Bob Galvin

animal wellness action

CENTER FOR A HUMANE ECONOMY

October 2, 2023

Legislative Committee on Administrative Rules
Re: 10 V.S.A. Appendix § 44, Furbearing Species

Dear Chair Squirrell and Esteemed Committee Members,

Thank you for giving me the opportunity to submit written testimony in response to the proposed rules put forth by the Vermont Fish & Wildlife Department regarding trapping and hunting of coyotes with hounds.

My name is Bob Galvin, and I am the Vermont State Director for the nonprofits Animal Wellness Action (AWA) and Center for a Humane Economy (CHE). I have a M.S. in Biology and several years of experience conducting wildlife research in the field. I have attended every Fish and Wildlife Board meeting since February of this year and participated in all three public comment meetings related to Acts 159 and 165 this summer. I write today as a concerned Vermonter and on behalf of AWA and CHE's Vermont members.

Before I go into the specific concerns I have about the deficiencies of Fish & Wildlife's proposed rules before you, I would like to share an experience I had at the Rutland public comment meeting on June 20 that was emblematic of how the Department ran these meetings without giving wildlife advocates the basic respect we deserve as engaged, concerned citizens participating in the rulemaking process.

At that meeting, after a presentation by the Department, the attendees split into small groups supervised by a Department employee, who were tasked with writing down our feedback about the proposed rule changes. After being explicitly told that the purpose of the small groups was to write down our feedback on the rules, a trapping proponent started spreading untruths about me at the table to several other folks sitting there. The Department employee at our table did nothing to moderate this. I was one of a handful of wildlife advocates in a room full of people who supported trapping and coyote hounding, and it felt humiliating and alienating to feel like I didn't have the support of the Department employee at my table. This incident was one of several situations that wildlife advocates experienced over more than a year that made them feel like the Department is not genuinely interested in hearing the perspective we are bringing to the table.

This lack of inclusivity not only undermines the integrity of the regulations set forth but also diminishes public trust in our institutions. When the public feels that their voices are unheard or, worse, being intentionally ignored, we are doing a disservice to the democratic principles we hold dear.

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Act 159 – An Act Relating to Best Management Practices for Trapping

I would now like to address a few of the rules put forth by the Department that are contrary to the legislative mandate required by Act 159. For simplicity, I will list the legislative mandate and then how the Department's rules are contrary to the intent of the Legislature. I've tried to be brief, so if you have any questions or would like additional information about any points I raised, I would happily follow up with you.

MANDATE: Trapping devices and components of trapping devices that are more humane than currently authorized devices and are designed to minimize injury to a captured animal.

By recommending that some body-crushing kill traps be allowed on land, the rules do not minimize injury to a captured animal. Here is a quote from a presentation by the American Federation of Wildlife Agencies about body-crushing kill traps: "In the U.S. BMP trap research program, the animal welfare performance standard for killing traps set on land is that the trap must cause irreversible loss of consciousness in 70 percent of the sample animals within 300 seconds." That means that for 30 percent of trapped animals, they are spending over 5 minutes in horrible agony in a body-crushing kill trap. For the "lucky" 70 percent, they can still spend seconds or minutes struggling before they are killed in that trap. Thirty percent of animals suffering for several minutes is not a meaningful attempt to minimize injury to a captured animal.

MANDATE: Trapping techniques, including the appropriate size and type of a trap for target animals, use of lures or other attractants, trap safety, and methods to avoid nontarget animals.

Baiting of traps is another area where the rules surrounding bait are incongruous from what wildlife advocates recommended at the working group meetings and do not meaningfully address the mandate's intent. Fish and Wildlife recommends that only meat-based bait be covered in an effort to mitigate the capture of protected species like owls and eagles. However, other types of bait, such as feathers, bones, and other animal matter, will still attract a raptor to a trap. As someone who has studied bird behavior as a major component of my master's degree, birds of prey are attracted to all kinds of visual attractants, and by not addressing non-meat based baits, the rules do not go far enough in protecting nontarget animals.

MANDATE: Requirements for the location of traps, including the placing of traps for purposes other than nuisance trapping at a safe distance, from public trails, class 4 roads, playgrounds, parks, and other public locations where persons may reasonably be expected to recreate.

The rules fail to meet the intent of this mandate by narrowly defining the terms "legal trail", "public trail", and "public highway" and then only requiring trapping setbacks on these artificially narrow definitions. Look at the definitions of these three terms again – are they easy for the average person to understand and meaningfully comprehend? By arbitrarily restricting the

definitions of these three terms, the rules do not meaningfully address many public locations where persons may be reasonably expected to recreate.

Many Vermonters love to walk outdoors with their dogs, and there is currently no state-wide leash law that prevents people from doing so. The 50-foot setback proposed in these rules is not a far enough distance to meaningfully reduce the number of dogs who are caught in traps. Especially when it is hard for the average person to know exactly where and when traps are placed, people who walk their dogs on trails will still be in danger with a 50-foot setback.

MANDATE: Criteria for when and how live, captured animals should be released or dispatched.

The rules put forth by the Department fail this mandate by including a loophole that the proposed rules may be amended when they receive recommendations from the Association of Fish and Wildlife Agencies (AFWA). AFWA currently allows bludgeoning and other inhumane methods. The loophole could allow dispatch methods that are less humane than gunshot, bow and arrow, muzzleloader or crossbow to be permitted down the line, and Vermonters want to ensure that animals caught in traps are killed quickly and humanely.

One final concern about Act 159 is the proposed rules attempt to change the definition of trapping when trapping was already clearly defined in Act 159. Act 159 defined trapping as "trapping means to take or attempt to take furbearing animals with traps, including the dispatching of lawfully trapped furbearing animals." However, in Section 3.20, the rules seek to change the definition of trapping to "to hunt, take or attempt to take fur-bearing animals with traps including the dispatching of such lawfully trapped fur-bearing animals." It is quite significant to legislatively define trapping to mean hunting, and by attempting to create their own definition of trapping, the Department proposed a rule beyond the agency's authority in this case. I've attended every Fish & Wildlife Board meeting on this issue and this significant change was never discussed.

Act 165 – An Act Relating to Hunting Coyotes With Dogs

MANDATE: A definition of control to minimize the risk that dogs pursuing coyote: (A) enter onto land that is posted against hunting (B) enter onto land where pursuit of coyote with dogs is not authorized; (C) harass or harm people or domestic animals; and (D) cause other unintentional damages to people or property.

The rules relating to the control of hounds are contrary to the legislature's intent. Having a shock collar and GPS device is simply not enough to minimize the risk that hounds enter land that is posted against hunting, for instance. In fact, in 2022, the president of the Vermont Bearhounders Association said the following in a 2022 Rutland Herald article - keep in mind that this goes for coyote hounds as well: "Dogs can't read; dogs are trained to follow a scent. Where they go from there is totally up to the bear." Or the coyote. A hound can be miles away from their owner in pursuit of a coyote, and one cannot tell from a GPS device if a parcel of land is posted against

hunting or the hunting of coyote with hounds is not authorized. By including a definition of control that does not answer these and many other questions, the rules do not meet the mandate to develop a "reasonable and effective" means of controlling hounds. Wildlife advocates had recommended that the hounds be in visual and verbal command at working group meetings, and that is both more reasonable and more effective than the definition of control currently recommended by the Department.

In closing, it has become increasingly clear to me as I have become more involved in this process that what Fish and Wildlife is choosing to endorse and what the public wants on the issues of trapping and coyote hounding are significantly different. Wildlife advocates have tried very hard to work with Fish & Wildlife, and what we are left with is little to no meaningful change, despite the mandates required in Acts 159 and 165.

Sincerely yours,

Bob Galvin

Vermont State Director

animal wellness action

CENTER FOR A HUMANE ECONOMY

October 19, 2023

Legislative Committee on Administrative Rules

Re: 10 V.S.A. Appendix § 44, Furbearing Species

Dear Chair Squirrell and Esteemed Committee Members,

Thank you for giving me the opportunity to submit additional written testimony in response to the proposed rules put forth by the Vermont Fish & Wildlife Department (the Department) regarding trapping and hunting of coyotes with hounds.

My name is Bob Galvin, and I am the Vermont State Director for the nonprofits Animal Wellness Action (AWA) and Center for a Humane Economy (CHE). I have a M.S. in Biology and several years of experience conducting wildlife research in the field. I have attended every Fish and Wildlife Board meeting since February of this year and participated in all three public hearings related to Acts 159 and 165 this summer. I write today as a concerned Vermonter and on behalf of AWA and CHE's Vermont members.

This testimony addresses several, but not all, misleading claims made by the Department during the October 5, 2023 LCAR meeting. I will first list the claim made by the Department, with direct testimony from the Department at the Oct. 5 meeting in quotes, and then our response.

Department Claim: "The Association of Fish and Wildlife agencies conducted a decades long study of over 600 trap types and 23 different fur bearing species to come up with the BMPs we are discussing today."

Context: Concerns over AFWA's BMP-testing process are well documented, including in a 2017 paper published in the Journal of International Wildlife Law & Policy entitled "How the United States was Able to Dodge International Reforms Designed to Make Wildlife Trapping Less Cruel". From the paper:

"The BMP testing program is unquestionably subject to bias, subjectivity, and inaccuracy. The use of professional fur trappers—who have a strong interest in the outcome—as testers undermines the veracity and accuracy of the data and the scientific rigor of the process."

Additionally, no body-gripping kill traps were tested according to BMP standards in the 2021 *Wildlife Monographs* paper cited by the Department. From the 2021 Wildlife Monographs paper they base these BMPs on: "We present performance data for 84 models of restraining traps (6 cage traps, 68 foothold traps, 9 foot-encapsulating traps, and 1 power-activated footsnare) on 19 furbearing species, or 231 trap-species combinations." To reiterate, no body-gripping kill traps were tested in the *Wildlife Monographs* study and F&W did not mention this critical fact to LCAR. It is our position that if there is no BMP testing data for these traps that is publicly

available, then body-gripping kill traps do not meet the legislative mandate as outlined in Act 159.

Department Claim: The regulations surrounding trapping BMPs are enforceable.

Context: While Warden Mike Scott said that these BMP regulations are meant to be enforceable, there are serious questions that arise regarding the enforceability of many aspects of BMPs that were not covered by the warden. For instance, how would a warden know if the pan tension is appropriately set on a given trap unless they were to spring the trap themselves? Similar questions arise when considering the enforceability of enforcing BMP-approved traps, because conventional traps and BMP-traps are often indistinguishable. Additionally, does the warden service have the capacity to check each individual trap they see? I think it's worth discussing how some of these finer details will be enforced in the field.

Department Claim: Vermont is the first state in the country to put BMP regulations into law.

Context: The Association of Fisheries and Wildlife Agencies never intended the BMPs to be enacted into law, and the 2021 *Wildlife Monographs* study explicitly says, "We intended BMPs to be implemented through a voluntary and educational approach".

Some of the specific difficulties in making BMPs mandatory are further explained in the paper:

"Some regulatory agencies may consider use of our results to prohibit traps that do not meet BMP standards, but attempting to do so may result in numerous practical or regulatory challenges that must be carefully considered. Agencies must consider the reality that nearly all traps are BMP-compliant for at least 1 species, appropriate responses when a trap set for 1 species for which it meets BMP standards catches another legally harvestable species for which it does not, potential use of trap brand names in regulations, and how to determine when an untested trap is similar to one that has been tested. Conversely, regulatory agencies may use our findings to support decisions that allow the use of currently prohibited devices, such as has occurred in recent years with cable restraints in numerous states. Because state and tribal authorities are the primary management agencies that regulate capture or harvest of non-migratory wildlife, we assume the approach to BMP implementation will vary, but regardless of the approach, we strongly recommend that they encourage their use by all those directly or indirectly involved in the capture of furbearing mammals."

It is precisely because of these difficulties that AFWA does not recommend these BMPs be put into law, and that additional context was not provided by the Department.

Department Claim: "There's also a trapper survey that trappers have to fill out, and that includes reporting on incidental traps of animals other than the target animals. So it's pretty comprehensive."

Context: According to Department data included in Attachment 4, over the past 3 years anywhere from 17.8%-31.5% of the trapper surveys mailed out annually were not returned to the Department. We are missing an immense amount of data if such a significant portion of trappers are not returning these surveys, and that aspect of the survey's reliability was overlooked.

Prior to 2018, trapper surveys were completely voluntary, so the Department is missing important historical data to accurately judge the scale of the dangers of trapping to non-target animals. In addition, it is impossible to know if trappers are submitting all of the data on their annual surveys. Because there's no corroborating data for most species, the data should never be considered complete.

Department Claim: "Two dogs were killed last year by traps. Both those incidents involved illegal trapping in violation of our rules."

Context: While the dog in Corinth was killed in an illegal trap, the dog who was killed in a trap in Underhill, VT last year was, in fact, killed in a legally set trap. From Warden Jeremy Schmid's description of the incident in the warden report (Attachment 1): "Dog killed in a legally set trap, no F&W violation". The Department's attempt to conflate pets being caught in traps with illegal trapping is something for the Committee to think about when considering future testimony from them.

Department Claim: While talking about the length of the trapping season, F&W said that traps set underwater are set "during a critical time period of the year where people are not in the water".

Context: F&W said that traps must be set "underwater", which is inaccurate. Wildlife advocates made that recommendation during the working groups, and that was ignored.

The statutory language governing traps set in the water reads, "A person shall not set a trap between December 31 and the following fourth Saturday in October unless the trap is set in the water" - nowhere do they mention that traps have to be submerged underwater, only that they have to be set in the water. A large body-gripping kill trap set in a stream presents a serious threat to the public and to non-target animals from the 4th Saturday of October through March 31st.

Beyond the threat to non-target animals and the public during the trapping season, it will still be legal to set body-gripping kill traps in the water to trap nuisance wildlife. The day before the October 5 LCAR meeting, a dog in Castleton, VT was caught in a legally set body-gripping kill trap set for beaver approximately 7 feet off a walking path.

Department Claim: The Department tries to encourage non-consumptive recreational activities on forest and park land, and tries to discourage that sort of recreation in Wildlife Management Areas.

Context: Dead Creek WMA's Wildlife Day just occurred on October 7. Listed as activities were a bird walk, a forest walk, a plant identification walk, an invasive species walk, and a lizard and snake identification session, among other activities. There was no trapping demonstration at the event, which leads one to believe that non-consumptive recreation might be encouraged at WMAs more than F&W expressed in their October 5 testimony. You can read the full activity list for the event here.

Consumptive users, such as bird dog hunters, would also benefit from trap setbacks. This safety measure does not only help non-consumptives.

Department Claim: "Any meat bait being used in conjunction with a foothold trap would also have to be concealed either with materials such as leaves, dirt, snow, soil, sticks and leaves."

Context: Warden Scott failed to mention that, in creating rules surrounding bait, the Department ignored the recommendations from wildlife advocates during the working group meetings to mirror other states' regulations, like Maine, that require all animal-matter-based bait (including feathers and bone) to be covered. Maine defines bait as "animal matter including meat, skin, bones, feathers, hair or any other solid substance that used to be part of an animal", and this definition better protects non-target wildlife who are still attracted to the smell or sight of non-meat-based bait.

In addition, allowing snow to be an accepted method of cover raises concerns due to the fact that snow can melt, thereby leaving the bait exposed.

Department Claim: "Most trappers trap during the season and they use the fur. They eat the meat."

Context: The claim that Vermont trappers are eating the meat from all of the animals they trap is not based in fact. Have you ever heard of skunk meat being consumed in our state? What about otter or fisher meat? Beyond anecdotal evidence, there is data to support the notion that most trappers are not trapping for fur or meat. According to a 2020 survey conducted in Maine by Responsive Management, the same company that operated the Vermont survey the Department has been referencing, 65% of trappers polled said the main reason they participated in trapping was "recreation/be outdoors/challenge/sport". Only 9% of the over 460 trappers polled said the main reason they trapped was for pelts, 7% said the main reason they trapped was for income, and 6% said the main reason they trapped was meat.

In addition to using the fur for personal use, which 62% of Vermonters polled disapprove of, trappers also sell the fur at annual fur auctions hosted by the Vermont Trappers Association. At the 2023 auction, 136 muskrat skins sold for an average of $2.47 apiece, 73 raccoon skins sold for an average of $6.90 apiece, and 116 mink skins were sold for an average of $5.80 apiece. You can read the full results of the 2023 fur auction in Attachment 3.

Department Claim: Wildlife Management Areas (WMAs) have been specifically purchased for the purpose of maintaining wildlife habitat as well as facilitating wildlife-based recreation, so they are exempt from the trail setback rules.

Context: How much money from trapping licenses was used to purchase the WMAs, and how much of the funding came from other sources? In an email sent to Catherine Gjessing by Protect Our Wildlife in 2023, Gjessing was unable to provide an answer. As far as I'm aware, the public has no idea how much, if any, of the approximately $21,000 a year the Department receives in trapping license fees goes toward funding WMAs.

Department Claim: Trapping is "low risk" to incidental animals.

Context: F&W did not give any supporting evidence to support that the risk of traps to non-target animals is low. There were at least 18 dogs and cats reported caught in traps in 2022, resulting in three deaths.

On October 4, a dog in Castleton was caught in a body-gripping kill trap set for beaver and sustained serious injuries. The fact that non-target animals are still being caught to this day, less than 10 feet from a commonly-used trail, indicates that this is not a low risk activity for Vermont pet owners and wildlife. The Department mentioned that the risk of a dog being caught in a trap is "orders of magnitude less than risks with pets in car accidents struck by vehicles, pets attacked by other animals or pets". The greater risk of a dog being struck by a vehicle does not preclude action by the Department to minimize the risk that a dog is caught in a trap.

Additionally, prior to legislative mandates in 2019 and 2022, respectively, the Department did not require the trapping of dogs and cats and non-targets. Therefore, they do not have a complete historical accounting of incidental takes of animals.

Department Claim: "The Association [of Fish and Wildlife Agencies] represents almost every state Fish and Wildlife agency in the United States, along with a whole host of federal entities, including EPA, U.S. Fish and Wildlife Service, and a number of non-governmental organizations and natural resource agencies."

Context: AFWA's members also include the National Trappers Association, Fur Institute of Canada, Fur Takers of America, Inc., and the National Rifle Association. Some of AFWA's communications strategies include a paper titled "Communication Strategy for Trapping and Furbearer Management'' that offers advice to Fish & Wildlife agencies with titles such as "How to Build Credibility with the Media," and "How to Sell Your Story". AFWA is not an impartial party in this conversation - they teach Fish & Wildlife departments all around the country how to effectively sell trapping to the public.

Department Claim: "Nonetheless, there has been testimony before the legislature already that AFWA is a marketing entity, that every single Fish and Wildlife agency in the United States is biased, that we are gaslighting the public and you and that the study that AFWA performed is biased as well."

Context: Here is part of AFWA's mission from their own website: "The Association represents its state agency members on Capitol Hill and before the Administration to advance favorable fish and wildlife conservation policy and funding and works to ensure that all entities work collaboratively on the most important issues." By AFWA's own admission, part of their job is to market state wildlife management to the federal legislature and the public. This misrepresentation oversimplifies the nuances of the conversations wildlife advocates have been having with the Department, and this is yet another example of why wildlife advocates feel they are not being meaningfully listened to on these issues.

Department Claim: F&W is concerned about the impacts of people with dogs on their wildlife management areas.

Context: This directly contradicts the Department's position on allowing packs of hounds to chase after coyote, bear, and other wildlife on WMA land – if there are genuine concerns about the impacts of dogs on these lands, why would there not be stronger regulations on hound hunting on these lands? Earlier this year, the Department actually fought scientists who work at the Silvio O. Conte National Wildlife Refuge on the topic of the hound training season within the refuge. Refuge scientists supported measures to shorten the hound training season by two months with the stated goal of protecting critical habitat for ground-nesting birds. Yet, the Department did not support a policy that would have put greater restrictions on unleashed dogs in the Refuge.

Department Claim: "Overall, 60% of residents either strongly or moderately supported regulated trapping, 10% didn't know, and 29% disapproved of it."

Context: The survey also mentions that when the word "regulated" is removed from the phrase "regulated trapping", approval falls from 60% to 42%, a significant drop. Here are some relevant survey results that weren't included in the Department's testimony about the survey:

- 68% of residents disapprove of trapping for recreation, while only 26% of residents approve.
- 62% of residents disapprove of trapping wild animals for fur for clothing, while only 31% of residents approve.
- 50% of residents agreed with the statement, "Even though trapping is regulated by the state, regulated trapping can still cause wildlife species to become endangered or extinct". Only 32% of residents disagreed with the statement.
- 68% of residents who disapprove of trapping or regulated trapping say that they disapprove because trapping is cruel/inhumane.
- When asked, "Which of these outdoor activities have you participated in within the past 2 years in Vermont?", 69% of residents said hiking or trail use and 55% said wildlife watching/birdwatching. Twenty-one percent of residents said they went fishing, 15% hunted, and only 4% trapped.
- Only 1% of residents said the otter population in their area was too high. Thirty percent said the population was about right, and 11% said it was too low. Yet the Department allows an exceptionally long otter trapping season (five months).

Department Claim: Trapping is crucial to wildlife management.

Context: It is incumbent on the Department to explain precisely how trapping is crucial to wildlife management. In an attached 2022 email from F&W biologist Chris Bernier (Attachment 2), who served as the furbearer biologist for years, he mentions several ways that trapping is not actually critical to wildlife management in Vermont. The text below is from a September 2022 email obtained through a public records request:

1. *Trapping to manage furbearer populations to reduce wildlife diseases that could affect people, pets, and other wildlife*. We do not put this forward as a rationale for trapping (or at least we shouldn't IMHO).
2. *Trapping to control certain wildlife populations so that they do not become too numerous and destroy wildlife habitat*. Other than nutria trapping to our south, there really is no other example of this being the case that I am aware of - certainly no such case here in VT.
3. *Trapping to relocate wild animals from where they are abundant to places where they once existed as part of a restoration program*. Who wouldn't want us to restore populations?! I get why we ask this question but in reality there is no such work on the horizon and, if we should ever find ourselves in the need to do more restoration work using traps, I feel fairly confident that the public would support our effort even if it used traps.

Department Claim: Packs of hounds used to chase wildlife are well-trained.

Context: This is not only untrue but anecdotal and was misrepresented to the Committee. There are no current or proposed regulations that address the training of hounds used to hunt wildlife. If there are no regulations requiring standardized training, what evidence do we have that these hounds actually are trained?

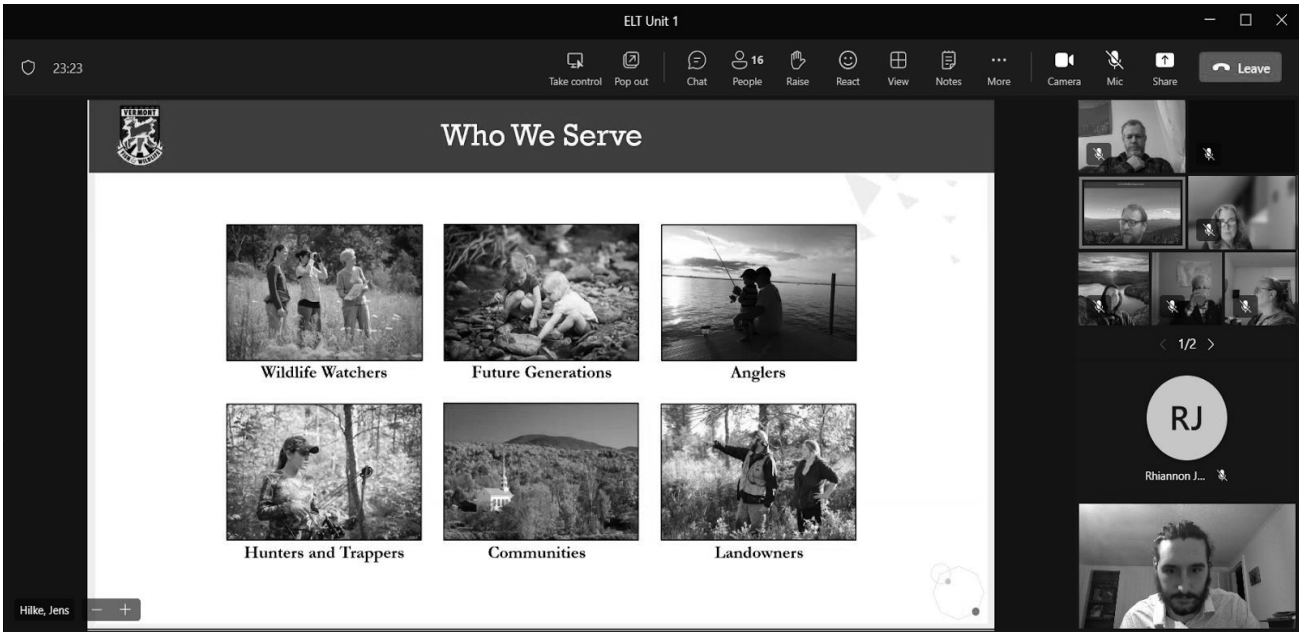
Also, F&W counsel mentioned the following example that highlights the importance of training on the behavior of a given dog: "The difference between just the dog and the trained dogs… I

have two dogs, I have a pit bull mix like that and he's really, really good right next to me. And he responds to voice control. But then I have a hound next and I have to put her on a leash in the woods because she will chase anything that moves." This illustrates that if hounds are not well-trained simply by virtue of what they were bred to do; they could be chasing all kinds of animals if they pick up a scent, regardless of whether the animal is the targeted species.

Department Claim: "The department's position that trapping is a form of hunting has been our position for decades."

Context: On October 10, I attended an Environmental Leadership Training course by the Department, and in their presentation (slide shown below), you can clearly see that hunting and trapping are separated into different activities. If the Department considered them the same thing, why would there be the need to separate hunters and trappers as separate entities? Additionally, wildlife advocates requested records from the Department verifying this decades-long position and only received one document dating from before 2015 - the only piece of additional evidence supplied was "conversations with staff who have, in fact, been working at the Department for decades". Anecdotal evidence has been decried by the Department when used by wildlife advocates, and it is unfair that the Department is relying on anecdotal information in this case.

If the Department wants to redefine trapping as hunting, then that substantive change must go through the legislative process where the public is aware and has an opportunity to submit testimony.



animal wellness action

CENTER FOR A HUMANE ECONOMY

Sincerely Yours,

Bob Galvin
Vermont State Director

Initial Call Information - [Fish + Wildlife Complaint] 10/31/22 19:10 : [redacted], Underhill, VT

Incident Number: 22FW006028
Call Time: 2022-10-31 19:10:45 -0400
Call Type: Fish + Wildlife Complaint
Primary Ofc.: 937: Schmid, Jeremy
Owner.: Disp 42061: Dubuque, Benjamin

Call Type	*Call Priority*	*Call Origin*	*Date & Time of Call*	*Location of Call*
Fish + Wildlife Complaint	Just Occurred	Phone	10/31/2022 19:10	[redacted] Underhill, VT, 05489

Area	*Team*	*Incident Number*	*Roll Call*	*Cancelled By Complainant*		*Incident Codes*
0415 - UNDERHILL		22FW006028	☐	☐	Owner: Disp 42061: Dubuque, Benjamin	*Common Call Type* F&W

Drugs Involved					*Alarm Number*	*Incident flags*
No Drug/Alcohol Involved	☐ *Opiate blocker*	☐ *Mental Health*	☐ *DOMV*	☐ *Cargo theft*		TDA - Trapped Domestic Animal

Witness List

Person Type		*Name*	*DOB*	*Primary Phone*
Owner	☐ *Bus.*	[redacted]	[redacted]	[redacted]
		Address [redacted], Underhill, VT, 05489		
Person Type		*Name*	*DOB*	*Primary Phone*
Complainant	☐ *Bus.*	[redacted]	[redacted]	[redacted]
		Address [redacted] Underhill, VT, 05489		

Responding Officers

Officer name		*Dispatched*	*Enroute*	*OnScene*	*Cleared*	*Secondary Loc.*
937: Schmid, Jeremy	☑ *Primary*	11/02/22 08:45:36	11/02/22 09:47:34	11/02/22 09:47:34	11/02/22 11:39:54	

Dispatch Narratives

---------- 937: Schmid, Jeremy - 11/02/22 08:46 ----------
961 attempted to make contact with homeowner but no one was home, I will try to make contact during shift today.
---------- Disp 35831: Eldred, Erika - 11/01/22 12:48 ----------
961 ADV HE HAS SPOKEN TO THE ACO ABOUT THIS, AND MAY BE FOLLOWING UP - WILL ADV DISPATCH WHEN/IF WE CAN ASSGN IT TO HIM
---------- Disp 35831: Eldred, Erika - 11/01/22 12:46 ----------
945 TIED UP WITH A CASE / CHK WITH 961
---------- Disp 35831: Eldred, Erika - 11/01/22 11:58 ----------
LEFT VM FOR 936 TO SEE IF SHE AND 945 WOULD TAKE THIS.
---------- Disp 42061: Dubuque, Benjamin - 10/31/22 19:12 ----------
937 is off on 11/1 // 937 wants any warden on duty tomorrow to be notified and reach out to complainaint
---------- Disp 42061: Dubuque, Benjamin - 10/31/22 19:10 ----------
937 advised
---------- Disp 42061: Dubuque, Benjamin - 10/31/22 19:09 ----------
257 req. 937 be advised of this case
---------- Disp 42061: Dubuque, Benjamin - 10/31/22 18:34 ----------
[redacted] / [redacted] / aco underhill / [redacted] / got a call about an hour ago about a dog missing / hanging in a tree in a bear trap / were able to get it down but the owner doesn't know the neighbors / [redacted] / [redacted] / [redacted] [redacted]

MRI# ***NCIC NIC#*** ***Narrative*** ☐ ***Cancelled***

Incident Detail - : 937: Schmid, Jeremy

Incident Number: 22FW006028
Call Time: 2022-10-31 19:10:45 -0400
Call Type: Fish + Wildlife Complaint
Primary Ofc.: 937: Schmid, Jeremy
Owner.: Disp 42061: Dubuque, Benjamin

Occurred From 10/31/2022 19:10
Occurred To 10/31/2022 19:10
Invest./Primary Officer

Attachment ***Description*** ***Uploaded at*** ***Employee name***

☐ ***Confidential***

☐ ***TRO/FRO Exists*** ☐ ***Alcohol Involved*** ☐ ***911 Call Exists*** ☐ ***Medical Release*** ☐ ***Audio Recordings*** ☐ ***DCF Notified*** ☐ ***Crisis Svc Involved*** ☐ ***Swabbings*** ☐ ***SIU Contacted*** ***SVU Contact***

☐ ***Video Recordings*** ☐ ***Photos Taken*** ☐ ***Prints Lifted*** ☐ ***Diagrams*** ☐ ***Clothing Evidence*** ☐ ***K9*** ☐ ***Miranda Warning*** ☐ ***Other Evidence*** ☐ ***Crime Scene Processed*** ☐ ***Lpr Used***

Evid. Search Conducted ***Physical Evidence*** ***Media/Press Summary*** ***Secondary Call Type***

Violation			*Offense Cat*	*Offense SubCat*	*NIBRS Vio Type*	*Counts*	*#Premises*
Comm/Att	*IBR Scene/Loc Typ*	*IBR Crim Act Typ*	*IBR Gang Affil*	*IBR Agg.Aslt/Hom.*	*IBR Weapon Typ*	*NIBRS Override*	
Point Of Entry	*Force/No Force*	*Point of Exit*	*Campus Code*	*Justifiable Homicide*			*Significant Event*

Narrative Type	*Officer*	*Narrative Template*
Officer Report	937: Schmid, J	

Confidential

Narrative

Dog killed in a legally set trap, no F&W violation.

Jeremy Schmid
State Game Warden
11.3.22

Offense Suspect	*Offense Victim*	*IBR Victim-Offender*		*Bias/Motivation (anti)*
V. was LEO	*V was LEO Assignment*		*Other ORI*	*LEOKA Narrative*

Sent: Monday, September 26, 2022 11:23 AM
To: Saunders, Chris <Chris.Saunders@vermont.gov>
Subject: RE: For Review: Furbearer Survey 1st Draft

Chris,

Thanks again for your patience with me on this. As I expected given all the players involved and your efforts to corral them, the survey looks great and is hard for me to find any significant/meaningful edits. It is long as previously noted so I paid particular attention to questions/sections that I thought could be deleted but I only settled on one section - "Outdoor Activities" - that seemed like it could be dropped without too much loss of important data. I also thought that the "Awareness" section could be deleted but then saw that responses to this section were used to narrow down later questions so maybe it should just remain as is. I agree with all RM's recommendations to streamline the questionnaire and only suggest that for those questions which have a random allocation (i.e., APPROVAL / DISAPPROVAL OF VARIOUS REASONS TO TRAP and KNOWLEDGE AND ATTITUDES TOWARD FURBEARER SPECIES) that we narrow the list down so that all participants are asked the same questions. For example, we could easily eliminate the following questions from the "approval/disapproval of various reason to trap section" without impacting the value of the survey:

1. *Trapping to manage furbearer populations to reduce wildlife diseases that could affect people, pets, and other wildlife*. We do not put this forward as a rationale for trapping (or at least we shouldn't IMHO).
2. *Trapping to control certain wildlife populations so that they do not become too numerous and destroy wildlife habitat*. Other than nutria trapping to our south, there really is no other example of this being the case that I am aware of - certainly no such case here in VT.
3. *Trapping to relocate wild animals from where they are abundant to places where they once existed as part of a restoration program*. Who wouldn't want us to restore populations?! I get why we ask this question but in reality there is no such work on the horizon and, if we should ever find ourselves in the need to do more restoration work using traps, I feel fairly confident that the public would support our effort even if it used traps.

Assuming we accept RM's recommendation of randomly asking participants only 8 of the 11 questions, eliminating the three questions above wouldn't shorten the survey but it would boost the response rates for the remaining 8 questions. Similarly, if we narrow the species down from nine to say four or five key indicator species in the "attitudes towards furbearer species" section and then randomly select three from this narrower list, we will maintain as high a response rate as possible per species and would still get the data we need for making decisions on the entire suite. If you think that makes sense, I suggest beaver, otter, coyote, bobcat, and raccoon. Others may think differently than me on what key indicator species to include but I'm guessing there will be some redundancy in responses for some of these species like raccoon and skunk, or like fisher and bobcat, etc. Again, going this route doesn't shorten the survey but it will maintain better samples sizes than spreading the questions out over nine species. Last, I really liked the inclusion/exclusion of the word "regulated" in the "approval/disapproval of trapping" section. Let me know if you need any clarification on any of these comments or if you need

VERMONT TRAPPERS ANNUAL SPRING FUR AUCTION

March 11, 2023

The Annual Spring Fur Auction was held at the White River Valley Middle School (formerly Whitcomb High School in Bethel, VT on Saturday, March 11, 2023. Thirty-two lots of fur were offered to the 7 buyers present. The following is a breakdown of prices received:

Species	# Offered	# Sold	Avg	High	Low	N/S	Total
Mink	116	116	5.80	6.31	1.50	0	673.50
Muskrat	136	136	2.47	5.00	1.50	0	366.50
Coyote	85	85	13.54	28.57	1.00	0	1,151.00
Red Fox	13	13	30.31	30.50	8.00	0	394.00
Grey Fox	11	11	23.00	30.00	17.33	0	253.00
Raccoon	73	73	6.90	12.00	1.00	0	504.00
Fisher	36	36	35.56	40.00	33.33	0	1,280.00
Beaver	176	176	18.52	22.50	5.00	0	3,260.00
Otter	22	22	30.59	45.00	27.50	0	673.00
Skunk	44	44	11.55	15.00	5.00	0	508.00
Opossum	1	1	3.00	3.00	3.00	0	3.00
Weasel	18	18	4.64	5.67	2.50	0	83.50
Bobcat	26	26	79.81	112.50	45.00	0	2,075.00
Badger	4	4	24.50	35.00	13.00	0	98.00
Castor	37 lbs, 3oz	32 lbs	19.38	20.98	15.00	5 lbs, 3 oz	620.00
Box assorted Skulls							150.00
Mink Garment							30.00

TOTAL SALES: $12,092.50

Annual Trapper Report Return Rate Summary

	2019-2020			2020-2021			2021-2022		
	Regular License Holders	Permanent License Holders	Totals	Regular License Holders	Permanent License Holders	Totals	Regular License Holders	Permanent License Holders	Totals
Total # Surveys Mailed	**791**	**1115**	**1906**	**905**	**1213**	**2118**	**839**	**917**	**1756**
# Trapped in-season only	154	37	191	193	51	244	179	58	237
# Trapped out-of-season only	20	7	27	16	11	27	41	13	54
# Trapped both in and out of season	57	22	79	59	20	79	39	16	55
# Did not trap	418	743	1161	383	417	800	456	574	1030
# Returned as undeliverable	12	9	21	3	8	11	8	11	19
# Perm license holder that are not trappers					290	290		48	48
Total # Surveys Returned[1]	**661**	**818**	**1479**	**654**	**797**	**1451**	**723**	**720**	**1443**
Return rate	**83.6%**	**73.4%**		**72.3%**	**65.7%**		**86.2%**	**78.5%**	
Overall return rate			**77.6%**			**68.5%**			**82.2%**

[1]Mailed, emailed, or reported by a phone call; includes those returned as "undeliverable as addressed" and those that responded "Not a trapper".

Below is summary information added to the FWD spreadsheet by B. Felitti

Totals for In-season only, out-of-season only and both seasons	***297***	***350***	***346***

JMack testimony

Charlene Dindo

From: Jeffrey Mack <jlmkaw@yahoo.com>
Sent: Monday, October 2, 2023 10:32 AM
To: Charlene Dindo
Subject: [External] testimony

[External]

My wife and I live in Shoreham. We are life long Vermonters. Where we are is coyote hounding central. In the winter months we are surrounded by hounders Sat. and Sun. from sun up till sun down. Coyote hunters use public roads for there personal hunting grounds. As they line the roads with trucks in anticipation of hounds running coyotes there way they almost never have to leave there truck. Then the road hunting begins with trucks driving around and around with a long gun by there side again in anticipation of being able to to get a shot at a coyote.

What I witness I believe is animal cruelty, dog on dog legalized dog fighting. Vermont fish and Wildlife could not have made it any easier to slaughter coyotes and put homeowners in the middle of war on coyotes. It puts homeowners against a large group of people with guns by there side. It puts children and pets in danger of hounds and coyotes in there yards.

As I speak out against this form of hunting I have had trucks at the end of our driveway staring at my house with there gun on the seat beside them yelling out it does not look like my land is legally posted. My wife and I have had trucks go far left of center in attempt to run us off the road. A local pilot used his airplane for low altitude high speed fly buys over our house. Fish and Wildlife recommendation gives these same people permission to have guns and dogs run free out of site of there handler all for sport killing. I am asking you to make my home and my yard safe in the winter months. Again Fish and Wildlife recommendation fall short of that.

Thank you for my time.

Jeffrey Mack

J Barbeau
Testimony

THE HUMANE SOCIETY
OF THE UNITED STATES

October 5, 2023

To: The Vermont Joint Legislative Committee on Administrative Rules

c/o Committee Assistant Charlene Dindo, charlene@leg.state.vt.us

Re: Proposed rule on trapping and coyote hounding, per the directive of Act 159 and Act 165

Good afternoon Chairman Squirrell and members of the committee,

My name is Joanne Bourbeau and I'm the northeastern regional director for the Humane Society of the United States (HSUS). I live in Windham County and represented the HSUS and our members and supporters in Vermont on both the trapping best management practices ("BMPs") and coyote hounding working groups. Thank you for the opportunity to share my comments on the proposed changes to trapping and coyote hounding in Vermont.

While the HSUS appreciated being at the table for these conversations, we find the recommended rule largely ignores the input of the humane groups that were involved. Instead, it just proposes to codify the trappers' and hounders' own ineffectual, self-imposed modifications to current practices. As such, the proposed recommendations will not protect wildlife, pets or the public.

The proposed rule appears to fall short of the intent of Act 159

Act 159 directed the working group **to consider recommended best management practices (BMPs) designed to modernize trapping and improve the welfare of animals subjected to trapping programs.** However, leghold traps are indiscriminate, spring-loaded metal jaws designed to clamp on an animal's limbs, and no amount of modifications will make them more humane. For example, the proposal would require leghold traps to be padded or offset, laminated, or have jaws with a minimum thickness of 5/16th of an inch. But researchers find that even if the jaws of leghold traps are covered by padding or a thin strip of rubber, they still cause major injuries in nearly one-half of trapped animals.[1]

Act 159 also **requires that traps be set away from public areas on all lands where the public can be reasonably expected to recreate.** Vermont Fish and Wildlife's recommendation for setbacks is inadequate because it applies to only a small percentage of public lands and is insufficient to protect the public. Additionally, its recommended 50-foot trap setbacks, although an improvement from the 25-foot setback that was initially recommended, still present a danger to the public and their dogs. The wildlife protection representatives on the stakeholder group instead recommended a 500-foot or more setback rule for public trails, class 4 roads, playgrounds, parks and other public locations where persons may reasonably be expected to recreate as a minimum standard for consistency.

Further, Villeneuve and Proulx (2022) attempted to quantify the hidden world of domestic dogs and cats captured in traps.[2] They found that the majority of family pet captures occur near urban settings, on

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[1] Muth, R. M., Zwick, R. R., Mather, M. E., Organ, J. F., Daigle, J. J., & Jonker, S. A. (2006). Unnecessary source of pain and suffering or necessary management tool: Attitudes of conservation professionals toward outlawing leghold traps. *Wildlife Society Bulletin, 34*(3), 706-715.

[2] Kimberly A. Villeneuve and Gilbert Proulx, "Impact of wild mammal trapping on dogs and cats: A search into an unmindful and undisclosed world," in *Mammal Trapping: Wildlife management, animal welfare and international standards*, ed. G. Proulx (Alpha Wildlife Publication, 2022).

trails and in winter.[3] They also found that governmental bodies "prefer to keep pertinent data sets [of captured domestic pets] undisclosed."[4]

Act 159 also directed the stakeholder group to **recommend trapping methods that would avoid nontarget animals.** But as long as body-crushing kill traps are allowed on the ground—including being elevated above the ground—nontarget animals will continue to be victims. We recommended these traps not be allowed on the ground under any circumstances, and be restricted to underwater use only, which would have significantly reduced this concern. However, the VFW proposal still allows traps to be placed at least 5 feet above ground, which will endanger black bears, whose limbs can be crushed when trying to access the baited trap in a tree, as well as endangered pine martens and other non-target species.

Additional requirements such as adjustable pan tension on traps, a limit on the size of a trap's jaw spread and allowing the use of drag anchors will also not limit the amount of physical and physiological distress that trapped animals regularly endure.

Beausoleil et al. (2022) write that traps can produce "negative or unpleasant mental experiences" on trapped animals including "thirst, hunger, pain, breathlessness and fear," which causes the animal to react in order to "try to alleviate or rectify the underlying problem," and these experiences are "detrimental to an animal's current state of welfare" or their survival.[5] These "unpleasant experiences" that an animal is unable to rectify either "through behavioral and physiological responses," such as thirst or fear, harm an animal's welfare far more than an experience in which an animal can control what is happening to itself.[6]

Confirming earlier studies, Beausoleil et al. (2022) found that while restraining traps (such as leghold traps) that are intended only to hold an animal, can cause death if these traps go unchecked—leaving an animal to die from dehydration or exposure. This is not a quick nor humane death, according to the American Veterinary Medical Association (2013).[7] Beausoleil et al. (2022) also reiterated that killing traps may not cause a quick death if a non-target animal is captured or if mis-strikes occur, which also has important animal welfare implications.[8]

Act 159 also **directs the establishment of criteria for when and how live, captured animals should be released or killed** (using the euphemism "dispatched"). Vermont Fish and Wildlife proposes that, "Upon discovery, a trapper shall immediately dispatch a live trapped furbearer with a muzzleloader, gun, crossbow, or bow and arrow." But it weakens this directive by adding that it "...may be amended upon receipt of the Association of Fish and Wildlife Agencies' recommendations regarding humane dispatch." However, those current AFWA recommendations are anything but humane, and allow wholly unacceptable killing methods such as bludgeoning, stomping to crush the heart and lungs (using the bloodless term "chest compression), choking, and even drowning. To reiterate, the American Veterinary Medical Association states clearly that *drowning is not a humane form of death.*[9]

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[3] Villeneuve and Proulx, "Impact of wild mammal trapping on dogs and cats: A search into an unmindful and undisclosed world."
[4] Villeneuve and Proulx, "Impact of wild mammal trapping on dogs and cats: A search into an unmindful and undisclosed world," p. 141.
[5] Ngaio J. Beausoleil, Sandra E. Baker, and Trudy Sharp, "Scientific Assessment of the Welfare of Trapped Mammals—Key Considerations for the Use of the Sharp and Saunders Humaneness Assessment Model," *Animals* 12, no. 3 (2022): p. 3-4, https://www.mdpi.com/2076-2615/12/3/402.
[6] Beausoleil, Baker, and Sharp, "Scientific Assessment of the Welfare of Trapped Mammals—Key Considerations for the Use of the Sharp and Saunders Humaneness Assessment Model," p. 3-4.
[7] The American Veterinary Medical Association, *AVMA Guidelines on Euthanasia* (June 2013).
[8] Beausoleil, Baker, and Sharp, "Scientific Assessment of the Welfare of Trapped Mammals—Key Considerations for the Use of the Sharp and Saunders Humaneness Assessment Model."
[9] Ludders, J. W., Schmidt, R. H., Dein, F. J., & Klein, P. N. (1999). Drowning is not euthanasia. *Wildlife Society Bulletin, 27*(3), 666-670; the American Veterinary Medical Association: AVMA Guidelines for the Euthanasia of Animals: 2020 Edition at https://www.avma.org/sites/default/files/2020-01/2020-Euthanasia-Final-1-17-20.pdf

So-called "best management practices" may not be what's best for wildlife

During discussions in the trapping BMPs stakeholder group, the HSUS agreed that the limited BMP recommendations proposed by the Vermont Trappers Association would not *worsen* animal welfare concerns. But we do not agree that they will *improve* animal welfare in any significant way.

Moreover, the use of the Association of Fish and Wildlife Agency's (AFWA) Best Management Practices as a guide for Vermont, in whole or in part, is no guarantee that there will any measurable reduction in the suffering that animals in our state endure in traps. The AFWA BMPs were established following the 1995 prohibition on the use of leghold traps in the European Union, which also sought to prevent the export of furs from countries that continued to use those devices, including the U.S. and Canada.[10] However, a compromise was eventually reached, allowing the U.S. to develop voluntary best management practices for trapping without actually moving toward a nationwide prohibition on the use of those devices.

Despite being touted as some kind of humane standard, the BMPs in fact allow for an unacceptable level of harm to trapped animals. This is because they rely on international scales of trauma and injury to assess trapped animal welfare that allow for some severe suffering to individual animals, as long as an average amount of suffering across all animals trapped is below a certain threshold. Notably, one of the scales allows for up to 30% of animals caught in restraining traps, such as leghold traps, to suffer from severe trauma, up to and including death. Animals caught in so-called killing traps, such as body-crushing traps, are allowed to suffer for up to five minutes before becoming permanently unconscious, and up to 30% of those animals can suffer even longer in agonizing pain.

The BMPs also fail to consider a holistic understanding of welfare. They fail to incorporate behavioral or physiological responses as measures of welfare, and they fail to account for the compounding effect of multiple lesser injuries that an animal might incur in the trap. They also assign low and moderate injury scores to some injuries that are capable of causing severe pain, such as a permanent tooth fracture, which by any reasonable measure can cause agonizing pain. The BMPs also allow for some injuries that may not be identified without the use of x-rays, they don't consider how long an injury is present before the animal is killed, the long-term harms from some injuries for animals who escape or for non-target animals who are released, and they don't provide guidelines on how animals, once caught, should be killed.

For instance, Gese et al. (2019) compared the usage of leghold traps to foot snares used to capture wolves (for research) and **found that many injuries are impossible to see on live animals and can only be discovered postmortem.**[11] Their study showed:

- 61% of wolves who were captured in leghold traps and 5% of wolves captured in cable snares sustained injuries to the feet and legs such as lacerations, punctures, and lost toes.
- 26% of the wolves captured in leghold traps had injuries to their mouths such as cut lips and lost teeth, while 77% of the snared wolves had injuries to their mouths including gum, tongue, and lip injuries.[12]

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[10] Tara Zuardo (2017) How the United States was Able to Dodge International Reforms Designed to Make Wildlife Trapping Less Cruel, Journal of International Wildlife Law & Policy, 20:1, 101-123, DOI: 10.1080/13880292.2017.1315278

[11] Eric M. Gese et al., "Injury scores and spatial responses of wolves following capture: Cable restraints versus foothold traps," *Wildlife Society Bulletin* 43, no. 1 (2019), https://doi.org/https://doi.org/10.1002/wsb.954, https://wildlife.onlinelibrary.wiley.com/doi/abs/10.1002/wsb.954.

[12] Gese et al., "Injury scores and spatial responses of wolves following capture: Cable restraints versus foothold traps."

Their research shows that even under the best conditions in which traps are monitored by researchers, wolves suffer grave bodily harm while restrained in leghold traps or snares. But many of those injuries are not detectable on live animals.

And though the BMPs suggest that specific trap types be used for specific animals, traps are indiscriminate—literally just pieces of spring-loaded metal—and frequently capture non-target animals like family pets and other wildlife.[13] In particular, the BMPs fail to consider the suffering of other "furbearing" species when they are caught in the wrong trap type. For instance, while a specific type of leghold trap may effectively capture and cause less injury to foxes and coyotes, the same trap can just as easily capture raccoons and opossums, too, and cause much more severe injuries to those species.[14] (In a brand-new study, researchers found that ticks, a favorite opossum prey, could be an important vector for spreading chronic wasting disease.[15])

Finally, an AFWA survey found that trappers rarely follow the BMPs that it had created. Its 2015 report indicated that only 42% of trappers had heard of the BMPs. Of that 42% of trappers, only 66% currently use and plan to continue using the BMPs when they trap.[16] That means that only 28% of all trappers are following the only, and insufficient, guidelines that the trapping industry has established to address animal welfare concerns.

The proposed rule appears to fall short of the intent of Act 165

Hounding, which is the use of packs of dogs to find and pursue coyotes and other wildlife, is considered unsporting even among many hunters because it gives unfair advantage to the hunter.[17] Hounders may attach GPS collars to their dogs, who then run miles ahead and are not under the control of their owners. While pursuing coyotes and other target species, hounds chase, startle, panic and kill non-target wildlife, including deer.[18] They may even chase coyotes into roadways, where oncoming vehicles could strike either species. And hounds invariably trespass on lands—whether on private land or on special refuges such as national parks where hounds are not permitted. This creates strife between landowners and hunters.[19] If the hounding is conducted in the late winter or spring, dependent coyote pups may be orphaned and left to die of starvation or exposure, or may be killed by other carnivores.

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[13] Beausoleil, Baker, and Sharp, "Scientific Assessment of the Welfare of Trapped Mammals—Key Considerations for the Use of the Sharp and Saunders Humaneness Assessment Model."; G. Iossa, C. D. Soulsbury, and S. Harris, "Mammal trapping: a review of animal welfare standards of killing and restraining traps," *Animal Welfare* 16, no. 3 (Aug 2007), <Go to ISI>://000248518900005 ; S. Harris, C. D. Soulsbury, and G. Iossa, "Trapped by bad science: The Myths behind the International Humane Trapping Standards: A Scientific Review," *International Fund for Animal Welfare*, (Nov. 2005); R. M. Muth et al., "Unnecessary source of pain and suffering or necessary management tool: Attitudes of conservation professionals toward outlawing leghold traps," Article, *Wildlife Society Bulletin* 34, no. 3 (Oct 2006), <Go to ISI>://000242398700020

[14] Iossa, Soulsbury, and Harris, "Mammal trapping: a review of animal welfare standards of killing and restraining traps."

[15] Inzalaco, H.N., Bravo-Risi, F., Morales, R. *et al.* Ticks harbor and excrete chronic wasting disease prions. *Sci Rep* 13, 7838 (2023). https://doi.org/10.1038/s41598-023-34308-3

[16] The Association of Fish and Wildlife Agencies. (2015). Trap use, furbearers trapped, and trapper characteristics in the United States in 2015. Available at https://www.dfw.state.or.us/wildlife/docs/AFWA_Trap_Use_Report_2015.pdf.

[17] C.W. Ryan, J.W. Edwards, and M.D. Duda, "West Virginia residents: Attitudes and opinions toward American black bear hunting," *Ursus* 2 (2009); T. L. Teel, R. S. Krannich, and R. H. Schmidt, "Utah stakeholders' attitudes toward selected cougar and black bear management practices," *Wildlife Society Bulletin* 30, no. 1 (Spr 2002), <Go to ISI>://000175200100002.

[18] Hank Hristienko and Jr. McDonald, John E., "Going in the 21st century: a perspective on trends and controversies in the management of the black bear," *Ursus* 18, no. 1 (2007). Stefano Grignolio et al., "Effects of hunting with hounds on a non-target species living on the edge of a protected area," *Biological Conservation* 144, no. 1 (2011/01/01/ 2011), https://doi.org/http://dx.doi.org/10.1016/j.biocon.2010.10.022, http://www.sciencedirect.com/science/article/pii/S0006320710004702. Emiliano Mori, "Porcupines in the landscape of fear: effect of hunting with dogs on the behaviour of a non-target species," journal article, *Mammal Research* 62, no. 3 (July 01 2017), https://doi.org/10.1007/s13364-017-0313-5, https://doi.org/10.1007/s13364-017-0313-5.

[19] Hristienko and McDonald, "Going in the 21st century: a perspective on trends and controversies in the management of the black bear."

The GPS and shock collars recommended in the proposed rule change may not meet the intent of Act 165, which **states that hounds should be under control of the coyote hunter.** It is impossible to control up to four dogs who could potentially be running in different directions without visual or physical contact. Since most Vermont coyote hounders already use GPS technology, it is unclear how this recommendation will decrease potential conflicts with landowners who have posted their land as closed to hunting.

Allowing the pursuit of one coyote with as many as four hounds also seems contradictory to **the directive of Act 165 to address the humane taking of coyotes.** By any reasonable measure, four trained, powerful hounds pursuing one terrified coyote is neither fair chase nor humane. By pitting domestic dogs against wild dogs, it is nothing more than a state-sanctioned form of dog fighting.

Act 165 also **asked Vermont Fish and Wildlife to consider prohibiting baiting,** which draws animals next to roads and residential areas and offers hunters even more of an unfair advantage. Members of the coyote hounding working group agreed to prohibit the baiting of coyotes for training purposes, but with no explanation, Vermont Fish and Wildlife ultimately removed that provision from its final proposal.

Finally, Act 165 **directs the rule to support "...the management of the population in concert with sound ecological principles."** But to date, Vermont Fish and Wildlife has not provided any science-based evidence that their proposed rule comports with that directive. In fact, the practice of hounding is antithetical to sound ecological principles.[20]

Wildlife belongs to all Vermonters, who should have a say in how their wildlife is managed

The wildlife of Vermont is held in the public trust, to be managed for the benefit of all Vermont residents—not just the small percentage who seek to kill them in traps or by hounding.

Recent landmark research titled the "America's Wildlife Values Project" found that animal welfare has become an increasingly important concern for the general public, and the number of those who value wildlife as "part of their extended social network" has grown.[21] That survey also found that nearly 10% more Vermont residents consider themselves to be "Mutualists," believing that humans and wildlife are meant to coexist, than those who consider themselves "Traditionalists," believing that wildlife should be managed for human benefit. Further, in that survey more than 70% of Vermont residents agreed that they should strive for a society that emphasizes environmental protection over economic growth. And a 2019 survey of American attitudes towards hunting by the National Shooting Sports Foundation and Responsive Management found that 71% of Americans disapprove of trophy hunting, and even more disfavor trapping.[22]

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[20] *Supra* notes 17 and 18.

[21] Manfredo, M.J., Sullivan, L., Don Carlos, A.W., Dietsch, A.M., Teel, T.L., Bright, A.D., & Bruskotter, J. (2018). *America's Wildlife Values: The Social Context of Wildlife Management in the U.S.* National report from the research project entitled "America's Wildlife Values." Fort Collins, CO: Colorado State University, Department of Human Dimensions of Natural Resources. https://sites.warnercnr.colostate.edu/wildlifevalues/

[22] The National Shooting Sports Foundation Report: "Americans' Attitudes Toward Hunting, Fishing, Sport Shooting and Trapping 2019" at https://asafishing.org/wp-content/uploads/2019/04/Americans-Attitudes-Survey-Report-2019.pdf.

There is no question that the demand for fur is disappearing, largely because policymakers and fashion companies have become aware of the cruelties associated with the fur industry, including trapping. The sale of new fur products has been banned throughout the entire state of California, and 16 municipalities around the country have similar bans or partial bans, including six communities in Massachusetts. Additional state and local policies are currently under consideration.

Fig. 1

The fur market is bottoming out as supply far outpaces demand and a rapidly growing list of fashion designers, department stores, and prominent apparel companies reject it, including Prada, Armani, Versace, Michael Kors, Jimmy Choo, DKNY, Burberry, Chanel, Alexander McQueen, Moncler, Balenciaga, and Dolce & Gabbana. (Fig. 1) In 2021 the prominent fashion magazine *ELLE* announced that it will no longer allow the advertising of fur products or the use of fur in its photoshoots.[23] Last year, one of Russia's largest fur retailers announced it would be closing its factory and selling its remaining stock because of declining sales.[24]

Nationwide, wildlife watchers and those who participate in non-consumptive outdoor recreation outnumber and outspend hunters and trappers by a wide margin.[25] (Fig. 2 and Fig. 3).

[23] Kim, L.: "Elle Ditches Fur In Magazine And Online Content Worldwide." *Forbes*, December 2, 2021 at https://www.forbes.com/sites/lisakim/2021/12/02/elle-ditches-fur-in-magazine-and-online-content-worldwide/?sh=3088474a8991

[24] Labutina, Daria: "Russian Fur Retailer Kalyaev to Close Factory Following Sales Decline." *Business of Fashion*, January 14, 2022. https://www.businessoffashion.com/news/global-markets/russian-fur-retailer-kalyaev-to-close-factory-following-sales-decline/

[25] The U.S. Fish & Wildlife Service: National Survey of Fishing, Hunting, and Wildlife Associated Recreation (2016) at https://www.census.gov/content/dam/Census/library/publications/2018/demo/fhw16-nat.pdf; and Dept. of Commerce Bureau of Economic Analysis, "Outdoor Recreation Satellite Account, U.S. and States, 2021" https://www.bea.gov/data/special-topics/outdoor-recreation

Fig. 2

USFWS: Wildlife Recreation Participation & Expenditures: 2011 vs. 2016 data From: *2016 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*			
	2011	**2016**	**Percent change**
Wildlife watchers	71.8M	86.0M	20
Wildlife watcher expenditures	$59.1B	$75.9B	28
Hunter numbers	13.7M	11.5M	-16
Hunter expenditures	$36.3B	$25.6B	-29

Fig. 3

Outdoor recreation spending in the U.S. (2021) From: *U.S. Bureau of Economic Analysis*		
Activity	Spending [in millions of dollars]	% of total
Hunting and trapping	4,831	**1.27**
Other outdoor recreation	62,796	**16.5**
Trips and travel	123,860	**32.6**
Total outdoor recreation	380,471	**100.00**

In Vermont, tourists spend millions of dollars in local economies to view wildlife and enjoy outdoor spaces. The National Park Service reports, "In 2021, 48.0 thousand park visitors spent an estimated $3.1 million in local gateway regions while visiting National Park Service lands in Vermont. These expenditures supported a total of 40 jobs, $1.4 million in labor income, $2.4 million in value added, and $4.1 million in economic output in the Vermont economy."[26]

According to the Bureau of Economic Analysis in the U.S. Dept. of Commerce, outdoor recreation in Vermont generated $1.5 billion for the state's economy in 2021. Of that figure, hunting and trapping generated a little over one percent. Participants in snow activities spent more than 12 times that much, and people spent more than 33 times as much on travel and tourism in Vermont (Fig. 4).[27]

[26] National Park Service, "2021 National Park Service Vistor Spending Effects Report," https://www.nps.gov/subjects/socialscience/vse.htm

[27] Dept. of Commerce Bureau of Economic Analysis, "Outdoor Recreation Satellite Account, U.S. and States, 2021" https://www.bea.gov/data/special-topics/outdoor-recreation

Fig. 4

Outdoor recreation spending in Vermont (2021) From: *U.S. Bureau of Economic Analysis*		
Sample outdoor activities	Spending [in thousands of dollars]	% of total
Hunting and trapping	17,691	**1.2**
Game areas (includes golfing and tennis)	57,613	**3.7**
Snow activities	215,049	**14**
Travel and tourism	594,020	**38.6**
Total outdoor recreation	1,539,280	**100.00**

The actions of an extremely small—and shrinking—segment of our state's population should not jeopardize the safety and well-being of Vermont's wildlife, companion animals, non-target species and public land users with these practices. Further, the values and viewpoints of the vast majority of Vermont residents who oppose these practices should be seriously considered by this Board.

Conclusion

For the reasons stated above, the Humane Society of the United States finds the proposed rule by Vermont Fish and Wildlife does little to nothing to improve animal welfare for trapped animals or coyotes being pursued by hounds, and does not need the mandates set forth by the legislature. Thank you for your time and attention.

Sincerely,

Joanne Bourbeau
Northeast Regional Director
The Humane Society of the United States
jbourbeau@humanesociety.org
PO Box 303
Jacksonville, VT 05342

Brenna Protect Our Wildlife

Charlene Dindo

From:	Protect Our Wildlife VT <info@protectourwildlifevt.org>
Sent:	Monday, October 2, 2023 12:51 PM
To:	Trevor Squirrell; Mark MacDonald; Christopher Bray; Virginia Lyons; David Weeks; Seth Bongartz; Mark Higley; Carol Ode
Cc:	Charlene Dindo
Subject:	[External] Department of Fish and Wildlife/Rulemaking 10 V.S.A. Appendix § 44, Furbearing Species
Attachments:	POW LCAR Department of Fish and Wildlife10 V.S.A. Appendix § 44, Furbearing Species.pdf

[External]

Good afternoon honorable LCAR committee members,
Attached is Protect Our Wildlife's written testimony in response to Fish & Wildlife's rulemaking pursuant to Acts 159 & 165. We did not include all of our concerns, as our written testimony already exceeds 11 pages. All of the exhibits contained in our written testimony are provided on this shared drive: https://drive.google.com/drive/folders/1Pop3oOU8jP2iBqD1miwq-ov4FRqmyxbg?usp=drive_link

Additionally, some of our testimony had to be rewritten and may need future revisions due to Fish & Wildlife submitting revised rules this week after a discussion with legislative counsel. Over the last 18 months wildlife advocates informed Fish & Wildlife that their recommendations for trap setbacks were insufficient. It appears that it took the urging of legislative counsel for them to make changes. We do not know what Fish & Wildlife's latest proposal to LCAR will be, which makes commenting on that part difficult at this time. We hope that there will be a future opportunity to comment on that.

It is our opinion that Fish & Wildlife did not meet various legislative mandates in Acts 159 and 165 and did not meet the legislative intent of Act 165.

I thank you for the opportunity to testify on Thursday and I appreciate your good work for the people of Vermont.

Respectfully,
Brenna

Brenna Galdenzi
President
Protect Our Wildlife POW
www.ProtectOurWildlifeVT.org

October 2, 2023

To: Legislative Committee on Administrative Rules
Re: Department of Fish and Wildlife/Rulemaking 10 V.S.A. Appendix § 44, Furbearing Species

Dear Honorable Committee Members:
I am writing on behalf of Protect Our Wildlife's 3,000+ Vermont subscribers, as well as our 30,000 social media followers concerning rule 23-P15: Vermont Fish & Wildlife Department's (Department) proposed rules pertaining to trapping and the hunting of coyotes with hounds resulting from Act 159 and 165, respectively.

Working with the Department and Vermont Fish & Wildlife Board (Board) has regrettably been a futile endeavor, resulting in no meaningful changes for wildlife and the public. Despite almost two years of working on these rules, the Board recently weakened what were already inadequate recommendations to begin with. The Board would have likely further weakened the Department's recommendations if not cautioned by a sole voice on the Board (and former Vermont House Representative), who reminded the Board of the intent of Acts 159 and Act 165.

This process has illuminated the fact that the values held by the Department with respect to wildlife are very different from the public's values. The only way that

the public, who largely opposes these activities, will see any meaningful changes for animals is through the legislature where democracy is possible. At every turn of this process, the Department eroded the trust and confidence of their constituents for whom they are to serve as trustee over our shared wildlife.

Background

Intent of the Acts are animal welfare and public safety.

I'd like to briefly provide some background on Acts 159 and 165 that hopefully offers insight as to how we got to where we are today. There were two bills in 2022: S.201, *a ban on leghold traps*, and S.281, *a ban on coyote hounding*. Both had tremendous support from the public, but they were not supported by the Department. The Senate Committee on Natural Resources amended these bills to instead require that the Department promulgate rules to address, in part: animal welfare; reduce non-targeted animals getting trapped; violation of landowner rights by packs of hounds traversing posted land; public safety; and other matters.

The Department convened working groups and hearings that were biased and hostile.

While we had our doubts that this process would yield the intended results, we participated in working group meetings, Board meetings, and public hearings in good faith to make meaningful changes for animals. From the beginning, the Department showed its bias by trying to exclude Protect Our Wildlife from the working groups. Protect Our Wildlife is the largest Vermont-based organization working on wildlife protection efforts since 2015. Only after Senators from **Senate Natural Resources pushed the Department were we invited. Our colleagues had already been invited.**

The Department convened working groups in which wildlife advocates were outnumbered (see appendix A) and allowed hostile public hearings in which wildlife advocates were disparaged and even threatened. I was personally told to "be quiet" by Mark Scott, former Director of the Vermont Fish & Wildlife Department, in front of an audience of people at a public hearing in Montpelier.

The Department failed to foster middle ground between the sporting community and animal advocates.

This law and working groups were a unique opportunity for the Department and Board to find a middle ground with wildlife advocates and the public. Instead, they squandered this chance to work together, by fighting every step to fulfill the intents of these Acts.

The Department did not incorporate a single one of the recommendations from the three wildlife protection groups that participated in the working groups. (See Protect Our Wildlife's original recommendations.)

In addition to these concerns, the Department (see appendices B-G):

- underrepresented data on non-targeted animals that were trapped
- misrepresented data to the legislature
- misrepresented our position in the minutes and on their website

The reason these things are important to mention is that the public will never see any positive changes for animals by working with either the Department or the Board. Until the management of the Department and Board is restructured to reflect current demographics and the actual values of the Vermont public, the legislature will be the body that will be called upon to make regulations that represent the will of the people.

Below are highlights of the legislative mandates that the Department did not meet. <u>This is not an exhaustive list.</u>

Act 159, An act relating to trapping

The Department fails its mandate and attempts to exploit the process to enshrine trapping in the Constitution.

The impetus for Act 159 was to improve animal welfare and reduce non-target animals from being trapped. We recently learned that the Department used Act 159 as a vehicle to make a substantial change—defining trapping as hunting—without ever discussing this change with the public. That maneuver is emblematic of the Department's opaque process. We believe that alone is grounds for LCAR to reject the rule because that rule is beyond the authority of the agency. If the Department wishes to make such a controversial change with far-reaching ramifications, it should be done in a transparent, democratic fashion, not attached to Act 159 without proper deliberation.

Legislative mandate: "Trapping techniques, including the appropriate size and type of a trap for target animals, use of lures or other attractants, trap safety, and methods to avoid non-target animals..." (From Act 159)

Both leghold and body-crushing kill traps are inherently non-selective. Any animal unlucky enough to trigger the trap will find themself trapped. Both targeted and non-targeted animals are maimed, injured, and killed every year, including protected species like red-tailed hawks, ravens, ducks, and even black bears. The Department's recommendations before you will not reduce this risk due to the indiscriminate nature of traps.

Wildlife advocates asked for body-crushing kill traps, like the one that killed two dogs last year, to be restricted to underwater use only. This was probably the easiest thing that the Department could've compromised on. Instead, the

Department will still allow kill traps to be set on land, including our shared public lands with no warning.

The Department downplayed the dangers that kill traps present to animals in their rulemaking to LCAR. The reality is that non-targeted animals suffer severe injuries from these traps. The raccoon presented in appendix H was trapped by the face this year in Island Pond. A cat in appendix I who had to have his leg amputated after being caught in a kill trap in Fairfax. These traps slam shut with tremendous force—some close with 90 pounds of pressure per square inch.

Allowing kill traps to remain on land and in shallow water with the meaningless requirements offered by the Department, fail to protect non-target animals and the public.

And it's not just wildlife advocates making this claim about kill traps. The following quote is from the website TrappingToday:

> *"What is the disadvantage to using conibear or body grip traps?*
>
> *Because they are designed to be a quick killing trap, the disadvantage to using these devices is that you can't release a nontarget animal alive. A pet or nontarget caught in a bodygrip trap is likely to be killed in it if not released quickly." (emphasis added) (TrappingToday, 2023)*

In addition, we had recommended that all bait be covered to reduce the risk of protected birds of prey from becoming trapped, as other states require. The Department is only requiring meat-based bait be covered, which doesn't match the standards of states like Maine that require various kinds of bait (e.g. feathers, bones etc.) be covered. The Department is also allowing trappers to use

snow to cover bait, but snow melts and then the bait becomes exposed, thereby endangering birds of prey.

The Department failed to provide definitive guidance on release or methods of killing trapped animals.

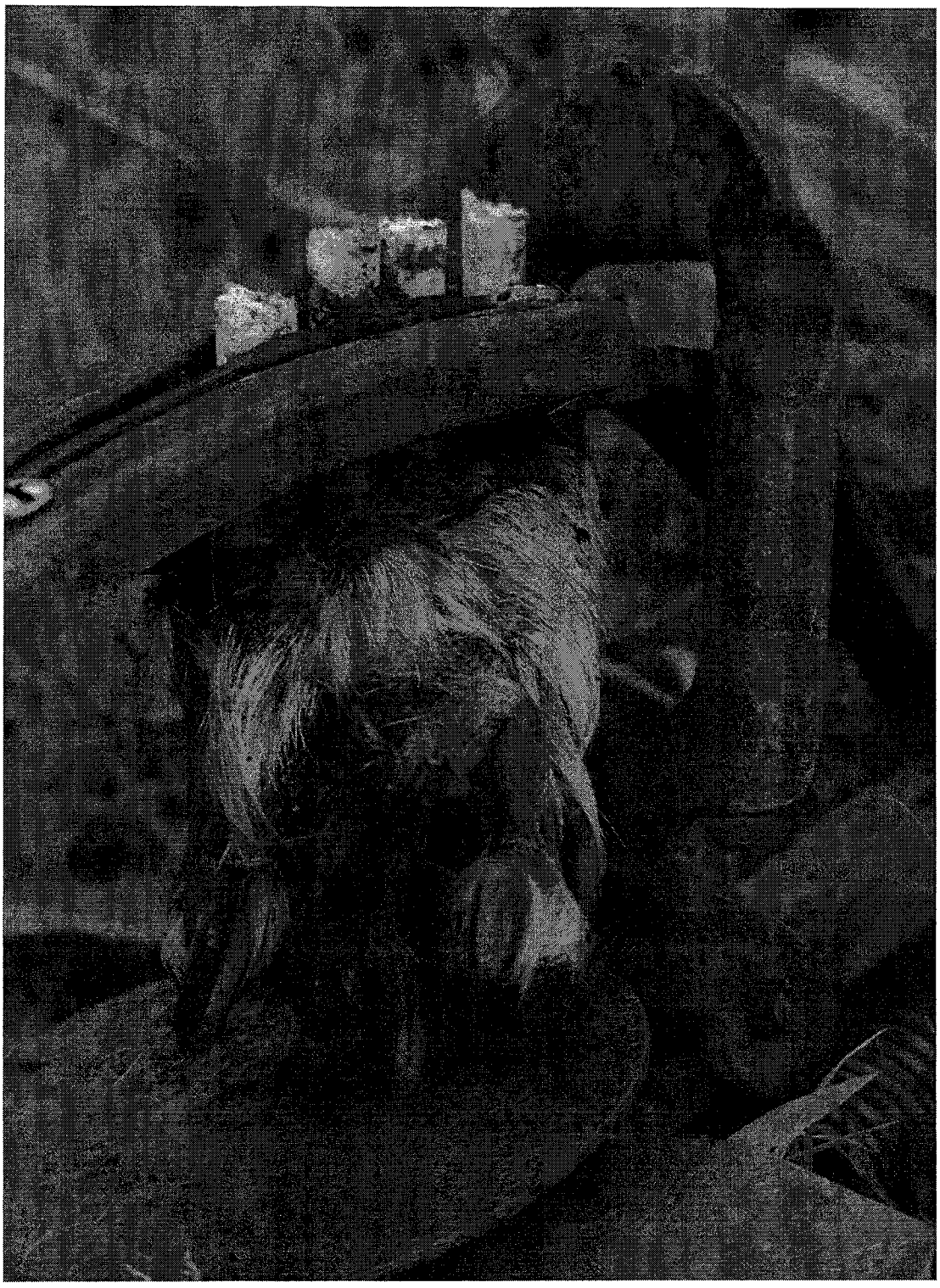
Legislative mandate: "Criteria for how live, captured animals should be released or dispatched" (From Act 159)

Despite multiple attempts at obtaining clarification from the Department, there are no criteria for the release of captured animals. A trapper released an injured raven (non-targeted animal) with a broken leg from a leghold trap last season. The trapper should have had to consult with a wildlife rehabber or state veterinarian. We asked the Department to consider requiring trappers to enlist the expertise of a warden or wildlife rehabilitator if they catch a non-targeted animal, including endangered species like pine marten to assess the animal's injuries before releasing it, yet they refused (see appendix J). Again, this shows how little the Department is willing to address these issues.

Currently, trapped animals are killed by being bludgeoned (like beaten with a bat), choked out, stomped on (known as "chest compression") and drowned. Wildlife advocates asked for gunshot only, which offers the quickest death. After a year and a half of pleading with the Department, their rule before you has a huge loophole. They're able to change the method of killing when the Association of Fish & Wildlife Agencies release their recommendation. AFWA is a private organization with sporting organizations as their main contributing members. AFWA currently recommends gruesome killing methods like bludgeoning trapped animals.

Legislative mandate: "The BMPs shall include recommended: (1) trapping devices and components of trapping devices that are more humane than currently authorized devices and are designed to minimize injury to a captured animal..." (From Act 159)

The subsequent image on page 8 is an example of a "padded" BMP-approved trap with a severed paw that was found by one of our members in woods behind her property. This is the exact type of a leghold trap that the Department claims is humane.



Animal advocates are not the only ones leery of so-called "BMPs." A Vermont trapper education instructor told the Department that these trap modifications will make no difference at all (see appendix K).

What's most alarming is that BMPs are inhumane by Association of Fish and Wildlife Agencies' (AFWA) own standards. **AFWA's scales of injury that the BMP uses for its criteria allow for extreme suffering: 30% of animals trapped are allowed to have amputations; compound fractures and even death and still meet the BMP criteria.** (See appendix L).

One of the many, and often unreported, cases of non-targeted animals being trapped is documented in a warden's report from November 2021. A young black bear was trapped in a Best Management Practice (BMP)-approved offset leghold trap (see appendix M). Trapping bears is illegal in Vermont, but a baited trap set for a coyote, as in this case, will just as easily trap a bear regardless of whether or not the trap is BMP-approved.

Lastly, AFWA's BMPs are species specific, whereas the Department's recommendations are broad, not species specific, and unenforceable. A BMP trap set for a coyote can cause even more serious injuries to a raccoon, for example. This concern was raised with the Department, but it went unanswered (see appendix N). Protect Our Wildlife wrote a white paper on trapping BMPs in July 2022 that addresses the shortcomings of BMPs.

The Department's setback recommendations only cover a small part of Vermont and are not far enough to be reasonably effective.

Legislative mandate: "Requirements for the location of traps including the placing of traps at a safe distance from public trails, class 4 roads, playgrounds, parks and other public locations where persons may reasonably be expected to recreate..." (From Act 159)

Vermonters and visitors recreate outdoors with their dogs. Trap setbacks (the distance a trap is from a trail, trailhead or place where people recreate) are long overdue. In fact, in 2019 Protect Our Wildlife petitioned the Board to require traps be set back from trails and trailheads. The Board met the request with hostility and denied the petition.

Historically, the Department has not required trappers to report any non-target animals that are trapped, including domestic animals. They only made this a requirement when they were required to by the legislature in 2022 and 2019, respectively. The Department has limited knowledge of what occurs in the field, especially due to the secretive nature of trapping. Yet, the Department routinely downplays the number of pets caught in traps set for wildlife. We know that at least 12 dogs were *reported* trapped just last year. Two of the trapped dogs died.

During the initial discussions with trappers in the working group, their meager recommendation was that they would not set traps on trails. This shows a clear lack of commitment to the legislative mandate that has driven the year and half process. The Department's final rule of 50 feet, including for of kill traps on land, is not nearly enough to protect the public and their pets. There is little chance of releasing a dog or cat from a kill trap. Our recommendation was 500 feet.

Equally concerning is the relatively small amount of land covered under the Department's proposals. They are just a sliver of the lands where people recreate, which is contrary to what Act 159 required.

Additionally, kill traps can be set in culverts. This presents a tremendous threat to dogs. With the Department's rules as currently written, this hazard will still be allowed.

Act 165, An act relating to the hunting of coyotes with dogs

Concerns over landowner rights being violated has been a common theme in discussions pertaining to hounding, as well as concerns over the inherent cruelty of allowing a pack of well-muscled, tenacious hounds to run down and maul a lone coyote.

There's also concern over both the public, our pets, and non-target animals being pursued, attacked and even killed by hounds. A woman was bicycling with her dog in Fairlee in 2021 when four hounds appeared out of the woods and proceeded to attack her dog for two miles. The hounder was nowhere to be found, which is common with hounding (see Appendix O).

Hounds often run miles away from the hounder and also run in different directions, making any attempt to control the dogs impossible.

