

Furbearer Conservation and Management in Vermont 2022

Maintaining wildlife species and their habitats for future generations



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Vermont Fish & Wildlife Department's Furbearer Management Project Personnel

The Fish & Wildlife Department (VFWD) is devoted to the protection, conservation, and respectful and sustainable use of wildlife in Vermont, **for all Vermonters**, as guided by science and the law. Individually, we are also Vermonters with a variety of backgrounds and training bound by our commitment to the mission: *The conservation of fish, wildlife, and plants and the habitats they depend on for the people of Vermont.*

We care deeply about Vermont's wildlife and have spent our careers as advocates for both wildlife and the habitats they depend on. We also recognize that legal, regulated trapping still has a place here in the state—but we acknowledge that it's a complicated, controversial, and poorly understood activity by many. We urge you to explore this document and draw your own conclusions as to its scientific, social, and/or conservation benefits.



The Rest of Our Furbearer Management Team



Major Sean Fowler
Game Warden Deputy Chief



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Fish & Wildlife Biometrician





















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Furbearer Program



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

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 18 Furbearer Species

Species	State Rank	State/Fed Status	Hunting Season	Trapping Season
Bobcat	S5: Common	—	Jan. 10 - Feb. 7	Dec.1-16
Red & Gray Fox	S5: Common	—	4th Sat. in Oct. - 2nd Sun. in Feb.	4th Sat. in Oct. - Dec. 31
Raccoon	S5: Common	—	Oct. 14 - Dec. 31	4th Sat. in Oct. - Dec. 31
Muskrat	S5: Common	—	March 20 - April 19	4th Sat. in Oct. - March 31
Coyote, Opossum, Skunk, Ermine	S5: Common	—	No Closed Season	4th Sat. in Oct. - Dec. 31
Long-tailed Weasel	S3: Uncommon S4: Apparently Secure	—	No Closed Season	4th Sat. in Oct. - Dec. 31
Beaver/Otter	S5: Common	—	No Open Season	4th Sat. in Oct. - March 31
Mink	S5: Common	—	No Open Season	4th Sat. in Oct. - Dec. 31
Fisher	S5: Common	—	No Open Season	4th Sat. in Oct. - Dec. 31
American Marten	S1: Very Rare	State endangered	No Open Season	No Open season
Lynx	S1: Very Rare	State endangered Federally threatened	No Open Season	No Open Season
Eastern Mountain Lion	SH: Historic	State endangered Federally endangered	No Open Season	No Open Season
Wolf	SX: Extirpated		No Open Season	No Open Season



Beaver

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.

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

Furbearer Program—Recovery Efforts

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



American Marten -
1989 to 1991

The department also intensively monitors threatened and endangered species:



Marten - 2014 to present



Lynx - 2012 to present

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.



Raccoon

Furbearer Program—Legal Regulated Trapping

Trapping is Highly Regulated

- Legal regulated trapping has never caused a species to become threatened or endangered.
- Trapping is managed through scientifically verified regulations that are strictly enforced by trained conservation enforcement officers.
- The Vermont Fish & Wildlife Department continually reviews and develops rules, regulations, education programs, and capture methods that consider animal welfare, while ensuring our goal of providing sustainable furbearer populations for future generations.
- Legal 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 legal regulated trapping is both a critical management tool and an often misunderstood and maligned activity.



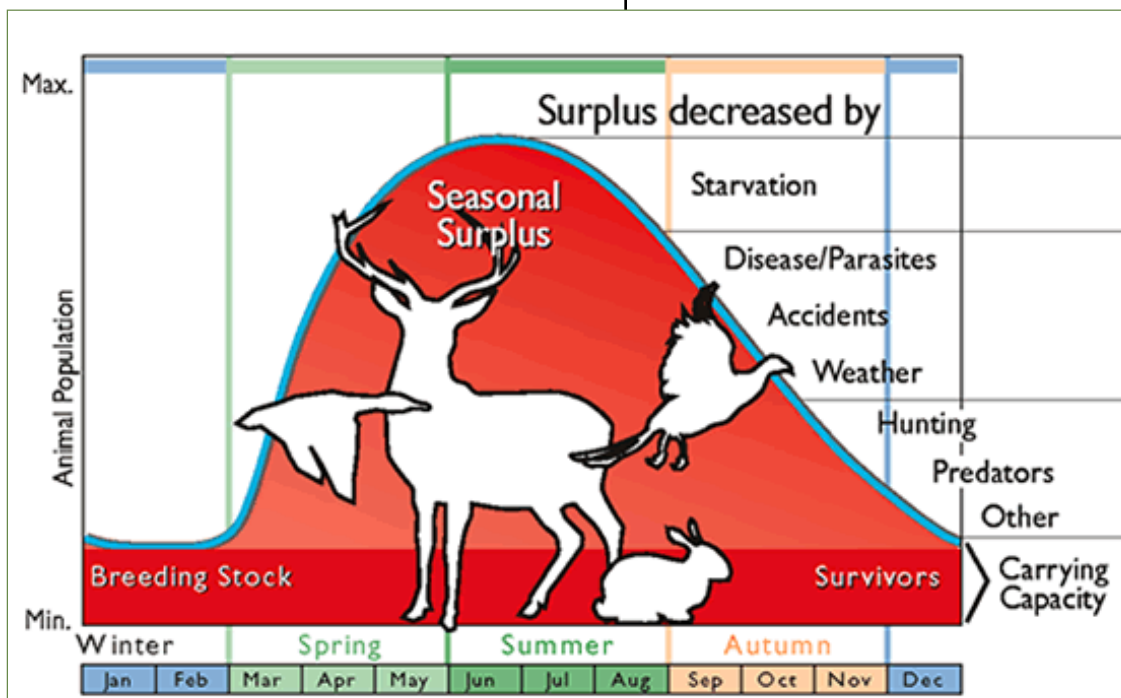
How the general public values furbearers and desires to conserve them is as diverse as the species themselves.

Role of Legal 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.
- Legal 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.
- Human altered landscapes benefit some species including skunks, raccoons, foxes, and coyotes. Legal 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.

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



- 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.

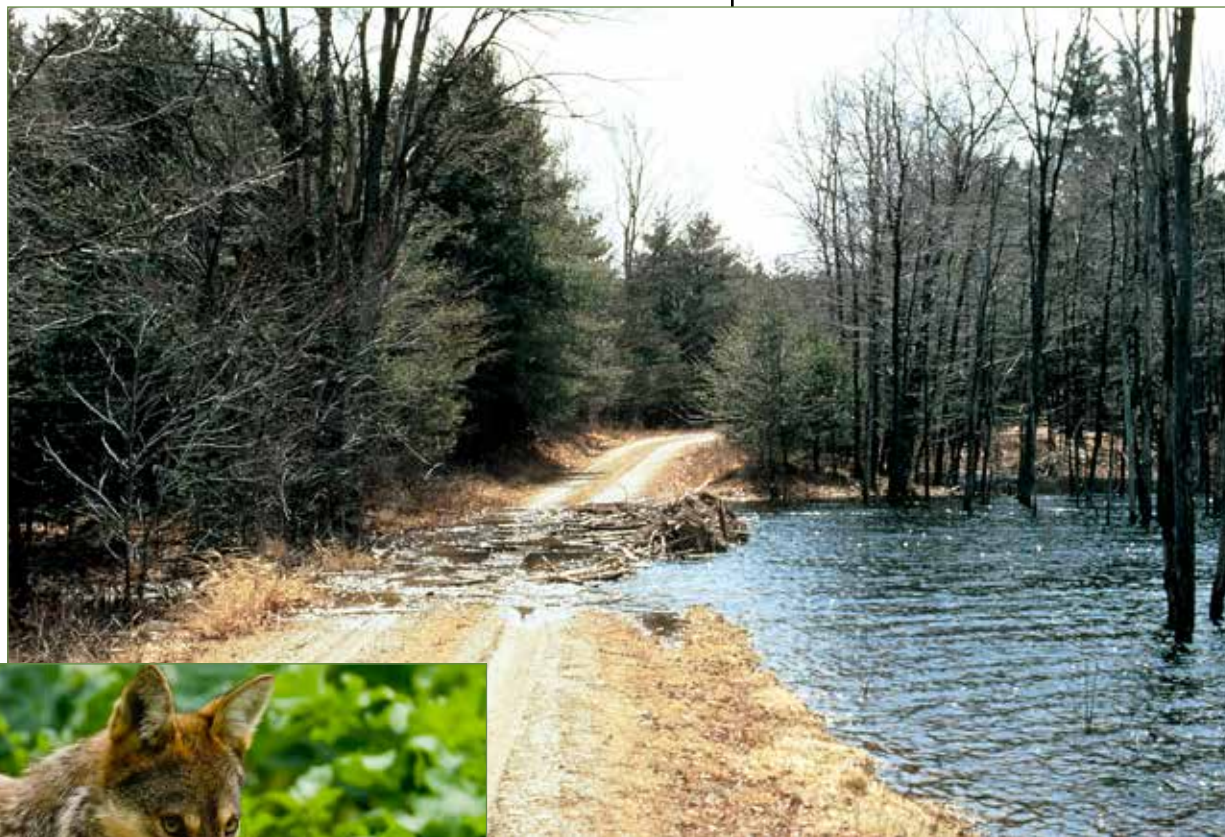


Beaver

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, legal regulated trapping and/or hunting can also be a tool to address conflicts—often at limited or no cost to the landowner.

