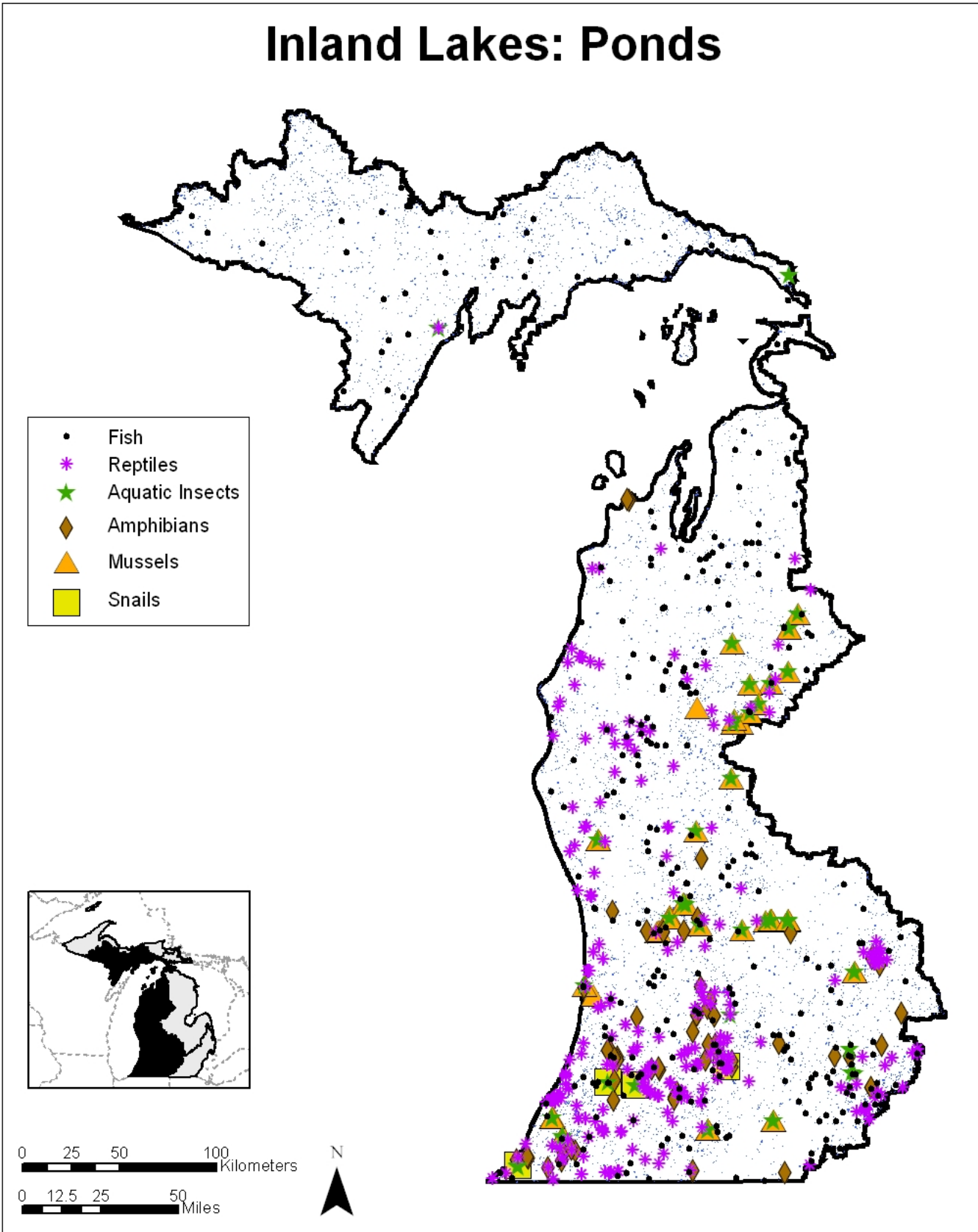


Inland Lakes: Ponds



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Description

Ponds are permanent standing water bodies <5 acres in area. This group is highly diverse in terms of chemical and biological variables. Most are shallow, unstratified, generally warmer, and higher in nutrient concentration than larger water bodies, and somewhat likely to have low winter oxygen levels. There are two states that ponds are generally found in. The first is characterized by high nutrients, high wind resuspension, no rooted plants, and turbid water. The second is characterized by low to medium nutrients, low wind resuspension, rooted plants dominant, and clear water. Because of their size, most ponds are privately owned and have no public access points.

General Condition of Feature

This habitat is considered 45% in good to excellent condition, 15% in fair condition, and 40% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

MUSSELS

eastern pondmussel (*Ligumia nasuta*)

SNAILS

spindle lymnaea (*Acella haldemani*)
watercress snail (*Fontigens nickliniana*)

CRAYFISH

devil crawfish (*Cambarus diogenes*)
digger crayfish (*Fallicambarus fodiens*)

INSECTS

sedge darner (*Aeshna juncea*)
spatterdock darner (*Aeshna mutata*)
zigzag darner (*Aeshna sitchensis*)
incurvate emerald dragonfly (*Somatochlora incurvata*)
a belostoman bug (*Belostoma lutarium*)

FISH

brassy minnow (*Hybognathus hankinsoni*)
finescale dace (*Phoxinus neogaeus*)
lake chubsucker (*Erimyzon sucetta*)
spotted sucker (*Minytrema melanops*)
brown bullhead (*Ameiurus nebulosus*)
tadpole madtom (*Noturus gyrinus*)

FISH cont.

grass pickerel (*Esox americanus*)
pirate perch (*Aphredoderus sayanus*)
starhead topminnow (*Fundulus dispar*)
least darter (*Etheostoma microperca*)

