# FISH & WILDLIFE DEPARTMENT PERFORMANCE-BASED BUDGET 2019 REPORT

It is difficult to understate the importance of fish and wildlife to Vermont. There's a buck atop the state seal, on the state flag and immortalized in stained glass at the state house. Few states can boast a higher rate of wildlife-related recreation and a 2015 survey found a large majority of residents (75 percent) felt wildlife was more important than economic development.

None of this would be possible without high-quality, connected habitat. Without it, the state could not support the healthy, abundant fish and wildlife populations that Vermonters enjoy today nor can these populations be expected to weather stresses from fragmentation, invasive species and climate change in the future. As a result, habitat conservation is at the heart of the Vermont Department of Fish and Wildlife's mission and central to almost everything we do.

We stock fish, chase violators and check bear dens in winter, but day in and day out, habitat work is key. This includes reviewing the impacts of Act 250 and Section 248 projects and hydropower relicensing applications, planting trees and removing Japanese knotweed along streambanks, attending late night municipal planning and conservation commission meetings, researching deeds and right-of-ways for potential land acquisitions and encroachments, drawing up contracts for timber sales, mowing and brush hogging, mapping habitat on GIS and developing management plans for any one of the department's 99 Wildlife Management Areas.

Focusing on habitat is also efficient. Vermont has tens of thousands of native species and the department is simply not large enough to study and conserve each one individually. Instead, actively managing for diversity of high-quality habitat types and ensuring species can move between them preserves the state's ecological integrity and reduces the number of plants, animals and insects requiring special attention, although some will always require it.

Habitat work will only increase in 2020. A wetland conservation and restoration initiative was created last year to accelerate habitat conservation—and improve water quality—in the Lake Champlain drainage basin. This unique three-year initiative's focus is on reducing pollution to the big lake and its tributaries. Other benefits of this work include restoring fish and wildlife habitat and significantly bolstering the acreage of permanently conserved acreage in the region available to species and wildlife recreationalists.

The year also marks the 100th anniversary of Wildlife Management Areas. With 99 WMAs under our jurisdiction, we are currently working hard to add the 100th. It's just a number, of course, but this milestone will be more than just another acquisition. The 100th WMA will be tangible celebration of the department's long recognition that habitat conservation is essential to ensuring the natural world remains a way of life in Vermont.

# 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, including permit lotteries, and more than 15 other permits related to resource protection. The division also promulgates rules and regulations via the Commissioner and the Fish & Wildlife Board.

**Fisheries** conserves and manages the state's fish populations and aquatic habitats. This includes: the operation of five fish hatcheries; maintaining more than 190 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 salmon; and participating in the protection of 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.

**Law Enforcement** protects Vermont's fish and wildlife from poaching and illegal trade, in addition to ensuring the state's 150,000 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 and remove 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 and Education** provides quality information and education about Vermont's fish and wildlife to ensure greater understanding and safe, responsible enjoyment of these resources. This includes operating the department's two Green Mountain Conservation Camps.

**Wildlife** 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 rare, threatened, and endangered species. This includes the oversight of the department's 99 Wildlife Management Areas and participating in the protection of critical wildlife habitat through the Act 250 and Act 48 process.

# WILDLIFE MANAGEMENT AREAS


**The department manages 99 Wildlife Management Areas (WMAs) and a number of stream and riverbank parcels totaling close to 130,000 acres.**

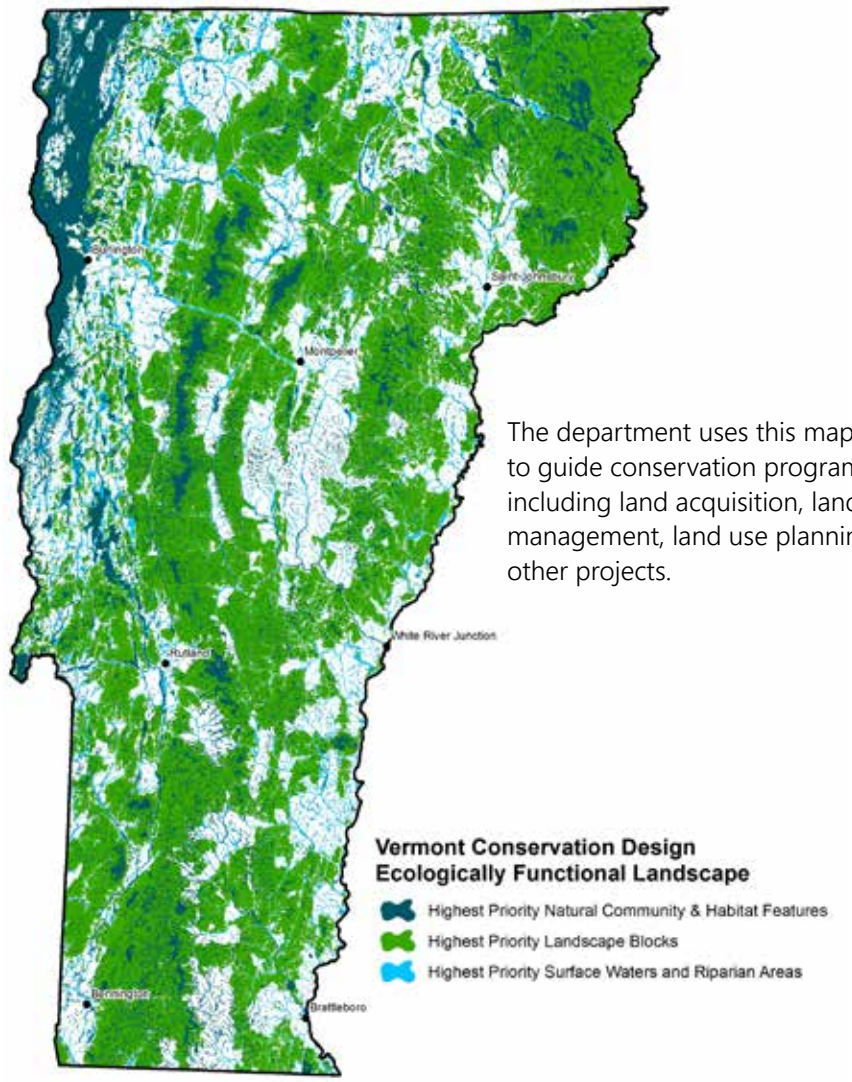
These properties are managed based on best available science to ensure excellent habitat conditions for a wide range of fish and wildlife as well as ensure public access for hunting, fishing, trapping and other wildlife-based activities. While WMAs are open to everyone, their acquisition and maintenance is primarily funded through sporting license sales and federal funds derived from excise taxes on hunting equipment with additional assistance from Habitat Stamp donations. Highlights from FY2019 include:

- 3,493 acres of direct habitat management including grassland mowing, controlled burns and invasive plant control;
- 354 acres of timber harvested where young forest habitat was needed;
- 2,675 trees planted for habitat restoration;
- 600 waterfowl nesting structures and boxes were installed and maintained;
- 46 dams and dikes were maintained to actively manage 800 acres of wetland;
- Infrastructure maintenance, vital for public access, included work on 33 miles of roads, 32 kiosks, 23 miles of boundary lines and 17 parking areas.

This past October, Dead Creek WMA hosted the 17th annual Dead Creek Wildlife Day. This day-long event featured activities for people who enjoy hunting, fishing, bird watching and learning about Vermont's diverse wildlife, and was timed to correspond with the beginning of the annual arrival of snow geese on their way south. Several hundred people attended to view the geese and take part in bird and plant identification walks, a bird banding demonstration, invasive plant education, and numerous other activities.

# 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.*




The department uses this map to guide conservation programs including land acquisition, land management, land use planning, and other projects.

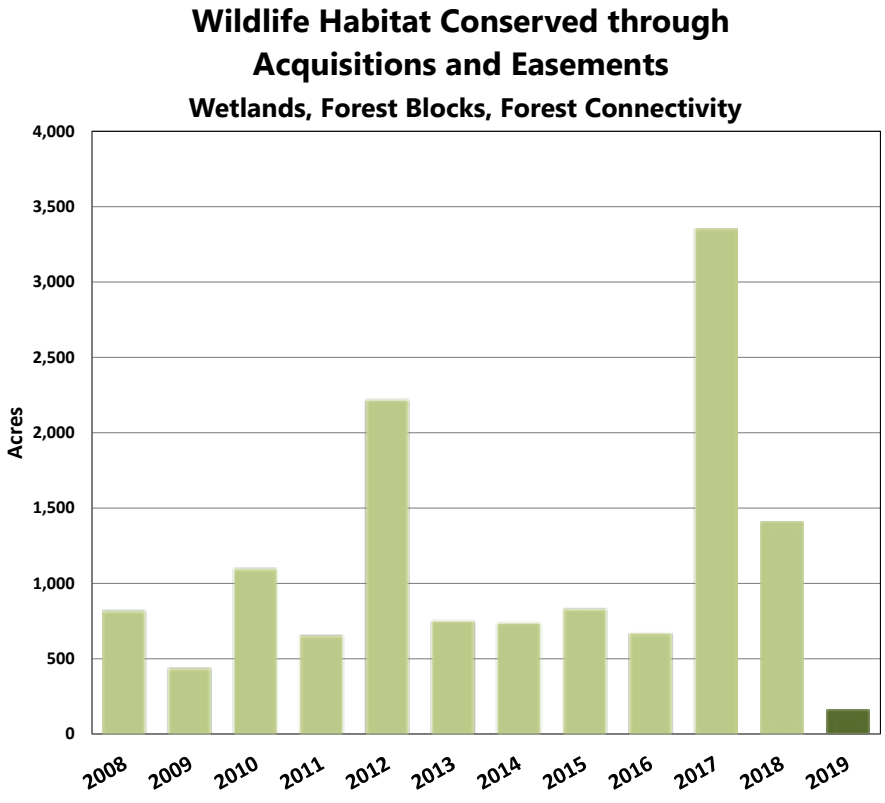
**Vermont Conservation Design (VCD) is a science-based vision to sustain our forests, waters, and wildlife for future generations.**

Vermont Conservation Design identifies the intact, connected, and diverse lands and waters that are highest priority for ecological function. When appropriately conserved or managed, these places sustain nature and all its benefits.

