

# FISH & WILDLIFE DEPARTMENT PERFORMANCE-BASED BUDGET FY2018 REPORT



## Introduction

Eating “local” in Vermont does not end at the farmer’s market. No fish could be fresher than the one you’ve just caught, and no meat is more sustainable than when taken in a carefully managed hunting or fishing season. This might sound trendy, but nothing is new about the deep significance that Vermonters place on hunting and fishing. The right to hunt and fish is afforded in our state constitution, and few states have been able to boast higher participation rates.

## Hunting

Hunting in Vermont is synonymous with the November rifle deer season. Most of the state’s 66,000 resident hunters hunt deer, and almost every Vermonter knows when deer season occurs because of the resultant sales, breakfasts, game suppers, and craft fairs. Hunting, however, is far more than just the sixteen days of rifle deer season in November. Other seasons, such as for black bear and ruffed grouse, open in September, and a few, such as snowshoe hare, stretch well into winter. Archery and muzzleloader seasons for deer are especially popular, and each May thousands of hunters return to the woods for the Spring turkey season.

While these seasons have their fans, the state’s aging demographics are clearly having an outsized impact on hunting. Hunters are getting older and there are fewer young people to take their place. Far less apparent, though, those hunters who remain are decidedly more avid than previous generations. They hunt more seasons, hunt more days, and spend more money. So much so that hunting expenditures are increasing, even after inflation is considered.

## Fishing

Lake Champlain is one of North America’s premier fishing destinations, attracting large numbers of residents and nonresidents, year after year, in all four seasons.

The lake’s incredible largemouth and smallmouth bass fishing are the primary draw. Inland, native brook trout is king. However, few states can offer such an exceptionally diverse range of species from the near mythical muskellunge to lesser-known burbot, a freshwater cod. Perhaps more importantly, the state’s 800 lakes and more than 7,000 miles of rivers and streams ensure all Vermonters have quality angling opportunities close to home.

One in five Vermonters purchased a fishing license last year, but that figure tells only part of the story. About half our anglers don’t fish every year, and youths age 15 and younger don’t even need a fishing license. As a result, the number of Vermonters who actually fish is much larger than yearly license sales suggest. Add to this the 40,000 nonresidents who travel here every year to fish, and it’s clear fishing remains one of the most popular outdoor pursuits in the state. It’s affordable too. A \$26 fishing license and a minimal investment in equipment can provide year-round enjoyment and the regular prospect of fresh fish for dinner.

## Conclusion

Vermonters’ historic passion for hunting and fishing led to the founding of the Vermont Fish and Wildlife Department in 1866. Our mission is now far broader and, as evidenced in this year’s report, we remain committed to conservation of all the state’s fish and wildlife species and habitats on which they depend. However, in an age of dire environmental change and rapid technological advancement, it’s worth remembering that many Vermonters still cherish the opportunity to explore Vermont’s rolling farmland, thick woods, mountain streams and deep, natural lakes.







## 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 and aquatic habitats. This includes: the operation of five fish hatcheries; maintaining 180 Fishing Access Areas; controlling the spread of fish diseases, exotic 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 regulatory processes such as Act 250, aquatic organism passage, and technical assistance.

**Law Enforcement** protects Vermont's fish and wildlife from poaching and illegal trade, in addition to ensuring the state's more than 150,000 resident and nonresident 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 they 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 93 Wildlife Management Areas and participating in the protection of critical wildlife habitat through the Act 250 and Act 48 process.

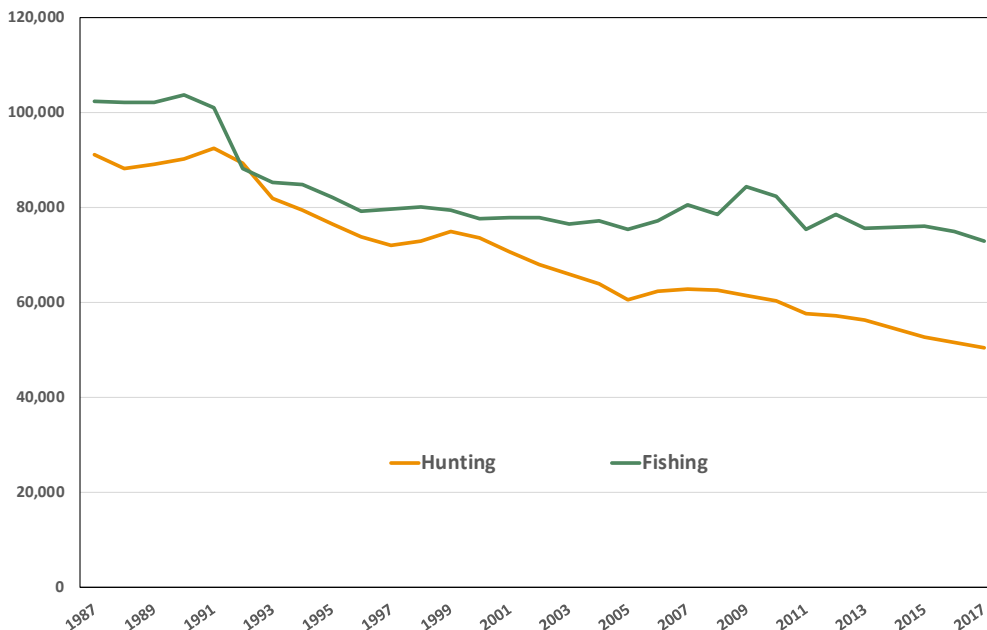


# THE DECLINE IN LICENSE SALES ACROSS 30 YEARS



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

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



**Declining license sales threaten the future of the state's fish and wildlife species and the businesses that depend on wildlife-related recreation.**

Recent initiatives may have helped stabilize the decline in fishing license sales. However, these efforts have not cancelled out significant, age-related losses in hunting participation, nor are they likely to offset the state's aging trends, which are also evident among the angling population.

