SPRING 2020

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Click on the beaver to watch a video about BDA efforts in the Owyhees.

PHOTO: Public Domain

Beaver Mimicry - A Tale of Stream Restoration

by Casey Pozzanghera*, Wildlife Diversity Biologist - Southwest Region, and Chris Yarbrough*, Habitat Biologist - Southwest Region, Idaho Department of Fish and Game

Dressed in chest waders, leather gloves, and hard hats, a group of eager wildlife biologists, land managers, consultants, land owners, and volunteers worked feverishly along Josephine Creek in central Owyhee County to try and beat the sweltering July heat. Some hauled sand, gravel, and mud by the bucket loads or gathered willow branches and juniper limbs. Others took turns driving wooden posts into the streambed with the help of a hydraulic post pounder, a machine requiring at least three individuals to maneuver safely within the uneven terrain of the sage-steppe ecosystem. As the morning wore on, one member of the team had an interesting recollection:

"I spent many hours early on in my career tearing beaver dams out of places like this... It's strange that all these years later I find myself building beaver dams back up!"

This same sentiment is undoubtedly shared by many that have been in the ecology field for the duration of their careers. Beavers have long been known as ecosystem engineers. They have an incredible ability to physically alter their landscape like few other wildlife species in the world. In doing so, they have a direct impact on other species, including humans. In human dominated areas, these alterations to the landscape can be seen as damaging and disruptive. For that reason, and in large part due to their valuable fur pelts, the North American beaver has experienced a dramatic human-driven range decline. In conjunction with a decline in beavers, much of the western U.S. has seen changes in land use practices, increases in non-native invasive species, shifts in fire regimes, drought and a growing human population, all of which can have major impacts on our riparian systems. Incised stream channels, narrowing stream floodplains, a loss of diversity within the vegetation community, poor water retention, and a lowering of the water table are all problems associated with degraded riparian areas. In addition, this degradation creates severe habitat fragmentation which directly affects many fish and wildlife populations, and can also limit the resources available for farmers and ranchers to irrigate fields and pastures and provide good water and healthy forage for their livestock.