Legislative intent: "General Assembly intends that the rules required under this section support the humane taking of coyote, the management of the population in concert with sound ecological principles, and the development of reasonable and effective means of control." (From Act 165)

The Department's recommendations of GPS and shock collars for controlling hounds is illogical and increases cruelty to hounds.

Legislative mandate: "A definition of control to minimize the risk that dogs pursuing coyote:

(A) enter onto land that is posted against hunting;

(B) enter onto land where pursuit of coyote with dogs is not authorized;

(C) harass or harm people or domestic animals; and

(D) cause other unintentional damages to people or property;"

Wildlife advocates who were members of the coyote hounding working group submitted recommendations to the Department. None of the recommendations were adopted (see appendix P). Wildlife advocates recommended that hounds be in visual and verbal command of the hounder. The Department inaccurately excluded that recommendation in their responsiveness summary to LCAR. They only mentioned that wildlife advocates wanted dogs to be leashed.

GPS collars have not kept hounds from attacking people, pets and wildlife. Shocking hounds that are out of sight is cruel.

The Department recommends the status quo (GPS collars) with the addition of shock collars (training collars or e-collars). These recommendations are illogical. These collars have not stopped any of the previous incidents where people and animals were attacked, and property rights were violated. There is no control of a pack of hounds that is running out of eyesight of the hounder. Hounds can run a mile or more away from the hounder making control impossible.

How does a collar tell a hounder if their hounds are pursuing someone's dog or a coyote?

How would a hounder know when to inflict a shock correction to their hound if the hounder can't see what the hound is doing?

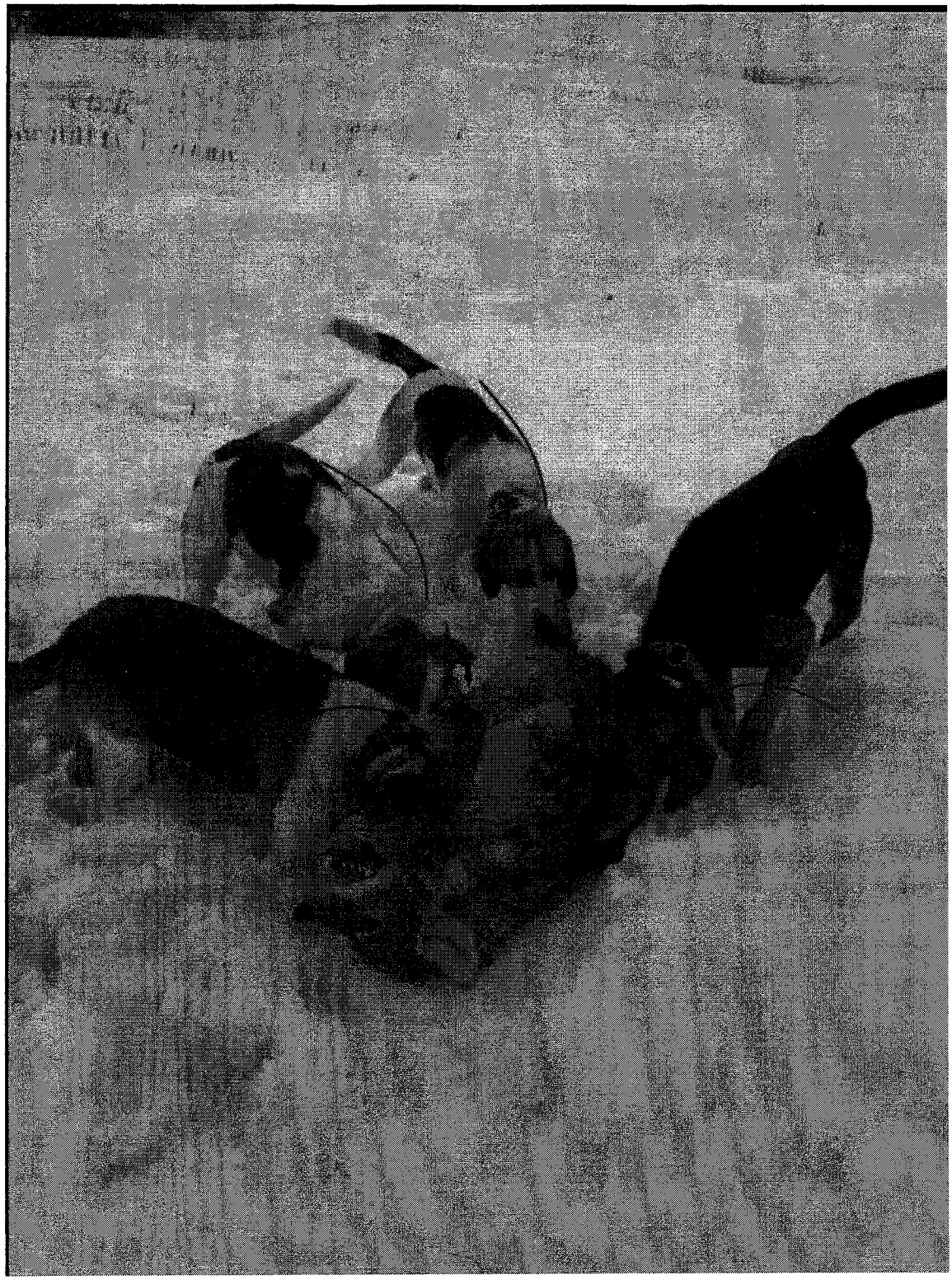
Further, what is proposed, the use of "training" or shock collars, legitimizes a controversial practice with no guidelines and which can cause harm to the dogs. Remotely shocking a dog is ineffective and cruel.

Four hounds on one coyote is not fair or "humane taking".

Legislative mandate: "A *limit on the number of dogs that may be used to pursue coyote...*" (From Act 165)

The Department recommends 4 hounds for one hounder. Allowing 4 well-muscled, powerful hounds to pursue one coyote is an unfair pursuit. It also makes controlling the hounds more difficult when you have multiple hounds running at large and in different directions. Our recommendation was one hound.

The subsequent photo on page 14, taken in Vermont, shows the reality of what happens when a pack of hounds are allowed to run down and maul a coyote. Notice the blood on the snow.



The Department offered and then rescinded prohibition on bait.

Legislative Mandate: "The Board shall consider whether to include within the rule required by this section provisions related to seasonal restrictions and baiting." (From Act 165)

Our recommendation was to ban baiting outright. Baiting wildlife may create conflicts between humans and coyotes by habituating coyotes near roads, farms and residential areas.

During the summer working group, the Department proposed the following language: *No person shall place bait to attract a coyote for the purposes of training a dog to catch/strike the scent of a coyote.*

Yet, after the working group concluded, the Department rescinded their restriction on bait. They did this unilaterally without notifying or discussing it with all working group members. The Department's proposal to LCAR allows all forms of baiting. Baiting is an unfair way to hunt and is ecologically unsound.

Additionally, the season that the Department is proposing is exactly the time of year when hounders hunt coyotes with hounds, so there will be no relief from the status quo.

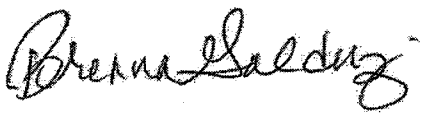
Closing

We ask the Committee members to reject The Department of Fish & Wildlife's rules before you because the proposed rule is:

- beyond the authority of the agency and;
- is contrary to the intent of the Legislature

The will of the people has not and will not be addressed by the Vermont Fish & Wildlife Department or Board as history has shown. These matters must be taken up by the legislature where democracy is possible. It is also our hope that the Committee will send a memo to the House and Senate Committees of jurisdiction outlining the many deficiencies in the Department's rule.

Respectfully,



Brenna Galdenzi
President & Co-founder

B. Felitti Testimony

Testimony of Barbara Felitti, resident of Huntington, VT
to the Legislative Committee on Administrative Rules (LCAR) regarding the
Proposed Rule for Furbearer Species from the Vermont Fish & Wildlife Department (Department)

The following are reasons why LCAR should object to the proposed furbearer rule:

The revised definition of trapping in the rule was not intended by the Legislature and has constitutional implications that are beyond the authority of the Department to make.

Act 159 stated that trapping "means to take or attempt to take furbearing animals with traps". The Department changed the definition of trapping in the proposed rule by adding the word "hunt". This not only is counter to the Legislature's intent but also raises constitutional issues.

Article 67 of the VT Constitution protects the right to hunt, fowl and fish. Re-defining trapping as hunting creates conflict and ambiguity with respect to regulations governing hunting vs. trapping.

Under current regulation, all lands not posted are open to hunting, but permission must be expressly given for trapping on lands not owned by the trapper. If trapping is now defined as hunting, does this mean that trappers no longer need permission to trap on unposted private property? Will private property owners now need to go through the burdensome process of posting their property to prevent trapping? What signs will be needed for posting land? Currently posted signs ban both hunting and trapping. If a property owner wants to allow hunting but not trapping, how do they post their property? Will new signs be created?

When presenting the revised rule at the March FWB meeting, the Department skipped over the change in trapping definition. The Department requested that the FWB vote in changes that were not discussed as "housekeeping" despite full knowledge of the significance of changing the definition of trapping. I have direct experience communicating with the Department on this issue when I raised a question about information on the Department's website. The Department would not provide me with the basis for their rationale that trapping is hunting saying "this issue is one that may eventually be the subject of controversy before the legislature and possibly the courts. . . ." (Attachment 1).

The Department is entitled to their opinion about the definition of trapping, but cannot be allowed to change it unilaterally without open discussion and opportunity for public comment. Additionally, using development of a new rule to knowingly make a controversial change is disingenuous at best, and is evidence of why wildlife advocates have limited trust in the

Department. Passing the rule with this change in trapping definition was not part of legislative intent, creates conflicts with existing regulations and raises constitutional issues not in the authority of the Department to make.

Act 159 - Trapping

There are no AFWA BMP standards for body-gripping traps, and the Department has failed to provide peer-reviewed data that form the basis of these BMPs. Act 159 states that BMPs should meet the minimum standards of the Association of Fish & Wildlife Agencies (AFWA). AFWA only has BMPs for leghold (restraining) traps[1]. AFWA relies in Canada for research and data on body-gripping traps (referred to as kill traps in international standards). In their Responsiveness Summary[2], the Department cited use of Canadian research for body-gripping traps but so far has not provided me with a copy of this data nor could I find it on the internet. I was given an AFWA publication on the ***use*** of body-gripping traps[3] and told "If you want data and information on all the studies conducted in Canada, ***we don't have those data*** *[emphasis mine]* and you will need to contact the authors" (Attachment 2). If the Department does not have the detailed research data and findings, or will not make these available then how can body-gripping/kill traps be authorized as a best practice in this rule? Body-gripping/kill traps should be removed from the rule because the Department has not provided research data and findings to support the BMPs.

Training standards are inadequate to ensure that trappers are instructed in BMP practices. In their responsiveness report, the Department determined that existing regulation for trapper education was sufficient and no rule changes were needed. However, existing regulation permits a trapping license to be given based on completion of a trapper course or issue of a trapper license **in another state or Canada**, without knowing if these meet standards for BMPs. There is also no requirement for current license holders to be recertified so that they receive information about BMPs. By the Department's own numbers there are only about 350 active trappers (Attachments 3 & 4), so this is not a burdensome requirement to require recertification. Allowing trapper certification based on other state's or Canada's program, and failure to re-certify current active trappers leaves significant gaps in how well trappers will be trained on BMPs and does not meet

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[1] Best Management Practices for trapping Furbearers in the United States, H. Bryant White et al, Wildlife Monograpghs, 26 July 2020. https://wildlife.onlinelibrary.wiley.com/doi/epdf/10.1002/wmon.1057

[2] See page 22 of Responsiveness Summary: Public Comments, Best Management Practices for Furbearer Trapping. https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/Vermont%20Fish%20and%20Wildlife%20Board%20Meeting%20Documents/2023%20proposals/LCAR-responsiveness-summary-Act159-Trapping.pdf (page 22)

[3] 2017 Bodygrip Traps on Dryland: A Guide to Responsible Use, Association of Fish & Wildlife Agencies. https://www.fishwildlife.org/application/files/9215/2106/2322/AFWA_Bodygrip_2017_final_compressed.pdf

the intent of Act 159 for "instructions that incorporates the recommendations or requirements set forth..."

Act 165 – Hunting with Hounds

The number of permits for hunting with hounds is not controlled. Act 165 explicitly limits permits for hunting with hounds to 100. Yet the rule includes the ability of "sub-permittees" to be part of hound hunting without ANY limitation on the number of sub-permittees or whether they are residents or non-residents through a process "designated by the coyote dog permit holder". Allowing an unlimited number of sub-permittees directly undermines the legislative intent to limit the number of permits issued, and puts permitting in the control of hunters and not the Department.

The control of dogs definition does not meet the legislative intent "to minimize the risk" that **"dogs pursing coyote enter onto land that is posted against hunting"**. There is no way to guarantee that a dog in hot pursuit of prey will not cross onto posted property if it is being monitored remotely on GPS with a shock collar as the only means to stop it. Due to terrain and vegetation, the collar may be ineffective over even relatively short distances, and worse, trying to stop a dog in pursuit could result in excessive shocks being applied to get the dog to respond. Ten countries ban the use of shock collars for training because they are considered inhumane, including countries like Australia and Wales that train working dogs. By this rule, Vermont is condoning a controversial practice which cannot definitively meet the intent of Act 165. For the rule, "control" must be defined as having visual and voice command.

It is important to be clear about why BMPs came about. They did not develop out of concern for animal welfare, but for economic reasons. In 1991, Europe banned leghold traps and the US and Canada wanted to find ways to be able to still sell fur to Europe. BMPs were developed so that this economic activity could continue.

Additionally, if these are truly "best" practices, there should be no exemptions for nuisance trapping or defense of property. Page 13 of the Department's Responsive Reports notes that only certain sections of the proposed rule will apply. Notably trapping in defense of property or nuisance trapping for compensation are exempt from sections for setbacks, dispatch and certain species. If these are truly best management practices, then there should be no exemptions.

Attachments:

1. Communications between VT Fish & Wildlife Department and B. Felitti related to definition of trapping
2. Communications between VT Fish & Wildlife Department and B. Felitti related to research data for body-gripping trap BMPs.
3. Communications between VT Fish & Wildlife Department and B. Felitti related to the number of Active Trappers
4. Spreadsheet from VT Fish & Wildlife Department related to the number of Active Trappers

Other reports cited:

Best Management Practices for trapping Furbearers in the United States, H. Bryant White et al, Wildlife Monograpghs, 26 July 2020. https://wildlife.onlinelibrary.wiley.com/doi/epdf/10.1002/wmon.1057

Pages 13 and 22 of Responsiveness Summary: Public Comments, Best Management Practices for Furbearer Trapping. https://vtfishandwildlife.com/sites/fishandwildlife/files/documents/Vermont%20Fish%20and%20Wildlife%20Board%20Meeting%20Documents/2023%20proposals/LCAR-responsiveness-summary-Act159-Trapping.pdf (page 22)

2017 Bodygrip Traps on Dryland: A Guide to Responsible Use, Association of Fish & Wildlife Agencies. https://www.fishwildlife.org/application/files/9215/2106/2322/AFWA_Bodygrip_2017_final_compressed.pdf

Re: Correction to FWD website

From: Gjessing, Catherine (catherine.gjessing@vermont.gov)

To: bfvermont@yahoo.com

Cc: Christopher.Herrick@vermont.gov

Date: Friday, December 23, 2022 at 03:36 PM EST

Dear Ms Felitti,

Yes, the Commissioner stated that it is the Department's position that trapping is protected by the Vermont Constitution. Regarding your other questions, the Department cannot give you legal advice. Protect Our Wildlife has advocated for and will likely continue to advocate for banning trapping, a position clearly not supported by the Department. Given that this issue is one that may eventually be the subject of controversy before the legislature and possibly the courts, we will not provide you with attorney client privileged communications or work product.

Have a wonderful holiday season.

Sincerely,

Catherine Gjessing

VERMONT

Catherine Gjessing, General Counsel (she/her)
Vermont Department of Fish and Wildlife
Commissioner's Office
1 National Life Drive, Davis 2 | Montpelier, VT 05620-3208
802-595-3331 cell | 802-828-1250 fax
https://vtfishandwildlife.com/

From: Barbara Felitti <bfvermont@yahoo.com>
Sent: Thursday, December 22, 2022 4:09 PM
To: Herrick, Christopher <Christopher.Herrick@vermont.gov>
Subject: Re: Correction to FWD website

Dear Commissioner Herrick,

Thank you for your reply. My understanding from your message is that the Department's position is that trapping is protected by the Vermont Constitution. Please correct me if this is not accurate.

I request clarification as to the legal basis for the Department's position that "trapping is a form of hunting protected by the Vermont Constitution". Is there any written memo, department document or other legal record that determines that trapping is protected under the Vermont constitution?

Hunting and trapping are defined as distinctly different activities under Vermont regulation as noted below:

10 App. V.S.A § 19 3.15 **"Hunting"** means the taking of an animal by use of a firearm, muzzleloader, bow or crossbow or other implement authorized by the General Assembly, or the Vermont Fish and Wildlife Board to pursue or take any live animal. [Note: This same definition appears under other subsections of 10 App. V.S.A that reference hunting].

10 App. V.S.A. § 44 3.6 **"Trapping"** means to take or attempt to take furbearing animals with traps including the dispatching of such lawfully trapped furbearing animals.

Additionally, in the Department's Vermont Hunting and Trapping Guide 2022 it notes that only hunting and fowling are guaranteed rights (p. 46). Because of this, as the guide states, "all private lands are open to hunters unless that land is posted".

For trapping the guide states that "Landowner permission is required to trap on all private property not owned by the trapper." (p. 37)

This difference in access to private lands reflects that hunting is a protected right per the VT Constitution and that trapping is not.

The above regulations and Department information do not support the assertion that trapping is a form of hunting and so a constitutionally guaranteed right.

Please also note that you misread the correct spelling of my last name.

Sincerely,
Barbara Felitti

On Thursday, December 15, 2022 at 04:59:22 PM EST, Herrick, Christopher <christopher.herrick@vermont.gov> wrote:

Dear Ms. Feletti;

Thank you for your note. Please be advised that it is the position of the Department that trapping is a form of hunting protected by the Vermont Constitution. For this reason, we will not be amending our website as you have requested.

From: Barbara Felitti <bfvermont@yahoo.com>
Sent: Monday, December 12, 2022 8:54 AM
To: Herrick, Christopher <Christopher.Herrick@vermont.gov>
Subject: Correction to FWD website

EXTERNAL SENDER: Do not open attachments or click on links unless you recognize and trust the sender.

Dear Commissioner Herrick,

I request that the Fish & Wildlife Department (FWD) correct its website which inaccurately states that

trapping is protected by the State constitution.

The following is found on the FWD website:

"The Vermont constitution has protected the right to hunt, fish and trap on open, private land since its drafting in 1793".

https://vtfishandwildlife.com/learn-more/landowner-resources/private-land-and-public-access/what-posting-means

The statement is incorrect. The Vermont constitution refers only to hunting, fishing and fowling:

§ 67. [HUNTING; FOWLING AND FISHING]

The inhabitants of this State shall have liberty in seasonable times, to hunt and fowl on the lands they hold, and on other lands not inclosed, and in like manner to fish in all boatable and other waters (not private property) under proper regulations, to be made and provided by the General Assembly.

Trapping is defined as a distinctly different activity under Vermont regulation and therefore should not be identified as constitutionally protected. The website should be revised as follows:

"The Vermont constitution has protected the right to hunt, fish and fowl ~~trap~~ on open, private land since its drafting in 1793".

Please advise as to when this correction will be made. Thank you.

Sincerely,

Barbara Felitti

RE: Follow-up Re: Request for Information

From: Connolly, Abigail (abigail.connolly@vermont.gov)

To: bfvermont@yahoo.com

Date: Thursday, September 28, 2023 at 09:11 AM EDT

Good morning Barbara,

1. Please see the attached ISO Restraining Traps protocol- that is a free copy of the ISO (otherwise it would cost close to $200 on amazon).
2. The BMP research study that was sent is not about how to set them. The publication covers the methods used and the welfare criteria that is used to evaluate traps for different species.
3. Under literature cited in the BMP research we sent, there are additional references for testing of body gripping traps: https://www.iso.org/standard/26355.html
4. If you want data and information on all the studies conducted in Canada, we don't have those data and you will need to contact the authors.
5. We have attached the international agreement on humane trapping standards- this can be found by googling.
6. The body gripping traps were not developed by the Canadian government. Body-gripping traps were tested in Canada. The fur institute of Canada, along with AFWA (or IAFWA at the time) spearheaded this work https://fur.ca/research-and-information/trap-research-and-testing/ Their work had to comply with the international humane trapping standards.

Sincerely,

VERMONT

Abigail Connolly (she/her) | Principal Assistant to Commissioner Herrick
Vermont Agency of Natural Resources | Department of Fish & Wildlife
1 National Life Drive, Davis 2 | Montpelier, VT 05620
802-828-1454 (o) | 802-636-7414 (c)
abigail.connolly@vermont.gov
www.vtfishandwildlife.com

From: Barbara Felitti <bfvermont@yahoo.com>
Sent: Wednesday, September 27, 2023 11:29 AM
To: Connolly, Abigail <Abigail.Connolly@vermont.gov>
Subject: Follow-up Re: Request for Information

Hi Abigail,

I reviewed the report you sent and determined that it does not answer my request.

My request was for information about BMPs for body-gripping traps developed by the Canadian government that formed the basis for the Department's development of the regulations for body-gripping traps in the new proposed fur-bearer rule. (Again, based on the Department's statement in

their responsiveness report that this is the information that was used).

The document sent is about the ***use*** of body-gripping traps, i.e., how to set them. It is not BMP research which would include information such as trap performance, methods of assessment, standards and measurement, etc.

I request the BMP research information for body-gripping traps.

Thank you,

Barbara

On Tuesday, September 26, 2023 at 04:14:35 PM EDT, Connolly, Abigail <abigail.connolly@vermont.gov> wrote:

Good afternoon Barbara,

Please see the attached document responsive to your request, specifically the second paragraph on page 6.

Sincerely,

Abigail Connolly (she/her) | Principal Assistant to Commissioner Herrick

Vermont Agency of Natural Resources | Department of Fish & Wildlife

1 National Life Drive, Davis 2 | Montpelier, VT 05620

802-828-1454 (o) | 802-636-7414 (c)

abigail.connolly@vermont.gov
www.vtfishandwildlife.com

From: Barbara Felitti <bfvermont@yahoo.com>
Sent: Friday, September 22, 2023 3:00 PM
To: Connolly, Abigail <Abigail.Connolly@vermont.gov>
Subject: Request for Information

Dear Abigail,

In the Department's report *"Responsiveness Summary: Public Comments, Best Management Practices for Furbearer Trapping"* reference is made on page 22 to body-gripping traps being tested by the Canadian government using international standards.

I have been unable to find a report of this through an internet search, and so I am requesting a copy of the report(s) used by the Department in their determinations about body-gripping traps for the proposed furbearer rule.

Thank you,

Barbara Felitti

AIHTS-Copy-of-Agreement.pdf
70.1kB

ISO Restraining Traps_20061025092814.pdf
892.6kB

RE: Clarification & Verification of Data Sent and Information Request

From: Connolly, Abigail (abigail.connolly@vermont.gov)

To: bfvermont@yahoo.com

Date: Tuesday, April 11, 2023 at 01:13 PM EDT

Good afternoon Ms. Felitti,

Please see our responses in green to your email from March 22, 2023.

Clarification
At last week's March 15th Fish & Wildlife Board (FWB) meeting, Kim Royar told FWB members that currently there are 500 active trappers. This information does not correlate with any of the information I have received from you (below). Even if in-season and out-of-season trapping numbers are added together, they do not approach 500. Also, just adding these two would be inaccurate as it would include some double counting of people who trap both in and out of season. **The attached spreadsheet should clarify these data for you. In recent years, the actual number of active trappers has been between 300-350 annually. In her presentation, Kim was simply generalizing about the number of trappers being around 500 which is accurate when you look back in time more than a few years. The number of active trappers can swing widely from year to year based on a number of factors including, most notably, pelt prices and weather.**

Verification
I would like to verify that the information about the number of active trappers based on trapping survey reports you have provided to me is correct, and that Ms. Royar was in error citing "500" as the number of active trappers. **The data in the attached spreadsheet is accurate and complete for the timeframe you requested. Again, Kim was presenting a more generalized representation of trapping activity in the state over a broader timeframe. Although only 300-350 trappers have been active over the past few years, it is not unreasonable to expect that some portion of the remaining 1500+ licensed trappers would become active with a change in the factors that influence trapper participation as discussed above.**

Information Request
I realize from your message that the data on licenses and reports don't align perfectly, i.e., trapping license years are calendar years and trapping survey reports are for a season which span two years. Nonetheless, there is serious under reporting by trappers, ranging from 22-36%. Most times it is closer to 36% or 1/3 as the data show: **Because of the complication associated with a split-year trapping season and a calendar year licensing system, you cannot figure the response rates as you have done. The data in the attached spreadsheet are a much more accurate reflection of per trapping season licenses and survey response rates. Although response rates are still lower than what we would like to see, our efforts to improve trapper compliance seem to be proving effective as witnessed with the marked improvement in 2021-22. We will continue our efforts to improve response rates in coming years.**

The 2020-2021 season had 1,451 reports returned.
There were 2,139 licenses in 2020 (potential under report of 688 or 32%) and 2,263 licenses in 2021 (potential under report of 812 or 36%).

The 2021-2022 season had 1,431 reports returned.
There were 2,263 licenses in 2021 (potential under report of 832 or 37%) and 1,836 licenses in 2022 (potential under report of 405 or 22%).

From the FWB meeting discussion and slide below from the meeting, it is evident that the Department does follow-up and investigates missing surveys.

I am requesting information for 2019 - 2022 related to:

- What are the final numbers of in-season and out-of-season trappers for 2019-2022 seasons based on the follow-up investigations? **See attached spreadsheet.**
- How many active trappers are failing to return trapping survey reports? **The number of licensed trappers who did not respond to the survey is provided in the spreadsheet, however, there is no way for us to tell if these were active trappers in the absence of their response. In fact, our previous experience (i.e., follow-up phone calls and warden visits) indicates that the majority of those who do not respond to the survey are folks who did not trap simply because they don't understand that they are required to respond to the survey regardless of whether or not they set traps.**
- How many permanent license holders are failing to return trapping survey reports? **See attached spreadsheet.**
- How many permanent license holders ask to be removed from the trapping survey mailing list? **See attached spreadsheet.**
- You noted that some permanent license holders "respond that they do not trap and ask to be taken off the survey mailing list". When this happens, does their license for trapping get revoked and is their trapping license no longer counted in tabulations of the annual number of trapping licenses? **Barring any illegal activity, there is no revoking of a permanent license once issued. These folks will continue to have trapping credentials on their license and, yes, they do get included in the license database query we use for generating our mailing lists. However, in recent years, we have developed a way for identifying and eliminating these folks from our mailing lists. This system is responsible for the sharp drop you'll note in the number of surveys sent to permanent license holders from 2020-21 to 2021-22 (i.e., 1213 to 917). By nature of necessity, our licensing system is very complex and nuanced.**
- What repercussions, if any, are there for an active trapper who does not return the required trapping survey report? **The failure to complete a biological collection survey is a nonpoint violation under 10 V.S.A. § 4502. It is a civil ticket and subject to $105 fine. See attached fee schedule and relevant statutes.**

Sincerely,

VERMONT
Abigail Connolly (she/her) | Principal Assistant to Commissioner Herrick
Vermont Agency of Natural Resources | Department of Fish & Wildlife
1 National Life Drive, Davis 2 | Montpelier, VT 05620
802-828-1454 (o) | 802-636-7414 (c)
abigail.connolly@vermont.gov
www.vtfishandwildlife.com

From: Barbara Felitti <bfvermont@yahoo.com>
Sent: Wednesday, March 22, 2023 1:49 PM
To: Connolly, Abigail <Abigail.Connolly@vermont.gov>
Subject: Clarification & Verification of Data Sent and Information Request

Dear Ms. Connelly,

I am writing to get clarification and verification of the information on the number of active trappers previously sent, and a new information request related to this

data.

Clarification
At last week's March 15th Fish & Wildlife Board (FWB) meeting, Kim Royar told FWB members that currently there are 500 active trappers. This information does not correlate with any of the information I have received from you (below). Even if in-season and out-of-season trapping numbers are added together, they do not approach 500. Also, just adding these two would be inaccurate as it would include some double counting of people who trap both in and out of season.

Verification
I would like to verify that the information about the number of active trappers based on trapping survey reports you have provided to me is correct, and that Ms. Royar was in error citing "500" as the number of active trappers.

Information Request
I realize from your message that the data on licenses and reports don't align perfectly, i.e., trapping license years are calendar years and trapping survey reports are for a season which span two years. Nonetheless, there is serious under reporting by trappers, ranging from 22-36%. Most times it is closer to 36% or 1/3 as the data show:

The 2020-2021 season had 1,451 reports returned.
There were 2,139 licenses in 2020 (potential under report of 688 or 32%) and 2,263 licenses in 2021 (potential under report of 812 or 36%).

The 2021-2022 season had 1,431 reports returned.
There were 2,263 licenses in 2021 (potential under report of 832 or 37%) and 1,836 licenses in 2022 (potential under report of 405 or 22%).

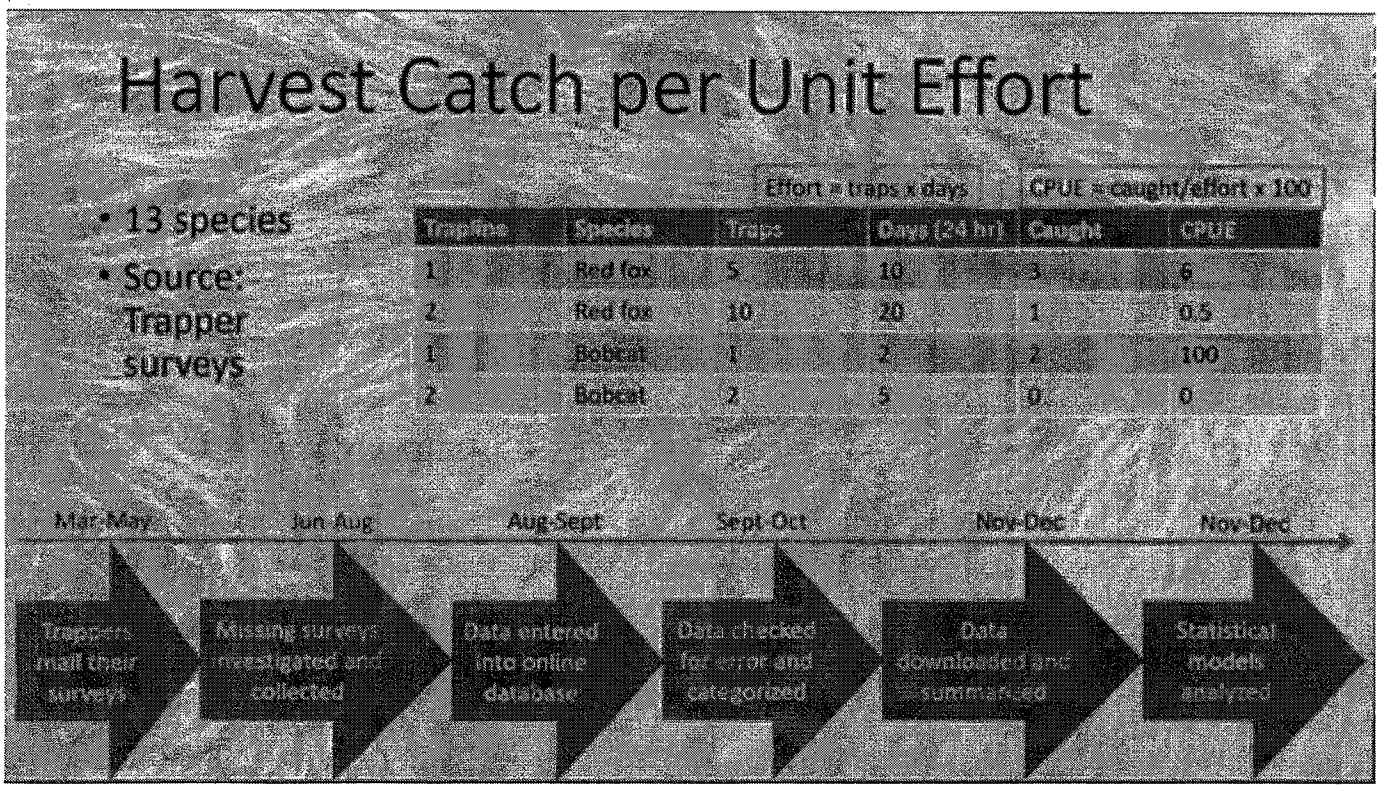
From the FWB meeting discussion and slide below from the meeting, it is evident that the Department does follow-up and investigates missing surveys.

I am requesting information for 2019 - 2022 related to:

- What are the final numbers of in-season and out-of-season trappers for 2019-2022 seasons based on the follow-up investigations?
- How many active trappers are failing to return trapping survey reports?
- How many permanent license holders are failing to return trapping survey reports?
- How many permanent license holders ask to be removed from the trapping survey mailing list?
- You noted that some permanent license holders "respond that they do not trap and ask to be taken off the survey mailing list". When this happens, does their license for trapping get revoked and is their trapping license no longer counted in tabulations of the annual number of trapping licenses?
- What repercussions, if any, are there for an active trapper who does not return the required trapping survey report?

Thank you for your assistance.

Sincerely,
Barbara Felitti



On Wednesday, January 25, 2023 at 02:46:22 PM EST, Connolly, Abigail <abigail.connolly@vermont.gov> wrote:

Good afternoon Ms. Felitti,

Addendum Testimony of Barbara Felitti, resident of Huntington, VT
to the Legislative Committee on Administrative Rules (LCAR) regarding the
Proposed Rule for Furbearer Species from the Vermont Fish & Wildlife Department (Department)
October 16, 2023

I have the following to add to my testimony in response to the Fish & Wildlife Department's staff testimony to LCAR on October 5th:

Definition of Trapping

When asked about why the Department chose to redefine trapping by adding the word "hunt", Ms. Gjessing stated "the Department's position that trapping is a form of hunting has been our position for decades". Based on my own direct communication with the Department, I can say that the Department cannot support their assertion of a "decades" long position with credible facts, knows that changing the definition is controversial, and did so without any public discussion.

The Department has provided only minimal information in an attempt to support this assertion.
Through a public records request related to the definition of trapping, the oldest document I received was from 2015 - ***eight years ago***, not decades. When asked to justify the statement of the position being "decades" old, I was given the following reasons (Attachment 1):

- Conversations with long-time staff who support the position
- Records may have been destroyed in Tropical Storm Irene
- Possession of a 1988 document from a private citizen "Right to Trap in VT" in an email dated July 8, 2022. (Note that this document was redacted and not given to me.

I made a formal records request and was told there were no additional records spanning the time between 1988 and 2015 that could be provided to support the Department's position that trapping is a form of hunting. The 1988 document cited as a basis for the Department's longstanding position was submitted by a private citizen. Many wildlife advocacy agencies, along with others, have submitted policy positions to the Department. There is no documented review or discussion as to how this one document, among the many received by the Department, came to reflect a Department position.

The Department is fully aware of the significance of changing the definition.
During my communications with the Department about defining trapping as hunting the significance of the constitutional implications were raised. All documents I received were heavily redacted because "this issue is one that may eventually be the subject of controversy before the legislature and possibly the courts. . ." (Attachment 2). By the Department's own admission, defining trapping as hunting is controversial. It has constitutional implications that are beyond the authority of the Department to make as part of revisions to a regulation.

The Department fails to meet the spirit of public comment.
The Department has argued that the definition change was posted publicly. It was. But it was never discussed or presented as a change by the Department at any Fish & Wildlife Board (FWB)

meeting or public meeting held. The Department may have technically met a requirement to post the information, but they have not made a good-faith effort to have a discussion and get public and FWB feedback on what they themselves acknowledge is a controversial issue.

The addition of the word "hunt" to the definition of trapping has no positive effect and in fact, adds confusion to existing regulation – do trappers no longer need landowner permission? Do landowners need to post to prevent trapping?

In my opinion, the addition of the word "hunt" to the definition of trapping is an attempt by the Department to confer constitutional protection on trapping under Article 67.

BMPS for Bodygrip Kill[1] Traps are not Publicly Available

The Department referred to BMPs being based on years of research data, peer-reviewed and published in the 2020 Wildlife monograph[2], a "gold-standard". These data are available only for leghold/foothold traps, not for bodygrip kill traps.

The Wildlife monograph cited by the Department, evaluated 19 species and 84 leghold trap types – not the 23 species and 600 trap types stated by the Department. I could not find similar species-specific research data for bodygrip kill traps through internet searches.

I contacted the Department for similar data for bodygrip kill traps - that is, a peer reviewed, published article or monograph available to the public. I was given booklets about how to use bodygrip kill traps and told "we don't have those data", i.e., the Department did not have the actual data or a published research report on bodygrip kill traps (Attachment 3). I was told that I would need to contact the Association of Fish and Wildlife Agencies (AFWA) or the Fur Institute of Canada (FICA) to get the data.

I contacted AFWA and was told that they do have FICA's data on bodygrip kill traps but that they have a memorandum of understanding with FICA that does not allow them to release research data to a third party, in this case, the public (Attachment 4). AFWA is also doing some of its own research on bodygrip kill traps, but any report would be available only "some point in the future".

I contacted FICA and was told that it would "involve quite a lot of work" to assemble data (Attachment 5). I responded to clarify my request for published peer-reviewed report(s) but to date, I have received no data or published report(s) from FICA.

The lack of data raises some questions. Are there bodygrip kill trap data for bobcats? AFWA does not have any, but will do research on bobcats in the future. On their certified trap list, FICA lists bobcat and Canada lynx separately for restraining (leghold/foothold) traps, but for kill traps, they

[1] The US and AFWA use the term "bodygrip" trap. Canada and the ISO use the term "kill" trap or "kill-type" trap. I have combined both into one term.

[2] Best Management Practices for trapping Furbearers in the United States, H. Bryant White et al, Wildlife Monographs, 26 July 2020. https://wildlife.onlinelibrary.wiley.com/doi/epdf/10.1002/wmon.1057

are listed together as "Canada Lynx and Bobcat" (Attachment 6). Are bobcat bodygrip kill trap BMPs being extrapolated from lynx, rather than having species-specific data? Without seeing the data we do not know.

This to me is the trapping version of "the emperor has no clothes". We hear about what a reliable organization AFWA is and all the years of research data there are but we can't see any of it. It would be like the EPA passing a drinking water standard but not letting the public see the data the standard is based on.

It is not acceptable that the furbearer regulation covering bodygrip kill trap BMPs will be based on data that is not publicly available in peer-reviewed reports.

Act 159 states BMPs should be based on "research and investigation". **If there is no publicly available peer-reviewed research data supporting bodygrip trap BMPs then bodygrip traps should be removed from the rule, and their use not allowed.**

Last, from my reading about BMPs, AFWA and FICA say that BMPs are intended to be advisory not regulatory. However, Vermont is choosing to make BMPs into a regulation. Perhaps we should examine why Vermont is the "first in the country" to propose a regulation with BMPs. It is because they are not intended to be used as regulation, but as guidance.

And even Vermont's guidance is sub-par. FICA publishes extensive lists of tested and approved traps (Attachment 6). AFWA does not have a certification list for specific trap manufacturers and so none is included in the Vermont furbearer rule. The Department often notes the dozens of types of different of traps which have been tested, but fails to use the information to provide regulatory control over specific traps, despite the fact that identifying compliant traps is one of the main purposes of the BMP research.

LCAR should object to the proposed rule due to the many ways it fails to meet legislative intent.

Attachments

1. C. Gjessing email on records request related to decades of trapping assertion
2. C. Gjessing email on controversy related to defining trapping as hunting
3. A. Connolly email on request for published bodygrip kill trap data
4. AFWA email with B. White on request for published bodygrip kill trap data
5. FICA email with S. Ward on request for published bodygrip kill trap data
6. FICA Certified Trap List

RE: Records Request

From: Gjessing, Catherine (catherine.gjessing@vermont.gov)

To: bfvermont@yahoo.com

Cc: abigail.connolly@vermont.gov

Date: Monday, October 9, 2023 at 08:58 AM EDT

Dear Ms. Felitti,

Also, for clarification, we produced an email from Mary Beth Adler entitled "1988 Right to Trap in VT - T Kalter - DRAFT.pdf." The document attached to that email and redacted was an attorney client privileged communication generated in 1988.

Sincerely,

Catherine Gjessing

VERMONT

Catherine Gjessing, General Counsel (she/her)
Vermont Department of Fish and Wildlife
Commissioner's Office
1 National Life Drive, Davis 2 | Montpelier,
VT 05620-3208
802-595-3331 cell | 802-828-1250 fax
https://vtfishandwildlife.com/

From: Gjessing, Catherine
Sent: Friday, October 6, 2023 2:06 PM
To: Barbara Felitti <bfvermont@yahoo.com>
Cc: Connolly, Abigail <Abigail.Connolly@vermont.gov>
Subject: RE: Records Request

Dear Ms. Felitti,

I know that the Fish and Wildlife Department has considered trapping to be a form of hunting for decades because of my conversations with staff who have in fact been working at the Department for decades. I have no other documents to share with you. It is possible that some

older documents were destroyed in Tropical Storm Irene when we were located in Waterbury and many of the Department records were stored in the basement at that time.

Have a great weekend.

VERMONT

Catherine Gjessing, General Counsel (she/her)

Vermont Department of Fish and Wildlife

Commissioner's Office

1 National Life Drive, Davis 2 |
Montpelier, VT 05620-3208

802-595-3331 cell | 802-828-1250 fax

https://vtfishandwildlife.com/

From: Barbara Felitti <bfvermont@yahoo.com>
Sent: Friday, October 6, 2023 1:57 PM
To: Gjessing, Catherine <Catherine.Gjessing@vermont.gov>
Cc: Connolly, Abigail <Abigail.Connolly@vermont.gov>
Subject: Records Request

EXTERNAL SENDER: Do not open attachments or click on links unless you recognize and trust the sender.

Dear Catherine,

At yesterday's LCAR hearing you stated that "the Department's position that trapping is a form of hunting has been our position for decades".

The oldest public record I received in response to my request for documents pertaining to policy development and decision that trapping is protected under the Vermont constitution was from 2015 - eight years ago, not

decades.

I am requesting records that support your assertion that the Department's position that trapping is a form of hunting has been the Department's position for decades.

Thank you,

Barbara Felitti

Re: Correction to FWD website

From: Gjessing, Catherine (catherine.gjessing@vermont.gov)

To: bfvermont@yahoo.com

Cc: Christopher.Herrick@vermont.gov

Date: Friday, December 23, 2022 at 03:36 PM EST

Dear Ms Felitti,

Yes, the Commissioner stated that it is the Department's position that trapping is protected by the Vermont Constitution. Regarding your other questions, the Department cannot give you legal advice. Protect Our Wildlife has advocated for and will likely continue to advocate for banning trapping, a position clearly not supported by the Department. Given that this issue is one that may eventually be the subject of controversy before the legislature and possibly the courts, we will not provide you with attorney client privileged communications or work product.

Have a wonderful holiday season.

Sincerely,

Catherine Gjessing

VERMONT

Catherine Gjessing, General Counsel (she/her)
Vermont Department of Fish and Wildlife
Commissioner's Office
1 National Life Drive, Davis 2 | Montpelier, VT 05620-3208
802-595-3331 cell | 802-828-1250 fax
https://vtfishandwildlife.com/

From: Barbara Felitti <bfvermont@yahoo.com>
Sent: Thursday, December 22, 2022 4:09 PM
To: Herrick, Christopher <Christopher.Herrick@vermont.gov>
Subject: Re: Correction to FWD website

EXTERNAL SENDER: Do not open attachments or click on links unless you recognize and trust the sender.

Dear Commissioner Herrick,

Thank you for your reply. My understanding from your message is that the Department's position is that trapping is protected by the Vermont Constitution. Please correct me if this is not accurate.

I request clarification as to the legal basis for the Department's position that "trapping is a form of hunting protected by the Vermont Constitution". Is there any written memo, department document or other legal record that determines that trapping is protected under the Vermont constitution?

Hunting and trapping are defined as distinctly different activities under Vermont regulation as noted below:

10 App. V.S.A § 19 3.15 **"Hunting"** means the taking of an animal by use of a firearm, muzzleloader, bow or crossbow or other implement authorized by the General Assembly, or the Vermont Fish and Wildlife Board to pursue or take any live animal. [Note: This same definition appears under other subsections of 10 App. V.S.A that reference hunting].

10 App. V.S.A. § 44 3.6 **"Trapping"** means to take or attempt to take furbearing animals with traps including the dispatching of such lawfully trapped furbearing animals.

Additionally, in the Department's Vermont Hunting and Trapping Guide 2022 it notes that only hunting and fowling are guaranteed rights (p. 46). Because of this, as the guide states, "all private lands are open to hunters unless that land is posted".

For trapping the guide states that "Landowner permission is required to trap on all private property not owned by the trapper." (p. 37)

This difference in access to private lands reflects that hunting is a protected right per the VT Constitution and that trapping is not.

The above regulations and Department information do not support the assertion that trapping is a form of hunting and so a constitutionally guaranteed right.

Please also note that you misread the correct spelling of my last name.

Sincerely,
Barbara Felitti

On Thursday, December 15, 2022 at 04:59:22 PM EST, Herrick, Christopher <christopher.herrick@vermont.gov> wrote:

Dear Ms. Feletti;

Thank you for your note. Please be advised that it is the position of the Department that trapping is a form of hunting protected by the Vermont Constitution. For this reason, we will not be amending our website as you have requested.

From: Barbara Felitti <bfvermont@yahoo.com>
Sent: Monday, December 12, 2022 8:54 AM
To: Herrick, Christopher <Christopher.Herrick@vermont.gov>
Subject: Correction to FWD website

EXTERNAL SENDER: Do not open attachments or click on links unless you recognize and trust the sender.

Dear Commissioner Herrick,

I request that the Fish & Wildlife Department (FWD) correct its website which inaccurately states that

trapping is protected by the State constitution.

The following is found on the FWD website:

"The Vermont constitution has protected the right to hunt, fish and trap on open, private land since its drafting in 1793".

https://vtfishandwildlife.com/learn-more/landowner-resources/private-land-and-public-access/what-posting-means

The statement is incorrect. The Vermont constitution refers only to hunting, fishing and fowling:

§ 67. [HUNTING; FOWLING AND FISHING]

The inhabitants of this State shall have liberty in seasonable times, to hunt and fowl on the lands they hold, and on other lands not inclosed, and in like manner to fish in all boatable and other waters (not private property) under proper regulations, to be made and provided by the General Assembly.

Trapping is defined as a distinctly different activity under Vermont regulation and therefore should not be identified as constitutionally protected. The website should be revised as follows:

"The Vermont constitution has protected the right to hunt, fish and fowl ~~trap~~ on open, private land since its drafting in 1793".

Please advise as to when this correction will be made. Thank you.

Sincerely,

Barbara Felitti

RE: Follow-up Re: Request for Information

From: Connolly, Abigail (abigail.connolly@vermont.gov)

To: bfvermont@yahoo.com

Date: Thursday, September 28, 2023 at 09:11 AM EDT

Good morning Barbara,

1. Please see the attached ISO Restraining Traps protocol- that is a free copy of the ISO (otherwise it would cost close to $200 on amazon).
2. The BMP research study that was sent is not about how to set them. The publication covers the methods used and the welfare criteria that is used to evaluate traps for different species.
3. Under literature cited in the BMP research we sent, there are additional references for testing of body gripping traps: https://www.iso.org/standard/26355.html
4. If you want data and information on all the studies conducted in Canada, we don't have those data and you will need to contact the authors.
5. We have attached the international agreement on humane trapping standards- this can be found by googling.
6. The body gripping traps were not developed by the Canadian government. Body-gripping traps were tested in Canada. The fur institute of Canada, along with AFWA (or IAFWA at the time) spearheaded this work https://fur.ca/research-and-information/trap-research-and-testing/ Their work had to comply with the international humane trapping standards.

Sincerely,

VERMONT

Abigail Connolly (she/her) | Principal Assistant to Commissioner Herrick
Vermont Agency of Natural Resources | Department of Fish & Wildlife
1 National Life Drive, Davis 2 | Montpelier, VT 05620
802-828-1454 (o) | 802-636-7414 (c)
abigail.connolly@vermont.gov
www.vtfishandwildlife.com

From: Barbara Felitti <bfvermont@yahoo.com>
Sent: Wednesday, September 27, 2023 11:29 AM
To: Connolly, Abigail <Abigail.Connolly@vermont.gov>
Subject: Follow-up Re: Request for Information

Hi Abigail,

I reviewed the report you sent and determined that it does not answer my request.

My request was for information about BMPs for body-gripping traps developed by the Canadian government that formed the basis for the Department's development of the regulations for body-gripping traps in the new proposed fur-bearer rule. (Again, based on the Department's statement in their responsiveness report that this is the information that was used).

The document sent is about the ***use*** of body-gripping traps, i.e., how to set them. It is not BMP research which would include information such as trap performance, methods of assessment, standards and measurement, etc.

I request the BMP research information for body-gripping traps.

Thank you,

Barbara

On Tuesday, September 26, 2023 at 04:14:35 PM EDT, Connolly, Abigail <abigail.connolly@vermont.gov> wrote:

Good afternoon Barbara,

Please see the attached document responsive to your request, specifically the second paragraph on page 6.

Sincerely,

Abigail Connolly (she/her) | Principal Assistant to Commissioner Herrick

Vermont Agency of Natural Resources | Department of Fish & Wildlife

1 National Life Drive, Davis 2 | Montpelier, VT 05620

802-828-1454 (o) | 802-636-7414 (c)

abigail.connolly@vermont.gov
www.vtfishandwildlife.com

From: Barbara Felitti <bfvermont@yahoo.com>
Sent: Friday, September 22, 2023 3:00 PM
To: Connolly, Abigail <Abigail.Connolly@vermont.gov>
Subject: Request for Information

Dear Abigail,

In the Department's report *"Responsiveness Summary: Public Comments, Best Management Practices for Furbearer Trapping"* reference is made on page 22 to body-gripping traps being tested by the Canadian government using international standards.

I have been unable to find a report of this through an internet search, and so I am requesting a copy of the report(s) used by the Department in their determinations about body-gripping traps for the proposed furbearer rule.

Thank you,

Barbara Felitti


AIHTS-Copy-of-Agreement.pdf
70.1kB


ISO Restraining Traps_20061025092814.pdf
892.6kB

RE: Request for Bodygrip Trap Research Data

From: Bryant White (bwhite@fishwildlife.org)

To: bfvermont@yahoo.com

Cc: pallen@fishwildlife.org

Date: Tuesday, October 10, 2023 at 07:07 PM EDT

Hi Barbara,

Thank you for reaching out and I appreciate your interest in gathering scientific information on trapping.

I am assuming you are likely most interested in the animal welfare data on bodygrip traps? The animal welfare data on bodygrip traps is developed by our research partners in Canada under the Agreement on International Humane Trapping Standards (AIHTS). The welfare data is developed, not through field projects, but through compound testing, predictive computer simulation models, or mechanical comparisons. For a better understanding of the process used in Canada I would refer you to their website at: https://fur.ca/

Our Canadian research partners share the welfare data with AFWA, but AFWA has an MOU with Canada that does not allow us to share the data with a third party. The Canadian data is proprietary so you will have to contact them directly to gain access. You can find the contact information needed at the website listed above.

In the U.S. we collect field data on the performance of bodygrip traps relative to efficacy, selectivity, practicality and safety. We only field test bodygrip traps that have already met the animal welfare standards. The only exception is that we have field tested a few bodygrip traps on species that are not covered under the AIHTS and for which Canada will not do any testing. The BMP Program is obligated to test traps on all twenty-three species trapped in North America, where as the AIHTS does not cover all species. In the US we took the much more difficult route but we felt that was the right thing to do.

We do plan to publish another document at some point in the future, similar to the BMP Monograph, with information on bodygrip traps, though we would only be able to reference animal welfare data developed in Canada. Beyond that researchers generally do not share raw data prior to scientific publication. However, I would be happy to share results of our bodygrip trap testing. I have never produced a full report on that research but I could generate one, though it would take me considerable time. Is there anything specific you are interested in relative to the data we collect in the US on efficacy, selectivity, practicality, and safety? I could probably answer questions much quicker that developing a full report if I knew what information you were looking for specifically.

Again, thanks for your inquiry.

Bryant

Bryant White (he/him/his)
Program Manager of Trapping Policy and Human-Wildlife Conflicts
Association of Fish and Wildlife Agencies
c/o Arizona Game and Fish Department
5000 W. Carefree Hwy
Phoenix, Arizona 85086
On the web: www.fishwildlife.org ; https://furbearermanagement.com
Get Trapper Education: https://conservationlearning.org

From: Barbara Felitti <bfvermont@yahoo.com>
Sent: Monday, October 9, 2023 6:43 AM
To: Bryant White <BWhite@fishwildlife.org>
Cc: Patricia Allen <pallen@fishwildlife.org>
Subject: Request for Bodygrip Trap Research Data

Dear Mr. White,

I have been referred to AFWA by the Vermont Fish & Wildlife Department to obtain research data for bodygrip traps.

I have the document "Best Management Practices for Trapping Furbearers in the United States" which was published in Wildlife Monographs. This research covers only leghold traps. I am interested in similar research reports for bodygrip traps.

Please know that I have reviewed publications on AFWA's website and been given two of your documents: "Bodygrip Traps on Dryland: A Guide to Responsible Use, AFWA, 2017" and "Best Management Practices for Trapping in the United States, Introduction, AFWA, 2006". These documents contain information on the use of bodygrip traps, but not the research data upon which the BMPs were made.

Thank you for providing me with the scientific data for bodygrip traps.

Sincerely,

Barbara Felitti

Vermont

image001.jpg
36.7kB

Re: New submission from Contact Us

From: Simon Ward (sward@fur.ca)

To: bfvermont@yahoo.com

Date: Friday, October 13, 2023 at 09:34 AM EDT

Hi Barbara,

I would be happy to introduce you to the person who can answer your questions, but since this may involve quite a lot of work, you should first introduce yourself. Can you tell me who you are and why you are looking for answers? If your interest is professional, a reference would help.

I should say that if your interest is in gathering information to be used against the fur trade, my colleague may not respond. I say this because I see you come from Vermont where there is currently a heated debate about hunting and trapping.

Hoping to hear from you again,

Simon

From: Barbara Felitti <bfvermont@yahoo.com>
Sent: 12 October 2023 07:35
To: Simon Ward <sward@fur.ca>
Subject: Re: New submission from Contact Us

Dear Simon,

Thank you for your prompt reply. I reviewed your website but did not find the information I am seeking.

I am looking to see if there is a published report(s) for BMPs for bodygrip/kill traps similar to one published in Wildlife Monographs - *"Best Management Practices for Trapping Furbearers in the United States"* (attached to this email for reference). Do you have a report with this type of information for bodygrip/kill traps?

My interest is in the underlying research data for bodygrip/kill traps, not guides for what traps to use or how to use them. So for example, do you

have published or publicly available research data to support the *Best Trapping Practices, July 2018*?

Last, can you confirm the list of furbearers you research for bodygrip/kill traps? From the July 2018 publication this appears to be: beaver, fisher, Canada lynx, marten, muskrat, otter, raccoon and weasel. Is this correct? Are there any others?

I appreciate your point about terminology. It seems to differ place to place. Here in the US, the term "bodygrip" trap is used while Canada uses the ISO standard language of "kill" trap. The EU talks about "leghold" traps, the US and Canada use "foothold" and the ISO uses "restraining" (which seems the most accurate). I'll need to consider terms depending upon who I am writing to.

Thank you for any assistance and information you can provide.
Barbara

On Tuesday, October 10, 2023, 10:08:53 PM EDT, Simon Ward <sward@fur.ca> wrote:

Dear Barbara,

Thank you for contacting us. Can you check here first to see if we have what you're looking for? https://fur.ca/certified-traps/

Since I'm here, please consider dropping the term "leghold". I know the term is still widely used, but it really refers to traps that caught an animal by its calf. These have not been used in Canada in decades, and I believe are banned in Vermont too. The closest equivalent among modern traps is the "foothold" trap, which, as the name says, is designed to hold an animal by its foot.

Let me know if you have any further questions.

Yours,

Simon Ward

From: Barbara Felitti <fic-communications@fur.ca>
Sent: 11 October 2023 08:21
To: FIC Communications <FIC-Communications@fur.ca>; Fur Institute of Canada (FIC)

<info@fur.ca>; Simon Ward <sward@truthaboutfur.com>
Subject: New submission from Contact Us

Name

Barbara Felitti

Email

bfvermont@yahoo.com

City

Huntington, VT

Country

USA

Message

I have been referred to the Fur Institute of Canada by the Vermont Fish & Wildlife Department in the US to obtain research data for bodygrip traps.

I have the document "Best Management Practices for Trapping Furbearers in the United States" which was published in Wildlife Monographs. https://wildlife.onlinelibrary.wiley.com /doi/full/10.1002/wmon.1057

This research covers only leghold traps. I am interested in similar research reports for bodygrip traps.

Thank you for providing me with the scientific research data for bodygrip traps.

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Certified Traps – AIHTS Implementation in Canada

The Canadian Wildlife Directors, Competent Authorities for implementation of the Agreement on International Humane Trapping Standards (AIHTS) have approved a 2-phase process for implementing the AIHTS in Canada. The following list shows the two phases for regulating species-specific traps: *(1) the **certified** traps currently regulated for specific species; (2) **certified** traps that are not regulated at this time. **Check with your provincial or territorial government to confirm regulations related to trap uses applicable in your trapping area.***

Updated January 1 2023 - (Any addition to this list is highlighted and marked in Bold)

PHASE 1 - KILLING TRAPS - Certified traps *currently* regulated for use per species

BEAVER	CANADA LYNX and BOBCAT	FISHER	MARTEN Martes americana Martes martes - Martes zibellina	MUSKRAT On Land	MUSKRAT Underwater	OTTER	RACCOON	WEASELS
-Bélisle Classique 330 -Bélisle Super X 280 -Bélisle Super X 330 -B.M.I. 280 Body Gripper -B.M.I. 330 Body Gripper -B.M.I. BT 300 -Bridger 330 -Duke 280 -Duke 330 -LDL C280 -LDL C280 Magnum -LDL C330 -LDL C330 Magnum -Rudy 280 -Rudy 330 -Sauvageau 1000-11F -Sauvageau 2001-8 -Sauvageau 2001-11 -Sauvageau 2001-12 -Species-Specific 330 Dislocator Half Mag -Species-Specific 440 Dislocator Half Mag -Woodstream Oneida Victor Conibear 280 -Woodstream Oneida Victor Conibear 330	-Bélisle Super X 280 -Bélisle Super X 330 -B.M.I 220 Body Gripper -B.M.I 280 Body Gripper -B.M.I 220 Magnum Body Gripper -B.M.I 280 Magnum Body Gripper -Bridger 220 -Bridger 280 Mag. Body Gripper -Duke 280 -LDL C220 -LDL C220 Magnum -LDL C280 Magnum -LDL C330 -LDL C330 Magnum -Rudy 330 -Sauvageau 2001-8 -Sauvageau 2001-11 -Woodstream Oneida Victor Conibear 330	-Bélisle Super X 120 -Bélisle Super X 160 -Bélisle Super X 220 -Koro no 2 -LDL C160 Magnum -LDL C220 Magnum -Rudy 120 Magnum -Rudy 160 Plus -Rudy 220 Plus -Sauvageau 2001-5 -Sauvageau 2001-6 -Sauvageau 2001-7 -Sauvageau 2001-8	-Bélisle Super X 120 -Bélisle Super X 160 -B.M.I. 126 Magnum Body Gripper -Koro no 1 -Koro no 2 -LDL B120 Magnum -LDL C160 Magnum -Northwoods 155 -Oneida Victor Conibear 120-3 MAGNUM Stainless Steel -Rudy 120 Magnum -Rudy 160 Plus -Sauvageau C120 Magnum -Sauvageau 2001-5 -Sauvageau 2001-6 -KP120 (Russia)	-Bélisle Super X 110 -Bélisle Super X 120 -B.M.I 120 Body Gripper -B.M.I 120 Body Gripper Magnum -B.M.I 126 Body Gripper Magnum -Bridger 120 -Bridger 120 Mag. Body Gripper -Bridger 155 Mag. Body Gripper -CONV 110 SS CAN (Holland) -Duke 120 -FMB 110 SS (Holland) -FMB 150 SS (Holland) -FS-110 SS (Holland) -HZ-110 Stainless Steel (Holland) -Koro Muskrat Trap -Koro Large Rodent Double spring -KT-140 (Russia) -LDL B120 -LDL B120 Magnum -Oneida Victor 120 Stainless Steel -Oneida Victor Conibear 110-3 Stainless Steel -Oneida Victor Conibear 110-3 MAGNUM Stainless Steel -Oneida Victor Conibear 120-3 Stainless Steel -Oneida Victor Conibear 120-3 MAGNUM Stainless Steel -Ouell 411-180 -Ouell RM -Rudy 110 -Rudy 120 -Rudy 120 Magnum -Sauvageau 2001-5 -Sauvageau C120 Magnum -Sauvageau C120 Reverse Bend -Triple M -WCS Tube Trap Int'l -WCS SHORTY Tube Trap -Woodstream Oneida Victor Conibear 110 -Woodstream Oneida Victor Conibear 120	Any jaw type trap (body gripping or leghold) set as a submersion set that exerts clamping force on a muskrat and that maintains this animal underwater.	-Bélisle Super X 220 -Bélisle Super X 280 -Bélisle Super X 330 -LDL C220 -LDL C220 Magnum -LDL C280 Magnum -Rudy 220 Plus -Rudy 280 -Rudy 330 -Sauvageau 2001-8 -Sauvageau 2001-11 -Sauvageau 2001-12 -Woodstream Oneida Victor Conibear 220 -Woodstream Oneida Victor Conibear 280 -Woodstream Oneida Victor Conibear 330	-Bélisle Classique 220 -Bélisle Super X 160 -Bélisle Super X 220 -Bélisle Super X 280 -B.M.I. 160 Body Gripper -B.M.I. 220 Body Gripper -B.M.I. 280 Body Gripper -B.M.I. 280 Magnum Body Gripper -Bridger 160 -Bridger 220 -Bridger 280 Mag Body Gripper -Duke 160 -Duke 220 -Koro no 2 -LDL C160 -LDL C160 Magnum -LDL C220 -LDL C220 Magnum -LDL C280 Magnum - Oneida Victor C-220 Stainless Steel -Northwoods 155 -Rudy 160 -Rudy 160 Plus -Rudy 220 -Rudy 220 Plus -Sauvageau 2001-6 -Sauvageau 2001-7 -Sauvageau 2001-8 -Species-Specific 220 Dislocator Half Mag -Woodstream Oneida Victor Conibear 160 -Woodstream Oneida Victor Conibear 220	-Bélisle Super X 110 -Bélisle Super X 120 -B.M.I 60 -B.M.I 120 Body Gripper Magnum -B.M.I 126 Body Gripper Magnum -Bridger 120 -Bridger 120 Mag Body Gripper -Bridger 155 Mag Body Gripper -Koro Muskrat Trap -Koro Rodent Trap -Koro Large Rodent Double spring -KT-140 (Russia) -LDL B120 Magnum -Ouell 411-180 -Ouell 3-10 -Ouell RM -Rudy 120 Magnum -Sauvageau C120 Magnum -Sauvageau C120 Reverse Bend -Sauvageau 2001-5 -Triple M -Victor Rat Trap -WCS Tube Trap Int'l -WCS SHORTY Tube Trap -Woodstream Oneida Victor Conibear 110 -Woodstream Oneida Victor Conibear 120

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Certified Traps – AIHTS Implementation in Canada

Updated January 1 2023 – (Any addition to this list is highlighted and marked in Bold)

1554 Carling Avenue, Suite M260, Ottawa, ON K1Z 7M4 • Telephone / Téléphone: **613 231-7099** • Fax / Télécopieur: 613 231-7940 • info@fur.ca • **www.fur.ca**

PHASE 1 - RESTRAINING TRAPS - Certified traps *currently* regulated for use per species

BEAVER (cage traps)	BOBCAT	CANADA LYNX	RACCOON *(see note Note 1 below)*	WOLF
-Breathe Easy Live Beaver trap -Comstock 12 x 18 x 39 Swin Through Beaver Cage -Dam Beaver Live Beaver Trap -Ezee Set Live Beaver Trap -Hancock Live Beaver Trap -Koro "Klam" Live Beaver Trap	-Bélisle Footsnare #6 -Bélisle Sélectif -Oneida Victor #1.5 Soft Catch equipped with 4 coil springs -Oneida Victor #1.75, offset, laminated jaws equipped with 2 coil springs -Oneida Victor #3 Soft Catch equipped with 2 coil springs -Oneida Victor #3 Soft Catch equipped with 4 coil springs -Oneida Victor #3 equipped with 3/16-inch offset, double rounded steel jaw laminations (3/16-inch on topside of jaws and ¼-inch on underside of jaws), with 2 coil springs	-Bélisle Footsnare #6 -Bélisle Sélectif -Oneida Victor #3 Soft Catch equipped with 2 coil springs -Oneida Victor #3 Soft Catch equipped with 4 coil springs -Oneida Victor #3 equipped with at least 8mm thick, non-offset steel jaws, 4 coil springs and an anchoring swivel centre mounted on a base plate	-Bridger T3 -Duffer -Duke DP Coon Trap -Egg Trap -Lil' Grizz Get'rz *Note 1: The exclusive use of these certified traps is currently mandatory only in Ontario, Québec, New Brunswick.*	-Bélisle Footsnare #8 -BFV Beer no 1 PLUS -Bridger Alaskan #5 Offset and Laminated Jaws -Bridger Alaskan #5 Rubber Jaws -Bridger Brawn no 9 Rubber Jaws -LAY 76 Laminated -Livestock Protection EZ Grip No. 7 -MB 750 Alaskan OS (3/8") -Muskwa no 9 Laminated Offset -Oneida Victor #3 Soft Catch equipped with 4 coil springs, a minimum 8mm thick base plate and an anchoring swivel mounted on this base plate. -Rudy Red Wolf 4 ½ -X TREME Wolf

PHASE 2 - YEAR OF IMPLEMENTATION TO BE DETERMINED

Although the traps listed in Phase 2 are certified for the following species and trap categories, the year of entry into force of the obligation to use only AIHTS Certified traps has not yet been determined. This date, which could vary from one species to another, will be known at least 3 years in advance. *Until then, traps that are currently legally permitted can still be used.* ***Check with your provincial or territorial government to confirm regulations related to trap uses applicable in your trapping area.***

PHASE 2 - **RESTRAINING TRAPS - Traps certified per species but *not yet* mandatory**

COYOTE	RACCOON (cage and box traps)	
-Bélisle Footsnare #6 -Bélisle Sélectif -Bridger #3 equipped with 5/16-inch offset, double rounded steel jaw laminations (3/16-inch on topside of jaw and ¼-inch on underside of jaws), with 4 coil springs and an anchoring swivel centre mounted on a base plate. -Duke No 3 Rubber Jaws with an anchoring swivel centre mounted on the base plate -Oneida Victor #1.5 Soft Catch equipped with 2 coil springs -Oneida Victor #1.5 Soft Catch equipped with 4 coil springs -Oneida Victor 1.75 equipped with 3/16-inch offset, double rounded steel jaw laminations (3/16-inch on top side of jaw and ¼-inch on underside of jaws), with a 4 coil springs -Oneida Victor #3 Soft Catch equipped with 2 coil springs -Oneida Victor #3 Soft Catch equipped with 4 coil springs -Oneida Victor #3 equipped with 3/16-inch offset, double rounded steel jaw laminations (3/16-inch on topside of jaw and ¼-inch on underside of jaws), with 2 coil springs -Oneida Victor #3 equipped with 3/16-inch offset, double rounded steel jaw laminations (3/16-inch on topside of jaw and ¼-inch on underside of jaws), with 4 coil springs -MB 550 Rubber Jaws equipped with 4 coil springs	-Ramconct DURA-POLY Box Trap -Havahart Cage Trap 1079 -Havahart Cage Trap 1081 -Havahart Cage Trap 1085 -Tomahawk Cage Trap 108 -Tomahawk Cage Trap 108.1 -Tomahawk Cage Trap 108.5 -Tomahawk Cage Trap 108F -Tomahawk Cage Trap 108SS -Tomahawk Cage Trap 108.2SS -Tomahawk Cage Trap 1010 -Tomahawk Cage Trap 1010F -Tomahawk Cage Trap 1010SS -Tomahawk Cage Trap 1010SS-F	-Tomahawk Cage Trap 608 -Tomahawk Cage Trap 608.1 -Tomahawk Cage Trap 608.5 -Tomahawk Cage Trap 608F -Tomahawk Cage Trap 608SS -Tomahawk Cage Trap 608.2SS -Tomahawk Cage Trap 6010 -Tomahawk Cage Trap 6010F -Tomahawk Cage Trap 6010SS

S Gorsline Testimony

PROJECT COYOTE

FOSTERING COEXISTENCE

October 2, 2023

Honorable Trevor Squirrel, Chair
Legislative Committee on Administrative Rules (LCAR)
115 State Street
Montpelier, VT 05633

Dear LCAR Committee Members and Chairman Squirrel,

My name is Sarah Gorsline, I'm a Grand Isle County resident. I also represent the national, science-based nonprofit Project Coyote in Vermont. Project Coyote promotes nonlethal coexistence strategies with native carnivores, such as bears, coyotes, wolves, foxes and bobcats throughout the United States. Science informs us that native carnivores are keystone species who maintain healthy ecosystems here in Vermont, thereby regulating populations of herbivores, such as deer, and other smaller animals, like rodents, within that ecosystem. We do not oppose fair-chase hunting, or subsistence hunting. Instead we're opposed to specific hunting practices and methods, such as trapping, hound hunting, and wildlife killing contests, because these practices lack any science-based justification, lead to animal suffering, and are not embraced by the majority of citizens or hunters.

I appreciate the opportunity to share my concerns as a Vermonter, and Project Coyote's concerns, about Vermont Fish & Wildlife Board's proposed Rules and Regulation changes related to Act 159, "An act relating to the best management practices for trapping", and Act 165, "An act relating to hunting coyotes with dogs." The Board and Department's proposed Trapping Best Management Practices and Coyote Hunting Regulations Updates do not go nearly far enough to protect Vermont ecosystems, or to protect wildlife held in the public trust that the Board and Department manage for all Vermonters, including subsequent generations into the future.

Vermont Fish & Wildlife's ICAR report states "these trapping and hunting activities will have no impact on the healthy and abundant populations of furbearers in Vermont." However given that there are no bag limits (kill limits) on the number of coyotes killed throughout a year-round open coyote hunting season (including trapping, hound hunting and all other methods of hunting) , and there is currently very limited reporting required for canids (coyote, fox, wolves) killed in Vermont, except voluntary reporting for animals over 50 pounds, Vermont Fish & Wildlife department has a limited understanding of how healthy furbearer populations actually are in Vermont.

Act 159 Legislative Mandate:

PH: 415-945-3232 · FAX: 415-373-3826 · P.O. BOX 5007 · LARKSPUR, CA 94977
INFO@PROJECTCOYOTE.ORG · WWW.PROJECTCOYOTE.ORG

The new Trapping BMP rules proposed by Vermont Fish and Wildlife in no way fit the legislative mandate under Act 159 to "propose criteria and equipment designed to modernize trapping and improve the welfare of animals subject to trapping programs." A few examples of why the rules can't meet this mandate:

1) Simply put, there's no way to make leg hold or body gripping traps humane for any animal, regardless of padding, size, type or placement. Trapping is a cruel and ineffective method of managing wildlife, and it doesn't reflect the instrumental value predators offer in their contributions to ecosystem health, rodent control, disease prevention and increased biodiversity of Vermont ecosystems. This is especially important to consider since 0.15% of the Vermont public participates in trapping.

2) No method of trapping can avoid the potential of capturing, with the risk of injuring or killing, non-target animals (including endangered species and domestic animals). In 2022 there were 13 reported pets injured or killed in Vermont traps, the total number injured or killed is unknown, since reporting is voluntary. Vermont Fish & Wildlife is still allowing kill traps on land which is a direct threat to non-targeted animals who cannot be safely released.

Act 165 Legislative Mandate

The Department and Board's proposed coyote hound hunting rules in response to Act 165 in no way meet the Legislative mandate that reads, "the General Assembly intends that the rules required under this section support the humane taking of coyote, the management of the population in concert with sound ecological principles, and the development of reasonable and effective means of control."

Examples of how the proposed rules do not fit the legislative mandate are:

1) Simply put, hound hunting will never be a humane way to hunt any animal. Many hunters and wildlife advocates consider hound hunting a violation of "fair chase" principles of hunting. Hounding involves hunters and guides using packs of powerful, GPS-collared hounds to pursue and harass wildlife until physical exhaustion. Hound hunting can involve hounds in direct conflict with the wild animal, hounds mauling live wildlife, and hounds getting injured by wildlife. There's a reason that dog fighting is illegal federally, there is no reason that dog fighting should be allowed in the woods because one of the dogs being mauled is a wild canid.

2) These proposed rules contradict the following legislative intent: "the management of the population in concert with sound ecological principles." Coyotes, and other apex predators, are critical allies in maintaining Vermont ecosystems. Here in Vermont, where eastern coyotes are the primary apex predator due to the loss of historical apex

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predators (eastern cougar and eastern wolf), coyote removal can precipitate an ecological chain reaction that leads to degradation of the health, integrity and diversity of our ecosystems.[1] By allowing the indiscriminate killing of predator species such as coyotes, this removal may set off a cascade of negative environmental consequences. At this time of mass species extinction, we should be strictly scrutinizing policies such as the proposed rules which allow the indiscriminate killing of carnivores and other ecologically valuable wildlife. We should be crafting policies to protect these species in the face of our current ecological crisis. One example of how Vermont Fish & Wildlife's current regulations don't fit this science, is that coyotes, a keystone species in Vermont, may be hunted year round, with no bag (kill number) limits, and no specific rules on how the animal may be killed.

3) The proposed rules totally lack "a reasonable and effective means of control" for hunting hounds. The Fish & Wildlife Department's own expert, who is a hound hunter himself, presented on GPS collars for dogs at the March 15th, 2023 Board meeting, noting that the collars stop working beyond a 1 mile range, or when the hounds go over any kind of topographic incline such as a rocky slope, of which there are many in VT. The idea of GPS collars, which are already in use by most hounders, as a control method for a pack of hunting hounds seems a nonstarter.

4) Studies suggest that wildlife managers should evaluate the effect of hunting dogs on non-target species, especially in areas with the presence of endangered and protected species which are likely to be negatively affected by hunting dog presence. In Vermont, hounds may be illegally harassing federally and state protected species such as transient wolves and lynx.[2]

5) Hounding is a cause of conflict and threat to public safety across Vermont with multiple reports of individuals and their dogs being attacked by hounds hunting coyotes[3] and black bears[4]. Vermont landowners have reported hounds trespassing on

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[1] Benson JF, Loveless KM, Rutledge LY, Patterson BR. Ungulate predation and ecological roles of wolves and coyotes in eastern North America. Ecol Appl. 2017 Apr;27(3):718-733. doi: 10.1002/eap.1499. Epub 2017 Mar 15. PMID: 28064464.

[2] Mori, E. 2017. Porcupines in the landscape of fear: Effect of hunting with dogs on the behaviour of a non-target species. Mammal Research 62:251-258; Grignolio, S., E. Merli, P. Bongi, S. Ciuti, and M. Apollonio. 2011. Effects of Hunting with Hounds on a Non-Target Species Living on the Edge of a Protected Area. Biological Conservation 144:641-649; Sforzi A. & Lovari S. 2000. Some effects of hunting on wild mammalian populations. Ibex J. MT. Ecol. (Hunting dogs have been proven to negatively effect the behavior of non-target species including displacement, temporary abandonment or substantial increase of home ranges, alteration of activity rhythms, significant temporal or spatial change in habitat use, and increased hormone secretions.)

[3] See: https://vtdigger.org/press_release/hunters-hounds-terrorize-vermont-resident-and-attack-her-dog/

[4] See: https://www.vpr.org/vpr-news/2019-11-26/hikers-attacked-by-bear-hunting-dogs-legislators-consider-changing-regulations

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their property, violating private property rights, and harassing them and their domestic animals.[5]

If the state is concerned about human-wildlife conflicts, and wildlife issues affecting Vermont farmers, then the Board and Department of Fish & Wildlife's own rules contradict these concerns. Indiscriminate and "pre-emptive" killing of predators associated with trapping, and hound hunting, can lead to the disruption of predators' social structure and foraging ecology in ways that increase the likelihood of predation on livestock and conflict with humans or pets. In hunted coyote populations, for example, the number of surviving pups that must be fed by the alpha parents and the number of transient individuals may increase. Coyote pups learn hunting behaviors and food habitats from their parents; therefore when trapping or hound hunting removes parents before they are able to teach their young, these factors predispose more coyotes to prey on livestock and increase the instances of conflict. Studies show that hunting-pressured coyote populations tend to be larger, not smaller, than populations with stable packs that are undisturbed.

In conclusion, I and my colleagues who are wildlife advocates, educators and scientists at Project Coyote urge you to reject Vermont Department of Fish & Wildlife's proposed Furbearer rules, which are unsupported by science or thorough studies on their environmental impact, and to push Vermont legislators on the House and Senate Environment and Energy Committees to follow science, and the values of Vermonters, to guide legislation on these issues. Before these committees' consideration are: H.191 a house bill to limit trapping, H.323, a house bill to ban the hound hunting of coyotes, and Senate Bill S.111 to limit trapping. We encourage legislators to move forward on these issues that are currently impacting Vermont ecosystems. Thank you for the opportunity to share these concerns with you.

