

## **“Recovery and Resiliency! Preparing for the Future”**

**23<sup>rd</sup> Annual Boulder County Ecosystems Symposium**

**Saturday, March 14, 2015**

**9:00 AM – 2:30 PM**

**Boulder County Parks and Open Space offices, Prairie Rooms**

The Symposium is free and open to the public. Registration begins at 8:30 am. Donations will be accepted for the Boulder County Nature Association’s Research Grants program. Don’t forget to bring your reusable plate, cup, and utensils for the complimentary lunch. The Parks and Open Space offices are located at 5201 St Vrain Rd in Longmont.

Many thanks to the sponsors who make this symposium possible: Boulder County Nature Association, Boulder County Parks and Open Space, City of Boulder Open Space and Mountain Parks, Boulder County Audubon Society, The Boulder Rights of Nature and the Colorado Native Plant Society.

### **Presentation abstracts and speaker biographies:**

#### **Welcome and Announcements**

**Steve Jones, Boulder County Nature Association**

#### **Keynote Address: Forward Directions/Problems for the future**

**John Mack, National Park Service**

Let’s warm up and stretch out minds to consider whether some of our seemingly biggest challenges facing plant and animal ecosystems and their recovery can be some of our best opportunities and successes for tomorrow. Let’s think about how many of the challenges facing the National Park Service could also be representative of those facing Boulder County, Colorado, the United States, and the world. As we touch upon many of the topics presented here today, I hope to provide thoughts for what we might strive to do accomplish in the future regarding science and wildland and resource management.

*John Mack* is the Branch Chief of Natural Resources at Rocky Mountain National Park. He hails from Helena, Montana and has a Masters Degree in Fish and Wildlife Management from Montana State University. John has worked for the National Park Service for 26 years, 12 at

Yellowstone National Park as a wildlife biologist, 7 years as Chief of Natural and Cultural Resources at Bandelier National Monument in New Mexico, and 7 years at Rocky Mountain National Park. John has worked on a diversity of projects ranging from trapping grizzly and black bears for the state of Montana, wolf reintroduction and bison management in Yellowstone, ecological restoration of vegetation communities to protect cultural resources in Bandelier's designated wilderness. He and the staff at Rocky Mountain National Park partner with a number of agencies and researchers on a wide variety of natural resource issues ranging from air quality, invasive exotic plants, limber pine, fisheries, boreal toads, and elk management.

## **Blackfooted Ferret Reintroduction**

### **Daylan Figgs, City of Fort Collins Natural Areas Department**

The City of Fort Collins owns approximately 48,148 acres (19,484.8 ha) within the Laramie Foothills Mountains to Plains (LFMTP) conservation area. The LFMTP has been the focus of intensive conservation efforts over the last two decades comprised of a partnership of public and private conservation organizations and private landowners whose goal is to conserve, through conservation easements and fee title acquisition, a connection between the mountains and plains. To date the partnership has conserved an essentially contiguous area extending 22 miles across, from the native grasslands along Interstate 25 to the foothills and lower reaches of Roosevelt National Forest.

In 2007, the NAD adopted the Soapstone Prairie Natural Area Management Plan (September 25, 2007) to guide future management decisions on SSN. The management plan recognized the black-footed ferret as a native species that was historically present on the property and one that could be reintroduced in the future with cooperation from Colorado Parks and Wildlife (CPW) and the U.S. Fish and Wildlife Service (USFWS).

The City of Fort Collins implemented a black-tailed prairie dog management plan with a goal of managing a complex between 3,000 and 4,000 acres. The plan identifies areas suitable for prairie dogs, areas in conflict with other conservation targets, and creates management options to address the abundance and/or distribution of prairie dogs. This approach to managing prairie dogs on relatively small landscapes for ferret reintroduction has been termed Purposeful Management by the black-footed ferret recovery coordinator and is recognized as a management strategy in the USFWS Black-Footed Ferret Programmatic Safe Harbor Agreement

In addition to implementing a prairie dog management approach, the City worked with State Representative Randy Fischer, Senator Matt Jones, and the Folsom and Natural Fort Grazing Associations (grazing partners on Soapstone and Meadow Springs, respectively) to introduce and pass HB14-1267 allowing for the reintroduction to occur on lands owned by a political

subdivision of the State (Municipal and County owned lands) if done so in accordance with a Programmatic Safe Harbor Agreement (SHA) and an enhancement-of-survival permit.

