

# Vermont Furbearer Management Newsletter



## Vermont Fish & Wildlife Department

As I write this, the 2014-15 trapping season has just come to a close, and trappers are now left to ponder the trials and travails of the past season as they clean up and organize their equipment for storage through the summer. Rest assured though, your equipment won't lie idle for long as October is only months away, and you'll soon be pulling your traps out again to ready them for the new season. Albeit for only a short time, it is important to take advantage of this brief lull to reflect on your accomplishments and to digest the lessons learned from the past year. What worked well, what didn't? Did you set realistic expectations and did you meet your goals? Were your interactions with other trappers and the non-trapping public positive and constructive? Did you learn anything new and did you share your knowledge with others? In the end, it's the contemplation of questions like these that will shape your experiences next season and will influence the future of trapping.

**The MISSION of the Vermont Fish & Wildlife Department is the conservation of fish, wildlife, and plants and their habitats for the people of Vermont.**

**Editors:** [Christopher Bernier](#)  
[Mary Beth Adler](#)

**Designer:** [Melissa Currier](#)

802-885-8833

[www.vtfishandwildlife.com](http://www.vtfishandwildlife.com)

Similarly, the Vermont Fish & Wildlife Department (VFWD) also takes advantage of this "quiet" time to compile data, evaluate accomplishments, and make plans for the months and years ahead. Upon reflection in this manner, it is evident that much progress has been made over the past year. We began the dialogue with constituents related to the legalization of cable restraints in the state. We've seen the new Canada lynx rules through their first year of implementation without complaint or incident. We've documented an expanding marten population and have partnered with several academic institutions to further our understanding of this species in Vermont. And we've collaborated with state and municipal road crews to help resolve nuisance activity in creative ways while promoting the skills and knowledge of trappers.



Chris Bernier, Furbearer Management Project Leader

As tempting as it may be to focus solely on one's accomplishments though, we run the risk of becoming complacent and/or ineffectual if we don't acknowledge and plan for the challenges that lie ahead. Needless to say, there are many challenges facing furbearers and their management in Vermont including, to name a few, the need to expand and improve upon our furbearer data collection processes, the increased scrutiny and influence of people who do not fully understand or appreciate the importance and value of furbearer management, and the whole array of complex issues impeding the conservation of Vermont's most vulnerable furbearers such as marten. Where should we apply our efforts and resources to most effectively achieve our objective — *to advocate for trapping and modern furbearer management while ensuring the sustainability of Vermont's furbearer resources?* Just as we celebrate our accomplishments together, the VFWD and Vermont trappers must also continue to work together to address the complex issues facing furbearers in Vermont. Together we must identify the priorities, collect the necessary data, and push changes forward. Some changes will be easy while others, not so much. One thing is certain though, our continued self-reflection and collaboration on these issues are critical to the success of furbearer management in Vermont.

Chris Bernier, Furbearer Management Project Leader

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## Season Summary

The following season summary statistics are for the 2013-14 season. Results from this past season are still being compiled and analyzed. These data are derived from fur dealer reports, trapper mail surveys, pelt tagging records, necropsies, and targeted occurrence surveys.

During the 2013-14 furbearer trapping/hunting seasons, a total of 2,073 pelts were purchased by licensed Vermont fur dealers. This was 25% less than the previous season and contributed to the downward trend in pelt sales observed over the past ten years. Nearly three-quarters of the pelts were purchased at the two annual fur auctions hosted by the Vermont Trappers Association (VTA). The remaining pelts were purchased directly from Vermont trappers and hunters by six individual Vermont fur dealers. Although the 2013-14 season pelt sales associated with VTA auctions remained relatively stable from previous years, there was a 64% decline in the number of pelts purchased by individual Vermont fur dealers. This accounted for most of the overall decline in pelt purchases witnessed this season. The monitoring of fur dealer activity in the state helps to track market trends and to explain seasonal variations in trapper effort.

During the 2013-14 furbearer trapping season, mail surveys were sent to 881 of Vermont's 968 regularly licensed trappers. Of the 184 surveys returned (21%), only 116 reported to have participated in any trapping activities (63%). In addition to the regularly licensed trappers, 51 permanently licensed trappers (≥ 65

years of age) also reported to have participated in trapping activities. Assuming trappers who did not respond to the survey participated at the same rate as those that did, it is estimated that approximately 800 trappers were active in the state during the 2013-14 season. This estimate is some magnitude higher than the actual number of active trappers because those who did not trap are less likely to respond to the survey. Monitoring overall trapping activity in the state helps to explain seasonal variation in harvest trends and to forecast future effort — both critical indices illustrating the importance of responding to the mail survey.

