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A Transformation in Trapping

TRAPPING HAS EVOLVED, AIDING FURBEARER RESEARCH AND CONSERVATION

By Nathan Roberts and Colleen Olfenbuttel

Credit: Colleen Olfenbuttel/North Carolina Wildlife Resources Commission

▲ **Modern traps are designed to cause little to no injury. The foot of the bobcat captured for a research project was held secured and without injury by a foothold trap.**

It's been over 20 years since the best management practices (BMPs) for trapping were conceived and implemented. At the time, furbearer managers, researchers and trapping organizations identified a need for a process to scientifically evaluate traps and trapping systems used to capture furbearers in the United States.

The evaluation system was based on five criteria — animal welfare, capture efficiency, trap selectivity, practicality and safety of the user. Since then, continuous trap research has had impacts far beyond regulated trapping. Furbearer conservation and research have also been transformed.

Furbearers are those species valued for, among other things, the utility of their fur. They include beavers (*Castor canadensis*), mink (*Neovison vison*), muskrats (*Ondatra zibethicus*), river otters (*Lontra canadensis*), martens (*Martes spp.*), wolves (*Canis lupus*), coyotes (*Canis latrans*), foxes (*Vulpes spp.* and *Urocyon spp.*), lynx (*Lynx canadensis*) and bobcats (*Lynx rufus*).

This species cohort creates many complex and unique challenges for wildlife researchers, managers and policymakers. With few exceptions, furbearer species have been restored and are considered abundant thanks to efforts from management agencies, researchers and trappers. While a wildlife success story, the abundance of many furbearer species is also associated with increasing human-wildlife interactions, as well as potential impacts on certain prey species, including federally threatened and endangered shorebirds.

A wealth of data

Despite these interactions, trappers and many members of the public hold certain furbearer species, such as bobcats, in high regard and expect management agencies to use scientifically sound data to inform management decisions. However, obtaining these data can be challenging. Most furbearers are difficult to visually or audibly monitor due to their smaller sizes, behaviors and preferred habitat. Think of the last time you saw or heard a bobcat in the wild. Bobcats are found throughout the U.S., having recovered in many areas in recent decades, but are still rarely seen or heard due to their cryptic coloring, behavior and elusive nature.

Harvest-dependent data, like age structure and catch-per-unit effort, are valuable to help understand and monitor trends in furbearer populations. These data have limitations, however, and cannot address all of

the questions important for management and conservation. Collecting data from live animals can yield a wealth of information, especially when combined with harvest-dependent data. Data derived through radio-transmitters attached to animals can address questions about space and habitat use, movements, survivorship and cause-specific mortality rates. Tissue samples, including hair for isotope analysis and genetics; morphometrics and pregnancy rates can be collected from live animals to address some questions as well.

However, whether equipping animals with a radio transmitter or collecting many types of samples, the key is first to have captured a live animal using methods that minimize injuries.

Trap technology

Some furbearers, like coyotes and foxes, are relatively difficult to capture, as they are very wary of changes in their surroundings. Box and cage traps are useful for small mammals and for some furbearers, such as raccoons and opossums. But box and cage traps are not an efficient or selective method for capturing coyotes, red foxes or river otter.

Live-restraining foothold traps and cable restraints not only provide a humane and efficient way to capture these furbearing species, but researchers are more likely to get a representative sample of the sex and age structure of the population versus box or cage traps. Thanks largely to two decades of concentrated research efforts to evaluate traps and trap modifications, modern-day traps and trapping perform much better than those from a few decades ago.

Trappers and wildlife professionals are taking notice of improvements in trap technology. A recent trapping survey (Responsive Management 2015) found that 66% of trappers that were aware of trapping BMPs used BMP-approved traps. Even those trappers that were not aware of trapping BMPs are increasingly using trapping devices that have various modifications to improve animal welfare, efficiency and selectivity compared to a similar survey in 2005. For example, no trapper reported using toothed or studded traps for coyotes or bobcats, but 50% and 53% used foothold traps with modified jaws, such as padding, lamination or offset jaws, for these species, respectively.

