



Fish & Wildlife Department Performance Based Budgeting

This report illustrates the work the Fish & Wildlife Department does and the changes in trends represented in the year 2016. These metrics are useful in detailing the nuts and bolts of what biological staff, law

enforcement, outreach and administrative staff achieved during the year just past. What these indicators don't convey quite so obviously is the *why*: the sense of purpose that drives this work.

Fish and wildlife staff spend hours in the field in all kinds of weather, trekking through wetlands and forests, dealing with black flies, sunburn and poison ivy, sampling animals as diverse as deer, bats, and sturgeon, documenting rare plants from quillworts to cork trees, and repairing streams so fish and frogs can swim unobstructed. They also travel from Vernon to Derby, Bennington to Newport to teach school children about snakes, bobcats, and bears, conservation commissions about managing growth and development, and volunteer instructors in the art of hunting and fly fishing techniques. They uphold the law in woods, fields and waterways often rescuing lost hikers and errant boaters along the way.

The staff work without fanfare. Still the work is done with passion, beyond the confines of a 9 to 5 office, with extra care taken and sacrifices made because, without exception, most are driven by one central tenet: conservation is critical to Vermont.

The proof of our progress lies in the statistics within this report, with nearly two-thirds of Vermonters indicating that they either hunt, fish, or watch wildlife.

The department works on behalf of all Vermonters, but because our conservation mission is broader than anyone government department, we work with myriad partners who share our commitment and passion for wild Vermont. Whatever the scale, these partnerships are essential to meaningful conservation and effective fiscal management.

“As a member of the Montpelier Conservation Commission, I have had the pleasure of working directly with the Vermont Fish and Wildlife Department on identifying a path forward for our commission to tackle conservation concerns within our city. We are a very passionate and motivated group, but that sometimes makes it challenging for us to prioritize specific conservation issues. The department has worked directly with our commission to help us prioritize and implement solutions for our most important conservation needs.”

James Brady, Montpelier

You will read about many of the past year's achievements and the resulting progress made toward our strategic goals. With few exceptions, you will note that these successes involved many individuals, conservation groups, other departments and agencies, legislature and corporations. And while you will may not see the fine brushwork behind the work portrayed here, we hope this report gives some sense of the devotion to conserving Vermont's wild things and wild places that will drive our efforts in 2017.



For 30 years, the Vermont Duck Stamp Program has raised million for the conservation of wetlands throughout Vermont. The success of this program stems from the many groups and individuals the department partnered with along the way.

Measuring Success

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Conserving fish, wildlife and plants and their habitats for the people of Vermont.

Measuring Success

Performance Based Budgeting



Habitat Conservation Through Act 250



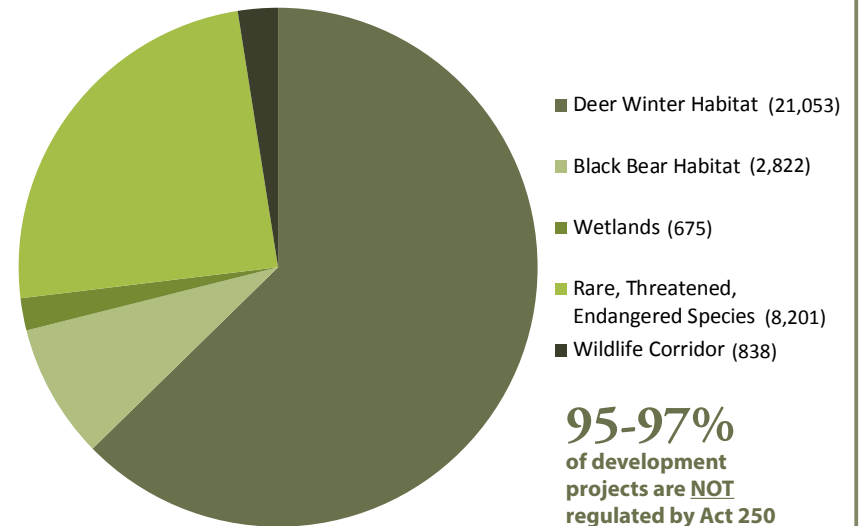
Jens Hawkins-Hilke, conservation planner, provides technical assistance to municipalities and regional commissions related to land use planning for wildlife and wildlife habitat conservation.

Act 250 works, but is only a small part of the solution.

Because Act 250 only regulates 3-5% of development projects, department staff, such as Jens Hawkins-Hilke, work directly with towns and landowners to minimize habitat loss and fragmentation.

In 2016, 4,040 acres were conserved through department biologists' reviews of regulated development.

Acres of Habitat Types Conserved 2011-2016



What Vermonters Think

I believe land development should be restricted to protect fish and wildlife.

83% YES

Source: Responsive Management. *Opinions on Fish, Wildlife, and Land Use Among Vermont Residents, Hunters, and Anglers*. Harrisonburg: Responsive Management, 2015.



Land Acquisition and Conservation Easements



*"This year we conserved nearly 200 acres at the Gale Meadows WMA in Winhall and Jamaica."
John Austin, Lands and Habitat Project Manager*

The department works to strategically target critical habitats for conservation.

Working with many partners, the department is conserving important fish and wildlife habitat through acquisitions, easements, and management agreements.

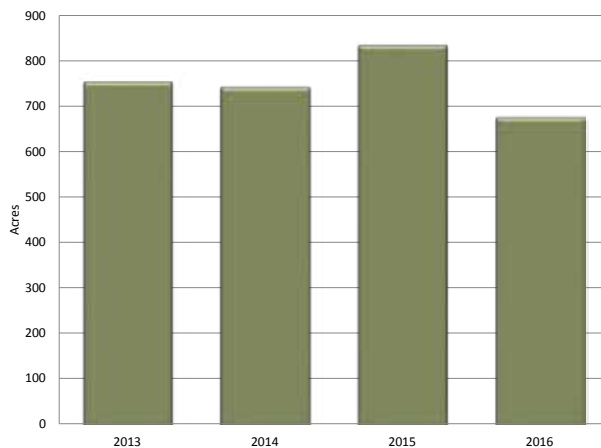
In 2016, the department conserved 675 acres through acquisitions. These lands are open for hunting, fishing, trapping, wildlife watching and connecting with nature.

What Vermonters Think

I support VT Fish & Wildlife Department protecting important wildlife habitat by purchasing land. **83% YES**

Source: Responsive Management, 2015.

Habitat Conserved Through Acquisitions and Easements



**2016 =
675 Acres Conserved**



Habitat Assistance for Private Landowners



Habitat Specialist Dave Adams walks with landowners on their property, identifying ways to improve the land for wildlife habitat. This year department staff worked with 90 landowners, protecting thousands of acres statewide.