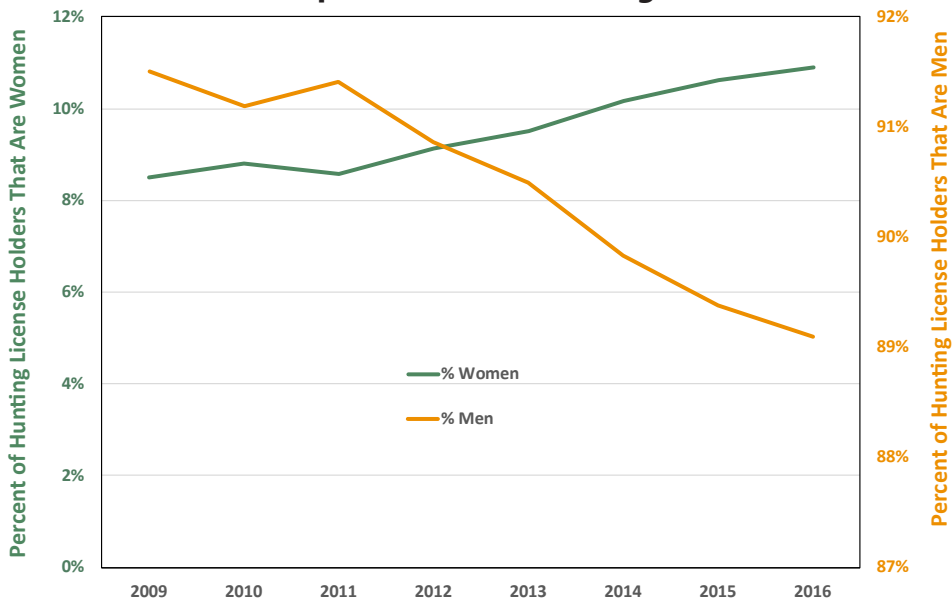
While the root causes (urbanization, demographics) are beyond our control, the department must continue to address license declines to remain financially viable and accomplish its mission.

# WOMEN IN THE OUTDOORS



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

## As the Percentage of Men Hunting Declines, Women Make up More of the Hunting Public

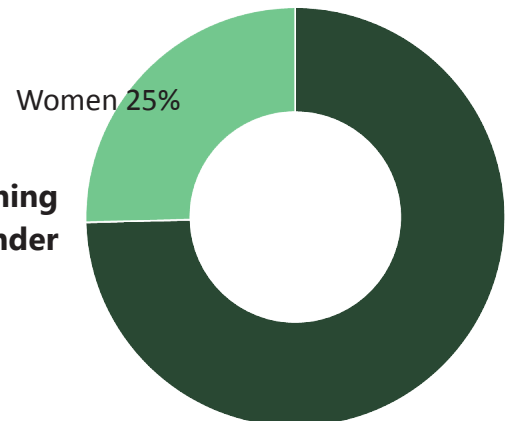


**The number of women hunting in Vermont remains slightly over 5,000.**

However, as the number of male hunters has decreased, primarily due to age, the percentage of female hunters in the hunting population has continued to rise. In 2016, 37 percent of hunter education graduates were girls or women, suggesting further increases may be likely. Meanwhile, women make up 1 in 4 anglers, a ratio that has remained stable for decades.



## Resident Fishing by Gender



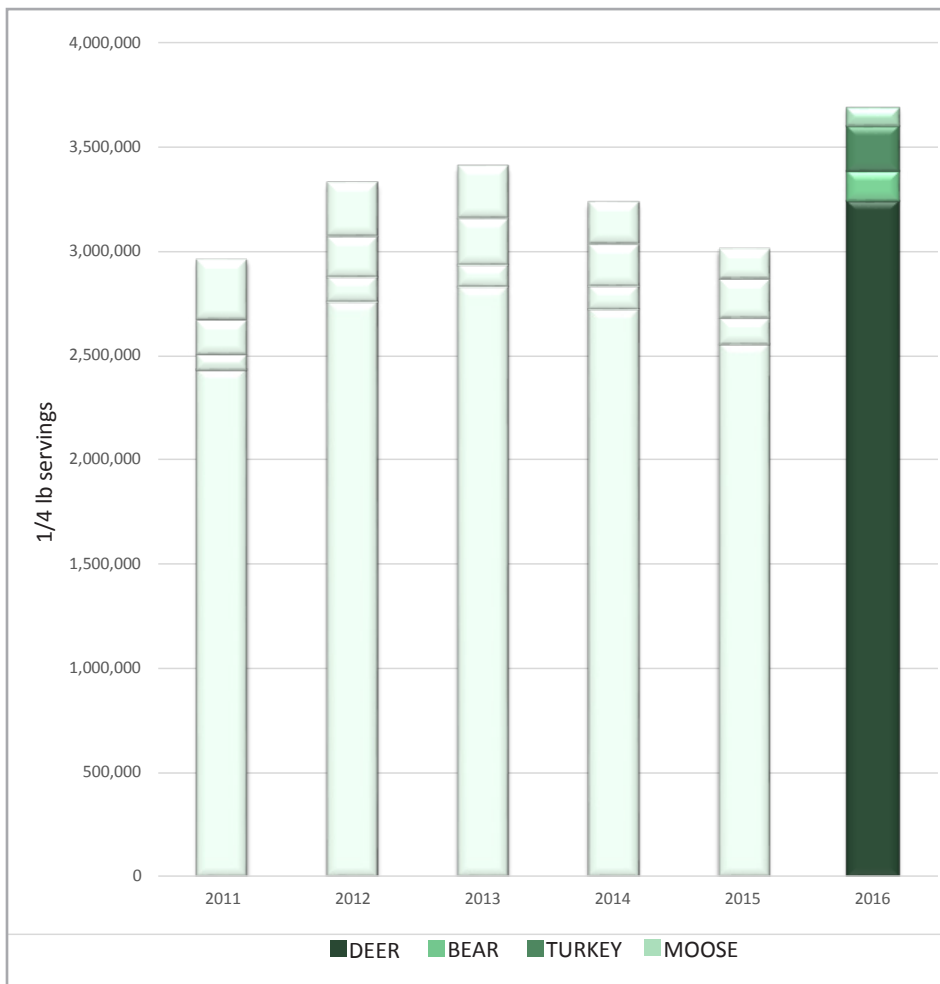


## MEAT HARVESTED THROUGH HUNTING



*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 Harvested Meat



**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 more experienced hunters, meat has always ranked high as motivation. However, within the last five years, meat surpassed simply getting outdoors and enjoying the challenge as the top reason to hunt.

Fishing is more associated with relaxation and spending time with family and friends, but make no mistake, a number of species like yellow perch, walleye and crappie owe some, if not much, of their traditional popularity to their taste. Keeping fish is particularly common when ice fishing. Cold temperatures, both in and out of the water, keeps 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 several regionally known wildlife hotspots that draw both residents and nonresidents, all of whom need places to stay and eat as well as to be outfitted. The department's Dead Creek WMA, for instance, is well-known throughout New England for its up-close viewing opportunities 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 contributes greatly to Vermont's economy.

- Nearly two out of three Vermonters hunt, fish or watch wildlife.
- In 2006, wildlife-related recreation generated \$377 million dollars, including almost \$20 million in state tax revenue.
- Wildlife-related spending is particularly important to rural areas and often coincides with the 'off-season'.
- While hunter numbers are declining, their expenditures are increasing. They spend as much as anglers and wildlife-watchers combined.
- 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. Half of Vermont households feed birds and almost all the seed and related supplies are bought locally.