As a result, VCD can inform land acquisition, land management, land use planning and other projects. In 2018, the department used this design to encourage landowners, towns, and partner organizations to voluntarily focus conservation and stewardship in high priority areas. It was also used to help identify species that need specific conservation attention for biological or social reasons.

# 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.*




All of the department's public lands are open to hunting, fishing, trapping, wildlife watching or just connecting with nature.

## The department strategically targets critical habitats for conservation.

Working with many partners, the department is safeguarding important fish and wildlife habitat through acquisitions, easements, and management agreements. The department closed on five real estate transactions this past year ranging from a critical 0.1-acre inholding at Little Otter Creek Wildlife Management Area (WMA) in Ferrisburgh to a 155.3-acre conservation easement at Turner Hill WMA located in Athens and Grafton that protects critical bear feeding habitat. Other significant acquisitions are expected in 2020.

More than twenty acquisitions are also in various stages of development with an emphasis on wetland acquisition and restoration in the Champlain Basin. This targeted focus is the result of a new Environmental Protection Agency wetland acquisition and restoration grant that will enable the department to enhance both water quality and wildlife habitat.

# 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. One hundred years later, 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 this year to accelerate conservation in the Lake Champlain drainage basin. This initiative is funded by the EPA ($1.75 million for three years) through the Department of Environmental Conservation (DEC) and Lake Champlain Basin Program and is focusing on improving water quality in the lake and its tributaries and restoring fish and wildlife habitat.

The department is currently working with partners, including DEC, The Nature Conservancy and Agency of Agriculture, to identify promising projects. A number of projects have already been found along Rock River, Otter Creek, Dead Creek and the Lemon Fair, and the first acquisitions should occur in 2020.

# PROTECTING AND RESTORING STREAMBANK HABITAT

*Performance measure: The number of miles and acres of streambank habitat enhanced or restored.*

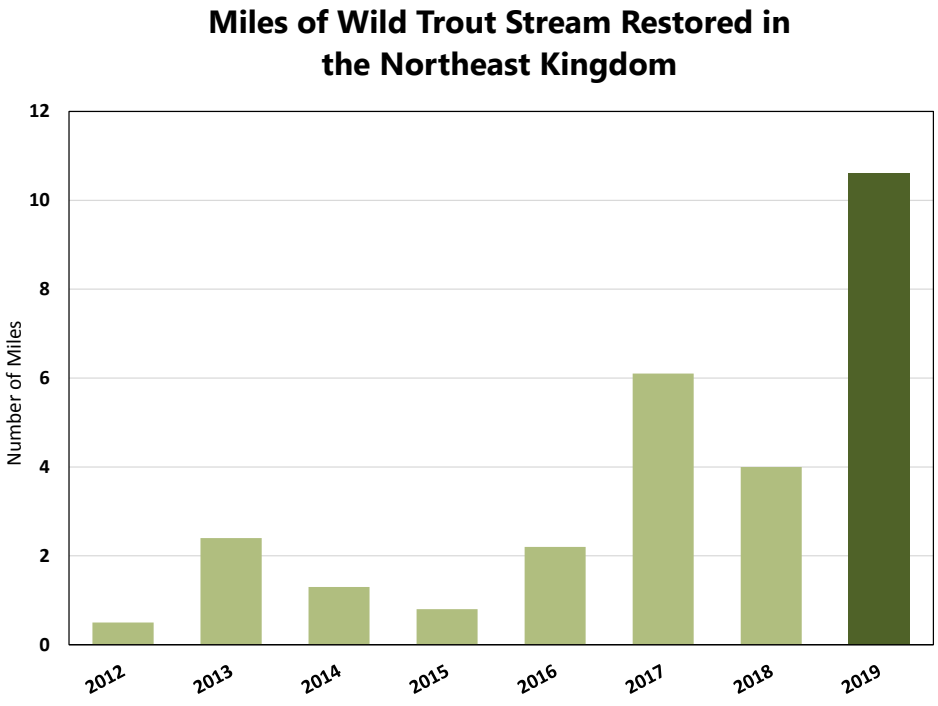
**The department works with state and federal agencies and non-profits to protect and restore habitat for fish and other aquatic creatures.**

Trout depend on cold, clean, complex and connected rivers and streams with unconstrained flow. These conditions occur naturally when trees grow along the banks and are left in place when they fall in, stream channels are given room to meander and flood their banks, culverts are appropriately sized, and defunct dams are removed. Put it another way, it is cheaper and more effective to protect and restore habitat than it is to create it. Healthy aquatic and streambank habitat is also good for water quality and flood resilience improving conditions for people throughout Vermont.

- Assessed over 45 miles of department-owned land along streams and rivers to evaluate aquatic habitat and public access for wildlife-based recreation.
- Worked with four watershed organizations and 700+ students and volunteers from 13 schools, one scout troop and a business to plant 4,500 trees and shrubs, restoring 11 acres and one mile of stream bank habitat.
- Returned a ditched stream to its natural channel and restored ten acres of floodplain and wetland habitat along the Wild Branch in Wolcott. `
- Worked with partners on the Hinesburg Town Forest and department lands on an experimental restoration of fields dominated by invasive reed canary grass to forested riparian areas.
- Installed flexible baffles in a 185-foot-long culvert in Pomfret. These baffles will temporarily restore aquatic organism passage to 1.5 miles of high-quality spawning habitat within the lower White River watershed.
- $38,500 in funding and more than 72 hours of non-regulatory technical assistance towards the removal of five deadbeat dams.
- $13,000 in funding and more than 60 hours of non-regulatory technical assistance towards upgrading three stream crossing structures. Replacing the existing structures with ones that provide aquatic organism passage has the potential to restore access to more than eight miles of stream for brook trout and other aquatic species.
- $84,898 in Watershed Grants to 20 watershed organizations, conservation districts and regional planning commissions to plan, implement and educate the public on water quality and aquatic habitat projects.

# TROUT HABITAT MANAGEMENT

*Performance measure: The number of stream-miles restored.*




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.

**Department biologists recently completed 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.

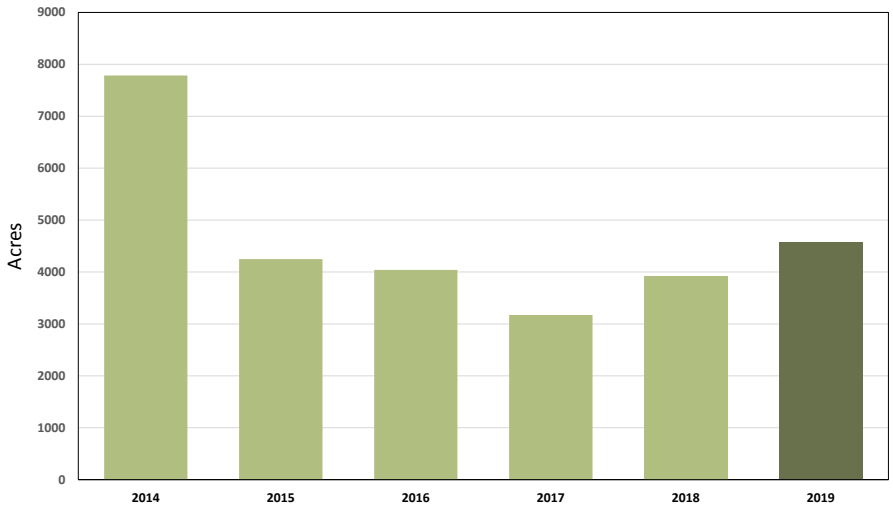
While most measures were similar, significantly higher densities of young brook trout were found. This may reflect the improved environmental protections put in place since the 1950s, particularly legislation and programs focusing on water quality and aquatic habitat protection.

The survey included sampling of 138 streams within 17 watersheds between 2005 and 2016, each of which were originally sampled between 1952 and 1960 by former biologist James MacMartin.