What Vermonters Think

I support the department providing technical assistance and guidance to landowners and towns for managing land to protect fish and wildlife. **95% YES**

Source: Responsive Management, 2015.

Working with cooperative landowners to improve wildlife habitat is crucial because more than 80% of lands in Vermont are in private ownership.

Environmental Quality Incentives Program (EQIP) provides information and financial incentives for landowners to manage their land for wildlife.

Wildlife Habitat Improved on Private Lands Through Fish & Wildlife Assistance and EQIP

- **563 Acres** - Invasive Species Controlled
- **296 Acres** - Brush Management
- **712 Acres** - Apple and Mast Tree Release
- **184 Acres** - Forest Stand Improvement
- **72 Acres** - Early Successional Habitat
- **17 Acres** - Trees and Shrubs Established
- **52 Acres** - Young Forest Habitat



Habitat Connectivity

The department works closely with the Vermont Agency of Transportation (VTrans) on issues related to fish and wildlife passage, animal-vehicle collisions and highway project review. Camera monitoring is confirming the success of the recent partnership to create the **Little River Wildlife Shelf**.

Challenges:

- The Mt Mansfield (72,000 acres) and Camel's Hump (55,000 acres) forest blocks are divided by one of the state's busiest travel corridors.
- These two habitat blocks are separated by I-89, Route 2, New England Central Railroad, local roads and the Winooski River.
- The uneven terrain under the Little River bridge was challenging for some species, like deer and moose.

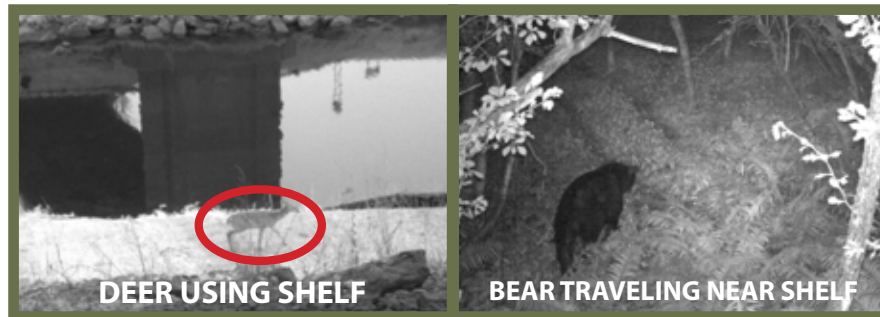
Solution:

- In 2013, the department worked with VTrans to build a wildlife 'shelf' on one side of the river below the Little River bridge. The shelf has a smooth, even trail-like surface.



Result:

- Deer began using the shelf within months. Species like bobcat are still more likely to cross higher up in the slope in the roughest of the boulder field, while mink and muskrat are down by the shore.



Connected habitat blocks that allow for plant and animal movement and migration is important for maintaining Vermont's diverse wildlife and offsetting the effects of habitat fragmentation and climate change.

Partnerships with VTrans, as well as municipalities, angler and watershed groups, and The Nature Conservancy are increasing the number of culverts and dams that allow fish and other wildlife to pass safely. Given the increase in extreme storms and aging infrastructure, Vermont will likely see more need for this important work

What Vermonters Think

I believe that habitat fragmentation is a problem in Vermont. **85% YES**

Source: Responsive Management, 2015.



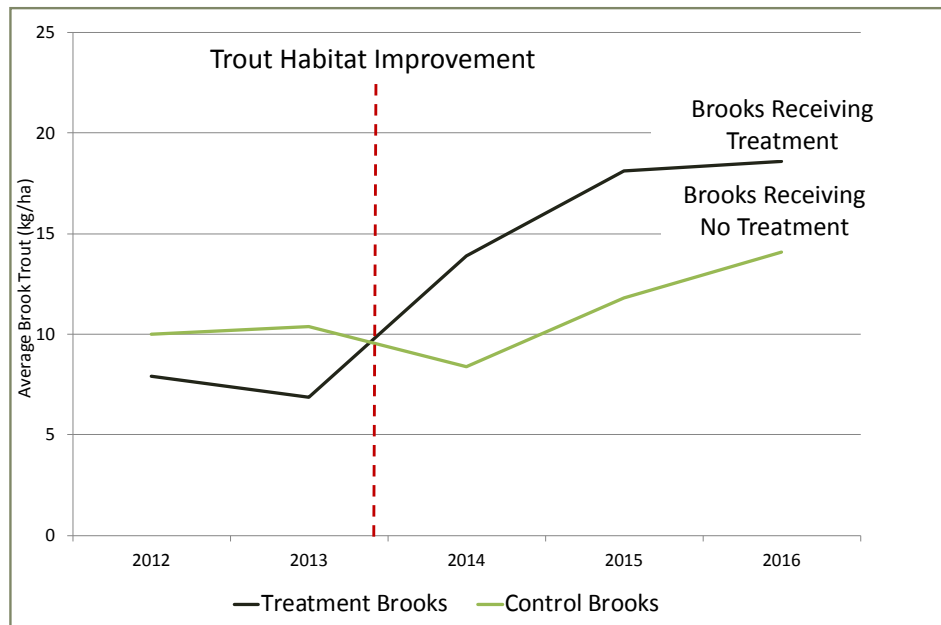
Trout Habitat Management



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



Trout Sampling Results for Brooks Receiving Habitat Improvement Treatment vs. Brooks Receiving No Treatment



What Vermonters Think

Protecting and preserving critical habitats is important to me.

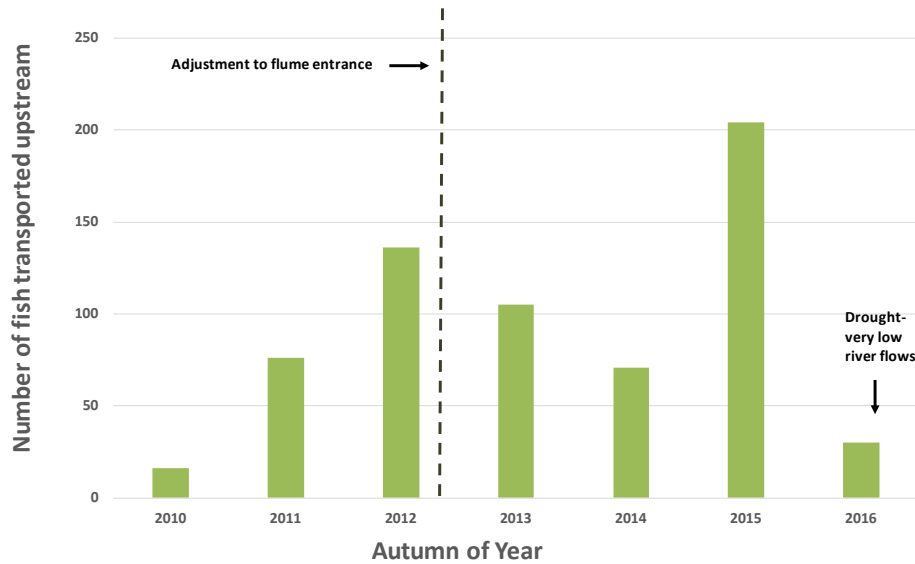
97% YES

Source: Responsive Management, 2015.