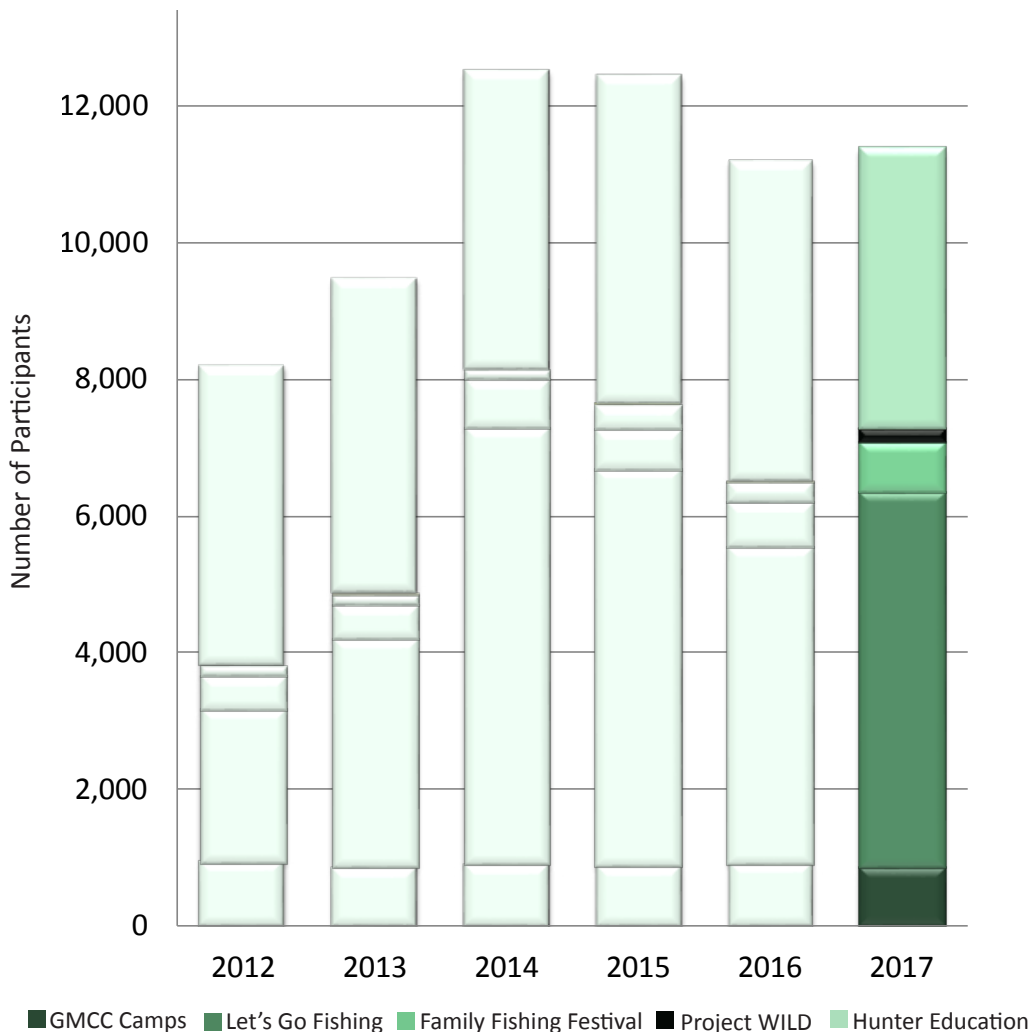
# CONSERVATION EDUCATION AND OUTREACH PROGRAMS

## Project WILD®



*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



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

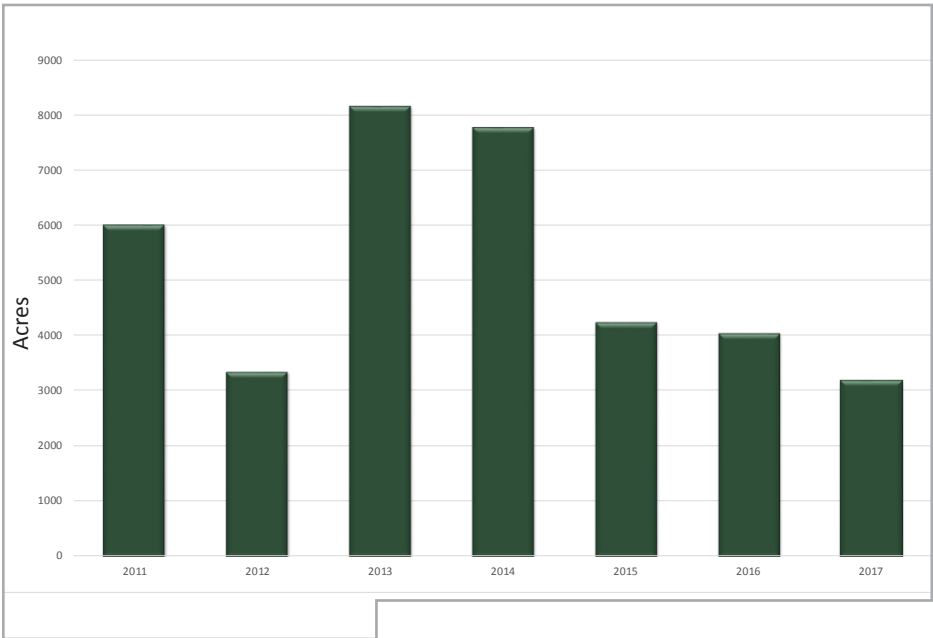
Our education programs strengthen an understanding of ecology, build support for conservation and teach the outdoor skills needed to responsibly enjoy our woods and waters. **They are affordable too.** Other than the Green Mountain Conservation Camps and educator's course, all programs are free. At just \$250 week, the camps are a fraction of the cost of most any other weeklong, residential camp. Because even \$250 is too much for many families, there are scholarships available to those of need. **Last year, 396 campers were sponsored by 113 organizations.**





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

**Habitat Conserved through Act 250**



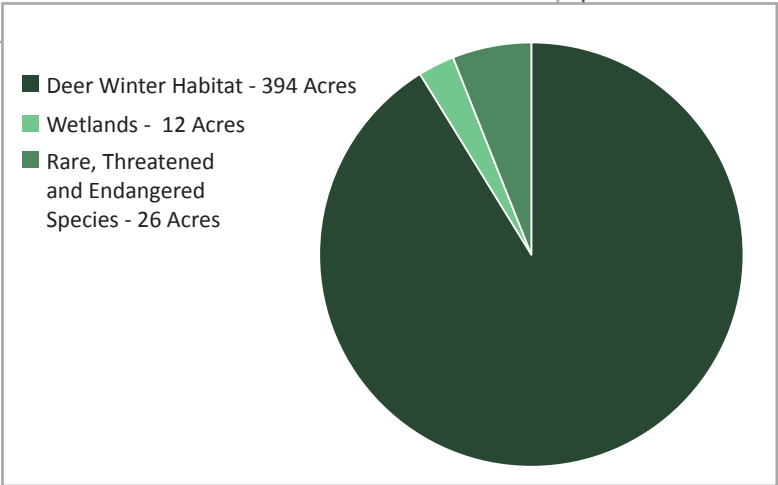
**Act 250 works for wildlife.**

The department plays a critical role in the protection of ecologically important habitats through the Act 250 process. In 2017, 212 projects were reviewed, and 3,172 acres of wildlife habitat were protected, while 432 acres were impacted. This equates to approximately 7.4 acres saved for every acre lost.