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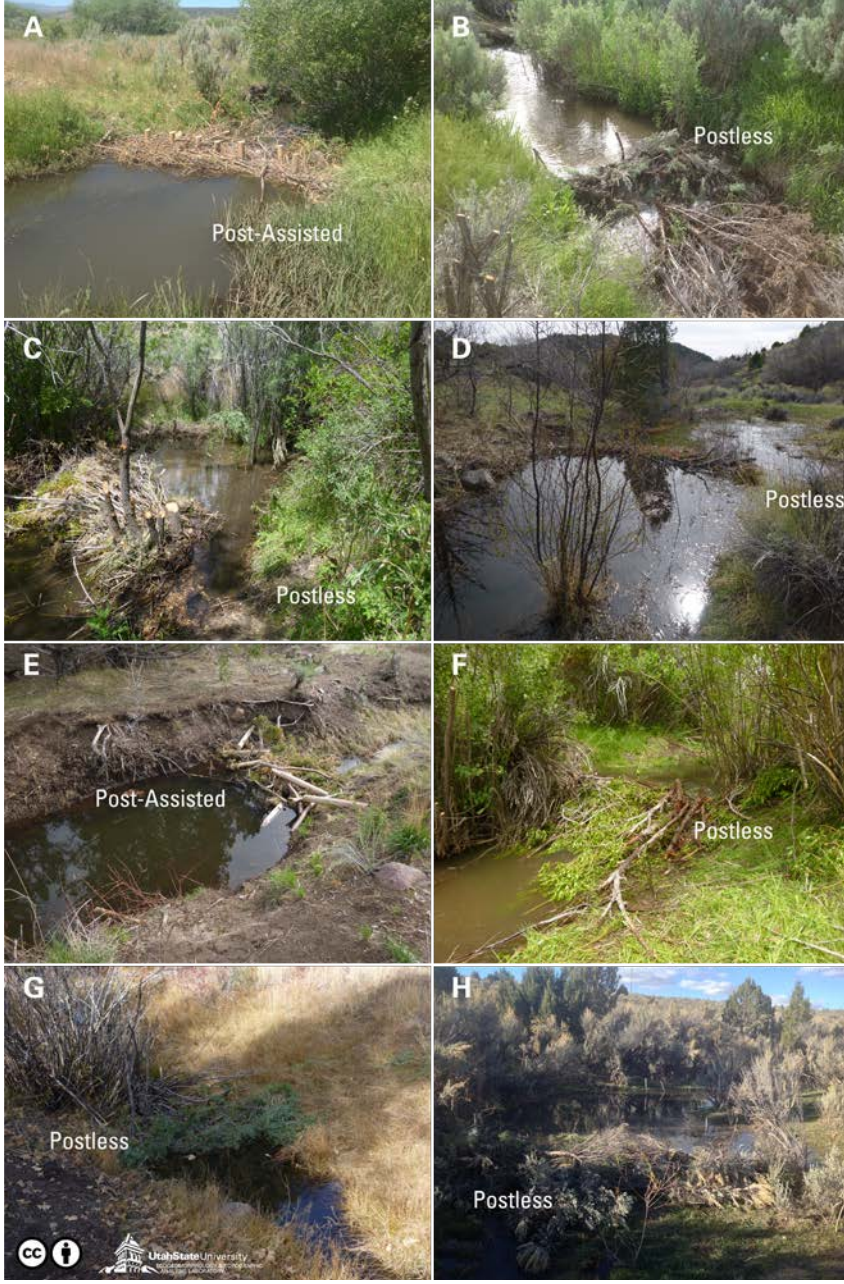
Repairing these imperiled systems is no easy task. Highly sophisticated stream restoration work, requiring large earth moving machinery and skilled hydrological engineers, can be effective in many areas at bringing a stream back to a desired ecological state. However, these processes come at a high cost per mile and are often not feasible in remote locations. For these reasons, biologists and managers have begun looking for a more economical and efficient means of restoring these landscapes. Enter the beaver.

The presence of beavers in a system often creates complexity within a stream channel that produces ponding of water, an expanded and multi-channeled floodplain, wetted meadows, a raised water table, and a greater diversity of vegetation. These changes may also result in increased water retention in intermittent streams, lengthening the time that water is available for wildlife and livestock during the peak dry seasons. Given their tremendous ability to shape an ecosystem, it is no wonder that the decline in beaver numbers and the contraction of their once vast species range in North America is further contributing to the degradation of riparian systems. In areas where beavers are no longer present and poor riparian health has become the norm, bringing this animal's services back to do the restoration work for us may be the best possible solution to improving degraded ecosystems. On Josephine Creek, and in many other locations across the west, the hard-working crew was looking to do just that.

Over the course of several weeks, 108 in-stream structures were constructed within Josephine and the adjacent Rose Creek drainages. These structures are designed to mimic the function of beavers in an ecosystem. Beaver Dam Analogs (BDAs), as they are commonly referred, are relatively inexpensive structures that utilize natural materials and wooden posts to create complexity within a stream system and add many of the benefits of beavers before the animal itself is ever involved. BDAs are typically used in combination with Post Assisted Log Structures (PALs). PALs consist of woody debris pinned in with wooden posts, and are designed to influence stream flows in a way that kick starts desirable ecological processes. The goals for this particular project were to improve habitat for greater sage grouse, redband trout, and Columbia spotted frogs, raise the water table and widen the floodplain, and hold water in the system for longer into the summer. These are meant to be temporary structures, a first step in restoration, and one that may require follow up work and adaptive strategies. Over time, the hope with many of these projects is that beaver will be re-introduced or will naturally recolonize the project areas and the system will be returned to a fully self-sustaining state.

