Of Ghosts and Shadows

Inside the effort to conserve Montana's mountain lions

BY JESSIANNE CASTLE

IT'S UNCLEAR WHAT MADE HIM DO IT, what kind of instinctual power compelled the young mountain lion to head east. He traveled roughly 230 miles across open grassland, leaving behind Montana's Missouri River Breaks and its coulees and crags. After swimming some 4 miles in the waters of Fort Peck Lake, he wandered along the north side of the Missouri River toward Wolf Point, then made a beeline southeast, crossing the Yellowstone River north of Glendive and bounding into North Dakota.

Randy Machett, a wildlife biologist at the Charles M. Russell National Wildlife Refuge, says he expected the tom to stop at several points on his journey, in places where steep and rocky cliffs meet thick cover, but he didn't. He never even hesitated.

Working on a study about the population of lions (also known as cougars and pumas) in the Missouri River Breaks for the U.S. Fish and Wildlife Service between 2010 and 2015, Machett tracked the male lion's movements in real time with the help of a satellite radio collar.

It was one element of a larger research potpourri that has become the standard in Montana and includes collaring, habitat mapping, genetic analysis and remote photography, all of which cast tiny beams of light onto the shadowy world of the mountain lion.

Beginning this winter, wildlife researchers will take an even closer look at the cat in hopes of safeguarding the species for the future. By gathering precise population estimates across ecoregions in Montana that are defined by a lion's preferred habitat, they hope to draw a better picture of how many cats are out there, what they're doing, and why.

A female mountain lion is treed in Granite County, Montana, during a study by Montana Fish, Wildlife and Parks. The studies help researchers learn more about the behavior of the big cats.

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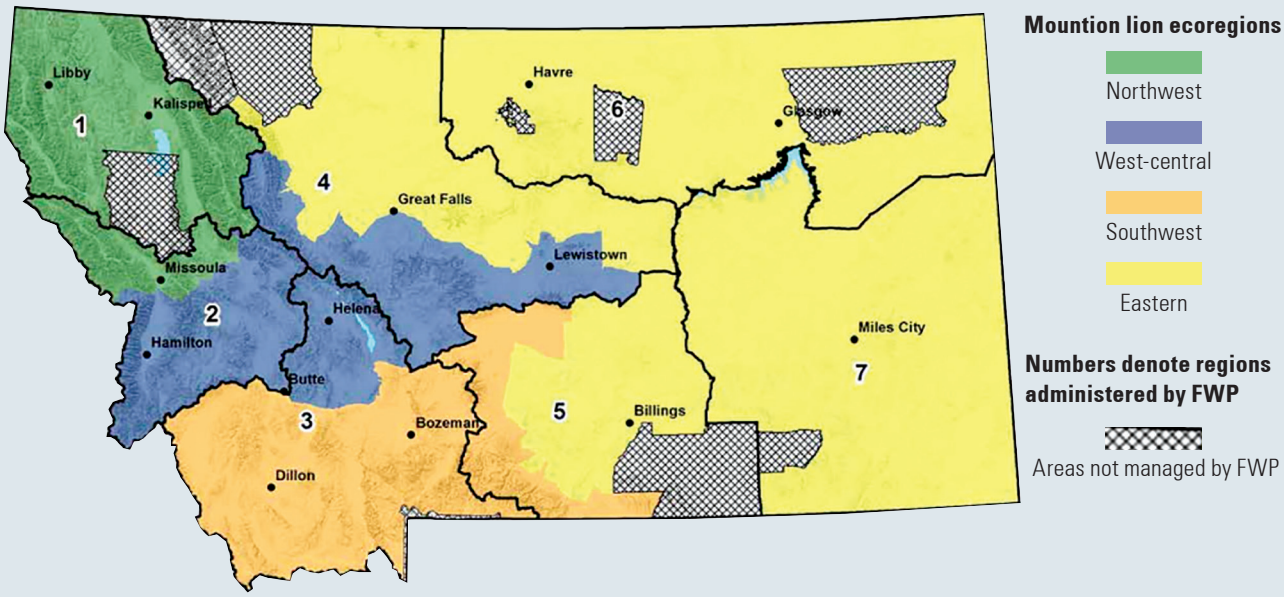
Montana's mountain lion ecoregions and FWP administrative regions



Source: Montana Fish, Wildlife and Parks

Ghosts of the Rocky Mountains

In 1925, a mountain lion was worth more dead than alive. A pelt earned $25, equivalent to about $370 today, and was paid out by the Treasure State as a bounty for every cat that was killed. They were deemed a troublesome predator at the time: a varmint that could put an end to a livestock operation, or a vicious monster that would attack dogs and people without cause.