Sincerely,

Sarah Gorsline
Grand Isle County resident
Vermont Representative & Multimedia Associate
Project Coyote
e: sarahgorsline@gmail.com
p: 802-378-5141

[5] See: https://www.reformer.com/opinion/letters/letter-hounding-violates-property-rights- imperils-domestic-animals-livestock/article_782344c4-6f58-11ec-8534-33fe4db321ce.html

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Rod Coronado

Dear LCAR Members,

My name is Rod Coronado, I'm a resident of the town of Orange where I am a cemetery commissioner and the Wildlife Programs Director for the Sage Mountain Botanical Sanctuary, a 600-acre forest preserve that currently provides nature-based after-school and summer programming for underserved youth in our community. I'm also an indigenous member of the Pascua Yaqui Tribe, and the director of the newly founded nonprofit, Vermont Wildlife Patrol.

Last October, while patrolling our Sanctuary's property I discovered a truck parked on our road and when I looked in the bed of the truck, I saw an assortment of steel body-gripping and foot-hold traps. The truck belonged to a trapper hired by VTrans to trap beavers in the area. The next day, I met with my local warden, who informed me VTrans had a legal right-a-way that allowed them to trap on property otherwise legally posted as closed to trapping. The same trapper hired by VTrans also placed body-gripping and foot-hold traps at a small beaver pond next to our town's office, which later trapped and drowned a beaver kit.

Following the interactions with the trapper in my town, I requested records from VTrans that identified the trapper I encountered, and I have since learned that they were cited in 2022 by VFW wardens for trapping fisher out of season. When I read the warden's report, I learned that the trappers body-gripping trap had been found on the face of a live fisher that was struggling with the trap on a snowmobile trail near the trapper's home. This was the same type of trap being used to target beaver in my town, only smaller.

I would soon learn that such body-gripping traps commonly used by trappers in Vermont, can not only fail to kill their victims as is their designed intent, but they also are indiscriminate, and are responsible for two reported dog fatalities in the state in 2022. (see attached warden report.) This past Spring, I also drove to Island Pond, looking for a raccoon

that had been reported by a motorist struggling in the middle of the road in a body-gripping trap. The animal was eventually killed by a responding warden.

Since the current proposed changes to the furbearer rules were first introduced, I have attended every Vermont Fish & Wildlife Board meeting, and have viewed all testimony by Vermont Fish & Wildlife (VFW) staff related to the proposed changes, in particular the proposed Best Management Practices for trapping designed by the Association of Fish & Wildlife Agencies (AFWA). While watching the presentation on trapping BMP's by VFW's Kim Royar last Fall, I noticed that the humane standards for body-gripping traps was suspect and the methods for testing extremely cruel. Back in 1991, I visited a lab in Washington State where researcher Fred Gilbert conducting BMP trapping tests using a drowning tank to test body-gripping traps on live beavers. (See attached research citations.)

In one set of tests, on average beavers ceased struggling after 8 minutes with irrevocable loss of consciousness recorded at 16 minutes. Current BMP standards for body-gripping traps require that test animals placed in the traps lose all consciousness within five minutes in at least 70% of all BMP experimental trials. These experiments continue to be conducted on live animals at a facility in Alberta, Canada that is largely funded by the Fur Institute of Canada. Interesting side note, when a Washington state news organization went to court in 1991 to gain access to videotapes of the BMP drowning experiments, the Fur Institute of Canada canceled their funding for the experiments. (see attached)

Further research into BMP trapping experimentation also led me to a published paper on the failure of the Conibear 220 body-gripping trap to humanely kill fisher that was published in the 1990's. The researchers concluded, "Although the Conibear 220 often is recommended as an alternative to steel leghold traps, it is unlikely that it has the potential to humanely kill

this furbearer." (See attached). It's been a long time since this research paper was published, but the idea that a BMP trap currently in use in Vermont might not be capable of killing an animal humanely has been reinforced by the two recent body-gripping trap incidents in Vermont I mentioned earlier, involving a fisher and a raccoon being discovered alive in what supposed to be a killing trap. That was when I began asking questions to Vermont Fish & Wildlife about these body-gripping trap discrepancies.

On June 14th, 2023 Vermont Fish & Wildlife Department staff members, Brehan Furhey, Furbearer Project Leader and David Sausville, Wildlife Program Manager attended a public meeting organized by my organization, that included representatives from eight Vermont wildlife advocacy groups, Vermont Wildlife Patrol, Animal Wellness Action, Protect Our Wildlife, Green Mountain Animal Defenders, Project Coyote, Vermont Coyote Coexistence Coalition, Vermont Wildlife Coalition and In Defense of Animals. The purpose of this meeting was to have questions answered by VFW staff related to the current proposed changes to trapping and coyote hound hunting rules.

I provided Ms. Furhey and Mr. Sausville with my questions regarding the BMP failing fisher trap ahead of the meeting on June 12, 2023:

Act 159 directed VFW to reduce the level of suffering animals experience in traps, yet there are no recommended changes to the use of or size of body-gripping traps used to kill fisher despite some legal fisher traps having been proven to not be effective at killing fisher. (see attachment) Why has the department not made any recommended changes to the use of body-gripping traps themselves that do not adhere to BMP standards?

At the June 14th meeting, neither Ms. Furhey nor Mr. Sausville could provide an answer to my question regarding body-gripping traps and the published research. I was told they would get back to me on the matter. On June 21, 2023, I attended the public hearing on the proposed trapping changes held at Montpelier High School where I again asked VFW staff, including Director of Wildlife, Mark Scott about the discrepancies within the trapping BMP's

related to body-gripping traps. I was asked to resubmit my questions and attachments, which I did the following day. (See attachments)

To this day, I still have not received any answers to my questions about the scientific conclusion that the Conibear 220 body-gripping trap or its equivalent is insufficient to humanely kill fisher. In the Vermont Fish & Wildlife Department report to LCAR, the department responded to my requests by stating simply, "A variety of 220 traps have passed for fisher as long as they meet the criteria listed in the BMP's. Devices have evolved over time." Yet, no published research has been provided by VFW to substantiate that claim. (FW LCAR Responsiveness Summary Act159 Trapping.pdf Pg. 20)

The legislative mandate for Act 159 is clear. "The act requires the Commissioner of Fish and Wildlife to submit to the General Assembly recommended best management practices (BMPs) for trapping that propose criteria and equipment designed to modernize trapping and improve the welfare of animals subject to trapping programs." Further, it states, The BMPs shall be based on investigation and research conducted by the Department of Fish and Wildlife and shall use the "Best Management Practices for Trapping in the United States" issued by the Association of Fish and Wildlife Agencies ***as the minimum standards for BMP development.***

Considering that the existing BMP's for trapping advanced by AFWA are supposed to be the minimum standard to be considered in Vermont, allowing the use of body-gripping traps to trap fisher in state that have been scientifically proven to ***not*** be effective at killing fisher, falls far short of the legislative mandate and is an issue that to this day, Vermont Fish & Wildlife has been unwilling to explain to Vermont Wildlife Patrol and other concerned Vermonters. In addition, the exclusion of underwater traps from any recommended changes to trapping practices ignores one of the most common forms of trapping in Vermont.

In closing I would ask LCAR members to review the attached published research paper on Trapping BMP's (that was also provided by VFW) to learn the origin of trapping BMP's in the United States. In 1991 the European Union enacted a ban on wild furs imported from countries that employed trapping methods that did not meet international agreed upon humane trapping standards. Thus began the fur industry's efforts to prove through research, that body-gripping traps were the most humane way to kill many furbearers. Thirty years later and I still have not seen a published BMP research study that supports that assumption. I am not against trapping. But I am against the documented cruelty that Vermont's wildlife and even some pets have been subjected to in body-gripping traps.

Sincerely,

Rod Coronado

ORLEANS COUNTY LAW ENFORCEMENT DISCOVERY FORM

VERMONT WARDEN SERVICE

State of Vermont – ORLEANS – Derby District

Incident number: 22FW008331

Defendant name & DOB: Lisa Guyette [redacted]

Arresting Officer: J. Johnson W932

Offense date & location: 01/25/2022 : [redacted], Troy

Court date: 03/15/2022

WITNESSES

1.Name/DOB/Address/Phone	Statement:	2.Name/DOB/Address/Phone	Statement:
[redacted] Newport Town, 05851	☐ Written ☐ Oral/Rec. ☑ None	Chad Guyette [redacted] Troy, VT, 05868	☐ Written ☐ Oral/Rec. ☑ None
3.Name/DOB/Address/Phone	Statement:	4.Name/DOB/Address/Phone	Statement:
	☐ Written ☐ Oral/Rec. ☐ None		☐ Written ☐ Oral/Rec. ☐ None
5.Name/DOB/Address/Phone	Statement:	6.Name/DOB/Address/Phone	Statement:
	☐ Written ☐ Oral/Rec. ☐ None		☐ Written ☐ Oral/Rec. ☐ None

CHECKLIST OF MATERIALS SUBMITTED

☑ Citation	☑ Criminal /DMV Record of Defendant	☐ Audio (CD Burn)
☑ Affidavit	☑ Evidence log	☐ Miranda waiver:
☑ Arrest Custody	☐ Photo log (CIF needed)	☐ Other:
☑ Investigation Report	☐ Photographs (CD burn / printed) C	☐ Other:
☐ Statement(s)	☑ Criminal / DMV Record – Witness	☐ Other:

All material requested above has been provided as of this date

02/28/2022
DATE

W932
INVESTIGATING OFFICER

VERMONT UNIFORM FISH AND WILDLIFE INFORMATION

STATE OF VERMONT
COUNTY OF Orleans NO. 262183
DOCKET NO. _____
IN THE CRIMINAL DIVISION OF VERMONT, UNIT NO. _____, _____
CIRCUIT, BY AUTHORITY OF THE STATE OF VERMONT, THE UNDERSIGNED SAYS:

NAME Guyette (LAST) Lisa (FIRST) M. (MIDDLE)
STREET [redacted]
CITY North Troy STATE VT ZIP CODE 05859
AGE: 54 DOB: [redacted] POB: VT HGT: 5'5" WGT: 115
SEX: M (F) (CIRCLE ONE) HAIR [redacted] EYES BRO OTHER I.D. _____
VEHICLE/BOAT REGISTRATION NO. _____ STATE _____ YEAR _____
MAKE _____ STYLE _____ COLOR _____
HUNTING/FISHING/TRAP LICENSE NO. W27268538 3
AT [redacted] Troy IN SAID COUNTY AND TERRITORIAL UNIT
ON Jan. 25th, 20 22 AT 1319 (TIME) P.M.
DID COMMIT THE FOLLOWING OFFENSE: Setting Trap on Ground after Dec. 31st, 2021
IN VIOLATION OF 10 V.S.A. _____ / REG. # 44 AND AGAINST THE PEACE AND DIGNITY OF THE STATE

THE UNDERSIGNED FURTHER STATES THAT HE HAS JUST AND REASONABLE GROUNDS TO BELIEVE THAT THE PERSON NAMED ABOVE COMMITTED THE OFFENSE HEREIN SET FORTH, CONTRARY TO LAW.

Warden (OFFICER'S TITLE) W932 (OFFICER'S NUMBER) [signature] (SIGNATURE OF LAW ENFORCEMENT OFFICER)

Court Appearance: 15th Day of Mar, 20 22 at 1000 A.M.
Address of Court 247 Main St., Newport, VT
Personal Appearance ☒ is, ☐ is not required. unless paid before Court Date
Fine (if applicable) $ [redacted]262
Restitution for wildlife $ 50
TOTAL 312
POINTS 11

I have examined a copy of the schedule of fines and suspension and I understand the fine is to be paid in U.S. Funds or its equivalent.
Signature [signature] (DEFENDANT'S SIGNATURE)

☐ I HEREBY ENTER AND PROSECUTE THE ABOVE COMPLAINT
☐ I HEREBY CONSENT TO THE PLEA OF GUILTY OR NOLO CONTENDERE BY THE PERSON ABOVE NAMED IN THE COMPLAINT.
☐ I HEREBY DISMISS THE ABOVE COMPLAINT.

_____ (SIGNATURE OF PROSECUTING ATTORNEY) _____ (DATE)

(FOR COURT USE ONLY)

FINE RECEIVED $ _____ PLEA BY WAIVER: GUILTY ☐ NOLO ☐
AS PROVIDED BY LAW, I HEREBY CERTIFY THAT THE INFORMATION ON THIS TICKET IS A TRUE ABSTRACT OF THE RECORD OF THIS COURT IN THIS CASE.

_____ (DATE) _____ (SIGNATURE OF CLERK)

1/14 SML

COURT COPY

Guyette Lisa M. 262183

VERMONT WARDEN SERVICE
AFFIDAVIT
STATE OF VERMONT
ORLEANS COUNTY, ss.
CASE: 22FW000331

NOW COMES State Game Warden Jacob Johnson, affiant, being duly sworn and on oath, deposes and states that I have probable cause to believe Lisa M. Guyette (DOB: 09/29/1967), committed the offense of: **Illegally Set Trap between December 31st – Following Fourth Saturday in October**; a violation of **Vermont Title 10 Appendix 44 (Section 4.7).**

This affiant is a member of the Vermont Fish and Wildlife Department, Law Enforcement Division, assigned to the Derby District. This affiant has been a State Game Warden since May of 2021. This affiant has been certified by the Vermont Criminal Justice Training Council as a Law Enforcement Officer since June, 2020.

1. On Tuesday, January 25th, 2022, at approximately 1658 hours I was contacted by Vermont State Police Dispatch while off-duty regarding a complaint from Beth Brault (DOB: 12/07/1953). Dispatch advised Ms. Brault had found what she believed to be either a fisher or marten with a trap stuck on it's face, on the VAST trail near Loop Road, in the town of Troy. I spoke with Ms. Brault on the phone, and she advised earlier that afternoon, she was operating her snowmobile on VAST 105 when she found the animal walking around in the middle of the trail with a metal trap attached to its face. Ms. Brault advised she was able to pick up the animal and place it on her snowmobile and drive to the intersection of Loop Road / VAST 105 where she attempted to make a phone call. Ms. Brault advised she did not have any cell service to make a phone call, so she made the decision to dispatch the animal with her 9mm handgun. Ms. Brault advised she then brought the animal back to her residence of 341 Niles Road, in the town of Newport, where she then called dispatch. I asked Ms. Brault if the animal and trap were still at her house, and she advised they were and that the trap was still affixed to the animal.

2. Due to being off-duty, I spoke with Sgt. Vermont State Game Warden Jenna Reed who was on-duty at the time, and she agreed to go pick the animal and trap up from Ms. Brault's residence. At approximately 1754 hours, Sgt. Reed retrieved the animal and trap from Ms. Brault's residence and advised me the animal was a fisher.

3. On 01/26/2022, at approximately 0815 hours, I retrieved the fisher and trap from Sgt. Reed. I observed the animal to be a male fisher with a 160 Duke trap attached to the face of the Fisher. The trap appeared to be newer and had approximately ten inches of chain affixed to one of the coil springs with a metal ring attached to the end of the chain. The metal ring also had approximately five inches of gold metal wire tied around it. Based on my training and experience, I know 160 Duke body gripping traps are commonly used by trappers to target and catch furbearers such as fishers. The traps are usually affixed to a stake in the ground or around a tree using metal wire such as the gold wire found on this trap. The wire appeared to have been broken off, presumably by the fisher. The trap also did not have a name or address affixed or engraved on the trap.

4. The trap had caused severe damage to the face and mouth areas of the fisher. The fisher would not have been able to open its mouth at all and was most likely blind. As a result of my observations, my estimate was the fisher had been caught by the trap only a few days prior, at most. There were also no signs of infection around the wounds of the fisher. The open season for trapping fisher was closed at this time, but had been open from December 1st, 2021 – December 31st, 2021.

5. **Vermont Title 10 Appendix 44, Section 3.7; Definitions,** states: 3.7 A "Trap" means a mechanical device used to capture, kill and/or restrain furbearing animals excluding firearms, muzzleloaders and archery equipment.

6. **Vermont Title 10 Appendix 44, Section 4.7; Restrictions**, states: 4.7 A person shall not set a trap between December 31 and the following fourth Saturday in October unless the trap is in the water, under the ice, or on a float in the water.

7. I then arrived at Ms. Brault's residence and spoke with her. She relayed a similar story as she had described to me on the phone the previous night. I requested Ms. Brault bring me to the location she found the fisher and where she dispatched it. Ms. Brault agreed to do so.

8. At approximately 0900 hours, Ms. Brault and I arrived at the intersection of Loop Road / VAST 105, in the town of Troy. Ms. Brault and I walked approximately 775 yards southwest along VAST 105 before she advised we had arrived at the spot she found the fisher. In the snow along the VAST trail, I observed there to be fisher tracks. Due to the snow the area received the night before, I was unable to back track the fisher tracks to locate where the trap was set. Ms. Brault and I then walked back to Loop Road along VAST 105 and she advised approximately 25 yards southwest of Loop Road was where she dispatched the fisher.

9. After speaking with Ms. Brault, I looked at a map of the area using the phone application OnX Hunt. Using the app, I was able to see the local landowners around the area the fisher was found. Due to the extensive injuries to the fisher, I estimated the fisher had not gone far from the site the trap was set at. Using the map, I was able to locate a landowner who owned land approximately 150 yards north of where the fisher and trap were found. The map showed the landowner was Chad Guyette, who owned 43 acres on the east side of Loop Road. I checked the Vermont Fish and Wildlife Point of Sale Database (POS), and found Chad Guyette (DOB:01/12/1971), who showed an address of 1422 Loop Road, in the town of Troy. Mr. Guyette and his wife Lisa Guyette (DOB: 09/29/1967) were familiar to me from previous professional involvements. I also knew Mrs. Guyette was an avid trapper.

10. At approximately 1134 hours, I arrived at Mrs. Guyette's residence of 1244 Loop Road, in the town of Troy. At her residence, I observed there to be various body-gripping traps hanging from the outside wall of the garage, some of which also had gold wire attached to them. I spoke with Mrs. Guyette and advised her of the situation, also showing her the trap. I questioned her if the trap I had was hers and she advised she did not believe it was. Mrs. Guyette went on to say she had three fisher sets on her property in December 2021, but they were pulled approximately around the second week of December. Mrs. Guyette advised in December she had suffered an injury which prevented her from checking her traps so her husband, Mr. Guyette, had pulled the three traps Mrs. Guyette had set on her property. Mrs. Guyette advised the three traps she had set on her property were set

intended to trap fisher and were affixed to trees. I asked Mrs. Guyette what type of traps she used in December, and she advised she used 160 Duke body gripping traps. I asked Mrs. Guyette if she had her name and address on the traps she set on her property and she advised she believed she did. Mrs. Guyette went on to advise she had purchased some new 160 Duke body gripping traps in 2021 from a gentleman in Island Pond but could not remember the name of the gentleman who sold them to her.

11. I asked Mrs. Guyette if there was any possibility all of her traps were not removed from her property before January 1st, 2022 and she advised she would check with Mr. Guyette later on this night to ensure he removed all her traps in December, 2021. I then pointed out to Mrs. Guyette the same gold wire affixed to the trap in question, was also attached to her other traps. Mrs. Guyette acknowledged this information and again advised she believed all her traps had her name and address affixed to them.

12. On the evening of 01/26/2022, I received a phone call from Mrs. Guyette. Mrs. Guyette advised she had spoken to Mr. Guyette and they believed the trap I had shown her earlier on this day was hers and advised they must have missed one of her traps when they were removed from their property in December 2021. Mrs. Guyette agreed to meet with me on 01/27/2022 at her residence.

13. On 01/27/2021at approximately 1702 hours, I met with Mr. and Mrs. Guyette at their residence. Mr. and Mrs. Guyette invited me inside their residence to talk. Mrs. Guyette advised while speaking with Mr. Guyette the previous night, they realized Mrs. Guyette must have had four fisher sets on their property in December 2021 and only removed three of them. Mrs. Guyette advised the trap that was found on the fisher was hers. I showed Mrs. Guyette a map of the property surrounding her residence of 1244 Loop Road, in the town of Troy, and asked her to show me where this trap was set. Mrs. Guyette showed me on the map where the trap was set, which was approximately 225 yards north of where Ms. Brault found the fisher on 01/25/2022. Mrs. Guyette advised this trap was also affixed to a tree.

14. **Vermont Title 10 V.S.A. 4001; Definitions**, states: (34) Small game: game birds, except for turkeys; game quadrupeds, except for big game; furbearers; and other wild animals.

15. **Vermont Title 10 V.S.A. 4001; Definitions**, states: (14) Fur-bearing animals: beaver, otter, marten, mink, raccoon, fisher, fox, skunk, coyote, bobcat, weasel, opossum, lynx, wolf, and muskrat.

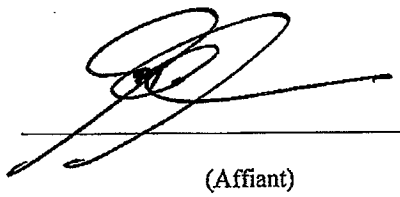
16. **Vermont Title 10 V.S.A. 4514; Possession of flesh of game; restitution**, states in part: (a) When legally taken, the flesh of a fish or wild animal may be possessed for food for a reasonable time thereafter and such flesh may be transported and stored in a public cold storage plant. Nothing in this section shall authorize the possession of game birds or carcasses or parts thereof contrary to regulations made pursuant to the Migratory Bird Treaty Act. (b) Any person convicted of illegally taking, destroying, or possessing wild animals or threatened or endangered species shall, in addition to other penalties provided under this chapter, pay restitution in the following amounts into the Fish and Wildlife Fund for each animal taken, destroyed, or possessed: (1) Big game no more than $2,000.00 and no less than $200.00 for the first offense and no less than $500.00 each for a second or subsequent offense (2) Endangered or threatened species no more than as

defined in section 5401 of this $2,000.00 and no title less than $500.00 each (3) Small game no more than $500.00 and no less than $50.00 each (4) Fish no more than $50.00 and no less than $25.00 each.

17. **Vermont Title 10 V.S.A. 4502; Uniform Point System; Revocation of License,** states in part: (a) A uniform point system that assigns points to those convicted of a violation of a provision of this part is established. The conviction report from the court shall be prima facie evidence of the points assessed. In addition to other penalties assessed for violation of fish and wildlife statutes, the Commissioner shall suspend licenses issued under this part that are held by a person who has accumulated 10 or more points in accordance with the provisions of subsection (c) of this section. (4) In addition to other points assessed under this subsection, a person shall be assessed one point for each fish, bird, animal, or pelt possessed, taken, transported, bought, or sold in excess of the limits established in statutes or rules adopted under this part

18. Based on my investigation and conversations with all parties involved, I issued Lisa Guyette (DOB: 09/29/1967), Vermont Uniform Fish and Wildlife Information No. 262183 for Illegally Set Trap between December 31st and the following fourth Saturday in October; a violation of Vermont Title 10 Appendix 44 (Section 4.7). I explained to Mrs. Guyette this violation carries a fine of $262 plus $50 in restitution per Vermont Title 10 V.S.A. 4514, bringing the total fine to $312. I also explained to Mrs. Guyette this violation carries 10 points on the Vermont Fish and Wildlife Uniform Point system plus one additional point for the taking of the fisher per Vermont Title 10 V.S.A. 4502. I showed Mrs. Guyette the schedule of fines related to this violation which she advised she understood and subsequently signed the information indicating so. I explained to Mrs. Guyette she was required to appear at the Orleans County Superior Court Criminal Division on March 15th, 2022 at 1000 hours to answer to the above mentioned charge unless the information was paid before then. Mrs. Guyette advised she understood all points, penalties, and procedures I explained to her related to the violation.

Subscribed and sworn to before me on
this 28th day of Feb, 2022



(Affiant)

2/28/22

(Notary Public)

(Date)

VERMONT FISH AND WILDLIFE NARRATIVE

OFFENSE: ILLEGALLY SET TRAP BETWEEN DECEMBER 31ST AND FOLLOWING FOURTH SATURDAY IN OCTOBER; TITLE 10 APPENDIX 44 (SECTION 4.7)

DEFENDANT: LISA M. GUYETTE (DOB: 09/29/1967)

DATE OF VIOLATION: JANUARY 25TH, 2022

WARDEN: JOHNSON

CASE NUMBER: 22FW000331

DETAILS OF INVESTIGATION:

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The trap had caused severe damage to the face and mouth areas of the fisher. The fisher would not have been able to open its mouth at all and was most likely blind. As a result of my observations, my estimate was the fisher had been caught by the trap only a few days prior, at most. There were also no signs of infection around the wounds of the fisher. The open season for trapping fisher was closed at this time, but had been open from December 1st, 2021 – December 31st, 2021.

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I then arrived at Ms. Brault's residence and spoke with her. She relayed a similar story as she had described to me on the phone the previous night. I requested Ms. Brault bring me to the location she found the fisher and where she dispatched it. Ms. Brault agreed to do so.

At approximately 0900 hours, Ms. Brault and I arrived at the intersection of Loop Road / VAST 105, in the town of Troy. Ms. Brault and I walked approximately 775 yards southwest along VAST 105 before she advised we had arrived at the spot she found the fisher. In the snow along the VAST trail, I observed there to be fisher tracks. Due to the snow the area received the night before, I was unable to back track the fisher tracks to locate where the trap was set. Ms. Brault and I then walked back to Loop Road along VAST 105 and she advised approximately 25 yards southwest of Loop Road was where she dispatched the fisher.

After speaking with Ms. Brault, I looked at a map of the area using the phone application OnX Hunt. Using the app, I was able to see the local landowners around the area the fisher was found. Due to the extensive injuries to the fisher, I estimated the fisher had not gone far from the site the trap was set at. Using the map, I was able to locate a landowner who owned land approximately 150 yards north of where the fisher and trap were found. The map showed the landowner was Chad Guyette, who owned 43 acres on the east side of Loop Road. I checked the Vermont Fish and Wildlife Point of Sale Database (POS), and found Chad Guyette (DOB:01/12/1971), who showed an address of 1422 Loop Road, in the town of Troy. Mr. Guyette and his wife Lisa Guyette (DOB: 09/29/1967) were familiar to me from previous professional involvements. I also knew Mrs. Guyette was an avid trapper.

At approximately 1134 hours, I arrived at Mrs. Guyette's residence of 1244 Loop Road, in the town of Troy. At her residence, I observed there to be various body-gripping traps hanging from the outside wall of the garage, some of which also had gold wire attached to them. I spoke with Mrs. Guyette and advised her of the situation, also showing her the trap. I questioned her if the trap I had was hers and she advised she did not believe it was. Mrs. Guyette went on to say she had three fisher sets on her property in December 2021, but they were pulled approximately around the second week of December. Mrs. Guyette advised in December she had suffered an injury which prevented her from checking her traps so her husband, Mr. Guyette, had pulled the three traps Mrs. Guyette had set on her property. Mrs. Guyette advised the three traps she had set on her property were set intended to trap fisher and were affixed to trees. I asked Mrs. Guyette what type of traps she used in December, and she advised she used 160 Duke body gripping traps. I asked Mrs. Guyette if she had her name and address on the traps she set on her property and she advised she believed she did. Mrs. Guyette went on to advise she had purchased some new 160 Duke body gripping traps in 2021 from a gentleman in Island Pond but could not remember the name of the gentleman who sold them to her.

I asked Mrs. Guyette if there was any possibility all of her traps were not removed from her property before January 1st, 2022 and she advised she would check with Mr. Guyette later on this night to ensure he removed all her traps in December, 2021. I then pointed out to Mrs. Guyette the same gold wire affixed to the trap in question, was also attached to her other traps. Mrs. Guyette acknowledged this information and again advised she believed all her traps had her name and address affixed to them.

On the evening of 01/26/2022, I received a phone call from Mrs. Guyette. Mrs. Guyette advised she had spoken to Mr. Guyette and they believed the trap I had shown her earlier on this day was hers and advised they must have missed one of her traps when they were removed from their property in December 2021. Mrs. Guyette agreed to meet with me on 01/27/2022 at her residence.

On 01/27/2021at approximately 1702 hours, I met with Mr. and Mrs. Guyette at their residence. Mr. and Mrs. Guyette invited me inside their residence to talk. Mrs. Guyette advised while speaking with Mr. Guyette the previous night, they realized Mrs. Guyette must have had four fisher sets on their property in December 2021 and only removed three of them. Mrs. Guyette advised the trap that was found on the fisher was hers. I showed Mrs. Guyette a map of the property surrounding her residence of 1244 Loop Road, in the town of Troy, and asked her to show me where this trap was set. Mrs. Guyette showed me on the map where the trap was set, which was approximately 225 yards north of where Ms. Brault found the fisher on 01/25/2022. Mrs. Guyette advised this trap was also affixed to a tree.

Vermont Title 10 V.S.A. 4001; Definitions, states: (34) Small game: game birds, except for turkeys; game quadrupeds, except for big game; furbearers; and other wild animals.

Vermont Title 10 V.S.A. 4001; Definitions, states: (14) Fur-bearing animals: beaver, otter, marten, mink, raccoon, fisher, fox, skunk, coyote, bobcat, weasel, opossum, lynx, wolf, and muskrat.

Vermont Title 10 V.S.A. 4514; Possession of flesh of game; restitution, states in part: (a) When legally taken, the flesh of a fish or wild animal may be possessed for food for a reasonable time thereafter and such flesh may be transported and stored in a public cold storage plant. Nothing in this section shall authorize the possession of game birds or carcasses or parts thereof contrary to regulations made pursuant to the Migratory Bird Treaty Act. (b) Any person convicted of illegally taking, destroying, or possessing wild animals or threatened or endangered species shall, in addition to other penalties provided under this chapter, pay restitution in the following amounts into the Fish and Wildlife Fund for each animal taken, destroyed, or possessed: (1) Big game no more than $2,000.00 and no less than $200.00 for the first offense and no less than $500.00 each for a second or subsequent offense (2) Endangered or threatened species no more than as defined in section 5401 of this $2,000.00 and no title less than $500.00 each (3) Small game no more than $500.00 and no less than $50.00 each (4) Fish no more than $50.00 and no less than $25.00 each.

Vermont Title 10 V.S.A. 4502; Uniform Point System; Revocation of License, states in part: (a) A uniform point system that assigns points to those convicted of a violation of a provision of this part is established. The conviction report from the court shall be prima facie evidence of the points assessed. In addition to other penalties assessed for violation of fish and wildlife statutes, the Commissioner shall suspend licenses issued under this part that are held by a person who has accumulated 10 or more points in accordance with the provisions of subsection (c) of this section. (4) In addition to other points assessed under this subsection, a person shall be assessed one point for each fish, bird, animal, or pelt possessed, taken, transported, bought, or sold in excess of the limits established in statutes or rules adopted under this part

Based on my investigation and conversations with all parties involved, I issued Lisa Guyette (DOB: 09/29/1967), Vermont Uniform Fish and Wildlife Information No. 262183 for Illegally Set Trap between December 31st and the following fourth Saturday in October; a violation of Vermont Title 10 Appendix 44 (Section 4.7). I explained to Mrs. Guyette this violation carries a fine of $262 plus $50 in restitution per Vermont Title 10 V.S.A. 4514, bringing the total fine to $312. I also explained to Mrs. Guyette this violation carries 10 points on the Vermont Fish and Wildlife Uniform Point system plus one additional point for the taking of the fisher per Vermont Title 10 V.S.A. 4502. I showed Mrs. Guyette the

schedule of fines related to this violation which she advised she understood and subsequently signed the information indicating so. I explained to Mrs. Guyette she was required to appear at the Orleans County Superior Court Criminal Division on March 15th, 2022 at 1000 hours to answer to the above mentioned charge unless the information was paid before then. Mrs. Guyette advised she understood all points, penalties, and procedures I explained to her related to the violation.

The male fisher along with the 160 Duke trap were logged and placed into evidence at the Vermont State police Derby Barracks in the Fish and Wildlife Evidence room.

NFA.

Warden J. Johnson

VT State Game Warden

EOR: 02.17.2022

Vermont State Game Warden
Evidence List

State v. LISA GUYETTE (DOB: 09/29/1967		
Case # **22FW000331**		Warden: **Jacob Johnson**
ITEM		**STORED AT**
1.	(1) Male Fisher	Vermont State Police Derby Barracks – Fiah and Wildlife Evidence
2.	(1) #160 Duke Trap	Vermont State Police Derby Barracks – Fiah and Wildlife Evidence

VERMONT FISH & WILDLIFE
ARREST SUMMARY REPORT

Date: 01/25/2022	Town: TROY	Case # 22FW000331	Warden: Johnson
Name: LISA M. GUYETTE		DOB: 09/29/1967	
Alias for: NONE		SSN: N/A	
Mailing Address: 1244 LOOP ROAD			
City: TROY		State: VT	Zip: 05859
Physical Address: SAME AS MAILING		Length of time at this address: N/A	
Driver's License Number: 70825490		State: VT	Expiration: N/A
Home Phone: 802-730-5136		Work Phone: N/A	
State ID: N/A	FBI Number: —	Local ID: —	
Race: ☐ A ☐ B ☐ I ☐ L ☐ U ☑ W	Sex: ☐ M ☑ F	Height: 5 ft 03 in.	Weight: 115 lbs.
Eyes: ☑ Brown ☐ Blue ☐ Hazel ☐ Other	Other (Glasses, Beard, etc.)		
Hair: ☐ Bald ☑ Brown ☐ Black ☐ Blond ☐ Red ☐ Gray			
Scars/Marks/Tattoos: N/A			
POB: VT	Marital Status: ☐ Single ☑ Mar ☐ Sep ☐ Div ☐ Wid ☐ Cohab		
Employer: N/A	How Long Employed: N/A		
Employer Address: N/A			
Occupation: N/A			
Vehicle Make: —	Model: —	Year: —	Color: —
Plate Number: —	State: —	VIN: —	Expiration: —

ARREST/OFFENSE INFORMATION

ARREST: ☐ **ONVA** (taken back to station) ☑ **CSUM** (not taken back to station) ☐ **CUST** (lodging)
EX: Cited & Released Roadside

Time: 1701 hrs.	Date: 01/27/22	Town: Troy	Town Code: —	Court: Orleans
Arresting Officer: J. Johnson LW32			Booking Number: —	
Arrest Circumstance: ☐ Armed ☑ Unarmed			If armed, with what?	
Fingerprints Taken ☐ Yes ☑ No			Processing Officer:	
Mug Shot Taken ☐ Yes ☑ No			TVT #	

OFFENSE

Case Number: 22FW000331	Date: 01/25/22	Location Troy	Time: 1317 hrs.

	Title, Section	Offense	Offense Code	Class
Statute	T 10 App. 44	Unlawful Trap	8401	Misd.

Initial Call Information - [Fish + Wildlife Complaint] 10/31/22 19:10 : [redacted], Underhill, VT

Incident Number: 22FW006028
Call Time: 2022-10-31 19:10:45 -0400
Call Type: Fish + Wildlife Complaint
Primary Ofc.: 937: Schmid, Jeremy
Owner.: Disp 42061: Dubuque, Benjamin

Call Type	*Call Priority*	*Call Origin*	*Date & Time of Call*	*Location of Call*
Fish + Wildlife Complaint	Just Occurred	Phone	10/31/2022 19:10	[redacted] Underhill, VT, 05489

Area	*Team*	*Incident Number*	*Roll Call*	*Cancelled By*	*Incident Codes*
0415 - UNDERHILL		22FW006028	☐	*Complainant* Owner: Disp 42061: Dubuque, Benjamin	*Common Call Type* F&W

Drugs Involved	*Opiate blocker*	*Mental Health*	*DOMV*	*Cargo theft*	*Alarm Number*	*Incident flags*
No Drug/Alcohol Involved	☐	☐	☐	☐		TDA - Trapped Domestic Animal

Witness List

Person Type	*Name*	*DOB*	*Primary Phone*
Owner	[redacted]	[redacted]	[redacted]

Bus.
Address
[redacted], Underhill, VT, 05489

Person Type	*Name*	*DOB*	*Primary Phone*
Complainant	[redacted]	[redacted]	[redacted]

Bus.
Address
[redacted] Underhill, VT, 05489

Responding Officers

Officer name		*Dispatched*	*Enroute*	*OnScene*	*Cleared*	*Secondary Loc.*
937: Schmid, Jeremy	☑ *Primary*	11/02/22 08:45:36	11/02/22 09:47:34	11/02/22 09:47:34	11/02/22 11:39:54	

Dispatch Narratives

---------- 937: Schmid, Jeremy - 11/02/22 08:46 ----------
961 attempted to make contact with homeowner but no one was home, I will try to make contact during shift today.
---------- Disp 35831: Eldred, Erika - 11/01/22 12:48 ----------
961 ADV HE HAS SPOKEN TO THE ACO ABOUT THIS, AND MAY BE FOLLOWING UP - WILL ADV DISPATCH WHEN/IF WE CAN ASSGN IT TO HIM
---------- Disp 35831: Eldred, Erika - 11/01/22 12:46 ----------
945 TIED UP WITH A CASE / CHK WITH 961
---------- Disp 35831: Eldred, Erika - 11/01/22 11:58 ----------
LEFT VM FOR 936 TO SEE IF SHE AND 945 WOULD TAKE THIS.
---------- Disp 42061: Dubuque, Benjamin - 10/31/22 19:12 ----------
937 is off on 11/1 // 937 wants any warden on duty tomorrow to be notified and reach out to complainaint
---------- Disp 42061: Dubuque, Benjamin - 10/31/22 19:10 ----------
937 advised
---------- Disp 42061: Dubuque, Benjamin - 10/31/22 19:09 ----------
257 req. 937 be advised of this case
---------- Disp 42061: Dubuque, Benjamin - 10/31/22 18:34 ----------
[redacted] / [redacted] / aco underhill / [redacted] / got a call about an hour ago about a dog missing / hanging in a tree in a bear trap / were able to get it down but the owner doesn't know the neighbors / [redacted] / [redacted] / [redacted] [redacted]

MRI# ***NCIC NIC#*** ***Narrative*** ☐ ***Cancelled***

Incident Detail - : 937: Schmid, Jeremy

Incident Number: 22FW006028
Call Time: 2022-10-31 19:10:45 -0400
Call Type: Fish + Wildlife Complaint
Primary Ofc.: 937: Schmid, Jeremy
Owner.: Disp 42061: Dubuque, Benjamin

Occurred From 10/31/2022 19:10 *Occurred To* 10/31/2022 19:10 *Invest./Primary Officer*

Attachment *Description* *Uploaded at* *Employee name*

☐ *Confidential*

☐ *TRO/FRO Exists*	☐ *Alcohol Involved*	☐ *911 Call Exists*	☐ *Medical Release*	☐ *Audio Recordings*	☐ *DCF Notified*	☐ *Crisis Svc Involved*	☐ *Swabbings*	☐ *SIU Contacted*	*SVU Contact*
☐ *Video Recordings*	☐ *Photos Taken*	☐ *Prints Lifted*	☐ *Diagrams*	☐ *Clothing Evidence*	☐ *K9*	☐ *Miranda Warning*	☐ *Other Evidence*	☐ *Crime Scene Processed*	☐ *Lpr Used*

Evid. Search Conducted *Physical Evidence* *Media/Press Summary* *Secondary Call Type*

Violation			*Offense Cat*	*Offense SubCat*	*NIBRS Vio Type*	*Counts*	*#Premises*
Comm/Att	*IBR Scene/Loc Typ*	*IBR Crim Act Typ*	*IBR Gang Affil*	*IBR Agg.Aslt/Hom.*	*IBR Weapon Typ*	*NIBRS Override*	
Point Of Entry	*Force/No Force*	*Point of Exit*	*Campus Code*	*Justifiable Homicide*			*Significant Event*

Narrative Type	*Officer*	*Narrative Template*
Officer Report	937: Schmid, ☐	

Confidential

Narrative

Dog killed in a legally set trap, no F&W violation.

Jeremy Schmid
State Game Warden
11.3.22

Offense Suspect	*Offense Victim*	*IBR Victim-Offender*		*Bias/Motivation (anti)*
V. was LEO	*V was LEO Assignment*		*Other ORI*	*LEOKA Narrative*

EVALUATION OF MECHANICALLY IMPROVED CONIBEAR 220™ TRAPS TO QUICKLY KILL FISHER (MARTES PENNANTI) IN SIMULATED NATURAL ENVIRONMENTS

Authors: Proulx, Gilbert, and Barrett, Morley W.

Source: Journal of Wildlife Diseases, 29(2) : 317-323

Published By: Wildlife Disease Association

URL: https://doi.org/10.7589/0090-3558-29.2.317

Journal of Wildlife Diseases, 29(2), 1993, pp. 317–323

EVALUATION OF MECHANICALLY IMPROVED CONIBEAR 220™ TRAPS TO QUICKLY KILL FISHER (*MARTES PENNANTI*) IN SIMULATED NATURAL ENVIRONMENTS

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ABSTRACT: Mechanically improved Conibear 220™ traps failed to render irreversibly unconscious in ≤3 min fishers single-struck in the head-neck region, or double-struck in the neck and thorax regions. Although the Conibear 220™ trap is often recommended as an alternative to the steel leghold trap, it is unlikely that it has the potential to humanely kill fisher.

Key words: Conibear 220™ trap, fisher, *Martes pennanti*, humane trapping, rotating-jaw trap, experimental study.

INTRODUCTION

The fisher (*Martes pennanti*) is a valuable furbearer and thousands of them are captured every year in North America (Obbard et al., 1987). With the banning of the controversial steel leghold traps in land sets for capturing most furbearers (Barrett et al., 1988), the killing Conibear 220™ (Woodstream Corporation, Lititz, Pennsylvania, USA) trap has been promoted as an alternative means for trapping fishers (Alberta Vocational Centre, 1987). However, members of the Federal Provincial Committee for Humane Trapping (1981) suggested that this trap did not generate sufficient energy to produce a humane kill.

Cook and Proulx (1989) showed that it was possible to increase both the striking and clamping forces of Conibear™ traps by increasing the strength of the springs and by adding clamping bars to the striking jaws. In the past, such modifications led to the development of humane killing traps for marten (*Martes americana*) (Proulx et al., 1989a) and mink (*Mustela vison*) (Proulx et al., 1990).

In this study, our objective was to assess the potential of mechanically improved Conibear 220™ to render fisher irreversibly unconscious in ≤3 min in simulated natural environments.

MATERIALS AND METHODS

The study was conducted during spring 1988 and winter 1989 in 12.2-×-5.2-×-4.4-m test enclosures landscaped with natural vegetation and kept under surveillance with remote control video cameras. The research facilities and equipment, and the husbandry procedures, were presented by Proulx et al. (1989b).

The Conibear 220™ is a 20-×-20-cm rotating-jaw trap (Fig. 1) with a mean momentum of 1.448 (SE = 0.017) kg m/sec (R. Drescher, pers. comm.; Proulx, 1990). The mechanically improved Conibear 220™ traps had four clamping bars (Fig. 1). In doube-strike tests, where animals were simultaneously struck in the head-neck and thorax regions by the distal and proximal rotating-jaws, we equipped the Conibear 220™ trap frame with 19 cm long Conibear 280™ (Woodstream Corporation, Lititz, Pennsylvania, USA) springs. The C220/280 trap had an mean (±SE) momentum of 1.904 (±0.095) kg m/sec, based on a mechanical evaluation of the three traps (Cook and Proulx, 1989). During the double-strike tests, the trap jaws were 20 to 80 mm apart at closing time. Clamping forces ranged from 306 to 474 Newtons (N) (R. Drescher, pers. comm.) and were slightly greater than those of the Conibear 220™ trap (206 to 472 N; R. Drescher, pers. comm.). The trap passed the preselection tests and was eligible for kill tests in enclosures. However, it failed to quickly render unconscious one fisher. On the basis of Proulx et al.'s (1989a, b) work, we decided to further enhance the trap's impact and clamping forces before conducting kill tests. Its springs were replaced by stronger 22.9 cm long Conibear 330™ (Woodstream Corporation, Lititz, Pennsylvania) springs. This C220/330 trap

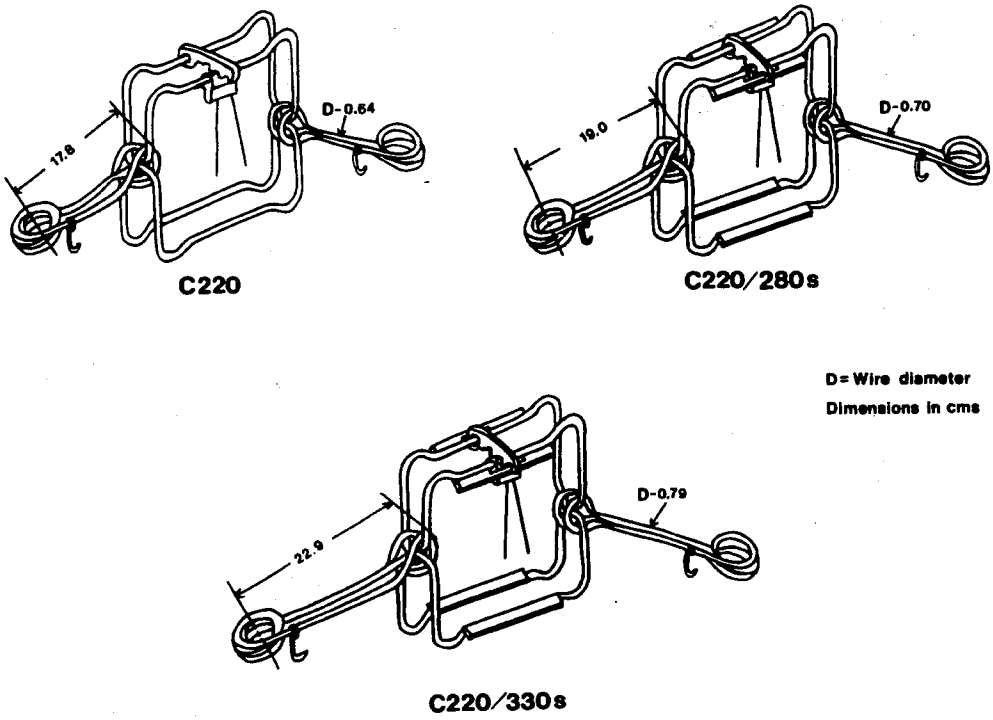

FIGURE 1. Diagrams of the Conibear 220®, C220/280, and C220/330 traps.

had an average momentum of 2.253 (±0.074) kg m/sec and clamping forces ranging from 317 to 633 N for 20 to 80 mm trap openings (R. Drescher, pers. comm.; Proulx, 1990).

In single-strike tests, where the animals were struck in the head-neck region by the proximal rotating-jaws, only the C220/330 trap was used. During these tests, the trap jaws were 10 to 60 mm apart at closing time. Clamping forces ranged from 119 to 633 N (R. Drescher, pers. comm.; Proulx, 1990) and were markedly greater than those of the Conibear 220® (21 to 472 N; R. Drescher, pers. comm.).

Six traps were evaluated in each series of preselection and kill tests described by Proulx et al. (1989b). Double-strike preselection tests were carried out with the C220/280 trap only. Because this trap passed the preselection tests, it was judged unnecessary to repeat these tests with the more powerful C220/330 trap. All the kill tests were carried out with the C220/330 trap.

Preselection tests were conducted with fishers immobilized with ketamine hydrochloride (10 to 20 mg/kg; Austin Laboratories, Joliette, Quebec, Canada). The immobilized animals were situated in traps in a position that duplicated placement in the approach tests (Proulx et al., 1989b), and the presence of their eye reflexes was confirmed before firing the trap. Traps passed the preselection tests if they rendered at least five of a maximum of six fishers unconscious in ≤3 min (Proulx et al., 1989b, 1990); this is a control level without implied statistical significance to justify subsequent kill tests with unanesthetized animals. Unconsciousness was determined by loss of corneal and palpebral reflexes (Walker, 1979; Horton, 1980; Rowsell et al., 1981). Tests were successful only if fishers did not regain consciousness after the 3-min period and subsequently died, as determined by loss of cardiac activity using a stethoscope.

Upon success at the preselection-test level, the C220/330 was evaluated in kill tests with unanesthetized animals. In double-strike kill tests, the trap was equipped with a 12.8-×-12.8-cm pan trigger used in approach tests to properly position the animals and ensure simultaneous strikes in the head-neck and thorax regions (Proulx and Barrett, unpubl.). The traps were set in baited cubby boxes (Proulx et al., 1990). In single-strike kill tests, the trap was set on a running pole (Barrett et al., 1989) and equipped with trigger systems which consistently positioned the animals for a head-neck strike (Proulx

TABLE 1. Location of strikes, time intervals between trap firing and irreversible loss of corneal/palpebral reflexes and heartbeat, and major trauma of fishers in double-strike preselection tests with the C220/280 trap.

Fisher number	Sex[a]	Location of double strikes	Time of loss after firing: Corneal/palpebral reflexes (sec)	Time of loss after firing: Heartbeat (sec)	Major trauma
1096	M	Behind the eyes and thorax	E[b]	—	No strike trauma; severe congestion of the lungs.
1087	M	Neck and thorax	60	120	Compression of muscles dorsal and ventral to the third cervical vertebra; lungs congested.
1085	F	Back of head and thorax	5	48	No strike trauma; lungs congested.
1089	M	Back of head and thorax	76	196	No strike trauma; severe congestion of lungs.
1099	U	Back of head and thorax	75	106	No strike trauma.
1101	F	Neck and thorax	39	174	Dorsoventral compression of soft tissues.

[a] M, male; F, female; U, unknown.
[b] Euthanized.

and Barrett, unpubl.). One trigger system was a baited two-prong trigger. Fisher fired the trap by pulling on it. The other trigger system was a four-prong pitchfork; the middle prongs were 40 mm apart (Proulx et al., 1989b). Fishers fired the trap by pushing on the trigger in order to reach a bait placed approximately 30 cm behind the trap. The use of these two triggers allowed for a thorough assessment of the trap's ability to kill in the head-neck region, between the back of the eyes and the fourth cervical vertebra, as recommended by the Canadian General Standards Board (1984).

Upon firing of the trap, in the kill tests, we ran to the test enclosure to monitor the state of consciousness of fishers. The trap passed the kill tests if it rendered at least five of a maximum of six animals irreversibly unconscious in ≤3 min (Proulx et al., 1989b, 1990). The trap then became eligible for additional kill tests, termed performance confirmation tests (Proulx et al., 1990), in order to be 95% confident that it could be expected to humanely kill ≥70% of all captured fishers (Proulx et al., 1993).

The 3-min period to unconsciousness was used as a guideline to identify humane traps (Proulx and Barrett, 1988). However, in previous research, such a time period was unrealistic for some species (Proulx and Barrett, 1988, 1990). It then is necessary to identify traps that can consistently render animals unconscious soon after the 3-min period and a new time period that can be accommodated practically. Therefore, in preselection and kill tests, if the fishers were struck in vital regions but were still conscious after 3 min, they were left in the trap for an additional 2 min; at that time they were euthanized by an intracardiac injection of 540 mg/ml sodium pentobarbital (Euthanyl forte; M.T.C. Pharmaceuticals, Cambridge, Ontario, Canada). Animals were necropsied by a veterinary pathologist at the Alberta Environmental Centre (Vegreville, Alberta, Canada). All animal husbandry and research procedures were approved by an institutional Animal Care Committee and carried out in accordance with the guidelines of the Canadian Council on Animal Care (1984).

RESULTS

Preselection tests with the C220/280 trap rendered five of six fishers double-struck in the head–neck and thorax regions irreversibly unconscious in ≤3 min. Mean (±SE) times to loss of consciousness and heartbeat were 51 (±13) sec and 128 (±26) sec, respectively (Table 1). In all cases, no major trauma was recorded. The trap passed the preselection tests but, because one fisher struck behind the eyes and in the thorax did not lose consciousness in ≤3 min and was euthanized (Table 1), it was replaced by the C220/330 trap in subsequent tests.

The C220/330 trap equipped with the pan trigger was successful in four of six kill tests. Mean (±SE) times to loss of consciousness and heartbeat were 107 (±12) sec and 235 (±12) sec, respectively (Table

TABLE 2. Location of strikes, time intervals between trap firing and irreversible loss of corneal/palpebral reflexes and heartbeat, and major trauma of fishers in double-strike kill tests with the C220/330 trap with a 12.8 × 12.8 cm trigger.

Fisher number	Sex[a]	Location of double strikes[b]	Time of loss after firing: Corneal/palpebral reflexes (sec)	Time of loss after firing: Heartbeat (sec)	Major trauma
1176	M	C_2 and T_8	79	209	Severe dorsoventral compression at strike locations.
1100	M	C_5	E[c]	—	Severe dorsoventral compression with bruising and hemorrhage at strike location. Trachea completely occluded.
1098	M	C_1 and T_7	135	225	Dorsoventral compression of soft tissues at strike locations.
1103	M	C_2 and T_{10}	100	267	No strike trauma.
1091	M	C_1 and T_{10}	115	238	Dorsoventral compression of soft tissues at strike locations.
1028	U	L_3 and abdomen	E[c]	—	Dorsoventral compression of soft tissues at strike locations.

[a] M, male; F, female; U, unknown.
[b] C, cervical vertebra; T, thoracic vertebra; L, lumber vertebra. Subscript refers to vertebra number.
[c] Euthanized.

2). No major trauma was apparent. One double-struck fisher pulled its head from the trap, struggled, and ended with a single strike to the neck area. The animal did not lose consciousness in ≤3 min; hemorrhage at the strike location and complete occlusion of the trachea were recorded. Another fisher charged forward at firing time and ended with a double-strike in the thoracic and abdominal regions. This animal did not lose consciousness in ≤3 min. No severe trauma was apparent (Table 2). The C220/330 trap with pan trigger failed the double-strike kill tests and was not eligible for additional kill tests.

Preselection tests with the C220/330 trap rendered five of five fishers single-struck in the head region irreversibly unconscious in ≤3 min. Mean (±SE) times to loss of consciousness and heartbeat were 11 (±4)

TABLE 3. Location of strikes, time intervals between trap firing and irreversible loss of corneal/palpebral reflexes and heartbeat, and major trauma of fishers in single-strike preselection tests with the C220/330 trap.

Fisher number	Sex[a]	Location of strike	Time of loss after firing: Corneal/palpebral reflexes (sec)	Time of loss after firing: Heartbeat (sec)	Major trauma
646	F	Across the eyes	25	335	Fracture of nasal bones, maxillae, premaxillae and mandibles; subdural hemorrhage.
663	M	Top of skull	6	254	Multiple fractures of frontal, parietal, temporal and sphenoid bones, and the zygomatic arches.
775	M	Atlanto-occipital joint	10	330	Dorsoventral compression of soft tissues.
774	F	Top of skull	8	210	Massive fracture of parietal bones and zygomatic arches.
664	M	Behind the eyes	6	245	Almost complete severance of the frontal nasal bones.

[a] M, male; F, female.

TABLE 4. Location of strikes, time intervals between trap firing and irreversible loss of corneal/palpebral reflexes and heartbeat, and major trauma of fishers in single-strike kill tests with the C220/280 trap.

Fisher number	Sex[a]	Location of strike	Time of loss after firing: Corneal/palpebral reflexes (sec)	Time of loss after firing: Heartbeat (sec)	Major trauma
895[b]	U	Top of skull	<44[c]	330	[d]
901[b]	M	Behind the eyes	E[e]	—	Fracture of the junction of the two mandibles and the right zygomatic arch.
773[f]	F	Cervical vertebrae 4 and 5	E[e]	—	Displacement and compression of the trachea, hemorrhage into spinal canal; deep bruising of muscles at the fourth and fifth cervical vertebrae.
898[f]	F	Cervical vertebrae 2 and 3	E[e]	—	Apparent separation of the second and third cervical vertebrae with chip fracture of the second cervical vertebra and fracture of lateral process of the third cervical vertebra, ventral compression of soft tissues overlying the trachea.

[a] M, male; F, female, U, unknown.
[b] Baited two-prong trigger.
[c] Animal was unconscious upon arrival of the observer.
[d] Carcass destroyed before autopsy.
[e] Euthanized.
[f] Four-prong pitchfork trigger.

sec and 275 (±25) sec, respectively (Table 3). In four cases, massive fractures of the cranial bones were recorded (Table 3).

In the kill tests, the C220/330 trap rendered one fisher struck on the top of the skull irreversibly unconscious in ≤3 min. However, it failed to quickly render unconscious two fishers struck behind the eyes and on the lower neck (Table 4). Despite these two failures, a fourth kill test was carried out with a more sensitized pitchfork trigger to obtain an upper neck strike. This fourth kill test was also a failure (Table 4). The C220/330 trap failed the single-strike kill tests and was not eligible for additional kill tests.

DISCUSSION

Although the Conibear 220® trap often is recommended as an alternative to steel leghold traps (Alberta Vocational Centre, 1987; Baker and Dwyer, 1987; Krause, 1989), it is unlikely that it has the potential to humanely kill this furbearer. The mechanically improved rotating-jaw traps used in this study were much more powerful than the standard model and yet, they did not consistently render fishers irreversibly unconscious in ≤5 min. Therefore, these rotating-jaw traps cannot be expected, at a 95% level of confidence, to render ≥70% of fishers captured on traplines irreversibly unconscious in ≤3 min.

In previous studies with marten (Proulx et al., 1989a) and mink (Proulx et al., 1990), double strikes were effective by causing severe damage to the central nervous system or impeding the respiratory functions of the animals. With fisher, however, it is apparently difficult to produce sufficient trauma to result in a quick death. Failures of kill tests involving double strikes were probably due to a displacement of the striking jaws during the animals' struggle. Also, in any future development of the Conibear 220® trap, the striking jaws must hit the animals with adequate force and tightly close around their bodies.

Proulx et al. (1989b) suggested that the standard Conibear 120® trap could humanely kill marten if it would consistently strike the animals in the region extending from the ears to the first cervical vertebra. However, they concluded that it may be impossible to restrict the hits to an area smaller than the head and neck regions because of the variation in the size of the animals, the manner and speed of their approaches, and the sensitivity of the trigger. We believe that this also is true for fishers. In the present study, the majority of the strikes occurred elsewhere than on the back of the skull and they failed to render the animals irreversibly unconscious in ≤3 min.

Because there are presently no proven humane killing traps for fisher, the Conibear 220® still remains an alternative to the steel leghold trap. However, in order to humanely kill fisher, even with a 5-min period to unconsciousness, the trap's striking and clamping forces must be improved. In the search of humane traps that render fisher irreversibly unconscious in ≤3 min, more work should be carried out on new designs such as mousetraps (Proulx and Barrett, 1991), planar traps (Gilbert, 1981; Proulx, 1990), and others.

ACKNOWLEDGMENTS

This study was funded by the Fur Institute of Canada, Environment Canada and the Province of Alberta. We thank S. R. Cook, B. Dew, R. K. Drescher, D. P. Hobson, D. Nelson, and J. W. Nolan for technical help; A. Lopez for post-mortem examination; and P. S. Grey for typing the manuscript.

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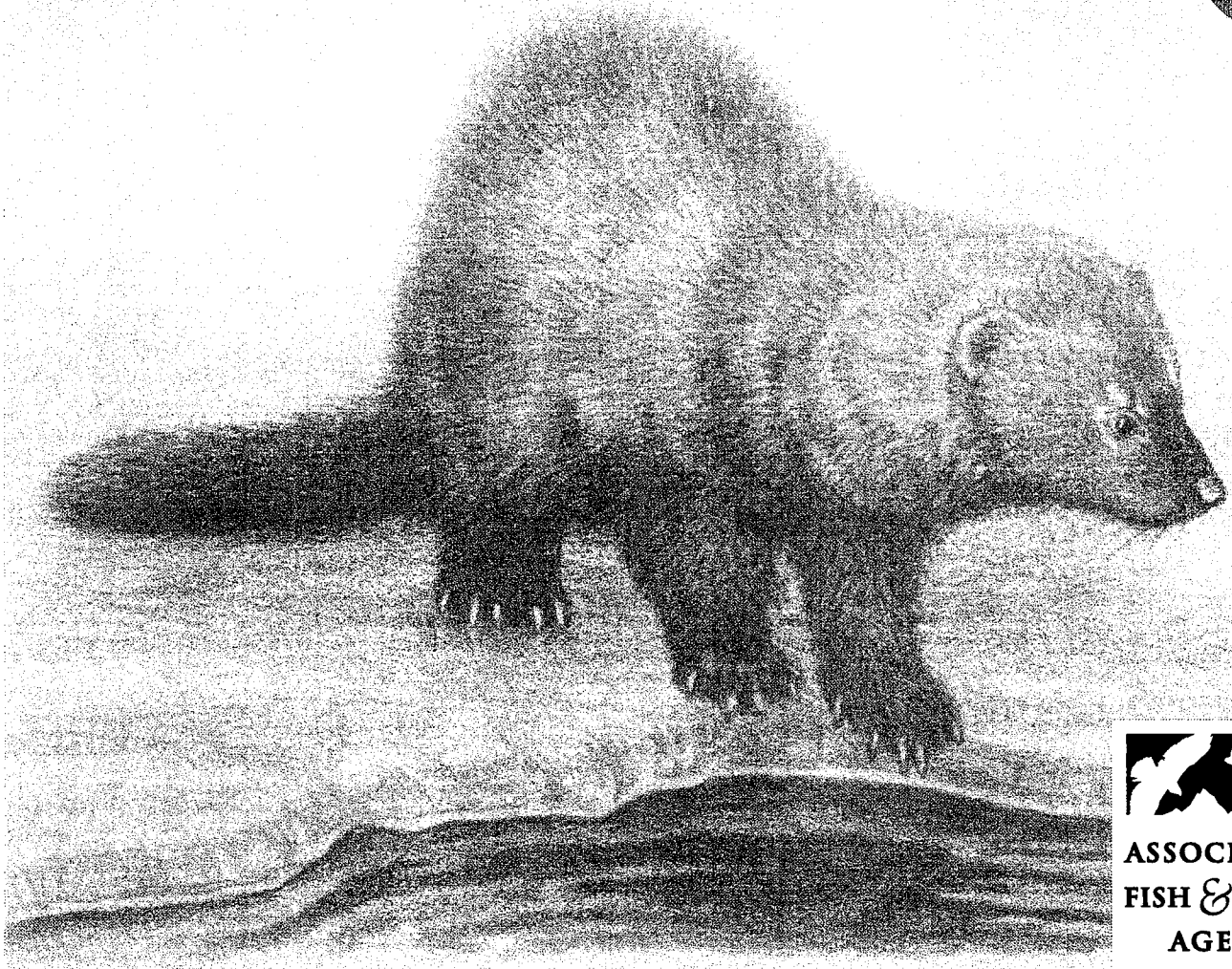
Received for publication 21 February 1992.

Best Management Practices

for Trapping Fisher in the United States

UPDATED 2014



ASSOCIATION *of* FISH & WILDLIFE AGENCIES

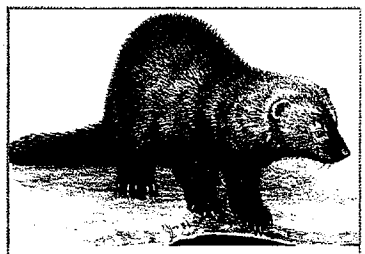


Figure FS1. Fisher *(Martes pennanti)*

Best Management Practices (BMPs) are carefully researched educational guides designed to address animal welfare and increase trappers' efficiency and selectivity. The extensive research and field-testing used to develop BMPs are described in the Introduction section of this manual. The evaluation methods used to develop BMPs have been standardized, enabling them to be easily updated and revised as new traps and techniques become available. All traps listed in the BMPs have been tested and meet performance standards for animal welfare, efficiency, selectivity, practicality and safety.

Trapping BMPs provide options, allowing for discretion and decision making in the field. BMPs are meant to be implemented in a voluntary and educational approach and do not present a single choice that can or must be applied in all cases. BMPs are the product of ongoing work that may be updated as additional traps are identified through future scientific testing.

The Fisher at a Glance

Characteristics

The fisher *(Martes pennanti)* (Figure FS1) is a member of the Mustelidae family. Like most other members of the "weasel" family, fishers have long and slender bodies, a noticeable growth of whiskers around the snout, a pointed face and relatively short, strong legs. A bushy tail makes up about one-third of the overall length, and often makes them appear much larger than they actually are. Adult males typically weigh nearly twice that of females and average about 8.5 pounds, with females averaging four to five pounds. Adult males average from 35 to 47 inches in overall length, while adult females average 29 to 37 1/2 inches. The coat of most fishers is grayish brown to dark brown, though the fur on the rump, tail and legs is generally black. The fur on the head and shoulders may be grizzled with beautiful gold and silver coloration, especially on males. Most fisher have white colored patches on their chests and/or groin also. Fisher spend most of the time on the ground, though they are expert and agile climbers. Like other mustelids, fishers have anal scent glands that produce a pungent odor.

Range

The fisher occurs only in North America and is found throughout the northwest, northeast, and northern portions of the midwest regions of the United States. Fishers range throughout Canada from the east coast to the northwest and Yukon territories, but they are not found above the Arctic Circle.

Habitat

The fisher prefers forests with a variety of species and ages of hardwood and coniferous trees. Adequate overhead cover, provided by dense conifers, is an important habitat component during winter due to the fact that snow accumulation on the forest floor is reduced, permitting fishers to travel and hunt more efficiently. Hardwood trees are an important habitat component as well, as fishers rely on dead snags or cavities in live trees for den sites. Other important habitat components include temporary shelters and resting places such as the dens and burrows of other animals, brush piles, rock piles, hollow logs and tree cavities. Fishers spend considerable time hunting in edge habitats that contain an abundance of prey species.

Food Habits

Fishers are primarily carnivorous with opportunistic feeding habits. Their diet varies with seasonal availability. Principle prey items include snowshoe hares, mice, voles, shrews, squirrels, birds, amphibians, reptiles, fish and insects. Uniquely, fishers are known to be efficient predators of porcupines, typically killing them with repeated bites to the face and head. Fishers will consume carrion, and they seasonally feed on fruit, nuts, berries and some types of fungi.

Reproduction

The fisher breeding season occurs in early spring with March and April being the peak months. The gestation period is between 327 to 358 days, due to delayed implantation (a period of arrested embryonic growth) with young typically being born from March to early April of the following year. The average litter size is three, but varies from one to five. Female fishers reach sexual maturity by one year of age and may become pregnant in their first breeding season, giving birth at age two. Males however, are usually not successful breeders until their second year. Female fishers have one litter per year. The female fisher typically makes a maternal den high above ground in the cavity of a large tree (often an abandoned woodpecker nest) where she will give birth to her litter of young (kits). Kits are born toothless, blind and sparsely furred. Kits are moved to a ground level or subterranean den at about two months of age. By five months of age, young fishers are nearly adult sized and are capable of killing their own prey. The young remain with the female in a family unit until late summer or early fall and then disperse to establish their own territories. The rearing of young is left solely to the female.

Populations

During the early to mid-1900s, fisher numbers continued to decline across the entirety of their range due to unregulated harvest and habitat reduction. Populations rebounded in the later half of the 20th century due to conservation efforts which included numerous reintroduction projects, controlled harvest and regulated seasons. These efforts continue where good habitat still exists and fisher populations have re-colonized a significant portion of their previously known range. Their populations remain low in the northwestern United States.

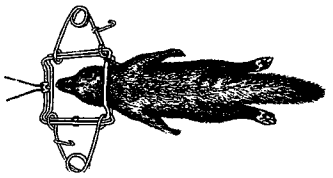


Figure FS2a. Bodygrip, proper strike location

General Overview of Traps Meeting BMP Criteria for Fisher in the United States

Three basic types of traps meet BMP criteria for fisher: cage traps, bodygrip traps and foothold traps (Table FS1). Examples, brief descriptions, and mechanical details of the various devices are given in the next section.

Trap Category	Total Dimensions* Length x Width x Height	Door Size* Width x Height	Mesh Size*/Gauge	
Cage	32 x 10 x 12.75	10 x 12	1 x 2 12 gauge galvanized	
	Height of Trap Window*	**Width of Trap Window***	**Frame Wire***	**Spring Wire***
†Bodygrip	4 1/4 - 7	4 1/4 - 7 1/4	3/16 - 1/4	3/16 - 1/4
	Jaw/Frame Characteristics	**Inside Jaw/Frame Spread at Dog***	**Inside Width at Jaw/ Frame Hinge Posts**	
Coil-spring (foothold)	Padded	4 1/2	4 9/16	

* Inches
† All bodygrip traps tested had two springs.

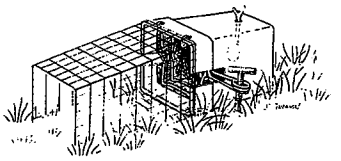


Figure FS2b. Bodygrip, cubby set with restricted entry

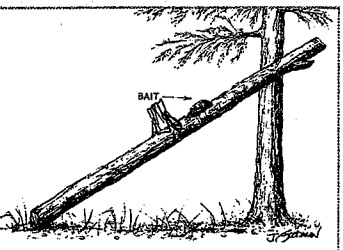


Figure FS2c. Bodygrip, pole set

General Considerations When Trapping Fisher

Cage Traps

- Can be used to capture several furbearer species
- Can be used in locations and in weather conditions where other traps are less effective
- Capture and hold animals alive, allowing for release
- Often require bait
- Are bulky

Bodygrip Traps

- Should be placed so that the rotating jaws capture the animal by closing on the top and bottom of the animal's neck (Figure FS2a)
- Can be used in locations and in weather conditions where other traps are less effective
- May not be appropriate in some areas (captures and kills animals, no release)
- May need additional protection in some areas to avoid capture of non-target animals through use of restricted entry cubby sets and elevated pole sets (Figures FS2b and FS2c)
- Often require bait

Foothold Traps

- Can be used to capture several furbearer species
- Capture and hold animals alive, allowing for release
- Use in bated cubby sets to improve selectivity

Safe Use of Bodygrip Traps

By design, bodygrip traps must close with considerable force to humanely dispatch and efficiently capture wild furbearers. This is particularly true of larger sized and "magnum" type bodygrip traps. As a result, users should take special precautions to avoid potential injury when using these devices. Trappers should be familiar with the safe and efficient use of bodygrip traps and these are best learned in trapper education courses.

A setting tool (Figure FS3a) should be used to compress trap springs when setting large and magnum bodygrip traps. Use of a setting tool will not only make setting traps easier, it will make setting traps safer by allowing the trapper to keep hands and fingers away from the jaws (Figure FS3b). Most bodygrip traps that have double springs are equipped with spring latches that hold each spring compressed, and the trapper should use these latches on both trap springs. A safety gripper (Figure FS4a) should also be attached to the jaws when the jaws are moved to the set position (Figure FS4b). This will prevent the trap from accidentally closing. The above safety devices protect the trapper and make it easier to set, position and anchor the trap safely. Safety devices should be disengaged only when the set is completed.

If you are accidentally caught in a bodygrip trap you need to know how to free yourself. A setting tool is the most effective means to freeing yourself and should be used to compress the springs or jaws. You should always have one in reach when setting and placing bodygrip traps. In the event you are not able to reach one or use it with one arm, you should always carry a four foot piece of rope. The rope should have a loop tied on one end and should be stored in a pocket that can be easily accessed by either hand. You can use the rope to free yourself as follows:

1) Thread the rope through the eyes of one of the springs (Figure FS5a).
2) Bring the rope around and thread it back through the eyes a second time (Figure FS5b).
3) Place your foot in the looped end of the rope and pull the other end with your free hand until you can set the safety latch for that spring. (Figure FS5c). You may need to do this to both springs to completely free yourself.

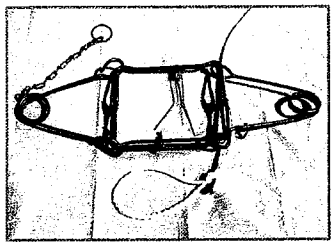


Figure FS5a. Step 1

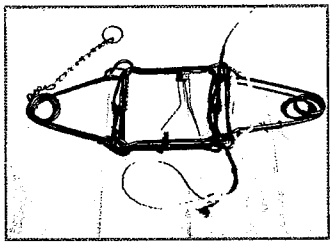


Figure FS5b. Step 2

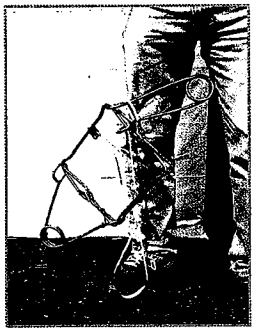


Figure FS5c. Step 3

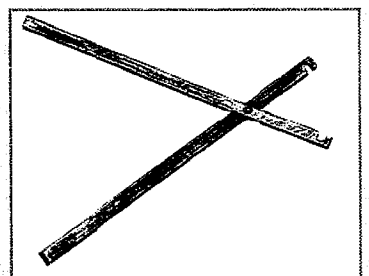


Figure FS3a. Setting tool

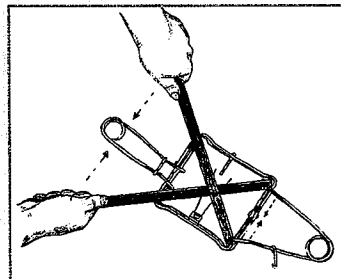


Figure FS3b. Using setting tool

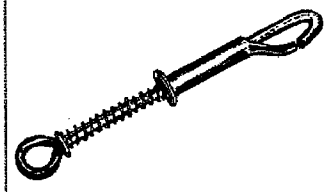


Figure FS4a. Safety gripper

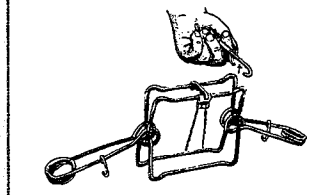


Figure FS4b. Using safety gripper

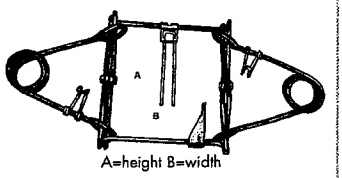


Figure FS6. Bodygrip trap

Specifications of Traps Meeting BMP Criteria for Fisher in the United States

As more capture devices are tested and new information becomes available, they will be added to an updated list. Mechanical descriptions of tested traps are given as an aid to trappers or manufacturers who may wish to measure, build or modify traps to meet these specifications (Figure FS6). Also, other commercially available traps, modified traps, or other capture devices not yet tested may perform as well as, or better than the listed BMP traps. References to trap names are provided to identify the specific traps tested. This list is provided for information purposes only and does not imply an endorsement of any manufacturer.

Average mechanical measurements are rounded to the nearest $^{1}/_{16}$ inch. There may be up to a $^{1}/_{8}$ inch variation in specifications on the part of the manufacturer. Manufacturers use recognizable names, such as "No. 2" coil-spring, to identify certain traps. However, there is no standardized system linking mechanical design features with trap names. The mechanical features of these traps are listed so that similar traps may be identified.

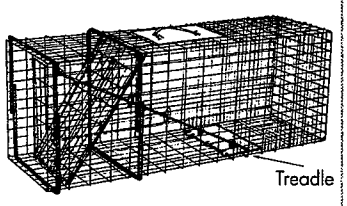


Figure FS7. Cage trap

Cage Trap (Figure FS7)

Average Mechanical Description and Attributes

Cage material, and mesh size: 12 gauge galvanized steel wire mesh, 1 x 2 inches
Cage size (length x width x height): 32 x 10 x 12.75 inches
Door size (width x height): 10 x 12 inches
Weight: 14 pounds
Model tested: Non-collapsing (rigid); single door
Door closure: Spring operated

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see Introduction: "Criteria for Evaluation of Trapping Devices" pages 4-6) needs to be considered as well. The trap tested was the Tomahawk™ Cage Trap, No. 108.

Additional Information

- Selectivity features: Limited opening size and length—restricts large animals.
- Special considerations for practicality: Versatile set options; can be used for multiple furbearer species in same sets; large and easily seen (difficult to conceal completely); bulky—requires space for transport and storage; captured animals are easily released; continues to operate in freezing weather conditions when placed in a cubby. This device also meets BMP criteria for raccoons, gray foxes and opossums.

Bodygrip Traps (Figures FS8, FS9 FS10 and FS11)

Average Mechanical Description and Attributes

Height of trap window: 4 7/8 inches
Width of trap window: 4 5/8 inches
Diameter of frame wire: 3/16 inch
Diameter of spring wire: 3/16 inch
Additional clamping bar: None, but does have a magnum bend which eliminates the gap between the jaws when the trap is closed.
Safety features: Spring latches

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see Introduction: "Criteria for Evaluation of Trapping Devices" pages 4-6) needs to be considered as well. The trap tested was the Belisle™ Super X 120 bodygrip trap.

Additional Information

- Anchoring used in trap testing: 18 inch cable, anchored with a stake.
- Selectivity features: Due to limited opening size, this trap may selectively capture small, likely female, fisher.
- Safety considerations: This trap has complete jaw closure. The use of safety devices such as setting tongs and a safety gripper is highly recommended, and trappers should familiarize themselves with emergency release methods discussed in the "Safe Use of Bodygrip Traps" section.
- Special considerations for practicality: Versatile set options (cubby sets, leaning pole sets); can be used for multiple furbearer species in same sets; continues to operate in freezing weather conditions (when placed in a cubby). This device also meets BMP criteria for marten and muskrat.

Average Mechanical Description and Attributes

Height of trap window: 6 1/8 inches
Width of trap window: 6 1/4 inches
Diameter of frame wire: 3/16 inch
Diameter of spring wire: 3/16 inch
Additional clamping bar: None, but does have a magnum bend which eliminates the gap between the jaws when the trap is closed.
Safety features: Spring latches

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see Introduction: "Criteria for Evaluation of Trapping Devices" pages 4-6) needs to be considered as well. The trap tested was the Belisle™ Super X 160 bodygrip trap.

Additional Information

- Anchoring used in trap testing: 18 inch cable, anchored with a stake.
- Safety considerations: This trap has complete jaw closure. The use of safety devices such as setting tongs and a safety gripper is highly recommended, and trappers should familiarize themselves with emergency release methods discussed in the "Safe Use of Bodygrip Traps" section.
- Special considerations for practicality: Versatile set options (cubby sets, leaning pole sets); can be used for multiple furbearer species in same sets; continues to operate in freezing weather conditions (when placed in a cubby). This device also meets BMP criteria for raccoons.

Most bodygrip traps approved in this BMP were tested via computer simulation modeling relative to animal welfare performance. As a result, trap anchoring information does not exist for these traps. However, bodygrip traps should always be securely anchored. Anchoring information is provided on specific traps that were field tested.