Based on the 167 active trappers who responded to the survey (not adjusted to account for those who did not respond to the survey), the total reported fur harvest for the 2013-14 season was 3,812 animals (Table 1). Of this total, 2,780 pelts (73%) were sold for the total value of \$53,957.47. Total value of all pelts reportedly harvested during the 2013-14 season, including those which were retained by trappers, was \$76,649.59. Accounting for those trappers who did not return a survey, the estimated value of pelts harvested during the 2013-14 trapping season was \$391,679.40, a 35% decrease from the previous year. In combination with fur dealer reports, the monitoring of harvest value provides critical information for understanding market trends, for predicting trends in trapper effort, and for explaining variations in harvests.

The 167 active trappers who responded to the survey reported a

total of 153,003 trap nights (one trap night equals one trap set for one night) of effort in pursuit of furbearers during the 2013-14 season. This is a 16% increase in trap nights from the previous year. The greatest increases in effort were observed in pursuit of raccoon, mink, and bobcat, 74%, 58%, and 43%, respectively. Conversely, modest decreases in effort were reported for beaver and fisher, 15% and 14%, respectively. Close monitoring for species-specific effort reveals valuable information related to trapper response to market values and provides wildlife managers with the data necessary for explaining harvest trends.

A review of the 2013-14 season reported Catch Per Unit Effort (CPUE) revealed that values for all species decreased from the previous season. This uniform decrease in CPUE values is at least in part a result of an overall increase in trapper activity and is corroborated by increases in trapping license sales and reported trap nights. An analysis of CPUE data reported since 1990 indicates that all of the values observed this season were well within the normal range of values reported since the trapper mail survey was instituted. The monitoring of species-specific CPUE provides some of the most important information for tracking trends in furbearer populations.

A total of 154 bobcat, 417 fisher, and 246 otter was reported and pelt-sealed by law enforcement personnel during the 2013-14 season (Table 2). Additionally, 790 of these carcasses (142 bobcat, 413 fisher, and 235 otter)

## Season Summary *(continued from page 2)*

were collected by law enforcement personnel and later examined by Furbearer Management Project staff to determine the age and sex of each specimen. Due to carcass condition, ages were not attainable on 7 of the specimens (5 bobcats, 1 fisher, and 1 otter). A review of the age and sex structure of the bobcat, fisher, and otter harvests reveals no alarming trends and reflects the relatively stable nature of these populations. Similarly, the geographic distribution of the 2013-14 bobcat, fisher, and otter harvests also reflects the widespread, abundant nature of these populations (Figures 1-3).

Although the distribution of the harvest is influenced by where trapping effort is applied, these distribution maps minimally show that these species exist in each of the state's 24 Wildlife Management Units and that the effort for and harvest of these species have remained relatively consistent for the past 10 years.

Please feel free to contact the Furbearer Management Project staff if you would like to discuss the summary statistics presented above in more detail.



### FURBEARER MANAGEMENT PROJECT STAFF

**Chris Bernier**

*Furbearer Program Leader*  
[chris.bernier@state.vt.us](mailto:chris.bernier@state.vt.us)

**Mary Beth Adler**

*Habitat Technician*  
[marybeth.adler@state.vt.us](mailto:marybeth.adler@state.vt.us)

**Table 1.** Summary of annual trapper mail survey reported catch per 100 trap nights (CPUE), 2004-05

Season	Mink	Raccoon	Muskrat	Skunk	Opossum	Weasel	Coyote	Red Fox	Grey Fox	Bobcat	Fisher	Otter	Beaver	Total Reported Harvest
2004-05	408	518	4,393	145	21	42	485	287	59	40	510	162	707	7,777
2005-06	243	276	3,097	154	—	49	252	163	34	31	303	118	733	5,453
2006-07	552	536	6,114	275	38	46	316	306	61	35	392	144	1,626	10,441
2007-08	498	615	2,043	111	58	82	210	188	56	21	285	64	802	5,033
2008-09	313	558	3,108	161	37	56	301	152	51	26	227	74	994	6,058
2009-10	314	408	4,627	191	29	23	260	126	53	40	236	74	943	7,324
2010-11	370	318	3,008	177	26	17	243	71	46	19	285	110	544	5,234
2011-12	297	420	2,490	121	49	13	244	91	54	27	201	138	868	5,013
2012-13	317	442	3,243	163	59	144	259	97	74	34	249	81	640	5,802
2013-14	271	349	1,989	79	22	13	249	85	40	42	130	56	487	3,812
<b>10-year Average</b>	<b>358.3</b>	<b>440.0</b>	<b>3,411.2</b>	<b>157.7</b>	<b>37.7</b>	<b>48.5</b>	<b>281.9</b>	<b>156.6</b>	<b>52.8</b>	<b>31.5</b>	<b>281.8</b>	<b>102.1</b>	<b>834.4</b>	<b>6,194.7</b>

*Continued on page 4*

## Season Summary *(continued from page 3)*

**Table 2.** Bobcat, fisher, and otter harvests by year from pelt-tagging records, 2004-05 through 2013-14.

Season	Bobcat	Fisher	Otter
2004-05	66	617	203
2005-06	79	420	178
2006-07	93	608	193
2007-08	91	389	106
2008-09	80	368	128
2009-10	111	403	122
2010-11	68	430	175
2011-12	95	434	234
2012-13	150	539	269
2013-14	154	417	246
<b>10-year Average</b>	<b>98.7</b>	<b>462.5</b>	<b>185.4</b>

