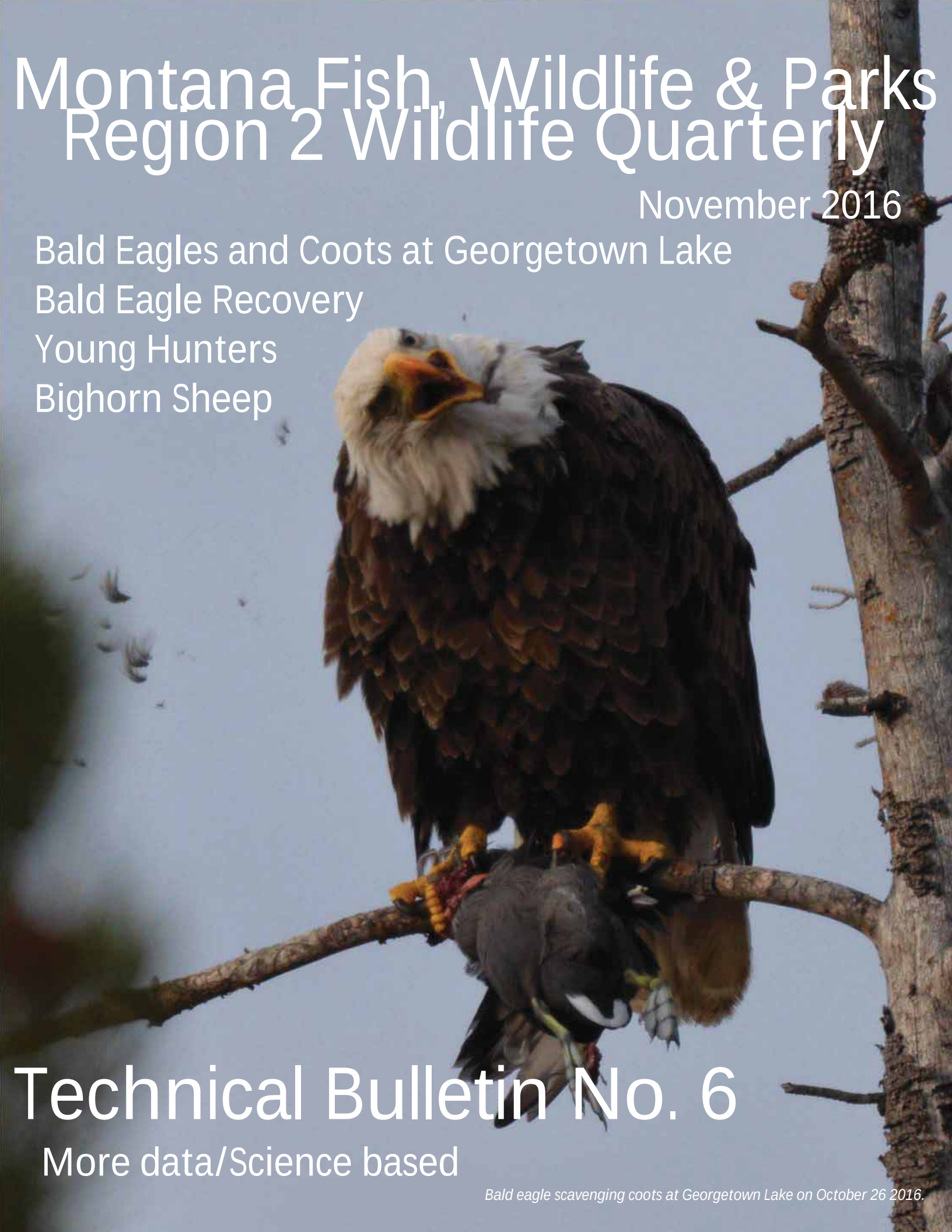
Montana Fish, Wildlife & Parks
Region 2 Wildlife Quarterly

November 2016

Bald Eagles and Coots at Georgetown Lake
Bald Eagle Recovery
Young Hunters
Bighorn Sheep



Technical Bulletin No. 6

More data/Science based

Bald eagle scavenging coots at Georgetown Lake on October 26 2016.

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The Region 2 Wildlife Quarterly is a product of Montana Fish, Wildlife & Parks; 3201 Spurgin Road; Missoula 59804. Its intent is to provide an outlet for a depth of technical information that normally cannot be accommodated by commercial media, yet we hope to retain a readable product for a wide audience. While we strive for accuracy and integrity, this is not a peer-refereed outlet for original scientific research, and results are preliminary. October 2015 was the inaugural issue.

The Bald Eagle in Montana—A Wildlife Restoration Success Story

By Kristi DuBois, FWP Wildlife Biologist, Region 2

The following information is excerpted from the final report that I compiled in April 2016 on behalf of the Montana Bald Eagle Working Group. Entitled, *Montana Bald Eagle Nesting Populations and Nest Monitoring, 1980-2014*, the full document may be accessed online at *fwp.mt.gov*.

The bald eagle nesting population in North America and Montana was largely taken for granted until noticeable declines had already taken place. Bald eagle numbers, estimated at a quarter of a million in the lower 48 states before 1800, declined steadily throughout the late 1800s and early 1900s due to illegal shooting and habitat loss. The advent of DDT and related pesticides during World War II and their widespread postwar use soon caused eagle reproduction to plummet. In 1963, a National Audubon Society Survey reported only 417 active nests in the lower 48 states. Bald eagles in the lower 48 states were subsequently listed as endangered under the Endangered Species Act in 1978.

