Region 2 Technical Bulletin

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New Deer On The Block

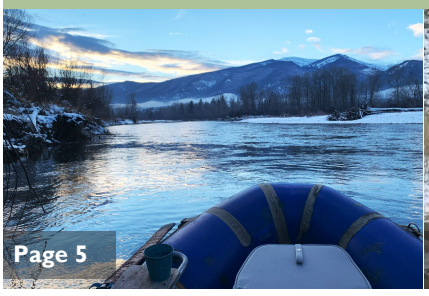
The evolving story of moose and parasites in Montana

New deer, who dis?: *A GPS-collared cow moose forages with her calf. Read on for more information on why moose may be more affected by certain parasites than other deer species. Photo by Sawyer Johnson.*

Moose are the largest member of the deer family yet are far outnumbered by deer and elk in Montana and throughout the West. For example, in 2022, Montana hunters harvested approximately 232 moose statewide, which pales in comparison to harvest estimates of >42,000 mule deer, >45,000 white-tailed deer, and >29,000 elk. Despite these seemingly low numbers, we might consider ourselves lucky to have any moose here at all.

Historic records suggest moose are actually somewhat of a newcomer to Montana, colonizing the US Rocky Mountains only in the past few hundred years. Furthermore, research into fossil records and genetics suggest moose have a much longer history in Europe and Asia but arrived in North America somewhat recently (during the last ice-age, 15,000 years ago). This, again, portrays them as a "new deer on the block" in the US and Canada compared to other species like white-tailed

SNEAK PEEK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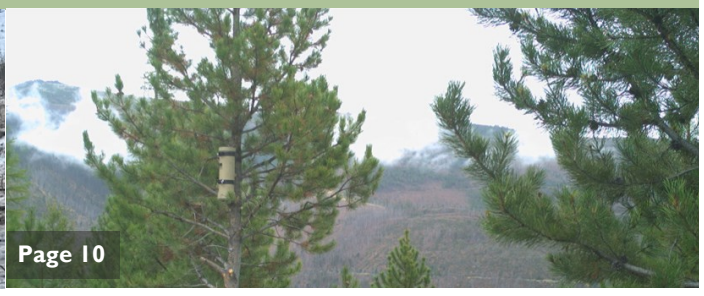
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New deer on the block

deer, which have a much deeper history of evolution in North America over the past 2+ million years!

Despite showing an impressive aptitude to spread across most of Canada and the northern US, moose are still at a big disadvantage when compared to other deer family species here in North America. Specifically, moose do not have the same long-term history of evolution with the suite of **parasites** that occur in North America. White-tailed deer have millions of years of evolutionary experience dealing with parasites common across this continent, including things like liver flukes, tapeworms, brainworms, bloodworms, and ticks. In contrast, moose have encountered these parasites only for the past few thousand years, and not surprisingly, are far less adept at dealing with them (in both in their physiology and behavior).

Ticking me off: *Crews fit a sedated cow moose with a GPS collar along the Rocky Mountain Front. This moose was heavily infested with winter ticks, yet survived. Photo by Nick DeCesare.*

In 2013, FWP began a research study focused on learning about the status of moose across the state and the potential factors limiting their numbers. Here, we discuss the important roles that parasites play in the health of our state's moose populations. We focus on two parasites that were each the subject of dedicated studies by FWP biologists and colleagues completed and published in the past year.

This cow moose was found dead in the Big Hole, with subsequent necropsy showing evidence of arterial worms. Notice the cropped ear. Photo by Nick DeCesare.

Parasite #1. Arterial worms (Elaeophora schneideri): When we began putting collars on moose to understand their movements and survival rates, we expected predators (wolves, bears, lions) to be the primary culprits behind occasions when collared moose died. To the contrary, we were surprised to repeatedly find adult moose lying dead and whole... a sad and perplexing sight. Since that time, we've conducted a detailed study comparing the prevalence of a specific parasite, arterial worms, in these moose. Recently published in *Journal of Wildlife Diseases*, this study[1] showed that these moose deaths were often associated with infections by this parasite AND that these infections commonly included a relatively high number of individual worms.