By the 1930s, a species that once roamed the entire expanse of Montana had been nearly extirpated, along with wolves and the silver-tipped grizzly bear. Lions were literally transformed into ghosts of the Rocky Mountains. The decline was the direct result of human hunting that targeted cougars as well as the deer and elk they eat. Market hunting had decimated prey and predator before most people realized they were gone.

Jay Kolbe was stoic as he described this chapter in mountain lion history. A biologist in White Sulphur Springs for Montana Fish, Wildlife and Parks (FWP), his blue eyes were dark under his brow. It was a crisp evening in September, and Kolbe was giving a presentation on mountain lions to a captivated audience at a homestead in the Bridger Mountains. The Bridgers, with their golden aspens and emerald forests, seemed to swallow us whole. Somewhere, and probably not far away, a tawny feline was on the prowl.

Kolbe recounted that, by midcentury, wildlife management began to change and evolving game laws launched the recovery of many North American species. Cougar bounties disappeared in the 1960s, and in 1971 the Montana Legislature designated mountain lions as a game species with specific protection from poaching. Over the next 20 years, lions started to flourish and people began to catch infrequent glimpses of the ghosts once again.

"It's a remarkable conservation success story that's happened in decades," Kolbe said, a narrow smile flickering across his bearded face. "They're really starting to recover now, even to include the midwestern part of the U.S., eastern Canada and the eastern seaboard of the U.S. It's just an amazing story."

The Holy Grail

As lions returned to their historic nooks and crannies, they became increasingly at odds with humans unused to living with predators. A harsh winter took its toll on many white-tailed deer in 1996 and 1997, fueling managers

A collared mountain lion photographed in Wyoming with remote imagery as part of Panthera's Teton Cougar Project, part of the conservation organization's larger effort to better understand the status of mountain lions throughout the Americas.

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with FWP to keep harvest quotas for mountain lions high to prevent human conflicts and aid struggling prey.

In the '80s, state managers had adopted a quota system that limited the number of males and females killed in small, species-specific hunting districts during a fall and winter season. This method is still followed today, and while some areas are open within the season until the quota fills, others require a hunter to apply for a tag. Residents and non-residents are able to harvest a mountain lion every year, and successful hunters are required to report their harvest within 12 hours. Young lions with spots or females supporting kittens may not be killed.

Following a period of high quotas in most hunting districts in the '90s, by the early 2000s managers feared they'd gone too far. In northwestern Montana, houndsmen—the sportsmen leading the lion harvest—were telling stories of fewer cats.

Many houndsmen came to the department asking for lower quotas, wanting to see fewer cats taken in order to maintain them on the landscape. It was a contentious time, and something Kolbe and others call "The Lion Wars." A young and inexperienced biologist at the time, Kolbe cut his teeth on the controversy.

"In my experience, lion hunters have been the most effective advocate for lion restoration and conservation in the state," he said, his voice gaining momentum. He paused.

"To be honest, we've made some mistakes. We've over-done and under-done harvest because we just had poor or virtually no information with which or on which to make decisions," he said, thoughtful. "I don't believe we'd have

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Bay and Rooster, hound dogs trained to track mountain lions, bark to indicate the location of a cougar in a tree.

the lion populations that we do without that hunter, hound-handler constituency that asks the department to do better."

Biologists didn't actually know how many mountain lions were in Montana. The technology just wasn't there.

"We've had no accurate, economical method to count lions," Kolbe said. Kolbe can count elk, deer, pronghorn and even wolves from the air. But mountain lions, he says, are virtually invisible from a plane. "We really needed fundamental information about lion ecology—movement, survival, predation, population size—in order to make better decisions."

Seeking answers

Our truck made the day's first tracks on the snow-packed road that bisects Granite County's Rock Creek drainage southeast of Missoula. Rock spires and cliff walls closed in around us, and the shale hillside was masked by a blanket of snow.

My husband Ryan Castle was working a mountain lion study for FWP, one that was meant to estimate the number of mountain lions in Granite County, and I was an eager observer.

When we crossed mountain lion tracks, Ryan punched the brakes and nearly fell out of the truck as he scrambled to drop the dogs. I watched as Rooster and Bay's tails cranked, their noses glued to the snow. The same floppy-eared hounds that gamboled about in our yard at home had been transformed. They were deliberate, precise. On a mission.

By the time they'd worked their way up the steep slope to the shale, we could hear Rooster's crooning bellow, echoing fiercely off the canyon walls. When Bay's throaty cry took up chorus, we knew they had the mountain lion treed.

After an abrupt climb from river bottom to outcrop, we met our dogs at the bottom of a large ponderosa pine, and gazed up at the lion. Her alluring eyes watched as

Ryan shouldered the dart gun and with a loud thunk, he launched the biopsy dart up toward her hip. It made contact then dropped to the ground and I shuffled through the snow to retrieve it. Inside the dart was a tiny piece of flesh and hair, smaller than the end of my pinky.