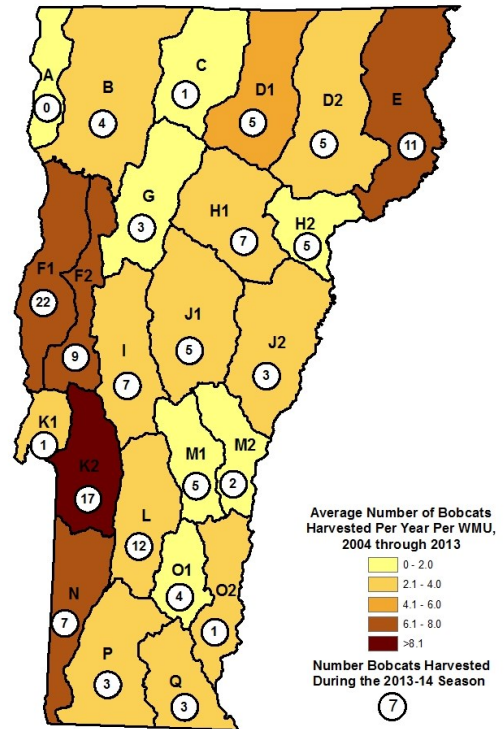


Figure 1. Distribution of bobcat harvest

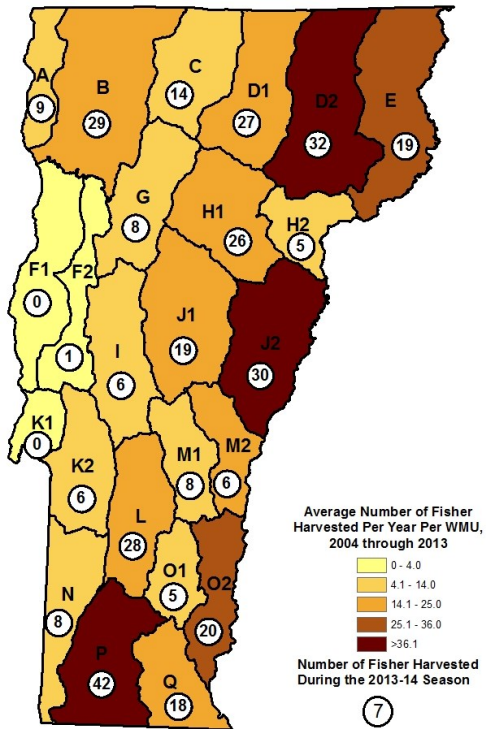


Figure 2. Distribution of fisher harvest

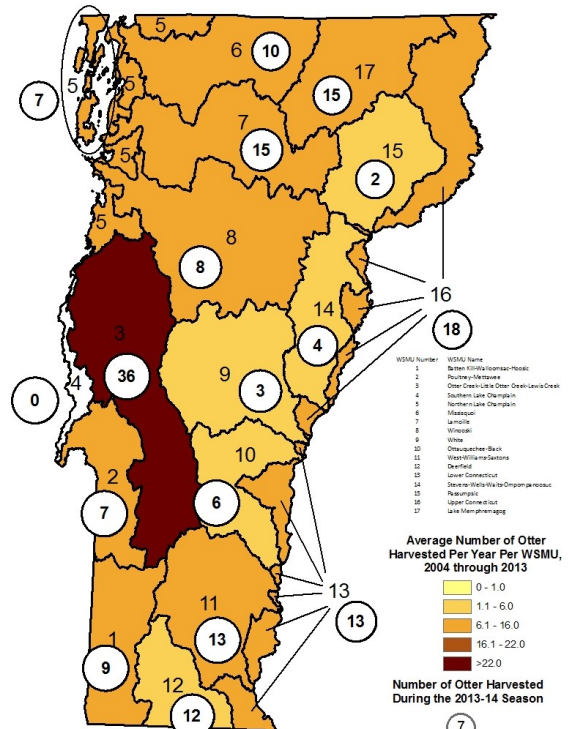


Figure 3. Distribution of otter harvest

## BMPs: Sustaining the Future of Trapping

A practical tool for trappers of all skill levels, BMPs (Best Management Practices) are carefully researched recommendations designed to address animal welfare and increase trappers' efficiency. BMPs feature the latest scientific information, along with practical advice from experienced trappers and wildlife biologists about techniques and equipment. Currently, BMPs for 21 of 23 furbearer species in the United States are available.