Arterial worms are a native parasite to North America. Adult worms are 3 to 5 inches long and look like a short strand of angel hair pasta. They live in the bloodstream of ungulate hosts (deer, sheep, etc...), often congregating in the carotid artery in the upper neck. The offspring of these worms require a second host (horseflies) to ingest them, host them while they transition into larvae, and then deposit them back into a new deer or other ungulate before growing into an adult. They commonly infect deer, specifically mule deer in

the West, yet mule deer rarely show negative effects. Having evolved with the parasite here in North America, deer have adapted to minimize the effects of the parasite, and similarly the parasites also adapt to make best of use hosts. For a worm that lives in the bloodstream, it's actually better to keep its host alive in order to reproduce and spread. If the parasite kills the host, it too dies without reproducing. For this reason, moose are sometimes called a "dead-end" host for this and several other North American parasites because neither the moose nor the parasite are fully evolved to deal with each other.

We suspect these worms cause two types of mortality in moose: 1) sudden or acute mortalities may occur when worms are migrating through the blood vessels in and surrounding the brain, and 2) slow or chronic mortality may occur as the result of more subtle and long-term effects of infection, including reduced blood flow to the brain and lesions in other organs and tissues caused by infection throughout the bloodstream.

Arterial worms can block blood flow to the head, causing circulation problems leading to frostbite and ear-cropping, as seen in this moose. Photo by Nick DeCesare.

Parasite #2. Winter ticks (Dermacentor albipictus): Winter ticks were the cause of another surprise when we first began our research in 2013. Along the Rocky Mountain Front near Choteau, local residents described a growing moose population in wetland habitats such as Pine Butte Swamp. Many reports described these moose as often being white in color. When we began capturing and collaring moose in this area, we did not find moose with truly white-colored hair, such as the albino or piebald moose that occasionally occur as the result of a genetic mutation. Instead, we found moose that showed large patches of white coloration, which was in fact the white bases of their winter hairs after being broken off by extensive scratching and rubbing. The scratched and broken hairs were the result of infections with startling numbers of winter ticks—over 20,000 ticks estimated to be living on a single cow moose in the worst cases.

A cow moose and her 11-month-old calf spotted during surveys on the Rocky Mountain Front show heavy infestation with winter ticks. Photo by Jesse Newby.

Winter ticks in their adult stage look superficially very similar in size and coloration to wood ticks, which are the very abundant tick commonly encountered by people during spring and summer throughout the Montana outdoors. However, winter ticks are rarely observed by people because the adult stages of their life cycle occur during winter while riding on the backs of wild mammals. During summer, winter ticks exist as eggs and tiny larvae. In the fall (Sep-Nov) those larvae climb up vegetation to eventually be picked up by animals, where they live through the winter—molting into adult ticks in January-February and filling with blood and dropping off to the ground in March-April.

The GOOD NEWS: We have observed a great deal of variation in winter tick loads across our Montana

study areas. Generally ticks are common in many places, and abundant in some. Fortunately, moose that face relatively high tick loads have still fared quite well on average. In fact, our study area with the highest average tick loads also has the most successful moose population in terms of survival and productivity. Ticks are likely having negative effects on some of Montana's moose and do ultimately kill individual moose on occasion, but they don't appear to be a primary threat to the statewide health of Montana's moose as of now.

The BAD NEWS: We recently pooled moose-tick data with biologists from four other western US states (Colorado, Idaho, Utah, Wyoming) and published a study[2] in the journal *Ecosphere* looking at what drives numbers of ticks up and down. Ticks are vulnerable to the weather during a few key times of year, namely when "questing" to climb aboard hosts in the fall and later in spring when dropping off of hosts to lay eggs. Our study showed that cold and snowy conditions depress tick numbers, killing ticks before they successfully find a host or lay their eggs. In contrast, warm and snow-free conditions lead to higher tick loads on moose. Thus, predictions of warmer climate trends in Montana's future are expected to come with higher tick loads for the future of our moose.

Nick DeCesare is a research biologist based in Missoula.

See http://fwp.mt.gov/conservation/wildlife-management/moose and scroll to "Research".