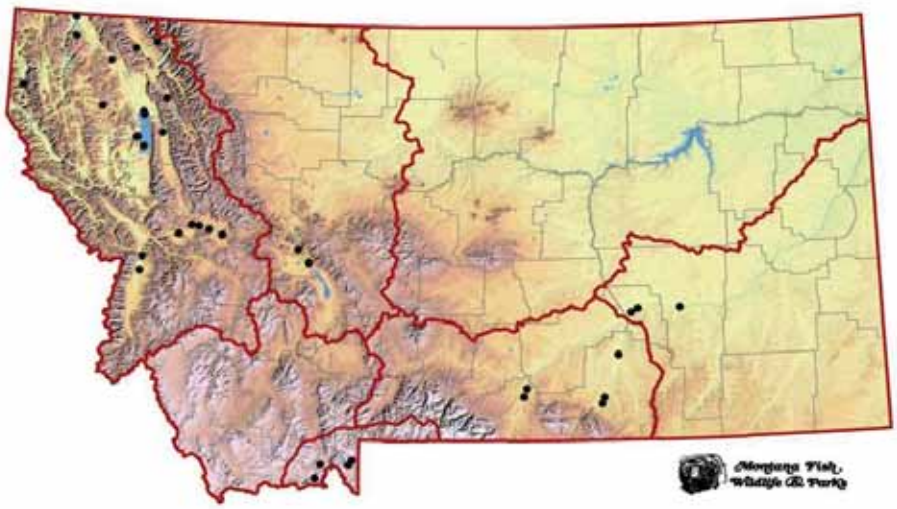
In 1978, there were 12 known breeding pairs of bald eagles in Montana. A group of biologists initiated annual bald eagle nesting surveys in 1980, and officially started the Montana Bald Eagle Working Group (MBEWG) in 1982. The MBEWG, composed of representatives from federal and state agencies, tribes, universities, conservation groups, and private industry, developed the monitoring methods, data forms and management recommendations that set the direction for over 30 years of bald eagle recovery and nest monitoring in Montana.

In 1980, Montana had 31 known or suspected bald eagle territories. Biologists were able to monitor 23 of those territories, and found 17 active nests. Twenty-six young were fledged that year.

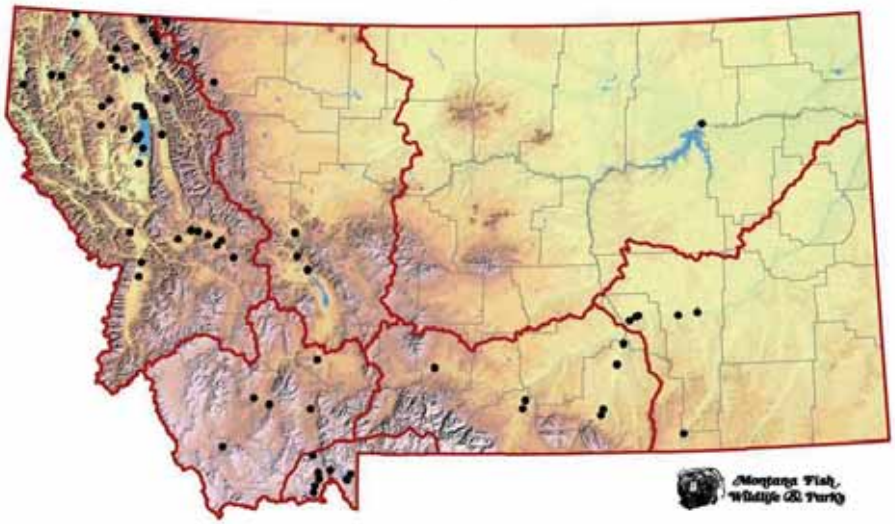
Over the next 34 years, the bald eagle nesting population steadily increased, except in 1987 when the number of known nests declined slightly after a large, strong storm had blown out a significant number of nests the preceding year. The population is currently over 700 nesting pairs.

Bald eagles were down-listed from Endangered to Threatened in 1995, and delisted in 2007. Currently, bald eagles continue to receive protection from the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act. These federal regulations protect eagles from direct persecution and human disturbance that could cause nest abandonment or reproductive failure.