The presentation will focus on the Natural Areas Department's "purposeful management" approach to prairie dog management, disease management efforts, development of the allocation request and safe harbor agreements, post release surveys results, future survey efforts, and outreach with neighboring landowners.

*Daylan Figgs* is a Sr Environmental Planner/Land Manager with the City of Fort Collins Natural Areas Department and is the project leader for the development and management of the Soapstone Prairie Natural Area and other Laramie Foothills properties. Daylan's work within federal, state, and local conservation organizations represents over 20 years of land conservation, grassland management, and habitat restoration experience within the western U.S. In addition to leading efforts to reintroduce black-footed ferrets to Soapstone Prairie and Meadow Springs, Daylan has brought native plains fish back to streams managed by Natural Areas and is currently working within a partnership to bring plains bison back to Soapstone.

## **Peregrine Falcon Ecology and Habitat Management in the Flatirons: Return and Recovery**

### **Will Keeley, City of Boulder Open Space and Mountain Parks**

Peregrine falcon (*Falco peregrinus anatum*) populations experienced a sharp decline from 1950s-1970s because of widespread anthropogenic use of DDT and other organochloride pesticides. In Colorado, only a handful of nesting sites were occupied by Peregrines in the 1960s, and the only identified territory in Boulder County was unoccupied since 1960. Although use of DDT was banned in 1972 and the bird was one of the first provided protection under the Endangered Species Act in 1970, the toxin's impact on Peregrine falcon populations continued for decades. The recovery plans for this species included captive propagation and release of captive-produced birds and The Peregrine Fund was founded to focus on reintroducing the species. After more than 5,000 captive-produced birds were successfully released, monitoring indicated that the species was re-occupying historic territories, and the Peregrine falcon was removed from the Endangered Species List in 1999. Locally, the species returned to the Flatirons in 1992 and with community support for OSMP's habitat protection efforts, Peregrine falcons have steadily increased their presence in the area and have experienced very high nesting success and productivity since their return. Continued support for habitat protection measures and increased public education surrounding Peregrine falcon ecology and their successful reintroduction will undoubtedly benefit this regal species.

*Will Keeley* obtained a Bachelor's degree in Biology from CU-Boulder in 1999 and a Masters in Science in Raptor Biology from Boise State University in 2005. From 2002 - 2006, he worked seasonally for Hawks Aloft, a non-profit organization located in New Mexico, where he

monitored nesting success of ferruginous hawks and golden eagles, and surveyed songbirds in the cottonwood forests along the Rio Grande. He currently works as a wildlife ecologist for the City of Boulder Open Space and Mountain Parks department where he manages avian, bat, and amphibian monitoring projects and works on habitat improvement projects for sensitive species.

### **Ute ladies'-tresses Orchid Habitat Management: Survival Strategies for a Threatened Species**

**Lynn Riedel, City of Boulder Open Space and Mountain Parks**

Boulder County is home to one of the largest populations of the Ute ladies'-tresses orchid (*Spiranthes diluvialis*), the County's only federally-listed plant species. A complex life history and disturbance-dependent ecology make habitat management and protection for this orchid a challenging and fascinating business – whether in Boulder's urban-rural context or in the wilds of Dinosaur National Monument along a regulated river. Devising a plan for recovering a species that was known to decline when well-meaning past efforts protected the plant from grazing, haying and other human caused disturbances presented a puzzle for biologists. Though the recovery plan has been in draft form for two decades, and most of the orchid's habitat throughout the western United States overlaps with desirable land and hydrologic resources for urban and exurban development, there is considerable hope that this species will be kept from extinction. This presentation will describe habitat management strategies and realities for Colorado's two largest populations, where the orchid's long-term survival is dependent on public land preservation, a working agricultural landscape, and a regulated river with endangered fish species.

