Recommendations in Response to the Petition for the Expansion of Bobcat and Otter Trapping Seasons, and the Trap Check Time for Muskrat Colony Cage Traps

Prepared for the Vermont Fish and Wildlife Board

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In October 2015, a six-item petition was received by the Fish and Wildlife Board (Board) requesting certain changes to Vermont's current furbearer regulations. The petitioner subsequently withdrew three of the petition items and requested that the remaining three items be implemented by the Board. The three petition items thus requiring Board consideration are as follows;

1. To allow a 72-hour check on underwater colony cage traps,
2. To extend bobcat trapping season for the month of December, and
3. To extend the otter season to coincide with beaver season.

In September 2016, the Vermont Fish & Wildlife Department (Department) completed a review of its biological data relative to bobcat and river otter and summarized its findings in a report titled, *An Assessment of the Status and Harvest Trends of River Otter and Bobcat in Vermont* (hereafter, Assessment Report). The Department's recommendations are based on this assessment and the additional mitigating factors discussed below. In summary, the Department;

1. Supports the proposed change to allow 72-hour check on underwater colony cage traps,
2. Opposes the extension of bobcat trapping season for the month of December, and
3. Supports the extension of otter season to coincide with beaver season.

Trap Check Time for Underwater Muskrat Colony Traps

Background

Similar to other kill type traps set in aquatic environments, colony cage traps historically required a 72-hour trap check period. Earlier rules concerning the trap check period for aquatic sets did not differentiate between the various types of traps used but, rather, simply required that all traps set under water or ice be checked at least once every 72 hours. This regulation structure prevailed up to 2008 when the suite of furbearer rules was transitioned from statute to the jurisdiction of the Board. At that time, the rules were reviewed, revised and reorganized in an attempt to address certain issues of the time and to modernize the overall structure of the regulations. During this process, colony cage traps were inadvertently omitted from the revised 72-hour trap check rule. In 2013, a subsequent attempt to correct this omission successfully reestablished the 72-hour check period for cage traps set under the ice but failed to extend the 72-hour check period for cage traps set under water despite the intent to do so. The purpose of this petition item, therefore, is to once again revisit this rule in order to maintain consistency in trap check period among all kill type traps set in aquatic environments.

Colony cage traps are used for capturing muskrats in aquatic sets. Although there are many variations of this trap type commercially available and trappers routinely fabricate their own using unique designs and a variety of materials, all colony traps operate on the same basic premise. Muskrats enter into the trap via a one-way door and are trapped in the cage beneath the waterline resulting in rapid death via drowning (Figures 1 and 2). Because there are no settable triggers, jaws or other moving parts that are engaged by an animal upon its entry into a colony trap, these traps remain activated after each capture and are therefore capable of multiple captures within a trap check period.

Figure 1. Commercially made colony trap - note its simple design and one-way, gravity activated doors.

Figure 2. Colony trap as typically deployed in the field.

When set under water, colony traps are highly selective and efficient kill type traps for muskrats that can be used in a variety of aquatic habitats and environmental conditions. These traps have been legal in Vermont since the inception of regulated trapping and have been commonly used throughout the state up to present times. Although difficult to quantify based on the Department's current data collection processes, it is assumed that a significant portion of Vermont's annual harvest of muskrats is derived via the use of colony traps.

Explanation

By adoption of this rule change by the Board, the Department would expect no appreciable change in muskrat harvest nor change in trapper behavior, trapping techniques or trap type usage. Instead, the rule change would simply synchronize the trap check requirements for colony cage traps with other kill type traps set in aquatic environments. Implementing this recommended rule change would help to minimize trapper confusion and restore trapper flexibility with respect to the use of these traps.

Recommendation

The Department supports the proposed change to allow 72-hour check on underwater colony cage traps.