Clyde River Restoration

Landlocked Atlantic Salmon Passage at Clyde River Ladder



Note: Extremely low flows and a lack of heavy rain impacted the spawning in 2016.



Clyde River fish ladder at the Clyde Pond Dam allows adult salmon to swim up the ladder and into a large holding tank. The salmon are then transported and released above the dam.

Restoration includes working closely with private industry.

By the late 1950s, a series of dams had decimated the once-celebrated run of landlocked Atlantic salmon on the Clyde River.

Restoration was started in 2007 when a fish ladder was installed at the Clyde Pond Dam, the remaining barrier.



What Vermonters Think

The health of native fish and wildlife populations is important even if I don't get to see them.

98% YES

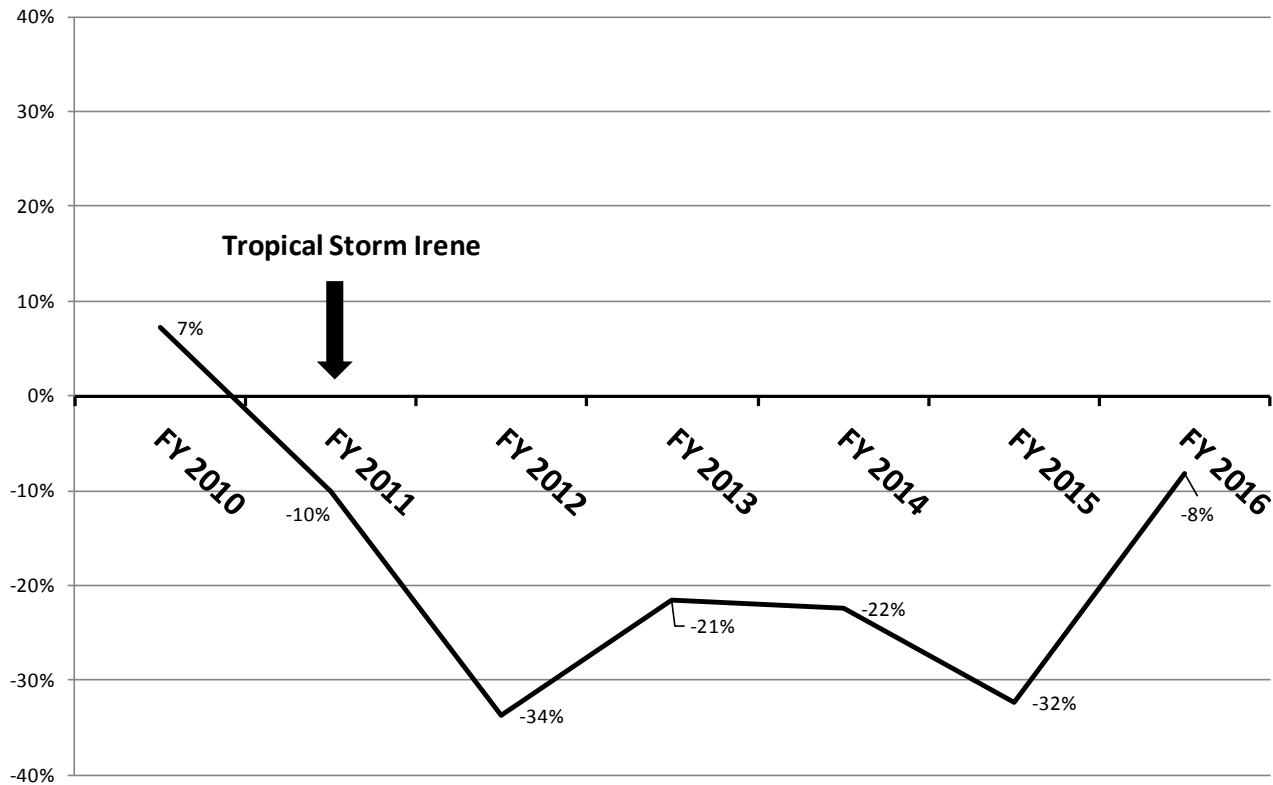
Source: Responsive Management, 2015.

Adjustments made by a partnership between Great Bay Hydro and the department in 2011, resulted in almost immediate results, allowing adult salmon to access approximately six additional miles of spawning habitat.



Trout Production Shortfalls Following Hurricane Irene

**Vermont Trout Production Surplus and Shortfalls
Brook, Brown and Rainbow Trout**



Damage to the Roxbury Fish Hatchery due to Tropical Storm Irene has left a significant shortage of adult trout annually.

While other hatcheries are currently working above their capacity in an attempt to make up for the deficit, this is not a long-term solution to meet fish stocking demands. Bennington Hatchery is now rearing a record



number of trout but this effort taxes this aging facility beyond its limits. Only restoring Roxbury will allow the state to return to its historic stocking levels.