However, only 3 to 5 percent of development projects in Vermont are regulated by Act 250. As a result, Vermont 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.

**Habitat Impacted by Regulated Development Projects in 2017**

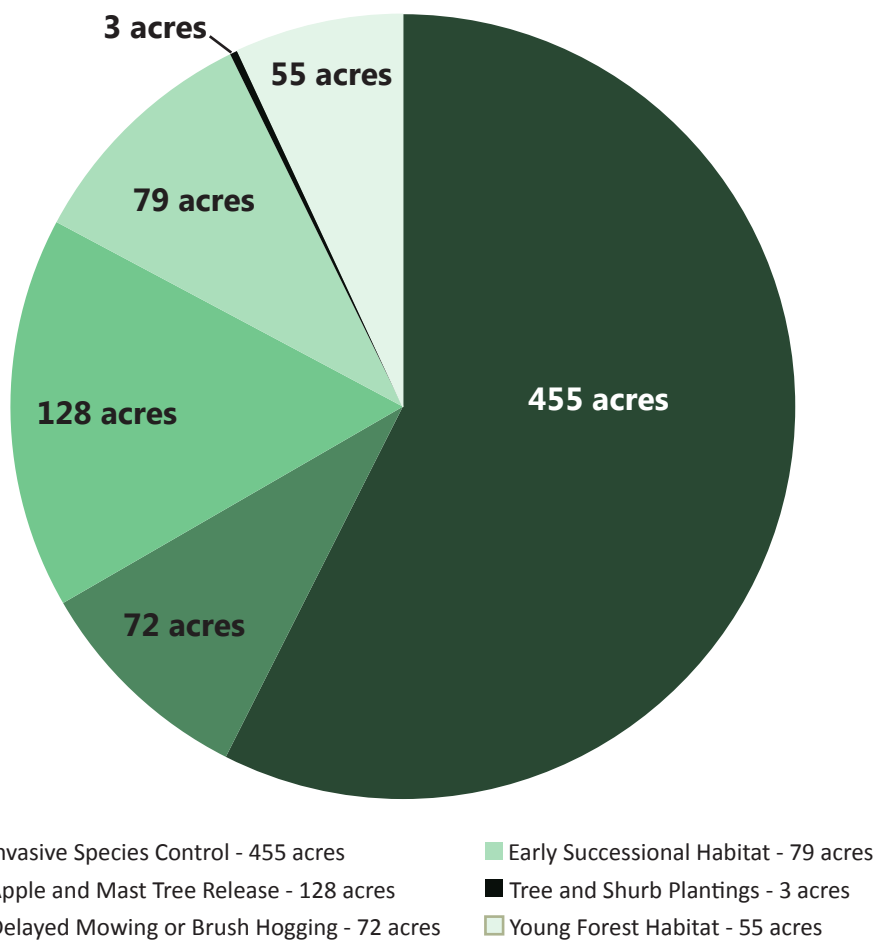


## HABITAT ASSISTANCE FOR PRIVATE LANDOWNERS



*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



**Working with landowners is essential to improving wildlife habitat because more than 80 percent of Vermont land is privately owned.**

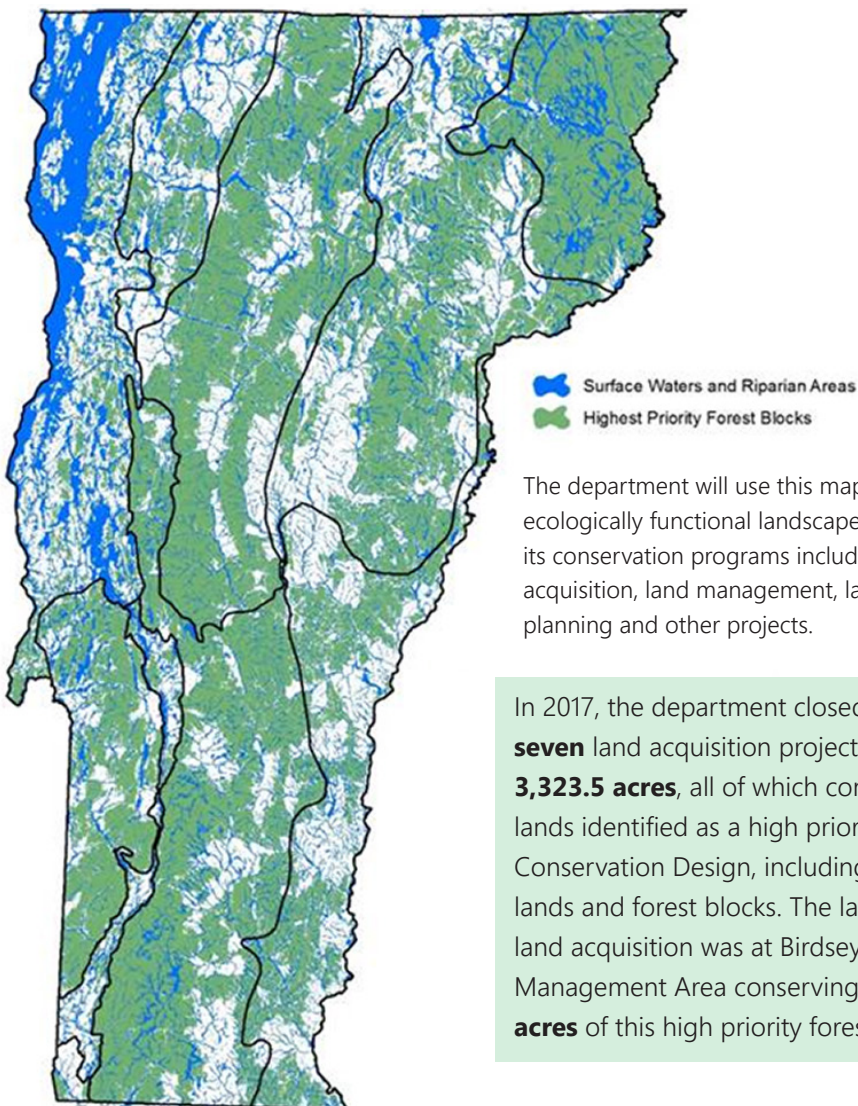
In FY2017, department staff helped 90 landowners manage their land for wildlife through the federal Natural Resources Conservation Service (NRCS) EQIP program, affecting thousands of acres statewide. Staff also gave workshops to Vermont Woodlands Association and Vermont Coverts groups, and assisted residents with bats in their homes, beavers flooding their roads and driveways, and many other human-wildlife conflicts.



