2021 Virtual Conference:
The Colorado Chapter of
The Wildlife Society

Presentations: March 10, 17, and 24 from 9:00 am to 11:00 am

Plenary: April 21 and 28 from 9:00 am to 11:00 am

DRAFT AGENDA

March 10, 7:00 pm to 9:00 pm – Film Showing

Zoom link: https://csupueblo.zoom.us/j/91747490278

Film showing: Deer 139

Q&A session with filmmakers Anya Tyson and Emilene Ostlind

March 17, 9:00 am to 11:00 am – Student and Professional Presentations

Zoom link: https://csupueblo.zoom.us/j/94275795636?

9:00 to 9:05 – Welcome and introductions

> **Nate Bickford** (CCTWS Chapter Vice President)

9:05 to 9:15 – Updates from Central Mountains and Plains Section

> **Shelly Deisch** (CMPS Section President)

> **Andrea Orabana** (CMPS Representative to TWS Council)

Contributed Presentations: Avian Ecology

9:15 to 9:30 – High-intensity short-duration grazing during spring is not an effective habitat management tool for Northern Bobwhites in Colorado

Adam C. Behney (Colorado Parks and Wildlife)

Abstract: Many wildlife species are reliant on periodic disturbance to maintain vegetation heterogeneity. Heterogeneity is necessary to support species like northern bobwhite (*Colinus virginianus*), which are a species of conservation concern and require different vegetation for nesting, brood-rearing, and protection from predators and extreme weather. In northeastern Colorado few disturbance options exist to manage bobwhite habitat other than domestic livestock grazing. High-intensity short-duration grazing has shown promise as a mode of disturbance for bobwhite habitat in other regions. Using a randomized block design, I tested whether spring high-intensity short-duration grazing could improve bobwhite habitat in northeastern Colorado. Specifically, I monitored bobwhite nest and brood survival and habitat selection in relation to grazing treatments over 3 years. I found that grazing had no effect on nest or brood survival or brood habitat selection, but bobwhites selected against grazed plots for nesting. Nest survival was negatively influenced by percent litter around the nest, and bobwhites selected nest sites with more grass cover and less bare ground. Broods selected habitat with less bare ground and more woody vegetation. Grazing affected vegetation immediately after grazing, but these effects weakened or disappeared by the end of the growing season. One exception was forbs, which tended to be more abundant on grazed plots throughout the growing season. Overall, I found neutral effects of grazing on bobwhite demographics or habitat selection and neutral to positive benefits to the vegetation. Spring high-intensity short-duration grazing does not appear to be an effective tool to manage bobwhite habitat in northeastern Colorado.

9:30 to 9:45 – Mountain Plover occurrence in the South Park Basin, Colorado

Brandon Skerbetz** (Western Colorado University and Bureau of Land Management), Jordan McMahon (Bureau of Land Management), and Matthew Rustand (Bureau of Land Management)

Abstract: Effective monitoring of mountain plover (Charadrius montanus) has been warranted by a 63% decline of their population in the late 1990's. Since this decline, the Bureau of Land Management (BLM) has distinguished the mountain plover as a sensitive species. The Royal Gorge Field Office of the BLM triennially conducts surveys of mountain plover in effort to monitor their local population and further base land management decisions accordingly. Our results after four survey intervals indicate a stable population of mountain plover in South Park, Colorado with an occupancy probability of 0.152. We recommend a continuation of monitoring mountain plover to constructively determine their status through their inevitably changing habitat in the future.

9:45 to 10:00 – How Colorado Parks and Wildlife helped inform the endangered species listing decision of an alpine icon

Amy Seglund (Colorado Parks and Wildlife) and Phillip Street (University of Nevada – Reno)

Abstract: An essential task facing wildlife managers today is having the ability to assess population dynamics of wildlife species and determine how populations will respond to current and projected environmental changes. Complicating this mission is defining and evaluating populations across multiple spatial scales. Colorado with its extensive concentration of mountainous habitats supports one of five purported subspecies of white-tailed ptarmigan (Lagopus leucura altipetens) – an alpine endemic grouse that was proposed for listing under the USFWS Endangered Species Act in 2010. From 2011-2017, Colorado Parks and Wildlife undertook a holistic approach in assessing the species status using a number of metrics including occupancy modeling to assess distribution; mark-recapture techniques to determine trends in abundance; radio tagging to evaluate annual survival, movement, and reproductive success; and genetic and genomic sampling to inform gene flow and genetic diversity. The overall indication from our work is that the southern white-tailed ptarmigan is a resilient species occupying all suitable habitats in the alpine with stable populations and low predicted estimates of extinction into the future. All of these data were incorporated into a thorough review of the best available science used by the USFWS to make a decision of Not Warranted for listing of the species in 2020. However because environments are rapidly changing with many unknown consequences on the horizon, it is imperative for Colorado Parks and Wildlife and other agencies to continue to monitor and work to conserve this iconic alpine species for future generations to enjoy and to maintain intact, healthy ecosystems.