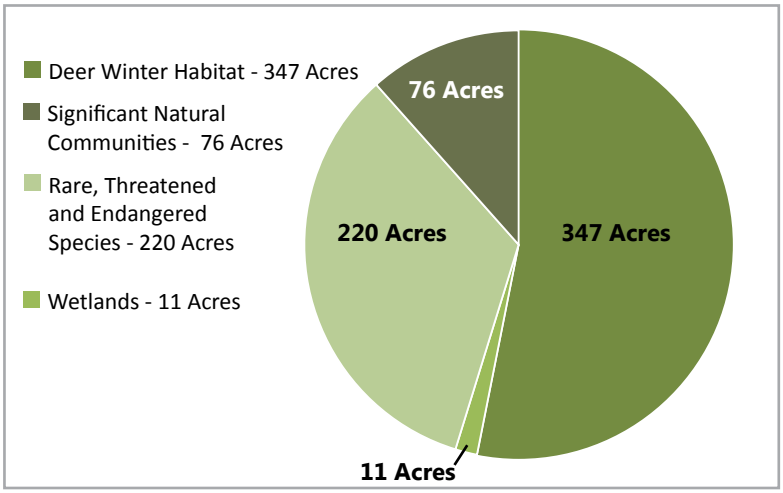
# HABITAT CONSERVATION THROUGH ACT 250

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

## Habitat Conserved through Act 250




## Habitat Impacted by Regulated Development Projects in 2019




## Act 250 works for wildlife.

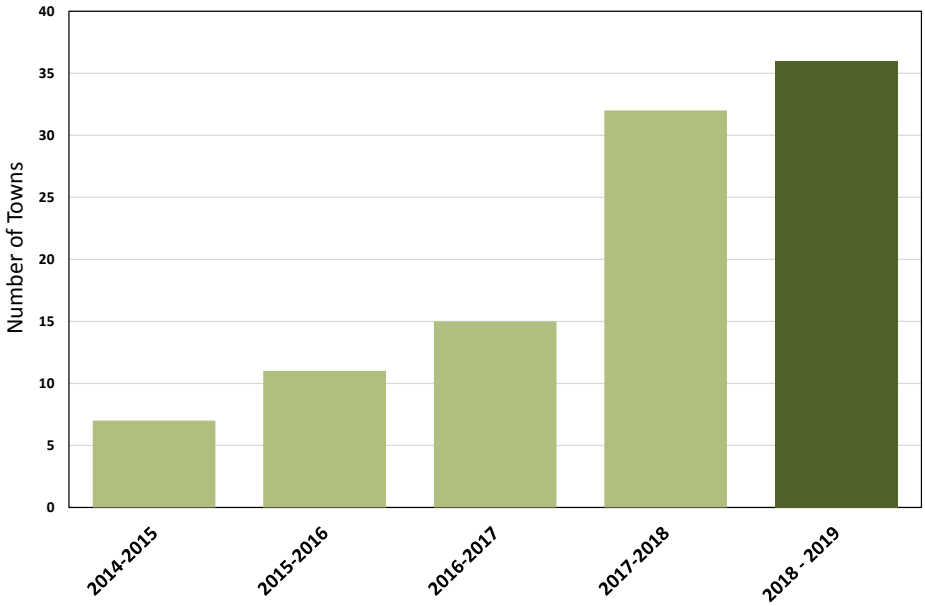
The department plays a critical role in the protection of ecologically important fish and wildlife habitats through Act 250. In 2019, this included reviewing 243 projects and protecting 4,570 acres of habitat. In addition, through a Public Utilities Commission process, department biologists also reviewed and influenced timber harvest activities on 4,487 acres of forestland where some of the harvested wood is sold to electric generation facilities in Vermont. Involvement in this process provides significant benefits to wildlife habitat while supporting our rural working land and forest products economies.

Only three to five percent of development projects in Vermont are regulated by Act 250. As a result, the state loses roughly 6,500 acres of undeveloped land every year, an area roughly the size of Montpelier. As part of its strategic plan, the department pursues other solutions such as working with town and regional planning commissions and private landowners to minimize habitat loss and fragmentation.

# COMMUNITY WILDLIFE PROGRAM

*Performance measure: Provide technical planning assistance to all Vermont Municipalities*

**Direct Technical Assistance to Towns by Fiscal Year**




The regional Staying Connected Initiative illustrates the department's commitment to habitat connectivity. In Vermont, the initiative focuses on Vermont Conservation Design Highest Priority Forest blocks to ensure wildlife of all sizes can move freely from one area to another. In 2019, this included several multi-town planning projects like the Shutesville Hill Wildlife Road Crossing and Windham County Connectivity initiative.

The partnership involves more then 62 U.S. and Canadian organizations, including NGOs, fish and wildlife departments and transportation agencies in Maine, New Hampshire, New York and Vermont.

**In the past five years, the department's Community Wildlife Program has significantly increased the number of towns it has aided.**

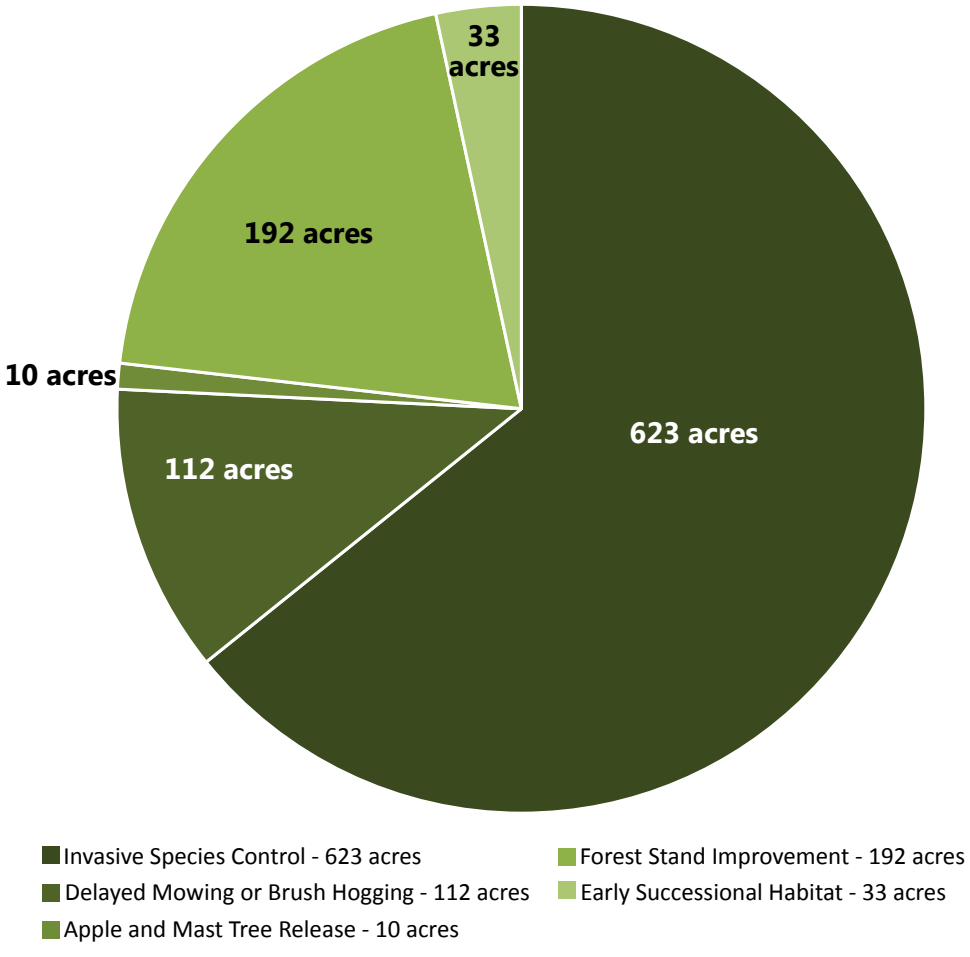
In 2019, however, the program, which offers land use planning technical assistance to municipalities, hit a new milestone. It reached every town and planning region through a new land use manual, Mapping Vermont's Natural Heritage, and a suite of trainings including Act 171 Webinars, Vermont Conservation Design workshops and the department's municipal training courses (NR1 Vermont's Ecology & Environment and NR2 Taking Action in your Community).

In addition, at least 101 towns have now received direct technical assistance, including 36 in 2018-2019. The program has also now influenced the regional plan development in all of the state's 11 Regional Planning Commissions.

# 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**




**More than 80 percent of Vermont land is privately owned so working with landowners is essential to improving wildlife habitat.**

In 2019, department staff helped 90 landowners manage their land for wildlife through the federal Natural Resources Conservation Service (NRCS) EQIP program. This assistance directly benefited thousands of acres of wildlife habitat. Staff also gave workshops to various organizations such as Vermont Woodlands Association and Vermont Coverts groups, worked with colleagues in the Department of Forests, Parks and Recreation to incorporate wildlife habitat considerations into the UVA plans, and assisted residents with bats in their homes, beavers flooding their roads and driveways and many other human-wildlife conflicts.

