FISH & WILDLIFE DEPARTMENT PERFORMANCE-BASED BUDGET 2024 REPORT

DEPARTMENT OVERVIEW

We are biologists, game wardens, educators and support staff.
Our MISSION is conserving fish, wildlife, plants, and their habitats for the people of Vermont.

Administration: provides policy, legal, personnel, and financial leadership for the department. The division oversees license sales, and more than 15 other permits related to resource protection. It also promulgates rules and regulations via the Commissioner and the Fish & Wildlife Board.

Fish: conserves and manages the state's fish populations and aquatic habitats. This includes: operating five fish hatcheries; maintaining 205 fishing access areas; controlling the spread of fish diseases, invasive fish and aquatic nuisance species; restoring populations of fish such as muskie, lake sturgeon and landlocked Atlantic salmon; and protecting aquatic species and critical aquatic habitat through technical assistance of regulatory processes such as Act 250, Section 248, hydroelectric dam relicensing, stream alteration and shore land protection permits, and aquatic organism passage.

Warden Service: protects Vermont's fish and wildlife from poaching and illegal trade, in addition to ensuring that the state's 163,000 licensed hunters, anglers, and trappers are compliant with rules and regulations. State Game Wardens respond to human - wildlife conflicts, animal damage complaints, potentially diseased animals, animal cruelty allegations, and remove dead big game animals from roadsides. They also perform standard law enforcement duties such as search and rescue, assistance to other law enforcement agencies, and boating, snowmobile, and ATV operation enforcement.

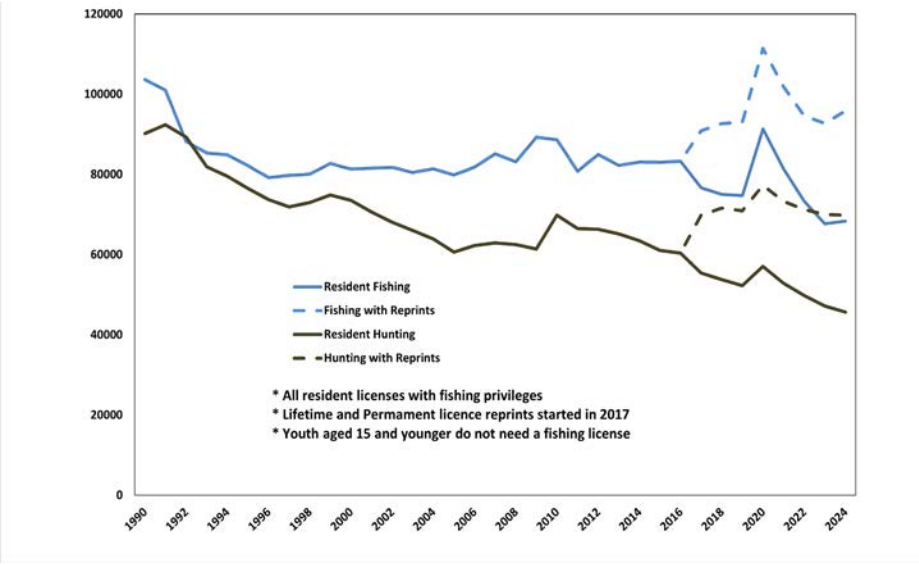
Outreach: connects Vermonters of all ages and abilities to the natural world. This includes operating the department's two Green Mountain Conservation Camps and offering a variety of conservation education programs such as mandatory hunter and trapper education, Lets Go Fishing, and Project WILD. Outreach staff also produce the annual law digests and calendar; develop press releases and content for the website and social media pages; and responds to public inquiries.

Wildlife: wildlife division staff work on three main areas—management and conservation of hunted or trapped species; public and private land and habitat conservation, management, and restoration; and the protection and recovery of rare, threatened, and endangered species. This includes the oversight of 105 Wildlife Management Areas and participating in the protection of important wildlife habitat through the Act 250 and Act 248 processes, among others.

PARTICIPATION IN HUNTING, FISHING AND TRAPPING

Performance measure: Maintain the number of Vermonters participating in hunting, fishing and trapping, as measured by active licenses.

Resident Hunting and Fishing License Sales Including Reprints*



Resident Hunting and Fishing License Sales and Reprints, Age 19 and Older, Including Reprints.

*** Lifetime and Permanent license reprints began in 2017.**

*** Combination sales and reprints included in both.**

Both the number and percentage of female hunters in the hunting population have risen steadily over the last decade. Not coincidentally, the number of female hunter education students has also followed this trend. Over a third of the Department's hunter education graduates are female and more than half go on to hunt in the fall, a purchase rate that is essentially equal to male students. Meanwhile, women account for a third of all resident fishing license sales and, overall, represent a quarter of all anglers, a ratio that has remained stable for decades. In 2024, the department entered into an agreement with the National Wild Turkey Federation to expand the Women in the Outdoors program through 2028. New grant funds will support over 60 women and female-identifying participants to gather and spend time learning about hunting, fishing, working with fur, kayaking, and more.

The department's capacity to conserve fish and wildlife as well as the viability of businesses that depend on wildlife-related recreation are linked to sporting license sales and hunting, fishing and trapping participation.

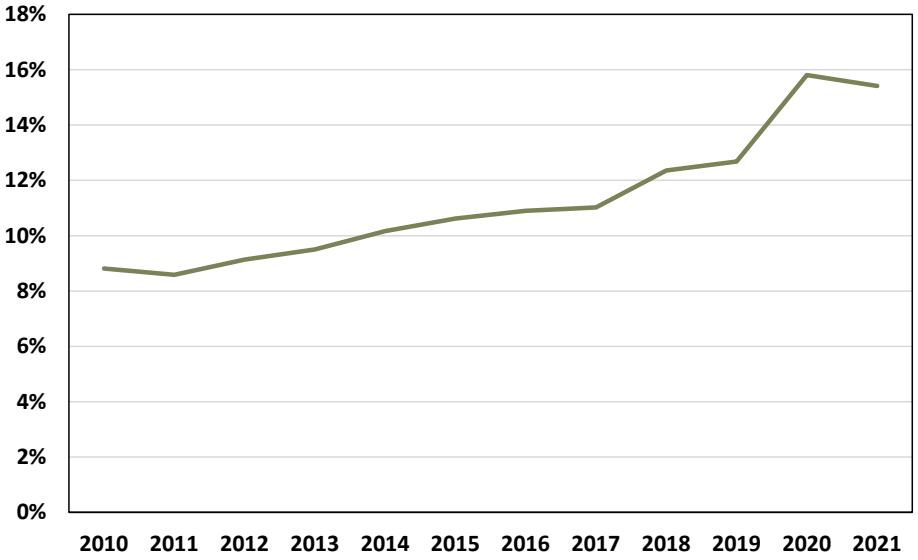
Yearly license sales are not equivalent to the number of hunters and anglers in the field. Youth under the age of 15 fish for free, and, if their property is unposted, landowners do not need licenses to hunt and fish on their own land. More importantly, many resident hunters and anglers hold permanent and lifetime licenses; license types that are not considered sales after the first year of purchase.

Starting in 2017, the department began requiring yearly 'reprints' of these licenses from those planning to use them. When reprints are added to license sales, hunting and fishing participation rates are far healthier than sales alone had previously suggested.

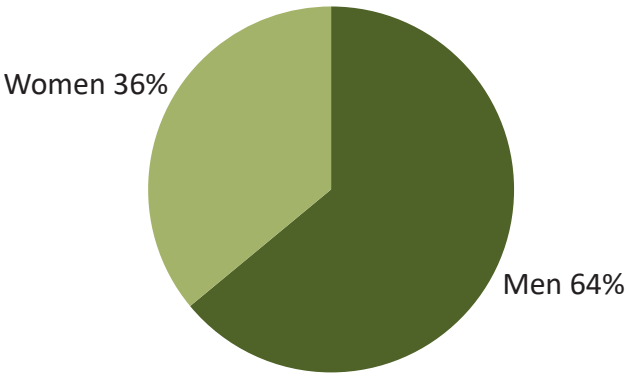
WOMEN IN THE OUTDOORS

Performance measure: Increase the number of women participating in hunting, trapping and fishing in Vermont, as measured by license sales.

