

STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-81-R-7

Study No.: 230513

Title: Evaluation of returns of salmonids to weirs in Michigan's waters of the Great Lakes.

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

Study Objectives: (1) To annually monitor and record returns of Chinook salmon, coho salmon, and steelhead trout to Michigan weir operation facilities. (2) To mark Chinook salmon, coho salmon, and steelhead trout at index sites and provide annual estimates of size at age. (3) To collect data and report on contracted salmon harvest operations. (4) To provide annual data summaries of weir returns to be used in Management Unit reports, GLFC reports, MDNR web site updates, and for distribution to interested researchers and the public.

Summary: Data were collected during 2005 on Chinook salmon *Oncorhynchus tshawytscha* and coho salmon *O. kisutch* returning to six MDNR harvest weir facilities. Returns of Chinook salmon and coho salmon were (in most cases) lower than in 2004 and below the long-term average. The audit report for 2005 operations was completed as scheduled, and is available electronically. Marking and stocking of Chinook salmon at three weir index sites was completed in spring of 2006, as scheduled. Collection of data on 2006 salmon weir returns is ongoing.

Findings: Jobs 1 through 5 were scheduled for 2005-06, and progress is reported below.

Job 1. Title: Monitor and record data at weir operation facilities.—In coordination with management unit personnel, data were collected during fall 2005 on Chinook and coho salmon returning to six MDNR harvest weir facilities. Returns of Chinook salmon to Lake Michigan harvest facilities (32,432) were slightly above the long-term average, but less than 2004 returns (Table 1). Lake Huron returns of Chinook salmon to the Swan River weir in 2005 (3,143 fish) were dramatically lower than the long-term average of 22,493 fish. Returns of coho salmon to Lake Michigan weirs (16,414 fish) were the lowest recorded in the 1983-2005 time series (Table 2). Data collection for 2006 weir returns is ongoing; this information will be presented in future reports, along with information collected on steelhead and other (non-harvested) trout at facilities throughout the state. Biological data are collected on steelhead running in the Boardman and Platte rivers in the fall and on the Little Manistee River in both the spring and fall. Additionally, information regarding the number of fish observed and passed through the weir facilities is available and efforts are currently underway to compile information regarding run size for inclusion in annual weir reports. Databases have been created to archive biological data collected from steelhead. Charlevoix staff are updating the databases with current information and checking the accuracy of past information. Steelhead scales from Lake Michigan and Huron weir collections are being archived at the Charlevoix Fisheries Research Station.

Job 2. Title: Mark salmon and trout.—Marking of Chinook salmon stocked in the Little Manistee River, Medusa Creek, and the Swan River was completed in spring of 2006 (Table 3). Coded wire tag marking was conducted in coordination with Study 230464, *Coded wire tag marking of salmonines in the Great Lakes*. Marked fish stocked in 2001-06 are collected at weir facilities, and will be used in the future to provide us with a standard index of size-at-age for Lake

Michigan and Lake Huron Chinook salmon. A long-term plan for marking steelhead at index sites is being developed, for implementation in spring 2008.

Job 3. Title: Report on contracted salmon harvest operations.—The annual audit report for 2005 weir operations (Clevenger 2006) – detailing harvest by species, weir facility, and date of collection – was completed as scheduled, and is available electronically. Collection of data on 2006 contract weir harvest operations is not yet complete. At the end of the weir harvest season (approximately December 1) this data will be compiled for the 2006 audit report. This report will be used to reconcile financial arrangements between the MDNR and the harvest contractor.

Job 4. Title: Produce annual data summaries and write report.—Charlevoix staff are continuing to develop data summary formats appropriate for web distribution. For example, weekly updates of 2006 harvest operations are currently available on the Division’s Intranet page. Additional multi-year data summaries have also been added to the annual audit report for weir operations (Clevenger 2006).

Job 5. Title: Write report for 2001-05.—A final report will be completed and submitted to Research Section administrative staff by December 29, 2006.

References:

Clevenger, J. A., Jr. 2006. Summary of the chinook and coho salmon harvest from Michigan weirs on tributaries of Lakes Michigan and Huron, 2005. Michigan Department of Natural Resources internal report.

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Dated: September 30, 2006

Table 1.—Estimated total number of Chinook salmon harvested from weirs on tributaries to Lakes Michigan and Huron each fall from 1986-2005.