Publications linked in this article:

1. Journal of Wildlife Diseases: https://fwp.mt.gov/binaries/content/assets/fwp/conservation/moose/25---decesare_etal_elaeophoramoosemt_jwd.pdf

2. Ecosphere: https://doi.org/10.1002/ecs2.4799

Photo by Jesse Newby.

A good kind of red flag

This is the seventh year that FWP has partnered with the Blackfoot Challenge, Wildlife Services and Defenders of Wildlife to deploy turbo fladry around calving allotments in the Blackfoot Valley.

Turbo fladry is used to help deter wolves from approaching livestock. Turbo fladry is an electrified poly wire with plastic or cloth flags attached every 18 inches. Turbo fladry is typically deployed along an existing fence line and fully encloses the livestock. Wolves are neophobic, which means they are afraid of new things and the flags create a new visual barrier on the landscape which wolves are hesitant to cross.

Studies found that fladry is fairly effective at deterring wolves for up to 60 days after deployment. Wolves will eventually test and cross the fladry. While fladry is not a permanent deterrent, it has been useful at deterring wolves when livestock are most vulnerable during calving season. Even 60 days of fladry around a calving allotment can allow newly born calves the time to grow and become less enticing and vulnerable to wolf predation.

-Tyler Parks, wolf-carnivore specialist

Reports from "the office"

TORREY RITTER

The Outside Is In Us All...But What If The Outside Is Outside And You're Stuck Inside So You Can't Get The Outside In You? I sure wish I had some cool field days or nature observations to report for this round of the Region 2 *Technical Bulletin.* But alas, it is winter, and the job is mostly talking on the phone or sitting in front of a computer for the next few months. At least in the winter I usually get to go floating and hiking and birdwatching and all those things that can maintain my connection to the natural world during the cold and dark months. This winter, however, was different. I had surgery on my feet that knocked me down and kept me inside for a long time, and during that time the importance of The Outside to my physical and mental health slapped me right in the face.

I always knew that being outside was a critical part of my life, but I had never really been faced with being completely unable to get out and enjoy immersion in nature. Heck, I was sliding on my butt down the linoleum just to get to the bathroom, so even the porch seemed like a dangerous and unforgiving wilderness. I am not one to mentally prepare myself well for things like this, opting instead to just stare at the finish line and power through until it's over. So, I figured I'd just repair any mental or physical damage that was done with extra outdoors time when I was back in the game. No big deal!

Then, the surgery did not go well, and I was stuck inside for a lot longer than I anticipated. I am not going to write a bunch about how terrible being disconnected from my main source of spiritual fulfilment was. I am just going to say that it was terrible. Those with a deep-seated connection to nature and wild places (i.e., probably everyone that reads this publication) will know these exact feelings. I took for granted that I would always be able to access wildness, and having got just a teeny taste of what it would be like to have that taken away was quite a powerful experience.

Eventually, I was finally at the point where I could wrap the did-not-go-so-well foot in plastic bags and take off floating down the Bitterroot River. I spent the day reveling in the feeling of being back home, and reflecting on the experiences of those much less fortunate than me when it comes to being able to get outside and into natural areas. I have the honor of being in a position where I can help people create, rekindle, or enhance their connection to nature, and this experience has left me more determined than ever to help others not feel the way I felt... 7 weeks in... sunk into the couch... watching the wonderful world outside go by without me.

I do want to thank the chickadees, nuthatches and doves that spent their wintry days flying in and out of the lodgepole pine that sits just outside our window in front of the couch. You were a breath of wild air as I was drowning myself in distraction and self-pity. I also want to thank my family who helped me every step of the way. I am fully aware of the privilege bestowed upon me to have this (temporarily) be the biggest source of stress in my life, and to have a network of people that care about me and are willing to help.

If nothing else, from here on out I will breathe the fresh air a little deeper, care less about the cold and numbness in my hands, and appreciate even a short hobble around the yard as a form of getting The Outside back in me.

Torrey Ritter is the Region 2 nongame biologist.

Project Report: Spotted Dog WMA Grazing

This report is intended to provide an update on the results of a pilot effort using virtual fence technology for the current Exchange of Use (EOU) agreement between Montana Fish, Wildlife, and Parks and McQueary Ranch.