### Trapping BMPs: Did you know?

- In the U.S., 41 state agencies have been actively involved in trap testing, and all 50 states support BMPs. Thirty-one states include all or part of BMPs into their trapper education and furbearer management programs.
- Approximately 250 types of traps have been evaluated including standard models, offsets, and more.
- Over 200 teams comprised of 76 state and federal biologists and 1,200 experienced volunteer trappers and technicians have participated in 260 studies involving the field testing of traps, gathering of data, and development of BMPs.
- More than 30 BMP workshops have been conducted to train 2,500 wildlife professionals.
- Trapping BMPs are not laws; they are recommendations. Each state will decide how BMPs will be incorporated into their trapper education and furbearer management programs. In some states, BMPs may help to broaden the trap and set types currently allowed.
- Trapping BMPs are working documents. They will be updated and expanded as more



traps are tested for each furbearer species. In the coming years, BMP research will focus on the two remaining species as well as additional trap modifications, setting techniques, and cable restraints.

- The evaluation methods used to develop BMPs have been standardized, enabling BMPs to be easily updated and revised as new traps and techniques become available. Standardized evaluation methods also make it possible for all of the data to be captured scientifically and to be consistent with international standards for evaluation.
- Research and results for BMPs are coordinated by the International Association of Fish and Wildlife Agencies (IAFWA), an organization comprised of our nation's 50 state fish and wildlife agencies. The IAFWA has no regulatory or enforcement authority.

BMPs are intended to maintain the integrity of furbearer management programs throughout the nation, to support trappers and sustain trapping — now and in the future. All trappers are encouraged to familiarize themselves with the BMPs and take advantage of the wealth of information this important research has provided. The benefits of the BMPs can only be fully realized through their use.

You can access the Best Management Practices for the available species at the Association of Fish and Wildlife Agencies' website: [www.fishwildlife.org](http://www.fishwildlife.org). Click on "Focus Areas" at the top, "Furbearer Management" on the left, then "Trapping Best Management Practices" on the right.

Since 1997, Vermont trappers and accompanying field observers and biologists have participated in several BMP trapping studies. These studies include:

- Testing of 5 different foothold traps and the Belisle foot snare targeting coyote and red fox from 1997 to 2000.
- Testing efficiency and selectivity by fisher using No. 1.5 coil spring foothold traps, 220 Conibear body-gripping traps, and Tomahawk 108 cage traps during the 2003 and 2004 fisher seasons.
- Testing No. 1.75 coil spring traps with offset laminated jaws during the 2006 and 2007 seasons to determine the extent of injuries to fisher caught with this model.

### THANK YOU, THANK YOU

Trappers, hunters, game wardens, biologists, seasonal staff, education specialists, support staff, and volunteers for your help in the management and conservation of Vermont's furbearers



## What's It Like to Be a Furbearer?

*"The best part of using it [furbearer education kit] was when a young boy took the coyote pelt and pulled it over his head to look through the eyes. He wanted to have a sense of what it was like to be a coyote."*

Ocean Adams, Brattleboro Centre for Children

This is just one reason why the Furbearer Fundamentals Education Kits don't collect any dust. Thanks to the generosity of the VTA and the Vermont Federation of Sportman's Clubs, we now have seven kits in circulation around the state, and two more based at the VFWD Conservation Camps. Because of these kits, an increasing number of folks of all ages are more aware of what it is like to be

one of the 14 furbearer species in Vermont. When Furbearer Project staff inquired about the use of the kit based in the Rutland District office, the list included high schools, preschools, middle schools, Wild about Town in Bennington, One World Conservation Center, the Vermont Envirothon, a half dozen Vermont Game Wardens, and five state parks. They traveled from Lincoln to Middlebury to Stockbridge to Bennington! Phew! No wonder they can look a little worse for wear over time.

More and more during the camping season, the kits are being used regularly as part of programs given by Park Naturalists for campers at many of Vermont's state parks.



Efforts are currently underway to put together another kit to be based out of the Rutland Regional Parks office. This will give the Park Naturalists access to a kit any time they need them while leaving the first kit available for others to use. If you or an organization you know would like to borrow a kit, contact the VFWD district office near you.

## A Richness of Marten

*"When its retreat is cut off, it will turn upon its assailant, arch its back, erect its hair, and hiss and snarl like a cat. It will sometimes seize a dog by the nose and bite so hard that unless the latter is accustomed to the combat, it suffers the little animal to escape."*

So wrote Zadock Thompson about the "pine marten" in 1853 in his Natural History of Vermont. At that time, the marten population had gone from being plentiful throughout the state to being "confined to the most mountainous and woody portions." By the early 1900s, marten had become extinct in Vermont due to widespread deforestation and unregulated trapping. In 1972, marten were legally classified as an endangered species in accordance with the state's endangered species law.

In an effort to restore populations of these curious yet seldom seen creatures, the VFWD, along with the US Forest Service, released 115 marten

at several different sites in the southern Green Mountain National Forest in 1989. These animals had been captured in Maine and New York by cooperating trappers. During the winter of 1994-95, camera boxes were set up at 12 sites to help determine the success of the effort. Marten were detected at two sites and fisher at 11. Three years later, a similar study involving 47 camera boxes detected no marten while fisher visited 37 of the boxes. This confirmed the belief that the reintroduction was unsuccessful, perhaps in large part due to competition with robust fisher populations occurring in these areas. This was exacerbated by several years of warm winters which likely allowed fisher to occupy areas that they historically would have been excluded from due to deep snow.