For this work to be successful, the education component is equally as important as the implementation. It is clear from the stories of veteran ecologists that we have started to turn a corner in how we manage delicate riparian systems, but it is critical that we continue to promote beavers as a tremendous resource and not a potential problem. Being mindful of potential conflicts and willingness to work collaboratively with a variety of stakeholders is paramount. If done strategically and respectfully, bringing back the services of North America's largest rodent might very well be the best thing we can do to improve stream ecosystems across the west.



Above: An example of multiple in-stream structures built to mimic the building behavior of beavers in order to add complexity to stream systems and restore a healthy riparian area.

Below: The three BDAs in this complex are building up the streambed as well as forcing water into a neighboring side channel.

PHOTS: IDFG

Above: A crew of biologists and volunteers work to construct a beaver dam analog (BDA) by using locally sourced materials woven between wooden posts sunk into the creek bottom. The BDA will work to slow down and spread out water, creating a healthier riparian area and improving habitat for wildlife and fish species.

Conservation Corner

A Golden Eagle's Amazing Journey From Alaska's Arctic to Idaho's Salmon River

by Joel Sauder*, Wildlife Diversity Biologist - Clearwater Region, Idaho Department of Fish and Game

Many wildlife species need large landscapes to survive and thrive. Elk often summer at higher elevations and move 10-50 miles to find winter ranges at lower elevations. Songbirds that summer in Idaho can winter in the Southwest US, Mexico, or even further abroad. Wildlife make these movements without compass or GPS, just using the instincts they were born with. While we know these facts in our heads, we get jaded to them over time, because that is just the nature of our busy lives. But every once in while we get an opportunity to see them again for the first time, and we should be amazed.

Late this winter I got a call from Steve Lewis, a USFWS researcher based in Alaska. A transmitter he had deployed on a golden eagle had stopped moving outside of Grangeville and he was hoping I could recover it for him. Besides salvaging a valuable piece of equipment, knowing if the bird perished or if the transmitter was shed was important information. The most recent location transmitted showed it was on private land out towards Pine Bar. After making contact with the land owner, who not only gave permission to recover the transmitter but was excited to assist in the recovery effort, we ATV'ed as close as we could to the location and started hiking. In the end, it turned out to be a pretty straightforward affair. The transmitter was right at the last reported location, still attached to the golden eagle, which looked like it just fell out of the sky, with no clear cause of death.