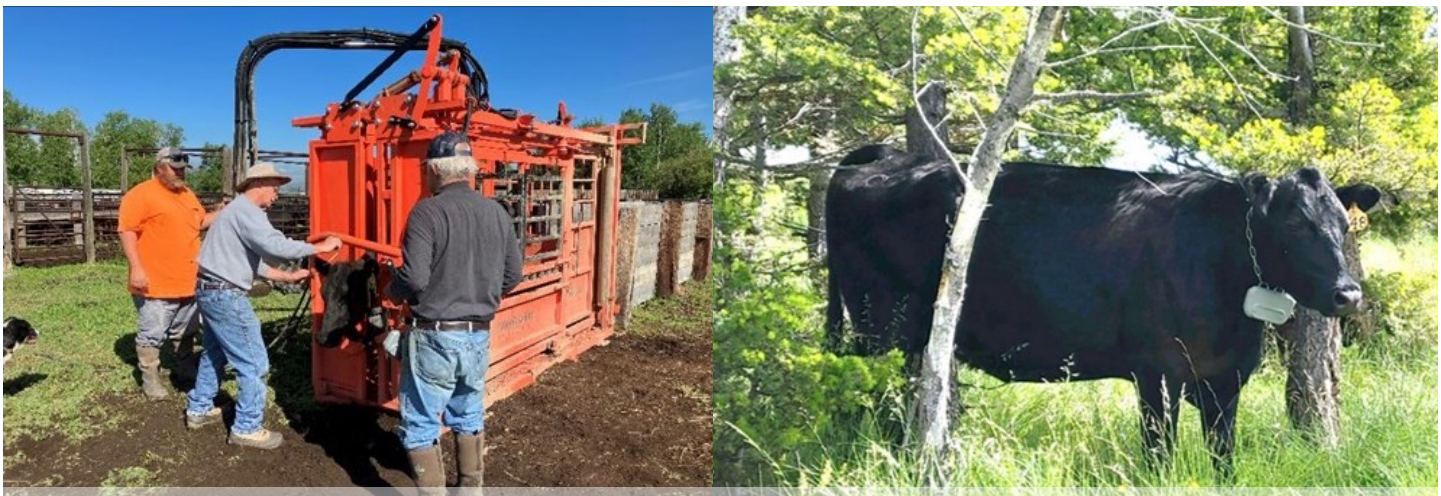
Targeted grazing was introduced onto Spotted Dog Wildlife Management Area (WMA) when FWP and the McQueary Ranch entered into an Exchange of Use (EOU) agreement in 2019 that will continue through July 31, 2024. Under the current EOU agreement, FWP allows McQueary Ranch to graze 240 animal unit months (AUMs) annually on a WMA pasture for a single season (June-August) in exchange for providing growing-season grazing rest or yearlong rest on three of their pastures. As a result, forage produced on rested private land pastures is available to elk in the winter, if needed. In short, livestock and elk grazing pressure is more evenly spread across the larger landscape to benefit both wildlife and neighboring landowners.

The current grazing-exchange agreement with McQueary Ranch has been in effect for five seasons, with one remaining. For the first four seasons, the WMA pastures were bounded by a temporary electric fence. In practice, the fence was difficult to maintain and sometimes failed to contain cattle in the designated pasture. Last year, we implemented virtual-fence technology (Vence®) in lieu of electric fences. Virtual-fence technology confines cows by using collars placed around their necks to transmit an electronic stimulus, or shock, if they approach a virtual-fence boundary preprogrammed onto the collar.

A fourth partner, Rocky Mountain Stockgrowers Association (RMSGA), supported the McQueary Ranch in this effort by covering the annual collar lease and battery fees at a cost of $50 per collar. In early June, collars were deployed on all (adult) cows prior to being moved onto the WMA. Cows were run through the chute, a neck measurement was taken, and a collar fit properly (see photos on bottom). It only took the better part of a morning to collar just shy of 120 cows, and that included working out a few bugs in the beginning. Cows were then moved into a pasture with hard-fence boundaries for a four-day training period. During the training period, a series of programmed vences teach the cows to associate a shock with the concept of a fence. Once the training period was complete, cows and calves were moved onto the WMA. It was not necessary to apply collars to calves, only adults, as the calves will typically stay with the cows.