# BALANCING WILDLIFE WITH RENEWABLE ENERGY

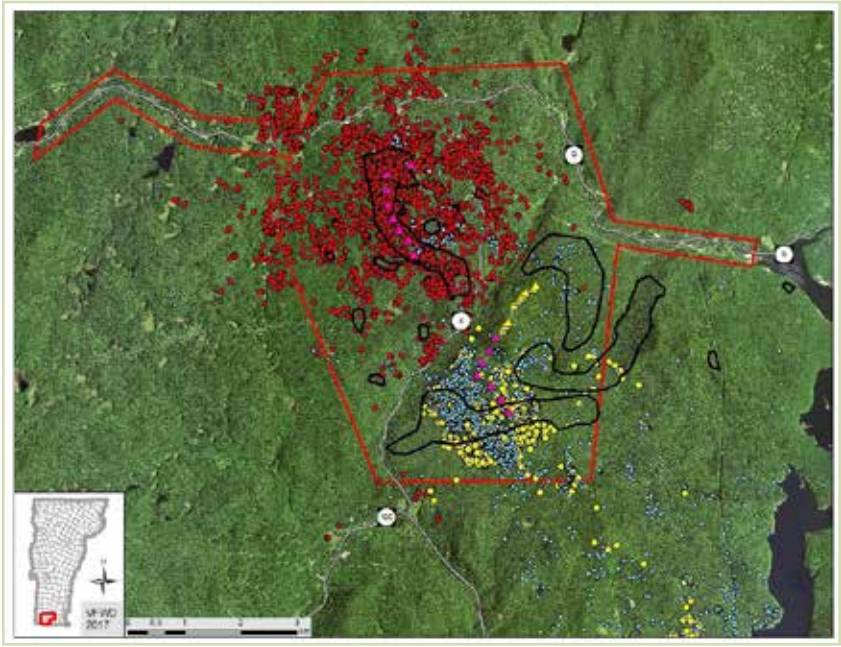
*Performance measure: Maintain the functionality of high-value habitat in areas targeted for renewable energy development.*

**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 and travel corridors.**

Since 2011, the department has been researching the impacts of a large wind energy project on black bears in southern Vermont. This is the first industrial-sized wind project on United States Forest Service (USFS) lands and the only research project investigating the potential impacts of wind energy development on black bears.

The primary objective is to determine how bears respond to disturbances associated with the construction and operation of the turbines. The research area includes extensive beech stands that are used seasonally by large numbers of bears. To date, 46 bears have been captured and fitted with satellite GPS collars to track their movements and habitat use. Additional data, including on uncollared bears, is being collected with 40 wildlife trail cameras.

Field work should be completed in 2020 and a final report available in 2022

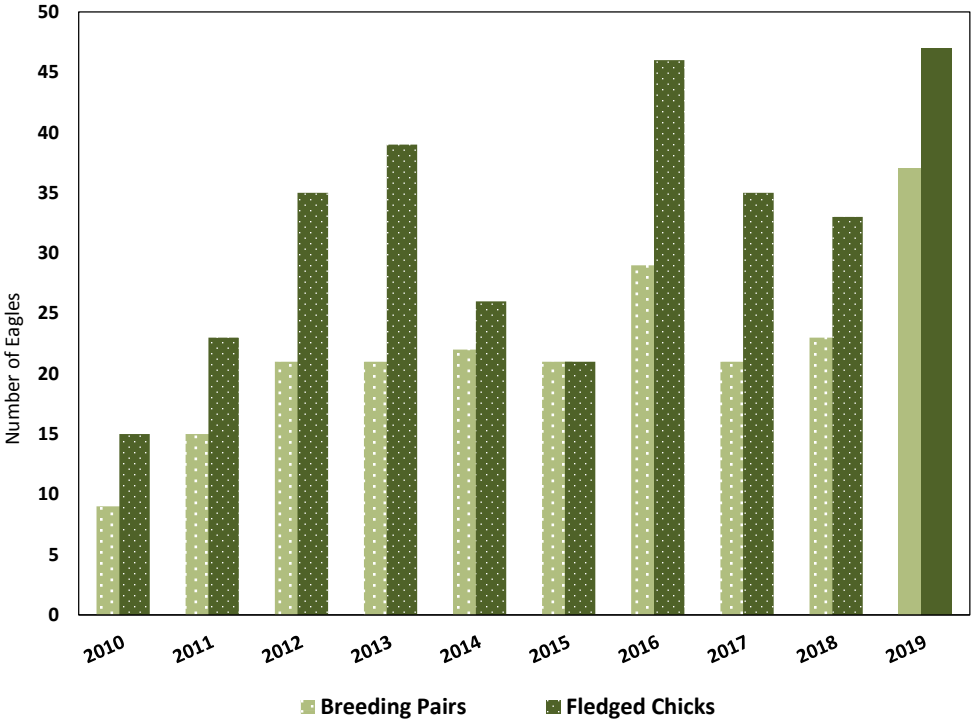


Locations of three study bears during 2015 near the future Deerfield Wind Energy Project (pink triangles). The red circles and yellow circles represent the locations of two different female bears and the blue circles are the locations of a male bear. The black polygons are mapped stands of bear scarred 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.

# THREATENED AND ENDANGERED SPECIES

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

**Vermont Bald Eagle Recovery Area Monitoring Results for Breeding Pairs and Fledged Eagles**




In 2019, thirty-seven pairs of bald eagles successfully fledged 47 chicks. This is a remarkable achievement for the species, since the first successful nest in more than 60 years occurred in Vermont only a eleven years ago in 2008.

Two other once endangered bird species had successful nesting seasons:

- 50 nesting pairs of peregrine falcons fledged 69 chicks
- 101 common loon pairs successfully fledged 87 chicks

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

The Wildlife Action Plan is a 10-year framework designed to assess the health of Vermont's wildlife, identify the problems they face, and outline the actions needed for long-term conservation. Some species such as moose, lynx, and marten may be at risk due to climate change. Others, like Jefferson Salamander and Northern Goshawk, are at risk by habitat loss and fragmentation.

# RESTORATION OF STURGEON AND OTHER FISH AND AQUATIC ORGANISMS

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

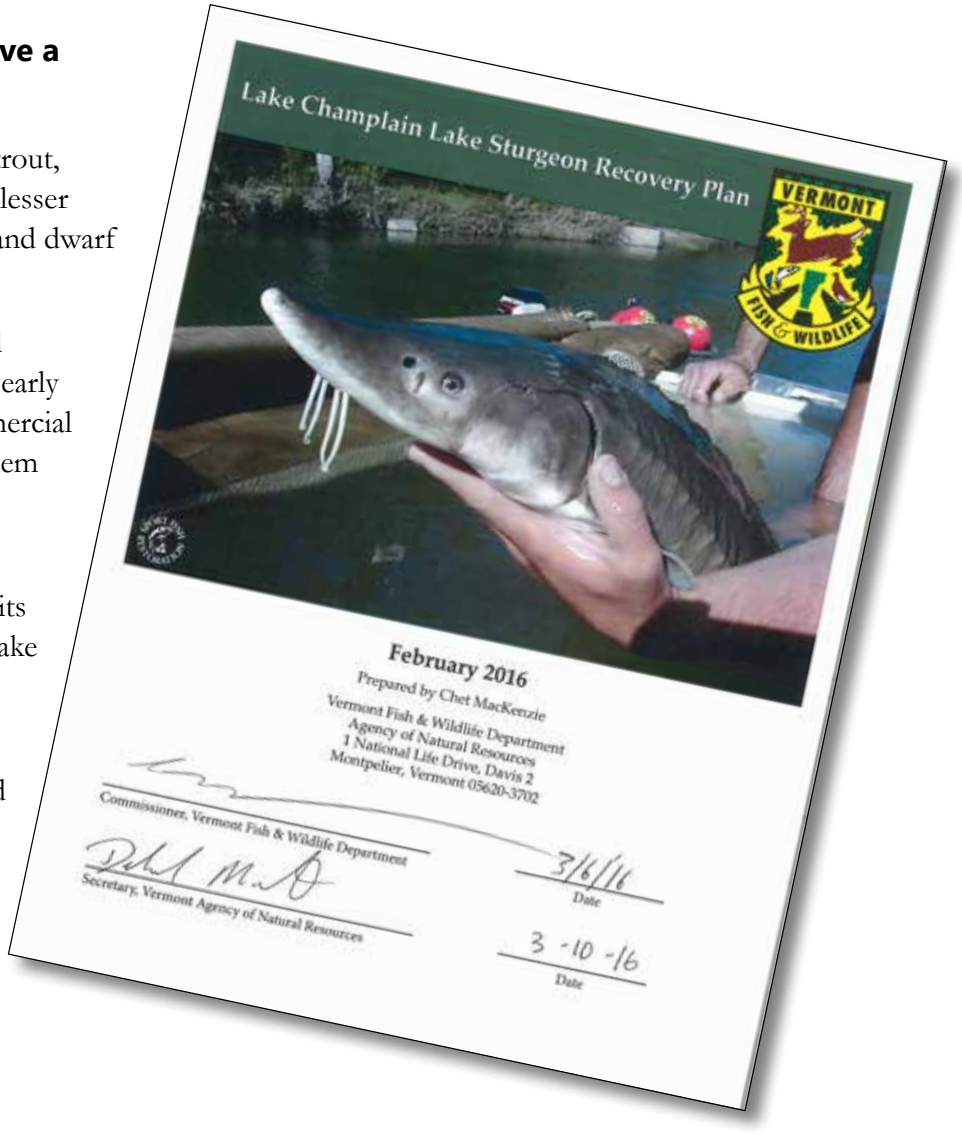
**The department works to conserve a diversity of aquatic species.**

This includes well known fish like lake trout, salmon, muskie and sturgeon as well as lesser known species such as channel darters and dwarf wedgemussels.

Lake sturgeon populations had declined precipitously in Lake Champlain by the early 1900s due to dams, pollution and commercial fishing and sea lamprey likely pushed them over the edge.

In 2016, the department released a new sturgeon recovery plan and stepped up its efforts to restore the state endangered lake sturgeon to the lake and its tributaries.

