Furbearer Conservation and Management in Vermont 2020

Maintaining wildlife species and their habitats for future generations





Vermont Fish & Wildlife Department | Furbearer Management Program 100 Mineral Street, Suite 302 Springfield, VT 05156-3168 www.vtfishandwildlife.com

Furbearer Program - Table of Contents

	Vermont's Furbearers	<u>1</u>
	Vermont Fish & Wildlife Furbearer Recovery Efforts	<u>2</u>
	Regulated Trapping and Its Role	<u>3</u>
	Population Control	<u>4</u>
	Human/Wildlife Conflicts	<u>5</u>
	Protecting Endangered Species	<u>6</u>
	Research, Monitoring & Recovery	7
	Best Management Practices	<u>8</u>
.11	Monitoring Populations	<u>9</u>
	Mandatory Annual Furdealer Reports	<u>10</u>
	Mandatory Annual Trapper Mail Survey	<u>11</u>
	Catch Per Unit Effort	<u>12</u>
	Mandatory Pelt-tagging Records	<u>14</u>
	Bobcat Harvest and Distribution Data	<u>15</u>
	Fisher Distribution Data	<u>17</u>
	Otter Distribution Data	<u>18</u>
Q	Monitoring Rare Furbearers	<u>19</u>
7	Protecting Critical Wetland Habitats	<u>22</u>
	Threats	<u>23</u>

Furbearer Program

Vermont's Furbearers

Furbearers are managed for all Vermonters for their intrinsic and ecological values, the value placed on them by the public, and to monitor those that are hunted and/or trapped. The term furbearer refers to a suite of mammal species which have historically been valued or pursued primarily for their fur. Seventeen species are legally classified as furbearers in Vermont.

Status of Vermont's 17 Furbearer Species

Species	State Rank	State/Fed Status	Hunting Season	Trapping Season
Bobcat	S5	furbearer	Jan. 10 - Feb. 7	Dec.1-16
Red & Gray Fox	S5	furbearer	4th Sat. in Oct 2nd Sun. in Feb.	4th Sat. in Oct Dec. 31
Raccoon	S5	furbearer	Oct. 14 - Dec. 31	4th Sat. in Oct Dec. 31
Muskrat	S5	furbearer	March 20 - April 19	4th Sat. in Oct March 31
Coyote, Opossum, Skunk, Ermine	S5	furbearer	No Closed Season	4th Sat. in Oct Dec. 31
Long-tailed Weasel	S3S4	furbearer	No Closed Season	4th Sat. in Oct Dec. 31
Beaver/Otter	S5	furbearer	No Open Season	4th Sat. in Oct March 31
Mink	S5	furbearer	No Open Season	4th Sat. in Oct Dec. 31
Fisher	S5	furbearer	No Open Season	4th Sat. in Oct Dec. 31
American Marten	S1	State endangered furbearer	No Open Season	No Open season
Lynx	S1	State endangered federally threat- ened furbearer	No Open Season	No Open Season
Eastern Mountain Lion	SH	State endangered federally endangered	No Open Season	No Open Season
Wolf	SX		No Open Season	No Open Season

State Ranking Codes - S1: Very Rare | S2: Rare | S3: Uncommon | S4: Apparently Secure | S5: Common | SH: Historic | SX: Extirpated



The Vermont Fish & Wildlife Department's (VFWD) mission is the conservation of fish, wildlife, plants, and their habitats for the people of Vermont.



Bobcat

The furbearer program's goal is to maintain sustainable furbearer populations for future generations and to maintain public support for their important value as part of a healthy and balanced ecosystem.

Vermont Fish & Wildlife Furbearer Recovery Efforts

Many furbearer species were extirpated in the state by the late 1800s. Vermont Fish & Wildlife Department worked to recover many of these iconic species:





Beaver - 1920 to 1940s

Fisher - 1950s/60s

It is likely that many species such as bobcat, coyote, red fox, and raccoon are more common today than they were prior to European settlement.





American Marten -1989 to 1991

The department also intensively monitors threatened and endangered species:



Marten - 2016 to 2021



Lynx - 2016 to 2019

Trapping is Highly Regulated

- Regulated trapping has never caused a species to become threatened or endangered since regulated trapping began.
- Trapping is managed through scientifically verified regulations that are strictly enforced by trained conservation enforcement officers.
- State wildlife agencies continually review and develop rules, regulations, education programs, and capture methods that consider animal welfare, while ensuring our goal of providing sustainable furbearer populations for future generations.
- Regulated trapping provides many benefits including:
 - reducing wildlife damage to crops and property
 - reducing threats to human health and safety
- Most of the animal can be used—as clothing, food, or other useful products

Furbearer species provide a particularly complex challenge for management, conservation, and restoration, in part, because regulated trapping is both a critical management tool and an often misunderstood and maligned activity.