10:00 to 10:15 – Ecology of the Slate River Great Blue Heron (*Ardea heodias*) rookery and impacts of human activities.

Ellie Orr** (Western Colorado University), Patrick Magee (Western Colorado University), and Jake Bartholomew (Western Colorado University)

Abstract: The Great Blue Heron (*Ardea herodias*) is the largest, semi-aquatic waterbird in North America and nests in gregarious colonies. These birds nest throughout Colorado including at a unique site in the Slate River Wetlands near Crested Butte. The relatively large colony (>20 nests) represents a persistent heronry in a high-elevation conifer stand in the Rocky Mountains. The Crested Butte area is highly popular for outdoor recreation and the increasing presence of humans is potentially impacting wildlife. It is unclear whether the heronry is stable, but it is potentially threatened by

human river recreation in the form of stand-up-paddle boards, kayaks, and small rafts. The purpose of our study is to document heron phenology, demographic characteristics, behavior, adult provisioning, and impacts of human activities around the Slate River heronry. We are working closely with the Crested Butte Land Trust to gather data that will continue to inform their diverse stakeholder, adaptive management process.

10:15 to 10:30 – Resource selection by Greater Sage-Grouse varies by season and infrastructure type in a Colorado oil and gas field

Brett L. Walker (Colorado Parks and Wildlife)

Abstract: Understanding how wildlife respond to increasing energy development is crucial for informing land-use management and policy. I examined how greater sage-grouse use and select seasonal habitats in relation to energy development in a high-elevation oil and gas field in western Colorado by linking energy infrastructure layers with locations of marked females from 2006-2014. Objectives were to: (1) quantify infrastructure around seasonal used locations; (2) examine 3rd order resource selection in relation to different types of energy infrastructure; (3) test whether greater industrial activity resulted in greater avoidance; (4) compare effects of disturbed, reclaimed, and total anthropogenic surface; and (5) assess the adequacy of proposed disturbance and density caps. Between 92-97% of female use locations across seasons had < 3% disturbed surface within 1000 m. Females in developed portions of breeding and winter use areas selected locations with less disturbed, reclaimed, and total anthropogenic surface within 1000 m and lower infrastructure density. Breeding females also selected locations further from high-activity infrastructure. Females in summer-fall selected locations with low to intermediate values of disturbed and reclaimed surface within 100 m, closer to pipelines and roads, and without regard to infrastructure density. A 3% surface disturbance threshold was inadequate to prevent detectable levels of avoidance during breeding and winter, but infrastructure density caps were adequate to prevent detectable levels of avoidance in all seasons. Overall, selection responses to energy infrastructure varied by season and infrastructure type and suggests that seasonal responses to energy development may differ between mesic and arid sagebrush ecosystems.

Contributed Presentations: Other Topics

10:30 to 10:50 – Improving outcomes of tree-growing campaigns

Karen Holl (University of California – Santa Cruz) and Pedro Brancalion (University of Sao Paulo)

10:50 to 10:55 – Closing Remarks

Nate Bickford (CCTWS Chapter Vice President)

***Student presenter (undergraduate)

**Student presenter (graduate)

March 24, 9:00 am to 11:00 am – Student and Professional Presentations

Zoom link: https://csupueblo.zoom.us/j/93357933783

9:00 to 9:05 – Welcome and introductions

> **Nathan Galloway** (CCTWS Chapter President)

Student Chapter 2020 Annual Reports

9:05 to 9:15 – Colorado State University Student Chapter 2020 Report

> **Rémi Pattyn** (CSU Student Chapter President)

9:15 to 9:25 – Colorado State University Pueblo Student Chapter 2020 Report

> **Austin Barnes** (CSU Pueblo Student Chapter President)

9:25 to 9:35 – Western Colorado University Student Chapter 2020 Report

> **Alyssa Rawinski** (WCU Student Chapter President)

9:35 to 9:40 – Question & Answer session for Student Chapters

Contributed Presentations: Restoration and Management

9:40 to 9:55 – Methods and applications for integrating A.I. photo-filtering software into camera surveys

