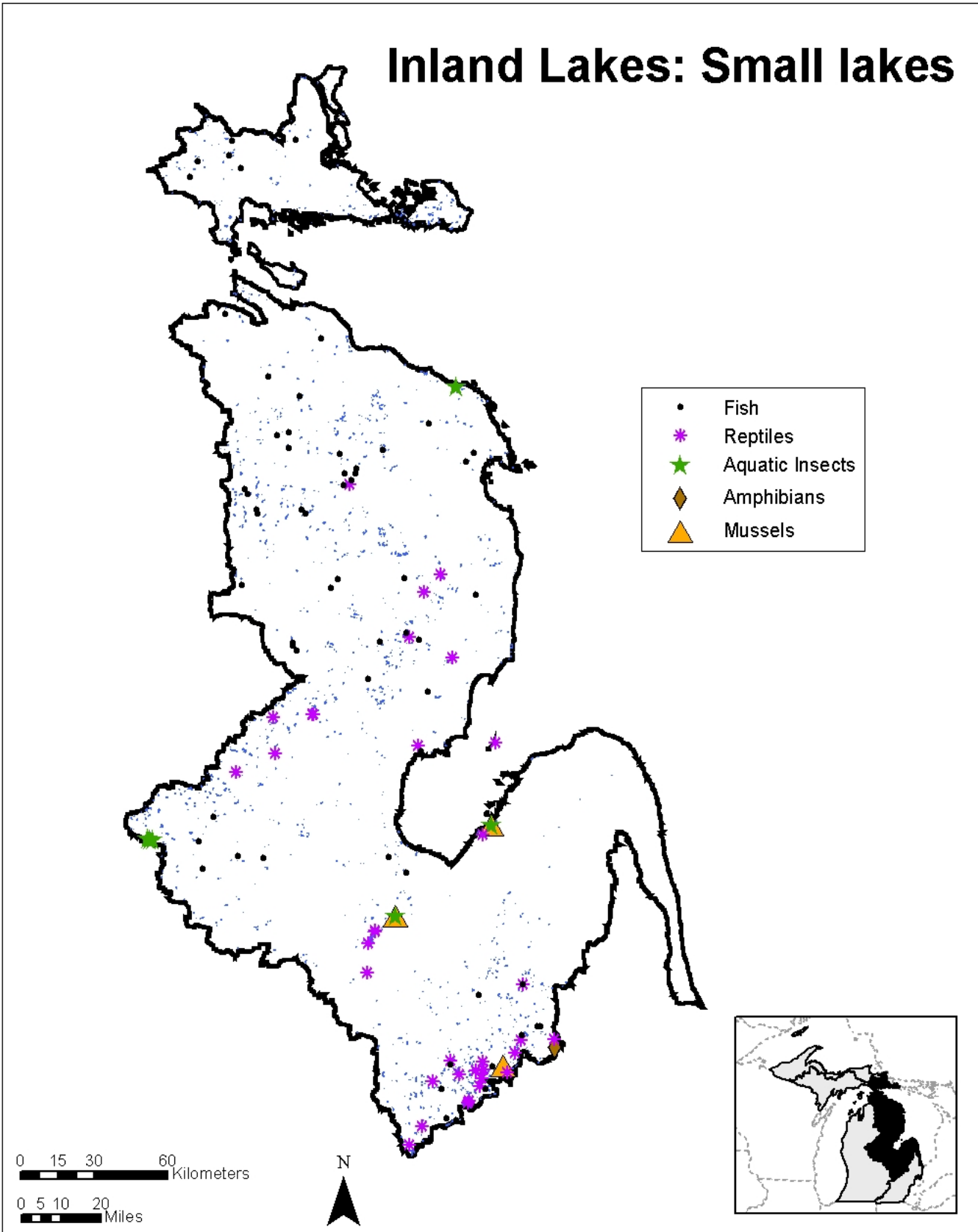


Inland Lakes: Small lakes



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Description

Small lakes are permanent standing water bodies that are greater than 5 acres and less than 99 acres in area. Water bodies in this group are highly diverse in terms of chemical and biological variables. Stratification status can range from fully stratified throughout the summer season, to no stratification. In lakes with stratification, there is development of true open-water (pelagic) zones that are distinct from shallow nearshore zones. Small lakes can range from cold to warm water depending on amounts of groundwater inflows, lake depth, and climate. Winter oxygen levels are also variable and depend on lake depth. If lakes are shallow (< 2 m average depth), there are two states in which they are generally found. The first is characterized by high nutrients, high wind resuspension, no rooted plants, and turbid water, and the second is characterized by low to medium nutrients, low wind resuspension, rooted plants dominant, and clear water.

General Condition of Feature

This habitat is considered 60% in good to excellent condition, 20% in fair condition, and 20% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

MUSSELS

- slippershell mussel (*Alasmidonta viridis*)
- rainbow (*Villosa iris*)
- cylindrical papershell (*Anodontooides ferussacianus*)
- eastern pondmussel (*Ligumia nasuta*)
- purple lilliput (*Toxolasma lividus*)

SNAILS

- spindle lymnaea (*Acella haldemani*)

INSECTS

- sedge darner (*Aeshna juncea*)
- spatterdock darner (*Aeshna mutata*)
- ocellated darner (*Boyeria grafiana*)
- a stonefly (*Arcynopteryx compacta*)

FISH

- pugnose shiner (*Notropis anogenus*)

FISH cont.

- finescale dace (*Phoxinus neogaeus*)
- lake chubsucker (*Erimyzon sucetta*)
- spotted sucker (*Minytrema melanops*)
- brown bullhead (*Ameiurus nebulosus*)
- slimy sculpin (*Cottus cognatus*)
- least darter (*Etheostoma microperca*)

AMPHIBIANS

- mudpuppy (*Necturus maculosus maculosus*)
- Blanchard's cricket frog (*Acris crepitans blanchardi*)
- pickereel frog (*Rana palustris*)
- northern leopard frog (*Rana pipiens*)

REPTILES

- queen snake (*Regina septemvittata*)

MAMMALS

- water shrew (*Sorex palustris*)