What Vermonters Think

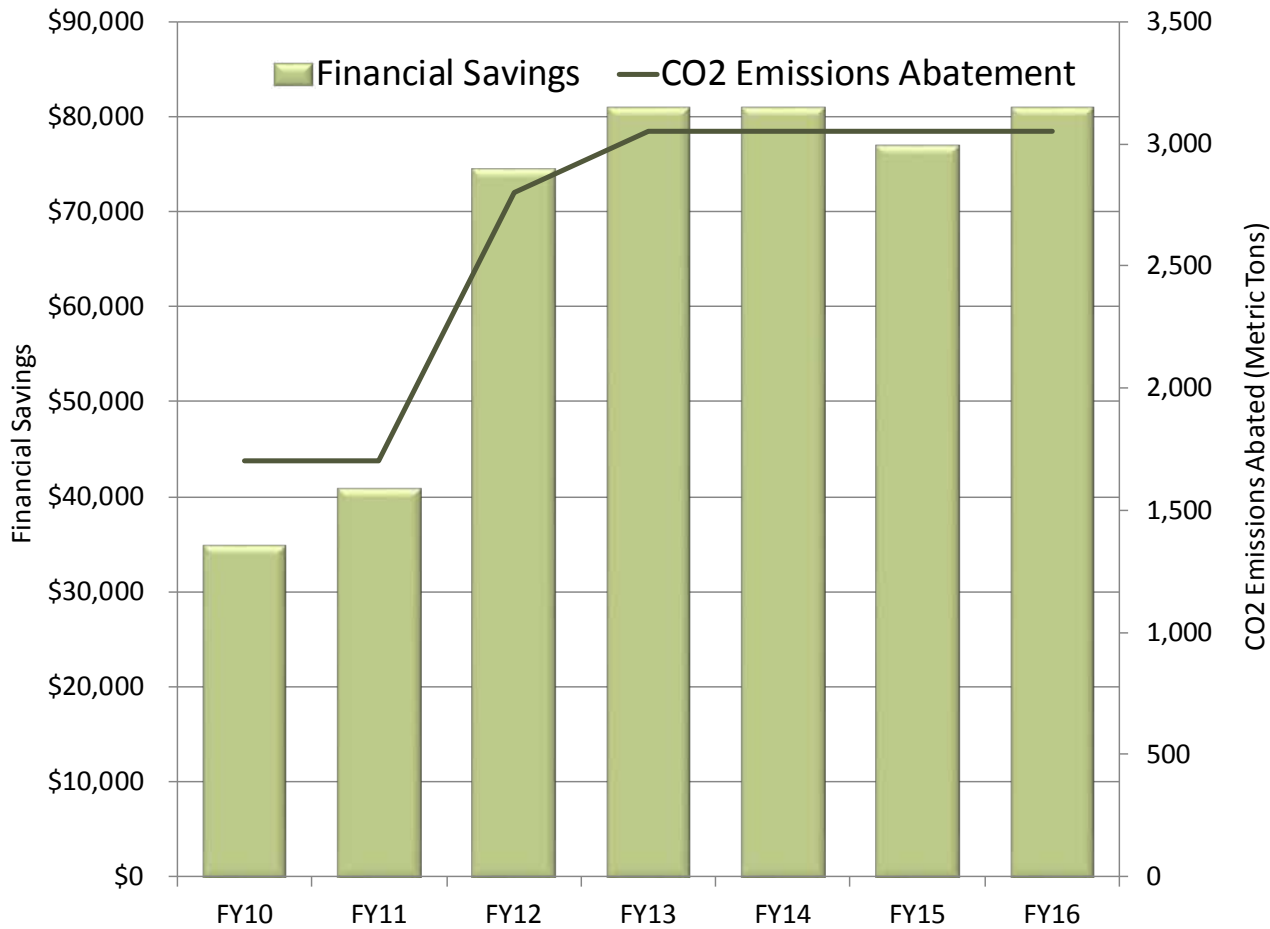
It is very important that people have the opportunity to hunt, fish and view wildlife. **91% YES**

Source: Responsive Management, 2015.



Energy Efficiency Updates at Fish Hatcheries

Financial Savings and CO2 Abatement Resulting From Hatchery Energy Efficiency Updates



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

Switching fish hatchery energy use to solar power saves enough energy every year to power the entire town of Grand Isle for a year.



Early rearing landlocked Atlantic salmon at Ed Weed are raised in a new tank system that recirculates water, saving water use and the propane needed to heat it.

What Vermonters Think

I recognize that the Vermont Fish & Wildlife Department is responsible for managing the state's fish and wildlife resources. **77% YES**

Source: Responsive Management, 2015.



Vermont's 10-Year Wildlife Action Plan



Widespread deforestation and unregulated trapping lead to the disappearance of the American marten from Vermont by the early 1900s. In 1989, the department worked with the U.S. Forest Service to release 115 martens in the southern Green Mountain National Forest. At the time, it was presumed this reintroduction failed. However, this was not the end of the story.

- 1989, Department biologists stock 115 martens in southern Vermont.
- Early 2000s, small marten population detected in the Northeast Kingdom (likely from New Hampshire).
- 2004, Vermont's first marten confirmed in Averill.
- 2004-2016, 60 additional reports and 27 confirmed individuals. Seven are confirmed from the original 1989 release group in Southern Vermont—long way from known breeding populations.

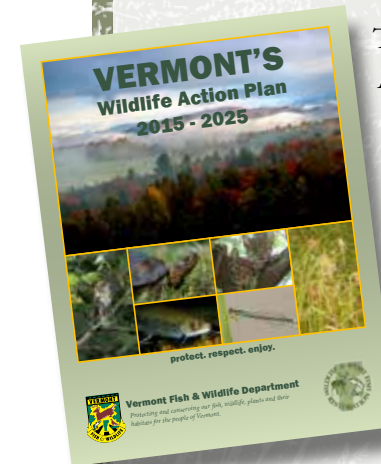
Ongoing department work to help this species includes: assessing their distribution and abundance, determining the source of marten through genetic analysis, and identifying, conserving and managing suitable marten habitat and important travel corridors.

What Vermonters Think

Threatened and endangered species must be protected. **97% YES**

Source: Responsive Management, 2015.

The department works strategically to keep common species common and to prevent struggling species from slipping towards threatened and endangered status.



The Wildlife Action Plan is a 10-year framework that assesses the health of Vermont's wildlife and wild lands, identifies the

problems they face and outlines the actions needed to conserve them in the long term. Some species such as the moose, lynx, and marten may be at risk due to climate change whereas others are threatened by habitat fragmentation and loss.



Species Conservation



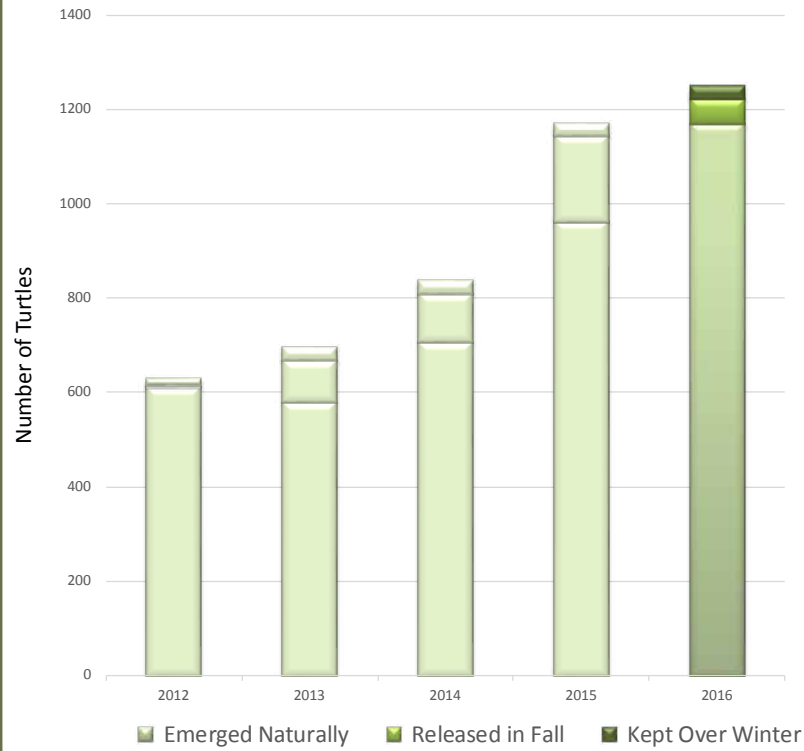
Steve Parren, Wildlife Diversity Project Manager, partners with the ECHO Lake Aquarium and Science Center and volunteers to conduct a turtle beach cleanup day and to increase public understanding of turtle habitat.

