STUDY PERFORMANCE REPORT

State: Michigan **Project No.:** F-81-R-7

Study No.: 230427 **Title:** Measurement of sportfishing harvest in the Michigan waters of lakes Michigan, Huron, Erie, and Superior

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

Study Objective: To obtain a continuous record of sport catch, catch rates, and catch composition in Great Lakes (Superior, Michigan, Huron, St. Clair, and Erie) and anadromous fisheries.

Summary: During the 2006 angling season, MDNR Fisheries Division conducted creel surveys at locations on Lakes Michigan, Huron, Erie, and Superior, and on eight tributaries of the Great Lakes. Data will be used to estimate effort, harvest, harvest rate, catch, and catch rate at all of these locations (following completion of these surveys). Estimates of recreational fishery parameters for 2005 from Lakes Michigan, Huron, Superior, and Erie were completed in spring 2006. These estimates were combined with charter effort and harvest data from Study 462; results were distributed to division biologists, partner agencies, and public constituents.

Findings: Jobs 1–6, and 8 were scheduled for 2005-06, and progress is reported below.

Job 1. Prepare schedules, initiate aerial boat counts.–In 2006, we conducted aerial surveys of boat, shore, and pier angling effort on the Michigan waters of Lake Erie and portions of Lake Huron (Saginaw Bay, from Harbor Beach to Tawas City, and St. Ignace northeast to the St. Mary's River). We also conducted aerial surveys of shanty and open ice angling effort, January through March, on portions of Lake Huron. All air flights were conducted using stratified random sampling schedules. At each survey area, we scheduled flights for all weekend days and three randomly selected weekdays per week. We randomly selected take-off times to ensure angler counts were made at various times during daylight hours each month. Schedules for creel clerks and air flight contractors were produced and distributed prior to the start of creel survey periods.

Job 2. Survey fisheries.–Creel clerks surveyed 65 Great Lakes sites during the 2006 season (Tables 1–4). In addition, eight Great Lakes tributaries (Dead, Menominee, Bear, Cedar, St. Joseph, St. Mary's, Tittabawassee, and Saginaw Rivers) were also surveyed. Throughout the season (at approximately two-week intervals), fisheries assistants sent data files to the Charlevoix Fisheries Research Station, where program staff error checked data and merged individual clerk data into the 2006 database. Data collection, error checking, and database management for the 2006 creel season is ongoing, and should be completed by December 2006.

Job 3. Complete quality control.–Statewide Angler Survey Program (SASP) staff, in collaboration with management unit personnel, are responsible for quality control of creel data and estimates. SASP began to develop quality control procedures in 2004 and continues to refine them each year. As part of this quality control, fisheries assistants who collect creel data are trained at a training session held in early spring of each year, prior to the start of most surveys on the Great Lakes. In 2006, the creel training session was held in Boyne City, Michigan.

In addition to the annual training session, lead workers and supervisors make frequent (weekly) contacts with the fish assistants, to field questions and evaluate performance. A record of contacts is maintained, to ensure clerks receive adequate communication and training.

In 2004, we began to convert data collection methods from paper data entry sheets to handheld electronic devices (PDAs). As part of this conversion, data entry "traps" were added to the PDAs to prevent error that can occur at the collection stage. With the start of the 2006 creel season, all fisheries assistants had been converted to electronic data entry.

Job 4. Prepare succeeding year schedules.–At the end of 2005, we reviewed our plans for creel coverage over the next 6 years. This review was coordinated with MDNR Inland Creel Program staff, the MDNR Tribal Coordination Unit biologist, Basin Coordinators, and MDNR unit biologists – to ensure that creel survey coverage is optimized and meets the needs of all division programs. Following this review, we prepared randomized sampling schedules for the 2006 season for clerks who covered the following areas: Lake Erie, Lake Michigan, Lake Huron including Saginaw Bay, western and central Lake Superior, and 8 Great Lakes tributaries (Dead, Menominee, Cedar, Bear, St. Joseph, Saginaw, and Tittabawassee Rivers).

