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**Name of Organization:** Michigan Natural Features Inventory

**Type of Organization:** Other

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**Project Title:** Aquatic Biodiversity Surveys of Area of Concern Rivers in MI

**Project Category:** Habitat (Ecological) Protection and Rest

**Rank by Organization (if applicable):** 0

**Total Funding Requested (\$):** 97,500 **Project Duration:** 2 Years

**Abstract:**

Development and implementation of ecosystem management strategies to protect Great Lakes Basin biological and ecological integrity rely on the availability of current status and distribution data for species, communities and habitats. Conservation needs in the Great Lakes tributary rivers are often difficult to address because updated biological and environmental data are not available. Many of these rivers have not been systematically surveyed in recent decades. Inventories that do exist typically do not provide comprehensive data spanning multiple taxonomic groups and environmental properties of surveyed reaches. Updated surveys of these rivers need to be conducted to provide a strong foundation for devising effective conservation strategies and for prioritizing sites for conservation action. This study will provide valuable biodiversity data for Lake Michigan and Lake Huron tributary rivers that are considered to be Areas of Concern. The results of the study will include identification of the important resident species and biological communities, reports on the current status of exotic species invasions of several inland waterways, identification of key environmental properties and biological stressors of sites, and identification of conservation needs and priorities for rivers. This study will contribute to a concerted effort by experts from academia, State and Federal agencies, and private conservation organizations to systematically survey rivers in Michigan to document the current status of aquatic ecosystems. Combined, the results of these and future projects will populate a comprehensive database to be used as a conservation tool for protecting Great Lakes aquatic ecosystem integrity, including development of a strategic plan to maintain diverse populations of native aquatic taxa.

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**Geographic Areas Affected by the Project**

**States:**

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|--|---------------------------------------|
| <input type="checkbox"/> Illinois            | <input type="checkbox"/> New York     |
| <input type="checkbox"/> Indiana             | <input type="checkbox"/> Pennsylvania |
| <input checked="" type="checkbox"/> Michigan | <input type="checkbox"/> Wisconsin    |
| <input type="checkbox"/> Minnesota           | <input type="checkbox"/> Ohio         |

**Lakes:**

- |  |                                    |
|--|------------------------------------|
| <input type="checkbox"/> Superior            | <input type="checkbox"/> Erie      |
| <input checked="" type="checkbox"/> Huron    | <input type="checkbox"/> Ontario   |
| <input checked="" type="checkbox"/> Michigan | <input type="checkbox"/> All Lakes |

**Geographic Initiatives:**

- |  |                                  |                                     |                                      |   |
|--|----------------------------------|-------------------------------------|--------------------------------------|---|
| <input type="checkbox"/> Greater Chicago | <input type="checkbox"/> NE Ohio | <input type="checkbox"/> NW Indiana | <input type="checkbox"/> SE Michigan | <input type="checkbox"/> Lake St. Clair |
|--|----------------------------------|-------------------------------------|--------------------------------------|---|

**Primary Affected Area of Concern:** Kalamazoo River, MI

**Other Affected Areas of Concern:** Clinton River, MI  
Rouge River, MI  
Saginaw River, MI  
River Raisin, MI

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***For Habitat Projects Only:***

**Primary Affected Biodiversity Investment Area:**

**Other Affected Biodiversity Investment Areas:**

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**Problem Statement:**

Aquatic ecosystem integrity continues to decline throughout the Great Lakes Basin in response to numerous environmental threats. Large tributary rivers, such as the Kalamazoo, Clinton, Raisin, Rouge and Saginaw Rivers, are especially susceptible to these perturbations given the intimate relationships that exist between rivers and the basins they drain. These rivers provide unique habitats that sustain considerable biodiversity, including many aquatic species that are now considered to be rare, threatened or endangered at both regional and global scales. Tributary rivers also influence Great Lakes ecosystems by acting as conduits for transporting water precipitated over broad landscapes to the lake basins. Conservation management of these ecosystems is required to enhance the long-term viability of native species and sustainability of ecological resources, including the rivers and the Great Lakes they feed. Devising appropriate restoration strategies relies on the availability of current status assessments of environmental features and biota. Most tributary rivers of Lake Michigan and Lake Huron have either not been systematically surveyed or have not been surveyed within recent decades. Moreover, comprehensive and comparable inventories that describe communities spanning multiple taxonomic groups have not been performed for any of these rivers. A substantial data gap currently exists that makes it difficult for experts to provide much needed insight into the conservation and management needs of these rivers, including several rivers that are considered to be Areas of Concern. Updated inventories and ecological assessments of these rivers will provide valuable data describing 1) the status of important resident biological communities and species, 2) current status of encroaching exotic species at survey sites, 3) key environmental properties and biodiversity stressors, 4) conditions required to protect ecosystem integrity, and 5) conservation management needs for river reaches throughout Southern Lower Michigan. The inventories will help to fill the information gaps that currently exist and will provide a much stronger foundation for devising sound conservation, restoration and sustainable development strategies. These surveys will also contribute significantly to ongoing efforts to systematically survey riverine ecosystems in Southern Lower Michigan to improve our understanding of the current status and distributions of native aquatic taxa to enhance resource management strategies.