What Vermonters Think

Threatened and endangered species must be protected. **97% YES**

Source: Responsive Management, 2015.

Spiny Softshell Turtle Nesting Success



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

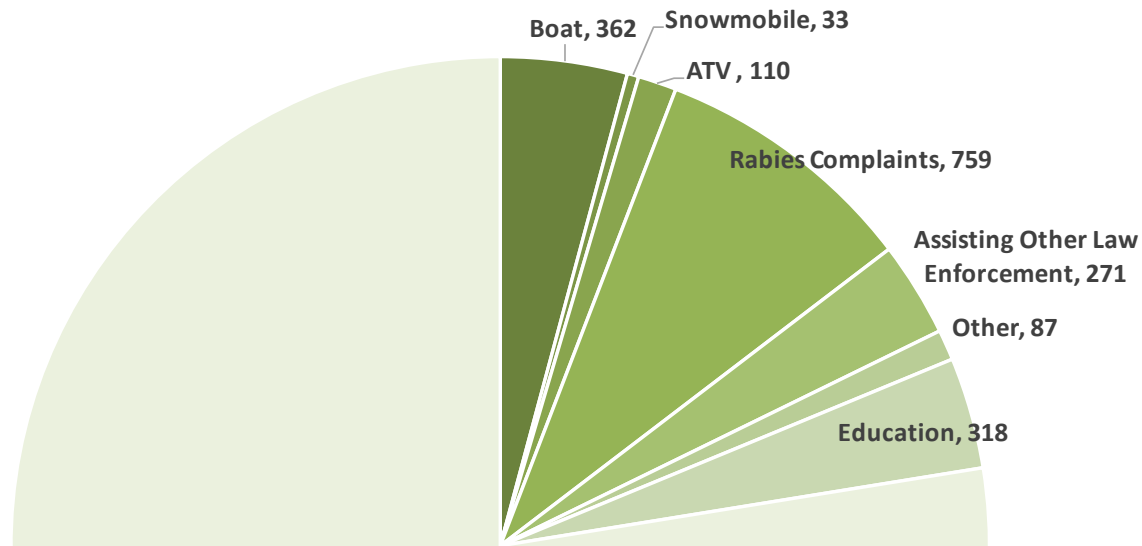
Spiny softshell turtles are a state threatened species and nesting-related problems are a primary reason why they are imperiled. Threats to nests include: habitat loss due to development or vegetative growth; depredation by raccoons, foxes, and skunks; and periodic flooding of nesting sites.

The department is working to minimize these threats by:

- Covering known nesting sites with wire mesh after females have laid their eggs to prevent animals from digging them up.
- Removing live eggs from any nests we find then incubating the eggs and raising hatchlings in captivity for release back into Lake Champlain in the spring.
- Increasing public awareness and outreach by partnering with the ECHO Lake Aquarium and Science Center and conducting a turtle beach cleanup day.



Wardens Serve the General Public



*"In 2016, Wardens responded to almost 9,000 cases. Nearly a quarter of these were outside traditional fish and wildlife-related enforcement."
Chief Game Warden, Col. Jason Batchelder*

Wardens apply their broad range of skills and expertise towards providing a wide variety of services that Vermonters rely on.

This includes: responding to reports of rabid animals and other human-wildlife conflicts; enforcing boating, ATV enforcement and snowmobiling laws; assisting other law enforcement agencies; and participating in search and rescue operations.



What Vermonters Think

The department effectively balances the interests of anglers, hunters, conservation groups, and the general public. **76% YES**

Source: Responsive Management, 2015.



Community-Based Law Enforcement

Wardens Inspire Youth to Donate to Conservation

Over the past few years, eleven-year-old Kaden Dillion from the Northeast Kingdom has donated his birthday money to the department's Nongame Wildlife Fund. In return, he only requests a meeting with Senior Warden Jenna Reed and/or Colonel Jason Batchelder. Kaden has donated hundreds of dollars for the protection of our natural resources, and we are truly grateful.

Warden K9 Officers

Vermont wardens include three K9 officers who routinely give demonstrations to schools, clubs, and at events. The dogs help break the ice, resulting in additional tips from the public and more cooperation from suspects. Make no mistake, however, these are working dogs.



Warden Gives Youth Another Chance

On an evening patrol through the town of Fletcher, State Game Warden Dustin Snyder observed an ATV doing donuts in the newly-built Fletcher Municipal Building parking lot. The operator, a young man, admitted he was 'toying' around in his unregistered ATV and had also been on a public highway, not permitted in Fletcher. Knowing the juvenile likely didn't have the funds to pay for the tickets, Warden Snyder offered him a chance instead. In lieu of a ticket, he would help the juvenile repair the parking lot. The grateful juvenile obliged and grabbed a rake from his father's house. They completed the repairs in about thirty minutes.



Vermont's warden force believes effective law enforcement stems from building trust and credibility with the public through positive interactions and strong individual relationships.

What Vermonters Think

I am satisfied with the Vermont Fish & Wildlife Department as a government agency.