These ancient, long lived fish take 25 years to mature, thus full recovery could take generations. However, lamprey control already seems to be working. Department biologists are locating more sturgeon during the spawning season and anglers are reporting more sightings and incidental catches.


Lake Champlain Lake Sturgeon Recovery Plan

VERMONT FISH & WILDLIFE

February 2016

Prepared by Chet MacKenzie
Vermont Fish & Wildlife Department
Agency of Natural Resources
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Montpelier, Vermont 05620-3702

Commissioner, Vermont Fish & Wildlife Department — 3/6/16 Date

Secretary, Vermont Agency of Natural Resources — 3-10-16 Date

# RESEARCHING THE DECLINE IN VERMONT'S MOOSE POPULATION

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

**Warmer falls and earlier springs are increasing winter tick densities in the in the heart of Vermont's moose range.**

To understand the impacts of winter ticks on Vermont moose, the department recently concluded a three-year study in the Essex County area. Beginning in 2017, 30 eight-month old moose calves were captured each year and outfitted with radio/GPS collars. Thirty adult cows were also captured in 2017 with six more in 2018 to maintain a sample size of at least 30 cows.

Overall, only 48 percent of the moose calves survived their first winter. Collared cows fared much better, averaging 87 percent winter survival over the three years, but fewer calves were produced than would be expected from healthy cows. Winter ticks were associated with 91 percent of moose calf deaths and 25 percent of the adult cows. Brainworm, another potentially fatal parasite, was present in about a third of carcasses, and lungworms were found in 70 percent of the calves that died. While lungworms are usually not fatal, heavy infestations can make moose more susceptible to dying from blood loss to winter ticks.

Results are still being analyzed, but the study clearly indicates that ticks remain at high enough levels to limit population growth.

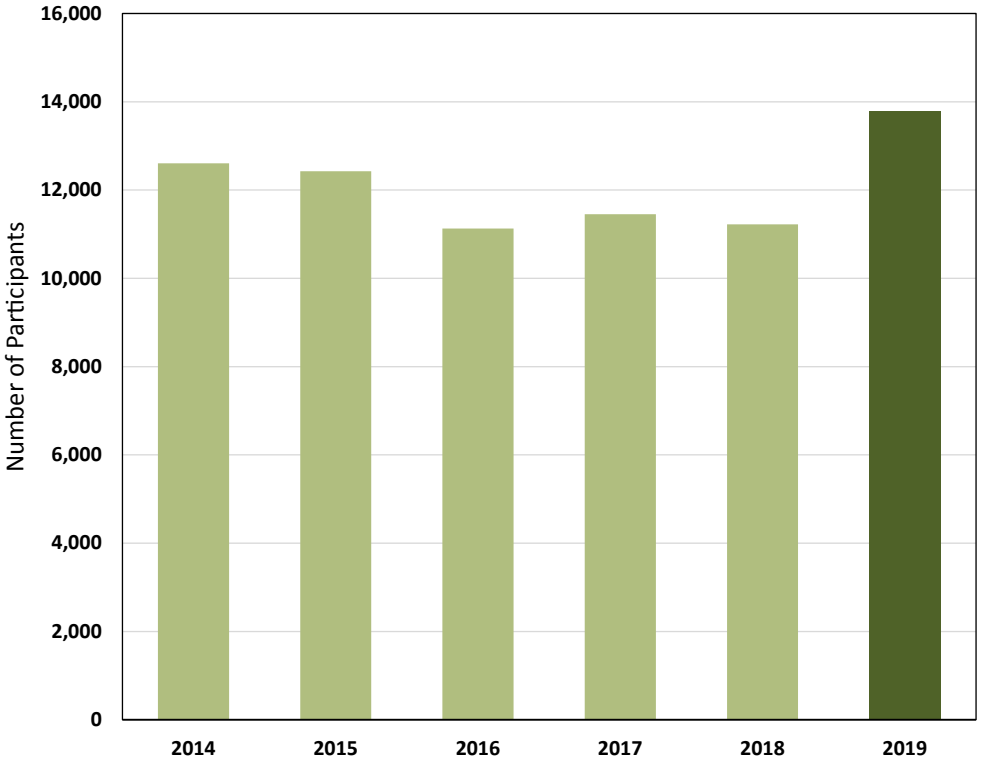
When finalized, the results of the study will help guide the department's management of moose in Vermont, including informing density goals and habitat management strategy.

Winter tick infestation

# 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.*

**Participation in Fish & Wildlife Education and Outreach Programs**




**2019 Participation by Program**

| | |
|---|---|
| Green Mountain Conservation Camps | 735 |
| Let's Go Fishing | 8,466 |
| Family Fishing Festival | 750 |
| Project WILD | 208 |
| Educator's Course | 10 |
| Hunter Education | 3,625 |
| Total | 13,794 |

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

Our education programs strengthen an understanding of ecology, build support for conservation, and teach the outdoor skills needed to responsibly enjoy our woods and waters.

**These programs are affordable too.** Other than the Green Mountain Conservation Camps and educator's course, all programs are free. Camp tuition is 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. All applicants that demonstrate need receive financial support.

# PUBLIC ACCESS FOR BOATING AND SHORE FISHING

**The department's access area program provides the state's 28,000 registered motorboat owners and 120,000 licensed anglers with safe and reliable access to 130 unique bodies of water at 196 locations.**

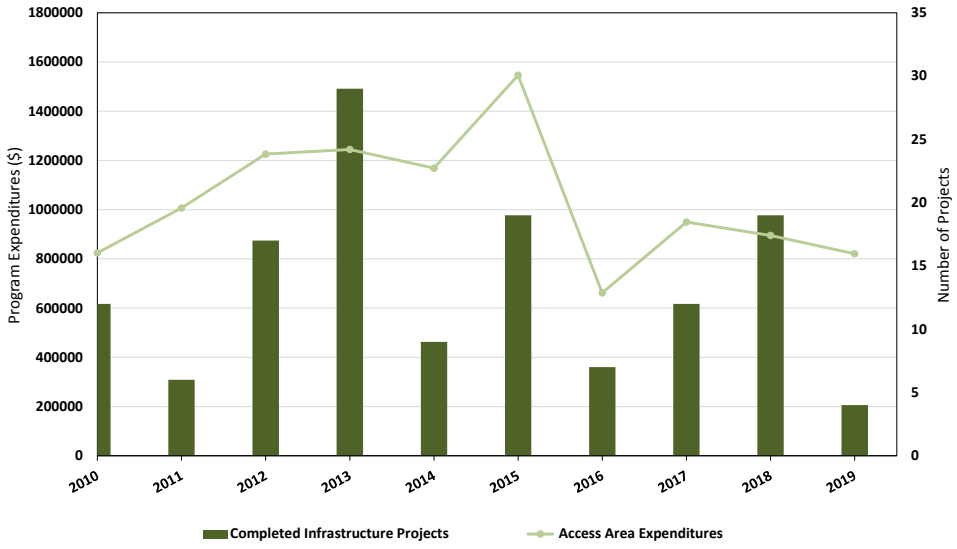
All access areas are free and include:

- 143 with concrete or gravel boat ramps
- 37 sites with at least one courtesy dock
- 30 with non-motorized boat access
- 23 with accessible shore fishing platforms

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 motorboat fuel tax.

During the past decade, the department has completed 120 infrastructure improvement projects, including more than 50 ramp upgrades and 30 dock replacements. This work has been accomplished with a combination of capital appropriations, state motorboat registration fees, and Federal Aid in Sport Fish Restoration funds totaling $3,140,000.

**Access Area Program Expenditures and Completed Projects**

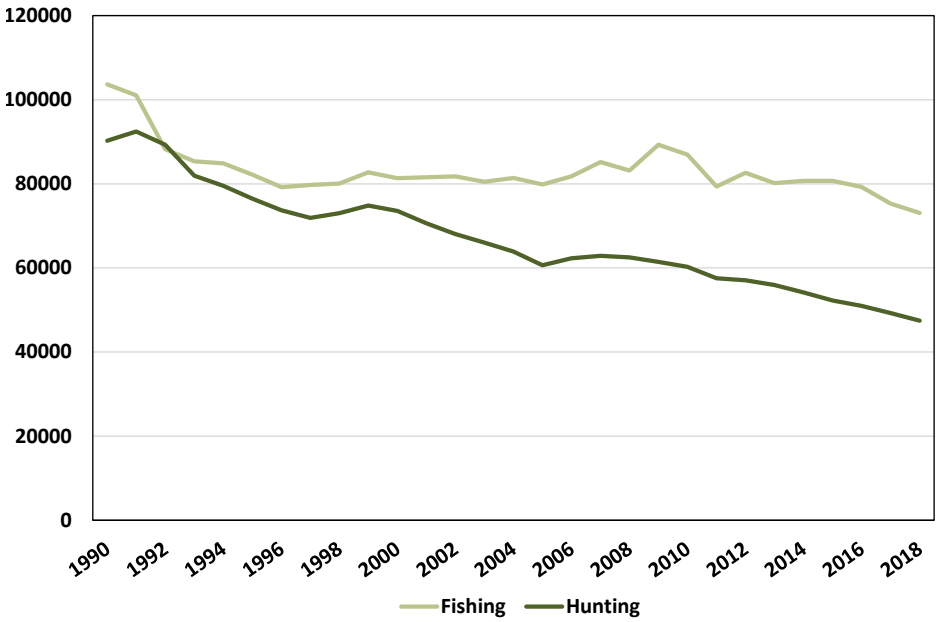



The access area program is committed to accessibility by creating designated ADA parking and accessible routes to docks and fishing platforms. In 2018, eleven ADA projects were completed. The goal of this plan is to enhance accessibility at no less than five sites per year and have at least 35 percent of all access areas fully ADA accessible by 2029.

