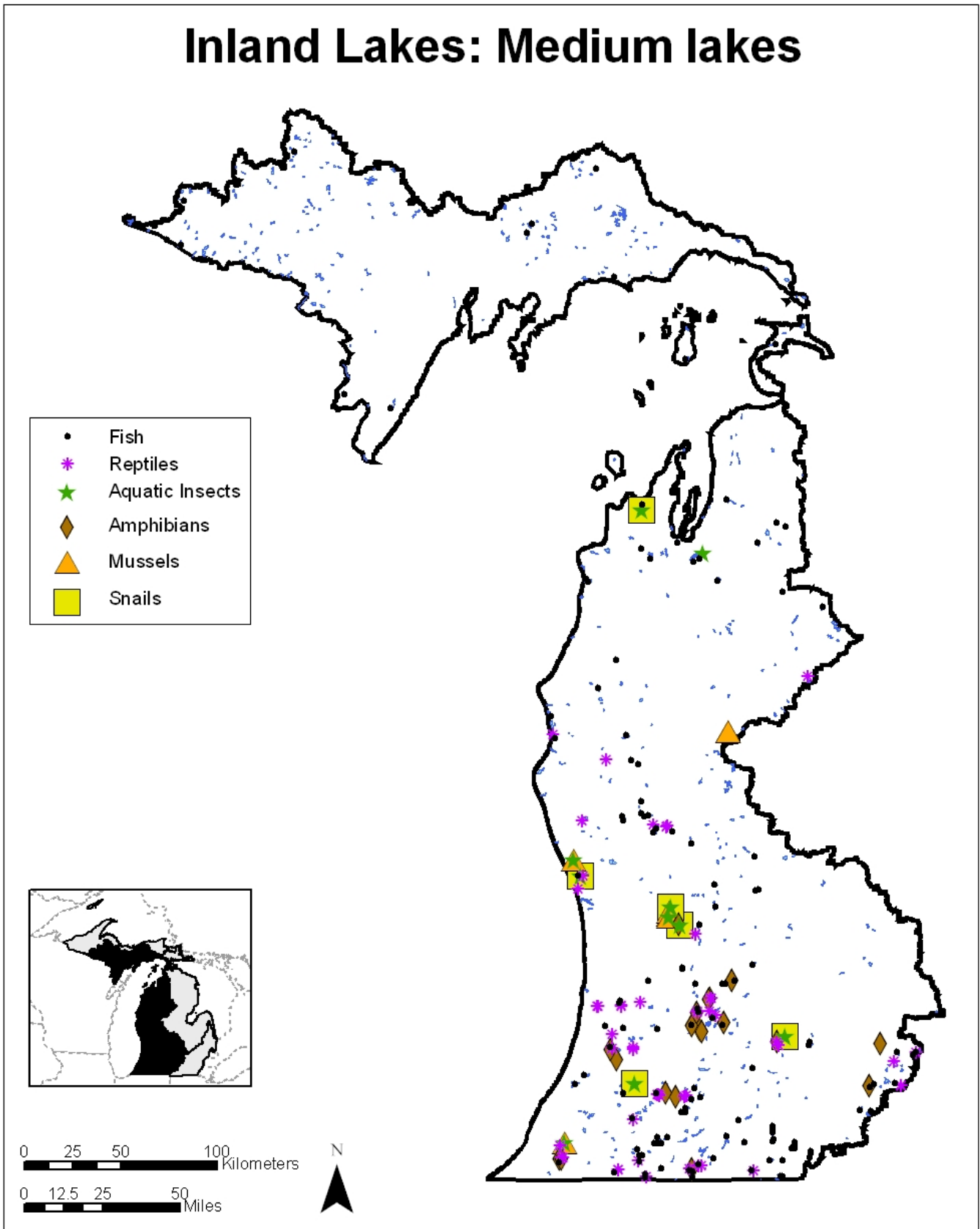


Inland Lakes: Medium lakes



Inland Lakes: Medium Lakes

Description

Medium lakes are permanent standing water bodies 100 to 999 acres in area. This group has moderately diverse features for chemical and biological variables. In general, these lakes will tend to have increasing shoreline complexity (lakes with many bays) and increasing basin complexity (lakes with more than one deep hole) compared to small lakes and ponds. 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. These lakes can span a broader temperature range (from relatively cold water to relatively warm water) compared to larger lakes, with temperature depending on amount of groundwater inflows, lake depth, and climate. Winter oxygen levels are also variable and depend on lake depth, but are generally higher than in small lakes and ponds.

General Condition of Feature

This habitat is considered 35% in good to excellent condition, 25% in fair condition, and 40% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

MUSSELS

- round lake floater (*Pyganodon subgibbosa*)
- eastern pondmussel (*Ligumia nasuta*)

SNAILS

- spindle lymnaea (*Acella haldemani*)

INSECTS

- ocellated damer (*Boyeria grafiiana*)
- a stonefly (*Arcynopteryx compacta*)

FISH

- spotted gar (*Lepisosteus oculatus*)
- mooneye (*Hiodon tergisus*)
- pugnose shiner (*Notropis anogenus*)
- bigmouth shiner (*Notropis dorsalis*)
- lake chubsucker (*Erimyzon sucetta*)

FISH cont.