Collars allowed the animals to be remotely monitored and virtual fences (vences) were modified and uploaded to the collars, if necessary, via nearby towers. Collars confined cattle via audio and electronic stimuli. A vence contained a sound zone (indicated in white in the figure on page 7) and a shock zone (indicated in red). In this case, the sound zone was set to 15 meters and the shock zone was 75 meters. An animal entered the sound zone first and received an auditory stimulus. If it continued, it entered the shock zone and received an electronic stimulus. If an animal received too many shocks, a safety mechanism on the collar disabled the shock function.

Although an improvement over temporary electric fences was observed, virtual fence technology was not 100% effective in containing the cows. Animals occa-



Functional neckwear: *Ranchers measure a cow's neck prior to fitting with a virtual fence collar.*

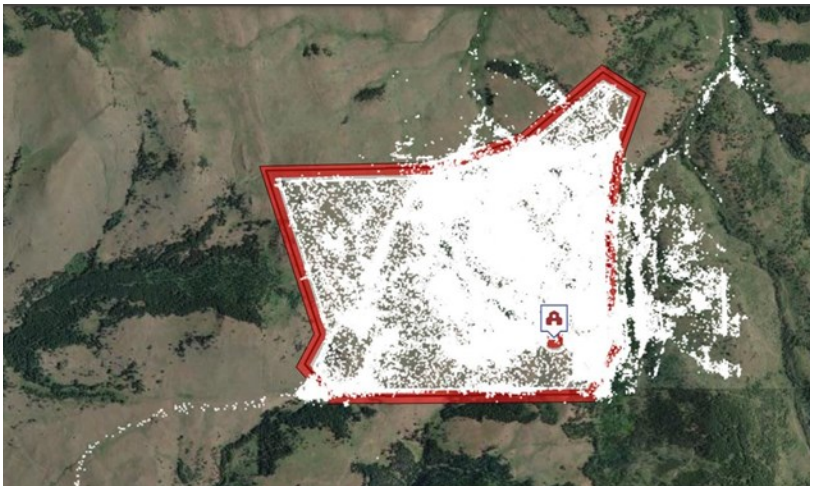
sionally were observed to move beyond the virtual boundary (see photo on right). After consultation with a Vence representative, we suspect that the shock safety mechanism was disabled after too many shocks allowing the cows to move out of the pasture without consequence. We will deploy several improvements in 2024 to remedy these occurrences. Another challenge that we faced during the pilot year was that a few collars fell off. In 2024, Vence will remedy the issue by providing locking carabiners to secure them.

Thus far, a stocking rate of 240 AUMs has proven insufficient to effectively treat a 600-700-acre pasture over a two-month grazing season. As the McQueary Ranch was the first EOU agreement to be implemented on Spotted Dog WMA, FWP chose to start with a conservative stocking rate. This level of grazing intensity has only achieved the desired wildlife habitat benefits in small portions of the target pasture (photo below).

As a result, FWP proposed through a Draft EA to expand grazing as a tool to achieve a desired habitat treatment on Spotted Dog via the addition of lessees and the support of strategic water development. FWP proposed a framework where stocking rate and pasture size can be adjusted through individual grazing lease agreements. EOU agreements with individual neighboring producers would outline the grazing agreement on the WMA as well as the producer's conservation commitment to native habitat on their private lands. These EOU agreements would be subject to public review and Commission approval.

Based on our initial findings, we are optimistic that virtual-fencing technology will provide better containment of cattle than traditional fencing, while also eliminating the costs associated with labor and materials needed to maintain a physical fence. We will make the adjustments described above and continue to implement virtual fencing with the McQueary Ranch and any additional producers included in future agreements.

***Above**: Vence's collar management program (Herd Manager) provides a visual representation of the virtual fence polygon (red). In this scenario, each collar (or cow) is displayed as a blue or yellow cow icon on the screen. Virtual fence boundaries can be adjusted via the Herd Manager program. **Below**: Location data points for all collared cows for the first 30 days they were on the WMA appear in this figure. Some cows breached the virtual fence boundary.*



Prepared by Kirstie Yeager, Anaconda area wildlife biologist

This photo, taken in the spring, includes a section of pasture four which was grazed during the 2022 season. Adequately treated areas display more green-up potential, whereas less treated areas still contain much litter from previous growing seasons and appear brown. The presence of fresh elk pellets indicate heavy elk use in the treated (green) areas.

