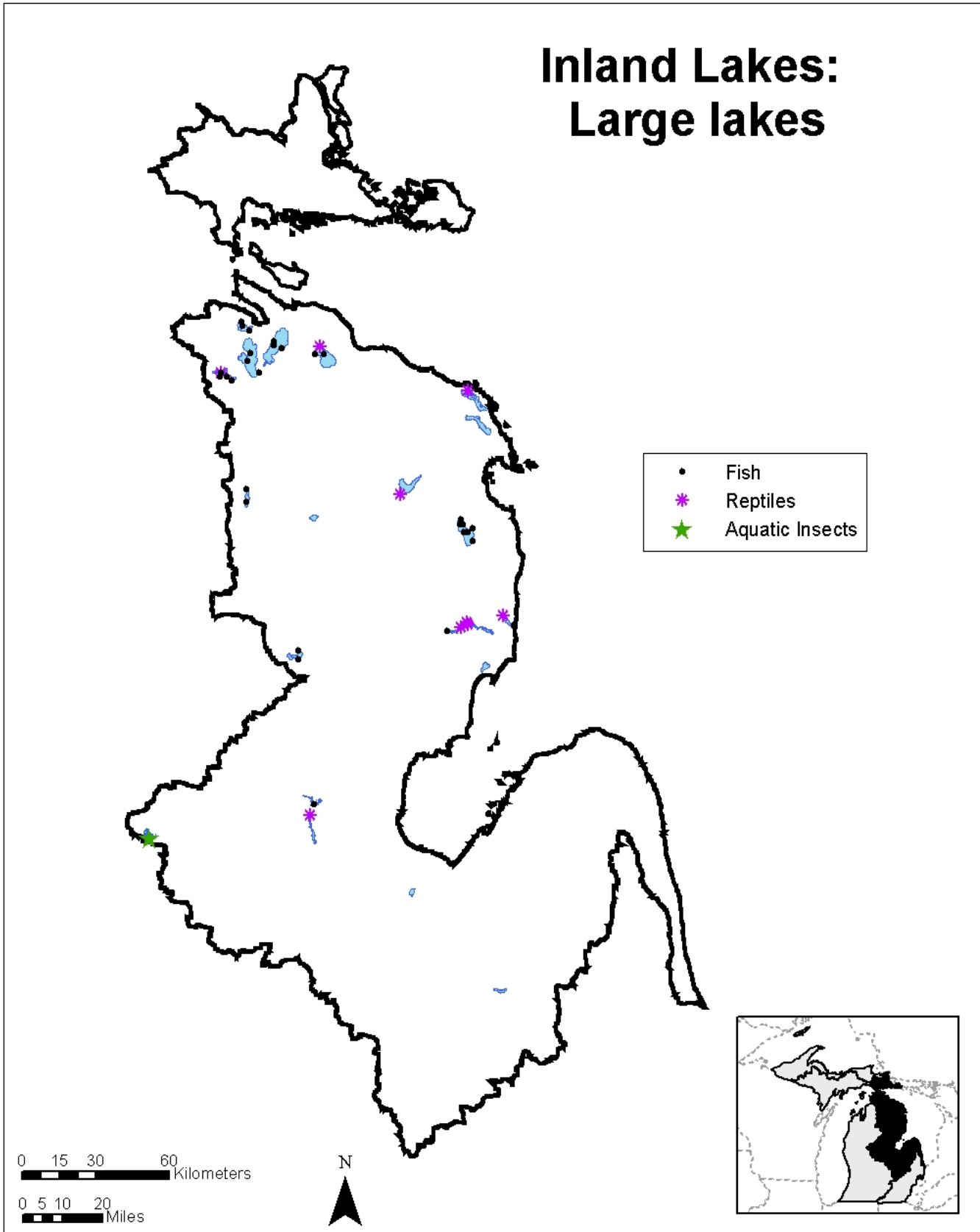


Inland Lakes: Large lakes



Inland Lakes: Large Lakes

Description

Large lakes are permanent standing water bodies greater than 1000 acres in area. These lakes are more homogeneous in terms of chemical and biological variables than smaller lakes, although there is still some diversity. They are typically oligotrophic to mesotrophic and most are dominated by open-water zones (pelagic) and are stratified. Large lakes are more likely to have wave-washed shores compared to smaller lakes and are unlikely to have low winter oxygen levels. There is more diversity of within-lake habitats in these lakes than smaller lakes. These lakes are the most likely to have public access points.