# MAINTAINING ECOLOGICAL FUNCTION THROUGH VERMONT CONSERVATION DESIGN



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



The department will use this map of an ecologically functional landscape to guide its conservation programs including land acquisition, land management, land use planning and other projects.

In 2017, the department closed on **seven** land acquisition projects totaling **3,323.5 acres**, all of which conserved lands identified as a high priority in Conservation Design, including riparian lands and forest blocks. The largest land acquisition was at Birdseye Wildlife Management Area conserving **2,875 acres** of this high priority forest block.

**Vermont Conservation Design is a practical approach to protecting and enhancing ecological function into the future.**

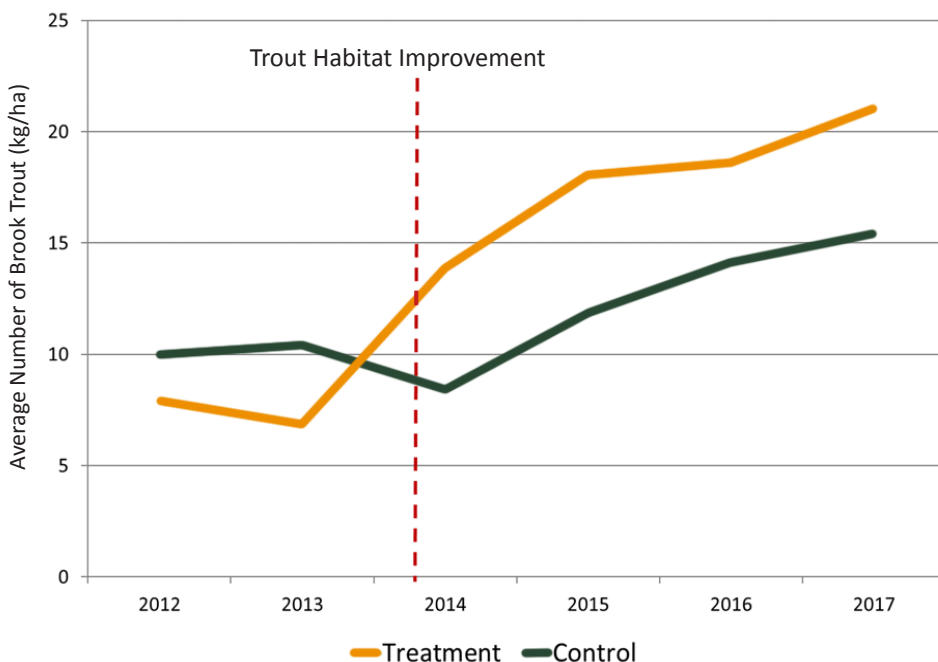
This multi-layered, landscape level mapping project is identifying the highest priority lands and waters needed to maintain ecological integrity. As a whole, they comprise a connected landscape of large and intact forested habitat, healthy aquatic and riparian systems, and a full range of physical features on which plant and animal communities depend. If conserved or managed appropriately, these lands will sustain Vermont's natural legacy for many generations. Some species will need specific conservation attention, either for biological or social reasons.



## TROUT HABITAT MANAGEMENT



*Performance measure: Maintain or increase the number of catchable trout per mile.*



Fisheries biologists, in cooperation with Trout Unlimited, have been strategically adding woody material to streams in the Nulhegan and Paul Stream watersheds. Brook trout population monitoring revealed 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 result for Vermont's favorite fish given that populations of wild brook trout have declined significantly across much of the specie's historic range.

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.





# CLYDE RIVER RESTORATION

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

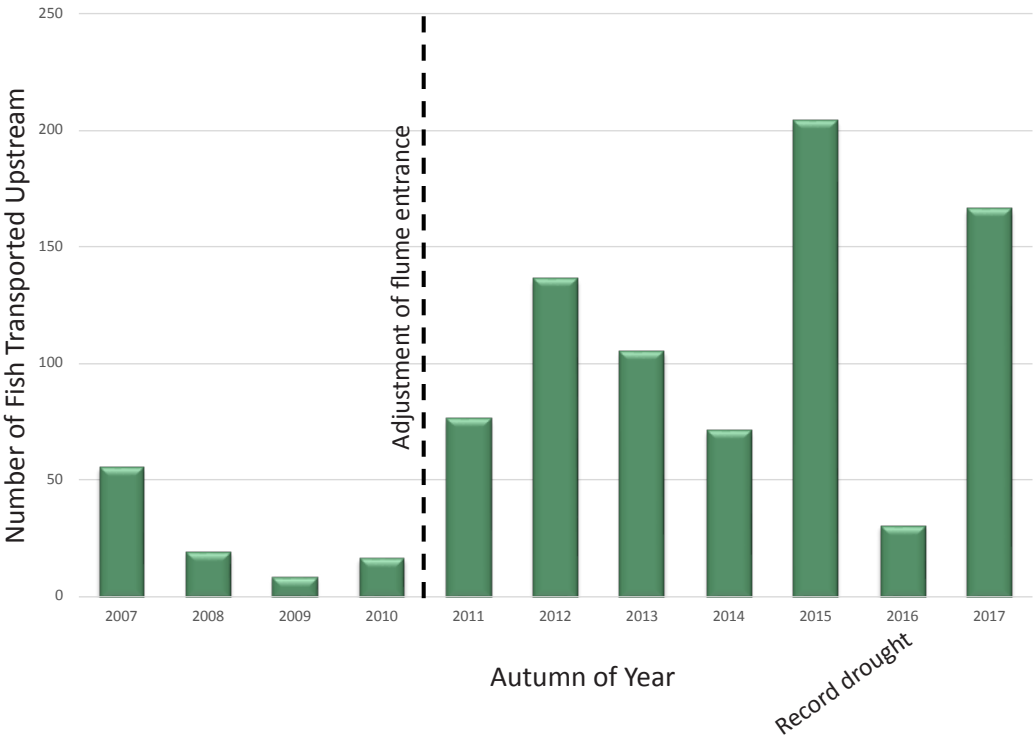
Fish climb a steep pass ladder into a large holding tank. The fish are measured and then transported and released above the dam.

**Restoration includes working closely with industry.**

Anglers from across the Northeast once travelled to Newport to fish a celebrated run of landlocked Atlantic salmon on the Clyde River. By the late 1950s, however, a series of dams and flow mismanagement had decimated the run and the money the salmon generated. Fortunes changed, however, when heavy run-off breached and

eventually doomed one of two dams on the lower river.

**Landlocked Atlantic Salmon Passage at Clyde River Ladder**



Restoration now seemed feasible. In 2007, a fish ladder was installed at the remaining barrier: Clyde Pond Dam. Minimum flows were also established. Progress was slow until Great Bay Hydro and the department worked together to make adjustments to the ladder. Completed in 2011, these changes resulted in almost immediate results, allowing adult salmon to access approximately six additional miles of spawning habitat.





