MASSACHUSETTS DIVISION OF FISHERIES & WILDLIFE

2024 ANNUAL REPORT

MASSWILDLIFE

Annual Report 2024

Massachusetts Division of Fisheries and Wildlife

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Front Cover:

MassWildlife's Angler Education summer seasonal Charly Blair (back row, left), Outdoor Education Specialist Ian Sypek (back row, center), and Learn to Hunt and Fish Specialist John Gutzeit (back row, right), with participants at a women's fishing workshop held at Wachusett Reservoir. The group caught the pictured landlocked salmon on a nightcrawler. For some of the participants, it was the first time they had gone fishing.

Back Cover:

A female American kestrel (*Falco sparverius*) that successfully nested in a nestbox placed and maintained in the Town of Grafton by the Grafton Land Trust wears a Motus tracking transmitter fitted by MassWildlife's State Ornithologist Andrew Vitz. This kestrel was one of seven to get a transmitter in FY 2024 as part of a multi-year project using automated radio telemetry to better understand the movement and behavior of the American kestrel. Photos by Troy Gipps/MassWildlife

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1 The Board Report

Stephen A. Sears, Chair

Overview

The Massachusetts Fisheries and Wildlife Board consists of seven persons appointed by the Governor to 5-year terms. By law, the individuals appointed to the Board are volunteers, receiving no remuneration for their service to the Commonwealth. Five of the seven are selected on a regional basis, with one member, by statute, representing agricultural interests. The two remaining seats are held by a professional wildlife biologist or wildlife manager and one representative with a specific interest in the management and restoration of wildlife populations not classified as game species. The Board oversees the operations of MassWildlife; reviews the agency's programs; approves all personnel appointments; sets policy and regulations pertinent to wildlife in the Commonwealth; and votes to accept care, custody, and control of wildlife lands acquired through the Department of Fish and Game's Land Protection Program.

Modifications to portions of the state's Open Meeting laws that enabled municipal and state boards, including the Fisheries and Wildlife Board, to hold public meetings via open conference calls and virtual meeting video platforms (e.g., Zoom) during the COVID-19 pandemic continued throughout the fiscal year, but all meetings were held in person during FY 2024 in addition to most meetings being streamed on Zoom. The Board held two public hearings on proposed regulatory changes during the year; details of those hearings are below.

While many different matters and issues are brought before the Board each year, most of its business meeting time is spent in review and scrutiny of proposals for regulatory changes; of agency programs and policies; and of possible land and conservation-restriction acquisitions, usually, given the confidential nature of land-purchase negotiations, in executive session. Anyone interested in the details of the meetings of the Fisheries and Wildlife Board is referred to the archive of approved Board meeting minutes the staff maintains on MassWildlife's website.

This report is organized topically, then roughly chronologically within each topic. This predictable structure allows relatively easy searching and comparison of the Board's annual reports year over year.

Fiscal Year Highlights

DFG Strategic Plan Development

The Department of Fish and Game under Commissioner Thomas K. O'Shea embarked on an ambitious project early in FY 2024 to develop a Strategic Plan for the Department and its four divisions, of which MassWildlife is one. MassWildlife staff from all sections put in long hours with teams of their counterparts from the other divisions to define, develop, and hone the themes of climate and biodiversity, environmental justice, and relevance that frame the goals, objectives, actions, and key results that the Department will work to achieve by 2030. Called *Connections, A Five-Year Strategic Plan to Guide Our Work: 2025-2030*, the plan was largely complete by the end of the fiscal year and the May meeting was the setting for Commissioner O'Shea's report that plans were being finalized to publish and distribute it by August of the new fiscal year. Commissioner O'Shea stated that *Connections* will be a living document, a road map, and a guide to future work. He noted that a strategic plan doesn't include everything the divisions do; rather, it's a vehicle to bring into focus the larger issues staff want to elevate, and he was very pleased with the result.

Governor's Visit to Sign Environmental Executive Orders (EO)

Figure B 1. Governor Maura Healey (seated), Lt. Governor Kim Driscoll (far right), Secretary of Energy and Environment Rebecca Tepper (far left), DFG Commissioner Tom O'Shea (center top), and Director Mark Tisa (second from right) during the signing of executive orders No. 618 and No. 619 at the MassWildlife Field Headquarters on September 21, 2023.

In September, Governor Maura Healey and Lt. Governor Kim Driscoll came to MassWildlife's Cronin Building to sign two environmentally focused executive orders (EO; Figure B 1). EO No. 618 mandated that Massachusetts will develop ambitious, first-in-the-nation biodiversity goals for 2030, 2040, and 2050; EO No. 619 banned the purchase of single-use plastic bottles by the Executive Department of state government.

EO No. 618 gave the Department of Fish and Game the leading role in drafting long-term objectives to conserve biodiversity. The goals will focus on sustaining a full array of plants, animals, and habitats in the Commonwealth while providing all people access to nature. Biologists and staff at MassWildlife were busy for the remainder of the fiscal year drafting recommendations for ensuring a climate-resilient Massachusetts now and into the future; that work and the work of the larger Department is ongoing.

2023 Manual Carballo award to MassWildlife's Hunters Share the Harvest

In November, Director Tisa reported to the Board that MassWildlife's Hunters Share the Harvest team had been presented with the state's highest employee award by the Governor and Lieutenant Governor, and that he had attended the ceremony at the State House. The Manuel Carballo Governor's Award for Excellence in Public Service is presented to employees "who selflessly personify a deep commitment to serving the people of the Commonwealth and exemplify the highest standards of public service. This award was established in memory of Manuel Carballo, who served as Secretary of Health and Human Services. ... The award...is given to 10 employees, or groups of employees, who demonstrate exemplary leadership, innovation, and creativity" (Commonwealth Employee Performance Recognition Program website)

The success of the Hunters Share the Harvest program shows the generosity of the hunting community and its willingness to give back, and the Carballo Award provided excellent recognition for the program and helped raise its profile in communities around the state. The program is co-led by Deer and Moose Project Leader Martin Feehan and Southeast Wildlife District Manager Jason Zimmer, and the other members of the core team are Northeast District Wildlife Biologist Chalis Bird, Western Wildlife District Wildlife Biologist Nate Buckhout, R3 Coordinator Astrid Huseby, Western Wildlife District Manager Andrew Madden, and O&E Communications Specialist Emily Stolarski.

Administrative Matters

Board Elections

The Board held its annual election of officers during the November business meeting, reelecting Mr. Sears to the Chair, Mr. Durand as the Vice Chair, and Mr. Foster as the Secretary of the Board.

Governance and Other Special Meetings of the Board

The Board members held five discussion, or governance, meetings in the course of the fiscal year. The Chair stated that the objective of the governance meetings was for the members to get to know each other and then to develop common goals based on the members' skills and interests. In November, the Chair devoted the governance meeting time to a presentation from Commissioner O'Shea, his staff, and a professional facilitator on the draft of the Department's Strategic Plan. Commissioner O'Shea requested that the members consider and provide feedback on the different objectives and goals in the Plan.

In lieu of a governance meeting in February, the Chair called a joint meeting with the DCR Stewardship Council and announced the theme of landscape-scale conservation. The first presentation, an update on EEA's Forests as Climate Solutions initiative, was given by Kurt Gaertner, EEA Assistant Secretary for Environmental Policy. The second presentation, "Landscape-level Projects: Opportunities for Collaboration between Public Agencies, Private Nonprofits and Individuals, and Nongovernmental Organizations in Massachusetts," a series of case studies, was given by Board member Emma Ellsworth and DCR Stewardship Council member Dicken Crane.

Natural Heritage and Endangered Species Advisory Committee Reports

Member Matthew Sisk serves on the Natural Heritage and Endangered Species Advisory Committee as the Board's representative. The Advisory Committee meets quarterly, and Mr. Sisk provided brief reports after its August and February meetings. Board member Emma Ellsworth attended the April Advisory Committee meeting and reported on it at the April Board meeting. For details of the quarterly meetings of the Advisory Committee, please refer to the archive of approved Advisory Committee meeting minutes maintained by staff on MassWildlife's website.

Adopted Regulations and Other Votes of the Board

Unified Archery Deer Season (321 CMR 3.02)

A public hearing was held in conjunction with the August meeting on proposed regulations that would extend the Archery deer hunting season statewide to match the current extended season in wildlife management zones 10-14. During the September meeting, Assistant Director Michael Huguenin presented an analysis of the public comments received before, during, and after the hearing, and then presented staff's final recommendations, which were unchanged from the original proposal. The Board voted to approve as proposed.

Updates to the MESA List (321 CMR 10.90)

At the October meeting, Assistant Director Schlüter cited the statutory and regulatory underpinnings of the Massachusetts Endangered Species Act (MESA) and reviewed the process

and procedure for changes to the MESA List, then enumerated the specific listing criteria that must be adhered to when considering species for the List. Dr. Michael Nelson provided the Board with the information he and other staff had compiled on the 26 species proposed for listing changes: 3 vertebrate species, 5 invertebrates, and 18 plants. His detailed reports included basic natural history where relevant; the rarity, population trend, and threats for each species; the current status; the proposed status; and the staff's status recommendation for each one. The Board voted to send the MESA List changes to a public hearing as proposed.

The hearing was authorized and held virtually in April in a Zoom webinar, and staff brought the final proposed changes to the Board at its May business meeting. Assistant Director of NHESP Jesse Leddick provided analyses of the oral comments received at the hearing as well as of the written comments received before and after the hearing and he reported no changes to the staff's recommendations. The Board voted to approve the MESA List changes as proposed.

2024-2025 Migratory Game Bird Season Regulations: Public Hearing, Comment Review, and Vote [321 CMR 3.02(2)]

In February, the Board heard an outline of the staff's proposals for the 2024-2025 Migratory Game Bird hunting seasons, which were based on the expected federal frameworks for migratory bird hunting and the input and preferences of Massachusetts bird hunters. Staff reported that the federal frameworks would not be set until after the Atlantic Flyway Council meetings, which were scheduled for the end of February. In late March, MassWildlife received authorization to hold the hearing in mid-April and immediately announced and began a written comment period on the proposed regulations.

In April, the staff held the public hearing and accepted oral public comments during the hearing. There was no written comment period after the hearing (which is normal for these regulations) because federal regulations require that states report their seasons by April 30, so that they can be recorded in the Federal Register by the end of May. After the close of the hearing and a brief recess to allow staff to evaluate the oral comments that had been received, Assistant Director Huguenin provided an analysis of all the public comments that had been received and presented the staff's final recommendations, noting one change from the original proposals, which was to extend the brant season 2 weeks later. The Board voted in favor of the change to the brant season and also voted to shift the coastal duck and goose season later in the year, against the advice of staff. All other seasons were approved as proposed.

2023 Deer Review and 2024 Antlerless Deer Permit Allocations

Deer and Moose Project Leader Martin Feehan presented the annual Deer Review to the Board at its June meeting. He also presented the 2024 Antlerless Deer Permit (ADP) allocations, which were unchanged from the previous year and were endorsed by the Board. Please refer to page

73 in the Wildlife Program section of this Annual Report for details of the 2023 deer hunting season and the ADP allocations for 2024.

Proposals for New, Updated, or Amended Regulations

Proposed Regulations to Comply with State Legislation on the Interstate Wildlife Violators Compact (321 CMR 6.00)

At the October meeting, Assistant Director Michael Huguenin reported that in November 2022 a state bill was passed that included updates to Chapter 131 in the form of fine increases, at section 90, and mandating implementation of the Wildlife Violators Compact, at section 90B. As a result, MassWildlife is required to pass new regulations instituting the Wildlife Violators Compact process in Massachusetts.

As background on the Interstate Wildlife Violators Compact, Assistant Director Huguenin informed the Board that the compact began in 1989 as an agreement between Colorado, Nevada, and Oregon to prevent violators from taking practices that result in hunting, fishing, and trapping violations to a neighboring state. Now, the Association of Fish and Wildlife Agencies oversees the committee that maintains a national database of violations and the data is shared regularly with the states. The benefits of the compact are that it prevents illegal activity, provides a more efficient way for states to process nonresident violators by allowing their release on their personal recognizance, and makes license suspensions reciprocal throughout the United States. He reported that the new regulation will codify the procedures under which the Compact is administered in accordance with the new statutory language. He reviewed the procedures that will address how in-state and out-of-state license suspensions for both residents and nonresidents are processed, including hearings, the application of reciprocal laws, and the terms of suspensions.

The Board voted to direct staff to develop appropriate regulations and take them to a public hearing. That hearing had not been authorized by the end of the fiscal year.

Update the Regulations on Wildlife Sanctuaries to Mandate Boundary-marking (321 CMR 7.00)

Also at the October meeting, Assistant Director Huguenin reported that the November 2022 bill included a requirement that MassWildlife mark the boundaries of Wildlife Sanctuaries, at section 10. As a result, MassWildlife is required to pass regulations that specify boundary-marking for sanctuaries. The purpose of the statutory change and the proposed regulations is to ensure the proper management of wildlife resources through preservation and to maximize ecological balance and genetic diversity. Sanctuary boundaries are already marked to indicate that hunting is not allowed; the new regulations will codify normal practice in the regulations. There are thirteen sanctuaries with a total of 1,429 acres where hunting and trapping are

prohibited. The statutory amendment requires regulations that mandate the marking of sanctuary boundaries, and staff proposed to update 321 CMR 7.00 to mirror the language in the statute, i.e., no taking of wildlife except under the Powers of the Director at Chapter 131, section 4(2), and sanctuary boundaries must be conspicuously posted.

The Board voted to direct staff to develop appropriate regulations and take them to a public hearing. That hearing had not been authorized by the end of the fiscal year.

Proposed Changes to the Regulations for the Hunting of Deer (321 CMR 3.02)

During the annual Deer Review in June, Deer and Moose Project Leader Martin Feehan presented a number of proposed changes to the deer hunting regulations. As part of a strategy to keep Chronic Wasting Disease from being detected in Massachusetts, staff recommended sunsetting the remaining existing captive deer facilities in the state, both propagators and education permittees, and expanding deboning requirements to include all venison harvested outside New England. Staff also recommended regulation changes to clarify that food plots are legal to hunt, to authorize the use of deer decoys during the Archery-only season, to remove the daily antlerless bag limit so successful hunters in zones with surplus antlerless deer permits can harvest more deer, to authorize the use of the Youth deer permit for any open deer season, to exempt naturally shed deer and moose antlers from possession permit requirements, and to create a winter Primitive Arms (i.e., muzzleloaders and archery equipment) season for the month of January in Wildlife Management Zones 13 and 14. Regarding the last recommendation, Dr. Feehan noted that the season would run January 1–31, would require the new-year license and Primitive Arms stamp, would create an either-sex Winter Deer Permit for use only during the winter season, assumes that the antlerless tag bag limit will be adjusted, and allows the use of the new year's regular antlered tags.

The Board voted to direct staff to create regulations based on the proposed changes and take them to a public hearing. Authorization to hold the hearing was not received by the end of the fiscal year.

Agency Program Reviews

Hunter Education Program Review

During the July meeting, Hunter Education Program Administrator Susan Langlois presented a review of MassWildlife's Hunter Education Program (MHEP). She reported that the mission is 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. At the same time, MHEP's role is to coordinate and administer courses statewide in accordance with EEA's Office of Law Enforcement (OLE), the International Hunter Education Association (IHEA), and state standards. It must meet the law, Chapter 131, section 14, which dictates IHEA

standard course content and a minimum 12 hours of instruction. Ms. Langlois noted that meeting the IHEA standards is important because hunter education certificates are valid anywhere in North America to be eligible to purchase a hunting license, and maintaining that reciprocity is a high priority. The MHEP trains and certifies its instructors and must maintain quality courses that are available in all areas of the Commonwealth. The MHEP also issues completion certificates, maintains student records, and promotes its courses to the public.

Ms. Langlois explained that the MHEP is conducted according to an MOU with the OLE, which investigates and reports hunting accidents and whose officers may present the Massachusetts laws and regulations at courses. The bulk of the courses are conducted by a corps of volunteer instructors, who number about 325 per year and typically serve as instructors for 10.5 years.

There are six courses offered by the MHEP in the course of a year. Two are mandated: Basic Hunter Education and Trapper Education, both condoned by the IHEA and the AFWA [Association of Fish and Wildlife Agencies]. Four additional courses are offered that are considered advanced disciplines: Bow Hunter Education; Black Powder (muzzleloader) Education; Waterfowl Identification and Hunting; and Map, Compass & Survival. The vast majority of courses offered each year are the Basic Hunter Education, since that is mandated and in relatively high demand compared to the others. Ms. Langlois explained that there are three learning formats accepted by the IHEA. In-person (traditional) formats are conducted in classrooms for the entire course. Blended formats are a mix of home study (online) and in-class instruction. The third format is pursued fully online as self-study, which means the students complete the entire course on their own. While the MHEP is investigating and would like to offer a fully online option for its students who want it, Ms. Langlois noted that there are obstacles to doing that in the statute that have to be addressed first.

Ms. Langlois also explained the administration of the MHEP, including the customized database it uses to track students through the process, from first inquiry about taking a course through being issued a certificate of completion. Emphasis is placed on meeting demand for courses across the state, which involves a lot of coordination among instructor teams, venues, and students. Ms. Langlois provided an analysis of levels of demand for courses, seats available, and seats filled, showing that there are normally enough seats provided to meet demand, so other factors are preventing the filling of all available courses, including a high percentage of no-shows among those who register for courses. She provided the demographics of Massachusetts students, including by age, gender (including a small percentage of students who identify as nonbinary), and ethnicity. Ms. Langlois also named and discussed the roles of the staff of the MHEP, noting that all the full-time employees are highly experienced and vital to the success of the program, while four seasonal staff provide fill-in for areas of the state where there are no

volunteers teams and therefore no course offerings and for teams who are short on instructors for various reasons.

Ms. Langlois summarized her report by noting that the MHEP is meeting course demand, offering a variety of format options to meet student needs, and pursuing a fully self-taught option to increase accessibility, and will continue to use data to improve the student experience while maintaining internationally recognized standards for course content and delivery.

Hunter Education Working Group Meetings and Final Report and Recommendations

A working group was established by the Chair in FY 2023 and met in July, August, September, and October of FY 2024 in open meetings before arriving at a set of recommendations presented at the November meeting by Assistant Director for O&E Nicole McSweeney for possible improvements to MHEP courses and engagement activities. Ms. McSweeney reported on the process the working group followed, including the charge to the working group, its composition, and the steps the Board members and staff followed as they explored the program and its impact.

She noted that the purpose of the working group was to evaluate whether the MHEP is fulfilling its mission through the administration of Basic Hunter Education. Initial conversations among the working group members identified a few key questions. Ms. McSweeney enumerated the questions and the answers at which the working group had arrived.

Is Basic Hunter Education meeting student needs? Are the Basic Hunter Education class formats and curriculum offered meeting required standards and best practices? Assistant Director McSweeney reported that the answer to this question is yes. MHEP Administrator Susan Langlois had provided a detailed review of the MHEP at the July meeting (see above), including data on volunteers, students, and course offerings that showed the MHEP is meeting current North American standards and existing student demand.

Is MassWildlife recruiting and retaining a diversity of high-quality volunteer instructors? How do Hunter Education Volunteer Instructors feel about the MHEP? Assistant Director McSweeney reported that, in addition to reviewing currently available volunteer data, the working group also developed and distributed a volunteer survey to get a more detailed look at volunteer instructors' experiences, attitudes, and levels of satisfaction.

Human Dimensions Project Leader Jody Simoes then reported in depth on the results and working group analysis of the survey. After detailing the questions posed and the answers received from the volunteer instructors, he concluded that the survey captured a representative sample of the instructors; that, overall, the large majority of respondents expressed positive or very positive views of the program; and that there were some topics

identified that were expressed by a small minority of respondents where improvements could be made. Most of those topics related to the program's vacancy in MassWildlife's Volunteer Coordinator position at the time; the Volunteer Coordinator manages the volunteers and provides effective communication with the MHEP.

In her conclusion, Assistant Director McSweeney reported that the working group had adopted four recommendations:

- Hire a Volunteer Coordinator to build better internal capacity and enable MassWildlife to better manage volunteers;
- Develop a fully online Basic Hunter Education course to meet student demand for that format;
- Expand efforts to connect interested Hunter Education graduates with next steps in their hunting journeys;
- Promote hunting benefits and educational opportunities.

Addressing each recommendation in turn, she went on to report that MassWildlife has already submitted the Volunteer Coordinator position to the state Human Resources Department and is awaiting announcement of the open position. MassWildlife is also in the process of developing a request for proposals to create a fully online Basic Hunter Education course to meet demand from students for that format and comply with statutory standards. And she reported that the working group found that MassWildlife is already engaged in efforts to connect graduates with additional learning tools and experiences as well as in promoting the benefits of hunting and MassWildlife's existing educational opportunities in traditionally underrepresented areas, and both those efforts are continuing.

Teaching with Trout Review

At the March meeting, Assistant Director of Fisheries Todd Richards introduced Coldwater Project Leader Adam Kautza, who talked through the different components of the Teaching with Trout program for schools. Dr. Kautza reported that the program is designed to use brook trout as a model organism to teach Massachusetts students, appropriately at various grade levels, about developmental biology and life history, water quality and chemistry, and broader conservation concepts related to local aquatic resources. He detailed the components of the program, including what MassWildlife provides to participating schools and what the students do in the course of their lessons for 3-4 months, and he reported that the fingerlings will reach 3—4 inches by the time they are released into a preapproved local waterbody that is suitable for them.

Dr. Kautza reported that the 2023-2024 Teaching with Trout program engaged 64 schools in 47 Massachusetts towns, which translates to approximately 5,100 students. He noted that the program expands every year, despite the decline during the COVID-19 pandemic, and has rebounded since the COVID restrictions were lifted. He stated that the overarching goal, beyond simply education, is to engage students in a way that helps them develop an appreciation for our aquatic resources and the factors that influence them in the real world.

Other Presentations on Topics of Interest to the Board

EEA's Forests as Climate Solutions Initiative

During the July meeting, Kurt Gaertner, Assistant Secretary for Environmental Policy in the Massachusetts Executive Office of Energy and Environmental Affairs (EEA), began his presentation about the state's Forests as Climate Solutions Initiative by reviewing the extent and types, by managing agency, of the over 525,375 acres of state-owned forestlands in Massachusetts, which include MassWildlife's WMAs, the DCR's State Parks and Forests, and the DCR's Water Supply Protection lands.

Mr. Gaertner stressed that it is a broad initiative that started from the Governor's mandate but added many other aspects and foundational work that has already been done. Regarding reserves, he said they are also looking at private ownerships as part of the total reserves, given the large percentage of forested private land, and intend to actively acquire land with the specific intention of adding it to reserves. Mr. Gaertner then outlined the specifics of the process EEA has initiated for developing the forest management guidelines, land conservation increases and reserve expansion, landowner incentives, and forestry business assistance. He reported parallel efforts for implementation simultaneously with public engagement starting in FY 2024 and stated that EEA looks to have its action items funded and in place before FY 2025.

Jug End WMA Habitat Management and Bird Banding Efforts by Green Berkshires, Inc.

At the October business meeting, Western Wildlife District Manager Andew Madden began his presentation on research and management activities at Jug End State Reservation and Wildlife Management Area by providing some history of the property as a popular resort in the Taconics that operated into the 1980s. In 1994, Mr. Madden reported, the Department of Environmental Management, now the Department of Conservation and Recreation (DCR), and MassWildlife developed and formalized a plan to restore and protect the largely pristine area for passive recreation and for ecological research. Under the current management regime, habitat management, including 60 acres that are mowed annually after September 15 in approximately 350-400 personnel-hours per year; hunting and fishing access; and nest box placement and maintenance are the responsibility of MassWildlife, while parking and recreational access,

maintenance of structures, and apple tree restoration are the purview of DCR, and both agencies engage in community relations with visitors and with the surrounding communities.

MassWildlife supports research at Jug End because of its local importance, both to inform MassWildlife's management of the resources at Jug End and other WMAs and to build partnerships with other conservation organizations. Research there is also regionally important because Jug End is part of a broad network of ecologically rich conservation land in the Taconics and the Berkshires and because research and surveys at that location allow MassWildlife to monitor ecological change over time in a way that is possible in only a few places in the state. In particular, there is a Motus tower at Jug End that enables the tracking and monitoring of wildlife fitted with transmitters.

Mr. Madden introduced Ben Nickley of the Berkshire Bird Observatory (BBO) and Green Berkshires, Inc., to report on the work he is leading at Jug End. The BBO is conducting a long-term ecological monitoring project focused on migratory birds. In this time of rapid environmental change, it is important to document the changes, and birds are important to study at Jug End because of its position in the Atlantic Flyway. Mr. Nickley stressed that the critical area is the Boreal Forest in Canada, 1.5 billion acres that serve as North America's bird nursery. It hosts hundreds of species, and Mr. Nickley pointed out that many species that breed in the Boreal Forest migrate through Massachusetts along the Atlantic Flyway to wintering grounds in the south. Sampling these birds on their breeding grounds is not feasible, because much of the boreal forest is remote and inaccessible. Therefore, it is critical to document them as they migrate through. Mr. Nickley named and showed pictures of many birds that depend on the Boreal Forest, two of which are on the MESA List, and some of the species also breed in Massachusetts. He showed a series of maps that vividly demonstrated the importance of the Southern Taconics – and Jug End, in particular – as an ideal spot for the study of migrating birds—both those that breed in the boreal forest and those that have large breeding populations in the state of Massachusetts. Mr. Nickley observed that migrating birds need a wide variety of different kinds of habitat, and Jug End has it all.

To study the migrating birds, Mr. Nickley and his team of researchers set up mist nets in stopover habitat, such as shrub-swamp that contains vital, high insect loads and upland orchard habitat that is being daylighted, or opened, as part of MassWildlife's and DCR's management efforts. Data from the banding station demonstrates the importance of shrub swamps and early successional habitat for migratory birds and will help inform management practices at Jug End and other MassWildlife properties.

Outlining the first year of data collection, Mr. Nickley reported that initially they picked up local birds, then the migrants started to come through, especially warblers, and he showed a whole

array of birds highlighting differences in age, sex, and species. Noting that he and his team were out every day during the spring migration, he provided a slide showing the spring 2022 recap: 1,016 new birds were banded; 117 were not banded (hummingbirds require a special permit to band); 392 birds were recaptures that had previously been banded. Mr. Nickley reported that 72 species were banded in all, of which 22 were warbler species. He emphasized that all those numbers were from only 15 mists nests, which demonstrates the very effective placement of the nets on the landscape.

Reporting on the fall migration of 2022, Mr. Nickley stated that the BBO was able to watch examples of early range shifts happening in real time because the team was out there every day, and he pointed out that the phenological mismatch is very interesting: Plants are more stable, while animals' movement-timings change over time. The fall of 2022 brought many rare birds, and Mr. Nickley reported that during the fall of 2023 there were even more, noting that in some cases the birds are rare because they're late. Migration timing is already changing, and the BBO is documenting this phenological shift with their long-term dataset.

The safety and welfare of the birds comes first, and Mr. Nickley reiterated that, if researchers conduct rigorous training and adhere to ethical standards, mist-netting is the safest sampling protocol. But the community is also invited to the banding station because outreach, education, and the exposure of young people to the research site are also important aspects of the BBO's mission.

Mr. Nickley then detailed the BBO's recent work to conserve American kestrels, starting with some pertinent natural history. He reported that the American kestrel is experiencing a precipitous population decline over most of its range, and that the BBO is building and maintaining nest boxes to supplement habitat and monitor the species at the same time, including across South Berkshire County. The BBO uses its data locally and contributes to larger continental studies through the American Kestrel Partnership. Showing an impressive map of box locations across lower Berkshire County, Mr. Nickley reported great community partnerships in that work, including on private land and with MassWildlife.

Mr. Nickley then reported on a project of the Institute for Bird Populations with which the BBO is collaborating called MAPS, Monitoring Avian Productivity and Survivorship, which captures and compares adults with juveniles to better understand productivity, recruitment, and survival of individual species to better understand and document the long-term effects of climate change and other factors impacting wildlife populations.

Mr. Nickley also reported on Motus, the big collaborative effort to track wildlife movement, particularly of birds and bats. The animals flying by a Motus tower will ping it and get recorded. He reported that BBO's tower is part of one of the 'fence lines' that connect the dots and fill the

gaps, so everything that passes gets recorded by the towers of the New England Motus Network, which consists of five fence lines and fifty towers that provide automated telemetry across the entire region.

MassFishHunt Update

In January, Dan Koch, the DFG Information Technology Coordinator, provided the Board with a comprehensive report on the history and current state of the *MassFishHunt* license sales system, including the timeline from the original development of the current system through to the procurement of a new contract to build and maintain a licensing solution for the Department. He also reviewed the problems the Department and its agencies experienced in its relationship with Kalkomey Enterprises, the original vendor, and detailed the ways the Department is addressing the "pain points" experienced with Kalkomey in the new procurement. There were many lessons learned and the Department's team incorporated all that accumulated knowledge into the procurement process for a new vendor. He then outlined the selection process the new vendor would undergo, as well as the best practices the Departments team will follow in its work with and oversight of the new vendor moving forward.

FY 2024-2025 DFG Land Protection Budget Review

At the February meeting, DFG Director of Land Policy and Capital Budgets Christy Edwards briefly explained the 2024-2025 land acquisition budget, which had received a significant bump through the award of American Rescue Plan Act (ARPA) funds from the federal government. Ms. Edwards reported that the ARPA funds need to be committed to projects by December 31, 2024, and spent by December 31, 2026, and that the bulk of those funds need to be spent on projects within specific categories, such as parcels that increase or improve climate resilience and parcels that add to state Forest Reserves.

Massachusetts Fisheries and Wildlife Board

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2 The Fisheries Program

Todd Richards, Assistant Director of Fisheries

Overview

Fisheries Program goals focus on three major categories: providing excellent recreational angling; restoring waterbodies for the benefit of all fish and wildlife resources; and monitoring fish communities for research, prioritization for restoration actions, and technical assistance.

Recreational angling in Massachusetts is promoted and supported through many fisheries program activities, including hatchery operations, regulation and management revisions, and improvements in our ability to provide our information to the angling public. Trout fishing, especially in our lakes and ponds, would simply not exist without this program. The fish we grow provide not only recreation but are also a critical economic factor, with every dollar spent on trout leading to $22 back to the Massachusetts economy.

High-quality recreation is not just a construct of the hatcheries, however. Our waters continue to provide excellent fishing for more than 25 species of fish. This year's Freshwater Sportfish Awards program saw the establishment of new categories of award and two new species: white sucker and fallfish. For all species and categories (youth, adult, catch and release, catch and keep) anglers were awarded nearly 2500 pins for fish exceeding minimum lengths or weights.

Our research this year, in collaboration with many partners, included the development of regional fish and mussel biodiversity metrics, stream flow studies to better understand the relationship between stream flow and municipal groundwater withdrawal, the conclusion of brown trout population parameters and movement, and the development of an air and water temperature model. The results of this work were used to alter trout stocking practices, helped sister agencies issue water withdrawal permits and increase our relevance in the climate change realm.

Considerable effort from the program was also invested in fish community monitoring, land acquisition, updating our public facing recreational products like GoFishMA! and mass.gov/trout, and maintaining or removing MassWildlife-owned dams.

Finally, considerable time was spent gaining a better understanding of the potential for transformational federal funding that is and will be available for restoration, such as for aquatic organism passage and habitat restoration. This information and a focus on landscape-scale

conservation were instrumental in allowing MassWildlife to apply for an additional America the Beautiful Challenge grant opportunity, with decisions on final funding coming in FY 2025.

Aquatic Habitat Conservation

Regional Aquatic Biodiversity

The aim of the project is to incorporate existing climate change research into a framework that evaluates the conservation of aquatic biodiversity under a suite of land protection and restoration scenarios. Components of biodiversity evaluated are fish and freshwater mussel species and assemblages. The goal of this work is to identify land protection and restoration actions that optimize aquatic biodiversity protection into the future. The project is currently in its third year.

Fish Biodiversity

In FY 2024, MassWildlife staff continued work with the MA Cooperative Fish and Wildlife Research Unit (led by Jennifer Rogers and Graziella DiRenzo) to complete analysis and reporting on this stage of the project. Two scientific manuscripts are being finalized and submitted for publication. One outlines the development on of new metrics that provide practitioners an improved ability to represent the full suite of native fish species in setting conservation goals. Please refer to the FY 2023 annual report for details. The second manuscript focuses on the management actions that optimizes mitigation of climate change impacts, including dam removal, riparian zone revegetation, and daylighting of impervious surfaces. By far, model results suggest that reforestation in the riparian zone and at the watershed scale provide the best mitigation from excessive flooding and warming temperatures manifesting from climate change.

Freshwater Mussel Biodiversity

MassWildlife staff, Jennifer Rogers, Rebecca O'Brien, Graziella DiRenzo, Allison Roy

The work detailed above was also used as an important variable in related work to understand how climate change is impacting freshwater mussel biodiversity throughout New England. Models were derived to calculate the probable distribution of nine freshwater species. The analysis also considered the drivers of potential occupancy of each species at the watershed scale. Results and reporting are being refined currently. This project will produce a scientific article as well as a public-facing webpage that allows managers to compare the likelihood of mussel persistence due to watershed characteristics. One useful application of the web page is to provide mangers a list of watersheds most likely to support mussel reintroductions as well as those needed more extensive surveys.

Climate Adaptation

Resilient Massachusetts

MassWildlife is one of the many state agencies that meet quarterly with the Resilient Massachusetts Action Team, the group tasked with updating and implementing the Resilient Massachusetts Plan (ResilientMA). This fiscal year, MassWildlife has given feedback to consultants developing metrics that measure the success of implemented climate adaptation actions. This work continues.

In FY 2024, MassWildlife was awarded ResilientMA funding to address conditions in vulnerable freshwater, forest, grassland and coastal ecosystems. Funds were used to restore portions of the Great Salt Marsh, begin monitoring in Atlantic White Cedar swamps, plan a response for continued Southern Pine Beetle infestations (affecting Pine-dominated forests), restore grasslands from cold- to warm-season grasses, and analyze the health of freshwater mussel populations.

Linking Stream Temperature and Flow Models to Identify Climate Change Refugia

Climate change refugia are areas altered by changing conditions at a much slower pace than surrounding landscapes and are important components of conservation strategies. Climate change is altering streams by changing historic patterns of both streamflow and temperature. We continue to partner with USGS and others to model how climate change is likely to alter streams (orders 1-4). In FY 2024, the network of game cameras used to collect streamflow data at ungagged streams was expanded and novel modeling techniques (e.g., machine learning) were used to expand the ability to model water temperatures across the northeast region. This group also hosted a webinar focused on the protection of coldwater habitats through the Northeast Climate Adaptation Science Center which was well attended (~120 participants).

Working Groups and Other Collaborative Efforts

MassWildlife continues to participate in several climate adaptation working groups. At the national level, the National Fish, Wildlife, and Plants Climate Adaptation Network released an update of the 2015 [National] Climate Adaptation Strategy. MassWildlife also participates in meetings of AFWA's Climate Adaption Committee. At the regional level, the Northeast Climate Change Working Group brings together practitioners to share climate-smart projects and discuss challenges. MassWildlife also continued to collaborate with other agencies on several efforts, including with the Instream Flow Council, on Ph.D. dissertation committees at UMass Amherst, with the Massachusetts Department of Environmental Protection and municipalities (e.g., Littleton, Groton) for environmental review of projects with the potential to adversely impact rivers and streams, and with U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration, among others, on Federal Energy Regulatory Commission relicensing of the Lawrence Dam.

Fisheries Sampling

Biological Data

Each year, MassWildlife fisheries biologists and district staff collect fish community data from lakes, ponds, streams, and rivers throughout the commonwealth. These data serve to keep biologists abreast of current conditions, address project-specific needs, and facilitate statewide statistical analyses examining factors affecting fish populations. Since 1996 when sampling methodologies were largely standardized, fisheries staff have conducted approximately 8,842 fisheries samples in 3,076 unique waterbodies, including some 952,060 individual fish records. With over 2,700 named streams and rivers encompassing over 48,000 miles and 3,158 lakes and ponds in Massachusetts, maintaining current records with limited time and resources is difficult. Each year priority sampling sites are distributed to District personnel for visitation and data collection. Sampling sites are selected based upon revisit intervals calculated from past efforts, discovery of previously unsampled streams, project-specific needs, and public and partner requests. Sites are assembled, coordinates and access double-checked, and the sites are separated by District and released to District fish biologists. In FY 2024, 258 unique sampling sites were prioritized across the five MassWildlife Districts. Sites included streams with active and planned dam removals, unsampled waters, coldwater fisheries and suspected coldwater fisheries, and sites that had not been visited recently.

Fisheries samples in streams and medium-size rivers are typically executed between June 1 and August 31 and conducted primarily using backpack electrofishing. Electrofishing is a standard technique whereby an electric current is applied to the water, creating a small field. The field is moved through the water as the biologist walks upstream and any fish that is encountered is temporarily immobilized and netted. Biologists typically traverse 100 meters of stream collecting immobilized fish using 1-4 backpack electrofishing units (depending on stream width) and placing them into buckets. Once the entire reach has been passed through once, fish are identified down to the species, measured for length or otherwise enumerated, then released close to the point of capture. Accessory data including GPS coordinates, effort, efficiency, habitat comments, average stream width, water temperature, conductivity, and pH are recorded onto paper data sheets.

Lake, pond, and larger river samples are primarily conducted using boat electrofishing. This technique is similar to backpack electrofishing except the field is much larger and centered around and moved by a boat. Stunned fish are collected over 15-minute timed runs as the boat moves through littoral areas of a waterbody. Additional passive and active fish capture gears such as gill nets and seines may also be employed depending on the habitat available in the lake or pond. Fish are measured and enumerated as in other waterbodies and weights are collected on selected game and forage fish.

Results of this year's fish community sampling efforts are further discussed in the Data Management section of this report.

Fishing Access Data

GoFishMA! is an online map application that provides the public with information on locations to fish throughout the commonwealth. The initial data included in the application were driven by 273 Office of Fishing and Boating Access sites that were developed by the Department but largely limited to improved boat ramps. While expansive, these data lacked specific information such as any special regulations pertaining to the waterbody, information on shore access, or pictures. Furthermore, smaller shore and kayak access sites on other public lands and less frequented or less well-known boat ramps were not included. Each year, additional fishing access sites are visited and documented for ultimate inclusion in the online application. In FY 2024, an additional 217 public access sites from 168 unique waterbodies were located and added to the Go Fish MA database. As a result, GoFishMA! data includes a total of 664 unique fishing and boating access points. These new points are prioritized for the collection of more detailed access information, including narratives of access, pictures, shore fishing, and documentation of special regulations.

Pond Map Conversions

Beginning in FY 2024, the fishing access data, bathymetric maps, pond map narratives, and access pictures were integrated and converted to individual web pages. In FY 2024, 300 web pages for lakes and ponds with existing pond maps were created and include updated pond summaries, species summaries, Google directions, trout stocking information, access locations, restrictions, and pictures. Pictures of parking and boat and shore access are still being collected and integrated into the web pages as time allows. Further, edits to the bathymetric maps incorporating new access additions (and removals) are also ongoing. Individual pond web pages remain unpublished but, following final edits, links will be incorporated into GoFishMA.

Data and Database Management and GIS Extension of Fisheries Data

Biological and Water-quality Data

Following the cessation of field activities for the season, biological and water-quality field data are entered into custom Excel spreadsheets by District staff. The spreadsheets have built-in validation and are structured to automate quality control and compilation into the Fisheries database. Data are prescreened for incorrect species information, inaccurate GPS coordinates, lengths and weights in exceedance of three times the interquartile range of statewide averages, water quality outliers, and general completeness. Raw datasheets are electronically scanned, and paper copies are filed at the Field Headquarters and electronically on the MassWildlife

network. In FY 2024, a total of 164 new fisheries samples were added to the fisheries database (Figure F 1).

Figure F 1. Locations of fisheries sampling conducted in FY 2024 by MassWildlife (grey circles) and DEP (grey triangles).

Of these, 35 were collected by the Massachusetts Department of Environmental Protection (DEP) as part of their stream monitoring activities. Sampling efforts were hampered by consistent rainfall during the latter half of the summer and subsequent high flows, which result in less accurate fisheries data and can be dangerous for wading.

Weight and length data are post-processed using linear modeling to estimate the relationship between log-transformed weight and length for each species within and among (statewide) waterbodies. Residuals from statewide regressions for each species are used to eliminate outliers using quartile ranges. Relative weight is calculated from statewide quadratic weight-length regressions for each species and waterbody and exported as a separate table within the fisheries database.

Bathymetry Data

Bathymetry data are prescreened using custom R scripts that delete erroneous depth points and identify and remove duplicate data. GPS and depth data are exported as .csv files for entry in the Arc Pro where they are projected and examined for errors manually. Fast turns, dense weed beds, and otherwise rough conditions can cause the GPS depth sounder to lose the bottom, which can result in erroneous depths. Visual examination is the best way to locate and exclude these points.

Depth data are interpolated to a continuous depth surface using two methods: inverse distance weighting (IDW) and triangular irregular networks (TIN). The former method combined with a smoothing kernel creates flowing depth contours that are visually pleasing but generalized relative to the more chaotic but accurate TIN surfaces. As such, IDW bathymetry surfaces are used primarily for mapping applications such as MassWildlife Pond Maps and online mapping applications, while TIN surfaces are used for the estimation of lake statistics, such as lake volume and littoral habitat area, that complement internal statistical analyses.

Spatial Extension of Fisheries Data

Once tabular data are entered into access databases information is tied to spatial attributes such as sampling locations, stream centerlines, and watersheds using Arc GIS pro. Custom R scripts are used to create a table of summary data for each sampling point (MassWildlife Annual Report 2018; Appendix B) including, species, abundances, sample type, date, presence of coldwater fish, hyperlinks to scanned raw datasheets and scanned historical documents and other information that biologists can use to rapidly access the character of a stream or waterbody. These data are exported from the database and imported as points into ArcGIS where they are cross-referenced with National Hydrography dataset (NHD) stream linework and waterbody polygons that have been sampled by MassWildlife in the past. Using the unique identifier of each stream and waterbody, the sampling point data and stream and waterbody line and polygon data are rectified. Errors are identified as instances where the unique identifier of a point is not in agreement with the unique identifier of the closest line or polygon to that point. Via this process, errors in coordinates or identifiers are found and resolved, and streams and waterbodies that have not been previously sampled are added to the hydrography dataset and assigned a unique identifier. Finally, sampling points are snapped to stream center lines and polygons, and snapped coordinates are exported from ArcGIS and imported back to the fisheries database via R scripts (MassWildlife Annual Report 2018; Appendix B). Once the fisheries data are plotted and errors are fixed, value-added spatial data layers and products such as the coldwater fisheries resource layer may be easily generated by sub-setting these master layers using simple queries in ArcGIS.

Robust GIS analyses require accurate boundaries from which to calculate physical habitat metrics. Watershed boundaries of lotic systems are typically delineated using digital elevation models. While this approach can be used for lentic systems as well, anthropogenic effects proximal to the shorelines may also be important in structuring fish communities in these systems. To capture shoreline habitat data effectively, accurate shorelines are paramount. Current shorelines contained within the National hydrography dataset were delineated from topographic maps and are not precise. Following the initial efforts to redelineate all the lake and pond shorelines in 2017, efforts are ongoing to continue to update shorelines where appropriate. Furthermore, watershed boundaries continue to be delineated for all sampling

points as needed and land use characteristics and impervious cover summarized. To date, sub-watersheds have been delineated for all samples conducted between 2000 and 2024, which equates to more than 7,000 unique polygons. Subwatershed boundaries are used to extract land use characteristics upstream of each fish sampling point. National land cover data (2001, 2006, 2011, 2016, 2019, 2021) are clipped for each subwatershed and expressed as percentages of watershed area. Finally, estimates of percentage change of each land cover class are computed between years.

In addition to land use statistics reported above, finer scale metrics such as structure and parcel density, and shoreline sinuosity are calculated for lakes in ponds. Furthermore, lakes and ponds with bathymetry and water quality data permit the calculation of lake volume, coldwater and anoxic volume, littoral habitat area, and numerous drawdown exposure statistics.

Following the compilation of these updates, spatial summary layers, tables, and the fisheries Microsoft Access database are distributed to partners at USGS, DEP, DER, and the Massachusetts Cooperative Fish and Wildlife Research Unit at UMass Amherst.

Lake Trout Sampling

Lake trout were initially stocked in Quabbin Reservoir in 1952 and began to enter the creel in 1956. Since then, populations have expanded into Wachusett Reservoir and comprise arguably one of the most popular sport fisheries in the Commonwealth. Since the initial stocking, lake trout in Quabbin Reservoir have been monitored almost continually using various mark-recapture methods and most recently employing passive integrated transponder (PIT) tags beginning in 2006. Similar efforts commenced in Wachusett Reservoir in 2014. Each fall, spawning Lake Trout are sampled using 100-foot experimental gillnets set at night over known spawning locations. Nets fish for approximately 30 minutes and captured lake trout are gently removed from the net and scanned for the presence of a PIT tag using a PIT tag reader. If no tag is present, a 10mm PIT tag is implanted within the pelvic girdle of the fish. The unique tag number is recorded along with the length and weight of the fish. Prior to release, the adipose fin is clipped to serve as a visual secondary mark.

Data are entered into a database, checked for consistency, and general linear modeling is used to determine the relationship between log transformed weight and length within waterbodies and sexes. Relative weight is then calculated among waterbodies and sexes and used to evaluate and track changes in condition over time in both waterbodies. Growth rates are calculated from length changes garnered from recaptured fish and expressed as relative and absolute annual growth. However, because fall gill-netting captures predominately male fish, analysis of growth and condition data are restricted to mature male lake trout.

In FY 2024, a total of 241 lake trout was captured: 116 within Quabbin Reservoir and 125 within Wachusett Reservoir, of which 111 and 115 were tagged, respectively (Table F 1 and Table F 2).

Table F 1. Quabbin Reservoir lake trout tag and recapture data, 2006 to 2023.

Year	Tagged	Recaptured	Total
2006	279	NA	279
2007	55	2	57
2008	102	7	109
2009	178	13	191
2010	147	30	177
2011	6	0	6
2012	0	0	0
2013	238	16	254
2014	276	14	290
2015	366	32	398
2016	286	32	318
2017	158	29	187
2018	133	30	163
2019	146	23	169
2020	94*	NA	94
2021	81	8	89
2022	106	11	117
2023	104	7	111
Total	2661	254	3009

Table F 2. Wachusett Reservoir lake trout tag and recapture data, 2006 to 2023.

Year	Tagged	Recaptured	Total
2006			
2007			
2008			
2009			
2010			
2011			
2012			
2013			
2014	110	NA	110
2015	155	6	161
2016	64	3	67
2017	74	9	83
2018	66	5	71
2019	156	6	162
2020	114*	NA	114
2021	127	7	134
2022	111	8	119
2023	106	9	115
Total	969	53	1136

**Lake trout measured length and weight only; not tagged.*

Growth rates from recaptured lake trout continue to indicate that these fish grow very slowly. Over the past 10 years lake trout have grown on average 7.5 mm and 11.1 mm a year in Quabbin and Wachusett reservoirs, respectively.

Quabbin lake trout length at catch and condition had remained relatively stable for the previous 4 years but dropped significantly in 2023. Over the long term, mean length at catch and relative condition have declined from historical highs in the 1970s but within decades oscillate regularly (Appendix A, Table A 10, Figure A 1, and Figure A 2). Interdecadal oscillations in these measures are likely a function of changes in forage fish abundance within Quabbin Reservoir, specifically rainbow smelt. For example, one qualitative measure of forage fish abundance decreased 10-fold between 2009 and 2011, which corresponds to a dramatic swing in lake trout relative condition during that time. Similar patterns observed in the number of

landlocked salmon submitted to the Sportfishing Awards Program suggest this species responds to forage fish abundance as well. This decline in length at catch and condition observed in 2021 is likely the inflection of another cycle in these metrics, which tend to recycle every 6 to 8 years. The overall decline in lake trout size at capture and condition across the period of record is likely a result of a combination of factors, including declining reservoir productivity, reductions in rainbow smelt densities potentially born through anthropogenic alterations to spawning strategies, and increasing lake trout densities.

Within Wachusett Reservoir, lake trout condition and length at capture remained stable relative to years past (Appendix A, Figure A 3 and Figure A 4). Tagging efforts began in Wachusett in 2014 and thus do not provide the benefit of the long-term perspective in the Quabbin lake trout data, which stretch back to the initial plantings in the 1950s.

Fish Kill Response

MassWildlife responded to 38 fish kills in FY 2024, which is slightly above the 10-year average of 35 (Appendix A, Figure A 5). All of the reported kills were of natural origin and were caused by a mix of low dissolved oxygen, disease, and physiologically stressful behaviors, such as spawning.

Other Fisheries Projects

- Conducted electrofishing demonstrations for students at Worcester State and University of Massachusetts and in conjunction with Massachusetts Department of Transportation as part of their river and roads initiative.
- Reviewed development and management proposals in and around lakes and ponds throughout the state as to their potential impacts to fisheries resources.
- Solicited, hired, and managed a contracted field technician stationed out of the Field Headquarters.
- Clipped the adipose fins of 10,000 landlocked salmon smolts at Palmer Hatchery prior to release into Quabbin Reservoir. Fin clips allow anglers to determine whether the fish was produced in a hatchery or is a result of natural reproduction in Quabbin tributaries.
- Initiated a voluntary creel survey in conjunction with the Department of Conservation and Recreation Division of Water Supply Protection at the three boat launch areas in Quabbin Reservoir to investigate catch, harvest, and participation.
- Conducted electrofishing surveys in Wachusett Reservoir tributaries (Stillwater River, Gates Brook) and Quabbin Reservoir tributaries (West Branch Swift River, Hop Brook) to monitor counts of young-of-the-year landlocked salmon. Scouted the Quinapoxet River and its tributaries for additional sampling sites in anticipation of the removal of the Quinapoxet Dam.

- Led stream survey crews sampling streams in Central District as the fish biologist position remained vacant.

Fisheries GIS

The activities included in this project in FY 2024 were focused primarily on the development and enhancement of fisheries-related online mapping and data applications. These applications included the MassWildlife trout-stocked waters application, pond maps and bathymetry, and the web-based fishing application, GoFishMA!

Trout-stocked Waters Application

In FY 2024 there was a major effort to migrate our trout stocking web application to a new platform. While the existing platform was both stable and flexible, the underlying system, an online Google-based database, was part of a host of databases that the state Office of Information and Technology could no longer support. Our team viewed the mandate to redesign the system in a new environment as a challenge, but also as an opportunity, designing a new system that could be integrated into other online fisheries data applications. As with the previous stocking application, the staff of DFG IT/GIS stepped in to facilitate the design and execution of the new application. Working closely together, the staff of Fisheries GIS, DFG IT/GIS, and the Districts and Hatcheries were able to design and road-test a new trout stocking application in a very short time period of about 6 months.

The previous Google-based system is now housed in ESRI's ArcGIS online (AGOL) platform. Since many other Fisheries-related applications are also hosted in AGOL, data from different applications can now be brought together to create new and innovative web applications for the public. For District and Hatchery staff, the new system is similar to the existing one in that it houses seasonal stocking schedules, orders, and allocations in one repository. The information from this database also automatically populates the public stocking list and map on the MassWildlife website, at Mass.gov\trout.

In addition to technical improvements to the online stocking application, efforts in FY 2024 included a review of all currently stocked waters by Westborough and District staff. The resulting revised lists were then included on both the website and hard-copy lists circulated by the Districts. Every year there are a handful of waterbodies that are added or removed from stocking, usually due to issues of public access. The project leader also updated a spatial data layer for internal use that depicts trout stocking since the inception of the new stocking application in 2016. This GIS layer shows stocking efforts by species, numbers, and seasons. Biologists can use this information to better inform aquatic surveys and conduct management and protection efforts.

The web application on masswildlife.org/trout continued to garner a very positive reception from the public. For the periods of fall and spring trout stocking in FY 2024, the stocking application web pages received a total of 668,582 unique page views (this excludes people logging in from state accounts). This figure is up dramatically from previous years (560,384 in FY 2023; 566,495 in FY 2022; and 591,000 in 2021). Users spent over 4 minutes on the page, which represents very positive engagement with the page content. The consistently large number of visitors to the trout stocking map/list page, which usually ranks in the top 5 of most-popular Mass.gov pages, indicates the public's continued appreciation of the application.

Bathymetry/Pond Maps

MassWildlife began collecting new bathymetry in 2015, using the data to update publicly available pond maps as well as online web applications. In FY 2024 bathymetric surveys were conducted on Cheshire Reservoir in Cheshire, and raw bathymetric data was acquired from DEP for Foss Reservoir in Framingham and Savery Pond in Plymouth. Digital depth maps for these ponds were incorporated into the publicly available DFW bathymetry dataset during the annual data update.

Typically, between 5,000 and 40,000 depth readings will be collected during a bathymetry survey, depending on the size of the waterbody. Once new bathymetry data is collected, the point depths are analyzed in a GIS system and subsequently output as a depth surface map. In FY 2024 Fisheries GIS recreated a statewide bathymetric datalayer for all the 264 lakes and ponds for which we had updated data, adding an additional 27 ponds to the previous spatial datalayer. This seamless dataset allows users, within and outside of MassWildlife, to view depth information, including labeled contours, in one location, and is useful internally for field survey planning, and by the public for both angling and boating. The statewide bathymetry datalayer is also used as a base map in both our GoFishMA! and Pond Maps viewers, enabling users to access depth data on both a computer and phone. Recent statistics indicate that over half of the uses of our GoFishMA! application accessed it on a phone or other mobile device. Both applications allow users to show their location, so now users with a smartphone out on the water (or ice) can get real-time information on lake and pond depth.

Depth surface maps are an important component of our Pond Maps and Fact Sheets, which are produced to provide lake and pond information for anglers, whether shore-fishing, ice-fishing, or out in a boat. The fact sheets, which describe fisheries resources, aquatic habitat, and recreational access, were updated based on the most recent sampling data, as well as information provided by the MassWildlife District Offices. The MassWildlife pond maps and fact sheets have always been used frequently by the public and were usually accessed through the online pond maps interactive map and list. With the rollout of the GoFishMA! application,

however, pond maps and associated information will be accessed solely through that application, simplifying where the public can access physical and fisheries-related information.

The current pond maps are static .pdf documents. In order to update information in the pond maps, the documents must be edited, the relevant maps attached, then reposted to the internet. To make this process more streamlined, staff are constructing standalone web pages for each waterbody. In addition to being able to easily edit information in the pages, we can now include photos of public access and other features of the waterbody. The new format will provide the public with more and timelier information on waterbodies. As part of this effort, we extracted the maps from the pond map writeups and created standalone, printable PDFs, accessible from the new waterbody information pages in the GoFishMA! web application. In FY 2024, the project leader created standalone printable PDF maps from existing pond map pages, so that users will still be able to print out waterbody maps from the new interactive web pages.

Integral to this process was the cataloging of existing pond maps and their status. There are currently 305 lake and pond maps available to the public. Of these, 189 have been updated with new maps, including new bathymetry, and new writeups describing recent surveys and other habitat information. The pond maps and new bathymetry are easily viewed by the public through the MassWildlife GoFishMA! application (discussed below). There are now 200 lakes and ponds that have updated digital depth maps available to the public.

In addition to the pond maps and fact sheets available to the public, we also updated the GIS layer of bathymetry collected during our surveys. This data was made available to the public as both an interactive and downloadable GIS layer. The downloadable bathymetric contour layer allows users to display the data at 5-foot contour intervals and is available from MassGIS. The interactive bathymetry layer is called 'Inland Waters Bathymetry' and is available through the MassMapper application.

GoFishMA!

In addition to the Trout Stocking web application mentioned above, the Fisheries program maintains other online maps designed to guide the public to waters that offer good angling experiences and other recreational opportunities.

The web application, called GoFishMA!, is the product of collaboration between the Fisheries program and our Outreach and Education program. The foundation of this online application is a layer of fishing sites, which is produced through input by both Westborough and District staff. This popular fishing web application is now available through MassWildlife's website, in the freshwater fishing section.

In addition to the fishing sites datalayer, the application currently includes shaded bathymetry for lakes and ponds, where available, links to pond maps and writeups, indications of trout-stocking, and access, including both shore access and boat ramps, and catch and release areas. Users can also get driving directions to a large number of sites, which will open Google Maps when someone click on a given site. While some access is obvious (e.g., boat ramp), other access needed local input from the District offices, especially for shore fishing areas and carry-in access. In FY 2024 Dr. Jason Stolarski worked with the Districts to accurately map and document a number of previously undocumented access sites, in effect doubling the number of boat access locations we can show the public. We also accurately mapped the locations of vendors that sell bait to the public, to include in the GoFishMA! application In FY 2024 bait stores were added to the online map as an additional base layer. Users will be able to click on a bait store location and get driving directions as well as contact information for that store. Adding bait stores will provide users with an additional layer of information when searching for angling opportunities. In FY 2024 we continued acquiring photos that represent access sites mapped in the GoFishMA! Application. In the future iteration of the application, the public will be able to click on a site and get photos of the ramp or other access site.

Pond Map Viewer

Another popular online map the Fisheries program had maintained was the Pond Map Viewer page. It was a very simple, user-friendly web application showing ponds where fact sheets/maps and digital bathymetry were available. As updated pond descriptions and bathymetry were available, they were posted to the application. At the end of FY 2024 we retired the Pond Map viewer and integrated the list and descriptions into the GoFishMA! web application. Consolidating waterbody information into GoFishMA! will make navigating to information easier for the public and make updating information easier for MassWildlife staff.

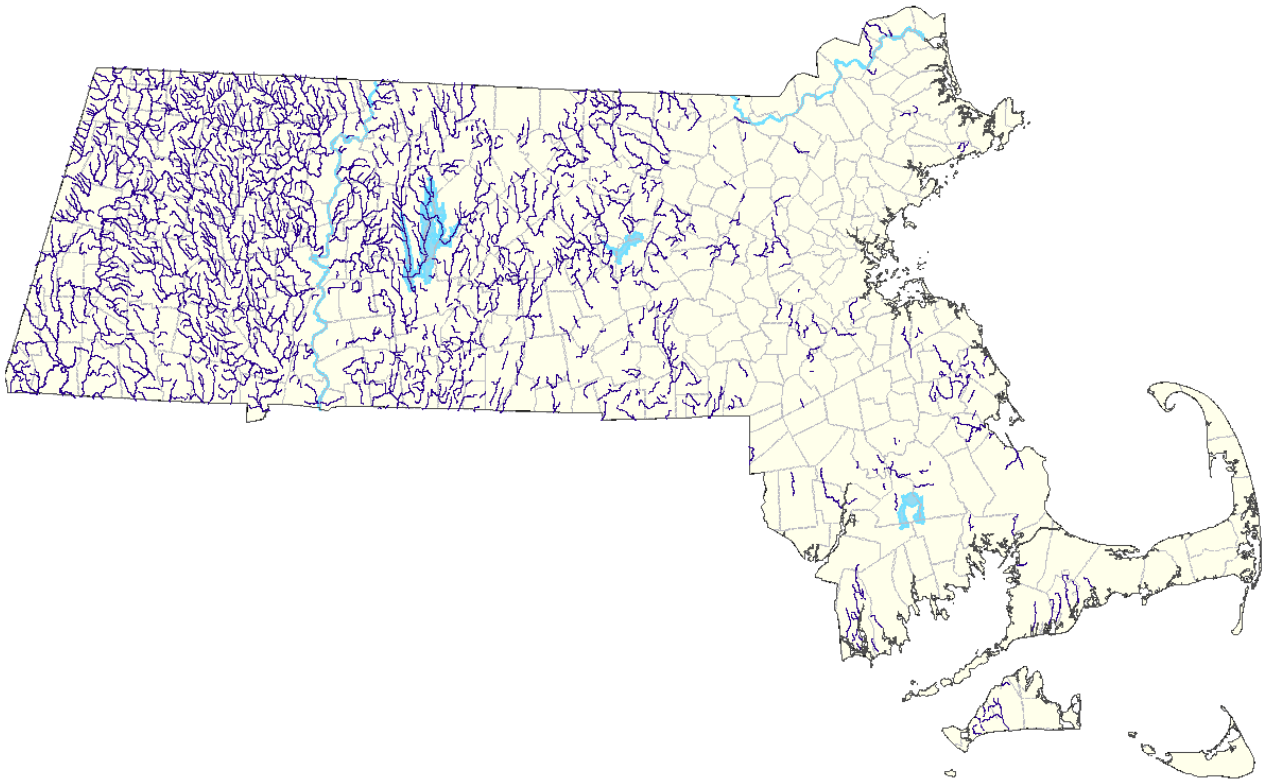
Coldwater Fish Resources Layer

Once a year, Fisheries GIS updates the Coldwater Fisheries Resource (CFR) datalayer available to the public (Figure F 8). CFRs are important habitat for a number of coldwater species, including trout. Coldwater species are typically more sensitive than other species to alterations to stream flow, water quality and temperature within their aquatic habitat. Once fish sampling data, collected annually by staff biologists and technicians, is filtered into the Fisheries program database, the data points are tied to stream and pond segments represented in the National Hydrography Dataset (NHD). The NHD is a dynamic dataset, designed to be improved on an ongoing basis based on field surveys and imagery interpretation. Through the process of tying our sampling data to this dynamic NHD data, we can ensure that our derived datalayers, like Coldwater Fisheries Resources, are based on the best available information. The total number of CFRs in Massachusetts is now 1,305. The CFR data can be accessed by the public via a CFR

web viewer. It is also available for download via MassGIS, for users that have access to a GIS mapping system.