Sample year	Weir								Total (Lake Huron)
	Boardman	Little Manistee	Medusa	Platte	Thompson ^a	Total (Lake Michigan)	Swan	Van Ettan ^b	
1986	0	22,131	0	2,678		24,809	38,781	12,733	51,514
1987	4,902	31,841	11,230	7,787		55,760	51,447	12,472	63,919
1988	6,129	12,519	2,353	4,649		25,650	30,830	9,081	39,911
1989	5,809	18,338	3,040	1,899		29,086	30,119	3,891	34,010
1990	6,236	19,499	6,533	1,761		34,029	19,521		19,521
1991	5,556	21,062	2,127	4,398		33,143	23,048	8,319	31,367
1992	3,139	15,747	4,038	4,171		27,095	37,862	7,913	45,775
1993	2,299	12,911	3,021	3,109		21,340	34,994	2,300	37,294
1994	3,025	11,888	3,030	1,162		19,105	19,771	1,218	20,989
1995	4,547	13,079	4,714	3,943		26,283	30,320	—	30,320
1996	5,705	17,120	6,548	4,145		33,518	25,615	—	25,615
1997	3,040	15,443	4,036	1,659		24,178	17,219	—	17,219
1998	2,665	7,326	1,277	2,380		13,648	11,654	—	11,654
1999	6,004	18,773	3,551	3,242		31,570	24,884	—	24,884
2000	4,549	13,030	3,904	2,345	624	24,452	11,552	—	11,552
2001	5,231	18,289	8,068	4,511	0	36,099	12,282	—	12,282
2002	5,489	19,392	10,417	6,053		41,351	9,645	—	9,645
2003	6,211	14,367	12,792	7,988		41,358	10,979	—	10,979
2004	7,795	15,615	15,465	7,169		46,044	6,193	—	6,193
2005	7,875	11,064	9,936	3,557	0	32,432	3,143	—	3,143
Average	4,810	16,472	5,804	3,930		31,048	22,493	7,241	25,389

^a Data compilation on harvest from Thompson Creek (Lake Michigan) is not yet complete; harvest at this facility in most years does not exceed 1,000 fish.

^b The harvest weir at Van Ettan Creek has not been operated since 1994.

Table 2.—Estimated total number of coho salmon harvested from weirs on tributaries to Lake Michigan each fall from 1983-2005.

Sample year	Weir				Total	
	Boardman	Little Manistee	Medusa ^a	Platte		Thompson ^a
1983	—	24,264		154,179	178,443	
1984	—	33,764		131,692	165,456	
1985	—	15,177		74,532	89,709	
1986	—	16,724		45,266	61,990	
1987	306	15,101		50,300	65,707	
1988	477	4,467		28,310	33,254	
1989	288	14,023		44,612	58,923	
1990	141	10,030		22,516	32,687	
1991	64	12,300		25,730	38,094	
1992	25	13,400		33,072	46,497	
1993	182	18,096		38,911	57,189	
1994	1,530	562		29,491	31,583	
1995	147	355		51,997	52,499	
1996	209	2,584		49,816	52,609	
1997	3,804	781		85,556	90,141	
1998	1,127	1,471		83,059	85,657	
1999	101	526		43,017	43,644	
2000	5,934	590	10	102,682	735	109,951
2001	599	926	0	82,024	0	83,549
2002	1,344	530	2	119,276		121,152
2003	163	618	1	22,947		23,729
2004	1,407	1,106	0	16,061	0	18,574
2005	3	2,094	0	14,317	0	16,414
Average	940	5,240		49,668		55,887

^a Data compilation on harvest from Thompson Creek and Medusa Creek is not yet complete; harvest at these facilities in most years does not exceed 1,000 fish.

Table 3.—Number of spring fingerling Chinook salmon marked with coded-wire tags and stocked in 2001-06 at weir index stocking sites. Number tagged is not corrected for tag retention or fin clip rates.

Study numbers	Stocking site	Number tagged	Tag retention (%)	Stocking date	Net pen (Y/N)
230513/230692	Medusa Creek, Charlevoix	203,506	88.8	06-05-01	Y
	Medusa Creek, Charlevoix	206,843	96.4	05-30-02	Y
	Medusa Creek, Charlevoix	204,498	96.8	05-28-03	Y
	Medusa Creek, Charlevoix	199,012	93.2	06-03-04	Y
	Medusa Creek, Charlevoix	201,924	93.9	06-01-05	Y
	Medusa Creek, Charlevoix	202,483	84.3	06-01-06	Y
230482/230513/230692	Swan River, Rogers City	203,839	94.5	05-15-01	N
	Swan River, Rogers City	198,209	94.1	05-07-02	N
230513/230692	Swan River, Rogers City	203,805	97.1	05-06-03	N
	Swan River, Rogers City	203,580	88.0	05-13-04	N
	Swan River, Rogers City	202,238	93.7	05-11-05	N
	Swan River, Rogers City	200,055	79.6	05-17-06	N
	Little Manistee River	203,946	92.7	05-14-01	N
	Little Manistee River	203,599	92.9	05-09-02	N
	Little Manistee River	202,255	96.8	05-05-03	N
	Little Manistee River	202,896	91.4	05-12-04	N
	Little Manistee River	202,241	89.6	05-10-05	N
	Little Manistee River	200,869	79.6	05-12-06	N