Bobcat Season Extension

Background

Vermont has had a long history of bobcat harvests with management strategies varying from outright persecution via bounties to the highly regulated and conservative legal trapping/hunting seasons of today. During the last ten years of the bobcat bounty era, which spanned from 1856 through 1971, an average of 237 bobcats were taken annually (range, 155-324) throughout the state. As is widely understood and accepted today, the bounty hunting and trapping of bobcats with no restrictions on seasons or methods of take cannot even remotely be characterized as a regulated activity. Despite the lack of any carefully considered, intentional management strategy, Vermont's bobcat population persevered throughout the bounty era while sustaining high annual harvests thereby demonstrating the species incredible resiliency, adaptability and abundance. The Department established a very conservative hunting and trapping season in 1972 to ensure the long-term conservation of this species. Today, bobcat harvests continue to be heavily regulated and are closely monitored through a variety of methods including trapper/hunter sourced data, research partnerships with academic institutions and the tracking of various landscape metrics. This conservatively managed and monitored bobcat population continues to thrive in Vermont providing opportunities for the public to enjoy, appreciate and utilize the species.

Since 1994, bobcats have been harvested by hunters and trappers during an annual 44-day season (trapping - December 1st through 16th, hunting - January 10th through February 7th). For the past ten years under this management regime, an average of 104 bobcats have been harvested annually (range, 68-154). A review of all data reveals a remarkably stable population structure throughout this time period indicating a widespread and abundant population that is conservatively harvested at levels well below that which occurred during the bounty years. Under the current management regime, in fact, the bobcat population is believed to have undergone an expansion beginning in the late 1990s and continuing through the mid-to-late 2000's before stabilizing at its present level.

This particular element of the petition is perhaps one of the most requested changes made by Vermont trappers over the past decade. This common desire among trappers stems from a variety of reasons including their recognition of the abundance of the species, their limited opportunities for harvesting bobcats (16-day trapping season) and their preference for having a season that is concurrent with the fisher season. With respect to the latter point, the Department has traditionally scheduled the bobcat and fisher trapping seasons concurrently in acknowledgement that many trap sets are capable of capturing either species. Although trap sets can be designed to maximize selectivity, in the case of fisher and bobcat the same set can capture either animal so maintaining concurrent seasons for the two species avoids incidental captures. However, in 2004, the fisher season was expanded to the entire month of December in response to a burgeoning population at the time, a desire for increased fisher harvest opportunities, and the belief that an unchecked fisher population had the potential to limit populations of other furbearers including bobcats, lynx, and American martens. Despite the desire among trappers to similarly expand the bobcat season at the same time, the Department did not bring such a proposal forward for Board

consideration due to its concern for how an increased bobcat harvest could influence the population over time. At that time, the Department again acknowledged the current health of the bobcat population and expressed its intent to maintain a conservative harvest strategy for the species.

As a result of the fisher season expansion implemented in 2004, the fisher and bobcat trapping seasons are no longer concurrent. Although certain trap placement restrictions designed to avoid bobcat capture in the last half of December were instituted as part of this season expansion, there continues to be a very limited potential for a small number of incidentally harvested bobcats during the expanded fisher season. Since these changes were implemented, an average of two bobcats per year have been reported as incidentally trapped during the expanded fisher season (range, 0-6). Although of little biological significance, the potential for and the occasional occurrence of incidental bobcat harvest during this part of the year has remained a point of concern for trappers. This concern can be described best as a genuine interest amongst trappers to avoid any incidental take and a strong desire to maximize utilization of these incidentally trapped animals which are now typically confiscated by law enforcement staff. In addition to an increased opportunity for the harvest of this species, the primary intent of this petition item is to resolve the issues of incidental take resulting from the divergent fisher and bobcat seasons.

Explanation

The reestablishment of concurrent fisher and bobcat trapping seasons as requested by the petitioner would certainly address the concern for incidental take. However, anticipating the increased harvest of bobcats that would likely result from such an expansion of the season is difficult. Bobcats are targeted by trappers using a variety of trap types over a wide range of habitats throughout the state. Trapper effort and success rates vary widely depending on a number of factors, such as weather and pelt prices, but can be very high during prolonged periods of suitable trapping conditions. Although the Department recognizes that the current 16-day bobcat trapping season limits trapper opportunity to harvest this species particularly when the weather does not cooperate, the Department again maintains that the current season structure and resulting conservative bobcat harvest is clearly sustainable and provides ample opportunities for Vermont trappers to harvest the species.