The Coldwater Fisheries Resource data is also used internally to produce a number of derivative data. These include the Wild Trout Classification data, which depict the best remaining waterbodies that hold reproducing wild trout. Also spatially based on the CFR data is the Coldwater Refugia dataset, showing those critical coldwater habitats where CFR-dependent species can survive high temperatures, drought, and other unsuitable conditions (Figure F 2).

Figure F 2. Current spatial representation of Coldwater Fisheries Resources (CFRs)



Fisheries Intra-agency Collaboration

In FY 2024, the Fisheries program contributed general GIS support to MassWildlife, with emphasis on the updating and support of aquatic data. MassWildlife Fisheries GIS is part of the National Hydrographic Dataset (NHD) network, and in FY 2024 participated in collaborative working groups focusing on the direction of hydrographic data development. Sometimes MassWildlife staff sample streams that are missing from the national data. These streams are field-verified and digitized from aerial photos, then incorporated into the national data set. Since the NHD data were originally developed at a 1:24k scale, many smaller streams are missing from the data, some of which may be of conservation concern. To address the paucity of smaller, especially headwater, streams, in the data, as well as the changes in hydrography that have accumulated over the years, USGS launched a new data initiative called the 3D hydrography program. The 3D hydrography data will replace existing hydrography and should enable the Fisheries program to better portray and analyze aquatic habitat, as well as deliver more accurate mapping products to the public.

In FY 2024, Fisheries GIS was able to take much of the Fisheries-specific data we produce and host it in an online portal called ArcGIS Online. ArcGIS Online is a web-based platform built by ESRI, our GIS software provider, designed to promote collaboration and seamless desktop to web publishing. In the last several years we have sought out innovative ways to host our Fisheries data so staff can access, update, and edit it from a variety of locations. This was a good opportunity to identify data critical to the Fisheries workflow, including for both Field Headquarters and District staff. To accomplish this, we created a Fisheries-specific section in ArcGIS Online for our spatial data. Accounts were then created for all our users, and they were trained in accessing and editing this data. This investment has proven valuable not only to streamline the Fisheries program workflow but also to incorporate our data in intra-agency efforts that share similar priorities.

Hatchery/Trout Program

Trout Production and Stocking

The total number and total pounds of each size category for each species of trout produced and stocked by MassWildlife's five hatcheries in FY 2024 are listed in Appendix A, Table A 1, Table A 2, Table A 3, Table A 4, and Table A 5, and Appendix A, Table A 6, Table A 7, Table A 8, Table A 9, and Table A 10, respectively. Overall, a total of 511,414 brook trout, brown trout, rainbow trout, and tiger trout with a combined weight of 421,987 pounds was stocked, which met the Division's annual trout production goal of 400,000 fish but was 6% short of the goal of 450,000 pounds. The shortfall results from adjustments to production as we transition from growing lots of small (6-9-inch) brook trout to fewer, larger (9-12-inch) brook trout.

The production goal is based on the rearing capacity of each hatchery, which is determined by a combination of the quantity and quality of the water supply, rearing space and limits imposed by the National Pollution Discharge Elimination System permits that each hatchery is issued by the Massachusetts Department of Environmental Protection and the Federal Environmental Protection Agency. A second production goal of the hatchery trout program is for 50% of the fish that are stocked to be in the 12+ size category (average length of 12 inches). This goal was achieved in FY 2024 as well; 78% (397,332 fish) met or exceeded this goal, including 290,098 rainbow trout, 51,488 brook trout, 52,929 brown trout, and 2,817 tiger trout.

MassWildlife has both a fall and a spring trout stocking season. During the FY 2024 fall season, which ran from late September through mid-October 2023, 134 ponds and lakes and 10 rivers and streams in 102 cities and towns across the Commonwealth's five Wildlife Management Districts were stocked. A total of 66,638 trout comprised of 25,017 14+ rainbow trout, 35,242 12+ rainbow trout, 5,910 9+ brown trout, and 469 12+ brook trout with a combined weight of 67,735 pounds was stocked. Ninety-one percent of the fish stocked during the fall were in the 12+ or larger size category.

In the spring stocking season, which ran from March through early June 2024, a total of 450,059 trout with a combined weight of 354,748 pounds was stocked in 215 lakes and ponds and 192 rivers and streams in 249 cities and towns. Overall, 78% of the fish that were stocked met or exceeded the 12+ size category. Ninety-six percent of the rainbow trout stocked (229,839) were in the 12+ category and 69% (165,062) were 14+ and weighed an average of 1 pound each. A few of the rainbows were over 16 inches long and weighed a pound and a half apiece. A total of 80,706 brook trout were stocked in spring FY 2024, of which 51,019 (63%) were in the 12+ size category or larger. Just over 550 18+ inch brook trout averaging 2.2 pounds each were stocked. The total poundage of brook trout stocked was 48,118 pounds. A total of 127,062 brown trout between 9 inches and 18+ inches with a total weight of 80,824 pounds were also stocked. 42% (53,155) of the brown trout were at least 2½ years old and 12 inches or larger with an average weight of 1 pound apiece. Over 800 of these brown trout were longer than 18 inches and weighed more than 4 pounds apiece. Sandwich Hatchery produced 3,057 tiger trout; 92% were 14+ inches and weighed an average of 1 pound apiece (Appendix A, Table A 4 and Table A 9). Tiger trout are a cross between a brown trout female and brook trout male and are called tiger trout because of their striking tiger-like stripes.

Sandwich Hatchery obtained 51,369 2023 Shasta Strain rainbow trout eggs from the USFWS Ennis National Fish Hatchery in February and 266,532 Erwin/Arlee Strain rainbow trout eggs from the USFWS White Sulfur Springs National Fish Hatchery in August. Sandwich Hatchery produced a total of 346,692 fertilized brown trout eggs (117,000 sent to Roger Reed [Palmer] Hatchery), 277,848 fertilized brook trout eggs (13,920 sent to Roger Reed) and 252,720

fertilized tiger trout eggs in FY 2024 (Appendix A, Table A 11). During the spring season, the Sandwich Hatchery stocked a total of 566 brook trout and 701 brown trout surplus brood stock (Appendix A, Table A 2and Table A 3) with a total weight of 2,532 pounds and 1,253 pounds, respectively (Appendix A, Table A 7and Table A 8).

The Roger Reed Hatchery produced a total of 761,334 fertilized brown trout eggs, 409,476 fertilized brook trout eggs, and received 117,000 fertilized brown trout eggs and 13,920 fertilized brook trout eggs from Sandwich Hatchery in FY 2024 (Appendix A, Table A 12). During the spring season, the Roger Reed Hatchery stocked a total of 780 brook trout and 726 brown trout surplus brood stock (Appendix A, Table A 2 and Table A 3) with a total weight of 3,169 pounds and 2,019 pounds, respectively (Appendix A, Table A 7 and Table A 8).

A small collection of eggs from each of 217 mated pairs, from both Roger Reed and Sandwich hatcheries, were retained at Roger Reed as future brood fish. The resulting fingerlings from these eggs will be incubated separately from production eggs and remain on station at Roger Reed for egg production in 2026.

McLaughlin Hatchery obtained 54,292 2024 Shasta Strain rainbow trout eggs (Ennis National Fish Hatchery, 2/5/24) and 767,161 2023 Erwin-Arlee Strain rainbow trout eggs (Erwin National Fish Hatchery, 182,519 on 8/24/23 and 584,642 on 9/14/23). McLaughlin obtained 327,464 2023 brown trout eggs (285,450 on 12/06/23 and 42,014 on 12/16/23) and 326,508 2023 brook trout eggs (12/5/23) from Roger Reed.

Roger Reed sent 320,000 eyed brook trout eggs to McLaughlin, 7,500 eyed brook trout eggs to Erwin NFH, and 86,000 eyed brook trout eggs (from Sandwich) to the Wolf Creek NFH. Roger Reed also sent 351,000 eyed brown trout eggs to McLaughlin.

After hatching at McLaughlin, 90,435 brown trout (382 lbs.), 90,325 brook trout (475 lbs.), 91,311 Erwin-Arlee Strain rainbow trout (367 lbs.), and 14,973 Shasta Strain rainbow trout (161 lbs.) fingerlings were transferred to Sunderland Hatchery for grow-out. McLaughlin also sent 100,459 brown trout (446 lbs.), 80,248 brook trout (372 lbs.), 116,118 Erwin-Arlee Strain rainbow trout (534 lbs.) to Bitzer Hatchery for grow out. Mclaughlin also sent out 16,306 brown trout (69 lbs.) to Sandwich Hatchery for grow out.

Landlocked Salmon Production and Stocking

The Roger Reed Hatchery produced a total of 13,370 landlocked Atlantic salmon in FY 2024 (Appendix A, Table A 12). 3,140 of these salmon (average 5.7 inches) weighing a total of 229 pounds were transferred in September 2023 to the New Jersey Division of Fish and Wildlife Hackettstown Hatchery in exchange for northern pike fingerlings. The remaining 10,230

salmon, which averaged 9.2 inches and weighed a total of 2,940 pounds, were stocked in Quabbin Reservoir in May 2024.

Landlocked salmon eggs for the LLS24 production lot were obtained from Grand Lake Stream State Hatchery (Maine) as eyed eggs in February 2024. From the approximately 30,000 eyed eggs surviving salmon fry remain on station for stocking in the spring of 2025.

Northern Pike Stocking

In September 2023, approximately 2,000 northern pike yearlings averaging 11.4 inches long were stocked in Lake Buel and Quaboag Pond. The northern pike were obtained from the New Jersey Division of Fish and Wildlife's Charles Hayford State Fish Hatchery in Hackettstown.

Fish Health Monitoring

MassWildlife has maintained an active fish health monitoring program for its five hatcheries since the 1980s. Since that time, MassWildlife's Fish Pathologist conducts an annual comprehensive fish health examination of each species of fish at each hatchery following the protocols of the American Fisheries Society and the Northeast Fish Health Committee (NEFHC; NEFHC 2015). MassWildlife is an active participant in the NEFHC. The fish are screened for fish pathogens that the NEFHC committee considers a risk to trout and salmon (NEFHC 2015). In addition, diagnostic examinations were performed as needed on any hatchery fish that exhibited symptoms of illness.

Results of the fish health inspections and diagnostic testing conducted in FY 2024 are in Appendix A, Table A 13, Table A 14, Table A 15, Table A 16, and Table A 17. One NEFHC listed pathogen (*Aeromonas salmonicida*) was diagnosed in FY 2024. Furunculosis (*Aeromonas salmonicida*) was diagnosed in the Sandwich strain of brook trout at Sunderland Hatchery. Furunculosis is a ubiquitous pathogen of trout throughout much of the United States. The Furunculosis-infected brook trout at Sunderland Hatchery were successfully treated with an FDA-approved antibiotic that was prescribed by a veterinarian in accordance with the FDA's Veterinary Feed Directive (VFD). Cold water disease (*Flavobacterium psychrophilum*) was diagnosed in the Erwin/Arlee and Shasta strains of rainbow trout at McLaughlin Hatchery and the Erwin/Arlee strain at Sandwich Hatchery (Appendix A, Table A 16). Cold water disease is a ubiquitous pathogen of trout throughout much of the United States, but it is not listed by the NEFCH; FEFCH 2015). The CWD-infected rainbow trout at McLaughlin and Sandwich hatcheries were successfully treated with an FDA-approved antibiotic for CWD that was prescribed by a veterinarian in accordance with the FDA's Veterinary Feed Directive (VFD). Bacterial gill disease was detected in the Sandwich strain of brook trout at McLaughlin and Sandwich hatcheries. Bacterial gill disease is also a ubiquitous pathogen and is a NEFCH non-listed pathogen. The

Bacterial gill disease-infected trout were successfully treated with sodium chloride and hydrogen peroxide.

Capital Improvement Projects

In FY 2024, the Hatchery program received $82,468 in capital funds for engineering and design of a new 100kW backup power generator at the Sandwich Hatchery. We plan to install the new unit in FY 2025.

References

Northeast Fish Health Committee. 2015. Guidelines for Fish Health Management in Northeastern States. 67 pp.

MassWildlife-owned Dams

In FY 2024, MassWildlife received $2.1 million in capital funds to bring MassWildlife-owned dams into compliance with state regulations.

- FY 2024 was marked by significant advancements with the substantial completion of the construction of Adams Pond Dam, rehabilitating this Poor-condition, Significant-hazard dam to protect state-listed rare species dependent in the impoundment and to improve public access. This project used the majority of the program expenditure in FY 2024.
- Maintained compliance with Dam Safety regulations relative to inspections and emergency planning.
- Performed substantial investigation and preliminary design development for White Island Pond Dam in preparation for an upcoming rehabilitation project.
- Performed design, permitting, and implementation of emergency repairs to White Island Pond Dam when the retaining wall comprising the dam's downstream wall failed.
- In addition to these capital funding program accomplishments, MassWildlife began a program using ARPA and ILF funding to remove seven dams that it owns. MassWildlife has completed an enormous amount of work relative to this program, having undertaken the following work in the last year:
- Performed data collection and analysis for all seven projects
- Completed permit-level designs for each project.
- Completed the MEPA process for each project.
- Submitted the majority of the state and federal permit applications along with a portion of the local permit applications.
- Received approval on a number of permit applications.
- Held at least one public hearing on nearly every project to date.

Deerfield River Wild Brown Trout

In collaboration with Deerfield River Watershed Trout Unlimited

Background

The Deerfield River tailwater in northwestern Massachusetts is the largest, and one of the most popular, river trout fisheries in the state. The current project was instituted several years ago in part to direct our management of this important fishery, as well as in response to concerns that the current flow regime out of Fife Brook Dam was impacting the wild brown trout population.

We began this project in 2018 by marking all the brown trout that were stocked into this section of the Deerfield River with an adipose fin clip. This marking scheme was repeated for each stocking cohort through 2024 to distinguish hatchery from wild brown trout in our surveys. Beginning in 2019 we used raft electrofishing to do mark-recapture surveys across approximately 11 km of the Deerfield River tailwater downstream of the Fife Brook Dam. These surveys were designed to assess the relative proportion of wild and hatchery brown trout and to develop estimates of population abundance of brown trout in our study area. In addition to raft electrofishing, in 2020, we used backpack electrofishing to survey four 100-meter bankside transects to track the abundance of young-of-the-year brown trout more explicitly.

Results to Date

Through FY 2024, we have tagged 470 brown trout (>150 mm). Of the brown trout collected over this period only 79 had an adipose fin clip, meaning that the brown trout fishery in the Deerfield River tailwater consists of over 84% wild fish and is therefore a predominantly wild trout fishery. These results were somewhat unexpected given the relatively limited number of successful self-sustaining wild brown trout fisheries in Massachusetts and especially in the Deerfield River watershed. The relatively low proportion of hatchery brown trout found across our surveys has led to a management shift away from stocking brown trout to managing for an all-wild brown trout fishery in this section of the Deerfield River.

Overall, abundance of brown trout has been somewhat lower than anticipated given the size and quality of habitat and the water temperatures present in the tailwater. Although, relative to wild brown trout populations in other similarly sized Massachusetts waters, as well as all wild brown trout waters of any size, abundance in the Deerfield tailwater is generally above the average (Figure F 3). Young-of-the-year (YOY) brown trout abundance in the Deerfield River tailwater has been exceptionally low in several previous years of this project; however, we observed a substantial increase in YOY brown trout in 2022 and 2024 (Figure F 4). Looking back at the fall and winter of 2021-22 and 2023-24 we observed that the flows in this section of the river were consistently higher, especially around spawning season October-November and throughout the egg development stages November-February, than current required minimum baseflow (125 cubic feet per second; cfs) and were more in line with the new minimum

baseflow requirements (250 cfs) set to begin in the next couple of years. Although this is only two years of data and may be anomalous, it is at least encouraging that higher winter flows correlated with increased YOY brown trout survival. In the future, the higher minimum baseflows required from Fife Brook Dam may allow the brown trout fishery to increase in abundance with better survival and recruitment. Although recruitment appears to be limited by the low abundance of YOY brown trout (except in 2022 and 2024), survival seems to be relatively consistent once individuals make it past their first year until they reach the limit of their longevity in the system.

Figure F 3. Brown trout mean abundance (number of brown trout per kilometer).

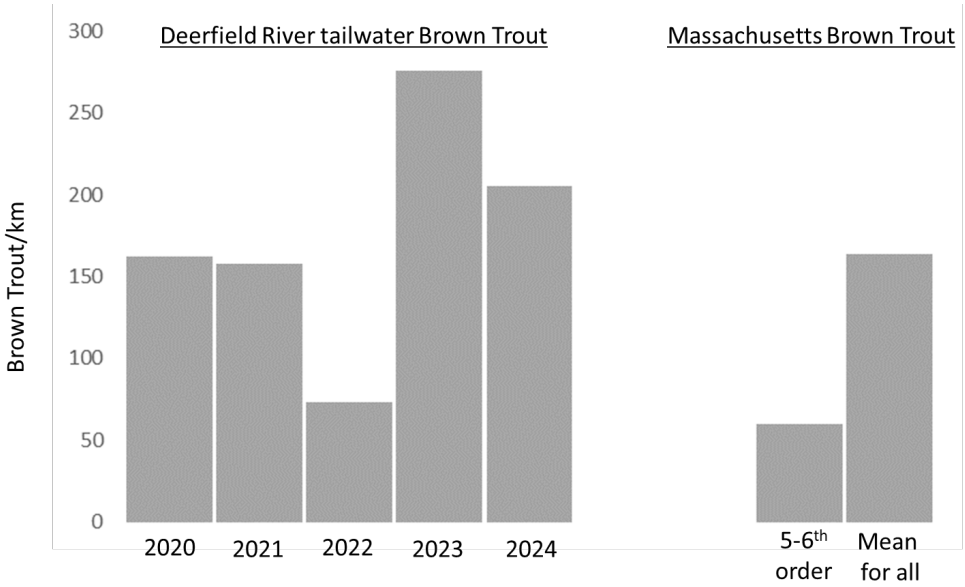
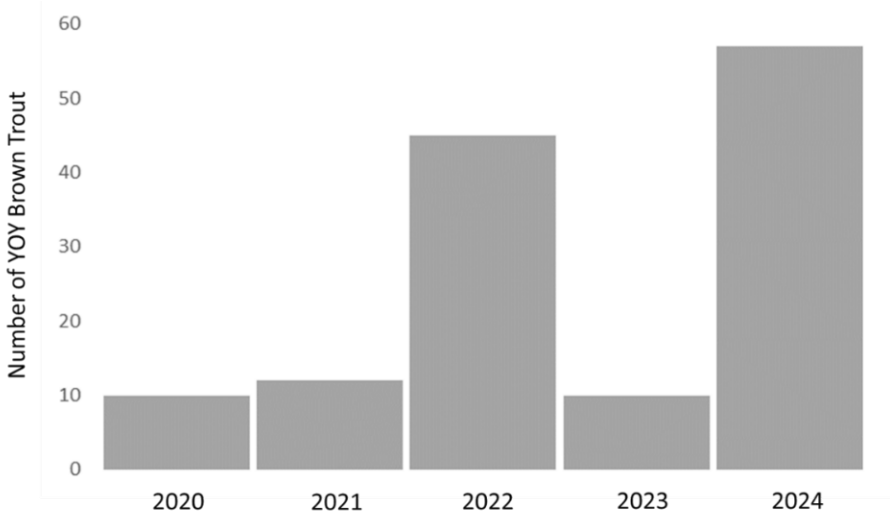


Figure F 4. Total number of young-of-the-year (YOY) brown trout from surveys in the Deerfield River tailwater 2020-2024.



The first phase of this project is ongoing. Data from the first phase are already being used to direct our management of the fishery (e.g., brown trout stocking has been discontinued to emphasize the wild, self-sustaining brown trout fishery) and will be used as baseline data for later comparison purposes. The second phase will begin following the mandated shifts in flow regime from Fife Brook Dam (e.g., higher minimum baseflows over fall, winter, and spring, and ramping up and down of daily hydropeaking flows) to begin sometime in the next couple of years. This second phase of the project will allow us to track changes in the brown trout population to assess the impacts of the modified flow regime.

Swift River

In collaboration with the Massachusetts Outdoor Heritage Foundation and Pioneer Valley Trout Unlimited

Wild Brook Trout Movement and Population Dynamics

To expand our inquiry into the prolific and popular wild brook trout population in the Swift River tailwater, we recently started a study using PIT (Passive Integrated Transponder) Tag arrays (Figure F 5). PIT Tags are individually identifiable internal RFID (Radio Frequency Identification) transmitters that, in this instance, can be read continuously by several semi-permanent in-stream antennae placed at meaningful locations in the Swift River tailwater. One of the primary benefits of this approach over past mark-recapture efforts is the continuous data collection at the arrays, as opposed to prescheduled recapture events. Tracking fish individually

Figure F 5. PIT tag antenna array in the Swift River.

rather than in cohorts will also allow for more robust data analysis, including research into growth and survival. The project is still in the early stages, as construction of the antennas is being completed. We will begin the next stage of the project this fall and winter. More information will be available in the coming years.

We received funding from the Massachusetts Outdoor Heritage Foundation and the Pioneer Valley Chapter of Trout Unlimited (PVTU) for this project and began work in spring 2023. With volunteer help from PVTU we have constructed and deployed three of the four PIT tag antenna arrays.

Brook Trout Young-of-the-year (YOY) Surveys

We continued our standard four, 50-meter bankside transects, explicitly for brook trout YOY monitoring. Ongoing long-term tracking of YOY abundance can lead to insights into the dynamics structuring the wild brook trout population as a whole and tracking any concerning developments in the wild brook trout population such as consistently low recruitment. Similar to relative abundance measures for adult brook trout that we had seen in the previous 6 years of comprehensive fish surveys (2017-2022), YOY brook trout relative abundance fluctuates from year to year in the Swift River tailwater (Figure F 6). It appears that some trends are emerging (e.g., relatively low abundance followed by relatively high abundance) indicating a density-dependent driver of YOY abundance. More data are needed to show longer-term trends and to identify potential influences, both density-dependent and density-independent, on Swift River wild brook trout recruitment.

Figure F 6. Relative abundance (catch-per-unit-effort; number of fish caught per hour of electrofishing) of young-of-the-year (YOY) brook trout in the Swift River tailwater, 2017-2024.

Sucker Brook PIT-tag Project

In partnership with Massachusetts DER and the Squann-a-tissit Chapter of Trout Unlimited

Sucker Brook, a wild trout stream and coldwater tributary to the Nissitissit River in northeastern Massachusetts, has become a major focus for whole stream restoration through multiple dam removals and culvert replacements facilitated by DER and local partners. We designed a project to quantify brook trout population dynamics in Sucker Brook, as well as assess brook trout movement throughout the system as both thermal and physical barriers are removed. To do this we will use PIT tags to tag individual brook trout and use mark-recapture surveys and strategically placed PIT tag antenna arrays to quantify population metrics and assess longitudinal movement, respectively. This project is being funded by the Division of Ecological Restoration (DER) and the Massachusetts Environmental Trust (MET).

At the time of this report, MassWildlife has used DER and MET funding to purchase most of the equipment and supplies needed to build three PIT tag antennas for Sucker Brook. Two of the three antenna arrays have been built and deployed in the field. Equipment issues with the PIT tag readers have set the project back a few months. Tagging and tracking of brook trout will begin in the fall 2024.

Wild Trout Stream Surveys

In collaboration with DER, various Trout Unlimited chapters, Native Fish Coalition, Sea Run Brook Trout Coalition, Norcross Wildlife Sanctuary, Mass Audubon, and others

As of the end of FY 2024, there were approximately 1,308 wild trout streams identified in Massachusetts. During the fiscal year there were approximately 106 individual electrofishing surveys on 91 wild trout streams spread across the five Districts. Many of these were done solely by District staff as part of the annual survey priorities list, while the project leader was involved with other surveys that 1) were done in conjunction with DER as part of ongoing monitoring for dam removal and culvert replacement projects, 2) were done in conjunction with the Southeast District as part of long-term monitoring projects or before/after restoration monitoring projects for sea-run brook trout, 3) were done in conjunction with district staff as part of the Wild Trout Management Plan call for assessment of “Premier” wild trout streams, or 4) were done as requests or partnerships in conjunction with individuals and/or organizations.

Teaching with Trout

Participation in the Teaching with Trout program rebounded to above pre-pandemic levels with over 100 teachers participating and maintaining 74 tanks at 64 schools in the 2023-2024 school year. Approximately 15,000 eyed eggs were provided to the various schools and organizations

for the program. Staff continued with a virtual rather than in-person orientation in FY 2024. A virtual orientation held in the evening has proved to be more effective because more teachers can attend.

Funding was received from the Massachusetts Outdoor Heritage Foundation to purchase an additional five water chillers to loan to teachers who want to participate in the program but are unable to secure the funds for this particularly expensive piece of required equipment. In addition, we held a demonstration of the Teaching with Trout program for state politicians, agency staff, and local students and teachers at Shrewsbury High School.

Collaborations and Agency Representation

MassWildlife continued to collaborate with other agencies and outside groups on several efforts, including 1) as a member of the Massachusetts Drought Management Task Force, 2) as a member of the Eastern Brook Joint Venture updating the Massachusetts portion of their range-wide brook trout distribution map and assessing restoration proposals for funding, 3) working with organizations like Native Fish Coalition on an holistic assessment of Trout Brook in Dover and Cold Spring Brook in Uxbridge, and with Norcross Wildlife Sanctuary and Mass Audubon to monitor pre-dam removal conditions on Vinica Brook and several tributaries on sanctuary property, 4) as a Coldwater Fisheries consultant for Water Management Act permit renewals, and 5) as an environmental reviewer for projects that take place in or near coldwater fisheries throughout Massachusetts.

In FY 2024, MassWildlife staff gave several presentations to the following organizations where wild trout management; coldwater fisheries conservation and management; and the Deerfield River, Swift River, and Sucker Brook projects were the central themes.

- Trout Unlimited (Deerfield River Chapter, including at the Deerfield River Watershed Science Summit, Pioneer Valley Chapter)
- Native Fish Coalition
- Eight Point Sportsmen’s Club
- Western Massachusetts Flyfishers
- Needham Sportsmen’s Club

Connectivity and Migratory Fish

Connecticut River

Holyoke

The City of Holyoke (Holyoke Gas and Electric Co. HG&E) bought the Holyoke Hydroelectric project from Northeast Utilities in 2002. Holyoke Gas and Electric Co., as directed by the

conditions of their new FERC hydroelectric license, directly coordinates monitoring of fish passage via the fish lift. Passage numbers are reported to state and federal agencies, and on Holyoke Gas and Electric website (https://www.hged.com/community-environment/barrett-fishway/fishway-counts.aspx).

The Holyoke fish passage facility operated for 60 days during the spring season, passing a total of 300, 923 anadromous fish (Appendix A, Table A 18).

Atlantic Salmon

No Atlantic salmon were reported passing in 2023.

American Shad

A total of 277,367 American shad passed through the Holyoke Fish Lift in 2023 (Table A 7). 50% of the total shad passed in 2023 passed this project by May 14.

Shortnose Sturgeon

A total of 64 shortnose sturgeon passed at Holyoke in 2023, 63 of which were passed upstream outside of the anadromous fish passage season.

American Eel

A total of 11,039 American eel passed at Holyoke in 2023.

Sea Lamprey

A total of 21,168 sea lamprey were passed upstream of Holyoke in 2023.

Other Anadromous Fish Species

A total of 116 striped bass, 60 gizzard shad, and 2,211 blueback herring passed upstream of Holyoke in 2023.

Turners Falls

The Turners Falls fishway operated for 78 days in 2023, from April 21 to July 7 (Appendix A, Table A 19, Table A 20, Table A 21, and Table A 22. 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 twenty-four hours each day unless technical problems occurred. All fish ladders remained open for passage twenty-four hours each day.

American Shad

A total of 33,782 American shad passed upstream of Turners Falls in 2023 (Appendix A, Table A 19, Table A 20, and Table A 21.

Sea Lamprey

A total of 19,724 sea lamprey passed upstream of Turners Falls in 2023 (Appendix A, Table A 22).

Westfield River Fishway

During 2023, the Westfield River Fish Ladder, located at the A&D Hydroelectric Dam in West Springfield was watered April 1—July 1, 2023. The fishway was not staffed with technicians as it was in previous years. For the fifth year, fish passing by the observation window were digitally recorded and enumerated from video footage. Motion-detection video was in operation 24 hours a day with the aid of a near-infrared camera and infrared illuminator.

Anadromous Fish

The total American shad count for 2023 was 3,028 fish and 50% of the 2023 American Shad passage had occurred by May 14 (Appendix A, Table A 23 and Figure A 7).

Non-anadromous Fish

Sea lamprey, white sucker, trout, and smallmouth bass (SMB) were observed passing upstream through the West Springfield Fish Passage Facility in 2023 (Appendix A, Table A 23 and Figure A 8). Yearly totals for these species were 1,753 (sea lamprey), 718 (white sucker), 11 (trout), and 444 (SMB).

Merrimack River

The Merrimack fishway counts for 2023 were very low. River herring reached their lowest upstream counts since 2012 at both the Laurence and Lowell dams (Appendix A, Table A 24 and Table A 25, respectively). The previous 10-year average (2013-2022) counts of river herring was 140,747 at Lawrence and 110,919 at Lowell. The 2023 counts were just 7.3 % and 2.6 % of the 10-year average at Lawrence and Lowell, respectively.

Essex Dam

The Essex Dam fish elevator operated for 89 days during spring and summer 2023 (April 17–July 14).

Atlantic Salmon

A total of 14 Atlantic salmon Passed upstream of the Essex Dam in Lawrence in 2023.

American Shad

A total of 28,587 American shad were lifted above the Essex Dam in 2023 (Table A 24).

River Herring

A total of 10,339 river herring were lifted above the Essex Dam in 2023.

OTHER ANADROMOUS FISH

21 striped bass, 19 American eel, and 9,939 sea lamprey were lifted above the Essex Dam in 2023.

Pawtucket Dam

ATLANTIC SLAMON

A total of 7 Atlantic salmon Passed upstream of the Essex Dam in Lawrence in 2023.

AMERICAN SHAD

A total of 2,464 American shad were lifted above the Essex Dam in 2023.

RIVER HERRING

A total of 2,956 river herring were lifted above the Essex Dam in 2023.

OTHER ANADROMOUS FISH

13 American eel and 889 sea lamprey were lifted above the Essex Dam in 2023.

Taunton River

The Connectivity Biologist has been working with the Division of Marine Fisheries and United States Fish and Wildlife Service to stock larval American Shad in the Taunton River. The Connectivity Biologist began monitoring for shad in June 2023. Monitoring will continue for 11 years and will take place in early summer (for adult shad) and in the fall (for juvenile shad).

CRMA Grant Review Team and Lands Committee Member

The Fisheries Outreach and Connectivity Biologist participated in the CRMA grant review led by the Division of Ecological Restoration (DER). Meetings were held in spring 2024 to discuss and rank project applications aimed at improving crossing infrastructure and aquatic organism passage. Similarly, the Fisheries Outreach and Connectivity Biologist participated in the spring, fall, and winter Lands Committee meetings.

Connectivity and Monitoring

MassWildlife is actively engaged with the Connecticut River Conservancy (CRC) to remove the DF Riley Grist Mill Dam in Hatfield, MA, which has high fish and mussel diversity and is an obstruction to several anadromous and resident species of the Connecticut River. Preliminary design and feasibility work is currently underway.

The Salmon Brook Restoration Project within the Quaboag WMA has continued to make progress through FY 2024. MassWildlife dam contractor Tighe and Bond are managing the project and have an estimated construction date of summer 2026. The project involves

removing a small, non-jurisdictional dam, removing an old stone crossing, and restoring a 40-foot section of stream bank.

Relevancy, Collaboration, and Outreach

Westfield River Fishway Open House

The Westfield River Watershed Association hosted the Westfield River Fishway and Dam Open House this year on May 19, 2024. The Connectivity Biologist staffed the causeway near the fishway and above the counting room and spoke to many people regarding fish passage and MassWildlife. The Connectivity Biologist answered questions about various aspects of the facility and anadromous fish life history and run status. The event was open to the public, and about 100-200 visitors toured the fishway facility during the open house.

Attleboro Fish Hatchery Open House

The Connectivity Biologist participated in the Attleboro Fish Hatchery Open House, which was held Saturday, June 1, 2024. The Connectivity Biologist answered questions about fisheries and the agency, promoted angler outreach programs such as the Sportfishing Awards Program, and provided brochure handouts pertaining to various MassWildlife programs and products.

Massachusetts Freshwater Sportfishing Awards Program

Appendix A, Figure A 9, gives the total number of program pins awarded by calendar year (CY), 2000-2023. A total of 2,456 bronze pins was awarded to participating anglers for fish caught in CY 2023 (Table F 3). The most popular category in CY 2023 was the Adult Catch-and-release Category, which awarded 1,371 pins, followed by Youth Catch-and-release (879), Adult Catch-and-keep (105), and Youth Catch-and-keep (101).

Table F 3. Approved pins during CY 2023, by category.

Category	Number of pins issued
Adult Catch-and-keep	105
Adult Catch-and-release	1,371
Youth Catch-and-keep	101
Youth Catch-and-release	879

The Freshwater Sportfishing Awards ceremony, which celebrated and awarded pins to anglers who caught the largest fish in eligible species categories during the CY 2023 fishing season (Table F 4, Table F 5, Table F 6, Table F 7, and Table F 8) was held on Saturday, March 23, 2024 (Figure F 7). The event was open to award recipients and their family members.

Table F 4. Approved bronze pins awarded in CY 2023 for the Freshwater Sportfishing Awards Program, by species.

Species	Number of pins issued
Bowfin	15
Brook Trout	64
Brown Trout	58
Bullhead	52
Carp	101
Chain Pickerel	162
Channel Catfish	73
Crappie	226
Fallfish	39
Lake Trout	13
Landlocked Salmon	48
Largemouth Bass	413
Northern Pike	52
Rainbow Trout	91
Shad	16
Smallmouth Bass	165
Sunfish	420
Tiger Muskellunge	1
Tiger Trout	30
Walleye	11
White Catfish	70
White Perch	95
White Sucker	90
Yellow Perch	166
Grand Total	**2,473**

Table F 5. Adult Catch-and-keep Gold Pin winners for CY 2023.

First Name	Last Name	Species	Pounds	Ounces
Dustin	Lewis	Bowfin	8	8
Dustin	Lewis	Brook Trout	4	2
Michael	Kenney	Brown Trout	5	3
Roger	Aziz, Jr.	Bullhead	3	10
Cam	Tucker	Carp	30	8
Cam	Tucker	Channel Catfish	12	2
Aidan	Webb	Crappie	2	0
George	Spitz	Crappie	2	0

First Name	Last Name	Species	Pounds	Ounces
Cam	Tucker	Fallfish	1	15
Paul	Cloutier	Lake Trout	9	12
David	Korash	Landlocked Salmon	5	5
Roger	Aziz, Jr.	Northern Pike	16	15
James	Ruxton	Rainbow Trout	4	12
Edward	Lemieux	Smallmouth Bass	4	14
Cam	Tucker	Sunfish	0	15
Daniel	Aitken	Tiger Muskellunge	16	14
Kenneth	Shaw	Tiger Trout	8	15
Jeffrey	Lapinski	Walleye	5	8
Eddie	Lemieux	White Catfish	6	4
Howie	Turcotte	White Perch	2	8
Andrew	Langley	White Sucker	3	8
Cam	Tucker	Yellow Perch	1	9
Andrew	Langley	Yellow Perch	1	9

Table F 6. Youth Catch-and-keep Gold Pin winners for CY 2023.

First Name	Last Name	Species	Pounds	Ounces
Logan	Middlebrook	Bowfin	6	14
John	Hannam	Brook Trout	3	4
Enzo	Buoniconti	Brown Trout	7	0
Sawyer	Moulton	Bullhead	2	1
Logan	Middlebrook	Carp	16	8
Ryker	Leslie	Chain Pickerel	4	10
Carter	Flagg	Channel Catfish	9	2
Trinley	Dudley	Crappie	1	13
Logan	Middlebrook	Fallfish	0	11
Jack	Carney	Landlocked Salmon	4	8
Trystan	Couture	Largemouth Bass	5	8
Alice	Christman	Northern Pike	13	2
Sage	Nicholson	Rainbow Trout	3	0
Jansiel	Rosario	Shad	3	15
Corbin	Carlow	Smallmouth Bass	4	5
Liam W	Webb	Sunfish	1	3
Alice	Christman	Tiger Trout	1	15
Logan	Middlebrook	White Catfish	3	15
Monroe	Venturi	White Perch	1	10
Liam W	Webb	White Sucker	3	5
Carter	Flagg	Yellow Perch	1	11

Table F 7. Adult Catch-and-release Gold Pin winners for CY 2023.

First Name	Last Name	Species	Fish length, in inches
William	Pellerin	Bowfin	34.50
Tyler	Mazzotta	Brook Trout	19.50
Colin	Duarte	Brown Trout	26
Roger	Aziz, Jr.	Bullhead	20.50
Kenneth	Welch	Carp	40.75
Nicholas	Gurney	Chain Pickerel	32.50
Cam	Tucker	Channel Catfish	34.75
Thomas	Melanson	Crappie	17.50
Andrew	Langley	Fallfish	18.50
Cam	Tucker	Fallfish	18.50
Jeff	Evans	Lake Trout	37
Colin	Duarte	Landlocked Salmon	26
Manuel	Silveira	Largemouth Bass	23.75
Scott	Pustis	Northern Pike	43.75
Christopher	Haycook	Rainbow Trout	22.25
Andrew	Langley	Shad	23.75
William	Pellerin	Smallmouth Bass	24.25
Cam	Tucker	Sunfish	11.25
David	Lindquist	Tiger Trout	23
Ashley	Letourneau	Walleye	27
Andrew	Langley	White Catfish	21.50
Eddie	Lemieux	White Catfish	21.50
Vinny	Percuoco	White Perch	16.50
Colin	Duarte	White Sucker	23
David	Jacek	Yellow Perch	15
Dave	Gatulis	Yellow Perch	15
Andrew	Langley	Yellow Perch	15
Austin	Reid	Yellow Perch	15
Shawn	Powell	Yellow Perch	15

Table F 8. Youth Catch-and-release Gold Pin winners for CY 2023.

First Name	Last Name	Species	Fish length, in inches
Logan	Middlebrook	Bowfin	28
James Kirk	McPherson	Bowfin	28
Michael	Baptista Jr	Brook Trout	16.50
Tyler	Mathieson	Brown Trout	20.50
Andrew	Drake	Bullhead	15.50
Zachary	Petersen	Carp	37

First Name	Last Name	Species	Fish length, in inches
Oisin	Hogan	Chain Pickerel	26
Carter	Flagg	Channel Catfish	31
Gunnar	Wec	Crappie	17
John	Lyons	Fallfish	14.25
Jackson	Benoit	Lake Trout	28
Colin	Hines	Landlocked Salmon	22.50
Kaydance	Soules	Largemouth Bass	22.50
Alexander	Press	Largemouth Bass	22.50
Sam	Belben	Northern Pike	40.25
Tyler	Boutin	Rainbow Trout	21
John	Lyons	Shad	23
Zoey	Lewis	Smallmouth Bass	21.50
Xavier	Fowler	Sunfish	11
Jacoby	Chalmers	Tiger Trout	16
Logan	Middlebrook	Tiger Trout	16
Liam	Frisbie	White Catfish	20
Sam	Belben	White Perch	14.50
Jacoby	Chalmers	White Perch	14.50
Jack	Belben	White Sucker	22
Sam	Belben	Yellow Perch	15.50

Figure F 7. Group photo of award recipients at the 2023 Sportfishing Awards Program Ceremony, held in March 2024.

Fisheries Program Staff

Westborough Field Headquarters

Todd A. Richards, M.S., Assistant Director, Fisheries
Adam Kautza, Ph.D., Coldwater Fishery Resource Project Leader
Steven Mattocks, M.S., Fisheries Operations/Aquatic Connectivity Biologist
Rebecca Quiñones, Ph.D., Stream and River Project Leader
Caleb Slater, Ph.D., Hatchery System Supervisor
Jason Stolarski, Ph.D., Watershed Project Leader
David Szczebak, M.S., Fisheries GIS Project Leader
Brian Fay, Seasonal Technician
Steven Humphries, Seasonal Technician

McLaughlin Hatchery

Kurt Palmateer, Manager
Jennifer Ayre, Fish Pathologist
Mark Coughlin, Assistant Manager
Jeremy Davis, Technician
Jeremy Jachym, Technician
Matt Lyons, Assistant Manager
Christopher Marsden, Technician
Jacob Rawlings, Technician

Montague (Bitzer) Hatchery

Holly Hubert, Manager
Ryan Cleveland, Technician
Brian Guerin, Assistant Manager
Chester Hall, Technician
Joseph Kendall, Technician

Palmer (Roger Reed) Hatchery

Daniel Marchant, Manager
Kevin Magowan, Assistant Manager
Cameron Young, Technician

Sandwich Hatchery

Adam Davies, Manager
Michael Clark, Technician
Gregory McSharry, Assistant Manager
Keith Wernert, Technician

Sunderland Hatchery

Chuck Bell, Manager
Megan Cruz, Technician
Sarah Lawson, Technician
Austin Morin, Technician
Timothy Nye, Assistant Manager
Andrew Ostrowski, Technician

3 The Wildlife Program

Michael Huguenin, Assistant Director of Wildlife

Overview

The Wildlife Program's priorities are centered around the conservation and management of many of the mammal and bird species in Massachusetts not designated as rare. The Program is responsible for conducting research and implementing conservation and management strategies for wildlife populations throughout the Commonwealth of Massachusetts. Further, the Wildlife Program works to enhance wildlife-based recreation and to reduce negative interactions between people and wildlife. The Program is led by the Assistant Director of Wildlife Research and consists of sixteen staff: seven Game Biologists, one Community Response Biologist (new), one Population Ecologist/GIS Specialist, one Ornithologist, and five Habitat Biologists under the supervision of the Habitat Program Supervisor.

We accomplish our goals by conducting research; consulting with internal and external experts; and utilizing the best available science to develop and implement management strategies, such as setting regulations, conducting public surveys and outreach and education efforts, evaluating wildlife population status, implementing habitat management practices, and providing input for the Department of Fish and Game's land acquisition efforts. Specifically, Game Biologists (four Project Leaders and three Wildlife Biologists) in the Wildlife Program are responsible for the management and conservation of most of the mammal and bird species in the state, including but not limited to black bear, white-tailed deer, wild turkey, waterfowl, cottontail rabbit, furbearers, woodcock, ruffed grouse, raptors, and moose.

Wildlife Program biologists develop, conduct, and maintain research projects in collaboration with staff from our five District offices, and in collaboration with partners, such as the USGS Cooperative Research Unit at UMass Amherst, other universities, NGOs (Mass Audubon, The Nature Conservancy, The Trustees), regional partners, other state agencies, and municipalities. Program biologists employ adaptive management strategies to conserve, protect, and manage wildlife populations to ensure those populations persist in perpetuity, and continue to provide benefit to the public. Wildlife Program staff also coordinate the Large Animal Response Team (LART); the agency's response to human-wildlife conflicts; the agency's pheasant stocking program; and permitting for falconry, crossbows, and problem animal control. They also represent the agency on the Northeast Association of Fish and Wildlife Agencies' various technical committees and with the Northeast Association of Wildlife Administrators. Staff also

provide presentations to the public, fulfill public records requests, and conduct media interviews.

Habitat Biologists in the Wildlife Program are responsible for developing and implementing habitat management projects on state Wildlife Management Areas (WMA) to maintain, enhance, and preserve biodiversity –of both game and nongame species—throughout the Commonwealth. Habitat staff also use the best available science, and collaborate with staff from across the agency, other agencies, and outside partners, to develop habitat management plans and develop and promote best practices for managing habitat to benefit biodiversity. Habitat staff directly conduct management in the field as well as supervising contractors hired to conduct habitat management. Habitat staff also consult with private landowners on habitat management strategies, and spend significant time developing management and conservation strategies, consulting on land acquisition, and conducting public outreach.

Meghan Crawford began employment in February 2023 as the new Community Response Biologist (CRB). The CRB is responsible for maintaining and fostering working relationships with partners, municipalities, farmers, and the public to promote relevant programs. Also, the CRB is responsible for assisting with outreach and communications for the Wildlife Program.

Upland Game Program

Wild Turkey

Hunter Participation

Hunting participation for wild turkey declined during FY 2024. In the fall of 2023, 3,774 fall-only turkey permits (turkey permit purchased after the spring season closed) were issued, the lowest number since 2013 (3,582) and an 7.5% decline compared to fall 2022. The spring 2024 season saw a decline in the number of turkey permits purchased, where 15,756 were sold; this represents the lowest number of turkey permits sold since 2008.

Fall 2023 Harvest

New regulations promulgated during 2020 changed and expanded the structure of the fall season. Now, hunters have a 12-day fall wild turkey hunting season where shotgun and archery equipment were allowed in addition to either 4 weeks (Zones 1-9) or 6 weeks (Zones 10-13) of additional archery-only fall turkey hunting.

A total of 147 wild turkeys were harvested during the fall season in 2023, which is lower than the 10-year average (180). There were 71 female and 76 male wild turkeys harvested during the 2023 fall hunting season. The proportion of females harvested in 2023 was 51.7% and comparable to the 10-year average (53.7%). However, it is likely that due to the difficulties of

sex identification of juvenile turkeys in the fall, some hunters may not accurately report the sex for fall-harvested turkeys.

Archery hunters (including crossbow users under special permit) continued to contribute a significant portion of the total harvest, accounting for 66.7% of the total fall harvest; this was the third year in a row that the archery harvest accounted for more than half of the total fall harvest and the highest proportion of archery harvest during the fall season ever. A large portion of this archery harvest can likely be attributed to archery deer hunters who are opportunistically harvesting turkeys, particularly since 2020, when expanded archery-only seasons were implemented that provided an additional 4-6 extra weeks of archery-only fall turkey hunting. Survey data indicates that approximately 50% of fall turkey hunting occurs concurrently with archery deer hunting. The high prevalence of archery harvest during the fall season and the substantial amount of fall permits issued indicates continued high demand for fall turkey hunting opportunities.

Hunter participation, weather conditions, and food availability may all influence the fall turkey harvest. Overall turkey population size, distribution, and particularly poult production and survival during the preceding summer months are factors that also greatly influence fall wild turkey harvest.

Spring 2024 Harvest

The 4-week spring wild turkey hunting season occurred April 29–May 25, 2024. A total of 2,879 wild turkeys were harvested during the regular spring season, similar to recent years despite the fewest number of turkey hunters since 2010.

In spring 2024, harvest was highest in Worcester (n = 699), Franklin (n = 413), and Berkshire (n = 391) counties. Bearded hens perennially account for less than 1% of the total spring wild turkey harvest; 9 hens were reported during the spring season. Approximately 4.08 adult male turkeys were harvested per juvenile male turkey, a rate considerably higher than in recent years.

Spring turkey hunters continue to utilize archery equipment; approximately 6.6% harvested turkeys with archery equipment in 2024; archery hunting for wild turkeys and other big game continues to be popular particularly in areas of eastern Massachusetts where many towns and properties will only allow archery equipment as an acceptable means of take.

Overall, wild turkey hunting opportunities remain excellent across the state, as the relatively high turkey population statewide continues to offer quality hunting experiences.

2024 Spring Youth Turkey Hunt

The annual mentored youth wild turkey hunt was held on April 27, 2024, on the Saturday immediately preceding the opening date of the spring hunting season. To participate, youths (ages 12-17) were required to complete a standardized training program and field exercise.

An estimated 259 youths received permits for the youth turkey hunt day. Youths harvested a total of 111 turkeys (30 immature male, 81 adult male) on youth day, representing a success rate of approximately 43%. Youth success rates are typically greater than regular spring season hunter success rates, which average approximately 15%-20%.

Ruffed Grouse Drumming Surveys

To assess the statewide/regional abundance of ruffed grouse, a springtime survey to detect their conspicuous drumming sounds is conducted each year by MassWildlife staff. In 2024, 20 drumming survey routes were surveyed across the state. Numerous "constant-zero" routes were not surveyed and consist of routes where no grouse had been recorded in 5 consecutive years. All routes were surveyed between April 15 and May 5. Two types of routes are surveyed, "random" routes are surveys randomly located in suitable habitat across the state, whereas "subjective" routes are ones that are intentionally placed in areas of high-quality habitat.

Overall, the average number of drums heard per route (the breeding grouse index; ANDR) on all random routes statewide has been slightly declining over the past several years; however, in 2024, the ANDR increased to 0.60. The ANDR in the Western District in 2024 was 1.2, which was three times higher than in 2023. Historically, ANDR is highest in the western portions of the state.

The ANDR on subjective routes completed increased for the first time in 4 years, to 2.9 (0.85 in 2023). Grouse continue to be detected on subjective routes in the Southeast District and anecdotal observations still indicate grouse exist in the Northeast District; grouse are not widespread in these districts but can be locally abundant in areas with suitable habitat. It's possible that subjective routes that have been surveyed for decades are suffering from the eventual decline in habitat quality. Continued and renewed emphasis on young forest creation and management is critical to the long-term sustainability of grouse populations statewide. Although grouse populations are substantially smaller than several decades ago, the birds remain abundant in heavily forested landscapes in Central and Western Massachusetts, particularly those areas where natural disturbance and/or active forest management results in the high-quality young forest habitat that is critical to the success of grouse and numerous species of conservation need.

American Woodcock Singing-Ground Survey

Woodcock singing ground surveys are conducted from April 20–May 10 each year. Routes are all 3.6 miles long and consist of 10 stops that are surveyed each for 2 minutes. Survey routes are sampled approximately 15-22 minutes after sunset within the survey period and must be completed within 38 minutes.

Currently, there are 19 randomized singing-ground survey routes in Massachusetts. Of those, 10 were actively surveyed in 2024. The average number of woodcock heard peenting per route (including constant-zero routes) in 2024 was 1.00, slightly below the 3-year average (1.23). Overall, woodcock are located statewide, and although most constant zero routes exist in the eastern portion of the state, numerous productive surveys are conducted in other developed landscapes.

The U.S. Fish and Wildlife Service publishes an annual report utilizing data from the Harvest Information Program (HIP) in addition to the Singing Ground Survey. Results from the 2024 reports indicate a substantial increase in woodcock harvest (4,900), hunter numbers (4,700), and days afield (25,600). The reliability of these estimates is suspect as there are extremely large standard errors associated with them.

New England Cottontail/Eastern Cottontail

Fecal pellet samples were collected from wild cottontail rabbits on 33 sites across areas of Barnstable, Nantucket, and Berkshire counties, January–April 2024. All areas were surveyed 1-2 times within a 3-week period with 0–20 samples collected per site. Approximately 302 samples were collected in total (355 and 269 collected in 2023 and 2022, respectively); results (species identification) of the 2024 winter sampling period are still pending, but overwhelmingly most samples were collected from sites on Cape Cod (>90%), with an abundance of samples also prioritized within the Berkshire County survey area. Live trapping of rabbits did not occur in the winter of 2024.

Waterfowl Program

Wood Duck Nest Success Project

The winter of 2022-23 was relatively mild. Wood ducks and hooded mergansers began nesting earlier than normal with some merganser nests initiated by March. However, the first week of April was unusually cold and eggs laid before hens began incubating were subject to addling. Clutches of eggs were found with longitudinal cracks, indicative of freezing. Some hatched clutches had many eggs left with only a few detached membranes, a sign that eggs were addled by cold temperatures. The eggs that did hatch were likely laid after the cold snap.

Box checks were incomplete this year due to low water from a continuing drought that affected 92% of the state, making it difficult to reach boxes by canoe. Inadequate ice conditions during the following winter also hindered checking and maintaining nest boxes that could not be checked during the summer/fall period. MassWildlife personnel were able to conduct nest-box checks on only 36 of 50 study sites used to monitor wood duck populations across the state.

Overall box usage for sites that could be checked was 83%. The wood duck success rate was 87%, despite the aforementioned conditions. Hooded merganser success rate was 78%, slightly below average. There were 139 wood duck nesting attempts, of which 121 were successful, and 106 hooded merganser nest starts with 74 hatches in the 252 checked boxes. Wood duck use of boxes continues to decline in the western third of the state with most boxes being used by hooded mergansers.

Canada Goose Population Trends

Between June 12 and June 30, District and Westborough HQ staff banded 799 geese at 73 sites in 64 municipalities from the Berkshires to Cape Cod. The total included 380 goslings and 419 adults. Also captured were 173 previously banded geese.

Park Waterfowl Census

Every 5 years since 1973, the Waterfowl Project Leader and staff have conducted a survey of sites where waterfowl, primarily mallards, are fed. Park sites were defined as areas where people fed waterfowl and were located on both private and public property in urban, suburban, and rural areas on fresh, brackish, or salt water. The survey is ground-based with most counts made by MassWildlife staff, though in some cases reports by the public were incorporated into the agency count.

A total of 5,754 mallards, 126 American black ducks, and 2,383 Canada geese were counted on 114 sites in 80 municipalities where waterfowl were fed; 494 birds of other species of waterfowl were also recorded. Waterfowl numbers have been declining on this survey since the peak count of over 20,000 in 1993.

Pre-season Waterfowl Banding

A total of 271 ducks were banded during 2023 preseason banding efforts. The total included 149 wood ducks, 115 mallards, 3 American black ducks, 2 green winged teal, and 2 blue winged teal. Birds were banded via airboat night-lighting, use of a tub launcher, a drop-door bait trap, and hand-netting. Twenty-one previously banded birds were also captured. The 2023 duck banding season was one of the poorest on record. We airboated on only 10 nights between August 8 and September 15, shutting down early for the year due to the waxing moon phase. Our average airboat catch per night was only 19 ducks, the poorest on record. Normally, we average 40-45 birds. Likewise, we bait-trapped/tub-launched on only 12 sites between August

23 and September 26, averaging only 4 ducks per shot. Our best success was on August 23, in Orleans on the Cape, when we captured 42 ducks in the drop-door trap in the backyard of a person who feeds them. Normally ducks banded at such sites are mallards, but that catch included 2 American black ducks and 2 wood ducks. We also collected oral and cloacal swabs for Avian Influenza sampling in western Massachusetts for the USDA's APHIS-WS.

Migratory Gamebird Hunting Regulations

During the period of September 1-22, Massachusetts conducted a statewide resident Canada Goose hunting season, with a daily bag of 15. Duck-hunting seasons in the Atlantic Flyway continued with the liberal option of 60-day seasons and a 6-bird bag limit. The Canada Goose season was 60 days with a 2-bird daily bag limit in the Central and Coastal waterfowl hunting zones as we have moved into the moderate hunting season package for North Atlantic Population geese and a moderate season of 45 days with a 3-bird bag limit in the Berkshire zone for Atlantic Population geese.

During the period January 15—February 12, 2023, Massachusetts held a late, resident Canada Goose season in the Central Zone while the season ran January 29 –February 15 in the North Coastal Zone with a 5-bird daily bag in each zone. New was a late Canada goose season in the Berkshire zone between January 1 and February 15 with a 5-bird daily bag.

American Black Duck and Mallard GPS Study

During January and February, Massachusetts again participated in a study using GPS-ACC tracking units on hen American black ducks to monitor movements, timing of migration, and nesting efforts and success. During this process we banded 29 black ducks and 1 black plumaged hybrid at 5 sites in 4 towns in the Southeast District. GPS backpack transmitters were deployed on 13 hens, which included redeploying units from 3 Massachusetts mortalities and 1 New York bird that died in Massachusetts.

All the devices functioned and are being tracked by researchers with the University of Saskatchewan.

Waterfowl Breeding Surveys

The 2023 Northeast Waterfowl Breeding survey was conducted by all 11 Northeastern states from Vermont to Virginia. The survey is of randomly selected 1-square-kilomenter plots, primarily by ground. In 2023, 1,232 plots were checked with estimates of 257,878 pairs of mallards; 21,461 pairs of black ducks; 216,492 pairs of wood ducks; and 349,897 pairs of Canada geese. The total Canada goose count of 947,547 was the lowest since 2016.

Common Eider Population Trends

No attempt was made to band eiders this year.

Permitting

Massachusetts issues individual egg-addling permits for resident Canada goose control under a federal program begun in March 2007. In 2023, we issued 70 such permits. Permittees reported addling 1,834 eggs in 340 nests. In addition, USDA/APHIS Wildlife Services addled goose eggs under the statewide permit MassWildlife issues to it.

Atlantic Flyway Council

This year, for the first time since COVID-19, the summer meeting of the Atlantic Flyway Council technical and council meetings was held in person, September 10—14, in Lancaster, Pennsylvania. The winter meeting of the Technical Section was held in Niagara, New York, February 25—29. The project leader is a member of the Mallard, Black Duck, and Canada goose committees as well as the voting representative for Massachusetts.

Black Bear Program

Black Bear Distribution and Harvest Investigations

A total of 12,642 bear-hunting permits were issued for the CY 2023 hunting season. This represents a decrease from the 13,054 permits sold in CY 2022 and likely reflects the increase in price of a bear permit from $5 to $10. In CY 2023, 245 bears were taken during the 47-day season, including 118 during the 17-day September segment, 50 during the 18-day November segment, and 77 during the 12-day deer shotgun season segment (Figure W 1 and Figure W 2).

Figure W 1. Historical black bear harvest by season, CY 1972 to CY 2023.