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



People tend to devalue wildlife, like coyotes, if they consider them a threat to themselves or their pets.

Role of Legal Regulated Trapping–Protecting Endangered Species

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

Legal 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 trapped with the same foothold traps used by fur trappers.

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 live-trap 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

When biologists capture furbearers for research and population restoration efforts, they use the same methods and live-restraining devices that fur trappers use, including the foothold trap.



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

Role of Legal 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 more than six 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.



Furbearer Program—Monitoring Populations

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 Reporting
- 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.

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



Sampling fisher carcasses from trappers for canine distemper and rodenticides.
















Pelt tagging and carcass collection of fisher.



Determining sex and age of muskrat pelts.

Furbearer Program—Monitoring Populations

Summary of Mandatory Annual Furdealer Reports, 2012-13 through 2021-22*














Season	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year Average
Mink 	244	88	146	87	65	14	26	0	2	28	70.0
Raccoon 	243	164	138	66	63	96	36	0	8	13	82.7
Muskrat 	1,061	1,044	678	722	374	280	162	6	0	139	446.6
Skunk 	7	6	17	3	7	12	19	0	1	13	8.5
Opossum 	18	35	7	3	2	7	1	0	0	0	7.3
Weasel 	51	3	15	1	9	0	7	0	0	1	8.7
Coyote 	128	132	212	172	95	82	106	18	34	74	105.3
Red Fox 	87	66	53	45	44	43	42	15	8	18	42.1
Grey Fox 	77	62	24	26	11	15	15	1	9	17	25.7
Bobcat 	19	16	12	14	12	13	17	2	13	6	12.4
Fisher 	189	74	68	76	50	48	105	0	25	7	64.2
Otter 	68	29	28	25	6	23	23	3	14	10	22.9
Beaver 	564	355	263	261	184	143	176	4	0	135	208.5
Total Estimated Harvest	2,756	2,074	1,661	1,501	922	776	735	49	114	461	1,104.9

*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.

Furbearer Program—Monitoring Populations

Summary of Mandatory Annual Trapper Reporting derived estimated* furbearer harvests, 2012-13 through 2021-22

Season	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year Average
Mink 	749	748	800	299	212	168	95	125	184	113	349.3
Raccoon 	1,044	1,004	953	648	382	504	442	273	361	323	593.4
Muskrat 	10,770	8,737	9,053	8,199	2,490	1,558	1,291	686	716	1,325	4,482.5
Skunk 	385	218	218	241	204	106	183	89	105	116	186.5
Opossum 	139	61	214	79	63	109	56	27	66	84	89.8
Weasel 	340	36	92	11	72	14	54	18	46	25	70.8
Coyote 	612	726	626	462	378	511	357	298	352	341	466.3
Red Fox 	229	306	270	181	126	221	118	81	130	87	174.9
Grey Fox 	175	130	81	69	31	60	51	26	43	45	71.1
Bobcat 	80	116	55	51	54	44	39	37	44	41	56.1
Fisher 	588	359	432	235	213	190	239	166	167	121	271.0
Otter 	269	246	154	155	113	111	73	93	97	105	141.6
Beaver 	2,125	2,139	1,504	1,789	1,198	865	776	725	844	889	1,286.0
Total Estimated Harvest	17,505	14,826	14,452	12,419	5,536	4,461	3,774	2,644	3,155	3,615	8,239.3

* 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.














Furbearer Program—Monitoring Populations

The Fish & Wildlife 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 legal 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.

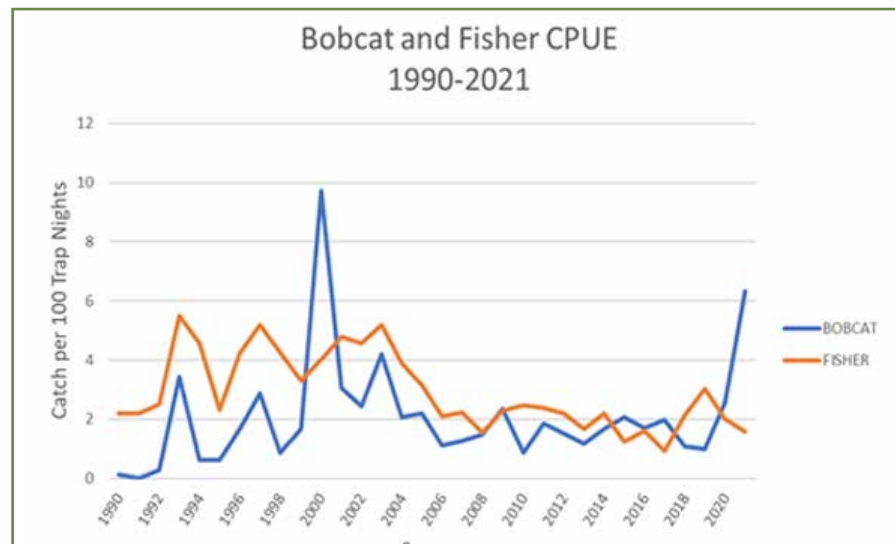
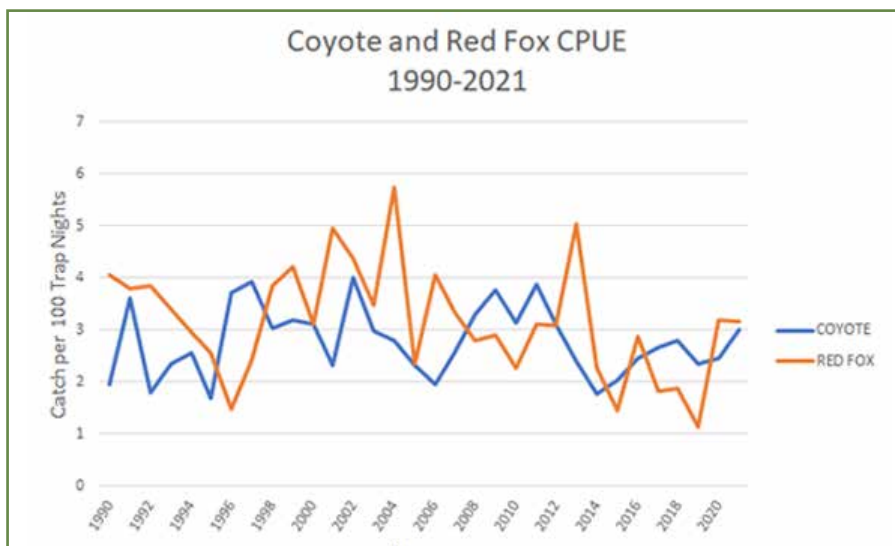
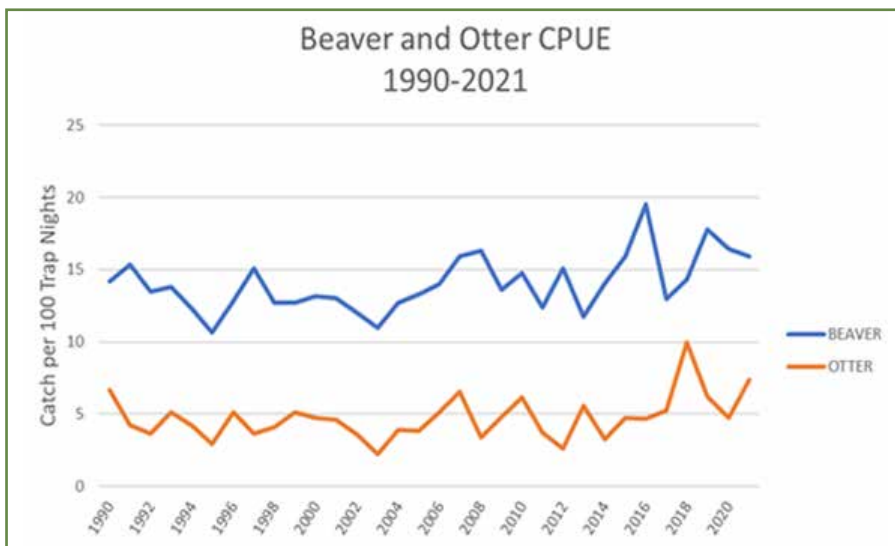
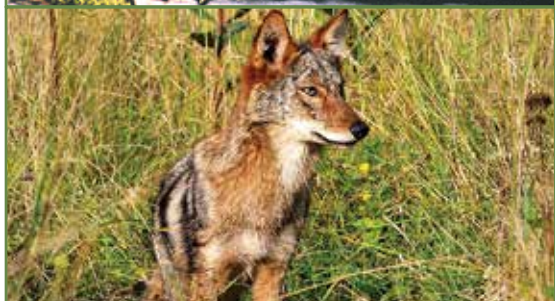
Catch Per Unit Effort (CPUE) for 2012-13 through 2021-22