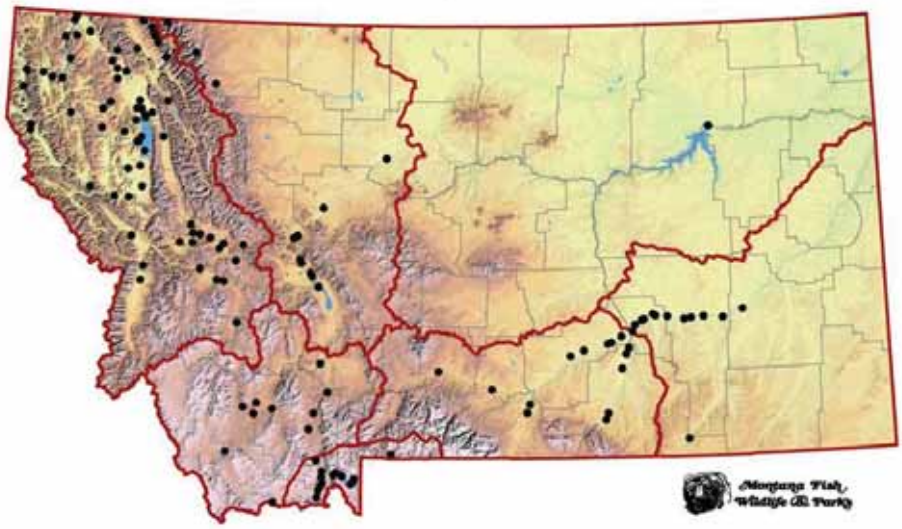
Montana Bald Eagle Territories, 1980



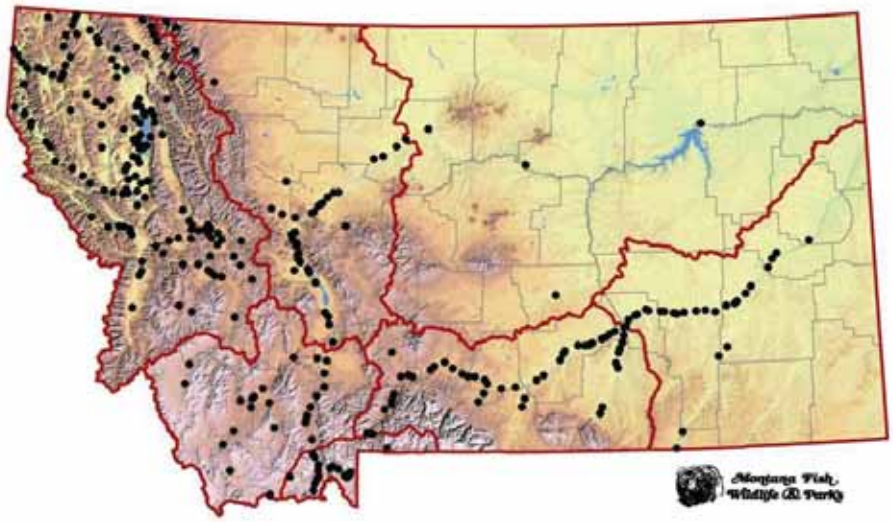
Montana Bald Eagle Territories, 1985



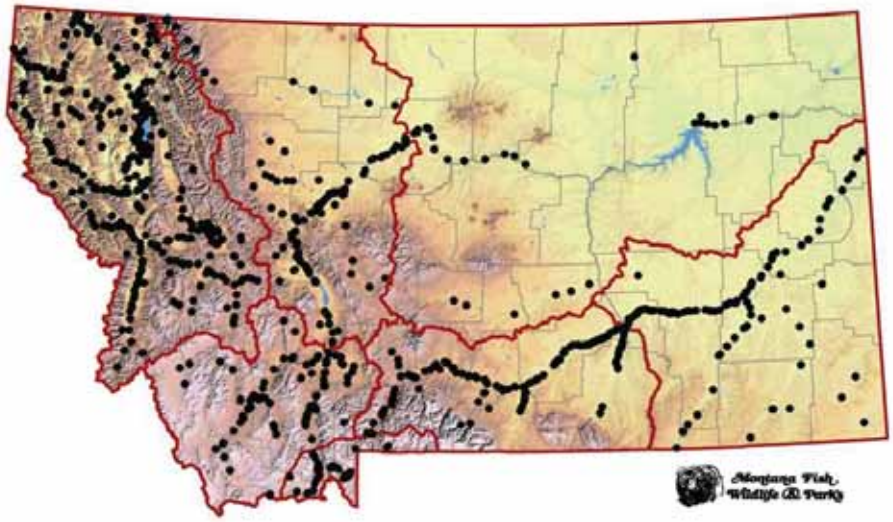
Montana Bald Eagle Territories, 1990



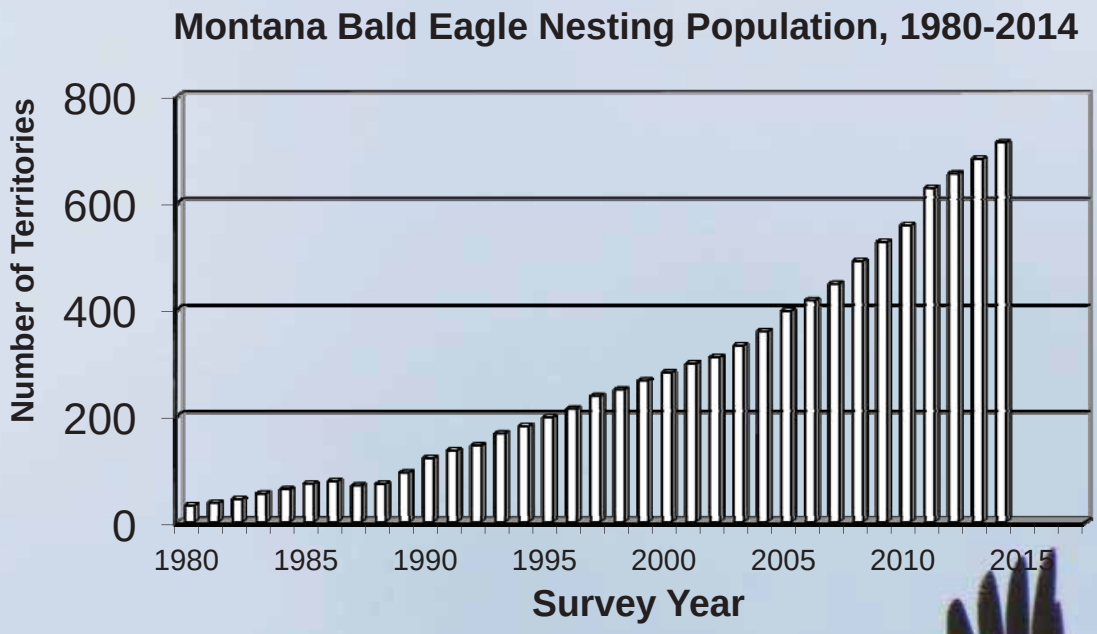
Montana Bald Eagle Territories, 2000



Montana Bald Eagle Territories, 2010



Montana Bald Eagle Territories, 2014



MAINTENANCE AND MONITORING

The MBEWG continues to monitor nesting bald eagles across Montana and cooperates with the federal post-delisting monitoring strategy that calls for monitoring every 5 years between 2009 and 2029. The MBEWG developed an updated bald eagle nest monitoring strategy in 2008, to increase monitoring efficiency and better define post-delisting monitoring objectives (MBEWG 2008). The top three objectives of bald eagle nest monitoring are:

1. Track bald eagle nest locations, to facilitate management of bald eagle nesting areas in compliance with the Bald and Golden Eagle Protection Act.

2. Monitor long-term population trends of nesting bald eagles in Montana, in order to ensure the nesting population remains stable or increasing.

3. Monitor nesting production, to identify large-scale production declines or failures that may be indicative of contaminant or other impacts.

In 1805, as Lewis and Clark entered Montana near Fort Union, they noted, “more bald eagles than we have hitherto observed; the nest of these last being always accompanied by those of two or three magpies, which are their inseparable attendants.” We can now finally enjoy bald eagles at populations comparable to those described by the Lewis and Clark Expedition.

Food Web at Georgetown—Trematode, Snail, Coot & Bald Eagle

By Kristi DuBois, FWP Wildlife Biologist, Region 2

Ravens taunt a mature bald eagle while immature bald eagles look on from their perches overlooking a die-off of American Coots on Georgetown Lake in October 2016. Coot die-offs have become annual events, so much so that bald eagles have incorporated this food source into their migrations. The eagles and ravens are not harmed from feeding on the parasitized coots.

UNINTENDED CONSEQUENCES

Montana, like other states is struggling with the negative impacts of invasive species, both terrestrial and aquatic. The faucet snail, also called the Mud Bithynia (*Bithynia trentaculata*) is a small aquatic snail native to Europe. It found its way to North America where it was first recorded in 1871 in Lake Michigan. It likely got there through contaminated ship ballast. The snail has since spread in the Midwest and northeast and is well established from Quebec to Wisconsin and Minnesota and across to Pennsylvania and New York.

This exotic snail harbors several species of exotic parasitic trematode flukes, worm-like creatures that have several life stages alternating between birds (mostly waterfowl) and snails. This parasite does not create problems in its native European range where birds are adapted to it. In Minnesota and Wisconsin, trematode infections (*trematodiasis*) have caused tens of thousands of diving ducks and American coots to die in several lakes and in pooled water along the Mississippi River.

