

## STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-80-R-6

Study No.: 230696

Title: Comparison of the recreational fisheries produced by stocking of spring and fall yearling brown trout, Lake Huron.

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

### Study Objective:

- (1) To test the hypothesis that yearling brown trout stocked in fall will contribute more to angler harvest than smaller yearlings stocked in spring in Thunder and Tawas bays, Lake Huron;
- (2) Determine whether the return to creel of fall-stocked brown trout is sufficient to compensate for their higher cost;
- (3) To examine food habits and distribution of yearling brown trout during their first 30 days after stocking.

**Summary:** This was the fourth year of funding for this project. The stocking phase of this study was completed during the previous study year. Spring assessments suggest alewife numbers are declining in Thunder Bay. Stocking success for spring yearlings appears to be correlated with adult alewife abundance at the time of stocking. No stocked brown trout were captured in the spring and only 3 in fall during the 2004 gillnet assessments. Lake whitefish, white suckers, lake trout, and burbot were the lead species in catches in fall 2004. Creel census was conducted each year. Brown trout harvest recovered at both ports from 2001-2003, particularly at Tawas Bay, but declined again in 2004. Creel census observations were supplemented with biological data collections from angler harvest during the 2004 and 2005 annual Alpena Brown Trout Festivals. To date there has been little difference in observed harvest of spring- and fall-stocked brown trout. Data from 2005 spring netting, creel survey, and Festival survey are being entered. Analysis of results from 2005 will be presented in next year's report.

**Findings:** Jobs 3 and 4 were scheduled for 2004-05, and progress is reported below. Additionally, Job 2 is reported on as promised in the report of 2003-04.

**Job 2. Title: Assess conditions of the receiving water in Thunder Bay.**—Five graded-mesh gillnets were fished for two days each in Thunder Bay in June 2004. The objective was to assess relative abundance of alewives in spawning condition, and to index numbers of piscine predators. Catch from the 2004 spring assessment is given in Table 1. Until 2004, adult alewives had been the most common fish in the catch while walleyes were the principal predator fish. In 2004, only 14 adult alewives were caught and the principal catch was walleyes. The catch of alewives in 2004 was the third lowest of the time series (Table 2). Alewives are thought to be an important buffer against predation on newly stocked trout during the spring stocking period; thus, the low alewife catch rate in 2004 may be followed by further declines in the brown trout fishery. No brown trout were caught in the spring 2004 survey.

**Job 3. Title: Determine return to creel of stocked fish.**—Creel census was conducted as per the study plan in 2002, 2003, 2004, and 2005 at Tawas (Tawas Bay) and Alpena (Thunder Bay) and other Lake Huron ports. Harvest of brown trout had declined at both Tawas and Alpena from 1996 through 2001, but rose in 2002 and again in 2003. The magnitude of increase was higher at

Tawas than Thunder Bay. However, harvest at both ports declined to a near all-time low in 2004 (Table 3). Biological data were recorded from all brown trout observed during creel census activities. Scales from the creel biological data collected through 2003 were aged, the data entered and verified. However, evidently not all the biological data collected from the Tawas area in 2002 and 2003 were entered because only 4 Study 696 brown trout (with ventral fin clips) were in the data base at the time of this report (Table 4). Based upon data available to date, there appears to be very little difference in the contributions of the two study groups (spring, fall) to observed brown trout harvest (Table 5). Fin clips and age determinations from the biological data will be used in next year's report to better estimate the proportions of harvest contributed by the two study groups to brown trout harvest at Tawas and Alpena. To augment creel observations of brown trout, Alpena Fisheries Research Station personnel were assigned to monitor recreational catch during the annual Alpena Brown Trout Festival during July 2002, 2003, 2004, and 2005. This additional effort may, in combination with creel census biological data, provide sufficient numbers of observations to enhance comparison of the two study groups in the recreational fishery. Analysis of creel census data will be done by Study 427 personnel at the Charlevoix Fisheries Research Station.

**Job 4. Title: Data analysis, preparation of annual and final reports, and presentation of findings at technical and public meetings.**—Data from job 3 from 2004 and 2005 are presently being entered and analyzed. The annual progress report was prepared as per study documents.

**Prepared by: James E. Johnson**

**Date: September 30, 2005**

Table 1.–Catch and catch per unit effort, by species, June gillnet sets, Thunder Bay, 2004.

Species	Number	Catch/305 m <sup>1</sup>	Mean length (mm)	Mean weight (kg)
Alewife	14	18.5	179	0.04
Gizzard shad	3	4.0	484	1.26
Northern pike	1	1.3	859	3.95
Brown bullhead	1	1.3	342	0.55
Channel catfish	6	7.9	481	1.06
Stonecat	1	1.3	251	0.16
Freshwater drum	12	15.9	411	0.88
Quillback	1	1.3	620	3.29
White sucker	1	1.3	533	1.37
Longnose sucker	14	18.5	324	0.53
Smallmouth bass	1	1.3	432	1.2
Rock bass	3	4.0	158	0.09
Walleye	60	79.3	528	1.55
Brown trout	0	0		

<sup>1</sup>Effort = ten 76-m graded-mesh gillnets

Table 2.–Catch rate of alewives in graded-mesh gillnets and recreational harvest of brown trout one year after gillnet survey, Thunder Bay.

Survey year	Alewife catch/305 m	Brown trout harvest 1 yr after survey
1990	154.7	No survey
1991	269.1	395
1992	220.0	2,011
1993	737.3	3,366
1994	405.5	3,322
1995	312.7	3,167
1996	No survey	1,899
1997	No survey	855
1998	11.0	822
1999	No survey	156
2000	144.7	314
2001	168.0	46
2002	55.6	237
2003	32.0	560
2004	5.6	203

Table 3.—Estimated brown trout recreational harvest, Tawas and Thunder Bays, 1986-2004.

Year	Tawas Bay	Thunder Bay
1986	6,782	3,873
1987	1,445	3,107
1988	578	656
1989	127	---
1990	---	---
1991	200	395
1992	310	2,011
1993	284	3,366
1994	1,715	3,322
1995	3,665	3,167
1996	4,543	1,899
1997	1,310	855
1998	765	822
1999	668	156
2000	1,026	314
2001	459	46
2002	1,987	237
2003	2,304	560
2004	559	203

Table 4.—Study fish observed in the recreational catch, by Lake Huron creel survey port, 2001-2003.

Port	Number clipped brown trout observed
Rogers City	0
Presque Isle	1
Rockport	1
Alpena	55
Harrisville	14
Oscoda	19
Tawas	4
Au Gres	0
Pt. Austin	8
Harbor Beach	7
Port Sanilac	5
Lexington	2

Table 5.—Contribution of the two study groups (spring, fall) to observed recreational catch in Thunder Bay through 2003, Study 427.

Stocking time	Age	Number observed	Average weight (kg)
Spring	1	3	0.50
	2	45	2.04
	3	11	4.17
		59	
Fall	1	1	1.95
	2	43	2.63
	3	13	3.99
		57	