Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: A survey of the impacts of fish introduction and removal on zooplankton of alpine lakes in Rocky Mountain National Park
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University, USGS-BRD
Effective Dates: 4/15/2005 - 6/30/2006
Funding Amount: $17,276.00
Investigators and Agency Representative:

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Project Abstract:

Stocking of non-native fishes in Rocky Mountain National Park was terminated in 1968, but many once fishless lakes still maintain populations of both native and non-native fishes. The introduction of fish into alpine lakes can have dramatic effects on the lake ecosystem and native fish populations. These effects often include changes in both the kinds of zooplankton present and the abundance of the various kinds. Fish introductions, by way of their effects on zooplankton, directly or indirectly impact nutrient cycling in lakes, food chain properties, and primary production. Alpine lakes in particular have shown low resilience to such changes.

Resource managers of Rocky Mountain National Park have set out a series of plans to protect native fish populations in the park. The most recent work is the Greenback Cutthroat Trout (GBCT) Management Plan. To fulfill some of the important research required by this plan, researchers will survey zooplankton from alpine lakes of Rocky Mountain National Park. The research objective is to establish a baseline understanding of what zooplankton communities are currently like in the Park and to assess the effects of fish stocking and removal. This work will serve two key goals of the GBCT Management Plan. First, a zooplankton survey is part of the call for complete surveys of current aquatic habitat in the Park. Secondly, assessment of the effects of fish introductions is necessary to understand how to protect and restore both native fish populations and their habitat to their unperturbed state.

In this study researchers will conduct an intensive survey of the zooplankton communities in alpine lakes east of the Continental Divide in Rocky Mountain National Park. Researchers will compare zooplankton communities of four types of alpine lakes: 1)fishless lakes, 2) fishless lakes that were stocked but the fish died out, 3)fishless lakes that were stocked and retain the stocked population, and 4) those lakes with continuous fish populations. These comparisons will allow researchers to survey the differences in current zooplankton communities, assess the effect(s) of fish introductions, measure the recovery of lakes from introductions that were not maintained, and possibly to estimate the recovery time of zooplankton communities after fish elimination.

Outcomes with Completion Dates:

- All data will be collected in the Park by early August 2005.
- Samples will be processed and raw data will be available by October 2005.
- The report to the Park and compact disks containing zooplankton images will be delivered no later than November 30, 2005.
- Submission of a paper to an appropriate scientific journal will be set for June 1, 2006.
- Project end date is June 30, 2006.

Keywords: fish, zooplankton, fishless lakes, nutrient cycling, Rocky Mountain National Park, Colorado State University, Greenback cutthroat trout

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