How the general public values furbearers and desires to conserve them is as diverse as the species themselves.

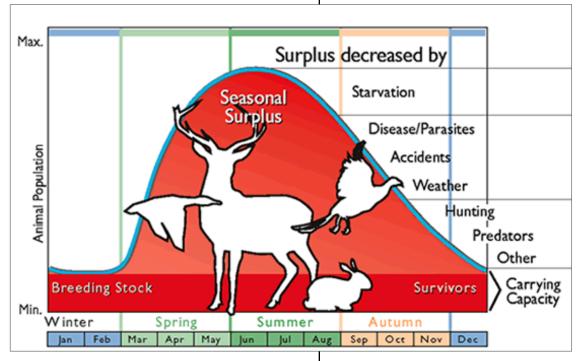
Role of Regulated Trapping–Population Control

Not all furbearer populations need to be managed, but....

- All furbearer populations are dynamic—always in a state of flux based on food availability, habitat quality, and other environmental factors.
- Regulated trapping is the most efficient and practical means available to accomplish localized population reductions, at limited cost to the public—and in some cases replaces natural predation.

Regulated trapping can help to keep populations of some species at healthy levels and within carrying capacity.

- Human altered landscapes benefit some species including skunks, raccoons, foxes, and coyotes. Regulated trapping is the most effective tool for maintaining these species in balance with the modified landscape.
- The department's primary management tool is to conserve habitat and minimize the impacts of human development on wildlife.



Some species, like beaver, often exceed their cultural carrying capacity (the willingness of their human neighbors to tolerate them) before they reach their biological carrying capacity.



Role of Regulated Trapping–Reducing Human/Wildlife Conflicts

Reducing Human/Wildlife Conflicts

- All native furbearers have intrinsic, ecological, cultural, utilitarian, and economic value to many Vermonters.
- People tend to devalue these animals if they perceive them to be a threat to themselves, their families, their livestock or pets, or their property.
- Managing furbearers to maintain public support for the protection of their habitats and for sustainable populations is the goal of the biologist.
- Although non-lethal methods are part of an integrated response to furbearer threats or damage, regulated trapping and/or hunting can also be a tool to address conflicts—often at limited or no cost to the landowner.

Regulated trapping helps minimize property damage and maintain the public's appreciation for wildlife rather than seeing it as nuisance.



Protecting Endangered Wildlife

- There are only a few remaining turtle nesting beaches in Vermont that are critical for map turtles and the state-threatened spiny softshell turtle reproduction. One skunk or raccoon can wipe out an entire population of turtles by going from nest to nest eating the eggs.
- In addition to placing fencing over the sand to prevent some predator damage, biologists place traps around these nesting beaches to target skunks and raccoons.
- Many islands along the coast of Maine provide critical habitat for colonial-nesting seabirds including

the threatened Atlantic Puffin, Razorbill, and Arctic Tern. Mammalian predators such as mink and river otter have found their way to several of the islands often resulting in abandonment of the site by the birds and/or significant loss of adults and chicks.

The use of modern traps and trapping systems has been a valuable tool in helping to support the long-term investment of state and federal agency staff who have been working effectively to protect and restore threatened and endangered nesting turtle and sea bird populations.

Protecting spiny softshell turtle nests

Regulated trapping has been used as an essential tool for the protection and reintroduction of rare, threatened and endangered species (RT&E).

Reintroduction of wolves in the west.



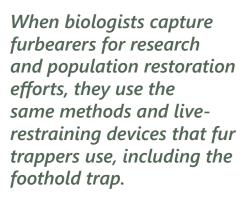


Research and Population Monitoring

- The goal of research and monitoring efforts is to capture and release animals unharmed. Many of the same trap types used by trappers are deployed in these research efforts because scientists believe they are the most efficient and stand the best chance of doing very little harm to the animal.
- Vermont researchers used foothold traps to live-trap and restrain coyotes and foxes for two radio-collar studies in the 1980s. In almost all cases, the animals were collared and released unharmed. Box traps are not effective on canids and would not have allowed for the capture of adequate numbers.
- Vermont researchers used both cage traps and BMP foothold traps to capture bobcats for a habitat study in the early/mid 2000s. The

bobcats were subsequently collared and released unharmed. Subsequent monitoring of these bobcats indicated no long-term issues.

- Biologists have a tremendous stake in ensuring that the animals they livetrap for conservation live long and healthy lives.
- Foothold traps are sometimes used to capture rare or endangered species unharmed so that the animals can be reintroduced into favorable habitats to reestablish healthy populations.
 - Many states around the country have released live-trapped river otter in a very successful nationwide otter restoration program.
 - Foothold traps have also been used to successfully restore wolf populations in several regions of the United States.
- Trappers in Maine participated in two successful Vermont reintroductions:
 - Fisher in the 1950s and 1960s
 - American marten in 1989, 1990 and 1991





Vermont researchers used BMP foothold traps to capture bobcats for a habitat study and found no long-term issues following release.