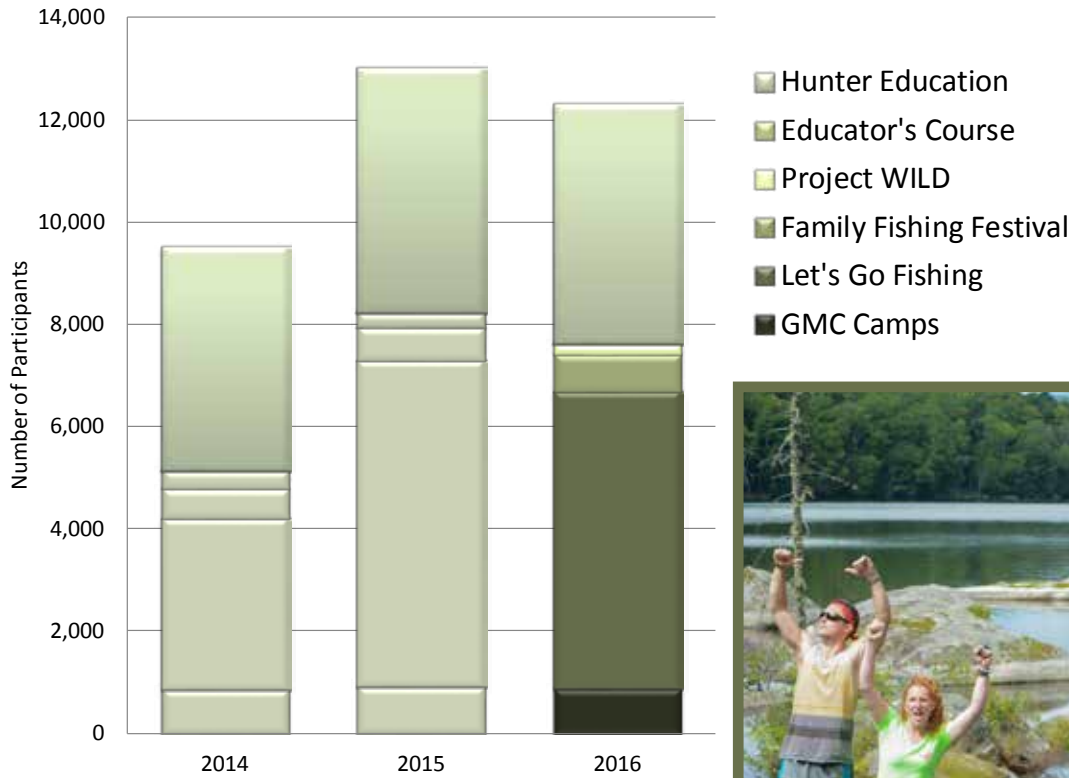
76% YES

Source: Responsive Management, 2015.



Environmental Education and Outreach Programs

Conservation Education and Outreach Programs



“We introduced thousands of kids and interested adults to the joys of fishing, hunting and the great outdoors in 2016.”
Alison Thomas, Education Manager

The education programs that we offer help strengthen residents’ understanding of natural resources and build support for conservation.

More than 5,000 Vermonters are now introduced to fishing and the ecology of rivers and lakes through the popular Let’s Go Fishing Program. In addition, more than 200 educators attend Project Wild workshops and 900 summer

campers learn about the importance of critical habitats in conserving Vermont’s wildlife and fish species.



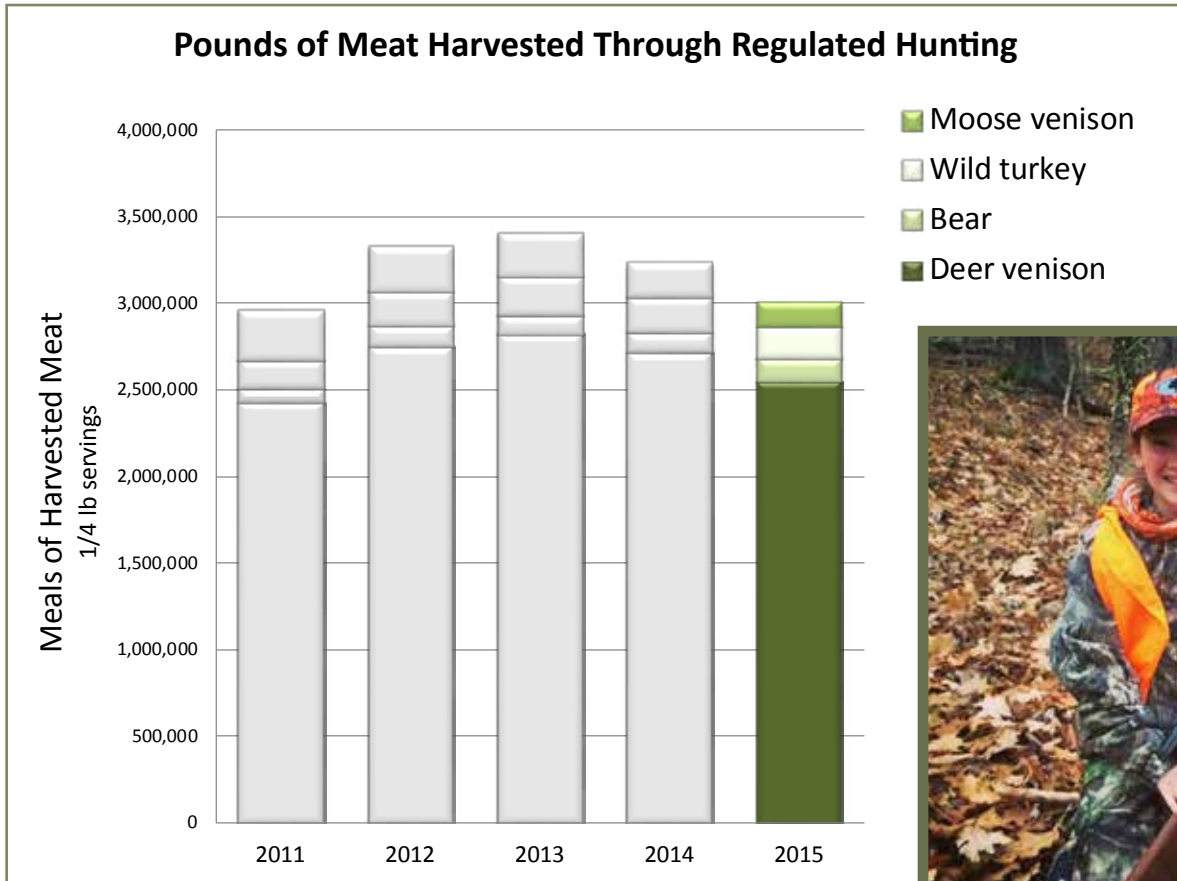
What Vermonters Think

When I hear the expression “quality of life,” the thing that comes to mind for me is the physical environment.

17% YES - the most common response

Source: Responsive Management, 2015.

Meat Harvested Through Hunting



Hunting and fishing provide Vermonters with food that is free-range, local, organic, sustainable, and affordable.

“Hunting provides food for the hunter and helps maintain an appropriate number of deer on



the landscape, which ensures deer and the habitats that support them remain in good condition and productive,” Nick Fortin, Deer Project Leader.