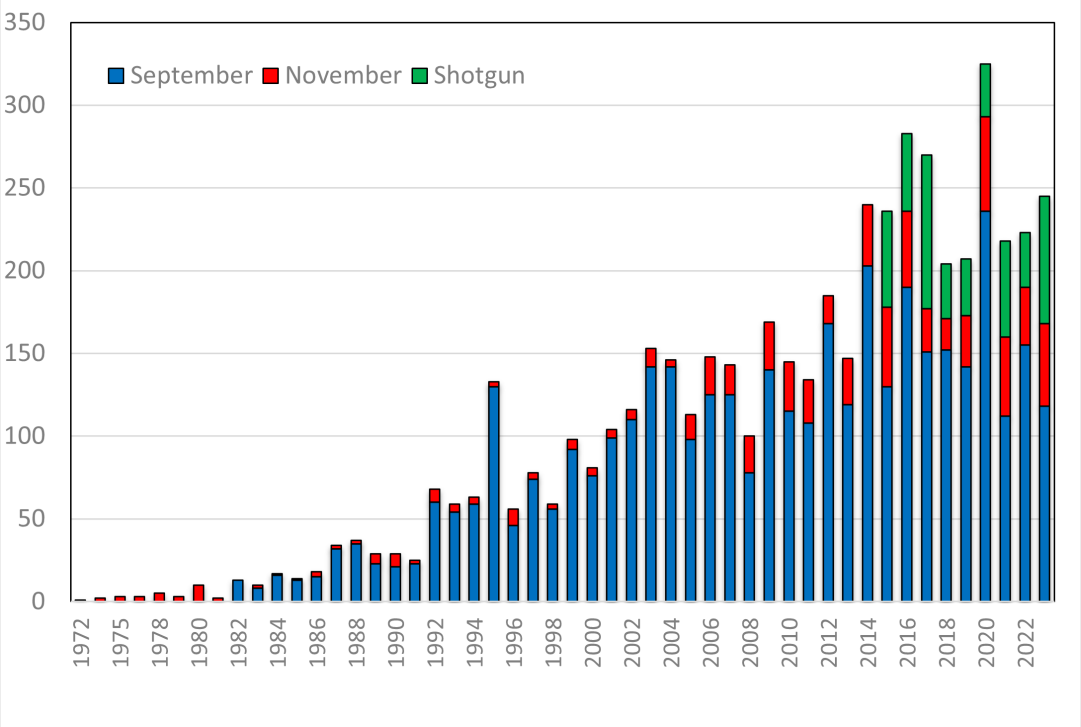
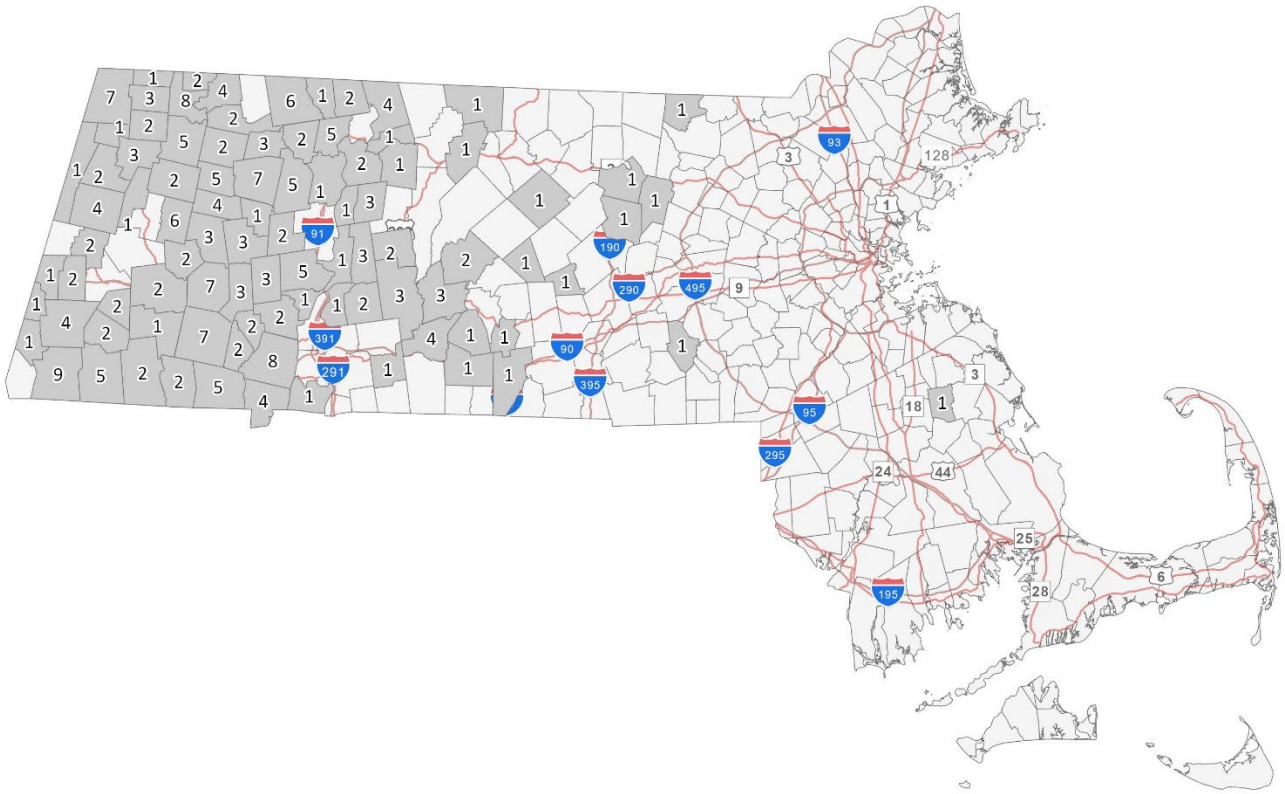


Figure W 2. Distribution of 2023 black bear harvest by town.



A total of 138 males, 100 females, and 7 unknown bears were taken in Berkshire (n=80), Franklin (n=54), Hampden (n=44), Hampshire (n=49), Worcester (n=14), Middlesex (n=3), and Plymouth (n=1) counties. Eighty-five percent of bears were reported through the online system in 2023, compared to 87% in 2022, 92% in 2021, 97% in 2020, 79% in 2019, 82% in 2018, 70% in 2017, 76% in 2016, 66% in 2015, 74% in 2014, and 69% in 2013; the large increase in 2020 and 2021 is likely attributable to the closure of many check stations due to COVID-19 restrictions.

Black Bear Research

MassWildlife continues to monitor collared female black bears as part of a cooperative research project with the Massachusetts Cooperative Fish and Wildlife Research Unit and the University of Massachusetts Amherst. The primary objectives of this research project are as follows: (1) to determine adult female survival and reproductive rates and causes of mortality and refine the population model for evaluating population trends of bears in Massachusetts; (2) to document black bear habitat use and movements in a fragmented landscape and to determine the effects of human-associated food sources on bears, (3) to assess the public's attitudes and perceptions of the bear population and bear management options, (4) to develop a comprehensive bear

management plan to guide black bear management in Massachusetts. As of June 30, 2024, 22 female bears were being monitored with GPS collars and another 22 females with VHF collars. To date, 94 female bears have been monitored with GPS collars, of which most have been monitored for at least two reproductive seasons. Six females are being monitored with GPS collars for the first time this year. Additionally, 4 male bears have been monitored with GPS collars. In 2017, we began collaring bears in our Western Wildlife Management District. From July 2023 to June 30, 2024, 4 collared females were killed, 2 in the hunting season; 1 illegal kill; and 1 unknown. MassWildlife monitored cub production/yearling survival at all successful winter dens or through encounters with sows/yearlings. In the winter of FY 2024, MassWildlife successfully captured 19 females during den checks, including 7 females with yearling cubs, 2 females with no cubs, and 10 females with newborn cubs. Females average 2.4 newborn cubs (0 cubs (n=2), 1 cub (n=1), 2 cubs (n=7), 3 cubs (n=4), 4 cubs (n=4)). Sows with yearlings, where staff was able to confirm the number of yearlings, successfully raised 22 of 29 cubs from the previous winter.

Furbearer Program

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 MESA-listed as Threatened or Endangered. The value of the Commonwealth's furbearer resource is very diverse and includes economic, ecological, cultural, biological, aesthetic, and educational opportunities for individuals in the state.

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

Harvest and Population

Harvest activities provide recreational and economic opportunities for citizens and households in the state. A total of 2,217 furbearers were tagged at MassWildlife check stations during the FY 2024 season. The harvest (a combination of hunted, trapped, and/or salvaged) of tagged

species included 901 beaver, 103 bobcat, 809 coyote, 84 fisher, 21 gray fox, 3 mink, 35 river otter, and 42 red fox. Trapper survey results indicated that a minimum of 65 raccoons, 111 muskrat, 22 skunks, 24 opossum, and 0 weasel were trapped during the FY 2024 season (Appendix B, Table B 1 and Table B 2).

MassWildlife staff conducted a hunter survey of a random sample of license buyers that provided an email address in 2023. Coyote is the most popular furbearer that is hunted. Twenty percent of respondents indicated that they hunted coyote, and 39.8% of those respondents specifically targeted coyotes; 4.0% percent of all respondents hunted fox, 4.3% hunted bobcat, 2.2% hunted raccoon, and 0.9% hunted opossum.

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

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

Wetland/Beaver Management

Between 1996 and 2000, the beaver population tripled because 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 MassWildlife.

Licensed trappers tagged 901 trapped beaver during the 2023-24 trapping season, of which 98 were reported as taken under emergency permits. PAC Agents reported taking 208 beaver outside the trapping season (April 15—October 31, 2021) and 240 beaver during the trapping season under emergency permits that were not tagged. Licensed trappers reported through the voluntary trapper survey that 391 beaver were taken under the local board of health 10-day

emergency permit, which includes beaver taken outside the season (n=317) and only beaver taken during the season that were not sealed at a MassWildlife check station (n=74). In total, a minimum of 325 beaver were taken outside of the trapping season as nuisance animals (there is an unknown amount of overlap between the PAC and trapper survey respondents). A minimum of 412 were taken inside the season under emergency permits and not checked. A minimum of 937 beaver were taken under emergency permits (either inside or outside the trapping season) for which conibear traps are legal to use and are the preferred trap type for beaver trapping.

Public education, regulated harvest, and the installation of flow devices are major components of beaver management in Massachusetts. MassWildlife 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

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

Deer Management Program

Overview

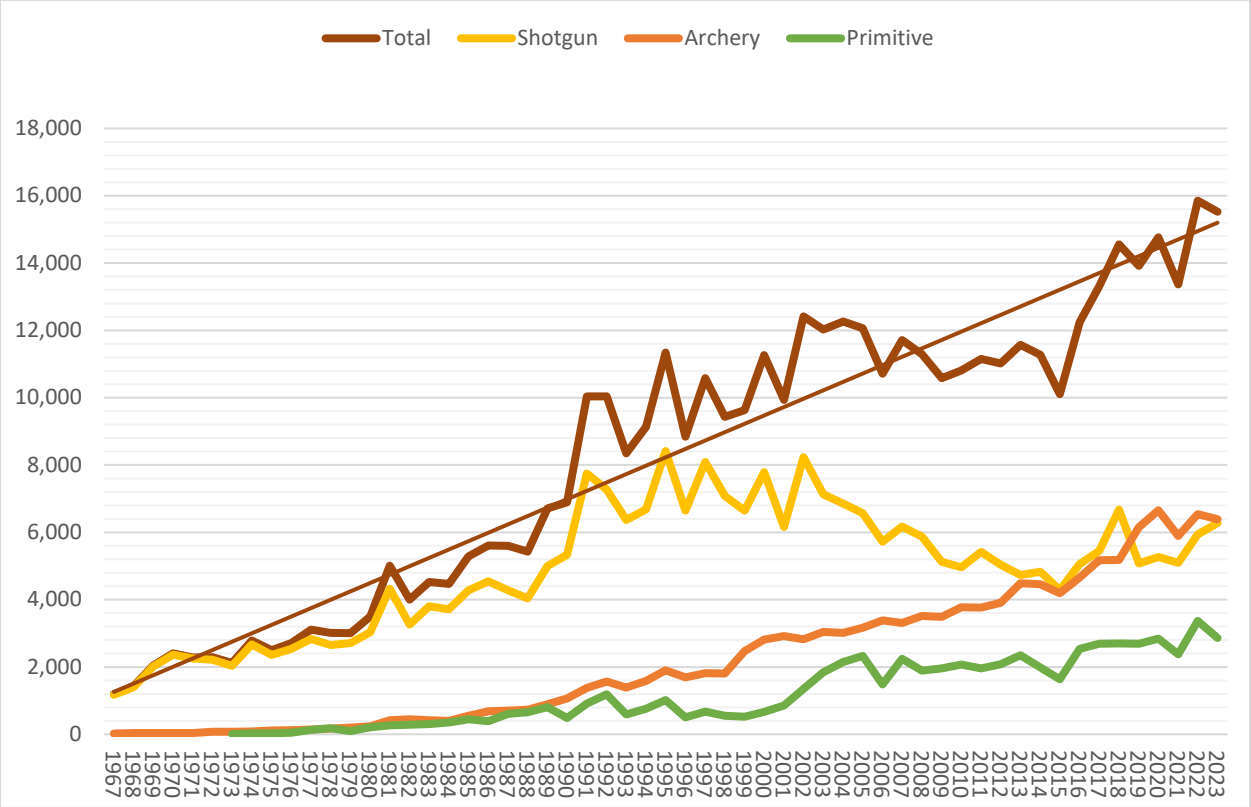
The CY 2023 hunting season had a total harvest of 15,522 deer, which was a decline of approximately 2% from the record-setting 2022 season (Table W 1 and Figure W 3).

Table W 1. The 2023 white-tailed deer harvest by season and sex/age class in Massachusetts, including Quabbin Reservoir harvest.

Season	Adult Male	Female	Male Fawn	Total	% Harvest
Paraplegic/Youth	70	79	5	154	1.0%
Archery	4,119	1,939	327	6,385	41.1%
Shotgun	3,450	2,206	462	6,118	39.4%
Primitive	1,219	1,388	258	2,865	18.5%
Statewide	8,858	5,612	1,052	15,520	100.0%

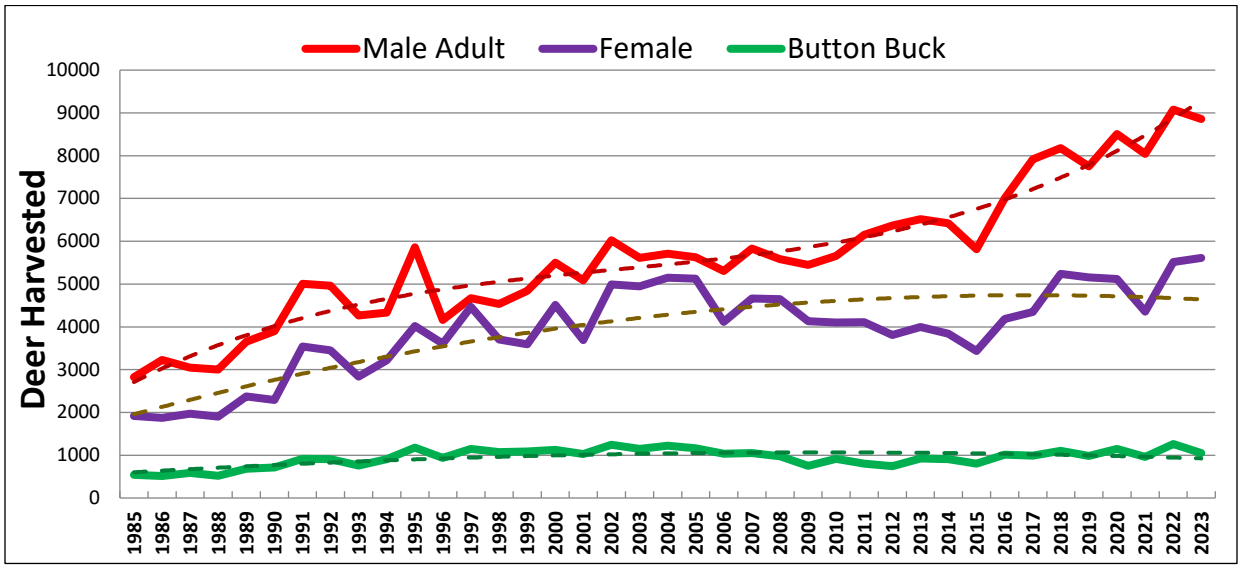
Poor weather conditions during much of the archery and primitive firearms seasons lowered the overall harvest, which likely would have set a new record if it were not for the poor conditions. In spite of these conditions, there were new zone record harvests in zones 9 and 14, and a record number of deer were harvested by participating youth on Youth Deer Hunt Day.

Figure W 3. Total statewide white-tailed deer harvest by season and year in Massachusetts (1966—2023).



The recent high harvests can mostly be attributed to rising deer abundance and the influence of increased archery and primitive harvests, particularly in eastern zones (Figure W 4).

Figure W 4. Statewide deer harvest by sex (1985—2023).



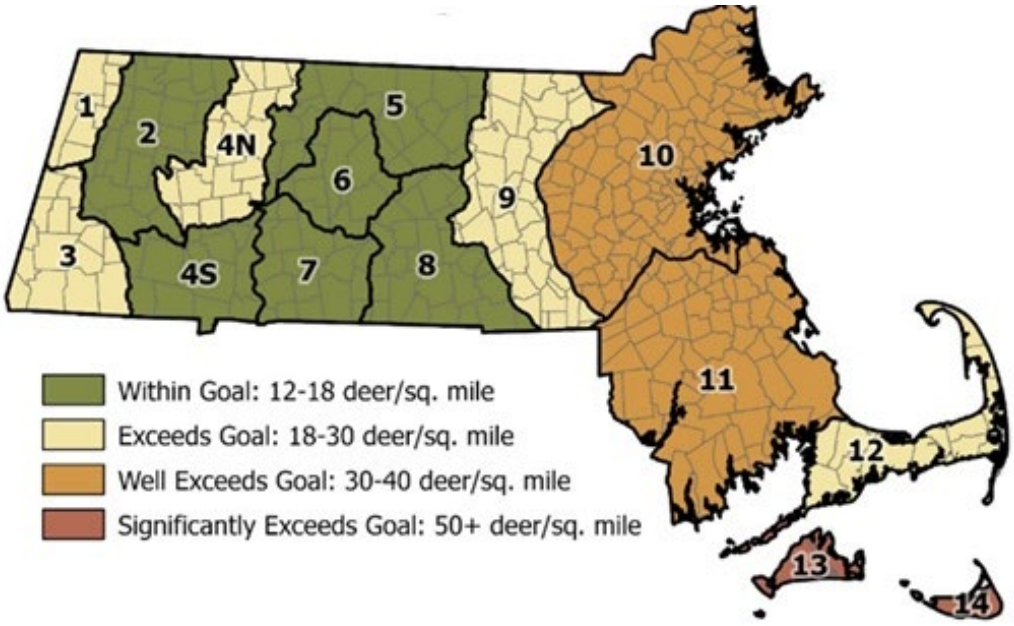
Antlerless Deer Permit Allocations

Antlerless deer permit (ADP) allocations were updated in 2022. WMZs 10, 11, 13, and 14 had their limits removed, allowing hunters to purchase additional permits throughout the season with no season bag limit. This wasn't a real change for WMZs 13 and 14, where there has been an artificially high limit in place historically that has not been met since 1988. The primary goals for WMZs 10 and 11 were to allow hunters to theoretically purchase fewer ADPs, considering the fee increase, by allowing them to purchase additional throughout the season and remove the ability for hunters to game the system by purchasing surplus ADPs and actively choosing to not use them.

Currently, the deer population statewide is estimated to be over 160,000 deer. Density estimates are based on harvest-based models, so estimates only apply to lands that are open to hunting and they range from 12-18 deer per square mile of forest in western and central Massachusetts to over 40 deer per square mile on the islands of Martha's Vineyard and Nantucket and in many suburban Boston communities. Areas with little to no hunting access anywhere in the state can see deer abundance well above the model estimates.

As in previous years, the Antlerless Deer Permit (ADP) system required a hunter to have an antlerless deer permit to harvest an antlerless deer in any deer season. The ADP system regulates female harvest across all Wildlife Management Zones. Overall, we are close to our deer density management range of 12-18 deer per square mile of forest in most parts of the western and central parts of the state, with the exceptions of zones 1, 3, 4N, and 9 (Figure W 5).

Figure W 5. Deer abundance by Wildlife Management Zone.



MassWildlife began integrating the purchase rate information into the published allocation in 2022 to increase transparency. This will then be modified on a three-year cycle. The ADP allocation for 2023 was 21,650 permits in zones with limited allocations (Zones 1-9, and 12) and 19,330 were purchased. There were 26,523 permits sold in unlimited zones (10, 11, 13, and 14). Overall, there were 46,996 permits sold in 2023 (Table W 2), which was an increase from the 46,759 sold in 2022.

Table W 2. The 2023 (FY 2024) white-tailed deer harvest by deer sex/age and the number of antlerless deer permits allocated and issued, by WMZ, for Massachusetts (Quabbin excluded).

Zone	Adult Male	Female	Buck Fawn	Total	Goal of Allocation	2023 Allocation	2023 Issued
1	220	80	7	307	Reduce	800	679
2	447	76	3	526	Stabilize	400	335
3	371	157	20	548	Reduce	2,050	1,809
4N	439	126	16	581	Reduce	800	689
4S	302	48	11	361	Stabilize	600	483
5	551	209	19	779	Stabilize	1,950	1,695
6	255	110	20	385	Stabilize	400	346
7	509	324	47	880	Stabilize	3,000	2,998
8	627	213	34	874	Increase	3,100	2,612
9	780	599	110	1,489	Stabilize	7,200	6,509
10	1,312	1,104	186	2,602	Reduce	Unlimited	10,721
11	2,124	1,675	353	4,152	Reduce	Unlimited	12,640
12	214	85	12	311	Stabilize	1,350	1,175
13	357	384	105	846	Reduce	Unlimited	1,565
14	350	420	109	879	Reduce	Unlimited	1,597
Statewide	8,858	5,610	1,052	15,520		21,650	46,996

Antlerless deer permits are functionally unlimited in Zones 10, 11, 13, and 14

Hunters Share the Harvest

MassWildlife launched an agency-led venison donation program branded as MassWildlife's Hunters Share the Harvest in 2022 with a soft launch beginning during the shotgun season with only one processor. All venison was ground and distributed through the Massachusetts Military Support Foundation's Food4Vets program. The pilot year total was approximately 1,800 meals of venison. The program grew extensively in year 2, with three processors available in 2023. There was also the new option of partial donation with a portion of the deer being donated and reduced processing costs for the hunter depending on how much was donated. The distribution network also grew in 2023 with the following distribution partners:

- Mass Military Support Foundation's Food4Vets
- Daniel's Table
- Worcester County Food Bank
- Herring Pond Wampanoag
- Wampanoag Tribe of Aquinnah

There were 93 deer donated to the program in 2023 from 75 different hunters. In total, 17,800 meals of venison were donated through the distribution network. The program is continuing to grow, with an even further expanded network of processors and distributors available for the CY 2024 season.

Research

MassWildlife continued to collaborate with USDA Wildlife Services for SARS-CoV-2 surveillance in 2023. In 2021, the antibody prevalence rate was 15.4%, which was lower than the national rate of 31.6%. The prevalence rate was 16.7% in 2022 and down to 5.7% in 2023. MassWildlife was notified in February 2023 that USDA had detected 3 cases of deer to human transmission as part of the SARS surveillance in 2021. Massachusetts had 1 of the 3 cases. MassWildlife collaborated with the Massachusetts Department of Public Health to conduct an interview with the individual identified and could not find any connecting cause to an intermediary hunter, staff member, or behavior.

In collaboration with the Massachusetts Cooperative Fish and Wildlife Research Unit, MassWildlife conducted a survey in December 2022 and January 2023 of license holders, captive cervid operators, MassWildlife staff, Massachusetts Environmental Police officers, and board members to measure knowledge, risk perception, behavior, and media consumption around Chronic Wasting Disease. The survey did find that 40% of license holders have hunted for CWD susceptible cervids outside of Massachusetts in the last 5 years and 29% in states/provinces with CWD already detected (not including Florida or Oklahoma, where first detections occurred after the survey was conducted).

MassWildlife is assisting with a multistate NSF project focusing on managing suburban wilds. The project includes faculty, graduate students, and postdocs at Boston University, University of Wisconsin Madison, Texas A&M University, and Colorado State University.

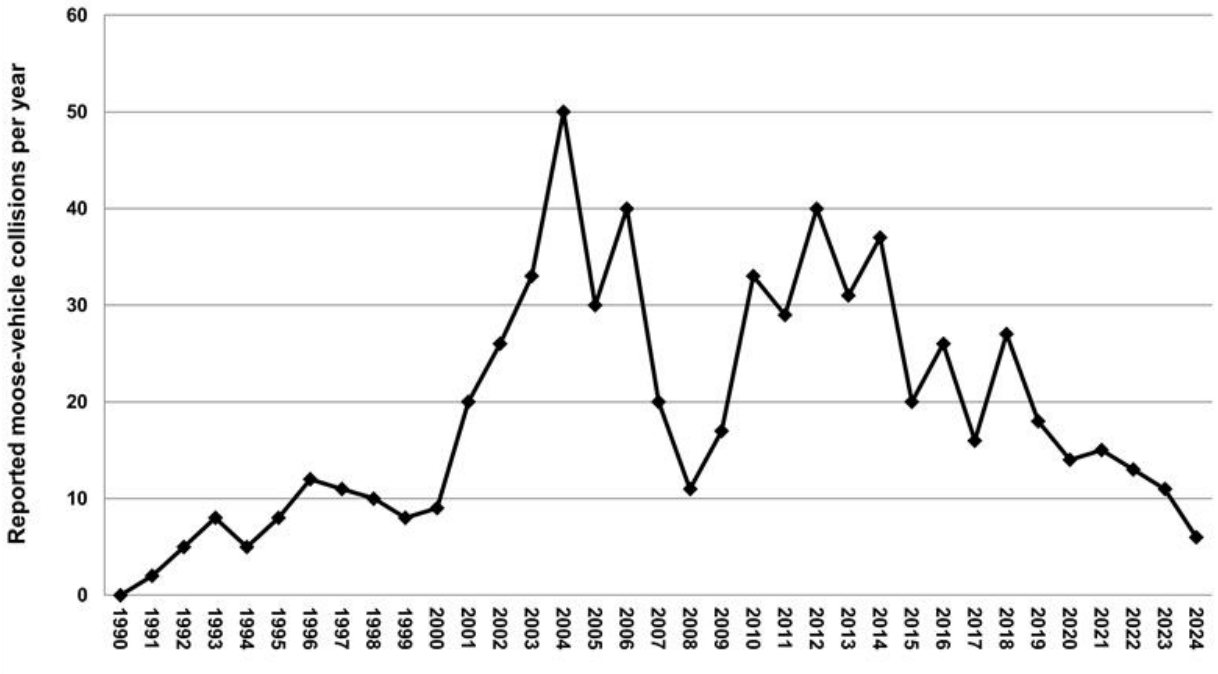
MassWildlife has joined the CDC funded, New England Regional Center of Vector-Borne Diseases (NEWVEC) based at UMass Amherst to help develop deer-focused strategies for tick abundance and tick-borne illness. This has included collaboration on several research projects, including the publication of Pearson et al. (2023; *White-tailed deer serum kills the Lyme disease spirochete, Borrelia burgdoferi*). MassWildlife and the NEWVEC are developing a captive

research facility at UMass Amherst to allow for rapid development of new acaricides and treatments for reducing tick abundance.

Moose Program

Traditionally, MassWildlife has collected reported data of moose-vehicle accidents (MVA). In 2024, 6 MVAs were reported. However, MVAs are not always reported to MassWildlife or to the Massachusetts Environmental Police; thus, these reports make up an unknown fraction of the actual human-moose interactions that occur in the state. For example, many are discovered indirectly through newspaper reports or verbally by staff that drove by a dead moose along the road. Further, caution must be used when looking at the number of collisions reported from year to year because reporting rates can vary from year to year depending on many factors, e.g., in Figure W 6, the reporting rate was likely low in 2007-2009. Nonetheless, these indices can be useful for biologists to use, along with other population trends, to monitor moose relative abundance and trends in Massachusetts.

Figure W 6. Total moose-vehicle accidents reported per year from 1980 to 2024 in Massachusetts.



The number of reports per town can be useful when making decisions about areas to focus on with signage on highways. Starting in 2015, we worked with MassDOT to have large variable-message boards placed along the road in many of the moose-vehicle collision hotspots during

the months of September and October, when moose activity spikes related to breeding. This action may have reduced the number of collisions independent of moose population trends.

The current moose population in Massachusetts is estimated to be around 1,000 animals. We have used a basic population model that incorporates standardized sighting rates from an annual deer hunter survey (we ask a random sample of deer hunters how many moose sightings they had per hour of deer hunting) and available moose habitat in the 12 WMZs that we feel have the potential for moose (we exclude Cape Cod and the Islands in our estimate as they do not represent potential moose habitat).

The Human-Wildlife Conflict Trends Project

Purpose and Methods

This project collects and analyzes citizen-provided information that is used by MassWildlife staff to develop proactive management strategies that are effective at minimizing human-wildlife interactions and, more specifically, resolving human-wildlife conflicts.

Wildlife report data are generated through the unsolicited phone calls and emails received from the public at each of the six MassWildlife offices. The wildlife report data are in turn collected from staff via the online MassWildlife Animal Report Form. The data collected include date, species, town, and report type (sick or injured animal, aggressive animal, property damage, depredation, etc.). Reports describe a variety of wildlife-related issues and are recorded as given by the individual; therefore, they are not assumed to be accurate with regard to species identification or the entire circumstances of the incident. Rather, the data collected are meant to represent the public's perception of a conflict or interaction with wildlife.

Summaries of the collected data provide Field Headquarters and District biologists with information to assist when providing advice and management options to the general public regarding human-wildlife interactions and conflicts. Summaries include graphs that display differences in volume of report types, concern types, species, and seasons. Maps are developed using MassGIS to geographically display the distribution of reports by type and species. Summarizing reports of interactions gives the agency the power to better inform both the public and MassWildlife biologists.

Summary information can also be used to detect trends in interactions, both spatially and temporally. Total report density across towns has remained relatively consistent over time. In general, major metropolitan areas (Pittsfield, Springfield, Worcester, Fitchburg, and Boston) tend to report more interactions between humans and wildlife than do more rural settings.

MassWildlife can, at the very least, use these data and these results to attempt to predict the occurrence of human-wildlife interactions on both a temporal and spatial scale. Beyond that, staff can advocate for the use of proactive education and intervention at specific times of year and in key areas of the state where a high volume of human-wildlife interactions are likely to occur. Specifically, biologists will utilize summaries of past years' data to inform Outreach and Education (O&E) staff on the type(s) of interactions the public should expect throughout the year. O&E staff then proactively provides information to the public on the species they can expect to interact with at specific times of year in certain areas of the state. Staff can further proactively educate the public on animal behavior (breeding seasons, feeding preferences, activity cycles, etc.) based on the ability to predict timing of influxes of specific human-wildlife interactions reports. It is likely that many of the negative interactions between humans and wildlife reported to the agency are accurate portrayals. That said, it is equally likely that many of those interactions can be prevented by educating the public on what to expect and how to prevent the interaction (e.g., blocking off denning sites, eliminating food sources, and securing pets). Figure W 7 and Figure W 8 depict, respectively, the total number of reports received each fiscal year since FY 2011 and the total number of reports received by the District offices in the past six fiscal years.

Figure W 7. Total reports of human-wildlife interactions, FY 2011 to FY 2024.

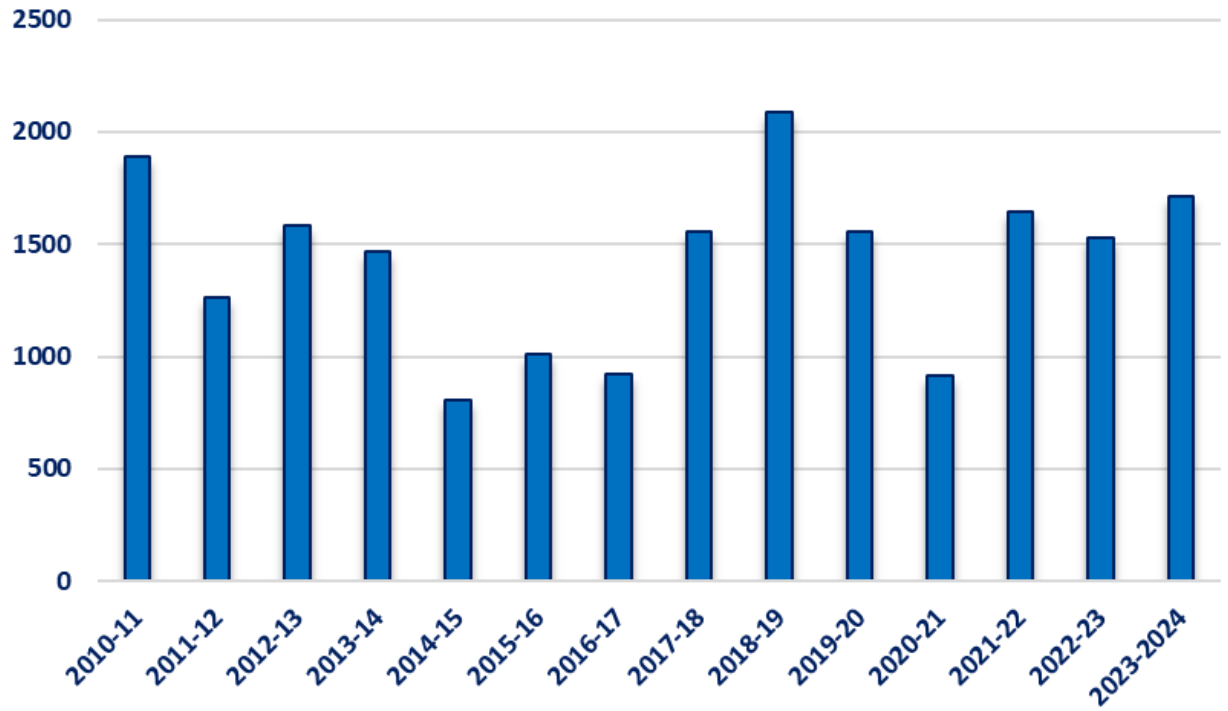
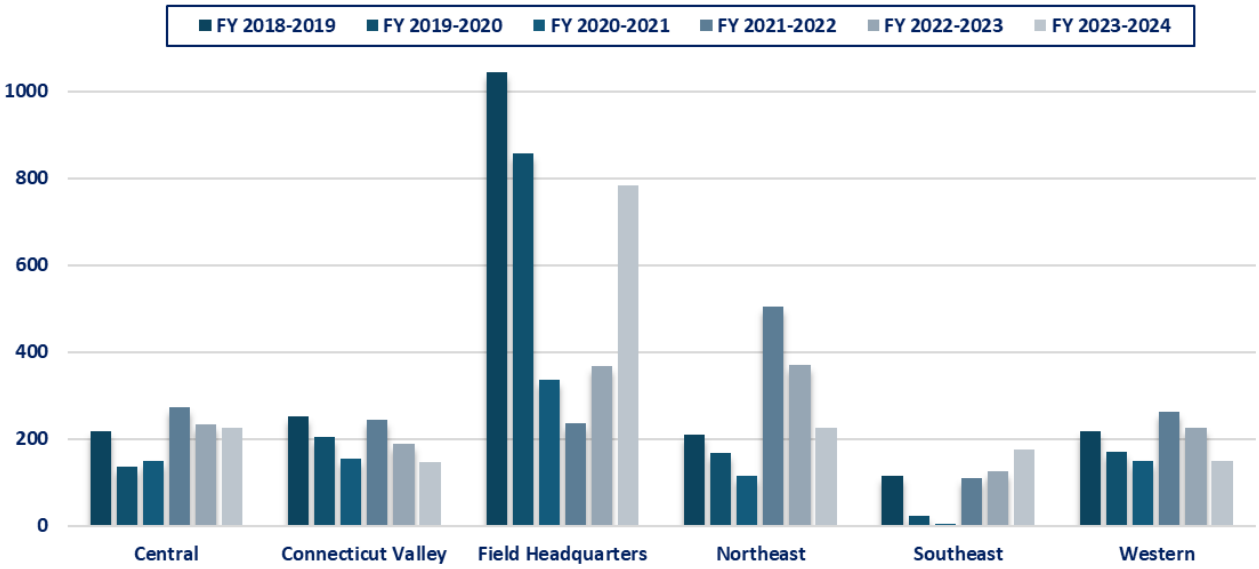


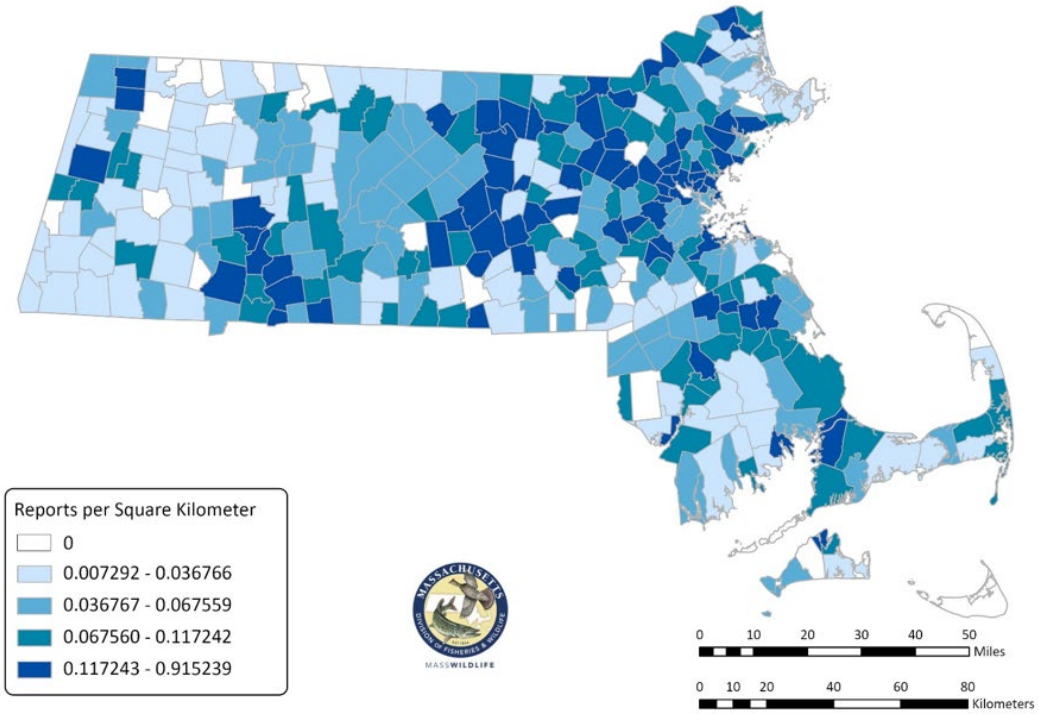
Figure W 8. Total reports of human-wildlife interactions by facility, FY 2019 to FY 2024.



FY 2024 Summaries

Human-wildlife interactions were recorded in 318 of 351 towns across Massachusetts, with a total of 1,710 reports submitted during FY 2024 (Figure W 9).

Figure W 9. Total reports of human-wildlife interactions per square kilometer for FY 2024.

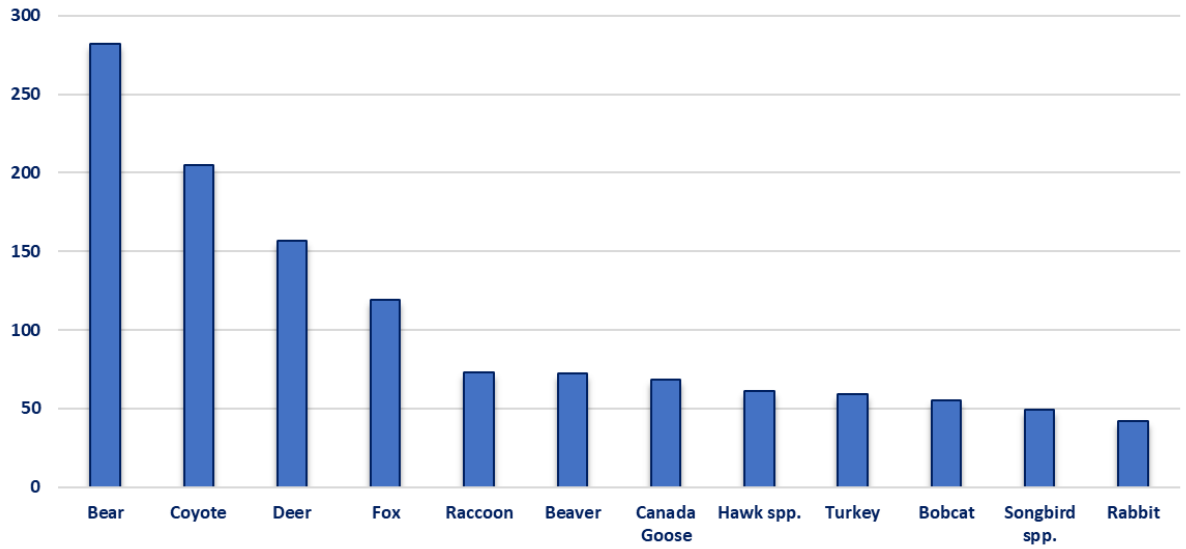


Ninety-nine percent of records (1,698) contained at least one identified wildlife species (24 reports contained more than one species recorded) and 94% (1,607) of reports had an identified town associated with the event. Six and a half percent of reports (111) were regarding general wildlife sightings and requests for positive species identification, and less than 1% (9) were regarding illegal or questionable activity. The remaining majority of reports, 93% (1,590), described a human-wildlife interaction with an associated concern.

Human-Wildlife Interactions in Massachusetts in FY 2024.

MassWildlife staff received reports of 53 different species types (33 unique species and 20 broad species categories, such as "songbirds"), of which 12 made up over 73% of all reports (Figure W 10).

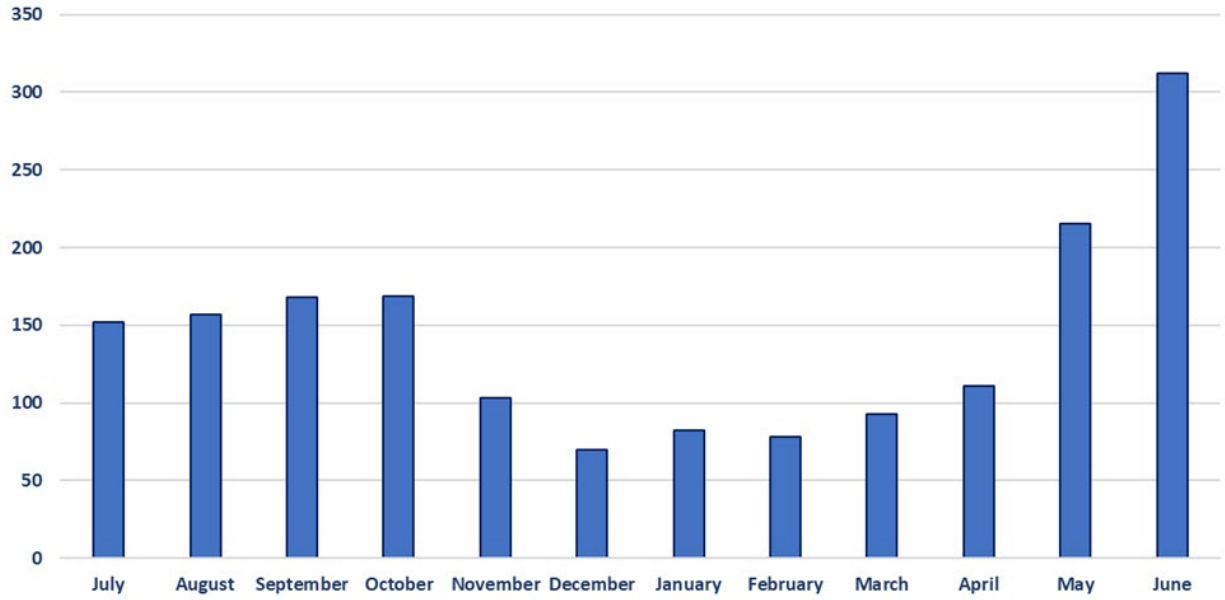
Figure W 10. The top 12 species that were reported to MassWildlife offices as being involved in a human-wildlife interaction.



Staff received more reports in June (312, 18%) than any other month, followed by May (215, 13%), October (169, 10%), and September (168, 10%; Figure W 11). Of the 1,590 reports containing a human-wildlife interaction report type, the highest number of reports were regarding property damage (650; 41%) and the second-highest number reported wildlife mortality, morbidity (i.e., illness), or injury (513; 32%). Ten percent of reports (177) were regarding young wildlife, and the least number of reports, 5% (81), were regarding public safety. Reports regarding threats to public safety included wildlife approaching humans and/or pets on a leash, aggression toward humans, animals exhibiting signs of rabies, certain types of beaver flooding activity, and human attacks. Of the 81 reports of threats to public safety, 8 were reported as a human attack involving hawk species (2), fox (2), wild turkey (2), coyote (1), and raccoon (1). It is important to note that these data represent the reporter's perception of

an “attack” and that physical contact and possible resulting injuries sustained by people were not necessarily confirmed or documented by MassWildlife staff.

Figure W 11. Total reports of human-wildlife interactions by month in Massachusetts in FY 2024.



Ornithology*

Kestrel Research and Management

To promote breeding productivity of American Kestrels, MassWildlife and partners deployed and maintained kestrel nest boxes in suitable habitat and recorded occupancy and nesting success rates. In the Connecticut River Valley, the Kestrel Land Trust (KLT) monitors numerous nest boxes. Of the boxes they maintain and monitor, 8/24 (33%) were occupied by nesting kestrels. Of these, 7 pairs (88% of occupied boxes) successfully fledged kestrel chicks, and 30 chicks survived and were banded prior to fledging. In addition, there were three successful kestrel boxes at the Arcadia Wildlife Sanctuary (Mass Audubon) and several others on private property, and 16 chicks were banded at those boxes prior to fledging. In central Massachusetts at least 17 nest boxes were used for nesting with a minimum of 12 producing fledglings. These boxes were managed by MassWildlife, East Quabbin Land Trust, DCR, The Trustees, Grafton Land Trust, and private landowners. In southeastern Massachusetts, Keeping Company with Kestrels reported 7 occupied kestrel boxes at cranberry bogs in the Carver area. Additionally, several nesting pairs were documented on Cape Cod including at the Frances Crane Wildlife Management Area. There are numerous other kestrels that nest in areas of Massachusetts that

we do not regularly monitor, including birds that nest around airfields, in urban landscapes, and on private farms.

In addition to documenting nesting productivity by monitoring boxes and banding young, MassWildlife deployed radio-transmitters on 21 adult kestrels (16 females, 5 males) to document movement and survival patterns throughout the annual cycle. These radio-transmitters, manufactured by Cellular Tracking Technologies, are designed to communicate with Motus tracking stations that are deployed throughout North America to automatically detected animals when flying within approximately 15 kilometers from a station. Six of these kestrels were nesters in cranberry bogs in southeastern Massachusetts (tagging done in partnership with Keeping Company with Kestrels), 14 were nesters in central and western Massachusetts, and one nested in greater Boston. We expect to get detections of many of these birds during fall migration as they depart their nesting areas in Massachusetts and move south to their wintering grounds. During autumn 2022, we obtained detections on all 14 kestrels tagged that summer during their fall migration, and six birds were again detected during spring migration as they returned to Massachusetts.

Motus Receiving Station Network Project

The Massachusetts Division of Fisheries and Wildlife is a partner agency on a Competitive State Wildlife Grant to deploy and maintain a network of inland Motus receiving stations throughout New England. New Hampshire is the lead state on the project with the New Hampshire Audubon Society being the lead organization coordinating work throughout New England. The goal of the project is to establish 50 strategically located inland automated telemetry receiver stations in Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island. This project will close a major geographic gap in receiving stations within the Motus Wildlife Tracking System (www.motus.org).

After reviewing numerous possible locations for Motus stations, the team selected sites based on geography, access, and permissions to deploy a station. In total, 10 sites were selected to host a Motus receiving station in Massachusetts. Three stations were deployed in FY 2022 and six in FY 2023. The final station is slated for deployment in late 2023. Each station includes a receiver (SensorStation, Cellular Tracking Technologies), power supply, and a small tower with up to eight directional antennas pointed in different directions to detect the two types of radio frequencies used for small animals (e.g., birds, bats, insects). When a transmitter is detected, data are automatically updated to the internet over the cellular network where biologists and the public can view results. All data are made available to project leaders and those managing a given station. All stations have detected tagged animals including kestrels, warblers, thrushes, swallows, blackbirds, sparrows, shorebirds, and monarch butterflies. These stations have been incorporated into the Motus Tracking Network and are available for use by any biologist (e.g.,

agency, academic, nonprofit biologists) by deploying the appropriate radio-transmitters on animals and registering transmitters in the Motus system.

**Other ornithology projects can be found within the Birds section of the Natural Heritage and Endangered Species Program report later in this document.*

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4 The Natural Heritage and Endangered Species Program

Eve Schlüter, Ph.D., Assistant Director of Natural Heritage and Endangered Species (partial year)

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Overview

MassWildlife's Natural Heritage and Endangered Species Program (NHESP) conserves and protects the most vulnerable native animal and plant species of Massachusetts and the habitats upon which they depend.

NHESP staff members are distributed primarily among three sections: Conservation Science, Information Management, and Regulatory Review. Conservation Science staff are responsible for determining the abundance and distribution of rare species in Massachusetts through field inventories and biological research and the planning and implementation of conservation efforts for rare species and their habitats. The Information Management Staff are responsible for the development and management of biological data in the NHESP's expansive tabular and spatial databases. The Regulatory Review staff assesses the potential impacts of proposed projects or activities to federally- and state-listed species and their habitats and provides guidance on avoidance, minimization, and mitigation measures.

The NHESP's highest priority is protecting the native species that are listed as Endangered, Threatened, or of Special Concern in Massachusetts pursuant to the Massachusetts Endangered Species Act (MESA; M.G.L. Ch. 131A) and its implementing regulations (321 CMR 10.00).

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

The MESA and its implementing regulations require review and updating of the List of Endangered, Threatened, and Special Concern Species ("the MESA List," 321 CMR 10.90) at least once every five years. In recent years, the MESA List has been updated approximately every four years. There are three main categories of change: (1) listing (addition of a species to the list); (2) delisting (removal of a species from the list); and (3) change in listing status of a species (Special Concern ↔ Threatened ↔ Endangered). Changes are proposed on a species-by-species basis. The process for updating the MESA list involves many steps and typically takes about a year and a half to complete. The list change process and associated information are

detailed in the document titled "*Listing Endangered Species in Massachusetts: The Basis, Criteria, and Procedure for Listing Endangered, Threatened, and Special Concern Species*."

The process for the current changes to the MESA List began in September 2022. After reviews by external experts closed in July 2023, staff reviewed all the comments and proposals and the NHESP recommended 25 of the 27 proposed list changes as proposed. Regarding the proposal to delist the Humpback Whale, the NHESP recommended down-listing from Endangered to Special Concern as opposed to delisting; NHESP staff did not recommend listing the American Horseshoe Crab.

In FY 2024, on July 27, all 27 list change proposals were presented to the Natural Heritage and Endangered Species Advisory Committee (NHESAC), along with copies of all comments and other information provided by external reviewers. These materials were reviewed by the NHESAC between July and October. During this time, the DMF withdrew the proposal to delist the Humpback Whale, leaving a total of 26 list change proposals under consideration. At meetings on September 14 and October 12, the NHESAC voted to recommend 25 of the proposed changes and to not list the American Horseshoe Crab.

The 26 list change proposals, along with the recommendations of NHESP staff and the NHESAC, were presented to the Fisheries and Wildlife Board on October 24. The Board voted to move the recommendations as proposed to public hearing for public comment. The public hearing was held on April 9, 2024, and a two-week written comment period followed. After the written public comment period closed, all comments from the public hearing and public comment period were reviewed and taken into consideration by NHESP staff.

At the May 15, 2024, meeting of the Fisheries and Wildlife Board, both a summary of public comments received and the final MESA List change recommendations were presented and the Board voted to approve the final set of changes as proposed. Subsequent to the vote of the Fisheries and Wildlife Board, the approved MESA List changes (the "Final Regulatory Amendment Package") was submitted to the Executive Office of Energy and Environmental Affairs (EEA) and the Executive Office for Administration and Finance (ANF) for approval. After those approvals, the final regulatory amendment package was delivered to the Secretary of State's Division for State Publications and Regulations. At the close of the fiscal year, the final regulation had not been promulgated.

BioMap: The Future of Conservation in Massachusetts

The new BioMap was launched in November 2022. It identifies resilient and vulnerable habitats that need greater prioritization for land protection and management and will help to guide

efficient prioritization of solutions to mitigate climate change effects (e.g., land protection, habitat management and restoration, infrastructure improvements).

In FY 2024, a BioMap Outreach Specialist and the NHESP GIS Manager provided technical assistance and worked to reach new BioMap user audiences. They connected with new organizations and communities about the updated BioMap by conducting a total of 17 virtual and in-person presentations to over 175 participants, corresponded directly with users to make them aware of the update and answer any questions about the BioMap tools, and provided technical assistance as requested. Most notably, the BioMap Outreach Specialist wrote an article for the No. 4, 2023, *Massachusetts Wildlife* magazine illustrating how BioMap is being used for conservation planning at various scales through case studies of three users. Additionally, MassWildlife and external contractors began new analyses to identify priority "Key Landscapes" in Massachusetts based on the density and prioritization of BioMap Core Habitats. These data will support Massachusetts Executive Order 618: Biodiversity Conservation in Massachusetts and the development of the next iteration of the Massachusetts State Wildlife Action Plan (SWAP) and can be applied to other conservation prioritizations by conservation entities across the state.

Linking Landscapes for Massachusetts Wildlife

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

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

In FY 2024, LLMW installed wildlife barriers to enhance public safety and reduce diamondback terrapin mortalities at a coastal site. LLMW implemented invasive species control and habitat restoration at hotspots for biodiversity and engaged with various community organizations. LLMW also supported the purchase of several GPS tags/radio tags to study the interaction of Blanding's turtles in Massachusetts with the road and highway network of the Commonwealth. Data from these tags will be used to evaluate Blanding's turtle movements in known road mortality hotspots in the state, how turtles are influenced by the road network, and what landscape and roadway features influence where and when Blanding's turtles cross roads. This study will help to refine turtle hotspot mortality data and will support ongoing conservation and transportation planning and prioritization between MassDOT and MassWildlife.

To support ongoing conservation and transportation planning and prioritization, LLMW funds were used to refurbish GPS iridium collars used to study the interaction of black bears with the road and highway network of the Commonwealth. Data from these collars is being used to evaluate black bear movements in the state, how they are influenced by the road network, and what features of the roadways and the landscape influence where and when bears crossroads. Finally, in order to study the elusive nocturnal whip-poor-will, LLMW facilitated the purchase of transmitters for use in automated radio tracking. This work presents an opportunity to collect unprecedented movement and habitat use data during the whip-poor-will nesting period. Specifically, these efforts will enable MassWildlife to document breeding season movements, habitat use and selection, territory size and habitat composition, and diurnal roosting and nesting locations. This data contributes to a professional conservation network for undergraduate and graduate students and professional colleagues.

Listed Species Conservation

Birds

Piping Plover (Charadrius melodus); Federally Threatened

Observers reported breeding pairs of piping plovers present at 210 sites; 158 additional sites were surveyed at least once, but no breeding pairs were detected. The population increased 14% relative to 2022. The Index Count (statewide census conducted June 1-9) was 1,163.5 pairs, and the Adjusted Total Count (estimated total number of breeding pairs statewide for the entire 2023 breeding season) was 1,178 pairs. A total of 1,295 chicks were reported fledged for an overall productivity of 1.11 fledglings per pair, based on data from 99% of pairs.

American Oystercatcher (Haematopus palliates)

MassWildlife coordinated annual monitoring and protection efforts for American oystercatchers conducted by a coastwide network of cooperators. Approximately 185 sites

were surveyed during May and early June 2023. Preliminary results indicate that Massachusetts supported an estimated 238 breeding pairs of oystercatchers in 2023.

Terns, Laughing Gulls, and Black Skimmers

Cooperators in Massachusetts surveyed approximately 250 coastal sites in 2023 for the presence of breeding roseate terns (*Sterna dougallii*), common terns (*Sterna hirundo*), arctic terns (*Sterna paradisaea*), least terns (*Sternula antillarum*), black skimmers (*Rhynchops niger*), and laughing gulls (*Larus atricilla*). Analysis of the data is underway. Preliminary estimates indicate 3,632 pairs of roseate terns (a record high), 28,511 pairs of common terns (a record high), 3,565 pairs of least terns, 22 pairs of black skimmers, and 6,641 pairs of laughing gulls (a record high). No arctic terns were detected.

BUZZARDS BAY TERN RESTORATION PROJECT

Common terns numbered 3,085 pairs on Bird Island and 3,650 pairs on Ram Island. Roseate terns numbered 1,956 pairs on Bird Island and 1,584 on Ram Island. Common tern productivity was 0.8 and 1.05 fledglings per nest at Bird and Ram islands, respectively. For roseate terns, productivity was 1.07 and 1.37. A mink on Bird Island killed approximately 90 terns, mostly roseate terns.

On Penikese Island, 1,592 pairs of common terns and 18 pairs of roseate terns nested. No arctic terns were detected. For common terns, productivity was 1.89 fledglings per pair, despite significant predation. Roseate tern productivity was 1.34 fledglings per pair. An estimated 1,188 pairs of herring gulls and 146 pairs of great black-backed gulls nested. Mean clutch size for herring gulls was 2.8 eggs per nest and apparent hatching success was 82.5%. Mean clutch size for great black-backed gulls was 2.85 eggs per nest and apparent hatching success was 86%. Nineteen pairs of great egrets, 48 pairs of snowy egrets, 33 pairs of glossy ibis, 340 pairs of double-crested cormorants, 94 pairs of common eiders, five pairs of American oystercatchers, and at least two pairs of Leach's storm-petrels nested. No nesting black-crowned night herons were detected.

Common Loon (Gavia immer)

Statewide monitoring of nesting loons was a collaborative effort among staff at MassWildlife, the Massachusetts Department of Conservation and Recreation (DCR), and the Biodiversity Research Institute (BRI). Before the nesting season, MassWildlife staff deployed nesting rafts at Buckley-Dunton Lake and Cleveland Brook Reservoir in Berkshire County. Rafts also were deployed at the Quabbin and Wachusett reservoirs (DCR staff), the Pine Hill Reservoir (Worcester Watershed staff), the Assawompset Pond Complex in Lakeville, and the Coppicut Reservoir in Fall River. Surveys were conducted at waterbodies throughout the state suitable for loon nesting to determine if they were being used by loons during the breeding period. Sites

were surveyed by a single observer by walking the shoreline and/or by kayak. When a loon was sighted, time was spent watching the bird through binoculars and/or a spotting scope to try and identify the bird by reading any color bands. Once territorial loons were identified, the birds were monitored through the summer to locate any nests and determine nesting success. Monitoring continued after chicks hatched to determine fledging success. Monitoring was a collaborative effort among staff at DCR, MassWildlife, and Biodiversity Research Institute (BRI).

During the 2023 nesting season MassWildlife staff and collaborators surveyed 135 waterbodies for nesting loons. In total, 51 territorial pairs of loons were documented on 25 waterbodies. The southeast portion of the state held 1 pair, and 3 pairs were recorded in western Massachusetts. The remaining 47 pairs were located in the region extending from Concord to Springfield. Of the total number of territorial pairs, 30 of them attempted nesting, producing 23 chicks and 16 fledglings. Nesting attempts were particularly low in the Quabbin Reservoir, where density-dependent factors are thought to be interrupting loon nesting behavior. For the entire state population, reproductive success was relatively low (0.31 chicks surviving per territorial pair) and well below the level thought to support a sustainable population (0.48). Nesting productivity was particularly poor on the Quabbin Reservoir, which fledged 0 chicks this year. In recent years, there has been an increasing number of unpaired adult loons that have disrupted nesting attempts and likely killed the young of mated pairs. Throughout the state, chick survival was relatively high with 70% (16/23) of those hatching surviving to fledging. Much of the loon population in the state nest on the Quabbin Reservoir (22 territorial pairs) and the Wachusett Reservoir (5 territorial pairs), and these birds are monitored by DCR staff. MassWildlife and BRI staff monitored loon pairs on waterbodies not managed by DCR and primarily located on lakes, ponds, and reservoirs in central Massachusetts. Of these, nesting was documented at 10 sites, producing at least 13 hatchlings and 10 fledglings. As part of the restoration efforts supported by the Bouchard 120 Oil Spill Settlement Fund, BRI partnered with MassWildlife to continue a loon translocation project in Massachusetts. In 2023, BRI translocated a total of 10 common loon chicks from Maine (8) and Vermont (2) to western Massachusetts (Berkshire County). Chicks were translocated at approximately 5-12 weeks of age. Of the 10 translocated chicks, 8 were reared in aquatic enclosures for 10-29 days before being released, and 2 older chicks were directly released onto suitable waterbodies.