Despite the presumed failure of the southern Vermont reintroduction

effort, evidence began to surface in the early 2000s indicating the existence of a small marten population in the northeastern corner of the state. Citizen reports of marten were received beginning in 2001, and in 2004 a marten was first confirmed in Averill. To date, a total of 60 occurrence reports confirming 27 individuals are on file. Interestingly, 7 of these confirmed reports came from southern Vermont in the vicinity of the 1989 release sites, providing evidence that the reintroduction effort may have been successful after all. Although a number of these occurrence reports are the result of individual marten being incidentally taken by fisher trappers, we continue to receive a growing number of reports from a variety of sources including targeted camera surveys, track surveys, trapper

## A Richness of Marten... *(continued from page 6)*

observations, and a variety of reports from citizens including the photo below that was taken by a hiker in the Glastonbury Wilderness area in southern Vermont.



As exciting as the recent evidence is though, there is still much to learn. The existence of marten in Vermont presents several conservation challenges, and recovery efforts will need to be tailored to meet these challenges. A few of these challenges and the work we are doing to address them include:

- **Determining the source of marten in Vermont** — Although it is assumed that the marten in southern Vermont stem from the reintroduction effort, natural dispersal cannot be ruled out. Knowing the source of this population has implications for the development of appropriate conservation strategies. Working with the University of Vermont, the DNA of those marten taken by fisher trappers will be analyzed in the hopes of answering this question.
- **Assessing the distribution and abundance of marten in Vermont** — Similar to above, knowing the distribution and abundance of these animals will significantly aid in the development of appropriate conservation

strategies. Working with the Central Connecticut State University, a camera-based monitoring system will be deployed in key habitats to facilitate the development of accurate distribution maps and population estimates.

- **Providing for the protection of marten in Vermont** — In addition to ongoing efforts to identify, conserve, and manage suitable marten habitats and important wildlife linkage corridors in Vermont, we will also be undertaking an effort to evaluate different trap configurations and exclusion devices for further minimizing the possibility of incidental take of the species. Trappers interested in participating in this effort are encouraged to contact Furbearer Project staff.

In the meantime, the marten is still an endangered species in Vermont. If you observe marten or their sign, please let us know. Keep your cameras handy and remember that photos of tracks are more easily interpreted if they include an object of known size such as a dollar bill, pocket knife or, ideally, a ruler. If you incidentally trap a marten, contact your local game warden or Furbearer Project staff as soon as possible so all pertinent information can be collected.

And stay tuned for more news about the status of this arboreal acrobat!

For more information about marten, please visit:

[www.vtfishandwildlife.com/VTCRITTERS/INDEX.cfm](http://www.vtfishandwildlife.com/VTCRITTERS/INDEX.cfm)

### Marten Facts

- ◆ Long, slender bodies with pointed faces, small prominent ears, short legs, long furry tails.
- ◆ Males average 2-3 lbs.; females are generally smaller.
- ◆ Fur color varies but often reddish-brown on torso becoming darker to black on legs and tail; the head is lighter colored tinged with gray.
- ◆ Distinguishable from a mink or small fisher by vertical “eyebrows” above the inner corners of the eyes and a distinctive yellowish-orange throat and chest.
- ◆ Adept at climbing trees to hunt prey, aided by rotating hind limbs that allow them to descend head first.
- ◆ Females mature at one and a half years and breed any time between late June and September, but the embryo does not begin to develop until February or March due to a phenomenon known as “delayed implantation” (see Word Power on page 8).
- ◆ Gestation is 27 days; a litter of one to five young, each weighing about an ounce, is born blind in a lined nest in a tree cavity or rock den.
- ◆ Young remain with the female until early summer or late fall then disperse.
- ◆ Called “wabachis” (rabbit-chase) by Native American Cree, prey includes snowshoe hare and ruffed grouse but also opportunistic hunting of small mammals, birds, eggs, berries, amphibians, reptiles, insects, and carrion.
- ◆ Favor habitat with downed trees or stumps that protrude above the snow as access points to food sources beneath the snow.
- ◆ Population fluctuations are known to follow mast crop cycles and the small mammal populations they influence.

## Trapper Mail Survey Returns Continue to Decline

As reported in the 2013 Furbearer Newsletter, the continued decline in Trapper Mail Survey returns has become a critical concern of Furbearer Project staff. The importance of the data collected via this survey cannot be overstated — it is the foundation of information upon which management is based and upon which our understanding of Vermont's furbearer populations depends. The downward trend in responses was evident again with the 2013/14 survey. Of 881 surveys mailed to regularly licensed trappers, just 184, or 21%, were returned. The response rate for the 2014/15 survey is looking similar thus far.