> **Shannon Lambert**** (Colorado State University), Peter Ersts (American Museum of Natural History), Mat Alldredge (Colorado Park and Wildlife), William Kendall (U.S. Geological Survey, Colorado State University), Ross Beveridge (Colorado State University)

> Abstract: Camera surveys have become an increasingly popular technique for monitoring wildlife populations. However, even small-scale surveys can accumulate tens of thousands of photos, which can take months for technicians to process. Limits in human capital lead to compromises in research methods. We explore ways to mitigate this overwhelming problem of photo processing by incorporating A.I. based detection and filtering

techniques into the workflow. Successful implementation of this technology can decrease processing time from months to a few days and can make quality control considerably more manageable. Our study utilized open-source machine learning frame works and an application called BBoxEE as a case study to evaluate the capabilities and limitations of A.I. assisted workflows. We assessed basic functionality of the A.I. to set a baseline of expectations when integrating the software into a new system. We evaluated impacts of different facets of a study on accuracy rates including size of the training model and impacts of blurry or obstructed photos. Future research includes impacts of presence of lookalike species, use of dynamic classes (e.g., age), and use of training data in different environments on accuracy rates. With this research we hope to assist biologists in tackling the vast amount of data collected in camera surveys. Effective use of this technology can release project resources for other important tasks, can bolster researcher confidence in data quality, and can make idealistic survey designs more tangible.

9:55 to 10:10 – Integrating field measurements and remotely sensed data to assess and model snowshoe hare habitat

Courtney L. King** (Western Colorado University), Matthew Vasquez (U.S. Forest Service), Ian Breckheimer (Rocky Mountain Biological Laboratory), Jessica Young (Western Colorado University)

Abstract: Crested Butte Mountain Resort was conditionally approved in 2019 to construct ski trails and other infrastructure in an undeveloped section of the Gunnison National Forest that supports snowshoe hare (Lepus americanus). In continuation of a pilot study, I assessed whether this area contains adequate hare to support the imperiled Canada lynx (Lynx canadensis) through conducting snowshoe hare fecal pellet count surveys. Pellet counts were significantly higher at a study site dominated by old-growth spruce-fir forest, which has traditionally been viewed as an important determinant of these species ' presence. Previous research has defined a population density of 0.5 snowshoe hares per hectare as adequate to support a Canada lynx population. Values at both of my study sites were close to but did not reach this threshold. I also estimated dense horizontal cover, an important component of winter hare habitat, in the field. Alongside this data I utilized forest structural variables derived from satellite and LiDAR imagery to develop candidate models for predicting snowshoe hare population density. Using these models, I aim to extrapolate my results across the Gunnison National Forest, providing maps and information necessary for the U.S. Forest Service to manage snowshoe hare and Canada

lynx habitat as federally mandated. This research will also demonstrate whether approaches incorporating open-access, remotely sensed data could serve as viable alternatives to the time- and labor-intensive field techniques currently used by land management agencies when assessing habitat for species that rely on forest structural variables including dense horizontal cover.

10:10 to 10:25 – Colorado Front Range invasive annual grass management successes: A wildlife, pollinators, and wildfire perspective

Jim Sebastian (Boulder County Open Space), **Joe Swanson** (Boulder County Open Space), and **Derek Sebastian** (Bayer Range and Pasture)

Abstract: Invasive winter annual grasses such as cheatgrass (*Bromus tectorum*) continue to negatively impact the Colorado Front Range. Impacts include displacement of species diversity, displacement of critical wildlife and pollinator habitat, and a drastic increase in fine fuels associated with wildfire. Since beginning in 2015 in collaboration with Colorado State University, Boulder County Open Space has treated operationally over 3,500 acres of open space with indaziflam (Rejuvra), resulting in effective long-term cheatgrass control and restoration of the desirable perennial species found at these sites. One concern of land managers, ecologists, and wildlife biologists in Boulder County and neighboring jurisdictions is the ever-increasing threat of cheatgrass, the possible permanent displacement of these in-tact ecosystems, and wildfire risk. Working in collaboration with CSU, Boulder County has collaborated on several research projects evaluating long-term invasive annual grass control and the response of the desirable perennial species (grasses, forbs, shrubs). Because the county manages properties in the lowland, foothills and mountains of Colorado that provide critical overwintering habitat for mule deer, elk, and other wildlife, treated areas have provided the opportunity to answer several research questions of interest to land managers. Our research has shown that mule deer browse for seven different shrub species and forb forage dramatically increased where cheatgrass was controlled. Our findings reinforce the findings of field managers, that cheatgrass and other invasive annual grasses pose a significant threat to the habitat and population of browse species.