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

**Vermont Trout Production Surplus/Shortfalls  
(Yearling & Older Brook, Brown, Rainbow Trout)**



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

Since then, the department's other hatcheries have been working above their capacity to try to make up the deficit. Bennington Hatchery, for instance, is rearing a record number of trout but this effort is taxing this aging facility beyond its limits. Only restoring Roxbury will allow the state to return to its historic stocking levels. Work is expected to begin in the spring of 2018.

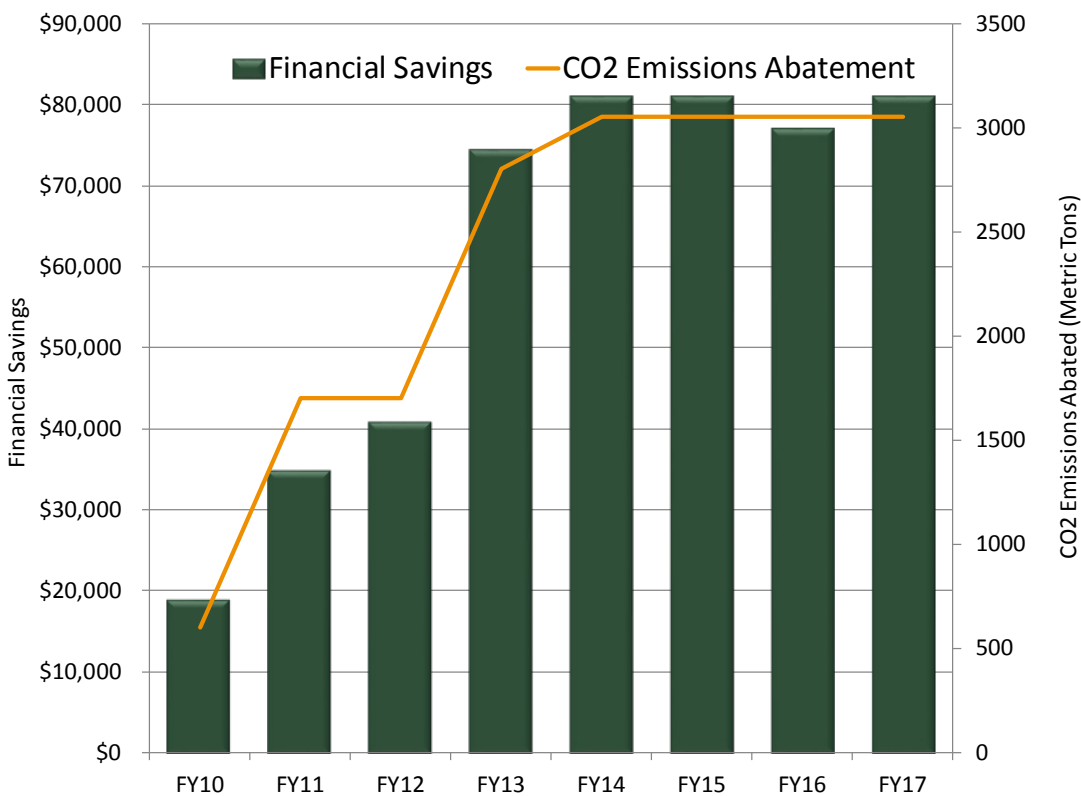


# ENERGY EFFICIENCY UPDATES AT FISH HATCHERIES



*Performance measure: Increase management effectiveness and efficiency.*

## Energy Efficiency Updates at Hatcheries



**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.

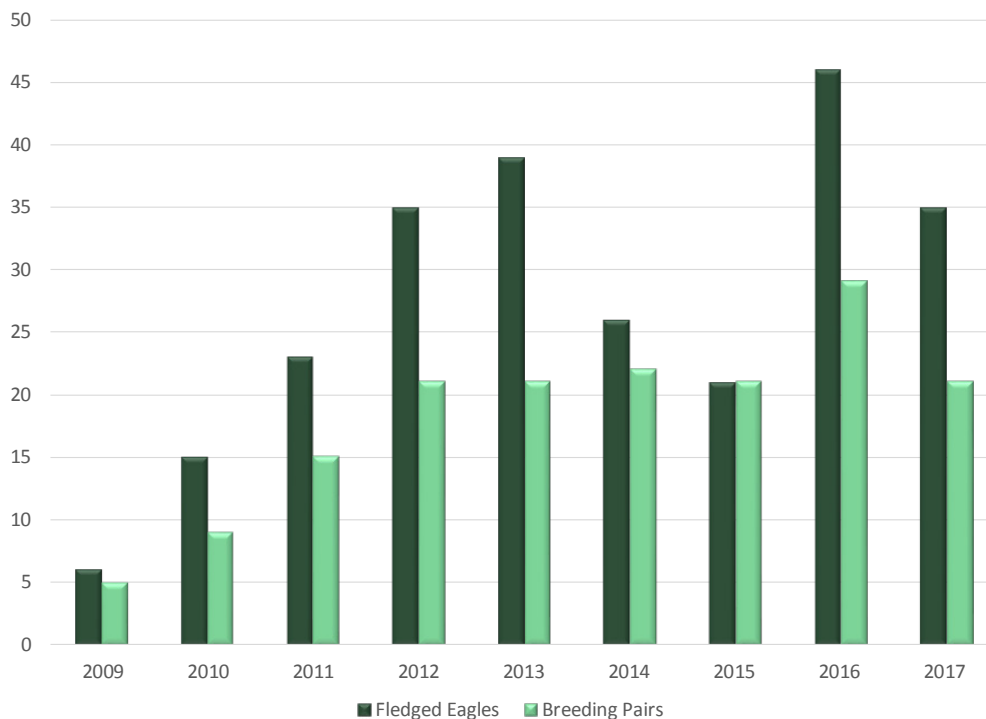


## THREATENED AND ENDANGERED SPECIES



*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



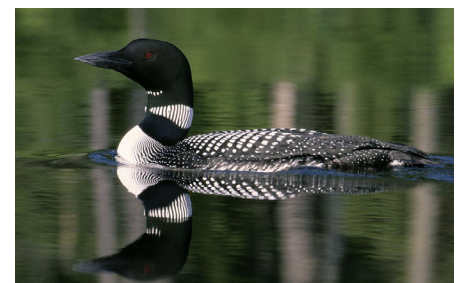
**The department works strategically to keep common species common and to prevent struggling species from slipping towards threatened and endangered status.**

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. Others are threatened by habitat fragmentation and loss.

In 2017, twenty pairs of bald eagles successfully fledged 35 offspring. This is remarkable for the species as the first successful nest in more than 60 years occurred only 9 years earlier in 2008.

