

STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-81-R-6

Study No.: 230712

Title: Resource inventory support for inland lakes

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

Study Objectives:

1. To oversee the implementation of the status and trends program for inland lakes.
2. To summarize and maintain data collected as part of the status and trends of inland lakes.
3. To evaluate statewide stocking programs in inland lakes.
4. To evaluate the status and trends of inland lakes.

Summary: Evaluations of sampling methods for assessing lake habitat and lakeshore development were completed. A technical report detailing the analyses and recommended sampling procedures was revised and is currently in press. This technical report was also rewritten for a peer-reviewed manuscript to be submitted in fall of 2005. A netting experiment was designed and conducted to evaluate size selectivity of trap nets and fyke nets and to determine the influence of these different gear types on lake survey catch statistics. A second netting experiment was designed and conducted to evaluate the effect of throat opening diameter on size selectivity and escapement of fish. Data from these experiments have been entered into databases for analyses. Initial summary statistics for the status and trends of Michigan inland lakes were produced. These summaries will be distributed to Fisheries Division Personnel for review.

Findings: Jobs 1, 2, 3, 4, and 6 were scheduled for 2004-05, and progress is reported below.

Job 1. Title: Determine appropriate quantitative sampling methods for inland lake ecological characterization.—Use accuracy, precision, and power analyses to determine necessary sample sizes. Evaluate sampling methods for potential bias. Develop sampling designs for fish, zooplankton, and habitat surveys that minimize bias and maximize efficiency of field crews. Evaluation and development of sampling methods for assessing lake habitat and human development of the lakeshore was completed and is detailed in the following report:

Lockwood, R. N., K. E. Wehrly, and D. B. Hayes. 2005. Sample Sizes for Inland Lake Habitat and Lakeshore Development Metrics. Michigan Department of Natural Resources, Technical Report 2005-3, Ann Arbor.

Additional work was spent condensing this technical report for a manuscript to be submitted to the North American Journal of Fisheries Management.

A netting experiment was designed and conducted from May 25 to June 10 to evaluate size selectivity of small mesh fyke nets (1.0 inch), large mesh fyke nets (1.5 inch), and small mesh trap nets (1.0 inch) to determine the influence of these different gear types on lake survey catch statistics. Two nets of each type were placed in Crooked lake, Joslin lake, and Mill lake, all located in Washtenaw County. Nets were placed in random locations in each lake and were moved to new random locations throughout the experiment. Numbers, lengths, and scale samples were collected from all fish in each net. Fish were also marked to estimate relative size

selectivity based on the ratio of recaptured fish to marked fish. All data collected during this experiment have been entered into a data base for analysis.

A second netting experiment was designed and is currently being conducted in a series of ponds at the Saline Fisheries Research Station. This experiment was designed to evaluate the effect of throat opening diameter on size selectivity and escapement of fish. For the first part of this experiment, bluegills of varying length were stocked into the pots of small and large mesh fyke nets and the opening of these nets were sewn shut. This enabled us to estimate the escapement rates attributable to mesh size as a function of fish size. In the second part of the experiment, throat sizes were fixed at 6, 8, and 10 inches. Three small mesh fyke nets and three large mesh fyke nets of varying throat size were placed in 2 ponds. Nets of similar mesh size were placed in the same pond. Nets were emptied after 24 hours and all fish captured were measured and fin clipped and then returned to the nets. The nets were emptied again after another 24 hours and fish were again measured and fin clipped. The experiment will be repeated 2 more times using 2 new ponds for each 2 day trial.

Job 2. Title: Train field personnel in new sampling methods.—Two workshops were held at the Saline Fisheries Research Station to train survey crews how to assess lake habitat and shoreline development, and to collect zooplankton and limnological samples. A fish identification training session was also presented during the creel clerk training workshop.

Job 3. Title: Write Fishery Division policy and procedures for sampling methods.—A procedures document was written for assessing lake habitat and human development of the lakeshore (see Job 1). Jim Dexter agreed to serve as the management team sponsor for the writing of the status and trends of inland lakes policy document. Work on this document has been scheduled for October 2005.

Job 4. Title: Evaluate statewide stocking programs in inland lakes.—A new study proposal was developed in collaboration with Zhenming Su. This new study will incorporate status and trends data into a systems framework for evaluating Michigan's fish production system. Study 712 will be amended in 2006 and Job 4 will be deleted.

Job 6. Title: Write annual performance report.—This annual progress report was prepared as scheduled.