Season	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-2022	10-year Average
Mink 	5.10	4.24	4.45	2.37	4.44	3.23	4.43	4.26	3.99	3.52	4.00
Raccoon 	7.77	4.96	8.83	6.05	7.84	5.99	11.69	7.83	9.63	8.87	7.94
Muskrat 	13.86	13.16	13.76	15.15	14.56	14.25	14.27	11.44	13.48	13.79	13.77
Skunk 	11.69	11.06	10.87	16.52	12.72	16.57	23.98	15.32	39.83	19.60	16.63
Opossum 	12.36	13.27	11.96	12.39	12.98	13.92	33.50	31.97	30.99	12.07	17.27
Weasel 	8.63	3.22	4.15	1.10	9.16	2.60	14.84	9.50	5.44	9.04	6.77
Coyote 	3.10	2.42	1.75	2.04	2.45	2.66	2.80	2.32	2.45	3.01	2.50
Red Fox 	3.10	5.04	2.26	1.44	2.88	1.81	1.89	1.13	3.20	3.16	2.59
Grey Fox 	2.97	2.04	1.12	2.02	2.85	2.47	2.40	1.75	2.06	1.34	2.10
Bobcat 	1.53	1.17	1.67	2.09	1.74	1.97	1.07	0.99	2.53	6.34	2.11
Fisher 	2.19	1.66	2.21	1.23	1.55	0.94	2.10	3.02	2.02	1.59	1.85
Otter 	2.62	5.57	3.24	4.76	4.84	5.34	9.92	6.25	4.71	7.35	5.46
Beaver 	15.07	11.76	14.10	15.90	19.83	12.92	14.36	17.75	15.76	16.04	15.42

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




Furbearer Program—Monitoring Populations

Catch Per Unit of Effort (CPUE) Trends for 1990 through 2021



Furbearer Program—Monitoring Populations

Mandatory Pelt-tagging Records* Bobcat, Fisher and Otter for 2012-13 through 2021-22

Season	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-2022	10-year Average
Bobcat 	150	154	116	93	107	84	100	117	111	109	114.1
Fisher 	539	417	428	263	232	184	248	198	179	109	279.7
Otter 	269	246	154	155	113	128	93	85	90	109	144.2

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



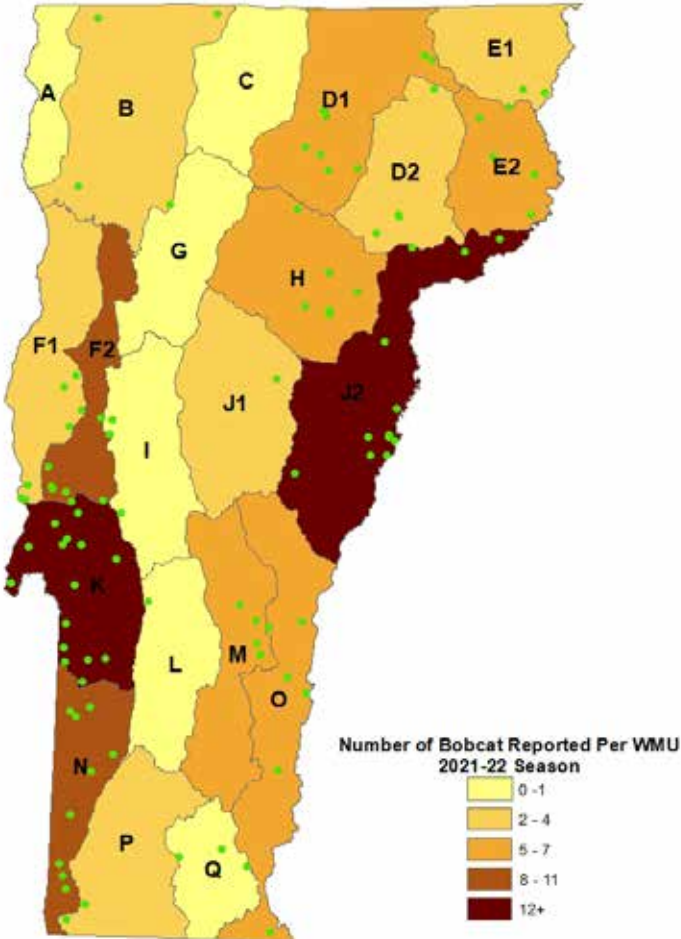
Summary of Bobcat Harvest by Season, 2012-13 through 2021-22

Season	Total Tagged & Collected	16 Day Trapping Season*			29 Day Hunting Season*			Miscellaneous Harvest**	
		Number Trapped	Average Catch Per Day	Percent of Total Harvest	Number Hunted	Average Catch Per Day	Percent of Total Harvest	Number Reported	Percent of Total Harvest
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	3.00	45%	30	1.03	28%	29	27%
2017-18	84	40	2.50	48%	29	1.00	35%	15	17%
2018-19	100	48	3.00	48%	29	1.00	29%	23	23%
2019-20	117	46	2.88	39%	58	2.00	50%	13	11%
2020-21	111	50	3.13	45%	40	1.38	36%	21	19%
2021-2022	109	37	2.31	34%	51	1.76	47%	21	19%
10-year Average	114.1	55.3	3.46	48%	40	1.38	35%	18.8	17%