Reports from "the office"

A growing passion for a species at risk

If you'd have asked me ten years ago, I never would have said I cared much about bighorn sheep. Sure, they're majestic and unique and live in some of the coolest habitats in the country. But their eyes are weird. They're not the sharpest tools in the shed. They regularly take breaks from posing majestically on cliffs to stand on busy highways and lick salt off the pavement. I've had to physically bump them with my truck (very gently, of course) to get them to move out of the way.

And for a species famous for smashing their thick skulls against each other for mating rights, sometimes they seem awfully frail. Bighorn sheep are notoriously susceptible to a wide variety of ailments, from contagious ecthyma to sinus tumors to the worst of them all—pneumonia. Pneumonia outbreaks (as well as years of overhunting, before we knew better) have reduced one of the most abundant ungulates in the Rocky Mountains to a few dozen small, scattered herds.

Perhaps it is this frailty that ultimately led to the species entangling itself in my heartstrings. Or their remarkable displays of tenacity in the midst of hardship, like the "broken leg ram" I wrote about in a previous issue, who spent several years traversing some pretty wild terrain despite being handicapped by an old injury. Over my years as the Bitterroot-area wildlife biologist, I've had a few chances now to get my hands on these animals during capture events. Each time, they entangle themselves ever more thoroughly.

Just before Valentine's Day this year, FWP and University of Montana researchers and volunteers spent two days capturing 37 sheep in the East Fork and Skalkaho herds in the Bitterroot via helicopter net-gunning. I spent half the time in a spotter plane helping search for sheep and guide the helicopter to them, but for the other half, I was on the ground assisting with processing: drawing blood, taking nasal and tonsil swabs for disease sampling, assessing body condition, and then fitting with a GPS collar. The information we get from this process will help us better understand what pathogens these sheep have, as well as how they move across the landscape—especially how often they may be exposed to new pathogens, either from domestic livestock or other wild sheep herds.

Ask any wildlife biologist and they'll likely tell you that handling wild animals is one of the coolest parts of the job. KO's capture was an especially memorable one. When the sheep arrive for processing, blindfolded, secured in slings dangling under the helicopter, and gently deposited on the ground, they are remarkably calm. No sedatives (which can interfere with respiration and thermoregulation) are involved. We do what we need to do as quickly and safely as we can, then remove the blindfolds and hobbles (straps restraining their legs) and send them on their way. Sometimes it takes them a second or two to realize they're free. Not KO.

A mature ram with impressive horns, KO was kicking against his restraints almost from the moment we had him in hand. He hadn't survived disease, predators and human hunters for this long to go down now without a fight. The name KO came from the two-character identifier on his collar (K-Zero, if you want to be technical about it). It was a random assignment that

A young ram is released after capture. Orange paint alerts capture crews that this animal has already been processed as they search for more sheep. Look at those weird rectangular pupils! Photo by Marcel Huijser.

Reports from "the office"

A growing passion for a species at risk

Stills from a video of KO's release. From left, capture crew: Researcher Nick DeCesare, USFS wildlife biologist Jesse Irwin, Rebecca Mowry, and warden Shane Yaskus. Video by student volunteer Ava Window.

ended up being quite apt for this particular ram.

It took several people stationed at strategic points around his body to keep him still enough for us to collect the samples and fit his GPS collar. The process only takes about five minutes, but for KO, those five minutes seemed to last an eternity—perhaps for him as well as for us. When we were ready to release him, I remember one of the principal investigators of the study—who had worked on bighorns dozens of times—saying, "As soon as we loosen those hobbles, he's going to kick." Game warden Shane Yaskus and I positioned ourselves behind the ram to keep him down while getting out of the way of his hooves. Shane untied the blindfold and draped it loosely across the ram's eyes, a very important step to prevent a sheep getting loose prematurely and wandering around blind. Another, more experienced handler (our own Nick DeCesare) began to loosen the straps that secured his legs.