Bald Eagle (Haliaeetus leucocephalus)

The 2023 Spring Nesting Eagle Survey took place on April 7, when agency staff and volunteers checked known eagle territories and explored areas with potential eagle habitat to verify continued use of “old” eagle nests and try to locate "new" nests. The elevated effort on this day helps us with the increasingly difficult task of monitoring the state’s growing numbers of breeding Bald Eagles and provides much of the information that we gather on nesting Bald Eagles in the state. In addition to the single day count, information on nesting eagles is

gathered through periodic nest monitoring by staff and volunteers and opportunistic observations collected throughout the year. Any reports of nesting eagles are investigated by MassWildlife staff to document new nesting pairs. When possible, these nests are monitored throughout the breeding season, and staff band chicks in the nest.

In 2023, 90 territorial pairs were documented throughout Massachusetts. The highest concentration of eagles was along the Connecticut River and Quabbin Reservoir. Additionally, the Merrimack River, the Westfield River, and the Assawompset Pond Complex all had multiple pairs of nesting eagles. Single nests were reported from numerous waterbodies throughout the state. In total, at least 31 successful nests fledged a minimum of 57 eagle chicks. Due to the increasing eagle population, the agency has reduced monitoring effort, and many pairs were not monitored throughout the season. Therefore, 8 pairs were not visited to determine nesting activity, 49 active nests had unknown fates, and 29 nestlings were banded with a USGS federal band and a field-readable state color band uniquely identifying each individual. This is the 35th year that bald eagles have raised young in Massachusetts since their restoration. During these 35 years, at least 1,041 wild-born chicks are known to have fledged, along with an additional 8 chicks that were captive-born and fostered into wild nests and another 18 that were captive-born and directly released.

Peregrine Falcon (Falco peregrinus)

Peregrine falcons use the same nesting sites for many years and known falcon nests are monitored during the nesting period. MassWildlife also follows up on reports of new nesting locations to verify these observations. Additionally, MassWildlife coordinates a volunteer network of peregrine falcon monitors who assist with population monitoring of this species in Massachusetts. When possible, MassWildlife staff band chicks in the nests.

Nesting peregrine falcons continue to increase in Massachusetts. Although most nest sites are now on artificial structures (e.g., buildings, bridges), there are several at quarries and an increasing number of historical cliff sites are now being used for nesting. As a result of the increasing number of nesting peregrine falcons, and as is true for eagles, MassWildlife has begun to scale back on monitoring efforts for this species.

In 2023, 44 nesting pairs were documented in Massachusetts, and at least 27 of these were successful, fledging 71 chicks. Of these, 53 chicks were banded at 18 nest sites, and all of them received a metal USGS band and a uniquely coded color band. These are minimum numbers as several nest sites were not monitored enough to determine nesting success. This is the 37th year that peregrine falcons have raised young in Massachusetts since their restoration. During these 37 years, at least 1,077 wild-born chicks are known to have fledged.

Eastern Whip-poor-will (Antrostomus vociferus)
The statewide nightjar survey project based on the Nightjar Survey Network's protocol continued into its 12th consecutive year. Twenty-four routes were run in 2023. Surveys once again took place in all the Massachusetts core eastern whip-poor-will areas (e.g., Manuel Correllus State Forest, Montague Plains WMA, Joint Base Cape Cod, Myles Standish State Forest), as well as many important secondary sites. Unlike past years, few chuck-wills-widow were detected, and as usual, no detection of common nighthawk occurred anywhere in the state. The information gathered from these routes is being used to inform regulatory, habitat management, and conservation decisions.

To examine the movements and habitat use patterns of eastern whip-poor-will at the Montague Plains Wildlife Management Area, MassWildlife staff and collaborators at the Worcester Polytechnic Institute (WPI) maintained an automated radio-tracking system was deployed at the site. This included a main receiver (SensorStation, Cellular Tracking Technologies) and a grid of mini receivers (nodes) deployed throughout the site. In 2023, we deployed 14 radio-transmitters (PowerTag, Cellular Tracking Technology) on adult whip-poor-pills to track their movements and habitat use through the WMA. The tags were programmed to produce a signal every 45 seconds that could be detected by nodes if the bird remained within the tracking grid. Data was uploaded to a server using the cellular network as well as saved to an SD card within each node. Although analysis of these data is ongoing, we plan on using the project results to inform management at this and other similar pine barrens sites.

Reptiles and Amphibians
General Program Updates
MassWildlife's NHESP hired three turtle-focused staff in FY 2024 for periods ranging from six months to one year. Two of these positions focused on at-risk turtle species were funded through Competitive State Wildlife Grants (CSWG) and USFWS Section 6 funds with specific project deliverables, and one position focused on Diamondback Terrapin in Buzzards Bay was funded in part through a partnership with Zoo New England. These contract positions have allowed MassWildlife to expand capacity in key areas, including technical assistance to landowners, inventory and monitoring, habitat management, and conservation genetics/eDNA.

Northern Red-bellied Cooter (Pseudemys rubriventris); Federally Endangered
MassWildlife biologists continued to manage and supervise a head-start program for the northern red-bellied cooter in coordination with the USFWS's New England Field Office (NEFO) and the Eastern Massachusetts National Wildlife Refuge (NWR) staff. Red-bellied cooters were collected from the wild and released as part of a permitted headstarting program, as described and authorized by a new federal recovery permit in effect since 2023. The northern red-bellied cooter is restricted to Plymouth and Bristol counties in southeastern Massachusetts and has

been federally listed as Endangered since 1980. It is now clear that the head-start program, which has run continuously since 1984–1985, has stabilized the species' populations in the Commonwealth. MassWildlife biologists worked with landowners in Lakeville and Plymouth to protect nests at known residential nesting areas, and distributed the hatchlings to participating institutions, schools, and individuals to care for during the 2023–2024 winter season. Here we report the key statistics from the 2023–2024 head-start season as well as the 2024 nesting season.

In the spring of 2023, 114 headstarted red-bellied cooters from the 2022 nest cohort were released into three separate waterbodies, specifically Abner Pond, Plymouth (34); Little Long Pond (Cachalot), Plymouth and Wareham (36); and Maple Springs Brook Reservoir, Wareham (44). These three sites are located in close proximity to each other on land managed by MassWildlife within the current extent of occurrence of the species in Massachusetts, and meet the criteria for release established by MassWildlife, USFWS-NEFO, and USFWS-Eastern Massachusetts NWR. Ten of these turtles were radiotracked their release locations throughout the activity period in 2023 using ATS 1680 radios provided by the USFWS-NEFO. From June into July 2023, staff coordinated with authorized landowners in the Plymouth and Lakeville areas to protect 16 nests for the 2023–2024 headstarting season. These included five nests in Plymouth protected by the landowner, and nine nests in Lakeville, which were protected with wire-mesh cages. MassWildlife also opportunistically protected one other nest in Lakeville, and one nest in Carver, after staff was notified by municipal workers of a red-bellied cooter nest. These 16 nests produced a total of 145 hatchlings, of which 96 were retained for headstarting and 49 were direct-released at their nesting area of capture in September 2023. In September 2023, the 96 hatchlings were distributed to 19 cooperating schools, organizations, and individuals across Massachusetts to be headstarted through the 2023–2024 winter. In May of 2024, 89 headstarted red-bellied cooters were released at properties owned by MassWildlife in Plymouth County.

Bog Turtle (Glyptemys muhlenbergii); Federally Threatened

Bog Turtle assessment and management occurred during the reporting period in coordination with USFWS-NEFO staff. MassWildlife staff participated in the regional recovery team for the Hudson-Housatonic unit. Bog Turtles at Massachusetts' two remaining sites (Site 1 and Site 2) were handled, marked, and radio-tracked to assess population status, identify important habitat areas, and inform management. At the Northern Site (Site 2), MassWildlife radio-tracked an average of ten adult bog turtles throughout the summer of 2023 in partnership with The Nature Conservancy (TNC) and UMass. At the Southern Site (Site 1), an average of ten turtles were radio-tracked throughout the summer of 2023. All radios were removed at the end of August 2023, ending a six-year, federally supported population study that formed the basis of a Master's thesis at UMass Amherst by Julia Vineyard, which was defended and completed in

August 2023. Vineyard assessed population demographics (including abundance and survival) and spatial distribution (home range) of two Massachusetts bog turtle populations and compared the results of this study were compared to two previous studies conducted in 1994–1997 and 2005–2009 to evaluate the response to habitat management, and key results from her thesis abstract (2023) are reproduced as follows:

Estimates of adult population abundance increased from the first study period ... to the last study period ... across both sites. Estimates of annual survival across all study periods remained above 90% at Site 1 and were 100% for two years at Site 2 (Vineyard 2023).

Vineyard also constructed 95% minimum convex polygon (MCP) and 95% kernel density estimation (KDE) home ranges for 71 turtles. She further reported that

> ...[t]he increase in abundance estimates, high survival, and stable home range sizes at Site 1 suggest that ongoing management has maintained quality habitat. At Site 2, the average home range size decreased by approximately half after the first study period in response to flooding but increased in the current study. Fluctuations in population abundance and home-range size at Site 2 throughout the study period reflect the cycles of habitat degradation and habitat management (Vineyard 2023).

Vineyard's results, produced in partnership with MassWildlife, TNC, and UMass, indicate that habitat management efforts implemented since the late 1990s have "provided quality habitat for the two bog turtle populations in Massachusetts while also mitigating long-term negative impacts on the populations."

Habitat management activities occurred at both known bog turtle sites to improve habitat. At the Northern Site, beaver deceiver and flow devices were monitored seasonally by TNC and MassWildlife staff. Minor vegetation management, including invasive plant removal and canopy tree removal, continued at both sites. In addition to surveys, trapping, and telemetry at the two known sites, MassWildlife continued to search for previously undiscovered populations using a combination of visual encounter surveys, standard trapping protocols, and camera trapping. Although MassWildlife identified several promising fens, surveys and trapping revealed no new bog turtle occurrences in 2023.

MassWildlife staff continued to work with state wildlife agencies in Pennsylvania, New Jersey, Connecticut, and New York to implement the regional conservation plan for bog turtles with funding from the CSWG program. MassWildlife staff also co-authored two articles on bog turtles published in *Northeastern Naturalist* during FY 2024. One article by Jones et al. (2024) reported on the apparent long-distance dispersal of a young male bog turtle marked at a long-term study site in Massachusetts and found dead on a residential homeowner's driveway 3.9

km to the north 2 years later. The other article (Conley et al. 2024) reported apparent cases of hepatic neoplasia in 2 adult bog turtles from the same fen in Massachusetts. The presence of neoplasia in 2 turtles from the same site is unlikely and uncommon and has potential conservation implications for disease surveillance and research, population monitoring, and threats assessment of this critically endangered species.

Wood Turtle (Glyptemys insculpta)

The wood turtle has been functionally extirpated from several streams in eastern Massachusetts in recent decades. It is a Regional Species of Greatest Conservation Need (RSGCN) and is petitioned for federal listing. The 13 northeastern states have been working together to conserve this species for about 12 years, supported by two CSWGs and three Regional Conservation Needs (RCN) grants. Having completed a conservation plan for the species from Maine to Virginia in 2018 (Jones et al. 2018), MassWildlife is serving as the lead state on a CSWG to implement the regional conservation plan. Eight partner state agencies in the Northeastern United States are partnering in this initiative.

MassWildlife staff also hosted a major symposium for the wood turtle, Blanding's turtle, and spotted turtle, held in July 2023 at Juniata College in Huntingdon, Pennsylvania, and attended by over 140 participants, to advance conservation objectives on all species in the Emydine family, specifically the wood, Blanding's, spotted, and box (Terrapene spp.) turtle. A total of 145 turtle conservationists from 86 institutions attended the symposium to present research, provide regional updates, or contribute to conservation planning discussions. The first day consisted of an optional field trip led by Juniata College to a local research site monitoring freshwater turtle nesting. The site was restored by Juniata College and the U.S. Army Corps of Engineers to develop suitable nesting habitat for the local populations. Participants were able to explore the site and ask questions regarding the research and management logistics. The following two days were devoted to presentations by 41 experts covering a diverse range of topics, including population assessments, genetics, illegal trade, headstarting, spatial ecology and general biology, and habitat management. In addition to presentations, two panel discussions were held by experts to bring attendees together and corroborate on issues and solutions around illegal trade and repatriation and conservation planning. During the conservation planning session and the end of Day 3, a live Mentimeter survey was given for participants to answer and start discussions. Overall, the symposium served as an opportunity for many to foster new working relationships and initiate coordination among institutions, states, and regions. It was the third symposium held since 2016 and served as a great follow-up to on-going regional projects and collaborations. An objective of this year's symposium was to expand partnerships between the Northeast, Midwest, Southeast, and Canada given the overlap of species and conservation needs.

Eastern Box Turtle (Terrapene carolina)

MassWildlife staff continue to assist with the implementation of an enhanced offsite mitigation program for the eastern box turtle statewide. MassWildlife's State Herpetologist and Assistant Director for Natural Heritage and Endangered Species worked throughout the year with partners from TNC to coordinate habitat conservation for the eastern box turtle using mitigation funds for offsite conservation established through MESA Conservation and Management Permits. In FY 2024, MassWildlife staff coauthored an article on fly-induced myiasis in eastern box turtles at Camp Edwards, finding little evidence that fly parasitism caused elevated rates of mortality or decreased movements. At present, this phenomenon appears localized on Cape Cod.

Spotted Turtle (Clemmys guttata)

MassWildlife coordinated additional field sampling for the spotted turtle in Dukes, Essex, and Barnstable counties, with a major emphasis on islands in Dukes County in partnership with the U.S. Fish and Wildlife Service, where nearly 100 individuals have been marked. MassWildlife staff coauthored an article on a Dukes County population of spotted turtles, finding evidence of wetlands affected by coastal erosion and high rates of limb deformity.

Blanding's Turtle (Emydoidea blandingii)

MassWildlife staff conducted field studies at Wildlife Management Areas in Middlesex and Worcester counties in partnership with Northeast and Central Wildlife District staff and undertook a telemetry study at one Wildlife Management Area in Middlesex County. MassWildlife also partnered with MassDOT on a pilot study of Blanding's turtles using GPS-enabled tags. MassWildlife staff coauthored a study of Blanding's turtle conservation genetics and effective population size.

Northern Diamondback Terrapin (Malaclemys terrapin)

MassWildlife staff collaborated with Zoo New England on a major new sampling effort for the species in Buzzards Bay. More than 500 terrapins were caught in the initial phase of this study. Regionally, the northeastern states have funded a 3-year project to inventory terrapins using standardized protocols and MassWildlife staff continue to partner with other northeastern states. MassWildlife also launched a new acoustic telemetry study of 30 female terrapins in Buzzards Bay in coordination with UMass Amherst.

Timber Rattlesnake (Crotalus horridus)

Massachusetts' rattlesnakes have dwindled to five isolated populations, several of which appear to be declining. MassWildlife continues to coordinate necessary conservation actions, such as trail closures, signage, and outreach, through three regional working groups in Berkshire County, the Connecticut River Valley, and the Blue Hills. MassWildlife also

coordinates three “response” teams, which are like the response groups in Vermont and Connecticut, to assist landowners in these regions by relocating rattlesnakes from yards. Additionally, from 2022 through early 2024, MassWildlife continued population studies through contracts with Oxbow Associates, James Condon, and Tom Tyning, et al., in the Connecticut River Valley and eastern Massachusetts, to evaluate size, demography, and trend of remaining rattlesnake populations. Generally, populations in both areas are notably small and isolated from other occupied sites, and are at risk of extirpation from roadkill, targeted killing, and harassment around the periphery of protected sites, as well as pathogens. MassWildlife biologists and their partners have noticed a resurgence in symptomatic Snake Fungal Disease, especially in eastern Massachusetts, and they are working closely with partners at the New England Wildlife Clinic, Cornell, and UMass to refine research into this concerning phenomenon.

Copperhead (Agkistrodon contortrix)

MassWildlife continued to coordinate population studies through contracts with Oxbow Associates and Tom Tyning, et al., to evaluate size, demography, and trend of remaining copperhead populations in eastern Massachusetts and the Connecticut River Valley, respectively. Generally, populations in both areas are notably small and isolated from other occupied sites, and are at risk of extirpation from roadkill, targeted killing, and harassment around the periphery of protected sites, as well as pathogens.

Eastern Spadefoot (Scaphiopus holbrookii)

With the help of partners and volunteer monitors, the NHESP continued implementation of Year 8 of a statewide monitoring plan for eastern spadefoot during July–October 2023. In addition to the active monitoring conducted by project personnel in the towns of Hadley, Rehoboth, Southwick, Sunderland, Wayland, and Westfield, the NHESP conducted remote monitoring of select pools in Hadley, Sunderland, Southwick, and Wayland via bioacoustics surveys. Monitors detected spadefoot breeding events in Southwick (n = 2) and Westfield (n = 1) following substantial rains in July. Bioacoustics surveys detected spadefoot calls during those same breeding events but no others. NHESP staff concluded that the Westfield event and one of the Southwick events ultimately resulted in tadpoles reaching metamorphosis. Failure of the other Southwick event to produce metamorphs was likely due to hatching failure and/or predation.

During November and December 2023, NHESP staff completed a comprehensive analysis of bioacoustics data from the 2020, 2021, and 2023 breeding seasons. Analysis of the 2020 data yielded detections of spadefoot calls at one of six pools monitored with recording devices. The calls occurred on a single date at one pool in Hadley; recording devices did not detect spadefoot calls at a second pool in Hadley or at pools in Northampton (n = 1) and Southwick (n

= 3). Analysis of the 2021 data yielded detections of spadefoot calls at four of seven pools monitored. There were five calling events at one pool in Southwick, four calling events at a second pool in Southwick, two calling events at a pool in Sunderland, and one calling event at a pool in Wayland; recording devices did not detect spadefoot calls at a third pool in Southwick, a second pool in Sunderland, or a pool in Northampton. Analysis of the 2023 data yielded detections of spadefoot calls at four of six pools monitored. There were three calling events at one pool in Southwick, four calling events at a second pool in Southwick, one calling event at a pool in Sunderland, and one calling event at a pool in Wayland; recording devices did not detect spadefoot calls at a second pool in Sunderland or at a pool in Hadley. The remote bioacoustics surveys were effective in complementing active monitoring work; in addition to detecting spadefoot breeding activity missed occasionally by active monitoring, bioacoustics surveys helped to confirm suspected inactivity, and they expanded the NHESP's monitoring capacity overall.

During April–June 2024, the monitoring plan was extended to Year 9. The spring breeding season was very active, with monitors detecting breeding events in East Longmeadow (*n* = 1), Eastham (*n* = 1), Edgartown (*n* = 1), Provincetown (*n* = 1), Rehoboth (*n* = 1), Southwick (*n* = 2), and Wellfleet (*n* = 3). The breeding events generally occurred on two dates: April 11/12 (East Longmeadow, Eastham, Provincetown, Rehoboth, Southwick, Wellfleet) and May 27 (Edgartown, Southwick, Wellfleet). One of the Wellfleet events occurred on May 8. Notably, the Eastham breeding event marked discovery of a previously undocumented population, and spadefoots were active in four pools there. During the Edgartown breeding event, monitors observed spadefoots not only at two traditional pools, but also at three pools not known to be used by the species previously. Similarly, monitors in Wellfleet observed spadefoots using two traditional pools and two pools not known to have been used previously. The reproductive efforts at Rehoboth, Southwick, and one of the Edgartown pools failed. The Edgartown failure was due to early pool drying, and the other failures were likely due to hatching failure and/or predation. Monitors were able to confirm metamorphs only at Provincetown; outcomes of the other breeding events are not known, as personnel were not able to monitor every pool or site intensively. Spadefoots did not breed at the Falmouth, Wayland, or Westfield sites. NHESP staff surveyed the Taunton pool for eggs and tadpoles on May 10 but did not find any. Additional breeding efforts during spring 2024 may be discovered following analysis of bioacoustics data from select pools in Sunderland, Southwick, and Wayland.

In mid-May 2024, a wildlife manager not associated with the spadefoot monitoring program discovered a previously undocumented local population in Chicopee by accident. This is an exciting development, given that only several extant populations are known from that region of the state.

The introduced spadefoot population at the Southwick Wildlife Management Area has now attempted to breed in three of the past four years (2021, 2023, 2024) following introduction of eggs, tadpoles, and metamorphs during 2017–2019. The introduced population at Mass Audubon's Ashumet Holly Wildlife Sanctuary (Falmouth) has also attempted to breed in three of the past four years (2021, 2022, 2023). To date, the only successful, unassisted reproduction (tadpole development to metamorphosis and subsequent dispersal into uplands) confirmed between the two sites has been at the Southwick WMA (one cohort at a single pool in each of 2021 and 2023).

Marbled Salamander (Ambystoma opacum)

The NHESP conducted a dip-netting survey for marbled salamander at a single site during early June 2024 to (a) attempt renewal of an approximately 15-year-old record of the species and (b) improve understanding of the geographic distribution and habitat use of the local population. A staff person and an intern surveyed five wetlands but did not detect the species. Given the late seasonal timing of the survey, the NHESP does not consider the result conclusive.

Blue-spotted Salamander (A. laterale)

The NHESP continued its annual, exploratory surveys for pure populations of blue-spotted salamander in Bristol and Plymouth counties. This year's effort focused on a riparian corridor downstream of a known population in Rehoboth to (a) determine whether the population ranged into the study site, (b) understand geographic distribution of the species (if present) within the site, and (c) identify the primary breeding habitat. Staff and two volunteers trapped vernal pools and a maple swamp system continuously through several amphibian breeding migration events in late February and early March 2024. Study personnel captured common pool-breeding amphibian species (wood frog, spotted salamander), but not blue-spotted salamander. The trapping effort was thorough and well-timed, and so the NHESP concluded that blue-spotted salamander is likely absent from the site.

*Jefferson Salamander (*A. jeffersonianum*)*

The NHESP did not conduct any inventory, monitoring, or management activities for Jefferson salamander during the reporting period.

Terrestrial Invertebrates

Surveys of "Historic" Element Occurrences

The MESA and its implementing regulations (321 CMR 10.00) consider "element occurrences" (EOs, or local populations) without an observation documenting the presence of the listed species during the preceding 25 years to be "historic," and therefore not subject to regulation under the MESA. Therefore, it is important to re-document species presence (if indeed still present) at historic or soon-to-be historic EOs. In addition to regulation under the MESA,

updating of historic EOs keeps the NHESP database current, thus enabling: (1) evaluation of species status statewide, informing needed changes to the MESA list; (2) conservation planning efforts such as the *BioMap*; and (3) informed land protection and habitat management efforts at particular sites. In 2023, several field surveys were conducted with the primary goal of updating historic EOs.

Bolton Flats Wildlife Management Area (WMA)
The "Pine Hill" section of Bolton Flats WMA, adjacent to the southeast side of Fort Devens in Lancaster and Bolton, consists of rare inland pitch pine scrub oak barrens and sandplain grassland habitat for a suite of state listed terrestrial invertebrates, birds, and other taxa listed under the MESA. The habitat at Pine Hill is a priority for ongoing habitat restoration and management by MassWildlife.

Historic EOs for five state-listed terrestrial invertebrates at Pine Hill were redocumented between 2020 through 2022: (1) purple tiger beetle (*Cicindela purpurea*, SC); (2) scrub euchlaena moth (*Euchlaena madusaria*, SC); (3) pink sallow moth (*Psectraglaea carnosa*, SC); (4) pine barrens speranza moth (*Speranza exonerata*, SC); and (5) the pine barrens zanclognatha moth (*Zanclognatha martha*, SC). One soon-to-be historic terrestrial invertebrate, the twilight moth (*Lycia rachelae*; last documented in 2002), remains a survey priority at this site. In 2023, surveys for this species at Pine Hill were unsuccessful.

Middlesex Fells State Reservation
Hentz's red-bellied tiger beetle (Cicindela rufiventris hentzii, T) was last observed at Middlesex Fells State Reservation in 1991. In 2023, Hentz's red-bellied tiger beetle was documented for the first time in 32 years.

*Northeastern Beach Tiger Beetle (*Cicindela dorsalis*) Monitoring*
The northeastern beach tiger beetle is state-listed as Endangered, in addition to its listing as Threatened under the federal Endangered Species Act.

Population monitoring of this species on Martha's Vineyard was conducted in 2023. The annual peak count of northeastern beach tiger beetle for the Martha's Vineyard population has been highly variable over the past decade (high of 2,131 in 2013, low of 304 in 2018), as is typical of most insect populations. Monitoring of northeastern beach tiger beetle on Martha's Vineyard during the summer of 2023 documented a peak adult count of 1,691 beetles, above the mean (1,350 beetles) of the preceding decade, indicating a stable population across the Island. Monitoring documented the following for each of the three subpopulations in 2023: (1) Aquinnah subpopulation, 374 beetles; (2) South Shore, Chilmark Pond/Tisbury Great Pond subpopulation, 653 beetles; and (3) South Shore, Oyster Pond/Edgartown Great Pond subpopulation, 664 beetles. For the Aquinnah subpopulation, this is low compared to the mean

(1,170 beetles) over the past decade (but higher than the 2018 count of 239 beetles). The count for the Chilmark Pond/Tisbury Great Pond subpopulation indicates a continued increase over the past decade. Similarly, the count for the Oyster Pond/Edgartown Great Pond subpopulation documents a continued increase since recolonization of this part of the South Shore on the Vineyard in 2015.

*Puritan Tiger Beetle (*Cicindela puritana*) Monitoring*
The puritan tiger beetle is state-listed as Endangered, in addition to its listing as Threatened under the federal Endangered Species Act. Threats to the single population in Massachusetts, inhabiting Rainbow Beach on the Connecticut River, include adverse, artificial hydrology over the past decade, as well as loss of beach habitat to vegetation encroachment. The latter threat is mitigated by continued annual vegetation control efforts by NHESP staff.

Population monitoring of this species at Rainbow Beach was conducted in 2023. On June 29, 2023, six adult beetles were observed, a low but typical number for the beginning of the adult season. After the first survey for adults, near-record to record rainfall throughout July resulted in complete inundation of the breeding habitat until early August, precluding surveys. Surveys of adult beetles were conducted on five additional dates between August 9 and September 7, with no more than two beetles observed on any single date. It seems likely that flooding of the habitat throughout the 2023 breeding season reduced breeding success of the odd-year cohort, but this will not be known until larval surveys are conducted in 2024. Larval surveys were conducted on one early summer (June 5) and five fall dates. A total of 868 larvae were recorded on June 5, but the peak count during the fall surveys was 126 larvae. This may indicate additional flooding mortality of the even-year cohort, although this will not be known until adult surveys in 2024.

Plants
During FY 2024, NHSP staff searched for, discovered, or verified 409 rare plant population occurrences. Heritage Hub was put in place for processing incoming records from all parties in 2020. Using the Heritage Hub, rare plant observations were processed through the platform; of the 624 total submitted rare plant observations, 416 were accepted.

In a small state that has been thoroughly botanized for three centuries by many of the nation's leading botanists, new additions to the state flora are not expected and are quite valuable and important in assessing rare species distribution as well as locating unusual or uncommon habitats. Massachusetts features a rich and diverse flora. The County Checklist of Vascular Plants, First Revision, published by NHESP in 2011, notes a total of 1,814 native plant taxa. Through new discoveries, the count stood at 1,818 at the end of the 2022 field season, with three of the four new species added by NHESP staff. The most recent find occurred in the 2023

field season and was found in the Berkshires by an amateur botanist from New York. It is an intriguing species called pine drops (*Pterospora andromedea*). In New England, this is only known in a few populations in Vermont and New Hampshire. Considerable media coverage occurred around this new find.

The following actions were accomplished for the four federally listed plants:

*Sandplain Gerardia (*Agalinis acuta*); Federally Endangered, Globally Rare*
Population censuses or sampling procedures were conducted at ten sites, five locations on Martha's Vineyard and five on Cape Cod. All these counts require organizing a large group of volunteers, many of which are interns at local nonprofit conservation groups or Joint Base Cape Cod. These are conducted using transects and quadrats to count thousands of small plants. As an annual plant, numbers vary somewhat from year to year, but all populations appear to be relatively stable. Massachusetts holds the world's largest populations of this globally rare species, both on native, natural sites and on restored sites, such as at Frances Crane WMA in Falmouth.

*Small Whorled Pogonia (*Isotria medeoloides*); Federally Threatened, Globally Rare*
Surveys were conducted at several locations. Populations are showing small declines, possible from highly variable weather due to a changing climate. Some restoration work is being done on one site by The Trustees with grant funding from MassWildlife. In June of 2024, a special survey was conducted in conjunction with two New York state botanists. A good number of plants were found one site in Franklin County, but one other site had no plants this year and a third site had only one plant, down from four in the prior count.

*Northeastern Bulrush (*Scirpus ancistrochaetus*); Federally Endangered, Globally Rare*
The large main population was resurveyed in FY 2024. A new population in Franklin County was discovered by a private consulting botanist along a powerline right-of-way in October of 2023 and reviewed onsite to confirm. This brings the total number of active sites to five, a new high for the state. At a third site in Franklin County, one plant was found in a known population that hadn't been seen in a number of years despite frequent surveys.

*American Chaffseed (*Schwalbea americana*); Federally Endangered, Globally Rare*
The one large population is holding steady. It was censused with a large group of volunteers using transects, resulting in a count of over 11,500 stems, approximately half in bloom. As is true of sandplain gerardia, Massachusetts has one of the world's largest populations of this globally rare species.

Habitat Management Projects

The Program continued its emphasis on habitat management projects for rare plants during FY 2024. Under the direction of NHESP staff, control of black swallowwort continued in 2024 at Mt. Tom, where five state-listed plants occur. On a second site in Ware, state Endangered purple milkweed is also being fenced and monitored by DCR Water Protection staff in conjunction with NHESP staff. On a third site, a moveable protective fence around a state-endangered species was put in place by DCR staff in consultation with NHESP staff and the result in June 2024 was very positive, with the plant responding well to this protection.

Aquatic Species

During FY 2024, NHESP staff conducted surveys for odonates, freshwater mussels, and other rare aquatic taxa in MassWildlife's Western, Connecticut Valley, Central, and Northeast districts. Below is a summarization of FY 2024's survey efforts.

Dragonflies and Damselflies

SCARLET BLUET (*ENALLAGMA PICTUM*); STATE THREATENED

Updated at two sites from two ponds and detected at two new ponds.

ATTENUATED BLUET (*ENALLAGMA DAECKII*); STATE THREATENED

Updated at one site from one pond representing Massachusetts' most western population.

TULE BLUET (*ENALLAGMA CARUNCULATUM*); STATE SPECIAL CONCERN

Updated at one site from one pond.

RINGED BOGHAUNTER (*WILLIAMSONIA LINTNERI*); STATE THREATENED

Updated at two wetlands and detected at two new wetlands.

EBONY BOGHAUNTER (*WILLIAMSONIA FLETCHERI*); STATE ENDANGERED

Updated at three wetlands and detected at two new wetlands

MOCHA EMERALD (*SOMATOCHLORA LINEARIS*); STATE SPECIAL CONCERN

Detected at three sites in two new wetlands.

SKI-TIPPED EMERALD (*SOMATOCHLORA ELONGATA*); STATE SPECIAL CONCERN

Updated at three sites in two wetlands.

RAPIDS CLUBTAIL (*PHANOGOMPHUS QUADRICOLOR*); STATE ENDANGERED

Detected at one new site in one new river.

BROOK SNAKETAIL (*OPHIOGOMPHUS ASPERSUS*); STATE SPECIAL CONCERN

Updated at six sites in three rivers and detected at three new sites in three extant rivers.

Spine-crowned clubtail (*Hylogomphus abbreviatus*); state Special Concern
Updated at four sites in three rivers.

Ocellated darner (*Boyeria grafiana*); state Special Concern
Updated three sites in one river.

Other Species
Dragonfly exuviae surveys performed in May and June 2024 are awaiting species identification.

Freshwater Mussels
MassWildlife is the lead agency on a multistate effort to evaluate the conservation and restoration needs of the state-endangered brook floater. NHESP staff worked with the UMass Cooperative Fish and Wildlife Research Unit to coordinate partner meetings, identify conservation priorities, and to investigate habitat needs of brook floater range wide. The initiative and associated surveys have resulted in updates to other SGCN freshwater mussels.

Brook floater (*Alasmidonta varicosa*); state Endangered
Updated presence at four sites in two streams and detected at two new sites in one extant river. Mark-recapture monitoring was conducted at three sites in the Nissitissit River and West Branch Farmington River.

Dwarf wedgemussel (*Alasmidonta heterodon*); federally and state Endangered
Updated at one site in one river.

Creeper (*Strophitus undulatus*); state Special Concern
Updated at three sites in one river. Mussel surveys were performed prior to the Wheelwright Dam removal process that PIT-tagged 74 creeper at three sections along the Ware River.

Eastern pondmussel (*Ligumia nasuta*); state Special Concern
Updated at one site in one river and detected at three sites in one new pond and one extant river.

Triangle floater (*Alasmidonta undulata*); SGCN
Updated at four sites in two rivers. Mussel surveys were performed prior to the Wheelwright Dam removal process that PIT-tagged 237 triangle floater at three sections along the Ware River.

Eastern pearlshell (*Margaritifera margaritifera*); SGCN
Updated at six sites in three rivers and detected at two sites in two new rivers. Quadrat surveys were performed downstream of the former Sucker Brook dam and several control sites in three rivers to estimate eastern pearlshell densities in response to dam removal. Mussel densities

appear to remain stable two years after the dam removal except for a decrease within the first 75 meters of the former dam. However, the decrease in density may be attributed to the severe summer drought in 2022.

Freshwater Fish

BRIDLE SHINER (*NOTROPIS BIFRENATUS*); STATE SPECIAL CONCERN

Updated at two sites in two ponds and detected at one new pond.

Data Management and Data Products

In FY 2024, NHESP processed a total of 243 new rare species, natural community, and certified vernal pool records (CVPs), and updated 673 existing records (Table NH 1).

Table NH 1. Categories of data processed by NHESP in FY 2024.

Record categories	New records	Updates to existing records
Vertebrates	31	354
Invertebrates	32	40
Plants	47	279
Communities	4	0
CVPs	129	0
Total	**243**	**673**

Note: The Information Manager position was vacant for the first half of FY 2024.

Vernal Pool and Rare Species Information System (VPRS)

The reporting piece of the VPRS system was retired in December 2020. Work continues on the VPRS internal workflows to process the accepted reports into our central Biotics database.

MassWildlife's Heritage Hub (Heritage Hub)

In FY 2024 alone, 763 new people signed up for Heritage Hub and a total of 2,432 observation reports were submitted, including 200 vernal pool certification forms, 624 plant observation forms, 1,602 animal observation forms, and 6 Natural Community forms.

Once submitted through Heritage Hub, the information is reviewed by NHESP using standard data acceptance criteria for inclusion in our database, and the accepted records are entered into the database by NHESP Data staff.

NHESP continued to focus on the Environmental Review process within the Heritage Hub application. Several new releases containing security updates, enhancements, and bug fixes have been completed over the past year. Staff have documented additional enhancements and

new workflows to continue to streamline the Environmental Review processes and provide greater transparency to the public. Work to enhance this system will continue in FY 2025.

Other Data Projects

For FY 2024, the NHESP continued to explore methods to improve and advance data collection and enhance collaboration with external groups, as well as streamline internal workflows and processes. These projects have included renegotiating data sharing intervals with key conservation partners and creating a Heritage Hub to Biotics Data Entry Sheet to assist with data processing.

Regulatory Review

The Regulatory Review staff plays an important role in the conservation of rare species across the state. Review staff assesses the potential impacts of proposed projects or activities to federally and state-listed species and their habitats and provides guidance on avoidance, minimization, and mitigation measures.

Table NH 2 provides a summary of reviews conducted in FY 2024.

Table NH 2. Summary of the environmental reviews conducted during FY 2024.

Review Type	Count
MESA project reviews	708
Notices of intent	491
Forest cutting plans	107
MESA information requests/data releases	309
MEPA reviews	78
Conservation and Management Permit applications received	15
Scientific collection permits	137
Other	199
Total	**1,944**

Relevancy, Collaboration, and Outreach

NHESP staff goes to great lengths to share the agency's mission, project-related information, and technical expertise with stakeholders, partners, and the public. In FY 2024, staff conducted multiple presentations and site walks, including as documented below.

- 8/8/2023: North County Land Trust, sandplain grassland tour to Bolton Flats, 20 people.
- 11/12/2023: Public tour of Muddy Brook WMA restoration, 8 people.

- 11/20/2023: Hosted Martha's Vineyard and Nantucket Conservation Partners for restoration tour of SE Pine Barrens WMA, 18 people.
- 11/29/2023: Dam Hollow Dam removal meeting, 15 people.
- 5/7/2024: Whip-poor-will walk at Muddy Brook WMA, 8 people.
- 4/23/2024: Northeast Association of Fish & Wildlife Agencies, Hyannis; Assessing Freshwater Mussel Density and Habitat Responses to Dam Removal in a Small Massachusetts Stream Presentation, ~25-30 people.
- 7/19/2023: Preserving our Heritage Summer Camp for Mashpee Wampanoag Tribe, Prescribed Fire and Habitat Management and the Role of MassWildlife Presentation, ~60 tribal members.
- 9/22/2023: Run for Wildlife, Westborough; table on prescribed fire management for MassWildlife.
- 10/25-29/2023: Instructor for M-410 NWCG Facilitative Instruction, 20 wildland fire professionals.
- 4/4/2024: Wachusett Community College, MassWildlife Use of Fire to Manage for Wildlife Objectives presentation, ~12 students.
- 4/21/2024: Northeast Association of Fish and Wildlife Agencies, Hyannis; field trip to Frances A. Crane WMA, ~30 biologists.
- 4/23/2024: Northeast Association of Fish and Wildlife Agencies, Hyannis; prescribed fire partnership in Massachusetts presentation, ~30 people.
- 7/31/2023: Cape Cod Master Gardeners, Invasive Plants and How to Tackle Them, 105 people.
- 9/7/2023: Harvard Conservation Commission, virtual; deer and plants, ~20 people.
- 9/13/2023: MIPAG Quarterly Meeting, Massachusetts Invasive Plant Advisory Group, 18 people.
- 12/12/2023: MIPAG Quarterly Meeting, Massachusetts Invasive Plant Advisory Group, 18 people.
- 3/2/2024: Massachusetts Association of Conservation Commissions, Identifying Woody Plants in Winter, 60-70 people.
- 3/14/2024: MIPAG Quarterly Meeting, Massachusetts Invasive Plant Advisory Group, 14 people.
- 3/26/2024: Orleans Conservation Trust, virtual; invasive plants.
- 4/25/2024: Falmouth 300 Committee, Invasive Plants, ~60 people.
- 4/26/2024: Falmouth 300 Committee, walk on Invasive Plants, 12 people.
- 4/27/2024: Mount Grace Land Conservation Trust, walk on iNaturalist, 4 people.
- 5/11/2024: Town of Plymouth, walk on Invasives and Removing, 30 people.

- 6/12/2024: MIPAG Quarterly Meeting, Massachusetts Invasive Plant Advisory Group, 15 people.
- 7/10-12/2023: Emydine Conservation Symposium, Juniata College, Huntingdon, PA, 120 people.
- 7/17/2023: Northeast Partners in Amphibian and Reptile Conservation meeting, Wesleyan University, Middletown, CT, 120 people.
- 8/27/2023: Athol Bird and Nature Club presentation, Athol, 40 people.
- 12/12/2023: Rattlesnake partners meeting, Westborough, 30 people.
- 1/9/2024: Blanding's turtle partners meeting, Westborough, 30 people.
- 3/12/2024: NRCS Working Lands for Wildlife meeting, Hadley, 40 people.
- 4/2/2024: NRCS Working Lands for Wildlife meeting, Amherst, 10 people.
- 4/11/2024: Memorial Hall Library presentation, Andover, 50 people.
- 4/22-23/2024: Northeast Association of Fish and Wildlife Agencies, Hyannis, average of 100 people in sessions.
- 5/25/2024: Red-bellied Cooter headstart turn-in presentation, Westborough, 60 people.
- More than twelve multi-partner site visits with the USFWS New England Field Office, USFWS Eastern Massachusetts NWR, USFWS Migratory Birds, USFWS Science Applications
- 5/8/2024: Wildlands Trust, Vernal pool workshop for personnel of land conservation organizations, ~20 people.
- 1/10/2024: Northeast Bat Working Group Annual Meeting, virtual; 2024 Massachusetts Bat Work Update, ~200 people.
- 1/24/2024: Burlington Garden Club, virtual; Why is bat conservation needed? ~20 people
- 3/28/2024: Wildlands Trust, Plymouth; Bat Conservation in Massachusetts, ~20 people.
- 4/26/2024: Wachusett Meadow Wildlife Sanctuary, Using Automated Radio Telemetry to Track Bird Movements, 15 people.
- July/August 2023: Interviews on the discovery of pine drops (*Pterospora*) in the Berkshires.
- 11/2/2023: Fitchburg State University presentation, ~25 people.
- 12/5/2023: Sandplain Grassland Network Conference, virtual; two presentations on conserving, managing, and restoring grasslands for the future, ~100 people each.
- January 2024: New England Plant Conservation Professionals, Westborough.
- 4/19-4/21/2024: Northeast Natural History Conference, Albany; three presentations, ~100 people each.

Presentations to the Natural Heritage and Endangered Species Advisory Committee

Please note that four meetings during FY 2024 did not have formal presentations but instead had open discussions on various topics.

- Recommended Changes to the Massachusetts Endangered Species Act List: Invertebrate Zoologist Mike Nelson and Assistant Director Eve Schlüter
- Building a Prescribed Fire Program Through Partnership: Prescribed Fire Program Leader Alex Entrup

Natural Heritage and Endangered Species Advisory Committee

Full Members
Mark Mello (Chair)
Timothy Flanagan (Vice Chair)
Kevin Powers (Secretary)
Matthew Sisk (Fisheries and Wildlife Board liaison)
William Brumback
Wayne Petersen
Dave Small
Associate Members
Andy Finton
Russ Hopping

Natural Heritage and Endangered Species Program Staff

Eve Schlüter, Ph.D., Assistant Director (partial year)
Jesse Leddick, Assistant Director (partial year)
Daniel Bove, Restoration Ecologist
Chris Buelow, Senior Restoration Ecologist
Caren Caljouw, Prescribed Fire Program Manager
Jason Carmignani, Ph.D., Aquatic Ecologist
Melany Cheeseman, Endangered Species Review Assistant
Michela Coury, Freshwater Turtle Biologist (partial year)
Karen Dolan, Finance and Projects Administrator
Alexandra Echandi, Endangered Species Review Biologist (partial year)
Alex Entrup, Prescribed Fire and Habitat Restoration Ecologist
Tom French, Ph.D., Consulting Biologist
Karro Frost, Conservation Planning Botanist
John Garrison, Freshwater Turtle Biologist (partial year)

Lauren Glorioso, Endangered Species Review Biologist
Nikolis Gualco, Endangered Species Review Biologist (partial year)
Sarah Guitart, Coastal Waterbird Specialist (partial year)
Amy Hoenig, Senior Endangered Species Review Biologist
Emily Holt, Senior Endangered Species Review Assistant
Tara Huguenin, Conservation Data Specialist
Micah Jasny, Information Manager (partial year)
Ally Jones, Seasonal Diamondback Terrapin Biologist Contractor (partial year)
Michael Jones, Ph.D., State Herpetologist
Alec Kaisand, BioMap Outreach Specialist (partial year), GIS Manager (partial year)
Jacob Kubel, Conservation Scientist
Jennifer Longsdorf, Natural Heritage Program Coordinator
Lisa MacGillivray, Habitat Mapping Biologist/Conservation Data Specialist
Sarah Maier, Information Manager (partial year)
Misty-Anne Marold, Senior Endangered Species Review Biologist
Tim McGuire, Endangered Species Review Biologist
Carolyn Mostello, Coastal Waterbird Biologist
Michael Nelson, Ph.D., Invertebrate Zoologist
Rebecca Quiñones, Ph.D., NHESP Conservation Science Program Manager (partial year)
Amanda Veinotte, NHESP Project Coordinator
Andrew Vitz, Ph.D. *, State Ornithologist
Bob Wernerehl, Ph.D., State Botanist
Ryan Williams, Conservation Data Specialist

**Wildlife Program staff*

5 The Outreach and Education Program

Nicole McSweeney, Assistant Director of Outreach and Education

Overview

The Outreach and Education (O&E) Program has the responsibility of keeping the public apprised of laws, policies, and management practices related to wildlife conservation. Outdoor skills clinics, wildlife education workshops, conservation presentations, publications, and digital platforms provide the public with experiences that lead to greater understanding, appreciation, and support of Massachusetts wildlife conservation. Staff leads a variety of outreach efforts to connect the public with nature, and promote hunting, fishing, and other wildlife-based recreation opportunities. The Outreach and Education section includes hunter and angler education; wildlife education; recruitment, retention, and reactivation (R3) and relevancy; human dimensions; publications; media relations; customer service; and other communications.

R3 and Relevancy

In Massachusetts and throughout the nation, the number of hunters and anglers—the historical base of financial support for MassWildlife and other state fish and wildlife agencies—is declining, and disconnection from nature is increasing. While all Massachusetts residents and visitors benefit from MassWildlife's work to conserve wildlife, protect open space, and preserve clean air and water, MassWildlife currently relies heavily on funds generated by hunters, anglers, and trappers. In response, MassWildlife has prioritized efforts to increase participation in and support for hunting, fishing, and the shooting sports through R3, while also deploying strategies to better engage with all residents, including those who will never hunt, fish, shoot, or trap, i.e., creating relevancy. Understanding public values and ensuring the public appreciates how MassWildlife's efforts are relevant to them are key to increasing broad support for conservation.

R3 Plan Implementation

The Massachusetts R3 Plan's goal is to increase participation in and support for hunting, fishing, and shooting sports. After much research of the existing literature, internal discussion, and external brainstorming among partners, MassWildlife developed five primary R3 strategies that help identify priority activities and actions.

- Coordination and partnerships

- Learning resources and R3 skills programs
- Access and opportunity
- Outreach and customer experience
- Acceptance of hunting, fishing, and shooting sports

Each strategy has specific elements, which can change and adapt over time. The R3 Plan is a living document and does not reflect every R3 effort implemented or planned by MassWildlife and its partners. Every other calendar year, MassWildlife identifies priority projects with associated bi-annual R3 Work Plans under the guidance of the R3 Coordinator, with key implementation steps, team members, and timelines.

In FY 2024, MassWildlife started implementing nine projects that will take place July 1, 2023 – December 31, 2024.

2023–2024 R3 Projects

1. Develop a Statewide R3 Task Force
2. Evaluate R3 in-person programs, and work with partners to scale the programs shown to be most effective
3. Identify and work with nontraditional R3 partners
4. Develop a mentoring campaign
5. Enhance GoFishMA Map
6. Develop signage for self-guided tour of sandwich hatchery
7. Better understand the barriers and needs of land trusts/towns to open their property to hunting
8. Work with partners to offer at least one public range in each district
9. Develop clear messaging that portrays hunting as a safe activity and highlights its benefits to conservation

Human Dimensions

The Human Dimensions Coordinator continued to lead the agency's efforts to better understand the stakeholders it serves in FY 2024. Information about the general public and the angling and hunting communities is critical for tailoring messaging and developing communication strategies. Primary and secondary research of Massachusetts' residents informs data-driven decision-making related to programs, management, and policies. A comprehensive understanding of the behaviors and cognitions informs recruitment, retention, and reactivation strategies. Baseline and continuing research provide a means for informing and evaluating the agency's outreach efforts and progress.

Human Dimensions Research

During FY 2024, data mining and primary and secondary research focused largely on 1) license database inquiries related to angling and hunting customers; 2) the development, execution, and analysis of surveys documenting hunter and angler behaviors and cognitions; 3) providing input and data support to R3 planning and R3 program evaluation; 4) continued analysis of the recreational angler survey; and, 5) execution, analysis, and reporting the results of the Hunter Education Volunteer Instructor Survey.

License Database Inquiries

Numerous data requests from staff typically requiring multi-year data exports via MassWildlife's database management system (SQL) were processed in FY 2024. Typically, multi-season queries support subsequent data mining to develop distinct angler, hunter, and trapper customer segments. During this period, data exports were used to support and inform marketing campaigns, campaign evaluations, press requests, efforts to reach BOW participants, estimate churn rates, analyze long-term trends, and to support additional targeted outreach and communication efforts. There continues to be considerable effort to examine license sales in the context of recent license price changes. Many of these efforts are detailed elsewhere in this report. Similarly, license data requests were used to generate sample frames for MassWildlife's annual hunter survey, as well as focused survey efforts of other customers.

Hunter and Angler Surveys

Multiple hunter surveys as well as the annual trapper surveys were conducted during this fiscal year. In addition to generating sample frames, the work also included guidance and support of questionnaire development and survey implementation strategy. Survey instruments were developed or refined to capture the behaviors, attitudes, opinions, and preferences of distinct hunting customer groups.

Results from the recent angler survey continue to be discussed internally, with additional analysis conducted during this period to inform agency decision-making related to both warmwater and coldwater fisheries management.

R3 Plan and Programmatic Evaluations

During this period, data analysis continued in support of MassWildlife's R3 reporting and presentations. Support for R3 included participation in R3 annual projects to improve hunter access and to improve Learn to Hunt (LTH) program evaluation. As part of annual R3 planning efforts, an in-depth analysis of license buyers was presented to MassWildlife staff to inform decision-making (e.g., R3 Kickoff Analysis), and in support of the R3 Summit.

Hunter Education Volunteer Instructors Survey

A survey of Hunter Education Program volunteer instructors was developed in FY 2023 to better understand volunteer needs and preferences and gather volunteer feedback about the Hunter Education Program. Execution, analysis, and reporting of the Hunter Education Volunteer Instructor survey took place in FY 2024. Response analysis indicated that the multi-mode survey was representative of all surveyed volunteer instructors and generalizable to the population. Survey results were presented to volunteer instructors at multiple Hunter Education Program volunteer instructor workshops and to the Fisheries and Wildlife Board. The results are critical for informing program decision-making and continued support for Hunter Education volunteer instructors.

Website

With assistance and input from other sections, O&E staff creates and maintains MassWildlife web content. The website is hosted by the Mass.gov content management system. As such, the agency website has access to existing content management system features and is limited by the constraints of the state system. Because of the agency's large volume of web visitors, MassWildlife is often asked to test new website features and provide feedback for feature development. In addition to routine content updates, a variety of projects were completed this fiscal year that expanded the existing collection of information available to the public. Work was also completed that increased the accessibility and quality of MassWildlife web content.

Accessibility and Translation

An Executive Order (No. 614) was signed in July 2023 to strengthen digital accessibility and equity in the Commonwealth. Website technology and best practices are being updated to reach those new standards. MassWildlife welcomes these improvements as the agency strives to create content that is accessible to a diverse audience.

MassWildlife had already taken steps to improve accessibility by migrating PDF documents to HTML web pages whenever possible; that work continued in FY 2024. HTML web pages are easier to view on mobile devices (which are used by over 65% of MassWildlife website visitors); can be read by screen-reading devices (used by some users with disabilities); can make use of the Mass.gov Google Translate widget for translation into about 40 languages; more readily appear in search engine queries (which can elevate the agency's profile/relevance); and are much easier to edit and maintain over time.

Popular web content related to common wildlife and preventing conflict with wildlife was translated into the top 10 languages spoken in Massachusetts: Spanish, Portuguese, Chinese (traditional), Chinese (simplified), Haitian, French, Vietnamese, Russian, Arabic, and Hindi. During the reporting period, work began to review and publish translated content online.

Waterbody Fact Sheet Migration

Work to migrate approximately 300 waterbody narratives from PDF documents to HTML web pages is nearing completion. These narratives, often called pond maps, since the narrative is accompanied by a depth map of the pond or lake, are extremely popular with Massachusetts anglers. These narratives are linked to the Go Fish MA! map. O&E staff, in collaboration with Fisheries staff, created a template for the new narratives that includes all current information as well as new photos of boat ramps, shore access, and parking. Links to buy a fishing license along with fishing tips and places to fish were also included. Fisheries staff updated the narrative with the most accurate species and access information. During this process, over 200 boat access locations (mostly cartop) that were previously not identified for the public were added to the narratives and will be added to the Go Fish MA! map.

Hunting And Fishing Self-learning Content

A variety of hunting and fishing video tutorials and written tips were created during this fiscal year including bass fishing tips, what to expect at a deer check station, winter deer scouting tips, rabbit hunting tips, and work began on a beginner's guide to archery.

Wildlife Content Improvements

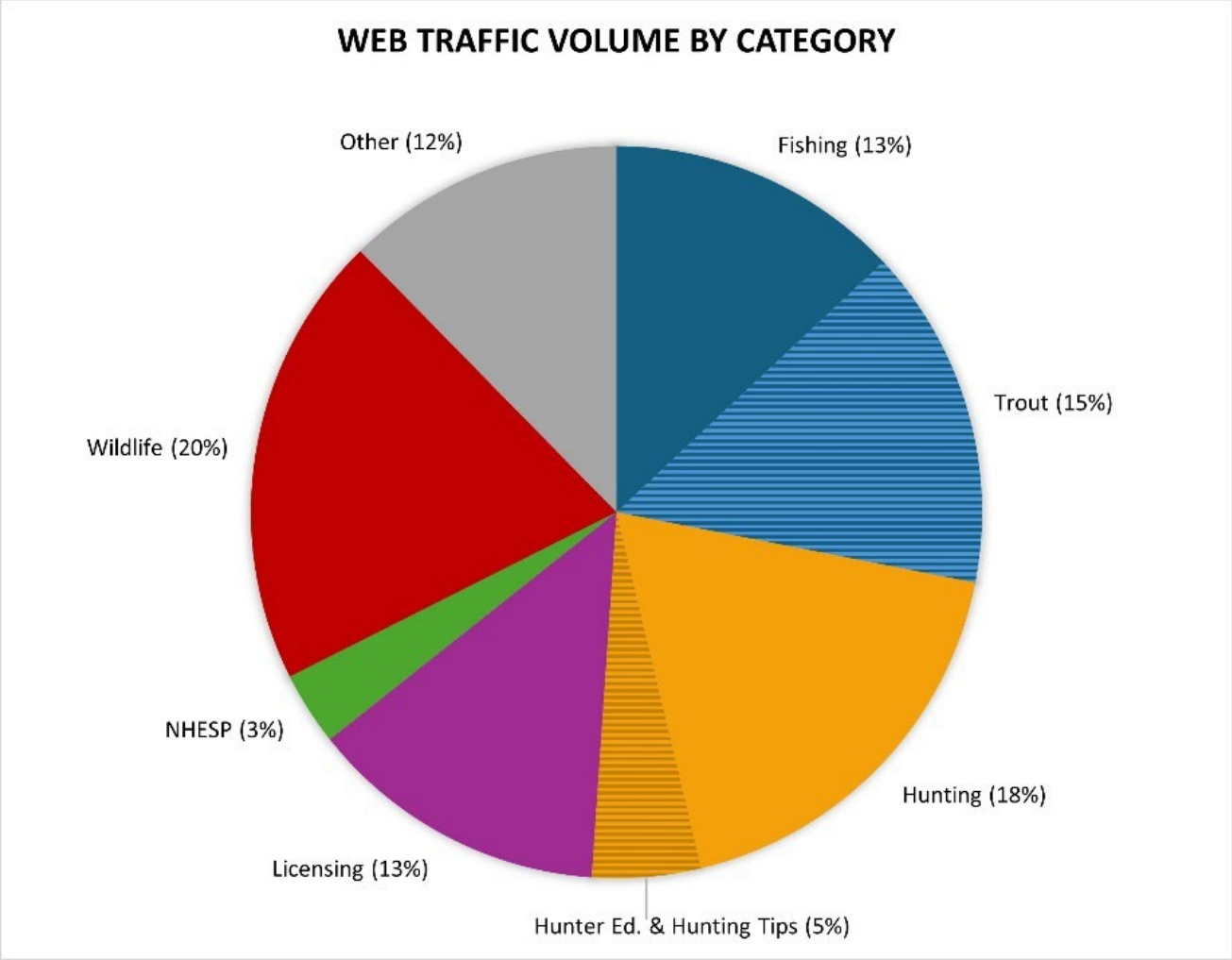
With the addition of the Community Engagement Biologist position, the agency has gained capacity to refine messaging about wildlife and offer proactive strategies to prevent wildlife/human conflict. With input from biologists and communications staff, web content was refreshed to strengthen and simplify messaging for the public about common wildlife species. Content was organized to provide clear and effective steps to help people avoid or address existing conflict with wildlife and to provide answers to the most frequently asked questions. Updates were made to web pages on the following topics: coyotes, bears, agricultural damage, deer, and mange. Notably, coyote content was rewritten and reorganized to empower residents to take actions—including removing food, protecting pets, and hazing—that minimize conflict and keep coyotes wild. A short URL, mass.gov/coyotes, was created to help the agency more easily spread this message.

Other New Web Content

Other web content improvement projects included the R3 Events Toolkit, Learn to Hunt Program reorganization, prescribed fire landing page (to support WMA signage), Wildlife Management Zones and waterfowl zones added to all 231 WMA web pages, BioMap town reports, and outdoor safety tips for non-hunters.

Web Analytics

Figure OE 1. MassWildlife web pages that received at least 1,000 page views in FY 2024, grouped by category.



Notes about categories: Fishing (13%) includes fishing regulations, learn-to-fish content, seasonal fishing announcements, and where-to-fish resources. Hunting (18%) includes species regulations and other hunting information. Hunter Ed. & Hunting Tips (5%) includes information about Hunter Education classes as well as tips designed to support beginner hunters. NHESP (3%) includes content specific to MESA regulations, mapping, reporting, and compliance (general MESA-listed species content is tallied under Wildlife). Wildlife (20%) includes wildlife rehabilitation, wildlife-as-pets regulations, and general learn-about-wildlife content. High-traffic wildlife content included common mammals, such as black bears, coyotes, deer, and foxes; but this year—following the updating of all snake web pages—snake information was also visited frequently. Other (12%) includes information on firearms licensing, agency lands and facility information, and the events calendar.

MassWildlife relies on Google Analytics (GA4) to measure web traffic and user engagement. According to GA4, MassWildlife web pages were viewed about 5.1 million times. Visitors spent an average of 1 minute and 24 seconds per page actively engaged with the content. MassWildlife has over 2,100 web pages and over 2,500 documents. MassWildlife web pages receiving the most traffic in FY 2024 were similar to those of previous years: trout stocking, fishing and hunting regulations, licensing, and general wildlife information (Figure OE 1).

MassFishHunt

O&E staff continues to provide feedback on the functionality of the existing electronic licensing system and participated in the Department of Fish and Game's process to secure a new license vendor contract by identifying priorities for user experience, outreach, and events, and other system requirements.

Social Media and Digital Communications

Facebook

In FY 2024, MassWildlife continued utilizing its Facebook page (Facebook.com/masswildlife) to engage with its constituents. As the most-used social media platform in the world, Facebook has been a useful tool in helping MassWildlife share information about fish and wildlife issues in the Commonwealth; communicate about research projects; and promote agency events, programs, job openings, and donation opportunities. MassWildlife posts to its Facebook page several times a week with a variety of content. MassWildlife continued to see an increase in followers in FY 2024, closing the year with 68,660 followers (up from 64,250 followers at the close of FY 2023). MassWildlife also uses Facebook to listen to what constituents are saying and engage with the public by responding to their comments and questions. Facebook is a primary tool for the agency to deliver high-quality customer service and answer constituent inquiries. Over 450 private messages were received through MassWildlife's Facebook page in FY 2024 (up from 330 in FY 2023), in addition to thousands of comments on posts, offering significant opportunities for engagement with MassWildlife's constituents.