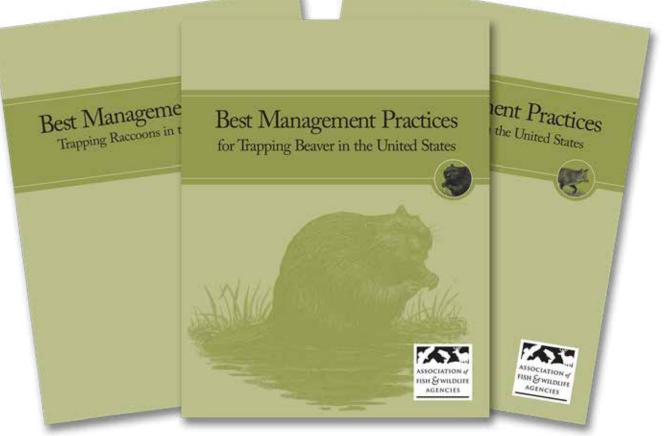
Role of Regulated Trapping–Best Management Practices

But What About Animal Welfare? Management Practices for Trapping

- State fish and wildlife departments and most of the public including trappers are concerned about animal welfare and the sustainability of wildlife populations. Because of our concern for the welfare of animals, the department and trappers participated in a national scientific research effort to improve and modernize trapping practices (AFWA, 2006).
- Trapping Best Management Practices (BMPs) are carefully researched recommendations designed to ensure animals are humanely captured. Developed as part of the largest trap research effort ever conducted, BMPs feature the latest scientific information about trapping techniques and equipment.
- Vermont participated in this nationwide study for six to eight years. Veterinarians examined many thousands of animals that had been trapped for signs of injury. Traps meeting Best Management Practices (BMPs) criteria had to pass rigorous tests of welfare, selectivity, efficiency, safety, and practicability.
- Vermont trappers are transitioning to traps and methods which have been documented to cause minimal injury or distress.



Modern traps are nothing like the rusted old, toothed devices that many people picture. They have been developed through scientific research that carefully considers the welfare of the animal.



Data Collection and Reporting

The Vermont Fish & Wildlife Department uses a variety of methods to annually collect data for tracking the harvest, population status and occurrence of Vermont's furbearer species. These methods include:

- Mandatory Annual Furdealer Reports
- Mandatory Annual Trapper Mail Survey
- Mandatory pelt tagging and carcass collection of fisher, otter and bobcat
- Collection of muskrat sex and age data
- Collection and analysis of genetic and/or disease samples
- Detection of rare furbearers through camera surveys

The following pages include the data that has been collected.



Sampling fisher carcasses from trappers for canine distemper and rodenticides.

The department uses a variety of methods to annually collect data on Vermont's furbearer species.



Pelt tagging and carcass collection of fisher.



Determining sex and age of muskrat pelts.

Summary of Mandatory Annual Furdealer Reports, 2010-11 through 2019-20*

	Season	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	10-year Average
Mink		142	179	244	88	146	87	65	14	26	0	99
Raccoon		119	130	243	164	138	66	63	96	36	0	105.5
Muskrat		722	1,209	1,061	1,044	678	722	374	280	162	6	626
Skunk		26	44	7	6	17	3	7	12	19	0	14
Opossum		5	3	18	35	7	3	2	7	1	0	8
Weasel	-	20	5	51	3	15	1	9	0	7	0	11
Coyote	AT)	127	191	128	132	212	172	95	82	106	18	126.3
Red Fox		38	73	87	66	53	45	44	43	42	15	51
Grey Fox	R	31	65	77	62	24	26	11	15	15	1	33
Bobcat		8	18	19	16	12	14	12	13	17	2	13
Fisher	PC	145	138	189	74	68	76	50	48	105	0	89
Otter	6	42	104	68	29	28	25	6	23	23	3	35
Beaver		209	493	564	355	263	261	184	143	176	4	265
Total Est Harvest	timated	1,634	2,652	2,756	2,074	1,661	1,501	922	776	735	49	1,476

* Tracks in-state pelt sales but excludes pelts sold out-of-state.

These data are subject to change as records continue to be received and reviewed.

