

## STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-35-R-22

Study No.: 670

Title: Development of decision tools for river management

Period Covered: April 1, 1996 to March 31, 1997

**Study Objective:** Using the results of F-35-R, Study 631, develop management decision tools for application to the rivers of Michigan's Lower Peninsula, specifically:

1. Classify all segments of Lower Peninsula rivers as either coldwater or not, using VSEC system. More stringent water quality regulations are applied to coldwater streams.
2. Classify all segments of Lower Peninsula rivers as to their current potential for gamefish production. Develop decision processes for stocking hatchery fishes.
3. For each Lower Peninsula river segment, develop predicted values for various metrics of ecological integrity representing both current and "best case" scenarios.

**Summary:** We developed a Memorandum of Understanding with The Nature Conservancy (TNC) (Chicago Regional Office) to jointly complete the map-based, ecological classification of all lower Michigan stream valley segments; specifically adding including smaller tributary and coastal systems. Work on this has begun and is to be completed during 1997. We have also developed two projects, cooperatively with the Michigan Department of Environmental Quality (MIDEQ) and the United States Environmental Protection Agency (USEPA) (Chicago Regional Office), to develop biological metrics for Michigan river systems. Planning is underway for field sampling, GIS and database development, and analyses during 1997-98.

**Job 1. Title: Classify segments and ID coldwater segments.**

**Findings:** We developed a Memorandum of Understanding with TNC (Chicago Regional Office) to jointly complete the map-based, ecological classification of all lower Michigan stream valley segments; specifically adding including smaller tributary and coastal systems. We are contributing planning and technical expertise. TNC is contributing staff time, and moneys for mapping and field survey technicians. We have begun classification of smaller tributaries and coastal streams, and have made plans for summer collection of field data and ground-truthing of classifications using site-specific data. This work is to be complete during 1997.

**Job 3. Title: Develop ecological metrics for the Rouge River.**

**Findings:** This work was done through an alternative funding source and this job has been discontinued with a recent study amendment.

**Job 4. Title: Develop models for ecological metrics.**

**Findings:** We have developed two projects, cooperatively with the MIDEQ and the USEPA (Chicago Regional Office), to develop biological metrics for Michigan river systems. In the first project, we will supervise the work of a Ph.D. student, who will (1) develop landscape-based models to predict biological metrics, using our experiences from the Michigan Rivers Inventory (MRI) Project and statewide biological data sets developed by MDEQ; and (2) develop “expected” or “reference” values and ranges of these metrics for each river valley segment (initially in lower Michigan). The student will begin in summer 1997 and is funded by USEPA.

In the second project we will work cooperatively with the states of Minnesota and Wisconsin, the Michigan Natural Features Inventory, and with USEPA, to test different approaches of developing biological metrics for the USEPA’s Northern Lakes and Forests Ecoregion. We will help coordinate standardized field sampling of biological metrics at 100 sites distributed across the three states. We will also coordinate the development of a GIS for the project; and provide an analysis of how modeling of catchment landscapes explains the observed variances in metrics, for comparison with an alternative analysis based on USEPA sub-ecoregions. USEPA will fund the field sampling (this begins summer 1997) and all participants will participate in the analyses and summarization stages.

**Job 6. Title: Write reports.**

**Findings:** An annual progress report was written on schedule.

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**Date:** March 31, 1997