10:25 to 10:35 – Question & Answer Session for Presenters

10:35 to 10:40 – Closing Remarks

Nathan Galloway (CCTWS Chapter President)

***Student presenter (undergraduate)

**Student presenter (graduate)

April 15, 9:00 am to 12:00 pm – Bioacoustics Workshop

- Register here by April 5th: https://docs.google.com/forms/d/e/1FAIpQLSc3hzfFb-DhyMxQlK9tDGm7WntHAyv-iT0msiOU1kxibDA7gg/viewform

- Instructor: Mickey Pardo PhD (Colorado State University)

- Contact for more information: Elizabeth Peterson PhD at elizabeth.peterson@csupueblo.edu or elizabethkpeterson@gmail.com

- Description: This is a virtual workshop hosted by the Colorado Chapter of The Wildlife Society. Learn how to visualize sound in time and frequency domains, segment recordings in Raven sound analysis program, measure dominant and fundamental frequencies in R, measure acoustic indices of biodiversity, batch-process sound files in R… and more! No prior knowledge of bioacoustics or coding is necessary! Prior to the workshop, please download and install the latest versions of R, RStudio, and Raven Lite (all free). Instructions for download will be provided to registered participants.

April 21, 9:00 am to 11:00 am – Business Meeting and Plenary

Zoom link: https://csupueblo.zoom.us/j/96947526271

Business Meeting

9:00 to 9:05 – Welcome and introductions

Nathan Galloway (CCTWS Chapter President)

9:05 to 9:10 – Treasurer's Update

Matt Rustand (CCTWS Treasurer)

9:10 to 9:15 – Election results, thank you to outgoing board members and welcome new board members to CCTWS, pass the gavel to new president

Nate Bickford (Incoming CCTWS President) and **Nathan Galloway** (Outgoing CCTWS President)

9:15 to 9:20 – Jim Olterman scholarship update

Nathan Galloway (CCTWS Chapter President)

9: 20 to 9:35 – Student Awards

Nick Kaczor (Student Awards Committee Chair)

Andrew Don Carlos (Student Presentation Awards presenter)

9:35 to 9:40 – Other business (changes to by-laws, event announcements, etc.)

Plenary Session: Restoration of Wildlife Habitats – Keynote Speaker

9:40 to 10:10 – *Prairie restoration ecology*

Chris Helzer (The Nature Conservancy)

10:10 to 10:25 – Question & Answer session

10:25 to 10:50 – [Diversity speaker series, presentation 1]

10:50 to 10:55 – Question & Answer session

10:55 to 11:00 – Closing remarks

Nathan Bickford (CCTWS Chapter President)

April 28, 9:00 am to 11:00 am – Plenary

Zoom link: https://csupueblo.zoom.us/j/96658375019?

Plenary Session: Restoration of Wildlife Habitats

9:00 to 9:05 – Welcome and introductions

Nate Bickford (CCTWS Chapter President)

9:05 to 9:30 – Using sagebrush chemical fingerprints to create closer collaborations between researchers and practitioners

Jennifer Forbey (Boise State University)

9:30 to 9:50 – Restoring native perennials in areas impacted by fire and exotic annual grasses

Matthew Germino (United States Geological Survey)

9:50 to 10:10 – Development of wolf restoration and management plan for Colorado

Eric Odell (Colorado Parks and Wildlife)

Colorado citizens voted Proposition 114 into statute on November 3, 2020. This directs the Colorado Parks and Wildlife Commission to develop a plan to restore and manage gray wolves in Colorado by December 31, 2023. To that end, Colorado Parks and Wildlife staff have developed a proposed public involvement process to draft the Colorado Wolf Restoration and Management Plan. This effort was informed from conversations with relevant staff from the six western state wildlife management agencies that have gone through a process to develop a wolf management plan as well as federal partners who had a role in previous wolf management and reintroduction efforts. This presentation will briefly describe the history of wolves and wolf planning in Colorado and the path forward to meet the requirements of Proposition 114.

10:10 to 10:35 – [Diversity speaker series, presentation 2]

10:35 to 10:55 – Awards

Marcella Tarantino (Photo Contest organizer)

Michelle Cowardin (Professional Awards Committee Chair)

10:55 to 11:00: Closing remarks

Nathan Bickford (CCTWS Chapter President)