Women by Percentage of Resident Hunting and Combination License Sales



Resident Fishing License Sales by Gender



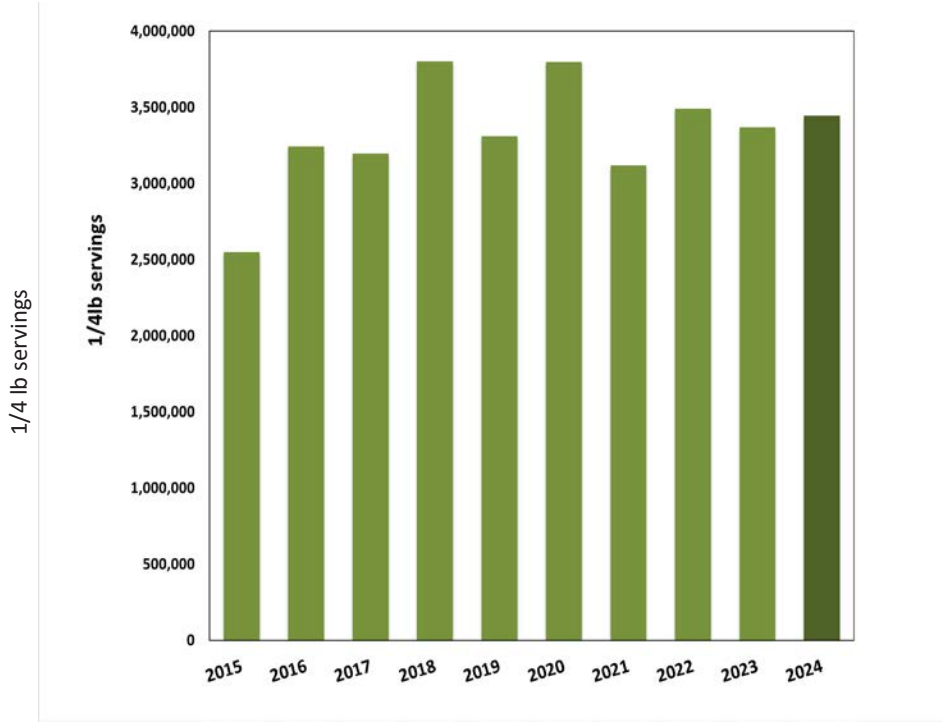
The number of female hunters increased in the 2000s and has since leveled out.

Both the number and percentage of female hunters in the hunting population have risen steadily over the last decade. Not coincidentally, the number of female hunter education students has also followed this trend. Over a third of the Department's hunter education graduates are female and more than half go on to hunt in the fall, a purchase rate that is essentially equal to male students. Women account for a third of all resident fishing license sales and represent a quarter of all anglers. In 2024, the department entered into an agreement with the National Wild Turkey Federation to expand the Women in the Outdoors program through 2028. Supporting 60 participants to learn about hunting, fishing, working with fur, kayaking, and more.

MEAT HARVESTED THROUGH HUNTING

Performance measure: The amount of meat, fish and other resources from fish and wildlife, taken annually, during regulated seasons shall be maintained at sustainable levels.

Meals of Venison Provided Through Regulated Hunting



Hunting and fishing provide Vermonters with free-range, local, sustainable, and affordable food sources.

Vermont is a leader in 'Farm to Table' and eating locally is a primary motivation for first-time hunters, especially those who are not from hunting backgrounds. Among experienced hunters, meat ranks among the top reasons to hunt. Anecdotally, the importance of meat has only increased due to food security concerns related to the pandemic and inflation.

Fishing is mostly associated with relaxation and spending time with friends and family, though some species like yellow perch, walleye and crappie owe most of their popularity to their taste. Keeping fish is particularly common during the winter when cold temperatures, both in and out of the water, keep fillets firm and fresh.

CONSUMER SPENDING AND WILDLIFE-RELATED RECREATION

Performance measure: Maintain consumer spending related to wildlife-recreation.

Long hunting and fishing seasons are a testament to the sustainability of carefully managed fish and game species while the steady, off-season traffic they create provides reliable income to rural general stores, restaurants, gas stations, and retailers.

The economic benefits of wildlife extend beyond hunting and fishing. Vermont is home to a number of wildlife-watching hotspots that draw both residents and nonresidents, all of whom must eat, sleep and be outfitted. Dead Creek Wildlife Management Area (WMA), for instance, is known throughout Vermont, even among the most casual observers, for its up-close views of snow geese each fall. In contrast, serious birders from New England and beyond visit Wenlock Wildlife Management Area and the surrounding area for its accessible opportunities for boreal birds, such as black-backed woodpeckers, gray jays and spruce grouse.

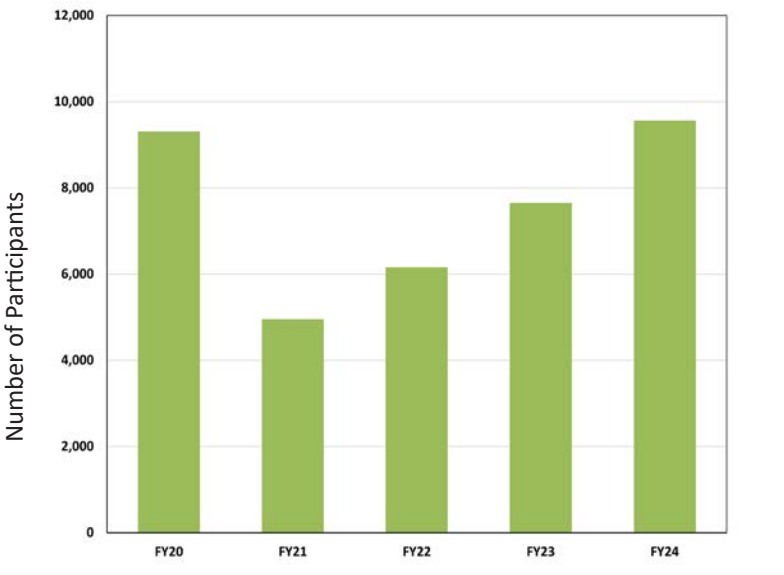
As immeasurable as wildlife's cultural importance may be to the state, wildlife-related recreation generates significant economic activity and the sum of this passion quickly adds up and represents a significant contribution to the economy.

- A US Department of Commerce, Bureau of Economic Analysis found only snow sports topped hunting, shooting and trapping in total, value-added economic impact in Vermont with boating and fishing coming in fourth. The recreational activities examined ran the gamut from the conventional (camping, hiking and climbing) to agritourism, outdoor concerts and even gardening.
- Wildlife-related spending is particularly important to rural areas and often coincides with the 'off-season' for other tourism.
- Anglers make a significant contribution to tourism; the bulk of their spending is on food, lodging and related trip expenses.
- According to survey conducted by UVM's Center for Rural Studies, Lake Champlain generates an average expenditure of $88 per angler, per day.
- Vermont draws dedicated wildlife watchers from around the region, not counting casual viewing by residents and tourists.
- The economic impact of bird feeding in Vermont cannot be overstated. The US Fish and Wildlife Service estimates almost half of Vermont households feed birds.

CONSERVATION EDUCATION AND OUTREACH PROGRAMS

Performance measure: Maintain or increase the public's support for, and knowledge of, fish and wildlife conservation and land stewardship.

Fish & Wildlife Education Program Participation (in person)



Fish & Wildlife programs are affordable. Other than the Green Mountain Conservation Camps and educator's course, all programs are free. Camp tuition ($250) is just a fraction of the cost of almost any other week-long residential camp. Plus, there are an ample number of scholarships available for those in need. In FY24, all applicants that demonstrated need received financial support.

The department works to maintain Vermonters' strong connection to the land.

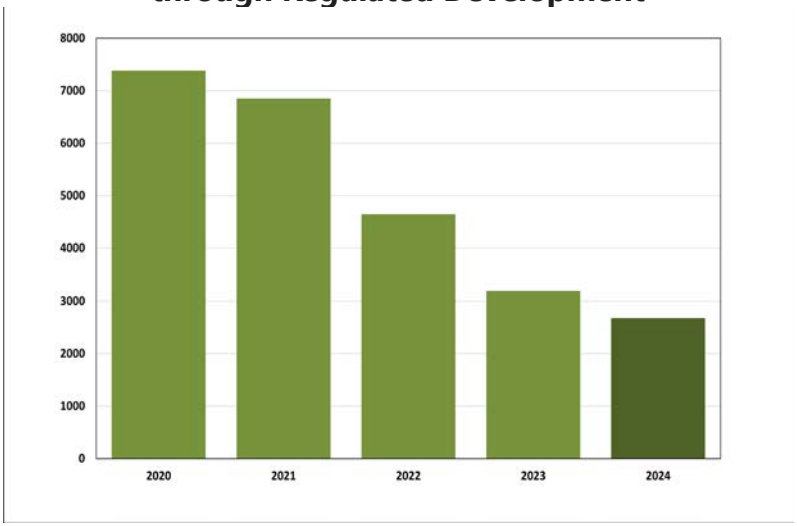
The department's education programs strengthen an understanding of ecology, build support for conservation, and teach the outdoor skills needed to responsibly enjoy our woods and waters. In FY24, 9,563 people participated in an in-person course, seminar, or event. Since Covid, the department has also augmented in-person opportunities with virtual and online educational programs, including fishing clinics, game cooking seminars, and wildlife tracking. These programs reached a further 2,300 people.