*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

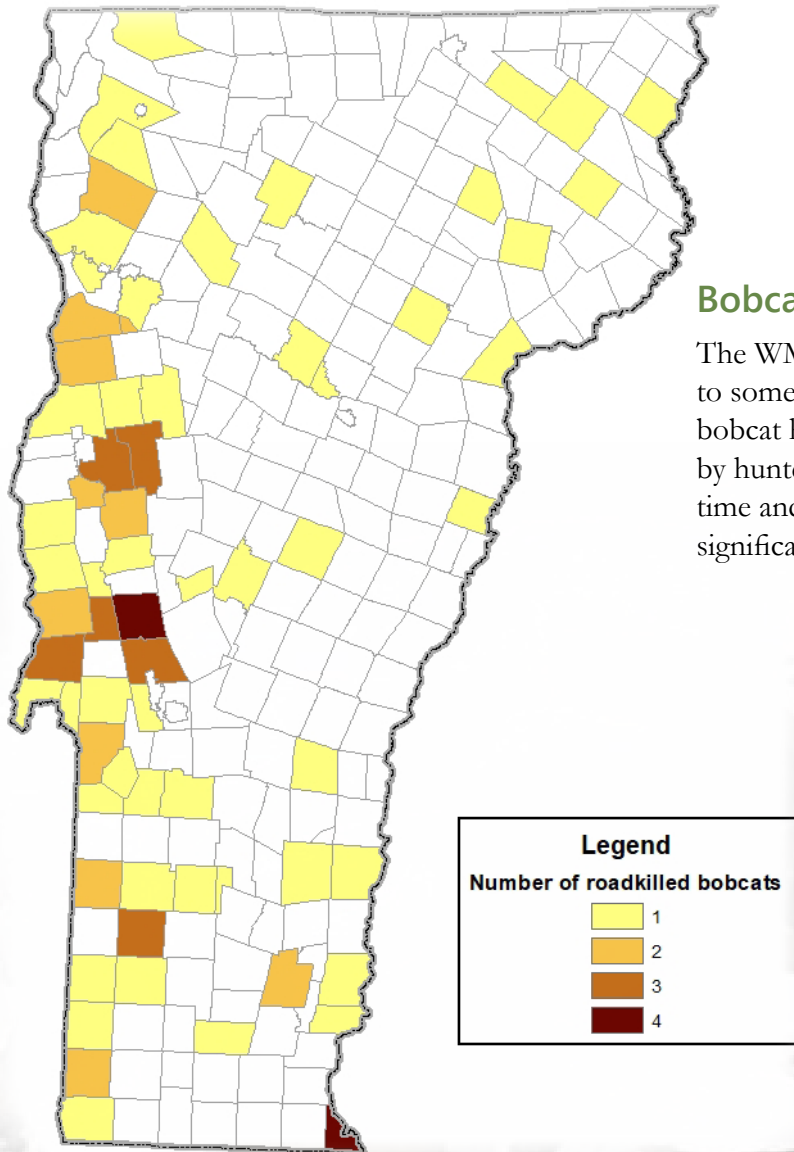


Distribution of 109 Bobcat Reported During the 2021-22 Season

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.

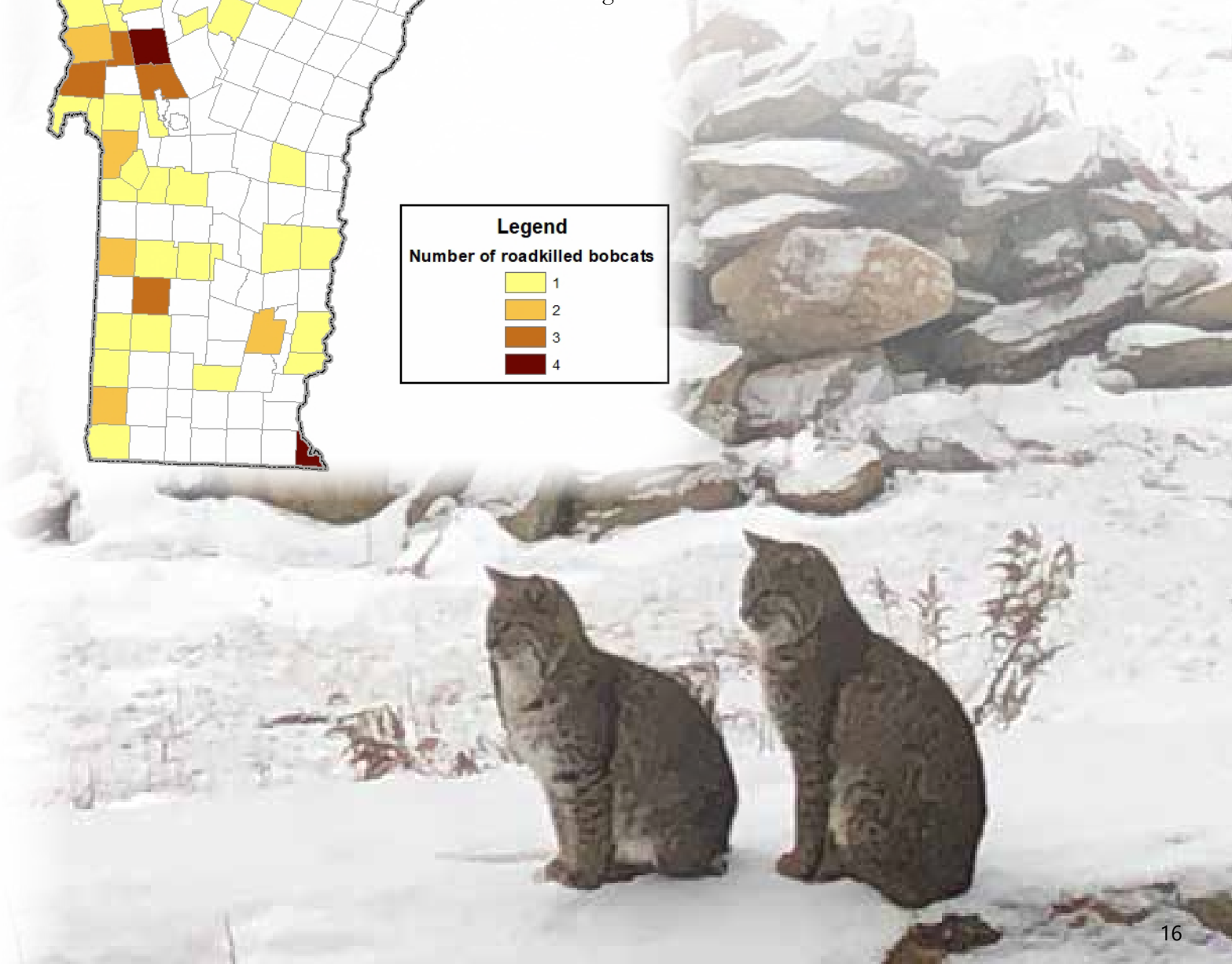
The distribution of the harvest is heavily influenced by where hunting and legal regulated trapping effort is expended. However, the evaluation of harvest distribution data over time shows that bobcats exist in each of the state’s 21 WMUs and the distribution has remained relatively stable through time.

Number of Road-Killed Bobcat Pelts Tagged and Collected, 2001-2021



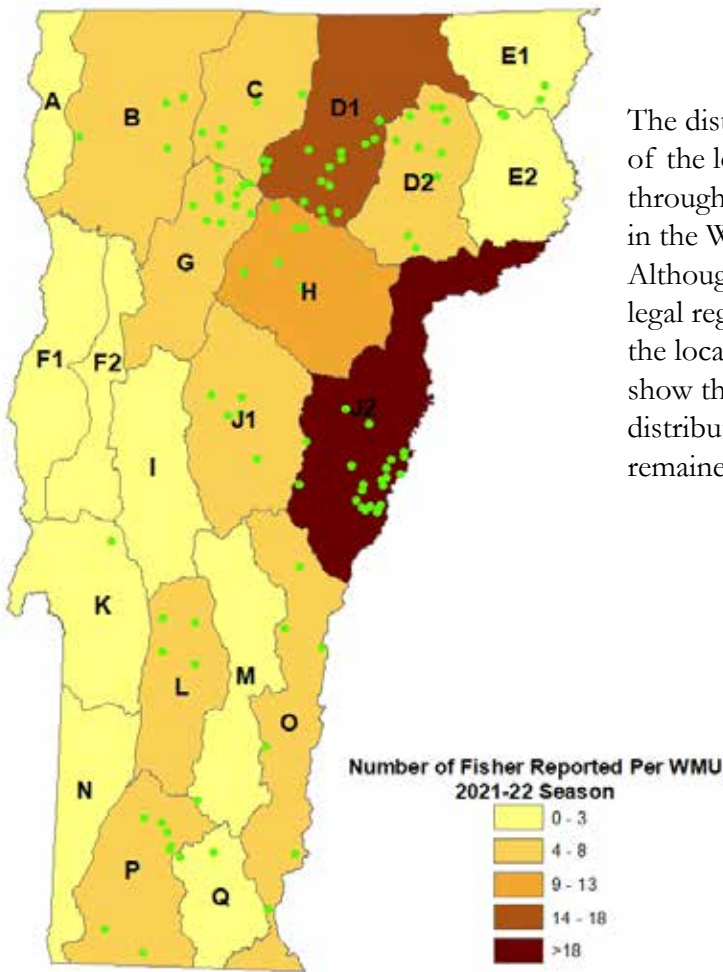
Bobcat Road Kill by Town 2001-2021

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 109 Fisher Reported During the 2021-22 Season

