

STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-81-R-16

Study No.: 230737

Title: Analysis and synthesis of fish populations, community structure, and instream habitat data collected from Michigan streams through statewide Stream Status and Trends Program (SSTP) surveys

Period Covered: October 1, 2014 to September 30, 2015

Study Objectives: The purpose of this study is to: 1) collect the information needed to maintain an inventory of stream habitat and fish community characteristics statewide; 2) provide reference points or benchmarks for local, regional, and statewide management needs; and 3) to assess the status of and detect changes to aquatic communities across Michigan. This will be accomplished through the following study objectives:

1. Characterize fish community structure by describing the presence, distribution, and abundance of fish populations in a variety of stream types across the state.
2. Describe the status of and long-term trends in fish population abundance in valuable trout and Smallmouth Bass *Micropterus dolomieu* streams across the state.
3. Track changes in survival and growth of salmonids and smallmouth bass over time.
4. Examine the relationship between temporal changes in fish population size and structure and instream habitat.
5. Identify appropriate spatial scales for describing regional trends (if any exist) in fish community structure and fish population abundance.
6. Ensure continued coordination and maintenance of the SSTP by providing scientific and technical support to field staff, Study 237014.

Summary: The Fisheries Division of the Michigan Department of Natural Resources (MDNR) initiated the statewide SSTP during the spring of 2002. The division-wide SSTP uses standardized sampling methods in an effort to collect and evaluate data from a statewide perspective. These data include fisheries information from electrofishing, habitat measurements, and water quality sampling that will be used to monitor statewide status and trends of streams and evaluate management activities. In 2014-15, we continued to assist in coordinating fish and habitat surveys, worked with other Fisheries Division personnel to improve the central database used to store all SSTP data, and responded to internal and external requests for data and analysis.

Findings: Jobs 1, 2, 4, and 5 were scheduled for 2014-15, and progress is reported below.

Job 1. Survey design and coordination.—We continued to work with field personnel through Fisheries Division’s Resource Inventory Team (which includes representatives from the Research Section and each fisheries management unit) to provide guidance on the completion of fixed and random fish and habitat surveys scheduled for the 2014-15 field season.

Job 2. Manage data and maintain database.—We continued to work with the Resource Inventory Team as well as administrators of Fisheries Division’s central fish database, the Fish Collection

System (FCS), to identify improvements and complete upgrades to its data storage and retrieval capabilities. This work resulted in a number of data entry and quality assurance bug fixes that were implemented in 2015. We also continued to refine a Microsoft Access database developed to automatically query fish community and habitat data from the FCS. These improvements will increase efficiency in retrieval, error-checking, and summarization of data for future analyses.

We also worked with Michigan State University and the Michigan Department of Technology, Management, and Budget to update the data in the Stream Fish Population Trend Viewer, our public-facing web application (<http://www.mcgi.state.mi.us/fishpop/>) is designed to display spatial patterns in fish population attributes (abundance, growth, and survival) for important species across the state, and serve trend data from SSTP index stations in graphical and tabular form for multiple sites and years. An external funding proposal to illustrate spatial patterns in the status of fish communities across the state using a similar web-based platform was drafted and successfully funded by the Great Lakes Fisheries Trust, with work set to begin during the next fiscal year.

In addition to assembling and updating the data in the Stream Fish Population Trend Viewer, we assembled and summarized data for internal and external partners including the Michigan Department of Environmental Quality and Michigan State University.

Job 4. Write annual performance report.—This progress report was prepared. In addition, a project summary was completed (Attachment 1).

Job 5. Write manuscripts for publication.—No manuscripts were prepared due to a change in the principal investigator's position and job duties. The study will be amended to add a new principal investigator who will prepare a 6-year summary report during the next fiscal year.

Analysis of Fish and Habitat Data Collected from Michigan's Streams by Statewide Stream Status and Trends Program Surveys

Jan-Michael Hessenauer, Todd Wills, and Troy Zorn
Lake St. Clair and Marquette Fisheries Research Stations

Background

Have you ever wondered how, with tens of thousands of miles of streams and rivers throughout the state, Fisheries Division fulfills its mission to protect and enhance Michigan's aquatic life and habitats for the benefit of current and future generations? It's not surprising that fulfilling our mission is a challenging task given the sheer number of streams and rivers in the state. While these diverse natural resources continue to provide a number of different benefits to people, their long-term quality is threatened by an ever-growing list of disturbances. The sound management needed to protect streams and rivers from these threats, and to conserve them for future generations, depends upon the availability of quickly accessible fish and habitat information that assesses their current condition and describes how they are changing over time. Collecting, analyzing, and sharing that information are all objectives of Fisheries Division's Stream Status and Trends Program, an effort initiated over 10 years ago as part of a broader resource inventory plan aimed to address Michigan's inland fisheries management needs.

What are the current key results?

Fisheries Division's Stream Status and Trends Program was initiated during the spring of 2002. This effort continued to use standardized sampling methods in an effort to collect and evaluate stream data from a statewide perspective. These data included fisheries information from electrofishing, habitat measurements, and water quality sampling that will monitor statewide status and trends of streams and evaluate management activities (Photos 1 and 2). In 2014-15, we continued to assist in coordinating fish and habitat surveys, worked with other Fisheries Division personnel to improve the central database used to store all SSTP data, developed an online data viewer for the public to use, and responded to a range of internal and external requests for data and analysis.



Photo 1. A large Brown Trout collected during Fisheries Division's surveys.



Photo 2. A large Brook Trout collected during Fisheries Division's surveys.

Where can I find the results?

Results and analyses from many individual stream and river surveys are published by the Michigan Department of Natural Resources Fisheries Division as Status of the Fishery Resource reports. Fisheries Division also publishes comprehensive Stream Status and Trends Program summary reports every 6 years. All of these reports can be found by visiting <http://www.michigan.gov/dnrfishing>. In addition, annual survey results from wild trout and smallmouth bass index stations across the state can be found by using Fisheries Division's new Stream Fish Population Trend Viewer web application: www.mcgi.state.mi.us/fishpop.

What does this project do for fisheries managers and anglers?

The Stream Status and Trends Program provides fisheries managers the baseline information needed to guide management actions such as regulation changes or habitat protection and fulfill our vision to provide world-class freshwater fishing opportunities, supported by healthy aquatic environments, which enhance the quality of life in Michigan.