Instagram

MassWildlife uses its Instagram account (@mass.wildlife) to engage with the public. The number of followers has been steadily growing over time (2,800 in FY 2018; 9,600 in FY 2019; 15,200 in FY 2020, 18,100 in FY 2021; 20,100 in FY 2022; 22,260 in FY 2023; and 25,500 in FY 2024). Instagram is a widely used, fast-growing social media platform, especially among younger audiences.

YouTube

MassWildlife publishes video content to our YouTube channel (Youtube.com/MassWildlife). Videos are then embedded back onto our Mass.Gov website. In FY 2024, we created videos on

trout spawning and the Hunters Share the Harvest venison donation program. We also posted a recording of a virtual presentation about coexisting with coyotes.

Newsletter

Twelve issues of the electronic "MassWildlife Monthly" newsletter were published this fiscal year around the first of each month. The newsletter is one of the agency's most effective channels for sharing information with the general public, with the sporting and conservation communities, and with media outlets. Newsletter stories cover a variety of topics including seasonally relevant recreation, tips for coexisting with wildlife, information about MassWildlife programs, and general information about common and rare wildlife. With expanded capacity provided by the agency's new Community Engagement Biologist, more general wildlife content and information designed to help people avoid conflicts with wildlife has been developed and delivered to newsletter subscribers, including articles about fishers, hibernation, coyote communication, coexisting with coyotes, and benefits of deer hunting.

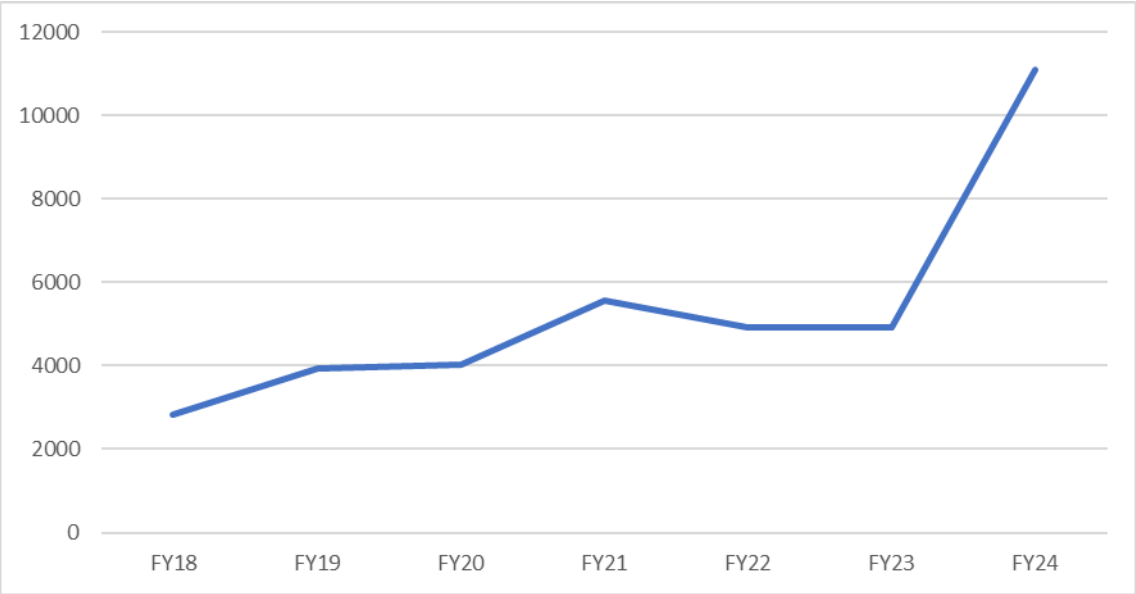
Annual subscriber growth continues and has reached 190,495 at the end of the fiscal year (167,331 at the close of FY 2023 and 134,853 at the close of FY 2022). A check box to subscribe within the MassFishHunt online licensing system continues to be the main driver of new monthly subscribers. Other sign-up tools like links to subscribe on the MassWildlife website and social media, as well as signage at events, add to the number of subscribers.

The newsletter is sent using Constant Contact, an email marketing service. Press releases to media and advisories alerting subscribers and license holders of new regulations, special events, public meetings, and hearings were also sent out through Constant Contact. On average, just over 50% of subscribers opened the MassWildlife Monthly email in FY 2024, which is considered an "above industry average" open rate. (The average open rate across all industries using Constant Contact is 33% as of August 2024.) This marks a modest increase from a 48% open rate in FY 2023. MassWildlife's average newsletter click rate was 4.7% (5.2% in FY 2023), which is well above the average of 2.0% for Constant Contact users, indicating that MassWildlife is producing high-quality, engaging content that subscribers want to read.

Agency Emails

Email is an important communication channel for members of the public to ask their questions. MassWildlife receives and responds to thousands of emails each year on topics ranging from animal/track identification, problems with wildlife, fishing and hunting regulations, and MassWildlife properties. The number of agency emails increased in FY 2024 (Figure OE 2). In addition to the 9,302 emails to mass.wildlife@mass.gov, 579 general inquiries from the public came in via the masswildlife.news@mass.gov email.

Figure OE 2. Number of emails received by the primary MassWildlife email account since FY 2018.



Marketing

Fishing and Hunting Promotions

MassWildlife works to recruit, retain, and reactivate hunters and anglers through innovative communication techniques. Targeted emails were used to retain and reactivate hunters and anglers throughout the year with license renewal reminders, and emails also delivered important information such as regulation changes, notices about education opportunities, and hunting and fishing tips. Social media also plays an important role in marketing for R3 through regular posts about hunting and fishing tips, game and fish recipes, tips, and places to enjoy hunting and fishing.

Digital Marketing for Fishing

Digital marketing efforts to promote freshwater fishing were resurrected in FY 2024. Using social media ads on Facebook and Instagram, the primary objective of the marketing campaigns was to drive fishing license sales and renewals. The primary objectives of this marketing campaign were to elevate the relevance of fishing to new audiences, increase interest and awareness of local fishing opportunities, and promote learn-to-fish skills training opportunities.

- MassWildlife contracted with a local marketing firm, Tomo 360, to manage its spring/summer campaign. MassWildlife coordinated with Tomo 360 to implement a strategy for the campaign, select images, write ad copy, define target audiences, place ads, and evaluate performance.

- From April through July, MassWildlife utilized Facebook and Instagram ads targeting lapsed anglers and prospective new anglers. Audiences were identified using lookalikes and demographic- and interest-based targeting. Engagement with these groups included simple license reminders, invitations to participate in learn-to-fish classes, and ads promoting resources like how to find fishing locations nearby.
- In addition to driving sales, our ads increased awareness of and interest in fishing. Social media ads resulted in 4.03M impressions, reached 1.5 million people, and generated over 62,000 clicks to our website.
- We ran one advertisement in Spanish and those ads demonstrated interest in fishing from a Spanish-speaking audience.
- This year we used the new audience targeting tools provided by Meta to find audiences who may be interested in fishing. These tools were effective in utilizing the budget and lowered the average cost for result to $0.36, compared to $1.56 in 2022.

NHESP Fundraising

State Income Tax Donation Promotion

An article about donations through Line 32A ("Endangered Species Conservation") of the state income tax return was featured in both the February and March editions of the MassWildlife Monthly e-newsletter, which was sent to over 182,000 subscribers. The tax-form donation was also promoted on social media during the spring.

Media Relations

Current media protocol procedures allowing EEA agencies to interact directly with media have strengthened long-established media relationships and resulted in valuable connections with new media contacts. The protocol has also expanded MassWildlife's ability to respond to the news media in a timely fashion and to proactively pitch stories.

For years, MassWildlife has utilized a media service to collect news coverage that mentions the agency or other related key words. This service primarily reports on print newspaper sources with some information on television and digital coverage. The service provides reporting on reach and value of the articles mentioning MassWildlife.

To supplement the media service, internet alerts are used to monitor mentions of MassWildlife on digital platforms. These alerts can provide insight on the number of articles mentioning the agency, but cannot provide detail on audience, reach, or media value. Used together, the media service and internet alerts capture most of the MassWildlife-related coverage in the news.

MassWildlife tracks media outreach effort, coverage resulting from these efforts, as well as coverage that is not a result of outreach, i.e., "organic" coverage. Media inquiries are tallied regardless of whether they result in a published news story.

Media Outreach Efforts

MassWildlife maintains a media contact list and sends monthly e-newsletters to those contacts. At the end of FY 2024, there were 476 contacts on the list from media outlets across Massachusetts and in the region. Reporters are given the option to be added to the list whenever they contact MassWildlife about a story. Contacts on the media list received 12 e-newsletters from MassWildlife over the course of the year. In addition, MassWildlife sent and collaborated on targeted media advisories. These were distributed to media in specific locations or to MassWildlife's entire media list; in many cases advisories were also sent to over 500 contacts on EEA's media list. The following were sent during FY 2024:

- Dam removal public meetings (January)
- MassWildlife Habitat Management Grant recipients (January 26)
- School vacation trout stocking events (mid-April)
- Northern red-bellied cooter landmark and event (May 16)
- Peregrine falcon banding (May 27)
- Free fishing weekend (May 29)

Media Coverage (from Outreach)

As in previous years, a variety of media outlets published or aired stories utilizing content from MassWildlife's monthly e-newsletter, advisories, collaborative press releases, and social media posts. MassWildlife outreach can result in a request for more information or for an interview with staff. Some media outlets summarize MassWildlife content in recurring outdoor segments or calendars, while other outlets reprint the original content exactly as written. The following is a list of topics promoted by MassWildlife that resulted in the most media coverage in FY 2024; the number in parenthesis is the number of articles generated:

- School vacation trout stocking (19)
- Black bears active and searching for food (18)
- Peregrine falcons/chick banding (14)
- Frosted elfin found at Montague Plains WMA (13)
- Trout stocking (13)
- Free fishing weekend (12)
- Aggressive turkey tips (11)
- Bald eagle nest building (9)
- Coyote mating season (9)

- Pine-drops plant discovery (9)
- MassWildlife's Hunters Share the Harvest program (7)
- MassWildlife's Habitat Management Grant awarded (7)
- Drivers brake for wildlife (7)
- What to do if you find young wildlife (7)
- Massachusetts fire crew deployed to western fires (6)
- Northern red-bellied cooter headstarting landmark (6)
- Temporary archery ranges (5)
- Rare orange sallow moth found at Muddy Brook WMA (5)
- Turkey hunting season announcements (4)
- Fisher facts (4)

Media Inquiries and Coverage (Organic)

MassWildlife fields requests from the media on a variety of topics throughout the year. Some requests are sparked by agency outreach, while others arise organically—often from a wildlife situation that readers or viewers are noticing locally. A portion of these media inquiries result in published coverage. In FY 2024, the agency responded to 278 press inquiries (Table OE 1).

Table OE 1. Media inquiries and coverage, by type.

Media Type	Number (%) of inquiries	Number (%) of stories with agency mentions
Newspaper/digital	105 (37.7%)	373 (57.5%)
Digital only	32 (11.5%)	140 (21.6%)
Television/digital	77 (27.7%)	80 (12.3%)
Radio/digital	53 (19%)	50 (7.7%)
Magazine or book	11 (3.9%)	-
Total	278	648

MassWildlife receives media inquiries that may arise from an unexpected wildlife sighting or problems with wildlife in a town or region. MassWildlife Outreach and Education staff work with subject-matter biologists to provide clear messaging on how to coexist with wildlife. MassWildlife staff responded to requests for information and/or interviews from reporters on a wide variety of topics. These inquiries often result in digital, print, radio, and television coverage. Topics generating the greatest volume of inquiries in FY 2024 included:

- Black bears (71): Many of these inquiries resulted from bears being seen in towns in eastern Massachusetts, and notably an incident involving livestock damage by a bear in the town of Hanson. The remaining coverage came from bear sightings, interest, and conflicts in other parts of the state.

- Coyotes (35): Most of the coyote news coverage focused on residents having problems with coyotes in their neighborhoods. The majority of these stories were focused on coyote concerns and conflict in towns in eastern Massachusetts.
- HPAI/birds (12): MassWildlife coordinate with MDAR and EEA to respond to media inquiries on HPAI, with MDAR primarily responding with information about domestic flocks and MassWildlife providing information about wild birds.
- Wild turkeys (10): Over half of the turkey inquiries were related to human/turkey conflict.

Earned media coverage resulting from MassWildlife outreach or from organic media inquiries is tallied using a paid news clip service, and by internet news alerts set by staff. MassWildlife was mentioned at least 648 times during the fiscal year (Table OE 1). Agency mentions appeared in at least 151 different newspaper, digital, radio, and television outlets. These outlets ranged from small community papers to major regional and even national media outlets, including The Boston Globe, Boston Herald, The Berkshire Eagle, The Lowell Sun, The Springfield Republican, Athol Daily News, Worcester Telegram and Gazette, The Sun Chronicle, WGBH radio, WBUR radio, WCVB News Radio, Boston.com, MassLive, Patch, Wicked Local, Boston25, NBC Boston, WWLP TV, and Spectrum 1.

Photography

Key Projects

The Magazine Editor and Publications Manager takes photographs for magazine articles and other publications, the website, and social media, in addition to gathering photos from staff and magazine contributors.

In FY 2024, photo shoots were conducted, including still image and video shoots of gray treefrogs, the Massachusetts Junior Conservation Camp, Mount Greylock State Reservation, cottontail rabbits, native orchids, goldenrod and pollinators, the “Run for Wildlife,” American kestrel, outdoor safety kit, bowhunting, Hunters Share the Harvest venison drop-off at a food pantry, Junior Duck Stamp Contest judging, ice storm, two Boy Scout bat house donation drop-offs, upland hunter with a dog, American toad breeding, Canada geese and goslings, Hawley Bog plants, American robin nestlings, fish fry, the capture and Motus harness attachment of an American kestrel, and fishing areas in Worcester and Shrewsbury in support of MassWildlife’s spring ad campaign.

Signage And Publications

Massachusetts Wildlife *Magazine*

Massachusetts Wildlife is a 40-page, full-color quarterly magazine with approximately 15,000 subscribers and a standard publication print run of 23,000 copies, which provides surplus for individual publication sales; handouts; and agency promotion at programs, shows, and fairs. Four issues of *Massachusetts Wildlife* were produced in FY 2024 (Number 3, 2023 – Number 2, 2024) covering fisheries, wildlife, and outdoor-related subjects, including wildlife research; rare and endangered species; general nature interest; and how-to articles for the hunter, angler, and nature observer, continuing a long tradition of producing articles that will be useful as references on various subjects for many years to come.

Issue Number 3, 2023

- The Kestrel Conundrum by Troy Gipps (Part 1) and Andrew Vitz (Part 2; staff)
- Outdoor Safety for All by John Gutzeit and Troy Gipps (staff)
- A Breed Apart: Western Massachusetts Duck Hunters Association by Ed Snyder
- A Strong Finish "(Trail)Run for Wildlife" (photo essay) by Troy Gipps (staff)

Issue Number 4, 2023

- Living with the Eastern Coyote by Meghan Crawford (staff)
- BioMap: The Future of Conservation by Sarah Wasserman (staff)
- My Solo Search for Venison by Sasha Ellsworth Dyer (Fisheries and Wildlife Board member)
- A Shocking Summer by Stephen Humphery (staff)

Issue Number 1, 2024

- Ephemeral Beauty by Karro Frost and Robert Wernerehl (staff)
- Spring Ephemerals: A Field Guide for Massachusetts by Karro Frost and Robert Wernerehl (staff)
- Treefrog Lullaby by Troy Gipps (staff)
- Fishing and Boating Access for All by Doug Cameron (OFBA staff)
- A Long Life, Lived Outdoors by Troy Gipps (staff)

Issue Number 2, 2024

- The Space Around Us by Troy Gipps (staff)
- Freshwater Sportfishing Awards 2023 Competition Results by Steven Mattocks (staff)
- Sharing the Harvest by Martin Feehan (staff)
- Pond to Po' Boy: A Hornpout Revival by Ian Sypek (staff)

Magazine Subscription Promotion Efforts

MassWildlife contracts with a vendor (Infonet) for magazine subscription fulfillment and promotion. The beginning of the fiscal year, July 1, 2023, showed 16,933 subscribers for the magazine; by June 30, 2024, there were 15,093 magazine subscribers. One-year subscriptions account for 61% of the total, while 39% of subscriptions are for two or more years. In FY 2024, a total of 8,879 new and renewal subscriptions were sold.

During FY 2024, Infonet sent 9,942 regular renewal mailings to 5,038 subscribers whose subscriptions were about to expire. The total cost of these mailings was $3,629 and they resulted in revenue of $23,364 from 2,402 renewals.

Cash Acknowledgements

Any person who sent in a one-year paid subscription on their own (i.e., not a "Bill Me" sign-up) is mailed an acknowledgement, thanking them for the subscription. The subscriber is invited to "step up" to receive a special 7 for $7 offer. In FY 2024, 621 cash acknowledgements were sent out at a cost of $227. There were 125 one-year subscribers who stepped up, resulting in revenue of $875.

Gift Subscription Promotions

In fall/winter 2024, four gift subscription renewal promotional mailings of 7,501 pieces were sent to 4,199 donors who have given gifts at a cost of $2,737, resulting in revenue of $25,086. A smaller promotional mailing at a cost of $2,279 went out to 6,244 subscribers who did not have a history of giving gift subscriptions. The result was 608 orders for $3,648 in revenue.

Other Magazine Outreach/Distribution Efforts

Magazine subscriptions are available for purchase through the MassFishHunt online licensing system. A guest account, for those people who are not purchasing licenses, offers subscribers the convenience of purchasing with a credit card. During FY 2024, 135 one-year subscriptions and 721 two-year subscriptions were sold through the MassFishHunt system.

Magazines at Meetings, Conferences, Exhibits, Fairs, and Education Workshops

Copies of back issues of magazines are made available at MassWildlife offices and distributed at a variety of public events, including fairs and shows, professional conferences and talks, all Project WILD teacher workshops, wildlife education programs, and Hunter Education courses.

Regulations

The Guide to Hunting, Freshwater Fishing, and Trapping

The 2024 Guide to Hunting, Freshwater Fishing and Trapping was again produced in cooperation with J. F. Griffin Publishing Co., as part of a multi-year contract with this publisher. The full-color, glossy-stock, 56-page booklet includes a digest presentation of fishing, hunting,

and trapping regulations and other information of interest to the sporting community. The print run was 140,000 copies in FY 2024 and guides were distributed at MassWildlife offices and license vendor locations, as well as at fairs, shows, and events. The Guide is also posted online on MassWildlife's website.

Migratory Game Bird Regulations Brochure

The Publications Editor also worked closely with the Wildlife Section to update, publish, and distribute the 2024–2025 Migratory Game Bird hunting regulations brochure, online and in print (12,500 copies). The brochure contains season dates and bag limits for migratory birds, which are not available for release when the Guide to Fishing, Hunting, and Trapping Laws is published.

Wildlife Management Area Signage

Outreach and Education staff completed work on several signage projects. Signage was developed for use on MassWildlife properties to describe how prescribed fires and herbicides are used to manage habitat. Prescribed fire signs linking to newly designed web content were created to inform visitors about the benefits of fire for habitats and wildlife. These signs will also alert visitors using equipment, such as tree stands or trail cameras, that prescribed fires are occasionally used.

Fact Sheets and Related Publications

Outreach and Education staff facilitated the creation of several new publications during FY 2024. Staff helped create a new handout to help residents avoid conflicts with coyotes including clear steps to effectively haze coyotes that exhibit bold behaviors. New labels were created for MassWildlife's Hunters Share the Harvest packaged venison. New turkey hunting safety stickers were redesigned and ordered. Fliers for local event promotion were created for trout stocking events and dam removal informational meetings. Digital files were created to promote Free Fishing Weekend through MassDOT's billboard PSA program.

Outreach Events

MassWildlife staff interacted with the public at a variety of outreach events during this fiscal year. In addition to exhibits and events directly organized by MassWildlife, MassWildlife's O&E Section coordinated with other agency staff on outreach events by providing support with event promotion and registration; helping to staff agency displays at events; and developing targeted display and presentation materials such as images and/or content for use in presentations, posters, and handouts.

Events

Several notable events occurred in FY 2024, including:

- MassWildlife planned and held the Run for Wildlife to raise awareness and funds for rare species conservation, at Wayne MacCallum WMA in Westborough.
- The agency hosted Massachusetts Governor Maura Healey at Field Headquarters for the signing of Executive Order No. 618 barring executive branch agencies from procuring single-use plastic bottles, and Executive Order No. 619, which mandated setting biodiversity goals for the Commonwealth.
- Governor Healey, EEA officials, and reporters accompanied MassWildlife staff to a winter black bear den.
- Agency staff hosted a tour of McLaughlin Fish Hatchery and habitat restoration work at Herman Covey WMA for DCR and EEA officials.
- MassWildlife staff, along with EEA and DESE officials, visited Shrewsbury High School to highlight the hands-on learning opportunities provided by the agency's Teaching with Trout program.
- To celebrate Earth Week, MassWildlife hosted family trout stocking events in Boston, Chicopee, Hopkinton, Leominster, Pittsfield, Plymouth, Westfield, and Worcester.
- MassWildlife hosted the Northeast Association of Fish and Wildlife Agencies' annual conference in Hyannis for over 600 wildlife professionals.
- To celebrate the 40th anniversary of the successful northern red-bellied cooter headstart program, MassWildlife held an event for program volunteers and invited local reporters.
- Peregrine falcon chick banding events were held in Huntington and Newburyport.

MassWildlife staff represented the agency at a variety of events. Staff led activities, provided publications, and answered questions from the public at the following venues: Huntstock (Westminster); Franklin County Fair (Greenfield); Women in the Outdoors "Pint Night" (Barre); Outdoor-women Meet & Greet (virtual); Forests, Climate, and Innovations Forum (Amherst); Springfield Science Museum Earth Day Festival (Springfield); Southeastern Massachusetts Sportsman's Show (East Bridgewater); Springfield Sportsmen's Show (West Springfield); and New England Fishing Expo (Marlborough).

Informational Public Presentations

MassWildlife staff gave presentations to organizations, clubs, and municipalities across the Commonwealth on a variety of topics, including coexisting with coyotes; coexisting with black bears; bat conservation; predators of Massachusetts; Quabbin Reservoir fisheries; restoration ecology at Quaboag WMA; reptiles of Massachusetts; conservation and management of native pollinator habitat; conserving, managing, and restoring grasslands; and planned dam removal

projects on MassWildlife properties. MassWildlife staff also gave presentations and participated in panel discussions at the Northeast Association of Fish and Wildlife Agencies conference, noted above.

Land and Habitat Events

A variety of events and guided walks took place at MassWildlife properties that highlighted land acquisition and habitat management projects. Habitat tours and walks were held at Frances Crane WMA, Montague Plains WMA, Muddy Brook WMA, Stafford Hill WMA, and Leyden WMA.

Wildlife Conservation Education Programs

Project WILD in Massachusetts

Project WILD is one of the most widely used wildlife-focused conservation and environmental education programs among educators of students in kindergarten through high school. Project WILD addresses the need for human beings to develop as responsible citizens of our planet and fosters responsible actions toward wildlife and related natural resources. Using balanced curriculum materials and professional training workshops, Project WILD accomplishes its goal of developing awareness, knowledge, skills, and commitment. In Massachusetts, K–12 educators are trained as facilitators to offer workshops for other educators from across the Commonwealth. Project WILD and Growing Up WILD: Exploring Nature with Young Children was developed by the Council for Environmental Education (CEE), is administered by the Association of Fish and Wildlife Agencies (AFWA) and is sponsored in Massachusetts by MassWildlife with support from the Massachusetts Sportsmen's Council.

Project WILD and Aquatic WILD (K–12)

These workshops are targeted for educators working with children in grades K–12. The Project WILD activities are terrestrial ecosystem based while the Aquatic WILD curriculum focuses on aquatic ecosystems. There are strong connections in these curricula to Science, Technology, Engineering, and Math (STEM). A combination Project WILD/Aquatic WILD workshop was offered and a combination Project WILD/Growing up WILD was offered to Worcester State University students. The annual in-person facilitator gathering and recognition was held at Clamber Hill Inn. The Project WILD Coordinator remained connected to and supported facilitators by meeting in-person for outdoor field sessions and discussions.

Growing Up WILD: Exploring Nature with Young Children

This early-childhood (ages 3–7 years) education program for educators, caregivers, teachers, and families 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 (GUW) is a tool for helping fish and wildlife agencies meet their conservation

goals through recognizing children start developing attitudes towards wildlife and nature at an early age and providing knowledge and skills to early childhood educators so they may teach about nature. GUW provides suggestions for outdoor nature-based recreation, conservation suggestions for each activity, and activities that families can do together. This lays a foundation for acquiring increased scientific knowledge and problem-solving skills. There is a continued strong focus on connecting Growing Up WILD to STEM. In FY 2024, Bridgewater State University offered one combination early childhood workshop (Growing Up WILD, Project Learning Tree, and Project WET) and a Growing up WILD workshop was hosted by Nashoba Brooks School.

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

An innovative way to teach children about wetlands and waterfowl, the Junior Duck Stamp Conservation and Design Program provides K–12 students the opportunity to learn scientific principles, connect with their natural world, and artistically express their knowledge of the beauty, diversity, and interdependence of wildlife.

JDS also provides a curriculum for students, educators, home school, and non-formal groups designed to spark youth interest in habitat conservation through science, art, math, and technology, made available to student artists and educators upon request. In Massachusetts, the Junior Duck Stamp Program is sponsored by MassWildlife and U.S. Fish and Wildlife Service, with support from the Massachusetts Sportsmen's Council.

Students in grades K–12 from across the Commonwealth submitted 268 pieces of artwork to this "Conservation through the Arts" program. Entries were received from public, private, and home-schooled students; individuals; and private art studios. In-person judging took place with the colored pencil drawing of a Hooded Merganser by Meghan Li, Apple-Leaf Studio, selected as Best of Show. Meghan's artwork represented Massachusetts at the National JDS Competition. Three venues hosted the statewide traveling art exhibit, comprised of a combination of the top 100 pieces of art.

General Wildlife Education Programs

Customized wildlife education programs presented by the Wildlife Education Coordinator focused on diverse audiences: students, scouts, educators, and adult audiences at retirement communities, adult day centers, and nursing homes. The Wildlife Education Coordinator was the Naturalist-in-Residence for the preschool at Nashoba Brooks School and the seasonal Naturalist at the Fay School Early Learning Center, offering experiential nature-based education aimed at inspiring wonder and stewardship of the local wildlife and ecosystems.

Massachusetts Envirothon

MassWildlife's involvement in this 37th annual natural resource (wildlife, soil, water, forest) program continued through the efforts of the Wildlife Education Coordinator, who hosted

teacher and student workshops, served on the education subcommittee of the steering committee, prepared the wildlife exam, provided wildlife-related information to the Current Issue question, and attended the competition. In FY 2024, the Envirothon was held at Wachusett Reservoir for 122 urban and rural high school students representing 17 Massachusetts communities.

Massachusetts Junior Conservation Camp

In August 2023, the Massachusetts Junior Conservation Camp held its 2-week summer camp at the H. A. Moses Boy Scout camp in Russell offering a program of conservation education and instruction in outdoor recreation skills. Approximately 100 campers ages 13–17 attended. As in the past, MassWildlife staff assisted and provided support through advertising, providing instructors, and arranging for additional trainers from other commonwealth agencies. MassWildlife staff and MassWildlife program volunteers offered Basic Hunter Education and Bow Hunter Education courses; provided lessons in wildlife management, fisheries management, game preparation, and cooking skills; conducted the information quiz that evaluates the participant's comprehension of outdoor information and skills learned during the camp session; and participated in the graduation ceremonies.

Northeast Wildlife Trackers Conference

The Northeast Wildlife Trackers mission is to organize, uplift, and inspire a community of wildlife trackers across the Northeastern U.S. and Canada. Their vision is to be an inclusive, welcoming community of naturalists, educators, tracking enthusiasts, and conservation professionals who share a passion for wildlife tracking and foster a sense of connection across social and geographic boundaries. As a representative on the annual conference planning committee, the Wildlife Education Coordinator hosted an in-person weekend conference at Prindle Pond Conference Center.

Teaching with Trout

Page 43 of the Fisheries Program report provides details of this program in FY 2024.

Hunter Education Program

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

The Hunter Education Program is a public education effort providing instruction in the safe handling of firearms and other outdoor activities related to hunting and firearm use. The Massachusetts Hunter Education Program evolved from a survey conducted in 1954 indicating that 75% of Massachusetts hunting accidents involved minors. In that same year, the State

Legislature enacted a law establishing a Hunter Education Program providing instruction in basic hunter education. The program is administered by the Massachusetts Division of Fisheries and Wildlife, and courses are taught by MassWildlife staff and certified volunteer instructors. In FY 2024, a Volunteer Coordinator was hired to assist in the training, management, recruitment, and retention of volunteer instructors. Courses are open to everyone, and no one shall be denied access to the course because of age, sex, race, color, religion, or country origin. All courses are offered free of charge.

Hunter Education Courses

In FY 2024, five of the six disciplines were offered, including Basic Hunter Education, which is mandated to qualify for a first-ever hunting license, and Trapper Education, which is mandated to apply for a trap registration certificate. In addition, a free self-study online Trapper Education course is now recognized to qualify for a Massachusetts Trap Registration Certificate. Individuals who successfully complete the North American Basic Trapping Course at https://conservationlearning.org can use that course completion certificate to apply for a Massachusetts Trap Registration Certificate.

A total of 81 courses were scheduled with 2,544 students participating in the Hunter Education Program. The course offerings decreased by 21% from the previous fiscal year and the number of students that participated followed the same pattern, with a 21% decrease from the previous fiscal-year levels.

Students are asked to volunteer information on age, gender, and ethnic background. The following is a summary of course offerings and statistics on student participation in FY 2024.

Basic Hunter Education

Starting January 1, 2007, anyone 18 years of age or older who wishes to hunt for any bird or mammal in the Commonwealth must successfully complete a Basic Hunter Education course, unless such person has held a license to hunt before January 1, 2007. The Basic Hunter Education course is a standardized curriculum that 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. The certificate of completion issued to graduates is recognized in all U.S. states, Canada, and Mexico. Sixty-one courses were offered in FY 2024. Basic Hunter Education course offerings decreased by 24% from the previous fiscal year and are lower than the yearly levels experienced prior to the pandemic. In FY 2024, a total of 2,017 students participated and 1,941 successfully completed the course, including 454 minors (under 18 years of age), 201 minorities, and 283 women.

Trapper Education

The Trapper Education curriculum standards were revised in May 2018 by the IHEA in cooperation with the Association of Fish and Wildlife Agencies. Trapper Education is mandatory in Massachusetts for Problem Animal Control (PAC) agents and first-time trappers to apply for a Massachusetts Trap Registration Certificate. This course includes both classroom work and field training and focuses on the best management practices for trapping. Students learn the proper use of traps, the identification of furbearing animals and their habitats, trapping laws, and ethical trapper behavior with an emphasis on the responsible treatment of animals and landowner relations. Three courses with an in-person component were offered, with a total of 100 participants, including 2 minorities and 7 women. Eight-one participants successfully completed the course.

Bowhunter Education

The Bowhunter Education curriculum standards were developed by the IHEA in cooperation with the National Bowhunter Education Foundation. This course is designed for both experienced and novice hunters. Course topics include the selection of equipment, safety, ethics, bowhunting methods, and care and handling of game. Bowhunter Education is not required in Massachusetts and a Bowhunter Education certificate does not qualify a person to purchase a first-ever Massachusetts Hunting or Sporting license. A Massachusetts Bowhunter Education Certificate is accepted, however, in other jurisdictions that do mandate the successful completion of the course. Eleven courses were offered. A total of 280 students participated and 274 successfully completed the course, including 59 minors (under 18 years of age), 7 minorities, and 47 women.

Waterfowl Identification and Hunting

This 1-day course teaches the identification of migratory waterfowl. It emphasizes the importance of distinguishing waterfowl in flight and includes identifying fall and winter plumage patterns and the size, shape, and flight characteristics of the birds. This course also covers hunting safely from boats and blinds and waterfowl hunting techniques. Two courses were offered. A total of 41 students participated and successfully completed the course, including 1 minor and 7 women.

Black Powder (Muzzleloader) Education

This 1-day course includes the identification and selection of hunting equipment, state laws and regulations regarding muzzleloader hunting, and the safe handling of muzzleloaders. A live-fire segment has been added. This course was not offered in FY2024.

Map, Compass & Survival

This 1-day course includes both classroom work and field training. Topics include instruction on the use of a compass and topographical map for land navigation as well as wilderness survival. Five courses were offered; 105 students participated and 91 successfully completed the course. Ten minors (under 18 years of age) and 21 women participated.

Hunting and Shooting Skills Programs

National Archery in the Schools Program in Massachusetts

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

NASP is a part of the in-school curriculum, generally a physical education class. The NASP curriculum is designed for students in grades 4–12, and includes social studies, mathematics, and physical education topics. This provides all students with an opportunity to try archery, including many who may not otherwise show an interest in the sport. MassWildlife provides a 1-day Basic Archery Instructor training for physical education teachers within schools/districts that plan to participate in NASP. In addition, MassWildlife coordinates the ordering and delivery of program equipment for the schools. To receive training, schools must obtain the NASP equipment kit, at a cost of about $3,500. The kit includes 11 Matthew Genesis bows, 122 arrows, 5 targets, 1 arrow curtain, and 1 tool/repair kit.

Staff conducted 9 Basic Archery Instructor trainings in FY 2024 to train 55 physical education teachers, and one Basic Archery Instructor Trainer course was held to train two new instructor trainers. Archery loaner kits were used at 20 different schools across the Commonwealth. In total, 11,038 students across Massachusetts participated in NASP as part of their in-school curriculum during FY 2024.

Young Adult Pheasant Program

The Massachusetts Young Adult Pheasant Hunt Program was developed by MassWildlife 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 hunter in a safe, friendly environment. The program is run by participating sportsmen’s clubs. This program is a comprehensive, three-part recreational program. Shooting instruction and practice take place during the summer or early fall; the pre-hunt workshop is held a week or two before the youth pheasant hunt; and the actual hunt is scheduled by the participating clubs

for any one of the six Saturdays prior to the mid-October start of the regular pheasant hunting season. The Young Adult Pheasant Program was run at six different clubs across the Commonwealth in FY 2024 with a total of 42 youth participants.

Youth Turkey Hunt Program

This program was developed by MassWildlife in cooperation with the Massachusetts Chapter of the National Wild Turkey Federation (NWTF) to provide an opportunity for 12–17-year-old Hunter Education graduates to practice firearms safety and turkey-hunting techniques, develop shooting skills, and participate in a special 1-day turkey hunt under the one-on-one guidance of an experienced turkey hunter. The program is offered by participating local sportsmen's clubs in partnership with local chapters of the NWTF. It is a comprehensive, three-part outdoor education program designed to give young hunters an opportunity to acquire some of the specialized skills associated with turkey hunting. Hunter safety is emphasized to help build the confidence of the inexperienced hunters so that they will feel comfortable when in the field.

The Youth Turkey Hunt Program takes place in the spring. Shooting instruction, practice, and the pre-hunt workshop take place two or three weeks prior to the day of the hunt. The actual turkey hunt is held on the Saturday prior to the last Monday in April. Participants can select either an online or in-person option for the youth turkey seminar. In FY 2024, 84 students completed the online course.

In addition to the online course, in-person seminars were also offered. Due to the increasing number of students who choose to take the seminar online, clubs can choose to either maintain the in-person seminar as they have been in the past for youth only, or they could offer them as learn to hunt seminars to young hunters 12 and older as well as adults. This allows clubs to reach a bigger audience with these seminars while also meeting the youth turkey requirement. Seven clubs held in-person seminars. Of the seven clubs, two of the clubs turned their seminar into a learn to turkey hunt seminar, and two clubs held a "range day" for adults and youth. A total of 19 adults and 24 youth participated at an in-person turkey seminar.

Learn to Hunt Program

The Learn to Hunt program, which is designed for novice hunter education graduates who need more information before they are comfortable hunting for a particular species, held a combination of virtual and in-person classes in FY 2024. Below is a summary of the learn-to-hunt classes offered.

- Deer Hunting 101 In-Person Course; 24 participants
- Scouting for Deer Online Course; 86 participants
- (4) Scouting for Deer In-Person Courses; 48 participants

- Small Game Hunting Online Course; 131 participants
- Field Dressing Class; 26 participants
- (2) Turkey Calling Seminars; 36 participants
- (2) Learn to Hunt Turkey Range Days; 20 participants
- Turkey Seminar and Mentored Hunt; 9 participants

In addition, MassWildlife launched Mentoring Mondays in February, which provides a virtual presentation with a Q&A on the second Monday of each month. The topics change each month. Below are the Mentoring Mondays that MassWildlife offered during FY 2024:

- February: Winter Scouting/Ice Fishing: 10 participants
- March: Turkey Calling: 22 participants
- April: Preparing for Turkey Season/Trout fishing: 4 participants
- May: Turkey hunting tactics/best bets for spring fishing: 11 participants
- June: Bass Fishing: 55 participants

Becoming an Outdoors Woman Program

Becoming an Outdoorswoman (BOW) is a program designed for women ages 18 and older, providing basic outdoor skills. Six BOW events were held that included two fishing clinics, one outdoor skills class, and three mentored hunting programs: a deer program, turkey program, and waterfowl program. All the mentored hunt programs included an in-person seminar and a mentored hunt.

- Fishing Clinic; 17 registered*
- Hike and Fish Clinic; 10 participants
- Turkey Seminar Only; 6 participants
- Turkey Seminar and Mentored Hunt; 10 participants
- Deer Seminar Only; 1 participant
- Deer Seminar and Mentored Hunt; 17 participants
- Waterfowl Seminar Only; 12 participants
- Waterfowl Seminar and Mentored Hunt; 10 participants

**This number indicates the number of registered participants; staff was not able to collect the number of attending participants. Typically, the no-show rate is 50% for online courses, and 20% for in-person classes.*

Fishing Skills Programs

The Angler Education Program is the main component of the Aquatic Resource Education Program. The other component is Aquatic Project WILD, overseen by the Wildlife Education

Coordinator. The Angler Education Program has several components designed to introduce people to fishing and the outdoors, including family fishing festivals, fishing clinics, fishing classes, and our own Fishing Tackle Loaner Program

The Angler Education Program operates with the cooperation of trained volunteers. All instructors complete a volunteer application and undergo a background check through the Criminal Offender Record Information (CORI) system. Volunteers are given pertinent information about MassWildlife and the Angler Education Program and then begin apprenticing at program events. Instructors are recruited mostly from fishing events, positive publicity, and word of mouth. There are currently 90 volunteer instructors, of which approximately 50% were active during FY 2024.

Family Fishing Festivals

Weekend family fishing events are set up as an introduction to fishing, where we make available rod-and-reel combinations, terminal tackle, and bait at no charge, and when the manpower allows, instruction in casting, fish identification, knot tying, baiting, cleaning, and filleting. There is typically no pre-registration required, and people can show up anytime within the festival timeframe. For FY 2024, there were 14 weekend family fishing events with approximately 1,600 participants.

Family Fishing Clinics

Fishing clinics, while short in duration, are a very popular program component. These clinics are typically co-sponsored by town recreation departments, sporting clubs, Boy or Girl Scouts groups, summer camps, or other state or federal agencies. Clinics are generally two to three hours, involving a short overview of fish, fishing, safety, and ethics, followed by casting instruction and a healthy dose of fishing. Pre-registration is typically required for these clinics, and participation is kept small enough to allow the instructors to work with participants one-on-one. During FY 2024, MassWildlife offered 75 fishing clinics for approximately 2,000 participants.

Fishing Classes

MassWildlife also teaches a small handful of fishing classes annually. These are generally specialty fishing skills classes like fly-tying, adult-only “learn to fish” classes, and a few school-based fishing classes. During FY 2024, MassWildlife taught 4 fly-tying class for 40 people and 8 in-school basic freshwater fishing classes with the Auburn High School Physical Education Program for approximately 150 students.

Fishing Tackle Loaner Program

The Angler Education Program keeps and maintains fishing equipment onsite for loan to various groups throughout the state. Loaner equipment includes basic spin casting rods, spinning rods,

and saltwater rods, as well as fly rods and fly-tying equipment and even ice fishing gear. Equipment was loaned to various groups and agencies, including DCR, the U.S. Army Corp of Engineers, the U.S. Fish and Wildlife Service, various sporting clubs, scout troops, and church groups. Along with the fishing gear, the necessary terminal tackle and various fishing education program handouts are also provided. In FY 2024, 32 groups requested equipment totaling 840 pieces of fishing equipment loaned.

Outreach and Education Program Staff

Nicole McSweeney, Assistant Director of Outreach and Education
Timothy Bradbury, Hunter Education Specialist
Michelle Collins, Outreach and Marketing Manager (partial year)
Jill Durand, Clerk
Steven Foster, Hunter Education Program Logistics Coordinator
Troy Gipps, Magazine Editor and Publications Manager
John Gutzeit, Learn to Fish and Hunt Outreach Specialist
Marlena Timins, Clerk
Astrid Huseby, R3 Coordinator
Jim Lagacy, Angler Education Coordinator
Pam Landry, Education Coordinator
Susan Langlois, Hunter Education Program Administrator
Jeffrey Osgood, Outdoor Education Volunteer Coordinator (partial year)
Cynthia Pratt, Hunter Education Office Specialist
Jody Simoes, Human Dimensions Project Leader
Emily Stolarski, Communications Coordinator
Ian Sypek, Outdoor Education Specialist (partial year)

6 The Districts and Wildlife Lands Report

Trina Moruzzi, Assistant Director of Operations

Overview

Most people who interact with MassWildlife do so through one of the agency's five Wildlife Districts. The District offices are this agency's field stations, administering wildlife lands, conducting on-site monitoring and management, enhancing recreational opportunities, and addressing the wildlife issues pertinent to their regions.

District personnel sell hunting, fishing, and trapping licenses; stamps; and selected permits as well as distribute the Guide to Massachusetts Hunting, Freshwater Fishing, and Trapping and other materials related to the sale of hunting, fishing, and trapping licenses to vendors throughout their District.

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 staff serve to educate the public and deal with a large number of bear complaints, deer damage complaints, questions about coyotes, and other issues dealing with the impact of wildlife on human activities, and vice versa. They also assist officers from the Massachusetts Environmental Police (MEP) to ensure public adherence to wildlife laws and regulations.

District staff participate in a wide variety of biological survey and monitoring programs initiated by MassWildlife's Fisheries and Wildlife program staff based at the Westborough Field Headquarters (FHQ); see the individual program reports for the status of these projects. Among the biological survey projects conducted by District staff were the black bear habitat study, rare turtle surveys, a bald eagle breeding survey, whip-poor-will surveys, New England cottontail surveys, and stream and lake surveys. District personnel also conduct census counts of wild turkey, woodcock, ruffed grouse, and bobwhite quail.

District staff members continued to 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.

Districts also provide additional upland gamebird hunting opportunities by releasing ring-necked pheasants on WMAs and in open covers (i.e., suitable habitat on public land).

Land stewardship is an important MassWildlife priority and has become a large part of District activities. District Stewardship Biologists assist the wildlife land acquisition effort to prioritize lands to be acquired by locating titles, landowners, and boundaries, and walk prospective sites with DFG Land Agents to assess natural resource values and identify any issues that may present stewardship challenges on particular parcels. Stewardship Biologists are responsible for communicating with members of the public, abutters, landowners, and other stakeholders on stewardship activities, including monitoring lands under Conservation Restrictions (CR) and stewardship of MassWildlife's WMAs. They also work to mitigate encroachments by adjacent landowners on our WMAs. Staff have also been assisting the Habitat program by participating in prescribed burns as part of the Biodiversity Initiative on several WMAs throughout the state. They also participate in habitat restoration and management work on the WMAs in their region by cutting brush, mowing, trimming trails, assisting with forest cutting operations, planting shrubs, performing herbicide treatments on invasive vegetation, 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.

Staff worked diligently this year to ensure acquisition, maintenance, and stewardship of the thousands of acres of wildlife lands acquired and managed by MassWildlife remain protected wildlife habitat. Wildlife lands stewardship staff based in Westborough coordinated stewardship efforts with the five districts in the form of habitat management, boundary marking, survey contracts, and signage to improve access to wildlife lands.

Conservation Restriction (CR) landowner relationships and CR monitoring are a large part of land stewardship. The DFG-MassWildlife CR portfolio has grown to 230 CRs and roughly 52,173 acres (See Appendix C for details). Annual letters were sent to all CR landowners inviting them to participate in annual monitoring visits. Stewardship staff conducted in-person monitoring visits at 204 CR properties across the state to ensure compliance with the terms and conditions of the CR. The DCR Working Forest Initiative Cost Share program funded two Forest Management Plan updates. Boundary marking contractors were hired to supplement work done at the districts and completed 50.21 miles of boundary marking, 22.26 acres of which were for the newly acquired from the former Templeton Development Center which added to the Norcross Hill WMA. Licensed survey contractors were hired for ten survey contracts to locate boundary monuments shown in previous surveys, locate roadway easements, identify encroachments, resolve boundary disputes or mark property lines with permanent boundary markers. The surveys were required to resolve complex stewardship issues. As a result, MassWildlife is better enabled to manage the land and keep it open for public enjoyment.

Three Baseline Documentation Reports were completed by contractors for over 250 acres of newly protected CR lands.

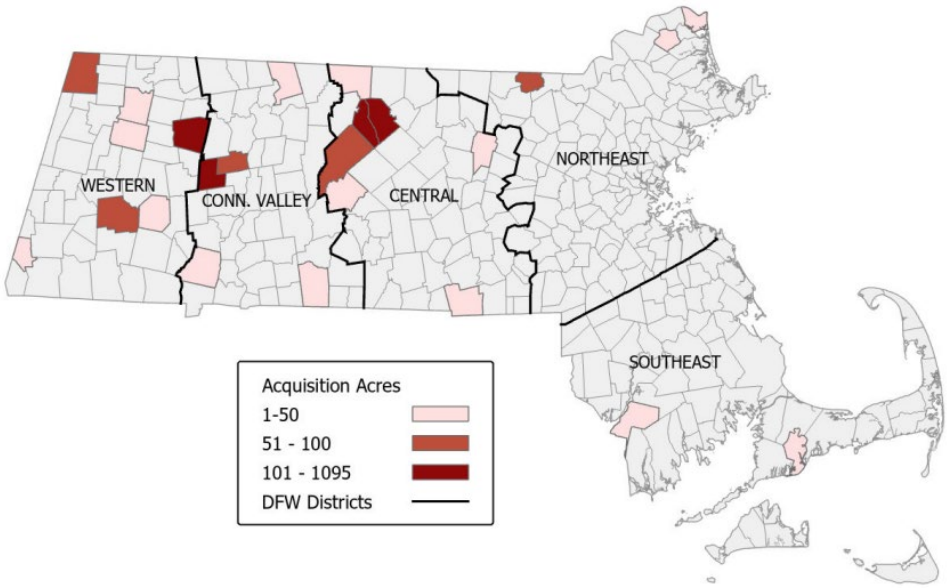
As detailed below, MassWildlife's continued focus on guiding strategic land acquisition and conducting long-term stewardship underscores its commitment to protecting the best land for wildlife, biodiversity, and wildlife-dependent recreation in Massachusetts. Each of the five District Supervisors as well as the Wildlife Lands Stewardship Coordinator are part of the DFG Lands Committee, ensuring land acquisition and conservation of DFW lands. The DFG land acquisition team is proud of another productive year of conserving land for habitat biodiversity as well as hunting, fishing, trapping, wildlife viewing and other nature-based recreation.

Land and Conservation Restriction Acquisitions in FY 2024

The Department of Fish and Game (DFG) and MassWildlife work together to protect the Commonwealth's most important fish and wildlife habitat and to expand the public's access to land and inland waters for hunting, trapping, and fishing and compatible passive recreation. To accomplish this dual mission, DFG's Land Protection Program uses funding from the Environmental Bond and the Wildlands Fund to purchase land and conservation restrictions (CRs) from willing landowners who seek to conserve their property. Some landowners donate their land or a CR on it to DFG, which may result in an income tax deduction for the landowner.

FY 2024 was another successful year for protecting land across the Commonwealth, yielding a multitude of public benefits. Land agents in each of the five districts completed a total of 26 projects covering 2,477.86 acres for a total cost of $3,449,000 (Figure DL 1; Table DL 1).

Figure DL 1. FY 2024 acquisitions, by town and acreage.



Land acquired in fee and through a CR improves Massachusetts' climate-change resiliency by protecting forests that absorb carbon dioxide and wetlands that work to absorb floodwaters in extreme weather events, and by connecting large tracts of wildlife habitat to allow plants and animals the ability to adapt to changing weather conditions. A current inventory of all MassWildlife properties is listed in Appendix C, the Wildlife Lands, Table C 1.

Table DL 1. FY 2024 summary of land acquisitions.

Town(s)	District	Facility	Deed Acres
Douglas	Central	Mine Brook WMA	20.33
Hardwick	Central	Muddy Brook WMA	13.71
Hardwick	Central	Muddy Brook WMA	24.60
Lancaster	Central	Bolton Flats WMA	34.10
Petersham	Central	Popple Camp WMA	93.00
Templeton	Central	Templeton Brook WMA	79.98
Templeton	Central	Templeton Brook WMA	3.05
Templeton, Phillipston, Royalston	Central	Norcross Hill WMA	1,386.64
Monson	Connecticut Valley	Wales WMA	27.25
Northfield	Connecticut Valley	Satan's Kingdom WMA	12.90
Westfield	Connecticut Valley	Tekoa Narrows WCE	13.99
Whately	Connecticut Valley	Mt. Esther WMA	12.02
Whately	Connecticut Valley	Great Swamp WMA	75.00
Williamsburg	Connecticut Valley	Williamsburg WMA	110.00
Dunstable	Northeast	Unkety Brook WMA	72.50
Salisbury	Northeast	Salisbury Salt Marsh WMA	21.00
West Newbury	Northeast	Crane Pond WMA	18.04
Fall River	Southeast	Copicut WMA	25.00
Mashpee	Southeast	Santuit Pond WCE	15.24
Ashfield	Western	Edge Hill WCE	132.78
Becket	Western	Shales Brook WMA	73.71
Chester	Western	Hiram H. Fox WMA	50.00
Egremont	Western	Karner Brook WMA	17.18
Savoy	Western	Savoy WMA	4.10
Williamstown	Western	Green River WMA (Western District)	100.00
Windsor	Western	Savoy WMA	41.75

Land Acquisition Highlights

The Northeast District protected 111.54 acres in 3 towns in FY 2024. One of the projects was a gift, required by an adjacent cluster residential development. The other two involved a partner,

the Essex County Greenbelt Association (ECGA), which pre-acquired the properties. The Dunstable project protected over 72 acres along Unkety Brook and will become part of the abutting Unkety Brook WMA. It is priority habitat for both a threatened and a special concern state-listed species and much of the property is outside hunting setbacks and will therefore be huntable. It offers great wildlife habitat and beautiful woodland with views of Unkety Brook's flooded marshes. The other highlight was 18 acres on Ash Street in West Newbury, which will become part of the adjacent Crane Pond WMA. This property was pre-acquired by ECGA, along with an abutting 18 acres of farmland. The existing house, barn, and farm fields will be sold with a conservation restriction, which will allow continued agricultural use but will prevent additional development beyond one potential new house. The third project protected salt marsh in Salisbury and will simplify salt marsh restoration.

There were two acquisitions in the Southeast District in FY 2024. One was a 25-acre inholding in the Southeastern Massachusetts Bioreserve formerly owned by the Brightman family. The property lies entirely within Priority Habitat, providing important habitat for Eastern Whip-poor-will and Eastern box turtles, and is also mapped as BioMap Forest Core, Rare Species Core and Critical Natural Landscape Block. The parcel is entirely huntable and contains beautiful mixed upland forest with a few small grassy fields. The second acquisition represented the successful completion of a decade-long process to amend the Santuit Pond CR to include the Mills property, purchased by the Town of Mashpee. This 15-acre gift CR was originally approved by the Lands Committee back in 2014; however, title issues delayed the acquisition. The property contains Priority Habitat for Eastern box turtle and there are two vernal pools on the site as well. The parcel is incorporated to the larger 293-acre Santuit Pond WCE.

In FY 2024, a total of 1,655.41 acres were added across five different existing WMAs, and one new WMA was formed in the Central District. An additional acquisition through interagency transfer from the Department of Capital Asset Maintenance and Management also occurred. This transfer of the former Templeton Development Center property was completed, and all the boundaries were properly marked detailing where the expanded WMA exists. This acquisition has increased Norcross Hill WMA from 500 acres to approximately 2,000 acres. Much of our work is done in partnership with local land trusts that help broker and facilitate land acquisitions, and we are grateful for the conservation opportunities these partnerships bring to the agency. The newly created Templeton Brook WMA is an example of this type of collaboration. This time we worked with the Mt. Grace Land Conservation Trust to help conserve 200 acres in Templeton through both in-fee acquisition, and a conservation restriction.

The Connecticut River Valley District successfully completed six land acquisition projects in FY 2024, resulting in the permanent protection of 250.96 additional acres in the district. Five of the

projects were in-fee acquisitions, and one was a CR with the city of Westfield. The largest of the acquisitions was a 110-acre purchase that more than doubles the size of the Williamsburg WMA. The additional acres dramatically improve fishing access to this section of the East Branch of the Mill River for native brook trout and brown trout fishing while protecting sensitive riparian zones and wildlife travel corridors in the region. Another noteworthy project that occurred this year was a new CR named the Tekoa Narrows Conservation Area in the town of Westfield. This CR was gifted from the town and will serve to protect several sensitive rare species in the area while providing amazing access to the Westfield River for fishing and outdoor activities. The other acquisitions across the District represented small but significant additions to our existing complement of WMAs.

The Western District was able to complete seven acquisition projects protecting over 420 acres of land. Among the FY 2024 highlights was 100 acres added to the Green River Wildlife Management Area. This parcel includes 1,000 feet along the Green River, a coldwater fisheries resource, along with beautifully forested slopes. Hunters will appreciate this important addition to the WMA. Another acquisition highlight is the Edge Hill Wildlife Conservation Easement, which is a recently abandoned golf course acquired for conservation by the Franklin Land Trust. The MassWildlife conservation easement assures public access for wildlife-based recreation and facilitates restoration opportunities on the property.

Northeast Wildlife District

Administration

The Northeast District was pleased to add Tucker Skowyra to the Wildlife Technician crew. Tucker is a fish guy who will use his depth of knowledge about fisheries conservation to help set priorities in the Northeast District. He has a strong work ethic and is eager to learn and participate in all District activities.

Overall, everyone stayed relatively healthy, with no work-related injuries to report.

Staff continued to grow their skills, abilities, and knowledge through prescribed fire training, chain saw training, fisheries conservation plan review, participation in setting Biodiversity Initiative goals, commenting on Forests as Climate Solutions, and GIS projects. Staff handled all aspects of District work in a professional manner, developing greater independence on projects and bettering their leadership capabilities. The District Wildlife Biologist and Stewardship Biologist obtained their FAA remote pilot licenses to fly drones. The ability to incorporate drone techniques into wildlife research is an exciting new development that will allow greater advancements in wildlife and vegetation surveys.

Nissitissit River and Nashua River Conservation Planning workshops were attended. Seminars and trainings attended by District staff included MassAchieve, LART, black bear review, Northeast Climate Adaptation Science Center (NE CASC), NE CASC Gulf of Maine Coastal Research, and a deer-aging class. Trail webinars were viewed. Deer review occurred. The updated coyote presentation was reviewed. Meetings were attended and comments submitted for Executive Order No. 618, Biodiversity Conservation in Massachusetts. District staff attended the EOEEA "All Staff Meeting" on the *Report of the Climate Forestry Committee: Recommendations for Climate-Oriented Forest Management Guidelines*. Staff provided verbal and written comments during the Forests as Climate Solutions Initiative process. Brown-bag lunches for the DFG Strategic Plan and Climate Mitigation and Resilience were attended. UMass-CZM Salt Marsh Working Groups were attended. Mass Achieve training was completed for required courses and other courses taken included SharePoint, Teams, OneDrive, and manager training. W-9-D grant tracking power app meeting was attended. Federal narratives were thereafter entered electronically.

Research was conducted on numerous topics of agency interest, including thin layer placement, climate, rail trail designs, wildlife impacts from trails, saltmarsh sparrow habitat and survey methods, wildlife rehabilitation regulations, drones, federal taking deeds, prescribed fire, oak woodlands, pine barrens, gas and electrical line maps, black bear, latest salt marsh restoration literature, adaptive management, Easy Grants, and hunting setback application.

Staff attended the Department of Environmental Protection Interagency Coastal Wetlands Climate Resilience Workgroup, providing comments and guidance to improve the review and permitting processes for salt marsh restoration projects. Comments were provided on the following guidelines *Wetlands Program Guidelines on Massachusetts Wetlands Protection Act and Water Quality Certification Provisions Regarding Salt Marsh Restoration Techniques, including. Ditch Remediation, Runnels, and Marsh Habitat Mounds,* effective date June 18, 2024, DRAFT *Wetlands Program Guidelines on Massachusetts Wetlands Protection Act and Water Quality Certification Provisions Regarding Management and Beneficial Reuse of Dredged and Fill Material for Salt Marsh Restoration: Thin Layer Placement*. Comments were provided on related regulation changes. A NECASC (Northeast Climate Adaptation Science Center) seminar was attended called "Human Modification to Salt Marsh in New England" and an interagency meeting on climate change was attended. MA Permitting Group meetings were attended with the goal of streamlining salt marsh restoration projects. The District Supervisor presented on the Great Marsh Salt Marsh Restoration Partnership at the Northeast Association of Fish and Wildlife Agencies annual conference. She received an Environmental Business Council APEX Award for her work with partners in Great Marsh.

Other meetings included Fish and Wildlife Board business and governance meetings, DCR Stewardship Council; Senior Staff, District Manager, Northeast District, and Wildlife Section staff meetings; R3 workgroup meetings; quarterly Salt Marsh Working Group; Coastal Waterbird Cooperators; Human Resources; Great Marsh Coalition; MassFishHunt; Stream Survey collaboration; Hunters Share the Harvest; drones; MA Permitting Group; Snake Conservation Partners; NHESP MESA list changes; Mt. Watatic Advisory Committee; Forest Legacy; the Nashua, Squannacook, and Nissitissit Rivers Wild & Scenic Stewardship Council; field trials; The Wildlife Society; UMass COOP; federal taking; National Coastal Resiliency Fund grant; and weekly State Hazard Mitigation and Climate Adaptation Plan (now Resilient Mass) grant update meetings.

Stewardship and Capital Access Funds lists were compiled, and the District budget updated. Documents were submitted for a fraud case with Peterson Oil. Gate bids were evaluated.

Land acquisition and conservation restriction projects were reviewed in Townsend, Ashby, Shirley, Groton, West Newbury, and Pepperell. The Northeast District Wildlife Biologist and Stewardship Biologist conducted habitat assessments for some of the proposed parcels. Quarterly Lands Committee meetings were attended by the District Manager.

Stewardship, Management, and Habitat Restoration

Regular stewardship meetings were held between the Stewardship Biologist and District Supervisor, and several informational meetings were led by the Stewardship Coordinator.

Meetings were attended with Mass. DOT and Merrimack Valley Planning Commission regarding the National Grid ROW bisecting Martin Burns WMA. Rail trail feasibility was discussed. MassWildlife provided background on past rail trail discussions and site visits that led to an alternative route acceptable to MADOT that would divert a rail trail around the WMA. MassWildlife provided information about the biodiversity importance of the ROW, rare species habitats, turtle nesting areas, negative impacts to wildlife, permitting obstacles, alternatives, and impacts to our ability to conduct habitat management. Follow-up consisted of contacting National Grid about permanently protecting the ROW as wildlife habitat, and for other beneficial management and maintenance projects. Old plans of the ROW were scanned to show National Grid the area of concern.