The department has been working with New American communities in the Burlington area to enhance their access to the outdoors. Fishing clinics have proven to be the most relevant and successful of these programs, likely because fishing is affordable and readily available and can double as a food source. In FY24, these clinics, in partnership with other organizations, reached 200 New Americans. Participants received free fishing rods, life jackets, and, occasionally, fishing licenses.

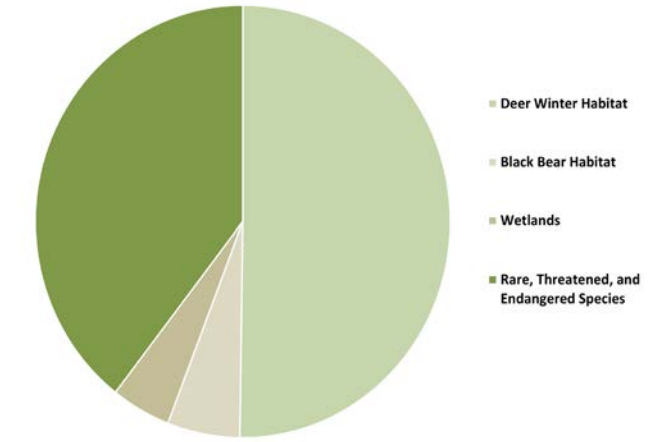
HABITAT CONSERVATION THROUGH ACT 250

Performance measure: Increase the number of acres of habitat and miles of shoreline protected through the regulatory process.

Acres of Habitat Preserved, Per Year, through Regulated Development



Habitat Protected by Type Through Regulated Development Projects in 2024



Act 250 works to protect important habitats for fish and wildlife.

The department protects ecologically important fish and wildlife habitat by providing technical assistance through Act 250 and Section 248. In FY24, this included reviewing 337 projects and protecting 2,762 acres. Work related to the Vermont Public Utility Commission included assessing the impacts of 11,429 acres of active forest management. While the reviews encompass the entire proposed harvest area, biomass for Burlington Electric Department and Ryegate Associates usually only comprises a portion of the harvested wood products. The reviews have occurred since the facilities were issued their Certificates of public good in the 1980's, resulting in hundreds of thousands of acres reviewed for wildlife habitat protection.

Only 3 to 5 percent of all development projects in Vermont are regulated by Act 250.

LAND ACQUISITION AND CONSERVATION EASEMENTS

Performance measure: Increase the cumulative number of acres of high-value habitats and natural communities conserved through acquisition or easements.

The department has a long, successful history of conserving, managing, and restoring wetland habitat. Sandbar Wildlife Management Area (WMA), established as a refuge for migratory waterfowl in Milton in 1920, was the first state-owned WMA in the eastern United States. One hundred years later, the department owns almost 30,000 acres of essential wetlands and is the state's largest wetlands owner.

In keeping with this tradition, the Wetland Conservation and Restoration Initiative was created in 2019 to accelerate conservation and restoration in the Lake Champlain drainage basin. This initiative is funded by the EPA (Over $5M since 2019) with support from the Department of Environmental Conservation (DEC) and Lake Champlain Basin Program (LCBP) and is focused on improving water quality and fish and wildlife habitat in Lake Champlain and its tributaries. In FY24, the department used initiative funds to purchase a 255-acre parcel on Lewis Creek in Ferrisburgh. This acquisition, an addition to the Little Otter Creek WMA in Addison County, will improve water quality through wetland restoration. Ten other wetland restoration projects are in various stages of development.

Strategically targeting critical habitats for conservation.

Working with many partners, the department safeguards important fish and wildlife habitat through acquisitions, easements, and management agreements. In 2024, the department closed on 13 real estate transactions totaling 436 acres in fee and an additional 1,400 acres of timber rights at an existing WMA.

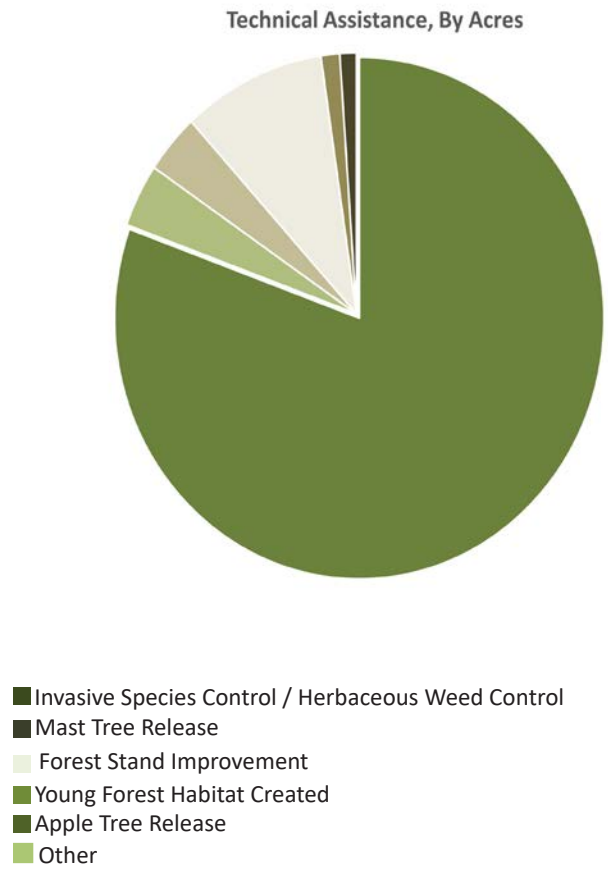
Acquiring the timber rights at Pond Woods WMA in the towns of Benson and Orwell was noteworthy because it was one of a dozen WMAs that included parcels that the department does not own the timber rights too. These parcels are often the oldest and acquiring the timber rights has become a department priority because it provides greater site control and ensures that any harvests promote ecological sustainability.

Other acquisitions included seven parcels in the Memphremagog basin to improve water quality and access. This effort included four acquisitions totaling 46 acres that expanded the Johns River Streambank Management Area in Derby, which is an excellent wild trout fishery.

HABITAT ASSISTANCE FOR PRIVATE LANDOWNERS

Performance measure: Increase the cumulative number of acres of high-value habitats improved through private lands technical assistance.

Wildlife Habitat Improved on Private Lands through Fish & Wildlife Staff Technical Assistance



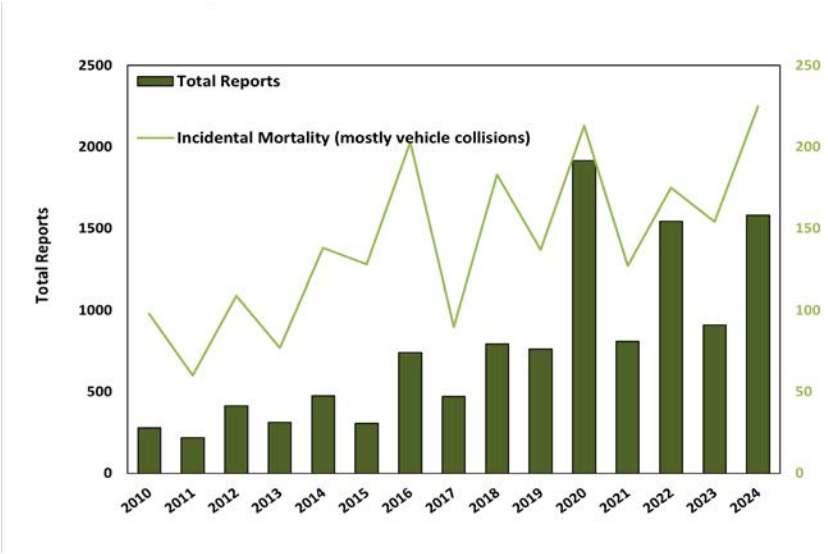
Approximately 80 percent of Vermont land is privately owned, working with landowners is essential to wildlife habitat.

In FY24, department staff conducted 392 site visits and provided technical services to more than 600 landowners. These visits familiarize landowners with potential habitat management activities and funding sources, and, more broadly, introduce a 'conservation-based' way of thinking about the future of their property. However, in FY24, they also resulted in the direct improvement of 1,330 acres of wildlife habitat through the federal Natural Resources Conservation Service (NRCS) Environmental Quality Incentive Program (EQIP) program. In addition, staff worked closely with 21 partnering organizations to coordinate landowner habitat technical assistance efforts and presented workshops to conservation organizations, natural resource professionals, and students.

WILDLIFE DAMAGE AND CONFLICT

Performance measure: Minimize the total number of negative interactions occurring between wildlife and Vermonters to achieve acceptable levels of human safety and tolerance and to protect critical wildlife habitats.