General Condition of Feature

This habitat is considered 50% in good to excellent condition, 30% in fair condition, and 20% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

MUSSELS

- rainbow (*Villosa iris*)
- pimpleback (*Quadrula pustulosa*)
- eastern pondmussel (*Ligumia nasuta*)
- black sandshell (*Ligumia recta*)
- threehorn wartyback (*Obliquaria reflexa*)
- kidneyshell (*Ptychobranthus fasciolaris*)

SNAILS

- aquatic snail (*Planorbella smithi*)

INSECTS

- ocellated darner (*Boyeria grafiana*)
- russet-tipped clubtail (*Stylurus plagiatus*)
- stygian shadowdragon (*Neurocordulia yamaskanensis*)

FISH

- lake sturgeon (*Acipenser fulvescens*)
- black buffalo (*Ictiobus niger*)
- brown bullhead (*Ameiurus nebulosus*)
- stonecat (*Noturus flavus*)
- cisco or lake herring (*Coregonus artedii*)
- slimy sculpin (*Cottus cognatus*)
- spoonhead sculpin (*Cottus ricei*)
- deepwater sculpin (*Myoxocephalus thompsonii*)
- sauger (*Sander canadensis*)

AMPHIBIANS

- mudpuppy (*Necturus maculosus maculosus*)

REPTILES

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

Associated Threats

POLLUTION

- Altered nutrient loads: Increases in fertilizers; Septic system leaks (low threat)
- Pesticides and herbicides: Herbicides (low threat)
- Urban, municipal, and industrial pollution: Heavy metal disposition (low threat)

HABITAT CONVERSION

- Dredging and channelization: Dredging for marinas; Filling
- Riparian modification: Shoreline development; Seawalls; Riprap; Large woody debris removal
- Wetland modification: Wetland loss (low threat)

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Cormorants

NON-CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Other structure removal: Woody debris removal
- Macrophyte removal: Excessive aquatic vegetation control

EDUCATION

- Social attitudes

Conservation Actions Needed (Threats addressed)

LAND & WATER PROTECTION

- Support landowner incentive programs to foster conservation on private land (general threats)

LAND, WATER & SPECIES MANAGEMENT

- Continued vigilance and cooperation on preventing aquatic invasive species introductions and establishments (invasive plants and animals)
- Develop early detection and rapid response protocols for aquatic invasive species (invasive plants and animals)
- Encourage the use of natural materials or soft engineering techniques for any shoreline modification (riparian modification)
- Use best management practices when applicable (riparian modification)

MICHIGAN'S WILDLIFE ACTION PLAN
AQUATIC SYSTEMS: LAKE HURON BASIN

- Maintain or establish riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits (riparian modification, other structure removal)
- Soften or remove shoreline structures and rehabilitate natural shoreline (riparian modification)
- Rehabilitate and maintain wetland functions (riparian modification, wetland modification)
- Rehabilitate native flora (macrophytes removal, riparian modification, wetland modification)
- Restrict beach grooming (macrophyte removal, riparian modification)
- Restrict herbicide use in medium lakes (macrophytes removal)
- When removing exotic vegetation, at least 60-80% of native vegetation should be preserved (invasive plants and animals, macrophyte removal)
- Vegetation management should be preformed in conjunction with watershed management practices that consider all physical, biological, and social factors (invasive plants and animals, macrophytes removal)

LAW & POLICY

- Work with local officials to develop planning and zoning regulation and ordinances (macrophytes removal, riparian modification, wetland modification)
- Enact and enforce better wetland regulations and mitigation requirements (wetland modification)
- Enact and enforce shoreline protection regulations (riparian modification)
- Work with local officials to develop planning and zoning guidelines that consider natural processes (riparian modification)
- Work with regulatory agencies to restrict dredging (dredging and channelization, riparian modification, wetland modification)

EDUCATION & AWARENESS

- Educate landowners about the spread of invasive species and preventative steps (invasive plants and animals, social attitudes)
- Educate landowners on the value of macrophytes, riparian vegetation, natural shorelines, wetlands, and stewardship issues (macrophytes removal, riparian modification, social attitudes, wetland modification)
- Educate legislators, local planning boards, and other policy makers on the importance of natural processes (social attitudes)

Research and Survey Needs

- Determine effective prevention, control, and survey techniques for aquatic invasive species
- Determine important aquatic nursery areas
- Determine socially-acceptable ways to coordinate macrophyte treatments with aquatic species needs
- Determine the amount of shoreline development in this landscape feature
- Determine the number of natural lake outlets and socially acceptable ways of maintaining them
- Determine use of large lakes by reptile SGCN
- Establish effective methods of communicating with the public and their role in stewardship, especially shoreline modification (beach grooming, seawalls, dredging)

Monitoring

- Indicator species
- Lake-level control structures
- Land use changes
- Macrophyte removal
- Riparian modification