Our concern prompted us to ask for your thoughts and suggestions on the 2013/14 survey, and we are grateful to those who responded.

The responses included some great ideas for encouraging better participation in the survey process. By far, the most recommended of these was to offer the survey online and/or via email. Related to this was the idea of tying the survey to the online purchase of a trapping license in a fashion similar to the migratory waterfowl survey.

Second to online availability was the suggestion to make it mandatory. "Make this survey law as part of being a good trapper at the end of each season," commented one trapper. Although this would not be our first choice, if the current trend continues, the decision could be out of our hands.

Raffle opportunities or gifts, removing the request for certain information (e.g., prices paid per pelt), timing for initial mailing of the survey and subsequent reminders,

and having the survey over a calendar year rather than trapping season were also some of the helpful comments we received. In the coming months, we'll be looking at all of these suggestions and will begin the process of making it as easy as possible for you to contribute the data needed for helping us to make the most logical and appropriate management decisions. Without sufficient data, we will be hobbled in our efforts to advocate for the changes that benefit you, the trapper, and the various furbearer populations you pursue.

**If you haven't already sent in the 2014/15 survey, please take the time to do it. If you have lost your copy or your mailing address has changed, give a call or send an email, and we'll get another one to you. We need the data!!**

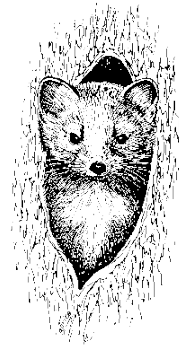
## WORD POWER: Delayed Implantation

**Delayed Implantation** (also called embryonic diapause) is a reproductive strategy used by almost 100 different mammals in seven different orders including rodents, bears, mustelids, and marsupials.

In delayed implantation, the embryo does not immediately implant in the uterus, but is maintained in a state of dormancy. No development takes place during this period and, as a result, the normal gestation period is extended, sometimes by as much as one year. There are two types of delayed implantation. *Facultative delay*, which appears largely in rodents, shrews, and some marsupials, is triggered by suckling

of the female's teats. *Obligate delay*, which occurs in a wide variety of carnivores, lasts for various lengths of time and seems to be seasonal.

Delayed implantation allows animals to tailor their reproductive cycle to their yearly food and weather cycles. Marten young born in the fall rather than spring have a long summer to learn survival skills before their first winter. A female fisher will be lighter afoot until the embryos implant and begin to develop, increasing swiftness in capturing prey. In the case of black bears, the female bear needs to take in enough food to get her and the developing embryo through the denning period. If the bear's body is



not sufficiently fit nutritionally, the embryo will not implant in the uterus.

See the interesting article below for more about delayed implantation:

[www.nwf.org/news-and-magazines/national-wildlife/animals/archives/1992/mothers-in-waiting.aspx](http://www.nwf.org/news-and-magazines/national-wildlife/animals/archives/1992/mothers-in-waiting.aspx)



## National Use of Traps by Trappers in the US



The National Use of Traps by Trappers in the United States survey is being conducted on behalf of the state fish and wildlife agencies by the Association of Fish and Wildlife Agencies (AFWA). The survey will be conducted primarily by telephone; however some trappers may be contacted by email or post mail. The goal of the survey is to determine what species of furbearers trappers are most interested in harvesting, and what trap types trappers most commonly use. The survey will also ask about trapper knowledge and use of Best Management Practices for Trapping (BMPs). There will also be a few questions about trapper demographics to determine average

age, gender, income importance and amount, etc. Once completed, national, regional, and state level results will be available. Results will be used to guide the continuing development of BMPs and to evaluate changes in trap use among trappers over the past ~20 years by comparing results to previous surveys conducted in 1992 and 2004. Gathering this information is critical as results form the basis of an agreement signed between the US and the European Union that allows the US fur trade to continue with the EU. The survey should take only about 15 minutes to complete. If you are contacted during this survey effort, please take the time to participate as we want to make sure Vermont trappers are represented in the results as they were back in the previous surveys. Results from the 2004 survey can be found by visiting

AFWA's homepage ([www.fishwildlife.org](http://www.fishwildlife.org)). Click on "Focus Areas" at the top, "Furbearer Resources" on the left, and then scroll through the "Publications" to find the report.