Sure enough, the moment those hobbles were loosed, KO got to his feet. "He's good, go ahead!" Nick said. I rocketed myself backward to get out of the way, skidding ungracefully on my back in the snow. Shane held on to those horns a split second too long and nearly got himself runover. But these sheep are never vengeful. Though a ram as big and powerful as he could choose to turn around and knock each of us to the ground in turn, they never do. KO ran just a few yards out into the meadow, stopped, gave us one last backward glance, and then took off into the hills.

I'll be the first to admit I don't like handling animals, however cool and unique an experience it is. It also happens to be quite dangerous and stressful, for them and for us (and especially for the helicopter crews). Whenever we highlight capture events in the media, we always get comments like "That's so cruel" and "Just leave them alone". I take those comments to heart. I would *love* to be able to leave these animals alone, believe me. But the bigger picture is that we need to do this work, to help us understand why their populations are struggling, what is limiting their growth, and how we can make management or habitat changes to improve their outlook. Because right now, that outlook is grim.

Maybe some day we will develop ways to get the information we need to preserve the wild animals we care so much about, without having to put them through this ordeal. But for now, I would like to conclude this story with a shoutout to KO, and Nick and Shane, everyone else who planned and helped out on this study, and everyone else out there who, like me, has gotten themselves wrapped around the cloven finger-toes of these fluffy, weird-eyed bovids.

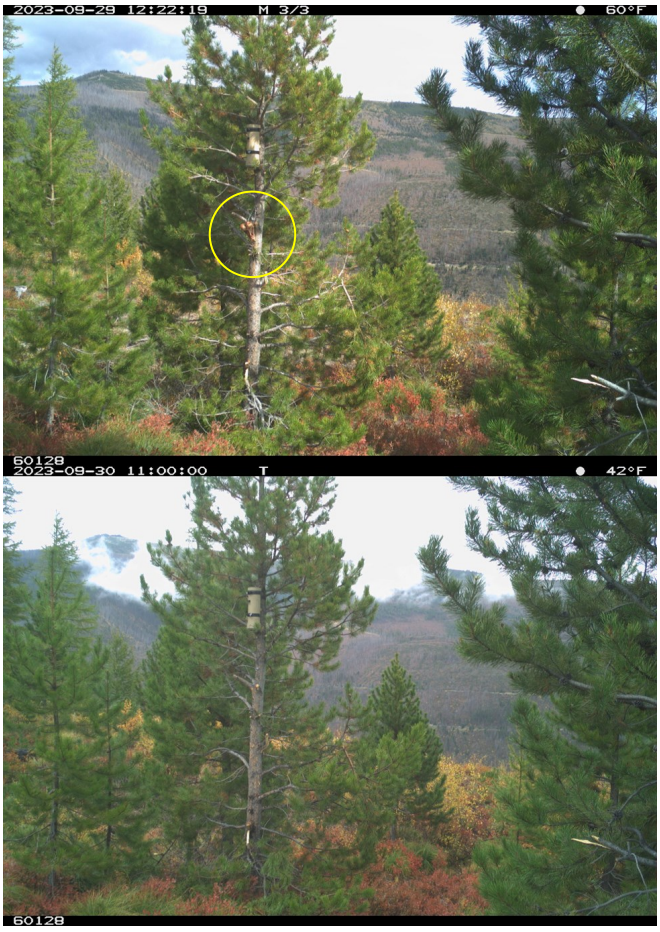
Rebecca Mowry is the Bitterroot-area wildlife biologist.

Reports from “the office”

RYAN KLIMSTRA

Let ’em soak: Hunters have been using motion-activated cameras for many decades to locate, pattern, and harvest different game species. Wildlife photographers have also been using sophisticated motion activated camera equipment to capture images of rare or illusive wildlife species in desolate or remote places. More recently, wildlife biologists have recognized the passive, low maintenance, yet high data-yielding utility of motion activated cameras and have developed complex sampling frameworks and statistical methods to analyze the vast quantities of data collected from huge camera arrays placed strategically across the landscape.

