



Wildlife

Boulder County

2023 Annual Report



STAFF

Mac Kobza

Senior Wildlife
Biologist

Jon DeCoste

Wildlife Biologist

Michelle Durant

Wildlife Biologist

Sarah Heerhartz

Wildlife Biologist

Dave Hoerath

Wildlife Biologist

Susan Spaulding

Environmental
Resources Specialist



Our Mission

County wildlife biologists work toward the preservation and restoration of wildlife species and habitat on Boulder County open space. We rise to the challenge of managing public lands increasingly impacted by effects of development, fragmentation, resource extraction, climate change and recreation.

We strive to utilize the best available research to inform our management recommendations in a consistent, science-based manner.

Strategic Planning

Desired Future Condition Statement

Diverse and representative habitats and landscape connectivity are preserved, conserved, and enhanced to ensure biological diversity and ecological health at a regional scale. Natural processes, including disturbance regimes, are embraced to ensure complete ecosystem function.

Overarching Goals for our Program

1. Preserve wildlife habitat to ensure protection from anthropogenic impacts in order to maintain regional native biodiversity.
2. Conserve wildlife habitat to ensure native biodiversity is maintained in a multiple-use focused landscape while allowing for sustainable use of natural resources.
3. Restore degraded wildlife habitats to bolster ecosystem function, connectivity, and resilience.
4. Promote and manage for functional wildlife movement corridors to facilitate migration and dispersal at multiple scales.
5. Allow or re-create natural disturbance processes to ensure ecosystem function and resilience.

Resilience and Connectivity: Monitoring and Adaptive Management of St Vrain Creek Fish Passage Projects. By Sarah Heerhartz, Ph.D.

In 2013, Boulder County experienced historic and catastrophic flooding that damaged property and infrastructure and reshaped the land and riverscape of the St Vrain Creek corridor. Rebuilding from the flood presented an opportunity to repair infrastructure and restore the stream and ditch connections in ways that improved resilience to future floods and reconnected habitat for native transition zone fishes.

Boulder County Parks and Open Space (BCPOS) collaborated with multiple partners including ditch owners, fish passage experts, biologists, nonprofit organizations, state and federal agencies, and stream engineers to complete two post-flood restoration projects in 2021, three miles apart on St Vrain Creek. Both projects replaced flood-damaged channel-spanning diversion dams with fish-passable structures that maintained the delivery of decreed water rights at the proper time. The Longmont Supply Passage project installed riffles and pools on an existing side channel with a robust bypass structure, whereas the Niwot project utilized a rock ramp design.



Looking downstream at the Longmont Supply Passage main river channel on the right. A piece of naturally recruited large wood sits on the floodplain between the main channel and the ditch supply channel.

After construction, BCPOS contracted with Otak to develop a monitoring and adaptive management program to collect data on specific parameters to confirm that the two projects are functioning as designed for water delivery and stream connectivity, including sediment transport, floodplain reconnection, and fish passage. This effort also identified thresholds where management action may be needed to ensure the long-term success of the projects. Standardized monitoring provides an opportunity to learn from the project designs and their observed performance and connect the knowledge gained to engineers and practitioners designing future projects with similar goals. In addition to the standardized monitoring protocols, a two-year telemetry study of fish passage was completed at the Niwot Passage project, the first rock ramp design in the Front Range to have multiple years of fish passage monitoring, with results expected this spring.



Installing a depth and temperature sensor at the Niwot Passage Project. A person in waders is standing in the river preparing to drop a depth sensor into its PVC housing, mounted on a t-post installed vertically in the stream bed. Another person in waders sits on the bank taking notes.

Lessons learned from the design, implementation, and monitoring of the two projects have already informed planning efforts for future connectivity projects in the transition zone of St Vrain Creek and the Passage Playbook (<https://svlhwcd.org/passage-playbook/>) for multi-benefit projects that incorporate ditch diversions and fish passage. In 2023, the St Vrain Adaptive Management Passage Program was recognized with a Boulder County Pinnacle Award for Stewardship and a National Association of Counties (NACo) Achievement Award. Many BCPOS staff have been instrumental in completing the two passage projects and developing the monitoring and adaptive management program. However, Sharla Benjamin deserves special recognition as the leader in weaving together the team and the vision for ensuring the projects continue to meet water delivery and ecosystem goals. We are excited to share our monitoring results in the future, adding to the story of connecting diverse stakeholders, native fish transition zones, and the state of science for two successful fish passage projects in Boulder County.

Bat Troughs at Heil Valley Ranch - Geer Canyon. By Dave Hoerath and Susan Spaulding.

Heil Valley Ranch is home to several species of bats that utilize the variety of habitat types within the property. Bats are notoriously understudied and not well understood because of their nocturnal nature, but we are very fortunate to have a clear understanding of bats at Heil, because of our long-term collaborative research partnership with Dr. Rick Adams, renowned bat expert.



Fig 1. Youth Corp members working to dig out the bat water "trough."

After the October 2020 fire at Heil (Cal-Wood Fire), we were concerned about how the bat populations would be affected. One measure we knew would be helpful, based on known locations of bat maternity colonies

(because of Dr. Adams' research),

was the installation of drinking infrastructure tailored specifically for bat use. This measure was also implemented because of expected impacts to bats with current and impending climate change effects (less water availability overall, especially during pup-rearing months for mother bats).



Fig. 2. An acoustic monitor is placed near the bat trough to record bat calling sounds, allowing researchers to identify species and activity levels.

Most bat species drink on the wing while flying, so they need long, linear, unobstructed and still-water features for drinking. Being in close proximity to suitable drinking water is even more imperative for mother bats that need to replenish themselves immediately upon night emergence from their maternity colonies after spending the daytime hours nursing their young.

Creation of the bat watering troughs was a long-term goal which we accomplished with the outstanding help of our Boulder County Youth Corps. After their successful construction, Dr. Adams monitored bat response and use with an acoustic monitoring device. The bat troughs are a resounding success and are supporting at least 10 species of

bats, including the rare fringed myotis (*Myotis thysanodes*).

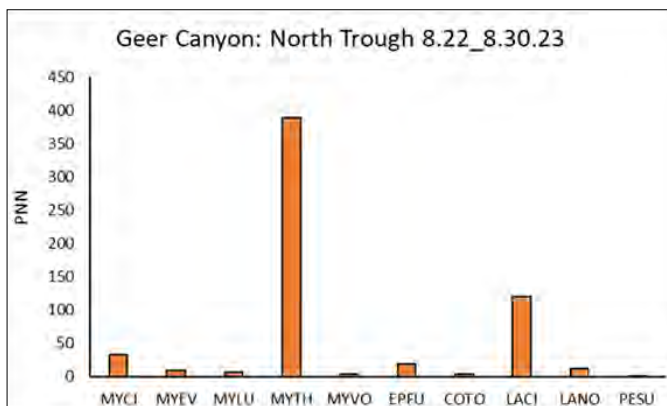


Fig. 3. A bar chart showing the number of "passes per night (PNN)." which is a measure of bat activity, across 10 species found at the bat trough at Heil Valley Ranch. MYCI (small-footed little bat), MYEV (long-eared little bat), MYLU (little brown bat), MYTH (fringed little bat), MYVO (long-legged little bat), EPFU (big brown bat), COTO (Townsend's big-eared bat), LACI (hoary bat), LANO (silver-haired bat), and PESU (tricolored bat).

2022-23 Colorado Parks and Wildlife (CPW) statewide Human-Bear Conflict Reduction Grant. By Michelle Durant.



Bear-resistant trash carts were for foothills communities, funded by a grant from Colorado Parks and Wildlife.

Boulder County Parks and Open Space (BCPOS) applied for the 2022-23 Colorado Parks and Wildlife (CPW) statewide Human-Bear Conflict Reduction Grant and was one of eleven entities across the state granted funding to pursue projects.

The goal for this CPW grant is to reduce the access to, and availability of, attractants (e.g., garbage, bird feeders, apiaries, etc.) or to develop methods to reduce conflict between bears and residents in urban and

rural communities. In turn, communities were encouraged to work in tandem with project leads to accomplish this goal. Boulder County was lead applicant for the grant and partnered with the Towns of Jamestown and Lyons to address conflicts with bears. The two communities were targeted because they have grassroots community support, established communication channels with their residents and are located in areas with high bear activity and



Volunteers help assemble trash carts before the distribution event

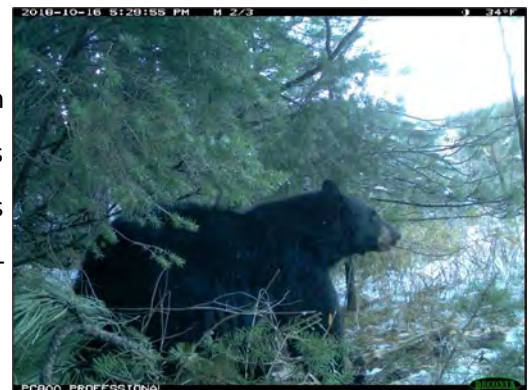


Bear-resistant trash cans lined up for the community event in Jamestown.

significant adjacent public land, including Open Space.

