

## *Rocky Mountain National Park*

### *Centennial Science behind the Scenery programs*

This series highlights scientific activity and learning in the park. Each week a different scientist conducting research in the park will share their experiences and discoveries.



**Anna Schoettle June 18th Limber Pine Conservation -Taking the Long-View but Acting Now!** Limber pine designated by Rocky Mountain National Park (RMNP) as a Species of Management Concern, it defines the alpine treeline, stabilizes slopes that are too harsh to support other tree species, and its large seeds provide food for birds, small mammals, and bears. In RMNP, limber pine is declining due to the interacting effects of recent severe droughts and the climate-exacerbated mountain pine beetle outbreak and dwarf mistletoe infestation. Dr. Schoettle has been conducting research on tree physiology and ecology in high mountain systems since 1985. She is developing proactive methods to increase their resiliency and sustainability.



**Scott Franklin June 25th Aspen Forests - changes over last 40 years** Aspen forests generally hold more water in their soil, have more soil nutrients, and have more species of plants in their understory than conifer forests. For these reasons, called ecosystem services, public land managers want to maintain aspen forests. However, aspen rarely reproduce from seed in Colorado. Instead, they are clonal and reproduce from their roots. Thus, it is unclear how they will increase over time, and several studies suggest aspen stands are decreasing in Colorado. Tonight's talk will discuss the ecology of aspen and how that affects their dominance in Colorado forests. Dr. Franklin studies disturbance and vegetation dynamics, having received his PhD in 1996 from Southern Illinois University. His current research examines long-term changes in Front Range forests, classification of the Pawnee

National Grassland vegetation communities, response of aspen to disturbance, and plant competition.



**Brittany Mosher July 2nd - A tale of toads in Rocky Mountain National Park.** Over 40% of amphibian species worldwide are in decline. Declines are related to a variety of factors including habitat destruction and disease. Amphibians in Rocky Mountain National Park have not been immune to these problems. Of the 5 species of amphibians historically present in the Park, two, including the boreal toad, have suffered severe declines. Once common throughout high elevation areas in Colorado, the boreal toad is currently endangered in the state and is being considered for federal listing as an endangered Species Act. In this look "behind the scenes," Brittany will share recent research findings on the effects of disease and introduced species on boreal toad populations. She has a Master's of Science degree in Fish and Wildlife Management from Montana State University, and is currently a Ph.D. Candidate in the Department of Fish, Wildlife, and Conservation Biology at CSU.



**Ben Lawhon July 9th Leave No Trace** is the most prevalent minimum-impact visitor education program in use in parks and protected areas in the U.S. The intent of the program is to educate visitors about the nature of their recreational impacts with the goal of resource protection. Everyone will benefit with Leave No Trace practices and learning how those practices are effective at reducing impacts. This study examined variables thought to influence future Leave No Trace behavioral intent in park visitors. If specific influences can be determined, park managers can effectively message to visitors about how to minimize their recreation-related impacts. Results indicate that educational efforts will effectively minimize impacts to the landscape.



**Jeremy White July 16th Protecting Night Sky Resources in U.S. National Parks and Beyond** – Jeremy is a Physical Scientist with the Natural Sounds and Night Skies Division of the National Park Service.. For the last 4 years, he has been collecting night sky measurements in National Parks across the country. The night sky can be one of the most awe-inspiring views we will ever experience. But the night sky and natural darkness are easily damaged and in many places are becoming lost in the glow of artificial lights. Jeremy will be discussing the ongoing research of the Natural Sounds and Night Skies Division.



**Karen Barton July 23rd Just Listen: Engaging Young People in Soundscape Research in Rocky Mountain National Park** The project aims to locate, record, and map sounds in order to create interactive sound maps of Rocky. Dr. Barton is currently a member in the Geography and G.I.S. Department at the University of Northern Colorado. Her research work with undergraduates will help create sound recordings and develop maps for use as soundscape curriculum in Colorado K-6 classes. This will be a very exciting program for the entire family.



**Robert Brunwig July 30th Three Thousand Generations of Native Americans in Rocky Mountain National Park: the emerging story of the park's natural and cultural landscapes since the last Ice Age**

In the late 1990s, our understanding of Rocky Mountain National Park's Native Americans was restricted to a limited number of archaeological sites and historic records of regionally resident tribes (Ute and Arapaho) and occasional raiding and hunting parties of non-resident tribes (Shoshone, Sioux, Cheyenne, Apache). Starting with the park's Archeological Inventory Program in 1998, we now have a detailed history of RMNP Native American lifestyles and culture from the end of

the most recent Ice Age to the late 19th century. This program will describe the historic paths taken by early park pioneers through modern-day researchers.





**August 6th Glen Patterson Trends in accumulation and melt of seasonal snow in Rocky Mountain National Park** The seasonal snowpack in Rocky Mountain National Park is critical to the local and downstream water supply and the ecosystem of the park, and is important for winter recreational opportunities. We know that there are heavy snow years and light snow years, but how do variations in the seasonal snowpack look over the long term? This talk examines long-term trends in snow accumulation and melts derived from snow monitoring stations. How does Rocky compare with other locations in the West in terms of these trends? What might be some of the ramifications for water managers, park ecosystems, and winter recreation? These are some of the questions that will be addressed as we look at the cold facts about snow in the park.



**August 13th Dr. Tom Hobbs How many elk should there be? A history of the concept of carrying capacity in Rocky Mountain National Park** The elk population in Rocky Mountain National Park is enjoyed by park visitors from all over the world. Deciding how to best manage that population has formed a central challenge for the Park since its creation. Dr. Hobbs has worked on population and community ecology of large herbivores for the last three decades. He has been at Colorado State since 2001 and before that he served for 20 years as a research scientist for the Colorado Division of Wildlife and will trace the history of elk management as it has been influenced by changing ideas about ecological feedbacks between large herbivores and plant communities.



**August 20th Ellen Wohl September 3rd The Importance of Beaver Dams and Wet Meadows** Beaver were historically widespread and abundant throughout North America. Beaver dams helped to create extensive floodplain wetlands known as beaver meadows. Within Rocky Mountain National Park, the most extensive beaver meadows were located just upstream from glacial terminal moraines in places such as Moraine Park and Wild Basin. Many of the beaver meadows within the national park have become drier grassland environments. The remaining functioning beaver meadows provide important insights into how river valleys across the national park and throughout North America once functioned. This talk will review these insights and explain the importance of protecting and restoring beaver colonies. Dr. Wohl has been on the geosciences faculty at Colorado State University since 1989.



**Lindsay Ringer August 27th Bringing back native plants after Bear Lake road construction** The biodiversity of National Parks is what we love about natural gems such as Rocky Mountain National Park. Unfortunately, with construction, soil resources are impacted that can alter the direction of plant establishment and encourage growth of weedy, annual species. In addition, nitrogen deposition from the Front Range and from cars, encourages the growth of annual weeds like cheat grass. Lindsay is a master's student with a passion for research questions that address plant-soil relationships. This presentation will talk about the soil response and restoration on Bear Lake Road since the road construction in 2012/2013.