Summary of Mandatory Annual Trapper Mail Survey derived estimated* furbearer harvests, 2010-11 through 2019-20

	Season	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	10-year Average
Mink		620	601	749	748	800	299	212	168	95	122	441.4
Raccoon		533	850	1,044	1,004	953	648	382	504	442	267	662.7
Muskrat		4,785	4,222	10,770	8,737	9,053	8,199	2,490	1,558	1,291	620	5,172.5
Skunk		297	245	385	218	218	241	204	106	183	88	218.5
Opossum		44	99	139	61	214	79	63	109	56	27	89.1
Weasel	-	28	26	340	36	92	11	72	14	54	18	69.1
Coyote	त्त	407	494	612	726	626	462	378	511	357	293	486.6
Red Fox		119	184	229	306	270	181	126	221	118	78	183.2
Grey Fox	R	77	109	175	130	81	69	31	60	51	26	80.9
Bobcat		32	55	80	116	55	51	54	44	39	37	56.3
Fisher	R	478	407	588	359	432	235	213	190	239	165	330.6
Otter	6	175	234	269	246	154	155	113	111	73	92	162.2
Beaver	0	865	1,472	2,125	2,139	1,504	1,789	1,198	865	776	696	1,342.9
Total Est Harvest	imated	8,460	8,998	17,505	14,826	14,452	12,419	5,536	4,461	3,774	2,529	9,296

* Total reported harvest multiplied by correction factors until 2017-18 season when figures represent those reported from the mandatory survey. These data are subject to change as records continue to be received and reviewed.

The department monitors furbearer population trends through the annual collection and assessment of trapper derived Catch per Unit of Effort (CPUE) data. It is an indirect index of population trends that helps biologists track the growth or decline of furbearer populations over time.

The table shows statistically summarized regulated trapping numbers for furbearers that are standardized according to trapping effort. This index is universally used across the world to measure capture rates for trapping, and is similarly used for other applications including wildlife field camera surveys, hunter sighting rates, etc.

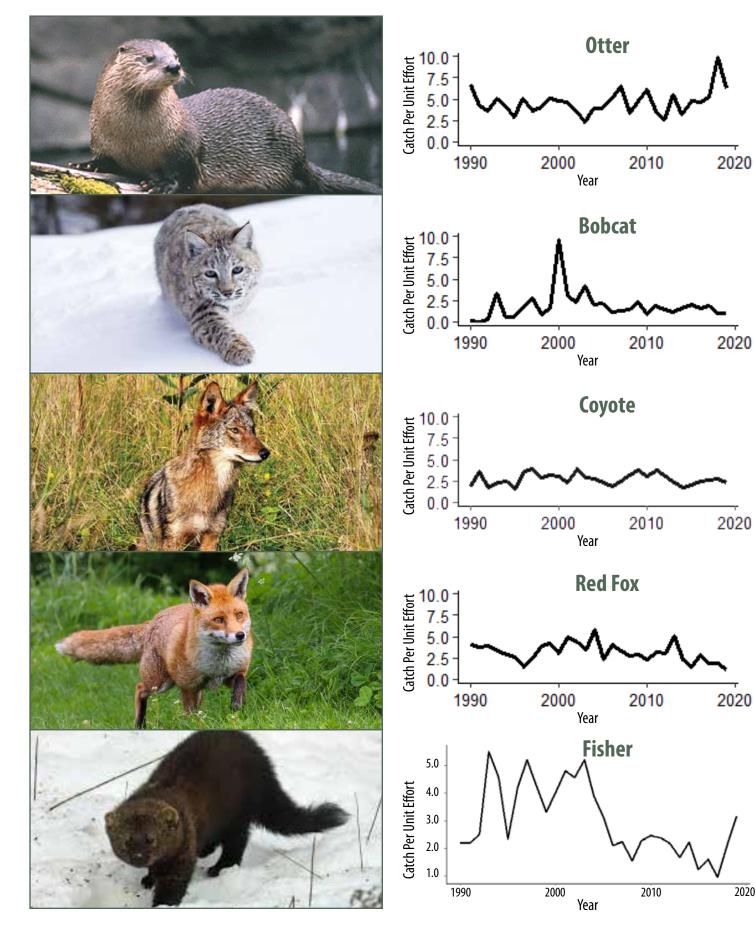
In the case of trapping, CPUE is the average number of animals trapped per 100 trap nights, where trap nights equals the number of traps set multiplied by the number of days they were deployed (e.g. 5 traps X 6 days = 30 trap nights). The table below shows these statistically derived CPUE values for Vermont furbearers over the last ten years.

	Season	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	10-year Average
Mink		3.64	4.15	5.1	4.24	4.45	2.37	4.44	3.23	4.43	4.22	4.03
Raccoon		10.89	11.49	7.77	4.96	8.83	6.05	7.84	5.99	11.69	7.72	8.32
Muskrat		13.21	18.5	13.86	13.16	13.76	15.15	14.56	14.25	14.27	11.08	14.18
Skunk		29.18	15.75	11.69	11.06	10.87	16.52	12.72	16.57	23.98	15.04	16.34
Opossum		8.57	2.52	12.36	13.27	11.96	12.39	12.98	13.92	33.5	31.97	15.34
Weasel	7	10.85	12.72	8.63	3.22	4.15	1.1	9.16	2.6	14.84	9.5	7.68
Coyote	ली	3.14	3.87	3.1	2.42	1.75	2.04	2.45	2.66	2.8	2.28	2.65
Red Fox		2.28	3.12	3.1	5.04	2.26	1.44	2.88	1.81	1.89	1.11	2.49
Grey Fox	R	5.77	2.6	2.97	2.04	1.12	2.02	2.85	2.47	2.4	1.75	2.6
Bobcat	~	0.87	1.86	1.53	1.17	1.67	2.09	1.74	1.97	1.07	0.99	1.5
Fisher	A	2.46	2.38	2.19	1.66	2.21	1.23	1.55	0.94	2.1	3.08	1.98
Otter	6	6.17	3.69	2.62	5.57	3.24	4.76	4.84	5.34	9.92	6.3	5.24
Beaver		14.77	12.39	15.07	11.76	14.1	15.9	19.83	12.92	14.36	17.94	14.9