This assertion is further supported by an evaluation of the bobcat harvest trends over the past two decades. Throughout this time, there has been a steady increase in the number of successful bobcat hunters and trappers and a corresponding increase in the average number of bobcats harvested by each (see Assessment Report page 9 and figures 26-27). Vermont does not limit the number of trappers/hunters who pursue bobcats nor does it impose restrictions on the number of animals that can be harvested or the number of traps that can be set. Season length is the principle means by which the Department regulates the harvest of bobcats. The increasing trends in bobcat harvest rates observed amongst all constituents clearly demonstrates that there currently are ample opportunities to harvest the species under the current conservative season structure while ensuring the sustainability of this harvest despite its sometime dramatic swings from year to year.

The request to extend the bobcat trapping season is further complicated by the fact that the species is also pursued by hunters during a separate season (January 10th - February 7th) which follows the trapping season each year. Similar to trapper's requests to expand the trapping season, the Department has received a variety of requests from its hunting constituents over the past decade to revise the bobcat hunting season including various expansion proposals. Under

current regulations which afford trappers a 16-day season, trapper harvest accounts for approximately 53% of the known annual mortality of bobcats (Table 1). Conversely, hunters account for 33% of the annual known mortality. The Department has worked to ensure an equitable allocation of this valuable resource between trappers, hunters, and the general public who appreciate seeing the occasional secretive and elusive bobcat.

Table 1. Summary of bobcat harvest per season, 2005-06 through 2014-15.

Season	Total Harvest	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
2005-06	79	42	2.63	53	28	0.97	35	9	11
2006-07	93	61	3.81	66	26	0.9	28	6	6
2007-08	91	36	2.25	40	23	0.79	25	32	35
2008-09	80	41	2.56	51	29	1	36	10	13
2009-10	111	49	3.06	44	46	1.59	41	16	14
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	3.4	47	46	1.6	40	15	13
10-year Average		**55.4**	**3.5**	**52.7**	**33.6**	**1.2**	**32.7**	**14.7**	**14.4**

** 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.*

Understanding the amount of *effort* hunters and trappers expend to arrive at the harvest gives managers the best measure of tracking population trends over time. In Vermont, such effort data is collected via the annual trapper mail survey. No regular means of tracking hunter effort for furbearers is currently employed in the state. Because relatively few bobcats are trapped each year and because response rates to the trapper mail survey have remained low in recent years (< 30%), the sample sizes required for effectively evaluating trends in regional bobcat populations using *Catch Per Unit Effort* data are not obtained. Our inability to track this important index of population change on a regional basis warrants further caution with respect to expanding opportunities for harvest.

Despite the Department's overall conclusion that Vermont's bobcat population is healthy and stable, a few concerns beyond those detailed above were identified during the Department's assessment process that warrant caution with respect to expanding opportunities for additional harvest. The distribution of harvest varies widely across the state with some regions experiencing significant increases in harvest in recent years and other remaining relatively stable (see Assessment Report pages 8-9 and figures 22-24). Because of this, key indices of population change must be tracked on a regional basis. Although no alarming trends were identified in most biophysical regions, our analysis did reveal a weak negative serial correlation between harvest one year with harvest two years prior in the Southern Green Mountains (see Assessment Report page 9) and a weak negative trend in the proportion of females in the harvest in the Southern Vermont Piedmont (see Assessment Report page 10). In both cases, however, these findings may

very well be the result of spurious data owing to small sample sizes but nonetheless warrant consideration. Similarly, an analysis of the statewide sex and age structure of the bobcat population (see Assessment Report page 10 and figure 37) revealed a slight decline in the juvenile ratios (i.e., juvenile/adult and proportion of juveniles in harvest) of the harvest since 2011 after having increased steady since 2000. Although this drop off is of concern, these indices remain well within the range of expected values and corroborate the results of the Downing model (see Assessment Report page 12 and figure 39) which indicate the population stabilized after a period of expansion through the early 2000s.

