

STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-81-R-7

Study No.: 230695

Title: Northern Lake Huron coolwater fish
community assessment

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

Study Objective: To collect relative abundance, growth rate, and other biological data with which to assess responses of the Les Cheneaux Islands region and the St. Marys River coolwater fish communities to exploitation, management initiatives, and changing environmental and biological conditions.

Summary: The fish community surveys of the St. Marys River and Les Cheneaux Islands were completed as scheduled. Analysis and reporting of the St. Marys survey will occur in 2007. Abundance of yellow perch *Perca flavescens* in the Les Cheneaux Islands region remained unchanged from 2004 but this value still reflected an overall improvement from recent years. The yellow perch population is principally supported by the 2002 and 2003 year classes, the latter which established a new record gillnet catch rate for the survey series as age-2 fish. It is not fully apparent, however, if these stronger year classes were a result of improved reproductive success alone, or if improved survival also contributed since the onset of cormorant control in 2004. Total annual mortality has declined to 71% for the 2001 year class (measured in 2002 – 2005) but additional years of data will be required to fully characterize trends in total mortality for the post cormorant control period. Yellow perch continue to grow faster than the state average in the Les Cheneaux Islands.

Findings: This study was recently amended and jobs 1 through 4 were scheduled for 2005-06. Job 3 (comparison netting) was suspended due to staffing and scheduling limitations. Progress is reported below.

Job 1. Title: St. Marys River Fish Community Survey.—Field work for the St. Marys River Fish Community Survey was completed on schedule in September 2006. Laboratory and data analysis as well as reporting will take place in 2007.

Job 2. Title: Fish community survey of the Les Cheneaux Islands region of Lake Huron.—In 2005, all sampling was conducted as scheduled. The October gill-net survey (reported here under Job 2 because the comparison netting had to be suspended; see Job 3 for more information) effort was again six net sets. These sets captured a total of 1,030 specimens representing 15 different species. Yellow perch abundance as indicated by gillnet catch-per-unit-of-effort (CPUE) was unchanged at 64.5 yellow perch per gillnet lift. Although unchanged from 2004, this value is significantly greater than the 2003 value and reflects a sustained increase in yellow perch abundance. The age structure of the 2005 yellow perch collection indicates that the population is rebuilding from younger ages beginning with the 2002 year class.

The abundance of age-2 yellow perch in the gillnet collections remains the principle measure of recruitment. The CPUE of age-2 yellow perch increased to 44 per lift, the highest recruitment level measured since monitoring began in 1969. Age-2 yellow perch in 2005 trace to the 2003 year class, which was a very strong year class for percids across much of the Great Lakes (Fielder and Thomas, in press). However, it is not readily evident from this information if the rebuilding

of the perch population is a result of increased recruitment alone or if improved survival at early ages (age-0 – age-2) might also be contributing. Improved survival might stem from the cormorant control program implemented by the U.S. Department of Agriculture's Wildlife Services office in 2004. The 2002 year class also showed stronger as age-2 fish (in 2004) and that was otherwise an unremarkable year class around the Great Lakes region. Regardless, these stronger year classes will allow for the exploration of this question by following the mortality rate of these cohorts over time.

Total annual mortality rate of the 2001 yellow perch cohort was 71% between the years 2002 and 2005, a decline from 85% for the 2000 cohort for the 2001 to 2004 period. Cohort-based mortality estimation is necessary to overcome variability in year class strength since stable recruitment is an assumption of traditional catch curve analysis. The total annual mortality rate of the 2001 cohort for 2002 – 2005 of 71 % is still high and does not fully reflect the period of lower cormorant abundance from the control operation. Cohort-based mortality estimation is needed from a time period wholly after cormorant control targets have been reached before more complete inferences about the efficacy of that effort can be drawn.

Yellow perch growth rate remains fast in the Les Cheneaux Islands suggesting that total abundance still has not yet fully recovered. The rapid growth probably is the result of the low level of intraspecific competition.

Full biological analysis, including food habits and maturity by age, has been conducted on the yellow perch collections made in 2005. Similar analyses have been conducted on other species also collected that year. Collections made in 2006 will be summarized and reported in 2007.

Job 3. Title: Conduct Les Cheneaux October comparison netting & analysis.—Staffing and scheduling limitations prevented conducting two rounds of survey work this year. Because we were able to conduct only one survey, we elected to survey during the traditional month of October. Those results are reported in Job 2 of this performance report.

Job 4. Title: Write reports.—This annual performance report was prepared as scheduled.

Literature Cited:

Fielder, D. G., and M. V. Thomas. In Press. Fish population dynamics of Saginaw Bay, Lake Huron, 1998 – 2004. Michigan Department of Natural Resources, Fisheries Research Report. Ann Arbor.

Schneider, J. C., P. W. Laarman, and H. Gowing. 2000. Age and growth methods and state averages. Chapter 9 in J. Schneider, editor. Manual of fisheries survey methods II: with periodic updates. Michigan Department of Natural Resources, Fisheries Special Report 25, Ann Arbor.

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