**Proposed Work Outcome:**

Systematic biological inventories and ecological assessments will be conducted at strategic sites in the Kalamazoo, Clinton, Rouge, Saginaw and Raisin River systems. Survey sites will be selected to include reaches with historical occurrences of rare or unique taxa and reaches that have high potential for supporting unique species, communities and/or habitats that have been overlooked in past surveys. The Michigan Natural Features Inventory (MNFI) Biological Conservation Database (BCD) and aerial photographs spanning several decades will be used as coarse filters for site selection. Reconnaissance visits to selected sites will be used to further screen potential survey sites. Inventories of fish,

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mollusks and benthic macroinvertebrates will be conducted to describe aquatic community composition and demographic properties of individual species' populations (e.g., abundance, density, population size, etc.). Both qualitative and quantitative sampling techniques will be used for the inventories. Environmental and ecological properties of river reaches will be evaluated using several qualitative field assessment protocols. Physical and chemical properties of the sites will also be measured directly, including water temperature, dissolved oxygen, pH, suspended solids, conductivity and substrate composition. This study, along with similar inventories in the St. Joseph River (Lake Michigan drainage), St. Joseph River (Maumee River drainage), Black River (Sanilac and St. Clair Counties, MI), Grand River and Huron River, will contribute to the production of a comprehensive database that will serve as a powerful contemporary tool for conservation and management of surface waters of the Great Lakes Basin. Funding from GLNPO to conduct the surveys in southwestern Michigan Rivers will help provide leverage to seek additional funding to enable members of the Michigan Freshwater Mussel Conservation Committee and other aquatics experts to conduct systematic river survey work in other Michigan rivers.

<b>Project Milestones:</b>	<b>Dates:</b>
Project Start;compile watershed database	12/2000
Begin site selection for Year 1 surveys	03/2001
Begin field surveys for Year 1	06/2001
Submit progress report for Year 1	12/2001
Begin site selection for Year 2	03/2002
Begin field surveys for Year 2	06/2002
Devise restoration/protection plan	10/2002
Submit final report and strategic plan	12/2002

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Project Addresses Environmental Justice

**If So, Description of How:**

Project Addresses Education/Outreach

**If So, Description of How:**

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**Project Budget:**

	<b>Federal Share Requested (\$)</b>	<b>Applicant's Share (\$)</b>
<b>Personnel:</b>	50,000	15,000
<b>Fringe:</b>	18,750	0
<b>Travel:</b>	10,000	0
<b>Equipment:</b>	2,000	0
<b>Supplies:</b>	3,000	0
<b>Contracts:</b>	0	0
<b>Construction:</b>	0	0
<b>Other:</b>	0	0
<b>Total Direct Costs:</b>	83,750	15,000
<b>Indirect Costs:</b>	13,750	5,000
<b>Total:</b>	97,500	20,000
<b>Projected Income:</b>	0	0

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**Funding by Other Organizations (Names, Amounts, Description of Commitments):**

Ongoing projects funded by the Michigan Department of Environmental Quality Office of the Great Lakes will provide matching contributions for aquatics work in the Kalamazoo River and the River Raisin during 2000, 2001 and 2002. Additional funding is being sought from the Department of Environmental Quality Coastal Zone Management Program to conduct complementary surveys in the lower reaches of the rivers targeted for survey as part of this project. Meeting the match requirements for GLNPO will be no problem if this project is funded.

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**Description of Collaboration/Community Based Support:**

Collaborations: Aquatics experts from State and Federal agencies, academia and private conservation organizations have committed to a cooperative effort to systematically survey aquatic biodiversity in Michigan rivers. Members represent the Michigan Department of Natural Resources (Wildlife and Fisheries Divisions), the Michigan Department of Environmental Quality, the Great Lakes Science Center (USGS), the US Fish and Wildlife Service, The Nature Conservancy, the University of Michigan and Michigan State University.