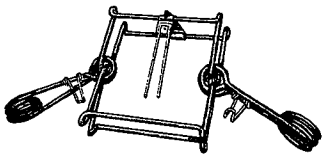


Figure FS8. Bélisle™ Super X bodygrip (set)

Average Mechanical Description and Attributes
Height of trap window: 6 7/8 inches
Width of trap window: 7 1/4 inches
Diameter of frame wire: 1/4 inch
Diameter of spring wire: 1/4 inch
Additional clamping bar: None, but does have a magnum bend which eliminates the gap between the jaws when the trap is closed.
Safety features: Spring latches

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see Introduction: "Criteria for Evaluation of Trapping Devices" pages 4-6) needs to be considered as well. The trap tested was the Belisle™ Super X 220 bodygrip trap.

Additional Information

- Safety considerations: This trap has complete jaw closure. The use of safety devices such as setting tongs and a safety gripper is highly recommended, and trappers should familiarize themselves with emergency release methods discussed in the "Safe Use of Bodygrip Traps" section.
- Special considerations for practicality: Versatile set options (cubby sets, leaning pole sets); can be used for multiple furbearer species in same sets; continues to operate in freezing weather conditions (when placed in a cubby). This device also meets BMP criteria for raccoon; and for beaver, river otter and muskrat in submersion sets.

Average Mechanical Description and Attributes
Height of trap window: 6 inches
Width of trap window: 6 1/16 inches
Diameter of frame wire: 3/16 inch
Diameter of spring wire: 3/16 inch
Additional clamping bar: Yes
Safety features: Spring latches

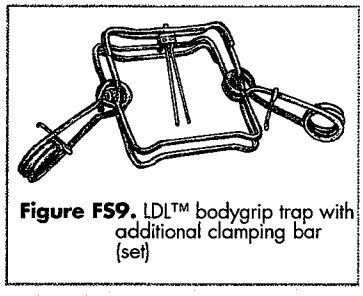


Figure FS9. LDL™ bodygrip trap with additional clamping bar (set)

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see Introduction: "Criteria for Evaluation of Trapping Devices" pages 4-6) needs to be considered as well. The trap tested was the LDL™ C160 Magnum bodygrip trap.

Additional Information

- Safety considerations: This trap has complete jaw closure. The use of safety devices such as setting tongs and a safety gripper is highly recommended, and trappers should familiarize themselves with emergency release methods discussed in the "Safe Use of Bodygrip Traps" section.
- Special considerations for practicality: Versatile set options (cubby sets, leaning pole sets); can be used for multiple furbearer species in same sets; continues to operate in freezing weather conditions (when placed in a cubby).

Average Mechanical Description and Attributes
Height of trap window: 7 inches
Width of trap window: 7 1/16 inches
Diameter of frame wire: 1/4 inch
Diameter of spring wire: 1/4 inch
Additional clamping bar: Yes
Safety features: Spring latches

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see Introduction: "Criteria for Evaluation of Trapping Devices" pages 4-6) needs to be considered as well. The trap tested was the LDL™ C 220 Magnum bodygrip trap.

Additional Information

- Safety considerations: This trap has complete jaw closure. The use of safety devices such as setting tongs and a safety gripper is highly recommended, and trappers should familiarize themselves with emergency release methods discussed in the "Safe Use of Bodygrip Traps" section.
- Special considerations for practicality: Versatile set options (cubby sets, leaning pole sets); can be used for multiple furbearer species in same sets; continues to operate in freezing weather conditions (when placed in a cubby). This device also meets BMP criteria for raccoon; and for beaver, river otter and muskrat in submersion sets.

Average Mechanical Description and Attributes
Height of trap window: 6 inches
Width of trap window: 5 3/4 inches
Diameter of frame wire: 1/4 inch
Diameter of spring wire: 3/16 inch
Additional clamping bar: None
Safety features: Spring latches

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see Introduction: "Criteria for Evaluation of Trapping Devices" pages 4-6) needs to be considered as well. The trap tested was the Rudy™ 160 Plus bodygrip trap.

Additional Information

- Safety considerations: Use of setting tongs and safety gripper is recommended.
- Special considerations for practicality: Versatile set options (cubby sets, leaning pole sets); can be used for multiple furbearer species in same sets; continues to operate in freezing weather conditions (when placed in a cubby). This device also meets BMP criteria for marten and raccoon.

Average Mechanical Description and Attributes
Height of trap window: 4 1/4 inches
Width of trap window: 4 1/4 inches
Diameter of frame wire: 1/4 inch
Diameter of spring wire: 3/16 inch
Additional clamping bar: Yes
Safety features: Spring latches

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see Introduction: "Criteria for Evaluation of Trapping Devices" pages 4-6) needs to be considered as well. The trap tested was the Rudy™ 120 Magnum bodygrip trap.

Additional Information
- Selectivity features: Due to limited opening size this trap may selectively capture small, likely female, fisher.
- Safety considerations: This trap has complete jaw closure. The use of safety devices such as setting tongs and a safety gripper is highly recommended, and trappers should familiarize themselves with emergency release methods discussed in the "Safe Use of Bodygrip Traps" section.
- Special considerations for practicality: Versatile set options (cubby sets, leaning pole sets); can be used for multiple furbearer species in same sets; continues to operate in freezing weather conditions (when placed in a cubby). This device also meets BMP criteria for marten.

Average Mechanical Description and Attributes
Height of trap window: 5 inches
Width of trap window: 4 1/2 inches
Diameter of frame wire: 3/16 inch
Diameter of spring wire: 1/4 inch
Additional clamping bar: Yes
Safety features: Spring latches

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see "Criteria for Evaluation of Trapping Devices": Introduction pages 4-6) needs to be considered as well. The trap tested was the Sauvageau™ C120 Magnum bodygrip trap.

Additional Information
- Selectivity features: Due to limited opening size, this trap may selectively capture small, likely female, fisher.
- Safety considerations: This trap has complete jaw closure. The use of safety devices such as setting tongs and a safety gripper is highly recommended, and trappers should familiarize themselves with emergency release methods discussed in the "Safe Use of Bodygrip Traps" section.
- Special considerations for practicality: Versatile set options (cubby sets, leaning pole sets); can be used for multiple furbearer species in same sets; continues to operate in freezing weather conditions (when placed in a cubby). This trap also meets BMP criteria for marten and muskrat.

Average Mechanical Description and Attributes
Height of trap window: 5 inches
Width of trap window: 4 1/2 inches
Diameter of frame wire: 3/16 inch
Diameter of spring wire: 3/16 inch
Additional clamping bar: Yes
Safety features: Spring latches

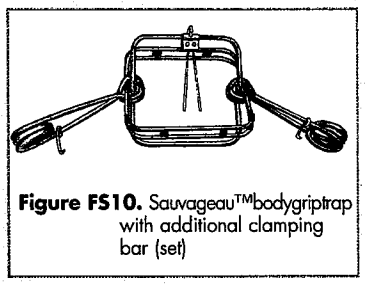


Figure FS10. Sauvageau™ bodygrip trap with additional clamping bar (set)

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see Introduction: "Criteria for Evaluation of Trapping Devices" pages 4-6) needs to be considered as well. The trap tested was the Sauvageau™ 2001-5 bodygrip trap.

Additional Information

- Selectivity features: Due to limited opening size this trap may selectively capture small, likely female, fisher.
- Safety considerations: This trap has complete jaw closure. The use of safety devices such as setting tongs and a safety gripper is highly recommended, and trappers should familiarize themselves with emergency release methods discussed in the "Safe Use of Bodygrip Traps" section.
- Special considerations for practicality: Versatile set options (cubby sets, leaning pole sets); can be used for multiple furbearer species in same sets; continues to operate in freezing weather conditions (when placed in a cubby). This device also meets BMP criteria for marten and muskrat.

Average Mechanical Description and Attributes
Height of trap window: 6 inches
Width of trap window: 6 inches
Diameter of frame wire: 3/16 inch
Diameter of spring wire: 3/16 inch
Additional clamping bar: Yes
Safety features: Spring latches

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see Introduction: "Criteria for Evaluation of Trapping Devices" pages 4-6) needs to be considered as well. The trap tested was the Sauvageau™ 2001-6 bodygrip trap.

Additional Information

- Safety considerations: This trap has complete jaw closure. The use of safety devices such as setting tongs and a safety gripper is highly recommended, and trappers should familiarize themselves with emergency release methods discussed in the "Safe Use of Bodygrip Traps" section.
- Special considerations for practicality: Versatile set options (cubby sets, leaning pole sets); can be used for multiple furbearer species in same sets; continues to operate in freezing weather conditions (when placed in a cubby). This device also meets BMP criteria for raccoon.

Average Mechanical Description and Attributes
Height of trap window: 7 inches
Width of trap window: 7 inches
Diameter of frame wire: 1/4 inch
Diameter of spring wire: 1/4 inch
Additional clamping bar: Yes
Safety features: Spring latches

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see Introduction: "Criteria for Evaluation of Trapping Devices" pages 4-6) needs to be considered as well. The trap tested was the Sauvageau™ 2001-7 bodygrip trap.

Additional Information

- Safety considerations: This trap has complete jaw closure. The use of safety devices such as setting tongs and a safety gripper is highly recommended, and trappers should familiarize themselves with emergency release methods discussed in the "Safe Use of Bodygrip Traps" section.
- Special considerations for practicality: Versatile set options (cubby sets, leaning pole sets); can be used for multiple furbearer species in same sets; continues to operate in freezing weather conditions (when placed in a cubby). This device also meets BMP criteria for raccoon.

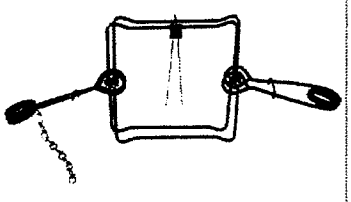


Figure FS11.

Average Mechanical Description and Attributes
Height of trap window: 6 3/4 inches
Width of trap window: 7 1/4 inches
Diameter of frame wire: 1/4 inch
Diameter of spring wire: 1/4 inch
Additional clamping bar: None, but does have a magnum bend which eliminates the gap between the jaws when the trap is closed.
Safety features: Spring latches

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see Introduction: "Criteria for Evaluation of Trapping Devices" pages 4-6) needs to be considered as well. The trap tested was the Rudy™ 220 Plus bodygrip trap.

Additional Information

- Anchor trap securely.
- Safety considerations: This trap has complete jaw closure. The use of safety devices such as setting tongs and a safety gripper is highly recommended, and trappers should familiarize themselves with emergency release methods discussed in the "Safe Use of Bodygrip Traps" section.
- Special considerations for practicality: Versatile set options (cubby sets, leaning pole sets); can be used for multiple furbearer species in same sets; continues to operate in freezing weather conditions (when placed in a cubby). This device also meets BMP criteria for raccoons and river otter.

Foothold Traps (Figures FS12 and FS13)

Average Mechanical Description and Attributes

Inside jaw spread (at dog): 4 1/2 inches
Inner width: 4 7/8 inches
Inside width at jaw hinge posts: 4 9/16 inches
Jaw width: 9/16 inch padded jaw
Jaw thickness: 3/8 inch
Padding: Manufacturer supplied rubber pads
Main trap springs: Two 0.131 inch wire-diameter coil springs
Additional springs: Two 0.100 inch wire-diameter coil springs
Base plate: Reinforced with D-ring

Any trap that has similar specifications may be considered a BMP trap regardless of brand or source of modification, although performance information on all other BMP criteria (see "Criteria for Evaluation of Trapping Devices": Introduction pp. 4-6) needs to be considered as well. The trap tested was the Woodstream™ Victor No. 1 1/2 Softcatch modified coil-spring, four-coiled.

Additional Information

- Chain attachment used in trap testing: 7 1/2 inch, center mounted with two swivels, one shock spring and anchored with a stake.
- Selectivity features: Brass pan tension machine screw; pan tension was set to two pounds for testing, and checked and readjusted as needed after every capture.
- Special considerations for practicality: Some damage to trap pads should be expected and will require occasional replacement as a normal part of trap maintenance and upkeep. Special care should be taken to prevent odor contamination of the rubber jaws. Avoid using petroleum-based dye directly on the rubber pads. This device also meets BMP criteria for bobcat, Eastern coyote, gray fox, opossum and red fox.

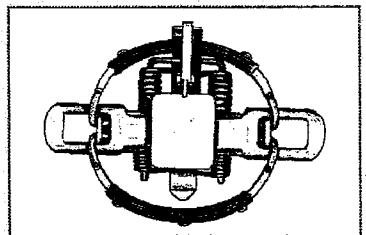


Figure FS12. Padded jaw coil-spring trap, four-coiled (open)

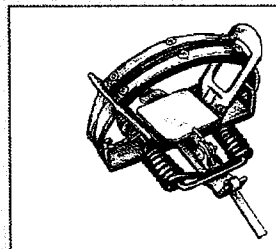


Figure FS13. Padded jaw coil-spring trap, four-coiled (closed)

Drowning is not euthanasia

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Drowning is not euthanasia

John W. Ludders, Robert H. Schmidt, F. Joshua Dein, and Patrice N. Klein

Historically, there has been considerable discussion within the nuisance wildlife control and trapping communities as to whether drowning is a humane method for killing animals. The issue received more attention in 1993, when the American Veterinary Medical Association's Panel on Euthanasia reaffirmed its position that drowning is an unacceptable method (Andrews et al. 1993). For this article, we make a distinction between euthanasia, a "good death" that occurs without pain or distress (Andrews et al. 1993), and death due to killing by other methods. The central issue in this debate is whether drowning animals are rendered unconscious by great levels of carbon dioxide (CO_2, carbon-dioxide-induced narcosis) early in the drowning process and thus are insensitive to the distress and pain associated with drowning.

Proponents of drowning cite an article by Gilbert and Gofton (1982) in which the authors stated that drowning animals die from carbon-dioxide-induced narcosis. However, Gilbert and Gofton (1982) did not report any information on levels of carbon dioxide in blood, which is needed before a determination can be made about the acceptability of drowning as a method of euthanasia. We wish to introduce and clarify information concerning effects of carbon dioxide that have been absent in the debate on drowning.

In their laboratory investigations, Gilbert and Gofton (1982) determined time to death by drowning in mink (*Mustela vison*), muskrat (*Ondatra zibethica*), and beaver (*Castor canadensis*). Readings of the electrical activity of the brain (electroencephalograph, EEG) and of the heart (electrocardiograph, ECG) were recorded from each animal during drowning, and time of death was taken to be the moment when electrical activity of the brain ceased (EEG signal became flat). On average, the EEG signal became flat in mink after 4 minutes, 37 seconds; in muskrats after 4 minutes, 3 seconds; and in beaver after 9 minutes, 11 seconds. However, neither arterial nor venous blood samples were collected before, during, or after the animals drowned, so the partial pressures of carbon dioxide (PCO_2) or oxygen (PO_2) in blood from these animals were not measured. The authors stated that "[d]eath by CO_2 induced narcosis (submersion asphyxia) was evident in beaver, about 50% of muskrats, but 'wet' drowning (defined below) occurred in mink" (Gilbert and Gofton 1982:835). A review article written by Timperman (1972) was referenced to corroborate their conclusion. Timperman's (1972) paper discussed the forensic diagnosis of drowning through identification of diatoms in the lungs of victims. The author mentioned that carbon-dioxide-induced narcosis could be a possible cause of death during drowning, but he also acknowledged that death could be from anoxia. However, he did not provide substantiating data, such as blood gas analyses, to support either factor as the cause of death by drowning.

Proponents of drowning make a distinction between "wet" or "dry" drowning, the former occurring when water enters the lungs and the latter when the lungs remain relatively dry. To some, "dry" drowning implies that because the animal does not inhale water, then death is from CO_2-induced narcosis, although this is most likely incorrect. According to reports of incidents involving human drownings, 2 events may occur following submersion: 1) during the ensuing panic and struggle, water is swallowed and aspiration occurs in

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Key words: animals, carbon dioxide, drowning, euthanasia, killing

85% of the victims, which leads to "wet" drowning, i.e., the lungs fill with water (Newman and Stewart 1995) and hypoxia and cardiac arrest occur rapidly, the latter probably because the vagal nerve, in response to water contacting the mucous membranes of the larynx or trachea, causes a reflex slowing and arrest of the heart (Suzuki 1996); or 2) during drowning, the act of swallowing water may lead to laryngospasm (an involuntary closure of the glottis or entrance to the airway), thus sealing the airway and preventing water from being aspirated into the lungs (Yagil et al. 1983, Suzuki 1996). Approximately 15% of human drowning victims experience "dry" drowning, in which the lungs remain relatively free of water (Newman and Stewart 1995). Hypoxia and cardiac arrest develop, but often this process is protracted compared to the victims experiencing "wet" drowning. In fact, current research strongly suggests that death occurs more rapidly when water is inhaled because it initiates a reflex vagal inhibition of the heart (Suzuki 1996). Thus, a longer period of consciousness may be associated with "dry" drowning than with "wet" drowning. The accumulated evidence (as discussed below) indicates that the cause of death during drowning is hypoxia and anoxia, not CO_2-induced narcosis.

Stedman's Medical Dictionary (1995:1176) defines narcosis as a "[g]eneral and nonspecific reversible depression of neuronal excitability, produced by a number of physical and chemical agents, usually resulting in stupor rather than in anesthesia." Hypercarbia, or an excess of carbon dioxide (CO_2) in blood, can cause narcosis. In animals, CO_2 is a normal byproduct of oxygen (O_2) metabolism, and it is eliminated from the body through the lungs and the process of pulmonary ventilation (Guyton 1991). The relationship of CO_2 production to O_2 utilization is expressed as the respiratory exchange ratio, generally accepted to be around 0.8; it indicates that in general, less CO_2 is produced for a given amount of metabolized O_2 (Guyton 1991).

Several studies, involving numerous animal species in which blood gases were measured, indicate that carbon-dioxide narcosis does not occur until the partial pressure of carbon dioxide in arterial blood ($PaCO_2$) exceeds 95 millimeters of mercury (mm Hg) and true anesthesia occurs only when $PaCO_2$ exceeds 200 mm Hg. For example, laboratory rats exposed to 100% CO_2 at various chamber fill rates started to show evidence of CO_2 narcosis (they became uncoordinated) after $PaCO_2$ exceeded 123 mm Hg (Hewett et al. 1993). The same rats became immobile only after $PaCO_2$ exceeded 212 mm Hg, and they finally lost the pedal reflex to painful stimulation (toe pinch) after $PaCO_2$ exceeded 332 mm Hg (Hewett et al. 1993).

A study of the narcotic properties of carbon dioxide in dogs sheds more light on the issue of CO_2-induced narcosis (Eisele et al. 1967). In this study, the narcotic and anesthetic properties of CO_2 were determined in 2 ways: 1) by determining the MAC (the minimum alveolar concentration of an inhalant anesthetic that prevents purposeful movement by an animal exposed to a painful stimulus) for the inhalant anesthetic halothane (2-bromo-2-chloro-1,1,1-trifluoroethane), and then, in a step-wise manner, replacing the halothane with CO_2 while maintaining a constant plane of anesthesia; and 2) by administering only CO_2 to dogs and recording the $PaCO_2$ when each dog was anesthetized and unresponsive to a painful stimulus. The results indicated that increasing levels of $PaCO_2$ above 95 mm Hg were increasingly narcotic. At a $PaCO_2$ of 95 mm Hg the narcotic effect of CO_2 was minimal as it reduced the MAC of halothane by only 0.08%. In this study, anesthesia was produced at an average $PaCO_2$ of 222 mm Hg.

Drowning animals, of course, are not breathing 100% CO_2, let alone air; in fact, they are not breathing at all. Because the drowning animal cannot breathe, it uses all of the O_2 available in its blood, and CO_2 accumulates because of oxygen metabolism. As previously noted, the respiratory exchange ratio indicates that the rate of O_2 utilization is greater than the rate of CO_2 production (Guyton 1991), and this fact is demonstrated by numerous animal studies. In dogs that were drowned with either cold salt water (CSW) or cold fresh water (CFW), $PaCO_2$ increased significantly, but after 10 minutes of immersion it never exceeded 64.8±4.9 mm Hg in either group (Conn et al. 1995). However, PaO_2 significantly decreased in both groups; after 4 minutes of immersion, PaO_2 was 16.4±1.5 mm Hg in the CFW group and 18.8±21.6 mm Hg in the CSW group, and after 10 minutes of immersion it was 9.6±3.8 and 8.8±1.9 in the CFW and CSW groups, respectively. Similar results were found in another study involving anesthetized, intubated dogs that inhaled a fixed quantity (20 ml/kg) of fresh water (Rai et al. 1980). Prior to inhaling water, the PaO_2 and $PaCO_2$ were 100 mm Hg and 35 mm Hg, respectively. Five minutes after inhaling

water, the PaO_2 and $PaCO_2$ were 35 mm Hg and 52 mm Hg, respectively. During 40 minutes of observation, $PaCO_2$ never exceeded 60±0.5 mm Hg (mean ± SEM) and the PaO_2 did not exceed 47±5.5 mm Hg. The results from these 2 studies show that $PaCO_2$ levels were well below those necessary to induce CO_2 narcosis and that the dogs were hypoxemic (inadequate oxygen in blood).

In a study that measured cerebral blood flow and arterial blood gases in ducks (*Anas platyrhynchos*) held under water for more than 4 minutes, the average PaO_2 was 52 mm Hg (minimum recorded was 37 mm Hg) at 4.61 minutes, while the average $PaCO_2$ was 51 mm Hg (Stephenson et al. 1994). These numbers indicate that the ducks were hypoxemic and hypercarbic and that $PaCO_2$ was not at levels known to produce narcosis. However, PaO_2 had decreased to hypoxemic levels, and had the ducks not been killed by decapitation, the PaO_2 would have continued to decrease to levels incompatible with life, i.e., the ducks would have died from anoxic asphyxiation.

A study in which blood gases were measured in beaver during submersion sheds more light on the drowning issue, especially as it relates to furbearers. After venous and arterial catheterization to sample blood, European beaver (*Castor fiber*) were forcefully submerged in water for up to 10 minutes (Clausen and Ersland 1970). From the authors' figures, the following conclusions can be drawn. Throughout the period of submersion, $PaCO_2$ increased but never exceeded 100 mm Hg; it took 7.5 minutes of submersion before $PaCO_2$ exceeded 95 mm Hg. The PaO_2 rapidly decreased during the first 7 minutes of submersion, but both PaO_2 and arterial hemoglobin saturation with oxygen were at hypoxemic levels (PaO_2<50 mm Hg and saturation<50%) within 5 minutes from the start of submersion. Thus the beavers were hypoxemic 2-3 minutes before $PaCO_2$ reached 95 mm Hg.

The method by which great CO_2 concentrations kill animals is anesthesia-induced respiratory arrest and the ensuing tissue hypoxia-anoxia (Mullenax and Dougherty 1963, Andrews et al. 1993). In fact, the time to death is prolonged when oxygen is used with CO_2. When a gas mixture consisting of approximately 70% CO_2, 24% N_2, and 6% O_2 was used to kill mink, for example, the 5 test animals survived for at least 15 minutes in the gas mixture (Hansen et al. 1991). One animal died 6 minutes after being removed from the gas mixture, but the 4 other animals fully recovered.

The preceding evidence demonstrates that in drowning animals, hypercarbia lags behind hypoxia and anoxia and that drowning animals die from hypoxia and anoxia. All of this suggests that drowning animals experience hypoxemia-induced discomfort and distress before CO_2 narcosis occurs, if narcosis occurs at all. This raises the question: do animals experience distress during drowning? For the following reasons, we believe that the answer is yes. The classic stress response consists of changes in heart rate and increases in blood pressures and circulating blood levels of epinephrine and norepinephrine and other stress-related hormones (Moberg 1985). In rats breathing 100% CO_2 (CO_2 anoxia), plasma norepinephrine increased significantly and was released from the sympathetic nervous system and not the adrenal medulla (Borovsky et al. 1998). The authors concluded that the response was mainly from hypoxia, not from CO_2 in and of itself (Borovsky et al. 1998).

In a model of asphyxia in which rats were strangled (anoxic asphyxia), mean serum norepinephrine and epinephrine concentrations were significantly greater in the strangled group compared to the non-strangled group (norepinephrine=5.4±2.6 ng/mL vs. 2.8±0.1 ng/mL, P<0.001 and epinephrine=6.0±3.4 ng/mL vs. 3.8±3.0 ng/mL, P<0.05; Hirvonen et al. 1997). The author concluded that the data supported the idea that catecholamine concentrations increased in blood upon suffocation and could be used as indicators of hypoxia (Hirvonen et al. 1997).

In dogs that were drowned with either cold salt water (CSW) or cold fresh water (CFW), epinephrine and norepinephrine concentrations (pg/mL) increased significantly after immersion and continued to rise throughout the experimental period (Conn et al. 1995). Prior to immersion, epinephrine was 206±25 in the CFW group and 133±67 in the CSW group. After 10 minutes of immersion, it had risen to 174,650±1,750 in the CFW group and 153,250±4,585 in the CSF group. Prior to immersion, norepinephrine was 224±46 in the CFW group and 374±182 in the CSW group, and by 10 minutes it had reached 63,025±4,946 in the CFW group and 50,400±1,796 in the CSF group. The authors noted that though the greater values reported in their study could be partly attributed to sudden cold stress that has been described after cold-water immersion, a more important etiological factor is likely to be anoxic-ischemic stress producing a catecholamine surge (Conn et al. 1995).

Thus, the accumulated data indicate that hypoxia-anoxia readily elicit the stress response in a variety of animal species.

To summarize, data from several studies and a variety of animal species indicate that CO_2 can produce narcosis, but only at partial pressures in arterial blood exceeding 95 mm Hg. Furthermore, data from rats and dogs suggest that a level of CO_2-induced narcosis sufficient to render an animal insensible to the discomfort, anxiety, and stress associated with hypoxemia is probably above 123 mm Hg; true CO_2-induced anesthesia, and thus insensibility, does not occur until $PaCO_2$ exceeds 200 mm Hg.

We recognize that drowning has been a traditional wildlife management technique, especially for trapping aquatic mammals such as beaver, muskrat, nutria (*Myocastor coypus*), mink, and river otters (*Lontra canadensis*). In some states, trappers have been encouraged to drown non-aquatic mammals captured in cage traps, including raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), and opossums (*Didelphis virginiana*). Drowning is a method of killing animals that is convenient for humans. However, the concept of euthanasia is independent of traditions and convenience, and drowning can not be considered euthanasia. As we noted at the beginning of this article, euthanasia is a "good death" that occurs without pain or distress. Time is an important element in euthanasia, and any technique that requires minutes rather than seconds to produce death can not be considered euthanasia. We encourage wildlife administrators, researchers, animal care and use committees, managers, and trappers to consider these findings as they develop wildlife euthanasia technique guidelines and Best Management Practices for Trapping (Proulx and Barrett 1989, Friend et al. 1994, Hamilton et al. 1998).

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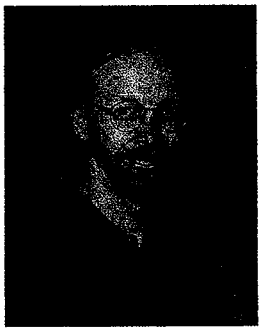
John W. Ludders (top photo) is an associate professor and chief of section in anesthesiology in the Department of Clinical Sciences at the College of Veterinary Medicine, Cornell University. He received his B.S. (zoology) and his D.V.M. from Washington State University and did his residency in veterinary anesthesiology at the University of California, Davis. His research interests are in analgesia and anesthesia for birds.



Robert H. Schmidt (bottom photo) is an associate professor in the Department of Fisheries and Wildlife at Utah State University. He received his B.S. in natural resources from Ohio State University; an M.S. in forestry, fisheries, and wildlife from the University of Nebraska, Lincoln; and an M.S. and Ph.D. in biological ecology from the University of California, Davis. His interests cover the spectrum of wildlife policy, ecology, and management. Robert was president of the Western Section of The Wildlife Society in 1989 and currently serves as president of the National Animal Damage Control Association and as an Executive Board member of the Wildlife Damage Management Working Group of TWS.

F. Joshua Dein is animal welfare officer at the United States Geological Service-Biological Research Division, National Wildlife Health Center. Trained as a biologist and a veterinarian, he is responsible for providing technical assistance to managers and researchers in areas such as captive animal management, capture and immobilization of wildlife, biological sample collection, telemetry implantation, euthanasia, and disease monitoring. He also has interests in electronic information resources, moderating the Wildlife Health mailing list and the Wildlife Health information Partnership. ***Patrice M. Klein*** is the wildlife veterinarian for the Humane Society of the United States (HSUS) and the veterinary director of the HSUS Wildlife Rehabilitation Training Center, Cape Cod, Massachusetts. She received her B.A. in biology from Hofstra University in 1976, an M.S. in pharmacology-toxicology from St. John's University, New York in 1983, and her V.M.D. from the University of Pennsylvania School of Veterinary Medicine in 1988. She has extensive training and experience in pathology and is a diplomate in the American College of Poultry Veterinarians. From 1990 to 1995, Pat was the center veterinarian at the United States Fish and Wildlife Service, Patuxent Wildlife Research Center, Laurel, Maryland, where she was responsible for the health management of endangered species of birds such as whooping cranes and Mississippi sandhill cranes and evaluated the effects of environmental pollutants on avian species. She is currently working with Humane Society International on international wildlife rehabilitation programs in Central and South America.

Gilbert and Gofton (1982)	#3 Victor Double Long Spring #4 Victor Double Long Spring	Controlled lab tests in aquatic tank using a drowning set. The average time to cessation of struggling was 8 min. 11 sec. (n=20); EEG loss occurred in an average of 9 min. 11 sec. (n=16). EKG loss took place after an average of 16 min. 27 sec. (n=14). Death occurred due to anoxia (asphyxiation).
Zelin et al. (1983)	Simulated "Killing"	Controlled lab tests on anesthetized animals; determined mean kill thresholds using 335-g striking bar; 10-minute time to death test period employed. With no holding force, the thresholds for head (n=8), neck (n=6), and thorax (n=8) hits of beavers were 3.7, 3.0, and 5.9 kg.m/sec, respectively. For abdominal hits of beaver, the impact momentum required to kill the animals (n=3) was beyond the capability of the test equipment (>13.9 kg.m/sec).

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Prepared by: George Hubert, Jr., Illinois DNR

BMP Bodygrip Traps – Welfare Criteria

- Welfare evaluated as irreversible loss of consciousness and sensibility leading to death
- Must occur within 300 seconds, in at least 70% of the animals in the sample
- Conducted at a lab/compound setting

Focus Questions
Development of Best Management Practices for Furbearer Trapping
Hunting Coyotes with the Aid of Dogs
Public Hearing---June 21, 2023, Rutland Middle School
Public Hearing – June 21, 2023, Montpelier High School

If willing, please fill in your name, email address, and town of residence and any responses you have to the questions below:

Name: ROD CORONADO **Town:** ORANGE

Email: [redacted]

1. **What are your comments on the Boards' first vote to change regulations for legal, regulated trapping in Vermont? Please add your reasons why.**
   i.e., 4.5 recommendations for foothold trapping systems including swivel requirements, chain length, jaw thickness, lamination, etc.
   4.6, 4.7, 4.8: recommendations for body-gripping traps on land
   4.9: Covered bait
   4.17 trapping setbacks: No traps may be set on or within 50' of the traveled portion of a town trail, public trail on state-owned land except WMAs, or highway unless set in the water.

Fails to meet legislative mandate to reduce animal suffering because there are no changes to the use of body-grip traps underwater and no change to Fisher trapping despite the 220 canibear trap not passing BMP tests as defined by AFWA. No recognition that the 220 trap is ineffective at killing Fisher.

Focus Questions
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2. What are your comments on the changes being recommended by the Department and the reasons why?

i.e., 4.5 (a) addition of an extra swivel
4.5 (f) elimination of drags
4.6, 4.7, 4.8: No body-gripping traps on the ground unless placed within an anchored enclosure or 5' above the ground.
4.17 change set-back distance for all traps from 25' to 50'. Apply setback to town trails.

Comments on Department suggested changes/additions: Fails to reduce animal suffering due to exclusion of underwater traps and the Conibear 220 and equivalent traps for Fisher. Royer stated that BMPs are designed to minimize injury yet many of the traps in Fisher BMP are smaller than the 220.

Focus Questions
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3. What are your comments on the Board's first vote for the coyote hunting and training season while hunting with the aid of dogs (see dates below)?

4.21.4 Seasons and Shooting Hours for Taking Coyote with the Aid of Dogs.

a) Coyote Dog Training Season: For Vermont Resident and Nonresident Permit Holder:

June 1 through September 15, all dates inclusive, except that a nonresident may train dogs to pursue coyote only while the training season is in effect in the nonresident's home state and subject to the requirements of these rules.

b) Coyote Dog Hunting Season December 15 through March 31, all dates inclusive.

c) Legal hours for taking coyote with the aid of dogs: One half hour before sunrise until one half hour after sunset.

GPS collars do not equal control. IF this was the case, we wouldn't have incidents of hound trespass.

Every individual engaged in coyote hunting w/ hounds should possess a permit. Too many documented incidents of hounds mauling and fighting w/ coyotes.

Any other comments or questions for the Board on the proposed rule changes for both coyote hunting with the aid of dogs and regulated, legal trapping?

Until body-gripping traps and underwater trapping techniques are included in the BMP's requirement, advocates will continue to press for legislation to end <u>all</u> trapping

From: Wolf Patrol [redacted]
Sent: Friday, June 30, 2023 8:01 PM
To: ANR - FW Public Comment
Subject: Trapping & Hounding Public Comment
Attachments: 0090-3558-29.2.317.pdf; Fisher BMP.pdf

Dear Members of the Fish & Wildlife Board, Commissioner Herrick & Legislators,

My name is Rod Coronado and I'd like to provide some input to the supposed improvements to trapping in Vermont. I live in Orange, Vermont where annually a contract trapper with the Department of Transportation (VTrans) has come onto our property and killed every single beaver that ever lived in Riddel Pond. Has our road or the state highway ever been flooded? No. Have beavers damaged or destroyed state or town infrastructure? No.

We live in a state where ecologically beneficial animals like beavers are trapped because state agencies like VTrans and members of my town's select board think they are a nuisance. None of the recommended changes proposed to trapping will affect the wanton waste of life committed by trappers in my town. No supposed "best management practice" will spare thousands of beavers a long and agonizing death in a body-gripping trap, which are completely exempted by these recommended "improvements" to trapping.

Last week, over 50 residents of the town of Orange presented a petition to our select board asking for a beaver policy that explored all non-lethal options available such as exclusion fencing, baffles and pond levelling devices, before trapping is considered. Instead of listening to the concerns of residents, our select board is choosing to do things the way they always have done, which is to kill the beavers, even though our town is not experiencing actual impact from the animals. This is the same response I see playing out across Vermont. When the public questions Vermont's trapping practices, we are told we are uneducated and that trapping is the only solution.

I have also attended every Fish & Wildlife Board meeting since January 2023, where 13 of the 14 members are trappers and/or hunters. Only one member of the board represents the 87% of Vermont's populace that does not hunt or trap. I have witnessed this super-majority at work, where it is regularly used to rubber stamp almost every single request from the trapping and hunting community, while outright ignoring the concerns of anyone who advocates for wildlife.

After hearing presentation after presentation on how trapping BMP's will reduce suffering experienced by trapped animals in Vermont, I read everything I could find on the actual research conducted to determine that a trap is a BMP trap. What I found was alarming. Literally thousands of wild animals are captured and anesthetized and placed in traps that are triggered on their drugged bodies. The drug used is Ketamine, which isn't anesthesia at all, but a paralytic. This means that the animal is conscious, only immobilized. The traps are sprung on their bodies and if 70% of the animals die within five minutes, the trap is approved as a BMP trap.

When I provided copies of a BMP research study that determined that particular BMP traps recommended for fisher trapping in Vermont did not pass BMP tests, I was met with silence from Brehan Furhey, Furbearer Project Leader, David Sausville and Mark Scott, Director of Wildlife. When Ms. Furhey and Mr. Sausville attended one of my public meetings on wildlife that I hold monthly in Montpelier on June 14th, 2023, I asked them both to answer my questions about the unsafe trap and to this day I have yet to receive a response.

In addition, when I attended the public hearing on the supposed improvements to trapping and coyote hound hunting on June 21, a member of the hound hunting community threatened to "rip my head off." When I reported the incident to both Commissioner Herrick and Mark Scott, I was again met with silence. How am I supposed to receive such unprofessionalism by those entrusted to protect our state's wildlife?

These are just a few of the reasons why I have now dedicated my life here in Vermont to seeing the end of trapping in my lifetime. Vermont Fish & Wildlife's pro-trapping furbearer department has put the interests of a few hundred trappers before the interests of 16 different native furbearer species, and in doing so are violating the public's trust, all to serve the special interests of people wanting to continue a cruel practice that has infected this state since before it was founded.

You can approve of these changes to trapping laws, but it will in no way eliminate the public's demands for an end to indiscriminate trapping practices in Vermont. In closing I am once again attaching the research paper I provided to VFW months ago, looking for that answer on why Vermont will continue to allow the use of traps that are known to be ineffective at killing fishers humanely.

Good Day,
Rod Coronado
Vermont Wildlife Patrol
Cemetery Commissioner, Town of Orange

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NEWS

Films on Beaver Research Protected by Judge

NOVEMBER 13, 1991

Colfax, Washington -- Whitman County Superior Court Judge Wallis Friel ruled last week that Washington State University need not release videotapes of research into the trapping of beavers to KIRO Inc., a Seattle television station.

Frederick Gilbert, a professor of natural-resource sciences who has been the target of animal-rights protesters, has filmed the killing of beavers in underwater traps. He is trying to develop a more efficient and humane trap.

Judge Friel said the film was exempt under the state's public-disclosure law, at least until the research is completed. He said the film's release would breach Mr. Gilbert's academic freedom and threaten the government's interest in doing research at public universities.

Mr. Gilbert had been performing his research for the Fur Institute of Canada, which canceled the contract when KIRO first requested the videotapes.

We welcome your thoughts and questions about this article. Please email the editors or submit a letter for publication.

TOP JOBS *from The Chronicle*

Assistant Professor - Aeronautics & Astronautics (SSI-NET)
William E. Boeing Department of Aeronautics & Astronautics

Director of UERU Development and Strategic Partnerships
Association for Undergraduate Education at Research Universities (UERU)

Assistant/Associate Professor - Education
University of Wisconsin-Green Bay

Academic Director and Clinical Assistant/Associate Professor of Management and Systems
New York University School of Professional Studies

Clinical Assistant Professors, Liberal Studies
New York University Arts and Science

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Wildlife Monographs 207:3–59; 2021; DOI: 10.1002/wmon.1057

Best Management Practices for Trapping Furbearers in the United States

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JOHN D. ERB, *Minnesota Department of Natural Resources, Forest Wildlife Populations and Research Group, 1201 E Highway 2, Grand Rapids, MN 55744, USA*

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NATHAN M. ROBERTS,[5] *Wisconsin Department of Natural Resources, 107 Sutliff Avenue, Rhinelander, WI 54501, USA*

ABSTRACT Humans have used wild furbearers for various purposes for thousands of years. Today, furbearers are sustainably used by the public for their pelts, leather, bones, glands, meat, or other purposes. In North America, contemporary harvest of furbearers has evolved along with trap technologies and societal concerns, and is now highly regulated and more closely coupled with harvest analysis and population monitoring. Traps and regulated trapping programs provide personal or cultural rewards that can also support conservation, and can assist with advancing ecological knowledge through research, protecting endangered species, restoring populations or habitats, protecting personal property, and enhancing public health and safety. However, animal welfare and trap selectivity remain important topics for furbearer management in North America, as they have for more than a century. A related international challenge to modern furbearer management came with the Wild Fur Regulation by the European Union, which passed in 1991. This regulation prohibited use of foothold traps in many European countries and the importation of furs and manufactured fur products to Europe from countries that allowed use of foothold traps or trapping methods that did not meet internationally agreed-upon humane trapping standards. To address existing national concerns and requirements of the Wild Fur Regulation, the United States and European Union signed a non-binding bilateral understanding that included a commitment by the United States to evaluate trap performance and advance the use of improved traps through development of best management practices (BMPs) for trapping. Our testing followed internationally accepted restraining-trap standards for quantifying injuries and capture efficiency, and we established BMP pass-fail thresholds for these metrics. We also quantified furbearer selectivity, and qualitatively assessed practicality and user safety for each trap, yielding overall species-specific performance profiles for individual trap models. We present performance data for 84 models of restraining traps (6 cage traps, 68 foothold traps, 9 foot-encapsulating traps, and 1 power-activated footsnare) on 19 furbearing species, or 231 trap-species combinations. We conducted post-mortem examinations on 8,566 furbearers captured by trappers. Of the 231 trap model-species combinations tested, we had sufficient data to evaluate 173 combinations, of which about 59% met all BMP criteria. Pooling species, cage traps produced the lowest average injury score (common injuries included tooth breakage), with minimal differences across other trap types; species-specific patterns

Received: 27 June 2019; Accepted: 26 July 2020

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were generally similar, with the exception of raccoons (*Procyon lotor*) for which foot-encapsulating traps performed better than other foot-restraining trap types. Padded-jaw foothold traps performed better than standard-jaw models for many species, though often similar to and occasionally worse than offset- or laminated-jaw models. Most traps we tested had high capture efficiency; only 5 (3%) failed BMP standards strictly because of poor efficiency. Average furbearer selectivity was high across all trap types we evaluated and was lowest for footsnares (88%) and highest for foot-encapsulating traps (99%). Mortality from trap-related injury in restraining traps we tested was very rare for furbearers (0.5% of animals). In over 230,000 trap-nights across a 21-year period, no individuals of a threatened or endangered species were captured. Of 9,589 total captures, 11% were non-furbearers, of which 83% were alive upon trap inspection; nearly all non-furbearer mortalities were birds, rabbits, or squirrels. Approximately 2% of total captures were feral or free-ranging dogs (*Canis familiaris*), of which none died or were deemed in need of veterinary care by either our technicians or the owners (if located). Similarly, 3% of total captures were feral or free-ranging cats (*Felis catus*); 2 were dead, and although locating potential owners was often impossible, none of the remaining cats were deemed in need of veterinary care by technicians or owners. Our results show that furbearer selectivity was high for all trap types evaluated, mortality or significant injury was very rare for domestic (or feral) animals, and the most potential for mortality or injury of non-furbearers was with smaller animals, a majority of which were squirrels and rabbits. Our results suggest that injury scores for a given trap-species combination are unlikely to vary significantly across states or regions of the United States, provided similar methods are employed. Our data also suggest that taxonomic affiliation and body-size groupings are correlated with injury scores, presumably through morphological, physiological, or behavioral adaptations or responses that influence injury potential during restraint; higher injury scores in foot-restraining trap types were more likely in smaller or more dexterous species, whereas injury scores were typically lowest for the felids we evaluated. For some species (e.g., American badger [*Taxidea taxus*], bobcat [*Lynx rufus*]), most restraining traps we tested met BMP standards, whereas few restraining traps we tested met standards for other species (e.g., muskrat [*Ondatra zibethicus*], striped skunk [*Mephitis mephitis*]). Comparison of our results with survey information collected during 2015 on trap use in the United States indicates that approximately 75% of all target furbearers harvested were taken in BMP-compliant traps, with another 10% taken in traps yet to be tested on that species. Future trap testing and development should focus on commonly used traps not yet tested on a species, species for which few passing traps currently pass BMP criteria, and trap models and modifications most likely to minimize trap injuries given a species morphology, physiology, and behavior. Outreach efforts should focus on general BMP awareness, discouraging use of traps that fail BMP standards for a given species, and public outreach on trapping. Restraining (and other) traps have evolved substantially in recent decades and offer numerous benefits to individuals, conservation, and society. However, continuing to address societal concerns remains a critical component of modern regulated trapping and furbearer management. Published trapping BMPs are regularly updated online and may include additional approved restraining and killing traps that were evaluated as part of testing by Canada. We will periodically update the trap performance tables and figures we presented and make them available online at the Association of Fish and Wildlife Agencies website. Published 2020. This article is a U.S. Government work and is in the public domain in the USA. Wildlife Monographs published by Wiley Periodicals LLC on behalf of The Wildlife Society.

KEY WORDS animal welfare, best management practices, BMPs, cage trap, capture efficiency, conservation, footsnare, foot-encapsulating trap, foothold trap, furbearers, furbearer management, injury score, restraining device, trap selectivity, trapping.

Mejores prácticas de manejo para atrapar animales de peletería en los Estados Unidos

RESUMEN Los seres humanos han utilizado a los animales silvestres de peletería para diversos fines durante miles de años. Hoy en día, el público utiliza de manera sostenible los animales de peletería para pieles, cueros, huesos, glándulas, carne u otros fines. En América del Norte, la cosecha contemporánea de animales de peletería, ha evolucionado junto con las tecnologías de trampas y las preocupaciones sociales, y ahora está altamente regulada y más estrechamente relacionada con el análisis de la cosecha y el monitoreo de la población. Las trampas y los programas de captura regulada brindan recompensas personales o culturales que también pueden apoyar la conservación y pueden ayudar a promover el conocimiento ecológico a través de la investigación, la protección de especies en peligro de extinción, la restauración de poblaciones o hábitats, la protección de la propiedad personal y la mejora de la salud y la seguridad públicas. Sin embargo, el bienestar animal y la selectividad de las trampas siguen siendo temas importantes para el manejo de los animales de peletería en América del Norte, como lo han sido durante más de un siglo. Un desafío internacional

relacionado con la gestión moderna de los animales de peletería llegó con el Reglamento de Pieles Silvestres de la Unión Europea, que se aprobó en 1991. Este reglamento prohibía el uso de trampas que sujetan las patas (más específicamente pie y metatarso o metacarpo) de los animales en muchos países europeos y la importación de pieles y productos de piel manufacturados a Europa desde países que permitían uso de trampas que sujetan las patas o métodos de captura que no cumplieron con los estándares de captura humanitaria acordados internacionalmente. Para abordar las preocupaciones y los requisitos nacionales existentes del Reglamento Sobre Pieles Silvestres, los Estados Unidos y la Unión Europea firmaron un acuerdo bilateral, no vinculante, que incluía un compromiso de los Estados Unidos para evaluar el desempeño de las trampas y promover el uso de trampas mejoradas mediante el desarrollo de mejores prácticas de manejo (MPM) para la captura. Nuestras pruebas siguieron los estándares aceptados internacionalmente de trampas para sujetar patas (o también llamadas de restricción o contención) para cuantificar las lesiones y la eficiencia de captura, y establecimos umbrales de MPM de aceptable y no aceptable para estos parámetros. También cuantificamos la selectividad sobre los animales de peletería y evaluamos cualitativamente la practicidad y la seguridad del usuario para cada trampa, lo que arrojó perfiles generales de rendimiento sobre especies específicas para modelos de trampa individuales. Presentamos datos de rendimiento para 84 modelos de trampas de contención (6 trampas de jaula, 68 trampas para sujetar patas, 9 trampas de encapsulación de patas y 1 lazada de pata activada mecánicamente) en 19 especies de peletería, o 231 combinaciones de trampas y especies. Realizamos exámenes post mortem en 8,566 animales de peletería capturados por tramperos. De las 231 combinaciones de modelos de trampas y especies probadas, tuvimos datos suficientes para evaluar 173 combinaciones, de las cuales aproximadamente el 59% cumplía con todos los criterios de MPM. Al agrupar especies, las trampas de jaula produjeron el puntaje de lesión promedio más bajo (las lesiones comunes incluyeron rotura de dientes), con diferencias mínimas entre otros tipos de trampas; los patrones específicos de las especies fueron generalmente similares, con la excepción de los mapaches (*Procyon lotor*), para los cuales las trampas encapsulantes para las patas funcionaron mejor que otros tipos de trampas para sujetar patas. Las trampas de mandíbula acolchada funcionaron mejor que los modelos de mandíbula estándar para muchas especies, aunque a menudo son similares y en ocasiones peores que los modelos de mandíbula laminada. La mayoría de las trampas que probamos tenían una alta eficiencia de captura; solo 5 (3%) fallaron los estándares de MPM estrictamente debido a una baja eficiencia. La selectividad promedio de animales de peletería fue alta en todos los tipos de trampas que evaluamos y fue más baja para trampas para lazadas para pies (88%) y más alta para trampas que encapsulan patas (99%). La mortalidad por lesiones relacionadas con trampas, fue muy rara para los animales de peletería en las trampas de sujeción que probamos (0,5% de los animales). En más de 230,000 trampas nocturnas a lo largo de un período de 21 años, no se capturó ningún individuo de una especie amenazada o en peligro de extinción. Del total de 9,589 capturas, el 11% no fueron animales de peletería, de los cuales el 83% estaban vivos tras la inspección de la trampa; casi todas las muertes de animales no de peletería, fueron aves, conejos o ardillas. Aproximadamente el 2% de las capturas totales fueron perros salvajes o en libertad (*Canis familiaris*), de los cuales ninguno murió o se consideró que necesitaban atención veterinaria por nuestros técnicos o los propietarios (si fue posible localizarlos). Del mismo modo, el 3% de las capturas totales fueron gatos salvajes o en libertad (*Felis catus*); 2 estaban muertos y, aunque a menudo era imposible localizar a los posibles propietarios, los técnicos o los propietarios no consideraron que ninguno de los gatos restantes necesitara atención veterinaria. Nuestros resultados muestran que la selectividad de los animales de peletería fue alta para todos los tipos de trampas evaluados, la mortalidad o lesiones significativas fue muy rara para los animales domésticos (o salvajes), y el mayor potencial de mortalidad o lesiones de las especies que no fueron de peletería, fue con animales más pequeños, la mayoría de los cuales eran ardillas y conejos. Nuestros resultados sugieren que es poco probable que los puntajes de lesiones para una combinación determinada de trampas y especies varíen significativamente entre los estados o regiones de los Estados Unidos, siempre que se empleen métodos similares. Nuestros datos también sugieren que la afiliación taxonómica y las agrupaciones de tamaño corporal están correlacionadas con los puntajes de las lesiones, que se sospecha se deben a adaptaciones o respuestas morfológicas, fisiológicas o de comportamiento que influyen en el potencial de lesiones durante la inmovilización; puntajes más altos de lesiones en las trampas para sujetar patas fueron más probables en especies más pequeñas o más diestras, mientras que los puntajes de lesiones fueron típicamente más bajos para los felinos que evaluamos. Para algunas especies (p. Ej., tejón americano [*Taxidea taxus*], lince rojo [*Lynx rufus*]), la mayoría de las trampas de contención que probamos cumplieron con los estándares de MPM, mientras que pocas trampas de contención que probamos cumplieron con los estándares para otras especies (p. Ej., rata almizclera [*Ondatra zibethicus*], zorrillo rayado [*Mephitis mephitis*]). La comparación de nuestros resultados con la información de la encuesta recopilada durante 2015 sobre el uso de trampas en los Estados Unidos indica que aproximadamente el 75% de todas las especies de peletería capturadas, fueron capturadas con trampas que cumplen con las MPM, con otro 10% capturadas en trampas que aún no se han probado en esa especie. Las pruebas y el desarrollo de trampas futuras deben centrarse en las trampas de uso común que aún no se han

probado en una especie, en especies para las que pocas trampas aprobadas que pasan los criterios de MP, y modelos de trampa y modificaciones que probablemente minimicen las lesiones de trampa dada la morfología, fisiología y comportamiento de la especie. Los esfuerzos de divulgación deben centrarse en la concienciación general de las MPM, desalentar el uso de trampas que no cumplan con los estándares de MPM para una especie determinada y la divulgación pública sobre la actividad de trampeo. Las trampas de contención (y otras), han evolucionado sustancialmente en las últimas décadas y ofrecen numerosos beneficios a las personas, la conservación y la sociedad. Sin embargo, seguir abordando las preocupaciones de la sociedad sigue siendo un componente crítico del manejo regulado contemporáneo de la actividad de trampeo y los animales de peletería. Las MPM sobre trampas se actualizan periódicamente en línea y pueden incluir trampas de contención y de muerte adicionales aprobadas que fueron evaluadas como parte de las pruebas realizadas por Canadá. Actualizaremos periódicamente las tablas y cifras de rendimiento de las trampas que presentamos y las pondremos a disposición en línea en el sitio web de la Asociación de Agencias de Pesca y Vida Silvestre (Association of Fish and Wildlife Agencies).

Meilleures pratiques de gestion pour le piégeage des animaux à fourrure aux États-Unis

RÉSUMÉ Les humains ont utilisé les animaux à fourrure sauvages à diverses fins depuis des milliers d'années. Aujourd'hui, les animaux à fourrure sont utilisés de façon durable par le public pour leurs peaux, cuir, os, glandes, viande, ainsi qu'à d'autres fins. En Amérique du Nord, la récolte contemporaine des animaux à fourrure a évolué avec les technologies de piégeage et les préoccupations sociales, ce qui fait du piégeage d'aujourd'hui, une pratique très réglementée et plus étroitement associée à l'analyse des récoltes et à la gestion des populations animales. De plus, les pièges ainsi que les programmes de piégeage réglementés offrent des bénéfices tant au niveau personnel qu'au niveau culturel qui permettent d'assurer la conservation, la progression des connaissances écologiques de par la recherche, la protection des espèces en voie de disparition, la restauration des populations animales et de leurs habitats, la protection des biens personnels, et l'amélioration de la santé et la sécurité publiques. Toutefois, le bien-être des animaux et la sélectivité des pièges demeurent des sujets importants pour la gestion des animaux à fourrure en Amérique du Nord, comme c'est le cas depuis plus d'un siècle. Un défi international en lien à la gestion moderne des animaux à fourrure est arrivé avec le règlement sur le piégeage et fourrures sauvages de l'Union Européenne, adopté en 1991. Ce règlement interdisait l'utilisation de pièges à rétention dans de nombreux pays européens ainsi que l'importation de fourrures et de produits manufacturés en Europe en provenance de pays qui permettaient l'utilisation de pièges à rétention ou l'utilisation de méthodes de piégeage qui ne respectaient pas les normes de piégeage sans cruauté telles que convenues au niveau international. Pour répondre à ces préoccupations et aux exigences nationales découlant du règlement sur le piégeage et fourrures sauvages, les États-Unis et l'Union Européenne ont signé un accord bilatéral non contraignant qui engageait les États-Unis à évaluer la performance des pièges et à assurer la progression vers l'amélioration des pièges via l'élaboration de meilleures pratiques de gestion (MPG) pour le piégeage. Nos tests ont été fait suivant les normes pour les pièges à rétention acceptées à l'échelle internationale en termes de quantification des blessures et de l'efficacité de la capture. Nous avons également établi des seuils de réussite et d'échec pour ces mesures en accord avec les MPG. Nous avons également quantifié la sélectivité des pièges en termes des espèces capturées, et évalué, de façon qualitative, l'utilisation pratique et la sécurité des utilisateurs pour chaque piège. Ce processus a permis d'élaborer des profils de performance spécifiques à l'espèce pour chaque modèle de piège. Nous présentons donc des données de performance pour 84 modèles de pièges (6 cages à capture vivante, 68 pièges à rétention, 9 pièges recouvre-patte, and 1lacet à propulsion mécanique) pour 19 espèces d'animaux à fourrure ou 231 combinaisons d'espèces-pièges. Nous avons effectué des examens post-mortem sur 8 566 animaux à fourrure capturés par des trappeurs. Sur les 231 combinaisons modèle-espèces de pièges testés, nous disposions de données suffisantes pour évaluer 173 combinaisons, dont environ 59% ont satisfait tous les critères MPG. Toutes espèces confondues, les cages à capture vivante ont produit le plus bas score moyen de blessures (les blessures courantes incluaient le bris de dents), avec des différences minimes entre les autres types de pièges. Les tendances spécifiques aux espèces étaient généralement semblables les unes aux autres, à l'exception des ratons laveurs (*Procyon lotor*) pour lesquels les pièges recouvre-patte ont obtenu de meilleurs résultats que les autres types de pièges à rétention. Pour de nombreuses espèces, les pièges à rétention à mâchoires cousinées ont obtenu de meilleurs résultats que les modèles de pièges à rétention standard, bien que les scores étaient souvent semblables et parfois pires que les modèles à mâchoires espacées ou à mâchoire laminées. La plupart des pièges que nous avons testés avaient une efficacité de capture élevée; seulement 5 (3%) se sont avérés non-conforme aux normes MPG et ce, en raison d'une faible efficacité. La sélectivité pour les

animaux à fourrure était élevée dans tous les types de pièges que nous avons évalués et elle était la plus faible pour les lacets à patte (88%) et le plus élevé pour les pièges recouvre-patte (99%). La mortalité causée par des blessures liées aux pièges dans les pièges que nous avons testés était très rare chez les animaux à fourrure (0,5% des animaux). Sur plus de 230 000 nuits passées à piéger sur une période de 21 ans, aucun individu d'une espèce menacée ou en voie de disparition n'a été capturé. Sur 9 589 captures totales, 11% n'étaient pas des animaux à fourrures, dont 83% étaient vivants lors de l'inspection des pièges. La majorité des mortalités d'animaux n'étant pas des animaux à fourrure étaient des oiseaux, des lapins ou des écureuils. Environ 2% des captures totales étaient des chiens sauvages ou en liberté (*Canis familiaris*), dont aucun n'est mort ou n'ont été jugés avoir besoin de soins vétérinaires selon nos techniciens ou les propriétaires des chiens (dans les cas où ils ont été localisés). De plus, 3% des captures totales étaient des chats sauvages ou en liberté (*Felis catus*); 2 étaient morts, et bien que localiser les propriétaires de ces chats était souvent impossible, aucun des chats ayant survécu à la capture n'ont été jugés avoir besoin de soins vétérinaires selon nos techniciens ou les propriétaires. Nos résultats montrent que la sélectivité des animaux à fourrure était élevée pour tous les types de pièges évalués, que la mortalité ou les blessures importantes étaient très rares pour les animaux domestiques (ou sauvages) et que le plus grand potentiel de mortalité ou de blessure chez les animaux n'étant pas des animaux à fourrure était chez les petits animaux, dont une majorité étaient des écureuils et des lapins. Nos résultats suggèrent qu'il est peu probable que les scores de blessures pour une combinaison d'espèces-pièges varient de manière significative entre les États ou les régions des États-Unis, à condition que des méthodes similaires soient employées. Nos données suggèrent également que l'affiliation taxonomique et les groupements de taille corporelle sont corrélés aux scores de blessure, vraisemblablement par le biais d'adaptations ou de réponses morphologiques, physiologiques ou comportementales qui influencent le potentiel de blessure pendant la capture; des scores de blessures plus élevés dans les types de pièges à rétention étaient plus probables chez les espèces plus petites ou plus adroites, alors que les scores de blessures étaient généralement les plus bas pour les félidés que nous avons évalués. Pour certaines espèces (par exemple: le blaireau d'Amérique [*Taxidea taxus*]et le lynx roux [*Lynx rufus*]), la plupart des pièges à rétention que nous avons testés répondaient aux normes MPG, tandis que ce n'était pas le cas pour d'autres espèces (par exemple, le rat musqué [*Ondatra zibethicus*] et la mouffette rayé [*Mephitis mephitis*]). La comparaison de nos résultats avec les données d'enquête recueillies en 2015 sur l'utilisation des pièges aux États-Unis indique qu'environ 75% de tous les animaux à fourrure cibles capturés ont été capturés dans des pièges conformes aux MPG avec un 10% supplémentaire ayant été capturés dans des pièges n'ayant pas encore été testé sur cette espèce. Les tests ainsi que les développements futurs des pièges devraient se concentrer sur les pièges couramment utilisés qui n'ont pas encore été testés sur une espèce, sur les espèces pour lesquelles peu de pièges satisfont actuellement aux critères du MGP, et sur les modèles de pièges et les modifications les plus susceptibles de minimiser les blessures reliées aux pièges en fonction de la morphologie, la physiologie et le comportement d'une certaine espèce. Les efforts de sensibilisation devraient se concentrer sur la sensibilisation générale aux MPG, à décourager l'utilisation de pièges qui ne respectent pas les normes de MGP pour une espèce donnée, et à la sensibilisation du public sur le piégeage. Les pièges à rétention (entre autres) ont considérablement évolué au cours des dernières décennies et offrent de nombreux avantages aux individus, à la conservation et à la société. Cependant, continuer à répondre aux préoccupations de la société reste un élément essentiel de la réglementation moderne du piégeage et de la gestion des animaux à fourrure. Les MPG publiées sur le piégeage sont régulièrement mises à jour en ligne et peuvent inclure d'autres pièges à rétention et méthodes d'abattage approuvés qui ont été évalués dans le cadre des tests effectués au Canada. Nous mettrons périodiquement à jour les tableaux et les indicatifs de performance des pièges que nous avons présentés et les rendrons disponibles en ligne sur le site web du Fish and Wildlife Agency.

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INTRODUCTION

Humans have been capturing and using wild furbearers for many purposes for thousands of years. Today, sustainable use of furbearers through regulated harvest by the public includes pelts, leather, bones, glands, meat, and other products or purposes (Ray 1987, Organ et al. 2015, Hiller and Vantassel 2021). Over time, market demands, particularly for pelts, have been substantial and fluctuated somewhat unpredictably and often species-specifically. However, muskrats (*Ondatra zibethicus*), American beavers (*Castor canadensis*), northern raccoons (*Procyon lotor*), and, more recently, coyotes (*Canis latrans*) consistently account for the majority of the wild furbearer harvest in North America (Novak et al. 1987, Responsive Management 2015). Fluctuating demand for furs or other derived products typically results in variable participation or effort by avocational trappers, making recruitment and retention of trappers a persistent and primary concern for the trapping community and wildlife managers (Armstrong and Rossi 2000). Although trends in participation had shown a decline from the mid-1980s to the mid-2000s, the estimated number of trappers in the United States grew 24% from about 142,000 in 2004 to >176,000 in 2015 (Responsive Management 2015).

Prior to 1900, unregulated and unmonitored harvest and habitat loss or degradation in North America resulted in substantial population declines, and even local extirpation, for some furbearing species. In response, the goals of early furbearer management included protective laws designed to restore populations, and regulation and monitoring of harvest (Sanderson 1982, Batcheller et al. 2000, Hiller et al. 2018). Although new challenges arise, conservation efforts continue to be successful at assisting recovery of several furbearing species (e.g., American beaver [Schulte and Müller-Schwarze 1999], fisher [*Pekania pennanti*; Lewis et al. 2012], gray wolf [*Canis lupus*; Bangs et al. 2001, U.S. Fish and Wildlife Service 2017*a*], North American river otter [*Lontra canadensis*; Raesly 2001], Sierra Nevada red fox [*Vulpes vulpes necator*; Hiller et al. 2015], swift fox [*Vulpes velox*; Kahn et al. 1997], Canada lynx [*Lynx canadensis*; U.S. Fish and Wildlife Service 2017*b*]).

Contemporary management of furbearers has evolved over the years and includes ongoing conservation efforts for rare species, regulated and sustainable harvest of abundant species, management of wildlife damage and conflict, and implementing research to address new needs (Wolfe and Chapman 1987, Batcheller et al. 2000, Hiller et al. 2018). Management agencies regularly review harvest and base recommendations for regulation changes on population trends, levels of wildlife conflicts, or other scientific evidence (Hamilton and Fox 1987, Hiller et al. 2018). For abundant furbearers, regulated harvest provides benefits to individual hunters and trappers, rural communities, society, and wildlife conservation and management (Boggess et al. 1990, White et al. 2015, Hiller et al. 2018), and is consistent with the tenets of the North American Model of Wildlife Conservation (Organ et al. 2012, 2015).

Trapping, like all human activities, is contingent upon there being a personal or societal desire, value, or need for doing so, and a sociopolitical willingness to allow it (Hampton and Teh-White 2018). In addition, where trapping is to be considered in the context of some wildlife management, conservation, or research goal, potential alternatives and effectiveness of each need to be considered. Acknowledging the complexity of these topics, we highlight some of the values and services that trapping can provide, and associated concerns with and regulatory challenges to trapping.

Financial and Cultural Benefits of Trapping to Individuals and Society

North America is currently a leading producer of wild fur, with retail fur sales >US $1.0 billion annually since 1991, and estimated at US $1.5 billion of the US $40 billion global market in 2014 (Fur Information Council of America 2015, Fur Commission USA 2016). This activity and its economic contributions to communities in the United States reportedly provides full-time employment for over 32,000 workers, and seasonal or part-time employment for an additional 155,000 workers (Fur Information Council of America 2015).

These estimates do not include the various economic benefits derived directly by avocational or nuisance control trappers, trapping supply dealers, or any associated multiplier effects. For example, approximately 177,000 licensed trappers in the United States, each spending an average of roughly $1,700 annually on trapping-related equipment (Responsive Management 2015), provided over $300 million in revenue to various businesses in 2014, in addition to conservation dollars generated through the sales of furbearer hunting and trapping licenses. Southwick et al. (2005) estimated that loss of furbearer hunting and trapping could cost United States taxpayers $132–265 million annually to address new damage and conflicts, conflicts that are often resolved through the removal of problem animals with the use of traps. Economic benefits must be weighed against potential conservation concerns, and the numbers are compelling given that modern trapping in North America is a highly regulated sustainable-use activity.

Financial and cultural benefits of trapping are often intertwined. Monetary considerations certainly play a role in fluctuations in trapper effort, but most avocational trappers do not rate income as their primary motivation for trapping (Responsive Management 2015). Rather, various personal factors often serve as the primary motivation, including interaction with nature, self-sufficiency or subsistence, and a rural lifestyle (Todd and Boggess 1987, Muth et al. 1996, Daigle et al. 1998, Zwick et al. 2007, Dorendorf et al. 2016). Although harder to quantify than financial benefits, trapping offers clear sociocultural rewards to individuals and indigenous and non-indigenous rural communities alike (Berkes et al. 1994, Brown et al. 1995, Muth et al. 1996, Daigle et al. 1998, Inoue 2001).

Indirect and Direct Benefits of Trapping to Management and Conservation

The sociocultural importance of trapping to many individuals and communities explains their desire for a close connection to the outdoors and nature interaction, and may explain why Kellert (1980) found avocational trappers to be highly knowledgeable about nature, second only to birdwatchers among the groups he compared. As such, trappers can serve as effective conservation collaborators or citizen scientists (Webb and Anderson 2016, Suffice et al. 2017). Affording the opportunity for regulated sustainable use of wildlife by those that choose to partake in the activity can expand the conservation support base and lead to stronger and more lasting support for the conservation of those species and their habitats (Hutton and Webb 2002, Prins et al. 2002, Abensperg-Traun 2009, Conrad 2012).

Whether avocational trapping plays a role in either the short- or longer-term reduction of various human-wildlife conflicts (e.g., property damage, livestock depredation, human health and safety) involving furbearers depends on many factors that vary temporally and spatially, including fluctuating pelt prices, number of active trappers, land access, and the type of conflict. Hence, broad generalizations about the effectiveness of avocational trapping at reducing human-wildlife conflicts are unwise. There are, however, sound arguments as to why avocational trapping can and does at times benefit management (Conover 2001), and strong correlative examples of extensive trapping restrictions leading to increased human-wildlife conflicts. For example, following substantial trapping restrictions, there was an estimated tripling of beaver population size in Massachusetts, USA, over 5 years and an associated significant increase in damage and complaints (Jonker et al. 2006, Organ et al. 2015).

Avocational trappers (or trapping in general) need not have population-level effects on a species, or demonstration thereof, to justify their potential role or value in reducing localized damage and conflicts. A majority of avocational trappers have been contacted by landowners to help alleviate a wildlife conflict, and 70% indicate they have assisted landowners with removal of nuisance furbearers (Responsive Management 2015). Furthermore, given that wildlife disease transmission is often density dependent, trapping, be it by avocational, incentivized, or government-employed trappers, can play a role in the reduction of disease prevalence or transmission and any associated human health and safety concerns (Todd et al. 1981, Voight and Tinline 1982, Rosatte et al. 1986, MacInnes 1987). Traps of various types are also critical tools for nuisance animal control businesses, a large and growing industry often addressing societal concerns related to property damage and human health in both rural and urban settings.

Traps and trapping are also an important component of wildlife research and conservation (Schemnitz et al. 2009). Though not all research on furbearers involves capture and handling of animals, a substantial proportion does. Traps of all types, including cage traps, foothold traps, footsnares, and cable restraints are regularly used to live restrain many species for biological data collection and subsequent animal monitoring, research that is critical to ecological understanding and conservation of species. Whether through voluntary collaboration or incentivized participation, avocational trappers often play an integral role in these capture efforts and in our experience often do so in a highly cost-effective manner; we are aware of several ongoing furbearer research projects relying exclusively on avocational trappers for animal capture (Roberts and Olfenbuttel 2019). Finally, though wildlife harvest is rarely if ever initiated or justified solely for the purpose of data collection, biologists often collect important data from harvested furbearers that are useful in managing and conserving those species (Hiller et al. 2018), again at substantially lower costs than required when obtaining the same information from targeted research projects. For example, 35 states use harvest-derived data (e.g., harvest locations, catch per unit effort, biological samples) to assist with monitoring distribution, trends, demographics, or health of North American river otters (Roberts et al. 2020), and this harvest is consistent with broader conservation goals. The International Union for Conservation of Nature considers the North American river otter, for which regulated harvest is allowed in 40 states and all provinces, a species of least concern and stable and classifies the remaining 12 species of otters occurring elsewhere in the world to be near threatened and declining at best. For many furbearers, harvest-based data are cost effective to obtain and often the only information available with sufficient sample sizes for more robust analyses regarding the distribution, abundance, and health or condition (e.g., parasite or disease prevalence, reproductive output, genetics) of the population (White et al. 2015, Hiller et al. 2018, Roberts and Olfenbuttel 2019).

Traps are also used to capture wildlife species for reintroduction or restoration efforts. This has allowed species once extirpated from portions of their historical range to return, flourish, and benefit native ecosystems. Examples of successful reintroductions in the United States facilitated by the use of the various trap types, and usually including assistance from avocational trappers, include North American river otters (Shirley et al. 1983, Serfass et al. 1996, Erb et al. 2018), gray wolves (Fritts et al. 1997), red wolves (*Canis rufus*), American beavers (Couch 1932, McKinstry and Anderson 1998), fishers (Berg 1982), American martens (*Martes americana*; Berg 1982), bobcats (*Lynx rufus*; Warren et al. 1990), and Canada lynx (Devineau et al. 2011). Trapping to reduce predation has also been shown to improve nesting success for comparatively common species (e.g., waterfowl; Anthony et al. 1991, Pieron and Rowher 2010), and more importantly, for the protection of >30 threatened or endangered species including various turtle species, whooping cranes (*Grus americana*), and many other aquatic and terrestrial species of plants and animals (see White et al. 2015 and Organ et al. 2015 for relevant examples and citations).

In addition to use in protection efforts for individual species, trapping can be an integral component in the protection of larger ecosystems. The nutria (*Myocastor coypus*), a non-native semi-aquatic mammal in the United States, has caused significant coastal marsh damage along the Atlantic coast in Maryland, the Gulf Coast sections of Louisiana, and along the coast in the Pacific Northwest. These areas provide habitat to over 15 million waterbirds, 1 million alligators (*Alligator mississippiensis*), and more than 10 threatened or endangered species. Nutria denude marshes through excessive herbivory. In Louisiana, nutria damage had been largely contained from 1962–1982 by regulated avocational trapping (Marx et al. 2004). When fur prices and avocational trapping declined in the 1980s, loss of wetlands became a growing concern. In 2002, wildlife officials in Louisiana initiated an incentivized trapping program to reduce nutria populations, supplementing the fur value with payments to registered trappers of US $4.00–$5.00 per animal. In 2003–2004, 346 trappers removed 332,596 nutrias from target areas (Marx et al. 2004). These programs have assisted in overall efforts to protect and restore large areas of fragile costal marsh ecosystems, and similar efforts have resulted in apparent eradication of nutria in Chesapeake Bay, Maryland (U.S. Fish and Wildlife Service 2016).

It is our view, similar to position statements from The Wildlife Society (2019) and the American Association of Wildlife Veterinarians (2007), that traps and regulated trapping programs provide personal or cultural rewards, can also facilitate or translate to conservation support, and can assist with advancing ecological knowledge, protecting endangered species, restoring populations or habitats, protecting personal property, and enhancing public health and safety. Traps, trapping techniques, and their associated values remain poorly understood or of concern to many people and it is imperative to continue to address concerns and knowledge gaps through public outreach, trapper education, adaptive management, ecological research, and continuing trap research and development.

Societal Concerns and Regulatory Challenges to Trapping

Public concerns about trapping are often associated with their perceptions about animal welfare and accidental captures during regulated trapping activities (Gentile 1987, Boggess et al. 1990, Andelt et al. 1999, Responsive Management 2002, Muth et al. 2006). Although trapping remains controversial, public support for regulated trapping in general is high (60–75%), but the level of support varies with the reason for capturing animals (Responsive Management 2001, 2016; Talling and Inglis 2009). Public acceptance of trapping may be increasing and higher for damage or population management than for other purposes, trends that seem consistent during past decades (Responsive Management 2001, 2002, 2016; Illinois Department of Natural Resources 2009). As noted above, however, the various motivations for trapping do not necessarily produce mutually exclusive benefits; avocational trapping or trappers can provide a cost-effective option for many wildlife conservation and management activities.

Foothold traps are very popular amongst trappers in the United States, with 86% of trappers using these devices in 2014 (Responsive Management 2015). The evolution of foothold traps has been difficult to document because early designs became popular >400 years ago and effective designs often remained in use for centuries (Gerstell 1985). Efforts to improve animal welfare and capture efficiency have also been occurring for nearly as long (Novak 1987*a*, Barrett et al. 1988, Boggess et al. 1990, Jotham and Phillips 1994). During the past several decades, ongoing improvements in traps and trapping techniques have resulted from technological advancements, scientifically based trap testing, improved trapper education programs, and regulatory refinements (International Association of Fish and Wildlife Agencies [IAFWA] 1997). Innovations include padded-, laminated-, and offset-jaw foothold traps, pan-tension devices to improve foothold trap selectivity, cable-restraints and associated breakaway (selectivity) devices (Olson and Tischaefer 2004, Association of Fish and Wildlife Agencies [AFWA] 2009, Tischaefer and Olson 2015), footsnares, lethal bodygrip (i.e., rotating-jaw) traps, foot-encapsulating traps designed to reduce injury and be highly selective for northern raccoons and Virginia opossums (*Didelphis virginiana*), and specialized cage or box traps.

In the United States, management of furbearers is under the authority of individual states and tribes, although federal management is also involved for species listed under the Convention on International Trade of Endangered Species (CITES 2013) and the Endangered Species Act of 1973 (U.S. Fish and Wildlife Service 2013). States require the flexibility and autonomy to design management programs that work within their legal frameworks, and for the diverse species, land uses, climates, and socioeconomic conditions in their jurisdiction. Given this diversity across jurisdictions, furbearer management needs and harvest regulations are spatially variable (Novak et al. 1987; AFWA 2007, 2016). However, challenges to trapping and furbearer management programs have occurred in all regions of the United States and have eroded state management authority through ballot initiatives and other legislative processes (Minnis 1998, Muth et al. 1998, Batcheller et al. 2000), and these challenges continue today (Hiller and Ahlers 2019).

An international challenge to modern furbearer management came with the 1991 Wild Fur Regulation (Regulation 3254/91) by the European Commission, designed to take effect in 1995 (European Commission 1991). Animal rights groups, following their success with an anti-sealing campaign during the 1980s against a relatively unorganized opposition (Dauvergne and Neville 2011), advanced the regulation. The Wild Fur Regulation prohibited use of foothold traps in many European countries. It also prohibited the importation of furs and manufactured fur products to Europe from countries that allowed use of foothold traps that did not meet internationally agreed-upon humane trapping standards (European Commission 1991, Hamilton et al. 1998, Harrop 1998, Andelt et al. 1999). Several issues arose with this regulation including a lack of agreed-upon humane trapping standards, and that international treaties and trade agreements are negotiated at the federal level in the United States but management authority for wildlife resides primarily with states and tribes.

Prior to the Wild Fur Regulation, Canadian officials had been working with the International Organization for Standardization (ISO) to form a multi-country (including the U.S.) technical committee of scientists and managers to develop international standards for humane trapping, including acceptable thresholds for injury from capture in restraining traps and times-to-death for species captured using killing systems (Hamilton et al. 1998). Despite failing to agree on performance thresholds (see Hamilton et al. 1998 for further explanation), the committee did eventually agree upon international trap-testing protocols for both restraining and killing traps (ISO 1999*a*, *b*).

Based on the original proposed ISO testing standards, the European Union, Canada, the Russian Federation, and the United States negotiated the Agreement on International Humane Trapping Standards (AIHTS) in 1997, which was ratified by the European Union in 1998, by Canada in 1999, and by the Russian Federation in 2008 (Council of the European Union 1998, European Commission 1998*a*, Talling and Inglis 2009). The United States did not sign this treaty agreement because of the constitutional issue related to autonomous state and tribal management authority for resident wildlife. Instead, the United States and the European Union reached an understanding memorialized as an Agreed Minute (European Commission 1998*b*), a non-binding diplomatic construct that referenced the international trap-testing standards appended to the AIHTS and the ISO standards that were under development. Furthermore, the United States conveyed by side letter the existing intent of the states to develop trapping best management practices (BMPs) for each of the 23 species of furbearing animals in North America. The United States also pledged a good-faith effort to support education and research related to improving animal welfare in United States trapping programs (IAFWA 1997, European Commission 1998*b*, Andelt et al. 1999, Fall 2002). The AIHTS and Agreed Minute were the first systematic international efforts to address concerns about animal welfare and trapping, but only the United States BMP program also included evaluation of trap efficiency, selectivity, practicality, and user safety (AFWA 2006).

Best Management Practices for Trapping

Best management practices are widely used in agriculture, forestry, and industry to promote best practices and techniques associated with specific activities. Broadly, BMPs have been described as "a method to improve an activity or set of activities by developing recommendations based on sound scientific information, while maintaining practicability" (IAFWA 1997:4). Conceptualization and early development of the trapping BMP process began prior to the European Union regulation, to proactively improve and sustain trapping and furbearer management programs, address concerns emerging within several states, and improve trapping technology in a systematic and well-documented manner. This effort was adopted in the United States by IAFWA (now known as AFWA), and the European Union regulation later added urgency to BMP development.