Associated Threats

HABITAT CONVERSION

- Dredging and channelization: Dredging; Filling
- Riparian modification: Hard shoreline structures such as seawalls and riprap
- Wetland modification: Wetland loss

BIOLOGICAL INTERACTIONS

- Disease, pathogens, & parasites: (low threat)
- Invasive plants and animals: Cormorants

NON-CONSUMPTIVE BIOLOGICAL RESOURCE USE

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

EDUCATION

- Social attitudes

Conservation Actions Needed (Threats addressed)

LAND & WATER PROTECTION

- Support land conservancy purchase of undeveloped land (general threats)
- 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)

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

- Use best management practices(riparian modification)
- Soften or remove shoreline structures and rehabilitate natural shoreline (riparian modification)
- Rehabilitate and maintain wetland functions (riparian modification, wetland modification)
- Restrict dredging activities during spawning & breeding and migration seasons and around mussel beds (dredging and channelization)
- Restrict herbicide use in small lakes (macrophytes 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

- Develop planning and zoning regulation and ordinances (macrophytes removal, riparian modification, wetland modification)
- Enact and enforce better wetland regulations and mitigation requirements (wetland 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, and wetlands (macrophytes removal, riparian modification, social attitudes, wetland modification)

Research and Survey Needs

- Determine effective prevention, control, and survey techniques for aquatic invasive species
- Determine alternatives to current drainage practices
- Determine effects of over-zealous macrophyte removal on native vegetation and species communities
- Determine life history strategies of SGCN that are unknown
- Determine the amount of shoreline development in this landscape feature
- Determine the number of natural lake outlets and socially acceptable ways of maintaining them

Monitoring

- Aquatic invasive species
- Dredging and channelization
- Indicator species
- Lake-level control structures
- Land use changes
- Macrophyte removals
- Riparian modification