STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-81-R-4

Study No.: 697

Title: Fisheries Stewardship and Heritage Outreach/Research (SHOR) Initiative: A Five Year Plan for Baseline and Longitudinal Research on Angling Involvement and Associated Fisheries and Aquatic Stewardship Activities in Michigan.

Period Covered: October 1, 2002 to September 30, 2003

Study Objectives: 1) Develop an annual, baseline reporting system to track demographic segments represented (and not represented) in the Michigan angling and fisheries stewardship populations, by using the computerized point-of-sale license database and other statewide databases. 2) Examine Michigan angler/stewardship population dynamics, including recruitment rates, retention rates, and other population parameters, using descriptive and analytical techniques commonly employed in basic fisheries population analysis and demography. 3) Design longitudinal research, using the computerized point-of-sale database, to examine the role of educational program interventions in early angling recruitment retention, and stewardship development, particularly among teenage, pre-license Michigan youth. 4) Evaluate effectiveness of other fisheries and aquatic stewardship communications/outreach tools and/or programs specifically designed for targeted audiences.

Summary: Working with MDNR Fisheries Division staff, we have identified methods to compile fishing license data from 1995-2002 for analysis for participation, recruitment and retention trends. Working with Roger Parsons, we acquired data from the statewide angler license computerized-point-of-sale database and sorted, analyzed, and graphed trends in angler recruitment and retention. We have the analysis completed to prepare a baseline report describing angler recruitment and retention, parallel to the report issued in 2001 by the MDNR Wildlife Division describing hunting trends. We have identified parameters, such as license types, age, and gender in the annual fishing license sales database that will be used in future annual tracking reports to monitor angler recruitment and retention. We are identifying and communicating with both state (Michigan Department of Natural Resources and Michigan State University) and national (Ohio Department of Natural Resources, Recreational Boating and Fishing Foundation, etc.) contacts that will serve on a working group to establish additional population parameters and baseline data which will be monitored. Finally, we are beginning to draft a longitudinal research strategy using the database and other data sources to examine dynamics of long-term recruitment/retention and the role of educational program interventions.

Findings: Jobs 5 through 9 were scheduled for 2002-03, and progress is reported below.

Job 5. Title: With the working group, decide on sampling and data management procedures for specific population parameters; specifically, develop a definition of "recruitment" which encompasses the theoretical construct of "stewardship" toward aquatic resources.–Initial working group members have included Roger Parsons, Information Systems analyst working with the MDNR Fisheries Division. Now that initial, descriptive analysis is nearing completion, we are ready to move ahead to convene a more formal working group to include the reconstituted Recreational Fisheries Program Committee, other MDNR Fisheries Division research staff and external resource people (from other state agencies, such as Ohio, and organizations such as

Recreational Boating and Fishing Foundation and the Aquatic Resources Education Association). We have scheduled an organizational meeting for 11 Dec. 2003, with Gary Towns (Chair, Recreational Fisheries Program Committee) and other MDNR Fisheries Division staff to present our initial findings and to initiate this working group process. On a national level, Ohio State University working in conjunction the Recreational Boating and Fishing Foundation (RBFF) may provide ideas and support for a working group in Michigan. Moreover, the RBFF is in the process of convening working groups across and within several states who are currently doing work similar to Michigan regarding recruiting and retaining anglers.

Reasons for the delay in establishing the formal working group are numerous. This research project was delayed in its initiation upon the receipt of the contract, due to the search process to secure a qualified graduate research assistant. Furthermore, during fall 2002, the lead Principal Investigator (Dann) was away on sabbatical leave. Finally, we have been waiting to engage members of the Recreational Fisheries Program Committee who remain after two early-out retirement offerings within MDNR. This Program Committee has not yet been re-formed after the departure of numerous staff, but we have agreement from Chair Gary Towns that we should move ahead with the organizational meeting of the formal Working Group for this project.

With the informal working group (MSU staff and Roger Parsons), we have identified the variables or parameters to be used in our baseline report on fishing participation, recruitment and retention include: total licenses and unique licensees (described yearly), license types purchased (Restricted (17+), All Species (17+), Young Angler / Voluntary (12-16 yrs), Senior -Restricted, and Senior -All Species), gender (described yearly, and by license type), age (described yearly, by license type).

Angler retention was analyzed by compiling data identifying 1) those purchasing during two year periods (i.e. 1995-96, 1996-97, 1997-98, 1998-99, 1999-2000, 2000-01, 2001-02); 2) those purchasing during three consecutive years; and 3) those purchasing across longer consecutive year periods. Data were analyzed by age and gender.

Future meetings of the working group will ascertain additional parameters to monitor and additional analytical techniques to further operationalize "recruitment" and long-term "stewardship." We hope to explore, with this group, the potential for GIS-based analysis of angler retention and recruitment by region within Michigan.

