

STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-80-R-8

Study No.: 230728

Title: Effects of *Piscirickettsia* infection on the muskellunge population of Lake St. Clair

Period Covered: October 1, 2006 to September 30, 2007

Study Objective: The objectives of this study are (1) to determine the infection rate in Lake St. Clair muskellunge and whether the rate varies spatially or temporally, (2) to determine if other fish species in the St. Clair System are infected by the bacteria, particularly migratory salmonids, (3) to identify the impacts of the organism on the health of individual muskellunge, and (4) to determine if the disease can be vertically transmitted.

Summary: Samples of fish and invertebrates were collected from Lake St. Clair during 2004, 2005, and 2006. The *Piscirickettsia* sp bacteria were found in muskellunge and yellow perch by laboratory examination. The bacteria were present in all of the muskellunge sent to the lab based on electron microscopy and molecular analysis using the ribosomal RNA gene sequences. Histopathological examination on the affected muskellunge revealed severe degeneration of the kidney glomeruli and widespread subcutaneous edema. Based on analysis of the gonads, there were no indications that this bacterium is present. Isolation, electron microscopy, and molecular evidence indicated that the Virus Hemorrhagic Septicemia Virus (VHSV) genotype IV, sublineage b was associated with an episode of muskellunge mortalities. The virus was found in high titers in internal organs. The roles each of the VHSV and *Piscirickettsia* has played in causing such mortalities remain to be elucidated.

Findings: Only Job 7 was scheduled for 2006-07, and progress is reported below.

Job 7. Title: Prepare final report.—A draft manuscript has been prepared by M. Thomas and is under review and revision by Dr. M. Faisal. The manuscript will be published as a fisheries research report in 2008.

Prepared by: Michael V. Thomas and Dr. Mohamed Faisal

Date: September 30, 2007