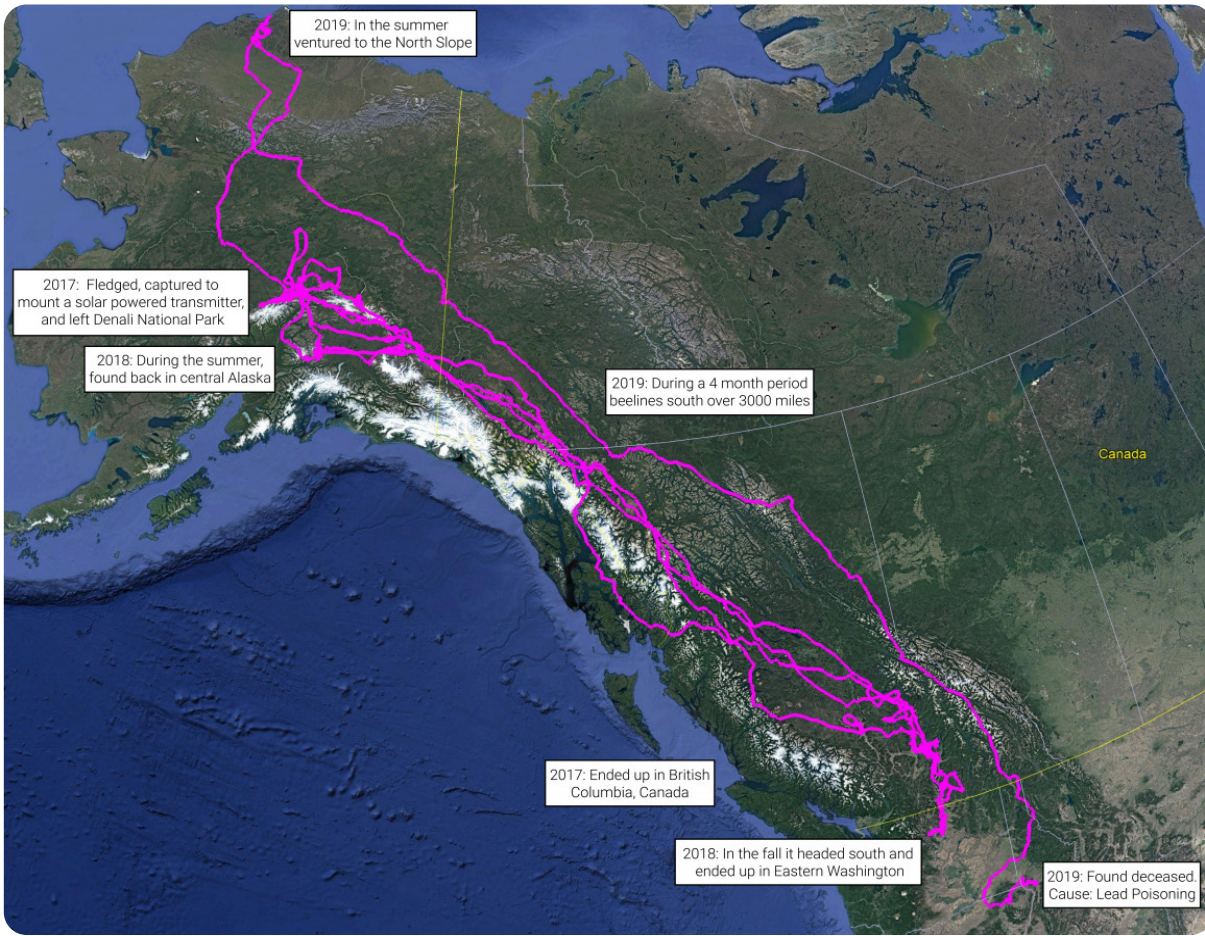
But this is where the story gets interesting. Back in the office, Steve sent me the data that had come from this bird. It turns out it fledged in 2017 in Denali National Park, where it had been caught by Steve and a solar powered transmitter mounted on its back via a lightweight harness. Then over two and a half years, the transmitter logged over 61,000 locations! In 2017 it left Denali National Park and wandered south, eventually ending up in southeast British Columbia. The summer of 2018 found it back in central Alaska, but come fall it made its way south again, this time ending up in Eastern Washington. In the summer of 2019, it ventured even further north, living on the North Slope, getting right to the edge of the Arctic Ocean. Then, over roughly a 4 month period, the eagle beelines south over 3000 miles, ending up in Idaho!

We ended up sending the carcass to a lab for testing in hopes of learning the cause of death. Turns on the most likely cause was lead poisoning. There is no way to know when and where the eagle got the lead, but bullet fragments left in gut piles from harvested wildlife are a common source. This is a sobering reminder that our local actions can have regional or global impacts.

Over its short 2.5 year life (eagles in the wild are known to live 15+ years), the bird flew in excess of 9,000 miles, spread across four states and two provinces. It is easy to assume the wildlife we see around us is just the local red-tailed hawk or a "town" deer. We have golden eagles that breed in Idaho, and for anyone that saw that bird it would be easy to assume it was a local bird. However, those assumptions are not always accurate. Wildlife often has needs that span scales we forget to appreciate. And if we get a chance to step back and recognize this anew it is well worth it.

For further information about this eagle or the golden eagle research occurring in Alaska, please contact Steve Lewis at: steve_b_lewis@fws.gov

Below: Seasonal movements from 2017 - 2019.