*Lynn Riedel* has spent her career in natural areas management in Colorado – initially working with the National Park Service. Her academic background is in biology and science education. Since the mid-1990's, she has worked as a plant ecologist with the City of Boulder Open Space and Mountain Parks Department, specializing in grassland ecology. In Dinosaur National Monument and in Boulder, her work has included monitoring and managing habitat for the Ute ladies'-tresses orchid, and she served on the US Fish and Wildlife Service recovery team for this species.

### **Rediscovering (Again) Colorado's State Fish and What to Do Next?**

**Andrew Martin, University of Colorado-Boulder**

Using molecular forensics, Andrew Martin's lab discovered that Colorado's state fish, the Greenback cutthroat trout, was historical native only to the South Platte basin. The species

persists today in a small stream (Bear Creek) on the edge of Colorado Springs. After the re-discovery of the species, 65 individuals were brought into hatchery production to generate fish that could be used for restoration purposes. However, it is becoming increasingly clear that the species may suffer from a high load of deleterious alleles because the population probably went through multiple bottlenecks over the last 150 years. Our current research attempts to use the principles of evolutionary biology to accelerate adaptation and help return the species to a high fitness peak that may be necessary for successful establishment in the wild. The talk will detail the detective story behind the discovery of the species and offer suggestions for how to bring this "damaged" species back from the brink of extinction.

*Andrew Martin* grew up in the Sonoran Desert on the outskirts of Tucson Arizona and it was during his childhood, surrounded by the remarkable diversity of the desert, that he gained an appreciation of nature and for the value of freshwater. His current research centers on native fishes and uses techniques borrowed from molecular biology to understand the identity, status, ecology and evolution of freshwater fishes. Andrew's recent work focuses on two iconic species: Colorado's state fish the Greenback cutthroat trout, and pupfish that live in isolated and small springs in the Mojave Desert. As a professor at the University of Colorado, he devotes about half of his time towards the task of understanding the biology of these fish and the other half of his time towards educating the next generation of citizens to use scientific thinking when evaluating and making claims about the world.

## **Canada Lynx in Colorado: Reintroduction and Response to Bark Beetle Epidemics**

### **Jake Ivan, Colorado Parks and Wildlife**

In 1999, Colorado Parks and Wildlife (CPW; then Colorado Division of Wildlife) initiated an effort to reintroduce Canada lynx (*Lynx canadensis*) to Colorado where the species had been present historically but was extirpated during the 1970s, presumably due to a variety of human-related stresses. Over the course of the next 7 years, CPW released 218 lynx into the state. All individuals were monitored with a combination of VHF and satellite telemetry devices to learn about their movements, survival, reproduction, and diet. These efforts indicated that over the course of several years, productivity was outstripping mortality and the trajectory for the population was positive. Thus, in 2010, CPW declared the initial reintroduction project a success. Also around that time the mountain pine beetle epidemic was reaching its peak and the spruce beetle infestations were building momentum. To date, these 2 insects have impacted over 4 million acres of subalpine forest in the state, altering the current structure of impacted stands and changing the successional direction for decades to come. This presentation will recap the details of the lynx reintroduction into the state, describe the current statewide lynx monitoring plan that was initiated in Fall 2014, and provide initial results from current CPW research aimed

at determining the response of lynx and their primary prey to bark beetle infestations in Colorado.

*Jake Ivan* has been with the Mammals Research Section of Colorado Parks and Wildlife for the past five years. He has a B.S. in Wildlife Science from Purdue University, M.S. in Wildlife Biology from The University of Montana, and a Ph.D. in Fish, Wildlife, and Conservation Biology from Colorado State University. Prior to his employment with CPW, Jake worked as a Biologist for The Nature Conservancy and U.S. Fish & Wildlife Service.