The goal was to retrieve a small tissue sample from the mountain lion in order to obtain DNA that could identify the individual. It would map the cougar's family tree and was a part of preliminary research on how to survey for lions.

That was two years ago. Today, Machett, veteran of lion studies in the Missouri Breaks, described the difficulty of mountain lion research. His own studies in the Missouri River Breaks were used in conjunction with my husband's work in Granite County and research in other parts of the state to inform a state-wide monitoring initiative that FWP launched this winter after it was approved by the Fish and Wildlife Commission and funded by the State Legislature midway through 2019.

"Lion populations are difficult to monitor because they are so secretive," Machett said from his office in Lewistown. Mountain lions are stealthy, solitary predators with a knack for never being seen. "Lions are good dispersers and colonizers; I don't think we totally understand or appreciate that."

He regaled me with stories of mountain lion mini-soap operas—tales of life and death, accounts of how transient males claim their territory in the Missouri River Breaks. He described his theory that lions in his neck of the woods are the progenitors of populations in North Dakota.

Speaking in reference to the state's new monitoring method, Machett said he thinks it's good.

"I do think Fish, Wildlife and Parks is trying to do the best science possible," he said. "I think they're going about it in a logical, rational, scientific way."

Learning from lions

Biologists are taking what they've learned in small-scale projects and are applying that on a statewide level. It's a new way to monitor a species, something Kolbe calls unprecedented in the realm of cougar science.

"Montana is really ahead on this," he said. "In the 50 years that we've actively managed mountain lions, we've never had [this] before."

Kolbe and his team have created a habitat map of the state and intend to manage lions based on four regions defined by the types of habitat cougars prefer rather than the traditional hunting districts and administrative lines humans have drawn on a map. The ecoregions consist of northwest, west-central

A mountain lion tissue sample preserved for genetic analysis.

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and southwest segments that encompass the western half of the state. The eastern ecoregion accounts for only 15 percent of the state's cougar population and will be managed independently of the western half.

"The important thing is [the ecoregions] were developed using lion biology, not administrative boundaries," Kolbe said. "We need to let the lions tell us where the lines need to be."

Over the course of the winter, contracted hound handlers will survey a 1,000-square-kilometer area and record where they find cougar tracks. As in the survey work in Granite County, they'll use trained dogs to help collect DNA. It's a method Kolbe describes as less invasive than collaring as the cats are never drugged or handled, and he says researchers can simultaneously collect passive samples from scat or hair found in the field.

They'll repeat the survey again next year south of Libby, then conduct a two-year survey in the Gallatin Range south of Bozeman. The winter work will be replicated two years later near Lincoln, and then the survey crew will return once again to Libby to repeat the six-year cycle. Data from these permanent trend-monitoring areas will be used in an elaborate statistical model that estimates the total number of lions in each ecoregion.

Kolbe says the model is intended to allow biologists to detect population changes quickly. Whether an ecoregion population expands, or dips due to weather, disease, forest succession or prey decline, wildlife managers will know about it and be able to adjust hunting regulations accordingly.

Safeguarding a species

Puma concolor is considered the most successful species in the Western Hemisphere.

"It's been called the ghost of the Rockies, but it really is the ghost of the Western Hemisphere," said Howard Quigley, the executive director of conservation science

for the international conservation organization Panthera. Quigley was referring to the mountain lion's expansive range, which extends from sea level to 12,000 feet, from Alaska to Patagonia.

"They're one of the most resilient species of large carnivores, probably in the world, but they're very sensitive to humans," he told me over the phone from Washington state. Quigley has dedicated his life to the conservation of wild cat species. He's seen puma tracks in the mud deep in the Amazon forest and clipped collars on cats in Patagonia. Fresh from a move from Montana, Quigley is familiar with the state's mountain lion story and he calls the latest monitoring effort a progressive approach.

"Progressive is trying to make sure you have the latest science to do your job well," he explained, adding that in a state with legal predator harvest, it also means biologically based hunting regulations. "It's being as responsible as they can in trying to make an estimate of the number of lions and a safe harvest level. It bodes well for the conservation of the species."

Researchers for Panthera are looking to better understand mountain lions across their entire range, as little is known about the puma south of the border. They use some of the same tools as FWP, such as tracking collars and remote cameras, and they're also looking at DNA, though it is retrieved with scat detection dogs rather than through tissue samples.

"It's the same DNA. It's just two ways to get at identification of the animal," Quigley said, adding that FWP's inclusion of houndsmen is positive from a public relations standpoint. "It enhances the relationship between the public hunter and the science."

Ultimately, Quigley said it is through advanced science and a potpourri of techniques that researchers can glean the best understanding of a species. Cameras provide a detailed look at behavior, collars shed light on movement, and DNA is an exact census technique.

"Hopefully by finding out more about their ecology and behavior, we can know more about their future," he said. "And the more we learn, the more we can export to other species around the world."