Catch Per Unit Effort (CPUE) for 2010-11 through 2019-20

These data are subject to change as records continue to be received and reviewed.

Catch Per Unit of Effort (CPUE) Trends for 1990 through 2020



Mandatory Pelt-tagging Records* Bobcat, Fisher and Otter for 2010-11 through 2019-20

	Season	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	10-year Average
Bobcat	~	68	95	150	154	116	93	107	84	100	117	108.4
Fisher		430	434	539	417	428	263	231	184	248	198	337.3
Otter	C	175	234	269	246	154	155	113	128	93	85	165.2

*Includes harvested, road-killed, nuisance, incidental, illegal and unknown take. These data are subject to change as records continue to be received and reviewed.



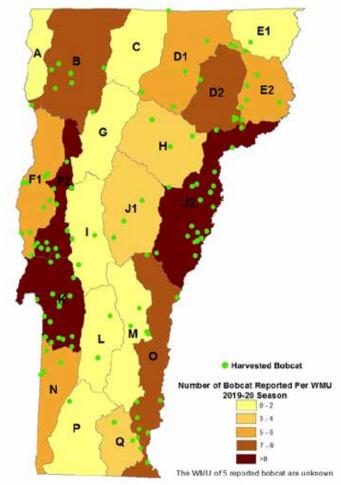


		16	16 Day Trapping Season*		29	Day Hunting Sea	Miscellaneous Harvest**			
Season	Total Harvest	Number	Average Catch	Percent of	Number	Average Catch	Percent of	Number	Percent of	
		Trapped	Per Day	Total Harvest	Hunted	Per Day	Total Harvest	Reported	Total Harvest	
2010-11	68	35	2.19	51	24	0.83	35	9	13	
2011-12	95	51	3.19	54	31	1.07	33	13	14	
2012-13	150	87	5.44	58	44	1.52	29	19	13	
2013-14	154	97	6.06	63	39	1.34	25	18	12	
2014-15	116	55	3.44	47	46	1.59	40	15	13	
2015-16	93	45	2.81	48	34	1.17	37	14	15	
2016-17	107	48	3	45	30	1.03	28	29	27	
2017-18	84	40	2.5	48	29	1	35	15	17	
2018-19	100	48	3	48	29	1	29	23	23	
2019-20	117	46	2.88	39	58	2	50	13	11	
10-year Average	108.4	55.2	3.451	50.1	36.4	1.255	34.1	16.8	15.8	

Summary of Bobcat Harvest by Season, 2010-11 through 2019-20

* Vermont has had a 16-day trapping season and a 29-day hunting season since 1996.

**Includes road-killed, nuisance, incidental, illegal and unknown take. These data are subject to change as records continue to be received and reviewed



Bobcat Harvest Distribution

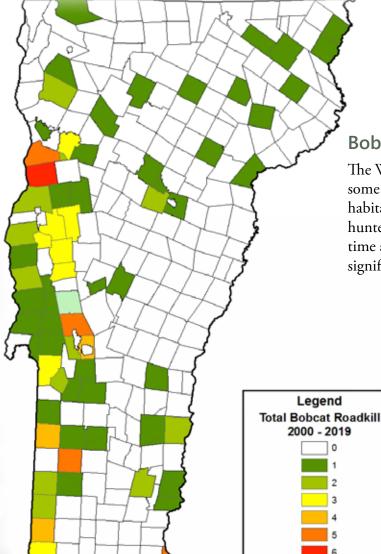
Distribution of 117 Bobcat Reported During the 2019-20 Season

Bobcats are well distributed throughout Vermont with the heaviest harvests typically recorded in the northern Taconic Mountains and the Lake Champlain Valley. To a lesser extent, they are taken along the upper Connecticut River Valley.

The distribution of the harvest is heavily influenced by where hunting and regulated trapping effort is expended. However, the evaluation of harvest distribution data over time shows that bobcats exist in each of the state's 21 WMUs and the distribution has remained relatively stable through time.