# THE DECLINE IN LICENSE SALES ACROSS 30 YEARS

*Performance measure: Maintain the number of Vermonters participating in hunting, fishing and trapping, as measured by license sales.*

**Adult Resident Hunting and Fishing License Sales: Age 19-65**



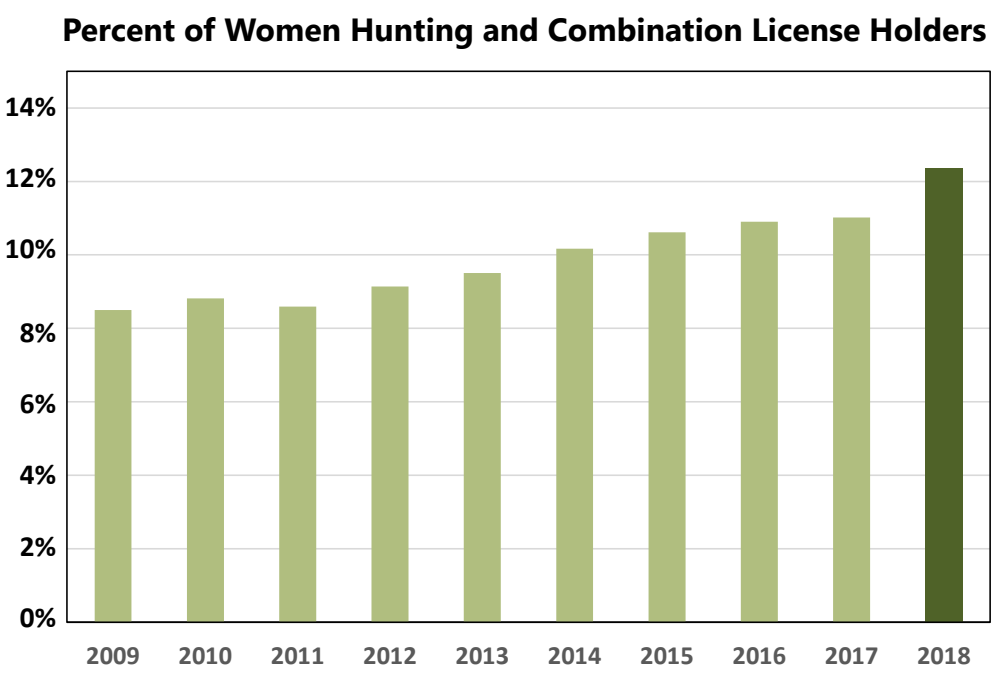

**Declining license sales threaten the department's ability to conserve and manage the state's fish and wildlife species and the businesses that depend on wildlife-related recreation.**

New programs are introducing new audiences to fishing and encouraging current anglers to keep fishing. Unfortunately, wet and cold springs, like in 2017, can result in early sales deficits that are all but impossible to erase later in the year, no matter how much the weather improves.

The primary factor behind the steep decline in hunting license sales is the same aging demographic impacting almost every corner of Vermont life, from skiing to education. A long-lasting remedy is beyond the department's control. Instead, the focus is on maintaining the very high support for hunting and ensuring that the hunters we do have continue to effectively meet the department's wildlife management goals.

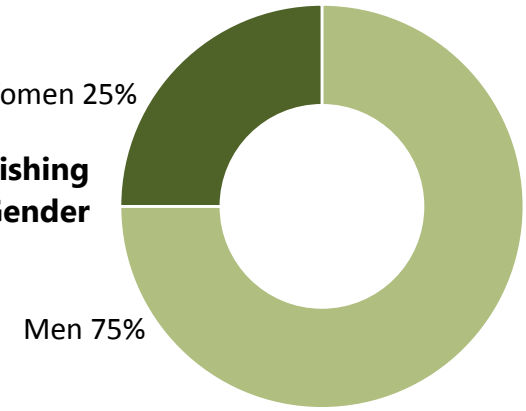
# WOMEN IN THE OUTDOORS

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



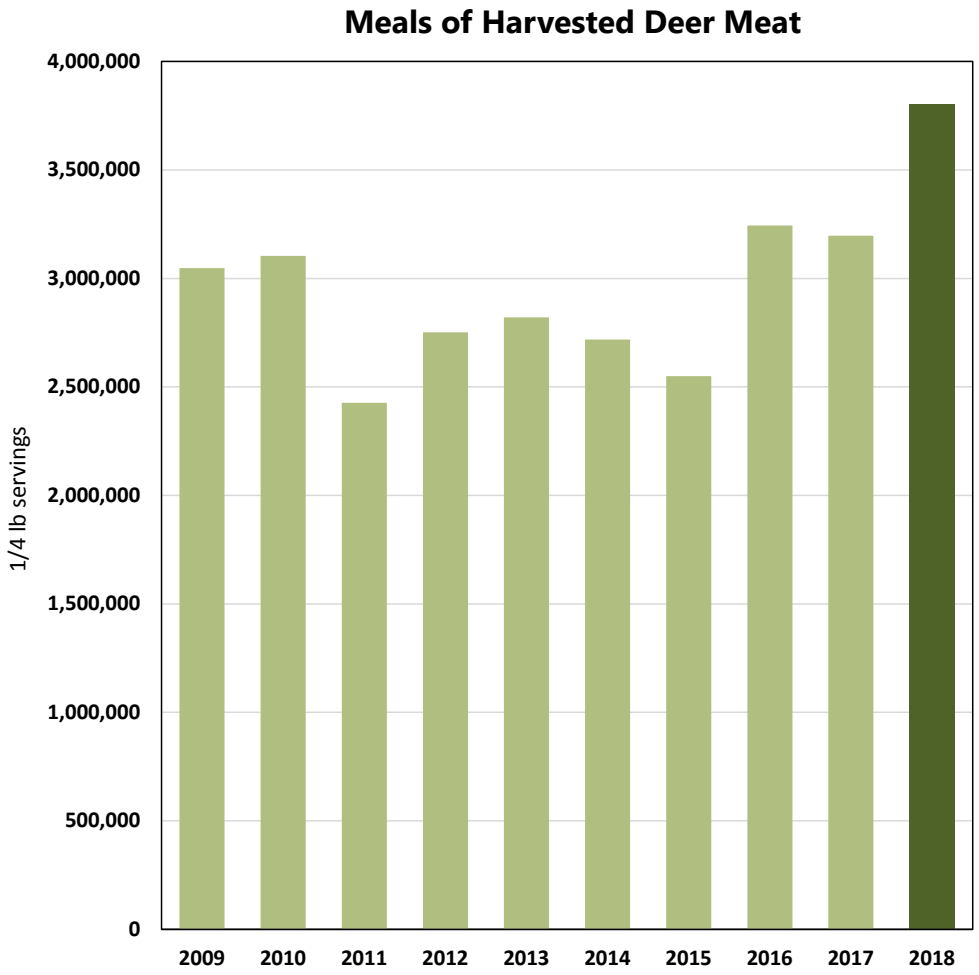

**The number of female hunters in Vermont increased in the 2000s and has since leveled out.**

The percentage of female hunters in the hunting population has risen as the number of male hunters has declined. In calendar year 2019, 34 percent of all hunter education graduates were female, suggesting further increases may occur. Meanwhile, women make up 1 in 4 anglers, a ratio that has remained stable for decades.



# 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.*




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

Vermont is a leader in the 'Farm to Table' and 'Field to Table' movement, and this mindset is a primary motivation for first-time hunters, especially those who are not from hunting backgrounds. Among hunters, meat has always ranked among the top reasons to hunt.

Fishing is sometimes more associated with relaxation and spending time with family and friends than fresh fish, but a number of species like yellow perch, walleye and crappie owe most of their popularity to their taste. Keeping fish is particularly common when ice fishing. 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, diners and gas stations.**

The economic benefits of wildlife extend beyond hunting and fishing.

