

STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-81-R-6

Study No.: 230486

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

Period Covered: October 1, 2004 to September 30, 2005

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 2005 field season, lake trout sampling efforts focused on assessments of populations in eastern Lake Michigan from April to May. A total of 692 lake trout were captured during the 2005 field season. Aging and bio-data entry remain to be completed. Relative abundance estimates are highest in the southern regions and lowest in the north. Mortality rates and other biological data through 2003 are summarized in reports provided as part of the 1836 Consent Decree process (Modeling Subcommittee, Technical Fisheries Committee 2005).

Findings: Jobs 1–5 were scheduled for 2004–05, 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 program) 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 2005, 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 2005. Nets were set at four depth strata in locations near each of six ports; a total of 692 lake trout were captured (Table 1).

Job 3. Title: Analyze assessment data.—Through 2004, 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) are thoroughly discussed in summary reports submitted as part of the 1836 Consent Decree process (Modeling Subcommittee, Technical Fisheries Committee 2005).

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 2004 (data through 2003) is available (Modeling Subcommittee, Technical Fisheries Committee 2005). 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 2005 TAC's (data through 2004). The 2005 TAC report is in preparation, and will be submitted to the Modeling Subcommittee (MSC) chairs in December 2005 and included with the 2005–2006 annual performance report.

Job 5. Title: Write annual performance report.—Produced this annual progress report as scheduled.

References:

Modeling Subcommittee, Technical Fisheries Committee. 2005. Summary Status of Lake Trout and Lake Whitefish Populations in the 1836 Treaty-Ceded Waters of Lakes Superior, Huron and Michigan in 2003, with recommended yield and effort levels for 2004. 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.

Table 1.–Lake-wide assessment plan (LWAP) survey summary from 2005.

Location	Number of nets	Depth strata (ft.)	Number of lake trout
Charlevoix	1	<50	1
	3	50-100	49
	2	100-150	40
	2	>150	59
Total	8	All	149
Leland	2	<50	38
	2	50-100	22
	2	100-150	54
	2	>150	102
Total	8	All	216
Arcadia	2	<50	15
	2	50-100	27
	2	100-150	27
	2	>150	21
Total	8	All	90
Grand Haven	2	<50	3
	2	50-100	3
	2	100-150	14
	2	>150	33
Total	8	All	53
Saugatuck	2	<50	13
	2	50-100	5
	2	100-150	19
	2	>150	18
Total	8	All	55
South Haven	2	<50	1
	2	50-100	3
	2	100-150	22
	2	>150	103
Total	8	All	129

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; “—” indicates missing data.

Year	Modeled region			
	North (MM1/2/3)	Grand Traverse Bay (MM4)	Frankfort to Leland (MM5)	Arcadia to Holland (MM6/7)
1981	1.36	1.75	2.78	3.37
1982	0.69	1.65	2.80	2.08
1983	0.67	1.79	2.66	3.16
1984	1.12	1.74	2.39	1.54
1985	0.92	1.40	3.05	—
1986	0.93	1.69	3.98	2.25
1987	1.33	2.21	2.64	2.89
1988	2.02	2.89	2.51	1.71
1989	2.49	2.51	2.93	1.98
1990	2.12	2.48	—	1.31
1991	—	—	—	—
1992	—	2.22	—	—
1993	—	2.03	—	—
1994	—	2.26	—	—
1995	—	2.19	—	—
1996	—	2.11	—	0.99
1997	—	2.11	3.82	1.74
1998	1.31	2.84	1.37	2.51
1999	1.18	1.69	1.90	2.86
2000	1.44	2.19	2.63	2.59
2001	1.77	2.03	2.90	2.73
2002	1.34	1.82	2.85	2.57
2003	1.49	1.79	2.90	2.76
2004	1.75	2.10	2.98	2.51
2000-04 average	1.56	1.99	2.85	2.63