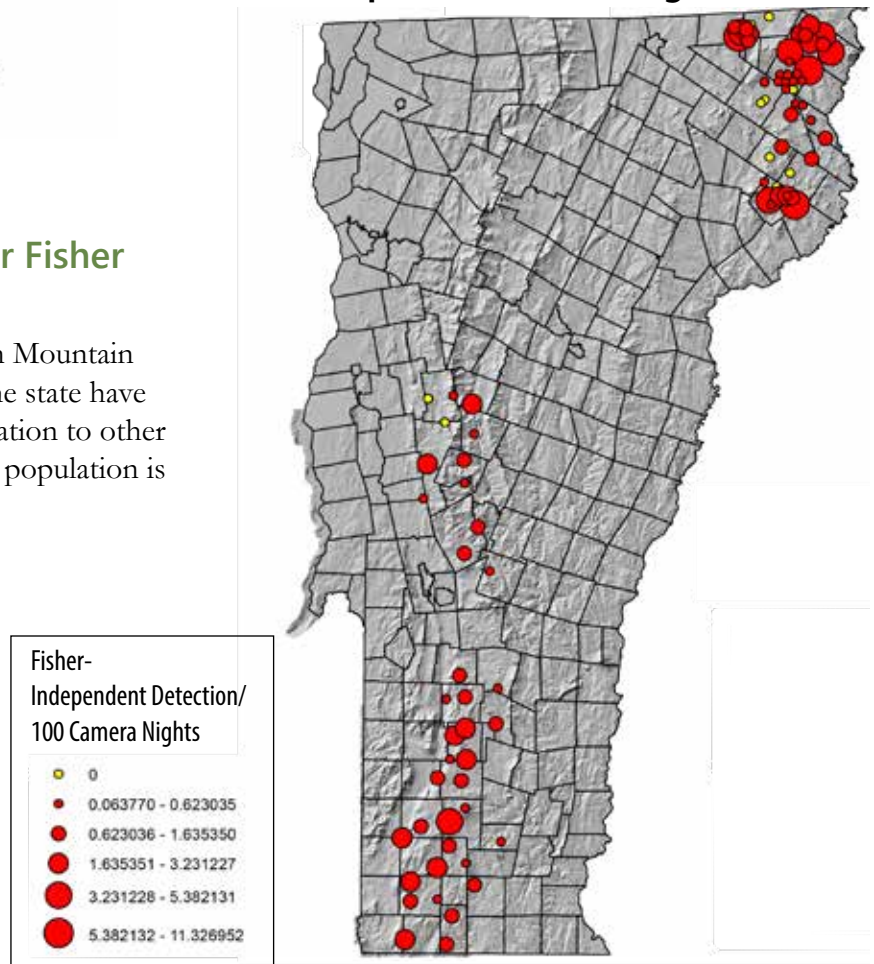
The distribution of the 2021-22 fisher harvest was again reflective of the long-term harvest distribution. Fisher are well dispersed throughout the state with the heaviest harvests typically occurring in the WMUs situated along and east of the Green Mountains. Although the distribution of the harvest is influenced by where legal 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 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.

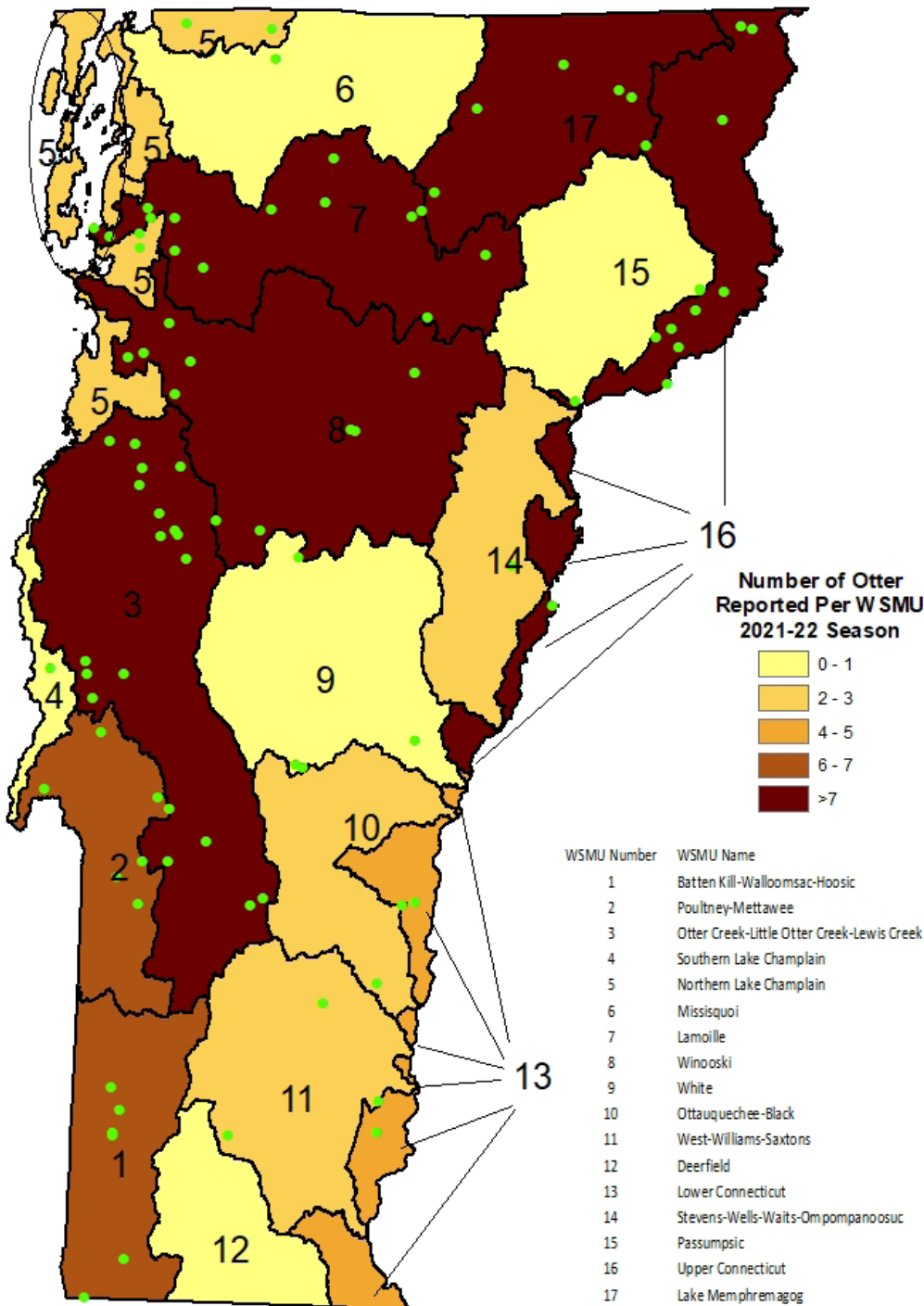
These data were derived from Canada lynx camera monitoring efforts conducted from 2014 through 2019. Detections were deemed independent when at least one hour lapsed between consecutive visits of a species to the camera site.