Despite having a mutual interest in minimizing incidental take and maximizing the utilization of harvested bobcats, the Department has some concern relative to the current harvest trends of the species which prevent us from supporting an expansion of the season as proposed at this time. In summary, these concerns and findings are as follows:

1. The variety of factors influencing the harvest of bobcats via trapping makes it very difficult to predict with any certainty the additional number of animals that might be harvested as a result of a season expansion,
2. A regional analysis of the sex/age structure and harvest of bobcats revealed weak trends suggesting harvest in certain regions may be approaching biological limits,
3. Recent harvest trends indicate a significant expansion of harvest opportunities for the species by both hunters and trappers without an expansion of the season,
4. Expanding the trapping season as proposed would impact the Department's objective of maintaining as equitable a distribution of opportunities as possible for the public to enjoy, appreciate and utilize the species, and
5. Insufficient trapper/hunter effort data complicates the Department's ability to fully understand observed trends in bobcat harvest.

Recommendation

The Department does not support the expansion of the bobcat season through the month of December at this time.

River Otter Season Extension

Background

Similar to the case all across its range, the existence of river otter is intertwined with that of beaver and the management of one species must, therefore, involve the management of the other. The Department has had a long and complex history of managing these species in the state while striving to maintain biologically sustainable and socially acceptable populations of both. From its reintroduction of beaver into Vermont dating back nearly a century ago to its relatively recent advocacy for beaver and otter trapping regulation changes, the Department has always considered the benefits and impacts to one species resulting from its management decisions and actions upon the other. In fact, the healthy, widespread and abundant otter population we enjoy today as documented in the Department's assessment report is in large part a result of the healthy, widespread and abundant nature of the beaver population.

Despite the many effective methods trappers employ to make their traps more selective, otter are sometimes caught in traps set for beaver; again demonstrating the intertwined nature of these

species in terms of the habitats they occupy and the behaviors they exhibit. For this reason, the Department has always attempted to maintain concurrent beaver and otter trapping seasons. In response to burgeoning nuisance beaver complaints being reported statewide, in 2007 the Department and the Vermont Trapper's Association advocated for an extension of the beaver season in order to allow for additional harvests of the species by licensed and experienced trappers during the season when pelts were prime. It was reasoned that by doing so, a corresponding decrease in out-of-season nuisance beaver trapping activity would result, thereby reducing the waste of this valuable resource and further minimizing incidental otter harvests. Expansion of the beaver season in this manner, though, marked the first time in Vermont's modern furbearer management history that the beaver and otter trapping seasons were out of sync and since then Vermont trappers have had to contend with the possibility of taking an otter out-of-season during the month of March.

In an attempt to minimize the likelihood of such an occurrence, certain rules were adopted by the Board at the same time that were specifically designed to protect otter from being caught in otherwise legally set beaver traps during the month of March after the otter season has closed. These rules, which require specific placement, length and configuration of triggers on body gripping traps, were developed and tested in other jurisdictions where results indicated a high efficiency for meeting this desired objective. In fact, nearly 10 years after implementing these rules, it appears Vermont's experience yielded the same success as the incidental take of otter during March has remained relatively low throughout this time (range, 0-1). Despite the apparent success of these rules, however, Vermont trappers commonly express concern that these regulations impinge on the trap's ability to function as intended sometimes resulting in inefficient captures of beaver and otter.

Similar to the concerns trappers raise regarding the fisher and bobcat seasons, there is a genuine interest amongst trappers to avoid any incidental take of otter and a strong desire to maximize utilization of these incidentally trapped animals which are now confiscated by law enforcement staff. Unlike the bobcat and fisher situation described above, though, there is an additional motivation among trappers to minimize the take of otter and beaver that occurs out-of-season in defense of property and an ardent interest in restoring proper trap function by eliminating the trap restrictions now in place during the month of March.

