

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Review and recommendations for the Upper Yellowstone River Fisheries Assessment Project

Discipline: Natural

Type of Project: Technical Assistance

Funding Agency: National Park Service

Other Partners/Cooperators: Montana State University

Effective Dates: 8/15/2005 - 12/30/2006

Funding Amount: \$7,638.00

Investigators and Agency Representative:

NPS Contact: Todd M. Koel, Ph.D., Supervisory Fisheries Biologist, Center for Resources, Fisheries and Aquatic Sciences Section, P.O. Box 168, Yellowstone National Park, WY 82190; 307-344-2281, todd_koel@nps.gov

Investigator: Thomas McMahan, Ph.D., Professor, Department of Ecology, Montana State University, Bozeman, MT 59717; 406-994-2492, tmcMahon@montana.edu

Project Abstract:

The Yellowstone cutthroat trout *Oncorhynchus clarki bouvieri* subspecies is indigenous to the Snake River upstream from Shoshone Falls, Idaho and the Yellowstone River upstream from the confluence of the Tongue River in Montana. Since the subspecies was geographically isolated following deglaciation of the Yellowstone region some 10,000-12,000 years ago, individual populations have adapted and evolved a variety of life history characteristics in response to a diversity of environmental conditions throughout their natural range. Activities of humans have resulted in a dramatic loss in the historical range of this subspecies. This range reduction is attributed to several factors, including hybridization with rainbow trout, genetic homogenization due to widespread stocking of Yellowstone cutthroat trout from Yellowstone Lake, competition/predation by brook trout (*S. fontinalis*) and brown trout (*Salmo trutta*), habitat loss and fragmentation, and over-harvest. Yellowstone Lake, its numerous tributary streams, and the Yellowstone River above the upper falls form the core of the remaining, natural habitat for native, genetically pure, Yellowstone cutthroat trout. At present, Yellowstone cutthroat trout with 90 percent or greater genetic purity occupy only about 27 percent of their historic range; most of the remaining pure fishes occur in Yellowstone Lake. The Fisheries Assessment of the Upper Yellowstone River (river and tributaries upstream of Yellowstone Lake) will help prevent the extinction and ensure the long-term conservation of Yellowstone cutthroat trout in the United States. The survey has been documenting the status of this important subspecies, including population estimates of resident versus adfluvial fish, size structure, movement patterns and other life history strategies, habitat associations, genetic purity, and an overall determination of fish health. Results will allow for the development of management strategies for the preservation of this important resource.

Due to the decrease in suitable habitat and the recent threats discovered to the Yellowstone cutthroat trout, the National Park Service (NPS) has been conducting a detailed assessment of this subspecies with an ultimate goal of determining the status of this important subspecies in what may be their most important, remaining habitat. There is a need for a subject expert to review field investigations completed to date and work collaboratively to develop work plans for the future. Specific objectives are: 1) To review all data collected in 2003, 2004, and 2005 regarding the movement patterns of Yellowstone cutthroat trout radio tagged in the Upper Yellowstone River region and 2) Meet with Yellowstone National Park fisheries staff and provide guidance for field assessments of cutthroat trout in the upper Yellowstone River in 2006 and 2007.

Outcomes with Completion Dates:

All information produced by this project will be provided in electronic format to the Fisheries and Aquatic Sciences Section, Yellowstone Center for Resources. Final product describing results and recommendations will be in the form of a brief technical report or draft M.S. thesis (due 12/30/2006).

Keywords: fisheries, Yellowstone cutthroat trout, population assessment, Yellowstone National Park, Montana State University

For Administrative Use Only:

Date Annual Report Received:

Date Final Report Received:

Publications, etc. on file: