

STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-53-R-13

Study No.: 462

Title: Charter boat catch and effort from the Michigan waters of the Great Lakes

Period Covered: April 1, 1996 to March 31, 1997

Study Objective: To obtain a continuous annual record of fishing effort as well as the number, type, and location of fish caught by charter boat anglers in the Michigan waters of the Great Lakes.

Summary: Charter boat catch reporting data forms, grid maps of the Great Lakes and instructions were sent to charter fishing operators prior to the 1996 angling season. Completed data forms were sent to the Charlevoix Fisheries Research Station and entered on computer throughout the year. Charter fishing operators who were delinquent with their reports were notified on a regular basis throughout the season via post card or certified mail.

By the end of the 1996 season, data was compiled on over 16,000 charter fishing excursions. Ninety-eight percent of all charter operations complied with the reporting requirements. A report was prepared which summarized the results of the project by lake and was mailed to all charter operators during January, 1997.

A correlation analysis of the charter and creel survey data (Study 427) for 1991-96 indicates that charter operators are reporting data accurately.

Job 1. Title: Distribute data forms.

Findings: Reporting forms, and grid maps of the Great Lakes were mailed to 496 charter operators during March, 1996. Charter operators, who used their vessels for fishing, were informed that they were required by law to complete the form each time they fished. The form was to be mailed by the tenth day of the following month to the Michigan Department of Natural Resources (MDNR) Charlevoix Fisheries Research Station.

Job 2. Title: Data entry and compliance.

Findings: Completed data forms received by the Charlevoix Fisheries Research Station were logged, coded by port fished, and entered on computer. Catch and effort data on 16,091 charter fishing excursions were recorded by year's end (December, 1996). Incomplete forms received were logged and returned to the charter operator with a letter stating the reason the report was returned.

Each month (June through October) post-card notices were sent to charter operators who had not filed a report for the previous month. Two notices were sent each month, the first after an operator was delinquent for 10 days, and the second after 30 days.

In November, 1996 letters were sent via certified mail to operators who had not filed reports for one or more months during May through September. The letter informed the operator that this would be the last notice he or she would receive. If the recipient did not respond in writing within 14 days his or her name would be submitted to MDNR, Law Enforcement Division recommending non-issuance of an inspection certificate for the 1997 season. A list of eight names of charter operators who had not complied with the reporting requirements was sent to MDNR, Law Enforcement Division in January, 1997.

During 1996, an average of 33% of charter operators had not filed their monthly reports within 10 days after the date they were due. An average of 18% of all operators were delinquent for at least 30 days. The monthly average rate of non-compliance during 1996 was slightly less compared to 1995. By end of December, 1996 98% of all charter operators had complied with the law. The final compliance rate for 1996 was greater than 1995 (92%).

Job 3. Title: Quality control and education.

Findings: Presentations regarding the results and importance of the charter boat reporting program were made at several charter boat workshops which were held around the State of Michigan during the winter months (1997). The workshops were organized by the Michigan State University Extension Service (Sea Grant). The presentations stressed the need for accurate and timely information from charter operators. Adequate time was allowed at the end of each session for the project biologist to field questions from charter captains.

Several field trips were made by the project biologist during the 1996 fishing season to various ports on lakes Michigan and Huron. The objective of these trips was to promote the reporting program and to talk informally to charter captains.

Several charter fishing operators were cited during 1996 by MDNR, Law Enforcement Division for either failing to submit catch reports on a timely basis, or for not maintaining an on-board log of their fishing activity.

Job 4. Title: Compile data and write annual reports.

Findings: Charter boat operators submitted reports on a total of 16,091 charter excursions which took place during 1996. These data were compiled and summarized by lake (Tables 1 through 5) and were presented in a report titled *Charter Boat Catch and Effort from the Michigan Waters of the Great Lakes, 1996*. Copies of this report were mailed to all charter operators during January, 1997. Charter anglers spent 416,000 hours fishing Michigan's waters of the Great Lakes in 1996. The total catch was 88,000 yellow perch, 43,000 walleye, 32,000 chinook salmon, 31,000 lake trout, 20,000 rainbow trout, 8,400 coho salmon and 3,700 brown trout.

In addition to the annual report which was sent to charter fishing operators an MDNR Fisheries Technical Report, No. 95-3, titled *Charter boat catch and effort from the Michigan waters of the Great Lakes, 1994* was published during 1996 (Rakoczy and Svoboda 1995).

Job 5. Title: Analyze six-year data series.

Findings: One of the most important applications of the charter boat catch and effort data are the valuable trend information that it provides on the salmonine fisheries on lakes Michigan, Huron and Superior as well as for the yellow perch and walleye fisheries on lakes Huron, St. Clair and Erie. Specifically, the chinook catch rate data series shows the improvement in the chinook fisheries on Lake Huron since 1993 and on Lake Michigan since 1995 (Table 6). The trendless lake trout catch rate data for Lake Superior indicates the continued health of that fishery. In general, yellow perch catch rates have been trending upward on lakes St. Clair and Erie, while the walleye fishery on Lake Huron has declined (Table 7).

Charter operators have also reported the numbers of sea lamprey observed attached to chinook salmon and lake trout since the inception of the charter catch reporting program. Incidence rates (number of lamprey per 100 fish) of attached sea lamprey have been much higher on Lake Huron than the other Great Lakes (Table 8). However, the incidence of lamprey attached to lake trout and chinook salmon harvested from Lake Huron has declined since the early 1990s.

From time to time the question regarding the veracity of the charter boat catch data has arisen both from within the MDNR and from individual charter operators themselves. The project biologist has always tried to assure that the data are being recorded by charter operators as soon as possible after the charter excursion has been completed. Charter operators have always been sent postcard notices 10 days and 30 days after their monthly reports were delinquent. Also, at the end of each season operators who were delinquent with their reports for two or more months were sent letters via certified mail. These reminders have proven very useful. The final compliance rate during 1991-96 ranged from 92-98% and averaged 97% per year. In addition, two very important changes were made to the program since 1991. First, during 1992, the charter boat catch reporting law was re-authorized and strengthened by the legislative and executive branches of Michigan state government. Most importantly the 1992 law required that charter operators have a record of their catch and effort on board their boats at all times. Second, the charter catch report form was redesigned for the 1996 season and provided a carbon copy for the charter operators records.

Providing for timely reporting is important, however providing for accuracy is another matter. It is difficult to insure that all charter operators are reporting in an honest manner. One way to test the accuracy of the charter data is to compare it to the creel survey (Study 427) data that has been collected over past several years. Catch rates for major species at high-use (based on angler hours) ports on the Great Lakes should show the same seasonal trends in both data sets. Correlation analysis of mean seasonal catch rates from the creel survey and from the charter reporting program indicate that catch rates were significantly ($P < 0.05$) correlated for chinook salmon, rainbow trout and lake trout at Ludington and Grand Haven during 1991-96 (Table 9). At the Lake Michigan Port of St. Joseph, rainbow trout catch rates correlated significantly. At Oscoda on Lake Huron, chinook salmon and rainbow trout catch rates correlated significantly. Neither walleye or yellow perch catch rates correlated significantly on Lake Erie at Monroe. Several reasons could cause the lower correlation of the Lake Erie walleye and yellow perch data, two are; first, many charter fisherman do not operate on Lake Erie during the entire season. Many operators fish only during May and June and then move to a Lake Michigan or Lake Huron port to fish for salmonines during July through September. Second, many Lake Erie charter operators dock in the Michigan waters of Lake Erie, but fish in the Ohio waters of the lake. This catch is not reported to Michigan. In general, these analysis support the opinion that the charter data are accurate.

Literature cited:

Rakoczy G. P. and R. F. Svoboda. 1995. Charter boat catch and effort from the Michigan waters of the Great Lakes, 1994. Michigan Department of Natural Resources Fisheries Technical Report No. 95-3, Ann Arbor.

Table 1.—Total catch per hour, catch per excursion, number caught, and fishing effort (angler hours, trips, and charter excursions) by charter boats on Lake Michigan, 1996.

Species	Total catch per hour	Total catch per excursion	Month							Season
			Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0271	0.8011	507	1,034	1,384	918	2,683	1,317	24	7,867
Chinook salmon	0.0879	2.5983	92	2,403	3,174	5,789	9,652	4,125	280	25,515
Rainbow trout	0.0628	1.8569	601	4,069	5,489	2,754	2,575	2,059	688	18,235
Brown trout	0.0114	0.3378	719	705	245	621	824	147	56	3,317
Lake trout	0.0725	2.1450	4	1,899	4,673	7,313	6,722	452	1	21,064
Yellow perch	0.1379	4.0783	9,902	8,169	5,780	7,133	8,370	695	0	40,049
Walleye	0.0035	0.1037	5	38	128	502	262	79	4	1,018
Other	0.0015	0.0453	56	9	32	168	104	31	45	445
Lamprey on chinook salmon			0	1	9	2	13	8	0	33
Lamprey on lake trout			0	9	50	46	53	2	0	160
Angler hours			16,253	35,929	50,602	67,042	87,897	28,463	4,205	290,391
Angler trips			2,863	6,075	8,374	11,190	14,567	4,744	622	48,435
Anglers										
Resident			1,739	3,861	5,118	7,202	9,479	3,289	328	31,016
Nonresident			1,124	2,214	3,256	3,988	5,088	1,455	294	17,419
Charter excursions			361	1,099	1,625	2,297	3,113	1,149	176	9,820

Table 2.—Total catch per hour, catch per excursion, number caught, and fishing effort (angler hours, trips, and charter excursions) by charter boats on Lake Huron, 1996.