Furbearer Program–Bobcat Distribution Data

Number of Road-Killed Bobcat Pelts Tagged and Collected, 1999-2018

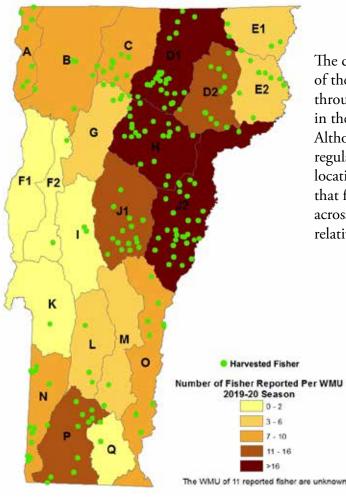


Bobcat Road Kill by Town 1999-2019

The WMUs with the heaviest harvest also correspond to some of the regions of the state where excellent bobcat habitat has been documented and acknowledged by hunters, trappers and department biologists for some time and coincides with where we have seen our most significant road kills.

Furbearer Program–Fisher Distribution Data

Fisher Harvest Distribution



Distribution of 198 Fisher Reported During the 2019-20 Season

The distribution of the 2019-20 fisher harvest was again reflective of the long-term harvest distribution. Fisher are well dispersed throughout the state with the heaviest harvests typically occurring in the WMUs situated along and east of the Green Mountains. Although the distribution of the harvest is influenced by where regulated trapping effort is expended, the harvest maps reflect the location of the highest populations of fisher and minimally show that fisher exist in each of the state's 21 WMUs. The distribution across the state of, effort for, and harvest of, fisher has remained relatively stable through time.

Independent Detection Rates for Fisher

Fisher-

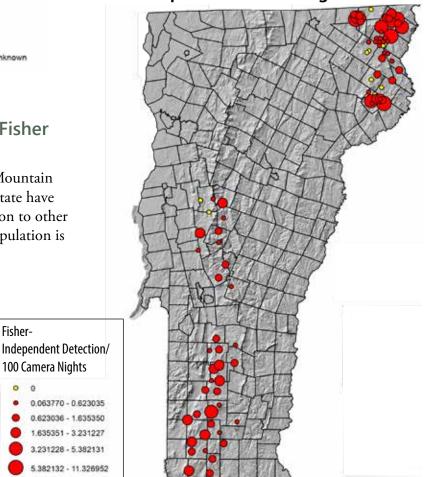
0

in Vermont 2014 to 2019

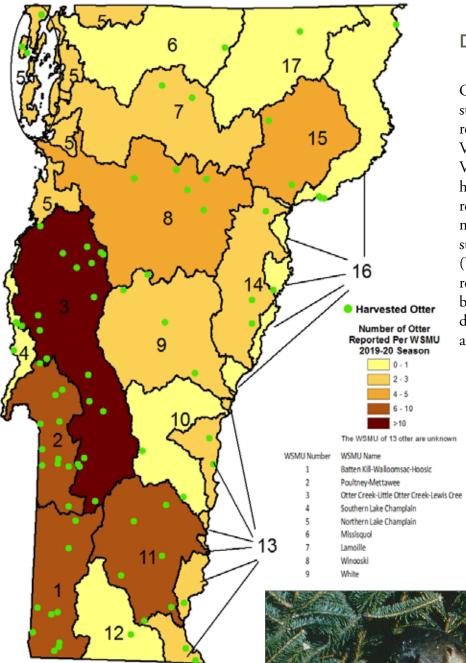
Camera surveys for marten and lynx on the Green Mountain National Forest and in the northeastern part of the state have shown relatively high fisher occupancy rates in relation to other carnivores. This supports the suggestions that the population is well distributed and stable in Vermont.

These data were derived from Canada lynx camera monitoring efforts conducted from 2014 through 2019. Detections were deemed independent when at least one hour lapsed between consecutive visits of a species to the camera site.





Furbearer Program–Otter Distribution Data



Otter Harvest Distribution

Distribution of 85 Otter Reported During the 2019-20 Season

Otter are well distributed throughout the state with the heaviest harvests typically recorded in the southern Lake Champlain Valley and the northern Connecticut River Valley. Although the distribution of the harvest is heavily influenced by where regulated trapping effort is expended, the map shows that otter exist in each of the state's 17 Watershed Management Units (WSMUs). There are WSMUs where regulated trapping pressure appears to be quite low. The relative stability of the distribution of harvest through time suggests a lightly trapped otter population.

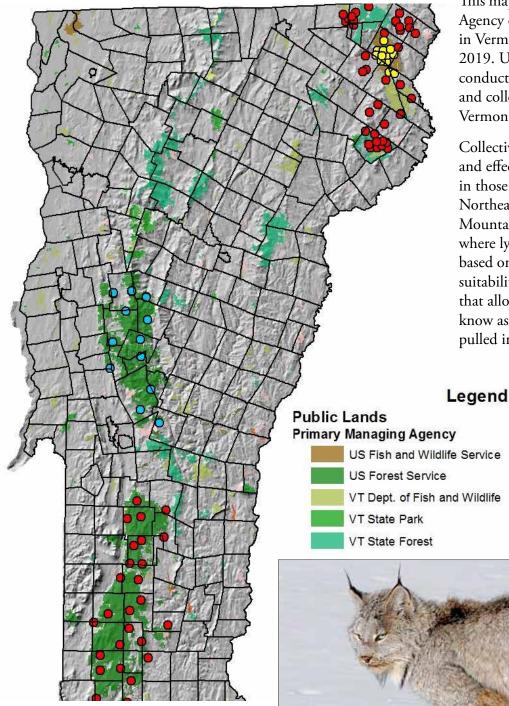
	The Hollo of 15 other are offender		
lumber	WSMU Name	WSMU Number	WSMU Name
	Batten Kill-Walloomsac-Hoosic	10	Ottauquechee-Black
	Poultney-Mettawee	11	West-Williams-Saxtons
	Otter Creek-Little Otter Creek-Lewis Cree	12	Deerfield
	Southern Lake Champlain	13	Lower Connecticut
	Northern Lake Champlain	14	Stevens-Wells-Waits-Ompompanoo
	Missisquol	15	Passumpsic
	Lamoille	16	Upper Connecticut
	Winooski	17	Lake Memphremagog
	White		



Furbearer Program– Monitoring Rare Furbearers

Canada Lynx

Canada Lynx Camera Monitoring Locations July 1, 2018 through June 30, 2019



This map shows the location and managing Agency of the 67 remote cameras deployed in Vermont from July 2018 through June 2019. Ultimately, VFWD staff and partners conducted a total of 191 camera checks and collected/tagged over 33,250 photos in Vermont.

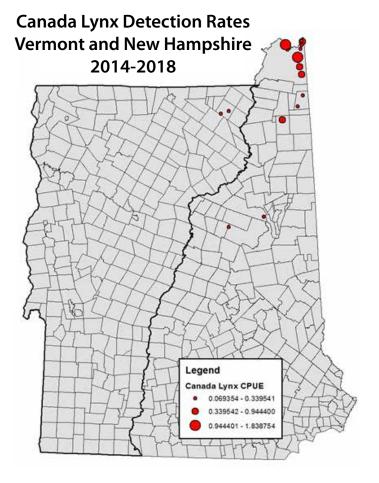
Collectively, these cameras provided an efficient and effective system for detecting lynx presence in those biophysical regions of the state (i.e. Northeastern Highlands, Northern Green Mountains and Southern Green Mountains) where lynx are deemed the most likely to occur based on proximity to core range, habitat suitability and the presence of patches of habitat that allow the species to move through, also know as dispersal corridors. The cameras were pulled in the late winter of 2019.

Camera Monitoring Sites Primary Managing Agency

- VFWD Camera Sites
- OUSFWS Camera Sites
- USFS Camera Sites



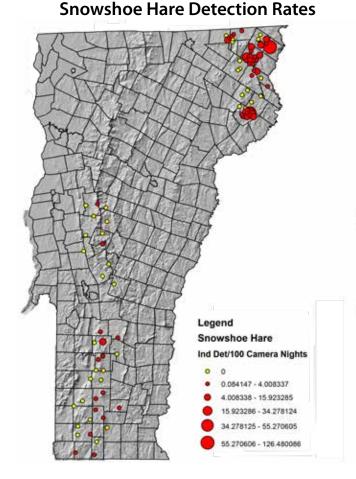
Furbearer Program– Monitoring Rare Furbearers



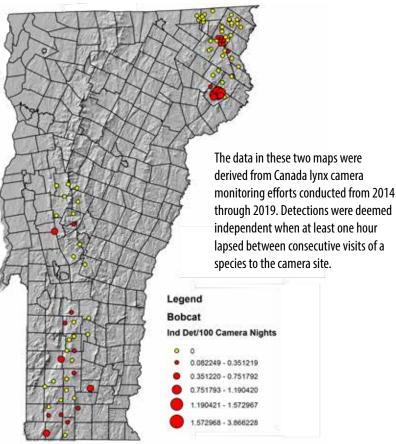
This map shows the approximate locations and respective lynx detection rates (i.e. number of independent detections per 100 camera nights) of the camera sites across New Hampshire and Vermont that detected lynx from 2014 until 2018.

The future presence of lynx in Vermont will depend on maintaining habitat connectivity between Vermont, New Hampshire, and Canada and mitigating the effects of climate change.

The maps below show the locations and density of prey species of significance (snowshoe hare) and competing carnivore species (bobcat) to lynx conservation in Vermont, as measured by the number of times field cameras captured photographs of snowshoe hare and bobcats over the course of the research study.