Bald eagles and American coot.

The exotic, invasive trematode fluke and faucet snail made their way from the Midwest to Georgetown Lake, probably on contaminated fishing boats. Bird deaths from trematodosis have been documented in the Midwest since 2002 and in Georgetown Lake since 2006. The trematode species that infests faucet snails in Montana has largely been *Cyathocotyle bushiensis*, which is highly lethal to American coots, although at least one other trematode species has been documented here. *Trematodiasis* has also been responsible for water bird and waterfowl mortality in Smith Lake near Kalispell and Rattlesnake Reservoir near Billings.

AMERICAN COOT

The American Coot is a common wetland bird across North America, a member of the rail family. Concentrations are greatest in the fall, when thousands of migrants gather on some of the larger water bodies in Montana, including Georgetown Lake. When ice forms on the lakes, the coots move on to wintering areas along the Pacific coast and in the southern U.S. and Mexico.

COMPLEX LIFE CYCLE

The trematode eggs hatch or are eaten by the exotic faucet snail (pictured at center right and below right). Once in the snail, the parasite larvae undergo asexual reproduction. Hundreds of larvae are formed and leave the snail. The larvae later reenter snails, forming cysts that become infectious to coots and other snail-feeding birds in a few days. The cysts grow into adult flukes, which attach inside the digestive tract of the bird. Recent work has shown that birds can ingest a lethal dose of trematode cysts in as little as 24 hours, with subsequent mortality from internal hemorrhaging within about 6 days.

GEORGETOWN LAKE

November 2, 2016

911	dead coots counted
>8,000	live coots estimated
>800	live ducks, geese, grebes and loons estimated
29	bald eagles counted

- Most live coots appeared to be healthy.
- Coots comprised about 90% of the water bird species.
- Numbers of dead coots carried into trees by scavenging birds were not estimated.

Surveyed by Kristi DuBois and Rose Leach

Photo by Kristi DuBois

FAUCET SNAIL

The faucet snail is a small, brown nondescript snail that resembles some of our native snails. Unlike many native snails, the faucet snail has an operculum, a separate flat piece of shell that acts like a trap door to help protect it from predatory leaches and survive desiccation. With its operculum closed, the snail can survive for many days out of water, long enough for transport on a boat or trailer across the U.S. Their ability to live for many days out of the water make the spread of this species to other water bodies more likely. Once they are introduced, they can spread very quickly and are hard to control.

