

STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-81-R-5

Study No.: 230486

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

Period Covered: October 1, 2003 to September 30, 2004

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. To determine the total allowable catch (TAC) of lake trout from management units within 1836 treaty waters.

Summary: During the 2004 field season, lake trout sampling efforts focused on assessments of populations in eastern Lake Michigan from April to May. A total of 627 lake trout were captured during the 2004 field season. Aging and biological 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 are summarized in the attached report produced to fulfill one of the mandates of the 1836 Consent Decree.

Findings: Jobs 1 through 5 were scheduled for 2003-04, and progress is reported below.

Job 1. 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) search results from fisheries journals. Relevant articles and publications are obtained and integrated into the database.

Job 2. Complete lake trout assessment duties required as part of the Lake Michigan Technical Committee lake-wide assessment plan (LWAP).—In 2004, we assessed lake trout populations as part of the lake-wide assessment plan for lake trout (LWAP). Bottom gill-net surveys were conducted during April through May of 2004. Nets were set at four depth strata near each of six ports; a total of 627 lake trout were captured (Table 1).

Job 3. Analyze assessment data.—Lake trout relative abundance estimates are lowest in the northern regions of Lake Michigan (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 the attached summary reports produced to fulfill one of the mandates of the 1836 Consent Decree.

Job 4. Model lake trout populations in 1836 treaty waters and meet Consent Decree reporting responsibilities.—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 2004 TAC's (data through 2003). The 2004 TAC report is in preparation, and will be submitted to the Modelling Subcommittee (MSC) chairs in December 2004 and included with the

2004 – 2005 annual performance report. The completed summary report for TAC calculation year 2003 (data through 2002) is attached.

Jonas, J. L., J. Netto, E. J. Olsen, S. L. Lenart, and M. Ebener. 2004. Lake trout in MM-1,2,3 (Northern Treaty Waters of Lake Michigan). 2004. Short Report to the Technical Fisheries Committee of the 2000 Consent Decree, 1836 Treaty Waters of Michigan's Great Lakes. Michigan Department of Natural Resources, Charlevoix Fisheries Research Station, unpublished report.

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

Prepared by: Jory Jonas

Date: September 30, 2004

Table 1.–Lake wide assessment plan (LWAP) survey summary from 2004, including the location, number of nets, and catch of lake trout.

Location	Number of nets	Depth strata (ft.)	Number of lake trout
Charlevoix	1	<50	2
	3	50-100	55
	2	100-150	62
	2	>150	46
	Total	8	All
Leland	1	<50	28
	3	50-100	108
	3	100-150	96
	1	>150	6
	Total	8	All
Arcadia	2	<50	20
	2	50-100	25
	2	100-150	40
	2	>150	19
	Total	8	All
Grand Haven	2	<50	7
	2	50-100	5
	1	100-150	7
	1	>150	18
	Total	6	All
Saugatuck	2	<50	2
	2	50-100	2
	2	100-150	8
	2	>150	34
	Total	8	All
South Haven	2	<50	2
	2	50-100	1
	2	100-150	2
	2	>150	32
	Total	8	All

Table 2.—Summary of mixed model analyses of the relative abundance (cpe) of lake trout captured in annual surveys from four regions of Lake Michigan. “—” indicates missing data.

Year	North (MM1/2/3)	Grand Traverse Bay (MM4)	Frankfort to Leland (MM5)	Arcadia to Holland (MM6/7)
1981	1.38	1.71	2.76	3.28
1982	0.71	1.64	2.92	1.96
1983	0.68	1.77	2.78	3.06
1984	1.13	1.74	2.68	1.44
1985	0.98	1.40	3.20	—
1986	0.99	1.67	4.16	2.15
1987	1.38	2.20	2.76	2.79
1988	2.07	2.86	2.81	1.57
1989	2.54	2.49	3.20	1.86
1990	2.16	2.45	—	1.19
1991	1.05	—	—	—
1992	1.18	2.22	—	—
1993	1.45	2.06	—	—
1994	1.73	2.26	—	—
1995	1.32	2.19	—	—
1996	1.53	2.10	—	0.91
1997	1.38	2.10	3.51	1.62
1998	0.71	2.87	1.26	2.47
1999	0.68	1.69	1.72	2.86
2000	1.13	2.20	2.33	2.53
2001	0.98	2.07	2.77	2.69
2002	0.99	1.82	2.76	2.48
2003	1.38	1.78	2.89	2.67
5-yr average	1.03	1.91	2.49	2.65