### VFWD Furbearer Project on the Road

Look for the Vermont Fish & Wildlife Department Furbearer Project Display and staff at the following events:

- [Herrick's Cove Wildlife Festival](#)  
*Sunday, May 3, 2015*  
Rockingham, VT
- [Southern Vermont Wildlife Festival](#)  
*Sunday, September 6, 2015*  
Marlboro, VT
- [Vermont Trappers Association Annual Rendezvous](#)  
*Saturday, September 12, 2015*  
Barton, VT
- [Yankee Sportsmen's Classic](#)  
*January 15-17, 2016*  
Champlain Valley Expo  
Essex Junction, VT
- [Dead Creek Wildlife Days](#)  
*October 3, 2015*  
Dead Creek Wildlife Management Area  
Addison, VT

## Muskrat

Since 2008, Furbearer Management Project staff has annually attended the VTA fur auctions in Bethel, VT to collect muskrat age and sex data. Although the sample size of data we've been able to collect to date is still insufficient for any robust statistical analysis, a preliminary review of the data reveals sex and age indices comparable to those reported in other jurisdictions and does not indicate any obvious or alarming trends at this time. However, trappers still routinely inform us of their concern for the species and provide anecdotal evidence suggesting there has been at least some localized population declines. The observations of Vermont trappers concur with the

observations of muskrat populations throughout the region where declines have been clearly documented. Thus, Furbearer Management Project staff will continue to collect and analyze muskrat harvest and biological data in the coming years in order to closely monitor the health of this population in the state. In the interim, the VFWD is planning to participate in a region-wide effort to collect additional population data beginning this fall. Although details on the specific methodology are still being worked out, trappers interested in participating in this effort should contact us to see how you can get involved.



## Carcass Processing

For six Wednesdays in February and March of this year, a group of dedicated volunteers joined by VFWD staff found themselves up to their knees and elbows in bobcat, fisher, and otter carcasses. Necropsies were performed on a total of 676 animals taken during the 2013/2014 trapping seasons. The always cheerful group of seasoned and rookie processors weighed, confirmed gender, determined general health, and removed the lower jaw for tooth extraction for each animal. Then they handed the carcass off to one of several researchers who extracted tissue samples for various projects. On bobcat processing day, there were four research groups taking advantage of the carcasses you provided to us.

In our 2013 newsletter, we mentioned an upcoming project led by researchers at the University of New Hampshire, in collaboration with state wildlife agencies across New England and Quebec. Rory P. Carroll, a master's degree candidate, and principal investigators Marian K. Litvaitis and John A. Litvaitis, are working to assess the dispersal patterns of bobcat populations in the region. Thanks to the furbearer harvest in Vermont, they have been able to collect over 200 individual tissue samples from the last two harvest seasons. The DNA from each sample is used to assess movement patterns across the landscape and to determine what features on the landscape help or hinder bobcat movement. Early results from this study indicate that there is a genetically diverse and well-connected bobcat population within Vermont's borders.

Dr. Stephanie McKay and Hannah Lachance, Laboratory Technician, from the McKay Laboratory at the University of Vermont Department of Animal Science, collected fisher and bobcat tissue samples to study the effects of environmental factors on gene expression in bobcat and fisher.

Gene expression is when the information from DNA is read and transcribed into functional parts — some genes are turned on (expressed) and some are turned off (inhibited). This area of study is referred to as epigenetics, which is a fairly new area of genetics that has not yet been investigated in wildlife. Since epigenetics is so heavily affected by the environment, it is an important field of study for understanding how this might impact our ability to sustain wildlife populations, both for conservation purposes as well as for economic and recreational purposes. The lab has already looked at the overall percentage of DNA that is affected by epigenetics and, with this knowledge, a more specific investigation of how epigenetics affects each species can be undertaken.

Professor Dagan Loisel from the Department of Biology at St. Michael's College, joined us for a second season this year. Prof. Loisel has collected around 275 muscle samples from the Vermont bobcat population through the carcass processing events. He and his undergraduate research students have extracted DNA from those samples and used that DNA to examine the levels of genetic diversity found in several important immune genes that are involved in fighting viruses. In addition, Prof. Loisel's lab is developing DNA-based techniques to detect different pathogens infecting the bobcats, including feline immunodeficiency virus and protozoan pathogens. The ultimate goal of this research is to connect the levels and patterns of genetic diversity observed in the immune genes to the presence and identity of pathogens in the bobcat population.

Dr. Jan E. Janecka and two graduate students in his lab, Trevor Anderson and Matt Jevit from Duquesne University in Pittsburgh, PA, joined the necropsy session for the first time. They collected bobcat muscle tissue

samples. These samples are being used by Dr. Janecka's undergraduate student, Sarah Sprauer, to study the localized adaptations bobcats have acquired to be able to successfully inhabit diverse regions in the US. Other regions of the US that are part of this study are New England, Mid-Atlantic, Southeast, Southwest, Central Plains, Central Rockies, Midwest, North Pacific, and Southern Florida. The DNA is being extracted from the tissue samples and using the latest Next Generation Sequencing methods, their genomes are analyzed to determine if bobcats in these different ecological regions and environments have unique adaptive variants of their genes, which have been selected for over time, leading to their wide distribution and abundance. The lab is also using the results from this project to examine the genome differences in the bobcat and the Canada lynx that may explain their divergent biology, ecology, and distribution. Dr. Janecka's lab also studies tiger and snow leopard genetics as well as equine hindgut bacteria.

So there is great work being accomplished in large part due to the efforts of trappers in Vermont. Thanks to all of you who take the time to do the right thing and supply valuable blue card information and carcasses to your local game wardens!

