

## **Project Summary**

### **Rocky Mountains Cooperative Ecosystem Studies Unit**

**Project Title:** Lake Trout Suppression Program Data Analysis, Modeling, and Guidance to Improve Efficiency

**Discipline:** Natural

**Type of Project:** Technical Assistance

**Funding Agency:** National Park Service

**Other Partners/Cooperators:** Montana State University

**Effective Dates:** 9/1/2006 - 12/31/2009

**Funding Amount:** \$68,691

**Investigators and Agency Representative:**

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**Project Abstract:**

In recent years, the aquatic resources of Yellowstone National Park and the ecosystems they support have become seriously threatened by introductions of non-native and exotic species. As a result, the preservation of Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*) of Yellowstone Lake, which is the largest remaining concentration of (genetically pure) inland cutthroat trout in the world, has become a top park priority. The lake trout (*Salvelinus namaycush*) suppression program, conducted to preserve the Yellowstone Lake cutthroat trout, is one of the largest non-native fish removal programs occurring in the United States. The catch-per-unit-effort of lake trout has remained low and relatively stable in recent years, and the average length of spawning fish has declined substantially, indicating that the suppression program is having a significant impact. However, this program requires the annual expenditure of a significant amount of resources, and the park is seeking information that could potentially improve program efficiency. There is an immediate need for detailed analysis and modeling of existing information for guiding future efforts of the program.

Our specific objectives are to:

- 1) Description of the historical and current age structure, mortality, growth, condition, and recruitment of lake trout in Yellowstone Lake;
- 2) Evaluation of temporal patterns in growth, recruitment, and mortality of lake trout related to annual levels of suppression effort;
- 3) Estimation of age-specific mortality levels that the program should strive for to achieve and maintain lake trout suppression;
- 4) Recommendations for improving lake trout suppression efficiency; and
- 5) Recommendations for a study design to be used in future years for the collection of lake trout age structure, mortality, growth, and recruitment data that will provide statistically rigorous results and allow a continuation of modeling to provide and annual assessment of suppression success.

**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 products will be in the form of a written report and/or M.S. Thesis.

**Keywords:** lake trout, suppression, cutthroat trout, Yellowstone Lake, Yellowstone National Park, Montana State University

**For Administrative Use Only:**

Date Annual Report Received:

Date Final Report Received:

Publications, etc. on file: