

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Understanding boreal toad tadpole feeding and predator avoidance behavior

Discipline: Natural
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University, USGS
Students Involvement: Yes, honors undergraduate
Effective Dates: 8/1/2015 - 5/30/17
Funding Amount: \$1,869

Investigators and Agency Representative:

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Project Abstract: Threatened and endangered species management is an important consideration for many National Parks, but this task often involves balancing competing species needs and limited habitats. 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. Reintroduction efforts within the park have occurred independently for the two species, and while Greenback Cutthroat Trout (GBCT) are native to RMNP, they are not historical residents at many high-elevation lakes where they were introduction to maintain the subspecies. GBCT now co-occur with Boreal Toads at one such location, Spruce Lake, where the native population of Boreal Toads are in decline. Spruce Lake is the best known extant breeding population of Boreal Toads in the park, and disease prevalence is very low. Despite this there is virtually no recruitment (Muths and Scherer 2011). Recent studies have shown reasonable hatching success for the few egg masses that are laid each year and seemingly little overlap between egg mass locations and GBCT habitat use (Lanier 2015). Still, experimental studies have shown lower tadpole survival in the presence of cutthroat trout (Lanier 2015) and recent monitoring suggest high variability in tadpole survival through metamorphosis at Spruce Lake. Understanding Boreal Toad tadpoles behavior and their potential interactions with other co-occurring species is an important component of preserving the few remaining Boreal Toad populations in RMNP. This study will quantify tadpole behavior (e.g., feeding, avoidance, movement), near shore distribution, and potential interactions with co-occurring species in an effort to understand variability in tadpole survival. This study will be completed by an honors undergraduate student who will gain "real world" experience outside of the classroom. This study will also benefit the scientific community and is of specific interest to the Boreal Toad and Greenback Cutthroat Trout Recovery Teams.

Outcomes with Completion Dates:

April-July 2016	Field planning
July-Aug 2016	Complete field observations
Sept - March 2017	Analyze data
March - May 2017	Prepare thesis and present findings

Keywords: Boreal Toads (*Anaxyrus boreas*), behavior, undergraduate research, Rocky Mountain National Park, Colorado State University