

## STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-80-R-7

Study No.: 230482

Title: Investigations into causes of, and solutions for, variable survival of Chinook salmon stocked into Lake Huron

Period Covered: October 1, 2005 to September 30, 2006

**Study Objectives:** To develop methods for documenting the lacustrine early life history of stocked salmonids, with emphasis upon an understanding of factors influencing mortality of chinook salmon in Lake Huron during their first year at large. To identify the cause of low returns of chinook salmon stocked into the AuSable River. To determine if there is a significant difference in return rates for chinook salmon stocked in three different regions of Lake Huron: North, Central, and South. To determine the relative contributions of wild and hatchery-produced chinook to Lake Huron's fisheries.

**Summary:** From 1993-2000, study fish were marked, reared, and stocked at Oscoda, Swan River, Harbor Beach, Tawas, and Port Austin as planned. Two roving "head hunters" were employed in all study years on Lake Huron to collect snouts with coded-wire tags from angler-caught Chinook salmon. Coded-wire tags from Chinook salmon were processed and the data entered. Tag recovery rates from the sportfishery suggested survival of groups of Chinook salmon from acclimation raceways at Oscoda was more than twice that of conventionally-planted fish. Weir collections and fall electrofishing were used to assess growth and condition and proportions of study groups returning to stocking sites as mature fish. In the AuSable River, test (acclimated) fish were observed more than 5 times as frequently as the control (conventionally stocked) groups in the spawning runs, suggesting acclimation raceways there enhanced both survival and homing. Similarly, raceway-acclimated Chinook salmon at Harrisville Harbor appear to be performing much better than conventionally stocked Chinook from other ports. Return rates from a netpen at Harbor Beach were not consistently different from conventional stockings, possibly because of exposure of the pen to unusually warm temperatures in a power plant thermal discharge. The 1997 and 1998 year classes appeared to be weak across all experimental stocking sites. The manuscript of the final report was finished and submitted for publication. All jobs but Job 6 (Publication) are completed.

**Findings:** Only Job 6 was scheduled for 2005-06 and progress is reported below.

**Job 6. Title: Publish report.**—This study was amended in 2006-07 to extend the publication period one more year. Data summaries were completed and the manuscript was drafted and submitted to the editor for publication.

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**Date:** September 30, 2006