Vermont is a leader in the ‘Farm to Table’ and ‘Field-to-table’ is emerging as new motivator for first time

hunters too, particularly those who don’t come from hunting backgrounds. Even among current hunters, meat now tops reasons to hunt.



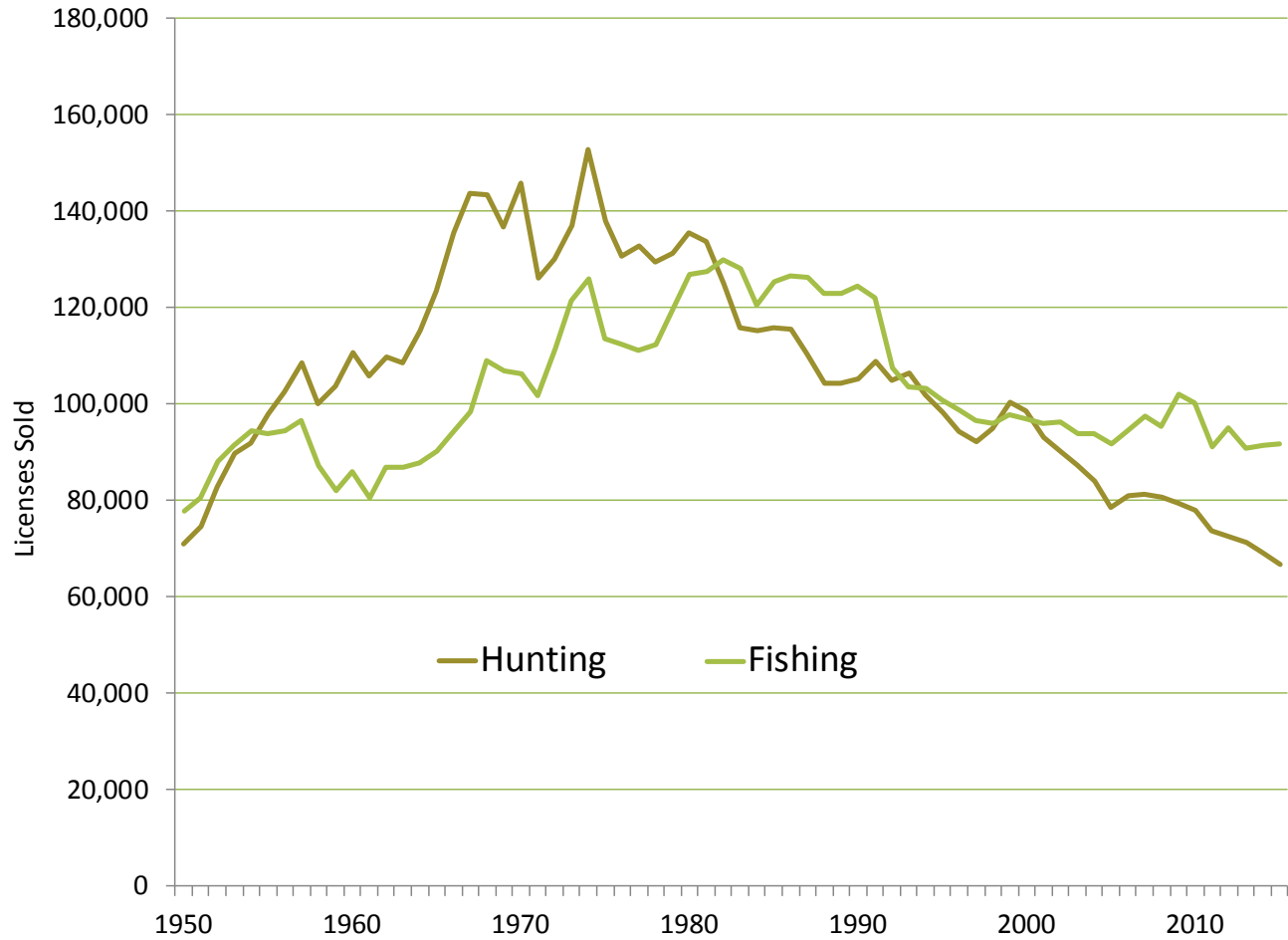
What Vermonters Think

Hunting and fishing are part of scientific management of healthy fish and wildlife populations. **89% YES**

Source: Responsive Management, 2015.

The Decline in License Sales Over 30 Years

Hunting and Fishing License Sales Over Time



Declining license sales trends threaten the future of the state's natural heritage and the services provided to Vermonters.

New initiatives have helped to stabilize fishing license sales. However, these increases have not canceled out age-related declines in hunting participation nor are they likely large enough address fishing's long-term demographic challenges. To remain financially stable, the department will need to address this funding challenge.



