STUDY PERFORMANCE REPORT

State: Michigan **Project No.:** F-80-R-5

Study No.: 230692 **Title:** Influence of total length and condition at stocking on Chinook salmon survival and time at large.

Period Covered: October 1, 2003 to September 30, 2004

Study Objectives: There are six main objectives identified for this project. 1) To evaluate the influence of the total length of stocked Chinook salmon on post-stocking survival. 2) To evaluate the influence of total length of Chinook salmon at stocking on the age and size of fish returning to spawn. 3) To evaluate the cost per return of small versus large stocked Chinook salmon. 4) To evaluate the influence of condition on survival of Chinook salmon stocked at the same size. 5) To evaluate the influences of high and low condition on the return size and age of Chinook salmon stocked at similar sizes. 6) To determine the cost per return of Chinook salmon at two condition levels.

Summary: Fish for this study have been stocked for four years, beginning in 2001. The portion of the study evaluating the condition of Chinook salmon at stocking has not yet been initiated due to delays in hatchery renovations at the Thompson State Fish Hatchery and the need to work out appropriate rearing techniques to complete this objective. Returns of tagged fish from the size-at-stocking evaluation are increasing, as three year-classes have fully entered the fishery. At the time of this writing, 1,248 fish have been returned and analyzed, all years and sites combined.

Findings: Jobs 1 and 2 were scheduled for 2003-04, and progress is reported below.

Job 1. Title: **Stock Fish.**–Study fish have been stocked into Lake Michigan and Lake Huron tributaries for four years (2001, 2002, 2003, and 2004; Table 1). Fish quality assessments have been conducted each year at each hatchery (Wolf Lake and Platte) prior to stocking, and data are being compiled for evaluation. We have amended the study to extend stocking an additional four years.

Job 2. Title: **Recover tags.**–A total of 1,248 tagged fish have been returned. In 2002, 184 fish were returned and over 75% of these were larger fish planted from the Wolf Lake State Fish Hatchery. A similar yet less pronounced pattern was observed in 2003, when 762 heads were returned, 485 (64%) of which were from Wolf Lake Hatchery. Preliminary data in 2004 (302 heads) indicate that returns are approaching a 50:50 ratio from the Wolf Lake and Platte hatcheries (Table 2). The majority of the fish returned were stocked at Medusa Creek (N=618) and the greatest number of salmon heads were returned from the Grand Haven, Manistee, South Haven and Charlevoix fisheries in Lake Michigan (N=199, 144, 113 and 109).

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Table 1.–Number of Chinook salmon stocked (recoverable tags) per stocking location and hatchery of origin (treatment), 2001 to 2004.

	Stocking location							
	Swan River Hatchery		Medusa Creek Hatchery		Little Manistee River Hatchery		St. Joseph River Hatchery	
	Wolf Lake	Platte	Wolf Lake	Platte	Wolf Lake	Platte	Wolf Lake	Platte
2001	102,749	84,703	94,462	75,348	98,978	79,719	71,029	85,751
2002	84,027	95,473	96,524	100,424	96,424	91,137	73,562	68,496
2003	100,698	94,038	98,471	98,768	98,057	94,284	70,943	71,201
2004	86,606	88,705	84,849	97,326	86,790	93,879	68,513	74,009

Table 2.–Number of Chinook salmon heads returned and tags recovered annually, 2001 to 2004.

Year	Total heads returned	Number of heads with tags	Number of tags from study 692	
			Platte	Wolf Lake
2001	413	303	0	0
2002	886	666	45	139
2003	1,658	1,305	277	485
2004	416	328	153	149