### **Recent Establishment of Bald Eagle Nesting Populations in Boulder County-A Presentation of Wintering and Nesting History and Discussion of Our Changing Landscape**

**Steve Jones, Boulder County Nature Association, and Susan Spaulding, Boulder County Parks and Open Space**

Denis Gale's seminal study of Boulder County birds, carried out from 1883-89, included no mention of Bald Eagles (*Haliaeetus leucocephalus*). In his 1937 publication, "Birds of Boulder County, Colorado," University of Colorado Museum director Gordon Alexander characterized the Southern Bald Eagle as a "rare transient" here. No nesting was reported within Boulder County prior to this century. However, until the mid-1900s, bald eagles were considered common throughout large areas of North America including the Gulf Coast, the Great Lakes Region, the Pacific Northwest, Alaska, and the Maritime Provinces of Canada.

Human persecution (128,000 bald eagles were killed for bounties in Alaska, alone, from 1917-51) and Bald Eagle reproductive failures caused by accumulation of DDT and other pesticides in their fatty tissues led to dramatic population declines throughout most of North America from the mid-1900s to the 1970s. The species was listed under the Bald Eagle Protection Act in 1940 and under the Endangered Species Act in 1978. After most uses of DDT were banned throughout North America in 1970, Bald Eagle populations began to recover. By 2006 the U.S. Fish and Wildlife Service estimated that nearly 10,000 pairs were nesting in the lower 48 states.

We began to observe wintering bald eagles gathering around prairie dog colonies in eastern Boulder County during the early 1980s. A winter roost along Lefthand Creek near Haystack Mountain held 40-50 bald eagles during 1985-6, and another winter roost near White Rocks Natural Area held 20-25 individuals. We observed these Bald Eagles stealing captured prairie dogs from Ferruginous Hawks, feeding on road-killed deer, and fishing in prairie reservoirs. In 2002 Boulder Open Space and Mountain Parks wildlife biologists reported the first Bald Eagle nest ever documented in Boulder County near White Rocks Natural Area.

Since 2002, several additional Bald Eagle nesting territories have established. Boulder County's landscape has changed dramatically over the past several decades, and Bald Eagles have benefitted from these changes. As an example, open water created by gravel mining operations, and the subsequent sport fish stocking of many of these ponds, has created ample hunting opportunities for these piscivorous raptors.

Boulder County has recently updated the Environmental Resources Element of the County Comprehensive Plan. As part of this update, the concept of establishing conservation plans for Species of Special Concern was introduced. As Boulder County moves forward with this process, aspects of our changing landscape will be taken into consideration. The Bald Eagle, a Boulder County Species of Special Concern, exemplifies a species that has shown promising trends range-wide and county-level land management provides protections for our local nesting pairs, but were they historically part of our ecosystem, and has their presence impacted other species?

*Stephen Jones* is a founding member of Boulder County Nature Association and author/co-author of *The Last Prairie*, *Peterson Field Guide to the North American Prairie*, *Butterflies of the Colorado Front Range*, *Colorado Nature Almanac*, and *Wild Boulder County*. He is co-compiler of BCNA's "Boulder County Avian Species of Special Concern" list and works as an environmental consultant specializing in breeding bird and raptor biology.

*Susan Spaulding* is Senior Wildlife Biologist with Boulder County Parks and Open Space. She has a B.A. in Biology/Ecology from the University of Colorado, Boulder and a Graduate Certificate in Geographical Information Systems from the University of Denver. Throughout her career, she has worked extensively conducting federally listed species habitat assessment and research (*spotted owl*, *marbled murrelet*, *desert tortoise*) and served as a wildlife biologist for the U.S. Forest Service (Lake Tahoe) for 10 years. At BCPOS, Susan manages the committed staff of biologists with the objective of providing input on behalf of wildlife resources towards comprehensive policy development and site specific land management plans.

### **Closing Remarks and Holly Near's "The Souls are Coming Back" video**

#### **Megan Bowes, Boulder County Nature Association**

Megan's remarks will be followed by a video of Holly Near singing "The Souls are Coming Back".