BCPOS's proposal requested \$110,500 in state funding to purchase bear resistant trash cans to offer community residents at a significantly subsidized cost, electric-fencing kits residents can use to deter bears from causing property damage, and additional materials for public outreach. The funding also covered a small portion of staff funding to support the management and coordination of the multiple phases of the project.

To date, the project has distributed more than 180 bear-resistant trash cans to foothills residents and distributed game cameras to participants who helped document bears in their neighborhoods. This project is nearing completion, but BCPOS has been awarded a similar grant in 2023-24 and will use this project model to serve additional communities.



Black bear in Jamestown's community park.

Connecting the Dots for Conservation - A new Boulder County position has been created with the objective to connect landscape-level conservation efforts across multiple ownerships. By Susan Spaulding.

Boulder County has invested considerable forethought, effort, and progressive principles into the development of the Environmental Resources Element (ERE) of the [Boulder County Comprehensive Plan](#). The tenets of the ERE focus on the preservation and enhancement of the unique and distinctive natural features and ecosystems within the county.

The wildlife group at BCPOS has always been focused on landscape-level conservation for wildlife, but their main objectives are to provide support for Open Space management processes. However, Boulder County has been missing the ability to coordinate the tenets and aspirations outlined in the ERE across jurisdictions and land ownership. As such, the BCPOS wildlife group successfully advocated for, and secured funding for, a full-time, Term position to do so.

This position has been filled by Susan Spaulding, who is busy developing the new program of work as the Environmental Resources Specialist. She has been building strong collaborative relationships with private landowners, land management agencies and the public, both within Boulder County and at a larger, regional scale. Her work so far has included assessment, monitoring, and advocacy of currently designated Critical Wildlife Habitats, as well as Species Conservation and Recovery plans.

‘We acknowledge our responsibility to ensure that naturally occurring ecosystems and their native species populations continue to exist and flourish in Boulder County...’

Other related projects that Susan is overseeing include Preble’s Meadow Jumping Mouse Conservation Planning, with many partners, and coordination of Wildlife Crossing along US36 between Lyons and Boulder, involving several



White-tailed ptarmigan overseeing CWH#29- Chittenden Meadows

stakeholders. Additionally, Susan is working with the Towns of Lyons, Jamestown, Nederland, and Niwot to implement Bear Safe measures via a Colorado Parks and Wildlife Grant. Further, she is working on implementation of beaver-related restoration techniques in collaboration with the Boulder Watershed Coalition. In summary, it has become very evident that the position created to “fill the missing link” toward implementation of the ERE’s objectives is timely and vital, especially in light of the challenges Boulder County’s wildlife is facing because of development and increasing human population.

Fishing Amenities at Walden Ponds and Carolyn Holmberg Preserve. By Dave Hoerath

We were able to support our last two areas without fishing decks in 2023! Bass Pond at the Walden Ponds Wildlife Habitat is the best fishery on the property – and up until last year had no developed areas to support and aid fishing. Previous grants had built nice sandstone decks at the Wally Toevs Pond and Duck Pond. Another effort had constructed a steppingstone walkway through the slough between the two halves of Bass Pond. But this effort finally built areas to support fishing at Bass Pond.

We chose areas that were already in use by anglers and improved them. We continued our stone deck style to keep [anglers](#) level and dry with 5 new pads at Bass Pond. We were also able to take advantage of low water conditions to redistribute some structure in the bottom of the lake.



An excavator building the southeast fishing deck.



The completed southeast deck with public anglers enjoying some fishing.

This project also built new decks along the southern shore of Stearns Lake. Once again, we selected sites that were already being fished and improved the footing and shoreline. Three new decks were constructed in the fall, as we waited for the bald eagle nest to progress.



The West deck at Stearns Lake prior to building the platforms.



The West fish decks of Stearns Lake after construction was completed.

Northern Leopard Frog Headstarting & Translocation Project. By Mac Kobza



A pan full of leopard frog eggs is collected from a natural pond.