Overall, the 2015 survey found that trappers had shifted from using traditional, unmodified foothold traps to using modified foothold traps for most furbearer species. This shift in trap use by trappers is likely due to several reasons. Seventy-three percent of trappers support trapping BMPs, with a plurality supporting BMPs for reasons related to animal welfare. Trappers also felt that BMP traps were good for animal populations and good for the future of trapping and that the BMPs provided necessary guidelines for trapping.

Researchers benefit

Trappers are not the only ones benefiting from advancements in trapping technology and methods. As ongoing results from the BMP trap research continue to be disseminated, more wildlife professionals are realizing the value of trappers and trapping devices in conservation and research efforts. The species-specific information from BMPs for trapping helps wildlife professionals determine which trapping devices are appropriate for research, management and conservation activities such as endangered resources protection, restoration and translocations, research captures and mitigating wildlife damage. In order to address the welfare of research animals, many institutional animal care and use committees (IACUCs) are requiring researchers to use BMP-approved traps for their projects, as well as requiring researchers to take trapper education and be trained by an experienced trapper.

▼ Researchers fit a GPS collar on a coyote (*Canis latrans*) caught by a trapper in a modern foothold trap.

Credit: Nathan Roberts/Wisconsin Department of Natural Resources

Credit: Perry Sumner/North Carolina Wildlife Resources Commission

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▲ **A river otter is captured in a foothold trap for restoration efforts. River otters have been restored throughout the United States due to relocation efforts.**

▶ **A double long spring trap includes modification such as laminated jaws and a center-anchored chain equipped with a swivel. This style of foothold trap was widely used across the United States to capture river otters for restoration efforts.**

The ability to partner with trappers is particularly exciting for wildlife researchers. A great example of this is coyote and bobcat research occurring in Wisconsin. While both species are wary, coyotes, particularly adult coyotes, are almost impossible to catch in anything other than a foothold trap or cable restraint.

Researchers who study these animals using radio-collars need to ensure that they can obtain a sufficient sample size that allows for reasonable inference while minimizing any capture-associated bias (e.g., capturing a sufficient number of adults). Other challenges that researchers face are limited funding, staffing and time. These factors complicate efforts to capture coyotes and bobcats, as trapping is not only constrained by season, but by the number of trap-nights (the number of traps set multiplied by number of nights set) it takes to capture these species. We know from postseason surveys of licensed trappers that it takes on average about 350 trap-nights to catch one bobcat or coyote. To catch 30 animals, a reasonable estimate would be over 10,000 trap-nights — 200 nonstop days of running 50 traps!

This task is even more daunting when you consider distributing effort and captures across a large study area. The logistics of having an adequate sample size that is representative of the coyote or bobcat population (not sex- or age-biased) becomes extremely challenging and expensive.

Partnering for bobcats

Fortunately, the trapping public is already afield and already using the same tools that researchers would use. Researchers with the Wisconsin Department of Natural Resources (WIDNR) saw an opportunity to partner with licensed trappers toward a common goal of better understanding the population status and ecology of these cautious critters.

Prompting the partnership between trappers and WIDNR was the need to better understand bobcat populations to help inform management decisions such as harvest quota allocations by management unit. WIDNR researchers determined that GPS collars would provide the information needed, such as habitat use, home-range overlap, survivorship and cause-specific mortality. Licensed trappers received a letter prior to the fall trapping season requesting that they call a hotline number if they caught a bobcat in a specified study area and they either did not want to harvest that bobcat or they could not legally harvest it.

To date, this partnership resulted in over 90 bobcats being captured and equipped with GPS collars, an unheard-of sample size for bobcats that is yielding a wealth of information that directly informs bobcat research and management questions. These bobcats were caught in foothold traps and cable restraints that the trappers owned and were using on their own traplines. To date, there have been no handling mortalities nor any injuries that have precluded using any of these captured bobcats in the collaring program.