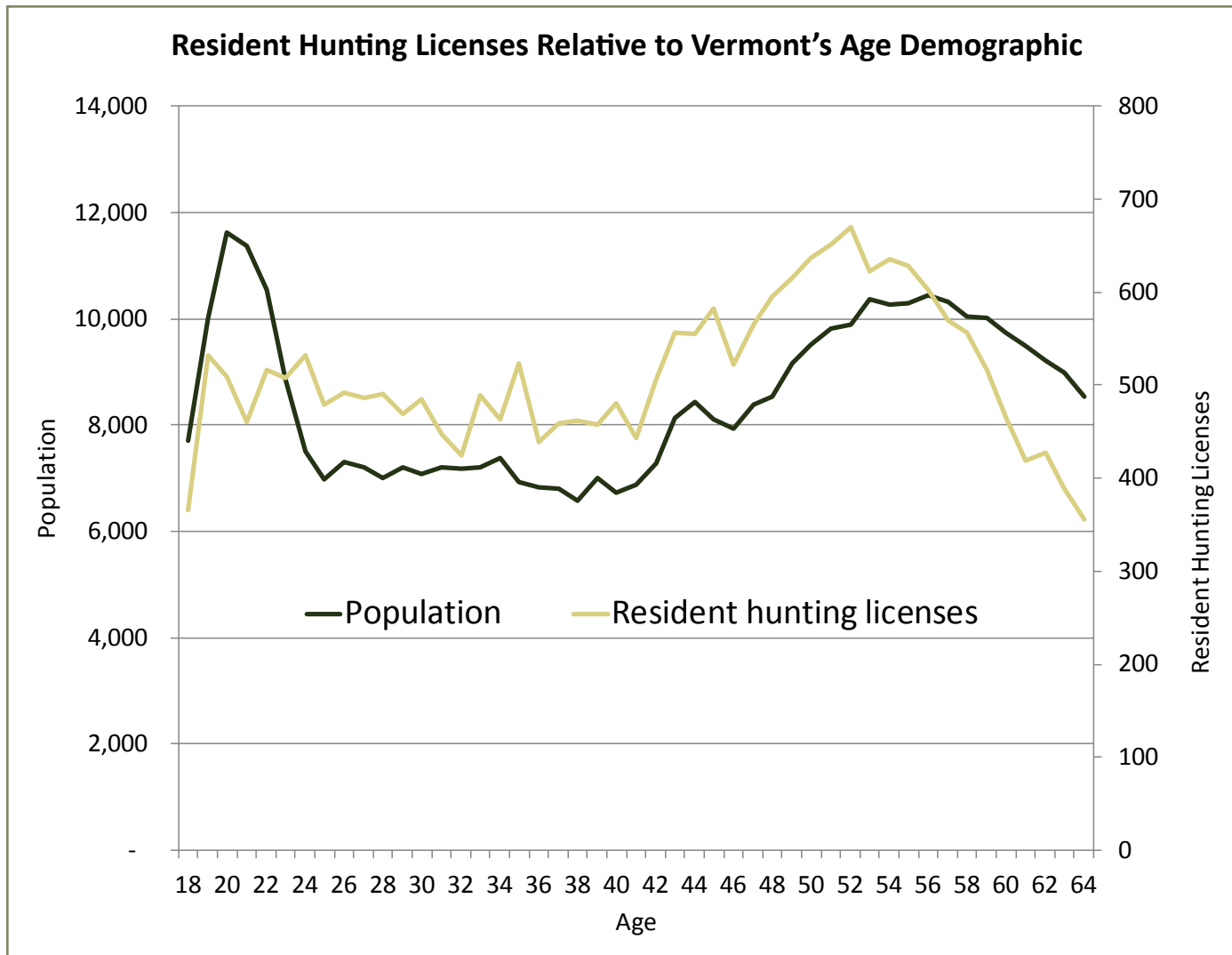
What Vermonters Think

It is very important that people have the opportunity to hunt, fish and view wildlife. **91% YES**

Source: Responsive Management, 2015.



License Sales with an Aging Population



Vermont's reliance on hunters and anglers to fund conservation is in jeopardy.

The percentage of Vermonters who hunt and fish is still among highest in the nation. However, Vermont's population is aging, leading to a steady decline in hunting participation. Fishing participation will likely soon follow, and no amount of recruitment can reverse this.

The department already offers an array of Getting Started in Hunting seminars and hunter education courses, but they have likely reached peak attendance based on our declining school-age population.

What Vermonters Think

Funding for fish and wildlife conservation programs should be *decreased*. **2% YES**

Source: Responsive Management, 2015.



Department Overview



Celebrating 150 years of conservation



Administration

The Administration Division provides policy, legal, personnel, and financial leadership for the department. It is responsible for the sale of all hunting and fishing licenses and more than 15 other permit types related to resource protection.

- ◆ Awards approximately \$1 million dollars of grants funding to municipalities, conservation organizations, and colleges and universities.
- ◆ Promulgates rules and regulations via Commissioner's Rule and Fish & Wildlife Board rules.
- ◆ Works with the Secretary of the Agency of Natural Resources on endangered species listings, and with the legislature on fish and wildlife-related legislation.
- ◆ Manages \$7+ million in federal grant dollars, ensuring funds are spent appropriately and all reporting requirements are met.



Law Enforcement

The Law Enforcement Division plays an essential role in wildlife conservation. They protect Vermont's fish and wildlife from poaching, illegal capture and trade, in addition to monitoring more than 150,000 licensed hunters, anglers, and trappers. State Game Wardens also perform standard law enforcement duties, such as search and rescue, assistance to other law enforcement agencies, and boating, snowmobile, and ATV operation enforcement.

- ◆ Responds to approximately 9,000 complaints a year related to fish and wildlife violations and public service requests.
- ◆ Handles human/wildlife conflicts, animal damage intervention, removal of big game animals from roadsides, and rabid animal calls, all to protect human health and safety.
- ◆ Supports the other divisions by participating in education programs, collecting biological data, and stocking fish.



Wildlife

The Wildlife Division protects and manages all of Vermont's wildlife, plants, and their habitats. Division staff work on three main areas – management of hunted or trapped species; public and private lands habitat conservation; and protecting all species including birds, mammals, amphibians, reptiles, invertebrates, plants and natural communities.

- ◆ Maintain Vermont's wildlife, natural communities and habitats.
- ◆ Participates in the protection of critical wildlife habitat through regulatory processes such as Act 250 and Act 248 (Public Service Board).
- ◆ Provides technical assistance on plants, natural communities, and wildlife to landowners, hunters, general public and natural resource professionals.
- ◆ Provides regulated, legal, and sustainable hunting and wildlife viewing opportunities, including managing 135,000 acres on the department's 90 Wildlife Management Areas (WMAs) and acquires new properties.



Outreach and Education

The Outreach Division provides quality information and education to enhance the public's understanding and enjoyment of Vermont's fish and wildlife. They also conduct statewide educational programs and special events that reach thousands of Vermont children and adults annually.

- ◆ Provides conservation education to 900 youth per year at its two Green Mountain Conservation Camps.
- ◆ Certifies nearly 5,000 Vermonters a year through volunteer-taught hunter education courses, and reaches nearly 5,000 students through the Let's Go Fishing Program.
- ◆ Communicates to the public about conservation through news releases, PSAs, Facebook, the Department's website, and "Wildlife Watch" on WCAX that reaches 60,000 Vermonters weekly.



Fisheries

The Fish Division is responsible for the conservation and management of all Vermont's fish and aquatic habitats. The economic impact of sport fishing in Vermont is estimated to be \$147.1 million, providing 2,420 jobs and \$16.0 million in state and local tax revenues. The direct boost from hatcheries alone was conservatively estimated at \$31.6 million annually, an almost 9:1 return on investment.

- ◆ Conserves and restores aquatic habitat including restoring stream buffers, removing barriers to fish passage from dams and culverts, and protecting water quality.
- ◆ Operates five fish hatcheries and stocks approximately 2 million fish annually in public waters for recreational angling and fish restoration.
- ◆ Provides regulated and sustainable fishing and boating opportunities, including maintaining 180 Fishing Access Areas statewide.
- ◆ Restores populations of fish such as muskie, lake sturgeon and salmon.
- ◆ Controls the spread of fish diseases, and the introduction of exotic fish species and aquatic nuisance species.
- ◆ Participates in the protection of aquatic species and critical aquatic habitat through regulatory processes such as Act 250, Aquatic Organism Passage, and technical assistance.



Roxbury Fish Hatchery - celebrated its 125th anniversary in 2016