Photo by Kristi DuBois

Photo by Kristi DuBois

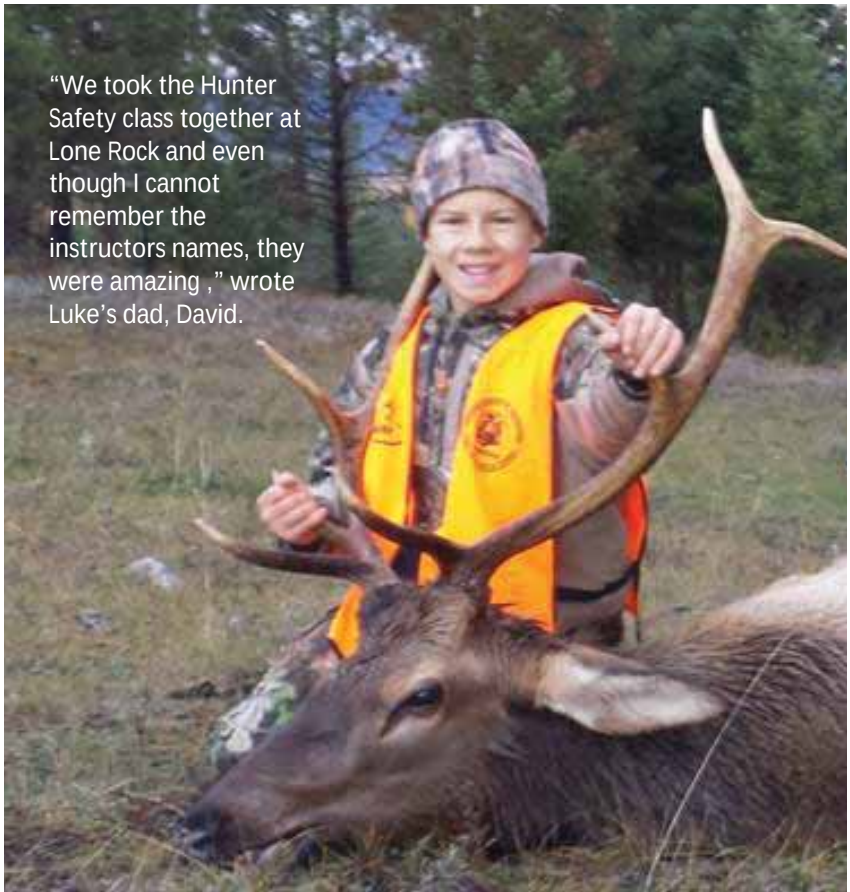
Hunting Access—Makes Memories for a Lifetime

As Written to Cannon Colegrove
FWP Hunting Access Technician, Region 2

Luke Gross, 13, with the whitetail buck and bull elk (below) that he took in Region 2 this fall. His proud father, David, shared their story with FWP, and with his permission, we are pleased to share it with you. (Photos by David Gross.)

Hi Cannon,
Well, to put it lightly, my son had a weekend he will never forget for the rest of his life, nor will I. THANK YOU very much for the tips and information. I didn't want the weekend to end.

We camped at [secret spot], and had the place all to ourselves. We started Thursday's youth hunt with a 5 hour walk thru the north side from the lake and saw lots of deer and a little elk sign. They were still logging in there North of the bigger pond so came out after lunch. We rallied at the trailer, then went on a hike to the South end. I am used to that Whitetail hunting and hitting the pocket timber and brush areas to see what we kick out. It was like Antelope hunting using the draws and landscape to our advantage. Saw several small bucks, then came around a corner and there was the one we'd hoped for! They didn't know we were there, wind and terrain was in our favor. My son and I belly crawled for 25 yards to a rock that I put my coat on and he laid in prone position waiting for the broadside shot. 150 yards, one shot, and he took a heavy, mature, 5x5. (At the Bonner Check Station they aged the deer as a 6 year old).We opted to drag it in the long grass together the 3/4 mile back to the camp. We were 400 yards from the camp when a cattle herd and 4 wheeler were coming our way. A rancher came up to us and said the cattle were going to be on top of us, so he offered to drag the deer to the road, and saved us another 45 minutes of dragging. He was impressed with the deer!



"We took the Hunter Safety class together at Lone Rock and even though I cannot remember the instructors names, they were amazing ," wrote Luke's dad, David.

We went to bed at [secret spot] Block Management Area on Friday with a herd bugling and cow calling right behind the camper. I didn't sleep hardly at all. We got up and hiked to the North in the dark circling around to the timber line to the highest point and sat under a tree. The herd had moved off to the South and we could still hear distant bugling and then some shooting. I felt good about our spot with a saddle on either side.

We had a herd of over 120 elk run to us and bunch up at 50 yards! Cow calling, bugling, steaming breath from all of them. I have never had an experience like that in my life. There was a herd bull, not a monster, that would not clear and separate for a clean shot. We waited and waited while the herd decided where they were going to go. They strung out after several minutes and started down toward the big pond. The big bull never gave Luke a shot and walked surrounded by cows. There were several other brow tined legal bulls and Luke wanted a bull. He lined up another one that separated and dropped him on the first shot, 50 yards!

It was the best experience in the woods ever in my life, without question! Thank you again for the assistance and tips. My son and I made LIFETIME memories.

