

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Devils Tower National Monument - Assessment of biological and physical relationships of springs and seep ecosystems across a gradient of human impacts

Discipline: Natural Resources
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: University of Wyoming
Effective Dates: 5/1/2009 - 3/1/2011
Funding Amount: \$18,566

Investigators and Agency Representative:

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Project Abstract: Springs and seeps in northeast Wyoming support high levels of biodiversity. These systems are especially critical in semi-arid northeastern Wyoming, where water is a scarce but crucial resource. Three springs in Devils Tower NM have been impacted by human intervention: cement boxes were constructed on two springs, and multiple cement reservoirs were built on the remaining spring in the 1930s or earlier. These structures have resulted in obvious altered spring flow and other impacts that may be too discrete to discern, such as impacts to water quality and macroinvertebrate populations. This project allows us to study the impacts of the cement structures on the three springs by comparing them to unimpacted springs in the park. The project will also allow us to obtain (1) guidance on the feasibility of removing the cement structures, (2) recommendations on techniques for that removal, and a (3) set of measurable parameters for determining the success of the restoration of these springs.

The questions to be addressed in this proposal are:

- 1) To what extent has the water quality of the three springs been impacted as a result of historic activities?
- 2) To what extent have the macroinvertebrate communities and hydrology of these springs been affected?
- 3) What techniques exist for the removal of the cement structures and the restoration of natural, unimpeded flow to the three springs?
- 4) What parameters need to be monitored long-term to determine the success of the springs' restoration?

Outcomes with Completion Dates: December 31, 2010

Keywords: springs and seeps, human impacts, Devils Tower National Monument, University of Wyoming