Explanation

This element of the petition is of particular interest to the Department as it involves many aspects of furbearer management. In addition to the "simple" considerations of maintaining sustainable harvest levels, the outcome of this petition item will in some way influence factors related to populations of other species, animal damage control practices, occurrence of incidental take and animal welfare. Although the Department's highest priority is to maintain healthy sustainable populations of river otter, in so doing it must also consider all ecological, biological and social aspects of the species' occurrence in the state. Needless to say, these are extremely complex factors requiring careful evaluation and consideration.

Taking advantage of the rich habitats beaver create, otter have been a direct benefactor of Vermont's thriving beaver population. Unfortunately, as beaver populations prosper so do complaints of beaver/human conflicts (e.g., flooding of roads, septic systems, wells, etc.). Since the reestablishment of beaver in the state, Vermont citizens have struggled to coexist with the species and the long list of impacts associated with their habits often overshadows the numerous ecological benefits derived from their activities. For this reason, the Department invests

considerable resources into beaver-specific outreach efforts (e.g., more than $37,000 in fiscal year 2016) and provides many levels of direct technical assistance to citizens and towns experiencing such problems. In fact, since 2000, the Department has helped landowners, municipalities and state road crews mitigate beaver problems by the installation of 86 beaver exclusion fences and 205 water control structures (a.k.a., "beaver baffles") positively influencing over 3,100 acres of wetland habitat throughout the state (Figure 3). Despite these efforts, though, the magnitude of the problem requires a multi-pronged approach and regulated trapping continues to be one of the most effective tools for mitigating these issues in an ecologically and economically sensible manner on a statewide basis.

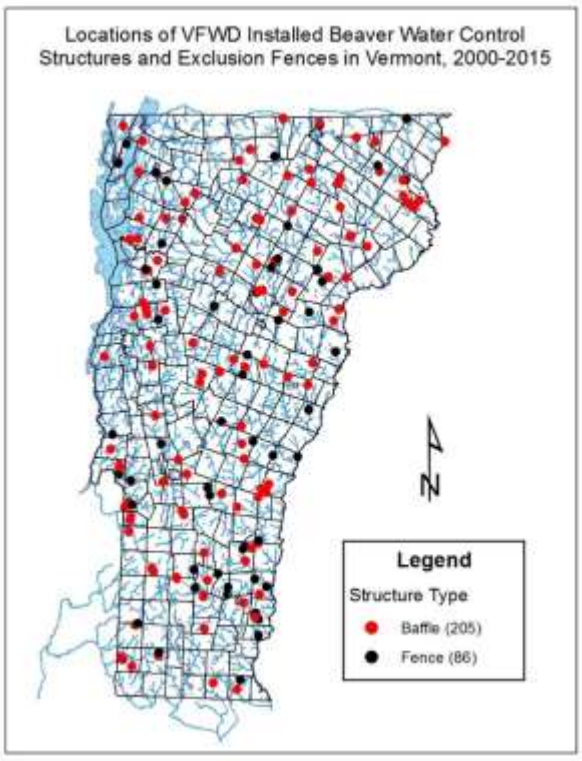

Figure 3. Locations of the 291 beaver water control structures and exclusion fences installed by the Vermont Fish & Wildlife Department since 2000.

Since 1961, Vermont statute allows nuisance furbearer activity to be remedied by the landowner or their agent in ways not otherwise subject to the rules which govern the take of the species (V.S.A. Title 10, § 4828 – hereafter, the "nuisance furbearer statute"). In this manner, the Department's ability to influence and track nuisance furbearer control activities in the state is limited. It is reasonable to expect, therefore, that some of this work is being completed by people having little trapping experience and/or limited knowledge of the modern Best Management Practices trapping methods and devices. Indeed, there are currently no licensing or training requirements to conduct this work in the state at this time.