November 5, 2016—A Few Minutes with the Petty Creek Bighorn Herd

By the Region 2 Wildlife Staff

In 1968, Montana Fish, Wildlife & Parks (FWP) reintroduced 16 bighorn sheep to Petty Creek, west of Missoula, from the Sun River bighorn population, and in 1985, FWP added 4 adult rams from the National Bison Range.

From these modest beginnings, FWP wildlife biologist Liz Bradley counted 151 sheep in the Petty Creek population on April 19, 2016.

In the afternoon of November 5, 2016, two mature rams tend two radio-collared and ear-tagged ewes as the breeding season (i.e., rut) approaches.

Radio collars appear to have little or no negative effect on the reproductive contribution of collared ewes during this social interaction (above). The collared ewe on the left is not in estrous, while the reproductive condition of the collared ewe on the right appears to attract more attention (center).

Fifteen ewes in the Petty Creek population were captured and collared on February 3, 2016, so the collars pictured here have been deployed in the field for 9 months. Each ewe was equipped with a GPS receiver for obtaining detailed movement data and a VHF transmitter with a mortality sensor to enable the investigation of any deaths. The GPS collar will fall off in 1.5 years, allowing data retrieval.

Voices floating on the mountain air, a flash of hunter orange out the corner of our eyes, and a pan of the long camera lens brings into focus another passion play on the mountainside.

The Petty Creek bighorn herd is managed within Hunting District 203, where FWP permitted the harvest of 5 adult rams and 7 adult ewes in 2016. The camera eavesdrops on Cameron Schmidt and her father, Carl, as they approach the ram that Cameron took on November 5, 2016.

Cameron, her sister, and father Carl, a longtime Hunter Education Program volunteer instructor, share a moment of quiet contemplation before setting to work.

Cameron validates her license and affixes it to one leg of the sheep, then holds the legs while her dad field dresses,and skins the animal.

FWP Conservation Specialist Tyler Rennfield carefully sorts growth rings from false annuli to assign an age, preparatory to affixing a permanent identification tag in the horn (above inset), and earns a place in the story alongside hunter Cameron Schmidt.

The role of disease, habitat, individual condition, and herd attributes on bighorn sheep recruitment and population dynamics in Montana

Federal Aid in Wildlife Restoration Grant W-159-R

Annual report, February 15, 2015

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PhD Candidate, Montana State University
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Photo Credit: Jenny Jones, MFWP

Project Objective

The overall aim of this research program is to assess the role of herd attributes, annual variation in climate, disease pathogens, and habitat conditions on bighorn sheep recruitment, adult survival, and population dynamics.

Location

Bighorn sheep research conducted under this grant is focused within the range of seven distinct bighorn sheep populations across varying ecological settings in Montana, occupying portions of Deer Lodge, Fergus, Lewis & Clark, Madison, Missoula, Sanders, Stillwater and Teton Counties, as well as the Flathead Indian Reservation. Populations initially planned to be included in the research program included Paradise, Lost Creek, Hilgard, Highlands, Castle Reef, and Fergus. However, due to logistical constraints of capturing animals, the Highlands population was dropped from the research program and replaced by the Petty Creek population.