Independent Detections of Fisher per 100 Camera Nights



Furbearer Program—Otter Distribution Data

Otter Harvest Distribution



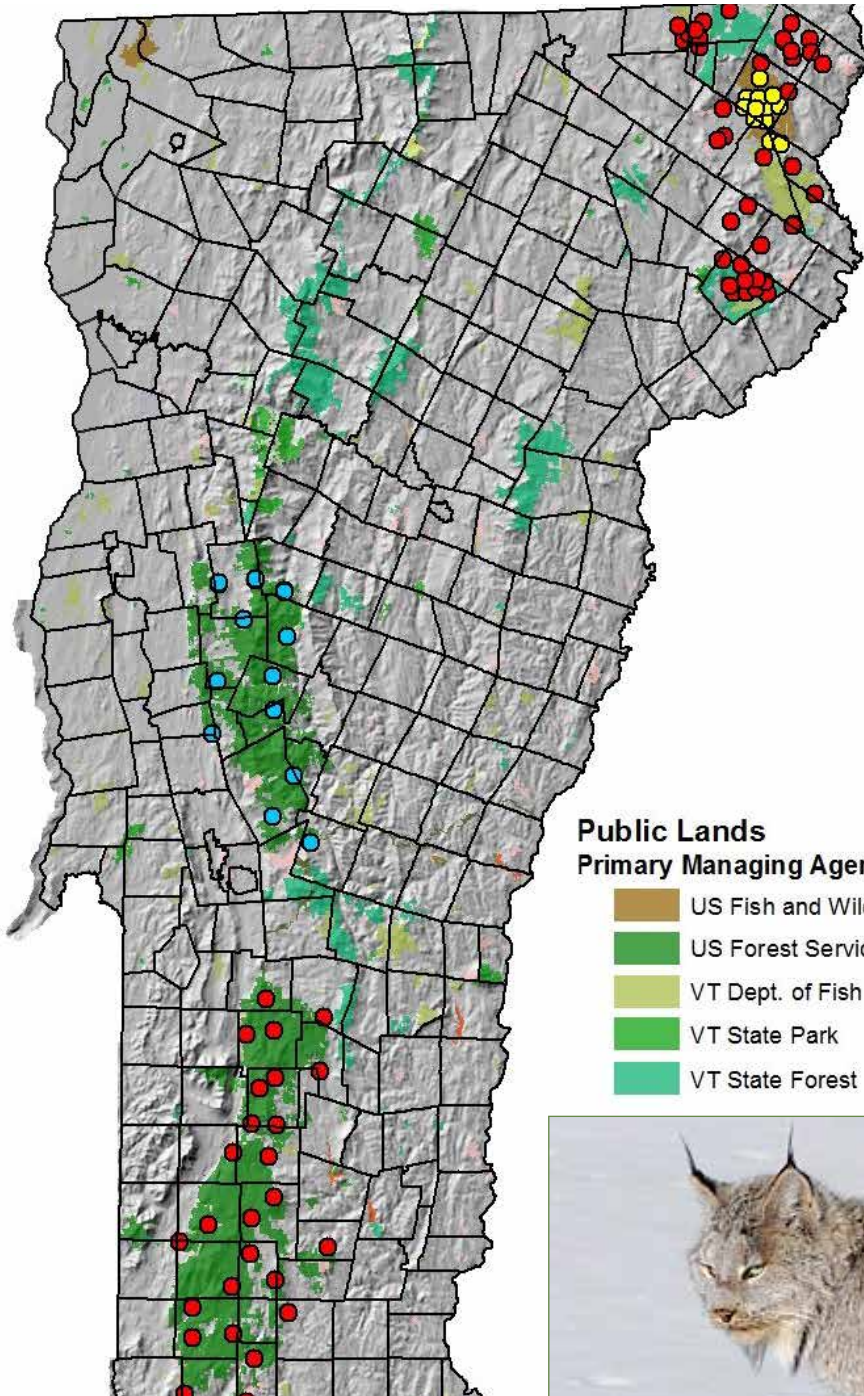
Distribution of 109 Otter Reported During the 2021-22 Season

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 legal 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 legal regulated trapping pressure appears to be quite low. The relative stability of the distribution of harvest through time suggests a lightly trapped otter population.

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 known as dispersal corridors. The cameras were pulled in the late winter of 2019.

Legend

Public Lands

Primary Managing Agency

- US Fish and Wildlife Service
- US Forest Service
- VT Dept. of Fish and Wildlife
- VT State Park
- VT State Forest

Camera Monitoring Sites

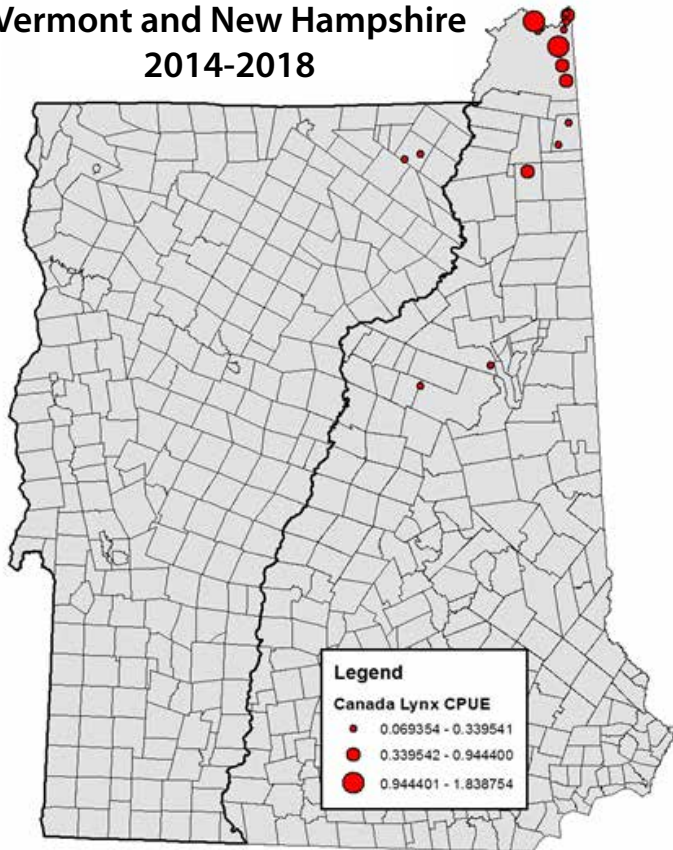
Primary Managing Agency

- VFWD Camera Sites
- USFWS Camera Sites
- USFS Camera Sites



Furbearer Program– Monitoring Rare Furbearers

Canada Lynx Detection Rates Vermont and New Hampshire 2014-2018

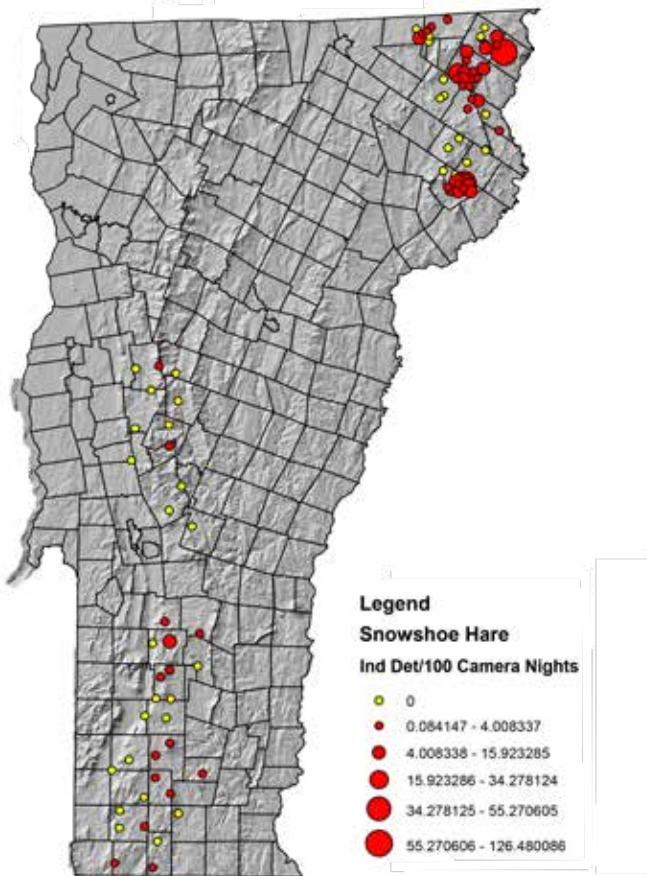


This map shows the approximate locations and respective lynx detection rates (i.e. number of independent detections per 100 camera nights) of the camera sites across New Hampshire and Vermont that detected lynx from 2014 until 2018.

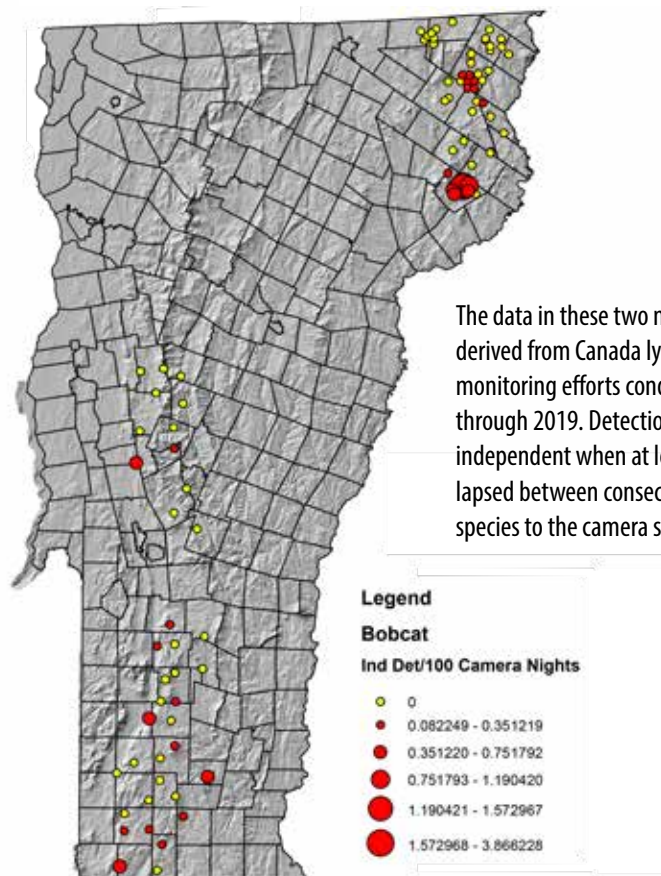
The future presence of lynx in Vermont will depend on maintaining habitat connectivity between Vermont, New Hampshire, and Canada and mitigating the effects of climate change.