Collaring coyotes

With the success of the bobcat project, WIDNR researchers saw another great opportunity to partner with the trapping public by placing GPS collars on coyotes — part of a larger study examining the role

of coyotes in white-tailed deer (*Odocoileus virginianus*) population dynamics.

Coyote trappers within the study areas were offered an incentive of $99 for captured coyotes that could be collared and released between September and January. While the coyote collaring efforts have not been underway as long as bobcats, over 50 coyotes were successfully collared and, given a nearly 50/50 spilt of males and females, it is unlikely this sample has significant bias. Further, no animals were lost due to capture injuries.

These 50 coyotes represent around 17,500 trap nights. This same effort, if using paid technicians and vehicles, would have easily exceeded $150,000. While the cost savings of such partnerships are immense, the ability to incorporate trappers into research efforts is equally valuable.

'Original citizen scientists'

Furbearer managers and researchers often call licensed trappers the "original citizen scientists." Trappers have collaborated with management agencies for decades to help address knowledge gaps and aid in research and restoration projects.

In the article "An Otterly Successful Restoration," appearing in the May/June 2018 edition of *The Wildlife Professional*, the role of licensed trappers in voluntarily providing harvest data and biological samples was highlighted as critical to monitoring restored and abundant river otter populations. Most state agencies, including the North Carolina Wildlife Resources Commission (NCWRC), enlisted licensed trappers to capture river otters in foothold traps for translocation to areas in which otters were absent or no longer abundant.

Trappers were critical to the success of river otter restoration efforts in North Carolina. They had the skills to capture the demographic of otters needed for successful restoration and to capture these otters efficiently and humanely. Licensed trappers in North Carolina continue to support the NCWRC's efforts to monitor river otters by participating in the agency's voluntary furbearer harvest survey and by providing the jaws of harvested otters to monitor the sex and age ratio of the population.

Their cooperation made it possible for a successful joint research project between NCWRC and North Carolina State University to determine the age structure, diet, health and reproduction of river otters in all three furbearer management units of North Carolina. To achieve research objectives, river otter carcasses were needed. A graduate student spent 898 trap-nights at 39 sites to capture six river otters. By working with trappers, that student was able to collect approximately 800 river otter carcasses, providing a massive dataset that will allow multiple comparisons among regions, time periods and states, as well as providing new information on emerging diseases that may be impacting aquatic mammals.

Credit: Colleen Olfenbuttel/North Carolina Wildlife Resources Commission

▲ **Modern foothold traps are widely used to capture wolves for research and restoration.**

Credit: Colleen Olfenbuttel/North Carolina Wildlife Resources Commission

▼ **Trappers and researchers release a captured bobcat.**

Modern methods

The rapidly evolving landscape of traps, trapping and trappers makes such partnerships possible. Dedicated and concentrated efforts to improve animal welfare, selectivity and the efficiency of traps and trapping are being adopted by trappers and agencies alike, and the potential to benefit resource management is enormous as new information and technology is embraced and adopted.

Unfortunately, some agencies and institutions still face challenges regarding the trapping of furbearer species. The outdated image of a rusty "leghold" trap with teeth still comes to mind for many when they imagine traps used by trappers. These outdated impressions occasionally persist in IACUCs and within some segments of the public. Trappers, management agencies and researchers will need to shed the image of unmodified and antiquated traps in order to maintain traps as an important tool for research and management.

The Association for Fish and Wildlife Agencies has created a website (furbearermanagement.com) with resources to learn more about trapping BMPs, as well as how to easily identify BMP-approved traps. These trapping BMPs are an important and science-based source of information that IACUCs can use when reviewing research proposals. By recognizing and understanding the evolution of trapping and trap technology over the past few decades, we can continue to see the conservation success stories that modern trapping has to offer looking forward. ■

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