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Alpine Surveys in Idaho's Most Rugged Terrain
On the Search for the Elusive Black Rosy-finch

by Tempe Regan*, Wildlife Diversity Biologist - Salmon Region,
Idaho Department of Fish and Game

Since the age of seven, when I spent time catching frogs and salamanders, waiting for and recording the arrival of geese in the spring (including naming each pair "Duke and Duchess, King and Queen, etc.—you get the point), and anxiously awaiting the day I could go hunting with my mom, I knew I wanted to work with animals. It became clear to me in high school that the exact job was a "wildlife biologist". Once that seed was planted, I never wavered in my pursuit of the degrees and appropriate jobs I needed to gain valuable experience. One day in 2018 while hunting on a snow-covered mountain in my home state of Montana, I found myself emotionally accepting my "dream job" as a nongame or Diversity Biologist with Idaho Fish and Game, with a start date the following January, 2019.

Fast forward through six whirlwind months, and I found myself leading a mule up a trail to Bear Valley Lakes, in the Lemhi Mountains while trying to avoid being stepped on. It was the first day of a dream project to begin surveying for some of Idaho's alpine-obligate (species that rely upon and cannot survive apart from alpine habitat) at-risk species. After five miles, I was thrilled to see the lake because that early in the season, my lungs and legs were screaming in protest, not being accustomed to hiking uphill over 8000 feet of elevation!

Our goals were to document breeding locations of Black Rosy-finches as well as Hoary Marmots, American Pika, invertebrates like the Alpine Tiger Beetle, Beartooth Copper Butterfly, and bumblebees, amphibians, as well as Mountain Goats and Bighorn Sheep.

One of Idaho's unique wildlife species, the Black Rosy-finch, prompted me to conceive this project. There are three species of rosy-finch including Black, Gray-crowned and Brown-capped Rosy-finches. Idaho is the core breeding range of Black Rosy-finches and a sub-set of the population winters here as well. Gray-crowned Rosy-finches breed along the west coast all the way into Alaska and the Aleutian Islands and migrate down to winter in Idaho. We only have sporadic evidence that Gray-crowned Rosy-finches may breed occasionally in Idaho, especially in the Panhandle.

Top: Male Black Rosy-finch **Bottom:** Alpine Lake, in the northern end of the Sawtooths. This is a view from the top of the survey within the basin above the lake.

These birds, as a group, are some of North America's highest elevational breeding songbirds, and as far as we know, they have no upper limit in elevational distribution. This unique attribute creates difficulty in accessing their breeding areas and combined with the short alpine "summer" season, makes them extremely difficult to study. We lack basic knowledge of their life history - things like timing of breeding and fledging of young, migration, distribution and behavioral traits. However, there are a few things we do know. Black Rosy-finches are one of a handful of birds who breed in true alpine settings, and maybe one of the only birds who strictly build nests in the talus fields and cliffs of the alpine basins and cirques. These nesting sites are far removed from food sources and Black Rosy-finches must travel farther to collect food for their young than other breeding birds. Because of this, they have a unique

adaptation allowing them to collect more food and carry it over greater distances; something called a gular pouch. The gular pouch is a unique feature among birds shared with only a few other species. It consists of two sacs located below the tongue. There are small openings through which the birds can maneuver food into these storage containers. The gular sacs were first discovered in the 1940s and were found to be packed full of insects. When the sacs are full, the birds actually appear to have a bulging throat and the feathers in that area may look ruffled up. The other interesting piece of Black Rosy-finch biology that we know is that rather than defending a fixed breeding territory, like most other male birds, Black Rosy-finch males actually defend their female and the space around her which is constantly moving.