AMPHIBIANS

spotted salamander (*Ambystoma maculatum*)
eastern tiger salamander (*Ambystoma tigrinum tigrinum*)
four-toed salamander (*Hemidactylium scutatum*)
western lesser siren (*Siren intermedia nettingi*)
Fowler's toad (*Bufo fowleri*)
Blanchard's cricket frog (*Acris crepitans blanchardi*)
western chorus frog (*Pseudacris triseriata triseriata*)
pickerel frog (*Rana palustris*)
northern leopard frog (*Rana pipiens*)

REPTILES

copperbelly water snake (*Nerodia erythrogaster neglecta*)
queen snake (*Regina septemvittata*)
spotted turtle (*Clemmys guttata*)
Blanding's turtle (*Emydoidea blandingii*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Habitat conversion probably creates more ponds than it eliminates; Man-made dams, roads on railroad grades, and beaver all alter flows in such a way as to create ponds
- Climate change: (low threat)
- Fragmentation: Major loss of small ponds due to development

POLLUTION

- Altered nutrient inflows: (low threat)
- Altered sediment loads
- Pesticides and herbicides: Agricultural runoff; Pesticides; Herbicides
- Urban, municipal, and industrial pollution: Mercury

HABITAT CONVERSION

- Dams
- Dredging and channelization: Dredging
- Riparian modification: Conversion to agriculture or other development; Farming up to the edge; Habitat conversion probably creates more ponds than it eliminates
- Wetland modification: Filling; Draining

BIOLOGICAL INTERACTIONS

- Disease, pathogens, and parasites
- Invasive plants and animals

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

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry practices: Timber harvest (low threat)
- Removal of wildlife: (low threat)

NON-CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Macrophyte removal: (low threat)

EDUCATION

- Lack of scientific knowledge: Lack of species information and interest (low threat)
- Social attitudes: Riparian owners need education (low threat)

Conservation Actions Needed (Threats addressed)

LAND & WATER PROTECTION

- Create and expand conservation easements (riparian modification, wetland modification)
- Support land conservancy purchase of undeveloped land (riparian modification, wetland modification)
- Support landowner incentive programs to foster conservation on private land (riparian modification, wetland modification)

LAND, WATER & SPECIES MANAGEMENT

- Control and prevent aquatic invasive species introductions and establishments (invasive plants and animals)
- Develop strategies for and implement disease control (Disease, pathogens, and parasites)
- Ensure that roads near ponds are not contributing sediment to the system (altered sediment loads)
- Maintain or rehabilitate natural corridors between ponds and other significant wetland and upland habitats (fragmentation, species issue)
- Maintain or rehabilitate natural hydrology (altered hydrologic regimes)
- Maintain or establish riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits, but 500 ft. or wider maximizes conservation benefits (altered hydrologic regimes, altered sediment loads, riparian modification, pesticides and herbicides)
- When removing invasive vegetation, at least 60-80% of native vegetation should be preserved (invasive plants and animals)
- Use best management practices (variety of threats)

LAW & POLICY

- Close roads during breeding seasons or install tunnels along migration pathways to allow amphibians and reptiles access to breeding areas (fragmentation, species issue)
- Encourage agricultural conservation practices (altered hydrologic regimes, altered sediment loads, riparian modification, wetland modification)
- Implement and continually improve storm water and non-point source best management practices (Urban, municipal, and industrial pollution)
- Include wetland protections in zoning and planning ordinances (wetland modification)
- Manage beaver populations for a variety of natural resource uses (dams)
- Protect and rehabilitate groundwater recharge by requiring that all development-related runoff be captured by infiltration basins (altered hydrologic regimes)
- Protect existing hydrologic conditions of lakes and remaining natural lake outlets by prohibiting construction of new lake-level control structures (altered hydrologic regimes)
- Reduce pesticide and herbicide use (pesticides and herbicides)
- Remove lake-level control structures and other dams to rehabilitate natural hydrology (altered hydrologic regimes, dams)
- Restrict dredging and channelization activities, especially during spawning seasons (dredging and channelization)
- Strengthen existing environmental laws (variety of threats)
- Strengthen wetland regulations, mitigation requirements, and enforcement (wetland modification)
- Work with Drain Commissioners to allow or closely mimic natural hydrologic processes on lake-level control structures (altered hydrologic regimes)
- Work with Drain Commissioners to use natural processes to manage sediment and flows and decrease the amount of channelization needed (dredging and channelization)
- Work with local governments to develop and refine planning and zoning regulations and ordinances that consider natural processes (riparian modification)
- Work with local officials on setback and buffer ordinances (riparian modification)

EDUCATION & AWARENESS

- Educate landowners on preventing the spread of aquatic invasive species (invasive plants and animals)
- Educate legislators, other policy makers, and the public on the benefits and ecological services that ponds provide (social attitudes)
- Work with Extension services to educate farmers and landowners of the value of ponds and the species that use them (social attitudes)

Research and Survey Needs

- Investigate affects of over zealous macrophyte removal on native vegetation and species communities
- Determine effective prevention, control, and survey techniques for aquatic invasive species
- Continue and expand surveys for aquatic pathogens and diseases
- Determine life history requirements of SGCN that are not known
- Develop alternatives to current drainage practices
- Establish effective methods of communicating with the public the role they play in stewardship
- Investigate affects of landscape alterations on pond processes
- Quantify the number of dams that are present on ponds
- Work with watershed councils and conservation groups on habitat rehabilitation

Monitoring

- Aquatic invasive species
- Aquatic pathogens and disease
- Dredging and channelization
- Education efforts to inform citizens of good stewardship practices
- Effluent outflows: municipal and septic systems
- Hydrologic outflows from dams
- Indicator species
- Land use changes
- Logging operations
- Pesticide and herbicide use
- Riparian modification
- Wetland modification