

## STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-81-R-7

Study No.: 230486

Title: Assessment of lake trout populations in Michigan's waters of Lake Michigan.

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

**Study Objectives:** To determine the relative abundance, length and age composition, and sea lamprey wounding and mortality rates for lake trout in Michigan's waters of eastern Lake Michigan. Determine the total allowable catch (TAC) of lake trout from management units within 1836 treaty waters.

**Summary:** During the 2006 field season, lake trout *Salvelinus namaycush* sampling efforts focused on assessments of populations in eastern Lake Michigan from April to May. A total of 745 lake trout were captured during the 2006 field season. Aging and bio-data entry remain to be completed. Relative abundance estimates are highest in the southern and central regions, and lowest in the north. Mortality rates and other biological data through 2004 are summarized in reports provided as part of the 1836 Consent Decree process (Modeling Subcommittee, Technical Fisheries Committee 2006).

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

**Job 1. Title: Evaluate relevant literature on lake trout.**—Literature on lake trout physiology, behavior, and habitats are being collected and catalogued in an Endnote bibliographic software file. Twice monthly, we evaluate Current Contents (a literature search service) results from fisheries journals. Relevant articles and publications are obtained and integrated into the database.

**Job 2. Title: Complete lake trout assessment duties required as part of the Lake Michigan Technical Committee lake-wide assessment plan (LWAP).**—In 2006, we assessed lake trout populations as part of the lake-wide assessment plan for lake trout (Schneeberger et al. 2001). Bottom gill-net surveys were conducted during April through May of 2006. Nets were set at four depth strata in locations near each of six ports; a total of 745 lake trout were captured (Table 1).

**Job 3. Title: Analyze assessment data.**—Through 2005, lake trout relative abundance estimates are lower in the northern regions of Lake Michigan compared to more southern and bay areas (Table 2). Mortality rates and other aspects of lake trout populations in modeled regions (MM-1/2/3, MM-4, MM-5, and MM-6/7; Figure 1) are thoroughly discussed in summary reports submitted as part of the 1836 Consent Decree process (Modeling Subcommittee, Technical Fisheries Committee 2006).

**Job 4. Title: Model lake trout populations in 1836 treaty waters and meet Consent Decree reporting responsibilities.**—The completed summary report for TAC calculation year 2005 (data through 2004) is available (Modeling Subcommittee, Technical Fisheries Committee 2006). Statistical catch-at-age models have been developed for lake trout populations in 1836 treaty-ceded waters (MM-1/2/3, MM-4, MM-5 and MM-6/7) and have been used to estimate 2006 TAC's (data through 2005). The 2006 TAC report is in review by co-authors, and will be submitted to the Modeling Subcommittee (MSC) chairs in October 2006. Results from this report will be included in the 2006–2007 annual performance report.

**Job 5. Title: Write annual performance report.**—This annual progress report was produced as scheduled.

**References:**

Modeling Subcommittee, Technical Fisheries Committee. 2006. Summary Status of Lake Trout and Lake Whitefish Populations in the 1836 Treaty-Ceded Waters of Lakes Superior, Huron, and Michigan in 2004, with recommended yield and effort levels for 2005. Technical Fisheries Committee, 1836 Treaty-Ceded Waters of Lakes Superior, Huron, and Michigan.

Schneeberger, P., M. Toneys, R. Elliott, J. Jonas, D. Clapp, R. Hess, and D. Passino-Reader. 2001. Lakewide assessment plan for Lake Michigan fish communities. Lake Michigan Technical Committee Report. Great Lakes Fishery Commission, Ann Arbor, Michigan.

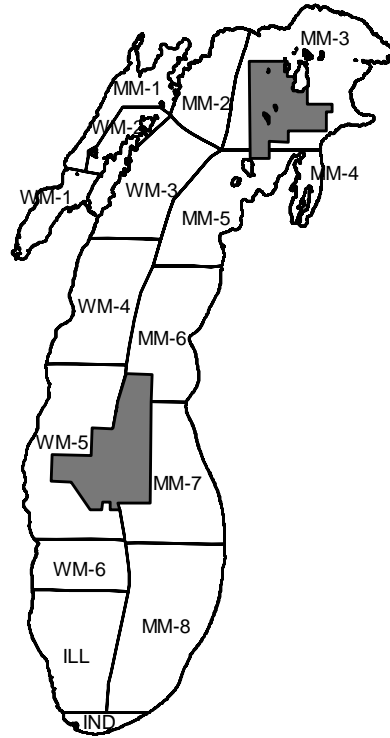


Figure 1.—Map of statistical district delineations in Lake Michigan.

Table 1.–Lake-wide assessment plan (LWAP) survey summary from 2006.

Location	Number of nets	Depth strata (ft.)	Number of lake trout
Charlevoix	0	<50	–
	4	50–100	66
	4	100–150	64
	0	>150	–
Total	8	All	130
Leland	0	<50	–
	4	50–100	119
	2	100–150	22
	2	>150	14
Total	8	All	155
Arcadia	2	<50	68
	2	50–100	87
	2	100–150	48
	2	>150	13
Total	8	All	216
Grand Haven	2	<50	9
	2	50–100	10
	2	100–150	24
	2	>150	19
Total	8	All	62
Saugatuck	2	<50	19
	2	50–100	21
	2	100–150	31
	2	>150	20
Total	8	All	91
South Haven	2	<50	35
	2	50–100	17
	2	100–150	14
	2	>150	25
Total	8	All	91

Table 2.–Summary of mixed model analyses of the relative abundance (catch-per-unit effort) of lake trout captured in annual surveys from four regions of Lake Michigan. MM designations are lake trout management units (Figure 1); “–” indicates missing data.

Year	Modeled region			
	North (MM1/2/3)	Grand Traverse Bay (MM4)	Frankfort to Leland (MM5)	Arcadia to Holland (MM6/7)
1981	1.12	1.80	2.81	3.45
1982	0.68	1.67	2.83	2.17
1983	0.91	1.82	2.69	3.48
1984	0.87	1.75	2.42	1.65
1985	0.62	1.42	3.05	–
1986	0.63	1.74	3.97	2.44
1987	1.02	2.25	2.66	3.10
1988	1.73	2.94	2.53	1.83
1989	2.20	2.56	2.94	2.19
1990	1.83	2.54	–	1.56
1991	–	–	–	–
1992	–	2.22	–	–
1993	–	1.99	–	–
1994	–	2.27	–	–
1995	–	2.19	–	–
1996	–	2.11	–	1.06
1997	–	2.11	3.72	1.77
1998	1.05	2.81	1.37	2.47
1999	1.03	1.68	1.94	2.73
2000	1.32	2.19	2.53	2.46
2001	1.62	2.01	2.85	2.59
2002	1.14	1.81	2.86	2.47
2003	1.32	1.80	2.91	2.78
2004	1.42	2.11	2.96	2.38
2005	1.39	2.07	2.77	2.47
2001–05 average	1.38	1.96	2.87	2.54