Thank you, too, to trappers Mak Keyes and Gary Gibbs, and to our dedicated volunteers and VFWD co-workers who pitch in to lighten the load for the Furbearer Project staff: Peter Smith, Hannah Lachance, Rachel Bakerian, Anya Beale, Walt Cottrell, Tim Appleton, Ryan Smith, John Mlcuch, Tom Rogers, and Lt. Dave Gregory. We couldn't ask for a nicer group of folks to work with!

## Trapper Education

It isn't uncommon to hear trappers complain that the "young folks just don't seem interested in trapping these days." Supporting this observation for many years now, we've witnessed the aging of our trapping community and a steady decline in trapping participation overall. This is not surprising, of course, when you consider all the choices kids have today for spending their "free" time and the fact that trapping is a labor intensive pursuit requiring substantial skill, knowledge, and equipment. It's hard for young people to get started especially while being bombarded by the relentless distractions resulting from our increasingly

"connected" world. This trend is a serious concern for the VFWD as we fully understand the importance of having citizens connected to their environment as opposed to their smart phones. It is those that immerse themselves in these pursuits, after all, that are often the most vocal and effective stewards of these resources.

The trapper/hunter education division of the VFWD has made great strides in peddling the importance of participation in these pursuits and, along with a number of dedicated volunteer trapper education instructors, much progress has been made. Recent trends indicate a

definitive increase in trapper certifications among younger folks (see figure and table below), and this trend is further supported by observed increases in license sales. It appears the effort to get the word out is paying off and, thanks to our dedicated staff and volunteers, more people may be turning their "devices" off and turning their senses on. Please offer your gratitude to the staff and volunteers that lead this effort. Looking for a trapper education class? You can find a list of courses on the department's website or by calling the hunter/trapper education office at 802-828-1193.



**Age Breakdown of Trapper Education Participants in 2014**

Age	%	
0-10	1.69	
15-19	44.35	69%
16-20	14.41	
21-25	9.89	
26-30	4.8	
31-35	7.91	
36-40	3.95	
41-45	5.37	
46-50	1.98	
51-55	2.54	
56-60	1.13	
61-65	0.85	
66-70	1.13	



**If you haven't already sent in your 2014/15 Trapper Mail survey, please take the time to do it. If you have lost your copy or your mailing address has changed, give us a call (802-885-8833 or 802-885-8836) or send an email ([chris.bernier@state.vt.us](mailto:chris.bernier@state.vt.us) or [marybeth.adler@state.vt.us](mailto:marybeth.adler@state.vt.us)), and we'll get another one to you.**

## Everybody's goin' surfin' ...



Here are some interesting and informative website links for the technologically minded.

### [www.furbearereducation.org/](http://www.furbearereducation.org/)

Furtakers of America. This site is dedicated to the smallest and least understood segment of the American Sportsperson community — trappers, and the furbearers they harvest. Check out the newly released “*Trapping in Today's World*” video produced by VT trapper Rick Schoonover and featuring several VFWD staff. This video targets high school aged students and the adults they interact with. Copies of the video are available either from this website, from [YouTube](https://www.youtube.com/), or from Rick Schoonover ([broaxell1@hotmail.com](mailto:broaxell1@hotmail.com)).

### [www.conservewildlife.org](http://www.conservewildlife.org)

Northeast Furbearer Resources Technical Committee. This site presents the current professional outlook on trapping and furbearer management. It is the combined work of numerous wildlife scientists responsible for the conservation of furbearer populations in the states and provinces of the Northeast.

### [www.nationaltrappers.com](http://www.nationaltrappers.com)

The National Trappers Association is committed to defending and promoting the safe and ethical harvest of furbearing mammals and to the preservation and enhancement of their habitats.

### [www.fishwildlife.org](http://www.fishwildlife.org)

Website of the International Association of Fish and Wildlife Agencies. IAFWA represents North America's fish and wildlife agencies to advance sound, science-based management and conservation of fish and wildlife and their habitats in the public interest. Best Management Practices for Trapping can be found here.

### [www.furbearers.org](http://www.furbearers.org)

Furbearers Unlimited is a nonprofit organization dedicated to developing, promoting and supporting educational programs based upon scientific, technical, and legal study and analysis for the restoration, wise use, management, and conservation of furbearers and other natural resources.

### [www.native-languages.org/legends.htm](http://www.native-languages.org/legends.htm)

Native Languages of the Americans. A Minnesota nonprofit corporation dedicated to the preservation and promotion of endangered American Indian languages. This site has lots of wonderful Native American folklore and traditional stories about furbearers.



*Your purchase of hunting and fishing licenses as well as equipment supports Fish and Wildlife Restoration.*



Fish & Wildlife Department

### Vermont Furbearer Management Newsletter

100 Mineral Street, Suite 302  
Springfield, Vermont 05156-3168

[www.vtfishandwildlife.com](http://www.vtfishandwildlife.com)