Two other once endangered bird species had successful nesting seasons:

- 63 peregrine falcons fledged
- 93 common loons fledged, (well above the previous annual record of 81)



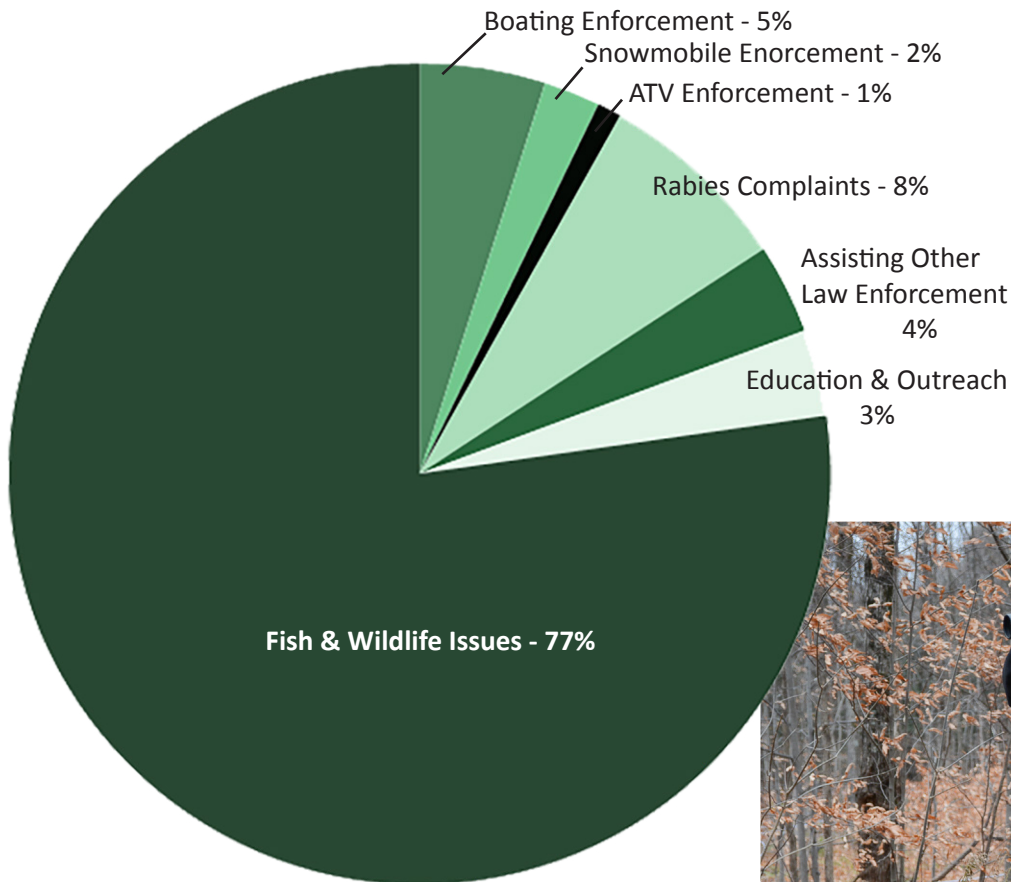


## WARDENS SERVE THE PUBLIC



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

### Warden Activities Benefitting the Public



**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; assisting other law enforcement agencies; and participating in search and rescue operations.





## 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.**

### Helping Others in Need

State Game Warden Amsden checked two young adults camping along the Passumpsic River this summer in St. Johnsbury. While warning them about poison ivy, he discovered they were homeless. Later that day and off duty, Warden Amsden returned with two bags of groceries. Months later, the two people came to the office to thank him. They had forgotten his name but wanted to let him know they had an apartment and jobs and that his kindness had made a difference in their lives.

### Sharing Expertise

After watching a fly fisherman from Massachusetts on the Black River fail to hook a fish after thirty minutes, State Game Warden Sargent decided to help. The angler was fishing a hole the Warden knew was loaded with fish because he had caught a bunch there earlier that morning while off duty. Sargent introduced himself, asked to see the man's fly box, picked a fly, adjusted his leader... and, as a result, the angler hooked up on his first cast. Warden Sargent even waded out and netted the nice rainbow.

### Rescuing Wildlife

Last winter, State Game Warden Watkin received reports of a deer struggling on the ice on Lake Harriman. Assuming it was injured, he went out across the slippery ice to find the deer simply couldn't gain traction. Deer can cause serious injury with their hooves, so attempting to carry it was out of the question. Instead, Warden Watkin spent the next 45 minutes gently sliding the deer to shore. The deer was none too pleased and attempted to fight him off, but getting to shore proved only half the battle. Being a reservoir, Lake Harriman has steep embankments of ice and cracks along the shore in the winter. Sure enough, the deer got a leg stuck in one of those cracks and Warden Watkin had to gingerly ease it out. The danger of the deer breaking a leg or alternatively Warden Watkin getting kicked in the face was real. Once the deer was freed, it refused to leave, despite coaxing. Warden Watkins remained for another half-hour with the deer until it finally wandered off into the woods.





FY 2019 GOVERNOR'S BUDGET RECOMMENDATIONS - PROGRAM PERFORMANCE MEASURES

AGENCY NAME: Agency of Natural Resources		
DEPARTMENT NAME: Vermont Department of Fish and Wildlife		
DIVISION NAME: Wildlife		
PRIMARY APPROPRIATION #	6120000000	
PROGRAM NAME	Land & Habitat	
PROGRAM NUMBER (if used)		
FY 2019 Appropriation \$\$	\$	24,148,778.00
Budget Amounts in Primary appropriation not related to this program:	\$	22,229,939.00
		SECONDARY APPROPRIATION #
TOTAL PROGRAM BUDGET FY 2019	\$	1,918,839.00
		n/a

POPULATION-LEVEL OUTCOME: (3) Vermont's environment is clean and sustainable.		Population-Level Outcomes Drop Down (scroll and select):
		(scroll down and select) (1) Vermont has a prosperous economy. (2) Vermonters are healthy. (3) Vermont's environment is clean and sustainable. (4) Vermont is a safe place to live. (5) Vermont's families are safe, nurturing, stable, and supported. (6) Vermont's children and young people achieve their potential. (7) Vermont's elders live with dignity in settings they prefer. (8) Vermonters with disabilities live in dignity in settings they prefer. (9) Vermont has open, effective, and inclusive government. (10) Vermont's State Infrastructure meets the needs of Vermonters, the economy and the environment.