The Northeast District Wildlife Biologist joined Habitat section staff at Kent's Island to discuss prescribed fire plans. This follows several years of herbiciding extensive invasive species growth. Vegetation management was conducted at parking lots and access areas including the new parking areas established at the Squannacook River WMA and Ashby WMA as well as the Cronin Memorial in Townsend. Dozens of apple trees were pruned winter 2023 at Ashby WMA,

Martin Burns WMA, Townsend Hill WMA and Squannacook River WMA while dozens of highbush blueberries were pruned on Ashby WMA.

Federal Taking work occurred throughout the year with recurring internal meetings between DFG legal counsel, District Supervisor, and the Federal Aid Compliance Officer. Other meetings and communications occurred with West Newbury landowners, West Newbury assessor and other town officials, DFG Lands Committee, appraisers, and wildlife biologists. Land comparison tables and narratives were provided, site visits conducted, and survey RFPs drafted. Ash Street and Middle Street surveys were completed.

After the resolution of a decades-old trespass at the Nashua River Access Area in Pepperell, approximately 380 feet of fencing was installed to establish the boundary line and prevent further encroachments. Two new parking area signs were installed at Ashby WMA where the public parks to access the popular Mt. Watatic for hiking, hunting, and wildlife viewing. Safety zone signs were installed at Unkety and Charles River WMAs abutting private property. A new trespass was discovered and remediated at Mulpus Brook WMA in Shirley, which involved a tractor used to remove a section of stone wall for private access. Proposed trails at the Watatic CR with North County Land Trust were evaluated.

The Stewardship Biologist promoted the importance and role of downed woody material in the Squannacook River and Nissitissit River as it is beneficial to wildlife especially rare and endangered species found in and along theses waterways. The Stewardship Biologist attended the National Park Service canoe access training on the Nissitissit River where the ecological significance of the river was relayed as well as the importance of downed woody material. Sign designs were reviewed for the Nashua, Squannacook, and Nissitissit Rivers Wild & Scenic Stewardship Council.

The District Supervisor met with the Townsend Conservation Commission (TCC) regarding severe culvert erosion at the intersection of Pearl Hill Brook and an old access road at Squannacook River WMA. The TCC advised MassWildlife to file for an Emergency Permit and provided guidance on the permitting process. Two residents coordinated with the Stewardship Biologist helping with materials and equipment. NHESP and District staff attended site visits and meetings in response to a proposed spur trail through Old Meeting House Road.

Three salt marsh habitat restoration grant proposals were submitted for Resilient Mass grants (formerly State Hazard Mitigation & Climate Adaptation Plan grant): 1) Salt Marsh Adaptation and Restoration Teams (SMARTeams) Academy, 2) Pilot remote sensing technology to monitor Saltmarsh Sparrows and habitat restoration projects, 3) complete 2,000 acres of salt marsh preliminary designs using nature-based techniques including ditch remediation, runnels, and

nesting islands. SMARTeams Academy curriculum was drafted by the Great Marsh SMARTeam for agency review.

Work continued on the $795,000 National Coastal Resiliency Fund grant awarded to MassWildlife to complete 3,278 acres of nature-based salt marsh restoration in Great Marsh and removal of two tidal restrictions. Requests for Proposals were completed for the Hay Street and Stage Island tidal restriction removal projects that occur within the Parker River watershed and Plum Island, respectively. A draft Scope of Work was submitted by MA Audubon Society for outreach and education for the NCRF grant. A Project Manager job description was developed for eventual posting and oversight of final design and permitting for 3,278 acres of nature-based salt marsh habitat restoration, with special focus on state-listed Saltmarsh Sparrows. Saltmarsh Sparrows breed solely in the salt marshes of Northeast United States and are threatened by rising sea levels. Staff from the District and In-Lieu Fee Program met with MA Audubon Society regarding final design, permitting and implementation of nature-based salt marsh restoration at Rough Meadows Sanctuary in Great Marsh to sort out grant funding options. Staff reviewed permitting documents for the USFWS 1450 salt marsh restoration project. Great Marsh partners showed Representative Kristen Kassner salt marsh restoration sites in Great Marsh.

Demolition documents were provided for Martin Burns WMA and Squannacook River WMA. A survey was completed at Squannacook River WMA near the Dailey parcel. The William Forward WMA case against Stephen Comley continued.

Research and Conservation

Wildlife

Biological deer check continued in FY 2024 with the District staffing five locations. All typical biological data was collected with the continuation of COVID active virus sampling for the third year. Hunters showed interest in the sampling and collecting of all data.

The winter of FY 2024 proved to be difficult yet again regarding wood duck work. Due to the lack of ice in the Northeast District, the staff were unable to service or erect the typical number of 100+ wood duck nesting boxes. District staff assisted the Waterfowl Biologist with the black duck research project to band and attach backpack transmitters on black duck hens through baiting. District staff redeveloped walk-in traps and secured several bait and walk-in trap sites in Essex County. However, staff ceased baiting at several successful key sites due to a high number of goose deaths caused by HPAI in the immediate site. Per direction from the Waterfowl Biologist, staff did not conduct annual park mallard banding, and the project likely will not continue for FY25. Air-boat waterfowl surveys were conducted at Great Meadows National Wildlife Refuge.

Northeast District completed the annual woodcock peenting survey (Haverhill) for FY 2024 where for the third year in a row woodcock were heard peenting which had not been previously heard for four consecutive years prior to FY22. Staff attempted the annual nightjar survey (Townsend/Shirley) but was unable to complete it during the survey period due to continuous rain and wind.

The black bear research project ran from the beginning of April to mid-June 2024. Multiple research sites were established, barrel traps were set based on bear activity. One male bear was captured, ear-tagged and released from a single trap site; no females were captured.

Annual goose banding usually takes place at the end of June, where district staff aims to capture and band roughly 251 geese from numerous sites throughout Norfolk, Middlesex, Suffolk and Essex counties. However, goose banding did not take place this year and will no longer take place in future years.

Regarding disease, staff collected and transferred to Tufts Wildlife Clinic several ducks, geese, and raptors suspect of having highly pathogenic avian influenza (HPAI) throughout FY 2024. Several eagles were also transferred to Tufts for rehabilitation or necropsy from injuries or suspected rodenticide poisoning.

Fisheries

Stream surveys were conducted in nine watersheds throughout the District. One fish kill was investigated by District staff. It was determined to be a natural die-off due to winter conditions. Adult and young-of-the-year snakeheads were caught by anglers at Reservoir Pond in Canton. District staff assisted Field Headquarters staff with boat shocking and backpack electrofishing at the outlet of the pond (Pequid Brook), but no snakeheads were collected. Staff attended meetings about catch-and-release fishing sites.

Natural Heritage and Endangered Species

Important turtle nesting areas were maintained at Upper Parker River WMA in Groveland, and the Squannacook River WMA and Townsend Hill WMA in Townsend, where encroaching trees and other vegetation were cut. Staff attended NHESP's Blanding's turtle partners meeting. A head-started Blanding's turtle was released at Delaney WMA, where its mother nested in an abutters yard.

Saltmarsh sparrow meetings were held with NHESP and Department of Conservation and Recreation to organize banding at William Forward WMA. Two District Wildlife Technicians will be trained in the process. They learned about mist net site selection and installation as well as sexing and aging birds. Banding and data collection will begin starting July 2024 through FY 2025. Staff attended regional saltmarsh sparrow conservation and restoration status meetings.

Bald eagle surveys were conducted on 36 nests in April 2024 and District staff continued to monitor 18 active nests. Several nests were not successful due to egg predation, destruction from a rival, hatch failure, and injuries from falling out of the nest. Eagle banding was accomplished from May-June 2024; staff banded a total of eight eagle chicks from four different nests including one new nest site which was first constructed during the winter of 2022. With the increase of eagle nests constructed closer to homes and the increased residential developments or site work, we have had more calls regarding regulations and legality which are referred to NHESP. The district biologist met with Conservation Commissions from Gloucester and Lynnfield and checked on nest sites near construction sites in Haverhill.

Northeast District staff continues to be more involved with peregrine falcon research including falcon chick banding and nesting structure maintenance. Staff banded falcon chicks from UMASS Lowell, Boston University, Watertown and Gillis Bridge. As with bald eagle banding, these banding events allow significant opportunity to interact positively with the public. It is evident these events foster a sense of curiosity and interest in wildlife conservation. NED staff participated in a peregrine Falcon banding and media event held at the Christian Science Center in Boston with EOEEA Secretary Rebecca Tepper, DFG Commissioner Tom O'Shea, and numerous onlookers.

Wildlife Technicians assisted NHESP with freshwater mussel surveys on the Nissitissit River as part of a long-term study. Fields were mowed to maintain grasslands, but milkweed was spared from July through September to accommodate late-season monarch butterflies. Monarchs were monitored, tagged, and released by collaborators on Squannacook WMA. District staff cleaned and serviced five bat boxes around the District but found no evidence of use by bats. Multiple bluebird and kestrel boxes were erected, checked, or serviced on various WMAs.

District staff has also become more involved with rattlesnake research and conservation recently. The District Wildlife Biologist has been attending statewide rattlesnake habitat and conservation meetings with the project lead and agency collaborators. From the meetings, District staff partnered with James Condon to assist in finding a few transmitters whose data had not been captured nor transmitter recovered. Nothing was found until the following spring of 2024.

Enhancement of Outdoor Recreation

Northeast district staff built, maintained, or repaired nine blinds at Delaney WMA for public use and for the controlled waterfowl hunt that takes place every year during the first several days of the duck season per regulation. Nearly all the old and new benches were severely damaged during the winter months were prepped for replacement in September 2025.

The District continues to receive positive comments from hunters regarding pheasant stocking at the West Meadow Road Squannacook property due to ideal hunter access, grassland management and pheasant cover. District staff continue to increase our ability to maintain grasslands and early successional habitat through reclamation at Martin Burns, Ashby, Townsend and Squannacook WMAs; feedback has been positive. The Northeast District stocked about 5,000 pheasants on 5 WMAs, 3 privately owned hunter-accessible properties, 2 DCR-owned properties, and 1 town-owned property. The WMAs stocked with pheasant include Martin Burns, Crane Pond, William Forward, Ashby, and multiple parcels of Squannacook. District staff continue to increase our ability to maintain grasslands and early successional habitat through reclamation at Martin Burns, Ashby, Townsend and Squannacook WMAs. The pheasant program leads, Northeast, Central and Southeast Districts conducted a full review of the pheasant schedule, distribution and stocking for the FY 24 season. The offloading and boxing adjustments are manageable, and the stocking schedule seems to be an improvement.

District staff stocked almost 90,000 trout throughout the District in the spring and over 12,000 in the fall at select ponds and two rivers. No major stocking truck issues occurred. Regular spring trout stocking was completed by May 17. The angler trail to the Merrimac River was maintained at Salisbury Salt Marsh WMA where striped bass are often caught.

Over 500 target range permits at Martin Burns WMA were issued. Four clubs were allotted field trial permits for Delaney WMA, as well as one mock fox hunt. A mock fox hunt at Surrendon Farms WCE in Groton was approved. One hunter took part in the paraplegic hunt held at Fort Devens, who harvested three3 deer, with one donated to Hunters Share the Harvest.

Outreach and Education

District staff remains heavily involved with R3 initiatives and projects, including Messaging, Land Access, Range, and Partnership Working Groups. The district biologist continues to lead the Partnership Working Group in assistance with the R3 coordinator. We were able to partner with several NGOs, private organizations and clubs and held several programs in collaboration. The District Wildlife Biologist assisted and helped to lead a few sections from the Woodswoman Workshop in August 2023. District staff worked with other districts, the R3 Coordinator, and Outreach and Education, as well as Hunter Education to create rules, regulations, signs, scheduling, and building of temporary archery ranges to be placed on one WMA per District during the summer of 2024. The Northeast District range will be placed on William Forward WMA, Kent's Island from July 2024 to September 2024 (FY 2025). Interviews with land trusts were completed, and Northeast District staff participated in the Buzzard Bay Coalition Land Trust and Williamstown Rural Lands land access interviews.

The District Wildlife Biologist gave two black bear presentations to two separate towns, one in-person presentation and the other virtual, with good turnouts. A District project and wildlife summary was also given to Westford Gun Club with members from nearby clubs also in attendance. Staff reviewed new black bear online resources from the Wildlife Section.

The District Wildlife Biologist was on the team for leading the student and early career professional planning effort for the 2024 NEAFWA conference held in Hyannis in spring 2024. Staff coordinated an off-property WMA learning walk with lead biologists, ran a safety in the field seminar and workshop, conducted resume reviews, held student only meet and greats, facilitated off-site social gatherings, held a student-professional meet and great lunch, and finally, led a whale conservation walk off site. Students and early career professionals gave staff positive feedback regarding what was offered.

The Northeast District Supervisor joined O&E at a table for the MA Land Conservation Conference. Staff participated in the Groton Conservation Forum.

Massachusetts Guides to Fishing and Hunting were distributed to vendors, the Department of Conservation and Recreation, and the Division of Marine Fisheries.

Technical Assistance

Staff provided information helpful to the Harvard deer committee. In their second year, the Concord deer committee continued to require assistance from MassWildlife.

Northeast District staff joined the MA Environmental Police and a representative from the Wildlife Rehabilitator's Association of Massachusetts to conduct an unannounced site inspection at a Chelmsford facility. All animals were in decent health, and the facility was in acceptable condition, but concern remained regarding aggressive dogs housed near skunk cages causing habituation.

The Northeast District clerk answered most wildlife technical assistance calls, having a well-established network of people she relied on for transport of injured wildlife to Tufts Wildlife Clinic and other facilities. There were numerous wildlife calls regarding general questions, sightings, and conflicts. Several hawk and owl calls were received where the birds were either caught inside buildings, injured, or found dead. Several calls about birds caught in fishing hooks and line were answered. Black bears continue to attack livestock in the western most towns in the district. A young bear killed a couple of sheep in Ashby and was then shot and killed by the farmer when it returned for more. The District clerk helped many people with MassFishHunt questions and problems. Wildlife rehabilitator and animal control agent tests were administered.

In coordination with NHESP, additional meetings were attended with West Newbury town officials regarding Ash Street in Crane Pond WMA where many animals are road-killed. Site visits to Ash Street by staff were conducted to check progress on meeting MassWildlife conditions.

Southeast Wildlife District

Administration

There were no personnel changes in the Southeast District in FY 2024.

Progress continued on the projects associated with the American the Beautiful Challenge Grant. Contracts were completed with most of the grant subrecipients, with the last couple expected to be in place in early FY 2025. Interfluve was hired as the engineer to complete the redesign and permitting update and several team meetings were held that have successfully guided the redesign process. Progress was also made with the Mashpee Wampanoag Tribe, the coastal plain ponds restoration project, upland pine barrens habitat restoration project and the first overview flight was competed with SEMPBA.

Significant progress was made this FY in attempting to get the Mill Brook Bogs restoration project to construction. SLR was hired to complete the final permitting steps and to prepare all bid documents to get the project ready to go out to bid. MassWildlife and DER staff worked with NRCS on extending the easement/restoration agreement and decided on a path to complete the project in phases while we continue to search for funding to bridge the gap between available funding and the estimated construction costs. SLR will be given a supplemental contract in early FY25 to separate the project into two phases with the goal of going out to bid and completing phase one by June 2025.

The Hunters Share the Harvest Program, which was started as a pilot project in FY23, saw considerable growth and success in FY 2024. Two additional processors were added for Fall 2023 and to date over 20,000 meals of healthy venison have been distributed through partnering food programs. Further, by the end of FY 2024, we had successfully increased the number of processors to ten and will be distributing through nine different partnering food programs across the state.

District staff attended or completed several trainings and certifications in FY 2024 including annual wildfire refresher training and work capacity tests, John Garofoli completed the S212 wildland fire chainsaw course, Steve Wright and Aaron Best completed drone training courses and all staff completed CPR/First Aid/Stop the Bleed training.

In July, John Garofoli, Southeast Wildlife Technician and member of the prescribed fire team, deployed with the Massachusetts Interagency Wildfire Crew to Montana for two weeks. While on deployment, John worked on four different fires, at one point working through the night in the mountains. He also received training on helicopter operations while on one of the fires. John performed very well on the assignment and gained very valuable experience that will allow him to advance in the ranks of wildfire certification and be a more valuable, safe and effective member of our prescribed fire team.

The District Manager served on the planning and development team for the Department of Fish & Game's new strategic plan, attending weekly meetings as the plan was developed. He also attended a workshop put on by the USFWS and the North American Non-lead Partnership to learn about national efforts to minimize the unintended impacts of lead ammunition on wildlife. The workshop included live firing demonstrations of both lead and non-lead ammunition. He also attended the Biodiversity Executive Order event at the Westborough HQ where Governor Healey signed the order. He also participated in reviewing and commenting on the Forests as Climate Solutions initiative.

Several staff attended and assisted with the NEAFWA conference in April on Cape Cod. Steve Wright participated in leading a tour at Frances A. Crane WMA for a subset of professionals attending the conference, presenting on habitat management activities on the WMA and discussing some of the benefits of the management on both game and non-game species. He also moderated several sessions at the conference.

Stewardship, Management, and Habitat Restoration

There were several important land stewardship issues in FY 2024. Probably the most significant stewardship issue in the District was the continued effort to return the Old Sandwich Game Farm WMA to full state oversight and management after decades of cooperative management with the Thorton Burgess Society under a longstanding License agreement that was jointly terminated following the acquisition of the TBS by the Cape Cod Museum of Natural History. We continued to work with the CCMNH to remove unpermitted benches and signs on the property and also issued a letter permit to affiliates of the Museum to pilot a new MAPS bird banding project on the property. Additionally, District staff completed a number of habitat improvement projects on the WMA including reclaiming old field edges, controlling invasive species and restoring a field previously maintained as manicured lawn to native warm season grasses through plowing, harrowing and seeding with a native, local ecotype seed mix.

Related to the above, a major statewide effort, funded with ARPA money, began to demolish and remove buildings and other structures on MassWildlife lands that served no purpose or presented safety hazards. Included in this effort is all of the buildings at the Old Sandwich Game

Farm (including the pavilion at the Old Sullivan Hatchery section of the WMA), two old concrete foundations at the Burrage Pond WMA, and old foundations at the Noquochoke WMA and Erwin Wilder WMA. The pavilion project at the Old Sullivan Hatchery facilitated a renewed effort to determine a path forward for continued use of that site by DMF under a license agreement. DMF has agreed to remove a lot of the old unused equipment and debris from the site and to complete some renovations to the two wooden buildings for housing their fishway team equipment and supplies.

The District continued to work with Barnstable County to assess and remediate PFAS contamination in the vicinity of the Hyannis Ponds WMA. A license agreement was issued that allows for temporary wells and sampling to be completed on various sections of the WMA as the County and their consultants continue to investigate the extent of PFAS contamination in the area from the former Barnstable County Fire Training Academy. Several initial sampling reports were submitted to MassWildlife for review and plans are in thew works for treatment of the groundwater to remove the contamination.

The District continued to work with staff from the Environment and Readiness Center to perform cleanup operations associated with an old grenade court that was identified associated with Camp Edwards that extended into a small section at the northern boundary between Crane and the base. Specially trained crews came in and surveyed the area for potential unexploded ordnance following clearing of the vegetation from the site and removed any metal items and debris. Most of the items removed were completely inert, however they did locate on old rocket that they believe was something someone had and discarded off the edge of an old roadway and not something associated with the former grenade court. Once the crew had cleared the area of metal, the site was harrowed and seeded with a native grass/for mix consistent with ongoing habitat restoration efforts on the WMA.

With the successful acquisition of Camp Cachalot by MassWildlife and DCR near the end of FY23, both agencies' staffs worked together on the development of an MOPU to guide future management of the property. This process involved several meetings and site visits due to the complexity of the site and differences in the missions of our two agencies. Ultimately, an MOU was formalized late in FY 2024 establishing DCR as the primary manager of the former building envelope and taking the lead on removal of the buildings and planning of a future day use area at Fivemile Pond and the possible establishment of a small (6-8) yurt camping area. MassWildlife will take the lead on management of the remainder of the property, as well as the lead on all things habitat management. Close coordination and consultation between MassWildlife and DCR will continue on all major activities on the property and joint sharing of monitoring was also established.

Several other license agreements were either renewed or established this FY including the finalizing of a agreement with the Town of Norton to create a new parking area and mow/maintain an access path to facilitate maintenance and visitation of an old cemetery on the Erwin Wilder WMA, the renewal and modification of an existing agricultural agreement, also at Wilder, and the establishment of a new license agreement at Rocky Gutter WMA to allow for maintenance of a field.

MassWildlife and DCR issued final approval to the Trustees to construct an accessible nature discovery trail at the Copicut Woods WCE. The project was constructed/completed this FY. Staff worked very closely with the Trustees to ensure the trail, while a very positive thing for introducing newer folks and children to nature, would not negatively impact the terms and conditions of the CR or allowable uses on the property, especially hunting.

A significant snow and windstorm in December 2023 significantly damaged a portion of the barn roof at the Burrage Pond WMA. The District worked with fiscal staff in Westborough to develop specs for the repair, go out to bid and successfully oversaw repairs to the roof that will protect our equipment and supplies stored in the building.

The District Stewardship Biologist completed annual monitoring visits and reports on all 43 District Conservation Restrictions (CRs) that were his responsibility in FY 2023.

Boundary marking, a combination of in-house and contractor work, was completed at several properties including the new Winnetuxet River WMA in Plympton.

Fire breaks were created and/or maintained at several Division properties including the Mashpee Pine Barrens WMA, Camp Cachalot WMA, Hyannis Ponds WMA and Frances A. Crane WMA.

Prescribed fires were conducted at the Noquochole WMA (December), Frances A. Crane WMA (August, January, March), Camp Cachalot (January, February), Penikese Island Sanctuary (April), Mashpee Pine Barrens WMA (April), and on Cuttyhunk (April).

Herbicide applications to treat invasive species were completed at the Burrage Pond WMA, Frances A Crane WMA, Erwin Wilder WMA and Halfway Pond WMA. Routine mowing of dike roads and slopes was also completed at the Burrage Pond WMA.

Biannual mowing/maintenance of all the pheasant and quail stocked fields at Myles Standish State Forest was completed in January and February 2024. Annual maintenance mowing was also completed at both Bird Island and Ram Island.

New composite WMA signs were installed at the Mattapoisett River WMA, Taunton River WMA, Maple Springs WMA, Atwood Reservoir WMA and Mashpee Pine Barrens WMA.

Trash monitoring and pickup was completed on all MassWildlife lands in the District with notable illegal dumping issues identified and cleaned up at Frances A Crane WMA, Rocky Gutter WMA, West Meadows WMA, Hockomock Swamp WMA, Hyannis Ponds WMA, Old Sandwich Game Farm WMA, Peterson Swamp WMA, Taunton River WMA, Maple Springs WMA, Red Brook WMA and the Burrage Pond WMA. The Peterson Swamp issue involved a long hike deep into the property to remove a bag of unknown fertilizer reported by a hiker.

Ongoing wetland restoration and management continued this fiscal year at the Burrage Pond WMA, with many hours of District staff time put towards maintenance of water control structures and flooding of 250 acres of former cranberry bog to support emergent wetland habitats for wildlife.

Research and Conservation

Wildlife

The increasing presence of bears in the district that was reported on last year continued into the beginning of FY 2024. Numerus reports and calls from both the public and town officials regarding bears dominated a large part of August through October of 2023, especially surrounding attempted or confirmed predation on livestock (primarily goats). One such incident involved a bear caught attacking a goat in a backyard pen in Kingston that was subsequently shot and wounded by homeowner, exercising his legal rights under MGL Chapter 131, Section 37. The bear was confirmed to survive, only receiving a minor injury to its hindquarter. A bear was also confirmed to have been clipped by a vehicle on Route 3 in Plymouth in July. All of these bear sightings gained significant media attention and as had happened in past years, a lot of attention and interest in social media. One of the bears suspected to be involved in many of the goat attacks, was given the nickname “Pumpkin” by both the press and the public. During the fall archery deer season, a hunter legally harvested the first recorded bear to be taken in southeastern Massachusetts in the Town of Hanson and, given the location in relation to recent goat attacks, it was highly suspected that the bear, a large male, was indeed the bear people were referring to as pumpkin, especially since attacks on goats abruptly ended after the bear was harvested. Bear reports tailed off considerably in 2024 with very, very few confirmed reports anywhere in southeastern MA, mostly a handful of credible reports in southern Bristol County.

In an effort to be better prepared to address future bear issues in the District, the District Manager organized a joint informational meeting between Southeast District MassWildlife staff

and OLE officers from the region. The meeting included a presentation by Dave Wattles and a lengthy question and answer period.

Southeast District staff completed multiple annual spring surveys including three ruffed grouse drumming surveys (Joint Base Cape Cod, Myles Standish State Forest, Cohasset), one nightjar survey (Mashpee/Falmouth), seven breeding waterfowl plot surveys (Eastham, Barnstable, Chatham, Truro, Falmouth, Wellfleet, Joint Base Cape Cod) and one woodcock peenting surveys (Bridgewater). The annual park mallard survey was also completed throughout the district. Of particular note was the district working with soon to be retiring Waterfowl Biologist H. Heusmann to learn and complete a number of additional waterfowl surveys this year to ensure that they will be adequately covered in future seasons. The District Manager completed a project to create georeferenced maps of every waterfowl survey plot in the district to aid in this effort.

Southeast District personnel assisted the MassWildlife Waterfowl Biologist in pre and post season duck banding efforts during the summer of 2023 and winter of 2024 utilizing tub launcher, baited trap and drop door trapping techniques, banding a total of 71 mallards and 30 black ducks and recapturing 12 previously banded mallards and 37 previously banded black ducks. Steve Wright assisted H. Heusmann with air boating on New Bedford Reservoir in August, banding over 20 ducks of a variety of species.

Continuing MassWildlife's involvement in the Black Duck Joint Venture, Southeast Wildlife District captured 15 female black ducks in Duxbury, Plymouth, Marion and Westport and affixed them with GPS transmitters in a continued effort to research nesting habitat usage and success in the boreal forest.

In early June, District staff completed some of our typical goose scouting for banding operations but were then informed we would not be banding geese this FY.

Staff continued to maintain wood duck nesting boxes and collect data on box usage at 22 boxes spread across 8 sites including Bourne, Falmouth, Lakeville, Mashpee, and Middleboro.

Bat boxes were maintained and or reconstructed at the Hartley Reservoir WMA, Red Brook WMA and Mill Brook Bogs WMA.

District staff operated biological deer check stations this FY at locations throughout the district including Cape Cod and the islands. Important biological data (age, sex, etc.) and other samples were collected (COVID testing, PFAS, etc.) from hundreds of deer. The data collected is critical to modeling and management of the deer populations. Following biological deer check, staff entered all kill cards into the online MassFishHunt system.

Fisheries

The Fisheries Biologist continued ongoing monitoring and maintenance of the White Island Pond dam and fish ladder this FY. Routine visits were made to the site to adjust boards and conduct instream manipulations to ensure fish passage during spring and fall migrations.

A long-term stream temperature monitoring network was maintained on 21 coastal streams and data collected and imported into a stream temperature database. Data has been provided to other researchers on request and has been used to evaluate the success of the Childs River restoration project.

Stream surveys were conducted in consultation with the Fisheries section in Westborough on First Brook and Second Brook in Kingston, an unnamed tributary to Spooner Pond in Plymouth, Stone Pond Brook in Plymouth, West Branch of the Sippican River in Rochester, Branch Brook in Mattapoisett, two unnamed tributaries to the Sippican River in Westport, Bread & Cheese Brook in Westport, Sam Tripp Brook in Westport, Beulah Brook in Westport, Dunham's Brook in Westport, Spring Brook in Westport, Quashnet River in Falmouth, Copicut River in Fall River, Child's River in Falmouth, Coonamesset River in Falmouth, Quashnet River in Falmouth, Red Brook in Wareham, Third Herring Brook in Hanover and Norwell, an unnamed tributary to Third Herring Brook in Norwell and Frogfoot Brook in Plymouth. Pond surveys were completed at Mashpee-Wakeby Pond in Mashpee, Ashumet Pond in Falmouth, Long and Little Ponds in Plymouth, Hamblin Pond in Barnstable, Peters Pond in Sandwich, Lovells Pond in Barnstable, Cliff Pond in Brewster, Scargo Lake in Dennis and Spectacle Pond in Sandwich.

As part of ongoing research and monitoring of wild salter brook trout populations, Passive Integrated Transponder (PIT) antennae were monitored and maintained at Red Brook, Quashnet River, Childs River, Coonamesset River and Third Herring Brook and additional surveys and tagging were completed. Spring sampling of young-of-the-year brook trout was conducted in restored reaches of the Childs and Coonamesset Rivers confirming brook trout reproduction and highlighting some of the benefits of ecosystem restoration in former cranberry bogs.

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

A number of lake and pond surveys were completed in support of TMDL report development.

A natural fish kill involving brown bullheads was investigated at Mashpee-Wakeby Pond in Mashpee in June 2024.

Natural Heritage and Endangered Species

The District cooperated with the Natural Heritage and Endangered Species Program (NHESP) staff on a variety of projects this fiscal year. The most significant NHESP project that is supported by District staff is our coastal waterbird programs including the Buzzards Bay tern project, piping plover monitoring and management and coastal waterboard monitoring and surveys.

Staff completed annual surveys for piping plovers, terns and American oystercatcher nesting surveys on a total of 18 sites including 9 on the Elizabeth Islands, 8 in Nasketucket Bay and one in Mattapoisett. Data from these surveys was entered into an online master database that helps the agency keep track of these species populations. Routine monitoring visits were conducted at several piping plover nesting beaches to ensure compliance with the State and Federal guidelines/regulations.

As has been the case for many years, staff assisted with a wide variety of tasks associated with the Buzzards Bay tern project including storing, maintaining and transporting boats, brush cutting both Ram and Bird Islands, placement and pickup of nesting structures and bird productivity surveys. The district also provides housing for seasonal tern project staff at our Red Brook WMA house.

This FY marked the return of the 5-year colonial waterbird survey. District staff worked with Drew Vitz to coordinate our surveys of many nesting islands including Angelica Rock and the Weepeckets in Buzzards Bay and Sutton Rock, West and East Shag Rocks, Gull Island, Black Rocks and Brush Island on the south shore (Hull, Cohasset, Scituate). The surveys were completed on foot after navigating to the islands by boat. Thousands of colonial waterbird nests were counted including gulls, cormorants and egrets, and we also counted common eider nests we encountered. A few oystercatcher nests were also recorded.

A new project, spearheaded by Jon Regosin, former Deputy Director and now a contract scientist, was started this fiscal year aimed at better understanding the distribution and abundance of diamondback terrapins in several estuaries in the district. The district assisted the project in a number of ways including building and deploying moorings for acoustic receiver arrays, assisting with survey and capture/tagging efforts, assisting with boat transport and establishing access sites, equipment storage and maintenance/repair and providing project staff with office space for data entry.

Staff continued our ongoing work associated with the recovery of the American bald eagle in Massachusetts by monitoring all of the Southeast District's known/active nests and completing chick banding at a few select nests. Ten nests were confirmed to successfully fledge chicks, while several others had initial reports of activity but failed for unknown reasons. Chicks were

banded at the nest on the Bristol County Agricultural School on the Taunton River in Dighton and at the White Island Pind nest in Wareham. District staff also assisted as climbers at banding events at nests in Shrewsbury, Grafton and West Brookfield.

The District also participated in the annual spring bald eagle survey and assisted with the release of a rehabilitated eagle from the Cape Wildlife Center.

Enhancement of Outdoor Recreation

District staff successfully stocked our fall 2023 allocation of 12, 200 trout into 24 ponds. Our spring 2024 allocation of over 91,210 trout was stocked out into 51 ponds and 13 streams.

The staff provided birds for another safe and successful upland game bird hunting season, stocking 7,980 pheasants on six WMAs and over 12 open covers throughout the district. WMAs stocked with pheasant include Erwin Wilder, Frances A. Crane, Freetown State Forest, Marconi (CCNS), Myles Standish State Forest, Hockomock Swamp and Noquochoke. Open local covers include Sandy Neck Beach and Town Conservation Land off Popple Bottom Road in Barnstable, Crowes Pasture Conservation Area in Dennis, Scusset Beach State Park, South Cape Beach State Park, the Shawme Fish and Game Club grounds, the Falmouth Rod and Gun Club grounds, private agricultural land off River Street in Halifax and Middleboro, private agricultural land off Cedar Street and North Central Street in East Bridgewater, and two other portions of the CCNS, near the Provincetown Airport and the eastern edge of Griffin Island in Wellfleet. Also, Waskosim's Rock Reservation, Sepiessa Point Reservation, Manuel Correllus State Forest and Katama Farm are stocked on Martha's Vineyard and 8 locations are stocked on Nantucket. Due to the Final Record of Decision on the hunting EIS at the CCNS, this was the final year of pheasant stocking on the Seashore.

In addition to pheasants, staff also stocked 3,500 Bobwhite Quail, split evenly between the Frances A. Crane WMA and Myles Standish State Forest WMA. Eight-week-old pheasants were again delivered to the Samoset Rod and Gun Club and the Shawme Fish and Game Club as part of the DFW's Club Bird Program. The district also provided pheasants to the Carver Sportsmen's Club and the Falmouth Rod and Gun Club for use in the DFW's Young Adult Pheasant Hunt.

The district operated and managed safe and successful controlled-access hunting opportunities for white-tailed deer and wild turkey at Camp Edwards on Joint Base Cape Cod. These efforts provided hundreds of sportsmen with the opportunity to hunt on roughly 9,500 acres of open territory on the base and resulted in the harvest of 77 deer and 18 turkeys. Between all the controlled hunting programs this fiscal year, a total of 1,048 days of hunting recreation were provided. In addition, this fiscal year we added a special mentored new adult turkey hunter controlled hunt limited to 10 participants. Several MassWildlife staff, including the District

Manager and Wildlife Biologist, served as mentors. The hunt went well, with several hunters having some action and seeing/hearing birds.

The District once again cooperated with the Trustees to help manage the controlled deer hunting program at the World's End Reservation in Hingham.

The District Supervisor issued permits for a total of 39 special winter game bird hunts, 7 at the Erwin Wilder WMA and 32 at the Frances A. Crane WMA. Two field dog trials were reviewed and permitted by the District Supervisor at the Frances A. Crane WMA. Further, eight individual dog training permits for using captive-reared mallards were issued to interested sporting dog owners/trainers.

Capital stewardship funding was again utilized to create, maintain, and improve recreational access to our lands this FY. The new parking lot at the Mill Brook Bogs WMA was expanded and improved further and a new parking lot was cleared and developed at the new Winnetuxet River WMA. Additionally, parking lots were improved/maintained with the addition and compaction of gravel at the Burrage Pond WMA, Frances A. Crane WMA (South Section), Mattapoisett River WMA, Mashpee Pine Barrens WMA, Rocky Gutter WMA, Old Sandwich Game Farm WMA, Triangle Pond WMA and the Betty's Neck WCE.

Staff completed a major cleanup and maintenance project at the John's Pond boat amp in Mashpee, removing an immense amount of landscaping debris illegally dumped there.

District staff mowed and maintained the open field habitats and access trails on all of our public pheasant and quail stocking covers. Specialized mowing was also completed at our Frances A. Crane WMA, Noquochoke WMA and the Hockomock Swamp WMA in support of permitted sporting dog training activities. Further, all of the fields at the Myles Standish State Forest that are stocked with birds were mowed in the winter for maintenance.

District staff safely and successfully distributed our annual Guide to Hunting, Fishing and Trapping to all license vendor locations in the district, as well as to many other locations (visitor centers, DCR facilities, Town Police Departments, sporting goods stores, etc.).

Relevancy, Collaboration, and Outreach

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

Southeast District personnel prepared and staffed a booth/display at the Marshfield Fair and manned a booth/display and sold hunting and fishing licenses at the Standish Sportsman Show.

Staff from the Southeast District organized and operated a display and several workshops at the hugely popular Huntstock Event held again at Wildwood Farm in Westminster in August. Staff attended the event and had displays on deer biology and management, hunter education and general MassWildlife information. We also had our dermestid beetle colony on display and gave people information on how to maintain their own beetle colony to do European mounts. Staff also gave a full demonstration on field dressing, skinning and butchering a deer in cooperation with the Brookline Cutting Barn.

Several District staff were heavily engaged in a variety of R3 project teams and participated in a host of R3 programs and events. Several staff assisted with teaching an online deer scouting class in September and then followed that up with an in-person field scouting class held at our Erwin Wilder WMA in October that was very well attended. The District Manager and Wildlife Biologist helped organize and offer a range day at the Marshfield Rod & Gun Club for newer adult turkey hunters where they had the chance to learn about typical turkey hunting shooting positions, proper aiming points and then practice patterning their shotguns using a variety of different loads and chokes. The same two staff also assisted with an online Learn to Turkey Hunt class.

The District Manager created a list of venison burger recipes with complete instructions to be posted on our website as a resource to hunters and to those that take advantage of the Hunter Share the Harvest Program. Also, although the Hunters Share the Harvest Program was mentioned earlier, it is important to point out the integral role District staff continued to play in the program's success by maintaining relationships with the processors and partnering food programs and transporting/delivering processed donations to the partner facilities for distribution.

District staff gave a number of public presentations this FY including multiple presentations on black bears, largely in response to the massive increase in bear sightings in the district, as well as several presentations on living with coyotes and general suburban wildlife topics. Steve Hurley continued his long history of giving a variety of fisheries biology and conservation talks throughout the year to school groups, conservation organizations and community groups.

The District Fisheries Biologist participated in the Earth Day Trout Stocking Event, stocking fish at Little and Long Ponds in Plymouth and giving a brief presentation on trout stocking and fisheries management to the public in attendance.

The Fisheries Biologist also attended regular meetings of the River Herring Network, Eastern Brook Trout Joint Venture, Sea Run Brook Trout Coalition, American Fisheries Society and continued his service as a longstanding member of the Camp Edwards Plume Containment Team.

The District Stewardship Biologist served on the Assawompset Pond Complex Management Team and the Bioreserve Management Team, attending their quarterly meetings. He also gave a presentation to the Hanson Historical Society on the Burrage Pond WMA.

The District Supervisor attended virtual and in-person monthly meetings of the Barnstable, Bristol, and Plymouth County leagues of sportsmen, providing them with information on MassWildlife activities and answering fish and wildlife questions.

Technical Assistance

District staff provided technical advice and support to many local Animal Control Officers, police departments, boards of health, and conservation commissions, as well as to the MEP on issues dealing with fish, wildlife, and their habitats. Many of these issues relate to the review of the potential impacts of proposed projects on fish and wildlife. Others dealt with suburban wildlife and conflicts with humans and with other public health and safety concerns related to fish and wildlife, particularly nuisance or damage complaints and reports of sick or injured wildlife. The district responded to a variety of problem animal calls this fiscal year, predominantly dealing with black bears, deer, coyotes, aggressive wild turkeys and aggressive hawks.

The black bear calls and issued mentioned earlier in this report did take a lot of district time and effort early in the FY with many, many calls coming in from the public and town officials. Many of the calls/issues were handled simply by providing educational information and advice, but a significant number of the calls resulted in site visits by both the District Manager and Wildlife Biologist. It did appear that over the course of the past few years our efforts to get the correct materials and information out to the public, town officials and the media is working to help create a community that is better prepared to safely and effectively coexist with black bears. The biggest ongoing issue lies with backyard hobby farmers that have been slow and/or unwilling to take the necessary steps (good, properly installed electric fencing) to protect their livestock/bees.

District staff responded and provided support and/or technical assistance with a number of different deer issues this FY including removing a dead deer in a backyard in Plympton that has gotten entangled in a fence, attempting to get a deer out of a fenced solar field in Rochester, collecting and ultimately euthanizing a severely injured fawn in Fall River, capturing an orphaned fawn (doe roadkill) in Middleboro and transporting to a licensed rehabber, and assisting the deer biologist with responding to and freeing a deer with wire fencing wrapped around its neck in Marion. The most interesting deer response included a buck that had gotten entangled in a backyard soccer net in Marshfield where multiple District staff responded late at night when the deer was noticed and darted the deer, removed it from the net and safely

transported to a nearby large piece of conservation land where it was successfully released unharmed.

Coyote responses, in addition to the standard concern/nuisance calls, included multiple site visits regarding coyotes with severe cases of mange in Plymouth, site visits related to coyotes denning under sheds and decks, and assisting the Dennis ACO and OLE in locating and humanely euthanizing an injured coyote (vehicle strike).

Staff also responded to several other sick/injured wildlife calls including injured cormorants in Bourne, an injured swan in Pembroke, an injured turkey vulture in Middleboro, injured ospreys in Bourne and Dartmouth, a sick Canada goose in Wareham, a sick turkey (avian pox) in Pembroke and a multitude of others. Most of these animals are transported to one of the local wildlife rehabilitation facilities that we have an excellent working relationship within the district. In some rare instances, due to the species or circumstances, we will transport them to the Tufts Wildlife Clinic in Grafton.

Staff responded to reports of a large lizard seen under a shed in Carver in September. After some significant effort, including digging and moving a lot of materials, we successfully captured the lizard, which turned out to be a savannah monitor, which is illegal to possess in Massachusetts. The lizard was transported to the New England Wildlife Center for evaluation and care and was ultimately placed with a licensed individual.

The District Manager worked very closely with the Dartmouth Natural Resources Trust who reached out asking for assistance in developing their first controlled hunting program. He attended several meetings, provided technical advice based on involvement with several other longstanding controlled hunting programs in the State and created georeferenced maps for all of their properties that were ultimately used to develop the program which is set to go into effect for the Fall 2024 hunting season.

Staff attended and/or provided technical advice and assistance to a variety of conservation efforts and projects including the Coonamesset River Catch & Release evaluation meeting, Coonamesset River Restoration Project, Cape Cod Pond Strategies Meetings, Buzzards Bay Restoration Committee meetings, Tidmarsh Restoration Project meetings, Santuit Pond Preserve Management Team meetings, River Herring Network meetings, Mashpee River fish passage project meetings, Hanover Fireworks Site restoration meetings, and the Martha’s Vineyard Mill Pond restoration project meetings.

Central Wildlife District

Administration

Central District staffing saw some changes in FY 2024. Our district Aquatic Biologist, Rebecca Colby, moved on to take a position in academia, and Technician Ian Sypek was promoted to Outdoor Education Specialist at the Field Headquarters in Westborough. Both positions remained open through the spring trout stocking season; however, at the end of the fiscal year we are close to backfilling these important roles. The rest of the District crew did an outstanding job stepping up to fulfil our mission while we have been short staffed.

All state mandated district staff annual trainings were completed on schedule. In addition, several staff members maintain Class 2 Hoisting Licenses, Class 4G Hoisting Licenses, Pesticide Applicators Licenses, and Prescribed Fire Certification. These licenses require additional continuing education and physicals.

In conjunction with our engineering contractor, Tighe and Bond, district staff conducted seven public information sessions related to ecological restoration projects that are ongoing. These projects all involve removal of defunct dam structures; two in Sutton, one in Athol, one in New Braintree, and one in Hardwick. This year we have been working on the permitting process and anticipate going out to contract on the projects in FY 2025 with construction work spanning FY 2025-FY 2026.

District staff met with representatives from USACE at Birch Hill Dam for an annual planning meeting on the timber harvest and habitat treatment work that is ongoing there. During that meeting a graduate student gave a presentation on their research of bee species and how they use the landscape.

Central District lands under License Agreement with local farmers remained at 31 properties. None of our agreements came up for bid this fiscal year as all eligible farmers took the optional renewal for a five-year extension of their agreements. This land management strategy allows the for the maintenance of open space by cooperative farmers which frees district staff to attend to land management duties on non-agricultural lands. If there are farmers who are interested in being notified when parcels do come up for bid, they should contact the district office.

Over the last few seasons, we have authorized three snowmobile trail licenses to clubs in the district. Of these clubs, only one chose to renew their license for the FY 2024 season. With less snow fall in recent years it has not been conducive for riding, and this past winter had very few periods of time meeting the minimum requirement of four inches of snowpack on the trails. While motorized vehicle access is generally not allowed, concessions were made in these

instances to allow access on three pre-existing trail routes that connect to the main stem Snowmobile Association of Massachusetts trail system.

Stewardship, Management, and Habitat Restoration

During FY 2024 the transfer of the former Templeton Development Center property was completed, and all the boundaries were properly marked detailing where the expanded WMA exists. This acquisition has increased Norcross Hill WMA from 500 acres to approximately 2000 acres. All standard WMA regulation now apply to this area. The open field portions of this property will be maintained through seasonal mowing. Some of this maintenance is currently being conducted via agricultural license with one of our farmer partners for hay.

District staff conducted seasonal mowing at just over twenty sites that are not part of our agricultural license program. Many of these sites are among our larger fall pheasant stocked WMAs such as High Ridge, Bolton Flats, McCallum, Winnimussett, Richardson, and Quaboag. Most of our mowing activities occur between July 15 and September 30.

In addition to seasonal mowing, several district properties are maintained with prescribed fire. Half of our district staff are certified to participate in prescribed fire work. In FY 2024 the program conducted burns at the following district WMAs: Birch Hill, Muddy Brook, Quaboag, Bolton Flats (Pine Hill section), and Richardson. In addition to these fires, we also collaborated on a burn in Grafton at a property owned by the local Native American nation. In addition to the burn events themselves, there is a lot of prep work that the District staff does to ready these sites for fire. All fire breaks need to be mowed and fire roads need to be built. While some of this work is contracted, much of it is conducted in-house. The prescribed fire program continues to grow, and district staff participate throughout the state to support this important habitat management work.

As a result of the annual planning process with the U.S. Army Corp of Engineers (USACOE) at Birch Hill, the next phase of timber cutting was completed on FY 2024. A few hundred more acres, mostly red pine plantation trees, were removed from the area around what is locally known as the old rifle range. Work is ongoing at Birch Hill; we are now starting year three of our five-year habitat management treatment work with USACOE.

In addition to the Birch Hill timber work, our final timer cutting phase at Muddy Brook was completed in FY 2024. This work was begun before the current moratorium was enacted and was largely finished during FY 2023, however, there were some final details and site cleanup that continued into FY 2024.

One area of ongoing focus for our Stewardship Biologist is to monitor for and mitigate illegal motor vehicle use on our lands. In FY 2024 they collaborated with the Massachusetts

Environmental Police (MEP) and local law enforcement on the cleanup of a serious trespass at Ware River WMA. A person was four-wheeling on the property and "mudding" through vernal pools. They ended up getting their vehicle stuck and stranded in a vernal pool which required the MEPs bringing in a tow company to extract them. This highlights just one instance; however, we frequently see evidence of environmental degradation cause by unauthorized motor vehicles on state lands. Unfortunately, our partners at MEP can't be in all places at once, so it's important for the public who care about the stewardship of these resources to report illegal activities to MEP when they see it happening.

Agency staff conduct approximately fifty WCR/WCE annual site monitoring visits of holdings within the Central District. These CRs protect important habitat resources while remaining under private land ownership. Our annual monitoring visits ensure that these properties are in compliance with the allowed uses per the CR.

HazMat surveys of three demo sites on WMAs in the district were completed. There is a plan to remove old, abandoned structures next fiscal year, and this is a necessary step in that process. Depending on funding, we project removal of the old houses on Bolton Flats WMA and Quaboag WMA, and a tunnel structure at High Ridge WMA. The houses were found to have asbestos and lead paint, and the tunnel has asbestos insulated pipes. These materials will be mitigated as part of the demo contracts.

Research and Conservation

Wildlife

The District staffed six biological check stations during the first week of shotgun deer season in FY 2024. There was one location change for this year. In the north-central area of the District the check station was moved. The South Royalston General closed during the off-season so was no longer available. Our thanks go out to the Royalston Fish and Game Club for stepping up to host a new check station at their location to fill that void. In addition to the standard biological data collected, District staff again collected samples to be tested for the presence of COVID for an ongoing study the deer project leader is participating in.

As mentioned earlier in this report, weather conditions during the winter months were mild in FY 2024. This prevented many District waterbodies from freezing and hindered our ability to check and maintain the more than 160 wood Duck nesting boxes that are installed in the District. Our partnership with a local school, Assabet Valley Regional Tech High School, continues to flourish and our supply of wood duck and bluebird nesting boxes is good.

FY 2024 black bear den surveys went well during the months of February and March. We were able to revisit six of seven collared sows, working with the Black Bear Project Leader to update

and change out collars as needed. One of the sows was recaptured in a barrel trap in Petersham after the denning season.

The District again assisted with a PFAS study being conducted by the Biodiversity Research Institute (BRI) located in Maine. A local graduate student is working with BRI to obtain samples from bald eagle chicks to check for the presence of PFAS. Nests in Grafton, Shrewsbury, and Northbridge were visited, and blood samples were taken. The eagle chicks that were present were also banded. While the sample results from this season are not available and the data is not complete from the previous season, early results suggest that PFAS is present in the blood of the chicks.

The implementation of the extended pheasant season was in effect for FY 2024 for the first time. Pheasant hunting was extended through the end of December, after the two-week break for the shotgun deer season. No stocking occurred after the traditional six weeks leading up to the Thanksgiving weekend; all 13,000 plus pheasants allocated to the district were released at 15 different properties over the course of the first 6-weeks of the season. Bolton Flats did not receive birds this year due to flooded conditions. Our work with the staff at West Hill dam in Mendon to ensure suitable habitat paid dividends and we were able to stock that location once again in FY 2024.

The Central District Wildlife Biologist and District Supervisor continue to maintain their training and certification for wildlife immobilization. We are members of the state Large Animal Response Team (LART), and work with the Environmental Police in our district whenever moose, bear, or deer wander into areas that impact public safety. In FY 2024, District staff were involved in only one relocation of a black bear from Worcester. Fortunately, most of these situations resolve themselves when the animals make their own way back to adjacent open spaces.

Fisheries

The Aquatic Biologist position was vacant for the majority of FY 2024, therefore much of the activity in this realm was focused on our core responsibilities; seasonal trout stocking, stream surveys, and Lake Trout management surveys in the Quabbin and Wachusett Reservoirs.

Unlike many years, fall trout stocking was met with plentiful water levels in some of our District rivers. Just over 12,500 trout were stocked between October 2 and 13. Operations ran smoothly, and we received positive angler feedback.

In November, District staff assisted with the annual lake trout survey work on the Quabbin and Wachusett reservoirs. Wind and temperature conditions hampered efforts with many nights being cancelled due to cold and dangerous conditions. The work at Wachusett was completed

by mid-month, however, the Quabbin survey was extended through the last week of November to capture and collect data on the total fish needed for the survey.

In the spring season the District was allocated 79,567 pounds of fish, 40% of those being rainbow trout in the +14-inch category from the McLaughlin Hatchery. The District staff completed a distribution plan and stocked the fish into 70 different waterbodies, some with multiple stocking locations. Spring trout stocking concluded with the last run on May 29 delivering a load of 800 14-inch rainbow trout to Lake Dennison in Templeton. Every year we evaluate the waters we stock and make decisions based on multiple factors, including public access and impact to the existing fish populations. As the years progress, anglers may see coldwater wild trout fisheries receive few stocked fish, especially fewer brook trout, or they may see a particular stream eliminated from the stocking routes. Rest assured, however, this doesn't mean fewer fish will be stocked in the District, it simply means they will be stocked in a more appropriate location for catch-and-keep fishing.

Seasonal coldwater stream survey work, primarily looking for wild eastern brook trout, was conducted in July and August. Annually we survey up to 40 places to compare year-over-year data to assess the health of the coldwater fishery in these specific locations. This data helps us understand the current status and how a location may have changed over time. As mentioned above, this survey work influences other aspects of fisheries management in the District.

Enhancement of Outdoor Recreation

District staff were heavily involved with the construction and deployment of the equipment used in MassWildlife's new temporary public archery ranges (Figure D 1). The ranges were designed to be moveable from one location to another, but they proved to be so well-received by the public that staff built more ranges and left them in place throughout the summer to satisfy demand. This program will likely continue and expand in the years to come. Within the Central District, the range was set up at the Wayne F. MacCallum WMA in Westborough.

Figure D 1. Archers practicing at the archery range on the Wayne MacCallum WMA in Westborough.

Every year we work to improve our parking and access points on to the WMAs so that users can enjoy these resources. In FY 2024, we restored the parking area at the Moosehorn Pond, which had become severely eroded over the years. We created a new parking area along Route 9 in West Brookfield at an old log landing site to give additional parking and access to the Coy Hill

WMA, and we completed an extensive rebuild of the access road into the section of Quaboag WMA known as Hayes Field. This parking area can be accessed off Boyes Avenue in Brookfield and leads into a popular pheasant-stocked area. Work is also being done at this location to convert the fields into seasonal grasses, namely little bluestem. The fields here were harrowed and planted in June.

The Adams Pond Access project in Sutton is complete. It is part of the Merril Ponds WMA. There is a new access drive and parking area, new cartop boat launch, and the dam, walking path, and spillway reconstruction is finished and the site ready to accept visitors to enjoy fishing, paddling, and wildlife viewing. There is space for several vehicles to park safely.

Relevancy, Collaboration, and Outreach

The District Wildlife Biologist conducted a presentation and discussion on black bears at the Hardwick Town House on June 18, 2024. Several town residents have had black bear encounters this spring, and the presentation was designed to help educate people on how to live alongside them.

Our Fisheries Biologist assisted the New England Aquarium with a survey of native fish species that live in streams. Want to see these species yourself? Keep an eye out at NEAQ.org for the announcement of a new exhibit celebrating native fishes of Massachusetts.

Two district staff members participated as instructors at the Basic and Bow Hunter Education courses at the Mass Junior Conservation Camp. This two-week annual summer camp introduces young people to a wide variety of outdoor skills and activities, and district staff have participated in conducting camp in some capacity for many years.

As a component of our overall outreach efforts, the District Supervisor continues to disseminate monthly activities reports, is a guest speaker at several meetings, and gave a presentation on the agencies fish hatchery program to a local civic group.

We conducted two public stocking events during school vacation week leading up to earth day. One was at Regatta Point on Lake Quinsigamond in Worcester. There, roughly 150 people attended and help stock 1600 fish into the lake. The second event was held at Barett Park in Leominster when 100 people came out to enjoy the day. In addition to the stocking events, we supported four fishing derbies in the district.

Technical Assistance

The Central District staff handle numerous wildlife calls regarding general questions, sightings, and conflicts. These inquiries are wide ranging, from question about how to protect property and livestock from wildlife predation, to simply identifying specific species.

With black bears range expanding eastward through the Central District, we find ourselves providing information to the public regarding how to live cohesively with these large animals. Many callers have no experience with bears and are only beginning to see them for the first time in some parts of the district.

Many callers contact us looking for information on how to handle injured wildlife. Sometimes we can refer them to a wildlife rehabilitator listed on our website, in other instances its best to allow nature to take its course.

Connecticut Valley Wildlife District

Administration

There were no personal changes in the Connecticut River Valley District Office for the duration of FY 2024. The office continues to be fully staffed with all available positions filled. The Valley District also issued no new agricultural license agreements throughout the WMAs in FY 2024. Our existing agreements will continue to be maintained in areas where they provide a benefit to wildlife by maintaining open space habitat in places that would otherwise not be actively managed due to staffing, equipment, and time constraints.

Working collaboratively with the Department of Conservation and Recreation (DCR), the Connecticut Valley District staff sold 2,256 Quabbin one-day fishing Licenses; 1,917 of these were from credit card sales. The licenses were issued at the three boat launch areas on the Quabbin Reservoir and totaled $11,280 this fiscal year.

The Swift River primitive camping area remained closed to the public during the duration of FY 2024. The Valley District did permit use of the camping facility for a Project Healing Waters event in the Fall of 2023. The 3-day fishing event was a volunteer-led program that helps active military service personnel and Veterans in need though dedicated, developed curriculum of fly fishing, casting, fly tying and fly rod building.

The Valley District issued two field trial permits in FY 2024 for events held on Herman Covey Wildlife Management Area. Both the New England Visla Club and the Central New England Brittany Club returned to Heman Covey WMA this year to hold events at the facility. For the second year the groups expressed their appreciation for the recent regulation changes as well as the condition of the WMA for the event.

In addition to our field trials, the valley district issued one special winter hunt for a hunt on Heman Covey WMA in the winter of 2023. The group stocked pheasant sourced from Fullflight game farm in Bernardston, MA for the one-day event.

Stewardship, Management, and Habitat Restoration

This year the focus of boundary marking efforts within the district prioritized the new parcels in Montague, Whatley, and Orange; wildlife conservation easements; and refreshing several areas that had damaged or missing boundary marking signs. A total of 4.42 miles of property boundary lines were refreshed and 4.8 miles of new properties were marked by the District staff. A total of 2.7 miles of wildlife conservation easements and 1.5 miles of new property were confirmed by the Stewardship Biologist and then marked by contracted boundary marking teams.

Annual monitoring visits and reports were conducted on Conservation Restrictions (CRs) throughout the district in FY 2024. Annual monitoring is a legal obligation under the terms of each CR and is also critical to protecting the conservation values of these properties. Landowners were contacted via letter and invited to participate. Participants who decided to come along for the site visits provided a good perspective on the land's history and current use, as well as a chance to build relationships with these landowners. We continue to see a change to new ownership of the underlying fees of many CRs. We welcome our new fee-holders to the conservation team and enjoyed spending time with the families, municipalities, land trusts and foresters that makes up our diverse team of landowners committed to protecting wildlife and their beautiful lands.

Under the agency's current Walking Trails Policy, proposed trails and maintenance of existing trails must undergo an in-depth application and approval process. Work continues with Kestrel Land Trust to bring sections of the Robert Frost Trail into compliance with this policy. The Valley District also monitors the existing licensed trails in the district – the Tully Trail within the Tully Mountain WMA, Fish Brook WMA, and Tully Mountain WCE and the New England Trail that winds through East Mountain WMA and the Tully Brook Access. A total of 1.80 miles of the NET Trail and 3.2 miles of the Tully Trail were monitored this year, with one maintenance project being completed on the NET trail.

Use of WMAs continues to see a marked growth in use compared to previous years. Dumped materials continue to be removed from WMAs and monitoring of these areas was consistent in FY 2024 with several truckloads of dumped materials being removed. It is noted that areas with water access are seeing an increase of usage with the onslaught of hotter weather and the community is seeking out these areas more. These areas have required more frequent monitoring and a greater amount of habitat impacts, trash removal and calls from the public concerning usage concerns. Parking areas and access points were improved by district staff at several of the WMAs throughout the district. Parking lot maintenance continues to be a focus for stewardship and staff. It is of note that there has been a marked increase in our collaboration and oversight of many power-grid improvements and climate resilience projects

being conducted by many utilities and transmission line companies in the valley. This year saw a 50% increase in requests for permits to remove hazardous and diseased trees.

Valley District staff continue to manufacture and produce CNC routed signs for use on state properties across the state. Staff produces 130 signs during FY 2024. Bringing the total number of signs produced to date to over 332 manufactured on site in and distributed to the other districts for use on Division properties.

Improvements and maintenance included widening existing parking areas, improving surfaces with gravel, boulder exclusions to limit illegal off-road access, installation of new gates, repair and/or maintenance of existing gates, and motorized vehicle trespass deterrence. All WMAs were posted with rules and regulations. Signs are posted at public access entrance points at 35 WMAs throughout the district.

Approximately 125 acres of fields, management access roads, and fire breaks were mowed at seven WMAs this year; 25 acres at Southwick WMA, 25 acres at Southampton WMA, 16 acres at Herman Covey WMA, 5 acres at Poland Brook WMA, 8 acres at Flagg Mountain, 35 acres at Leyden WMA, 10 acres at Montague Plains WMA, and 1 acre at Great Swamp Whately WMA.

A total of 598 acres of grasslands and shrublands were burned under prescribed fire plans at four WMAs; 12 acres at Leyden WMA, 300 acres at Montague Plains WMA, 146 acres at Herman Covey WMA, and 140 acres at Southwick WMA. One additional district staff member was trained as fire fighter Type 1 bringing the total number of district staff qualified to participate in prescribed fires to 5. These individuals are used to assist with prescribed fires though out the state when doing so improves wildlife habitat.

