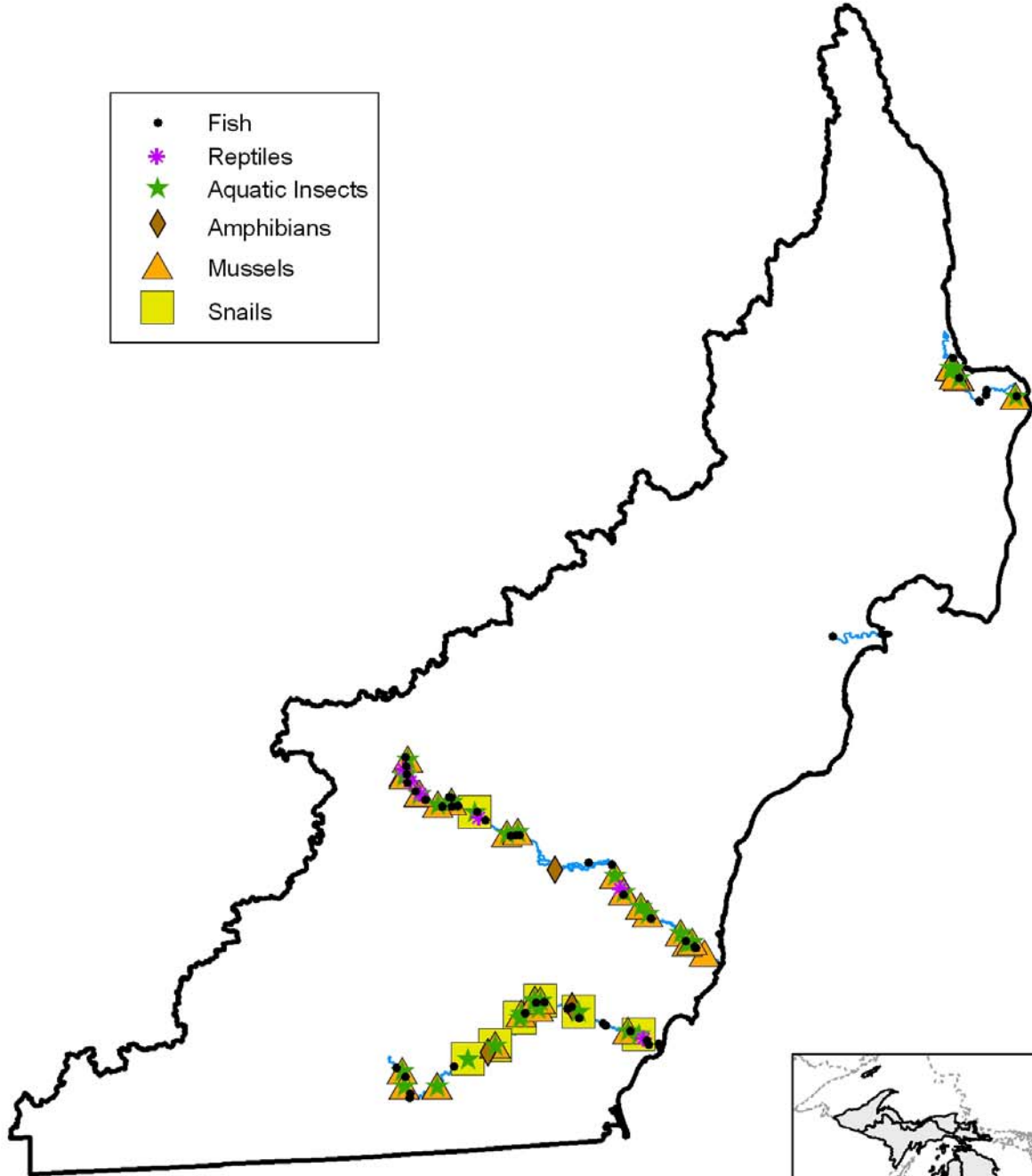
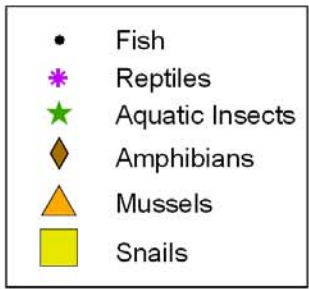


## Rivers: Very large rivers



## Rivers: Very Large Rivers

### Description

Very large rivers are those systems that have a midpoint catchment area greater than 620 square miles. Very large rivers are high stream order systems that are typically unwadeable. They include runoff and groundwater-driven systems that encompass a variety of thermal regimes from cool to warm. Most are low or moderate gradient, a few are high gradient. Very large rivers flow through a variety of valley types including confined, sporadically confined, and unconfined glacial valleys and unconfined alluvial valleys. Temperatures range from cold to warm.

### General Condition of Feature

This habitat is considered 70% in fair condition and 30% in degraded to very degraded condition.