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.

Snowshoe Hare Detection Rates



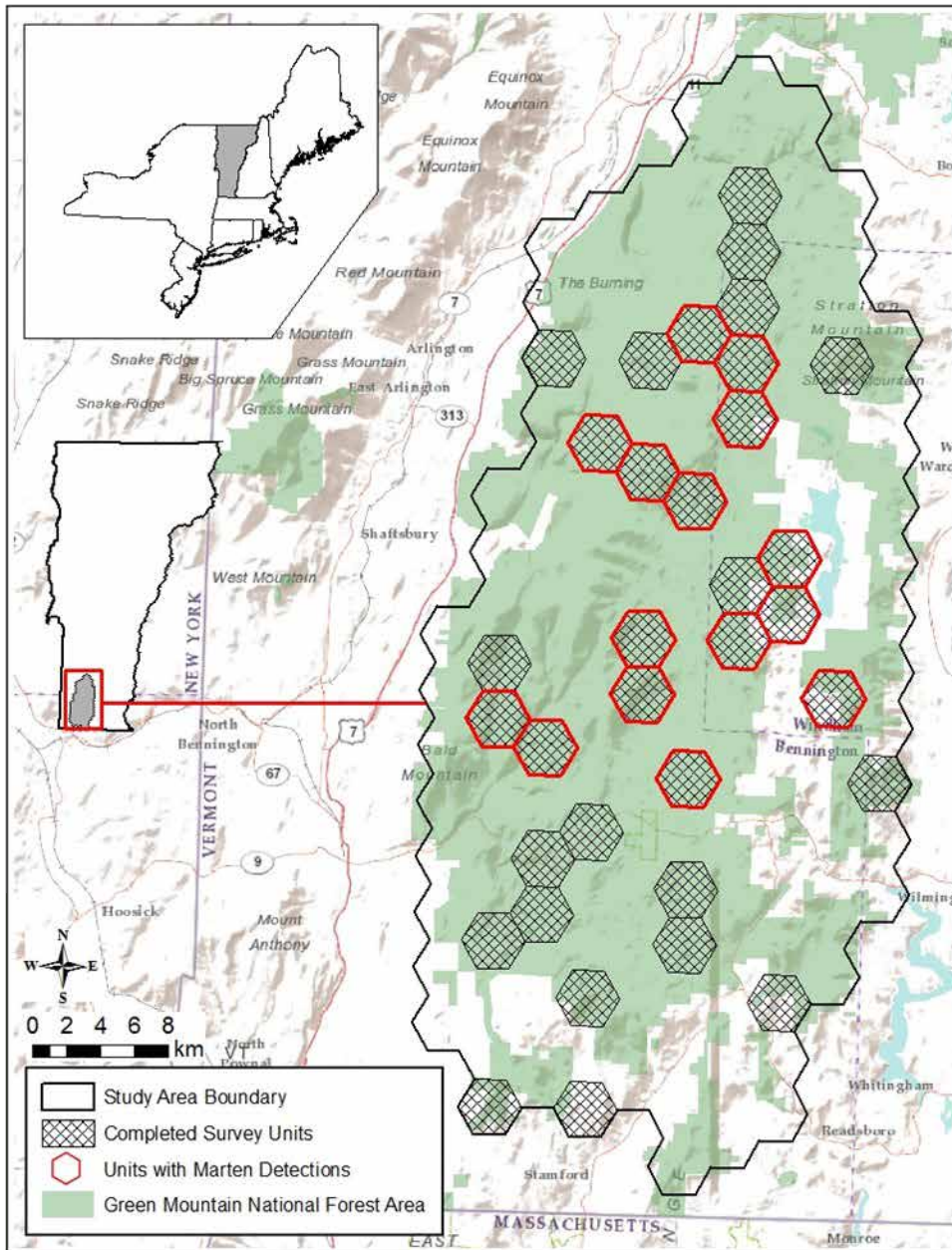
Bobcat Detection Rates



The data in these two maps 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– Monitoring Rare Furbearers

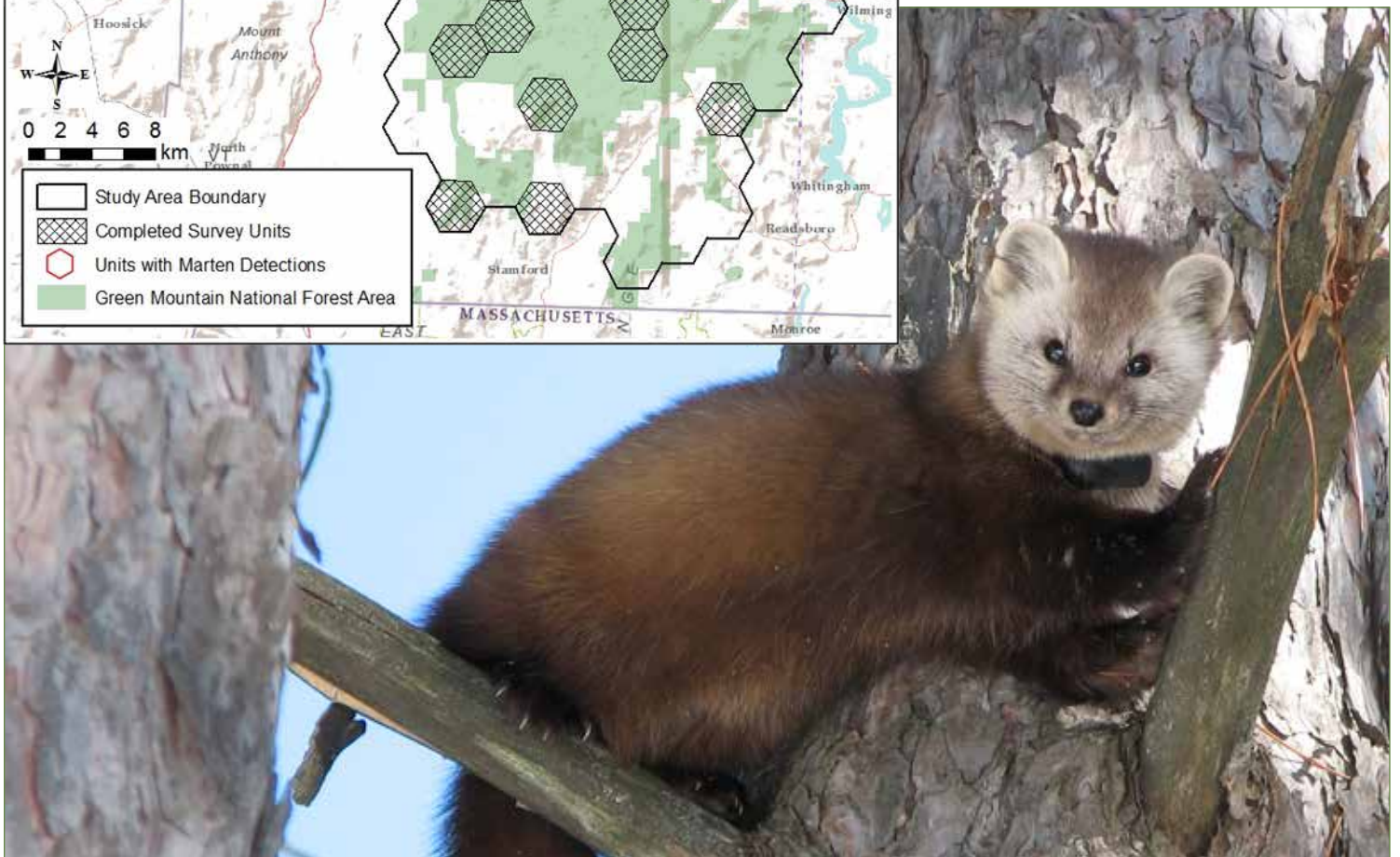
American Marten



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 18 units were sampled in 2020 and 11 units in 2021 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—Research and Testing

An important component of furbearer management in Vermont is the ongoing partnerships the department has with multiple universities and researchers to collect disease, genetic, and contaminant data from the carcasses that trappers are required to turn in on an annual basis. These data are critical to understanding the status of furbearer population health and well-being. During the 2021-22 season, we collaborated with trappers and several researchers on research led by VFWD or one of our partners.