As mentioned above, accessing sites to study Black Rosy-finches is difficult and contributes to our lack of information. Also, most of the seminal studies on rosy-finches occurred in the 1940s–1960s. When we consider alpine species as a whole guild, some things come to mind. The most pressing being, these are all wildlife species that inhabit some of the most rugged and extreme habitats on the planet. However, because they already live at the tops of the tallest mountains, what will happen to these species if the climate continues to change, suitable habitat continues to become more restricted, and they have nowhere to retreat to? What happens if lower elevational species start to encroach upon and compete for resources in the core range of alpine species? Perhaps adaptions to thrive in the cold temperatures of harsh alpine environs will change as temperatures warm but will our alpine specialists be able to adapt quickly enough? Continued research and monitoring is important so biologists can begin comparing current distributions, behavior and population numbers to historical data. This would begin to illustrate how these species, Black Rosy-finches included, are responding and adapting to a warming climate, or if they are at all. Gathering this baseline data will allow us to make informed conservation and management decisions for these unique wildlife species.

After surviving the horse-pack and hike into our first survey, Melanie, my field-technician, and I got up before sunrise in sub-freezing temperatures, on the fifth of July, shoved granola bars into our mouths and packs for a little early and little-later on breakfasts, splashed our way across the outlet of the lake and began our survey. As I attempted to traverse sliding scree of various sizes and jammed my boots into frozen snowpack to create footholds, small doubts and uncertainties about whether we were doing the survey correctly, would we even see anything, and what had I forgotten began to burgeon in the back of my mind.

I was distracted from my doubts by the unmistakable alarm-call, “meeeemp”, of an American Pika. Little did I know but we would document pika on almost every single one of our alpine surveys in the coming months. We recorded the data, taking down time, the compass bearing and the distance to the animal as well as other habitat metrics. After we finished the 20 minute observation period we slowly rock-crawled to

Top: Senior Conservation Officer Chad Wippermann leading Tank and Oakley across the slippery wet rocks of the infamous Beaverslide in the aptly named Bighorn Crags.

Middle: Hot and dusty horse packing in the Bighorn Crags.

Bottom: Tempe Regan, Wildlife Diversity Biologist, traversing a snow field at 10,000 ft. in the Lost River Range.

PHOTOS: Tempe Regan, IDFG

Top: Melanie, field technician, on the Bear Valley Lakes survey looking for Black Rosy-finches.

Middle Left: Surveying with a view.

Middle Right: Melanie and Tempe capturing and processing insects in the Bighorn Crags.

Bottom: Looking back on the Merriam Lake basin after completing the survey.

PHOTOS: Tempe Regan, IDFG

our next survey point, delicately picking our way across small-sized, shifting scree slopes. As we neared the near-vertical cliffs behind the lake, we still had not seen feather nor fluff of a Black Rosy-finch. I was beginning to think that my doubts had been right all along - we weren't going to see many of these birds this summer.

We sat at our fourth observation point, and stared, and looked and listened - almost afraid to breathe in case we missed the harsh call of a finch. Suddenly, I thought I heard it, "there!" I said and pointed in a random direction above our heads that I thought I heard the call from. "Mel, I think I just heard one, did you?!" I said. She looked at me like I was crazy. This made me feel crazy. I probably was crazy. So we moved 150 meters to the next point which led us to begin climbing cliffs, scree and snow pack up into the basin behind the lake. As we settled into our fifth observation point, we were watching Townsend's Solitaires, Cassin's Finches, Violet-green Swallows and Rock Wrens flitting around the cliffs, when I heard the "unmistakable" raspy "chert" call of a Black Rosy-finch. Spluttering, I almost threw my binoculars and strangled myself with my rangefinder lanyard as I rushed to point out the bird to Melanie as it flew over us, "There! It just landed on that rock, just below the crevice...see, there, it's moving, feeding! It's a female!" As I attempted to explain the bird's location on the rocks to Melanie, I kept my eye on the bird until I heard an excited squeal from her "Oh I see it! I see it!" A hushed moment of concentration followed as we tracked the bird's hops and feeding stops across the cliff until it flew away.

