

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Investigating the impact of willow condition on abundance and species richness of small mammals and birds

Discipline: Natural
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Effective Dates: 6/1/2012 - 6/1/2014
Funding Amount: \$30,000

Investigators and Agency Representative:

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Project Abstract: In 2008 Rocky Mountain National Park staff began implementing the Elk and Vegetation Management Plan (EVMP), with a goal of restoring riparian willow communities, as well as aspen communities, to more natural conditions. The EVMP allows for a variety of conservation tools to be used to meet these goals including elk redistribution, vegetation restoration, and elk culling. The EVMP also calls for fencing up to 105 ha (260 acres) of riparian willow communities on the park's east side elk winter-range. This area supports high densities of elk and encompasses areas most extensively impacted by elk herbivory including Moraine Park and Horseshoe Park (U.S. Department of the Interior, 2007).

The first elk enclosure was built in Endovalley in 2007 and served as a prototype for future fences. In the fall of 2008, three additional fences were constructed to protect approximately 70 acres of willow communities, two in Horseshoe Park and one in Moraine Park. In the fall of 2009, an additional ten fences were constructed to protect approximately 44 acres of aspen communities. In 2010, five fences were constructed to protect approximately 74.5 acres of willow communities.

Park staff monitors the willow plant communities annually, surveying approximately 20 randomly selected microplots inside and outside of the enclosures within montane riparian zones (Zeigenfuss, Johnson, & Zeibe 2011). This monitoring takes place in the spring and fall of each year and includes a count of browsed and unbrowsed shoots per willow stem, base and tip diameter measurements for shoots, and identification of the willow species present at each site (Zeigenfuss et al. 2011). Every five years, staff survey more comprehensively, which includes visiting all 91 willow plots to collect plot photos and measure willow height and canopy, in addition to the annual microplot methods (Zeigenfuss et al. 2011). The first of such comprehensive reviews will take place in the summer of 2013.

The willows are being carefully monitored; however, vegetation is just one component of a functional ecosystem. Because wildlife plays a critical role in seed dispersal, nutrient cycling, decomposition, and other processes, we can achieve a fuller picture of recovery by assessing small mammal and bird responses to rest from herbivory.

Objectives:

- Develop protocols for evaluations of the abundance and species richness of small mammals and birds within montane riparian willow communities.
- Compare small mammal and bird abundance and species richness in unhealthy vs. healthy willow communities within ROMO to establish an ideal state for these guilds.
- Survey enclosures for small mammal and bird abundance and species richness to assess the state of recovery compared to the ideal state.

Outcomes with Completion Dates: Final Report and Masters Thesis are due to the NPS for review by December 31, 2013. Final copy of report due no later than June 1, 2014.

Keywords: Rocky Mountain National Park, Colorado State University, willows, restoration, small mammals, birds