POPULATION-LEVEL INDICATOR:	Acres of significant wildlife habitat protected through land use regulations that provides benefits to Vermont's fish, wildlife, plants, and public benefits and interests associated with them. This has important economic and quality-of-life benefits to Vermonters, as well as ecosystem services such as water filtration and flood control.	An Indicator is: A measurable condition of well-being for children, adults, families, communities. Examples: violent crime rate; median house price; unemployment rate; % of electric generation from renewable sources; % registered voters voting in general election; % structurally deficient bridges; etc. Not all performance measures have measurable indicators, although the performance measure may well inform the ultimate Outcome and/or the state of the Outcome..
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		Performance Measure Data (Calendar or Fiscal Year)					
		Performance Measures Types (scroll and select):					
Performance Measure A:	Acres of habitat impacted by regulated development (the objective is to minimize habitat loss).	(scroll down and select) 1. How much did we do? (a.k.a. quantity or output) (Good PM) 2. How well did we do it? (a.k.a. quality or efficiency) (Better PM) 3. Is anyone better off? (a.k.a. effectiveness or result/outcome) (Best PM)	2015	2016	2017	2018 (As reported last year)	2019 Forecast
Type of PM A:	1. How much did we do? (a.k.a. quantity or output) (Good PM)		27	409	233	432	453
Performance Measure B:	Habitat conserved or otherwise positively influenced through dept efforts in regulating development (the objective is to maximize these benefits through number of acres protected).	(scroll down and select) 1. How much did we do? (a.k.a. quantity or output) (Good PM) 2. How well did we do it? (a.k.a. quality or efficiency) (Better PM) 3. Is anyone better off? (a.k.a. effectiveness or result/outcome) (Best PM)	2015	2016	2017	2018 (As reported last year)	2019 Forecast
Type of PM B:	1. How much did we do? (a.k.a. quantity or output) (Good PM)		28	4248	4040	3172	4851
Performance Measure C:	Number of projects affecting significant wildlife habitat (the objective is to ensure that all projects subject to state or federal land use regulatory jurisdiction are considered with respect to potential effects on fish and wildlife habitat).	(scroll down and select) 1. How much did we do? (a.k.a. quantity or output) (Good PM) 2. How well did we do it? (a.k.a. quality or efficiency) (Better PM) 3. Is anyone better off? (a.k.a. effectiveness or result/outcome) (Best PM)	2015	2016	2017	2018 (As reported last year)	2019 Forecast
Type of PM C:	1. How much did we do? (a.k.a. quantity or output) (Good PM)		29	271	288	212	227
NARRATIVE/COMMENTS/STORY: Describe the program. Who/what does it serve? Are there any data limitations or caveats? Explain trend or recent changes. Speak to new initiatives expected to have future impact.		(scroll down and select) 1. How much did we do? (a.k.a. quantity or output) (Good PM) 2. How well did we do it? (a.k.a. quality or efficiency) (Better PM) 3. Is anyone better off? (a.k.a. effectiveness or result/outcome) (Best PM)	2015	2016	2017	2018 (As reported last year)	2019 Forecast
			31				

Department staff protect important fish and wildlife habitat, significant natural communities, and rare, threatened and endangered species by reviewing all Act 250, section 248, Vermont Wetland Permit Applications, lakeshore encroachment permits, Army Corps of Engineer Permits, timber harvest notifications with the Burlington Electric Department and Ryegate Associates electric generation facilities, among others. The Department provides technical guidance and expertise to the processes governing these regulations in order to avoid, minimize, and mitigate impacts to fish, wildlife, plants and their habitats. Trends are driven in large part by the number and size of development projects proposed on a year-to-year basis. Vermont loses over 450 acres a year of necessary wildlife habitat to regulated development, and only an estimated five (5) percent of development in Vermont is subject to Act 250 and section 248 jurisdiction. Habitat and natural communities protected through these efforts are essential for supporting Vermont's fish and wildlife, as well as related public interests. Habitat conserved through these efforts provide opportunities for the public to enjoy and appreciate fish, wildlife and the Vermont landscape, as well as provide a myriad of other ecological, social and economic benefits to the State of Vermont including water quality improvement and flood resilience.



FY 2019 GOVERNOR'S BUDGET RECOMMENDATIONS - PROGRAM PERFORMANCE MEASURES

AGENCY NAME:Agency of Natural Resources

DEPARTMENT NAME:Vermont Department of Fish and Wildlife

DIVISION NAME:Fisheries

PRIMARY APPROPRIATION #612000000

PROGRAM NAMEFish Culture

PROGRAM NUMBER (if used)

FY 2019 Appropriation \$\$24,148,778.00

Budget Amounts in Primary appropriation not related to this program: \$20,429,629.00

SECONDARY APPROPRIATION #

TOTAL PROGRAM BUDGET FY 2019 \$3,719,149.00n/a

POPULATION-LEVEL OUTCOME:(3) Vermont's environment is clean and sustainable.

POPULATION-LEVEL INDICATOR:Increasing recreational opportunities and boosting Vermont's tourist economy by providing stocked fish while minimizing cost, energy usage, and greenhouse gas emissions.

Performance Measure A:Greenhouse gas emissions abated over time (units: Mega Tons of CO2 emitted)

Type of PM A:1. How much did we do? (a.k.a. quantity or output) (Good PM)

Performance Measure B:Energy savings over time (units: million BTUs, or British Thermal Units)

Type of PM B:1. How much did we do? (a.k.a. quantity or output) (Good PM)

Performance Measure C:Financial savings over time (units: dollars)

Type of PM C:1. How much did we do? (a.k.a. quantity or output) (Good PM)

NARRATIVE/COMMENTS/STORY: Describe the program. Who/what does it serve? Are there any data limitations or caveats? Explain trend or recent changes. Speak to new initiatives expected to have future impact.

Vermont's five fish culture stations have recently undergone numerous energy updates through the State Resource Management Revolving Fund loan program. Solar panels have been placed at one fish culture station while other solar projects are planned to provide clean, sustainable energy that does not emit any greenhouse gases. There have also been a number of other energy efficiency updates to the fish culture stations, including the installation of water recirculation technology to minimize the need to heat water, the installation of energy efficient lighting and water pumping technology to reduce electricity usage, and the upgrade of heating systems to save on fuel oil and propane. These energy upgrades save approximately \$80,000 annually, which is enough energy every year to power the entire town of Grand Isle annually. With all of these energy efficiency projects totaled together, the Vermont fish culture program has abated enough greenhouse gas emissions to drive a passenger car around the world 327 times a year. This initiative within the Vermont fish culture stations not only serves to promote a clean environment for future generations but it also in the long run serves to reduce operational costs by reducing the Department's reliance on fossil fuels and electricity. Overall, this means a more cost effective fish culture program for Vermonters.

Population-Level Outcomes Drop Down (scroll and select):

Population-Level Outcomes Drop Down (scroll and select):

Performance Measures Types (scroll and select):

Performance Measure Data (Calendar or Fiscal Year)

2015201620172018 (As reported last year)2018 Projection2019 Forecast

2730503050305030503050

2015201620172018 (As reported last year)2018 Projection2019 Forecast

2830503050305030503050

2015201620172018 (As reported last year)2018 Projection2019 Forecast

298100081000810008100081000

2015201620172018 (As reported last year)2018 Projection2019 Forecast

31