Species	Total catch per hour	Total catch per excursion	Month							Season
			Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0038	0.0806	2	17	50	15	77	45	0	206
Chinook salmon	0.1170	2.4491	17	594	663	1,006	2,906	1,003	71	6,260
Rainbow trout	0.0277	0.5810	8	75	212	285	756	134	15	1,485
Brown trout	0.0079	0.1659	17	80	30	115	150	32	0	424
Lake trout	0.0953	1.9961	0	514	980	1,489	1,989	127	3	5,102
Yellow perch	0.0283	0.5923	0	0	251	558	457	89	159	1,514
Walleye	0.0348	0.7289	2	24	15	1,007	777	38	0	1,863
Other	0.0143	0.2985	0	14	133	212	336	68	0	763
Lamprey on chinook salmon			0	14	18	54	122	33	0	241
Lamprey on lake trout			0	6	16	38	35	1	0	96
Angler hours			361	5,196	7,517	14,083	20,861	5,164	332	53,514
Angler trips			53	863	1,327	2,523	3,717	940	61	9,484
Anglers										
Resident			50	778	1,189	2,162	3,214	783	52	8,228
Nonresident			3	85	138	361	503	157	9	1,256
Charter excursions			18	244	353	681	977	261	22	2,556

Table 3.—Total catch per hour, catch per excursion, number caught, and fishing effort (angler hours, trips, and charter excursions) by charter boats on Lake Erie, 1996.

Species	Total catch per hour	Total catch per excursion	Month							Season
			Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0000	0.0000	0	0	0	0	0	0	0	0
Chinook salmon	0.0000	0.0006	1	0	0	0	0	0	0	1
Rainbow trout	0.0001	0.0039	0	0	6	1	0	0	0	7
Brown trout	0.0000	0.0000	0	0	0	0	0	0	0	0
Lake trout	0.0000	0.0000	0	0	0	0	0	0	0	0
Yellow perch	0.7841	21.0349	0	206	369	726	15,852	14,228	5,956	37,337
Walleye	0.8221	22.0558	401	4,524	20,118	12,321	1,783	2	0	39,149
Other	0.0276	0.7408	0	131	644	296	3	169	72	1,315
Lamprey on chinook salmon			0	0	0	0	0	0	0	0
Lamprey on lake trout			0	0	0	0	0	0	0	0
Angler hours			605	6,708	20,743	11,785	4,422	2,412	945	47,620
Angler trips			107	1,199	3,872	2,265	804	456	180	8,883
Anglers										
Resident			96	980	3,439	2,035	722	412	157	7,841
Nonresident			11	219	433	230	82	44	23	1,042
Charter excursions			23	246	760	454	165	90	37	1,775

Table 4.—Total catch per hour, catch per excursion, number caught, and fishing effort (angler hours, trips, and charter excursions) by charter boats on Lake Superior, 1996 .

Species	Total catch per hour	Total catch per excursion	Month							Season
			Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0189	0.6942	0	20	159	73	19	28	12	311
Chinook salmon	0.0030	0.1094	0	0	22	19	8	0	0	49
Rainbow trout	0.0035	0.1272	0	0	27	15	12	2	1	57
Brown trout	0.0002	0.0089	0	1	2	1	0	0	0	4
Lake trout	0.2765	10.1540	0	18	1,050	1,645	1,572	259	5	4,549
Yellow perch	0.0000	0.0000	0	0	0	0	0	0	0	0
Walleye	0.0000	0.0000	0	0	0	0	0	0	0	0
Other	0.0001	0.0022	0	0	0	0	1	0	0	1
Lamprey on chinook salmon			0	0	0	0	0	0	0	0
Lamprey on lake trout			0	0	2	14	17	2	0	35
Angler hours			0	146	4,028	5,640	5,705	880	53	16,452
Angler trips			0	16	473	765	776	129	9	2,168
Anglers										
Resident			0	3	250	381	201	57	1	893
Nonresident			0	13	223	384	575	72	8	1,275
Charter excursions			0	3	96	157	162	28	2	448

Table 5.—Total catch per hour, catch per excursion, number caught, and fishing effort (angler hours, trips, and charter excursions) by charter boats on Lake St. Clair and the St. Clair River, 1996 .