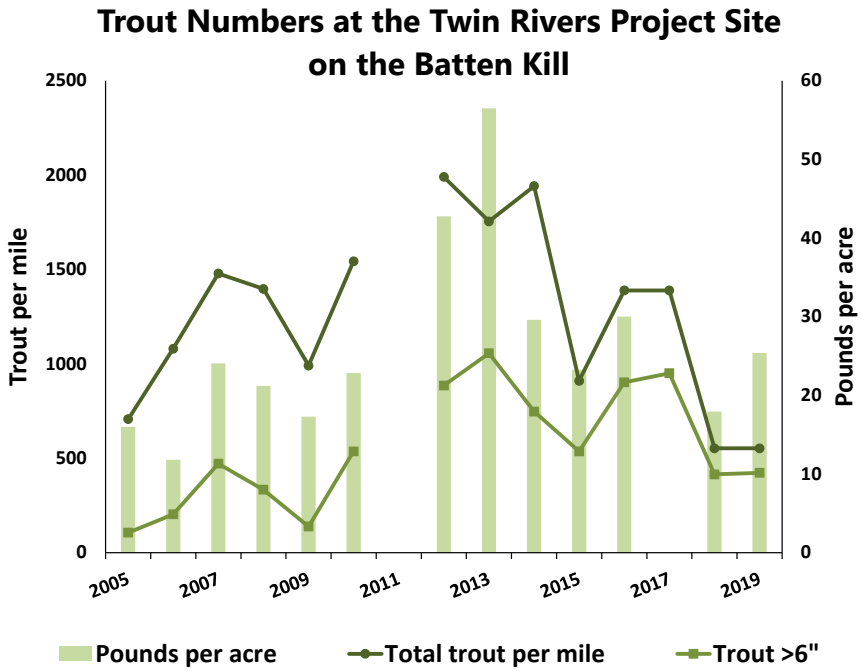
Vermont is home to a number of regionally-known wildlife hotspots that draw both residents and nonresidents, all of whom must eat, sleep and be outfitted. The department's Dead Creek WMA, for instance, is well-known throughout New England, even among the most casual observers, for its up-close views of snow geese each fall. In contrast, serious birders from all over visit Wenlock WMA and the surrounding area for its accessible opportunities for boreal birds, such as black-backed woodpeckers, gray jays and spruce grouse —species that would otherwise require long distance travel to more remote locations.

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

- **Nearly two out of three Vermonters hunt, fish or watch wildlife.**
- The US Department of Commerce, Bureau of Economic Analysis found, in Vermont, only snow sports topped hunting, shooting and trapping in total economic impact from recreational activities, with boating and fishing coming in fourth. The 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'.
- Anglers make a significant contribution to tourism; the bulk of their spending is on food, lodging and related trip expenses.
- Lake Champlain generates an average expenditure of $88 per angler, per day.
- Vermont draws wildlife watchers from around the region and this doesn't include casual viewing by residents or tourists.
- The economic impact of bird feeding in Vermont cannot be overstated. Almost half of Vermont households feed birds and almost all the seed and related supplies are bought locally.

# WILD TROUT FISHERIES RESTORATION

*Performance measure: The number of catchable trout per mile.*



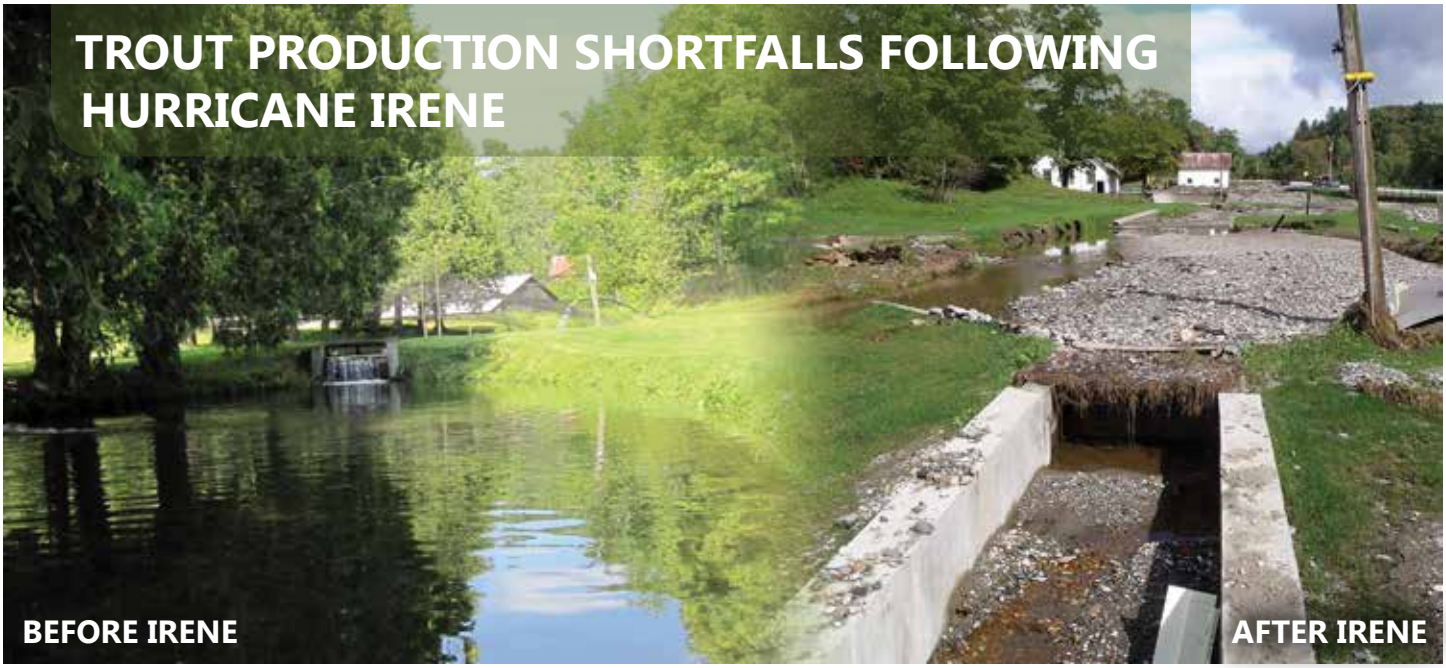

**The department is working to provide quality trout fishing opportunities by restoring and maintaining self-sustaining wild trout fisheries.**

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

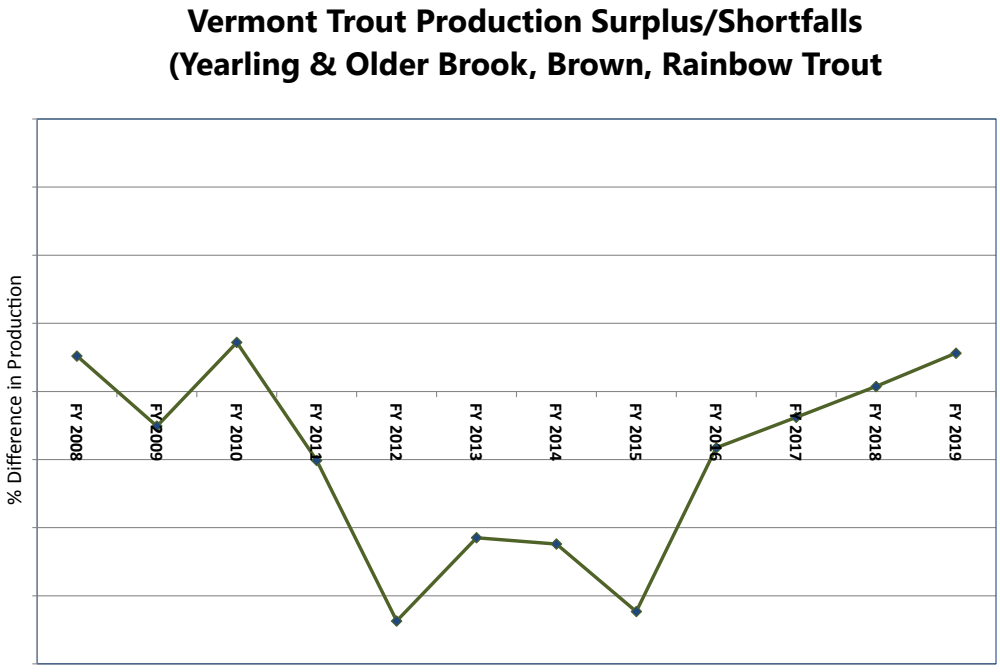
The "Twin Rivers" project site on the Batten Kill in Arlington was the site of the river's first instream habitat restoration project in 2006. Trout populations at this site substantially increased in the years following the habitat work, but may be locally declining as these structures deteriorate over time.

Trout numbers in the famed Batten Kill declined sharply in the 1990s due to a lack of instream habitat and cover. Projects designed to restore this habitat have shown trout populations respond positively when habitat becomes available, improving angler satisfaction as a result.

Biologists are now working with landowners to restore and protect native vegetation along river banks. These trees and shrubs will help keep the water cool, improve water quality, and provide the next round of necessary instream habitat for trout as they naturally fall into the river.




