

## STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-81-R-5

Study No.: 230513

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

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

**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 2003 on Chinook and coho salmon returning to six MDNR harvest weir facilities. Returns of Chinook salmon were above the long-term average, whereas coho salmon returns to Lake Michigan weirs were the lowest recorded. The audit report for 2003 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 2004, as scheduled. Collection of data on 2004 salmon weir returns is ongoing.

**Findings:** Jobs 1 through 4 were scheduled for 2003-04, and progress is reported below.

**Job 1. Monitor and record data on returns of Chinook salmon, coho salmon, and steelhead trout to Michigan weir operation facilities.**-In coordination with management unit personnel, data were collected during fall 2003 on Chinook and coho salmon returning to six MDNR harvest weir facilities. Returns of Chinook salmon to Lake Michigan harvest facilities (41,358) were above the long-term average, and similar to 2002 (Table 1). Returns of coho salmon (23,729 fish) were the lowest recorded since 1983 (Table 2). Data collection for 2004 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 in the process of 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. Mark Chinook salmon, coho salmon, and steelhead trout at index sites, and provide annual estimates of size at age and percent return.**-Marking of Chinook salmon stocked in the Little Manistee River, Medusa Creek, and the Swan River was completed in spring of 2004 (Table 3). Coded wire tag marking was conducted in coordination with Study 464, *Coded wire tag marking of salmonines in the Great Lakes*. Marked fish stocked in 2001-03 are beginning to

return to 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.

There is not an established long-term plan for marking steelhead at index sites since, unlike Chinook salmon, steelhead returning to weirs can be readily aged with scale samples. In the future, other sites and / or species may be included in the weir index marking program.

**Job 3. Report on contracted salmon harvest operations.**-The annual audit report for 2003 weir operations (Clevenger 2004) – detailing harvest by species, weir facility, and date of collection – was completed as scheduled, and is available electronically. Collection of data on 2004 contract weir harvest operations is not yet complete. At the end of the weir harvest season (approximately December 1) these data will be compiled for the 2003-04 audit report. This report will be used to reconcile financial arrangements between the MDNR and the harvest contractor.

**Job 4. Produce annual data summaries of weir returns for use in Management Unit reports, GLFC reports, MDNR web site updates, and for distribution to interested researchers and the public.**-Charlevoix staff are in the process of developing a summary report template, to be used by management unit personnel in completing annual weir operation and egg take technical reports. In addition, we are developing data summary formats appropriate for web distribution. For example, weekly updates of 2003-04 harvest operations are currently available on the Division's Intranet page.

#### **References:**

Clevenger, J. A., Jr. 2004. Summary of the chinook and coho salmon harvest from Michigan weirs on tributaries of Lakes Michigan and Huron, 2003. Michigan Department of Natural Resources internal report.

**Prepared by:** David F. Clapp, John Clevenger, and Jory L. Jonas.

**Dated:** September 30, 2004

Table 1.—Estimated total number of Chinook salmon harvested from weirs on tributaries to Lakes Michigan and Huron each fall from 1986-2003.

Sample year	Weir								
	Lake Michigan					Lake Huron			
	Boardman	Little Manistee	Medusa	Platte	Thompson <sup>a</sup>	Total	Swan	Van Ettan <sup>b</sup>	Total
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
Average	4,474	16,820	5,038	3,771		30,137	24,474		27,692

<sup>a</sup> 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.

<sup>b</sup> 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 1983-2003.

Sample year	Weir					Total
	Boardman	Little Manistee	Medusa <sup>a</sup>	Platte	Thompson <sup>a</sup>	
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
Average	967	8,871	3	62,809		72,498

<sup>a</sup> 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 2001-2004 at weir index stocking sites. Number tagged is not corrected for tag retention or fin clip rates.

Study number	Stocking site	Number tagged	Tag retention (%)	Stocking date	Net pen (Y/N)
513/692	Medusa Creek, Charlevoix	203,506	88.8	06-05-01	Yes
513/692	Medusa Creek, Charlevoix	206,843	96.4	05-30-02	Yes
513/692	Medusa Creek, Charlevoix	204,498	96.8	05-28-03	Yes
513/692	Medusa Creek, Charlevoix	199,012	93.2	06-03-04	Yes
482/513/692	Swan River, Rogers City	203,839	94.5	05-15-01	No
482/513/692	Swan River, Rogers City	198,209	94.1	05-07-02	No
513/692	Swan River, Rogers City	203,805	97.1	05-06-03	No
513/692	Swan River, Rogers City	203,580	88.0	05-13-04	No
513/692	Little Manistee River	203,946	92.7	05-14-01	No
513/692	Little Manistee River	203,599	92.9	05-09-02	No
513/692	Little Manistee River	202,255	96.8	05-05-03	No
513/692	Little Manistee River	202,896	91.4	05-12-04	No