Public Reports of Bear-Human Conflicts & Incidental Bear Mortalities



Education centered around preventing bears access to human-related foods is critical. In 2024, the department's outreach and education efforts included on-the-ground technical assistance, presentations on living with bears, online content, social media posts, and television and radio spots. While some of this outreach was statewide, staff targeted communities with the highest problems. In addition, the department partnered with Vermont Coverts to train a group of their members to share 'Bear Aware' information in their communities and social circles and entered in to contract with USDA Wildlife Services and the Department of Forest, Parks and Recreation. This contract created three positions within Wildlife Services that provided technical assistance to Vermonters and visitors at Vermont State Parks.

Education, however, cannot overcome systemic problems with garbage and food scrap storage. Residents must have access to secure storage. To help address this, the department has increased coordination with Department of Environmental Conservation solid waste, solid waste districts, trash haulers, and USDA (APHIS) Wildlife Services. More work is needed to achieve meaningful improvements across Vermont.

Record numbers of bear-human interactions are challenging the department's capacity to provide direct and effective assistance. In 2024, the department recorded the second highest number of human-bear incidents (1,580) and the highest number of non-hunting mortalities (225).

- Incidents were dominated by reports of bears: seeking garbage (33%); causing damage to buildings in search of food (13%); accessing bird feeders (9%); and eating, or attempting to eat, backyard chickens (8%). However, there were also more serious cases of direct threats to public safety and/or significant property damage. This included:
- Two incidents that resulted in human injuries.
- 44 reports of bears entering or damaging vehicles.
- 78 successful and/or attempted home entries by bears.
- The vast majority (83%) of the 225 non-hunting bear mortalities were caused by vehicle collisions; the remainder were the result of

WILDLIFE DAMAGE AND CONFLICT

Performance measure: Minimize the total number of negative interactions occurring between wildlife and Vermonters to achieve acceptable levels of human safety and tolerance and to protect critical wildlife habitats.

Beaver Baffle Program

Beaver-created wetlands are valuable wildlife habitat that can also improve flood resiliency and water quality and help mitigate drought impacts. These same wetlands, however, can also threaten public and private infrastructure and create safety hazards. To help maintain these wetlands and assist road crews and landowners with resolving beaver conflicts, the department established the beaver baffle program over 25 years ago.

Beaver baffles can keep water levels in a beaver-created wetland at a lower, more manageable water level. While not effective in all situations, and certainly not a replacement for beaver population management, the devices allow some water to pass through without the need to breach the dam and, just as importantly, without the beavers figuring out how to stop it. Baffles are just one of many techniques that the program uses, or recommends, to minimize damage. Others include fencing to protect culverts and wire mesh or special paint to prevent gnawing.

Since the project's inception in 2000, 353 devices (204 baffles and 149 exclusion fences) have been installed around the state, influencing 3,852 acres of beaver created wetland habitats.

In FY24, program staff:

• Responded to over 315 public inquiries related to beaver conflicts

• Conducted 72 site visits throughout the state

• Installed 7 exclusion fences and 4 baffles that influenced 55 acres of beaver created wetlands.

• Inspected 26 previously installed devices and maintained another 19 devices, continuing to influence 187 acres of beaver created wetland habitat.

Bear-Human Interactions (continued)

conflicts with people.

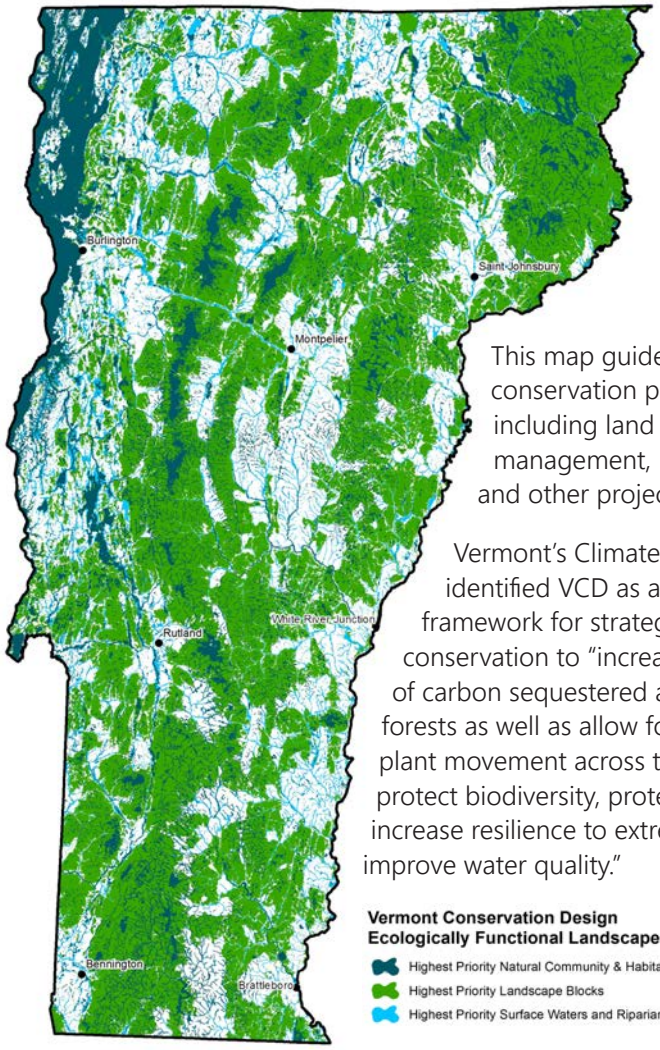
2024 followed a familiar pattern. Over the last fifteen years, reports have been higher in even numbered years than odd numbered ones while the overall number of reports continues to rise. Non-hunting mortalities have also noticeably increased from an average of 84 reported bear deaths annually (2002-2013) compared to an average of 165 annual bear deaths (2014-2024).

Contributing factors likely include:

- Bears expanding their range into areas with higher human development and less experience living with bears.
- An influx of people from suburban and urban areas into more rural environments.
- A shift in bear behavior as more bears learn that human foods are easy to find and more reliable.
- Pulses in population in years following abundant beechnut crops, which have consistently occurred in odd numbered years for the past 15 years.
- A web-based reporting form, introduced in 2018, that makes it easier for people to report incidents coupled with increased outreach by the department.
- Increased coordination with Department of Environmental Conservation solid waste, solid waste districts, trash haulers, and USDA (APHIS) Wildlife Services. More work is needed to achieve meaningful improvements across Vermont.

MAINTAINING ECOLOGICAL FUNCTION THROUGH VERMONT CONSERVATION DESIGN

Performance measure: Increase the percentage of lands and waters containing the highest priority forest blocks and riparian areas identified in Vermont Conservation Design in some form of protection, conservation, improvement or restoration.



This map guides department conservation programs including land acquisition, land management, land use planning and other projects.

Vermont's Climate Action Plan identified VCD as a guiding framework for strategic land conservation to "increase the amount of carbon sequestered and stored in our forests as well as allow for wildlife and plant movement across the landscape, protect biodiversity, protect climate refugia, increase resilience to extreme weather and improve water quality."

Find VCD at vtfishandwildlife.com/conserve/vermont-conservation-design

Vermont Conservation Design (VCD) is a science-based vision to sustain our forests, waters, and wildlife for future generations.

VCD identifies the intact, connected, anIncrease the percentage of lands and waters containing the highest priority forest blocks and riparian areas, as identified in Vermont Conservation Design, in some form of protection, conservation, enhancement, or restoration.

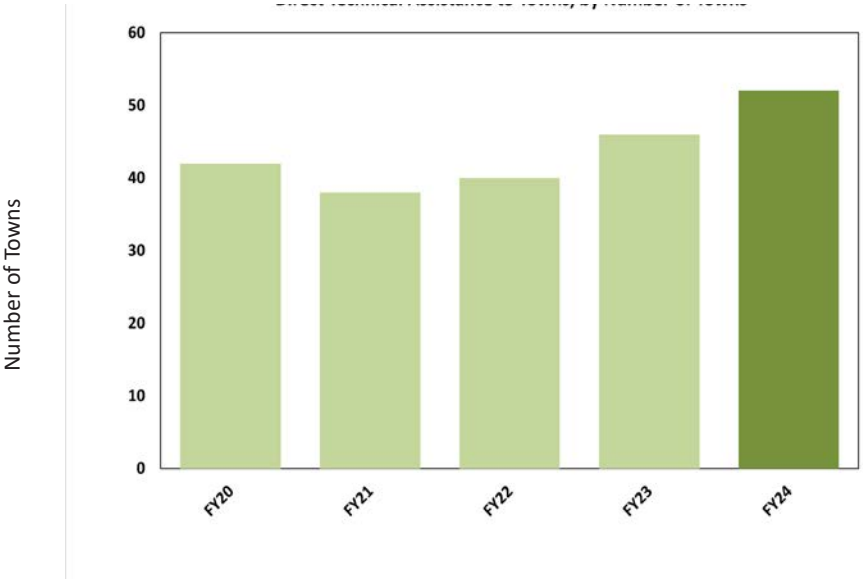
As a result, VCD informs land acquisition, land management, land use planning and other conservation efforts. In 2024, the department used it to encourage landowners, towns, and partner organizations to voluntarily focus conservation and stewardship in high priority areas and to help identify species that need specific conservation attention for biological or social reasons.

