

STUDY FINAL REPORT

State: Michigan

Project No.: F-81-R-5

Study No.: 230489

Title: Comparison of mail and creel survey estimates for recreational fishing on the Great Lakes

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

Study Objective: To examine the feasibility of using a mail and/or telephone survey to provide estimates of effort, targeted effort, harvest, and targeted harvest by month and Statistical Reporting District for selected species from Michigan's waters of the Great Lakes.

Summary: This study examined on a pilot basis the feasibility of a mail survey for generating estimates of Great Lakes fishery effort and harvest. During the 1997 fishing season we conducted mail surveys to evaluate whether such surveys could be used to produce reliable estimates of fishing harvest and effort on the Great Lakes comparable to those currently produced by the Great Lakes Creel Survey program. Pre-screening and screening postcards were used to design the sampling plan and generate a sample for a panel survey of anglers who purchased annual fishing licenses in 1996. The panel survey was stratified by license type and geographic region of residence and panel members (n=1 674 with valid address information) received monthly surveys from June through October 1997 (5 surveys in all) on which they recorded their fishing activity. In addition, 500 daily fishing license holders were surveyed each month over the same period of time, with this survey stratified by geographic region of license sale. A follow-up non-response questionnaire generated information on participation in fishing during 1997 by those who were willing to serve on our panel and those who did not respond to our screener postcard (from which we identified willing panel members). The resulting estimates of fishing effort (days fished) and harvest of key species were substantially biased upward, with estimates of fishing effort exceeding comparable estimates from the contact creel survey by two-fold. The difference between our mail and the contact creel survey estimates was greater for harvest than for effort and varied among species. A major source of bias was a strong tendency by those who were willing to serve on our panel to fish more than other licensed anglers. Among the postcards and short questionnaire (pre-screening postcard, screening postcard, and non-response questionnaire), response rates varied from 29% (screening postcard) to over 75% (non-response questionnaire). The low response rate for the screening postcard may reflect a negative reaction to our query about willingness to serve on the panel, but reasons for the very high response rate to the non-response questionnaire, even among non-responders to the screener, are unclear. This high response rate, however, does suggest that simple surveys evaluating the relative fishing effort of non-responders and responders are feasible. We calculated a crude adjustment factor based on the relative differences in fishing activity by those who were willing or unwilling to serve on the panel, which was consistent with the apparent bias in the mail survey estimates. We are much less optimistic about the feasibility of adjusting for non-response bias in harvest estimates. These biases varied among species and partly seem to reflect systematic reporting errors. Thus, non-response surveys to assess this would need to be more involved than those focusing on fishing effort. It is essential that any future mail surveys incorporate ongoing follow-up non-response surveys for each month and strata. Our results indicated that response rates varied by license type and that non-response bias most likely varies over the season. We believe the non-response problem was exacerbated by our use of a panel design, and recommend selection of separate samples from the current population of annual license holders for each monthly survey. We

discuss how a mail survey of fishing effort could potentially be integrated with a Great Lakes contact creel-survey, potentially as part of a larger survey providing information on inland fishing effort. We also note that a mail survey can provide types of information that the current Great Lakes creel survey does not, because it relates fishing activity to properties of the individual angler (such as geographic location of residence and license type). For example, our results suggest that 50% or more of licensed anglers participated in Great Lakes fishing during 1996 and 1997. The relatively high percentage suggests that using the current license database for selecting samples could be an effective means of contacting Great Lakes anglers.

Findings: Job 9 was scheduled for 2003-04, and progress is reported below.

Job 9 Title: Publish final report.—This job was to publish a report through the Fisheries Division's editing and finishing process for Research and Technical reports. This was the only active job during the current year. The results of this pilot study were deemed too preliminary to warrant publication in a peer-reviewed report. In addition, there was concern that the mail survey estimates, which are clearly biased, might be inappropriately cited if contained in a peer-reviewed Research or Technical report. Consequently, a revised report of this study was prepared containing detailed findings and is attached.

Bence, J. R., D. A. Hall, and M. H. Koval. 2004. Comparison of mail and creel survey estimates for recreational fishing on the Great Lakes. Revised final report to Michigan Department of Natural Resources, Michigan State University, East Lansing.

Prepared by: James Bence

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