Rodenticides in Fisher and Bobcat

The 2021-22 trapping season was the third year the department collected liver samples from fisher to test for the presence of rodenticides. It was the first season we tested for their presence in bobcats. Other states in the region have also been testing for rodenticides, however, they are more challenged since, unlike Vermont, few other states have mandatory collection of fisher, otter, and bobcat carcasses.

The results indicated the presence of up to six different anticoagulant rodenticide compounds in 94 percent of the fisher tested. Bobcat results indicated up to three compounds present in 31 percent of the samples tested.

While concerning, no conclusions can be drawn yet. The concentration and source of these compounds and the impacts on an individual animal's health or that of the population is yet to be determined. It is clear there is more work to be done by the department with the help of our partners.

Echinococcus multilocularis

During the 2021-22 trapping season, VFWD Furbearer Project staff collected fecal samples from coyotes and foxes voluntarily turned in by trappers and hunters. The samples were sent to two different labs to test for *Echinococcus multilocularis* (EM), a zoonotic tapeworm that can cause Alveolar echinococcosis (AE), a severe zoonotic disease in humans that affects the liver. The department is cooperating with a researcher from Virginia Tech University to test for the prevalence of this parasite after several cases were reported in humans in the Northeast. Samples from wild canids in Maine and Pennsylvania were also tested. The 68 samples submitted by Vermont proved negative for the parasite.

Collection of genetic material from furbearers, canids, and other species to better understand wildlife movement and landscape connectivity

The Northeast region represents a critical linkage for the movement of species northward as climate conditions change. However, habitat fragmentation, alteration, and loss represent persistent conservation problems that can substantially impact wildlife populations by limiting how and where species move across the landscape.

Collecting disease, genetic, and contaminant data from the carcasses trappers are required to turn in annually is critical to understanding the status of furbearer population health and well-being.



Bobcat

Furbearer Program—Research and Testing

A team of researchers from the University of Vermont (UVM) collected genetic samples from 11 species, including furbearers, to enhance the understanding of wildlife movement and connectivity across the northeastern states, based on the composition and configuration of land cover. The UVM researchers were able to collect coyote, red fox, grey fox, bobcat, fisher, and otter tissue samples from carcasses turned in by trappers. This work will help to inform future land and species management decisions, and conserve/enhance connectivity for these species across the region.

SARS CoV2 in Vermont Canids and Furbearers

SARS-CoV-2 is the pathogen that causes Covid-19. Recent studies show that SARS-CoV-2 may have spilled over from humans to wildlife species. At present, it is unclear which members of the wildlife community may be exposed, how the disease moves from humans to wildlife, whether wildlife experience symptoms, and whether transfer back to humans is possible.

University of Vermont researchers sampled bobcat, fisher, coyote, and red and grey fox turned in by trappers and hunters to explore whether SARS-CoV-2 is present in Vermont's furbearer and canid populations, what the prevalence is, and how prevalence varies among species.

Genetic testing for fisher diversity

The University of New Hampshire continued the collection of genetic material from fisher to build on work done in the past. Using the samples we provided, researchers will analyze and characterize fisher genetic diversity in Maine, Vermont, New Hampshire, and New York, characterize microsatellite diversity, compare populations across the regions and between states, and attempt to identify borders to diversity from natural or man-made boundaries.

Testing bobcats for the presence of gammaherpesvirus and parvovirus

Researchers from St. Michaels College continued the partnership with VFWD in the study of two viruses in the Vermont bobcat population. Through the collection of samples from trapped and hunted bobcats, they will identify the presence of viral DNA from gammaherpesvirus and parvovirus in Vermont bobcat tissue samples, estimate the relative prevalence of viral infection, test for associations with bobcat age, sex, and location and characterize levels and types of genetic diversity in viral genomes. Parvoviruses are capable of infecting and causing disease in carnivores and are found worldwide.

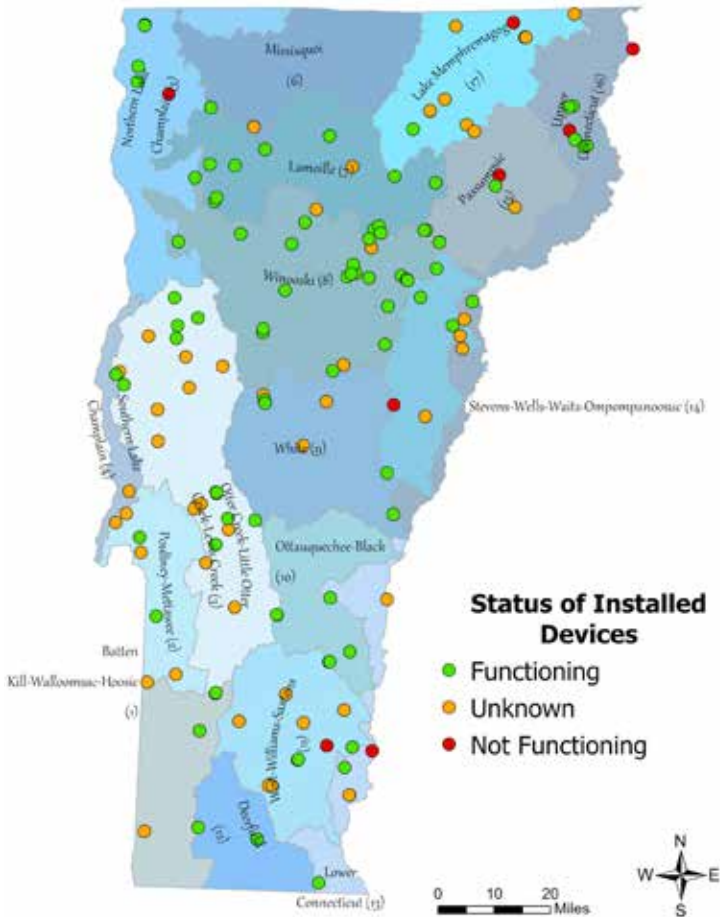


Grey Fox

UVM researchers collected genetic samples from grey fox and other furbearers carcasses turned in by trappers with the goal of enhancing the understanding of wildlife movement and connectivity across the northeastern states. This work will help inform future land and species management decisions.

Furbearer Program—Protecting Critical Wetland Habitats

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 water control devices currently installed by VFWD staff throughout Vermont.

In 2022 ten devices were installed (six baffles and four exclusion fences) influencing 54 acres of beaver-created wetland

Vermont Fish & Wildlife Department's Beaver Conservation Work: 2000-2022

- 331 structures (199 baffles & 132 exclusion fences)
- 3,664 acres of beaver-created wetland habitat influenced
- 400 phone calls or emails per year involving beaver-related conflicts
- 45 site visits statewide per year



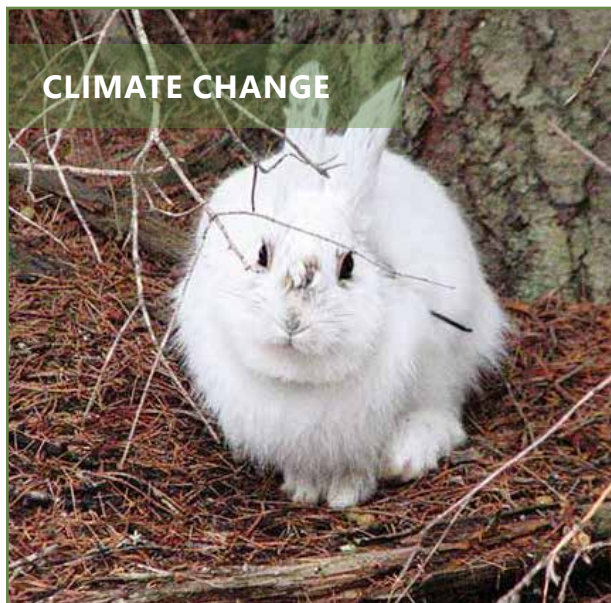
Furbearer Program

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.



Red Fox

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

In the United States alone, outdoor cats kill approximately 2.4 billion birds every year.

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