

## STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-81-R-8

Study No.: 230486

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

Period Covered: October 1, 2006 to September 30, 2007

**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 2007 field season, lake trout sampling efforts focused on assessments of populations in eastern Lake Michigan from April to May. A total of 792 lake trout were captured during the 2007 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 2005 are summarized in reports provided as part of the 1836 Consent Decree process.

**Findings:** Jobs 1 through 5 were scheduled for 2006-07, 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, I 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 assessment duties.**—In 2007, I 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 2007. Nets were set at four depth strata in locations near each of six ports; a total of 792 lake trout were captured (Table 1).

**Job 3. Title: Analyze assessment data.**—Through 2006, lake trout relative abundance estimates are lower from the northern regions of Lake Michigan compared to more southern regions 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 (the following publication is complete and included with this performance report):

Modeling Subcommittee, Technical Fisheries Committee. 2007. Technical fisheries committee administrative report 2006: status of lake trout and lake whitefish populations in the 1836 treaty-ceded waters of lakes Superior, Huron and Michigan in 2005, with recommended yield and effort levels for 2006. Available: [http://www.michigan.gov/documents/dnr/2006-status-report\\_215230\\_7.pdf](http://www.michigan.gov/documents/dnr/2006-status-report_215230_7.pdf).

**Job 4. Title: Model lake trout populations.**—The completed summary report for TAC calculation year 2006 (data through 2005) is available (Modeling Subcommittee, Technical Fisheries Committee 2007; see Job 3). 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 2007 TAC's using data collected through 2006. The 2007 TAC report is in review by co-authors, and will be submitted to the Modeling Subcommittee (MSC) chairs in October 2007.

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

**References:**

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.

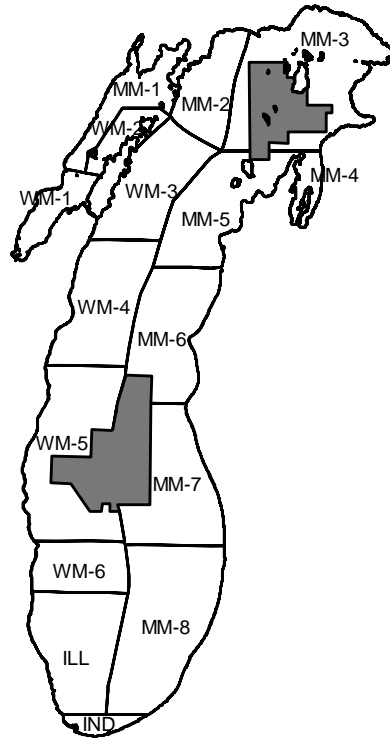


Figure 1.—Map of statistical district delineations in Lake Michigan.

Table 1.–Lake-wide assessment plan (LWAP) survey summary from 2007.

Location	Number of nets	Depth strata (ft.)	Number of lake trout
Charlevoix	2	<50	54
	2	50–100	41
	2	100–150	49
	2	>150	20
	Total	8	All
Leland	2	<50	72
	2	50–100	40
	2	100–150	21
	2	>150	12
	Total	8	All
Arcadia	2	<50	30
	2	50–100	56
	2	100–150	60
	2	>150	43
	Total	8	All
Grand Haven	2	<50	8
	2	50–100	8
	2	100–150	23
	2	>150	35
	Total	8	All
Saugatuck	2	<50	12
	2	50–100	31
	2	100–150	31
	2	>150	50
	Total	8	All
South Haven	2	<50	24
	2	50–100	20
	2	100–150	31
	2	>150	21
	Total	8	All

Table 2.—Summary of mixed model analyses of the relative abundance (gillnet 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	1.11	1.82	2.78	3.49
1982	0.69	1.67	2.79	2.16
1983	1.04	1.83	2.65	3.55
1984	0.89	1.75	2.44	1.53
1985	0.49	1.42	3.06	—
1986	0.52	1.75	3.99	2.51
1987	0.90	2.25	2.63	3.18
1988	1.58	2.96	2.55	1.95
1989	2.05	2.57	2.96	2.33
1990	1.69	2.55	—	1.58
1991	—	—	—	—
1992	—	2.21	—	—
1993	—	1.97	—	—
1994	—	2.26	—	—
1995	—	2.19	—	—
1996	—	2.11	—	1.06
1997	—	2.11	3.79	1.78
1998	1.13	2.79	1.37	2.46
1999	1.07	1.66	1.95	2.69
2000	1.45	2.17	2.60	2.46
2001	1.59	1.98	2.85	2.45
2002	1.05	1.79	2.87	2.43
2003	1.22	1.81	2.92	2.79
2004	1.49	2.11	3.00	2.41
2005	1.33	2.08	2.79	2.48
2006	1.03	2.78	3.05	2.76
2001–06 average	1.28	2.09	2.92	2.55