Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Whirling Disease Infection Risk of Yellowstone Cutthroat Trout

Discipline: Natural
Type of Project: Technical assistance
Funding Agency: National Park Service
Other Partners/Cooperators: Montana State University
Effective Dates: March 15, 2008- March 15, 2010
Funding Amount: $12,769 ($5,622-FY08; $7,147-FY09)

Investigators and Agency Representative:
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Project Abstract:

Background Information

The Yellowstone cutthroat trout (YCT) subpopulations occurring in the Yellowstone Lake basin provide an excellent opportunity to study the whirling disease parasite and develop risk assessment tools specific for cutthroat trout. Much progress has been made examining the environmental and ecological characteristics that correlate with rainbow trout (RBT) infection risk, thus providing parameters that would be important in risk assessment tools. For example, there were significant positive correlations between RBT infection risk and abundance of *T. tubifex* releasing triactinomyxons and between RBT infection risk and abundant fine sediments, slow water velocities and stable water temperatures in the Madison River, MT. The strain of *T. tubifex* present in an area may also be associated with disease risk because they exhibit widely different levels of triactinomyxon production. For example, a susceptible strain of *T. tubifex* dominates in one region of the Colorado River where RBT disease risk is high and a resistant strain dominates in a region where RBT disease risk is low. Such studies need to be extended to YCT so that risk assessment tools can be developed, tested, and applied to the waters of Yellowstone National Park.

Objective

Our specific objective is to:
Develop a risk-assessment tool for fishery managers based on localized factors influencing disease prevalence and severity.

Methodology
We will develop a qualitative, reach-scale, risk assessment model. Briefly, we plan to use statistical analyses (primarily correlation) to examine how well the physical habitat and chemical factors, tubificid density, and prevalence of infection of tubificids correlate with, and predict prevalence of infection and histological scores of sentinel fish at the reach scale. We will rank the features based on the strength of the correlations. Thus, we call our risk assessment model qualitative, because we will only rank the relative risk posed by various habitat features, worms etc.

Outcomes with Completion Dates:
1) 15 August 2008 – Progress Report
2) 15 August 2009 – Progress Report
3) 31 December 2009 Final Report

Keywords: Whirling Disease, Yellowstone Cutthroat Trout, Yellowstone National Park, Montana State University