Because available data on species-specific trap performance were either sparse or based on varying methods, the BMP process required designing and implementing a field-based trap-testing program coordinated by AFWA and cooperating state agencies. We designed BMPs to allow integration of existing and new information into an overall set of recommendations that might facilitate jurisdictional consistency using the best available science, while recognizing the autonomy of individual states for implementation (IAFWA 1997).

As part of developing trapping BMPs, we (now the AFWA Furbearer Resources Technical Work Group) established thresholds for certain trap-performance criteria (detailed in Methods). We developed these thresholds consistent with the procedural standards annexed to the 1997 understanding reached between the United States and the European Union (European Commission 1998*b*). Specific thresholds provide a common framework for evaluating traps, and hence progress toward the use of traps and trapping methods that meet animal welfare (and other) criteria.

Our broad objectives for the trapping BMP program were to 1) evaluate the performance of traps using a standardized, science-based, national-scale, and multi-species testing program; 2) stimulate continued development of improved trapping systems with respect to animal welfare, efficiency, and selectivity; 3) develop BMPs and encourage use of BMP-compliant devices by all trap users; 4) meet United States obligations pursuant to the Agreed Minute with the European Union; and 5) provide effective outreach to better demonstrate and maintain trapping (in its many forms) as a sustainable use of natural resources and an important tool for wildlife research and conservation, and human-wildlife conflict resolution. We focused on presenting 1) methods and processes used in development of BMPs, 2) species-specific trap performance, and 3) broad-scale patterns in trap performance metrics.

STUDY AREA

To address differential trap use across the United States (Responsive Management 2015) and to encompass a diversity of field conditions (e.g., land uses and cover types, weather, soil conditions) that may affect trap performance, we designed our study to include field testing in numerous states, and where appropriate and possible, in different regions we delineated

within the United States (Fig. 1). We selected study sites primarily based on population levels of the species of interest, levels of participation interest by individual state wildlife agencies, potential differences in biotic and abiotic conditions that may affect trap performance, and regulatory considerations.

Major land-use, land-cover types in Alaska (>1.7 million km^2) included shrub-scrub (24.6%), dwarf shrub (18.6%), evergreen forest (14.9%), and barren land (8.4%; Fry et al. 2011). Based on the Köppen climate classification, Alaska includes areas with primarily snow and cool, dry summers, snow with cool fully humid summers, and polar tundra (Chen and Chen 2013). Alaska had a human population of about 714,000 during 2010 (U.S. Census Bureau 2016).

The Great Plains-West region encompasses about 3.7 million km^2 and had a human population of about 86.3 million (U.S. Census Bureau 2016). Major land-use, land-cover types included shrub-scrub (44.3%), grassland-herbaceous (18.5%), evergreen forest (18.1%), and cultivated crops (7.3%; Fry et al. 2011). Climate in this area is diverse but included snow with fully humid and cool or hot summer (mountainous areas), dry with dry summers and cold arid climate (interior non-mountainous areas), and mild temperatures with dry (warm or hot) summers (coastal areas; Chen and Chen 2013).

The midwestern portion of the United States covers about 2.3 million km^2 with a human population of 70.7 million (U.S. Census Bureau 2016). Major land-use, land-cover types included cultivated crops (36.7%), grassland-herbaceous (20.0%), deciduous forest (14.0%), and pasture-hay (10.4%; Fry et al. 2011). The area is characterized by a dry, cold and arid climate with dry summers in the west; snow with fully humid, hot summers in the central section; and mild temperatures with fully humid, hot summers in the south (Chen and Chen 2013).

The northeastern portion of the United States covers 0.5 million km^2 with a human population of 62.7 million (U.S. Census Bureau 2016). Major land-use, land-cover types included deciduous forest (34.4%), mixed forest (11.9%), evergreen forest (9.6%), and pasture-hay (9.3%; Fry et al. 2011). This area is dominated by mild temperatures with fully humid, hot summers, with the far northern section including snow with fully humid, warm summers (Chen and Chen 2013).

The southeastern portion of the United States has about 87.5 million humans within about 1.6 million km^2 (U.S. Census Bureau 2016). Major land-use, land-cover types included deciduous forest (23.0%), evergreen forest (13.8%), pasture-hay (12.7%), and woody wetlands (11.2%; Fry et al. 2011). Climate in the southeastern United States is predominately mild temperatures with fully humid, hot summers (Chen and Chen 2013).

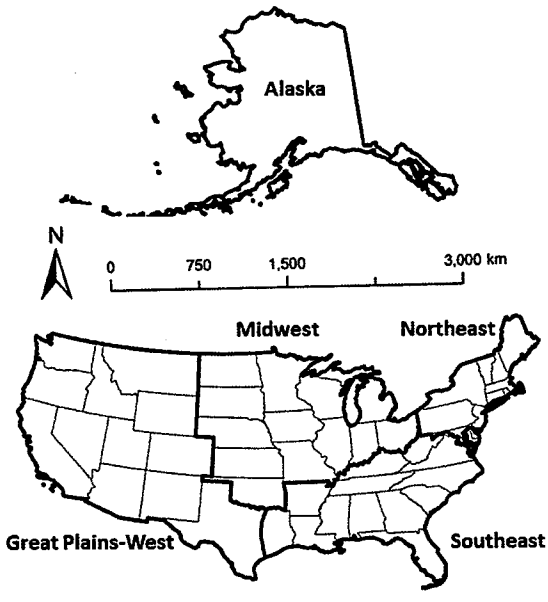

Figure 1. The study area used for trap testing to develop best management practices for trapping included the conterminous states and Alaska, USA, 1997–2018. We conducted testing of each trap model in ≥1 or more of 5 regions: Alaska (AK), Great Plains-West (AZ, CA, CO, ID, MT, NV, NM, OR, western TX, UT, WA, WY), Midwest (IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, OK, SD, WI), Northeast (CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT), and Southeast (AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, eastern TX, VA, WV).

METHODS

Because the initial focus of research conducted by parties to the AIHTS, primarily Canada, was the evaluation of killing-trap performance pursuant to ISO protocols, the United States BMP research program focused on evaluation of live-restraining traps. Nonetheless, killing trap welfare (time-to-death) data collected in Canada (Fur Institute of Canada 2017*a*) were shared with us and traps were included in BMPs if they met our thresholds for welfare and efficiency; data on killing-trap efficiency were collected as part of BMP research in the United States. Because we are not at liberty to publish the killing-trap welfare data collected by Canada, we report only our research on performance of live-restraining traps.

Types of Restraining Traps

Restraining traps are capture devices "...designed and set with the intention of not killing the trapped animal, but restraining its movements to such an extent that a human can make direct contact with it" (European Commission 1998*b*:28). We evaluated 4 types of restraining traps for mammals: foothold traps, foot-encapsulating traps, cage traps, and 1 model of spring-activated footsnare (Fig. 2; see Proulx 1999 and AFWA 2006 for comprehensive trap descriptions). Systematic testing on a fifth type of live-restraining trap, cable-restraints, is ongoing and results will be published separately when sufficient data have been collected.

Foothold traps (Figs. 2A and 2B) typically have 2 jaws that are 180 degrees apart when in the set position (Fig. 2B [left]), and close to 90 degrees when the trap is activated (Fig. 2B [right]). We tested numerous models of foothold traps with different types of jaws (Fig. 3). Footsnares (Poelker and Hartwell 1973, Englund 1982, Skinner and Todd 1990, Shivik et al. 2000) are spring-activated cables used to capture and hold medium- and large-sized mammals by a foot (Fig. 2C). Cage traps are manufactured in an array of sizes suitable for many mammalian species (Fig. 2D), and are constructed of wire or nylon mesh, wood, plastic, or metal, with a treadle or other triggering device that activates ≥1 gravity- or spring-operated door. Foot-encapsulating devices generally have a reach-in pull-trigger that

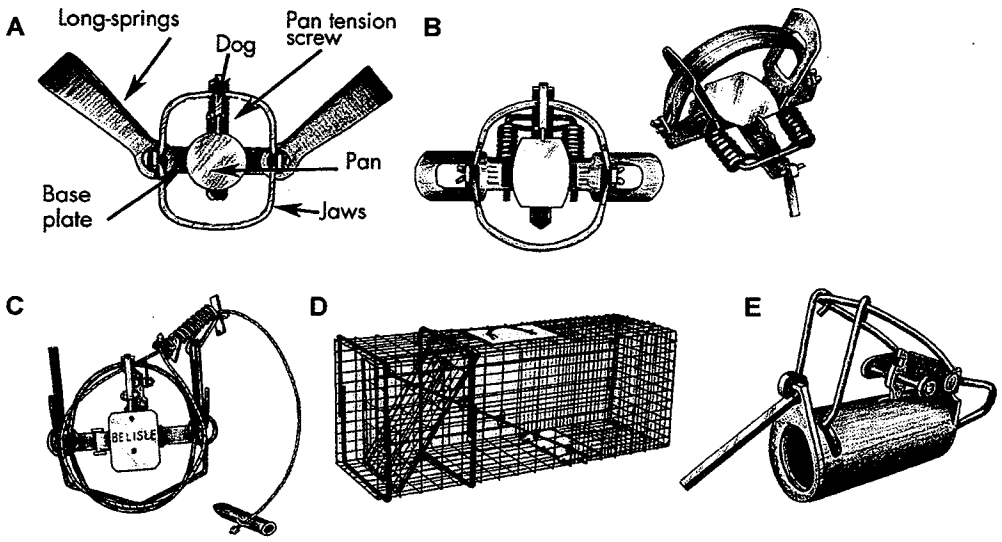

Figure 2. Examples of restraining traps tested during development of best management practices for trapping included the A) double-longspring foothold trap (with description of major components), B) coil-spring foothold trap (left = activated), C) power-activated footsnare, D) wire-mesh cage trap, and E) foot-encapsulating trap.

releases a small rod or plate that secures the animal's foot against and inside a plastic or metal trap housing designed to protect the captured limb from torsion or self-directed biting (Fig. 2E); a few models have triggers that activate using either a push or pull trigger design. Foot-encapsulating traps were designed by trappers to selectively capture raccoons with minimal injury.

Prioritizing Testing Efforts

We conducted a comprehensive survey of state and provincial wildlife agencies (IAFWA 1992) to collect information on ownership and use of traps, costs of wildlife damage control, and trapping regulations. Based on these results, a review of published literature, and consultation with experienced trappers, veterinarians, and statisticians, we designed and implemented a long-term, nationwide study to evaluate traps and trapping systems. We initially prioritized testing of individual models of restraining traps based on their commercial availability, relative use among trappers both regionally and nationally, and potential benefits for addressing concerns about animal welfare.

We also prioritized testing on the 23 furbearing species listed in the Agreed Minute based on numerous criteria (e.g., magnitude and economic value of harvest, level of wildlife conflicts, quality of existing data) and ranked testing for each species as high, medium, or low priority (Table 1; IAFWA 1997). The prioritization process resulted in testing a large number of restraining traps for some furbearing species, and few models for

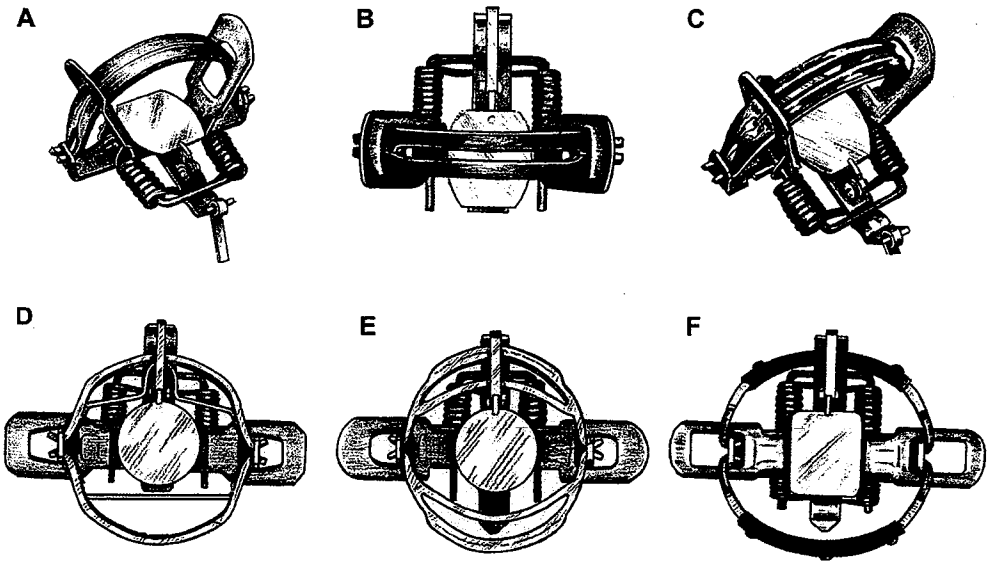

Figure 3. Examples of different types of jaws on foothold traps: A) standard, B) offset, C) offset and outside-laminated, D) asymmetrical double, E) symmetrical double, and D) padded.

Table 1. Priority ranking for best management practices trap testing on furbearing species in the United States, 1997–2018. Rankings were based on factors such as number harvested, number of conflicts with humans, and quality of existing data. Asterisk denotes species for which testing of live-restraining devices has been conducted.

High	Medium	Low
American and Pacific marten	American badger*	Arctic fox*
American mink	American beaver*	Canada lynx*
Coyote*	Bobcat*	Ringtail*
Gray fox*	Fisher*	Weasel spp.
Muskrat*	Gray wolf*	Wolverine
Northern raccoon*	North American river otter*	
Nutria*	Striped skunk*	
Red fox*	Swift fox and kit fox*	
	Virginia opossum*	

other species. For example, no BMP testing has been conducted using foothold traps for live restraint of American (or Pacific [*Martes caurina*]) marten, American mink (*Neovison vison*), or weasels (*Mustela* spp.) because these sets are not commonly used for these species (Responsive Management 2015). Similarly, testing of restraining traps was comparatively limited for some semi-aquatic species (e.g., American beaver, muskrat) because most trapping for these species uses either lethal bodygrip traps (Responsive Management 2015) or lethal trapping systems (e.g., submersion systems incorporating foothold traps). In addition, though we have commenced with an effort to develop a wolverine (*Gulo gulo*) trapping BMP, we have not yet tested any live-restraining traps on this species.

Field Data Collection

We collected furbearers from trappers in 33 states and across all regions of the United States from 1997–2018 (Tables S3–S38, available online in Supporting Information). We followed standardized testing protocols established by ISO (1999*b*) for restraining traps, as described in the Agreed Minute between the United States and European Union (European Commission 1998*b*). We used 2-person teams that consisted of 1 trapper and 1 field technician to test ≥1 model of restraining trap on each testing project we conducted. Through various agreements, experienced state-licensed avocational trappers participated in the effort and provided animals they had captured during normal regulated trapping seasons in their state. Trappers followed any manufacturer's instructions for the restraining traps and used their own knowledge and experience in the field. Technicians trained in the field protocol accompanied trappers to record data, mark captured furbearers, and ensure that trappers followed the study design. We recruited up to 4 trapper-technician teams in each participating state for each testing project. We prioritized recruitment of participants in areas with relatively abundant populations of the species of interest, and selected experienced trappers willing to participate in their state or region. When possible, we also selected trappers from different geographic locations within a state or region to encompass a broader range of trapping conditions.

To avoid confusion or potential bias, we trained each team to follow our study design and, when necessary, familiarized them with the specific models of restraining traps being evaluated. We trained technicians to collect data, maintain accurate records on standardized data sheets, and label and prepare animals for post-mortem examination. To gain additional insight into trap performance, we also interviewed trappers at the end of each trap-testing period.

We instructed technicians to ensure that trappers set traps in pairs, which we refer to as a trap station (Fig. 4). To avoid trap-selection bias, each trapper selected a location for a trap station and then the technician randomly assigned a specific restraining trap (i.e., manufacturer, model, size; hereafter, trap model) from the set of trap models (Appendix A) they were testing. Trap locations within a trap station were 3–10 m apart at the discretion of the trapper. Trap stations were a minimum distance of either 30 m (for Canada lynx in Alaska, coyotes in the Great Plains-West region, and northern raccoons in all regions) or 100 m (all other instances) apart to increase spatial independence. The reduced distance for some species-region combinations was intended to accommodate typical trap setting practices (i.e., multiple traps in patches of good habitat) that trappers preferred in those situations, relying on the local landscape features (e.g., dense cover, topography, creek banks, waterway sinuosity) often present in those areas to help ensure reduced visibility or behavioral influence of other animals captured at nearby trap stations. After a trapper established all of their trap stations, they selected 2–4 alternative locations for trap stations to allow for relocation of traps during testing, if

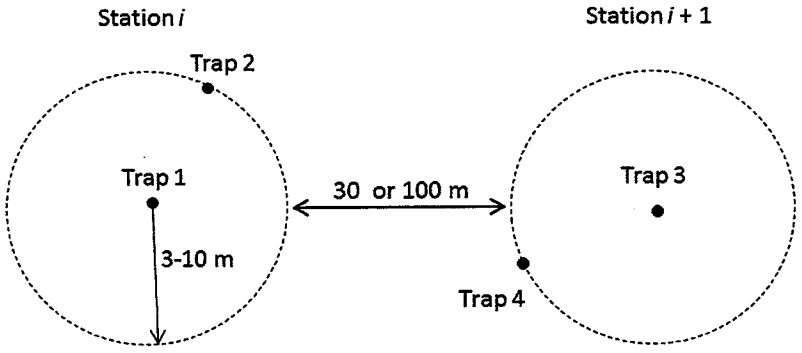

Figure 4. Trap-placement design for live-restraining devices used on furbearers during development of best management practices for trapping in the United States, 1997–2018. Each trapline consisted of a series of stations, with distance between pairs of stations either 30 m (raccoons, coyotes, Canada lynx) or 100 m (all other species).

necessary. A trapper could relocate a trap within the boundary of a given trap station at any time, but if a trapper relocated a trap outside of a trap station, the design specified that both traps be relocated. If an alternative location for a trap station was necessary, the technician randomly selected 1 of those alternatives for the trapper.

Testing of individual trap models proceeded for a predetermined duration (usually 10, 14, or 21 days) that was dependent on the estimated time required to meet capture quotas assigned to individual trappers. If a trapper met their capture quota for the focal species before the end of the time allocated, the team ceased collecting animals. If an individual trapper was unable to meet their capture quota, we asked 1 or more trappers within that state or region to capture more than their quota to meet minimum desired sample sizes.

We required trappers to check each trap and remove any animals once each day before 1200 hours. Trappers used a gunshot (.22-caliber) to the head to dispatch furbearers captured in restraining traps (Sikes et al. 2011, American Veterinary Medical Association 2013). This method ensured rapid death and avoided damage to teeth, legs, or other body parts that could influence subsequent assessment of trap-related injuries. In an attempt to minimize spraying during 1 skunk-focused field project, trappers used hypoxia to dispatch striped skunks (*Mephitis mephitis*) captured in cage traps; they placed individual skunks in a closed chamber and exposed them to high concentrations of carbon dioxide (American Veterinary Medical Association 2013).

Technicians recorded information such as the species captured and restrained in the trap until inspection, any species captured but not restrained until inspection, any traps activated with evidence of a potential capture, any traps activated with no evidence of a potential capture, and any trap sites disturbed but with the trap not activated. For each dispatched furbearer, technicians recorded the foot (for foot-restraining trap types) by which the animal was restrained, the capture position on that foot (e.g., toe, metatarsal or metacarpal pad, wrist), and its physical condition (i.e., alive, dead, unconscious) when they checked the trap. Because our restraining-trap research was focused on injuries (including death) associated with the trap itself, we excluded from analysis animals that were already dead (or injured) upon trap inspection as a result of uncontrolled external variables (e.g., shot by another person, attacked by other animals, hypothermia, accidental drowning). However, if there was no apparent cause of death (e.g., bite marks, bullet hole, dead animal in water), we assumed the death was from trap-related stress or injury. Technicians marked each dispatched furbearer with a unique identification number, secured the animal in a sealed plastic bag, and placed it in a freezer until post-mortem examination by a wildlife veterinary pathologist. Trappers released non-furbearing species (domestic or wild) and any furbearers with closed seasons or otherwise not legal to trap at that time in the state where testing occurred. Technicians ensured that any captured domestic dog (*Canis familiaris*) or cat (*Felis catus*) was returned to the owner, when located, and received any necessary medical treatment.

We often designed testing projects for 1 focal species, but on many projects, trappers set traps targeting multiple furbearing species to allow trapping methods they commonly employed, and to increase overall BMP project efficiency. Exceptions included testing on Arctic foxes (*Vulpes lagopus*) and gray wolves, which always targeted a single species. Because of their more limited distribution (Audet et al. 2002) and logistical challenges, we captured Arctic foxes on Saint George Island, Alaska, under a scientific collection permit (#15-026) issued by the Alaska Department of Fish and Game and a Land Use Permit issued by the Saint George Tanaq Corporation, and with permission of the Saint George Tribal Council. Most gray wolves were captured outside normal harvest seasons as part of authorized depredation control programs in the lower 48 states. Therefore, data collected while trapping gray wolves may not be reflective of seasonal conditions (e.g., species availability, behaviors) normally experienced on avocational traplines. Open-access species-specific BMP documents (AFWA 2017*a*) may include additional models of restraining devices, a result of ongoing research and because testing of a few restraining devices occurred exclusively by Canada through the AIHTS (Fur Institute of Canada 2017*b*) and we are not at liberty to publish those data.

Laboratory Data Collection

Wildlife veterinary pathologists, many already experienced with evaluating trap-related injuries, cross trained on established procedures to conduct comprehensive whole-body post-mortem examinations of captured furbearers. To avoid potential bias, pathologists had no knowledge of the trap model used for any specimens prior to examination, or (for foot-restraining traps) the specific foot by which the animal had been restrained. On a random sub-sample of specimens, pathologists used information from x-ray of limbs to verify visual observations during examinations. Pathologists reported results using ISO methods for scoring specific injuries from restraining traps (ISO 1999*b*). Although not assigned injury points in and of itself, we also noted presence or absence of any self-directed biting on all animals during post-mortem examinations.

Criteria to Evaluate Restraining Traps

We evaluated restraining traps based on 2 quantitative criteria (animal welfare, capture efficiency) that had threshold values for approval in the BMP program. We required a minimum sample size of 20 individuals of a given furbearing species per trap model (European Commission 1998*b*) to evaluate animal welfare and capture efficiency. An exception to this could occur when the sample size was nearly met (e.g., ≥ 17) but injury scores were such that collection of additional samples to reach the minimum of 20 was unlikely to have changed the animal welfare pass-fail status of that trap. Although we did not develop a hard rule, our exception assessment was based on comparison of the maximum (or minimum) score that each additional animal would need to have to alter the pass-fail status of the trap to the observed maximum (or minimum) for that trap-species combination; details of any exceptions ($n = 2$) are provided in species-specific results.

We also computed a quantitative measure of furbearer selectivity, though we did not establish a selectivity threshold value for approval in the BMPs. The BMP process also included

2 qualitative criteria (practicality, user safety) that we do not discuss further except to note that we did not exclude any restraining devices from BMPs solely because of either of these criteria.

Animal welfare.—We acknowledge that the issue of animal welfare is complex and involves physical injury and other considerations (e.g., pain, distress). However, we selected injury as the primary criterion to evaluate animal welfare based on the recommendations of ISO. Other potential methods or components of welfare might include criteria related to behavior, physiology (stress), immunology, and molecular biology, but the ISO process concluded there was insufficient knowledge or technology to incorporate those potential metrics (ISO 1999*b*: Annex A, Scope 1, paragraph 1.2). Likewise, we remain unaware of any cumulative metric that encapsulates all of these considerations, can be reliably measured in typical field situations, and that is science-based with a broadly accepted threshold for acceptance. For these reasons, we focused on quantifying and comparing injury levels across trap models using standardized ISO scoring protocols, with a goal of improving animal welfare in trapping.

The ISO testing-standard development did not result in international agreement on acceptable injury thresholds (Hamilton et al. 1998) but described 2 trauma scales for summarizing injury (ISO 1999*b*). The first method uses a cumulative point-scoring system for injuries and assigns points (0 to 100; Table 2; see also Table S1, available online in Supporting Information) to each specific injury incurred. The second system uses ISO trauma categories (mild, moderate, moderately severe, and severe) pre-determined (Table 2) for each injury.

We derived BMP criteria and thresholds based on the level of injury that we deemed unlikely to directly or indirectly (i.e., through behavioral changes) have a meaningful effect on subsequent survival or reproduction for >70% of the animals. The ISO injury assessment requires whole body examination of dead animals, so we were unable to correlate observed injury scores with subsequent survival and reproduction of trapped animals. Instead, we relied on expert opinion of some individuals on our committee who had been involved in the ISO process, along with that from other experienced biologists and wildlife veterinary pathologists in the United States. Per ISO protocol, we recorded and assigned each injury the associated ISO injury score and to the associated injury class (Tables 2 and S1). We then calculated a cumulative injury score for each individual and the average cumulative injury score for each species-trap combination. We adopted a 2-part BMP threshold that takes into account the most severe injury an animal sustained and the totality of injury. For a trap model to meet BMP welfare criteria for a species, the mean cumulative injury score must be ≤55 points (hereafter, injury-score criterion) and ≥70% of individuals in the sample must have either no injuries, or injuries categorized only as mild or moderate (hereafter, lower-trauma criterion).

Capture efficiency.—We calculated species-specific capture efficiency for each trap model as the number of captures of the focal species divided by the number of potential captures of that species (described as capture rate in ISO [1999*b*]). We defined a potential capture to be when a given species activated a trap and 1) was never restrained, 2) was captured but not restrained until trap inspection, or 3) was captured and restrained until the trap was inspected (Linscombe and Wright 1988, Phillips et al. 1992, ISO 1999*b*). We defined an activated foothold or foot-encapsulating trap as one having been sprung (i.e., trap jaws or strike bar in closed position) by the focal species, an activated footsnare as one where the cable loop was at least partially closed by the animal, and an activated cage trap as one with the door closed. When a trap was activated without a capture, trappers examined tracks and other evidence at trap stations to identify species. If the trapper could not reasonably identify the species that had activated the trap, we considered the species unknown and we did not use those activations in the calculation of capture efficiency.

Table 2. Description of individual injury scores and associated trauma classes delineated in International Organization for Standardization (1999*b*) protocols and used for assessing trap-related injuries during post-mortem examination of furbearers captured during development of best management practices for trapping in the United States, 1997–2018.

Trauma category observation	Trauma score (points)
No trauma	0
Mild	
Claw loss	2
Oedematous swelling or hemorrhage	5
Minor cutaneous laceration	5
Minor subcutaneous soft-tissue maceration or erosion (contusion)	10
Major cutaneous laceration, except on foot pads or tongue	10
Minor periosteal abrasion	10
Moderate	
Severance of minor tendon or ligament (each occurrence)	25
Amputation of 1 digit	25
Permanent tooth fracture exposing pulp cavity	30
Major subcutaneous soft-tissue maceration or erosion	30
Major laceration on foot pads or tongue	30
Severe joint hemorrhage	30
Joint luxation at or below carpus or tarsus	30
Major periosteal abrasion	30
Simple rib fracture	30
Eye lacerations	30
Minor skeletal muscle degeneration	30
Moderately severe	
Simple fracture at or below carpus or tarsus	50
Compression fracture	50
Comminuted rib fracture	50
Amputation of 2 digits	50
Major skeletal muscle degeneration	55
Limb ischemia	55
Severe	
Amputation of ≥3 digits	100
Any fracture or joint luxation on limb above carpus or tarsus	100
Any amputation above digits	100
Spinal cord injury	100
Severe internal organ damage (internal bleeding)	100
Compound or comminuted fracture at or below carpus or tarsus	100
Severance of major tendon or ligament	100
Compound rib fractures	100
Ocular injury resulting in blindness of an eye	100
Myocardial degeneration	100
Mortality	100

On the assumption that commonly used traps deployed by experienced avocational trappers were providing minimally acceptable efficiency (i.e., they were voluntarily being used), we, in consultation with experienced trappers and national trapping organizations, examined preliminary efficiency data from typical trap lines to establish a BMP threshold. To pass our BMP efficiency criterion, we required that the trap capture and restrain ≥60% of the individuals of the focal species that activated it.

Selectivity.—Selectivity is an important trap performance metric, with a goal of minimizing the number of captures of protected or non-furbearing species. We calculated trap-specific furbearer selectivity by dividing the total number of captures of furbearers that were legal to harvest by the total number of captures of all species (ISO 1999*b*; AFWA 2006). We used furbearer selectivity, as opposed to species-specific selectivity, for 2 reasons. First, our testing effort (e.g., number of projects, geographic locations) for specific traps was asymmetric within and across species, confounding interpretation of species-specific trap selectivity and reducing the value of species-trap model comparisons from our dataset. Second, the intent of trappers, and therefore the goal of many of the BMP field projects, was often to set a particular trap in a manner that facilitates capture of multiple furbearing species that are legal within a given jurisdiction during the regulated harvest season; species-specific selectivity would not have reflected the design of many projects we undertook. Hence, our measure of furbearer selectivity is trap-specific (i.e., not trap × target species-specific), and represents average furbearer selectivity for that trap model under the varying conditions (e.g., variable species diversity, land uses, climate) where it was tested during 1997–2018. The only exception to this is for Arctic foxes, where testing was conducted on an isolated island in which no other furbearers were present; lumping data from this project with other projects where the same trap models had been tested did not seem appropriate, and furbearer selectivity thus equated with Arctic fox selectivity for this species.

Trap Evaluation

We largely use a descriptive approach (Guthery et al. 2001) to report and discuss results for restraining traps based on animal welfare, capture efficiency, and selectivity. For the injury-score and lower-trauma criteria, we graphically present distributional information using box and whisker plots and percent stacked bar charts, respectively. For efficiency and furbearer selectivity metrics, we computed exact binomial confidence intervals following Clopper and Pearson (1934). We collated numeric results for each of the 4 metrics, along with the states, years of testing, and number of trapper-technician teams used for each trap-species combination and the record of injury codes for each trap-species combination (Tables S2–S37, available online in Supporting Information). We identified whether a given model of restraining device met all BMP criteria, and where possible, we compared within-species relative performance of restraining device types tested, and also assessed spatial variability in performance for a given trap-species combination when possible as part of our broader analyses.

Although we required a minimum sample of 20 captures and necropsies (with the exception noted above) for determination of whether a trap passed BMP welfare and efficiency thresholds, for broader comparative value we report data for any trap with a species-specific sample size ≥8 and regardless of whether the trap is commonly used by trappers to target that species. For some species-trap combinations, capture sample size used to estimate efficiency exceeded the number of animals necropsied. This occurred because some animals that could be included as captures for efficiency calculations were either unavailable for post-mortem examination (e.g., killed or scavenged while in trap, damaged or destroyed because of freezer failure prior to necropsy) or were not necropsied for budgetary reasons when captured during field projects in subsequent years after the minimum sample size requirement had already been met.

Because we focused our research design on species-specific trap testing and BMP development, we did not systematically test the same number, types, and sizes of traps on all species. Nonetheless, our collective dataset does allow for broader examination of patterns in trap performance. For instances where we tested a specific trap on the same species in multiple states or regions, and where sample sizes in each met our BMP requirements, we compared average cumulative injury scores using analysis of variance or independent 2-sample *t*-tests, depending on the number of groups. Where applicable, we used informal guidelines (Cumming and Finch 2005) to visually assess differences or patterns in injury scores and trap efficiency across taxonomic groups (we included striped skunks with the mustelids for simplification), broad body-size class assignments based on average species-specific weights from various literature sources (<2.0 kg [small species], 2.0–3.9 kg [medium-small], 4.0–6.9 kg [medium], 7.0–10 kg [medium-large], and >10.0 kg [large]), trap types (cage, foot-encapsulating, foothold, and footsnare), foothold trap jaw types (standard jaw, double jaw, offset or laminated jaw, and padded jaw), and trap sizes. We also examined the association between cumulative injury scores and incidence of self-directed biting using a Pearson correlation coefficient. Because our measure of selectivity was trap-specific, not trap × target species-specific, we focused our broad examination of selectivity data on those variables specific to the trap (i.e., trap type or size). In addition, we summarized selectivity and efficiency results based on whether we tested each trap model in only land sets, only water sets, or both. Our subsequent use of trap size is based largely on the common, albeit not rigorously standardized, nomenclature used by trap manufacturers (e.g., number 1.5, number 1.75). Although this nomenclature is typically associated with trap jaw spreads, it is not an actual measurement in itself. In cases where trap manufacturers used different naming nomenclature (e.g., MB550), we assigned those traps to the more common numbering system based on the typical range of jaw spreads in that trap size class.

RESULTS

We report performance data for 84 models of restraining traps across 19 furbearing species, or 231 trap-species combinations. Restraining devices we tested include 68 models of foothold traps, 9 models of foot-encapsulating devices, 6 models of cage traps, and 1 model of power-activated footsnare (Appendix A). We collected data from 1,970 trapper-technician teams, averaging 8.6 teams per trap-species combination (range = 1–29;

median = 8). We conducted whole body necropsies on 8,566 furbearers collected from trappers during 1997–2018, of which 0.5% of the animals were dead upon trap inspection from what we deemed trap-related stress or injury. For the 231 trap-species combinations, we had sufficient sample size (i.e., $n \geq 20$) to evaluate 173 combinations, of which 59% met all BMP criteria.

American Badger

Trappers captured 171 badgers (*Taxidea taxus*) in 9 different models of restraining devices, all foothold traps, in the Great Plains-West and Midwest regions; we conducted post-mortem examinations on 166. All foothold traps met BMP criteria for animal welfare and capture efficiency, but the sample sizes for 3 traps are currently insufficient for BMP inclusion (Fig. 5; Table S3). For devices that met sample size requirements, capture efficiency for each was >95% and furbearer selectivity was >89% (Fig. 5; Table S3). Post-mortem examination of captured badgers showed that >78% of animals in those trap models sustained injuries in the lower-trauma categories (Fig. 5). The most common injuries were mild edema, minor cutaneous laceration, and minor (superficial) soft tissue maceration; <4% of captured badgers showed evidence of self-directed biting and no mortalities occurred from trap-related stress or injury (Tables S1 and S4). Six restraining devices tested on badgers met all BMP criteria (Fig. 5; Table S3).

American Beaver

Trappers captured 144 beavers in 3 different models of restraining traps (2 models of cage trap [HAN, BTH], 1 model of foothold trap [MB750]; see Appendix A for trap code definitions) in the Midwest, Northeast, and Southeast regions; we conducted post-mortem examinations on 137. Cumulative injury scores for both cage traps met the injury-score criterion, whereas the MB750 failed this criterion (Fig. 6; Table S5). Greater than 97% of the animals sustained either no or mild injuries in cage traps, whereas 65% of beavers captured in the MB750 foothold trap sustained a severe injury (Fig. 6). Mild edema and minor periosteal abrasion were common in all traps, with additional common injuries in the foothold trap being minor and major cutaneous laceration, minor and major

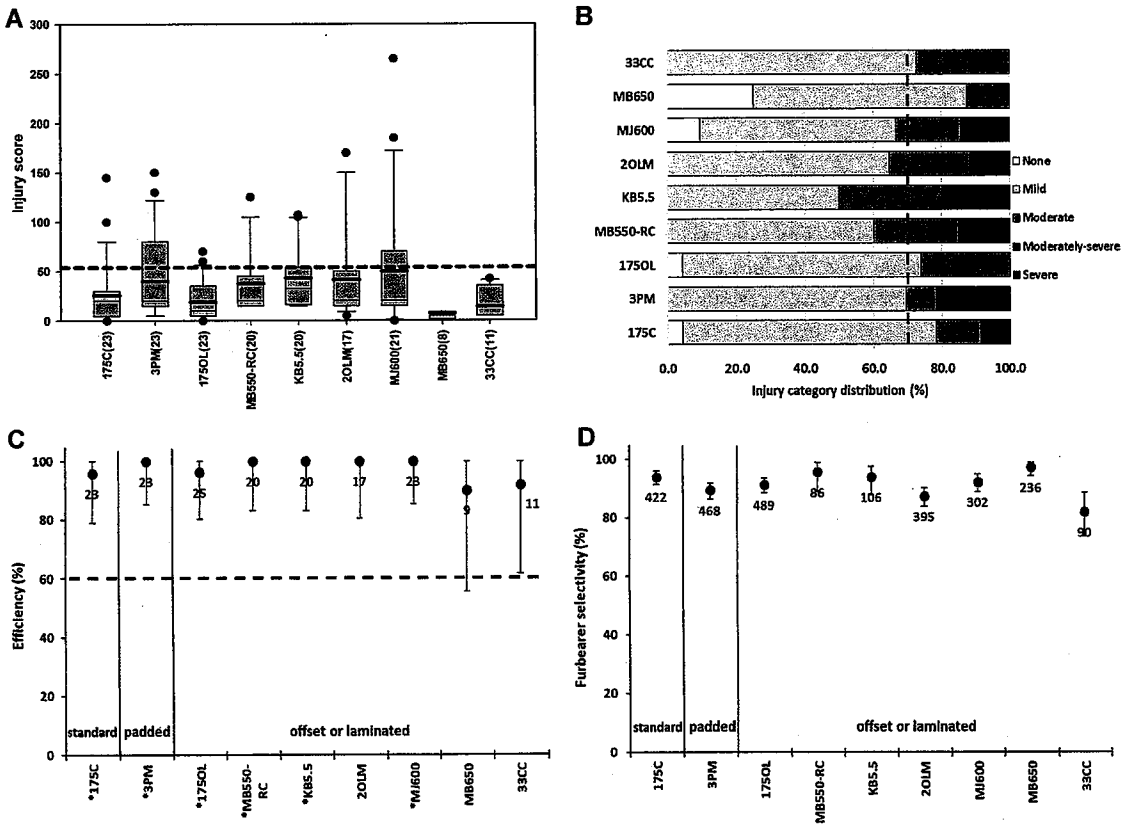

Figure 5. Trap performance profiles for live-restraining traps evaluated on American badgers from 1997–2018 during development of best management practices (BMPs) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of badgers captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of badgers captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

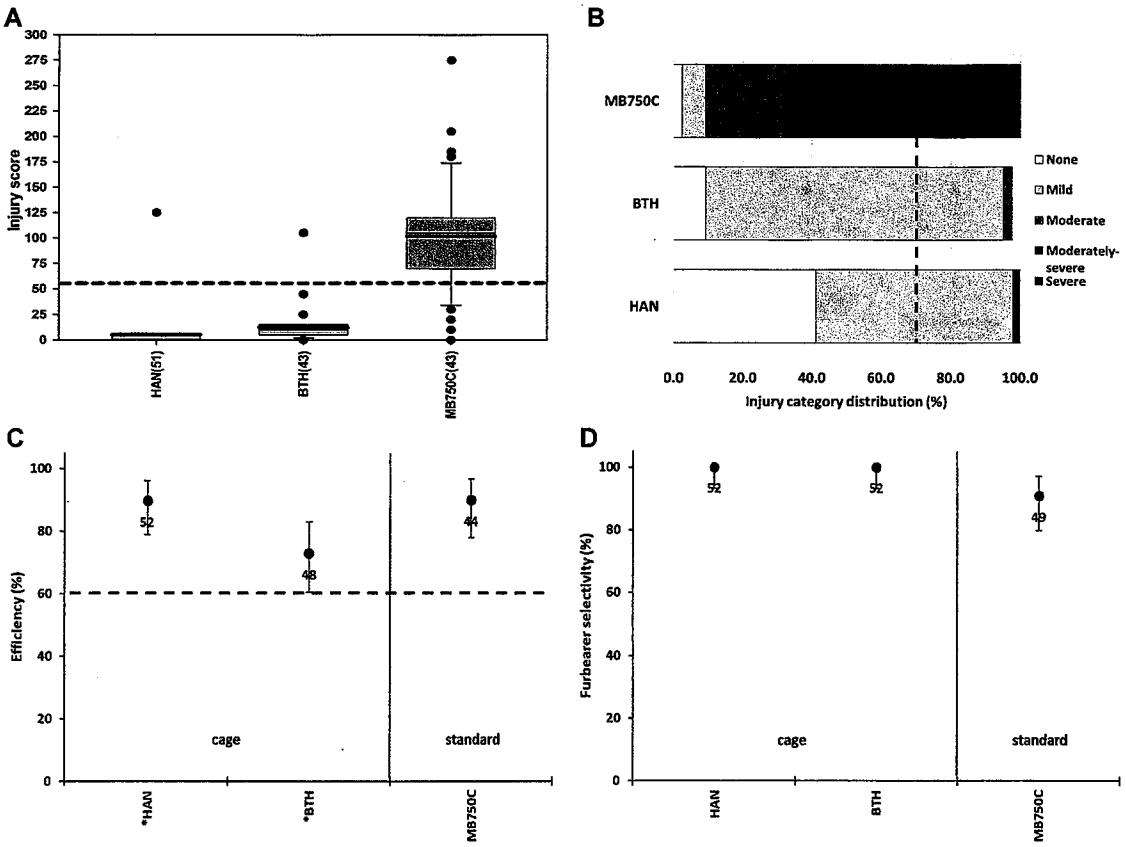

Figure 6. Trap performance profiles for live-restraining traps evaluated on American beavers from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of beavers captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of beavers captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

subcutaneous soft tissue maceration, and fracture or joint luxation above the carpus or tarsus (Tables S1 and S6). One of 138 beavers had evidence of self-directed biting, and 1 beaver (in the BTH) died from trap-related stress or injury (Tables S1 and S6). Efficiency in the BTH trap was lower than for the other 2 traps (73% vs. 90%), and furbearer selectivity was ≥90% for all 3 devices (Fig. 6; Table S5). Two of the 3 restraining devices (both cage traps) tested on beavers met all BMP criteria (Fig. 6; Table S5).

Arctic Fox

We captured 64 Arctic foxes in Alaska using 2 models of padded-jaw foothold traps (1P, 15P) and 1 model of cage trap (Cage 207; Appendix A). We released 2 foxes (per other permit requirements) unharmed and conducted post-mortem examinations on 62 foxes. All 3 trap models had a mean cumulative injury score <10.0 and all injuries were in the lower-trauma categories (Fig. 7; Table S7). The most common injury from each trap model was mild edema or hemorrhage; 2 foxes captured in the cage trap had chipped or fractured teeth (Tables S1 and S8). There was no evidence of self-directed biting and no Arctic foxes died because of trap-related stress or injury (Tables S1 and S8). Capture efficiency did not significantly vary across trap models, with all traps ≥92% efficient. Species selectivity was 100% for all 3 trap models evaluated on Arctic foxes (Fig. 7; Table S7), and all 3 models we evaluated met all BMP criteria (Fig. 7; Table S7).

Bobcat

Trappers captured 537 bobcats in 14 different models of foothold traps (13 coil-spring, 1 double longspring), 1 model of footsnare, and 1 model of cage trap in the Great Plains-West, Midwest, Northeast, and Southeast regions (Fig. 8; Table S9); we necropsied 502 bobcats. In foothold traps, trappers captured 488 bobcats, of which we conducted post-mortem examinations on 462. Mean cumulative injury scores for bobcats captured in foothold traps averaged 18.5 and ranged from 9.4 to 37.7 (Fig. 8; Table S9) across models, and an average of >96% of injuries were in the lower-trauma categories (Fig. 8). All foothold traps we evaluated met both animal welfare criteria (Fig. 8; Table S9). The number 1.5

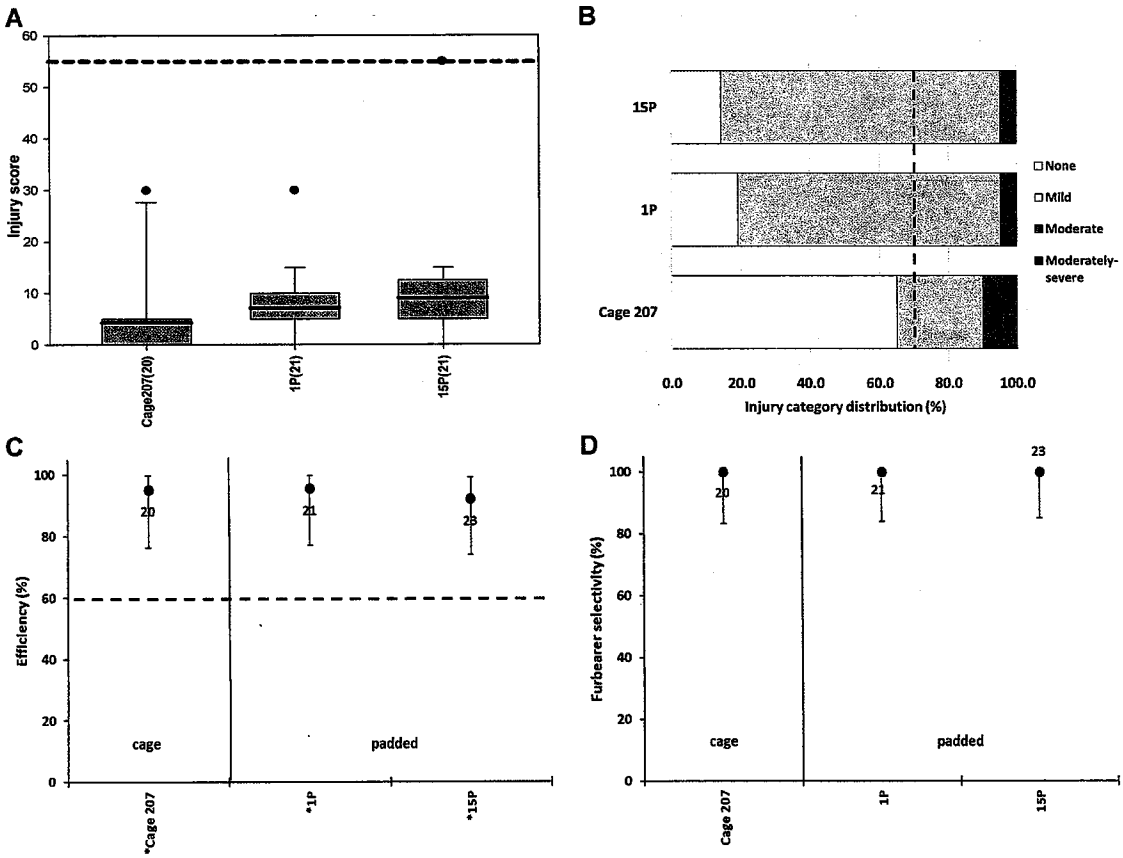

Figure 7. Trap performance profiles for live-restraining traps evaluated on Arctic foxes from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of Arctic foxes captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of Arctic foxes captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

coil-spring trap (15C) had the lowest mean cumulative injury score (9.4), followed closely by the 1.75 coil-spring (175C; 9.8), and the number 3 coil-spring trap with padded jaws and 4 coil-springs (3PM, 10.1; Appendix A). The most common injuries in foothold traps were mild edema and minor cutaneous lacerations. Though moderately severe and severe injuries were uncommon (Fig. 8; Table S9), there was a positive association between trap size and injury scores for standard-jaw foothold traps only; no similar pattern was apparent with padded or offset-laminated-jaw footholds (Fig. 8). Capture efficiency for all foothold traps averaged 89%, and was >77% for all traps; there was a weak positive relationship between trap size and efficiency for all foothold jaw types (Fig. 8). Furbearer selectivity was >85% for all foothold traps, and >90% for 9 of the 13 foothold models, with no obvious effect of trap size on furbearer selectivity (Fig. 8).

Trappers captured 22 bobcats in the wire-mesh cage trap (Cage 109.5; Appendix A). The cage trap had the lowest mean cumulative injury score (<1.0 point) of all traps tested on bobcats (Fig. 8; Table S9). Most bobcats (>95%) captured in the cage trap sustained no injuries (Fig. 8), with 1 individual sustaining mild injuries including claw loss and mild edema (Tables S1 and S10). The cage trap had the highest capture efficiency (100%) but the lowest furbearer selectively (84%) for all traps tested on bobcats (Fig. 8; Table S9).

Trappers captured 27 bobcats in the power-activated footsnare (BEL; Appendix A) and we conducted post-mortem examinations on 18. The mean injury score was 17.3, near the average for all 16 trap models tested (Fig. 8; Table S9). Most injuries (>94%) sustained by bobcats captured in this device were lower-trauma category injuries; the most common injury was mild edema (Fig. 8; Tables S1 and S10). Although necropsy sample size was only 18 in the BEL, if 2 additional bobcats were captured, each would need to have an injury score of 394 for the trap to fail; we deemed this highly improbable (maximum injury score was 90 on the 18 necropsied animals) and concluded the trap met BMP welfare criteria. The BEL had the lowest, but still passing, capture efficiency (75%), and the fourth-lowest furbearer selectivity (88%) of all traps tested on bobcats (Fig. 8; Table S9).

For these 16 trap models evaluated on bobcats, there was no evidence of self-directed biting and we did not find any animals

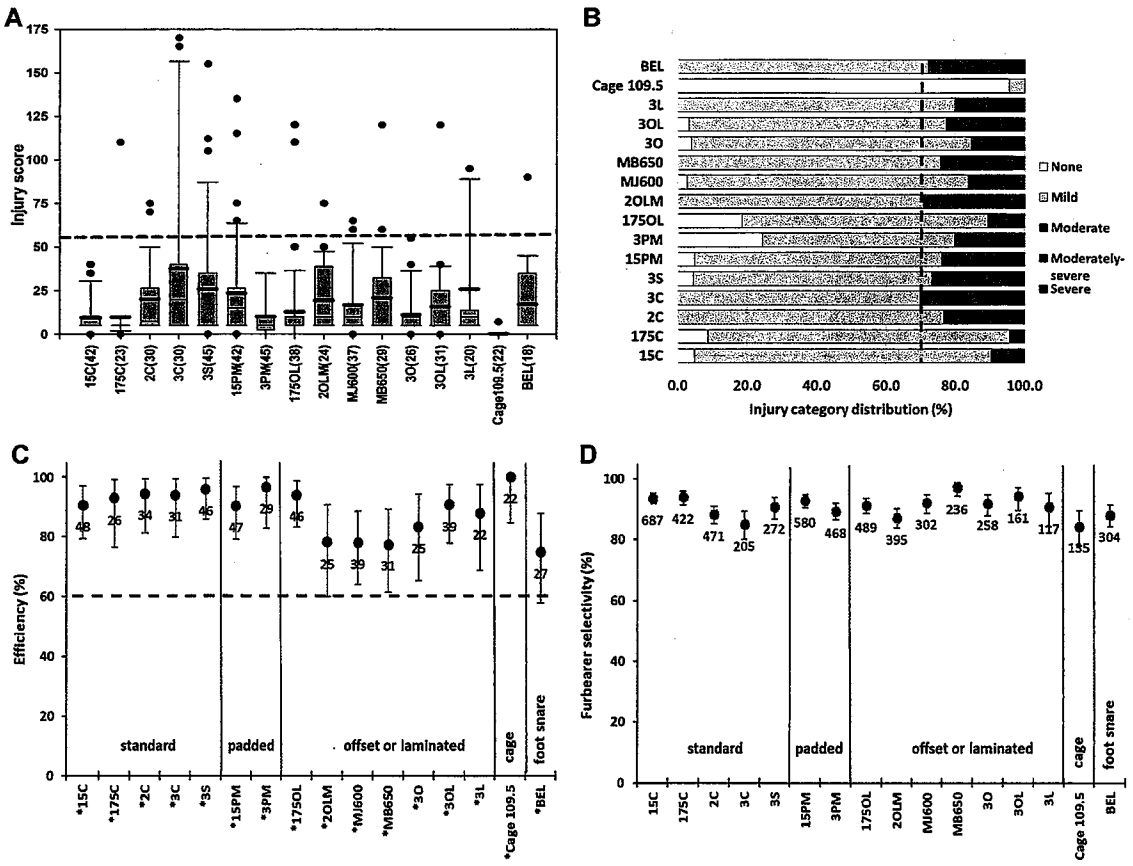

Figure 8. Trap performance profiles for live-restraining traps evaluated on bobcats from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of bobcats captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of bobcats captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

dead because of trap-related stress or injury (Tables S1 and S10). All 16 restraining devices tested on bobcats met all BMP criteria (Fig. 8; Table S9).

Canada Lynx

We tested 2 devices on Canada lynx, the number 3 coil-spring trap with standard jaws (3C) and a power-activated footsnare (BEL; Appendix A). Trappers captured 35 Canada lynx in Alaska, of which we conducted post-mortem examinations on 34 (Fig. 9; Table S11). The 3C met all BMP criteria for animal welfare (mean injury score = 30.2, 87.5% of animals in lower-trauma categories) and capture efficiency (100%). Trappers captured too few lynxes to assess whether the BEL met animal welfare and efficiency criteria.

Roughly two-thirds of individuals captured in the 3C sustained either no or mild injuries (Fig. 9). The most common injuries were lower-trauma category injuries (mild edema or minor hemorrhage, minor cutaneous laceration, and minor subcutaneous soft tissue maceration or erosion; Tables S1 and S12). However, 3 (12.5%) of the 24 lynx captured in the 3C experienced a fracture to the limb, 1 with a simple fracture at or below the carpus or tarsus and 2 with a fracture above this area. None of the lynx had evidence of self-directed biting or were found dead from trap-related stress or injury in the 3C (Tables S1 and S12).

Most (80%) injuries sustained by the 10 lynx captured in the BEL were mild (Fig. 9), primarily mild edema or minor hemorrhage; one lynx had a simple fracture at or below the carpus or tarsus and 1 lynx had a fracture above this area (Tables S1 and S12). None of the captured lynx had evidence of self-directed biting and we did not find any dead because of trap-related stress or injury in the footsnare. The 3C was more efficient but slightly less selective than the BEL (Fig. 9; Table S11). Overall, only the 3C had a sufficient sample size for full evaluation and it met all BMP criteria (Fig. 9; Table S11).

Coyote

Trappers captured 1,546 coyotes in 30 models of foothold traps (29 coil-springs, 1 double-longspring) and 1 model of

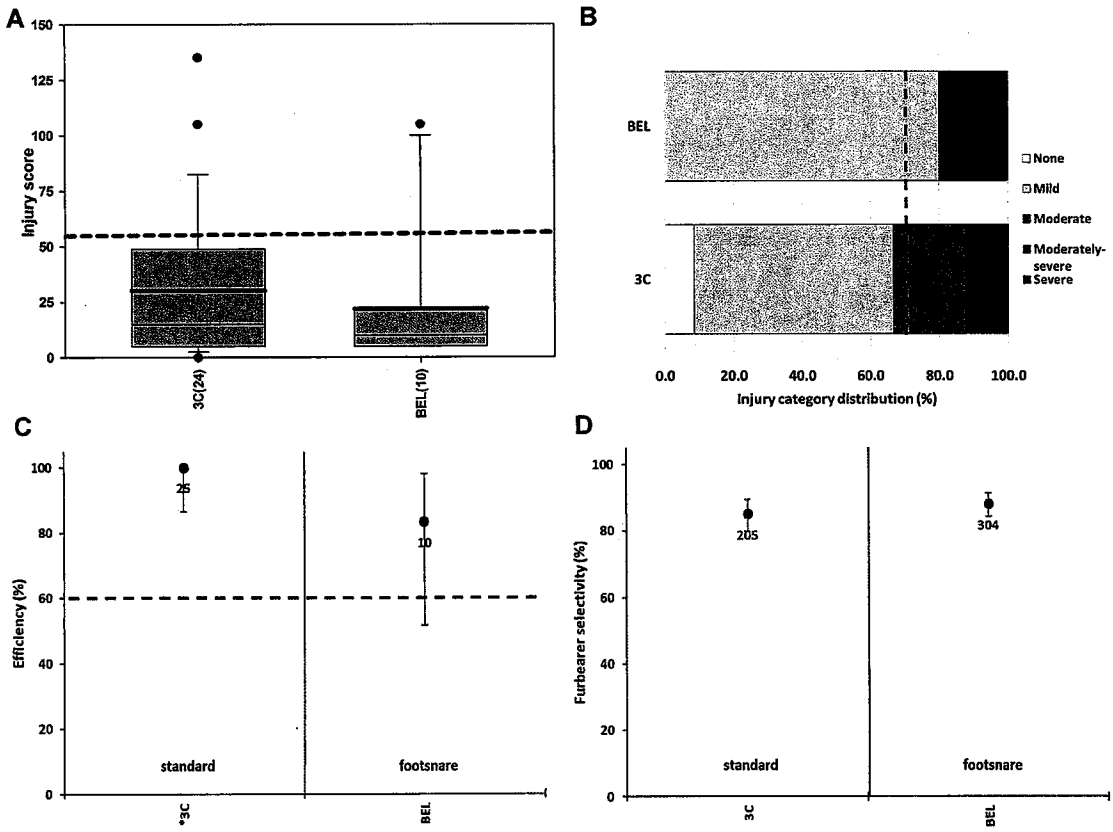

Figure 9. Trap performance profiles for live-restraining traps evaluated on Canada lynx from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of Canada lynx captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of Canada lynx captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

power-activated footsnare in the Great Plains-West, Midwest, Northeast, and Southeast regions. We conducted post-mortem examinations on 1,161 coyotes.

For the 22 foothold traps meeting sample size requirements, mean cumulative injury scores averaged 44.6 and ranged from 16.2 to 98.2 (Fig. 10; Table S13). The mean cumulative injury score for all padded-jaw models meeting sample size requirements (29.1 points) was lower than for offset wide- or cast-jaw models (45.2), offset and laminated models (45.4), standard models (49.4), and the 1 offset only model (98.2). Within both standard and offset- or laminated-jaw types, mean injury scores generally increased with trap size; we did not observe a similar pattern in padded-jaw models (Fig. 10). For foothold traps meeting sample size requirements, 83–100% of injuries were in the lower-trauma categories (Fig. 10; Table S13). The most common injuries among all foothold trap types were mild edema, minor lacerations, and minor periosteal abrasions (Tables S1 and S14). For foothold traps with sufficient sample size, 20 of 22 passed BMP animal welfare criteria (Fig. 10; Table S13).

Capture efficiency for foothold traps meeting sample size requirements ranged from 56–100%, and averaged 85.1%; the number 1.5 padded with 2 coil-springs (15P; Appendix A) failed the BMP efficiency criterion. For traps with adequate sample size, average efficiency scores by jaw type were offset only (92.8%; 1 model), offset and laminated (87.7%), offset wide or cast (85.9%), standard (82.6%), and padded (81.1%). Efficiency generally increased with trap size for padded- and standard-jaw models, but not for offset- or wide-laminated-jaw models (Fig. 10; Table S13). For all foothold traps meeting sample size requirements, furbearer selectivity was >81%, and ≥90% for 16 of 24 traps (Fig. 10; Table S13).

Trappers captured 73 coyotes in the footsnare (BEL; Appendix A) and we conducted post-mortem examinations on 49. Ninety-six percent of coyotes sustained only lower-trauma injuries (Fig. 10). The most common injuries recorded were mild edema and minor lacerations (Tables S1 and S14). This restraining device met all criteria for animal welfare (mean injury score = 22.7, 95.9% of animals in lower-trauma categories) and capture efficiency (74.5%), and furbearer selectivity in the BEL (88.1%) was slightly above the average for all foothold traps (Fig. 10; Table S13).

For all restraining traps meeting sample size requirements, self-directed biting occurred in an average of 2.2% of coyotes (median = 0%), and we did not find any coyotes dead because of

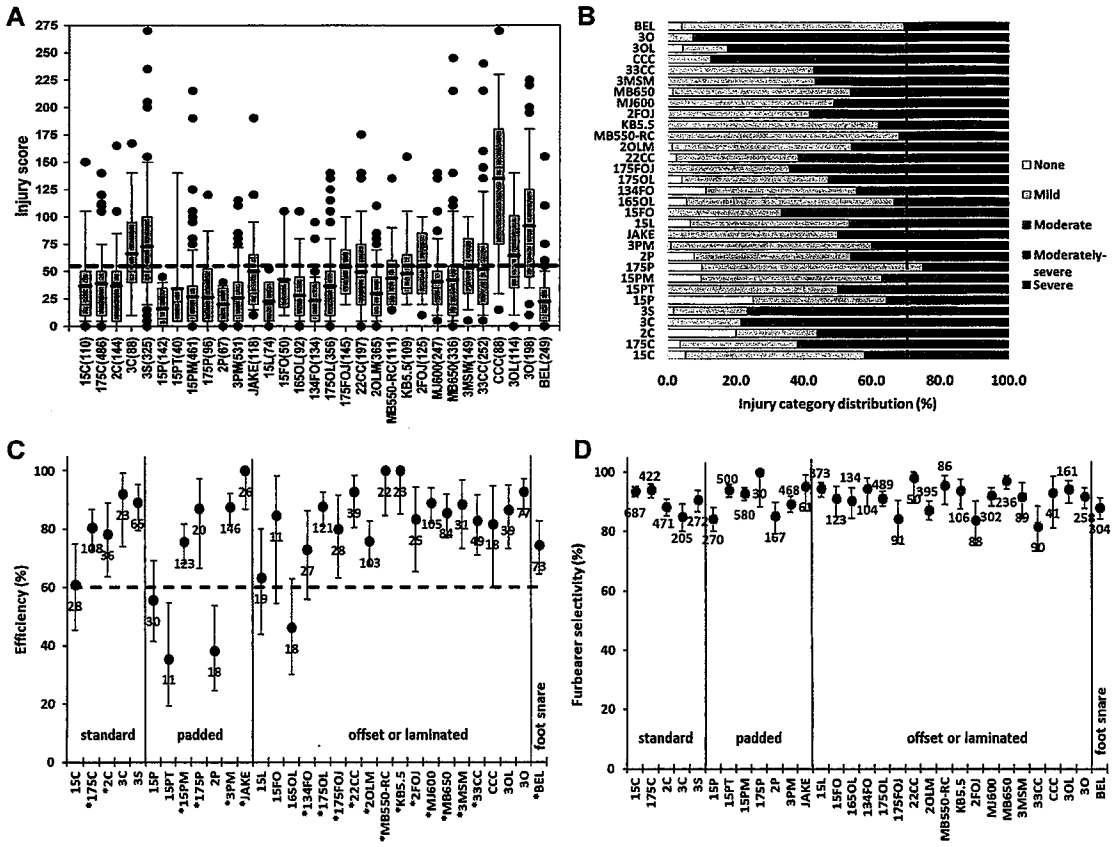

Figure 10. Trap performance profiles for live-restraining traps evaluated on coyotes from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of coyotes captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of coyotes captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

trap-related stress or injury (Tables S1 and S14). Nineteen restraining devices met all BMP criteria, 3 failed the animal welfare criteria, 1 failed the efficiency criterion, and 8 currently have insufficient sample sizes to reach a conclusion (Fig. 10; Table S13).

Fisher

Trappers captured 79 fishers, of which we conducted post-mortem examinations on 74, in the Midwest and Northeast regions using 4 restraining devices (the number 1.5 coil-spring foothold trap with standard jaws [15C], the number 1.5 coil-spring foothold trap with padded jaws and 4 coil-springs [15PM], the number 1.75 coil-spring foothold trap with offset and laminated jaws [175OL], and a wire-mesh cage trap [Cage 108]; Appendix A). All animal welfare and capture efficiency criteria were met for both the 15PM and the Cage 108 (Fig. 11; Table S15). The sample size for the 15C ($n = 19$) was less than required, though the trap could not pass BMP welfare criteria even if 1 additional animal had no injuries. The sample size for the number 175OL ($n = 13$) was insufficient to evaluate against BMP welfare criteria.

Of the 54 fishers captured in foothold traps and necropsied, the most common injuries were mild edema, minor hemorrhage, minor lacerations, minor periosteal abrasion, and minor subcutaneous soft tissue maceration (Tables S1 and S16). We found evidence of self-directed biting on 1 fisher, and we did not find any fishers dead from trap-related stress or injury (Tables S1 and S16).

For the 20 fishers captured in the Cage 108, the mean injury score was 5.0; 80% sustained no injury (Fig. 11; Table S15) and the most common (15% of fishers) injury was chipped or fractured teeth. We did not find any evidence of self-directed biting or any fishers dead from trap-related stress or injury in the cage trap (Tables S1 and S16).

Capture efficiency for all restraining traps evaluated on fishers was >82%, and furbearer selectivity was >91% for the 3 foothold traps and 88% for the cage trap (Fig. 11; Table S15). Overall, 2 restraining devices tested on fishers met all BMP criteria, 1 device failed welfare criteria, and 1 had insufficient sample size to confirm (Fig. 11; Table S15).

Gray Fox

Trappers captured 938 gray foxes (*Urocyon cinereoargenteus*) in 22 models of foothold traps (all coil-spring traps), 1 model of

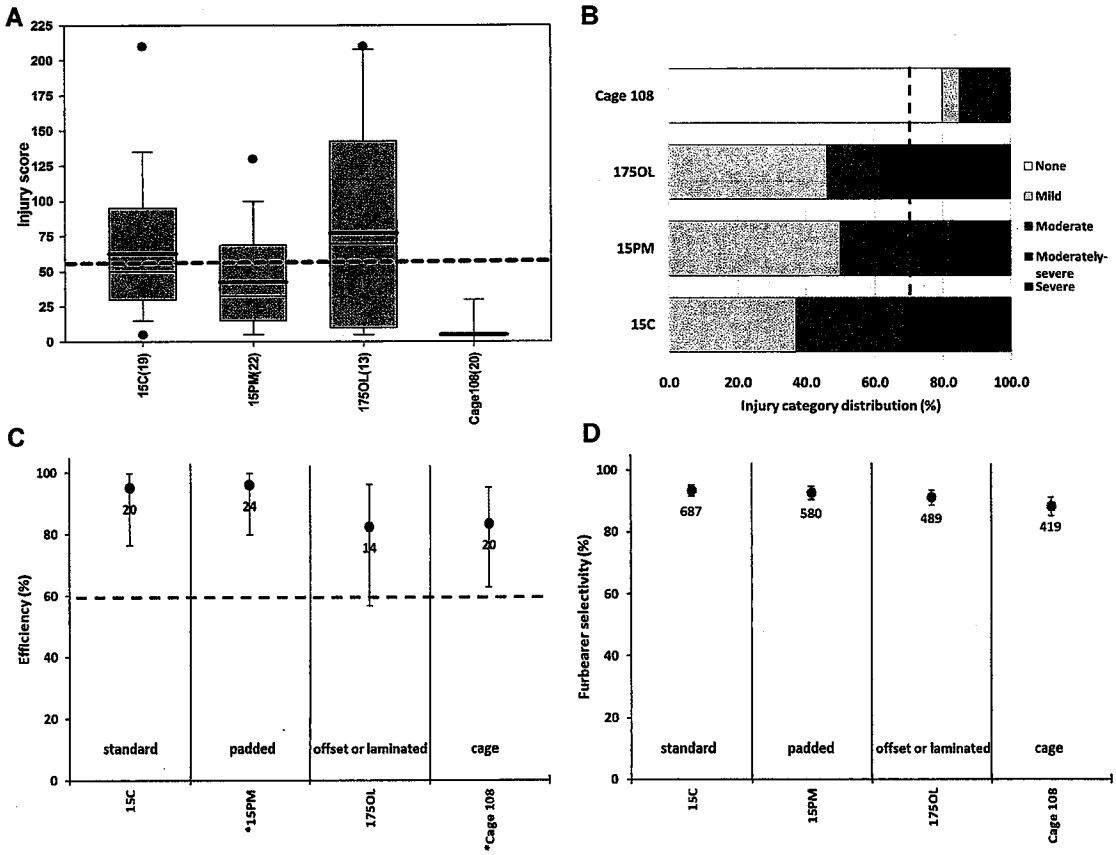

Figure 11. Trap performance profiles for live-restraining traps evaluated on fishers from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of fishers captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of fishers captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

power-activated footsnare (BEL), and 1 model of wire-mesh cage trap (Cage 108; Appendix A) in the Great Plains-West, Midwest, Northeast, and Southeast regions. We conducted post-mortem examinations on 748 gray foxes.

Of foothold traps with sufficient sample size, 8 models (5 padded-jaw models and 3 offset, wide, or laminated models) passed both welfare criteria (Fig. 12; Table S17). Five additional models failed both welfare criteria (1 double-jaw, 1 padded-jaw, and 3 offset- or laminated-jaw models), and 5 passed the lower-trauma criterion but failed the injury-score criterion (1 standard jaw, 1 padded jaw, and 3 offset- or laminated-jaw models). There was a positive correlation between injury scores and trap size for padded-jaw models only. Overall, the most common injuries were mild edema, minor cutaneous lacerations, and chipped or fractured teeth; we observed evidence of self-directed biting in 33 (4%) gray foxes, and found 5 (<1%) individuals dead because of trap-related stress or injury in foothold traps (Tables S1 and S18). Of the 8 foothold traps that met both animal welfare criteria, all of them met BMP capture efficiency standards; there was no correlation between efficiency and trap size for any jaw types (Fig. 12; Table S17). The lowest furbearer selectivity among the 8 passing foothold traps was 83% (Fig. 12; Table S17).

Using the footsnare (BEL; Appendix A), trappers captured 23 gray foxes, of which we necropsied 22. The mean injury score was 51.1 and 82% of gray foxes sustained only lower-trauma injuries (Fig. 12; Table S17). The most common injuries were mild edema and minor lacerations; we detected self-directed biting in 1 (5%) gray fox and did not find any dead from trap-related stress or injury in the BEL (Tables S1 and S18). We excluded 1 trapper's efficiency data because they had highly atypical gray fox footsnare efficiency results (7% vs. >80% for other trappers); revised gray fox capture efficiency in the BEL was 84%, slightly below the average for foothold traps (86%; Fig. 12; Table S17), and furbearer selectivity for this device was 88%.

Most (95%) gray foxes captured in the Cage 108 sustained only lower-trauma injuries, and the mean injury score was 29.7 (Fig. 12; Table S17). The most common injuries were chipped or fractured teeth; we did not detect any self-directed

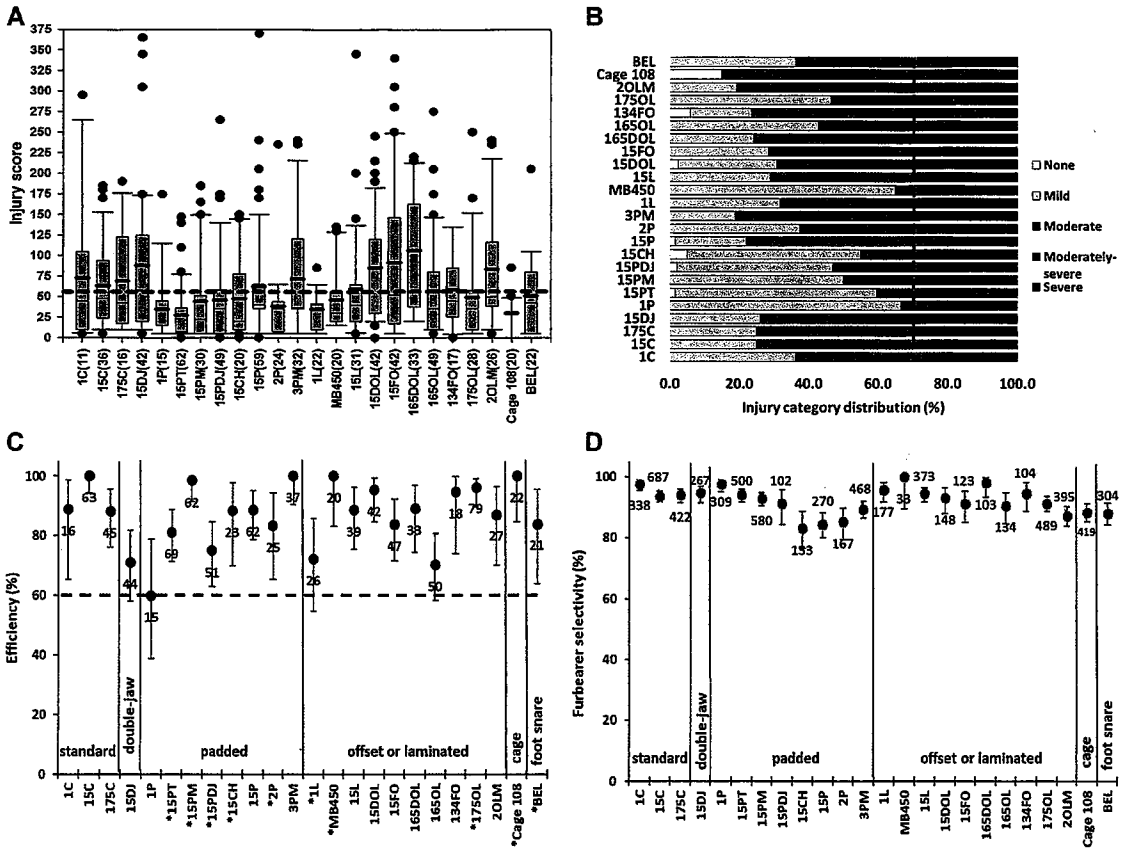

Figure 12. Trap performance profiles for live-restraining traps evaluated on gray foxes from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of gray foxes captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of gray foxes captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

biting and did not find any gray foxes dead because of trap-related stress or injury in cage traps (Tables S1 and S18). The Cage 108, along with 3 foothold traps, had the highest capture efficiency (100%), and furbearer selectivity was 88% (Fig. 12; Table S17). The Cage 108 met all animal welfare and efficiency criteria. Overall, 10 restraining devices evaluated on gray foxes met all BMP criteria, 10 failed one or both welfare criterion, and 4 had insufficient sample size to confirm (Fig. 12; Table S17).

Gray Wolf

Trappers captured 123 gray wolves in 5 models of foothold traps, which included 2 different anchoring systems (stakes vs. grapples), in the Midwest region. We conducted post-mortem examinations on all captured wolves.

Four models had sufficient data for BMP evaluation of animal welfare (Fig. 13; Table S19); all 4 models met both the injury-score (max. = 54.3 points) and lower-trauma criteria (each with >89% of injuries in the lower-trauma categories; Fig. 13; Table S19). The most common injuries for all foothold traps were mild edema or hemorrhage, minor subcutaneous soft tissue maceration or erosion, and minor (superficial) periosteal abrasion; 2 (1.6%) had evidence of self-directed biting, and we did not find any wolves dead from trap-related stress or injury (Tables S1 and S20). There was no consistent difference in injury or efficiency scores between the 2 trap-anchoring methods. Each anchoring method for the Livestock Protection Company number 4 trap had higher capture efficiency than the similar anchoring method for the Minnesota Brand MB750 trap (i.e., LPC4G vs. MB750G, LPC4K vs. MB750K; Appendix A), but all 4 traps met the efficiency criterion; among all traps, the lowest capture efficiency was 81% (Fig. 13; Table S19). All 4 foothold trap models with sufficient sample size met all BMP criteria (Fig. 13; Table S19), and another model (MB650; Appendix A) is likely to pass pending additional sampling. Furbearer selectivity in all devices was ≥93%.

Muskrat

Trappers captured 113 muskrats, many incidental on projects for other species, in 9 different models of foothold traps and

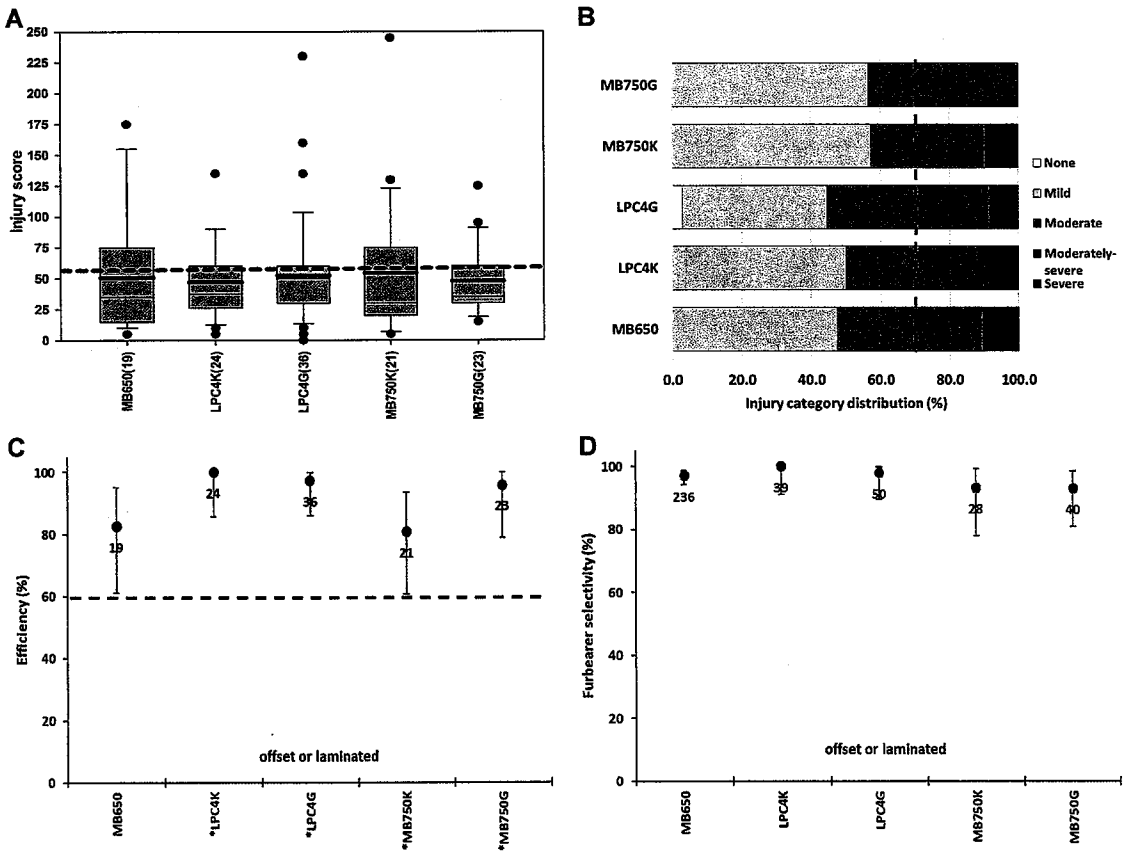

Figure 13. Trap performance profiles for live-restraining traps evaluated on gray wolves from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of gray wolves captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of gray wolves captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

1 model of wire-mesh cage trap (Cage 105.5; Appendix A) in the Midwest region. We conducted post-mortem examinations on 88 muskrats. For other species, we limited our reporting to traps with a minimum sample size of 8; however for muskrats we include 1 device (number 1 longspring with an immobilization guard [1VG]; Appendix A) with a sample size of 5 because of its unique design. However, sample sizes for all but 1 foothold trap (the number 11 double-longspring trap with padded jaws [11P]; Appendix A) were too low for BMP assessment. Although we could have collected additional samples, we chose not to because injury scores were not promising and few, if any, biologists or trappers intentionally live restrain muskrats using foothold traps.

Using the 11P, trappers captured 20 muskrats; this trap failed both welfare criteria (Fig. 14; Table S21). The most common muskrat injuries from this model of foothold trap, similar to other foothold traps, were mild edema or hemorrhage and fracture or joint luxation above the carpus or tarsus; no muskrats showed evidence of self-directed biting and we did not find any dead from trap-related stress or injury in this trap model (Tables S1 and S22). The 11P met the capture efficiency criterion, and furbearer selectivity for this device was 89% (Fig. 14; Table S21). Although sample size is quite low, results from testing of the number 1VG, designed to reduce injury in muskrats, indicate that the trap does reduce injury in comparison to other foothold models (Fig. 14; Table S21), though perhaps not enough to meet BMP welfare criteria for live-restraining traps.

Trappers captured 24 muskrats in the Cage 105.5, which met all BMP welfare (mean injury score = 6.0, 95.8% of animals in lower-trauma categories) and efficiency criteria (100%; Fig. 14; Table S21). Most (>62%) captured muskrats sustained no injuries, and 1 sustained a moderately severe injury (Fig. 14; Table S22). The most common injuries noted were mild edema or minor hemorrhage ($n = 7$) and recently chipped or fractured teeth ($n = 3$); no self-directed biting occurred and we did not find any muskrats dead from trap-related stress or injury in the cage trap (Tables S1 and S22). The Cage 105.5 was 96% efficient on muskrats, and furbearer selectivity in this device was 96% (Fig. 14; Table S21). Overall, of the 2 devices with

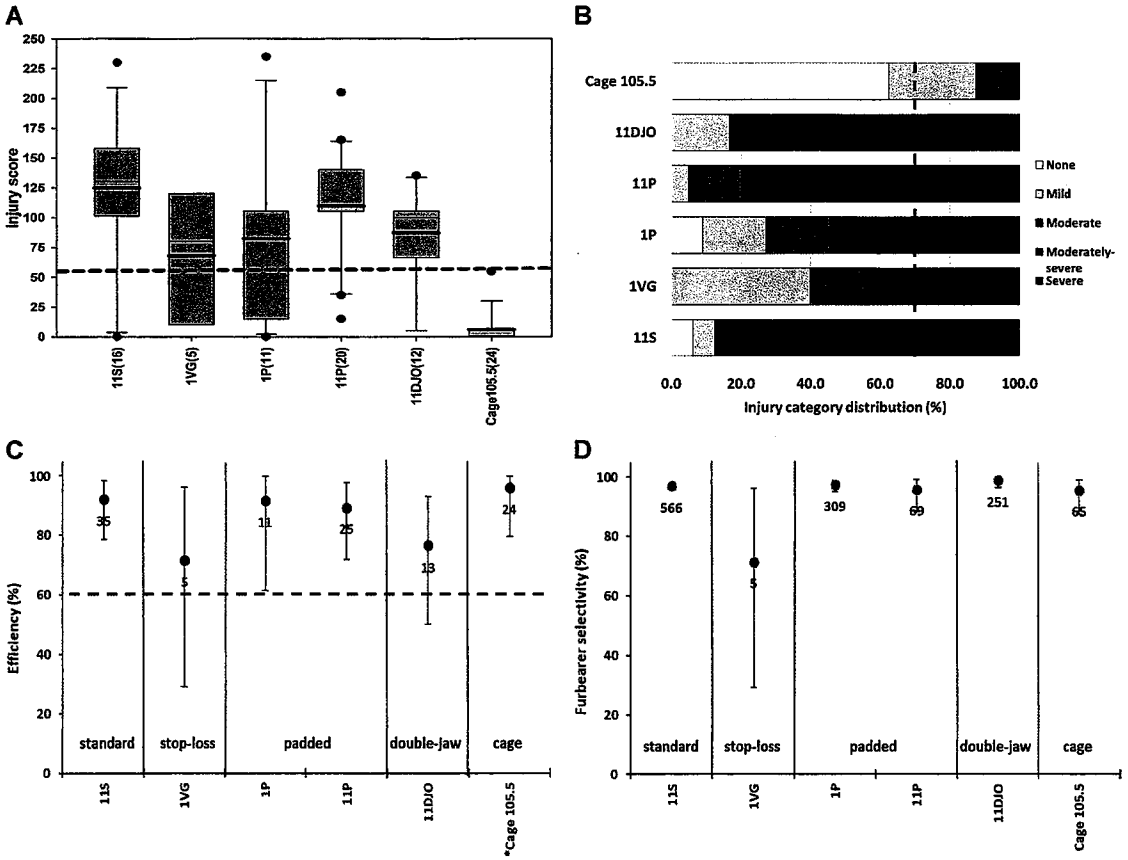

Figure 14. Trap performance profiles for live-restraining traps evaluated on muskrats from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of muskrats captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of muskrats captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

sufficient data, only the cage trap met all BMP criteria for use as a live-restraining device on muskrats (Fig. 14; Table S21).

North American River Otter

Trappers captured 76 river otters, of which we necropsied 70, in 3 different models of foothold traps (number 11 double-longspring with standard [11S] and double jaws [11DJ] and the number 2 coil-spring with standard jaws [2C]; Appendix A) in the Midwest and Southeast regions. For all traps, mean cumulative injury scores were ≤49 points and most otters (≥81%) sustained injuries in only the lower-trauma categories (Fig. 15; Table S23). The most common injuries were mild edema, minor subcutaneous soft tissue maceration, and minor lacerations; 6 (9%) otters exhibited chipped or fractured teeth, nearly all (5) in the 2C. Self-directed biting occurred on 1 occasion in the 11S and 11DJ, and on 3 occasions in the 2C (Tables S1 and S24). We did not find any otters dead because of trap-related stress or injury (Tables S1 and S24). All 3 foothold traps met both animal welfare criteria; however, all 3 failed the BMP efficiency criterion (Fig. 15; Table S23). Furbearer selectivity for all 3 traps was >88%.

Northern Raccoon

We obtained raccoon data for 50 restraining trap models, of which 40 had sample sizes ≥20 (8 standard-jaw foothold models, 11 double-jaw foothold models, 6 padded-jaw foothold models, 4 offset, laminated, or wide-jaw foothold models, 9 foot-encapsulating traps, 1 cage trap, and 1 footsnare) in the Great Plains-West, Midwest, Northeast, and Southeast regions. Trappers captured 4,078 raccoons, of which we conducted post-mortem examinations on 2,919 (Fig. 16; Table S25).

Foothold traps.—Of 1,141 raccoons captured in 8 models of standard-jaw coil-spring traps meeting sample size requirements, we conducted post-mortem examinations on 733. No standard-jaw foothold models passed the injury-score criterion and only 1 passed the lower-trauma criterion (Fig. 16; Table S25). The mean cumulative injury score for all standard-jaw foothold models meeting sample size requirements was 82.6. Although

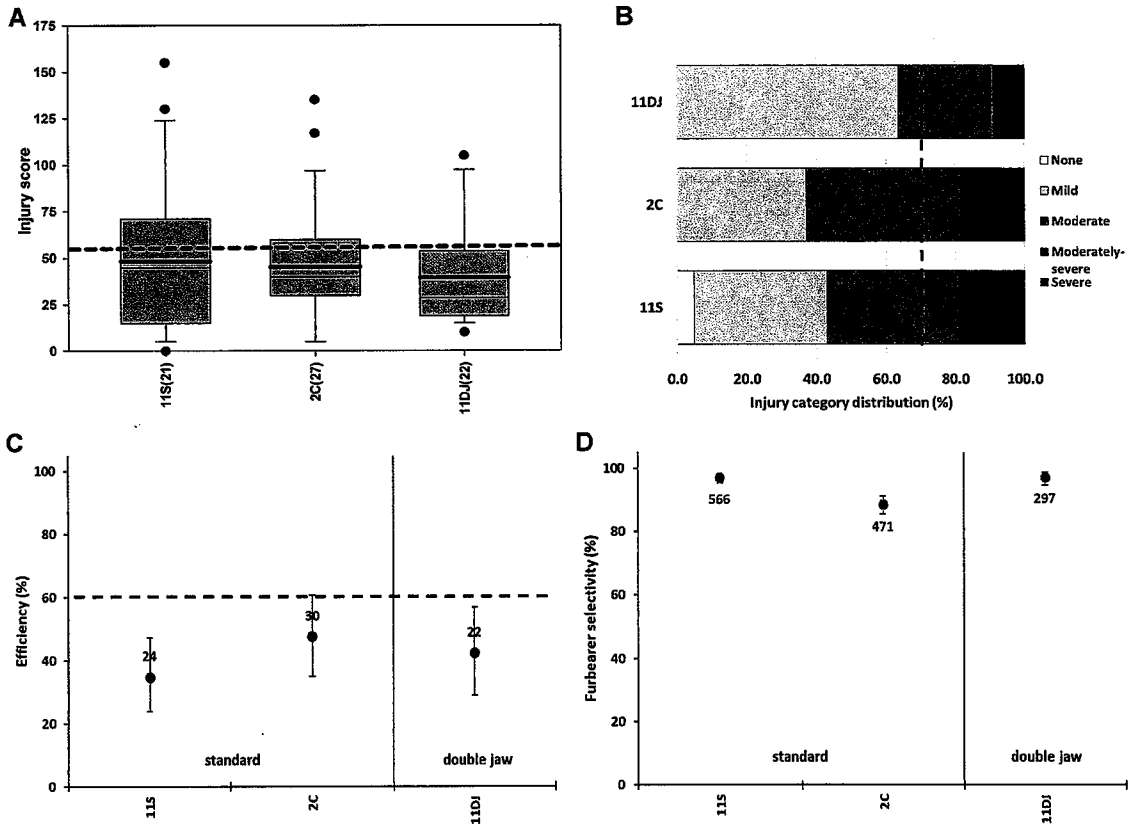

Figure 15. Trap performance profiles for live-restraining traps evaluated on North American river otters from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of North American river otters captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of North American river otters captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

the most common injuries in standard-jaw foothold traps were in the mild category, particularly swelling, minor laceration, minor tissue maceration, and minor periosteal abrasion, 40% of animals captured in standard-jaw footholds sustained severe injuries and 30% of animals exhibited self-directed biting (Tables S1 and S26). We found 1 raccoon dead from trap-related stress or injury in a standard-jaw foothold. There was no clear association between trap size and injury score for standard-jaw footholds (Fig. 16; Table S25). All standard-jaw foothold models with adequate sample size passed the BMP efficiency criterion (range = 71–94%), and efficiency generally increased with trap size (Fig. 16; Table S25). Furbearer selectivity ranged from 94–100% (Fig. 16; Table S25). No standard-jaw footholds tested on raccoons passed all BMP criteria (Fig. 16; Table S25).

Of 910 raccoons captured in 11 models of double-jaw coil-spring traps with adequate sample size, we conducted post-mortem examinations on 697. Four models of double-jaw footholds passed both the injury-score and lower-trauma criteria (Fig. 16; Table S25). The mean cumulative injury score for all double-jaw foothold models with adequate sample size was 67.9. As with standard-jaw models, the most common injuries in double-jaw foothold traps were in the mild category, particularly swelling, minor laceration, minor tissue maceration, and minor periosteal abrasion, but 26% of animals sustained severe injuries and 19% exhibited self-directed biting in double-jaw models (Tables S1 and S26). We found 15 raccoons dead from trap-related stress or injury in double-jaw footholds. There was minimal variation in trap size across double-jaw models tested on which to ascertain any correlation with injury scores or efficiency. All double-jaw foothold models meeting sample size requirements passed the efficiency criterion (range = 70–91%) and furbearer selectivity ranged from 93–100% (Fig. 16; Table S25). Four double-jaw foothold models tested on raccoons passed all BMP criteria (Fig. 16; Table S25).

Of 565 raccoons captured in 6 models of padded-jaw coil-spring traps meeting sample size requirements, we conducted post-mortem examinations on 423. Two models of padded-jaw footholds passed both injury criteria (Fig. 16; Table S25). The mean cumulative injury score for all padded-jaw foothold models meeting sample size requirements was 65.3, similar to double-jaw traps. The most common injuries in padded-jaw foothold traps were in the mild category, particularly swelling and minor

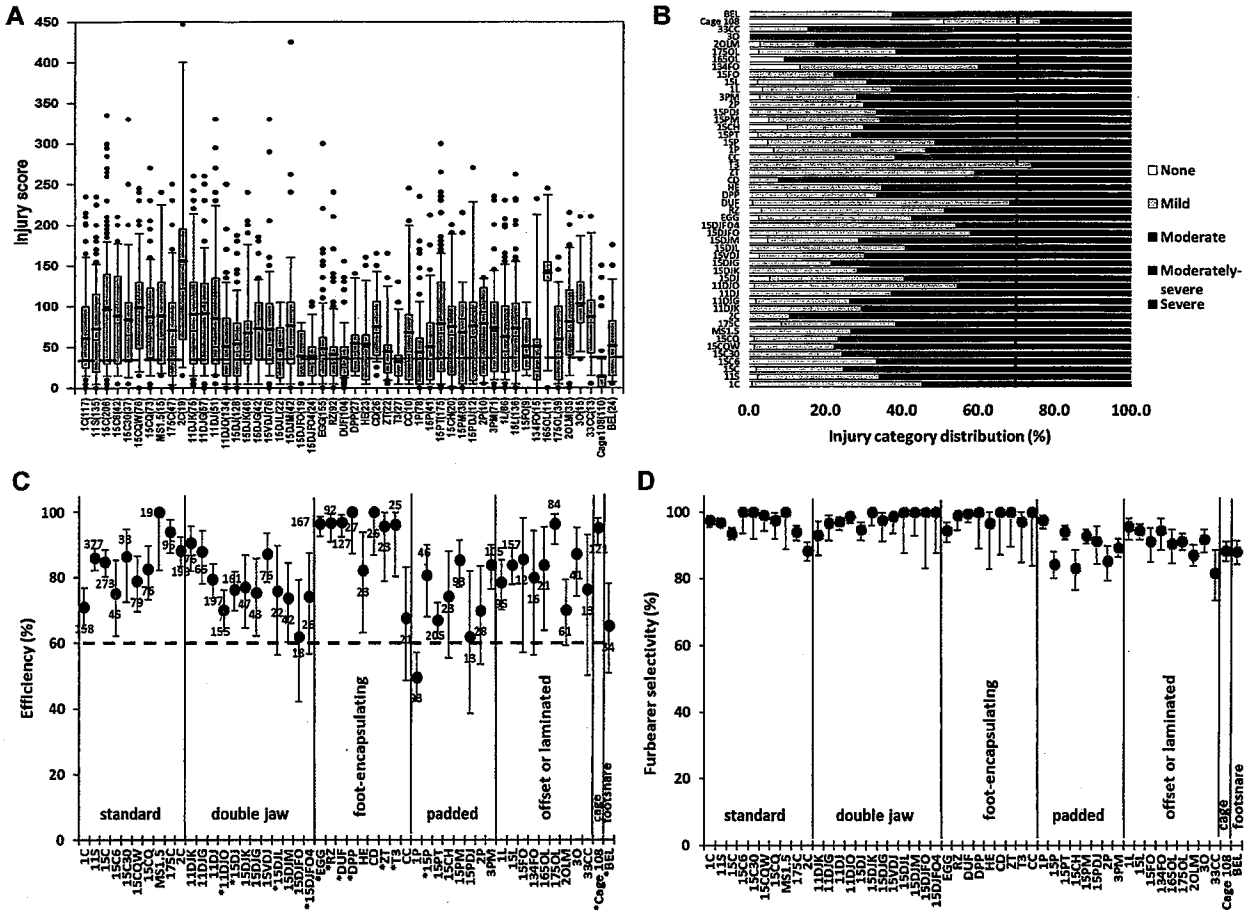

Figure 16. Trap performance profiles for live-restraining traps evaluated on northern raccoons from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of northern raccoons captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of northern raccoons captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

tissue maceration. Compared to standard and double-jaw models, moderate injuries (in the form of chipped or broken teeth) were more common in padded-jaw models (Tables S1 and S26). Overall, an average of 32% of the raccoons sustained severe injuries in padded-jaw models meeting sample size requirements, and 32% exhibited self-directed biting; we did not find any raccoons dead from trap-related stress or injury in padded-jaw traps (Tables S1 and S26). Both injury scores and efficiency generally increased with trap size for padded-jaw models (Fig. 16; Table S25). Five of 6 padded-jaw foothold models meeting sample size requirements passed the BMP efficiency criterion (range = 67–85%) and furbearer selectivity ranged from 83–98% (Fig. 16; Table S25). One padded-jaw foothold model (number 1.5 coil-spring, padded jaws, 2-coil-springs [15P]) tested on raccoons met all BMP criteria (Fig. 16; Table S25).

Of 397 raccoons captured in 4 models of offset- or laminated-jaw coil-spring traps meeting sample size requirements, we conducted post-mortem examinations on 296. None of the 4 models with sufficient samples passed either welfare criterion (Fig. 16; Table S25). The mean cumulative injury score for all offset- or laminated-jaw models meeting sample size requirements was 69.5, similar to double-jaw and padded-jaw footholds. Also similar to both standard- and double-jaw models, the most common injuries in offset- or laminated-jaw models were in the mild category, particularly swelling, minor laceration, minor tissue maceration, and minor periosteal abrasion. However, for traps with adequate sample sizes, these jaw models had the highest percent of animals with severe injuries (36%) and the highest rate of self-directed biting (35%; Tables S1 and S26); we found 2 raccoons dead from trap-related stress or injury in this foothold jaw-type category. Although there was no linear association between trap size and injury scores for these jaw types, the largest traps had the highest injury scores (Fig. 16). Efficiency did not exhibit any correlation with trap size, and ranged from 70–97% for the 4 traps with sufficient samples; furbearer selectivity ranged

from 87–96% (Fig. 16; Table S25). None of the offset- or laminated-jaw models tested that met sample size requirements passed all BMP criteria (Fig. 16; Table S25).

Foot-encapsulating traps.—Trappers captured 522 raccoons in 9 models of foot-encapsulating traps with adequate sample size, and we conducted post-mortem examinations on 497. Six of the 9 models passed both animal welfare criteria, 1 failed the injury-score criterion, 1 failed the lower-trauma criterion, and 1 failed both injury criteria. The mean injury score for all foot-encapsulating models was 50.7, lower than the average for any foothold trap regardless of jaw type (Fig. 16; Table S25). The most common injuries from foot-encapsulating traps were mild edema, minor lacerations, and minor subcutaneous soft tissue maceration or erosion (Tables S1 and S26). Overall, an average of 13% (or 9%, considering only passing traps) of animals captured in this trap type had severe injuries and an average of 4.3% exhibited self-directed biting, the lowest for any foot-restraining type of trap we evaluated. Excluding the foot-encapsulating trap with an atypical design (HE, which has a tube attached to the pan of a standard-jaw foothold trap; Appendix A), an average of 1.6% of raccoons exhibited self-directed biting. We did not find any raccoons dead from trap-related stress or injury in foot-encapsulating traps (Tables S1 and S26). All foot-encapsulating models met the capture efficiency criterion (range = 68–100%), and all had high (>94%) furbearer selectivity (Fig. 16; Table S25). Of the 9 models of foot-encapsulating traps with sufficient sample size, 6 met all BMP criteria for live-restraining raccoons and 3 failed at least 1 welfare criterion (Fig. 16; Table S24).

Footsnares.—Using the power-activated footsnare (BEL; Appendix A), trappers captured 34 raccoons and we assessed injuries on 24 (Fig. 16; Table S25). The mean injury score was 51.8 and 79% of the captured raccoons sustained only lower-trauma injuries (Fig. 16; Table S25). The most common injuries were mild edema and minor soft tissue maceration; self-directed biting was reported in 6 (25%) raccoons, and we did not find any raccoons captured in the BEL dead from trap-related stress or injury (Tables S1 and S26). The BEL had the second-lowest capture efficiency across all traps with sufficient samples, and furbearer selectivity was 88% (Fig. 16; Table S25). The BEL met all BMP criteria for capturing raccoons (Fig. 16; Table S25).

Cage traps.—Trappers captured 121 raccoons in 1 model of wire-mesh cage trap (Cage 108; Appendix A) and we examined 110 for trap-related injuries. The Cage 108 had the lowest mean cumulative injury score (13.8) for any restraining trap tested on raccoons (Fig. 16; Table S25). Greater than 95% of the captured raccoons sustained only lower-trauma injuries (Fig. 16; Tables S1 and S26). The most common injuries were mild edema and tooth damage; self-directed biting was reported in 1 (<1% of total) captured raccoon and we did not find any raccoons dead from trap-related stress or injury in the Cage 108 (Tables S1 and S26). Capture efficiency was high (95.3%), and furbearer selectivity was 88.4 (Fig. 16; Table S25). The Cage 108 met all BMP criteria for capturing raccoons (Fig. 16; Table S25).

All traps.—For traps that met sample size requirements, the Cage 108 had the lowest injury score (13.8 points), followed by the overall means for foot-encapsulating traps (50.7), the power-activated footsnare (51.8), padded-jaw footholds (65.3 points), double-jaw footholds (67.9 points), offset- or laminated-jaw footholds (69.5), and standard-jaw footholds (82.6). Self-directing biting was most prevalent in foothold traps (27.4%), of which double-jaw models had the lowest incidence (19%), followed by the footsnare (25.0%), foot-encapsulating traps (4.3%, or 1.6% excluding 1 atypical design), and the cage trap (<1%).

Among all restraining traps that met all criteria for raccoons, capture efficiency was highest for foot-encapsulating traps ($\bar{x} = 95.6\%$) and the cage trap (95.3%), followed by foothold traps ($\bar{x} = 79.5\%$) and the footsnare (65.4%). Furbearer selectivity by trap type, in descending order, was foot-encapsulating traps ($\bar{x} = 98.3\%$), foothold traps ($\bar{x} = 95\%$), the cage trap (88.4%), and the power-activated footsnare (88.1%). Overall, 13 restraining traps met all BMP criteria, 27 devices failed 1 or more criteria (Fig. 16; Table S25), and 10 traps had insufficient samples to reach a conclusion.

Nutria

We evaluated 7 different models of restraining devices (all foothold traps) on nutria, all of which had sufficient sample sizes for BMP assessment. Trappers captured 426 nutria in live-restraining (non-submersion) sets in the Southeast region. We conducted post-mortem examinations on 269. Three of the 7 traps, all padded-jaw models, had cumulative injury scores ≤55 points; of the 4 models that had injury scores >55 points, 1 had padded jaws (Fig. 17; Table S27). Of the 3 foothold traps that met the injury-score criterion (1P, 11CH, 15PT; Appendix A), 2 (1P, 15PT) also met the lower-trauma criterion (Fig. 17; Table S27). Among all foothold traps, mild edema or mild hemorrhage was the most common injury, particularly for padded-jaw traps, with minor cutaneous lacerations and fracture or joint luxation above the carpus or tarsus to a much lesser extent (Tables S1 and S28). One captured nutria showed evidence of self-directed biting, and we did not find any nutria dead from trap-related stress or injury in any of the trap models (Tables S1 and S28). All foothold traps met the capture efficiency criterion (range = 68–97%), with the number 15PT being the most efficient. Furbearer selectivity for these trap models ranged from 94–100% (Fig. 17; Table S27). Overall, 2 restraining devices (1P, 15PT) met all BMP criteria for live restraint, and 5 devices failed 1 or both animal welfare criteria (Fig. 17; Table S27).

Red Fox

Trappers captured 672 red foxes (*Vulpes vulpes*) in 19 models of foothold traps (all coil-spring models) and 1 model of footsnare in Alaska, the Great Plains-West, Midwest, Northeast, and Southeast regions. We conducted post-mortem examinations on 603 red foxes. Fourteen traps had sufficient sample sizes for BMP assessment, including 3 standard-jaw foothold models, 5 padded-jaw foothold models, 5 offset-, laminated-, or wide-jaw models, and the footsnare.

Of 129 red foxes captured in the 3 models of standard-jaw coil-spring traps meeting sample size requirements, we conducted post-mortem examinations on 121. Two of the devices

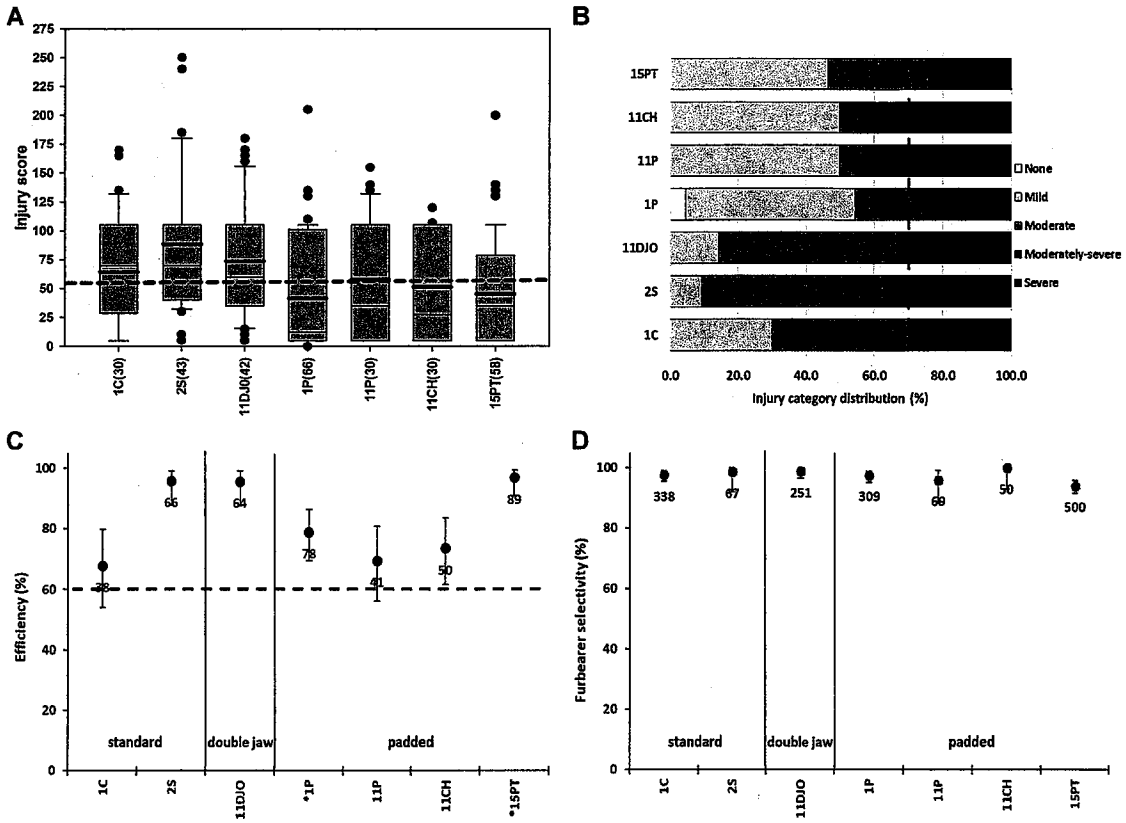

Figure 17. Trap performance profiles for live-restraining traps evaluated on nutria from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of nutria captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of nutria captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

(15C, 175C) passed both welfare criteria, and the 2C failed the injury-score criterion (Fig. 18; Table S29; Appendix A). The mean cumulative injury score for all 3 standard-jaw foothold models meeting sample size requirements was 43.2. The most common injuries in standard-jaw foothold traps were in the mild category, particularly mild edema, minor lacerations, and minor periosteal abrasions; self-directed biting occurred on 1 red fox, and we did not find any red foxes dead from trap-related stress or injury in these devices (Tables S1 and S30). There were few standard-jaw traps on which to gauge the influence of trap size on injury scores or efficiency, though our data suggest no consistent pattern for injury but a decline in efficiency for larger traps (Fig. 18). All standard-jaw foothold models meeting sample size requirements passed the BMP efficiency criterion (range = 80–95%) and furbearer selectivity ranged from 88–94% (Fig. 18; Table S29). Two of the standard-jaw models tested on red foxes passed all BMP criteria, with the third failing the injury-score criterion (Fig. 18; Table S29).

Of 206 red foxes captured in the 5 models of padded-jaw coil-spring traps with sufficient sample sizes, we conducted post-mortem examinations on 179. All 5 of the padded-jaw models passed both welfare criteria (Fig. 18; Table S29). The mean cumulative injury score for the 5 padded-jaw foothold models meeting sample size requirements was 26.0. The most common injuries in padded-jaw foothold traps were in the mild category, particularly mild edema, minor lacerations, and minor periosteal abrasions; self-directed biting occurred with 3 (2%) red foxes, and we did not find any dead from trap-related stress or injury in these devices (Tables S1 and S30). There was no consistent relationship between trap size and injury scores for padded-jaw models, but efficiency generally increased with trap size. All padded-jaw foothold models meeting sample size requirements passed the BMP efficiency criterion (range = 74–94%) and furbearer selectivity ranged from 84–93% (Fig. 18; Table S29). All 5 of the padded-jaw models with sufficient sample sizes passed all BMP criteria for red foxes (Fig. 18; Table S29).

Of 208 red foxes captured in the 5 models of offset-, laminated-, or wide-jaw coil-spring traps that met sample size requirements, we conducted post-mortem examinations on 187. Four of the 5 models passed both welfare criteria

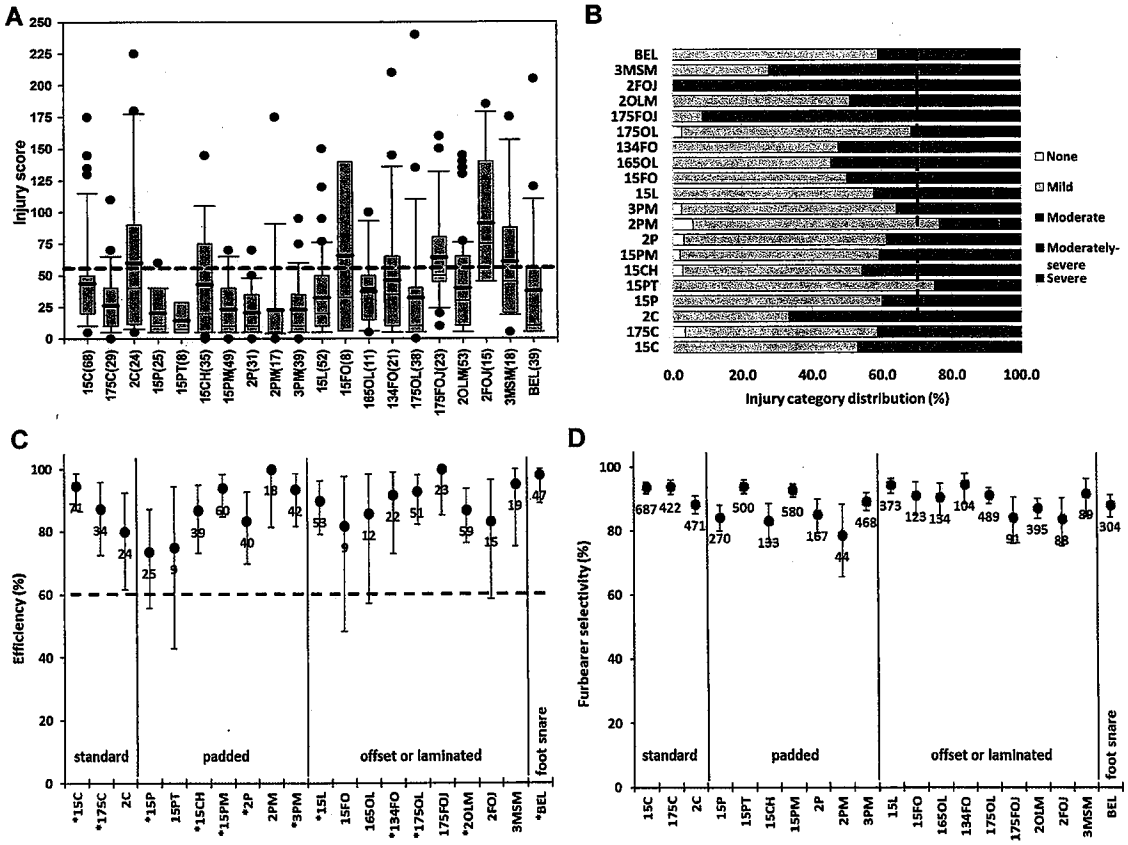

Figure 18. Trap performance profiles for live-restraining traps evaluated on red foxes from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of red foxes captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of red foxes captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

and 1 failed both criteria (Fig. 18; Table S29). The mean cumulative injury score for the 5 traps meeting sample size requirements was 42.8, similar to standard-jaw models. The most common injuries were in the mild category, particularly mild edema, minor lacerations, and minor periosteal abrasions; self-directed biting occurred with 3 (1.6%) red foxes, and we did not find any dead from trap-related stress or injury in these devices (Tables S1 and S30). For this jaw-type category, injury scores generally increased with trap size, with little to no improvement in efficiency (Fig. 18). All traps meeting sample size requirements passed the BMP efficiency criterion (range = 87–100%) and furbearer selectivity ranged from 84–95% (Fig. 18; Table S29). Four of the 5 models with sufficient sample sizes passed all BMP criteria (Fig. 18; Table S29).

We conducted post-mortem examinations on 39 of the 47 red foxes captured in the footsnare (BEL; Appendix A); the mean injury score was 37.4. Approximately 87% of red foxes sustained only lower-trauma injuries (Fig. 18; Table S29). The most common injuries were mild edema, lacerations, and minor periosteal abrasions; there was no evidence of self-directed biting and we did not find any red foxes dead from trap-related stress or injury in the BEL (Tables S1 and S30). The BEL met all criteria for animal welfare and efficiency (98%); furbearer selectivity in this device was 88% (Fig. 18; Table S29). Overall, 12 restraining devices with sufficient sample size met all BMP criteria for red foxes, and 2 failed the welfare criteria (Fig. 18; Table S29).

Ringtail

Trappers captured 20 ringtails (*Bassariscus astutus*) in the Great Plains-West region using a wire-mesh cage trap (Cage 108; Appendix A). The mean cumulative injury score for ringtails captured in this trap was 5.0 (median = 0.0; SE = 3.7; Table S31). All individuals sustained either no (80%), mild (5%), or moderate injuries (15%), and this trap met the lower-trauma criterion (Table S31). The most common injuries were mild edema and tooth damage; no incidence of self-directed biting or trap-related mortality occurred (Tables S1 and S32). Capture efficiency was 100% and furbearer selectivity was 88.4%

for the Cage 108 (Table S31). This restraining device met all BMP criteria (Table S31). To date, we have not evaluated any other live-restraining devices on ringtails.

Striped Skunk

Trappers captured 320 striped skunks in 14 live-restraining devices in the Great Plains-West, Midwest, Northeast, and Southeast regions. We conducted post-mortem examinations on 188 skunks. Most striped skunk captures were incidental during projects targeting other species, with the exception of 1 cage trap project where striped skunks were the focal species. We met required sample sizes for only 3 of the 14 devices that captured skunks (Fig. 19; Table S33).

The number 1 coil-spring foothold trap with double jaws (1DJ; Appendix A) did not meet either animal welfare criterion (Fig. 19; Table S33), but capture efficiency was 100%. Considering all 11 foothold traps regardless of sample size, only 1 model (number 1.65 coil-spring with offset laminated jaws [165OL]; $n = 8$) currently meets the welfare thresholds. Across all models with sample size >8, an average of 57% of striped skunks exhibited severe injuries, and self-directed biting occurred in an average of 44% of the skunks; we did not find any skunks dead as a result of trap-related stress or injury. No foothold traps currently meet all BMP criteria for striped skunks (Fig. 19; Table S33).

Trappers captured 70 striped skunks in 2 models of cage traps (Cage 105.5, Cage 108; Appendix A), of which we conducted post-mortem examinations on 51 (Fig. 19; Table S33). No animals exhibited any injury (Tables S33 and S34), we did not find animals dead from trap-related stress or injury, and both cage traps had 100% efficiency on striped skunks (Fig. 19; Table S33). Furbearer selectivity was higher in the smaller Cage 105.5 (96% vs. 88%), and both met all BMP criteria (Fig. 19; Table S33).

Trappers incidentally captured 18 striped skunks in the footsnare (BEL; Appendix A), of which 8 were necropsied (Fig. 19; Table S33). Although sample size is too low for BMP evaluation, this trap had the second-highest injury score (106.3; Fig. 19; Table S33), with 63% of animals exhibiting severe injuries and 63% with indications of self-directed biting (Fig. 19; Tables S1 and S34); we doubt the trap would pass welfare criteria if additional samples were obtained. Efficiency of the BEL

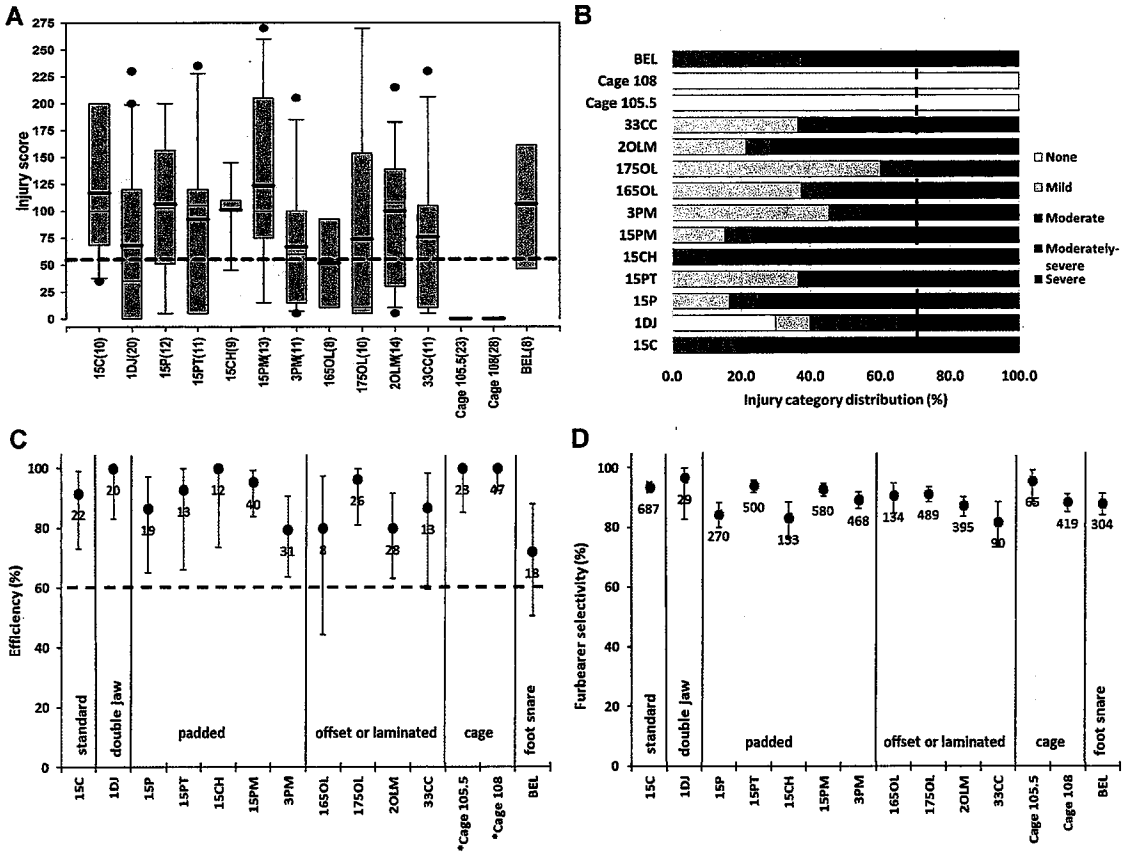

Figure 19. Trap performance profiles for live-restraining traps evaluated on striped skunks from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after x-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of striped skunks captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of striped skunks captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

on striped skunks was also lower (72%) than for other tested traps, and furbearer selectivity was 88% (Fig. 19; Table S33). For all restraining devices evaluated on striped skunks that met sample size, currently only the 2 cage traps pass all BMP criteria (Fig. 19; Table S33).

Swift and Kit Foxes

We tested 2 models of number 1 coil-spring foothold trap (standard jaws [1C] and padded jaws [1P]) and 1 model of wire-mesh cage trap (Cage 108; Appendix A) on swift and kit (*Vulpes macrotis*) foxes. Trappers captured 66 swift and kit foxes in the Great Plains-West and Midwest regions, of which we necropsied 64.

Although the mean injury score for the 1P was much lower than for the 1C (67 vs. 100), neither model met either injury criterion (Fig. 20; Table S35). The most common injuries in foothold traps included mild edema and hemorrhage, and minor subcutaneous soft tissue maceration (Tables S1 and S36). However, failing injury scores appear largely a result of a high percentage of animals also exhibiting major skeletal muscle degeneration (Tables S1 and S36) in their limbs (a moderately severe injury), presumably a result of lunging while in the trap. One animal showed indications of self-directed biting, and we did not find any individuals dead from trap-related stress or injury (Tables S1 and S36). The 1C had higher efficiency than the 1P (95% vs. 81%), and furbearer selectivity in these traps was identical (98%). Neither device met all BMP criteria (Fig. 20; Table S35).

Fifty-five percent of swift and kit foxes captured in the Cage 108 ($n = 20$) sustained no injuries, with a mean injury score of 13.5 (Fig. 20; Table S35). Of the foxes with injuries, all were in the lower-trauma category (Fig. 20; Table S35); the only trauma reported was tooth damage, of which 45% showed evidence (Tables S1 and S36). There was no evidence of self-directed biting or mortality from trap-related stress or injury in the Cage 108 (Tables S1 and S36). Efficiency of this cage trap on swift and kit foxes was 81%, and furbearer selectivity was 88% (Fig. 20; Table S35). The Cage 108 was the only swift and kit fox restraining trap we tested that met all BMP criteria (Fig. 20; Table S35).

Virginia Opossum

We collected data on Virginia opossums in 26 models of foothold traps (19 with BMP-sufficient sample size), 2 models

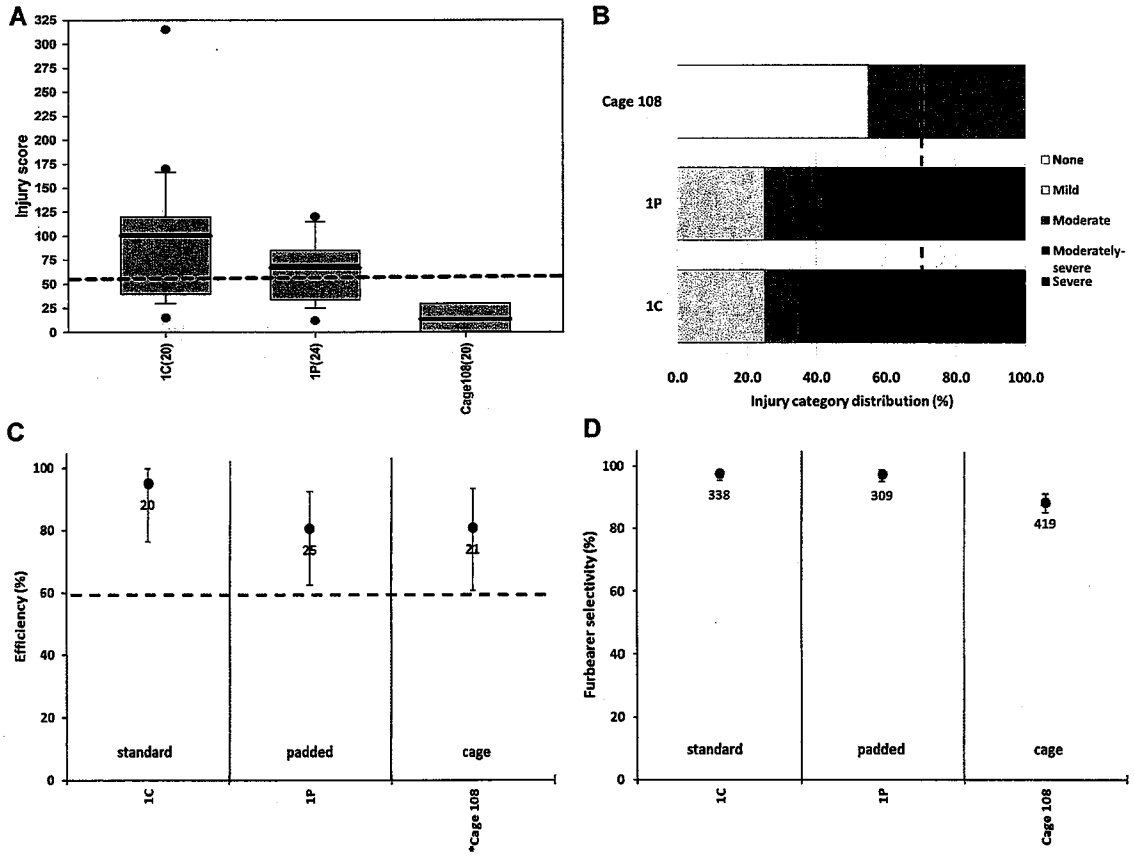

Figure 20. Trap performance profiles for live-restraining traps evaluated on swift and kit foxes from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of swift and kit foxes captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of swift and kit foxes captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

of foot-encapsulating traps, 1 model of cage trap, and 1 model of power-activated footsnare. As with striped skunks, most Virginia opossums captured during our study were incidental on projects targeting other species. Trappers captured 1,715 opossums in the Great Plains-West, Midwest, Northeast, and Southeast regions, of which we conducted post-mortem examinations on 954.

Foothold traps.—Of 204 Virginia opossums captured in 2 models of standard-jaw coil-spring traps (number 1 coil-spring [1C], number 1.5 coil-spring [15C]; Appendix A) with sufficient sample size, we conducted post-mortem examinations on 107. Both standard-jaw foothold models failed both injury criteria (Fig. 21; Table S37). The mean cumulative injury score for these 2 standard-jaw foothold models was 87.6. Opossums exhibited numerous types of injuries, including those categorized as mild (swelling, minor laceration, and minor periosteal abrasion), moderate (chipped or fractured teeth, major subcutaneous maceration), and severe (fracture or joint luxation above the carpus or tarsus (Tables S1 and S38). None captured in the 1C exhibited self-directed biting or died from trap-related stress or injury. In the 15C, 4 (5.1%) animals exhibited self-directed biting, and we did not find any dead from trap-related stress or injury (Tables S1 and S38). Though several models had insufficient sample sizes, injury scores increased with trap size for standard-jaw footholds. Both standard-jaw foothold models meeting sample size requirements had similar efficiency (95–96%) and furbearer selectivity (94–98%); no trend in efficiency was apparent with increasing trap size for standard-jaw models, but furbearer selectivity slightly declined with trap size (Fig. 21; Table S37). Neither standard-jaw foothold passed all BMP criteria for opossums (Fig. 21; Table S37).

Of 147 opossums captured in 5 models of double-jaw coil-spring traps meeting sample size requirements, we conducted post-mortem examinations on 128. One of the 5 models (number 1.5 coil-spring with double jaws [15DJ]; Appendix A) passed both welfare criteria, with a mean injury score at the BMP threshold (55.0; Fig. 21; Table S37). The average cumulative injury score for all 5 models pooled was 68.5. Similar to standard-jaw models, opossums captured in double-jaw models exhibited numerous types of injuries, including those categorized as mild (swelling, minor laceration, and minor periosteal abrasion), moderate (chipped or fractured teeth, major

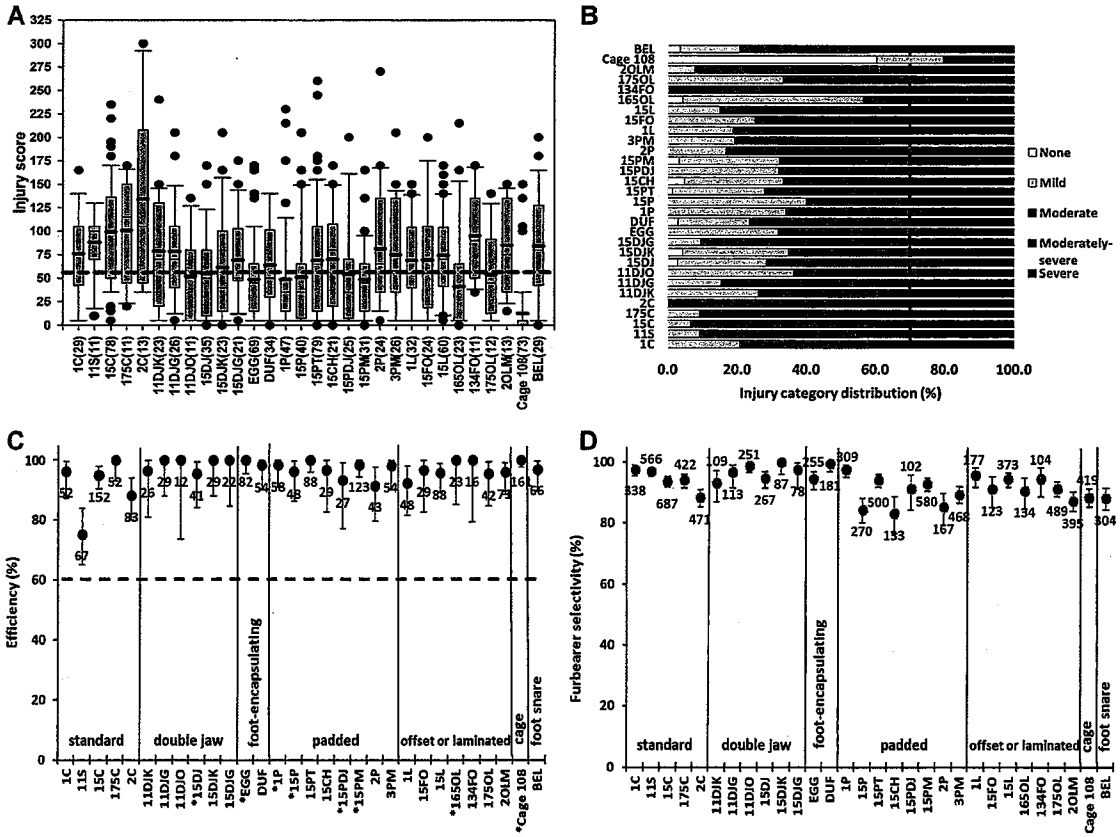

Figure 21. Trap performance profiles for live-restraining traps evaluated on Virginia opossums from 1997–2018 during development of best management practices (BMP) for trapping in the United States. A) Trap-specific boxplots of cumulative injury scores for all animals necropised; thick line represents mean, thin line represents median. Necropsy sample size is shown in parentheses after *x*-axis trap labels. B) Injury severity class distribution (%) for the most severe injury each animal incurred; necropsy sample sizes are the same as in A. C) Efficiency (% of Virginia opossums captured that activated the trap); error bars represent 95% confidence intervals, and numeric labels represent number of Virginia opossums captured. D) Furbearer selectivity (%); error bars represent 95% confidence intervals, and numeric labels represent total number of furbearers captured in each trap type. All graphs have traps organized by broad type (e.g., cage trap, footsnare, foot-encapsulating trap) or by jaw type (standard, double, padded, and offset or laminated) for foothold traps, and are generally ordered in increasing size from left to right within each type. Dashed lines represent metric-specific BMP thresholds and an asterisk preceding a trap code in panel C denotes a trap that met sample size requirements and passed all BMP criteria. Detailed explanation of trap codes can be found in Appendix A.

subcutaneous maceration), and severe (fracture or joint luxation above the carpus or tarsus; Tables S1 and S38). Two (1.5%) animals captured in these 5 models exhibited self-directed biting, and we did not find any opossums dead from trap-related stress or injury (Tables S1 and S38). Efficiency was high (>95%) for all 5 models, as was furbearer selectivity (93–100%; Fig. 21; Table S37). Although there was some variation in trap sizes for the models evaluated, there was no obvious association between trap size and injury, efficiency, or furbearer selectivity (Fig. 21). One double-jaw foothold tested on opossums passed all BMP criteria (Fig. 21; Table S37).

Of 470 opossums captured in 8 models of padded-jaw coil-spring traps that met sample size requirements, we conducted post-mortem examinations on 293. Four of the 8 models passed both welfare criteria, and 4 failed 1 or both criteria (Fig. 21; Table S37). The mean cumulative injury score for all 8 padded-jaw foothold models was 62.2. As with standard- and double-jaw models, opossums captured in padded-jaw models exhibited numerous types of injuries (Tables S1 and S38), including those categorized as mild (swelling, minor laceration, and minor periosteal abrasion), moderate (chipped or fractured teeth, major subcutaneous maceration), and severe (fracture or joint luxation above the carpus or tarsus). The average percentage of severe injuries was lower (15% vs. 33%) for the 4 padded-jaw models that passed welfare criteria than those that did not (Tables S1 and S38). Seventeen (5.8%) of the 293 opossums necropsied exhibited evidence of self-directed biting, and we did not find any opossums captured in padded-jaw models dead from trap-related stress or injury (Tables S1 and S38). Efficiency was high (>91%) for all 8 models, and furbearer selectivity ranged from 83–98% (Fig. 21; Table S37). There was no obvious correlation between trap size and efficiency or furbearer selectivity, but injury scores slightly increased with trap size for padded-jaw models (Fig. 21). Four models of padded-jaw trap meeting sample size requirements passed all BMP criteria, and 4 failed the welfare criteria (Fig. 21; Table S37).

Of 188 opossums captured in 4 models of offset-, laminated-, or wide-jaw coil-spring traps that met sample size requirements, we conducted post-mortem examinations on 139. One model, the largest of the 4 (number 1.65 coil-spring with offset laminated jaws [165OL]; Appendix A), passed both welfare criteria. The mean injury score for the 165OL was 41.1 (Fig. 21; Table S37), compared to 63.4 for all 4 models combined. Opossums captured in these foothold jaw types exhibited injuries similar to other jaw types, including those classified as mild (swelling, minor laceration, and minor periosteal abrasion), moderate (chipped or fractured teeth, major subcutaneous maceration), and severe (fracture or joint luxation above the carpus or tarsus); the 1 model that passed welfare criteria had a lower percentage of severe injuries (Tables S1 and S38). Eight (5.8%) of the 139 opossums necropsied exhibited evidence of self-directed biting, and we did not find any opossums captured in these jaw types dead from trap-related stress or injury (Tables S1 and S38). Efficiency was high (>92%) for all 4 models with adequate sample size, and furbearer selectivity ranged from 91–96% (Fig. 21; Table S37). There was no obvious association between trap size and cumulative injury score, efficiency, or furbearer selectivity (Fig. 21). For the 4 models of offset-, laminated-, or wide-jaw coil-spring traps that met sample size requirements, the 165OL passed all BMP criteria, and 3 failed the welfare criteria (Fig. 21; Table S37).

Foot-encapsulating traps.—We conducted post-mortem examinations on 103 of 136 opossums captured in 2 foot-encapsulating traps (DUF, EGG; Appendix A). The EGG met both criteria for animal welfare, whereas the DUF failed both criteria (Fig. 21; Table S37). For both traps, the most common injuries were mild edema, mild lacerations, and major subcutaneous soft tissue maceration or erosion; the primary difference was that the DUF had a higher percentage of animals with fractures at or below the carpus or tarsus (i.e., a severe injury; Tables S1 and S38). We observed evidence of self-directed biting in 5 (3.7%) animals, 4 being in the EGG; we did not find any animals dead from trap-related stress or injury (Tables S1 and S38). Both foot-encapsulating traps had capture efficiency >98% and furbearer selectivity ≥94% (Fig. 21; Table S37). The EGG met all BMP criteria, whereas the DUF failed the welfare criteria (Fig. 21; Table S37).

Cage traps.—Trappers captured 161 opossums in the Cage 108 (Appendix A) and we conducted a post-mortem examination on 73. The Cage 108 had the lowest mean cumulative injury score (12.5) of all restraining traps tested on opossums (Fig. 21; Table S37). Approximately 95% of opossums captured in the Cage 108 sustained injuries in only the lower-trauma categories (Fig. 21; Table S37). The most common injury we observed was mild edema; no self-directed biting or trap-related mortalities occurred (Tables S1 and S38). The Cage 108 met all BMP welfare and efficiency criteria, and furbearer selectivity was 88.4% (Fig. 21; Table S37).

Footsnares.—Of 66 Virginia opossums captured in the power-activated footsnare (BEL; Appendix A), we conducted a post-mortem examination on 29 individuals. The mean cumulative injury score in the BEL was 84.0 (Fig. 21; Table S37). Approximately 55% of opossums captured in the BEL sustained only lower-trauma injuries (Fig. 21; Table S37). The most common injuries observed were mild edema and minor laceration; we detected self-directed biting in 1 animal and we did not find any opossums dead from trap-related stress or injury in the BEL (Tables S1 and S38). The BEL did not meet either animal welfare criterion, but did meet the efficiency criterion (97%); furbearer selectivity was 88.1%, the fourth lowest of all restraining traps tested on opossums (Fig. 21; Table S37). Overall, 8 of the 23 restraining devices evaluated on Virginia opossums met all BMP criteria (Fig. 21; Table S37).

Multi-Species Comparisons

Injury scores.—Sample sizes were sufficient to allow a comparison of mean injury score for 21 trap-species pairs across >1 states or state-groupings, including 2 traps for bobcats, 6 traps for coyotes, 2 traps for gray foxes, 3 traps for opossums, and 8 traps for raccoons (Fig. 22). Of the 21 comparisons we were able to conduct, injury scores were statistically different ($P < 0.05$) for 2 comparisons; the mean injury score for the number 1.5 padded-jaw trap with 4 coil-springs (15PM) was higher for coyotes in South Dakota-Wyoming than in Maine-Vermont, and the mean injury score for the number 1.5 padded-jaw trap with 2 stronger coil-springs (15PT) was higher for raccoons in midwestern states where the trap was tested (i.e., Kansas-Missouri-Wisconsin)

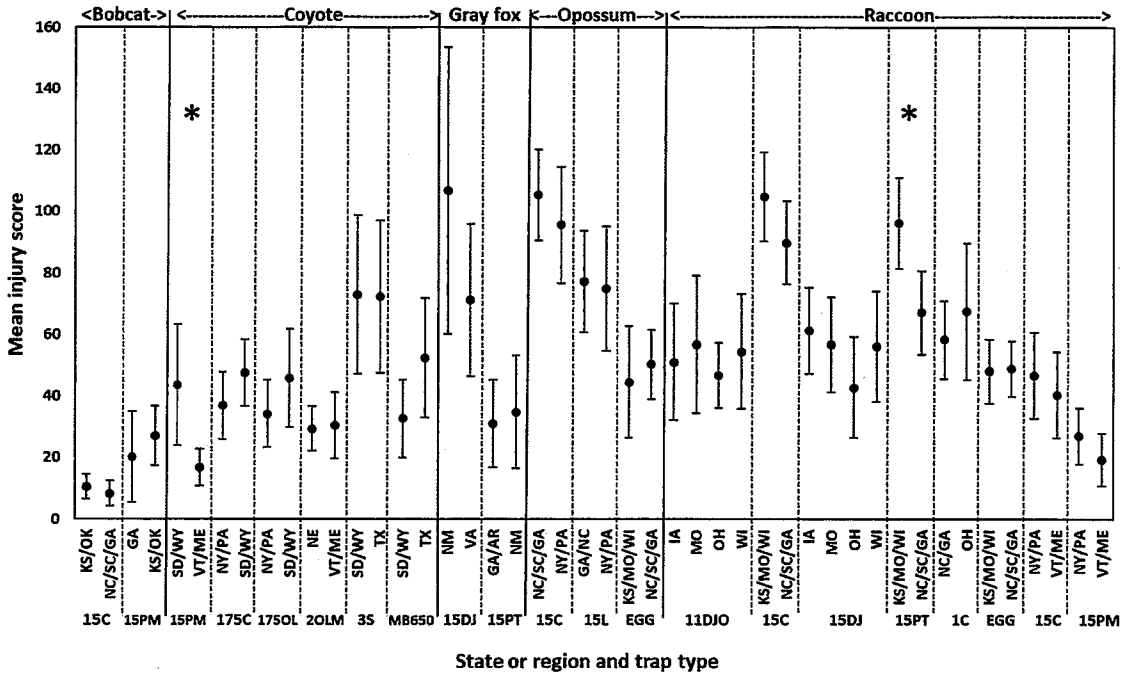

Figure 22. Comparison of mean injury score between states or state groups for 21 trap-species combinations where group-specific sample size was ≥17 during best management practices trap testing in the United States, 1997–2018. Error bars represent 95% confidence intervals. Asterisk denotes a significant difference ($P < 0.05$) in mean injury score between groups. Detailed explanation of trap codes can be found in Appendix A.

than in southeastern states (i.e., North Carolina-South Carolina-Georgia).

Across taxonomic groupings, injury scores were lowest for felids (Fig. 23), which primarily consisted of bobcats in our dataset. Canid and mustelid injury scores were also generally lower than for didelphids, procyonids, and rodents, with minimal differences in average injury scores across the latter 3 taxonomic groups (Fig. 23). Injury scores also generally decreased with increasing body-size class (Fig. 24).

With species pooled, cage traps had the lowest average injury score and there was minimal variation across the other 3 trap-type categories (Fig. 25). We did not test all trap types on all species or species groupings, but this pattern was largely consistent across taxonomic groups and body-size classes (Fig. 25). The greater average injury score for the footsnare in both the mustelid family and medium-small body-size class is largely a result of higher injury in striped skunks, though sample size for striped skunks in this trap is currently below the minimum required for BMP assessment.

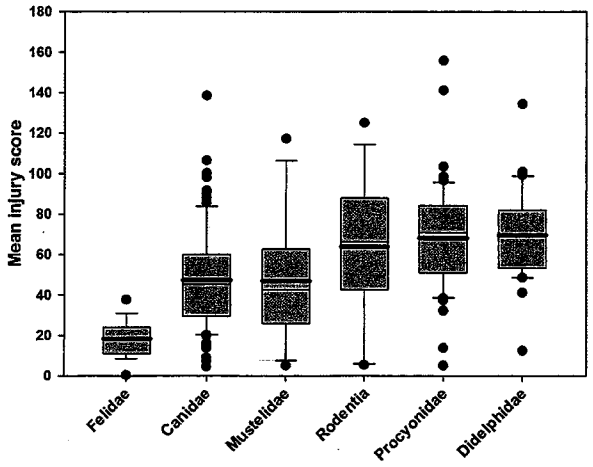

Figure 23. Distribution of mean injury scores by taxonomic group across all traps tested during best management practices trap testing in the United States, 1997–2018. The overall mean for each group is represented by the thick line, and the median by the thin line.

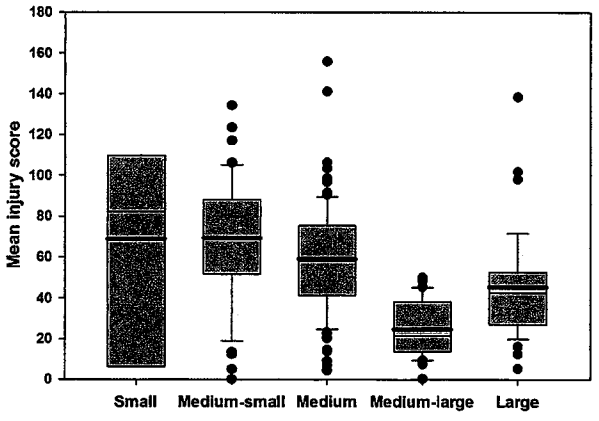

Figure 24. Distribution of mean injury scores across all traps tested on species grouped by body-size classes (small: muskrats, ringtails; medium-small: swift and kit foxes, opossums, fishers, and striped skunks; medium: Arctic, red, and gray foxes, raccoons, and nutria; medium-large: badgers, bobcats, lynx, and river otters; large: coyotes, wolves, and beavers) during best management practices trap testing in the United States, 1997–2018. The overall mean for each group is represented by the thick line, and the median by the thin line.

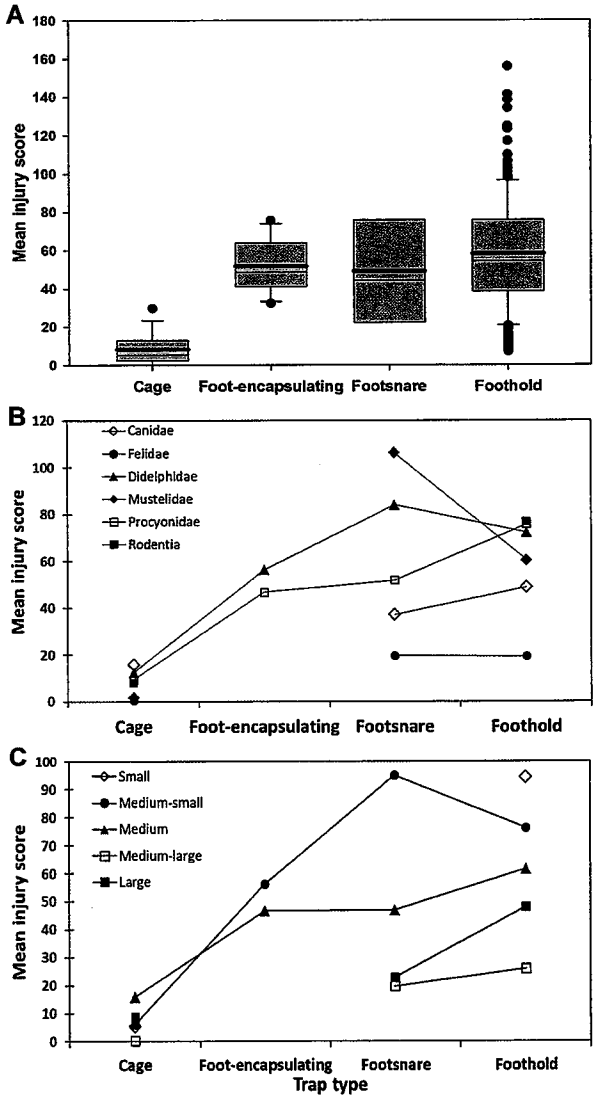

Figure 25. Distribution of mean injury scores by trap type for all species pooled (A), and mean scores for trap types by taxonomic group (B) and by body-size classes (C; small: muskrats, ringtails; medium-small: swift or kit foxes, opossums, fishers, and striped skunks; medium: Arctic, red, and gray foxes, raccoons, and nutria; medium-large: badgers, bobcats, lynx, and river otters; large: coyotes, wolves, and beavers) during best management practices trap testing in the United States, 1997–2018. Connecting lines in B and C are used only to facilitate comparison of patterns among groups.

With species pooled, we did not observe any difference in average injury scores between standard-jaw and double-jaw foothold models, or between offset-laminated and padded-jaw models (Fig. 26). However, injury scores for the latter 2 jaw types were on average lower than the former 2 jaw types (Fig. 26). Although data were sparse for some groupings, there were no obvious exceptions to this pattern across taxonomic groups or body-size classes.

Although there were some patterns in species-specific injury scores as a function of foothold trap size, there was no overall (i.e., species pooled) trend in average injury scores as foothold trap size increased (Fig. 27). Data for some sub-groupings were often sparse, but the only potential exceptions to this

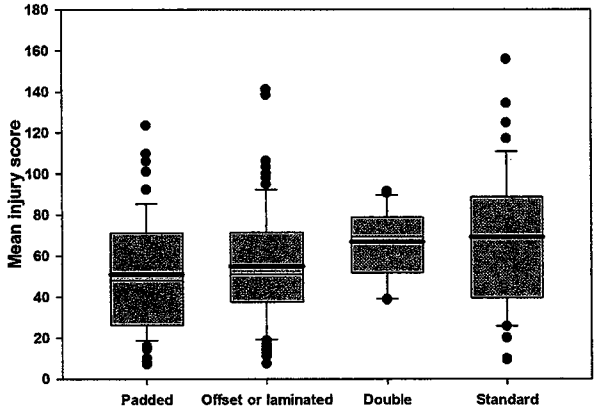

Figure 26. Distribution of mean injury scores by jaw type for all foothold traps evaluated (species pooled) during best management practices trap testing in the United States, 1997–2018. The overall mean for each jaw type is represented by the thick line, and the median by the thin line.

observation for any jaw type, taxonomic, or body-size sub-groupings were slight increases in injury scores with increasing trap size for canids and procyonids, and a moderately increasing trend for the large body-size class (with data dominated by coyote testing; Fig. 28).

Averaged across all traps tested, self-directed biting was absent or very rare (≤2% of animals) for most species, rare (4–7%) for 4 species (badgers, gray foxes, Virginia opossums, and North American river otters), and most common for raccoons (21%) and striped skunks (39%; Fig. 29). There was a statistically significant, albeit relatively low, correlation between mean injury scores and the percentage of animals exhibiting self-directed biting ($r = 0.49$, $P < 0.001$). Self-directed biting was least common in cage traps, and highest for footsnares (Fig. 29). For foothold traps, jaw type did not appear to have a strong influence on propensity for self-directed biting (Fig. 29), with the

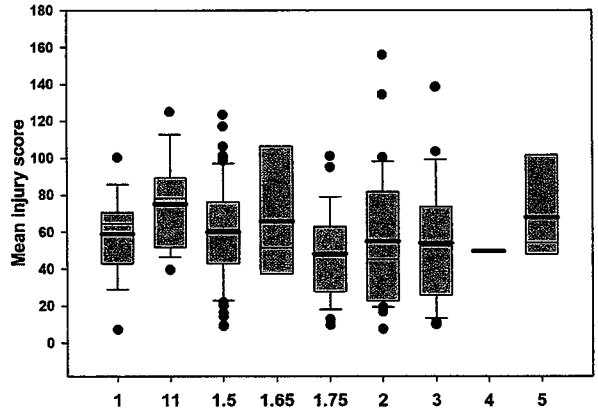

Figure 27. Distribution of mean injury scores by foothold trap size for all species pooled during best management practices trap testing in the United States, 1997–2018. The overall mean for each trap size is represented by the thick line, and the median by the thin line. Trap sizes on the *x*-axis are based on the common nomenclature used by trap manufacturers. Although this nomenclature is typically associated with trap jaw spreads, it is not an actual measurement in itself.

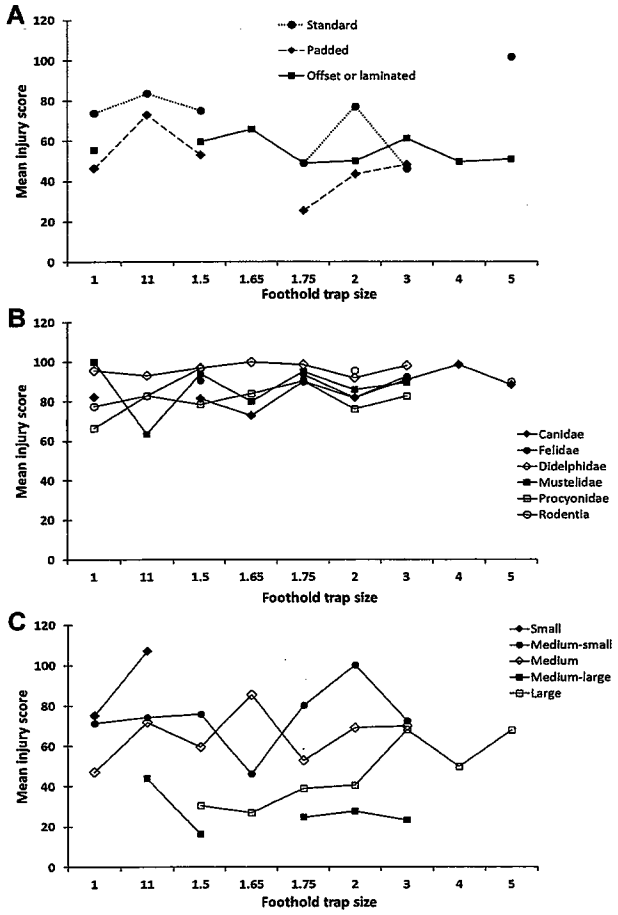

Figure 28. Mean injury score for each foothold trap size by jaw type (A), taxonomic group (B), and body-size class (C) during best management practices trap testing in the United States, 1997–2018. Trap sizes on the *x*-axis are based on the common nomenclature used by trap manufacturers. Although this nomenclature is typically associated with trap jaw spreads, it is not an actual measurement in itself. Connecting lines are used only to facilitate comparison of patterns among groups.

exception of raccoons for which double-jaw models did reduce self-directed biting compared to other foothold jaw types.

Capture efficiency.—Average capture efficiency was typically high ($\bar{x} = 86\%$) and few trap models failed the efficiency criterion for any species. There were some differences in average capture efficiency across taxonomic groups (Fig. 30); efficiency was the greatest for opossums (96%), intermediate for mustelids and felids (87–89%), and slightly lower for canids, rodents, and procyonids (82–85%); observed differences across groups were not practically significant for many trapping situations. Capture efficiency did not exhibit any consistent trend across body-size classes (Fig. 31).

Capture efficiencies for cage and foot-encapsulating traps (the latter highly selective for raccoons and opossums) were similar and the greatest of the 4 trap types we evaluated (Fig. 32); average efficiency was progressively lower for foothold traps and footsnares, though still remained high (>76%) for both. This pattern (i.e., greatest to least: foot-encapsulating and cage, foothold, footsnare) was generally consistent across taxonomic groups, with the exception of similar capture efficiency for all trap types on opossums and little difference between footholds and footsnares for canids (Fig. 32). Grouping by body-size classes yielded more-unbalanced data for comparison, but these trap-type patterns in efficiency were not notably dissimilar across size groups (Fig. 32).

Average capture efficiency generally increased with foothold trap size (Fig. 33), though the range across trap sizes was not substantial (79–98%). This slightly increasing trend was broadly similar across all body-size classes (Fig. 33), but efficiency increased more rapidly with trap size for the larger species (data dominated by coyote testing). We did not observe any overall difference in average capture efficiency across foothold trap jaw types (Fig. 34). When examined by taxonomic groups or body-size classes, the primary exception to this observation, acknowledging data for some sub-groupings were sparse, was lower efficiency with double-jaw traps for the procyonid, canid, and mustelid groups (Fig. 34), which in this case is largely explained by lower efficiency for raccoons, gray foxes, and river otters, respectively. Lower efficiency for the double-jaw trap in the medium-large body-size class is also a result of poor efficiency on river otters, the only species in this body-size class for which a double-jaw trap was tested, and a species for which all foothold traps we tested had lower efficiency.

Parsing data based on whether each trap model was primarily set (regardless of focal species) on land, in water, or both (i.e., primarily raccoons in our dataset), average capture efficiency was high (>75%) for all categories, but was higher for traps set in terrestrial locations ($\bar{x} = 88.7\%$; 95% CI = 86.9–90.5) than in mixed ($\bar{x} = 81.3\%$; 95% CI = 77.9–84.7) or aquatic ($\bar{x} = 76.2\%$; 95% CI = 66.4–86.1) locations.

Furbearer selectivity.—Across trap types, average furbearer selectivity was consistently high, with footsnares being the lowest (88%) and foot-encapsulating traps being the highest (99%; Fig. 35). There were not any notable differences in furbearer selectivity across either foothold trap sizes or jaw types (Fig. 35). When parsed by locations where traps were set, average furbearer selectivity was consistently high (>93%) but slightly lower in traps deployed only in terrestrial sets than those in mixed-location sets (terrestrial: $\bar{x} = 93.1\%$, 95% CI = 91.5–94.6; mixed: $\bar{x} = 96.1\%$, 95% CI = 94.6–97.6; aquatic: $\bar{x} = 94.7\%$, 95% CI = 87–100).

During the 21 years of trap testing, trappers deployed live-restraining traps for approximately 230,000 trap nights. During this time, trappers did not capture any individuals of a threatened or endangered species. Trappers captured 1,035 non-furbearers (11% of total captures), of which 83% were alive upon trap visitation. The majority of non-furbearers captured were feral or free-ranging cats ($n = 292$, 28% of non-furbearers, 3.4% of total captures), lagomorphs (primarily cottontail rabbits [*Sylvilagus floridanus*]; $n = 219$, 21% of non-furbearers, 2.5% of total captures), feral or free-ranging dogs ($n = 199$, 19% of non-furbearers, 2.3% of total captures), and birds ($n = 139$, 13% of non-furbearers, 1.6% of total captures). Other captures in order of decreasing frequency were small rodents and squirrels, porcupines (*Erethizon dorsatum*), deer (*Odocoileus* spp.), black bears (*Ursus americanus*), frogs, and livestock (2 cows, 1 sheep). Of the 199 feral or free-ranging dogs captured, all were alive, none were deemed to be in need of veterinary care by our technicians, and

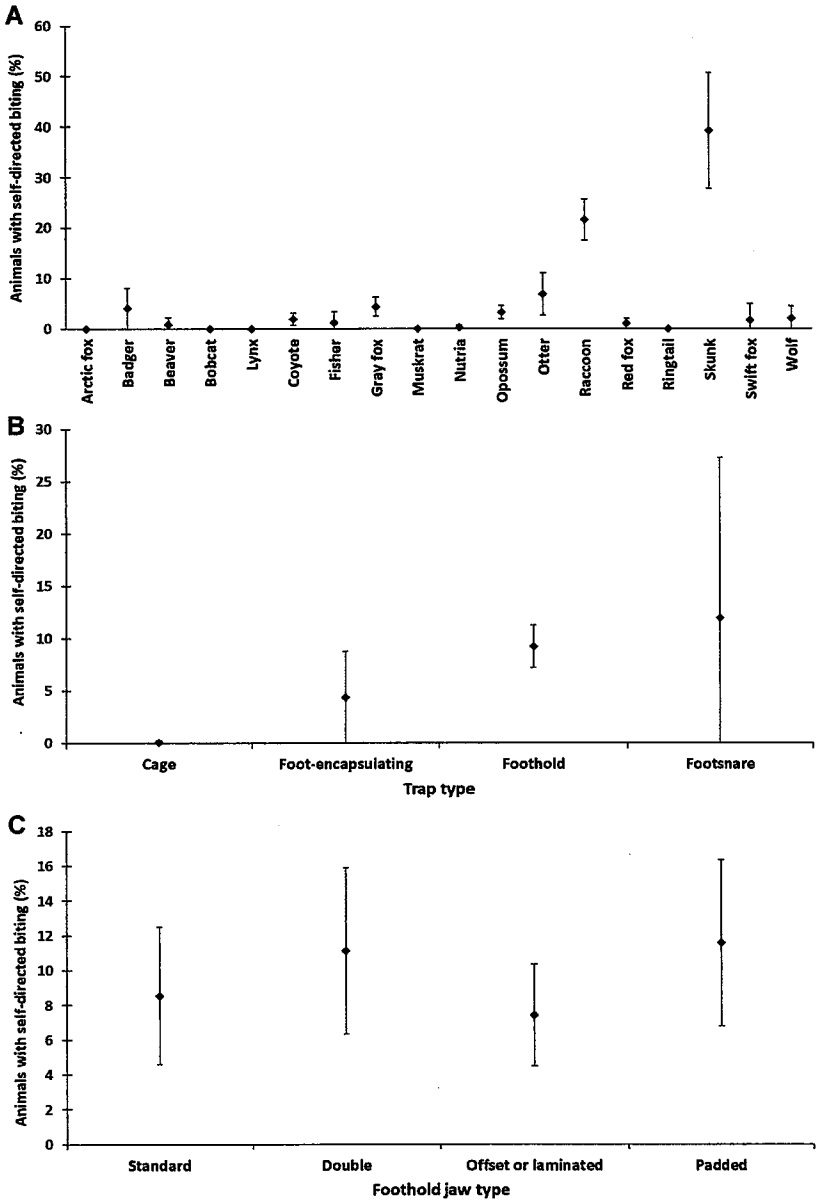

Figure 29. Mean percentage of animals exhibiting self-directed biting by species (A), trap type (B), and foothold jaw types (C) during best management practices trap testing in the United States, 1997–2018. Error bars represent 95% confidence intervals.

no dog owners (when they could be located) requested any veterinary care. Of the 292 feral or free-ranging cats captured, 2 (1%) were dead upon trap inspection. Although confirming the owner of a captured cat was often impossible (we suspect a majority were feral cats), none of the 290 that were alive upon inspection were deemed in need of veterinary care by technicians or any owners that could be located. Nearly all of the 17% of non-furbearers that were dead upon trap inspection were birds, rabbits, and squirrels, sometimes a result of predation while in a trap.

DISCUSSION

Our research was not the first to evaluate traps with the goal of improving animal welfare. For example, Robinson (1959) described the efforts of the American Humane Association and cooperators to conduct a professionally judged humane trap contest. Fall (2002) summarized other modern efforts, particularly those supported by the United States government, that focused on evaluating and addressing concerns about animal welfare, and much research and development has taken place since our initial review of trap testing research conducted over 2 decades ago (IAFWA 1997). In most trap research, numerical scores have typically been used to summarize injury incurred by a trapped animal (Olsen et al. 1986, Linhart et al. 1988, Olsen et al. 1988, Onderka et al. 1990, Phillips et al. 1992, Hubert et al. 1996). Although Linhart and Linscombe (1987) recommended the establishment of a standardized numerical system to rank trap-related injuries, the existence of several

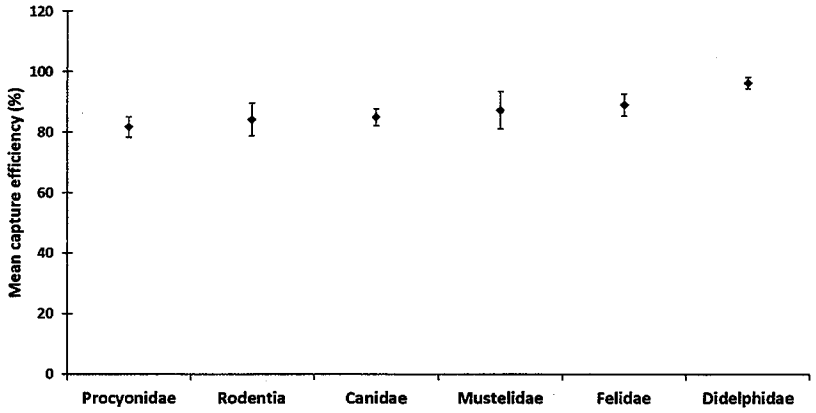

Figure 30. Mean capture efficiency by taxonomic group across all traps tested during best management practices trap testing in the United States, 1997–2018. Error bars represent 95% confidence intervals.

different and contradictory scoring systems has complicated absolute comparisons across studies. We believe the ISO scoring system provided a sound, objective, and repeatable approach that others should use in future trap-testing studies. Our work provides the largest and most standardized trap-injury database in the world for 19 species of mammals captured in a wide variety of restraining traps, and as such should form a central basis for any further consideration of animal welfare in restraining traps.

Demonstrating that trapping devices and methods can be acceptably humane, selective, and efficient is critical for ensuring that traps remain viable tools for use by avocational trappers, wildlife control operators, public health officials, and wildlife managers and researchers (Novak 1987*b*). Batcheller et al. (2000) identified the adoption of BMPs as an essential component of sustaining avocational trapping and the use of traps in furbearer management and research. In 2015, 66% of trappers who were aware of the BMPs used them when making trapping decisions, but more than half of all trappers had no knowledge of the BMPs (Responsive Management 2015). Lack of knowledge about trapping BMPs, although a concern, does not equate with lack of use of traps that in fact meet BMP criteria. Through a comparison of 2015 trap-use data in the United States (Responsive Management 2015; AFWA, unpublished data) with the list of BMP-compliant traps, we estimate that roughly 75% of all target furbearers trapped in the United States were (in 2015) taken in BMP-compliant traps, and an additional 10% were taken in traps not yet tested.

We continue to engage in a multifaceted outreach effort to avocational trappers and wildlife professionals, including through training workshops and online resources for wildlife agency staff and trappers (AFWA 2017*a*), presentations at wildlife conferences, attendance at state and national trapping conventions to discuss and distribute BMPs, writing articles in popular trapping magazines, and development of an online BMP trap-search portal (AFWA 2019). We also plan to continue periodic national surveys to assess changes in trap use in the United States, and encourage all wildlife managers and agencies, educational and research institutions, and those within the trapping community (Krause 2007) to continue trap research efforts and improve or expand trapping-related education and outreach.

For each trap we tested, we relied on multiple experienced trappers, typically in multiple states, to capture animals. Our

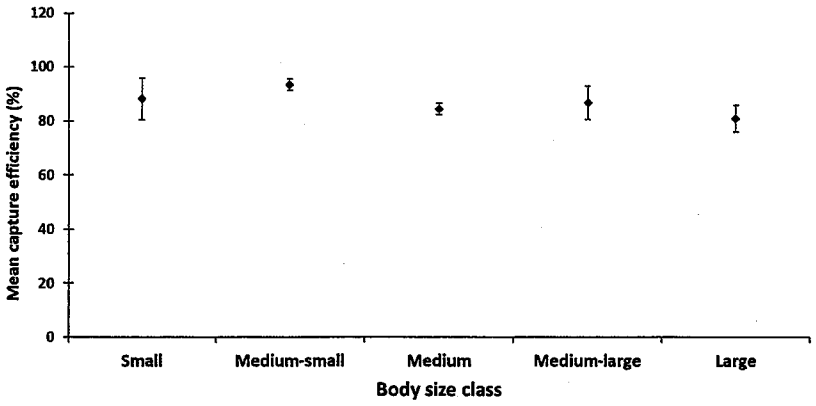

Figure 31. Average capture efficiency (all traps pooled) by body-size classes (small: muskrats, ringtails; medium-small: swift and kit foxes, opossums, fishers, and striped skunks; medium: Arctic, red, and gray foxes, raccoons, and nutria; medium-large: badgers, bobcats, lynx, and river otters; large: coyotes, wolves, and beavers) during best management practices trap testing in the United States, 1997–2018. Error bars represent 95% confidence intervals.

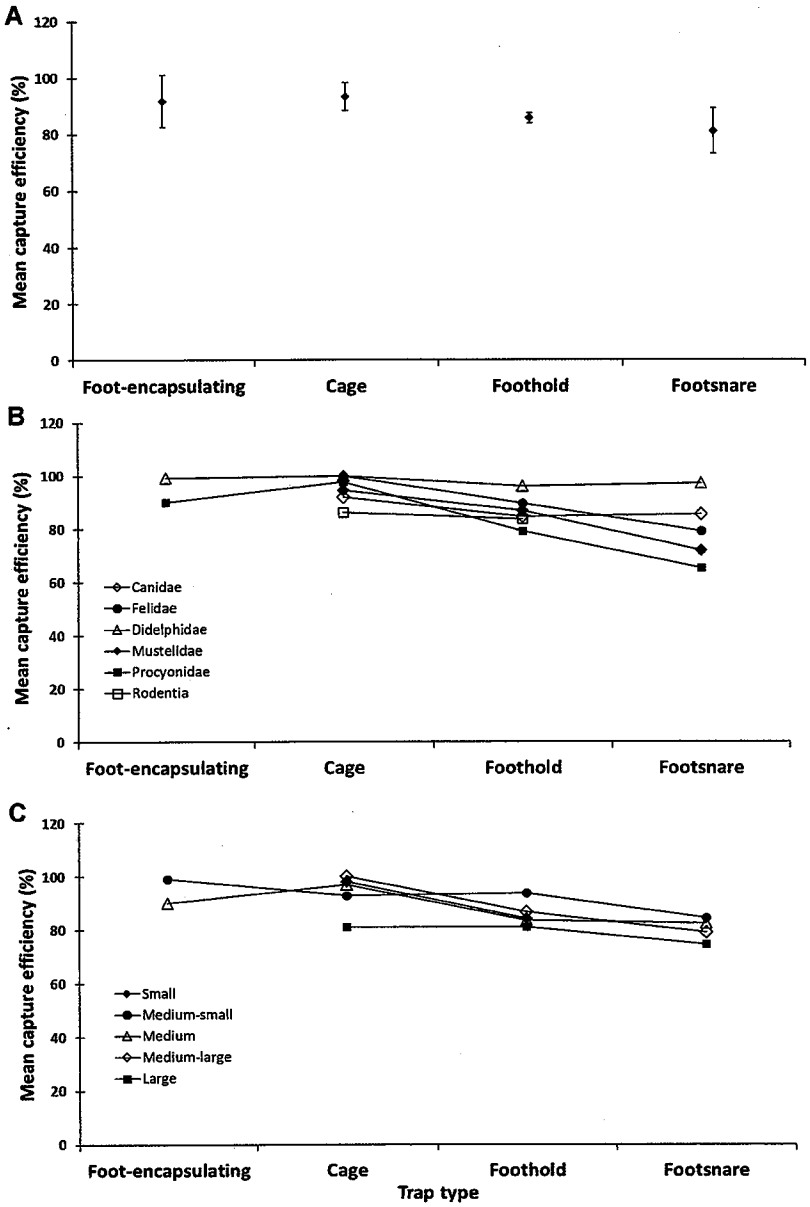

Figure 32. Average capture efficiency by trap type for all species pooled (A), by taxonomic group (B), and by body-size class (C) during best management practices trap testing in the United States, 1997–2018. Error bars in top graph represent 95% confidence intervals. Connecting lines in B and C are used only to facilitate comparison of patterns among groups.

results, therefore, describe the performance of traps deployed under variable biotic and abiotic conditions by experienced trappers. To help ensure our results will be broadly applicable predictors of trap performance, trapper education programs are critical, especially for new trappers. In the United States, trapper education programs were offered, as of 2015, in approximately 70% of states (AFWA 2016), though not all are mandatory. We also developed a national trapper education program (AFWA 2018) that is available to anyone and incorporates key BMP principles and findings. We encourage all states to implement trapper education courses, incorporate key BMP findings in those programs, and consider mentoring programs for beginning trappers. We also recommend that all students and research biologists involved in the live capture of furbearers receive training and consult our data and online trapping BMPs (AFWA 2017*a*) before initiating fieldwork; soliciting advice from experienced trappers is also highly encouraged.

Continuing innovation by trappers and trap manufacturers, ongoing trapper education efforts, and collaborative research between trappers and wildlife managers will lead to further improvements in animal welfare and trap selectivity and efficiency. Foot-encapsulating traps are but one recent example; they were developed by avocational trappers, confirmed through collaborative research to be efficient and highly selective for raccoons (and Virginia opossums) and to have notably lower injury scores than most traditional foothold traps, and now are

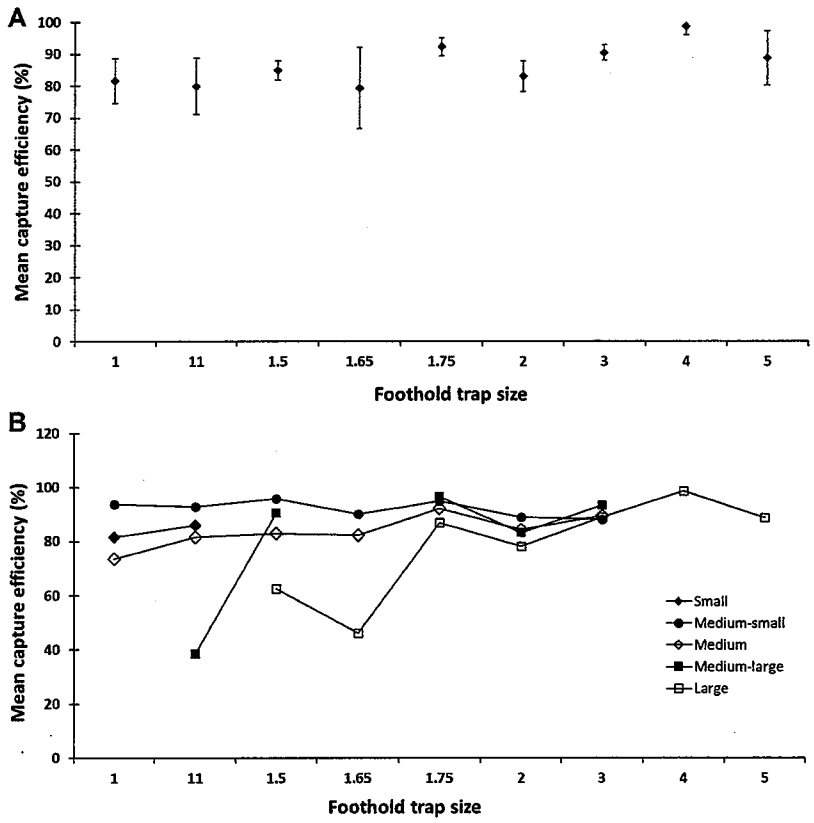

Figure 33. Average capture efficiency by foothold trap size for all species pooled (A) and by body-size class (B) during best management practices trap testing in the United States, 1997–2018. Error bars in top graph represent 95% confidence intervals. Trap sizes are based on the common nomenclature used by trap manufacturers. Although this nomenclature is typically associated with trap jaw spreads, it is not an actual measurement in itself. Connecting lines in B are used only to facilitate comparison of patterns among groups.

the most commonly used traps for raccoons in the United States (Responsive Management 2015).

We recognize there will be continuing debate about what constitutes appropriate welfare thresholds for animals captured in traps, but our use of an internationally accepted (ISO) injury scoring system and both cumulative and maximum injury thresholds provided a practical and appropriate way to assess and discriminate traps, and should ultimately improve the welfare of animals captured in restraining traps. We concluded 40% of the trap-species combinations that we evaluated failed BMP standards. Our numeric thresholds were intended for use in development of broad trapping BMPs, and we recognize there may be situations (e.g., capture of animals in pressing human health and safety situations, certain wildlife research projects) where higher or lower standards (i.e., welfare thresholds or trap-selection criteria) may be necessary or desired.

Although it may have been possible to collect additional information as an index of pain or distress (e.g., use of cameras to document animal behavior in traps, collection of blood for quantifying stress hormones), we did not for several reasons. First, our primary focus was to collect data specifically on trap-related injuries; injury severity scores have been shown to be reliable predictors of mortality risk in humans (Baker et al. 1974, Copes et al. 1988), and effects of injury on survival were a key consideration in our criteria development. Second, pain perception is a complex and subjective process (Katz and Melzack 1999), but we felt that it was reasonable to assume that injury scores would be positively, even if weakly, correlated with pain and distress. Finally, we, and the ISO process (ISO 1999*b*: Annex A, Scope 1, paragraph 1.2), concluded that translating observed behavior or hormone profiles into metrics with associated welfare thresholds seemed an intractable approach. For example, distinguishing stress associated directly with a specific trap injury (i.e., our primary focus) is confounded by stress associated with the presence of humans at the site to dispatch or release the animal, or possibly from agitation caused by other animals visiting the site. Our collective experience on numerous capture-related projects, along with published studies by others (Kreeger et al. 1990, Marks et al. 2004), clearly shows that although variable across individuals and species, captured animals often undergo a cycle of behavior from initial agitation upon capture to comparative inactivity, and then agitation when humans or other animals arrive at the site. Averaging or interpreting hormone metrics or behavior across the full time of capture did not seem possible with our long-term and large-scale effort. As with BMPs for any activity, they are intended to be living documents that incorporate both scientific and practical considerations. If future evidence suggests more appropriate thresholds or alternative field-practical metrics, our BMPs can be revised.

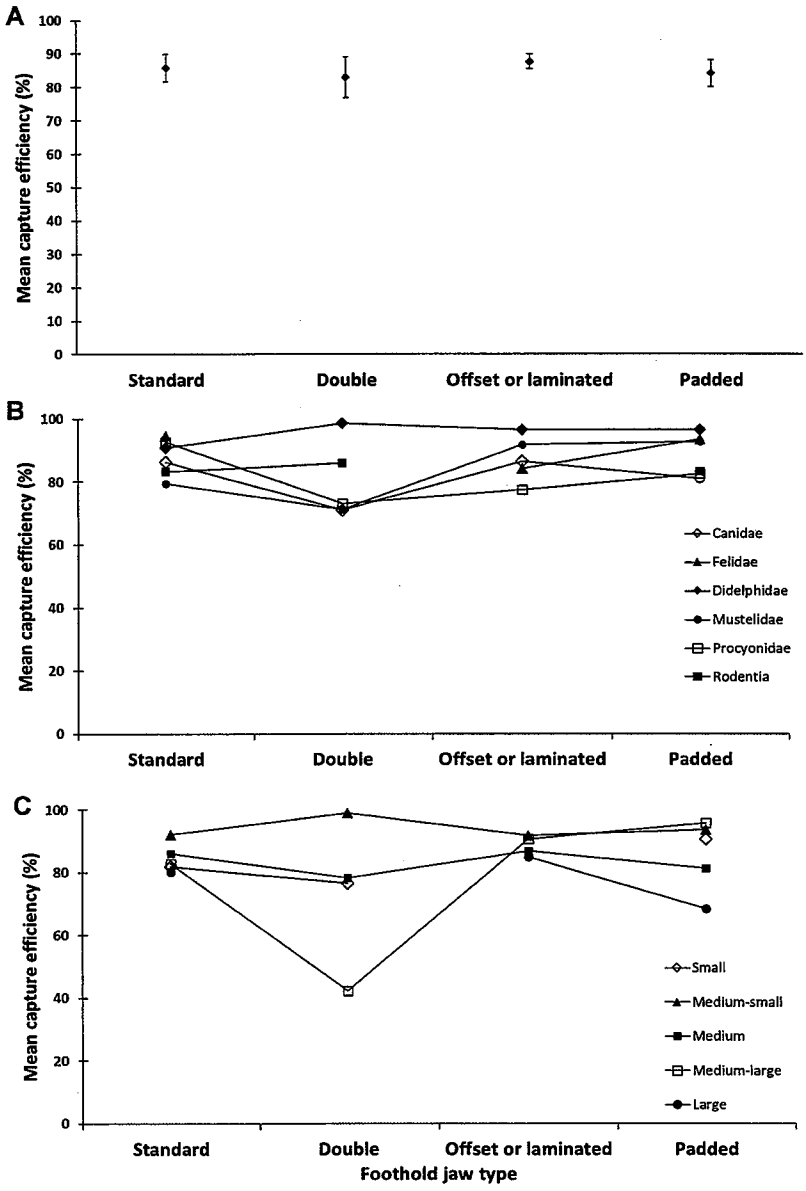

Figure 34. Average capture efficiency by foothold jaw type for species pooled (A), by taxonomic group (B), and by body-size class (C), during best management practices trap testing in the United States, 1997–2018. Error bars in top graph represent 95% confidence intervals. Connecting lines in B and C are used only to facilitate comparison of patterns among groups.

In the BMP process, we did not opt to use confidence interval overlap or other statistical testing to evaluate a trap against the thresholds, or against other traps. We acknowledge that we or others could do so, using, for example, bootstrapped confidence intervals for the mean or median, but doing so has 2-sided effects. Specifically, an injury mean below the threshold (i.e., passing BMP criteria) but with an upper confidence limit extending above the threshold would fail, whereas an injury mean above the threshold (i.e., failing BMP criteria) but with a lower confidence interval extending below the threshold would pass. A conservative approach might suggest doing only the former, and our use of the mean for a threshold, on what is often positively (right) skewed data, is effectively such a conservative approach; in 87% of the 231 trap-species combinations, the mean injury score for a trap was greater than the median.

For several reasons, we do not view BMPs or our data as tools for identifying only 1 best trap that should always be used for a given species. Best management practices are designed to offer users multiple approved options that meet minimum performance thresholds, and are most likely to be accepted when they offer this flexibility. Furthermore, there are often tradeoffs when selecting a trap, such as between welfare, efficiency, selectivity, and practicality; the social acceptability of various tradeoffs will be context-specific. For example, a more humane but slightly less efficient trap may be the prudent choice on a wildlife research project, but a less humane but more efficient trap may be the prudent choice in situations involving time-sensitive

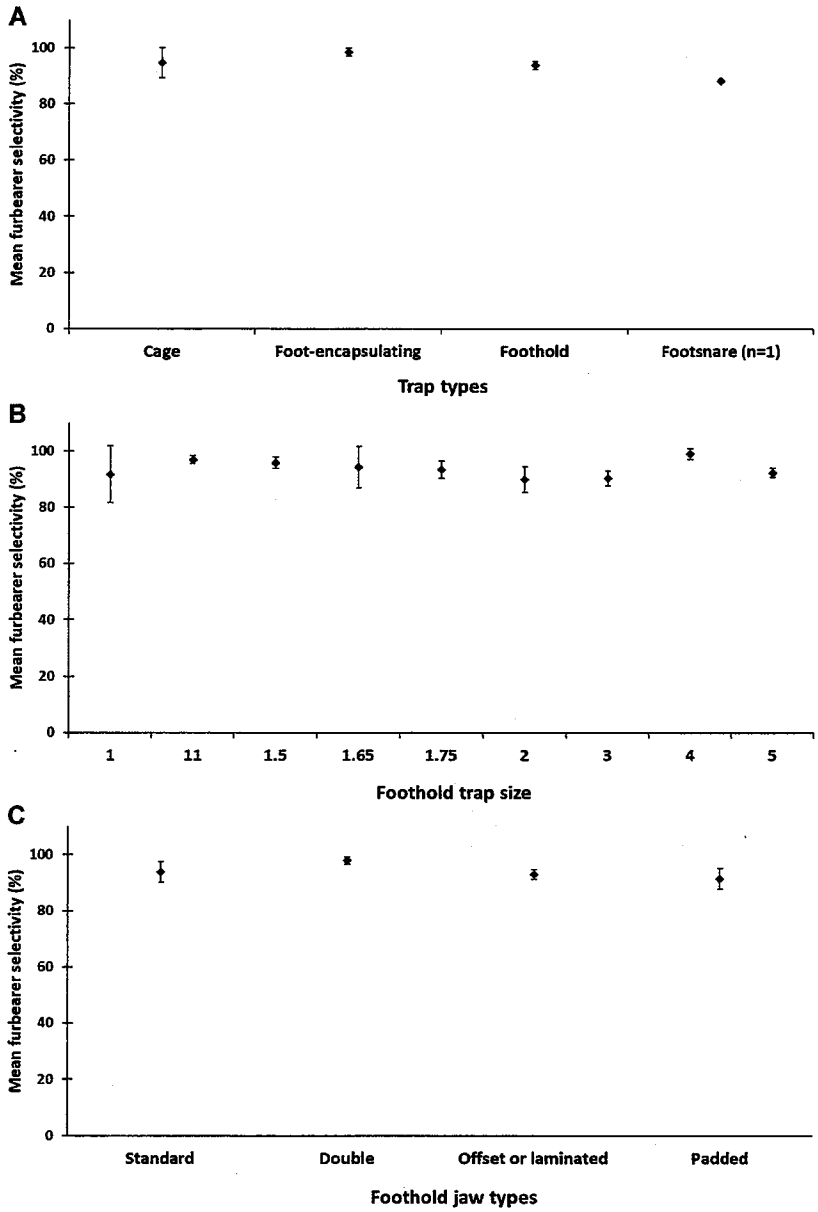

Figure 35. Average furbearer selectivity by trap type (A), foothold trap size (B), and foothold jaw type (C) during best managemen practices trap testing in the United States, 1997–2018. Error bars represent 95% confidence intervals. Trap sizes are based on the common nomenclature used by trap manufacturers. Although this nomenclature is typically associated with trap jaw spreads, it is not an actual measurement in itself.

protection of human property or health. If all other trap use considerations (i.e., efficiency, selectivity, practicality, and user safety) are essentially identical for multiple traps being considered in a given context, we certainly recommend trap users deploy a BMP-compliant trap with lower injury scores.

We used daily trap checks to standardize testing because 1) they are required for live-restraining traps in approximately 70% of states (AFWA 2016), and 2) testing multiple protocols was not feasible on this large-scale effort. It is reasonable to assume that average time spent in a trap increases with trap-check interval. It may also be tempting to assume that average injury scores are positively correlated with the time spent in a trap, but data are extremely limited. Based on observed restraint behavior described above, injury occurrence might be most likely in the first hours after capture, and again when humans approach to dispatch or release the animal (which would occur regardless of trap-check interval), although it may not be appropriate to assume animal movement is required to cause trap-related injury. We are unaware of observations of restraint behavior beyond a 24-hour period. Proulx et al. (1993) compared raccoon injuries after 12 and 24 hours in 2 trap models, and reported that the mean injury score was higher after 24 hours compared to 12 hours in 1 trap but lower in the other trap; they did not conduct statistical tests, but neither likely represented a significant difference. Furthermore, trap-check interval does not equate with time spent in a trap; with a 48-hour trap check requirement, a captured animal could still have been in a trap for only 6 hours prior to trap inspection. For

example, in research unrelated to our BMP process, Proulx et al. (1994) documented that even on 1 Arctic fox trapline where traps were checked on average every 8 days, 28% of captured foxes had no injury, including edema; presumably, the foxes with no injury were captured later in the trap-check interval. The relationship between trap-check intervals and average time spent in a trap is likely temporally and spatially variable. Factors such as animal density or home range size, trap density (Wilson et al. 2011), and biotic (e.g., food availability; Jensen et al. 2012) and abiotic (e.g., temperature; Martin et al. 2017) conditions influence animal presence, activity, and vulnerability to capture at a given location. It is highly unlikely that a trap set on the landscape in one state or region has the same daily probability of catching an individual of a given species as it does in another state or region. Therefore, we caution against generalizations regarding the effect that extended trap-check intervals have on injury scores, especially when projecting across states in different regions of the country. Conversely, we also stress that our trap performance results are contingent on the daily trap-check interval used in this study and should not be assumed to apply to other intervals; additional research would be needed to test such an assumption. Ultimately, the local situation (e.g., purpose for trapping, weather conditions, land access, selectivity concerns, animal density) and societal desires will influence the need for, and practicality or feasibility of, daily trap checks.

A key focus of this publication is to present the species-specific summaries of the systematic data we collected on trap injury scores, efficiency, and selectivity. Our results have many potential species-specific applications, in addition to their use in developing BMPs. We previously summarized past species-specific trap research (IAFWA 1997), and some additional trap research (outside of our effort) has taken place since that time. However, we refrain from detailed species-specific discussion or comparison of our findings to past research because 1) our species-specific figures and tables are self-explanatory, and 2) our research used different (ISO-based) methodology for assessing trap performance than most previous research. We focus our remaining discussion on broad patterns in the totality of our data.

Injury scores

We relied on experienced trappers for capturing animals, but we tested most traps using multiple trappers in multiple states. Undoubtedly, there was variation in their specific trap sets, baits, lures, and environmental conditions. Yet for the 21 trap-species combinations with sufficient sample sizes in >1 state, we rarely ($n = 2$) observed statistically significant (i.e., $P < 0.05$) geographic differences in mean injury scores (Fig. 22). Our trap-specific injury scores for each species should be reliable predictors of injury in a variety of situations, provided similar methods are employed (i.e., ISO injury scoring, daily trap checks). We do not know if the 2 significant differences we did observe are meaningful or a result of sampling error, but the collective results suggest that trap mechanical attributes are a more important predictor of trap-related injuries than trap set variation or varying environmental conditions.

Our results do suggest that taxonomic affiliation may correlate with trap injury scores, presumably via anatomical or behavioral traits. Noting that our data on felids are limited to 2 species, and primarily bobcats, average injury scores for felids were significantly lower in all trap types (Fig. 23). We postulate this to be the case for 2 reasons: 1) felids may have evolved strong yet flexible and shock-absorbing feet and forelimbs, useful for jumping from elevated locations or pouncing on or grasping prey (Meachen-Samuels and Van Valkenburgh 2009, Kitchener et al. 2010, Cuff et al. 2016); and 2) our collective experience suggests that felids are more passive or secretive during restraint, perhaps associated with their stalking (not cursorial) tendencies (Kitchener et al. 2010), which may further reduce potential for lunging-related injury. These attributes make injuries less likely, either directly from the trap or from struggling to escape the trap.

Taxonomy may also be correlated with the tendency towards self-directed biting when in a live-restraining trap. Although self-directed biting was rare (<2%) for most species (Fig. 29), it was comparatively high for skunks (39%) and raccoons (22%), with 2 of the 3 species with the next highest values (i.e., otter, 6.8%; badger, 4.0%) potentially having a closer phylogenetic link to skunks or raccoons. For example, many previous classification efforts have concluded that skunks, otters, and badgers may be in a clade separate from other mustelids (Bryant et al. 1993). More recent phylogenetic work suggested that skunks may be more related to raccoons (i.e., the 2 species in which we observed the highest degree of self-directed biting) than they are to mustelids (Sato et al. 2012). Although taxonomic debates may continue, it does appear that phylogeny may be correlated with this trap-response behavior. The underlying mechanisms are unclear and likely multivariate, but as appears true for raccoons (Kaufman 1982, Whiteside 2009), we suspect one potential contributor may be that these species may have comparatively reduced cushion and high innervation in their forefeet, useful (depending on species) for digging, climbing, or detecting or handling prey. This may increase negative sensory feedback and produce a more aversive or aggressive response to capture in foot-restraining devices. It remains unclear whether there is also a purely psychological component to self-directed biting, perhaps stemming from confinement in any trap, but our data provide minimal support for this; in cage traps, no skunks and only 1 raccoon exhibited this behavior. Data from Proulx et al. (1993) also suggest that time spent in a trap may play only a minor role in self-directed biting in raccoons; comparing a foot-encapsulating and a padded-jaw foothold trap, they found no evidence of self-directed biting in either trap after 12 hours and evidence in only 1 animal (in the padded-jaw trap) after 24 hours. Foot-encapsulating traps substantially reduced (from 27% to 2%) self-directed biting in raccoons compared to other foot-restraining trap types, but they are not currently effective capture devices on striped skunks for which self-directed biting was most common. Although we opted to describe these injuries as self-directed biting, we note that it remains unknown whether an animal is intentionally directing this behavior towards itself, or towards the trap but with injury indirectly occurring to a potentially desensitized foot (e.g., from reduced circulation). Furthermore, we recorded self-directed biting as a binary event, but its actual translation to injury can be variable; although we detected a statistically significant positive correlation between

incidence of self-directed biting and injury scores, the correlation was not particularly strong (i.e., $r < 0.5$).

Across species, mean injury scores generally exhibited an inverse correlation with body size (Fig. 24), despite trap size also typically changing in accordance with animal body size (i.e., trappers typically use, and we evaluated, larger traps on larger species). Although it remains possible that changes in trap jaw spreads do not change proportionately with other relevant trap metrics (e.g., clamping force), our finding suggests that smaller species are, on average, more prone to trap injury, whether for anatomical, physiological, or behavioral reasons. Biewener (1982) found that the material strength (per unit area) of animal bone does not vary with body size. However, Biewener (1989) also found that the force-generating ability of muscle, after normalizing for body weight, decreases in larger animals, suggesting that smaller animals may be more capable of causing injury to themselves from lunging or struggling while in a trap. This might explain, for example, the poor performance of even a very small padded-jaw foothold trap on swift foxes; injury scores were affected by the prevalence of major skeletal muscle degeneration (77% of animals) that occurred primarily to the deltoid, soleus, and gastrocnemius muscles, likely a result of lunging during restraint and not the trap per se. A potential force-based predisposition to injury might be exacerbated by a tendency, based on our observations, for some smaller species to more vigorously or continuously attempt escape from restraint, perhaps a result of their increased vulnerability to predation or interspecific killing (Palomares and Caro 1999), or their higher relative metabolic rates (White and Seymour 2003) that may require proportionately more activity and food acquisition, particularly for carnivores (Elgar and Harvey 1987). If correct, this suggests that certain trap-related modifications (e.g., shorter, heavier, or shock-absorbing trap chaining systems) and trap set locations (e.g., in more security cover) may play an important role in reducing injuries in smaller species. However, during our swift and kit fox testing, even a very small foothold trap (number 1 coil-spring) equipped with padded jaws, a short chain, and a shock spring still failed BMP injury thresholds; we do not have comparative data (i.e., same trap with a longer chain or without a shock spring) to confirm if the features of the trap we tested did at least reduce injury. We recommend additional species-specific testing to assess whether more shock-absorbent springs or staking systems, or setting traps in or near more concealment cover, might reduce injury levels in smaller species.

We did not attempt to isolate and compare the effects of some trap sub-components, such as chain length and swiveling, on injury. The only exception was a specific comparison we conducted evaluating the influence of freedom of movement (i.e., chain length; 15 vs. 76 cm) on frequency of self-directed biting in raccoons, and we detected no appreciable effect on this behavior. For coyotes, past research (Linhart et al. 1981, 1988) has provided conflicting results on the effect of chain length on injury. Long chains may increase lunging-related injury, but short chains may cause agitation from more confined animal movement, which Houben et al. (1993) hypothesized may lead to more persistent attempts to escape or a more aggressive response to the trap. They suggested that moderate length (45 cm) chains might be preferred for coyotes, but more research is needed to assess the effects of chain length on injury scores and we suspect optimal lengths are dependent on other trap attributes (e.g., jaw type, thickness) and species-specific behavior and morphology. The length of chains attached to the vast majority of traps we tested were ≤45 cm, many ≤30 cm (AFWA 2017*a*). Houben et al. (1993) also posited that appropriate trap swiveling is critical to reduce torsion-related injury when restrained animals twist or roll, a recommendation supported by our observations and conventional wisdom amongst avocational trappers. All foot-restraining traps we tested contained ≥2 swivel points, often ≥4, in the trap chaining system, and we recommend this on most traps.

Across species, cage traps consistently produced the lowest injury scores (Fig. 25), though not always appreciably better than the foot-restraining trap with the lowest injury score (i.e., for Arctic and gray foxes). Most animals experienced some injury in cage traps, often tooth damage. We have not yet evaluated a cage trap on river otters, and Shirley et al. (1983) were unable to capture otters in a double-door cage trap. Blundell et al. (1999) compared Hancock cage traps (clam-shell design) to number 11 double-longspring traps with double jaws for otters and found no differences between trap models in injuries to appendages, but Hancock cage traps resulted in more serious tooth injuries; they recommended the number 11 double-longspring with double jaws to minimize the potentially more influential tooth injuries to captured river otters.

We also have yet to evaluate cage traps for badgers, Canada lynx, American marten, nutria, American mink, red foxes, coyotes, and wolves because of efficiency concerns or their infrequent use by avocational or nuisance control trappers. Based on their common use by researchers on American martens and Canada lynx, we presume injury scores and efficiency are generally acceptable for these species, though formal ISO-based testing is needed to confirm whether they pass BMP thresholds. In multi-trap comparisons of injuries, both Mowat et al. (1994) and Kolbe et al. (2003) found no or minimal injuries to lynx in cage traps. Cage traps have also been used for nutria (Robicheaux and Linscombe 1978, Baker and Clarke 1988), and the low injury scores we observed with cage traps for beavers (also see Koenen et al. 2005) and muskrats suggest similar low-injury potential on nutria. Although cage traps might also produce few injuries in larger canids, we did not conduct any such testing and have notable concerns with respect to efficiency on these species (see efficiency discussion below). Furthermore, where BMP-approved alternatives to cage traps exist, as is the case for many furbearing species, other restraining trap types may be preferable in many situations because of reduced costs and fewer practical constraints (e.g., reduced size and weight). However, for some species where testing of foothold traps as restraining devices has been absent or limited (e.g., fishers, martens, minks, ringtails, weasels) or not promising (e.g., muskrats, skunks, swift and kit foxes), cage traps may be the preferred method for live restraint at this time, and may remain so for some smaller species. Killing traps are also highly effective for many of these species, many such devices meet BMP standards, and avocational trappers usually prefer them for many of these species (Responsive Management 2015).

A consistent conclusion from previous raccoon and striped skunk trap research has been that most serious injuries observed

were due to self-directed biting (Berchielli and Tullar 1980, Novak 1981, Nettles et al. 1990, Proulx et al. 1993, Hubert et al. 1996). Furthermore, many have concluded that padded-jaw foothold traps are not likely to appreciably reduce injury scores for these species (Tullar 1984, Olsen et al. 1988, Nettles et al. 1990, Hubert et al. 1991, Kern et al. 1994, Kamler et al. 2000). They may also have lower efficiency for raccoons (Linscombe and Wright 1988, Hubert et al. 1991, this study; but see Saunders et al. [1988] and Heydon et al. [1993] for contradicting results). We found, as others (Proulx et al. 1993, Hubert et al. 1996) have, that foot-encapsulating traps, highly selective for raccoons and Virginia opossums, were very effective at reducing injuries in raccoons associated with self-directed biting, and BMP welfare criteria were met for 6 of the 9 models we tested. Similar to cage traps, however, tooth damage was common and future design improvements to reduce edges on foot-encapsulating traps may address this particular injury. Foot-encapsulating traps are now the most commonly used capture device by avocational trappers in the United States when targeting raccoons, and second-most common (after cage traps) when targeting Virginia opossums (Responsive Management 2015).

A power-activated footsnare passed BMP standards for bobcats, Canada lynx, coyotes, gray foxes, raccoons, and red foxes, but failed injury thresholds for Virginia opossums; injury results were also poor for striped skunks, but sample size was below that required for BMP assessment. Past research, primarily on canids, has produced variable conclusions regarding footsnare injury levels in comparison to other trap types, perhaps owing to different footsnare models tested (Berchielli and Tullar 1980, Onderka et al. 1990, Shivek et al. 2000). We have not evaluated footsnares on Arctic foxes or badgers, 2 species for which footsnares may have potential value. We are not at liberty to publish the numeric results, but a larger footsnare has passed United States BMP standards for gray wolves based on testing conducted by Canada. For species on which the footsnare passed BMP standards, injury scores were typically similar to foothold traps that also passed BMP standards.

There has been much discussion and research on the effect of foothold jaw types on injury. Pooling species, our data indicate that compared to standard-jaw traps, double-jaw models, which we tested on gray foxes, muskrats, river otters, raccoons, nutria, striped skunks, and Virginia opossums, do not generally reduce injury scores (Fig. 26). This may be due to the lower jaw on these traps often being inset from the main jaw, which may not contact the foot. Because pressure is proportional to force (i.e., dependent on surface area), a second inset jaw may not effectively reduce pressure and compression-related injury potential; single but wider-faced jaws do often appear to reduce injury (Kern et al. 1994, Phillips et al. 1996, Hubert et al. 1997). We did find that double-jaw traps, on average, reduce the incidence of self-directed biting in raccoons. However, unlike fully enclosed foot-encapsulating devices, some double-jaw foothold traps may not provide a sufficient barrier against self-directed biting, possibly a result of their secondary jaws being inadequately spaced. We also found that padded and offset or laminated jaws, both tested on most medium and large species, do, on average, reduce injury scores compared to standard jaws. These effects generally held across the taxonomic and body-size groupings we examined. However, the advantages of modified-jaw foothold traps were more evident for some species. American badgers and bobcats, for example, had BMP-compliant animal welfare scores for a wide range of foothold jaw types, whereas only padded-jaw foothold traps currently meet standards for fishers and nutria.

Padded-jaw traps have been studied on a wide array of species, including badgers (Goodrich 1991, Kern et al. 1994), bobcats (Olsen et al. 1988, Earle et al. 1996, Kamler et al. 2000), coyotes (Linhart et al. 1988, Olsen et al. 1988, Onderka et al. 1990, Phillips et al. 1992, Phillips and Mullis 1996), gray foxes (Olsen et al. 1988), muskrats (McConnell et al. 1985), Virginia opossums (Nettles et al. 1990), raccoons (Tullar 1984, Olsen et al. 1988, Nettles et al. 1990, Hubert et al. 1991, 1996; Kern et al. 1994), red foxes (Olsen et al. 1988, Kreeger et al. 1990, Onderka et al. 1990, Kern et al. 1994, Kamler et al. 2000), river otters (Serfass et al. 1996), striped skunks (Nettles et al. 1990), and wolves (Frame and Meier 2007, Turnbull et al. 2013). Many, but not all, of these studies have reported fewer injuries in padded-jaw traps. In our study, offset or laminated jaws performed as well as padded jaws for many species. In at least 3 previous red fox or coyote studies (Kern et al. 1994, Phillips et al. 1996, Hubert et al. 1997), use of foothold traps with laminated jaws resulted in fewer injuries than standard-jaw foothold traps, and Houben et al. (1993) found no difference in mean injury scores for coyotes captured in a padded-jaw versus laminated offset-jaw number 3 coil-spring. Laminated- or offset-jaw models may be preferable to avocational trappers because they are easier to prepare and require less maintenance than padded-jaw traps (i.e., no periodic replacement of worn pads). Furthermore, there were indications that padded-jaw traps, averaged across all trap sizes tested, performed worse than many non-padded traps for striped skunks and raccoons. We speculate this may be due to the soft flexible pads either being targeted for biting, or potentially numbing the foot (i.e., reduced circulation); either may result in biting injury on the foot. Reduced circulation may also explain the increased risk with padded-jaw traps of lynx toes freezing in cold temperatures (Kolbe et al. 2003). Nonetheless, even where injury in offset or laminated traps may be similar or slightly less for a species, padded-jaw models may be preferable when simultaneously trapping multiple species, one for which padded jaws clearly performed better.

Not surprisingly (because larger traps are typically used on larger species), we did not find a positive correlation between foothold trap size and injury scores when pooling all species (Fig. 27). We did detect positive correlations between foothold trap size and injury scores within some species or groups (Fig. 28), but there were no consistent patterns across species or jaw types; broad generalizations about increased injury resulting from larger traps are not appropriate. This may be a result of variations in species-specific morphology or trap-response behavior, or because trap size may be a poor correlate of other underlying trap attributes (e.g., velocity and clamping force) that affect injury levels. Stronger velocity or clamping force has the potential to increase impact- or compression-related injury but also the potential to reduce lacerations or bone abrasion by preventing the foot from moving side-to-side across the trap jaws. Data from Houben et al. (1993) and Gruver et al. (1996)

indicate that number 3 padded-jaw traps with 4 coil-springs (i.e., greater clamping force) resulted in fewer injuries to coyotes than the same model with the original 2 coil-springs, and Kuehn et al. (1986) detected fewer wolf injuries in traps with offset jaws and rounded teeth, which may prevent side-to-side foot movement. Additional research is needed to determine optimal species-specific trap velocities and clamping forces, which we believe are those that are minimally sufficient to capture and hold an animal and prevent the foot from easily sliding between the trap jaws; levels below this may cause lacerations or bone abrasions from foot movement or not yield acceptable trap efficiency, and levels above this may increase risk of impact or compression injury. Optimal velocity and clamping force may also vary with foothold jaw design, specifically jaw thickness (i.e., force displacing area) and jaw shape (e.g., square vs. round edges) or hardness (e.g., pads vs. no pads).

Trap size (jaw spread) may also play an independent role in injury levels through its influence on foot strike location. However, foot strike location is a complex function of factors including body stance (i.e., plantigrade vs. digitigrade), foot size in relation to jaw spread, trap pan tension in relation to body weight, and speed of reflexive response to a trap being sprung. We are unaware of published data on which to base recommendations, but our experience along with conventional wisdom among trappers with whom we have worked, is that optimal strike locations are those across the middle portion of the foot and over or in contact with the foot pad, not those near or above the ankle or that only restrain the animal by a subset of toes. Trap pan-tension devices (or adjustments) are important components that can play a role in controlling strike locations for a given trap size and species, but more research is needed to assess the consistency of this approach.

Although foothold-style traps are often practical and efficient tools, injury data for muskrats, striped skunks, and swift or kit foxes, or lack thereof for weasels, minks, wolverines, and martens, currently precludes inclusion of any such devices in BMPs for use in live-restraining situations. For muskrats, martens, and weasels, avocational trappers almost exclusively use lethal traps and sets (Responsive Management 2015), and several such traps or trapping systems meet BMP criteria for these species (AFWA 2017*a*). The BMP-compliant cage or killing-style traps are also the most commonly used devices used by avocational trappers targeting striped skunks (Responsive Management 2015). Our ongoing testing of the use of cable restraints to live restrain furbearers suggests low injury scores for several species (e.g., beavers, red foxes, coyotes; also see Gese et al. 2019 for wolves) and may be another viable live-restraining trap for species such as gray, kit, and swift foxes, striped skunks, bobcats, and raccoons.

Efficiency

As defined and measured in our study, capture efficiency (capture rate according to ISO [1999*b*]) can be influenced by trap-specific mechanical attributes, local abiotic conditions, and trapper experience and deployment methods (Pawlina and Proulx 1999, Ruette et al. 2003). This likely explains the largely consistent (across taxonomic and body-size groupings) decrease in efficiency we observed from cage traps to footholds to footsnares (Fig. 32). Cage traps have simpler mechanical attributes, are less influenced by abiotic conditions (i.e., not buried in the ground like foothold traps and footsnares), and require less user skill or experience to set them. However, cage trap design can vary and influence efficiency. Lacki et al. (1990) evaluated efficiency (captures/trap night) of 2 models of cage traps on muskrats and concluded that cage traps with spring-loaded doors were more efficient than those with gravity-operated doors. Mowat et al. (1994) observed low lynx efficiency in a commercial cage trap and recommended against their use for practical or logistical reasons; Kolbe et al. (2003) had much higher lynx capture efficiency in a custom-made cage trap.

These typical factors likely to influence efficiency may also explain why footsnares had the lowest average efficiency; footsnares have numerous mechanical components, are usually concealed in dirt and are influenced by abiotic conditions, and few trappers have extensive experience with them (Responsive Management 2015). Previous research has also found comparatively low efficiency in footsnares (Berchielli and Tullar 1980, Novak 1981, Skinner and Todd 1990). Compared to cage traps and footsnares, foothold traps we tested had intermediate efficiency; they have an intermediate number of mechanical components, are more influenced by abiotic conditions than cage traps, and generally require less skill to set than footsnares and trappers are more experienced with them. Despite the variability we observed in capture efficiency, it was high ($\bar{x} = 86\%$) for most trap types, few devices failed our BMP efficiency criterion, and we did not observe differences across animal body-size classes when pooling trap types.

We did observe a 12 percentage point reduction (88% to 76%) in mean capture efficiency for traps deployed exclusively in aquatic compared to terrestrial sets. However, much of this is attributable to lower efficiency with foothold traps set for live restraining river otters. We believe this is a result of the increased speed of movement and sliding tendencies that river otters exhibit near typical otter trap set locations (i.e., entering and exiting the water), resulting in more sprung traps without a capture. Furthermore, foothold traps we tested on otters, all of which passed BMP welfare criteria, were smaller models that have commonly been used by biologists for research and reintroductions (Shirley et al. 1983, Serfass et al. 1996, Blundell et al. 1999); avocational trappers primarily use killing traps or sets (Responsive Management 2015).

Traps may change in design over time in response to efficiency concerns from trappers, leading to temporally variable results. For example, the Victor (now, Oneida Victor) Soft Catch™ coil-spring trap went through multiple generations of improvements to address concerns related to poor efficiency and durability (Linhart et al. 1986, Linscombe and Wright 1988, Linhart and Dasch 1992, Phillips and Mullis 1996, Tuovila et al. 1996, Earle et al. 2003). Training to properly set and use this particular trap may improve its efficacy (Linhart and Dasch 1992), including use of more pan tension, ensuring the trap dog (Fig. 2) does not cause the rubber pad to roll on to itself, and elevating the free trap jaw slightly. Using experienced trappers and current trap models, foothold jaw type had no consistent influence on capture efficiency in our study (Fig. 34).

An alternative efficiency metric often used for trap comparisons is captures per trap night (CPTN). Unlike the efficiency

metric we used, CPTN is heavily influenced by population density of the focal species. Because our interest was in isolating performance of the trap itself, we did not use CPTN. It is nevertheless relevant and highlights a limitation of our efficiency metric; a trap with high capture efficiency (as we calculated) may still have few CPTN if animals completely avoid engaging with the trap, and for some species this seems more likely to be the case with cage traps. For example, Robicheaux and Linscombe (1978) found that double-door wire-mesh cage traps had the fewest CPTN of all traps they evaluated on nutria and raccoons, and Austin et al. (2004) had fewer raccoon captures in cage traps compared to a foot-encapsulating trap. Furthermore, even if cage traps might meet the BMP efficiency standard (i.e., capture rate given they spring the trap) for medium- and large-sized canids, we are skeptical we could capture enough animals on typical avocational traplines to conduct injury assessments because of their tendency towards complete avoidance of cage traps (i.e., CPTN is likely to be extremely low). Cage traps may be useful for capturing coyotes in urban areas where they are habituated to human structures and activities (Way et al. 2002), but these restraining devices produce few captures in rural areas (Shivik et al. 2005). We did not capture any coyotes in cage traps during our research, including in bobcat-sized cage traps deployed in areas where coyotes were present. Similarly, very low catch success has been reported for cage traps set for red foxes (Muñoz-Igualada et al. 2008; T. L. Hiller, Wildlife Ecology Institute, unpublished data), and we captured only 1 red fox in a cage trap during our research even though they were present in all areas. Accordingly, we urge caution in assuming that the efficiency metric we used, especially when computed for cage traps, will be equally meaningful in all situations or for all species.

Selectivity

Reducing accidental capture of non-target species, be they domestic, threatened, endangered, or otherwise protected species, or other non-furbearing game species, is important to avocational trappers, researchers, and the public alike. Many trap or trap-setting selectivity improvements, including for body-gripping kill traps (AFWA 2017*b*) and snares or cable restraints (AFWA 2009), have been developed and incorporated into trapper education. For foothold, foot-encapsulating, footsnare, and cage traps, common options for affecting selectivity include pan tension controls (Turkowski et al. 1984, Phillips and Gruver 1996), proper selection of trap (or jaw-offset) size to capture or avoid a specific species, and education on more selective set locations and bait or lure choices. We recommend pan tension devices or adjustments be incorporated into medium and large foothold traps as an effective way (Turkowski et al. 1984) to minimize capture of smaller animals, especially when the smaller animals present are not legally harvestable or the trap has not met BMP standards for that species. We also encourage targeted research to ascertain optimal species-specific pan tension for maximizing both efficiency and selectivity.

Avocational trappers commonly set traps targeting multiple legal furbearing species, and some are typically caught only while pursuing other species (e.g., few trappers target striped skunks or Virginia opossums); our research was designed to mimic these realities. In addition, to increase project efficiency we opted to collect and necropsy all legal furbearing animals captured on a project, especially in the early years of our research. Our selectivity metric is therefore trap-specific, not species-specific, and represents the proportion of total captures that were legal furbearers across all testing projects where a given trap model was used. Similar to efficiency, furbearer selectivity for a given trap will vary temporally and spatially, in this case related to factors such as species diversity (furbearers and non-furbearers), relative abundance, and user-controlled variables (e.g., set type, set location, bait and lure choices). However, given the wide geographical area over which we tested most traps, with multiple trappers using varied methods, those contemplating multiple trap choice options can expect furbearer selectivity results to fall within our observed trap-specific confidence intervals, provided those deploying the traps are reasonably experienced and trapping in rural or semi-rural landscapes where our data were derived (i.e., avocational traplines).

Although other studies have reported comparatively low species-specific selectivity in cage traps (Way et al. 2002, Shivik et al. 2005, Muñoz-Igualada et al. 2008), in our study they were nearly identical to foothold traps in furbearer (not species-specific) selectivity (94%). This is perhaps unsurprising given that the majority of non-furbearer species captured were feral or free-ranging cats, lagomorphs, birds, and squirrels, all of which are of the size capable, depending on pan-tension controls, of being captured in both cage and foothold traps. Only for medium- to large-sized dogs would captures in commonly used cage traps be less likely than in foothold traps. Foothold trap size also did not have a notable influence on furbearer selectivity (Fig. 35). With the exception of the smallest model of foothold trap we tested (i.e., number 1 or 11, which represented only 15% of the models tested), most devices we examined were of a size capable (depending on pan-tension controls) of restraining the most common non-furbearers captured in our study. We also did not find any notable difference in furbearer selectivity for trap models deployed only on land versus those set in water, or both land and water, and average furbearer selectivity was >93% in all 3 groupings. The most common non-furbearer species captured (i.e., cats, lagomorphs, dogs, birds, squirrels) were similar across these set location groupings. We believe this is because most live-restraining traps set in aquatic areas (i.e., for muskrat, nutria, river otter, beaver, mink, and raccoon) are usually set at the land-water interface in very shallow water, areas that terrestrial non-furbearer species will still investigate, and areas that can temporarily be exposed because of drops in water level. Although the species of non-furbearers captured were similar, birds represented a greater proportion of non-furbearer captures in aquatic sets compared to the overall dataset (22% vs. 13%). Risk of waterbird captures in aquatic trap sets is greater in spring (Bailey 1976, Gross et al. 2017), particularly during spring muskrat trapping, than in fall-winter when most trapping on our project occurred. Nevertheless, bird exclusion devices have been shown to be effective in certain sets during both spring and fall muskrat trapping (Gross et al. 2017).

Although high selectivity is desirable for any trap type, it can be comparatively less important in live-restraining traps because of the ability to release animals. We observed mortality

associated with what we deemed to be capture-related stress or injury in 4 furbearer species (i.e., beavers, muskrats, raccoons, and gray foxes), representing 0.5% of the 8,566 furbearers we collected for necropsy from 1997–2018. There were 6 additional furbearer deaths (1 bobcat, 1 opossum, and 4 minks) deemed to be from trap-related stress or injury not included because sample size for the trap-species combination in those cases was below that we used for data reporting here (i.e., 8). We acknowledge that death through other mechanisms can occur while an animal is in a trap, such as being shot by humans or attacked by other animals, but this was uncommon during our study and is largely unpreventable. Although we did not pathologically confirm deaths due to hypothermia, observations from our research suggest that it (or accidental drowning) did occur, particularly for raccoons and muskrats captured in traps set in or near water; Nettles et al. (1990) also reported a high percentage of hypothermia-related deaths for raccoons captured in water sets. Particularly during colder times of the year, we urge caution in deploying traps intended for live restraint in areas where animals, especially terrestrial species, can enter water.

Approximately 1.8% of total captures during our 21-year study resulted in mortality of a non-furbearer. We did not pathologically confirm cause of death in these cases, but some were clearly a result of predation and others were likely a result of capture-related stress or injury. Nearly all non-furbearer mortalities were birds, rabbits, and squirrels; 2 feral or free-ranging cats died and no dogs died or were severely injured as a result of capture in live-restraining traps we tested. Combining furbearers and non-furbearers, most capture-related mortalities involved smaller species, and largely herbivores or omnivores. Others have noted that severe capture myopathy appears rare in carnivores (Hartup et al. 1999, McCarthy et al. 2013). Capture-related mortality could occur from injury (e.g., shock) or a result of stress or exertional myopathy. Breed et al. (2019) described capture myopathy as a pathophysiological manifestation of inherent biological stress defenses of an animal failing. Our hypothesis to explain higher trap injury scores in smaller species seems relevant here as well; smaller animals, perhaps especially those more vulnerable to predation, likely exhibit more exertional resistance to restraint, are at more risk of lunging-related injury, and may incur more stress from an inability to escape, all increasing risk of mortality.

In our study, furbearer selectivity was high for all trap types we evaluated, being lowest for footsnares (88%) and highest for foot-encapsulating traps (99%; Fig. 35). In addition, mortality or significant injury was very rare for domestic species, and the most potential for mortality or injury was with smaller non-furbearers. Nonetheless, selectivity is a critical consideration in trap selection and should be emphasized in educational programs for avocational, nuisance control, and research trappers alike. In most applications, but more so when using foot-restraining compared to cage traps, we recommend trap users give equal consideration to animal welfare and selectivity when selecting a trap. Trap users should consider expected injury level or mortality risk to the species they are targeting and those they may potentially capture in that specific location, selecting trap types, sizes, and features (e.g., jaw type, pan tension controls) least likely to cause injury or mortality to that full suite of species. Our data, along with the online trapping BMPs (AFWA 2017*a*) and a BMP trap-search tool (AFWA 2019) we created, can assist with the decision process, and we encourage consultation with experienced trappers regarding tools and methods that can improve selectivity given the suite of species present in the local area where traps are to be deployed.

Virgós et al. (2016) argued that the current ISO measure to quantify selectivity fails to consider the relative abundance of focal and incidental species, and therefore the result is simply proportional capture data. Although they outlined their concerns about the current ISO measure of selectivity, and the potential consequences to endangered species conservation, they also acknowledged the significant effort necessary to address their concerns. During 2 decades of testing across the United States in our study, we did not capture any individuals of federally threatened or endangered species, though we acknowledge such capture does occasionally occur. Our data show that in most potential scenarios, animals captured in restraining traps can be released alive with minimal or no injury. Furthermore, we are unaware of any modern examples where regulated trapping (or accidental take) has been determined to be the cause of species endangerment in the United States, or a substantial future threat. Conversely, traps have regularly been used in modern times for the restoration of species, protection of endangered species, and for many other conservation or societal benefits.

Trapping in its many forms offers clear benefits to individuals, society, and wildlife conservation, but societal concerns remain that can and should be addressed through ongoing research and education. As new data become available through ongoing research, we will periodically update information reported herein and make it available online at the AFWA website.

MANAGEMENT IMPLICATIONS

Our research to develop BMPs for trapping has been the most extensive and intensive mammalian capture evaluation effort ever undertaken. The results have management implications to wildlife and land management agencies, research institutions, avocational trappers, nuisance control businesses, trap manufacturers, and the general public. Best management practices are based on quantitative measures of animal welfare, capture efficiency, and selectivity, and consideration of trap practicality and user safety. We recommend all metrics be considered when making trap-selection decisions. Focus on only 1 metric can lead to unintended negative consequences such as poor animal welfare, ineffective response to threats to human property and safety, impractical trapping regulations, or wasted resources during wildlife research projects.

We intended BMPs to be implemented through a voluntary and educational approach and have simultaneously engaged in a multifaceted effort to facilitate this, including through extensive outreach and training to state wildlife agency staff, presentations at wildlife conferences, attendance at state and national trapping conventions to discuss and distribute BMPs, writing articles in popular trapping magazines, conducting national surveys on trap use in the United States, and developing a national trapper education program that incorporates key BMP principles and findings and is available to anyone. We recommend that wildlife

management agencies and educational and research institutions, collaboratively with trap manufacturers and trapping organizations, vigorously continue this effort. The benefits include advancing our understanding of trap performance through research, developing trap innovations and trapper education programs that improve animal welfare and trap efficiency and selectivity, and increasing societal awareness of modern trap performance and the benefits of trapping.

Some regulatory agencies may consider use of our results to prohibit traps that do not meet BMP standards, but attempting to do so may result in numerous practical or regulatory challenges that must be carefully considered. Agencies must consider the reality that nearly all traps are BMP-compliant for at least 1 species, appropriate responses when a trap set for 1 species for which it meets BMP standards catches another legally harvestable species for which it does not, potential use of trap brand names in regulations, and how to determine when an untested trap is similar to one that has been tested. Conversely, regulatory agencies may use our findings to support decisions that allow the use of currently prohibited devices, such as has occurred in recent years with cable restraints in numerous states. Because state and tribal authorities are the primary management agencies that regulate capture or harvest of non-migratory wildlife, we assume the approach to BMP implementation will vary, but regardless of the approach, we strongly recommend that they encourage their use by all those directly or indirectly involved in the capture of furbearing mammals.

The live capture of furbearing animals remains an important component of wildlife research in the United States. For research projects that use live capture and require approval through an internal or external animal care and use committee, we encourage use of our findings to make science-based decisions during the development and implementation of research protocols, and where data are lacking, we recommend use of expert opinion. Restraining devices, including foothold traps, can be efficient and selective tools that produce minimal injury or risk of death when used by those with proper training and experience, whether for research, animal damage management, or avocational harvest.

The large scope of our research (i.e., nationwide testing of multiple trap types for development of trapping BMPs on 19 species) allowed us to detect consistent patterns and differences across species in the influence of trap attributes on several performance metrics. We recommend judicious use of generalizations about trap performance and that our species-specific results and online BMPs always be examined before selecting a trap. When seeking ways to improve trap performance, or in situations where performance data are lacking for a trap of potential interest, we offer the following general observations and recommendations based on our collective results and experience. First, selecting or modifying traps (or choosing where to set them) to reduce injury potential must closely consider the taxonomy, natural habitat and behavior, size, morphology, and physiology of the species of interest; response to restraint and the associated potential for different types of injury should inform proper trap selection, design, and modification. Second, when using foot-restraining traps for live capture, certain mechanical attributes are likely to lower injury risk under most circumstances, including 1) padded or wider-faced jaws (depending on species); 2) velocity and clamping forces that produce minimally acceptable trap efficiency, but no more than necessary to prevent the restrained foot from sliding between the jaws; 3) jaw spreads and pan tension controls that are most likely to result in a strike location near the center of the foot and across the pad; 4) a sufficient number of swivels in the chaining system to reduce potential for torsion-related injury; and 5) chain lengths and features (e.g., weight, shock absorbers) that give animals some freedom of movement, but not enough to increase the risk of serious lunging-related injury. Third, selection or design of traps should in most circumstances give equal consideration to the focal and other species that could be captured, particularly smaller species, which our data indicate are more vulnerable to injury even in smaller traps. Selectivity metrics cannot be interpreted in isolation and must be considered in the context of potential injury to any animal that may be captured, and selectivity-improving tools (e.g., pan tension devices or controls) and trap-setting methods (e.g., trap location, baits and lures) are a critical component of trap use and trapper education. Finally, where practical and cost-effective, cage traps are viable live-capture methods that typically produce few injuries, but designs with lower potential for tooth damage should be used or developed (e.g., solid-walled vs. wire mesh traps, appropriate wire mesh opening sizes, fewer internal mechanical components to bite).

Many currently used traps either meet BMP criteria or could easily be modified to do so; trap manufacturers and supply companies already provide components (e.g., jaw-lamination kits, add-on jaw pads) to modify restraining traps in ways consistent with specifications of BMP-approved traps. Manufacturers and inventors can use our results to improve designs that had poor performance to ensure they meet all BMP criteria. To further elucidate important relationships between trap mechanics and performance, future modeling or controlled research should examine the effects of specific quantitative measures that may more directly correlate with performance (e.g., velocity, clamping force, jaw thickness, jaw spread, pan tension, chain length, number of swivels).

The need for trapping BMPs was borne out of both national and international concerns related largely to animal welfare and selectivity. Our data and trapping BMPs are critical mechanisms by which to move those discussions forward in a more objective manner, and to help ensure that a variety of traps remain viable tools in wildlife research, wildlife conservation, wildlife damage management, and sustainable harvest of these species. As with other commodities and services, responding to societal or market-based concerns related to capture of wildlife is necessary for long-term viability.

ACKNOWLEDGMENTS

The United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) provided funding to support development of BMPs under a series of cooperative agreements between APHIS Wildlife Services and the Association of Fish and Wildlife Agencies. The United States Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program, supported numerous education and outreach activities under multi-state conservation grants, including development of an extensive trapper education module using BMPs. The

International Fur Trade Federation provided additional funding, and many state agencies made substantial in-kind contributions. The Arizona Game and Fish Department and the Missouri Department of Conservation provided office space, storage space, and technical support since the inception of the BMP program.

This project traces its origins to the foresight of early members the IAFWA Furbearer Resources Committee (now the AFWA Furbearer Conservation Technical Working Group) during the 1980s and 1990s; the ISO United States Technical Advisory Group for Humane Trap Standards; and to The Wildlife Society's technical review of traps, trapping, and furbearer management originally published in 1990. With such a lengthy history involving some 4 generations of project personnel and nearly 2 decades of data collection, there are numerous people and organizations to thank for their help and support.

Development of this monograph would not have been possible without the cooperation and participation of many state and federal wildlife personnel, expert trappers, and trapper organizations. State agency biologists provided on-the-ground coordination and supervision in those states where BMP trap testing occurred, and many state agency personnel provided constructive comments as study reports were developed. We thank the wildlife veterinary pathologists, V. Nettles, C. Quist, T. DeLiberto, J. Fischer, E. Williams (deceased), K. Straka, D. Grove, J. Burco, L. Long, and J. Langenberg, who conducted post-mortem examinations of captured animals. We thank R. Engeman, P. Groninger, S. Sheriff, and R. Steidl for assistance in planning data collection and analysis. We particularly thank the members of state trapper associations and the individual trappers and technicians who took part in testing of traps. Their hard work and commitment to the continued improvement of trapping in the United States has been essential to the success of this continuing project. C. Roy and S. Trusso played critical roles in the early years of project initiation. We also appreciate the critical involvement of the National Trappers Association from the inception of the ISO and BMP processes and acknowledge their continuing assistance and support. Likewise, Fur Takers of America provided valuable and continuing input during development of the BMPs. We are indebted to the Fur Institute of Canada, the Alberta Research Council, and numerous trap-research colleagues across Canada for professional discussions and coordination of overall BMP efforts. We also extend our appreciation to the many cooperating landowners who permitted BMP trap testing to be conducted on their properties and to the many manufacturers of animal capture devices who cooperated in the work and used the findings. They have made substantial contributions to the future of furbearer conservation and management in the United States.

This work would not have been possible without the vision and foresight of 4 conservation leaders who recognized the need for this work and provided early organization and funding. Wildlife management professionals, trappers, and the authors owe a substantial debt of gratitude to G. Linscombe, D. MacLauchlan, M. Peterson, and B. Acord. We are also grateful to J. Bucknall, L. Clark, W. Clay, M. Hogan, and R. Regan for their strong support as the research progressed. In addition, the technical, scientific and organizational guidance provided by the following individuals was essential to the success of the project: S. Trusso, O. Baker, G. Waters, S. Peterson, L. Cooper, C. Roy, M. Peek, C. Olfenbuttel, T. Krause, and D. Hastings.

John Phelps (deceased) was a furbearer biologist with the Arizona Game and Fish Department. Prior to his retirement, John was an active member of the Furbearer Conservation Technical Working Group. He provided primarily a western-state perspective during the development of the BMPs. John was an expert field biologist with a fundamental understanding of the reality of trapping in the field, while recognizing the need to move forward with the improvement of trapping devices in the United States. We thank John for his substantial contributions.

We thank S. Larivière, C. Larivière, P. Oleiro, and F. Abarca for previous or current translations of the abstract to French and Spanish. Several colleagues have reviewed drafts of this paper and have provided valuable comments or insights that we have incorporated. The authors, however, are fully responsible for any errors, omissions, or oversights. The extensive use of trade names is for identification purposes and does not constitute endorsement or recommendation by the authors, their agencies, organizations, or cooperators, or by the United States Department of Agriculture.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

APPENDIX A. TRAP CODES AND MODELS

Table A1. Trap codes and models used to capture furbearing species in restraining traps in the United States during the best management practices for trapping program, 1997–2018. Brand names are used because manufacturers do not use standardized trap-size designations for individual trap models.

Trap code	Trap brand and model
B2P	Bridger[a] No. 2 coil-spring trap with padded jaws
BEL	Belisle[b] No. 6 power-activated foot-snare
BTH	Breathe Easy[c] cage-trap
Cage 105.5	Tomahawk[d] wire-mesh cage-trap (60.9-cm long, 17.8-cm wide, 17.8-cm high)
Cage 108	Tomahawk wire-mesh cage-trap (81.3-cm long, 25.4-cm wide, 32.4-cm high)
Cage 109.5	Tomahawk wire-mesh cage-trap (106.7-cm long, 38.1-cm wide, 50.8-cm high)
Cage 207	Tomahawk wire-mesh cage-trap (81.3-cm long, 25.4-cm wide, 30.5-cm high)
HAN	Hancock[e] cage-trap
CC	Coon Cuffs[f] foot encapsulating trap
CCC	High Country[g] Circle C Coyote Cuff No. 3 coil-spring with offset wide face jaws
CD	Coon Dagger[h] foot-encapsulating trap
DPP	Duke[i] DP foot-encapsulating trap
DUF	Duffer[j] foot-encapsulating trap
EGG	Egg[k] foot-encapsulating trap
HE	Black Hole[l] trigger assembly added to the 15C
JAKE	J. C. Conner[m] Jake coil-spring trap with padded jaws
KB5.5	KB[n] Compound 5.5 foothold trap with outside-laminated offset jaws
LPC4G	Livestock Protection Company[o] No. 4 double longspring trap with offset jaws, anchored with grapple
LPC4K	Livestock Protection Company No. 4 double longspring trap with offset jaws, anchored with stake
MB450	Minnesota Brand[p] MB450-FOX foothold trap
MB550-RC	Minnesota Brand 550-RC foothold trap
MB650	Minnesota Brand MB650 foothold trap with offset cast jaws
MB750C	Minnesota Brand MB750 foothold trap with standard jaws
MB750G	Minnesota Brand MB750 foothold trap with outside-laminated offset jaws, anchored with grapple
MB750K	Minnesota Brand MB750 foothold trap with outside-laminated offset jaws, anchored with stake
MJ600	Sterling[q] MJ600 foothold trap
MS1.5	Montana[r] Special 1.5 coil-spring trap
RZ	Lil' Grizz Get'rz[s] foot-encapsulating trap
T3	Bridger T3 foot-encapsulating trap
ZT	Z-Trap[t] foot-encapsulating trap
1C	Oneida[u] Victor No. 1 coil-spring foothold trap with standard jaws
1L	Oneida Victor No. 1 coil-spring foothold trap with outside-laminated jaws
1P	Oneida Victor Soft Catch No. 1 coil-spring foothold trap with padded jaws
1DJ	Sleepy Creek[v] No. 1 coil-spring foothold trap with double jaws
1VG	Oneida Victor Stop-Loss No. 1 longspring foothold trap with spring-activated immobilization guard
11P	Sleepy Creek No. 11 double longspring foothold trap with padded jaws
11S	Sleepy Creek No. 11 double longspring foothold trap with standard jaws
11CH	Sleepy Creek No. 11 double longspring foothold trap with Humane Hold™ jaw pads
11DJ	Sleepy Creek No. 11 double longspring foothold trap with double jaws
11DJG	Sleepy Creek No. 11 double longspring foothold trap with double jaws, anchored with grapple
11DJK	Sleepy Creek No. 11 double longspring foothold trap with double jaws, anchored with stake
11DJO	Sleepy Creek No. 11 double longspring foothold trap with offset double jaws
15C	Oneida Victor No. 1.5 coil-spring foothold trap with standard jaws
15L	Oneida Victor No. 1.5 coil-spring foothold trap with outside-laminated jaws
15P	Oneida Victor Soft Catch No. 1.5 coil-spring foothold trap with padded jaws
15C6	Oneida Victor No. 1.5 coil-spring foothold trap with standard jaws, 15.2-cm-long chain
15C30	Oneida Victor No. 1.5 coil-spring foothold trap with standard jaws, 76.2-cm-long chain
15CH	Oneida Victor No. 1.5 coil-spring foothold trap with Humane Hold™ jaw pads
15CQ_	Oneida Victor No. 1.5 coil-spring foothold trap with standard jaws, chain attachment on trap corner, stronger springs
15DJ	Oneida Victor No. 1.5 coil-spring foothold trap with double jaws
15DJL	Oneida Victor No. 1.5 coil-spring foothold trap with laminated double jaws
15FO	Sleepy Creek No. 1.5 coil-spring foothold trap with offset wide jaws
15PM	Oneida Victor Soft Catch No. 1.5 coil-spring foothold trap with padded jaws, 4 coil-springs
15PT	Oneida Victor Soft Catch No. 1.5 coil-spring foothold trap with stronger coil-springs

(*Continued*)

Trap code	Trap brand and model
15CQW	Oneida Victor No. 1.5 coil-spring foothold trap with standard jaws, chain attachment on trap corner, weaker coil-springs
15DJG	Oneida Victor No. 1.5 coil-spring foothold trap with symmetrical double jaws, anchored with grapple
15DJK	Oneida Victor No. 1.5 coil-spring foothold trap with symmetrical double jaws, anchored with stake
15DJL	Sleepy Creek No. 1.5 coil-spring foothold trap with laminated double jaws
15DJM	Oneida Victor No. 1.5 coil-spring foothold trap with double jaws, 4 coil-springs
15DOL	Duke 1.5 coil-spring with inside lamination
15PDJ	Oneida Victor No. 1.5 coil-spring foothold trap with padded double jaws
15VDJ	Oneida Victor No. 1.5 coil-spring foothold trap with asymmetrical double jaws
15DJFO	Sleepy Creek Manufacturing No. 1.5 coil-spring foothold trap with flat-faced offset double jaws
15DJFO4	Sleepy Creek Manufacturing No. 1.5 coil-spring foothold trap with flat-faced offset double jaws, 4 coil-springs
134FO	Sleepy Creek Manufacturing No. 1 3/4 coil-spring foothold trap with offset wide jaws
165DOL	Bridger No. 1.65 coil-spring foothold trap with outside-laminated jaws
165OL	Bridger No. 1.65 coil-spring foothold trap with outside-laminated offset jaws
175C	Oneida Victor No. 1.75 coil-spring foothold trap with standard jaws
175OL	Oneida Victor No. 1.75 coil-spring foothold trap with outside-laminated offset jaws
175FOJ	Oneida Victor No. 1.75 coil-spring foothold trap with offset, wide-face jaws
175P	Oneida Victor Soft Catch No. 1.75 coil-spring foothold trap with padded jaws
2C	Oneida Victor No. 2 coil-spring foothold trap with standard jaws
2P	Butera[w] Cushion-Catch No. 2 coil-spring foothold trap with padded jaws
2S	Oneida Victor No. 2 double longspring foothold trap with standard jaws
2FOJ	Oneida Victor No. 2 coil-spring foothold trap with offset wide jaws
2OLM	Bridger No. 2 coil-spring foothold trap with inside-laminated offset jaws
22CC	High Country Control Coyote Cuffs No. 22 coil-spring foothold trap with offset wide cast jaws
3C	Oneida Victor No. 3 coil-spring foothold trap with standard jaws
3L	Bridger No. 3 coil-spring foothold trap with outside-laminated jaws
3O	Bridger No. 3 coil-spring foothold trap with offset jaws
3S	Sleepy Creek Manufacturing No. 3 double longspring foothold trap with standard jaws
3OL	Bridger No. 3 coil-spring foothold trap with outside-laminated offset jaws
3PM	Oneida Victor Soft Catch No. 3 coil-spring foothold trap with padded jaws and 4 coil-springs
33CC	Bridger No. 3 coil-spring with Coyote Cuffs No. 33 offset wide cast jaws
3MSM	Montana Special No. 3 coil-spring modified foothold trap with outside-laminated offset jaws

[a] Bridger Trap Company, Pennock, MN, USA
[b] Belisle Enterprises, Blainville, QC, Canada
[c] Breathe Easy Trap Inc., Truro, NS, Canada
[d] Tomahawk Live Trap, Hazelhurst, WI, USA
[e] Hancock Trap Company, Custer, SD, USA
[f] Blue Valley Trap Supply, Pickrell, NE, USA
[g] High Country Control, Model, CO, USA
[h] Sudden Valley Supply, Warrenton, MO, USA
[i] Duke Company, West Point, MS, USA
[j] Duffer's Trap Company, Bern, KS, USA
[k] The Egg Trap Company, Butte, ND, USA
[l] Bill Rudy, Aurora, NE, USA
[m] J. C. Conner, LTD., Newcomerstown, OH, USA
[n] Kurt Beauregard, Fort Plain, NY, USA
[o] The Livestock Protection Company, Alpine, TX, USA
[p] Minnesota Trapline Products, Pennock, MN, USA
[q] Glen Sterling (deceased), Hulett, WY, USA
[r] Montana Traps, Lusk, WY, USA
[s] Sterling Fur Company, Sterling, OH, USA
[t] Z Traps, Lake View, IA, USA
[u] Oneida Victor Inc., Ltd., Cleveland, OH, USA
[v] Sleepy Creek Manufacturing, Berkeley Springs, WV, USA
[w] Butera Manufacturing Ind., Wickliffe, OH, USA

A McKinsey Testimony

ANNE MCKINSEY • 614 Village Rd, East Corinth, VT 05040 • 802-439-6472 • mckinseya@gmail.com

October 2, 2023

Honorable Trevor Squirrel, Chair
Legislative Committee on Administrative Rules (LCAR)
115 State Street
Montpelier, VT 05633

Dear Chair Squirrel and Members of the Vermont LCAR:

RE: Act No. 159, An act relating to best management practices (BMPs) for trapping
Act No. 165, An act relating to hunting coyotes with dogs

Thank you for the opportunity to offer testimony. I am a resident of the town of Corinth in Orange County. Imagine this: You're out for a walk with your dog on a trail that you and your neighbors use regularly. Your dog, legally off-leash, wanders off trail and she does not respond as she usually does to your call. You watch her and then she gives a yelp. She has gotten trapped in a body-gripping trap. Her neck is crushed, not 'gripped.' She dies ten minutes later in your arms. My dog, Clara, was killed this way last December close to my home and this could happen to anyone virtually anywhere in the state.