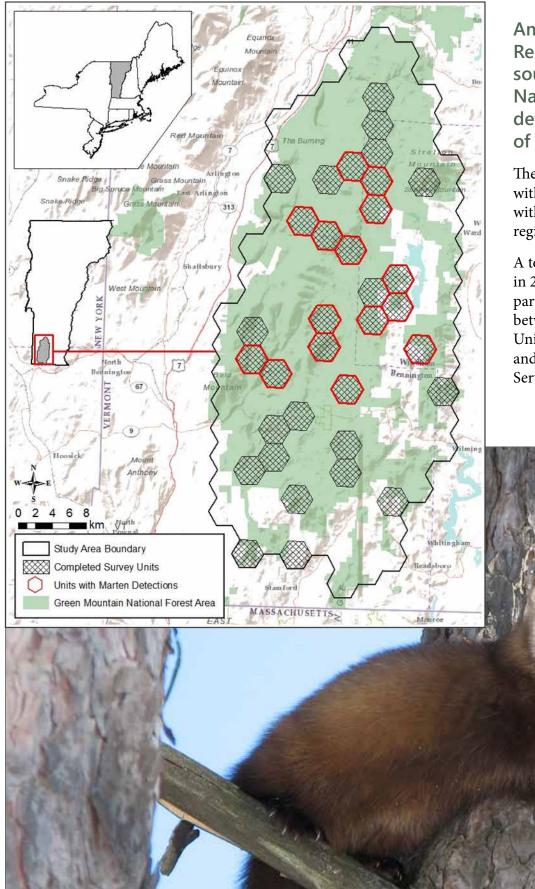


Bobcat Detection Rates



Furbearer Program– Monitoring Rare Furbearers

American Marten



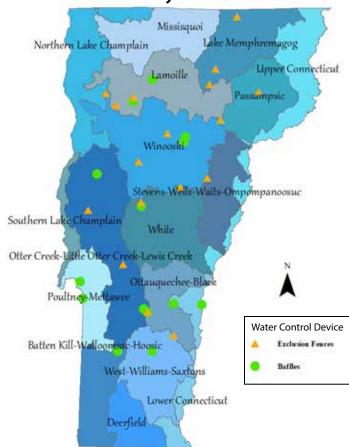
American Marten Research effort on the southern Green Mountain National Forest (GMNF) to determine the distribution of American marten.

The map shows the units surveyed with cameras and indicates units with marten detections within regions of the GMNF.

A total of 17 units were sampled in 2018-19 and 18 units in 2020 as part of a cooperative research effort between Central Connecticut State University, the Department of Fish and Wildlife, and the US Forest Service.



Furbearer Program–Protecting Critical Wetland Habitats



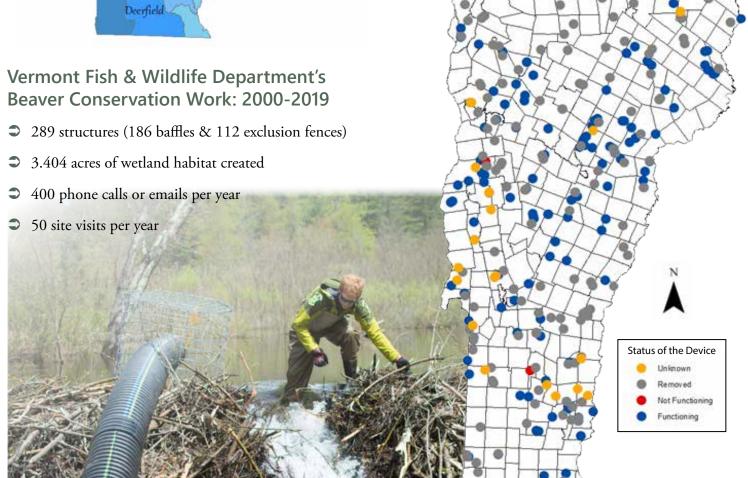
Functioning Water Control Devices Currently Installed by VFWD Staff

Beaver Baffle Program

One characteristic common to all furbearers is that as human-wildlife conflicts increase, so does the public's intolerance for them. The shift of public opinion of a particular furbearer from a valued member of the ecosystem to a nuisance species greatly hinders a biologist's ability to conserve this species in a structured, humane and sustainable way.

To protect the critical wetland habitats that beaver create the department established the beaver baffle program in 2000 to provide technical assistance to town road crews, state AOT, and private landowners. The map on the left depicts the 122 functioning water control devices currently installed by VFWD staff throughout Vermont.

Water Control Structures Installed 2000-2019



Furbearer Program

Threats

The biggest threats to furbearers are:

- Habitat loss and fragmentation
- Climate Change
- Invasive species
- Changing public attitudes

We must all work together to work to minimize these threats.





All species that are hunted and trapped in Vermont are thriving and doing well.