*Performance measure: Meet fish culture production targets to fully support recreation and restoration goals.*

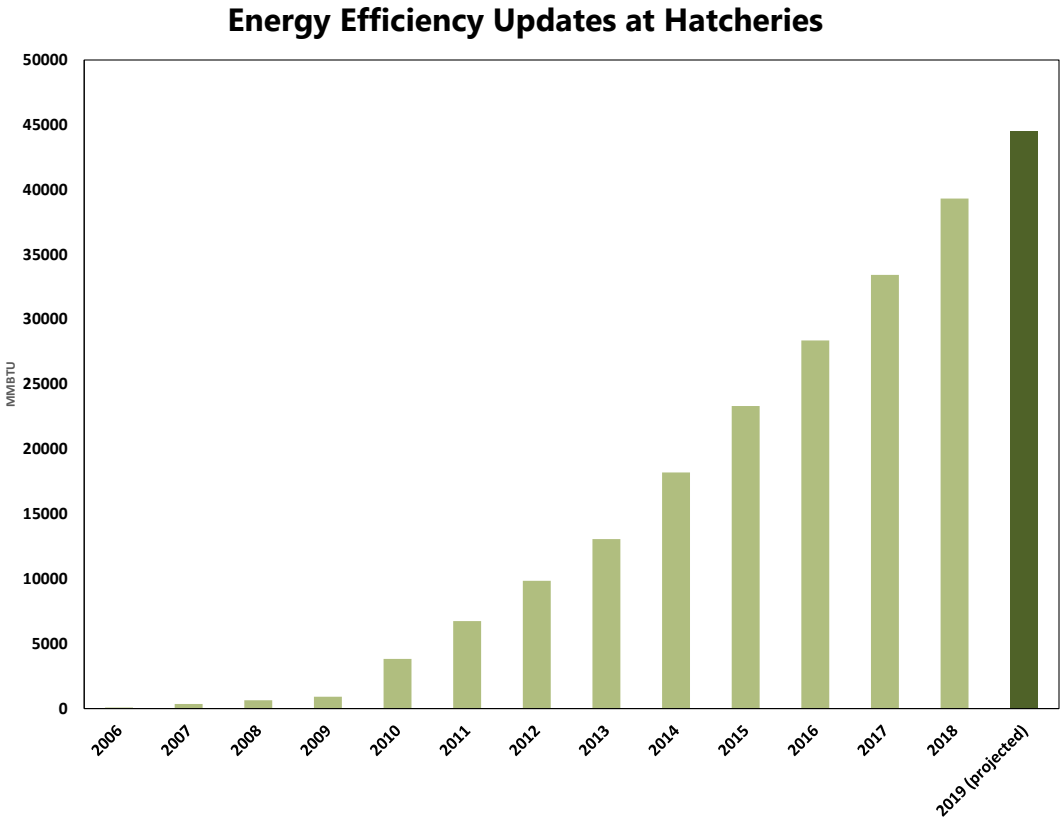



**Damage to the Roxbury Fish Hatchery due to Tropical Storm Irene created a 25 percent shortage of stockable-size trout annually.**

Since then, the department's other hatcheries have been working beyond their capacity to make up the deficit. Bennington Fish Culture Station, for instance, is rearing a record number of trout, but this effort is taxing the aging facility. Fortunately, Roxbury reconstruction began in the fall of 2018 and is expected to be completed by the spring of 2020.

# ENERGY EFFICIENCY UPDATES AT FISH HATCHERIES

*Performance measure: Increase management effectiveness and efficiency.*

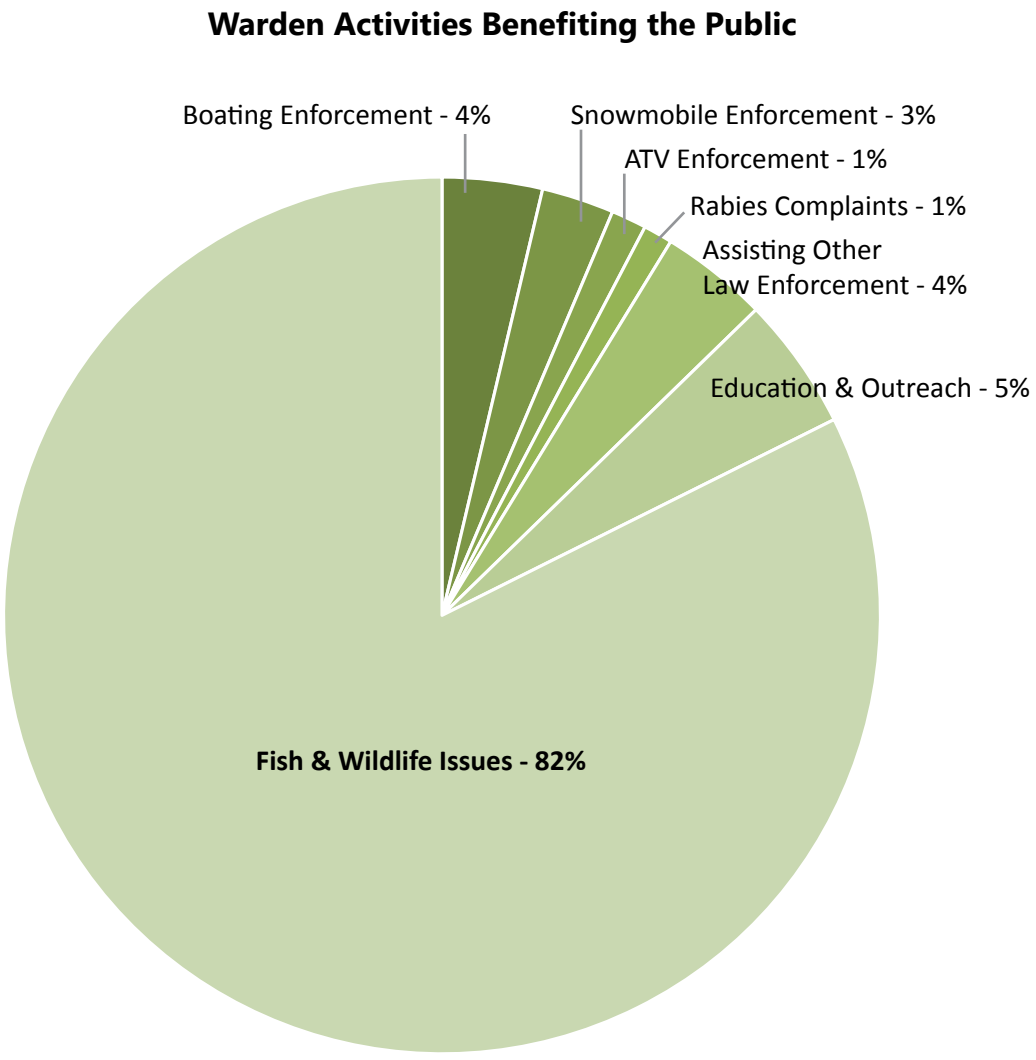



**The department is a conscientious steward of energy resources and constantly works to increase its efficiency and reduce costs.**

Switching fish hatchery energy use to solar power saves enough energy every year to power the entire town of Grand Isle for a year. In 2019, it is projected to save the department $120,000.

# WARDENS SERVE THE PUBLIC

*Performance measure: Decrease human-wildlife conflicts while increasing safety for outdoor recreationists.*




**Wardens apply their broad range of skills and expertise to provide a wide variety of services that Vermonters increasingly rely on.**

This includes responding to rabid animal calls and human-wildlife conflicts; enforcing boating, ATV and snowmobiling laws; and participating in search and rescue operations. In addition, the number of mutual assists to other agencies has almost doubled in the last decade due to strained law enforcement budgets around the state.

# 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 within the community through positive interactions and strong individual relationships. Wardens are the original community police, each with a home office and publicly listed phone.**

### Building on Success of Local Food Shelf

Wardens have lists of people in their districts who are interested in receiving deer, bear and moose meat. And while wardens regularly obtain road-killed game, only a handful of the people who need the meat are able to accept a carcass. They don't have the time or place to process the animal, the carcass is recovered too late at night or the weather is too hot to preserve the meat. To address these challenges, wardens have been working with Duxbury Food Shelf and two local butchers who donate their time and wrapping materials to ensure these animals don't go to waste. The wardens drop the carcasses off at the processors, deliver the meat to the food shelf and dispose of the left-over carcasses. By the end of 2019, 2,356 meals had been delivered to food shelf. This program has proven so successful it is now being replicated in other warden districts.

### Giving Gifts for Kids

Operation Fire Cuffs distributes gifts to children who are undergoing treatment at UVM Children's Hospital. Law enforcement agencies solicit toy donations and wardens, police and firefighters deliver them to the hospital in grand style, beginning with a vehicle parade and with assistance from Santa. The hospital holds some of the toys to distribute year-round when their young patients need a lift. Game Wardens also teamed up with retired marines to collect contributions for Toys for Kids. This Vermont-based program makes all the difference to kids who might otherwise go without during the holiday season. Many toys were collected or dropped off at the department's district offices along with monetary donations to the Marine Corps League, which will provide additional assistance to families in need.

### Helping With the Road to Recovery

A deputy warden candidate, who also hopes to become a full-time warden, was temporarily derailed after suffering serious injuries when she was hit by tree while spending time with her family in her yard. A friend reached out to the department and explained that her desire to become a warden was a primary motivation in recovery and wanted to coordinate getting patches and/or challenge coins from other states in hopes of keeping her motivated. The request was sent through the department and has drawn an incredible response from around the country.


*Performance measure: Improve facilities and business processes to maximize efficiency and reduce costs.*

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|---|---|---|
| **Administration** | **$110,500** | Point of Sale license system |
| **Law Enforcement** | **$43,473** | Smaller, more efficient trucks |
| **Outreach** | **$319,708** | Online camp registration - fewer contracts - more federal match |
| **Fisheries** | **$214,035** | Solar panels - energy efficiency projects |
| **Wildlife** | **$354,181** | More federal match - private grant funding - mitigation fees |
| **Total** | **$1,041,897** | |

Revenues from license sales have slightly decreased over the last three years and costs continue to increase. To combat this, the department is working hard to become more efficient across all our divisions.

With the help of field staff, significant savings have been found, particularly through energy reductions at hatcheries, fewer out-of-house contracts, and actively pursuing donations and private grants that can be matched with federal funds.

To date, these initiatives have saved the department $1,041,897.