Job 5. Analyze and evaluate data.–We estimated monthly fishing effort and species-specific harvest, harvest rate, catch, and catch rate, using equations described in Lockwood et al. (1999). We sampled most locations on Lake Michigan and Huron, and generally expanded for ports that were not sampled on these two lakes by applying a ratio from a year in which the missing port was sampled (Table 1 and 2). On Lake Superior, we estimated total effort and harvest for 6 ports, MI-4 to MI-7 (Table 3). On Lake Erie, we surveyed 6 grids that contain Michigan waters (Table 4).

Estimates of fishing effort and species-specific harvest, harvest rate, catch, and catch rate were completed for 2005. These data were provided to division biologists, partner agencies, and public constituents. Uses of these data included calculation and monitoring of the total allowable catch (TAC) of lake trout in various zones in the 1836 Treaty waters of the Great Lakes; estimation of total harvest of the major sport fish from all of Lake Michigan by the Lake Michigan Technical Committee (LMC-GLFC); and setting harvest quota limits for the state and provincial commercial and sport fisheries by the GLFC Lake Erie Committee to use in. Estimates for the 2006 season will be completed and distributed by March 2007.

Job 6. Prepare annual performance report.–This annual performance report was completed as scheduled.

Job 8. Prepare other reports, peer-reviewed manuscripts.–Creel personnel and fisheries biologists across the state communicated the status and trends of the 2005 sport harvest to the public, at meetings and in the popular literature (newspapers, magazines and television).

During 2006, the MDNR Great Lakes and Inland Creel Programs were formally combined into a single statewide angler survey program (SASP); this study (230427) and study 230646 were terminated, to be replaced with a new Federal Aid study (230499) beginning in October 2006. A final report for study 230427, including analysis of data collected during the 2006 field season (through October 2006) will be submitted in FY2007. Work will be completed without charging the Federal Aid in Sport fish Restoration program.

Literature cited:

Lockwood, R. N., D. M. Benjamin, and J. R. Bence. 1999. Estimating angling effort and catch from Michigan roving and access site angler survey data. Michigan Department of Natural Resources, Fisheries Research Report 2044. Ann Arbor.

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Table 1.–Lake Michigan creel survey locations (tributary locations not included). An X denotes that the port or area was sampled during that year. Shaded locations denote where monthly ratios or means were used to estimate catch.

Survey location		Site code	Year									
			1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
MM-1	Menominee Harbor	001	X	X	X	X	X	X	X	X[1]		X
	Stoney Pt. to Kleinke Park	007	X	X	X	X	X	X	X			X
	Cedar River PAS	015	X	X	X	X	X	X	X			X
	Little Bay de Noc	020	X	X	X	X	X	X	X	X	X	X
	Big Bay de Noc	025	X	X	X	X	X	X	X	X	X	X
	Fairport	330								X	X	X
MM-2	Thompson	046										
	Manistique Harbor and R.	048				X	X					X
	Seul Choix Point	053				X[2]						
	Naubinway	058				X[2]						
MM-3	Harbor Springs	080	X	X	X	X	X	X	X	X	X	X
	Petoskey	085	X	X	X	X	X	X	X	X	X	X
	Charlevoix	090	X	X	X	X	X	X	X	X	X	X
MM-4	Elk Rapids	094	X	X	X	X	X	X	X	X	X	X
	East Grand Traverse Bay	095	X	X	X	X	X	X	X	X	X	X
	West Grand Traverse Bay	100	X	X	X	X	X	X	X	X	X	X
MM-5	Leland	116				X	X				X[4]	X
	Glen Arbor	118				X	X				X[4]	X
	Platte Bay	122				X	X				X	
	Frankfort/Elberta	124	X	X	X	X	X	X	X	X	X	X
MM-6	Arcadia	126				X	X				X	
	Onekama (Portage Lake)	127	X	X	X	X	X	X	X	X	X	X
	Manistee	128	X	X	X	X	X	X	X	X	X	X
	Ludington	134	X	X	X	X	X	X	X	X	X	X
	Pentwater	139		X[3]		X	X		X	X	X	X
MM-7	Whitehall/Montague	311		X[3]		X	X	X	X	X	X	X
	Muskegon	149	X	X	X	X	X	X	X	X	X	X
	Grand Haven	153	X	X	X	X	X	X	X	X	X	X
	Port Sheldon	155			X	X	X	X	X		X	
MM-8	Holland	156	X		X	X	X	X	X		X	
	Saugatuck	160		X								
	South Haven	162	X	X	X	X	X	X	X	X		X
	Benton Harbor/St. Joseph	164	X	X	X	X	X	X	X	X	X	X
	New Buffalo	166	X	X	X	X	X	X	X	X	X	