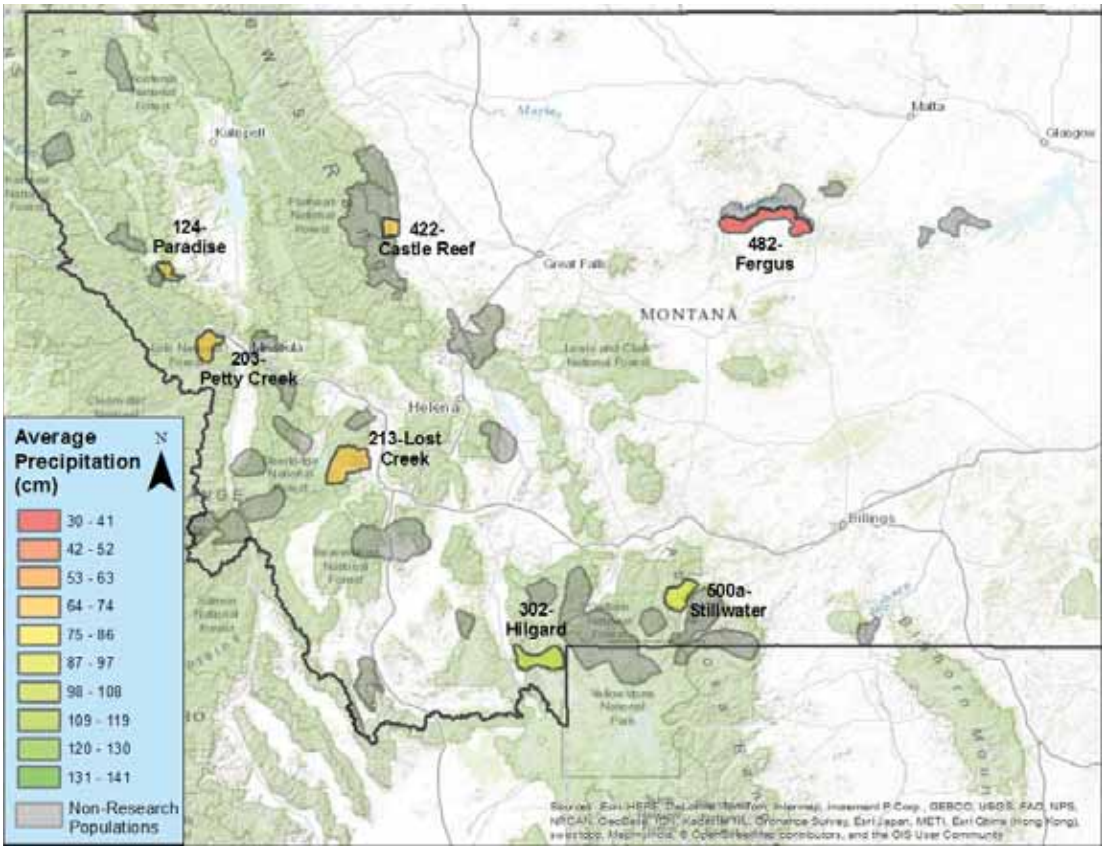


Figure 1. *Ranges of, and precipitation experienced by, the seven study populations included in the Montana Bighorn Sheep Study. Polygons shaded in gray show ranges of the other bighorn sheep populations in Montana that are not part of this research effort.*

Study Objectives (Year 1 of 6 year-study)

During the first field season of this bighorn sheep research program, the primary objectives were:

1) Capture, sample, and instrument animals in each study population.
2) Assess variation in respiratory pathogen communities and exposure among sampled populations
3) Assess variation in body condition and physiological status among sampled populations
4) Monitor demographic rates in instrumented populations

Ecology of Bighorn Sheep—Winter 2016 Objectives and Update

By Ethan Lula, Montana State University, Bozeman

WINTER 2016 OBJECTIVES

- Resample six of the seven original study herds for continued disease and genetic monitoring/analysis.
- Deploy 55 new paired GPS/VHF radio-collars within six of the seven original study herds for improved spatial analysis and model development.
- Incorporate a new prairie-breaks population into the study (Middle Missouri/Larb Hills)

LOST CREEK (ANACONDA)

Capture Update

In winter 2014/2015 seven animals (6 adult females and 1 adult male) were captured and sampled using a drop-net on January 3rd, and six adult females were captured and sampled using ground-based chemical immobilization throughout March. All 12 adult females were fit with paired GPS/VHF radio-collars, however 2 of these animals died before winter 2015/2016, leaving five sets of radio-collars to be deployed over winter 2015/2016. In December 2015, five adult females were captured via ground darting and sampled, all of which were instrumented with paired GPS/VHF radio-collars. An additional female was captured, sampled and fitted with GPS/VHF radio-collar on March 20th, 2016 resulting in a total of 19 animals having been captured and sampled in this population. The winter 2016 capture and sample objective for this population is 30 animals with 10 being fitted with new GPS/VHF radio-collars.