Job 6. Title: <u>**Examine data from past license years, and establish procedures for tracking angler population parameters for a 4-year period.**</u>–Much of the work of this project thus far has centered on this Job. Obtaining and analyzing the computerized point-of-sale license data has proven complex and time-consuming, yet has yielded informative results.

Work began through discussions with Brian Frawley, MDNR Wildlife Division, to learn about methods used in analyzing the 1997-99 hunter recruitment and retention data. We identified Roger Parsons as the analyst working within Fisheries Division who could acquire the necessary data. Parsons worked with us first to draw one year of data (1995) into a workable format for our preliminary analysis (fall/winter 2001 through summer 2002). We piloted the analytical process for the data, and reported on preliminary findings and the analysis process during the Fisheries Division research meetings in summer 2002.

Subsequently, Parsons extracted the fishing license data from 1995 through 2002, and placed these into a separate Microsoft Access database (in CD format) for each license year, and included the following data tables:

- Customer table (which included customer identification key, customer address key, and customer's base demographic information such as age and gender);

- Customer address table (which included mailing address, state and zip code);

- License types table (which included license types and requirements for purchase of each license type for each respective year);

- Tables for each individual license type for each year.

Before beginning analysis, steps were taken to organize and clean data sets. Using the customer identification numbers as a primary sorting key, a series of Microsoft Access queries were developed and used to remove voided licenses, as well as duplicate licenses of the same license type which were sold to the same individual in the same year. Duplicate licenses sold to the same customers were most likely voided license sales transactions occurring at the point-of-sale terminal or as a result of those customers losing their licenses and replacing them throughout the year. Cleaned data were compared against original data to ensure that voided and duplicate licenses were removed without losing individual customers.

Microsoft Access was used as the primary software for organizing data for analysis. For the basic analysis of demographic and license types purchased by individual year, it was necessary to establish relationships between the various data tables belonging to each database for each respective license year. Using the customer identification numbers or individual customers as a primary sorting key, relationships were built between the customer table (CT) and the individual license tables (LTs) of the databases established for each license year. Additionally, using the "address key" associated with each unique "customer key," relationships were built between the customer table (CT) and the address table (AT), linking all tables within each database through the common, but unique customer keys assigned to each individual customer. A Microsoft Access query was developed and used to build a new Access table including for each individual and unique customer key the following information: Customer Key (CT), Birth Date (CT), Gender (CT), State or Province (AT), Zip Code (AT), and each license table occurring for each license year (LTs).

For the retention analysis portion of this project it was necessary to develop relationships between individuals across various license years. For this analysis, the customer tables from each different license year were compiled into a new Microsoft Access database allowing for the development of relationships that linked individual, unique customer keys across license years. A series of queries were developed to identify customers who had purchased any fishing license in all years of each two- and three-year period from 1995 through 2002.

Finally, to analyze angling participation in relation to the Michigan population, U.S. Census Data were utilized for comparison. These data for all Michigan residents were used in the analysis of the Michigan resident angler demographic statistics.

Once data were sorted and organized for analysis, a series of steps allowed us to import the results of the Microsoft Access data queries into SPSS for statistical analysis. Finally, SPSS analysis output data were exported into Microsoft Excel for describing and presenting the data and analyses graphically.

To date, results are indicating some notable trends. The number of unique customers in the angling population databases has declined slightly from 1.37 million in 1995 to 1.24 million in 2002. The average age of Michigan anglers has increased somewhat from 42.1 to 43.3 years old from 1995 to 2002. This increasing age is likely due to the aging of the baby boom generation of participants. Two-year angling retention rates have decreased slightly for all anglers, from 61.6%

in 1995-96, to 59.0% in 2001-2002. Male anglers have a greater two-year retention rate than females. Male retention rates from 1995-96 through 2001-02 ranged from 61-66%, whereas female two-year retention rates ranged from 47-51%. Overall angler three-year retention rates have remained steady, at about 46% since 1995-97, through 2000-2002. Additional results are being summarized into a full report.

Job 7. Title: **Establish data management procedures to identify educational program participants within the angler license database, and employ these procedures.**–Planned for 2004-2006. This work has not begun due to the delay in forming the formal Working Group for this research project. (See Job 5 for explanation.)

Job 8. Title: **Conduct analysis and report findings.**–This annual progress report was written documenting analytical techniques. Formal report drafting is underway (see Job 6, above). We are using the report format created by the Wildlife Division of MNDR for its analysis of the Michigan hunter population. Its report analyzed data from only three license years (1997-99), but compared these data to historic qualitative summaries of hunting involvement (Frawley 2001).

Job 9. Title: **Prepare/update specific research proposal for Jobs 10 through 16.**–Planned for early 2004, in conjunction with the formal Working Group for this project. (See Job 5 for explanation.)

References:

Frawley, B. 2001. Demographics, recruitment and retention of Michigan Hunters, Michigan Department of Natural Resources, Wildlife Division Report 3332, Lansing.

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