District staff spot treated 109 acres of invasive plants with herbicide treatment on four WMAs; 15acres at Leyden WMA, 37 acres at Herman Covey WMA, 38 acres at Southampton, and 19 acres Southwick WMA.

District efforts to restore the Sandplains Habitat on Montague Plains WMA continued in FY 2024. Staff collected approximately 200 sandplain lupin seeds that were planted within newly scarified areas. Several firebreaks were mowed and/or maintained at Montague Plains WMA, Southwick WMA, Herm Covey, and Leyden WMA for prescribed fire management on those properties.

Research and Conservation

Wildlife

Valley District staff contributed to the statewide wildlife survey efforts by completing 8 ruffed grouse drumming survey routes and conducted wild turkey brood surveys. Only a total of 72

Wood Duck boxes were checked and maintained at 20 sites this fiscal year because of the mild winter and lack of ice on ponds. Blue Bird and Kestrel nesting boxes were maintained at several WMAs as well.

Valley District monitored the survival and reproduction of 24 radio-collared female black bears during this reporting period. No collared bears in the Valley District died during this period. One collared yearling female slipped her collar. Attempts were made to capture 19 collared females in their dens to determine reproductive success and first-year cub survival. Due to the exceptionally mild winter and lack of snow many bears remained active and did not securely den. As a result, only 8 of the females were successfully immobilized and handled in dens. It was determined that 9 females had newborn cubs, 6 had yearling cubs, 1 lost her cubs and did not breed, 1 adult female was barren, and one 2-year-old did not breed. Global Positioning System (GPS) collars were affixed to bears to monitor locations every 45 minutes. Bear traps were set in the spring and early summer to recapture a female bear with a GPS collar that malfunctioned and to add new females to sample size. In total this year 22 bears were captured during trapping, 13 new bears (9 males, 4 females) and 9 previously tagged bears (7 males, 2 females).

Ten check stations in the district were open to check hunter harvested animals this year and 8 biological deer check stations were staffed by Valley District staff during the first week of deer shotgun season.

Valley District staff stocked 10,000 pheasants on 10 agency owned WMAs, 6 government or town owned properties, and 10 privately owned hunter accessible properties prior to and during the 6-week long pheasant hunting season. The WMAs stocked by district staff this year included: Herman Covey WMA, Poland Brook WMA, Leyden WMA, Montague Plains WMA, Connecticut River WMA, Bennet Meadows WMA, Pauchaug Brook WMA, Southampton WMA, Southwick WMA and Whately Great Swamp WMA. Towns stocked within the district included: Amherst, Belchertown, Brimfield, Conway, Deerfield, Easthampton, Hadley, Hatfield, Holland, Brimfield, Leverett, Leyden, Montague, Northfield, Northampton, South Hadley, Southampton, Southwick and Whately. A complete list of pheasant-stocked properties within the district can be found on MassWildlife's website.

Fisheries

This document covers a period of time between July 2023 and June 2024, which includes the Fall 2023 and Spring 2024 stocking seasons. Fall stocking season in the Connecticut Valley District ran from 09/27/2023 to 10/13/2023 and sourced trout from McLaughlin (64.5%), Bitzer (31%), and Sunderland (4.5%) hatcheries, totaling 16,906 pounds. The majority of fish fished in the fall (85%) were Rainbow Trout, with a relatively small number of Brown Trout (12%) and

Eastern Brook Trout (3%) stocked as well. 34 different waterbodies were stocked with trout; 27 lakes/ponds and 7 rivers/streams. Low water did not impact stocking locations as it did the previous fall season in 2022.

The spring trout stocking season is a much bigger effort than the fall season, running for 13 weeks between 03/14/24 and 05/30/24, with an additional load on 07/03/24. In total 93,695 trout weighing 78,692 pounds were stocked into 88 different waterbodies in 48 towns. Trout were sourced from all 5 state hatcheries: Bitzer (22%), McLaughlin (48%), Reed (1%), Sandwich (1%) and Sunderland (28%). rainbow trout comprised 53% of all stocked trout, followed by brown trout (29%), eastern brook trout (18%), and tiger trout (<1%). 76% of all stocked fish were 12 inches or larger in size. In the spring season, 30 ponds and lakes and 58 streams and rivers were stocked in the District.

The report covers the second half of the 2023 and first half of the 2024 sampling seasons, information reported below reflects this break, which is often mid-project. Some of these surveys are to update out-of-date sampling data from older sampling efforts, to collect data on unsampled locations, or to work with other agencies on specific projects such as dam removals and research. In total, district staff completed 30 electrofishing surveys. Additionally, District staff assisted with numerous freshwater mussel surveys, and PIT tag recapture efforts on the Ware River associated with the Wheelwright Dam removal Project.

District staff continued to organize and conduct field sampling efforts on a long-term study of Quabbin Reservoir lake trout populations. The project has been collecting data on Quabbin lake trout for over 60 years. Fish are collected when they congregate to spawn in November, using short-soak (30-60 min) gillnets at depths of approximately 30-50 feet. Fish are assessed and measured, checked for existed tags or implanted with a new tag, then released. Currently Passive Integrated Transponder (PIT) tags are used; a 16-digit unique ID allowed for identification of individual fish in successive recaptures. In the CY 2023 field season, 21 net gillnet sets were completed over 3 sampling nights. In total, 116 lake trout were captured, 109 newly encountered fish, and 7 recaptures. The largest fish encountered in the 2023 season, a previously untagged male, weighed 11.75 pounds and measured 33 inches long.

This reporting period saw much continued work on the largescale Wild Brook Trout Project on the Swift River. The project set up is ongoing at the time this report was produced but is moving forward well after some setbacks and delays during winter 2024. Flows on the Swift River spiked dramatically starting in January of 2024 after water from Quabbin Reservoir started to spill over the dam spillway into the Swift River. Scheduled work was postponed and canceled as flows continued to climb. Flows peaked in early April 2024 at 1,200 cfs, then began to slowly decrease until June when the dam stopped spilling. After spill concluded the river dropped back

to regular flow (50 cfs) almost immediately. In addition to slowing scheduled progress, the elevated flows also damaged and displaced the two antenna sites that had been completed prior to the flow increase. Staff were able to remove important equipment and reinforce installations before river access became dangerous or impossible. After flows dropped to safe levels in June, staff was able to assess the damages and conduct repairs. Luckily, repairs were quite quick and easy. Staff have been taking advantage of the regular (50 cfs and lower) flow to get the project back on schedule and continue progress on the work that still has yet to be completed. The project has been made possible through the support of the Pioneer Valley Chapter of Trout Unlimited, which has provided funding as well as many helpful volunteers. By the end of the fiscal year, 32 people have assisted with various stages of fieldwork and antenna installations. Three out of the four antenna sites are currently installed and operational, with the fourth slated for completion very soon. Fish-tagging is planned to take place for the first time this fall/winter and continue for several years. More detail about the methods and goals of this project are available at www.mass.gov/swift-trout. This website was advertised locally and on signs at each of the field locations.

Natural Heritage and Endangered Species

The Valley District staff continued its efforts to monitor and band eagle census covering Hampshire, Hampden, and Franklin counties. District staff identified and monitored 40 breeding bald eagle territories.

The district cooperated with NHESP staff on a variety of projects throughout the district this year. Valley District staff also assisted FHQ staff with four whip-poor-will surveys within the district.

District staff continued to assist with freshwater mussel surveys, as well as tagging/recapture projects. During this reporting period the majority of work with freshwater mussels was related to the large Wheelright Dam removal in Hardwick, on the Ware River. Crews assisted Natural Heritage in snorkel surveys, application of PIT tags, and numerous PIT tag recapture and assessment sampling events.

Enhancement of Outdoor Recreation

Valley District staff administered the annual controlled waterfowl hunt at Ludlow WMA. A total of 5 hunters applied for this year's lottery style permits which was down considerably from prior years. All those who applied were drawn to participate in the hunt. In preparation of the hunt the Valley District staff cleared and maintained approximately 1.25 miles of access trails and four duck blinds on the property.

Five sportsmen's clubs within the Valley District participated in the Club Pheasant Program this year. District staff received and distributed 1,120 seven-week-old pheasants to these clubs in

July. These birds will be released on properties open to public hunting during the regular hunting season for sportsmen and sportswomen to enjoy.

Relevancy, Collaboration, and Outreach

The majority of fisheries outreach events are held during the spring trout stocking season, spring 2024 was no exception, new events are added each year. In 2024 hatchery staff participated in nearly every event, often the crews from the hatchery that raised the fish assisted at the event. As a standard approach at most these events the public is given a brief presentation and then participates in the stocking effort using buckets. These continue to be a very positive experience that we will continue to expand each year. As they are often targeted to children/families, quite a few events are held during school break, which is also often Earth Week. Additionally, district staff lead field and demonstrations for electrofishing and provided in-class lectures for Westfield State University students and assisted with field electrofishing demonstrations for University of Massachusetts, Amherst.

Technical Assistance

Our District offices are often MassWildlife's first line of contact with the public. The Valley District office was open to the public and district staff answered hundreds of calls requesting technical assistance regarding wildlife and fisheries concerns. Staff addressed the needs of callers ranging from hunting and fishing license sales, requests for information, aided with nuisance-animal complaints, assistance with injured wildlife and hunter harvest reports for hunters without access to computers.

Western Wildlife District

Administration

The District welcomed Kalina Flood, who transferred to the Western District from the Sunderland Hatchery in January 2024. Kalina brings a sound foundation in biology, local knowledge, and agency experience to the Western District Office.

Large Animal Response Team (LART) cases in FY 2024 included responses to deer, bear, coyote, and moose. Outcomes of these call varied depending on the health and safety of the animals and the public. In addition to these in-person cases, District staff responded to numerous calls and questions involving LART species.

The District Supervisor represented the agency in the Inflation Reduction Act Northern Forest Project throughout the spring of 2023. This multistate project seeks to provide funding for restoration projects in the Northern Forest Biome to increase climate resiliency.

District Aquatic Biologist Leanda Fontaine was awarded the prestigious Sportsperson of the Year Award by the Berkshire County League of Sportsmen for her work protecting natural resources in the Western District. The award was presented in front of a large crowd at the annual Silvio Conte banquet.

The American Rescue Plan Act (ARPA) provided funding for stewardship and restoration on WMAs throughout the state. The Western District staff worked on three ARPA funded projects: demolition of structures on WMAs, fish barrier removal on Weston Brook, and Restoration of ORV damage on the Chalet WMA.

The District Supervisor also provided support and information for the America The Beautiful Appalachian corridor grant proposal.

District staff participated in several training and professional development activities including all state mandated training. The District Wildlife Biologist also became certified as a licensed pesticide applicator and a licensed drone pilot. District staff renewed training in prescribed fire.

Stewardship, Management, and Habitat Restoration

The Stewardship Biologist is responsible for coordinating efforts on boundary marking, encroachments, access, Conservation Restriction (CR) monitoring, and other land management activities. The Stewardship Biologist is the point of contact for contractors working on boundary marking and surveys. A total of 4 miles of property boundaries were marked in FY 2024 by district staff. Although bids were solicited, we were unable to contract boundary marking because of a lack of vendors able to do the work. Marking efforts were spread throughout the district prioritizing new acquisitions and previously unmarked properties. The Western District has responsibility for close to 70,000 acres between Wildlife Management Areas and Conservation Restrictions including hundreds of miles of boundaries.

The Stewardship Biologist completed 38 monitoring visits to Conservation Restrictions. He reviewed multiple forest management plans, in conjunction with the Wildlife Lands Stewardship Coordinator and Habitat Program. The district also reviewed multiple requests for trail construction, trail repairs and parking areas on lands under Wildlife Conservation Easements.

District staff maintained parking areas at 12 WMAs and 4 Public Access ramps, mowing, weed whacking, cleaning trash, and repairing gates. Stone was added to improve parking and access for pheasant stocking at the George Darey Housatonic River WMA.

In cooperation with stewardship staff at Field Headquarters, the district resolved a challenging encroachment on the Coles Meadow WCE. An abutting landowner constructed a septic system

on land under the Conservation easement. After negotiations between the landowner, abutter, and MassWildlife the Septic was removed and the area restored to natural condition. Encroachment cases at Long Mountain WMA were also resolved.

The district used capital stewardship funds to repair road and parking areas at Eugene Moran WMA, Hinsdale Flats WMA, George Darey Housatonic Valley WMA and Fairfield Brook WMA. We also installed water bars on 8000 feet of woods road that had washed out in a high rain event.

A hazard tree issue was identified on the boundary of George Darey Housatonic Valley WMA in Pittsfield. The district resolved the issue by contracting for tree removal. In FY 2024, seven Western District employees were members of the MassWildlife prescribed fire team. FY 2024 was the best year to date for prescribed fire in the district with fire successfully applied at Stafford Hill WMA, Fairfield Brook WMA, and Hop Brook WMA.

Research and Conservation

Wildlife

Annual surveys for woodcock (2), ruffed grouse (7), and waterfowl indicated pair (4) surveys were conducted in the District. Staff also cleaned, constructed, and installed over 120 nesting boxes for wood ducks, 60 bluebird boxes, and 10 kestrel boxes.

Western District personnel implemented multiple habitat projects including annual brush mowing over 400 acres across 13 different WMAs and pruning/daylighting over 60 apple trees and blueberry bushes on 3 different WMAs. Staff also coordinated with the Habitat section on projects, including management plan review, site visits, and logistical support.

The district deployed loon rafts at Cleveland Reservoir in Hinsdale and Ashley Reservoir in Pittsfield. The District Supervisor and Wildlife Biologist coordinated with the Biodiversity Research Institute continuing a loon relocation project in FY 2024.

The district had continued success with the bear trapping and collaring program. Three new bears were collared and many others ear tagged. Bear trapping requires substantial effort but has provided some very important local data which has been directly relevant in explaining and, in some cases, reducing bear conflicts in the region. Nine dens were visited over the winter resulting in 8 successful captures

Fisheries

A total of 26 surveys on 23 water bodies were conducted by Western District staff between July and September 2023. District staff also assisted the Fisheries Program with trout collection surveys in the Deerfield River. Six waterbodies were surveyed by boat electrofishing in June

2023: Ashmere Lake, Buel Lake, Littleville Reservoir, Lower Highland Lake, Richmond Pond, Upper Goose Pond. Nighttime surveys were conducted on Littleville Reservoir on June 27 and included 3 gillnet sets as part of the survey effort. Surveys on Lower Highland Lake in Goshen also included 3 gillnet sets. All fish were identified and measured to the nearest millimeter and weighed before being returned to the water.

The Fisheries Biologist assisted the Fisheries Section in adipose clipping of Brown Trout for stocking in the Deerfield River, as part of an ongoing assessment of wild Brown Trout.

Monitoring and removal of Water Chestnut continued on Threemile Pond and Mill Pond in 2023. One day was spent removing Water Chestnut from Threemile Pond at the Threemile Pond WMA in Sheffield in July 2023, to control the plant's spread to other parts of the waterbody. Three Western District staff members pulled all visible emergent plants by hand from kayaks and moved offsite for decomposition.

Annual removal of water chestnut at Mill Pond at the Karner Brook WMA in Egremont was also conducted in July 2023. Three days of hand pulling were performed by Division staff, removing approximate 5 pickup truck-bed loads of plant material which was moved to an upland location for decomposition. Removal efforts included assistance from Natural Heritage and Endangered Species Program staff.

Natural Heritage and Endangered Species

District staff participated in the bald eagle nesting survey. There are nine confirmed active nests known in the Western District, Pittsfield, Lee, Monterey, Buckland, Hinsdale, Great Barrington, Richmond, Williamstown, and Otis. The district banded eagle chicks at the nests in Richmond and Williamstown.

The District Biologists and Wildlife Technicians partnered with NHESP to manage and enhance habitat for endangered turtles by conducting surveys, clearing vegetation, applying prescribed fire, and maintaining water levels. The District Supervisor attended monthly meetings of the Berkshire Fens working group with The Nature Conservancy.

Western District staff assisted the natural heritage and Endangered Species Program with the ongoing Brook Floater mark and recapture study on the West Branch Farmington River in Otis. Staff conducted 2 mussel surveys via snorkeling in July and August 2023.

Western District staff provided field assistance and support for contractors working on timber rattlesnakes in Western Massachusetts. District staff assisted with peregrine banding at the Tekoa WMA and Monument Mountain. Western District staff conducted winter bat surveys in

multiple hibernacula and provided technical expertise to DCR on recently discovered bat hibernacula in southeastern Massachusetts.

Enhancement of Outdoor Recreation

Enhancement of outdoor recreation is a core function of the district office. Pheasants were stocked 3 days per week throughout the season. The Western District distributes 4,000 birds, released on nine WMAs: Stafford Hill (Cheshire), Eugene Moran (Windsor), George Darey Housatonic Valley (Lenox), Hop Brook (Lee), Knightville (Huntington), Hinsdale Flats (Hinsdale), Three Mile Pond (Sheffield), Flat Brook (West Stockbridge), and Peru (Peru) and 13 covers across the towns of Ashfield, Lee, Lenox, Williamstown, Hawley, Great Barrington, and Pittsfield. Overall, Pheasant stocking requires about 40 personnel days to complete each year. Pheasant chicks were provided to the Lee and Ashfield sportsmen's clubs in early FY 2024.

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

Fall trout stocking was completed over 10 days between September 26 and October 6. Fifteen waterbodies were stocked this fall: 14 lakes and ponds and 2 rivers (Deerfield River and East Branch Westfield River). The total number of trout stocked in Western District waters was 13,999 fish from Bitzer, Sunderland and McLaughlin hatcheries.

Spring trout stocking commenced on March 2024. A total of 91,614 fish were stocked during the spring season into 71 waterbodies: 23 lakes and ponds and 49 rivers and streams. District staff traveled daily to MassWildlife hatcheries and brought trout back to the Western District for distribution. Spring stocking concluded on May 24, 2023, for a total of 48 stocking days.

Northern pike were stocked in Lake Buel on September 19, 2023.

Relevancy, Collaboration, and Outreach

Because they are in the field daily, District staff (particularly Wildlife Technicians) communicate with the public almost every day. These interactions are an important part of direct outreach for agency programs.

The District Supervisor attended monthly meetings and provided updates to the Berkshire County League of Sportsmen and attended the annual banquet. District personnel staffed the tables at the Springfield Sportsman Show, the Berkshire Hunting and Fishing gear sale, and the Berkshire Natural History Conference greeting hunters, anglers, and naturalists while providing information about the agency.

District biologists and technicians participated in several R3 (Recruitment, Retention, Reactivation) working groups to promote hunting, fishing, and shooting activities.

The district continued our excellent relationship with Wahconah Regional High School in Dalton. Staff hosted students on multiple occasions and demonstrated biological deer check, fish stocking, and electrofishing. The Fisheries Biologist assisted with a Learn to Fish class, teaching students about fishing, acquiring licenses, and casting demonstrations. Science classes from Berkshire Community College and Westfield State University joined Western District Biologists collecting data at deer check stations.

The District Wildlife Biologist conducted multiple presentations to the public on topics including talks on living with bears, mustelids in Massachusetts, beavers, and hunting and working in wildlife

The District Fisheries Biologist participated in several cooperative projects, including career fairs at Hoosac Valley High School in Adams and Westfield State University, MassDOT's Rivers and Roads Training field component with electrofishing demonstrations and aquatic habitat value discussions, peer-review of the Practical Guide for Lake and Pond Management, and working with Field Headquarters staff on reviewing and commenting on the proposed continuation of a winter drawdown of Pontoosuc Lake.

Technical Assistance

District Staff operated on a full-time, in-person schedule throughout FY 2024. The District Clerk answered a high volume of calls and provided technical advice on fish, wildlife, and licensing. She also answered call for the Westborough Field Headquarters. The District Fisheries Biologist continued to serve as an alternate to the Westfield River Wild and Scenic Committee.

The Western District responded to numerous wildlife situations in FY 2024. We picked up several hawks and owls over the course of the year. We provided daily technical advice on living with bears and other wildlife throughout the spring and early summer.

The District Supervisor and Wildlife Biologist conducted numerous site visits related to bear activity. In most cases the issues were resolved with education and information. Intentional bear feeding continued to be an issue in the Western District causing harm to animals and disruption to neighbors. Summer camps and RV camps also continued to be a problem. District staff visited five summer camps and three RV camp-communities dealing with both intentional and unintentional feeding of bears. Bears had broken into multiple cabins, RVs, dining halls, and porches. In two cases, barrel traps were set but activity subsided.

Wildlife District and Lands Staff

Field Headquarters

Trina Moruzzi, Assistant Director of Operations
Elizabeth Newlands, Wildlife Lands Stewardship Coordinator

Northeast Wildlife District

Patricia Huckery, District Supervisor
Chalis Bird, Wildlife Biologist
Travis Drudi, Stewardship Biologist
Leslie Gabrilska, Clerk
Anne Gagnon, Land Agent (DFG)
Joshua Gahagan, Wildlife Technician
Tim Mathews, Wildlife Technician
Ryan Meuse, Wildlife Technician
Derek McDermott, Wildlife Technician
John Sheedy, Fisheries Biologist
Tucker Skowyra, Wildlife Technician

Southeast Wildlife District

Jason E. Zimmer, District Supervisor
Aaron Best, Stewardship Biologist
Jeff Breton, Wildlife Technician
Connor Fleming, Wildlife Technician
Daniel Fortier, Wildlife Technician
John Garofoli, Wildlife Technician
Steve Hurley, Fisheries Biologist
Joan Pierce, Land Agent (DFG)
Debra Silva, Clerk
Steve Wright, Wildlife Biologist

Central Wildlife District

Todd Olanyk, District Supervisor
John Bonafini, Wildlife Technician
Rebecca Colby, Fisheries Biologist (partial year)
Scott Kemp, Stewardship Biologist
Ethan LaPlante, Wildlife Technician
Mike Morelly, Wildlife Biologist
Debra Manty, Clerk
Jessi Manty, Wildlife Technician

James McCarthy, Land Agent (DFG)
Ian Sypek, Wildlife Technician (partial year)
Bruce Walker, Wildlife Technician

Connecticut Valley Wildlife District

Joseph Rogers, District Supervisor
Anne-Marie Bartus, Clerk
Kevin Chaffee, Land Agent (DFG)
Joshua Freniere, Wildlife Technician
David Fuller, Wildlife Biologist
Brian Keleher, Fisheries Biologist
Jennifer Jones, Stewardship Biologist
Kevin Pelosky, Wildlife Technician
Shasta Slade, Wildlife Technician
Walter Tynan, Wildlife Technician

Western Wildlife District

Andrew Madden, District Supervisor
Nathan Buckhout, Wildlife Biologist
Kalina Flood, Wildlife Technician (partial year)
Leanda Fontaine, Fisheries Biologist
Debra Lipa, Clerk
Peter Milanesi, Land Agent (DFG)
Colby Kellogg-Youndt, Wildlife Technician
Jacob Morris-Siegel, Stewardship Biologist
Eli Pease, Wildlife Technician
Heather Sadler, Wildlife Technician

7 The Field Headquarters Facility Report

Trina Moruzzi, Assistant Director of Operations

2024 Projects

In FY 2024, Facilities staff initiated and coordinated a number of major projects to maintain or enhance operations at MassWildlife's Field Headquarters in the Cronin Building.

Staff researched and coordinated the installation of a new access control system to replace the original system installed when the Cronin Building was first opened in September 2014. Access control systems are electronic systems that allow authorized personnel to enter controlled, restricted, or secure spaces by presenting an access credential to a credential reader.

Staff directed the stabilization and enhancement of the walkway on the side of the Cronin Building with the application of crushed stone. The new walkway provides better, more stable footing for staff and visitors.

Staff oversaw the installation of push-buttons at the doors of the Cronin Building's first-floor bathrooms, to automate door opening and closing in compliance with Americans with Disabilities Act (ADA) standards.

After a major failure, staff coordinated clean-up and oversaw repairs to the Cronin Building's walk-in freezer, as well as preventive maintenance to avoid similar damage in the future.

Staff oversaw the installation of two dual electric-vehicle (EV) charging stations for MassWildlife's growing fleet of electric vehicles and other authorized state-owned vehicles.

Facilities Staff

Trina Moruzzi, Assistant Director of Operations
James Pollock, Facilities Specialist

8 Federal Aid Program Administration

Lori Cookman, Federal Aid and Compliance Manager

Overview

The Federal Aid and Compliance Manager implements MassWildlife's Federal Aid Program, including oversight of documentation, reporting, compliance with acts and regulations, and other requirements for the administration of federal grants. The position also serves as the liaison between the grantee and federal agencies – including the grant administrator of the Legacy Region 5 office of the U.S. Fish and Wildlife Service (USFWS) for the U.S. Department of the Interior; the Natural Resources Conservation Service (NRCS) and the Animal and Plant Health Inspection Service (APHIS), both of the U.S. Department of Agriculture; and other grantors of federal funds such as the National Fish and Wildlife Foundation (NFWF).

Federal Aid

Wildlife Restoration (Pittman-Robertson)

MassWildlife's Wildlife Restoration Act apportionment, $9,667,166 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, wildlife outreach and communication, expanding hunter opportunities, regional restoration and management of New England Cottontail, land acquisition, and program coordination.

Sport Fish Restoration (Dingell-Johnson and Wallop-Breaux)

Massachusetts' Sport Fish Restoration Act apportionment, $3,818,272 was 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 $572,741 (15%); and the balance of $3,245,531 was divided 46/54 between the Division of Marine Fisheries (1,492,944) and MassWildlife ($1,752,587).

MassWildlife activities reimbursed under the Sport Fish Restoration Program include hatchery operations, hatchery maintenance, fish distribution, and boat accommodations. The OFBA, in cooperation with MassWildlife, had four boat accommodation grants active in FY 2024.

State Wildlife Grant Program (SWG)

MassWildlife's State Wildlife Grant apportionment of $858,841 was an increase from the previous year. The State Wildlife Grant funds were applied to four projects. Activities reimbursed under those projects include fish community research, biodiversity impact review, biodiversity inventory and research, biodiversity conservation mapping and planning, habitat evaluation, and the implementation of the Massachusetts State Wildlife Action Plan.

MassWildlife was awarded $161,673 through the FY 2019 national State Wildlife Grant competitive program to fund the Implementation of the Bog Turtle Conservation Plan for the Northern Population, with Benefits to Associated Headwater Wetland Species of Greatest Conservation Need. MassWildlife is partnering with Pennsylvania, Maryland, New Jersey, and Connecticut. This cooperative project expands upon a previous grant that was completed in FY 2019. Implementation of the new Bog Turtle grant began in FY 2020 and will continue through FY 2025.

Also in FY 2019, MassWildlife was awarded $115,206 through the national State Wildlife Grant competitive program to fund the project entitled Using Nanotag Technology to Identify Landscape-scale Habitat Use of Multiple Species of Greatest Conservation Need in New England. MassWildlife is partnering with the states of New Hampshire, Maine, and Pennsylvania. Implementation of this grant began in FY 2021 and will continue through FY 2025.

MassWildlife was awarded $52,000 through the FY 2020 national State Wildlife Grant competitive program to fund the project entitled Testing Salt Marsh Restoration Practices to Advance Saltmarsh Sparrow Conservation. MassWildlife is partnering with the states of Connecticut, Maine, Maryland, Rhode Island, and Virginia. This project will continue into FY 2026.

MassWildlife will serve as the lead state and was awarded $124,200 through the FY 2020 national State Wildlife Grant Competitive program to fund the Regional Conservation for Wood Turtles and Related Emydine Turtles. MassWildlife is partnering with the states of Connecticut, Maine, Maryland, New Hampshire, New Jersey, Pennsylvania, Rhode Island, and Virginia. This cooperative project will continue into FY 2026.

MassWildlife will serve as the lead state and was awarded $392,362 through the FY 2021 national State Wildlife Grant Competitive program to fund Advancing Conservation and Restoration of Brook Floater and Associated Freshwater Mussels. MassWildlife is partnering with the states of New Jersey, South Carolina, and Virginia. This cooperative project will continue into FY 2027.

MassWildlife was awarded $250,000 through the FY 2023 national State Wildlife Grant competitive program to fund the single state project entitled Implementation of Regional Conservation Plans for At-risk Turtles and Co-occurring SGCN in Massachusetts. This project will continue into FY 2027.

The Endangered Species Act (Section 6)

In FY 2024, MassWildlife received $76,500 in Section 6 funding from the USFWS. Funds will be used to further survey, monitoring and population management of Federally listed and at-risk turtles; and to continue survey, monitoring and management efforts for the Puritan tiger beetle and the Northeast Beach tiger beetle.

In FY 2024 MassWildlife was awarded $300,000 for a Section 6 Conservation Planning Assistance Grant entitled Responding to a changing Piping Plover Landscape in Massachusetts: A Strategy for Continued Conservation Success. Project activities will continue into FY 2027.

Regional Conservation Partnership Program

In FY 2019, MassWildlife was awarded $150,000 in RCPP funds through a cooperative agreement with the Natural Resources Conservation Service Funds. The agreement will help to provide technical assistance to private landowners interested in conducting habitat management on their property. Implementation of this cooperative agreement will continue into early FY 2025.

Miscellaneous Federal Grant Funds

In FY2023, MassWildlife received $25,000.00 through a cooperative agreement with the USDA-APHIS to conduct activities related to ARP SARS CoV2 in Cervids. Implementation of this cooperative agreement will continue into FY 2024.

In FY 2023, MassWildlife was awarded $773,000 in Zoonotic Disease Initiative funding through the USFWS to develop a wildlife health and public outreach program for Massachusetts and to research wildlife diseases and prevent their spread within the Northeast region. This project will continue into FY 2027.

Also in FY 2023, MassWildlife was awarded $795,000 through the 2022 National Coastal Resilience Fund for Protecting Saltmarsh Sparrows and Great Marsh Communities through Salt Marsh Restoration. Funds will be used to restore 3,278 acres of salt marsh through nature-based techniques, removal of two tidal restrictions, reversing salt marsh subsidence, and maintaining high marsh to improve coastal resilience. This project will continue into FY 2026.

Additionally, in FY 2023 MassWildlife was awarded $4,900,000 through the 2022 America the Beautiful Challenge Grant for the Southeastern Massachusetts Pine Barrens Landscape Restoration and Community Engagement Initiative. This initiative will restore the site of a former cranberry bog; expand aquatic connectivity and riparian habitat; build ecosystem resilience of pine barrens, woodlands, shrublands and sandplain grasslands; and improve ecological function of coastal plain pondshores. This project will engage landowners and collaborate with the Mashpee Wampanoag Tribe and other partners to complete large-scale restoration and build capacity for future conservation throughout the imperiled southeastern pine barrens of Massachusetts. Project completion is planned for FY 2027.

In FY 2024, MassWildlife received $249,839 through a cooperative agreement with the USDA-APHIS to develop Chronic Wasting Disease (CWD) educational materials and strategies to help prevent and/or control the spread of CWD in Massachusetts. Implementation of this cooperative agreement will continue into FY 2026.

Additionally in FY 2024, MassWildlife was awarded $3,492,093.52 through the 2023 America the Beautiful Challenge Grant for the Aquatic Connectivity for Imperiled Species in the Appalachian Corridor in Massachusetts. This initiative will restore floodplain benches, riparian forests, and aquatic connectivity within 3 river basins in the Appalachian Highlands in Massachusetts. Project completion is planned for FY 2028.

Audits

MassWildlife is subject to federal audits that are conducted every five years. MassWildlife's next audit is scheduled for federal FY 2025.

Other Matters

The Federal Aid and Compliance Manager responded to requests for information and public inquiries, managed MassWildlife's inventory, oversaw project performance and financial reporting, provided project assistance, attended trainings and meetings, and served as the liaison between Federal Aid personnel and MassWildlife staff.

Federal Aid Program Personnel

Kris McCarthy, Chief Fiscal Officer/Associate Director of Administration and Finance
Lori Cookman, Federal Aid and Compliance Manager
Debra Chamberlain, Assistant to the Federal Aid Coordinator
Debbie McGrath, Federal Aid Bookkeeper

9 The Personnel Report

Paige Jones, EEA Deputy Human Resources Director/Department of Fish and Game

Table P 1. New Hires: Employees

Name	Title	Date	Comment
Alec Kaisand	Conservation Biologist III	7/30/2023	Former contract employee
Marlena Timins	Clerk IV	7/30/2023	
Nikolis Gualco	Conservation Biologist III	8/27/2023	
Tucker Skowyra	Wildlife Technician II	11/5/2023	Former contract employee
Micah Jasny	Conservation Biologist IV	12/31/2023	
Matthew Lyons	Fish Culturist II	1/28/2024	
Jeffrey Osgood	Game Biologist III	2/25/2024	
Michelle Collins	Conservation Biologist III	3/10/2024	Former contract employee

Table P 2. New/Rehires: Seasonals and Other Contractors

Name	Title	Date	Comment
Brenna McCoubrey	Contract Social Media and Outreach Specialist	9/24/2023	
Alyssa Grayson	Scientists	11/19/2023	
Jeffery Larkin	Scientists	1/2/2024	
Sarah Guitart	Scientists	2/25/2024	
Ally Jones	Contracted Seasonal Employees	4/7/2024	
Michela Coury	Scientists	5/5/2024	
Marcela Liljesthrom	Scientists	5/5/2024	Rehired
Samuel Meigs	Contracted Seasonal Employees	5/5/2024	
Mark Fuller	Contracted Seasonal Employees	5/19/2024	
Michael Harris	Contracted Seasonal Employees	5/19/2024	
Gabrielle McMahon-Csaki	Contracted Seasonal Employees	5/19/2024	
Brock Dalton	Contracted Seasonal Employees	5/19/2024	
Brian Sweeney	Contracted Seasonal Employees	6/2/2024	
Joshua Maynard	Contracted Seasonal Employees	6/2/2024	

Name	Title	Date	Comment
Charley Blair	Contracted Seasonal Employees	6/2/2024	
Gwendolyn Church	Contracted Seasonal Employees	6/2/2024	

Table P 3. Promotions

Name	Title	Date	Comments
Everose Schluter	Program Manager VIII/Deputy Director	8/27/2023	From Program Manager VI/ Assistant Director of Natural Heritage and Endangered Species
Mark Coughlin	Fish Culturist II	12/31/2023	From Wildlife Technician III
Jesse Leddick	Program Manager VI/Assistant Director of Natural Heritage and Endangered Species	12/31/2023	From Environmental Analyst V
James Burnham	Program Coordinator III	1/14/2024	From Program Coordinator II
Ian Sypek	Game Biologist I	1/28/2024	From Wildlife Technician II
Jeremy Davis	Wildlife Technician III	2/11/2024	From Wildlife Technician II
Alex Entrup	Conservation Biologist IV	2/25/2024	From Conservation Biologist III
Eli Pease	Wildlife Technician III	2/25/2024	From Wildlife Technician II
Rebecca Quinones	Environmental Analyst V	4/21/2024	From Aquatic Biologist IV

Table P 4. Employee Terminations

Name	Title	Date	Comments
Marcela Liljesthrom	Scientists	7/15/2023	Contract Expired/Rehired as Contractor on 5/5/2024
Mark Baran	Scientists	7/15/2023	Contract Expired
Tucker Skowyra	Scientists	7/15/2023	Contract Expired/Hired as Wildlife Technician II on 11/5/2023
Alec Kaisand	Scientists	7/29/2023	Contract Expired/Hired as Conservation Biologist III on 7/30/2023
Alexander Castle	Contracted Seasonal Employees	8/26/2023	Seasonal Closure
John Sousa	Fish Culturist II	9/1/2023	Retirement
Chet Thomas	Fish Culturist II	9/15/2023	Resignation
Katherine Bradbury	Contracted Seasonal Employees	9/23/2023	Contract Expired
Matthew Driscoll	Contracted Seasonal Employees	9/30/2023	Seasonal Closure
Stephen Humphrey	Contracted Seasonal Employees	12/2/2023	Contract Expired

Name	Title	Date	Comments
Sarah Wasserman	Scientists	12/23/2023	Contract Expired
Raymond J. Bressette III	Wildlife Technician III	1/27/2024	Resignation
Michelle Collins	Program Coordinators	3/9/2024	Contract Expired/Hired as Conservation Biologist III on 3/10/2024
Nancy Dewkett	Wildlife Technician III	5/8/2024	Retirement

10 The Financial Report

Kris McCarthy, Chief Fiscal Officer

George L. Darey Inland Fish and Game Fund

Summary Revenue and Fund Equity

DEPARTMENTAL REVENUES	FY 2024
Fishing, hunting, and trapping licenses	$ 6,945,332
Archery stamps	$ 321,346
Primitive firearm stamps	$ 327,924
Waterfowl stamps	$ 101,607
Pheasant stamps	$ 129,938
Wildlands stamps	$ 918,885
Trap registrations	$ 4,436
Antlerless deer permits	$ 485,605
Bear permits	$ 129,260
Turkey permits	$ 205,460
Special licenses, tags, and posters	$ 43,265
Magazine subscriptions	$ 68,825
Timber sales, other	$ -
Fines and penalties	$ -
Rents	$ 58,700
Prior year refunds	$ -
Donations	$ 34,238
Miscellaneous income	$ 106,643
PAC	$ 27,501
NSF charge/debt collection	$ 80
Total	**$ 9,909,045**

FEDERAL AID REIMBURSEMENTS	FY 2024
Dingell-Johnson (Fisheries)	$ 1,249,009
Pittman-Robertson (Wildlife)	$ 5,365,888
USDA	$ 33,501
RCPP	$ 18,488
CWD	$ 52,133
Total	**$ 6,719,018**

TAXES	FY 2024
Gasoline tax apportionment	**$ 921,901**

OTHER FINANCIAL SOURCES	FY 2024
Reimbursement for half-price licenses	$ 326,987
Reimbursement for free licenses	$ 1,720,967
Investment earnings	$ 67,377
Total	**$ 2,115,330**

TOTAL REVENUE	$ 19,665,293

FUND EQUITY AS OF JUNE 30, 2024	$ 15,126,804

License Sales

Code	Type of License	Cost	Quantity	Amount
F1	CY23 Resident Fishing	29.50	20,050	$591,475.00
F1	CY24 Resident Fishing	33.00	85,613	$2,825,229.00
F2	CY23 Resident Citizen Minor Fishing	FREE	2,356	$0.00
F2	CY24 Resident Citizen Minor Fishing	FREE	7,294	$0.00
F3	CY23 Resident Citizen Fishing (age 65-69)	14.75	1,329	$19,602.75
F3	CY24 Resident Citizen Fishing (age 65-69)	16.50	9,839	$162,343.50
F4	CY23 Resident Citizen Fishing (over 70)	FREE	2,508	$0.00
F4	CY24 Resident Citizen Fishing (over 70)	FREE	19,102	$0.00
F4	CY23 Resident Citizen Fishing (disabled)	FREE	31	$0.00
F4	CY24 Resident Citizen Fishing (disabled)	FREE	229	$0.00
F6	CY23 Non-Res. Fishing	39.50	3,235	$127,782.50
F6	CY24 Non-Res. Fishing	43.00	9,275	$398,825.00
F7	CY23 Non-Res. Fishing (3 day)	23.30	2,131	$49,652.30
F7	CY24 Non-Res. Fishing (3 day)	25.70	1,364	$35,054.80
F8	CY23 Resident Fishing (3 day)	12.50	1,564	$19,550.00
F8	CY24 Resident Fishing (3 day)	15.00	1,002	$15,030.00
F9	CY23 Non-Resident (Citizen) Minor Fishing	7.10	306	$2,172.60
F9	CY24 Non-Resident (Citizen) Minor Fishing	7.40	276	$2,042.40
F10	CY23 Quabbin 1-Day Fishing	5.00	520	$2,600.00
F10	CY24 Quabbin 1-Day Fishing	5.00	2,351	$11,755.00
T1	CY23 Resident Citizen Trapping	34.00	135	$4,590.00
T1	CY24 Resident Citizen Trapping	36.00	608	$21,888.00
T2	CY23 Resident Citizen Minor Trapping	6.50	2	$13.00
T2	CY24 Resident Citizen Minor Trapping	6.50	8	$52.00
T3	CY23 Resident Citizen Trapping (age 65-69)	17.00	13	$221.00
T3	CY24 Resident Citizen Trapping (age 65-69)	18.00	75	$1,350.00
T3	CY23 Trapping non-resident	206.00	4	$824.00
T3	CY24 Trapping non-resident	209.00	42	$8,778.00
H1	CY23 Resident Citizen Hunting	29.50	10,435	$307,832.50
H1	CY24 Resident Citizen Hunting	33.00	4,956	$163,548.00
H2	CY23 Resident Citizen Hunting (age 65-69)	14.75	728	$10,738.00
H2	CY24 Resident Citizen Hunting (age 65-69)	16.50	604	$9,966.00
H3	CY23 Resident Citizen Hunting (paraplegics)	FREE	2	$0.00
H3	CY24 Resident Citizen Hunting (paraplegics)	FREE	1	$0.00
H4	CY23 Resident Non-Citizen Hunting	29.50	84	$2,478.00
H4	CY24 Resident Non-Citizen Hunting	33.00	71	$2,343.00
H5	CY23 Non-Res. Hunting (big game)	101.50	2,639	$267,858.50
H5	CY24 Non-Res. Hunting (big game)	105.00	1,834	$192,570.00
H6	CY23 Non-Res. Hunting (small game)	67.50	853	$57,577.50
H6	CY24 Non-Res. Hunting (small game)	71.00	796	$56,516.00

Code	Type of License	Cost	Quantity	Amount
H8	CY23 Resident (Citizen) Minor Hunting	6.50	540	$3,510.00
H8	CY24 Resident (Citizen) Minor Hunting	6.50	550	$3,575.00
S1	CY23 Resident Citizen Sporting	54.00	4,309	$232,686.00
S1	CY24 Resident Citizen Sporting	61.00	19,853	$1,211,033.00
S2	CY23 Resident Citizen Sporting (age 65-69)	27.00	522	$14,094.00
S2	CY24 Resident Citizen Sporting (age 65-69)	30.50	3,563	$108,671.50
S3	CY23 Resident Citizen Sporting (over 70)	FREE	1,629	$0.00
S3	CY24 Resident Citizen Sporting (0ver 70)	FREE	9,902	$0.00
S4	CY23 Resident Sporting (paraplegic)	FREE	78	$0.00
S4	CY24 Resident Sporting (paraplegic)	FREE	27	$0.00
N/A	**TOTAL LICENSE SALES (GROSS)**	N/A	**235,238**	**$6,945,827.85**

Stamp Sales

Code	Type of Stamp	Cost	Quantity	Amount
M1	CY23 Archery stamp	10.00	10,344	$103,440.00
M1	CY24 Archery stamp	10.00	19,021	$190,210.00
M1	CY23 Non-Resident Archery stamp	15.00	959	$14,385.00
M1	CY24 Non-Resident Archery stamp	20.00	663	$13,260.00
M2	CY23 Waterfowl stamp	10.00	2,470	$24,700.00
M2	CY24 Waterfowl stamp	10.00	5,206	$52,060.00
M2	CY23 Non-Resident Waterfowl stamp	15.00	582	$8,730.00
M2	CY24 Non-Resident Waterfowl stamp	20.00	806	$16,120.00
M3	CY23 Primitive Firearm stamp	10.00	10,831	$108,310.00
M3	CY24 Primitive Firearm stamp	10.00	18,298	$182,980.00
M3	CY23 Non-Resident Primitive Firearm stamp	15.00	1,499	$22,485.00
M3	CY24 Non-Resident Primitive Firearm stamp	20.00	711	$14,220.00
W1	CY23 Wildlands stamp	5.00	37,137	$185,685.00
W1	CY24 Wildlands stamp	5.00	123,766	$618,830.00
W2	CY23 Non-Resident Wildlands stamp	5.00	9,251	$46,255.00
W2	CY24 Non-Resident Wildlands stamp	5.00	13,621	$68,105.00
W2	CY23 Pheasant and Quail permit (resident)	8.00	4,357	$34,856.00
W2	CY24 Pheasant and Quail permit (resident)	12.00	7,085	$85,020.00
W2	CY23 Pheasant and Quail permit (non-resident)	12.00	480	$5,760.00
W2	CY24 Pheasant and Quail permit (non-resident)	18.00	239	$4,302.00
N/A	**TOTAL STAMP SALES (GROSS)**	N/A	**267,326**	**$1,799,713.00**

Adjustments

Adjustment	Amount
Fees retained and adjustments by clerks	-$109.20
Refunds	-$399.10
TOTAL	**-$508.30**

TOTAL LICENSE/STAMP SALES (NET)	**$8,745,032.55**

Expenditures

Administration	**FY 2024**
Administration	$ 2,173,864
Outreach-Education	$ 1,313,723
DCAMM Field Headquarters chargeback	$ 119,433
Total	**$ 3,607,021**
Percent of total expenditures	17%

Fisheries and Wildlife Programs	**FY 2024**
Hatcheries	$ 2,909,548
Game bird program	$ 770,195
Seasonals	$ 36,617
Cooperative Units	$ 196,033
Fisheries and wildlife management	$ 6,528,459
Total	**$ 10,440,853**
Percent of total expenditures	50%

Other Programs	**FY 2024**
Land acquisitions	$ 1,465,000
Waterfowl management program	$ 36,256
Hunter safety program	$ 412,604
Total	**$ 1,913,860**
Percent of total expenditures	9%

Other Assessments	**FY 2024**
Payroll taxes	$ 230,150
GI and other fringe benefits	$ 4,561,766
Total	**$ 4,791,916**
Percent of total expenditures	23%

TOTAL EXPENDITURES	**$ 20,753,650**

Natural Heritage and Endangered Species Fund

Summary Revenue, Expenditures, and Fund Equity

REVENUES	**FY 2024**
Natural Heritage and Endangered Species Tax Donations	$ 283,734
Sales	$ 2,350
NRCS/Wildlife Habitat Incentives Program	$ 7,092
State Wildlife Grants and Endangered Species Act	$ 1,018,019
Massachusetts Endangered Species Act Fees	$ 311,450
Contracts	$ 483,080
Direct Donations	$ 46,046
Interest	$ 6,024
TOTAL REVENUES	**$ 2,157,794**

EXPENDITURES	**FY 2024**
Natural Heritage and Endangered Species Program	$ 2,175,147
Housatonic Natural Resource Damage	$ 56,282
TOTAL EXPENDITURES	**$ 2,231,429**

FUND EQUITY AS OF JUNE 30, 2024	**$ 2,114,248**

Other Expenditures

Capital Outlay Funds

CATEGORY	**FY 2024**
Land Protection: Habitat Management and CR Stewardship	$ 922,006
Staffing for Land and Infrastructure Programs	$ 473,472
Hatchery/District/Westborough Field Headquarters Repairs	$ 139,405
Habitat Grant Program	$ 231,145
Dam Safety and Repair	$ 2,033,822
State Hazard Mitigation and Climate Adaptation Plan	$ 240,187
American Rescue Plan Act (ARPA)	$ 175,634
TOTAL CAPITAL EXPENDITURES	**$ 4,215,671**

Interdepartmental Service Agreements

ISA	**FY 2024**
Massachusetts Department of Transportation (MassDOT)	$ 349,271
Massachusetts Department of Conservation and Recreation	$ 74,370
Executive Office of Energy and Environmental (EEA)	
Massachusetts Environmental Trust	$ 10,768
EEA Diversity, Equity, and Inclusion	$ 27,902
Massachusetts Electric Vehicle Infrastructure Program	$ 28,520
TOTAL ISA	**$ 490,831**

Natural Heritage and Endangered Species Line Item	**$ 1,493,930**

Other Trust Accounts

Federal Duck Stamp (e-stamp)	**FY 2024**
Revenue	$ 190,485
Expenditures	$ 190,845
Federal Duck Trust Balance	$ 998
Birch Hill Army Corp of Engineers Trust	**FY 2024**
Revenue	$ 43,576
Expenditures	$ 324
ACOE Trust Balance	$ 217,556

Federal Accounts

U.S. Department of Agriculture Chronic Wasting Disease	$ 52,133

Appendix A The Fisheries Tables and Figures

Table A 1. Number of rainbow trout produced at each of MassWildlife's five fish hatcheries in FY 2024 (fall 2023 and spring 2024).

Size category (inches)	Bitzer	McLaughlin	Palmer	Sandwich	Sunderland	Total number of fish
9+	6,750			2,645		9,395
12+	24,025			28,577	47,417	100,019
14+		180,035		10,044		190,079
Sub-total	30,775	180,035		41,266	47,417	299,493

Table A 2. Number of brook trout produced at each of MassWildlife's five fish hatcheries in FY 2024.

Size category (inches)	Bitzer	McLaughlin	Palmer	Sandwich	Sunderland	Total number of fish
9+			350		24,280	24,630
12+	32,458	469		9,335	8,230	50,492
14+			430			430
18+				566		566
Sub-total	32,458	469	780	9,901	32,510	51,488

Table A 3. Number of brown trout produced at each of MassWildlife's five fish hatcheries in FY 2024.

Size category (inches)	Bitzer	McLaughlin	Palmer	Sandwich	Sunderland	Total number of fish
9+	25,910	23,757	400		29,750	79,817
12+	23,700			8,802	19,626	
14+						
18+			100	701		801
Sub-total	49,610	23,757	500	9,503	49,376	801

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Table A 4. Number of tiger trout produced at each of MassWildlife's five fish hatcheries in FY 2024.

Size category (inches)	Bitzer	McLaughlin	Palmer	Sandwich	Sunderland	Total number of fish
9+				240		240
14+				2,817		2,817
Sub-total				3,057		3,057

Table A 5. Total number of fish of all trout species produced at each of MassWildlife's five fish hatcheries, and the total number of fish produced by MassWildlife in FY 2024.

Bitzer	McLaughlin	Palmer	Sandwich	Sunderland	Total number of fish
112,843	204,261	1,280	63,727	129,303	511,414

Table A 6. Pounds of rainbow trout produced at MassWildlife's five fish hatcheries in FY 2024 (fall 2023 and spring 2024).

Size category (inches)	Bitzer	McLaughlin	Palmer	Sandwich	Sunderland	Total weight of fish
9+	2,860			520		3,380
12+	19,715			23,239	39,357	82,311
14+		189,997		9,687		199,684
Sub-total	22,575	189,997		33,446	39,357	285,375

Table A 7. Pounds of brook trout produced at MassWildlife's five fish hatcheries in FY 2024.

Size Category (inches)	Bitzer	McLaughlin	Palmer	Sandwich	Sunderland	Total Weight of Fish
9+			253		5,487	5,740
12+	24,786	957		8,434	6,553	40,730
14+			910			910
18+				1253		1,253
Sub-total	24,786	957	1,163	9,687	12,040	48,633

Table A 8. Pounds of brown trout produced at MassWildlife's five fish hatcheries in FY 2024.

Size category (inches)	Bitzer	McLaughlin	Palmer	Sandwich	Sunderland	Total weight of fish
9+	9,295	9,927	202		5,551	24,975
12+	24,542			10,039	21,503	56,084
14+						
18+			834	2,532		3,366
Sub-total	33,837	9,927	1,036	12,571	27,054	59,450

Table A 9. Pounds of tiger trout produced at MassWildlife's five fish hatcheries in FY 2024.

Size category (inches)	Bitzer	McLaughlin	Palmer	Sandwich	Sunderland	Total weight of fish
9+				64		64
14+				3,490		3,490
Sub-total				3,554		3,554

Table A 10. Total pounds of all trout species produced at MassWildlife's five fish hatcheries, and the total pounds of trout produced by Mass Wildlife in FY 2024.

Bitzer	McLaughlin	Palmer	Sandwich	Sunderland	Total weight of fish
81,198	200,881	2,199	59,258	78,451	421,987

Table A 11. Summary of brook trout eggs, brown trout eggs, and tiger trout eggs produced at Sandwich Hatchery in FY 2024.

Species	Size, in inches or by category	Number	Weight in pounds
Brook trout	eggs	277,848	N/A
Brown trout	eggs	346,692	N/A
Tiger trout	eggs	252,720	N/A

Table A 12. Summary of landlocked salmon, brook trout eggs, and brown trout eggs produced at Roger Reed (Palmer) Hatchery in FY 2024.

Species	Size, in inches or by category	Number	Weight in pounds
Landlocked salmon	9	10,230	3,140
Landlocked salmon	fall fingerlings	3,140	229
Brook trout	eggs	409,476	N/A
Brown trout	eggs	761,334	N/A

Table A 13. Results of fish health tests[1] conducted at MassWildlife's Bitzer Fish Hatchery in FY 2024. Neg signifies negative test results.

Species[2]	Number of fish tested	IPNV	VHSV	OMV	IHNV	BF	BRM
BK (SA)	60	neg	neg	neg	neg	neg	neg
BT (SA)	60	neg	neg	neg	neg	neg	neg
RT (E/A)	60	neg	neg	neg	neg	neg	neg

Table A 14. Results of fish health tests[1] conducted at MassWildlife's McLaughlin Fish Hatchery in FY 2024. Neg signifies negative test results.

Species[2]	Number of fish tested	IPNV	VHSV	OMV	IHNV	BF	BRM
BT (SA)	60	neg	neg	neg	neg	neg	neg
RT (E/A)	60	neg	neg	neg	neg	neg	neg
RT (TL)	60	neg	neg	neg	neg	neg	neg
RT (SH)	60	neg	neg	neg	neg	neg	neg
RT (E/A)	10					neg	neg
RT (SH)	10					neg	neg
BK (SA)	10					neg	neg

Table A 15. Results of fish health tests[1] conducted at MassWildlife's Palmer Fish Hatchery in FY 2024. Neg signifies negative test results.

Species[2]	Number of fish tested	IPNV	VHSV	OMV	IHNV	BF	BRM
LLS (GL)	60	neg	neg	neg	neg	neg	neg
BK (SA)	15	neg	neg	neg	neg	neg	neg
BK (SA)	1,394	neg	neg	neg	neg	neg	neg
BT (SA)	15	neg	neg	neg	neg	neg	neg
BT (SA)	234	neg	neg	neg	neg	neg	neg

Table A 16. Results of fish health tests[1] conducted at MassWildlife's Sandwich Fish Hatchery in FY 2024. Neg signifies negative test results.

Species[2]	Number of fish tested	IPNV	VHSV	OMV	IHNV	BF	BRM
BK (SA)	60	neg	neg	neg	neg	neg	neg
BK (SA)	684	neg	neg	neg	neg	neg	neg
BT (SA)	60	neg	neg	neg	neg	neg	neg
BT (SA)	574	neg	neg	neg	neg	neg	neg
RT (E/A)	60	neg	neg	neg	neg	neg	neg
RT (SH)	60	neg	neg	neg	neg	neg	neg
TT (SA)	30	neg	neg	neg	neg	neg	neg
RT (E/A)	10					neg	neg
BT (SA)	10						
BT (SA)	10						

Table A 17. Results of fish health tests[1] conducted at MassWildlife's Sunderland Fish Hatchery in FY 2024. Neg signifies negative test results.

Species[2]	Number of fish tested	IPNV	VHSV	OMV	IHNV	BF	BRM
BK (SA)	60	neg	neg	neg	neg	neg	neg
BT(SA)	60	neg	neg	neg	neg	neg	neg
RT (E/A)	60	neg	neg	neg	neg	neg	neg
RT (SH)	60	neg	neg	neg	neg	neg	neg
BK (SA)						positive	neg

[1]Fish were tested following the Northeast Fish Health Guidelines and the American Fisheries Society – Fish Health Section "Suggested Procedures for the Detection and Identification of Certain Finfish and Shellfish Pathogens."

Pathogen codes:

IPNV: Pancreatic Necrosis Virus
VHSV: Viral Hemorrhagic Septicemia virus
OMV: Oncorhynchus masou virus
IHNV: Infectious Hematopoietic Necrosis virus
BF: Aeromonas salmonicida
BRM: Yersinia ruckeri
WD: Myxobolus cerebralis

[2]Species codes:

BK (SA): brook trout (Sandwich strain)
BK (SL): brook trout (Soda Lake strain)
BT (SA): brown trout (Sandwich strain)
RT (E/A): rainbow trout (Erwin Arlee strain)
RT (TL): rainbow trout (Trout Lodge strain)
RT (SH): rainbow trout (Shasta strain)
LLS (GL): landlocked salmon (Maine Grand Lake strain)
TT: tiger trout (Sandwich strain)

[3]Other included examinations and diagnostic tests performed on fish that showed symptoms of a specific disease or parasitic infection.

NDT = no addition diagnostic testing necessary
CWD = Coldwater disease caused by the bacteria Flavobacterium psychrophilum.

[4]Female ovarian fluid samples

Table A 18. Daily anadromous fish counts at the Holyoke Dam in FY 2024.

Date	American Shad	Blueback Herring	Sea Lamprey	Striped Bass	Gizzard Shad	Shortnose Sturgeon
4/11	0	0	0	0	0	0
4/12	0	0	0	0	0	0
4/18	203	0	0	0	1	0
4/19	39	0	0	0	0	0
4/20	9	0	0	0	0	0
4/21	20	0	0	0	0	0
4/22	27	0	0	0	0	0
4/23	58	0	0	0	0	0
4/27	13	0	0	0	0	0
4/28	689	0	0	0	0	0
4/29	117	0	0	0	0	0
4/30	27	0	0	0	0	0
5/1	46	1	0	0	0	0
5/8	3764	0	4	0	3	0
5/9	4082	4	23	0	5	0
5/10	9830	6	10	0	3	0
5/11	22663	187	101	1	8	0
5/12	19328	49	234	2	5	0
5/13	29906	9	309	2	9	0
5/14	50710	123	301	2	4	0
5/15	21601	576	502	0	0	0
5/16	14383	309	192	0	0	0
5/17	10594	610	157	1	0	0
5/18	6886	279	61	0	0	0
5/19	4508	5	20	1	0	0
5/20	3108	3	53	0	1	0
5/21	3932	4	386	0	0	0
5/22	5013	1	23	5	1	0
5/23	4355	1	449	2	2	0
5/24	8100	6	427	0	5	0
5/25	5265	15	209	2	1	0
5/26	5603	2	168	1	0	0
5/27	6038	0	1315	0	0	0
5/28	3680	1	2609	1	3	0
5/29	4555	3	2371	0	2	0
5/30	3083	9	3488	0	0	0

Date	American Shad	Blueback Herring	Sea Lamprey	Striped Bass	Gizzard Shad	Shortnose Sturgeon
5/31	3091	4	2436	1	0	0
6/1	3568	2	2801	0	0	0
6/2	489	0	865	0	0	0
6/3	3420	2	553	1	0	0
6/4	2808	0	142	4	0	0
6/5	868	0	5	5	0	0
6/6	403	0	13	6	0	0
6/7	1164	0	395	1	0	0
6/8	636	0	156	9	0	0
6/9	1028	0	40	6	0	0
6/10	1155	0	94	7	0	1
6/11	1799	0	46	4	0	0
6/12	354	0	47	10	0	0
6/13	786	0	80	4	3	0
6/14	336	0	24	1	0	0
6/15	477	0	23	3	4	0
6/16	331	0	23	3	0	0
6/17	815	0	4	7	0	0
6/18	276	0	6	2	0	0
6/19	171	0	0	20	0	0
6/20	131	0	1	0	0	0
6/21	394	0	2	0	0	0
6/22	449	0	0	2	0	0
6/23	183	0	0	0	0	0
Total	277,367	2,211	21,168	116	60	1

Table A 19. Daily counts and cumulative totals of American shad at the Turners Falls Dam's Cabot Fish Ladder in FY 2024.

