

Completion Report Rocky Mountains Cooperative Ecosystem Studies Unit (RM-CESU)

Project Title: Tracking Lake Trout Diet and Trophic Interactions in Blue Mesa Reservoir Using Stable Isotopes

Project Code: CSURM-245, P12AC10275

Type of Project: Research

Funding Agency: National Park Service

Partner University: Colorado State University

NPS Agreement Technical Representative: Danguole Bockus, National Park Service, Black Canyon NP/Curecanti NRA, 102 Elk Creek, Gunnison, CO 81230, 970-249-1914 ext 432, danguole_bockus@nps.gov

NPS Technical Expert: Matt Malick, National Park Service, Black Canyon NP/Curecanti NRA, 102 Elk Creek, Gunnison, CO 81230, 970-641-2337 ext 248, matt_malick@nps.gov

Principal Investigator: Dr. Brett Johnson, Professor, Department of Fish, Wildlife, and Conservation Biology, 233 Wagar Building, 1474 Campus Delivery, Colorado State University, Fort Collins, CO 80523, 970-491-5002; brett@cnr.colostate.edu

Start Date of Project: April 1, 2012

End Date of Project: June 30, 2013

Funding Amount: \$10,000

Project Summary,

Results of the evaluation of lake trout isotopic diet analysis, energy density analysis and bioenergetics modeling will be provided in a Master's Thesis. The report will include summary and analysis of findings, and management recommendations for NPS and CPW biologists. The results of this study are already being used by the State of Colorado to manage the Lake Trout/Kokanee dynamic in Blue Mesa Reservoir.

The Activities completed under this agreement include:

- **Samples were collected by Colorado Parks and Wildlife during spring and summer 2012 in order to bolster samples of prey taxa and select sizes of piscivores.**
- **Data analysis was completed on energy content of all members of the food web to be used in bioenergetics modeling. This allowed re-creation of the current food web in Blue Mesa Reservoir with a system-specific bioenergetics component showing consumptive demand on the kokanee population both pre- and post-kokanee salmon collapse.**

Number of students participating in this project: undergraduates, graduate students, degrees conferred.

1 – MS Student in the Department of Fish, Wildlife, and Conservation Biology. Bill Pate.

Lessons Learned from this project:

Data and analysis from this project showed that kokanee salmon were still a significant portion of the diet of small and medium sized lake trout and the primary prey item for large sized lake trout. Modeling of this information showed that without more aggressive lake trout harvest and removal efforts, predation by the lake trout population would cause the kokanee salmon population to continue to decline. This information was used by Colorado Parks and Wildlife managers to implement different harvest and removal strategies for lake trout at Blue Mesa.

Other RM-CESU agencies or research partners who participated in this project:

CURE staff contributed field time to the netting effort.