### Associated Species of Greatest Conservation Need

#### *MUSSELS*

Specific associations with this landscape feature were not found in the literature

#### *SNAILS*

Specific associations with this landscape feature were not found in the literature

#### *INSECTS*

Specific associations with this landscape feature were not found in the literature

#### *FISH*

lake sturgeon (*Acipenser fulvescens*)  
silver chub (*Macrhybopsis storeriana*)  
river chub (*Nocomis micropogon*)

#### *FISH cont.*

pugnose minnow (*Opsopoeodus emiliae*)  
black buffalo (*Ictiobus niger*)  
spotted sucker (*Minytrema melanops*)  
river herring (*Moxostoma carinatum*)  
cisco or lake herring (*Coregonus artedii*)  
sauger (*Sander canadensis*)

#### *AMPHIBIANS*

Specific associations with this landscape feature were not found in the literature

#### *REPTILES*

Specific associations with this landscape feature were not found in the literature

### Associated Threats

#### *MODIFICATION OF NATURAL PROCESSES*

- Altered hydrologic regimes: Power plant intakes and discharges; Altered flow regime
- Climate change
- Fragmentation: Habitat fragmentation due to dams

#### *POLLUTION*

- Altered nutrient inflows: (low threat)
- Altered sediment loads
- Pesticides and herbicides: Contaminated sediments
- Thermal changes: Power plant discharges; Altered thermal regime
- Urban, municipal, and industrial pollution: Contaminated sediments; Chemical mills on the Canadian side of St. Clair River; Degraded water quality

#### *HABITAT CONVERSION*

- Dams: Habitat fragmentation
- Dredging and channelization: Shipping and navigation maintenance; Dredging
- Riparian modification: Shoreline hardening; Shoreline modification and loss of connected wetlands
- Wetland modification: Loss of wetlands

#### *BIOLOGICAL INTERACTIONS*

- Invasive plants and animals

#### *NON-CONSUMPTIVE BIOLOGICAL RESOURCE USE*

- Macrophyte removal: Aquatic vegetation removal

### Conservation Actions Needed (Threats addressed)

#### *LAND, WATER & SPECIES MANAGEMENT*

- Allow seasonal flooding (altered hydrologic regimes)
- Encourage the use of best management practices (altered hydrologic regimes, altered nutrient inflows, altered sediment loads, riparian modification)
- Engineered drainage channels should mimic natural stream channel stability (channel dimension, pattern, and profile) (altered hydrologic regimes, altered sediment loads)
- Maintain, rehabilitate, and protect riparian buffers (altered hydrologic regimes, altered sediment loads, riparian modification)
- Preserve woody riparian vegetation to reduce sedimentation (altered sediment loads)

**MICHIGAN'S WILDLIFE ACTION PLAN**  
**AQUATIC SYSTEMS: LAKE ERIE BASIN**

- Prevent establishment of more aquatic invasive species (invasive plants and animals)
- Protect existing natural wetlands and floodplains and rehabilitate damaged and degraded wetlands and floodplains (wetland modification)
- Reduce pesticide and herbicide use (pesticides and herbicides)
- When removing exotic vegetation, at least 60-80% of native vegetation should be preserved (invasive – animals and plants, macrophyte removal)
- Require all vegetation management to occur in conjunction with a watershed management plan (macrophyte removal)
- Rehabilitate natural flora (macrophyte removal, riparian modification)
- Soften or remove hard stream structures (riparian modification)
- Use natural materials or soft engineering techniques for riparian modification (riparian modification)
- Use sediment barriers and Best management practices during road and stream crossing construction (altered sediment loads)

*LAW & POLICY*

- Implement ballast control regulations (invasive plants and animals)
- No open water disposal of dredging spoils (dredging and channelization)
- Reduce effluent flows (thermal changes, Urban, municipal, and industrial pollution)
- Restrict dredging activities during spawning and migration seasons (dredging and channelization)
- Strengthen water quality laws (altered hydrologic regimes and all pollution threats)

*EDUCATION & AWARENESS*

- Educate landowners on the value and ecological services of macrophytes (macrophyte removal, social attitudes)
- Educate the public on prevention and control of aquatic invasive species (invasive plants and animals, social attitudes)
- Increase awareness of effects of aquatic invasive species on the ecosystem (invasive plants and animals, social attitudes)
- Work with Extension and Natural Resource Conservation services to educate farmers and landowners on natural processes and ecological services (social attitudes)

Research and Survey Needs

- Determine effective prevention, control, and survey techniques for aquatic invasive species
- Conduct inventories to determine problem erosion sites
- Develop biological controls of aquatic invasive species
- Develop early detection, rapid response protocols for aquatic invasive species
- Establish effective methods of communicating with the public and enhancing their stewardship role
- Inventory the number and condition of wetlands less than 5 acres
- Investigate life history strategies of SGCN where this information is lacking

Monitoring

- Aquatic invasive species
- Industrial effluent
- Municipal wastewater treatment plants
- Riparian modification
- Storm water flows
- Wetland and floodplain modification