The experience with my dog points to four problems that are analogous to Acts 159 and 165:

1. **Body-gripping kill traps.** Act 159 states that a baited trap would continue to be allowed if installed inside an enclosure. An enclosure does not stop the indiscriminate killing of wild animals and pets. These traps are non-selective and many animals are mistakenly killed by them every year. Even if the animal is not killed, it likely needs to be euthanized because a leg, face, or other body part has been crushed. *Body-gripping traps should be illegal in Vermont as they are in other states.*

2. **Control of dogs and Act 165.** I have been called out more than once by the trapping community that my dog's death was my fault because she was not leashed. This is misplaced blame. Corinth, like so many other Vermont towns, has a verbal command law, not a leash law. So here is the trapping community arguing that people should keep their dogs leashed at all times to be safe from their traps. Yet, concurrently, hunting hounds are often miles away from their owner and are not in control. There have been numerous incidents of hounds attacking people and entering private property.[1] *GPS collars should not be relied on for control of hounds, as stated in Act 165.*

3. **Public trail setbacks.** The 50-foot setback from public trails that Fish & Wildlife proposes falls way short of meaningful protection for the public. Some states require a 500-foot setback. My dog was killed about 70 feet from the trail. It is disturbing to think that the safety of hikers is compromised for the sake of about 350 trappers in our state. *Extending the proposed setback needs to be considered.*

4. **Public safety.** The use of signage in trapping areas has been considered, but not adopted. I am speaking not only of permanent signs on trail kiosks, but also refer to temporary signage to be placed by every trapper with name and date that reads: "Caution: Trapping is in Progress." Currently, traps can be set in all state parks, Wildlife Management Areas, town forests, on private land, and along public trails

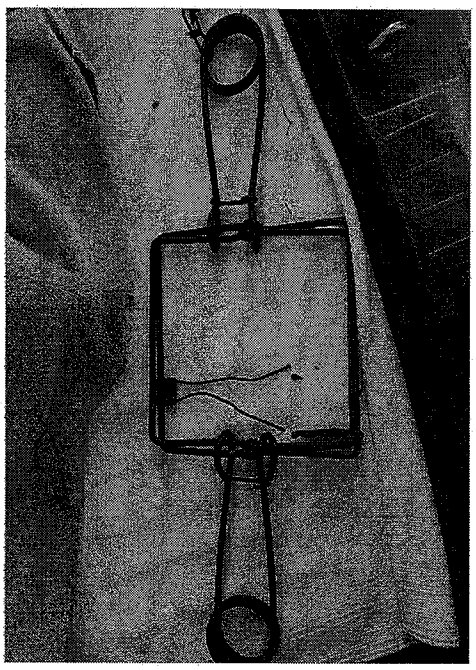
with no caution signs for the public. Traps are a hazard and it's the responsibility of Fish & Wildlife to require that trappers use signage. *Adopting a signage rule needs to be considered.*

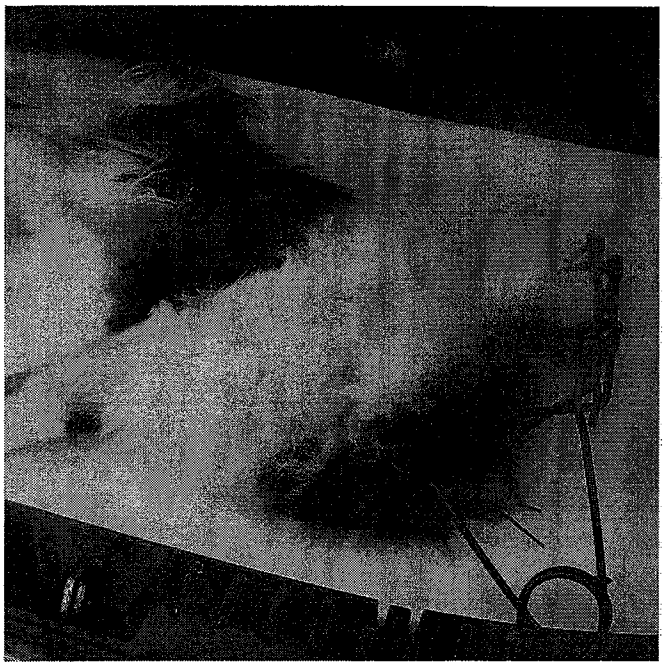
Thank you again for the opportunity to offer testimony in regards to body-gripping traps, control of hound-hunting dogs, public trail setbacks, and signage for the safety of the general public.

Yours sincerely,

Anne McKinsey

[1] *Addison Independent*, Nov. 14, 2019: https://www.addisonindependent.com/2019/11/14/legislators-eye-bear-hound-rules-after-ripton-attack/





Clara McKinsey killed in a body-gripping trap (aka Conibear or body-crushing trap).
December 2022. Corinth, Vermont.

Devin Brennan

Devin Brennan

Legislative Committee on Administrative Rules

Rep. Trevor Squirrell, Chair

19 October 2023

Testimony

Good morning! My name is Devin Brennan. I am a student at Vermont Law and Graduate School, where I am a candidate for a Juris Doctor with a Concentration in Animal Law and a Master of Animal Protection Policy.[1] My testimony focuses on the Fish and Wildlife Board's definition of trapping as hunting.[2]

The Fish and Wildlife Board's interpretation of hunting makes provisions of Vermont's Constitution redundant.[3] The Vermont Supreme Court has stated, "In construing a statute, every part of the statute must be considered, and every word, clause, and sentence given effect if possible."[4] Under the regulations and proposed rules of the Fish and Wildlife Department and Board, the meaning of "hunting" subsumes fishing, fowling, and trapping.[5] In this way, the Fish and Wildlife Board's expanding interpretation of "hunting" renders redundant the words "fowling" and "fishing" in Vermont's Constitution.[6]

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[1] *N.b.*, I do not represent Vermont Law and Graduate School, and my opinions are my own; I speak in my individual capacity.

[2] 10 App. V.S.A. § 44(3.20) (May 17, 2023) ("'Trapping' means to hunt....").

[3] *See* VT. CONST. § 67 ("The inhabitants of this State shall have liberty in seasonable times, to hunt and fowl on the lands they hold, and on other lands not inclosed, and in like manner to fish in all boatable and other waters (not private property) under proper regulations, to be made and provided by the General Assembly.").

[4] *State v. Stevens*, 137 Vt. 473 (Sept. 17, 1979); *see also* ANTONIN SCALIA & BRIAN GARNER, *Surplusage Canon* in READING LAW 174–79 (2012) ("If possible, every word and every provision is to be given effect. None should be ignored. None should needlessly be given an interpretation that causes it to duplicate another provision or to have no consequence.").

[5] 10 App. V.S.A. §19(3.15) ("'Hunting' means the taking of an animal by use of a firearm, muzzleloader, bow or crossbow or other implement authorized by the General Assembly, or the Vermont Fish and Wildlife Board to pursue or take any live animal."); 10 App. V.S.A. § 19a(3.11) ("'Hunting' means the taking of an animal by use of a firearm, muzzleloader, bow or crossbow or other implement authorized by the General Assembly, or the Vermont Fish and Wildlife Board to pursue or take any live animal."); 10 App. V.S.A § 44(3.20), *supra* note 2 ("'Trapping" means to hunt....").

[6] VT. CONST. § 67, *supra* note 3; *see Surplusage Canon, supra* note 4.

The Legislative Committee on Administrative Rules may object to an agency's proposed rule as arbitrary under at least three conditions.[7] First, if an agency's rule lacks factual basis, the Committee may object to that rule as arbitrary.[8] Second, if an agency's rule does not rationally connect to the factual basis asserted for the agency's rule, the Committee may object to that rule as arbitrary.[9] Third, if an agency's rule does not make sense to a reasonable person, the Committee may object to that rule as arbitrary.[10] If the Committee finds any one of these three conditions holds, the Committee may object.

I believe the Committee has reason to object to the Board's proposed rule. No neighboring state apparently defines fishing, fowling, or trapping as hunting.[11] Statutes, regulations, and licenses concerning hunting differ from those concerning trapping.[12] Not only does Vermont's Constitution say nothing of trapping, but the Board's proposed rule seemingly renders provisions of Vermont's Constitution redundant.[13] The Department's General Counsel thinks defining trapping as hunting does not substantively change the rule.[14] And given the plain meaning of "hunting" as an activity involving pursuit and given the lack of pursuit inherent in trapping, defining trapping as hunting does not make sense.[15] For these reasons, I urge the

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[7] 3 V.S.A. § 842(b)(3).
[8] 3 V.S.A. § 801(13)(A)(i).
[9] 3 V.S.A. § 801(13)(A)(ii).
[10] 3 V.S.A. § 801(13)(A)(iii).
[11] *See* Conn. Gen. Stat. §§ 26-1(7), (19), (21); Mass. Gen. Laws Ann. ch. 130 § 1, 131 § 1; Me. Stat. tit. 12 §§ 10001-23, 10001-27, 10001-64, 12601; N.H. Reg. ("angling"); N.Y. Env't Conserv. Law §§ 11-0103(10), (12a), (12b).
[12] *See, e.g.*, 10 V.S.A. §§ 4254(b), 4701, 4707, 4708; *see also* 10 App. V.S.A. § 14.
[13] *See* ANTONIN SCALIA & BRIAN GARNER, *Omitted-Case Canon* in READING LAW 93–100 ("Nothing is to be added to what the text states or reasonably implies.... That is, a matter not covered is to be treated as not covered."); *see also Surplusage Canon, supra* note 4.
[14] *LCAR 2023-10-05*, YouTube 2:13:23 (Oct. 5, 2023), https://www.youtube.com/live/cazIXNSblcA?si=K8mBBKvOHepQuSn5&t=8003.
[15] *See* ANTONIN SCALIA & BRIAN GARNER, *Ordinary-Meaning Canon* in READING LAW 69–77 (2012) ("Words are to be understood in their ordinary, everyday meanings—unless the context indicates that they bear a technical sense.... The ordinary-meaning rule is the most fundamental semantic rule of interpretation.")

Committee to consider objecting to the Board's proposed rule. Thank you!

~~Green~~
R Mullen

LCAR October 5, 2023, Act 159 – Proposed FWD and FWB trapping rules

Thank you, Chairman Squirrel, and members of the committee, for this opportunity to speak with you regarding the proposed rules resulting from A.159 and A.165. Trap trail setbacks will be my focus with a brief mention of control of dogs, an issue I deal with regularly as Bolton's Animal Control Officer.

My name is Rob Mullen from West Bolton. Pertinent to trapping and hounding, I have a Bachelor of Science in biology from UVM and am a nationally known wildlife artist and Signature Member of The Society of Animal Artists (www.robmullen.com).

As an artist, I have run 20 wilderness art expeditions from Labrador to Alaska and have observed and studied wildlife professionally for almost forty years. I am the Board Chair of the Vermont Wildlife Coalition (www.vtwildlifecoalition.org) and served on the A.159 trapping working group.

Before moving to what I believe is a clear violation of both the letter and intent of A.159, as an ACO, I wish to address two issues:

1. Whether a 50-foot setback is a well-reasoned or an arbitrary figure. In materials before this committee and in an interview with Vermont Public (Vermont's Fish & Wildlife Department is accepting public comment on modernized trapping regulations | Vermont Public), the FWD cites the length of dog leashes as the reason for the 50-foot setback figure. That would be a soundly reasoned distance where dogs are required to be on a leash. However, it is a baseless metric in a state with no leash law. Leash laws, if any, are by the authority of towns in Vermont under VSA Title 20 Chapter 193, subchapter 1 https://legislature.vermont.gov/statutes/chapter/20/193. Bolton, like most rural towns, does not have a leash law, but only requires control of your dog (i.e., in sight and with excellent recall). I have always considered it one of the benefits of rural life. An unleashed dog can cover 50 feet in a moment's inattention, making the FWD/FWB's figure analogous to tailgating in a car.

> We had initially suggested 500-ft setbacks in the working group – the State's standard on ANR property - and the Trappers Association VP granted that his membership would agree to **not set traps ON trails.** At a subsequent meeting, he suggested 10-feet. I wrote the group and suggested a compromise of 100-feet – more likely within the reaction time distance to recall a dog. I received no reply.

Furthermore, the exception for traps set in culverts ignores the fact that many dogs, especially terrier breeds and mixes, LOVE tunnels. I have a husky/terrier mix (we think) who has never seen a culvert she doesn't want to run through. This exception weakens an already anemic setback rule that was supposed to establish s

2. Re A.165, as an Animal Control Officer, I find it downright Orwellian that the same people who want to enact statewide leash laws on the rest of us, twist into rhetorical pretzels to claim that packs of dogs running at large (a violation in every town) are legally considered "controlled" if they have a tracking collar and maybe a buzz collar on, even if they are miles from their owner. Calling it a "control collar" doesn't make it an effective control device. Without the backup of body language, it is very difficult to train a dog to understand what they are being buzzed for – presuming that the

range of the collar is sufficient in hilly country – a serious question with line-of-sight radio transmitters.

> Act 159; ... (4) requirements for the location of traps, including the placing of traps for purposes other than nuisance trapping at a safe distance, from public trails, class 4 roads, playgrounds, parks, and other public locations where persons may reasonably be expected to recreate;

A. 159, Trail setbacks.

Contrary to the arbitrary definition the FWD and FWB put on it, "Public Trail" is not stated as having to be on public land in A.159, but to the contrary, given the addition of, "... *public locations where persons may reasonably be expected to recreate*" clearly intends to include most publicly used trails throughout the state, whether they are on public land or not. That is common sense because public land, federal (7.8%), state (6.4%), and municipal (1.1%), constitute less than 15% of our land area. Setbacks limited to such a small area would be of limited value.

The text box below is the resulting FWD/FWB proposed rule:

> 4.15 Trapping Set-backs: No traps or body-gripping traps shall be set on or within 50' of the travelled portion of a legal trail, public trail or public highway unless set in the water. This setback requirement shall not apply to Wildlife Management Areas, ...

Leaving the 50-foot issue aside (and the WMAs), it seems in line with A.159. It is not. One also must read the fourteenth definition on page two. Far from following the letter and intent of A.159, the FWD and FWB have **arbitrarily and without authority** redefined "public trail." A.159 clearly intended to include most if not all publicly used trails, wherever they are. The FWD/FWB declared "public trails" to only mean **trails on land owned by the state of Vermont** – about **6.4%** of the state (text box below).

> *Public hiking trails often traverse private land in Vermont, including many of the nearly 100 GMC access trails and trailheads for the Long Trail, Appalachian Trail, and Kingdom Heritage Trail as well as the main trails themselves. Having hiked the Long Trail "End-to-End," I can personally attest that much of the trail can be readily accessed by trappers at automobile road crossings, and by ATV or snowmobile along even more numerous abandoned roads, logging roads, and ATV/snowmobile trails.*

> *3.14 "Public Trail" for the purposes of this rule, means a pedestrian foot path on Vermont state- owned public land, open to the public, and designated and mapped by the managing agency or department.*

The FWD's arbitrary redefinition **summarily exempts trails on all federal lands** such as the entire Green Mountain National Forest, and the Conte and Missisquoi National Wildlife Refuges. Not only that, but the FWD/FWB further **exempted Wildlife Management Areas (WMAs) – about 40% of all state-owned** lands yielding an (inadequately) **protected area of less than 4% of the state.** The rationale for this exclusion given in the Working Group was that trappers helped pay for the WMAs through federal excise taxes. In materials before this committee, the FWD shifted to a rationale of management design, that WMAs were purchased to provide hunting, trapping, and fishing opportunities. Well, setbacks don't prevent trapping, they do make other activities safer and the first activities that the Agency of Natural Resources list on their website for WMAs are, " ... WMAs are enjoyed by the public for hiking,

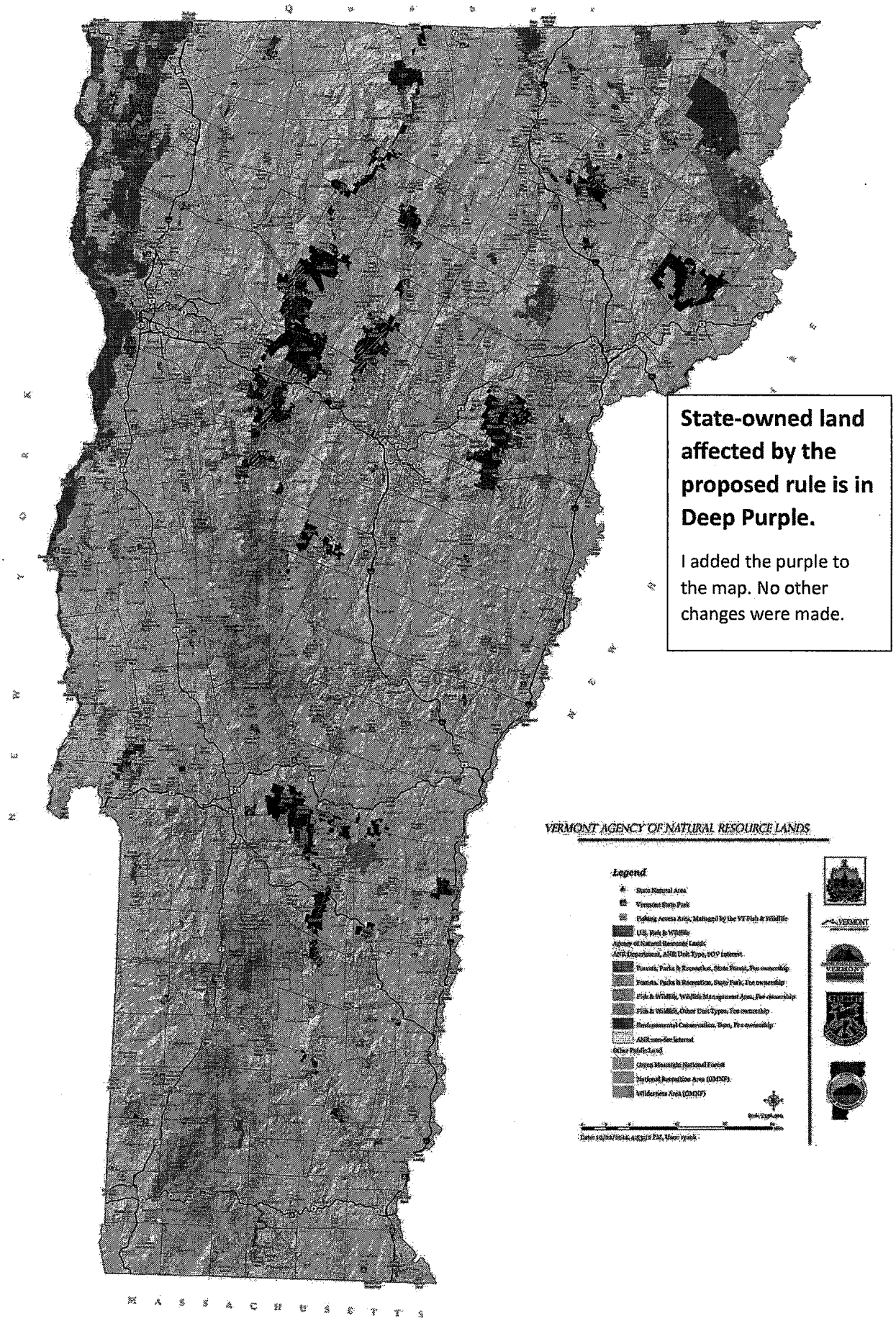
wildlife observation, bird watching, and educational opportunities." (Wildlife Management Areas | Department of Environmental Conservation (vermont.gov). And as for paying for WMAs, trappers don't pay any of the federal excise taxes that fund WMAs on traps. However, I do on the $3/round ammunition for my 45-70 carbine, my Winchester 30-30, several other guns, fishing gear, boating equipment, and registration. This gutting of the public trails portion of the setback requirement occurred at the second trapping working group meeting that I missed because of my birthday. As soon as I heard of it, I sent an email protesting the unjustifiable move. I received no reply. At the third meeting, I repeated my objection and presented reprinted maps of public lands from the Agency of Natural Resources (below). On it, I had highlighted the few, scattered properties that the FWD's public trail definition would affect. I had copies of the map for everyone. The FWD/FWB has been aware of this for over a year.

Recently, the FWD/FWB added mapped municipal trails approved by a Select Board to the list. There are about 67,000 acres of town forests in Vermont (Town Forests | Vermont Urban & Community Forestry Program (vtcommunityforestry.org)). Whether most trails in town forests would qualify under the mapped by the Agency of Transportation and approved by a Select Board criterion or not is doubtful (Bolton's six miles, some of the most popular in the state and 20 years old, are not). Even if all were though, in a state of 6.154 million acres, it at best adds 1.08% to the land area on which trails would have a setback. With this addition, public trails in possibly as much as 4.68% of the state would be "protected" with 50-foot trap setbacks. Is that what the Legislature intended with A.159?

The FWD/FWB has added Class 1, 2, and 3 highways (*Class 4 highways were already mandated by the Legislature in A.159*), and "legal trails" (municipal land above) to the setback rule. Class 1,2,and 3 highways are year-round automobile roads. They are not prime destinations for unleashed dog recreation or, I would imagine, trapping. However, they do add 14,090 miles to a map of setbacks which looks amazing. The FWD has provided just such a map from the Agency of Transportation with all the public highways and "legal trails" delineated on it. It is an impressive amount of real estate. Until you remember that this is basically an automobile highway map of every single road in Vermont. All 15,631 miles of them. The map, while technically accurate as far as it goes, regarding meaningful safety measures for family pets, is misleading chaff.

Next page Map Notes: I highlighted the area affected by these setback rules in purple. The pale yellow is land which the ANR holds easements on but does not own. I made no other changes. The new Lamoille Valley Rail Trail runs from St. Johnsbury to Swanton. However, the state right-of-way is only 30-feet each side of the middle line of the trail, so a 50' setback could be moot.

Source: ANR Lands.pdf (vermont.gov)



State-owned land affected by the proposed rule is in Deep Purple.

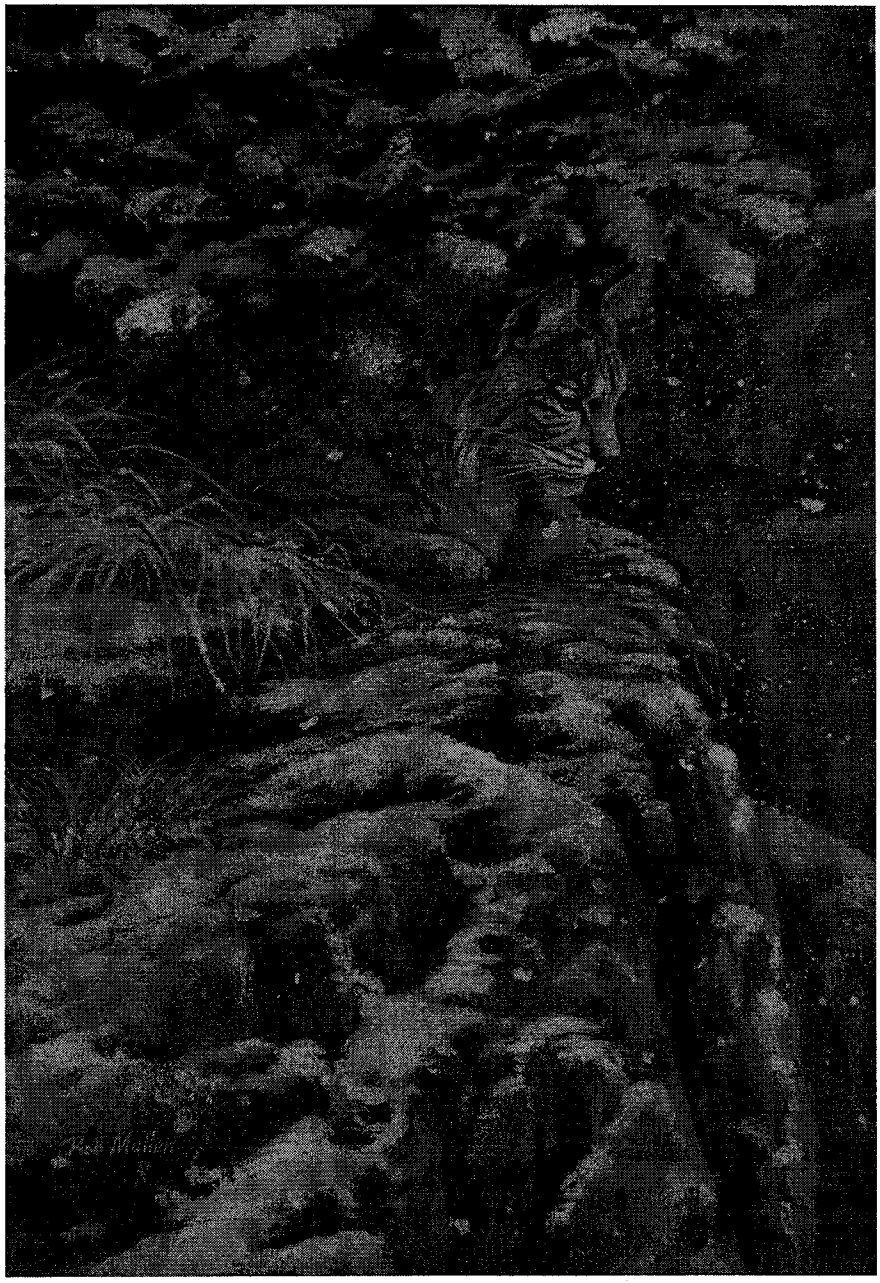
I added the purple to the map. No other changes were made.

In closing, I first want to object, again, to the FWD minimizing the deaths of family pets in traps. A "rare" occurrence, that they have deigned to address because of public concern. The numbers of family pets killed in traps is likely higher than the FWD has records of, but however many there are, each one is horrific. They are beloved members of Vermont families, and such a tragic loss leaves scars. This unserious effort is very disappointing as was the baked-in bias of the Working Group (nine members from the FWD, FWB, VT Trappers Assoc., VT Sportsman's Assoc., and the Association of Fish & Wildlife Agencies with only three – after the Commissioner was pressed to add Brena Galdenzi – wildlife advocates).

The FWD and FWB have proposed a rule that at first glance looks legit, but in fact, guts the law it is supposed to follow. We should not have to carefully parse every word of documents from public agencies charged with serving all of us to ferret out such dramatic deviations from their initially apparent meanings. And agencies should not circumvent the legislative intent of a law by arbitrarily changing definitions in it to suit their agendas and/or the wants of special interest groups.

Thank you,

Rob Mullen



"Snowy Overlook" Bobcat
12" x 9" acrylic - Mullen

J Fitzwilliam

October 2, 2023

To: Honorable Members of Legislative Committee on Administrative Rules
Re: Department of Fish and Wildlife Department/Rulemaking Act 165 and Act 159
From: Jane Fitzwilliam, Lead, Vermont Coyote Coexistence Coalition

Dear Honorable Committee Members:

Thank you for the opportunity to provide testimony today.

ACT 165

The General Assembly through the rules required under this section intends to reduce conflicts between landowners and persons pursuing coyote with the aid of dogs by reducing the frequency that dogs or persons pursuing coyote enter onto land that is posted against hunting or land where pursuit of coyote with dogs is not authorized. In addition, the General Assembly intends that the rules required under this section support the humane taking of coyote, the management of the population in concert with sound ecological principles, and the development of reasonable and effective means of control.

Control of Dogs

VFWD's (Vermont Fish & Wildlife Department) recommendation for control of dogs is what most coyote hounders are already doing, which means no change to the status quo. VFWD considers control of dogs to mean: *the transportation, loading, or unloading of dogs from vehicle(s); and the handling, catching, restraining, or releasing dogs to pursue coyotes. GPS collars with track log and training/control functions or separate GPS and training/control collars shall be required to locate and track dogs at all times while in pursuit of coyotes. At no time shall dogs be in pursuit of coyotes without a GPS track log being maintained by the permit holder.*

A GPS and shock collar do not communicate what land is posted, nor does it offer any "training or control" when the hounder can't even see where their hounds are. Having visual control would offer better control, but still presents problems. Control of any dog requires a physical presence close enough to witness any unintended action and move in to prevent it. Additionally, even hounders know their GPS collars don't work. (Please see the attached screen shot from a hounder's Facebook page clearly showing their GPS collars don't work.)

Additionally, on page 4 of Act 165, it states:
A definition of control to minimize the risk that dogs pursuing coyote:
(A) enter onto land that is posted against hunting;
(B) enter onto land where pursuit of coyote with dogs is not authorized; (C) harass or harm people or domestic animals; and
(D) cause other unintentional damages to people or property.

In response to (C): There is no way for hounders to know if their hounds are chasing a domestic dog, cat, deer or person versus their intended target. In April 2021 in Fairlee, VT a woman's dog was viciously attacked by four coyote hounds while running alongside its owner. The hounder was nowhere in sight. VFWD's definition of control would not reduce the chances of something like that happening again.

Additionally, a coyote hounder who participated in the January 2023 working group said that the hounds sometimes split in different directions while pursuing coyotes. It's not possible to control hounds simply with GPS and shock collars.

Limit on Number of Dogs
VFWD's recommendation of four hounds does not meet the "humane taking of coyotes" as mandated in Act 165. Allowing four hounds, with GPS collars, to pursue one coyote is unfair. Our recommendation was one hound.

Seasons and Shooting Hours
VFWD is recommending a summer coyote hound training season that will result in increased conflicts with landowners and also introduce animal welfare concerns since coyotes are birthing then. Coyote hounders can train their hounds using drags and other methods that don't involve pursuing coyotes during the summer months.

The coyote hound-hunting season recommended by VFWD is already the time of year when most hounders run their hounds, when there's snow. The season is too long, resulting in more opportunities for conflicts with the public.

Legislative intent includes the following: management of the population in concert with sound ecological principles. VFWD has not provided any science-based evidence that supports this. Hounding is antithetical to sound ecological principles.

Prohibitions

Act 165 asked VFWD to consider prohibiting baiting. Our recommendation is to ban it outright. During the summer working group, VFWD offered the following: *No person shall place bait to attract a coyote for the purposes of training a dog to catch/strike the scent of a coyote.*

After the working group concluded, VFWD rescinded their restriction on bait and baiting in all forms will still be allowed.

ACT 159

While VCCC did not sit on the working group for Act 159, we do not believe that VFWD met legislative mandates, especially as it relates to trap setbacks on lands where the public may be reasonably expected to recreate. Also, a 50-foot setback does little to protect a dog from being trapped and killed.

Act 159 is a bill aimed at improving animal welfare and all VFWD has done is try to enshrine trapping in the constitution by **seeking to redefine trapping as hunting** without ever communicating this substantive change to the public.

That alone should be grounds for LCAR to reject this rule.

Additionally, VFWD was asked to institute humane methods of killing animals. Currently trapped animals are beaten with bats, drowned, choked, "thoracic compression" aka stomping on the chest and other gruesome methods. VFWD's rule before you is punting the issue by waiting for the Association of Fish & Wildlife Agencies to come up with their recommendations, but they currently allow all of these methods, so we have little faith that their recommendations will meet humane standards. This is a dangerous loophole that cannot be allowed to advance.

We ask you to please reject the rule before you and take these issues up via the legislature in January, since Fish & Wildlife has proven that they are unable to rise to the challenge.

On behalf of the Vermont Coyote Coexistence Coalition's supporters, I thank you for considering our letter.

Sincerely,

Jane Fitzwilliam

Jane Fitzwilliam
Lead, Vermont Coyote
Coexistence Coalition
Vermontcoyote.org

Northeast Hunting With Hounds

I lost range on my Garmin when dogs crested a rocky slope. Anyone have problems with GPS not being reliable. I spent four figures on these dam collars.

1 4 comments

Like Comment Send

Top comments

[redacted]rite a comment...

J.R. Williams
Yes you gotta keep moving around so you have service with the gps and collars happens all the time when your in the hills and creek bottoms so it's good to have someone in the woods and one in the truck on the road and to have radios is a must also

Like Reply 13m

[redacted] Reply to J.R. Williams...

Timothy Farrar Sr.
Pretty much a line of sight tool. Rocks or not ridges block signals.

Like Reply 4h

Raymond Taylor
They only range so far.

Like Reply 9h

Dennis R. Cochrane
Know collar will give you a range when the dog goes over the top of slope and drops in a hole.

Like Reply 34m

Kari Born

Hello and thank you for the opportunity to speak.

I am a resident of the Whiting/Shoreham area in Addison County. Before the moratorium I was negatively impacted by coyote hounders for several winters in a row. I am here speaking to you all because I believe that the proposed regulations from the Department of Fish & Wildlife regarding this activity are a complete smoke screen. The proposed regulations, as they are currently written, will do almost nothing to curb a dangerous and reckless activity.

The argument that hounds on GPS and/or shock collars are "under control" just does not hold water. In my experience hounds cover miles of terrain with great speed. They are following the scents of animals that weave in and out of property lines constantly. The hounders are separated from their hounds by a great distance (oftentimes miles). Even in proximity, I have witnessed hounders unable to recall their dogs, and I saw one incident where a hounder had to chase two of his dogs across a field (while trespassing) before catching them. I have also seen hounds run across and into roads -- this is a car accident waiting to happen. The hounds make an awful baying racket that you can hear from miles away, for hours on end. In addition, the hounds disturb and displace all the other local wildlife.

If there is any point I want people to take away from my testimony today, it is this: The hounds that ended up at my house, numerous times, over several winters, scaring my children, alarming my dog, and spooking my horses in their paddock -- I repeat, numerous times – every single one of those hounds had a GPS/shock collar on. My land was posted. So, I am asking, what in these proposed regulations changes any of that?

Put yourself in my shoes: I am out on a walk with my three-year-old son and my dog (who is on a leash), and a hound or a pack of hounds arrives. Their handlers never informed me they were coming and never asked my permission. Their handlers are oftentimes parked miles away, sitting in their trucks while they let their dogs run all over the area. These handlers would have no idea that their dogs have come upon other humans and/or their animals – because the GPS collars do not give them any of that information. I have no way of reaching the handlers to inform them of an encounter, or to get them to call off their dogs. I am literally at the mercy of these hounds and unable to defend myself, my dog, or my child. When I raised this scenario with the game warden, he told me I should always carry mace. On my own property.

So how do I make this calculation? Is it worth it for me to risk my family's well-being in order take a walk on a Saturday morning, and enjoy the land that I work all week to pay taxes on? How would I feel if my three-year-old witnessed a dog fight? Or worse? Why am I even being put in this position? I am not bothering anybody. Why do the interests of a few individuals pursuing their idea of fun, take priority over the dozens of residents in my area who are minding their own business?

The argument that if you have a GPS tracker on your dog, than you are in control of its whereabouts and its activity, even when it is out of your sight -- that is called magical thinking. It is not real. And even if it gave you a modicum of control in the best of all scenarios, there are way too many instances where things could go array; there is way too much potential for adverse outcomes. Do you know why? Because other humans and animals live here too. We live here

too. And name one person who likes the feeling of an unknown dog approaching them whose owner is nowhere to be found and nowhere to be seen. Who of even the most avid dog lovers, myself included, likes that experience?

I wish I could keep open, unposted borders on my land. I have many agreements with neighbors to that affect: my next-door neighbor hunts turkey on my land in season, and his daughter rides her horse in my forest. The hounders are not my neighbors and they did not ask permission. They never asked me if I had a problem with a coyote, because that is not why they are pursuing this activity.

Last week I spoke with a law enforcement official at the Department of Fish & Wildlife. He said that with the proposed regulations if dogs trespassed on my posted land, I could file a complaint. So, I currently have a 9-month-old baby. I don't know when the hounders will show up. How do I just drop everything in the moment to chase hounds, or follow hounders' pick-up trucks so I can get a photo of their license plate? I feel that the Department of Fish & Wildlife is just setting up inevitable confrontations between people. This is an activity that puts landowners on edge and on the defensive. And to serve what exactly? I'm still waiting for that answer ...

Thanks to the moratorium I can tell you that last winter in my area, it was calm and quiet. I am asking my representatives and other governing bodies to keep it that way -- to do the right thing: to prioritize the rights of the people paying taxes on their land, who are stewards of the land, and who want to authorize ethical activity, not reckless endangerment. I do not understand the point in creating regulations that, by their very nature, cannot be followed. If these proposals are authorized, we will inevitably find ourselves here again, having the same conversation, after further incidents ensue. Coyote hounding should be banned because it is an activity that cannot be effectively regulated. Maybe in theory ... but in reality -- it will all fall apart.

Karima Borni Ph.D.
Dance Department
Middlebury College

Animal Behavior & Training
Alana Stevenson

Alana Stevenson

To: Rep. Trevor Squirrell, Chair
Sen. Mark MacDonald, Vice Chair
Legislative Committee on Administrative Rules

October 5, 2023

23-P15/10 V.S.A. Appendix §44, Furbearing Species

Act 165 – Page 3, Section 3: The recommendations made by the Fish and Wildlife Board do not meet the legislative mandate to develop a reasonable and effective means of control for hunting hounds.

I'm an animal behaviorist with over twenty years professional experience and have two published books on dog behavior and training. I wanted to speak on the issue of control of hunting hounds. The Fish and Wildlife Dept. and Board were to address the issue and seek input. I reached out to the Board multiple times to speak, but was never invited to present information or share knowledge. To my understanding, the Board invited two hounding enthusiasts who promoted remote training collars as a means of controlling hounds. These are already used by most, if not all, hounders.

Predatory aggression and prey drive are the hardest behaviors to control from a training perspective. If anyone has experienced a dog fight, you are aware of how frenzied it can be. Sic'ing a bunch of dogs on a coyote or a bear is a form of dog fighting. Hunting hounds are caged, kenneled, or tied on chains 24/7, and then let loose to chase down and attack animals. These dogs are in a high state of arousal. They are not capable of learning or deciphering verbal or auditory signals while in fight and flight mode.

The use of e-collars is contraindicated for animals with aggression. When these collars are used correctly, behavior is suppressed, not extinguished. The aggressive behavior can resurface at any time, without warning, and usually does so with more severity.

The use of shock reduces a dog's bite threshold and can elicit redirected aggression and aggression in dogs with no prior aggressive history. If a dog's bite threshold is low, the dog is more likely to bite. The use of shock collars increases a dog's propensity to bite, as well as biting intensity and severity. This is one reason why professional animal behavior and veterinary organizations are against using them.

Remote training collars are shock collars. They can be marketed as electronic stimulation devices, e-collars, training collars, e-touch, stimulation, tingle, TENS unit, remote delivery collars and remote trainers. They are manual, radio controlled systems that allow you to deliver a shock to the dog's collar from a hand-held transmitter. The first step in using them correctly is to understand the limitations. They range from 150 yards to 2 miles. However, maximum range is based on "line of sight" — this means to get the full range out of any remote training system

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there should be nothing between the transmitter and the receiver. The terrain needs to be flat and open. This does not apply to the woods and mountains of Vermont.

A GPS system does not control a dog, nor is it a training substitute.

Hand-held transmitters can have multiple buttons or levers to set for individual dogs. Hounders usually hold these while wearing gloves which makes handling them cumbersome. There is considerable potential for e-collars operators to deliver mistimed electric shocks since one transmitter can be used on multiple dogs.

In hounding, the animal being chased or targeted determines where and in what direction the hounds will go, not the hounder or person holding the transmitter. Therefore, the animal being chased determines the dogs' behavior and course of action, not the hounder, collar, or remote training system.

Hounds are mostly out of sight and often not in close proximity to each other. The dogs are in a constant state of motion and exhibit multiple behaviors at one time. These behaviors vary between dogs.

Individual dogs respond to shock differently on any given day. How they respond varies according to the dog's energy level, mood, emotional state, frustration level, pain threshold, distractions present, and environmental conditions. Therefore, one handler being able to control multiple dogs on one transmitter is extremely unreliable.

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Remote training collars are dependent upon the handler being able to deliver the shock as a behavior is performed and for the dog to understand what the shock means. Unless timing is impeccable and the handler knows exactly what they are shocking for, when, and how to apply it, the dog does not associate the shock with any behavior, but easily associates the painful sensation of shock with other factors in the environment such as the location the dog is in, other animals or dogs, odors, and people.

The irony to employing remote training collars to control hounds is that using them correctly is in direct opposition to hounding and the motivations of hounders. Since shock is a punisher, its goal is to inhibit behavior. Hounds are baited and taunted to chase and attack an animal. They are encouraged to exhibit predatory aggression. Therefore, the shock cannot be paired with the target animal because, if used correctly, the dog will have an aversion to that animal. This is why shock

collars are used on dogs for snake aversion training, to teach dogs to avoid and retreat from certain species of poisonous snakes.

With regards to safety of companion or working dogs, hounds cannot differentiate between dog breeds. Even professionals who work with dogs have difficulty assessing a dog's breed upon visual examination. In one study, professional trainers, behaviorists, and veterinarians identified breed composition in mixed-breed dogs by visual appearance with less than 50% accuracy when compared to DNA analysis (Victoria Voith, 2013).

There are over twenty dog breeds that look like bears and nineteen breeds that look like coyotes (See lists below). This does not include all of the mixed-breed dogs, nor variations within breeds related to a dog's coloring, conformation, or size. Companion and working dogs have been attacked by hounds for this reason.

Coonhounds and Foxhounds are not classified as "Sporting" dogs, nor are they considered "Herding" or "Working" dogs by the American Kennel Club. Therefore, any reference to coyote, bear, or raccoon hounds being sporting dogs is a misnomer.

"Sporting" dogs are spaniels, setters, retrievers and pointers — none of whom are used for animal fighting. Any legislation that affects hunting hounds would not necessarily impact sporting breeds.

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The "training season" for hounding is a veil or euphemism for an extended hounding season. The use of remote delivery or shock collars may sound good on paper to those who lack knowledge on how dogs learn, but to those who have an understanding in animal behavior analysis, it's a farce.

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I have been contacted by a governmental official over concerns about hunting dogs and finding lost hounds on their property. One of the dogs was in very poor shape, malnourished, and neglected. This official was greatly concerned for the dog's welfare. The hounders eventually pulled up in their truck. One of them walked onto the property, grabbed the dog roughly, threw the dog into the dog box, and then they quickly drove off. The hounder never apologized, made eye-contact or acknowledged the home owner who was holding the hound at the time.

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Hounding needs to be banned for public safety. The majority shouldn't have to suffer so a small few can engage in an activity that is inherently cruel, dangerous, and disrespectful to neighbors and land owners.

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Animal Behavior & Training
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Alana Stevenson, MS

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K. Nolan Testimon

Testimony re: Act 159, "An act relating to best management practices for trapping," and Act 165, "An act relating to hunting coyotes with dogs"

To: Vermont Legislative Committee on Administrative Rules

From: Katie Nolan, General Campaigner, In Defense of Animals
katie@idausa.org / 203-823-8228

October 5, 2023

Dear Chair Squirrell and the Committee Members,

My name is Katie Nolan and I am the General Campaigner of In Defense of Animals, an international non-profit representing our Vermont members. Thank you for the opportunity to provide feedback on these rules. I am here to speak on behalf of our members to express that Act 159 and Act 165 do not meet the legislative mandates.

Several concerns were raised throughout this process by my peers, colleagues, and others that the rules do not meet the legislative mandates. I also attended the June 21 Fish and Wildlife Public hearing in Montpelier to raise several of my own concerns. I would like to echo those concerns and raise some additional points:

Act 159, "An act relating to best management practices for trapping"

The protection of recreators should be prioritized on all Public Lands. Currently, the 50 foot setback rule (which is in itself inadequate) does not apply to Wildlife Management Areas (WMAs), which make up a significant portion of the public lands in Vermont. There are over 133,000 acres of WMAs in the state, and they are open to the general public for a wide variety of activities including hiking and wildlife watching.[1] These outdoor spaces should be made safe for all Vermonters, so the setback rule should apply to WMAs as well.

The Process did not feel inclusive, fair, or transparent. Act 159 directed to improve the welfare of animals and yet comments and concerns from animal welfare advocates, the obvious experts on animal welfare, were not given any serious consideration throughout the entire process. Because of this, the process did not feel inclusive, fair, or transparent

Licensing and trapper education were not updated. Despite the legislative mandate, there were no changes in education and licensing to highlight animal welfare. The way licensing is

[1] https://dec.vermont.gov/water-investment/agency-facilities/Wildlife-Management-Areas

handled currently, someone with a trapping license from another state would qualify for a license without knowing about the BMPs. Additionally, pursuant to 10 V.S.A. § 4254a, individuals can obtain a Vermont trapping license by attending a trapper education course outside of the state, which does not address the specific regulations and requirements within Vermont. A person with an out of state trapping license is also eligible to purchase a trapping license in Vermont regardless of when their original license was obtained. In some states, it is not mandated to attend a trapper education course.

Vermont Fish and Wildlife failed to address the mandate to revise trapper education materials and instructions that incorporate the new proposed recommendations. If the changes to trapping BMPs were not significant enough to warrant providing new educational information to trappers, then perhaps significant enough changes were not made to the BMPs.

Trapping and hunting are not Synonymous. It is beyond the authority of the Department to redefine trapping as hunting as they've attempted to in the definitions sections. For this reason alone, we believe the rule should be rejected. This substantive change was never discussed at any of the meetings.

Act 165, "An act relating to hunting coyotes with dogs"

The Department's definition of control is inadequate. A GPS or electrical shock collar does not change the fact that a dog could be out of sight and therefore out of the hunter's control. Additionally dogs cannot read and therefore do not understand when entering onto posted land.

Landowner permissions: don't see any incentives to ask permission to enter land that is not legally posted

Four dogs is too many. The Department's decision to limit the number of hunting dogs in a pack to four was arbitrarily based on an average of the highest and lowest numbers proposed in the stakeholder working group. The lowest number proposed was 1 and the highest was 6, the average of which is actually 3.5. The department decided to round up to four despite Protect Our Wildlife's recommendation to allow only one hound for a more fair chase.

Hounding causes disruptions to the ecosystem. Hounding places stress on non-target species like deer, moose, small mammals, and ground nesting birds whose reaction to dogs is to flee, causing them to expend energy.

There are welfare concerns for hunting dogs. Hounds are often perpetually underfed to encourage their prey drive; they can collapse from dehydration and be struck by vehicles while

crossing the road. When hunting dogs do not perform successfully they are frequently abandoned, causing a strain on our local animal shelters

Conclusion

To conclude, the Department did not meet the legislative mandates for both Act 159 and Act 165. We can and must do better to prioritize the welfare of Vermont's citizens, companion animals, and wildlife. Thank you for your time and for your careful consideration of this important matter.

Sincerely,

Katie Nolan
In Defense of Animals

A. Jameson
Testimony

Dear LCAR Chair Squirrell and LCAR committee members,

My name is Anne Jameson and I live in Marshfield. As Wildlife Advocacy Coordinator for Green Mountain Animal Defenders, I have followed the proceedings leading to the Act 159 (Best Management Practices (BMPs) for trapping and Act 165 (taking of coyotes with dogs) proposal by the Fish & Wildlife Department (FWD) from the beginning. In my opinion, these BMPs fail to meet the 2021 legislative mandate.

Specifically referencing LCAR Rule (7) "the environmental impact analysis fails to recognize a substantial environmental impact of the proposed rule": I question why no mention is made of a larger-view environmental impact having been done is noted in the proposal being reviewed by LCAR, even 'though this information may be found in the ICAR rules. Surely effects on environments and habitats in the state should be a significant factor in the 'best management' of species which live in those environments, and what overall, long-term impacts the implementation of those BMPs will have. This lack illustrates the criteria for committee rejection of the proposed BMPs under this Rule.

Beavers, for example, are a keystone species critical to the larger environment for their incredible ecosystem engineering feats. Their ponds and dams not only create and re-stabilize wetland habitat for themselves and other species such as otter, muskrat, moose, birds, fish and insects, but also provide a critical mitigating tool in times of flooding by pushing flood waters into the earth and helping it to spread out, thereby reducing the amount of damage further downstream. Even in the recent severe floods, unlike past years, towns such as Monkton, Shelburne and Essex suffered little to no damage after choosing to co-exist with the beavers and instead install 'beaver baffles or deceivers'. An environmental impact study would show that, although the water itself isn't affected by the trapping of beavers, its actions on other parts of the surroundings would be if not for the existence of these very important animals and the effects of their dams.

With regard to beaver, Section 4.17 of the FWD BMP proposal only offers trapping restrictions for the month of March. Further, during the rest of the regular season there is no bag limit! Why is the trapping and killing of them still allowed and condoned by the FWD when we need all our bio-diversity to help remedy our climate crisis? Beavers should be welcomed as valuable assistants in the battle to save our ecologies, not maligned as pests, then trapped and killed. Although the FWD website extols the benefits of these wetland builders and how the Department strives to encourage the use of beaver baffles, in reality their support of trapping, both by their own Department and various other state agencies offers a different picture.

Another example where a broader impact study should have been done is the practice of hunting coyotes with a pack of trained dogs. No mention is made of the value of or need for coyotes as apex predators in the 'wider' picture of our state environs. The FWD document only establishes processes and regulations by which coyote may be hunted with these dogs.

Having evolved from the smaller Western coyote and, probably, the somewhat larger Eastern/Ontario wolf, the Eastern coyote is very intelligent, and has become highly adaptable in its ability to live in colder climates, eat a more varied diet and live closer to humans. As a beneficial apex predator, coyotes control over-populations of smaller prey such as mice and rats which often carry pathogens such as Lyme disease, a serious, on-going threat to both humans and domestic animals in our state. They also help maintain a healthy deer population by occasional thinning of weaker animals.

Yet, coyotes may be hunted all through the deepest of winter, when food is scarcest, and with no limit on take, by a pack of dogs – a very un-sporting, unethical hunting method. An environmental impact study would take into consideration not only the long-term effects of a decreasing population of apex

predators on the larger habitat, and how that population may be adversely affected by the hunting with hounds, but would also evaluate the potential damage to lands and possibly domestic animals at all times of the year by this hunting with dogs. The need for a restricted coyote hunting season becomes even more critical with the increasing possibility of wolves, an endangered species, returning to Northeastern habitats. Procedures for counting coyote take, along with the creation and implementation of reporting procedures and data gathering for those who fall into pre-determined criteria as possible wolves, must be put into place.

As stated in a letter to the FWD sent June 28, 2023 by Joanne Bourbeau, Northeast Regional Director of the Humane Society of the United State (HSUS): "Act 165 directs the rules to support the management of the population in concert with sound ecological principles." So far, the FWD hasn't shown anything truly science-based in their proposal that satisfies that directive. Indeed, the hunting of coyotes with dogs is antithetical to any sound ecological practice.

Based on the grounds for rejection by this committee as stated in Rule (7), I firmly believe the FWD's BMP proposal falls decidedly short of both Act 159 and Act 165 legislative mandates for its lack of attention to the overall, broader environmental impact of trapping and hounding. The proposal should, therefore, be rejected.

Thank you for considering my concerns.

K. Cameron
Testimony

Charlene Dindo

From: K Cameron <kcameron914@gmail.com>
Sent: Thursday, September 28, 2023 5:35 PM
To: Trevor Squirrell; Mark MacDonald; Christopher Bray; Virginia Lyons; David Weeks; Seth Bongartz; Mark Higley; Carol Ode
Cc: Charlene Dindo
Subject: [External] Fish & Wildlife's recommended rules on trapping and coyote hounding
Attachments: Trapping-BMP-POW.pdf

[External]

Dear Senators and Representatives of the Legislative Committee on Administrative Rules:

I know your committee will be reviewing the Fish & Wildlife Dept.'s recommended rules on trapping and coyote hounding next week. I have followed the activities of the working group and watched the board meetings that followed. I do not believe the F&W Dept's recommendations meet the legislative mandate required under Act 159 and Act 165. Their proposals will do little if anything to protect people's property and pets or improve animal welfare.

I expect the Fish & Wildlife Dept. will talk about trapping Best Management Practices (BMPs), as recommended by the Association of Fish & Wildlife Agencies. That is why I am attaching a white paper that provides background information on BMPs. I hope you will find it informative during your deliberations.

I continue to hope the legislature will take up the issue of trapping and hounding during the next session. Unfortunately, the legislature is the only place where democracy is possible. The Fish & Wildlife Dept. and Board are not the right body to enact regulations that reflect the will of the people. Their recommendations consistently serve the interests of license holders. They fail to adequately address (and the Board is ill-equipped to address) complex issues like biodiversity and climate change. Their deliberations and consideration of certain petitions are overtly hostile to the interests of other Vermonters. The majority of Vermonters oppose trapping and hounding. Meanwhile, the Fish & Wildlife Dept. and Board continue to privilege special interests.

Thank you for your time.

Sincerely,
Kristen Cameron
Burlington, Vermont

Trapping: Do Best Management Practices Improve Animal Welfare?

July 2022

Introduction

Every year well over six million wild animals are trapped and killed for their fur in the United States. Despite a decline in price and the global demand for fur, as well as growing public opposition to trapping, the United States remains one of the world's leaders in the number of animals killed every year by trapping. In addition to supporting an increasingly obsolete fur industry, millions of animals are unnecessarily trapped and killed under the guise of "predator control" or simply as a recreational activity.

Over 100 countries have banned the use of steel-jaw traps, including the European Union, China, Israel, and Mexico (Born Free USA, 2022; Knudson, 2016). Numerous states, including Arizona, California, New Mexico, Colorado, Florida, Hawaii, Massachusetts, New Jersey, Rhode Island, and Washington, have limited or banned certain types of traps due to concerns about public safety and animal cruelty (Animal Legal Defense Fund, 2021).

There are no federal trapping regulations. Trapping regulations are established at the state level and vary dramatically, from little or no restrictions to outright bans. The species classified as furbearers in Vermont that may be trapped are beaver, muskrat, mink, gray fox, red fox, coyote, raccoon, skunk, river otter, weasel, bobcat, opossum, and fisher. In addition, many unreported non-target animals fall victim to steel-jaw leghold traps and body gripping kill traps in Vermont, including black bears, owls, eagles, turtles and other incidental takes.

Steel-jaw leghold (a.k.a. foothold traps), body-gripping "quick kill" traps, colony traps (a.k.a. submersion sets) and cage traps are all legal in Vermont. Snares (a.k.a. cable restraints) are illegal. To obtain a license to trap during the legal season, a trapper education course is required. There are regulations that govern trapping, such as daily trap checks, but the inherent nature of trapping, and the fact that it often occurs on private land, makes enforcement of regulations challenging. There is also a shortage of game wardens. These factors render any future enforcement of Best Management Practices (BMP) impractical.

The Evolution of the Best Management Practice Program

The BMP program is an ongoing process of evaluating various traps for restraining, killing, or occasionally, relocating wildlife. BMPs did not evolve out of genuine concern for animal welfare. BMPs are a response to the public's growing opposition to trapping and, particularly, to pressure from the European Union (EU) (Zuardo, 2017). The EU adopted a policy of prohibiting

the import of fur from 13 species of animals from countries, including the United States, using steel-jaw leghold traps. In an effort to assuage the EU's concerns, BMPs were developed. One of the primary aims of the federal BMP trap-testing program is "to instill public confidence in and maintain public support for wildlife management and trapping through distribution of science-based information" (Zuardo, 2017).

Inherent Biases in the Testing Program

BMPs for trapping in the United States were written by the Furbearer Conservation Technical Work Group of the Association of Fish & Wildlife Agencies (AFWA), an independent marketing organization that works for state Fish & Wildlife Departments across the country, including Vermont Fish & Wildlife. Some of their other dues-paying members include the Safari Club International, the National Rifle Association and the National Trappers Association. According to AFWA's website, "The Association represents its state agency members on Capitol Hill and before the Administration to advance favorable fish and wildlife conservation policy and funding" (Association of Fish & Wildlife Agencies, n.d.). Some of their communications strategies include a paper titled "Communication Strategy for Trapping and Furbearer Management" that offers advice to Fish & Wildlife agencies with titles such as "How to Build Credibility with the Media," and "How to Sell Your Story" (Association of Fish & Wildlife Agencies, 2019). AFWA serves as a marketing and public relations advisor and BMPs are propaganda to garner support for trapping.

Funders of the program have a financial and political interest in the outcome of the BMP process, which presents bias concerns. Funders include The U.S. Department of Agriculture (USDA), which includes the notorious Wildlife Services Division and The International Fur Trade Federation. In addition, many state Fish & Wildlife Departments have given substantial in-kind contributions (AFWA, 2019).

Lastly, Fish & Wildlife Agencies often promote the involvement of veterinarians in the BMP process. However, possible conflicts of interest of the veterinarians who participated were not disclosed. For example, one of the veterinarians, Kelly Straka, worked for the Michigan Fish & Wildlife Department at the time of the BMP necropsies and was later hired in 2021 to work for the Minnesota Fish & Wildlife Department (Schulson, 2022). State Fish & Wildlife Departments have a strong bias towards trapping interests. The use of independent veterinarians would have increased public confidence in the process.

BMP's Claims v. Reality

AFWA claims 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, along with practical advice from experienced trappers and wildlife biologists" (Association of Fish & Wildlife Agencies, 2018).

In reality, from 1997 to 2018, trappers in 33 states were hired to set out certain types of traps, including steel-jaw leghold traps for 22 species of furbearing animals and assist in evaluating the performance of those traps. But the use of trappers to conduct the study has greatly compromised the results. "The trappers and their 'technicians' (who can, by protocol, be the trapper's spouse, relative, or friend) are asked to set certain types of traps and aid in the evaluation of criteria that describe trap performance" (Zuardo, 2017). There was no independent person in the field verifying the results of trap captures (e.g. did the trap catch a coyote or a red tailed hawk?)

The BMP program has been widely criticized by independent scientists, wildlife professionals, and animal advocacy organizations for being unscientific, self-serving, lacking transparency, and laden with political agendas and conflicts of interest (Proulx, 2021; Zuardo, 2017). For example, some of the veterinarians who participated in the process work for either state or federal Fish & Wildlife agencies that have a consistent bias toward trapping.

If BMPs are to offer any potential benefits, they should apply to trapping systems instead of just the traps themselves. A "trapping system" includes the trap, pan tension, location, bait, etc. Trappers from different regions may use different sets. The trap set impacts the effectiveness of a trap. Therefore, when veterinarians assess carcasses from some trappers, they are not assessing the trapping system. Also, during the BMP testing, some trappers might have checked their traps every 4 hours, others every 24 hours. Consequently, the impact of the trap on animal welfare cannot be accurately assessed due to the variations in trap visit schedules and other factors.

"Moderate" injury, as defined by AFWA, can consist of amputation of one-digit, permanent tooth fracture exposing pulp cavity, severe joint hemorrhage, eye lacerations, rib fractures, major laceration on foot pads or tongue, and other injuries. Would a reasonable person consider these injuries "moderate"?

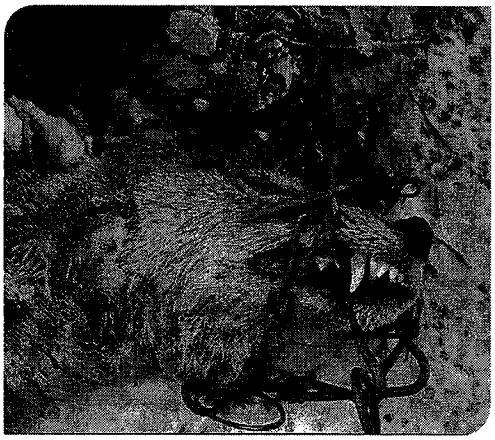
Additionally, some of the testing methods have been challenged due to flaws in the methodology. According to Proulx et al. (2022), the BMPs for beaver and muskrat indicate that most approved body-grip traps for these species were tested through "computer simulation modeling," and presumably the same process was used for river otters. Using computer simulations instead of actual testing raises various concerns about the reliability of tests that qualify a body-grip trap to meet existing time standards for a humane death. (Proulx, 2022). Proulx (2022) further states that the Conibear™ "quick kill" 220 trap does not consistently render raccoons irreversibly unconscious within five minutes, as required under the BMP. These findings were based on actual animal testing and were repeatedly published, according to Proulx (2022). But the Fur Institute of Canada – the United States adheres to their recommendations – endorsed the trap as being humane based on computer simulations, which is not an accurate representation of the trap's functionality in the field (Proulx, 2022).

Even AFWA acknowledged challenges with some of their test results. For example, the BMP testing likely understated the incidental take of waterbird captures. "Risk of waterbird captures in aquatic trap sets is greater in the spring (Bailey 1976, Gross et al. 2017), particularly during spring muskrat trapping, than in the fall-winter when most trapping on our project occurred" (White et al., 2021).

What is Missing from BMP Testing?

BMPs rely on scales of injury to attempt to assess and quantify animal welfare. Injuries to trapped animals are evaluated based upon the following injury categories: mild, moderate, moderately severe, or severe (White et al., 2021). BMP recommendations for leghold traps must result in no greater than moderate injury in at least 70% of the animals trapped (Association of Fish & Wildlife Agencies, 2021). "Moderate" injury, as defined by AFWA, can consist of amputation of one-digit, permanent tooth fracture exposing pulp cavity, severe joint hemorrhage, eye lacerations, rib fractures, major laceration on foot pads or tongue, and other injuries (White et al., 2021). Would a reasonable person consider these injuries "moderate"? Notwithstanding the severe injuries that are only considered moderate on this AFWA scale, according to the BMPs, fully 30% of all animals trapped could potentially suffer severe injuries like amputation, compound fractures, severe internal organ damage, spinal cord injury, or death and still meet the BMP criteria (White et al., 2021).

Animal welfare standards for body gripping "quick kill" traps set on land allow 30% of trapped animals to suffer for undetermined periods of time. An example of this is a fisher caught by the torso, instead of the base of the neck. The result is prolonged suffering. This image shows a coyote trapped by the head in a "quick kill" body gripping trap in Killington Vermont. According to the warden, the coyote traveled for over a mile from where the trap was triggered before succumbing to its injuries. Up to 70% of the trapped animals are allowed to suffer for an excruciating five minutes before losing consciousness under the BMP standard (AFWA, 2021; Association of Fish & Wildlife Agencies, 2017)



Beavers, who are routinely trapped in body-gripping "quick kill" traps underwater, often die by drowning when the trap does not kill them instantly. Beavers can hold their breath for fifteen minutes—the terror experienced by a beaver trapped and held underwater for that length of time could hardly be called humane. In addition, river otters are often caught in traps set for beavers and the differences in anatomy can cause otters to be trapped by the tail or torso, resulting in a prolonged death.

Additionally, the BMP research revealed that certain animals like raccoons and skunks have a higher probability of serious injuries due to self-biting as a result of being restrained in leghold traps, yet leghold traps are still included in the BMP recommendations for raccoons. They are not recommended for skunks, though skunks are routinely caught in leghold traps set for other wildlife (White et al., 2021). BMPs clearly allow unacceptable levels of trauma to animals.

The BMP process also tested for efficiency and selectivity. Per BMP guidance, for traps to be deemed efficient, they must capture and hold the target species 60% of the time (White et al., 2021). Thus, it is acceptable for victims to escape after springing the trap 40% of the time, possibly with severe, life-threatening injuries. Trap efficiency was, and is, only calculated for target species.

Selectivity is an important trap performance metric, with the goal of minimizing the number of captures of non-targeted animals. However, the BMP testing only used furbearer selectivity, as opposed to species-specific selectivity resulting in a misleading high-performance rate. For example, testing did not consider a bobcat that was caught as a non-target in a trap set for a coyote because they are both furbearers. Therefore, the BMP process did not provide any assurance that a trap that is set for a specific furbearer species has a higher or lower probability of capturing the intended animal. Additionally, the BMP process for selectivity has been criticized by other researchers for its failure to consider the relative abundance of focal and incidental species, and therefore the result is simply proportional capture data. Concerns over potential consequences to endangered species conservation were also raised (Virgós et al., 2016).

What BMPs Don't Evaluate

Traps are inherently indiscriminate, and BMPs for one target species are not valid and will not protect other species. Non-target species can suffer greatly when trapped by devices not designed or intended for their species. For instance, traps set for coyotes can also catch raptors, skunks, raccoons, opossums, and other non-targeted animals, including dogs and cats, and cause severe trauma that is even greater than what the intended target would have experienced (American Veterinary Medical Association, 2008). Accordingly, a BMP for a targeted animal that results in a 70% probability for a "moderate" injury may result in a severe injury to a non-target animal.

BMP approved Onedia Victor™ Softcatch leghold trap found in VT with a severed paw

The BMP evaluation process for injury and trauma fails to evaluate behavioral or physiological responses as measures of welfare. For example, cortisol level rise from stress can have detrimental and long-lasting effects on trapped animals. In order to test for these effects, researchers would have to monitor the trapped animal to record behavioral signs of stress,

panic, or fear for the entire time the animal is restrained. According to Proulx (2022), "distress indicators may include: fighting, biting, pulling or disturbing the trapping system, [and] self-mutilation...." Before the animal is released from the trap, hair and/or feces could be collected to compare pre- and post-capture stress levels. "It is necessary to expand on animal welfare indicators to detect stress, injury and physiological disturbances in animals captured in restraining traps" (Proulx, 2022).

According to White et al. (2021), their trap research failed to include animals that were already dead (or injured) upon trap inspection as a result of external variables (e.g., shot by another person, attacked by other animals, hypothermia, accidental drowning). Due to this, trap research did not incorporate all aspects of animal suffering while restrained in leghold traps.

Furthermore, there is no consideration of how long an injury was present before the animal was killed, or of the long-term impacts of injuries to animals who escape or to non-target animals who are released. The American Veterinary Medical Association stated the following concerning modern trap designs and improved procedures for setting traps, "Swelling, hemorrhage, and lacerations still occur, and post-release survival may be impaired even by relatively minor injuries." (AVMA, 2008)

Finally, BMPs do not provide guidelines on how animals, once caught, should be killed (Zuardo, 2017). Clubbing, suffocation (usually by standing on the animal's chest), drowning or strangulation are methods used by trappers to preserve the pelt from bullet holes.

Clearly, all trapping methods present numerous animal welfare concerns that were neither evaluated nor addressed in the development of BMPs.

BMPs are Unenforceable

Existing trapping regulations are virtually impossible to enforce. There is a chronic shortage of game wardens to ensure compliance with existing regulations. A significant amount of trapping occurs on private land which is another challenge to enforcement.

BMPs are only recommendations. Even if they were required, enforcement would be exceptionally difficult because it is challenging to differentiate a proper BMP practice from a conventional practice. For example, BMP-approved traps look very similar to conventional traps. In addition, trap performance is not solely about using a specific trap. Other factors such as the choice of pan tension, baits, lures, location of the trap etc., all play a role. Additionally, a BMP-approved trap may be suitable for one species but not for others who are caught as non-targets.

Even if we were to accept that BMP-approved traps improve animal welfare, that only applies if trappers in the field are trapping using the same exact protocols used by trappers during the BMP testing (e.g., during trap testing, trappers always checked their traps daily before noon,

at a minimum). According to an email to Protect Our Wildlife, Carter Niemeyer, biologist and retired trapper who conducted wildlife studies for the U.S. Fish and Wildlife Service, said, "If trappers deviate from the conditions establishing BMPs, then the BMPs are meaningless and results/risks to the trapped animal go up the longer the animal lingers" C. Niemeyer (personal communication, May 27, 2022).

Even AFWA acknowledges challenges with enforcement. "Some regulatory agencies may consider use of our results to prohibit traps that do not meet BMP standards but attempting to do so may result in numerous practical or regulatory challenges that must be carefully considered. Agencies must consider the reality that nearly all traps are BMP compliant for at least 1 species, appropriate responses when a trap set for 1 species for which it meets BMP standards catches another legally harvestable species for which it does not, potential use of trap brand names in regulations, and how to determine when an untested trap is similar to one that has been tested" (White et al., 2021).

Conclusion: BMPs Do Not Achieve Their Stated Objectives

BMPs fail to achieve meaningful welfare gains for wildlife captured in traps as evidenced by the standards used. BMPs were conceived, studied, and evaluated by the very people that they aim to regulate.

The BMP process evolved out of pressure to meet global concerns for animal welfare. It has been over two decades since the BMP conversations began, yet animals are still being bludgeoned, drowned, and suffer grave injuries and also death due to leghold and body-gripping traps in Vermont. The fact that very few changes have been made in trapping devices over the decades since the BMP program started suggests that there was little interest in reducing animal suffering and trauma by wildlife agencies. Protect Our Wildlife has submitted petitions in the past to Vermont Fish & Wildlife to improve trapping practices to address animal welfare and public safety concerns but all were denied. It is only due to bill S.201– that was originally a ban on leghold traps– requiring the Vermont Fish & Wildlife Department to improve upon trapping devices, that we are even having these discussions.

BMPs are touted nationwide to justify trapping in the face of growing opposition. BMPs are hardly more than propaganda by Fish & Wildlife Agencies to garner support for a practice that the majority of Vermonters would like to see banned outright (Center for Rural Studies, 2017).

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PROTECT OUR WILDLIFE
Be a Voice for Wildlife!

P. Noel
Testimony

Charlene Dindo

From: Paul F. Noel <pfnoel22@yahoo.com>
Sent: Sunday, October 1, 2023 9:34 AM
To: Charlene Dindo
Subject: [External] 23-P15 Furbearing Species Rule

[External]

Legislative Committee on Administrative Rules--

As a member of the Fish and Wildlife Board representing Orleans County I have been witness and a part of the vast number of hours and hard work expended to craft the new proposals to furbearer management rules. These rules cover a wide range of alterations that further advance the humaneness of trapping and greatly reduce the likelihood of capture of domestic animals and other non-target species. Best management practices regarding furbearer harvest have been meticulously employed and in some cases exceeded. If these rules are adopted Vermont may now exhibit the most comprehensive and detailed trapping rules in the country and could be used as a template for other states looking to update and revise their furbearer trapping regulations.

I will not go into detail of all the trap hardware modifications and logistical changes to land trapping systems; you will be getting that from other sources. I will simply state that the proposed rules will put the stance of modern trapping and furbearer management onto solid ground. One leg firmly planted in the science of proven, humane wildlife conservation and the other leg equally planted in the vital tradition of ancient wisdom and indigenous culture. The marriage of these two arenas allow the annual regulated harvest of renewable, abundant resources for fur and food while supporting and partnering with professional biological management efforts to ensure these furbearer species will thrive within their social/biological carrying capacities and endure in perpetuity.

Regards

Paul F. Noel

Irasburg VT

Larry Martin

Re: 23-P15, Vermont Fish and Wildlife Board Final Proposed Rule, 10 V.S.A. Appendix 44, Furbearing species, Written testimony for September 19, 2023 meeting of the Legislative Committee on Administrative Rules

Dear Members of the Legislative Committee on Administrative Rules,

Thank you for the opportunity to testify today.

My name is Larry Martin. I live in Worcester, VT. I have been a trapper for 54 years. I have trapped in nine different states and one Native American reservation. I trapped professionally for seven years.

I am from a five-generation trapping family, and trapping is my cultural heritage.

I give you this information so that you may understand my knowledge of trapping far exceeds that of the average person.

I have thoroughly reviewed the Best Management Practices (BMP) trapping proposal sent to you by the Vermont Fish and Wildlife Board. I find these BMPs to be well thought out and based on research and fact. I think the proposed BMPs are a giant step in humane capture of furbearing animals.

Vermonters are leaders. If these BMPs become law, Vermont will be the first state in the United States to mandate Best Management Practices for trapping.

I urge this Committee to approve the Fish and Wildlife Board's BMP trapping proposal as originally proposed and to help ensure the future of trapping in Vermont.

Thank you.

Larry Martin

Vermont Federation of Sportsmen's Clubs
Testimony for LCAR
23-P15 - Department of Fish and Wildlife/10 V.S.A. Appendix § 44, Furbearing Species
October 19, 2023
Chris Bradley, President & Executive Director – VTFSC

My name is Chris Bradley, and I am the President of the Vermont Federation of Sportsmen's Clubs. For those of you that may not be familiar with our organization, we have existed in Vermont since 1875, and we represent approximately 45 Fish & Game Clubs across Vermont and their 14,000+ members.

S.201 / Act 159
Given the trajectory of this bill, the VTFSC believes that the "Legislative Intent" of S.201 was clear: Trapping would continue so long as trapping conformed to Best Management Practices (BMPs), and rules were promulgated to make that happen.

We believe we have the solid framework of a good law. We are aware however that there were some instances where legislative intent may not have been met, and we are further aware that the Vermont Fish & Wildlife Department has been working to address the few oversights that were identified.

We note however that one section of S.201 is incredibly problematic, a(4). That reads as:

"*requirements for the location of traps, including the placing of traps for purposes other than nuisance trapping at a safe distance, from public trails, class 4 roads, playgrounds, parks,* ***and other public locations where persons may reasonably be expected to recreate***."

Our concern here is the death of trapping by 1,000 cuts, which is one of the stated goals of my opposition. It simply cannot be that the literal interpretation of "***public places where persons may reasonably be expected to recreate***" is so exhaustive that it defeats the purpose of allowing trapping to continue.

Taking a step back for a moment, the simple fact is that trappers want to be successful. Setting aside what may be necessary for nuisance trapping: Trappers will typically avoid setting their traps very near "***public locations where persons may reasonably recreate***".

Why?

1. Trappers pursue animals that are elusive, and while fur bearers can certainly be found all over Vermont, they typically tend to avoid people and public locations.

2. Trappers do not want inadvertent takes, especially pets, and since pets often accompany humans on trails, traps are not typically set in, on or very close to trails.

3. Trappers do not want to hurt people or draw attention to their activities; so, the thought that they would set a trap in or near a playground is simply not realistic.

4. In regard to setting traps in parks: Virtually all Vermont parks are closed during the normal trapping seasons.

We do not dispute that there have been situations where traps have caught pets, but we do point out that those animals were caught without the benefit of a BMP law.

According to our opponents, "*at least 18 pets were *reported* trapped last year, 3 died.*"

Assuming that none were feral pets, what we are not told about those numbers is how many of those were dogs versus cats; how many were running free with no supervision; how many were running free with supervision but not leashed; how many occurred as a result of nuisance trapping; how many occurred on private property with no owner permission; or how many were the result of illegal trapping.

As those implications on the reported numbers are considered, we then need to consider the literally millions, if not tens or even hundreds of millions of hours that legally set traps were on the landscape in that year. From that we can understand how infinitesimally small the chance a pet being caught in a trap really is, and the even more miniscule chance of death.

Finally, we must consider what the positive effect on those numbers will be with the implementation of BMPs.

Based on the above, we would like to point out that a goodly number of the issues raised to be addressed were not in most cases issues with trapping prior to S.201 being taken up; it includes a number of those 1,000 cuts I mentioned previously; and they became issues to be addressed as part of Legislative Intent under pressure from anti-trapping groups promoting those 1,000 cuts.

That said, at this time we are confident that the issues that have been raised will be adequately addressed by the F&W Department and F&W Board.

S.281 / Act 165

In approaching the discussion of coyote hunting, we feel it is important to note that coyotes are an "invasive species". Coyotes displace native species like fox, and there are many accounts about how harmful coyotes can be. On this point, and should you be interested, we have compiled a listing of links to news stories which show the harm that coyotes can do, with that list found here.

While we cannot find any statistics on this, we believe it is a very fair statement to say that the impact on pets by marauding coyotes is orders of magnitude worse than the exceptionally low number impacted by trapping.

Beyond that, I will only mention in passing the exceptionally gruesome and horrendous sight it is to see the remains of a deer that was run down by a pack of coyotes, with that deer then being consumed from the rear while it was still alive. That is a true image of nature, and it is not "humane".

Concerning the ability to control, one of the groups opposing forward motion with S.201 makes

the unequivocal statement: "***A GPS and shock collar is not a method of control***". I suggest that that statement is incorrect.

As a citizen drives around Vermont, it is not uncommon to see electronic "pet fences" which is an area, typically around a house, that is marked with small flags. These pet fences work in conjunction with a pet collar, such that when the pet wearing that collar goes close to the fence line, the collar can be set to make a tone, vibrate, give an electronic shock of adjustable intensity, or some combination of the three. This automatic prompting teaches the pet to stay inside the fence's bounds.

Given their proliferation, it seems clear that pet fences have proven very effective at allowing pets to roam freely within a designated area.

Similar in concept to pet fences, but using even more advanced technology, collars for hunting dogs have similar features, with the exception that these collars can be set to interact with a hand-held device carried by the hunter.

With suitable instruction and training, which will take some time to implement as such control has not been required up to now, GPS collars will allow for the remote viewing of where a dog is, with that view including overlays which show posted land. By using the remote hand-held device: The hunter can send signals to a single collar or all collars that can provoke a trained reaction by the dog(s), such that the dog(s) can be remotely instructed to stop and return to the hunter.

Due to the value of their dogs, and the hunter's desire to keep them from harm, virtually all hounders now employ GPS collars, although a good number are likely to be older technology that does not have the latest features now available.

The truth is that, with the promulgation of more effective rules that relate to control, hounds can be trained to drastically improve a hunter's control over them.

Further than that, hound hunters have no desire to upset people or have their animal(s) trespass on posted property; they want to avoid both. With the mandated use of control collars with GPS capabilities, now used almost universally by hounders: Incidents of unwanted animal trespass will and must diminish.

Regarding incidental damage that hounding may cause: In virtually all situations we are aware of where a coyote hounder's actions resulted in injury or damage, the hounder responsible virtually always offers to pay for any damages or injury, such as the case cited by POW that occurred in Lake Morey.

We support both S.201/Act 159 and S.281/Act 165 and urge LCAR to move this forward with all due speed.