Date	Daily	Cumulative
4/21	0	0
4/22	0	0
4/23	0	0
4/24	0	0
4/25	0	0
4/26	0	0
4/27	0	0
4/28	0	0

Date	Daily	Cumulative
4/29	0	0
4/30	0	0
5/1	0	0
5/2	0	0
5/3	0	0
5/4	0	0
5/5	0	0
5/6	0	0

Date	Daily	Cumulative
5/7	0	0
5/8	0	0
5/9	0	0
5/10	194	194
5/11	677	871
5/12	2,308	3,179
5/13	4,046	7,225
5/14	4,980	12,205
5/15	6,355	18,560
5/16	5,657	24,217
5/17	1,615	25,832
5/18	1,317	27,149
5/19	2,197	29,346
5/20	2,270	31,616
5/21	1,378	32,994
5/22	1,919	34,913
5/23	1,572	36,485
5/24	1,585	38,070
5/25	645	38,715
5/26	615	39,330
5/27	470	39,800
5/28	863	40,663
5/29	1,156	41,819
5/30	1,127	42,946
5/31	1,269	44,215
6/1	1,066	45,281
6/2	1,143	46,424
6/3	878	47,302
6/4	297	47,599
6/5	112	47,711
6/6	91	47,802

Date	Daily	Cumulative
6/7	28	47,830
6/8	787	48,617
6/9	187	48,804
6/10	130	48,934
6/11	99	49,033
6/12	1,202	50,235
6/13	1,015	51,250
6/14	532	51,782
6/15	200	51,982
6/16	286	52,268
6/17	71	52,339
6/18	260	52,599
6/19	151	52,750
6/20	151	52,901
6/21	53	52,954
6/22	31	52,985
6/23	33	53,018
6/24	17	53,035
6/25	25	53,060
6/26	44	53,104
6/27	50	53,154
6/28	1	53,155
6/29	0	53,155
6/30	0	53,155
7/1	0	53,155
7/2	1	53,156
7/3	1	53,157
7/4	0	53,157
7/5	0	53,157
7/6	0	53,157
7/7	0	53,157

Table A 20. Daily counts and cumulative totals of American shad at the Turners Falls Dam's Spillway fish ladder in FY 2024.

Date	Daily	Cumulative
4/21	0	0
4/22	0	0
4/23	0	0
4/24	0	0
4/25	0	0
4/26	0	0
4/27	0	0
4/28	0	0
4/29	0	0
4/30	0	0
5/1	0	0
5/2	0	0
5/3	0	0
5/4	0	0
5/5	0	0
5/6	0	0
5/7	0	0
5/8	16	16
5/9	22	38
5/10	57	95
5/11	74	169
5/12	71	240
5/13	206	446
5/14	77	523
5/15	66	589
5/16	143	732
5/17	258	990
5/18	244	1,234
5/19	269	1,503
5/20	164	1,667
5/21	102	1,769
5/22	358	2,127
5/23	312	2,439
5/24	456	2,895
5/25	237	3,132
5/26	146	3,278
5/27	187	3,465
5/28	286	3,751
5/29	457	4,208
5/30	269	4,477
5/31	263	4,740
6/1	528	5,268
6/2	420	5,688
6/3	273	5,961
6/4	18	5,979
6/5	99	6,078
6/6	281	6,359
6/7	103	6,462
6/8	85	6,547
6/9	85	6,632
6/10	49	6,681
6/11	68	6,749
6/12	52	6,801
6/13	90	6,891
6/14	50	6,941
6/15	37	6,978
6/16	33	7,011
6/17	3	7,014
6/18	13	7,027
6/19	54	7,081
6/20	75	7,156
6/21	13	7,169
6/22	3	7,172
6/23	12	7,184
6/24	1	7,185
6/25	9	7,194
6/26	19	7,213
6/27	29	7,242
6/28	2	7,244
6/29	7	7,251
6/30	9	7,260
7/1	2	7,262

Date	Daily	Cumulative
7/2	1	7,263
7/3	2	7,265
7/4	0	7,265

Date	Daily	Cumulative
7/5	0	7,265
7/6	0	7,265
7/7	0	7,265

Table A 21. Daily counts and cumulative totals of American shad at the Turners Falls Dam's Gatehouse fish ladder in FY 2024.

Date	Daily	Cumulative
4/21	0	0
4/22	0	0
4/23	0	0
4/24	0	0
4/25	0	0
4/26	0	0
4/27	0	0
4/28	0	0
4/29	0	0
4/30	0	0
5/1	0	0
5/2	0	0
5/3	0	0
5/4	0	0
5/5	0	0
5/6	0	0
5/7	0	0
5/8	12	12
5/9	19	31
5/10	53	84
5/11	88	172
5/12	263	435
5/13	277	712
5/14	3,063	3,775
5/15	2,292	6,067
5/16	229	6,296
5/17	542	6,838
5/18	195	7,033
5/19	104	7,137
5/20	3,992	11,129

Date	Daily	Cumulative
5/21	443	11,572
5/22	342	11,914
5/23	3,306	15,220
5/24	482	15,702
5/25	2,036	17,738
5/26	477	18,215
5/27	2,441	20,656
5/28	1,622	22,278
5/29	1,349	23,627
5/30	387	24,014
5/31	1,486	25,500
6/1	1,383	26,883
6/2	1,497	28,380
6/3	676	29,056
6/4	1,199	30,255
6/5	444	30,699
6/6	241	30,940
6/7	52	30,992
6/8	85	31,077
6/9	455	31,532
6/10	243	31,775
6/11	167	31,942
6/12	122	32,064
6/13	95	32,159
6/14	622	32,781
6/15	341	33,122
6/16	34	33,156
6/17	239	33,395
6/18	14	33,409
6/19	53	33,462

Date	Daily	Cumulative
6/20	89	33,551
6/21	8	33,559
6/22	7	33,566
6/23	121	33,687
6/24	42	33,729
6/25	21	33,750
6/26	6	33,756
6/27	5	33,761
6/28	0	33,761

Date	Daily	Cumulative
6/29	6	33,767
6/30	8	33,775
7/1	3	33,778
7/2	1	33,779
7/3	3	33,782
7/4	0	33,782
7/5	0	33,782
7/6	0	33,782
7/7	0	33,782

Table A 22. Daily counts and cumulative totals of sea lamprey at the Turners Falls Dam's Gatehouse fish ladder in FY 2024.

Date	Daily	Cumulative
4/21	0	0
4/22	0	0
4/23	0	0
4/24	0	0
4/25	0	0
4/26	0	0
4/27	0	0
4/28	0	0
4/29	0	0
4/30	0	0
5/1	0	0
5/2	0	0
5/3	0	0
5/4	0	0
5/5	0	0
5/6	0	0
5/7	0	0
5/8	0	0
5/9	0	0
5/10	0	0
5/11	0	0
5/12	0	0
5/13	2	2
5/14	13	15

Date	Daily	Cumulative
5/15	37	52
5/16	24	76
5/17	39	115
5/18	21	136
5/19	28	164
5/20	112	276
5/21	51	327
5/22	86	413
5/23	190	603
5/24	130	733
5/25	216	949
5/26	255	1,204
5/27	448	1,652
5/28	533	2,185
5/29	1,282	3,467
5/30	726	4,193
5/31	2,795	6,988
6/1	3,825	10,813
6/2	2,564	13,377
6/3	2,351	15,728
6/4	1,238	16,966
6/5	396	17,362
6/6	189	17,551
6/7	34	17,585

Date	Daily	Cumulative
6/8	57	17,642
6/9	192	17,834
6/10	336	18,170
6/11	409	18,579
6/12	462	19,041
6/13	220	19,261
6/14	186	19,447
6/15	80	19,527
6/16	68	19,595
6/17	56	19,651
6/18	37	19,688
6/19	11	19,699
6/20	9	19,708
6/21	8	19,716
6/22	7	19,723

Date	Daily	Cumulative
6/23	1	19,724
6/24	0	19,724
6/25	0	19,724
6/26	0	19,724
6/27	0	19,724
6/28	0	19,724
6/29	0	19,724
6/30	0	19,724
7/1	0	19,724
7/2	0	19,724
7/3	0	19,724
7/4	0	19,724
7/5	0	19,724
7/6	0	19,724
7/7	0	19,724

Table A 23. Annual total migratory fish counts at the A&D Hydroelectric Dam on the Westfield River, 1992-2023.

Date	American Shad	Blueback Herring	Sea Lamprey	Striped Bass	Atlantic Salmon	Gizzard Shad	White Sucker	Small-mouth
1992*					2			
1993*					10			
1994*					7			
1995*					6			
1996	1,413	1	4,699	0	19	0	4,699	110
1997	1,012	-	2,255	0	37	0	2,255	64
1998	2,292	2	1,756	5	47	1	5,515	149
1999	2,668	-	643	0	17	1	1,227	109
2000	3,558	-	2,040	0	11	122	3,158	207
2001	4,720	2	2,345	2	8	0	3,735	129
2002	2,762	4	3,638	2	5	1	2,242	146
2003	1,957	5	404	0	6	0	1,832	155
2004	913	1	1,171	0	12	0	2,789	148
2005	1,237	0	818	0	27	0	1,161	201
2006	1,534	0	1,276	1	34	0	3,447	188
2007	4,497	0	1,797	0	21	0	2,280	133
2008	3,212	0	1,220	0	30	0	1,757	246

2009	1,395	0	538	0	2	0	1,865	260
2010	3,444	4	447	0	3	0	954	185
2011	5,029	0	1,590	0	9	0	1,544	496
2012	10,373	3	392	0	6	176	1,529	326
2013	4,938	0	729	0	11	0	1,241	620
2014	4,787	4	1,127	0	2	0	1,663	290
2015	3,383	0	218	0	3	0	2,065	341
2016	6,003	0	456	1	1	0	1,023	601
2017	6,004	5	262	1	5	0	2,176	613
2018	5,762	4	138	0	0	0	2,201	363
2019	4,166	5	484	0	0	0	1,822	285
2020	5,567	-	-	-	-	-	-	-
2021	1,962	-	-	-	-	-	-	-
2022	1,297	0	616	1	0	0	824	196
2023	3,028	0	1,753	0	0	0	718	444

Table A 24. Historical annual total anadromous fish counts at the Essex Dam (Lawrence), 1983-2023.

Year	River herring	American shad	American eel	Atlantic salmon	Total
1983	4,794	5,629	--	114	10,537
1984	1,769	5,497	--	115	7,381
1985	23,112	12,793	--	213	36,118
1986	16,265	18,173	--	103	34,541
1987	77,209	16,909	--	139	94,257
1988	361,012	12,359	--	65	373,436
1989	387,973	7,875	--	84	395,932
1990	254,242	6,013	--	248	260,503
1991	379,588	16,098	--	332	396,018
1992	102,166	20,796	--	199	123,161
1993	14,027	8,599	--	61	22,687
1994	88,913	4,349	--	21	93,283
1995	33,425	13,861	--	34	47,320
1996	51	11,322	--	76	11,449
1997	403	22,661	--	71	23,135
1998	1,362	27,891	--	123	29,376
1999	7,898	56,461	--	185	64,544
2000	19,405	72,800	--	82	92,287
2001	1,550	76,717	--	83	78,350

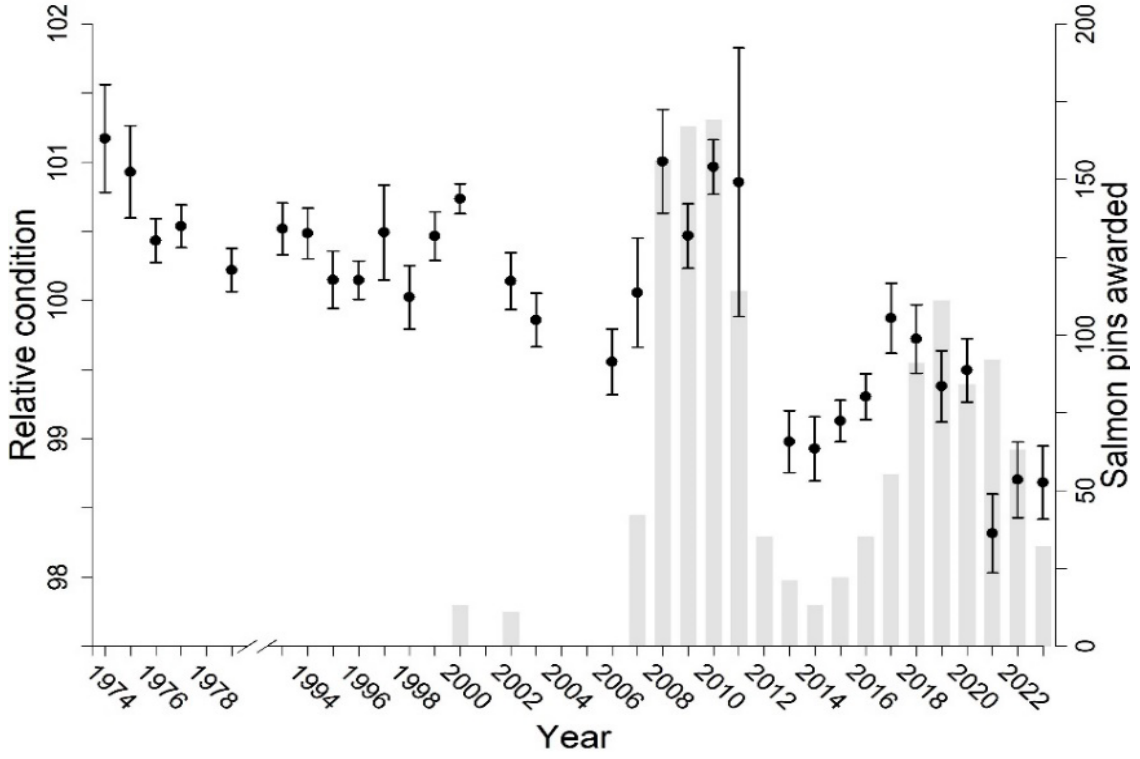
Year	River herring	American shad	American eel	Atlantic salmon	Total
2002	526	54,586	--	56	55,168
2003	10,866	55,620	--	147	66,633
2004	15,051	36,593	--	129	51,773
2005	99	6,382	--	34	6,515
2006	1,257	1,205	--	91	2,553
2007	1,169	15,876	--	74	17,119
2008	108	25,116	--	119	25,343
2009	1,456	23,199	--	81	24,736
2010	518	10,442	--	85	11,045
2011	740	13,835	--	402	14,977
2012	8,992	21,396	6,969	137	37,494
2013	17,359	37,149	915	22	55,445
2014	57,213	38,107	1,788	75	97,183
2015	128,692	89,467	8,124	13	226,296
2016	417,240	67,528	1,981	6	486,755
2017	91,616	62,846	17,738	5	172,205
2018	449,346	28,302	267,353	10	745,001
2019	43,108	19,450	81,179	15	143,752
2020	87,150	52,239	93,058	1	232,448
2021	96,429	64,162	9,296	0	169,887
2022	19,319	36,731	48,648	0	104,698
2023	10,339	28,587	19	14	38,959

Table A 25. Historical annual total anadromous fish counts at the Pawtucket Dam (Lowell), 1983-2023.

Year	River herring	American shad	American eel	Total
1983	--	--	--	--
1984	--	--	--	--
1985	--	--	--	--
1986	--	1,630	--	1,630
1987	--	3,926	--	3,926
1988	56,739	1,289	--	58,028
1989	137,296	940	--	138,236
1990	9,888	443	--	10,331
1991	6,920	428	--	7,348
1992	32,501	6,491	--	38,992

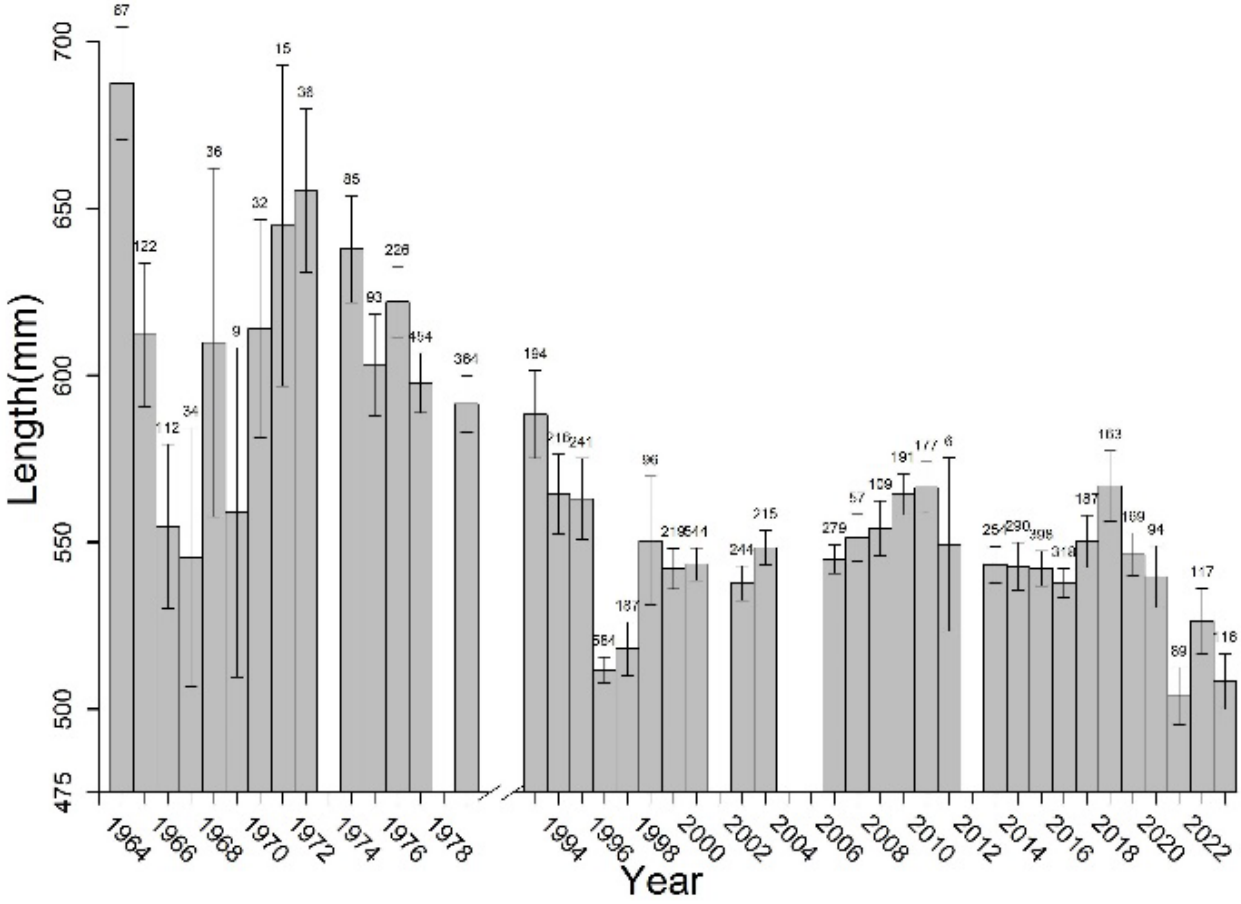
Year	River herring	American shad	American eel	Total
1993	4,315	1,679	--	5,994
1994	33,735	383	--	34,118
1995	11,848	5,255	--	17,103
1996	51	400	--	451
1997	403	4,446	--	4,849
1998	13	4,159	--	4,172
1999	2,930	16,347	--	19,277
2000	673	12,716	--	13,389
2001	58	7,740	--	7,798
2002	--	5,283	--	5,283
2003	194	6,580	--	6,774
2004	7,448	11,028	--	18,476
2005	201	716	--	917
2006	27		--	27
2007	--	1,653	--	1,653
2008	--	4,050	--	4,050
2009	139	2,267	--	2,406
2010	43	490	--	533
2011	228	831	--	1,059
2012	1,809	1,728	--	3,537
2013	13,490	9,756	--	23,246
2014	23,610	3,357	166	27,133
2015	31,323	20,937	2,647	54,907
2016	287,343	11,439	328	299,110
2017	5,656	5,086	1,981	12,723
2018	311,867	14,046	*	325,913
2019	43,871	2,201	*	46,072
2020	181,979	8,449	974	191,402
2021	163,266	21,054	1,549	185,869
2022	46,783	3,919	552	51,254
2023	2,956	2,464	13	5,433

Figure A 1. Mean relative condition of male lake trout collected from Quabbin Reservoir, 1974 to 2023.



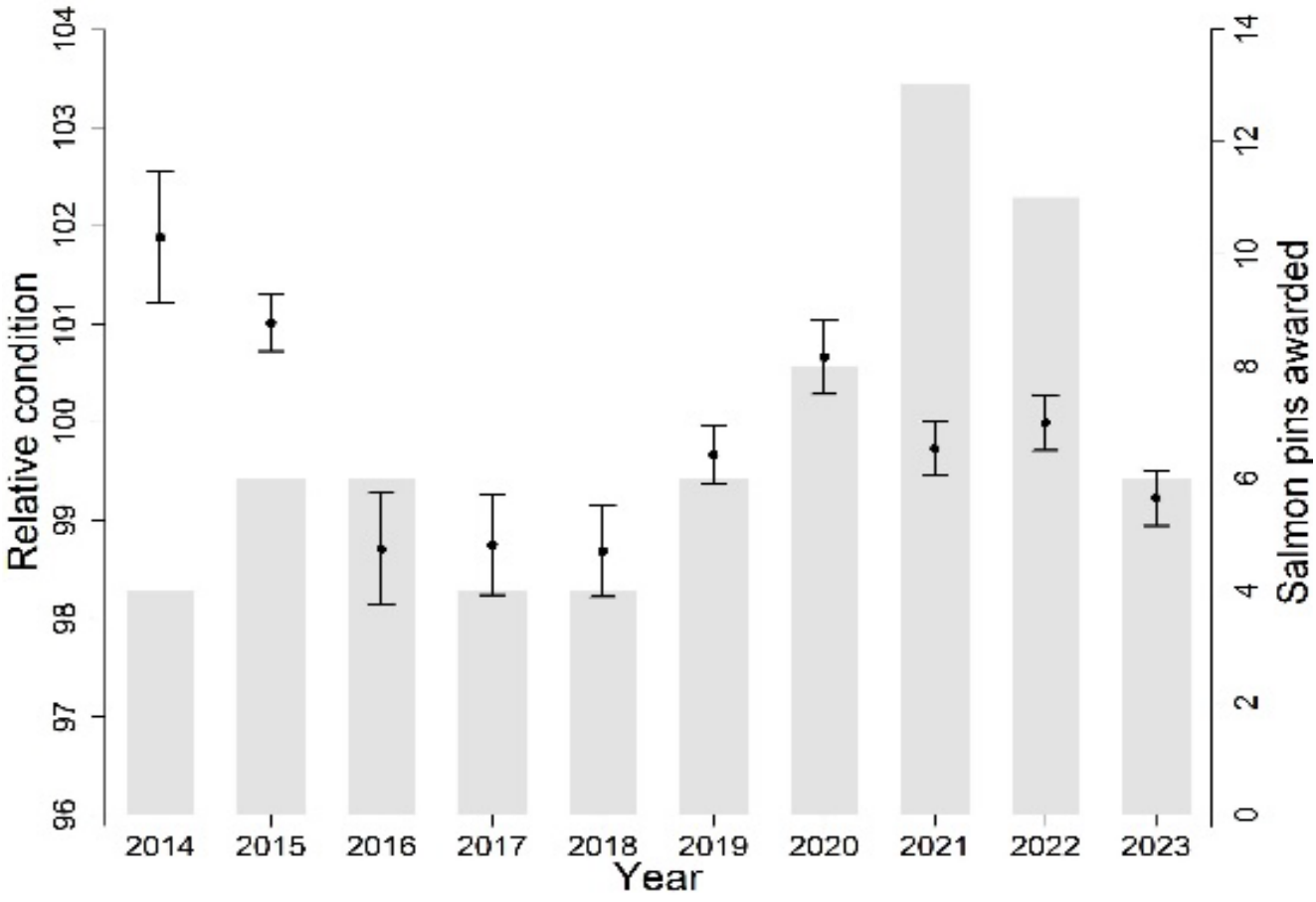
Note the axis break. Grey bars on secondary y-axis depict the number of landlocked salmon submitted to the Massachusetts Sportfishing Awards Program that met minimum size requirements over the same time interval.

Figure A 2. Mean length (mm) at catch with sample sizes of lake trout collected from Quabbin Reservoir, 1964-2023.



Note the axis break.

Figure A 3. Mean relative condition of male lake trout collected from Wachusett Reservoir, 2014-2023.



Black points represent the mean relative condition. Grey bars on secondary Y-axis depicts the number of landlocked salmon submitted to the Massachusetts Freshwater Sportfishing Awards Program that met minimum size requirements over the same time interval.

Figure A 4. Mean length (mm) at catch, with sample sizes, of lake trout collected from Wachusett Reservoir, 2014-2023.

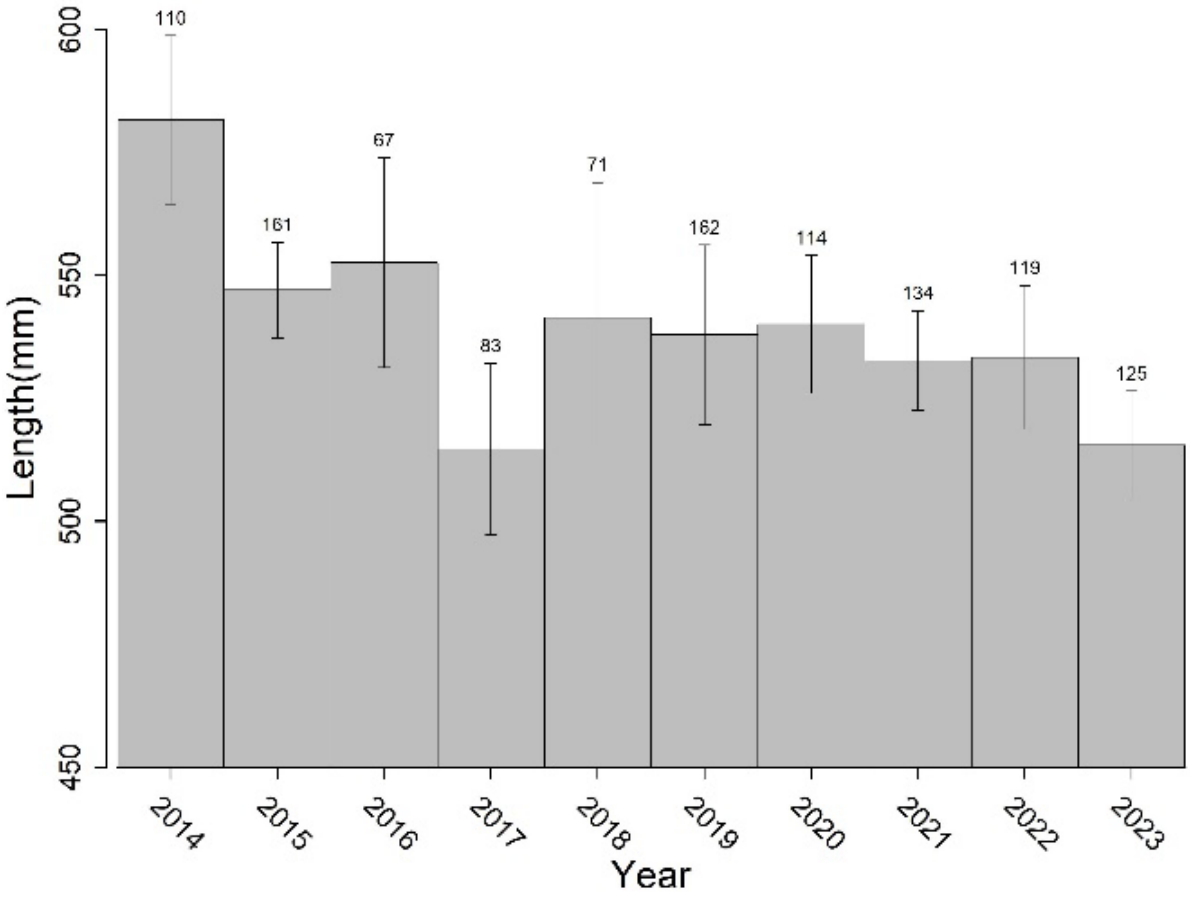


Figure A 5. Number of fish kills reported to MassWildlife between 2012 and 2023, with the 10-year running average.

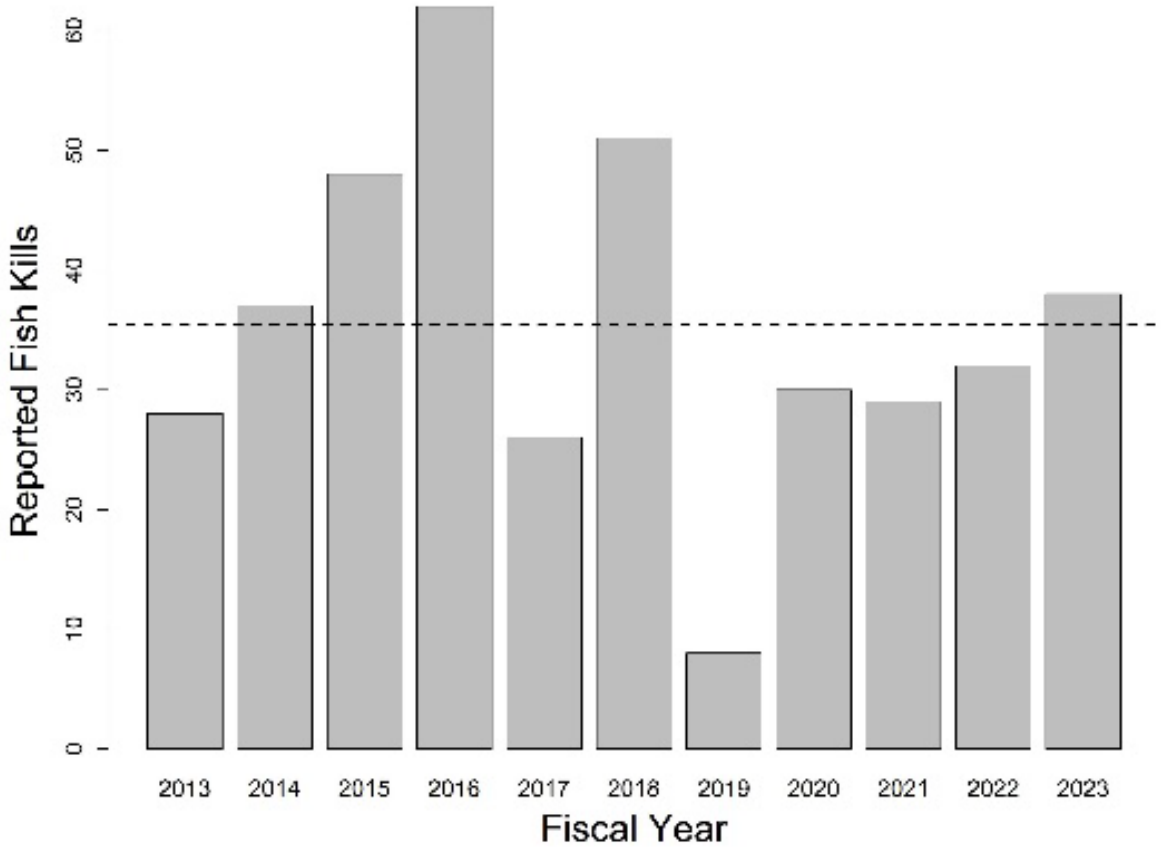


Figure A 6: Westfield River fishway CY 2023 daily fish counts.

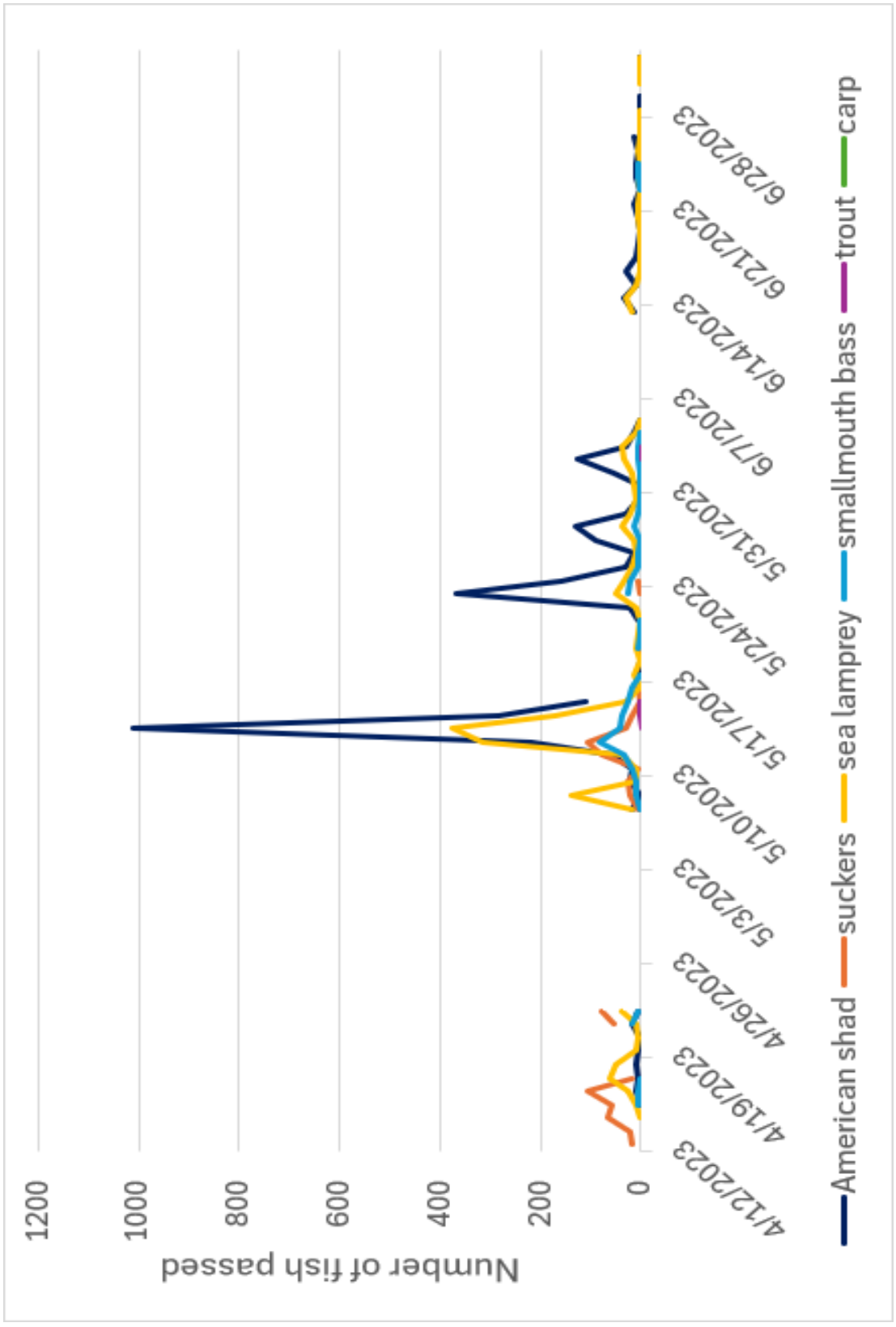
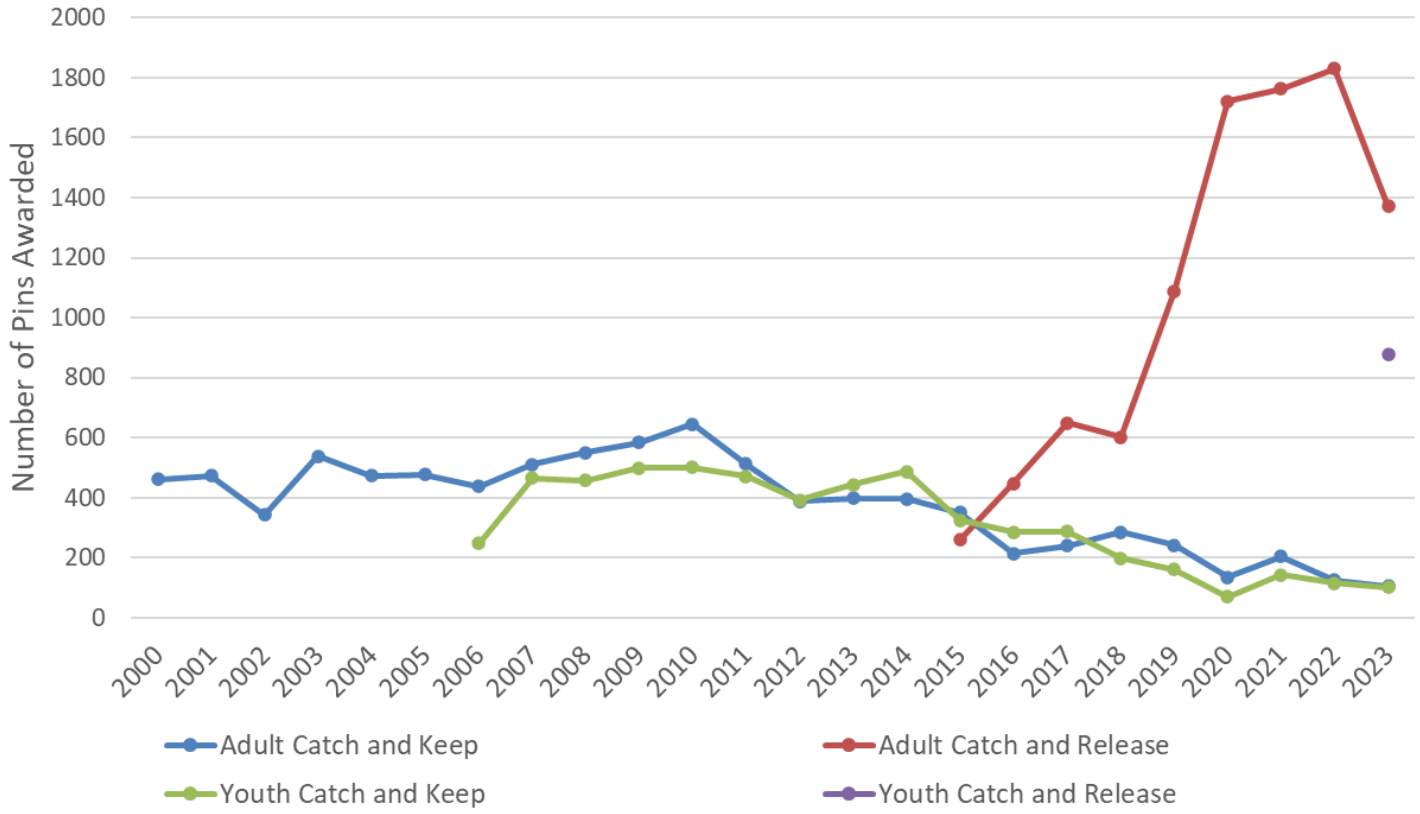


Figure A 7. Number of pins awarded by calendar year, 2000-2023. Note the addition of the Youth Catch-and-release category in 2023.



Appendix B The Wildlife Tables

Table B 1. Historical furbearer harvest, FY 1993 to FY 2023, of river otter, mink, muskrat, beaver, gray fox, and red fox.

Season	River otter [a,d]	Mink [a,d]	Muskrat [b,d]	Beaver [a,d]	Gray fox [a,c]	Red fox [a,c]
1992/1993	149	591	9,474	1,086	19	118
1993/1994	151	593	9,595	1,017	10	92
1994/1995	165	559	11,341	2,083	19	78
1995/1996	171	502	7,873	1,135	36	83
1996/1997	147	441	7,062	623	20	65
1997/1998	13	49	712	98	43	31
1998/1999	15	49	1,017	114	54	27
1999/2000	11	63	747	312	26	17
2000/2001	16	59	667	558	37	27
2001/2002	38	49	917	1,172	50	36
2002/2003	25	39	649	495	43	24
2003/2004	72	25	1,419	717	49	40
2004/2005	97	34	1,063	564	37	42
2005/2006	119	30	543	791	38	33
2006/2007	97	36	679	730	45	46
2007/2008	72	40	976	848	33	48
2008/2009	64	49	709	702	45	31
2009/2010	78	34	1,066	509	46	53
2010/2011	79	35	947	548	49	55
2011/2012	88	38	1,174	828	38	42
2012/2013	156	51	967	711	57	47
2013/2014	166	60	110	969	65	65
2014/2015	102	30	61	562	56	58
2015/2016	57	12	518	727	24	27
2016/2017	101	8	34	534	56	70
2017/2018	62	22	115	667	45	81
2018/2019	35	18	32	567	32	126
2019/2020	22	17	89	672	50	103
2020/2021	30	11	99	594	33	65
2021/2022	28	7	17	816	26	63
2022/2023	21	5	58	657	27	57
Past 5-year Average	27.2	11.6	59	661.2	33.6	82.8

Table B 2. Historical furbearer harvest, FY 1993 to FY 2023, of weasel, skunk, opossum, raccoon, coyote, bobcat, and fisher.

Season	Weasel [b,c]	Skunk [b,c]	Opossum [b,c]	Raccoon [b,c]	Coyote [a,c]	Bobcat [a,c]	Fisher [a,d]
1992/1993	0	31	66	2,150	95	10	111
1993/1994	0	31	54	1,438	92	16	120
1994/1995	4	52	87	1,471	107	12	158
1995/1996	15	41	54	640	153	14	226
1996/1997	1	11	44	998	166	9	278
1997/1998	5	99	113	559	86	8	340
1998/1999	2	64	75	368	97	8	395
1999/2000	1	67	32	123	84	15	220
2000/2001	0	55	24	300	95	14	124
2001/2002	0	60	52	399	91	18	197
2002/2003	0	85	27	717	85	23	303
2003/2004	0	110	54	720	176	47	215
2004/2005	4	111	53	403	191	51	339
2005/2006	7	119	37	178	188	45	342
2006/2007	1	8	25	234	242	38	582
2007/2008	3	25	79	344	530	53	486
2008/2009	0	23	38	239	513	63	521
2009/2010	1	15	30	186	599	53	262
2010/2011	6	12	74	237	489	67	321
2011/2012	9	15	43	287	449	81	214
2012/2013			3	77	470	103	415
2013/2014	8	8	28	55	420	103	459
2014/2015	1	12	32	26	468	81	398
2015/2016	0	21	16	71	532	79	286
2016/2017	0	15	10	46	486	100	280
2017/2018	1	30	18	59	522	87	244
2018/2019	2	23	20	97	759	109	109
2019/2020	0	39	36	101	626	118	152
2020/2021	2	19	30	82	574	94	118
2021/2022	0	26	17	55	597	97	84
2022/2023	1	24	28	120	724	146	90
Past 5-year average	1	26.2	26.2	91	656	112.8	141.4

a *number of animals reported at official check stations or via online check system*
b *number of animals reported from voluntary trapper survey*
c *both hunting and trapping seasons*
d *trapping season only*

Appendix C The Wildlife Lands

Table C 1. The wildlife lands and acreages as of the end of FY 2024.

Central District	**54,366.78**
Ashburnham WMA	272.00
Bare Hill Pond Access	1.45
Barre Falls WMA	650.18
Benjamin Hill WCE	87.50
Bennett WMA	281.20
Birch Hill WMA	4,560.55
Blackstone / West River Access	28.00
Bolton Flats WMA	1,353.98
Breakneck Brook WCE	526.00
Breakneck Brook WCR	176.00
Breakneck Brook WMA	787.00
Burnshirt River WCE	100.00
Carter Pond WCE	300.50
Chockalog Swamp WMA	52.50
Clinton Bluff WMA	42.00
Coy Hill WMA	1,224.25
Cusky Pond Access	23.00
E. Kent Swift WMA	157.00
Fish Brook WCE	75.00
Fish Brook WMA	324.50
Fitchburg Watershed WCE	1,875.00
Five Mile River Access	178.52
Five Mile River WCR	17.27
Four Chimneys WMA	200.00
Glen Echo Lake Access	1.00
High Ridge WMA	2,240.87
Hitchcock Mountain WCE	110.50
Hitchcock Mountain WCR	499.50
Hitchcock Mountain WMA	268.41
Hubbardston WMA	361.00
Lackey Pond WMA	174.54
Lawrence Brook WCE	462.60
Lawrence Brook WMA	295.50
Leadmine Mountain WCE	826.37
Leadmine Pond Access	0.05
Leadmine WMA	826.00
Little River WMA	42.00
Long Pond WCE	8.85
Long Pond WMA	5.60
Martha Deering WMA	232.58
McKinstry Brook WCE	31.00
McKinstry Brook WCR	26.00
McKinstry Brook WMA	291.30
Merrill Pond WMA	1,037.06
Millers River WCE	194.22
Millers River WMA	4,019.26
Mine Brook WMA	1,217.73
Moose Brook Access	20.13
Moose Brook WCE	125.00
Moose Brook WMA	849.20
Moose Hill WMA	695.60
Moosehorn Pond Access	9.00
Mossy Pond Access	17.00
Mount Watatic Sanctuary	228.00
Mt. Pisgah WCE	19.12
Mt. Pisgah WMA	88.80
Muddy Brook WCE	575.69
Muddy Brook WMA	2,026.45
Natty Brook Access	95.17
Newton Reservoir WCE	622.00
Nineteenth Hill WCE	623.75
Nineteenth Hill WMA	383.60

Norcross Hill WMA	1,851.57
North Pond Access	0.18
Oakham WMA	911.20
Phillipston WMA	3,227.37
Popple Camp WMA	1,552.91
Potter Hill WCE	90.80
Poutwater Pond WMA	391.74
Prince River WMA	838.95
Quaboag WMA	1,822.53
Quacumquasit WMA	179.82
Quag Pond Bog Access	31.00
Quinapoxet River Access	32.00
Quinsigamond Marsh Access	60.50
Quinsigamond River Access	18.60
Quisset WCE	247.00
Quisset WMA	424.69
Raccoon Hill WCR	22.00
Raccoon Hill WMA	754.41
Richardson WMA	467.22
Savage Hill WCE	234.00
Savage Hill WMA	930.96
Scripture Hill WMA	121.00
Secret Lake WCE	311.30
Sevenmile River Access	77.00
Slater Woods WCE	73.90
South Meadow Pond Access	0.25
Sputtermill Pond Access	58.50
Stone Bridge WMA	505.17
Stuart Pond WCE	28.70
Sucker Brook WMA	102.60
Susan B. Minns Sanctuary	139.91
Taft Hill WCE	394.60
Templeton Brook WMA	83.03
Thayer Pond WMA	131.00
Tully River Access	1.00
Ware River Access - Barre	40.00
Ware River WMA	185.36
Wayne F. MacCallum WMA	894.58
Webster Lake Access	1.70
Wekepeke WCE	564.00
West Hill Dam WMA	350.00
Whitmanville WCE	118.10
Whortleberry Hill WMA	334.36
Williamsville Pond WCR	5.64
Winchendon Springs WMA	907.74
Winimusset WCE	100.00
Winimusset WMA	670.17
Wolf Swamp WMA	1,233.88
Connecticut Valley District	**33,248.17**
Amethyst Brook WCE	36.90
Bachelor Brook WMA	93.70
Bennett Meadows WMA	201.00
Bitzer Fish Hatchery	74.54
Brewer Brook WMA	456.69
Brushy Mountain WCE	78.00
Brushy Mountain WMA	181.38
Catamount WMA	413.00
Chestnut Hill WCE	175.40
Connecticut River Access	94.80
Darwin Scott WMA	27.30
Deerfield River Access	23.00
East Mountain WMA	612.85
Facing Rock WCE	190.00
Facing Rock WMA	1,388.89
Flagg Mountain WCE	345.00
Flagg Mountain WMA	223.69
Forest Lake Access	34.80
Great Swamp WCE	0.94
Great Swamp WMA	845.16
Green River WMA (Valley District)	593.85
Herman Covey WMA	1,505.94
Honey Pot WCE	52.74
Honey Pot WMA	178.42
Lake Lorraine Access	0.26

Lake Quinsigamond Access	6.49
Lake Rohunta Access	2.49
Lake Rohunta WCE	59.00
Lake Warner WMA	98.00
Leyden WMA	759.00
Little Alum Pond Access	0.50
Little Tully Mountain WCE	461.38
Ludlow Reservoir WCE	1,750.00
Mill River Access	14.15
Millers River Access	73.50
Montague Plains WMA	1,983.59
Montague WMA	2,074.45
Mt. Esther WMA	476.20
Mt. Toby WMA	739.10
Mt. Tom WMA	79.90
Orange WCE	877.97
Orange WMA	388.50
Packard Pond Access	0.54
Palmer WMA	1,541.49
Pauchaug Brook WMA	161.30
Paul C. Jones Working Forest WCE	3,486.00
Poland Brook WMA	707.53
Rainbow Beach WMA	45.90
Reed Fish Hatchery	316.00
Satan's Kingdom WCE	123.50
Satan's Kingdom WMA	2,416.67
Sawmill River Access	52.00
Shattuck Brook WMA	178.80
Southampton WMA	170.60
Southwick WCE	61.31
Southwick WMA	348.28
Sunderland Fish Hatchery	45.59
Sunderland Islands WMA	15.00
Tekoa Narrows WCE	13.99
Tully Brook Access	154.88
Tully Mountain WCE	692.87
Tully Mountain WMA	704.00
Wales WMA	234.40
Walter Cowls Jones Working Forest WCE	2,038.78
Ware River Access	39.00
Warwick WMA	379.00
Wendell WCR	2.39
Wendell WMA	602.78
Westfield River Access	79.40
Westfield WMA	234.03
Whately WMA	388.59
Wilbraham Nature and Cultural Center	143.09
Williamsburg WMA	198.00
Northeast District	**20,814.84**
Ashby WCE	15.00
Ashby WMA	1,136.76
Ayer Game Farm	90.72
Baddacook Pond Access	0.16
Boxborough Station WMA	124.10
Carr Island Sanctuary	110.50
Castle Neck River WMA	54.67
Charles River WMA	482.06
Concord River Access	0.25
Concord River WCE	18.90
Cow Pond Brook WCE	127.00
Crane Pond WMA	2,641.25
Delaney WMA	658.00
Devil’s Den WCE	28.00
Dunstable Brook WMA	177.35
Eagle Island WMA	5.00
Elbow Meadow WMA	210.33
Fessenden Hill WMA	21.00
Flagg Swamp WMA	54.00
Flint Pond Access	89.18
Gov. Thos. Dudley Park	4.50
Great Marsh North WCE	426.13
Great Marsh North WMA	459.12

Great Meadows WCE	16.00
Great Swamp Brook WCE	106.00
Groton Town Forest WCE	513.00
Hauk Swamp WMA	61.00
Henry Cabot Lodge Bird Sanctuary (Egg Rock)	2.00
Hunting Hills WCE	84.59
Hunting Hills WMA	430.02
Ipswich River Access	1.79
Ipswich River Access – Peabody	22.23
J. C. Phillips Sanctuary	390.98
King Phillip Woods WMA	87.20
Knops Pond Access	0.60
Lake Attitash Access	6.03
Long Sought For Pond Access	1.00
Martin H. Burns WCE	113.44
Martin H. Burns WMA	1,576.70
Mascuppic Lake Access	0.25
Meadow Pond WCE	81.90
Milk Island Sanctuary	29.00
Mill Creek WCR	59.00
Mount Watatic Reservation	280.00
Mulpus Brook WMA	596.20
Nashua River Access - Dunstable	15.00
Nashua River Access - Groton	10.10
Nashua River Access - Pepperell	11.20
Nashua River Access - Shirley	31.20
Nissitissit River WMA	428.06
Northeast District HQ	15.70
Pantry Brook WMA	449.95
Pepperell Springs WCE	255.00
Ram Island Sanctuary (North)	20.00
Salisbury Salt Marsh WMA	909.65
Squannacook River WCE	312.81
Squannacook River WCR	68.00
Squannacook River WMA	1,954.76
Sucker Brook WCE	12.00
Sudbury River Access	51.86
Surrenden Farm West WCE	169.70
Throne Hill WCE	177.50
Townsend Hill WMA	795.64
Trapfall Brook WMA	45.38
Unkety Brook WCE	137.78
Unkety Brook WMA	902.94
Upper Parker River WMA	208.89
Weymouth Back River Access	16.50
Whittier WMA	42.00
William Forward WCE	274.75
William Forward WMA	1,957.56
Wright Ponds WCE	148.00
Southeast District	**58,672.50**
Acushnet River WCE	30.20
Agawam Mill Pond Access	1.40
Agawam Mill Pond Access WCE	0.50
Agawam River WCE	3.98
Angeline Brook WCE	100.70
Assawompsett Pond Complex WCE	3,065.00
Atwood Reservoir WMA	511.07
Bakers Pond Access	1.75
Barnstable Harbor Access	2.78
Bearse Pond WMA	5.80
Bettys Neck WCE	329.22
Big Sandy Pond Access	0.20
Billingsgate Island Sanctuary	12.00
Billington Sea WCE	69.74
Bird Island Sanctuary	3.10
Black Brook WMA	411.32
Blueberry Pond WMA	1.50
Brandt Island Cove WCE	109.52
Brayton Point WMA	2.20
Bread and Cheese Brook WCE	5.52
Burrage Pond WMA	1,842.17
Camp Cachalot WMA	789.00

Camp Edwards WMA	15,013.16
Canoe River WMA	116.60
Chase Garden Creek WMA	56.40
Childs River Access	0.25
Clapps Pond WMA	68.35
Cook Pond Access	3.00
Cooks Pond WMA	69.18
Copicut WCE	486.22
Copicut WMA	4,017.56
Dartmoor Farm WMA	473.00
Dennis Grassy Pond WMA	7.24
Dogfish Bar Beach Access	2.40
Eastham Salt Marsh WMA	7.44
English Salt Marsh WMA	288.50
Erwin S. Wilder WMA	540.95
Fisk Forestdale WMA	235.00
Fox Island WMA	71.10
Frances A. Crane WMA	2,302.31
Gosnold WMA	3.45
Great Herring Pond Access	1.06
Halfway Pond WCE	28.00
Halfway Pond WMA	367.91
Hartley Reservoir WMA	70.00
Haskell Swamp WMA	3,117.22
Head Of The Plains WMA	2.00
Hockomock Swamp WMA	4,748.54
Hog Ponds WMA	24.50
Hyannis Ponds WMA	365.00
Johns Pond Access	0.52
Katama Plains WMA	18.57
Lake Nippenicket WCE	8.35
Lobster Hatchery	14.80
Maple Springs WCE	156.25
Maple Springs WCR	466.24
Maple Springs WMA	858.34
Marconi WMA	1,211.00
Mashpee Pine Barrens WMA	198.35
Mashpee River WMA	55.80
Mashpee-Wakeby Pond Access	25.00
Mattapoisett River WMA	163.00
Meetinghouse Swamp WMA	123.00
Miacomet Heath WMA	3.83
Mill Brook Bogs WMA	584.52
Muddy Pond WMA	72.00
Nemasket River Access	0.46
Noquochoke WMA	204.50
North Attleborough WMA	36.46
Old Sandwich Game Farm WMA	93.13
Olivers Pond WMA	12.00
Penikese Island Sanctuary	60.00
Peterson Swamp WMA	264.99
Pickerel Cove WCE	78.30
Pickerel Cove WMA	15.90
Pilgrim Springs WCE	17.05
Plymouth Grassy Pond WCR	33.90
Plymouth Grassy Pond WMA	25.50
Plymouth Pine Hill WCE	240.70
Plymouth Town Forest WCE	296.00
Poor Meadow Brook WCE	101.00
Poor Meadow Brook WMA	161.61
Popponesset Beach Access	1.50
Provincetown Corridor WMA	122.00
Puddingstone WMA	158.70
Purchade Brook WMA	106.00
Quashnet River WCE	14.10
Quashnet River WMA	51.54
Quashnet Woods State Reservation and WMA	360.00
Ram Island Sanctuary (South)	2.00
Red Brook WMA	683.20
Robbins Pond Access	1.00
Rocky Gutter WMA	3,318.56
Sandwich Fish Hatchery	69.76
Sandwich Hollows WMA	224.20
Santuit Pond WCE	308.24

Scorton Creek Access	5.48
Southeast Massachusetts Bioreserve	5.94
Southeast Pine Barrens WCE	33.04
Southeast Pine Barrens WMA	796.59
Shubael Pond Access	0.35
Sippican Headwaters WMA	336.73
Sippican Woods WCE	390.14
Sly Pond WMA	192.00
Snipatuit Pond Access	0.50
South Shore Marshes WMA	22.40
South Triangle Pond WCE	47.50
South Triangle Pond WMA	10.26
South Watuppa Pond Access	5.26
Southeast District HQ	29.80
Spectacle Pond Access	0.50
Stump Brook Reservoir WCE	174.00
Tarpaulin Cove Sanctuary	4.50
Taunton River WCE	290.07
Taunton River WCR	4.00
Taunton River WMA	743.22
Tispaquin Pond Access	6.00
Triangle Pond WMA	81.90
Wasque Point WMA	99.50
Watuppa Reservation WCE	4,300.00
West Meadows WMA	231.72
Weweantic River WCE	10.08
Winnetuxet River WMA	44.14
Western District	**70,135.54**
Abbott Brook WCE	1,782.00
Abbott Brook WMA	18.00
Agawam Lake WMA	785.75
Alford Spring WCE	889.82
Allen Mountain WCE	208.00
Ashfield Hawley WMA	284.00
Barton's Ledge WMA	146.60
Boulders WCE	642.53

Brodie Mountain WMA	145.94
Bullock Ledge WMA	15.50
Chalet WMA	7,804.33
Cold Brook WCE	405.00
Cole Meadow WCE	101.00
Cummington WMA	415.80
Day Mountain WMA	387.54
Deerfield River Access (Charlemont)	0.62
Dolomite Ledges WMA	389.87
E. Howe Forbush Sanctuary	365.50
Edge Hill WCE	132.78
Elizabeth's Woods WCE	86.00
Eugene D. Moran WMA	1,870.43
Fairfield Brook WMA	164.90
Farmington River WMA	1,901.10
Fisk Meadows WMA	638.17
Flag Rock WCE	41.38
Flat Brook WMA	273.15
Fox Den WMA	5,707.37
George L. Darey Housatonic Valley WMA	812.93
Grace A. Robson Sanctuary	62.00
Green River WMA (Western District)	589.12
Hawks Brook WCE	23.19
Hawks Brook WMA	509.83
Hinsdale Flats WMA	1,940.63
Hiram H. Fox WMA	3,831.19
Hoosic River Access	5.90
Hop Brook WMA	527.53
Housatonic River Access	17.00
Housatonic River East Branch WCE	123.83
Housatonic River East Branch WMA	27.50
Hubbard Brook WMA	195.93
Jackson Swamp WCE	175.46

John J. Kelly WMA	342.00
Jug End State Reservation and WMA	1,169.80
Jug End WCE	262.48
Kampoosa Fen WMA	72.00
Karner Brook WCE	81.57
Karner Brook WMA	283.15
Knightville Dam WMA	296.00
Knightville WCE	676.00
Konkapot River Access	16.40
Lilly Pond WMA	395.70
Long Mountain WMA	1,014.46
Maple Hill WMA	687.99
Maxwell Brook WMA	168.19
Meadow Brook WCE	126.04
Meadow Brook WMA	50.00
Misery Mountain WMA	1,416.39
Mt. Darby WCE	319.29
Mt. Plantain WCE	1,337.44
North Egremont WCE	21.50
North Egremont WMA	25.96
North River West Branch WCE	250.20
Oak Hill WMA	712.30
Peru WMA	5,143.47
Powell Brook WMA	404.58
Ram Hill WMA	549.60
Richmond Fen WMA	22.90
Rockhouse Mountain WCE	78.00
Savoy WMA	2,041.19

Scout Pond WCE	175.90
Shales Brook WCE	5.60
Shales Brook WMA	307.71
Shaw Brook WMA	153.33
Silver Brook WCE	162.00
Soda Creek WCE	301.58
Stafford Hill WMA	904.60
Stage Brook WCE	581.00
Stage Brook WMA	148.30
Steadman Pond WCE	1,716.17
Swift River WMA	867.46
Tekoa Mountain WMA	1,383.30
Thorpe Brook WCE	266.20
Three Mile Pond WMA	1,141.82
Tom Ball Mountain WCE	849.53
Tower Brook WMA	789.61
Tracy Pond WMA	323.12
Umpachene River WCE	239.00
Upper Westfield River WMA	328.72
Walnut Hill WMA	1,116.70
Western District (Old HQ)	2.35
Westfield River Access (Chester)	3.50
Westfield Watershed WCE	2,300.00
Widow White's Peak WCE	244.00
Williams River WMA	60.50
Windsor Brook WCE	3,284.43
Windsor Brook WCR	69.40
Grand total as of June 30, 2024	**237,237.83**