Species	Total catch per hour	Total catch per excursion	Month							Season
			Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0000	0.0000	0	0	0	0	0	0	0	0
Chinook salmon	0.0002	0.0058	0	2	0	0	0	0	0	2
Rainbow trout	0.0000	0.0000	0	0	0	0	0	0	0	0
Brown trout	0.0002	0.0058	0	0	0	2	0	0	0	2
Lake trout	0.0000	0.0000	0	0	0	0	0	0	0	0
Yellow perch	1.0030	26.0434	0	521	1,516	2,112	1,613	260	2,989	9,011
Walleye	0.1298	3.3699	52	11	335	618	148	2	0	1,166
Other	0.3114	8.0867	0	16	1,110	865	651	153	3	2,798
Lamprey on chinook salmon			0	0	0	0	0	0	0	0
Lamprey on lake trout			0	0	0	0	0	0	0	0
Angler hours			72	348	2,592	3,134	1,836	538	464	8,984
Angler trips			18	63	433	491	287	77	68	1,437
Anglers										
Resident			18	63	423	479	284	73	68	1,408
Nonresident			0	0	10	12	3	4	0	29
Charter excursions			5	14	104	115	66	22	20	346

Table 6.—Catch rates (fish per 100 angler hours) by charter anglers for salmonines on lakes Michigan, Huron and Superior during 1991-96.

Species	Michigan						Huron						Superior					
	1991	1992	1993	1994	1995	1996	1991	1992	1993	1994	1995	1996	1991	1992	1993	1994	1995	1996
Coho salmon	2.8	3.4	4.5	2.6	2.2	2.7	0.2	0.2	0.3	0.3	0.1	0.4	3.2	1.3	1.0	1.6	2.0	1.9
Chinook salmon	7.0	4.9	4.0	4.0	4.8	8.8	6.4	6.4	7.2	8.3	11.5	11.7	0.4	0.3	0.3	0.1	0.2	0.3
Rainbow trout	7.2	6.5	5.0	5.2	2.9	6.3	0.6	0.7	1.4	1.3	2.4	2.8	0.3	0.1	0.2	0.3	0.4	0.4
Brown trout	0.8	0.4	0.7	1.1	0.8	1.1	0.2	0.7	1.7	2.1	1.9	0.8	0.2	0.1	0.0	0.1	<0.1	<0.1
Lake trout	8.7	7.6	9.7	10.4	10.2	7.3	7.9	6.6	4.3	6.3	6.6	9.5	27.9	25.5	28.2	25.3	25.6	27.7

Table 7.—Catch rates (fish per 100 angler hours) by charter anglers for yellow perch and walleye on lakes Huron, St. Clair and Erie during 1991-96.

Species	Huron						St. Clair						Erie					
	1991	1992	1993	1994	1995	1996	1991	1992	1993	1994	1995	1996	1991	1992	1993	1994	1995	1996
Yellow perch	7.4	6.3	4.0	4.9	3.9	2.8	16.8	15.1	40.4	85.5	67.1	100.3	34.1	43.3	43.9	28.7	53.4	78.4
Walleye	7.1	6.7	7.4	6.7	3.6	3.5	20.4	12.5	18.4	12.3	14.3	13.0	62.8	78.5	81.4	69.6	81.2	82.2

Table 8.—Sea lamprey incidence (lamprey per 100 fish) for chinook salmon and lake trout harvested by the charter fishery in the Michigan waters of the Great Lakes, 1991-96.

Lake	Chinook salmon						Lake trout					
	1991	1992	1993	1994	1995	1996	1991	1992	1993	1994	1995	1996
Michigan	0.3	0.2	0.1	0.3	0.3	0.1	1.2	0.8	0.6	0.6	1.0	0.8
Huron	13.9	13.6	7.6	7.1	6.4	3.8	5.7	4.6	2.1	3.3	2.8	1.9
Superior	8.0	0.0	0.0	0.0	3.0	0.0	1.6	0.8	0.5	1.1	0.9	0.8

Table 9.—Correlation coefficients (r) of charter and creel survey catch rates for various species at selected ports on the Great Lakes, 1991-96. P<0.05 determined significance.

Port and lake	Chinook salmon		Rainbow trout		Lake trout		Walleye		Yellow perch	
	r	Prob.	r	Prob.	r	Prob.	r	Prob.	r	Prob.
Ludington, Michigan	0.99	<0.01	0.87	0.02	0.95	<0.01				
Grand Haven, Michigan	0.86	0.03	0.86	0.03	0.95	<0.01				
St. Joseph, Michigan	0.52	0.52	0.96	<0.01	0.51	0.29				
Oscoda, Huron	0.99	<0.01	0.88	0.02	0.71	0.11				
Monroe, Erie							0.69	0.13	0.77	0.07

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