Wildlife staff have been working to restore the northern leopard frog to habitats on open space, in partnership with the St. Vrain Valley School District Innovation Center, Colorado Parks and Wildlife, Ocean First Institute, City of Boulder Open Space & Mountain Parks, the Watershed Center, U.S. Fish and Wildlife Service and the Denver Zoo. Native to Colorado, the northern leopard frog is a county Species of Special Concern, and CPW Tier 1 Species of Greatest Need. This species is facing a multitude of threats across the Front Range of Colorado, such as disease (chytrid fungus), predators (bullfrogs), and natural habitat loss (wetlands). It has experienced dramatic declines across BCPOS open space properties.

In 2023, wildlife staff helped to establish [an aquatic nursery for the frogs at the IC Center](#) and obtained eggs from CPW and OSMP lands. Data Science students from SVVSD worked closely with BCPOS and partners to develop standard procedures for raising these frogs from eggs to tadpoles. This involved daily water quality testing, water changes, tank cleaning and feedings. Students

were also out in the field monitoring water quality, land cover observations, and taking acoustic recordings at various locations along the St. Vrain River.



The frog eggs were placed in aquariums and the team raised them to tadpoles.



Tadpoles from the aquariums were released into the wild, and one of them grew into this young leopard frog at our release site.

Tadpoles were released in June of 2023 at [TWC's Andreas Pond on Lefthand Creek](#). Subsequent monitoring found juvenile leopard frogs, even after the ponds flooded. A new population of frogs is now established in this area and we hope they "hop to it" and expand their range!

The students won several cash awards for the project in 2023, including a [Philippe Cousteau's EarthEcho International challenge](#) ("Fungi Frogs" team) and [Colorado Earthforce RISE Challenge](#) related to STEM education (see the great videos the teams created!). Local newspapers and media outlets have published articles about this project ([1](#), [2](#)). BCPOS and staff have been recognized in these awards and the school District has been very appreciative of the opportunities our department has provided.



Students, their teachers and mentors won many awards for their involvements with this project.

Wildlife staff are again coordinating a leopard frog headstarting project in 2024. Our strong partnerships and success have contributed to the establishment of a coordinated statewide effort to recover this species back into its historic range. We look forward to empowering our young conservationists to again lead the way!

Uncrewed Aircraft Systems (UAS) Elk Monitoring Project. By Jon DeCoste



Photo 1: Mike Wussow using an UAS to count elk in adjacent field.

In 2023, the elk management team partnered with a graduate student enrolled in the University of North Dakota's Department of Aviation to assist in elk population counts. The student, Mike Wussow, proposed a project evaluating the use of uncrewed aircraft systems (UAS) as a tool for improving elk population counts of the Rabbit Mountain and Red Hill sub-herds. Accurate counts of these herds are especially important as we enter the last year of approved elk management hunts at both Rabbit Mountain and Red Hill. These hunts were necessitated by ballooning elk numbers in these areas, causing damage to local resources, private property, and crops, and creating safety issues for motorists.

To assess the success of the program, the elk management team created objective herd sizes for each study area—30-70 elk for Rabbit Mountain (30 year-round individuals with up to 70 when including winter migrants), and 25 resident elk for Red Hill. Several times throughout the summer and winter months, Colorado Parks & Wildlife and BCPOS staff conduct ground counts of these herds using binoculars and spotting scopes. This method has limitations on achieving accurate counts due to factors such as local topography, distance from observed elk, time of day, and vegetation cover. By doing these ground counts paired with using a drone, we're hoping to improve the accuracy of these counts in order to make more informed management decisions regarding these two elk herds.

Starting in June, we began test flights on Red Hill to see if this method for counting elk would be a viable way of obtaining good count data. The initial results of these flights gave us confidence that we could successfully count elk using a drone without causing undo stress or disturbance to the elk and other wildlife in the area, particularly avifauna.

Since the initial test flights over the summer, we've flown multiple flights over 6-days during a 4-month period. Using ground counters, a drone pilot, and an observer, we've been able to do side by side comparison counts of various groups of elk in the study area. Although the data has not been fully analyzed yet, all indications are that this method will dramatically improve the accuracy of our elk counts. Using the drone, we were able to count elk in areas where the topography and vegetation made it impossible for our observers to see the entire aggregation of elk from the ground using just scopes and binoculars.



Photo 2: Example of using a spotting scope to count elk from the ground.

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For a copy of this report, contact:

Mac Kobza
Senior Wildlife Biologist
mkobza@bouldercounty.gov