A feeling of wonder descended on us. I looked at Mel and I could feel tears welling in my eyes as I said shakily, "Holy smokes, Mel, we found 'em!". It was an absolutely unbelievable feeling and a moment of my career I will remember forever. It was a feeling that comes from conceiving of an idea prior to even having the diversity biologist job, to planning the project in the land of "theory" behind a computer screen, to actually being in the field observing a bird species for, not only the first time in my life, but also in satisfaction of all the effort, uncertainty and stress that went into the background work. My insides were jumping with adrenalin and joy as I took in the gorgeous surroundings of our survey site, the fact that this was work, and that we had just seen a Black Rosy-finch!

We cliff-hopped to our next point and saw no finches. As we ended the survey, we decided to hike around the backside of the lake to camp. It is an old personal tradition of mine, and Mel's also, to always hike around the lake, and I am sure this is not unique to us. There is some call to humans it seems, no matter how difficult, circling the lake is the meaning of high-mountain hiking success. As we balanced on boulders at the lake's edge, we both heard it at the same time, "chert, chert", and snapped our heads to the left. "Rosy finch! It's a male!" we yelled in unison. I have to tell you, this bird was absolutely stunning. At just 15 feet away, his gray crown gleamed silvery-metallic in the high-elevation air and the pink on his forewing and

pink-scalloping along the edges of his body feathers was such a contrast with the sooty black of his other feathers. Apparently unconcerned at my hurried and fumbled attempt to yank out my camera, the bird hopped along foraging in the crevices of the boulder. I heard my camera lense-cover click off the rock below me as it fell out of my hand. I attempted to zoom on the bird but just like that, he flitted to the next rock. After several failed attempts to get a photo, the bird finally flew off but not before we had about 5 glorious minutes of up-close observation. After I scrambled around in the rocks until I found my camera lense-cover, we proceeded hiking back to camp. We felt like we were flying, still amazed that we had seen Black Rosy-finches during the breeding season, something not many can say.

I'm happy to report that we began to get the hang of our surveys after that first one and became much more confident in how to conduct them. At the end of the summer, after spending 48 days conducting alpine surveys across seven different mountain ranges in the Salmon Region, Melanie and I, with help from a few other folks, had amassed a total of 134 miles hiking, and 55 miles on horseback, to access surveys. We had hiked another 48 miles on actual survey routes alone. We were able to conduct 25 surveys which led to a grand total of 128 new detections and locations of Black Rosy-finches during the breeding season. We also observed every other target species except the Alpine Tiger Beetle and the Beartooth Copper Butterfly.

It was a dream summer come true, spent doing things for work that most people can't wait to do on their weekends. Accessing some surveys would not have been possible without the help of Dave Silcock, Salmon Regional Conservation Officer and Chad Wippermann, a Senior Conservation Officer in Salmon, who brought their horse-packing and riding skills, and provided food and top-notch camp cooking accommodations for Melanie and I. Now-retired Regional Wildlife Manager Greg Painter had the time of his life surviving an absolute death-march across a hell-hole of an avalanche slide to get into his alpine survey, and Ian Montgomery, one of Salmon's wildlife technicians, volunteered for a survey in the Lost River Range, where he was stoked to see one of his favorite wildlife species, a huge Bighorn Sheep ram. Two of my technicians from my former job with the Intermountain Bird Observatory, Erik Schoenborn and Leah Rudge, also volunteered to survey in the Sawtooth Mountains and they were the only team to document wolverine tracks at a survey location.

As I sit at my desk, I can't help but look forward with anticipation to the challenges, triumphs, and new discoveries that the 2020 alpine survey season will bring. One thing I hope is that more Idaho Fish and Game employees and volunteers will get to discover the joy of alpine surveys while collecting valuable data on Idaho's suite of alpine Species of Greatest Conservation Need.

Above: Tempe's camp site at Merriam Lake in the Lost River Range the night before the survey.

PHOTO: Tempe Regan, IDFG

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PHOTO: FlickrCC by Brant Olsen

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