Find VCD at https://vtfishandwildlife.com/conserve/vermont-conservation-design

COMMUNITY WILDLIFE PROGRAM

Performance measure: Provide technical planning assistance to all Vermont municipalities

Direct Technical Assistance to Towns by Fiscal Year



The department's Community Wildlife Program uses Vermont Conservation Design (VCD) as the scientific basis for its land use planning recommendations.

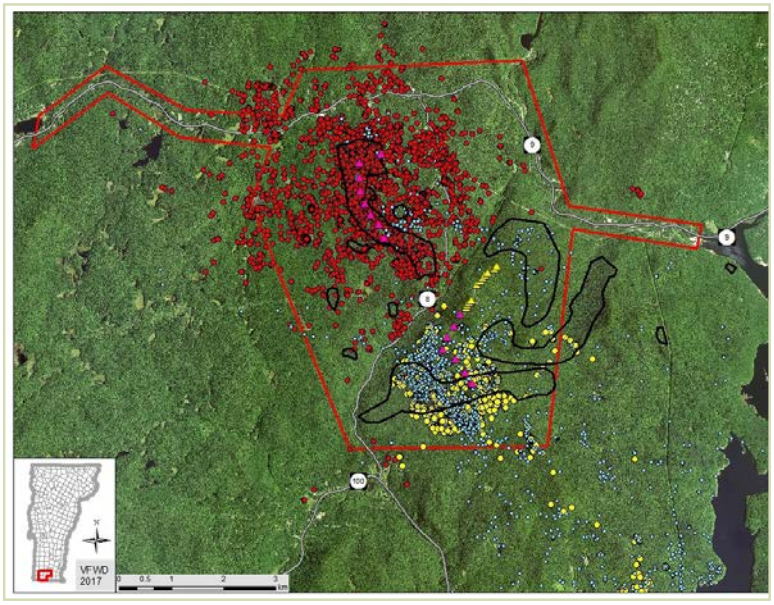
The Community Wildlife Program uses a three-pronged approach to assist municipalities: 1) webinars to generate interest in, and the understanding of, conservation planning; 2) Environmental Leadership Training to improve the effectiveness of municipal commission members, and 3) direct technical assistance to towns that are updating plans or regulations.

In FY24, Community Wildlife Program staff served 136 towns and provided 1,352 hours of technical assistance, including direct support to 52 towns. In addition, the program worked with 7 Regional Planning Commissions, engaged 25 partner organizations, participated in 3 collaborative partnerships, and offered 91 events (presentations, meetings, trainings, webinars).

The Community Wildlife Program serves Vermont municipalities with technical assistance for conservation planning. VCD as the scientific basis for land use planning recommendations. VCD was developed to support stewardship and conservation, particularly land use planning, and is available on the Vermont Agency of Natural Resource's BioFinder website. The tool identifies features at the landscape and natural community scales that are necessary for maintaining an ecologically functional landscape – a landscape that conserves current biological diversity and allows species to move and shift in response to land-use patterns and climate change.

BALANCING WILDLIFE WITH RENEWABLE ENERGY

Performance measure: Maintain the functionality of high-value habitat in areas targeted for renewable energy development.



Locations of three study bears during 2015 near the Deerfield Wind Energy Project (pink triangles). The red circles and yellow circles represent the locations of two different female bears and the blue circles are the locations of a male bear. The black polygons are mapped stands of bear scarred beech concentrations. The red polygon is the virtual fence – collars within the fence collect one location every 20 minutes. Construction of the wind facility did not begin until the fall of 2016.

Wind and solar are essential components of Vermont's carbon-free future. However, energy development must be balanced with needs of wildlife, particularly irreplaceable habitat, natural communities and travel corridors.

The department has been conducting a long-term study to evaluate the impacts of wind energy development on black bear use of important foraging habitat. The Deerfield Wind Project, in Searsburg and Readsboro, is the first industrial sized wind project on United States Forest Service (USFS) lands.

To understand what the impact of the wind project was on bears, the department collected data from 45 GPS collared bears and 40 trail cameras. Data collection occurred from 2011-2021. This long timespan allowed the department to monitor bear movements and habitat use prior to development, during construction, and once the facility became operational. In 2023, the department entered a contract with researchers at the University of Alberta to help analyze and summarize the data.

Preliminary results indicate that bears, during and after construction, avoided the area, relocated to portions of the remaining beech habitat that were farther from the facility, and spent more time traveling and less time foraging.

RESEARCHING THE DECLINE IN VERMONT'S MOOSE POPULATION

Performance measure: Monitor and minimize the impact of disease on wildlife populations.

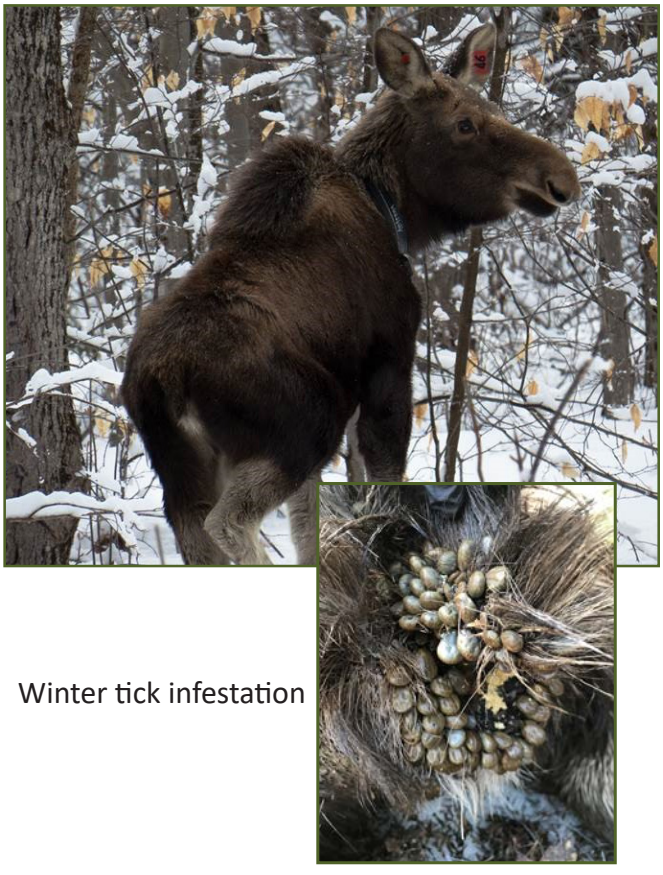
Shorter winters and abundant moose are increasing winter tick densities in the heart of Vermont's moose range.

The department recently completed a three-year study in the Essex County area to understand the impacts of winter ticks on Vermont moose. Beginning in 2017, 60 eight-month-old moose calves and 36 adult cows were captured and outfitted with radio/GPS collars.

Overall, winter ticks killed almost half of all the moose calves. Collared cows fared much better (87% winter survival), but they produced fewer calves than would be expected. This was likely due to poor body condition because of winter tick infestations. Additionally, lungworm, another parasite, was found in 70 percent of the dead calves. While usually not fatal, lungworms can increase the risk of death from blood loss due to winter ticks.

Results of the study clearly indicated that ticks remain at high enough levels to limit moose population growth. As a result, the department reinstated a limited hunt in 2020 designed to reduce the moose density in Essex County to, in turn, reduce winter tick density and allow moose to persist. Results from the 2021 hunt indicated that tick counts remained high, and the physical condition and reproductive rates of moose remained poor. It will take several years to reduce moose population to the density that research has shown is necessary to impact winter ticks.

The 2019 Big Game Survey found the majority (65%) of Vermonters support the use of hunting to manage for a smaller moose population if it reduces the number of moose that die from ticks.



Winter tick infestation

THE DEPARTMENT'S APPROACH TO FISH & WILDLIFE DISEASES

Performance measure: Maintain or restore fish and wildlife populations at healthy and sustainable levels.

The department actively works to identify and monitor fish and wildlife diseases to ensure sustainable and diverse wildlife populations in the future.

One of the earliest discoveries about COVID-19 was its ability to be transmitted between humans and both wild and domestic animals. Since then, department biologists have worked with experts from across the country to assist with the latest research and to determine what measures are needed to safeguard both humans and native wildlife.

The pandemic bolstered the need to monitor a long list of other fish and wildlife diseases that could become zoonotic, meaning the ability to jump from animals to humans. For example, in 2022, Highly Pathogenic Avian Influenza was detected in Vermont. Though expected and not thought to be impacting wild bird populations in Vermont, this strain of 'bird flu' has proven far hardier than past outbreaks. Rather than fizzling out after the first winter, it's still circulating. As a result, both the Wildlife Division and Warden Service continue to devote significant staff time to responding to public calls, investigating potential cases, collecting samples, and coordinating with other state and federal agencies.