For perspective, in September of 2023 I placed a camera and bait station near Missoula in presumable Canada lynx habitat at around 5,400 ft. in elevation. I just retrieved the camera in mid-May 2024. This camera (one of many for the project) captured just shy of 12,000 images. Mind you, the vast majority were wind-triggered (i.e., tree branch moved, camera fired); however, the camera did capture both deer species, moose, elk, wolves, various birds, snowshoe hares, and coyote. Unfortunately, it did not capture our target species for the project, Canada lynx.



It also did not capture the thief that so expertly removed the chunk of cow femur that was securely fastened to the tree with a metal cable and lag screw (circled in yellow at left). In these particular camera setups, the bone acts as an attractant and a “catch” for the scent pump above to deliver a good daily spritzing of liquid catnip and beaver castor aimed at attracting our feline target. As you can imagine, other species are curious about the scent and investigate. This makes for some amazing photos to review once the camera has “soaked” all winter. In this particular instance, as I was approaching this setup for retrieval, I immediately noticed the bone was gone and there were huge claw marks on the tree. Upon closer inspection (only after I loudly declared my presence to any nearby lurking bait stealers) it was obvious that a bruin, of which species I am not sure but I have my suspicions, had chewed through the metal cable as if it was a wet piece of spaghetti and made off with the bone. While doing so, it had left extensive claw marks up and down the tree trunk.

Boy, was I excited to get back to the office (you won’t hear me say that often) and review the photos to watch the bruin remove this large bone. I had no idea if it had happened earlier in the day or back in October, so I kept looking over my shoulder and wasted no time packing up and getting the rest of the equipment removed. Well. . . as you can see in Picture 1 on 9/29/23 there was a bone beneath the scent pump and in Picture 2 on 9/30/23 there was no bone and claw marks were present. So given that there were almost 12,000 photos and the camera triggered with every little movement of even the smallest vegetation, I was expecting a treasure trove of bear photos but there were NONE. So, why didn’t I get photos of the culprit? I have no clue! Why did the camera fail to trigger? I have no clue! There is risk associated with all data collection and this type of data collection comes with a big risk in that when you walk away from the initial camera deployment you are accepting the possibility that the camera may not even work at all (rarely happens). This was a good reminder to me that even with the most sophisticated technology and fanciest statistical analyses that errors can still occur and we must be adaptable.

Ryan Klimstra is the Missoula area wildlife biologist.

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Montana Fish, Wildlife & Parks, through its employees and citizen commission and board, provides for the stewardship of the fish, wildlife, parks, and recreational resources of Montana, while contributing to the quality of life for present and future generations.

THE **OUTSIDE** IS IN US ALL.

Growing up in the rolling hills of Virginia, if I wasn't outside in the woods, I was playing a sport on some field or court somewhere. I started to mold a little structure on a future career outdoors by majoring in biology at James Madison University. However, still not truly knowing what I wanted to do, I applied for a volunteer position on a reserve in South Africa helping with environmental education.

After a very humbling four months of conservation work, I came back to the US and started working various wildlife technician jobs. However, I was "bitten by the African bug" as the locals say and went back to South Africa in 2011 for a life-changing road trip throughout southern Africa with two close friends. I found a predator assistant position working primarily with black-backed jackals where I learned the foundation of predator-prey dynamics in an exciting but complex landscape.

After five years flew by, I returned to the US and began working in Colorado as a wildlife technician before accepting a master's position at Utah State University investigating carnivores in the West Desert of Utah. Upon completion of my MS in 2021, I began work as a mountain lion biologist for Nebraska Game and Parks Commission. The northwestern portion of Nebraska is a little version of the Black Hills (South Dakota), which is why mountain lions naturally recolonized the area. After 3 years of monitoring lions in Nebraska, I found an opportunity to expand my work as a lion biologist in Montana. I was fortunate that I was able to keep the pine trees and lions as I shifted to my new position.

In January 2024, I made my move and began work as the mountain lion monitoring biologist with FWP where I am now responsible for coordinating Montana's statewide lion population monitoring program. What I love about this job is the opportunity to do what I love as a career, work alongside and learn from some of the top researchers and houndsmen in the country, continue to gain knowledge on what this cryptic critter is doing, and try to answer the never-ending question: how many are there?

-Ashley Hodge,
statewide mountain lion
monitoring biologist