Furthermore, the nuisance furbearer statute only requires the reporting of those furbearers taken into possession by the landowner and provides no other means for quantifying the nuisance control activities that occur around the state. The annual voluntary trapper mail survey does provide, however, a limited source of data related to nuisance beaver trapping activities while the voluntary turn-in of otter carcasses trapped outside of the beaver season (trappers are required to turn-in otter caught incidentally during the beaver season) provides some measure of the extent of this occurrence. Despite the very limited nature of this reporting, a review of these data since

2000 indicates that on average approximately 35% (range, 15-55%) of Vermont's annual beaver harvest consists of animals taken out of season in defense of property and as many as 5 otter are taken annually outside of the beaver season. Although this may not seem to be a significant number of otter, it is important to understand that this is the minimum known number of otter that were reported by trappers/landowners. The actual number is assuredly some magnitude higher but the lack of reporting requirements prevents us from obtaining a more accurate estimate.

Minimizing the out-of-season harvest of beaver (via both trapping and/or shooting) continues to be of significant interest to the Department and Vermont trappers. To this end, maintaining the current trapping season for beaver will continue to mitigate the need for controlling the species out-of-season and thereby minimize waste of this valuable wildlife resource while maximizing utilization of the harvested animals. Doing so will also help to ensure to the greatest extent possible that more animals are harvested by licensed, trained and experienced trappers using the best traps available and will undoubtedly result in less otter being taken incidental to nuisance beaver traps. In fact, when the beaver season was extended to the month of March in 2007, the number of incidental otter taken in March decreased from approximately 2 per year to less than 1 per year demonstrating the benefits of a regulated harvest versus an unregulated harvest. Similarly, prior to the beaver season expansion through the month of March, the annual beaver harvest consisted of an average of 44% nuisance animals taken out-of-season (1998-2006). Since expanding the beaver season in 2007, though, only 28% of the harvest consisted of nuisance beaver. Although there are many factors that have influenced this change, the ability for trappers to harvest beaver in March in a regulated manner has likely contributed to the success of lowering the rates of nuisance beaver trapping in the state.

Although increasing the otter harvest is not an objective of the Department at this time, the number of additional otter harvested statewide by an expansion of the season as proposed would be predictably few (see Assessment Report page 6, figure 15 and table 1). In fact, only 7.9% of the annual otter harvest occurs in the last month of the season and the downward trend in harvest observed as the season progresses would lead us to expect that even fewer otter would be harvested in March should the season be expanded as proposed. Under this scenario, the Department would confidently anticipate an additional otter harvest of less than 10 animals statewide.

Analysis of all available data indicates that the harvest of otter in Vermont over the past few decades has had no detectable effect on this population (see Assessment Report). There are no significant trends in sex and age ratios, no patterns in which harvest one year affects harvest in successive years, and only predictable and expected patterns of trapper effort and harvest. Furthermore, an analysis of the otter population using both the SAK and Downing models revealed a stable to increasing population of otters statewide. Although harvest rates and densities vary considerably amongst the Watershed Management Units, these patterns are readily explainable, are relatively stable through time and reveal no alarming trends specific to any one region of the state. Based on this analysis, Vermont's river otter population appears to be healthy, abundant, and widespread.

Extension of the otter season as petitioned would either fully resolve or help to resolve many of the issues discussed above and has merit for further consideration. In summary, the Department's concerns and findings are as follows;

1. The current level of harvest has no detectable effect on Vermont's otter population,
2. The additional number of otter harvested as a result of the proposed expansion will be predictably few,
3. The additional number of otter harvested as a result of the proposed season expansion would likely result in a corresponding decrease in the out-of-season take of the species,
4. The current level of in-season beaver harvest will be maintained, and
5. Expansion of the otter season as proposed would allow for the current trigger rules to be eliminated thereby restoring proper trap function and maximizing welfare.

Recommendation

The Department supports the expansion of the otter season through the month of March as proposed and further recommends the Board consider eliminating the trigger rules (10 V.S.A. App. § 44, 4.13) at this time.