

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Investigating the impact of introduced, endangered cutthroat trout on boreal toad breeding success and recruitment

Discipline: Natural
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University, USGS
Effective Dates: 7/1/2012 - 12/31/2014
Funding Amount: \$20,000 [FY13: \$9,000; FY12: \$11,000]

Investigators and Agency Representative:

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Project Abstract: Threatened and endangered species management is an important consideration for many National Parks, but is a task that is fraught with difficulty and at times conflicting needs. Boreal Toads (*Anaxyrus boreas*) and the Greenback cutthroat trout (*Oncorhynchus clarkii stomias*) are both found in Rocky Mountain National Park (RMNP) and provide an example of a potential conundrum in endangered species management. Monitoring and reintroduction efforts within the park have occurred independently for the two species, and while efforts for the Greenback Cutthroat Trout (GBCT) have enjoyed reasonable success, populations of Boreal Toads continue to decline. Boreal Toads rely on high-elevation lakes and streams without non-native fishes. While GBCT are native to RMNP, they are not historical residents at many of the lakes in which they now occur. GBCT were stocked recently to maintain the subspecies in available, suitable habitat, and for recreation, and now co-occur with Boreal Toads at locations in RMNP. The amphibian chytrid fungus has been an important factor in the decline of Boreal Toads, and is likely contributing to a lack of recovery at many sites. However, at other sites, factors other than disease (e.g., predation or competition) appear to be compromising reproduction and subsequent colonization of new sites. Understanding the interactions between Boreal Toads and other co-occurring species is an important component of preserving the few remaining Boreal Toad populations in RMNP and is of elevated importance to managers when both interacting species are of special concern. This proposal outlines a research project which addresses a high priority management need for RMNP (NPS 2010a, 2010b). Results from this study may also influence reintroduction efforts for both species throughout their range. This research is tactical in that it addresses a particular hypothesis - that direct mortality caused by introduced GBCT or competition between introduced GBCT and naturally occurring Boreal Toads is contributing to toad recruitment failure. Information generated by this research is also likely to lead to future research on species interactions.

Outcomes with Completion Dates: Final Report - December 31, 2014

1. Product: At least two peer-reviewed manuscripts using the data from this project and presentation of the data at a national or international herpetological meeting.
2. Product: Contribute findings to RMNP annual boreal toad monitoring reports and present findings to the Boreal Toad Recovery Team's annual meeting.
3. Outcome: A better understanding of the relationship between introduced trout and the survival of boreal toad eggs and tadpoles.

Keywords: Boreal Toads (*Anaxyrus boreas*), Greenback cutthroat trout (*Oncorhynchus clarkii stomias*), threatened and endangered species management Rocky Mountain National Park, Colorado State University