STUDY PERFORMANCE REPORT

State: Michigan **Project No.:** T-10-T-5

Study No.: 237016 **Title:** Refinement of the aquatic portion of Michigan's Wildlife Action Plan (MWAP) and development of tools to support the plan

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

Study Objectives: The goals of this project are to refine the Michigan's comprehensive aquatic conservation strategy; synthesize progress made during the first phase of implementation of the plan; and develop improved databases, frameworks, and tools for the implementation of MWAP. The study objectives are to: (1) identify high priority conservation areas for both inland lakes and rivers; (2) assess environmental conditions of Michigan's rivers and inland lakes; (3) identify key environmental threats to each water body; (4) develop GIS application tools to meet the other implementation needs of the MWAP programs of Fisheries Division; and (5) develop and write the aquatic portion of the 10-year conservation strategy refinement report.

Summary: We identified high priority conservation areas, assessed environmental conditions, and identified key environmental threats for all SGCN and for priority aquatic habitats including big rivers, warmwater rivers and their headwaters, littoral zones, Cisco *Coregonus artedi* Lakes, Great Lakes Coregonids, and the St Clair-Detroit Rivers System. We continued to develop web-based tools to serve habitat and conservation-related data layers, and provided GIS support to numerous MWAP-related projects. The 10-year conservation strategy for Michigan was written as scheduled.

Findings: Jobs 1-7 were scheduled for 2014-15, and findings are reported below.

Job 1. Identify high priority conservation areas for both inland lakes and rivers.–We identified high priority conservation areas for big rivers, warmwater rivers and their headwaters, littoral zones, Cisco Lakes, Great Lakes Coregonids, and the St Clair-Detroit Rivers System using expert opinion from 4 stakeholder workshops and results of modeling efforts using conservation planning software. The conservation planning software incorporates key natural habitat characteristics for each species as well as a risk-based habitat assessment using both contemporary (human disturbance index and connectivity) and future (climate change) threats.

Job 2. Assess environmental conditions of Michigan rivers and inland lakes.–A connectivity analysis for streams and lakes was finalized using a statewide barrier dataset that includes small dams, large dams, and waterfalls. These barriers were used to create a statewide connectivity layer identifying patches containing adjacent, connected streams/lakes with river basins. This information was used to calculate dendritic connectivity index values for each SGCN fish species, creating a measure of contemporary connectivity among high suitable habitats.

Job 3. Identify key environmental threats to each water body.–Key environmental threats from land use disturbance, climate change, and fragmentation were identified and their relative influence on aquatic SGCN was quantified.

Job 4. Develop GIS application tools to meet the other Fisheries Division implementation needs of the MWAP.–We continued to update and maintain the original version of the Aquatic Habitat Viewer (Flash), providing biologists an easy way to access the essential aquatic habitat information. We also developed and set up a framework for a JavaScript web-mapping platform with mobile device support, which will become the framework for the next iteration of the Aquatic Habitat Viewer. We began using the framework to build a Conservation Viewer for the MWAP decision support process, delivering the key findings of the SGCN modeling results.

Job 5. Provide GIS support to the MWAP.–GIS support was provided to the MWAP programs when requested. We provided a variety of spatial data including streams, lakes, and watersheds to display fish habitat and evaluate spatial relationships by different programs that deal with species of greatest conservation need (SGCN) issues. Maps of updated species distributions and priority conservations areas were created for all focal species and priority habitats.

Job 6. Develop and write the 10-year conservation strategy refinement report.–The 10-year conservation strategy for Michigan was written.

Job 7. Prepare annual performance report.–This report was prepared as scheduled. In addition, a study summary was completed (Attachment 1).

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Date: September 30, 2015