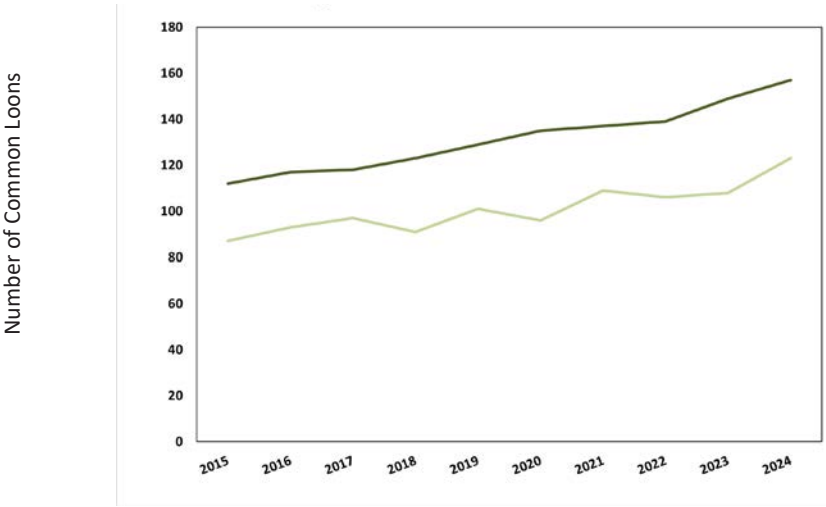
Others diseases being monitored include: Chronic Wasting Disease (deer and moose), White-Nose Syndrome (bats); Whirling Disease (trout); rabies and canine distemper virus (particularly furbearers); Viral Hemorrhagic Septicemia (all fish species); and the emerging threat of Rabbit Hemorrhagic Disease Virus 2, a highly contagious and often fatal virus that is spreading rapidly in multiple species of domestic and wild rabbits and hares in the Western United States.

- The department's multi-disciplinary approach to disease includes:
- Two Fish Health Biologists stationed at the Fish Health Lab at the Vermont Agriculture and Environmental Laboratory in Randolph. (See sidebar)
- Three trained wildlife disease response teams (mammals, birds and reptiles and amphibians) operating under the guidance of disease surveillance plans.
- An updated Chronic Wasting Disease (CWD) response plan to better detect, respond to, and reduce the impacts of CWD to Vermont's deer population.
- Participation with the Northeast Fish Health Committee, state, regional and federal agencies, including USDA-Wildlife Services, Vermont Agency of Agriculture, Food & Markets, and Vermont Department of Health.
- Utilizing a veterinarian working as the Northeast Association of Fish and Wildlife Agencies' (NEAFWA) Regional Fish and Wildlife Health Coordinator.
- Working with a volunteer wildlife veterinarian to for disease surveillance, diagnostics, and organizational planning.
- Accounts at testing facilities to speed up sample submissions.

THREATENED AND ENDANGERED SPECIES

Performance measure: Maintain or restore fish and wildlife populations at healthy and sustainable levels.

Nesting and Territorial Pairs of Common Loons in Vermont



The Vermont Loon Conservation Project, a partnership between the department and the Vermont Center for Ecostudies, includes an annual inventory of the state's summer common loon population. In 2024, project volunteers observed loons on 121 of 163 surveyed lakes and counted 368 adults, 83 chicks, and 1 subadult. To provide a historical perspective, volunteers counted just 184 adults in 2004.

The department works strategically to keep common species common and prevent vulnerable species from becoming threatened and endangered.

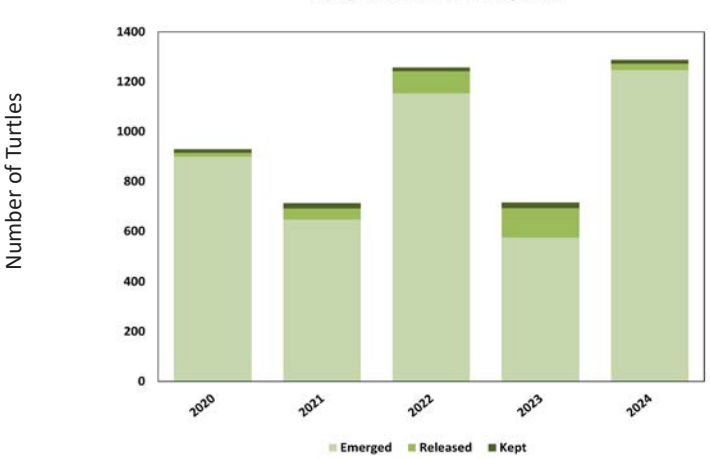
The Vermont Wildlife Action Plan is a 10-year framework designed to assess the health of Vermont's fish, wildlife, and plant populations, identify problems that species face, and outline actions for long-term conservation. Implementing the plan is the way to maintain stable, resilient populations of hundreds of at-risk species, and keep them from becoming endangered.

Jefferson Salamander by Andrew Hoffman (CC BY-NC-ND 2.0)

THREATENED AND ENDANGERED SPECIES

Performance measure: Maintain or restore fish and wildlife populations at healthy and sustainable levels.

Spiny Softshell Turtle Nesting Success



Spiny softshell turtles are a state-threatened species. In Vermont, they are only found in Lake Champlain, and nesting-related problems are a primary reason why they are imperiled. Threats to nesting include habitat loss due to development and competing vegetation, depredation by raccoons, foxes and skunks, and periodic flooding of nesting sites when lake level is high.

The department is working to minimize these threats by:

- Covering known nesting sites with wire mesh after females have laid their eggs to prevent predation.
- Employing USDA APHIS Wildlife Services to reduce nest predator abundance at the most sensitive nesting beaches.
- When found, removing any live eggs/young from hatched nests, then incubating them and raising the hatchlings in captivity for release into Lake Champlain the following spring.
- Increasing public awareness and outreach by partnering with the ECHO Leahy Center for Lake Champlain and conducting annual volunteer turtle beach cleanups.

Conserving Vermont's diversity of species involves protecting important habitats and reducing other threats that impact survival.

Only three small populations of the state-endangered spotted turtle are known to exist in Vermont and the fact they are hard to find doesn't make locating new populations any easier. To help with the search, the department staff worked with UVM to determine if environmental DNA eDNA might enhance detection. Like DNA from a crime scene, species leave behind eDNA – especially in water bodies – and it can be detected in a water samples. In partnership with several states, 191 water samples were collected at seven sites, in and out of Vermont, known to be occupied by spotted turtles plus several control sites where no turtles were present. At six of the seven sites, eDNA detected the presence of the turtles. The next step is to now put the technology to work in potential turtle habitat.

WILDLIFE MANAGEMENT AREAS

The department manages 105 Wildlife Management Areas (WMAs) and many Streambank Management Areas (SMAs) totaling 135,000 acres. These properties showcase quality habitat management for all wildlife species and ensure public access for hunting, fishing, trapping, and wildlife watching. While open to all, their acquisition and maintenance is primarily funded through sporting license sales and federal funds derived from excise taxes on hunting equipment with additional assistance from Habitat Stamp donations.

FY24 highlights include:

- 2,969 acres of direct habitat management including grassland mowing, controlled burns, and invasive plant control.
- 87 acres of timber harvested to create young forest habitat.
- 292 waterfowl nesting structures and boxes were installed and maintained.
- 26 dams and dikes were maintained to actively manage 1,648 acres of wetland.
- 3 bridges and culverts were repaired or replaced.
- Infrastructure maintenance, vital for public access, included work on 33 miles of roads, 62 kiosks, 5 miles of boundary lines, 59 parking areas, and 12 gates.

LAKE CHAMPLAIN WETLAND CONSERVATION AND RESTORATION INITIATIVE

The department has a long, successful history of conserving, managing and restoring wetland habitat.

Sandbar Wildlife Management Area (WMA), established as a refuge for migratory waterfowl in Milton in 1920, was the first state-owned WMA in the eastern United States. To date, the department has conserved almost 30,000 acres of essential wetlands and is the largest owner of wetlands in the state.

In keeping with this tradition, a wetland conservation and restoration initiative was created in 2019 to accelerate conservation and restoration in the Lake Champlain drainage basin. This initiative is funded by the EPA ($1.75 million for three years) with support from the Department of Environmental Conservation (DEC) and Lake Champlain Basin Program and is focusing on improving water quality and fish and wildlife habitat in Lake Champlain and its tributaries.

In FY22, the department used the funds to secure two parcels, totaling just over 360 acres, that will improve water quality through wetland restoration and expand Dead Creek WMA in Addison County. Eight other wetland restoration projects are in various stages of development.

