

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Transboundary Fish Population Aging

Type of Project: Technical Assistance

Discipline: Natural

Funding Agency: National Park Service

Other Partners/Cooperators: University of Montana, Confederated Kootenai Salish Tribes (CSKT)

Effective Dates: 7/1/2012 - 12/31/2013

Funding Amount: \$3,514

Investigators and Agency Representative:

NPS Contact: Chris Downs, Fisheries Biologist, Science Center, Glacier National Park, West Glacier, MT 59936, 406-888-7917, chris_downs@nps.gov

Investigator: Lisa Eby, Associate Professor of Aquatic Vertebrate Ecology, College of Forestry and Conservation, University of Montana, 32 Campus Drive, Missoula, MT, 59812, (ph) 406-243-5984, (fax) 406 243-4845, lisa.eby@umontana.edu

Craig Stafford, Researcher (LOA), College of Forestry and Conservation, University of Montana, 32 Campus Drive, Missoula, MT 59812; (fax) 406-243-4845, (ph.) 406- 546-5345; craig.stafford@mso.umt.edu

Project Abstract: To reach our research objectives we propose to analyze fish aging structures (otoliths) collected during previous and ongoing sampling efforts cooperatively funded through the RMCESU and other NPS sources. We will prioritize obtaining age data from up to 100 lake trout otoliths but if funding allows would pursue aging of bull trout, westslope cutthroat trout, northern pikeminnow, and northern pike using other age structures. Ages from a minimum of 75 fish will be determined primarily using thin sectioned otoliths, which generally are considered the most accurate way to age fishes particularly if they are long lived. Whole otoliths (after clearing) may be used to cross reference the thin sections for a sub-sample of at least 20 fish. Scales may be used as a cross reference for younger fish, and also to age fish when no otolith samples were collected. Otoliths and scales will be prepared using standard preparation and viewing techniques. Otolith thin sections will be prepared by embedding in epoxy and making a transverse section with a low speed saw at the Confederated Kootenai Salish Tribes (CSKT) fish facility at Blue Bay, Montana. Whole otoliths will be prepared by soaking in either immersion or clove oil, depending on species, while scales will be cleaned and mounted between glass slides. All aging samples will be viewed and photographed using a dissecting scope integrated with a digital camera. Ages will initially be determined by University of Montana (UM) staff with extensive aging experience (Stafford), and replicate readings will be done on a sub-sample by National Park Service (Downs) or other qualified staff. UM cooperators will develop an age-length key for lake trout for Logging, St. Mary, and Cosley lakes for lake trout. A summary report will be provided to the NPS detailing the results of the age and growth work.

Outcomes with Completion Dates: December 2013

Keywords: lake trout, otoliths, population aging, Glacier National Park, University of Montana