[1] Winter survey only.
[2] No harvest or effort estimates could be made for Seul Choix Point or Naubinway due to the lack of angler effort.
[3] Sampled during May–July.
[4] Survey completed April–May 18, then terminated due to budget shortfall.

Table 2.–Lake Huron creel survey locations (tributary locations not included). An X denotes that the port or area was sampled during that year. Shaded locations denote where monthly ratios were used to estimate catch.

Survey location		Site code	Year								
			1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
MH-1	Munuscong Bay	207			X	X	X	X	X	X	X	X
	Drummond Island	210				X	X				X	
	St. Vital Pt. to Detour	211				X	X	X	X	X	X	X
	Les Cheneaux Islands	214				X	X	X	X	X	X	X
	St. Ignace to St. Martins Bay	216				X	X	X	X	X	X	X
	Cheboygan	218				X	X					X
	Hammond Bay	219				X	X					X
	Rogers City	223	X	X	X	X	X	X	X	X	X	X
MH-2	Presque Isle Harbor	224		X	X	X	X	X	X	X	X	X
	Rockport	225	X	X	X	X	X	X	X	X	X	X
	Alpena	227	X	X	X	X	X	X	X	X	X	X
MH-3	Harrisville	232	X	X	X	X	X	X	X	X	X	X
	Oscoda	234	X	X	X	X	X	X	X	X	X	X
MH-4	Tawas	250	X	X	X	X	X	X	X	X	X	X
	Au Gres	255	X	X	X	X	X	X	X	X	X	X
	Saganing Creek to Sag. R.	260	X	X	X	X	X	X	X	X	X	X
	Saginaw R. to Quanicassee	356	X	X	X	X	X	X	X	X	X	X
	Quanicassee to Sebewaing	278	X	X	X	X	X	X	X	X	X	X
	Sebewaing	288	X	X	X	X	X	X	X	X	X	X
	Caseville	290								X	X	X
	Oak Beach Rd to Port Austin	236	X	X	X	X	X	X	X	X	X	X
MH-5	Eagle Bay to Harbor Beach	241	X	X	X	X	X	X	X	X	X	X
MH-6	Port Sanilac	245	X	X	X	X	X	X	X	X	X	X
	Lexington	246	X	X	X	X	X	X	X	X	X	X
	Port Huron	248										

Table 3.–Lake Superior creel survey locations (tributary locations not included). An X denotes that the port or area was sampled during that year. No expansions have been done in Lake Superior. MI-1 and MI-8 are not surveyed due to low effort.

Survey location	Site code	Year									
		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
MI-2 Black River Harbor	168	X	X								X
Ontonagon	172	X	X								X
MI-3 Copper Harbor	177										X [2]
MI-4 Traverse Bay	182	X	X	X	X	X	X	X	X	X	X
Keweenaw Bay	185	X[1]	X	X	X	X	X	X	X	X	X
Huron Bay	188										
MI-5 Big Bay	189										
Marquette	190	X	X	X	X	X	X	X	X	X	X
MI-6 Au Train	194	X	X	X	X	X	X	X	X	X	X
Munising	195	X [1]	X	X	X	X	X	X	X	X	X
MI-7 Grand Marais	197					X	X	X	X	X	X

[1] Winter ice fishery was not sampled.
[2] April, October, November only.

Table 4.–Lake Erie creel survey locations (tributary locations not included). An X denotes that the port or area was sampled during that year.

Survey grid	Year									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
500									X	X
699										X
701	X	X	X	X	X	X	X	X	X	X
702	X	X	X	X	X	X	X	X	X	X
703	X	X	X	X	X	X	X	X	X	X
801	X	X	X	X	X	X	X	X	X	X
802	X	X	X	X	X	X	X	X	X	X