RESTORATION OF STURGEON AND OTHER FISH AND AQUATIC ORGANISMS

Performance measure: Maintain or restore fish and wildlife populations at healthy and sustainable levels.

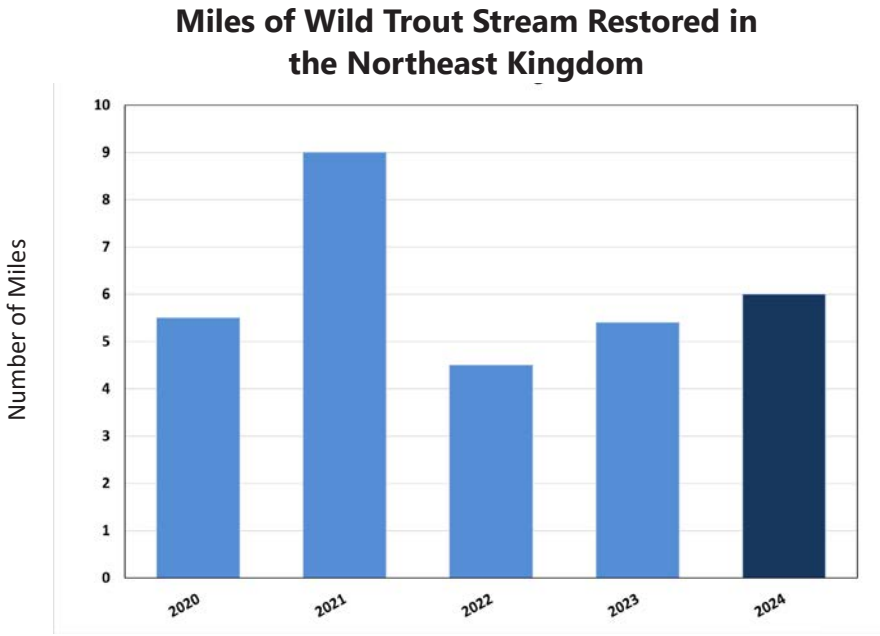
The department works to conserve a diversity of aquatic species.

Lake sturgeon populations had declined precipitously in Lake Champlain by the mid-1900s due to dams, pollution, and commercial fishing and then sea lamprey likely pushed them over the edge. In 2016, the department released a new lake sturgeon recovery plan and stepped up its efforts to restore the endangered fish to the lake and its tributaries. It was initiated with the knowledge that full recovery could take generations. It takes 25 years for the ancient, long-lived fish to even reach maturity.

In 2024, biologists continued efforts to better understand behavior and habitat use in the little-known population that spawns in the Missisquoi River and, to a lesser extent, a population near Otter Creek. Five adult fish were captured (one was a recapture) and four were tagged in the Inland Sea during spring sampling, bringing the total number of tagged fish in northern Lake Champlain to eleven. No fish were captured near Otter Creek. Biologists also continued public outreach efforts, including reminding anglers that the fish cannot be legally targeted and must be immediately cut off if inadvertently hooked. Efforts in 2025 will include the continued assessment of tagged fish near the Winooski and Lamoille rivers, monitoring the movement of the northern fish, sampling in the Missisquoi River and Otter Creek, and conducting a creel survey on the Winooski River to better understand sturgeon bycatch.

TROUT HABITAT MANAGEMENT

Performance measure: The number of stream-miles restored.



Fisheries biologists work with Trout Unlimited and other partners to improve trout habitat on the East Branch Nulhegan River.

Fisheries biologists, in cooperation with Trout Unlimited, have been strategically adding woody material to streams in the Northeast Kingdom. Brook trout population monitoring reveals that brook trout abundance has more than doubled in treated areas.

A decade-long survey of wild brook trout and found that present day populations are comparable to those from more than 50 years ago.

This is a remarkable conclusion for Vermont's favorite fish given that populations of wild brook trout have declined significantly across much of the species' historic range in the eastern United States.

While most measures were similar, significantly higher densities of young brook trout were found. This may reflect the improved environmental protections put in place since the 1950s, particularly legislation and programs focusing on water quality and aquatic habitat protection.

The survey included sampling 138 streams in 17 watersheds.

WILD TROUT FISHERIES RESTORATION

Performance measure: The number of catchable trout per mile.

Trout per Mile, Twin Rivers Restoration Site, Batten Kill River

The department is working to provide quality trout fishing opportunities by restoring and maintaining self-sustaining wild trout fisheries.

Vermont's finest wild trout rivers include the Batten Kill and the Dog River, and the department is working to improve a number of other streams too, including in the Northeast Kingdom.

"Wood is good" "Fish grow on trees" "Mess is best"

When high-quality, complex instream habitat is restored, trout abundance and size increase. In 2006, mature trees were strategically felled and placed in a stretch of the Batten Kill in Arlington known as "Twin Rivers". Following restoration, trout abundance and the number of fish larger than 6 inches in length increased and has been sustained nearly 20 years later.

While the initial restoration still benefits trout, local efforts to maintain high-quality habitat for trout in the river have aided the project's longevity. In addition to planting trees and shrubs along streambanks to restore the source of these large trees, local partners have taken it one step further. Education, communication, and collaboration have been successful in forwarding the goal of quality trout habitat.

PROTECTING AND RESTORING STREAMBANK HABITAT AND AQUATIC ORGANISM PASSAGE

Performance measure: Miles and acres of streambank habitat enhanced or restored, and miles of river connected.

The department works with state and federal agencies and non-profits to protect and restore habitat for fish and other aquatic creatures.

Trout depend on cold, clean, complex, and connected rivers and streams with unconstrained flow. These conditions occur naturally when: trees grow along the banks are left after they fall in; stream channels are given room to meander and flood their banks; bridges and culverts are appropriately sized; and dams are removed. To put it another way, it is cheaper and more effective to protect and restore habitat than it is to create it. Healthy aquatic habitat is also essential to water quality and flood resilience. FY24 Aquatic Habitat Conservation highlights include:

- Providing $260,000 in funding from the Habitat Stamp, State Wildlife Grant, and EPA and over 50 hours of technical assistance to assess 300 privately owned=culverts and bridges for aquatic organism passage, enhance two AOP compliant culverts, and remove three dams.
- Assessing 70 culverts in central Vermont following the 2023 floods. All of the structures that were replaced since 2011 and built to the current state standard were intact and maintained their level of Aquatic Organism Passage.
- Beginning the acquisition of a 22-acre property on Kenfield Brook in Morristown that was damaged during the 2023 flood.
- Co-teaching two Rivers and Roads trainings with DEC. This course presents river process, aquatic habitat and aquatic organism passage concepts and designs to state and municipal staff and consultants who design and maintain road infrastructure.
- Monitoring tree plantings at 15 sites across the state to study practices that can increase growth and survival of planted trees, particularly in the presence of beavers, and enhance tree regeneration.
- Awarding $70,000 in Watershed Grants to 11 watershed organizations, conservation districts and regional planning commissions to plan, implement and educate the public on water quality and aquatic habitat projects.
- Providing technical assistance to Stream Wise, a Lake Champlain Basin Program public education and outreach campaign to promote healthy, forested streamside areas.

TROUT PRODUCTION FOR RECREATION AND RESTORATION

Performance measure: Meet the management request for cultured fish (+/- 10%) to support recreation and restoration goals.

Vermont's Fish Culture Facilities are Operating at Full Capacity and Continue to Produce Quality Trout

Vermont's Fish Culture Stations work closely with the department's Fish Management team to enhance fishing opportunities and restore fish populations. Each year, the department raises over one million trout, walleye, and landlocked salmon and stocks nearly 190,000 lbs. of fish in Vermont's public waters. These stations are supported by fishing license sales, and for every $1 invested, $23 in economic benefits are generated for the state. In addition, catchable-sized trout are stocked in places with ample and easy public access, often in or near urban areas, to ensure a quality fishing experience for all Vermonters.