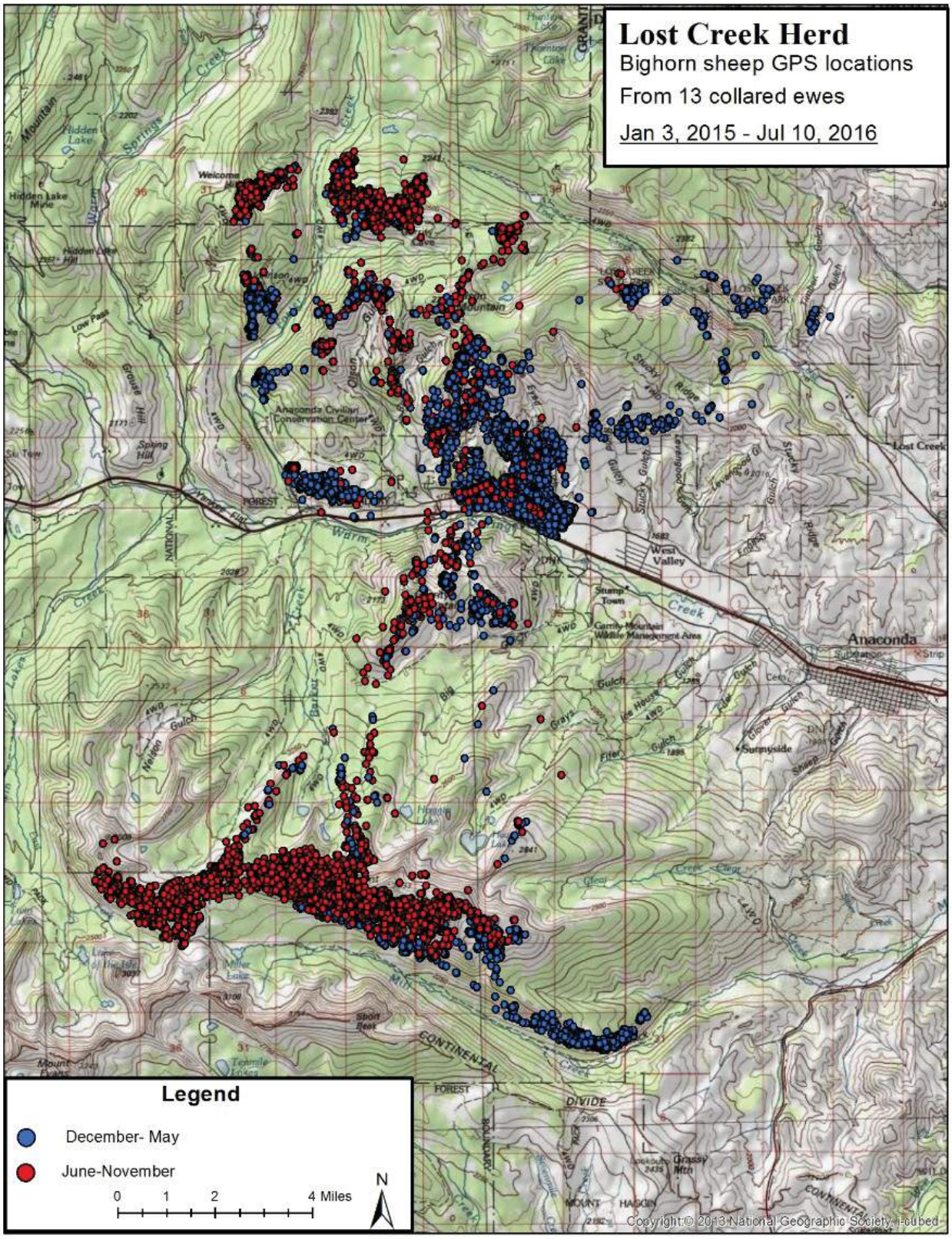
Survival Update

Three of the 12 adult females that were radio-collared in January and March 2015 died in 2015, leaving 75% of these animals alive and in the population. One died April 15th due to disease, the second died May 23rd for unknown reasons, and the third died December 25th from mountain lion predation. In 2016, another female from the original 12 died on May 30th for unknown reasons, leaving 67% of the animals from the original capture efforts alive.

GPS Data

Between January 2014 and March 2016, a total of 18 adult females were fitted with paired GPS/VHF radio-collars. The GPS radio-collars were programmed to record a location every four hours, store the information within the collar, and fall off the animal at a pre-determined time. In 2016, nine GPS radio-collars deployed off captured animals, and all were successfully recovered. Initial analysis of this data, as

well as that of the 4 mortalities, has begun (see figures) and formal analysis will begin in spring of 2017. The remaining five GPS-radio collars are scheduled to deploy in spring of 2017.



PETTY CREEK

Capture Update

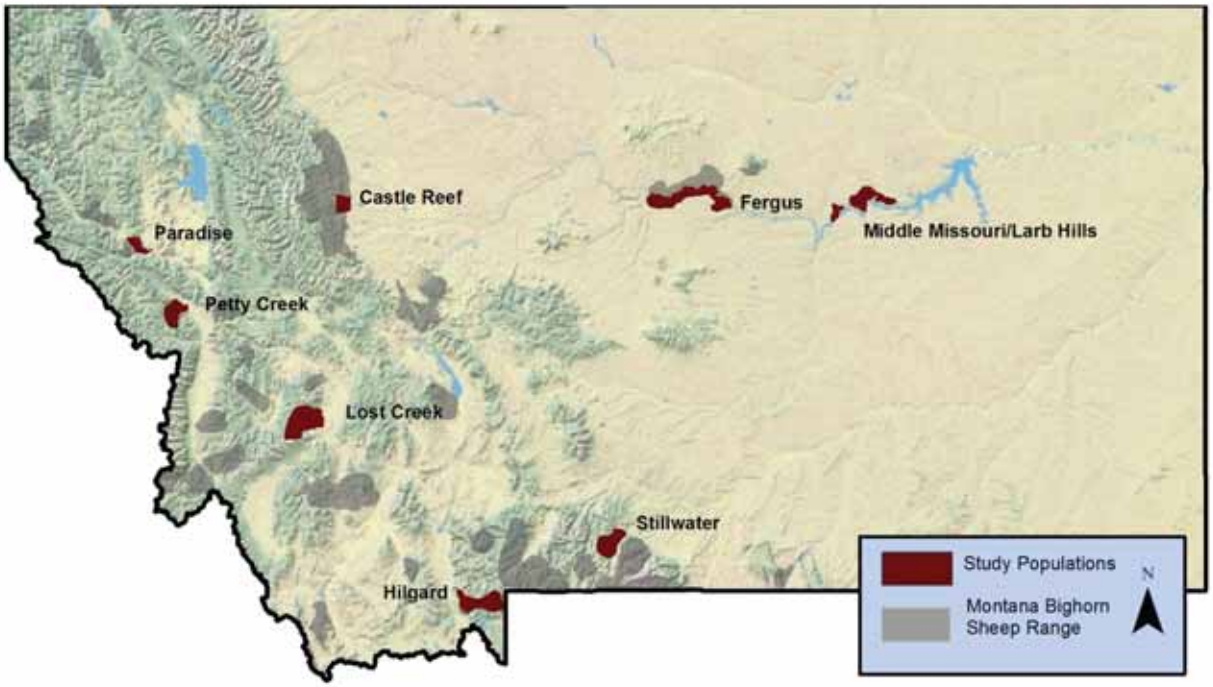
Attempts to attract animals at Petty Creek to drop-net sites in winter 2014/2015 were unsuccessful. Accordingly, a helicopter contract was solicited and chemical immobilization was planned for winter 2015/2016 in order to supplement drop-netting efforts. Seventeen adult females were captured and sampled using helicopter net-gunning on February 1st and 2nd 2016, and all 15 pairs of GPS/VHF collars were deployed. The next capture/sampling effort for this population is scheduled to take place winter of 2017.

Survival Update

As of this writing, all 15 collared animals are alive.

GPS Data

In February 2015, 15 adult females were collared with paired GPS/VHF radio-collars. The GPS collars are programmed to record a location every 4 hours and are scheduled to deploy off the animal during the spring/summer of 2017.



Lower Rock Creek, November 2016