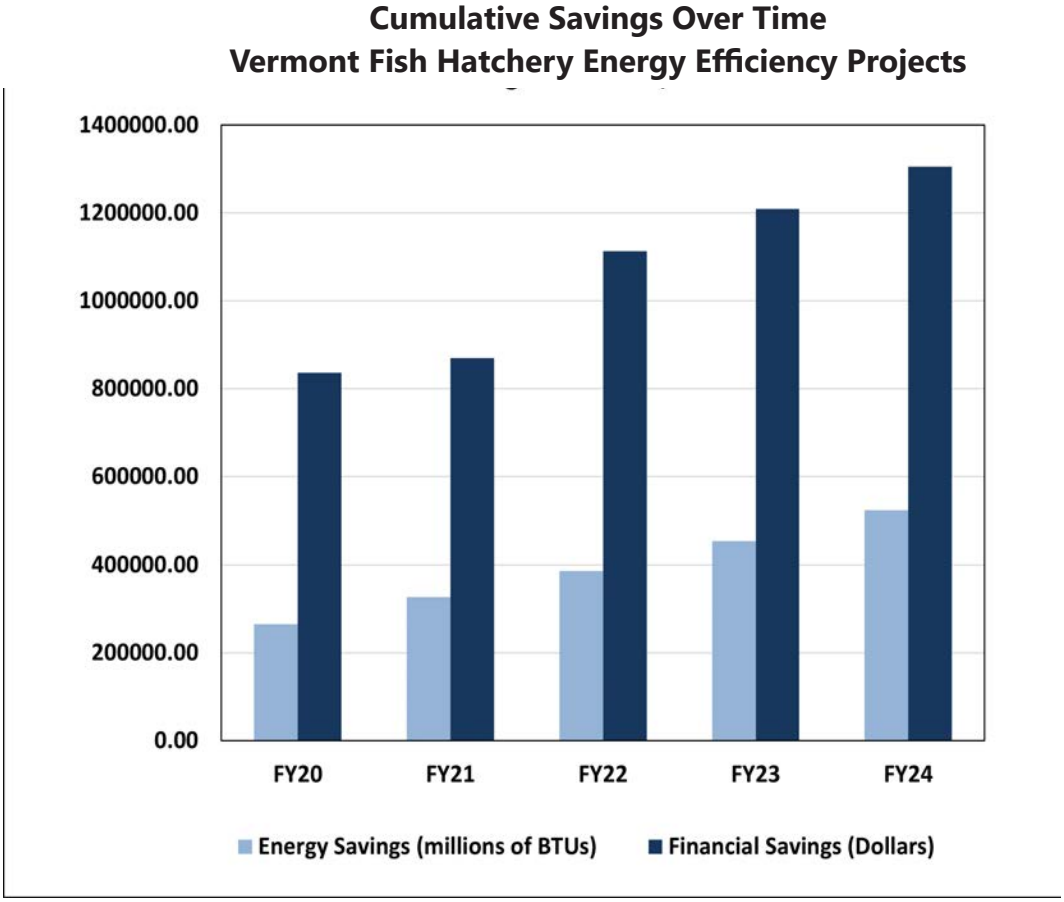
Vermont's Fish Health Program

Vermont's Fish Health program helps protect wild fish populations and fish reared at fish culture stations by preventing and managing serious fish diseases. Its fish health laboratory is equipped to diagnosis many parasitic, bacterial and viral fish pathogens. The program:

- Conducts annual fish health inspections on all state owned and private fish culture stations and investigates specific diseases when they occur on facilities.
- Develops statutes and regulations designed to prevent and manage serious fish diseases.
- Administers Vermont's fish importation, baitfish dealer, and fish propagation permit programs.
- Investigates fish kills and studies fish disease in the natural environment.
- Provides technical assistance in fish heath related matters to fisheries staff and the public.

ENERGY EFFICIENCY UPDATES AT FISH HATCHERIES

Performance measure: Increase management effectiveness and efficiency.



The department is a conscientious steward of energy resources and constantly works to increase its efficiency and reduce costs.

Solar power projects at the fish culture stations save enough energy per year to power the town of Grand Isle. This not only saves money -- $96,000 in FY24 - but also reduces the department carbon footprint. Cumulatively, these projects are estimated to have prevented the release of 22,483 mega tons of greenhouse gases.

PUBLIC ACCESS FOR BOATING AND SHORE FISHING

The department's access area program provides the state's 28,000 registered motorboat owners and 140,000 resident and nonresident licensed anglers with safe and reliable access to 134 unique bodies of water at 205 locations.

All access areas are free and include:

- 145 with concrete or gravel boat ramps
- 43 sites with at least one courtesy dock
- 87 dedicated to non-motorized boats, including seven new paddling sites on the Moose River and Otter Creek.
- 22 with accessible shore fishing platforms

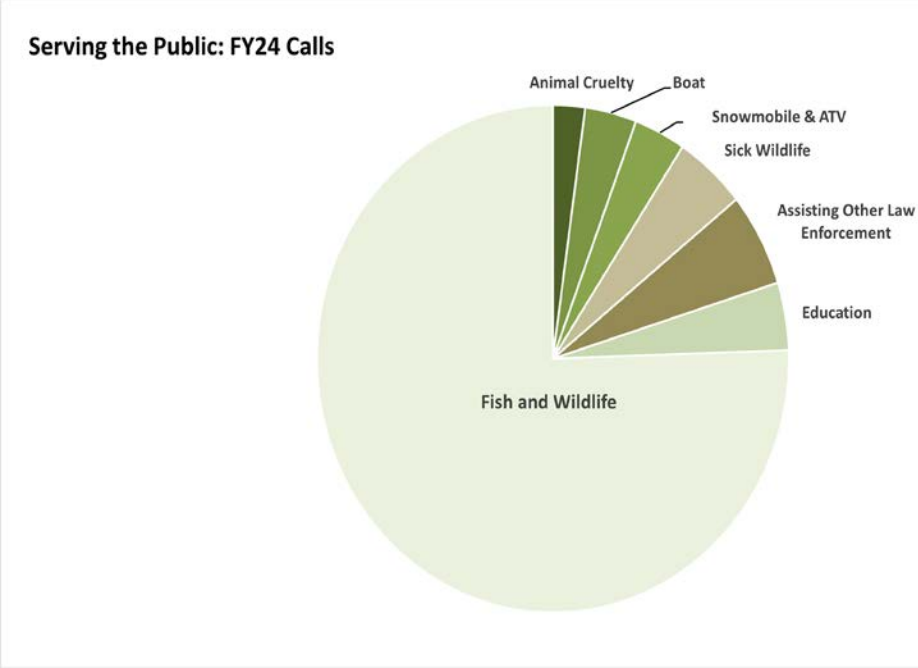
Fishing Access Areas are funded through state and federal sources. Fishing license revenues and motorboat registration fees are used to leverage federal funds derived from excise taxes on fishing tackle and the federal marine fuel tax. Non-motorized watercraft and non-anglers are welcome to use the sites, provided they follow access area rules.

Over the past decade, the department has completed 105 infrastructure improvement projects, such as upgrades or replacements of boat ramps and docks and the creation of paddling access sites. They were made possible by combination of capital appropriations, state motorboat registration fees, Federal Aid in Sport Fish Restoration, and more recently federal COVID stimulus and general funds.

WARDENS SERVE THE PUBLIC

Performance measure: Reduce human-wildlife conflicts and improve safety and compliance among all outdoor recreationists.

Warden Activities Benefiting the Public



Animal cruelty case investigation was transferred to the Warden Service in 2022; a task that has taxed division resources and the wardens, individually, ever since. Many of these cases are extremely long in duration, some taking years to resolve. Many also involve mental health issues, a factor that wardens have not traditionally been trained to handle. However, one of the biggest challenges is more straightforward: a lack of housing for seized animals.

Wardens use a broad range of skills and expertise to provide essential conservation law enforcement and, increasingly, many other services that Vermonters depend on.

Conservation law enforcement is the Division of Warden Service's highest priority. However, it's not their only mandate. Wardens also: respond to rabid animal calls and human-wildlife conflicts; enforce boating, ATV, and snowmobiling laws; participate in outreach programs; conduct search and rescue; collect vital biological data used to monitor wildlife populations; investigate animal cruelty allegations; and provide mutual assistance to other agencies. Mutual assistance calls have almost doubled in the last decade.

COMMUNITY-BASED LAW ENFORCEMENT

Performance measure: Increase positive interactions with the public to improve law enforcement capabilities.

Effective law enforcement is the result of building trust and credibility in the community with positive interactions and strong individual relationships. Wardens also part of their communities with home offices in their districts and publicly listed phone numbers

Warden Camp Teen Weekend

In the summer of 2024, the Warden Service hosted its first ever Warden Teen Camp, a two-day program where 25 youths, ages 15 to 17, were immersed in all-things warden. Campers participated in sessions ranging from K-9 use and boater safety to patrol procedures and venison processing and were also able to have more relaxed interactions with the wardens during meals and recreation time. The camp filled immediately and several donors covered the costs for all the campers.

Helping Feed Vermonters

For the last several years, the warden whose district includes Huntington, has provided the Soup's On program with fresh, high-quality venison for one of their most popular monthly meals: venison chili. The program, organized by Director of Maintenance and Safety at the Brewster Pierce School in Huntington, delivers meals free of charge, each month, to the food insecure and the venison chili feeds upwards of 100 people. Wardens work hard to get the deer they salvage and seize into the hands of their neighbors who need it

School Engagement

A warden was a jscience fair udge at Blue Mountain Union School in Newbury. The success of this participation lead to an invitation from the school principal to return for January term and instruct ice fishing and snowmobiling. The snowmobile class included an approximately 25-mile ride on a local V.A.S.T. trail along with standard safety and state statue discussions. While the ice fishing course, of course, included a trip to Ticklenaked Pond in Ryegate.