- river redhorse (*Moxostoma carinatum*)
- brown bullhead (*Ameiurus nebulosus*)
- tadpole madtom (*Noturus gyrinus*)
- cisco or lake herring (*Coregonus artedii*)
- least darter (*Etheostoma microperca*)

AMPHIBIANS

- mudpuppy (*Necturus maculosus maculosus*)
- Fowler's toad (*Bufo fowleri*)
- Blanchard's cricket frog (*Acris crepitans blanchardi*)
- pickereel frog (*Rana palustris*)

REPTILES

- Blanding's turtle (*Emydoidea blandingii*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Water & lake level control structures
- Climate change: (low threat)
- Fragmentation

POLLUTION

- Altered nutrient inflows: Eutrophication from failing septic tanks and fertilizers
- Altered sediment loads
- Pesticides and herbicides
- Thermal changes
- Urban, municipal, and industrial pollution: Municipal pollution; Inadequate septic systems

HABITAT CONVERSION

- Dams
- Dredging and channelization: Dredging; Filling
- Riparian modification: Development; Shoreline alterations; Loss of woody debris inputs, etc.; Residential shoreline development; Seawalls; Shoreline armoring
- Wetland modification: Wetland filling

BIOLOGICAL INTERACTIONS

- Disease, pathogens, and parasites: (low threat)
- Invasive plants and animals: Zebra mussels; Increased risk of invasive species due to medium lakes being more likely to have boat landings

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Removal of wildlife: (low threat)

NON-CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Macrophyte removal: Beach grooming and sanding; "Weed" treatment using herbicides (low threat)
- Non-consumptive recreation (low threat)

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

EDUCATION

- Lack of scientific knowledge
- Social attitudes

Conservation Actions Needed (Threats addressed)

LAND & WATER PROTECTION

- Create and expand conservation easements (riparian modification, wetland modification)

LAND, WATER & SPECIES MANAGEMENT

- Avoid important fish nursery areas during macrophyte treatments (species issue)
- Avoid use of herbicides in medium lakes (macrophyte removal, pesticides and herbicides)
- Control and prevent aquatic invasive species introductions and establishments (invasive plants and animals)
- Develop management plans for medium lakes (variety of threats)
- Encourage use of natural materials or soft engineering techniques for any shoreline modification (riparian modification)
- Ensure roads near lakes are not contributing sediment to the system (altered sediment loads)
- Maintain and rehabilitate natural hydrology (altered hydrologic regimes)
- Maintain natural water levels and fluctuations (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 sediment loads, riparian modification)
- Protect and rehabilitate wetland functions (variety of threats)
- When removing invasive vegetation, at least 60-80% of native vegetation needs to be preserved (invasive plants and animals, macrophyte removal)
- Require vegetation management to occur in conjunction with a watershed management plan (macrophyte removal)

LAW & POLICY

- Encourage agricultural conservation practices (variety of threats)
- Encourage implementation of USDA soil conservation practices to reduce erosion (altered sediment loads)
- Encourage sound water withdrawal practices that take into account species needs (altered hydrologic regimes)
- Include wetland protections in zoning and planning ordinances (wetland modification)
- Manage lake-level control structures to mimic natural water levels and fluctuations (altered hydrologic regimes, dams)
- Manage or modify lake-level controls to allow for run-of-river flows (altered hydrologic regimes, 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, dams)
- Reduce pesticide and herbicide use (macrophyte removal, pesticides and herbicides)
- Restrict beach grooming (riparian modifications)
- Restrict dredging and channelization, especially during spawning and migration seasons and around mussel beds (dredging and channelization)
- Strengthen water quality laws and enforcement of permits controlling effluent discharge (thermal changes, Urban, municipal, and industrial pollution)
- Upgrade septic systems (altered nutrient inflows)
- Use best management practices (variety of threats)
- Work with Drain Commissioners to allow or closely mimic natural hydrologic processes on legally controlled lake-level control structures (altered hydrologic regimes, dams)
- Work with Drain Commissioners to use natural processes to manage sediment and flows and decrease the amount of channelization needed (variety of threats)
- Work with local governments to develop and refine planning and zoning regulations and ordinances that consider natural processes (variety of threats)
- Work with local officials on setback and buffer ordinances (riparian modification)

EDUCATION & AWARENESS

- Continue educating landowners and boaters on preventing the spread of invasive aquatic species (invasive plants and animals, social attitudes)
- Educate landowners on the value of riparian areas, macrophytes, woody structure, and stewardship issues (social attitudes)
- Educate legislators, other policy makers, and the public on the benefits of medium lakes and the species that use them (social attitudes)
- Educate the public on the use of and reasons for maintaining septic systems (altered nutrient inflows, social attitudes)

Research and Survey Needs

- Determine effective prevention, control, and survey techniques for aquatic invasive species
- Determine important aquatic nursery areas

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

- Determine life history requirements for SGCN associated with medium lakes
- Determine socially-acceptable ways to coordinate macrophyte treatments with aquatic species needs
- Determine amount of shoreline development in medium lakes
- Determine the number of natural lake outlets and socially acceptable ways of maintaining them
- Determine the number and method of operation of lake-level control structures
- Establish effective methods of communicating with the public and their role in stewardship, especially shoreline modification (beach grooming, seawalls, dredging)
- Investigate the effects of over zealous macrophyte removal on native vegetation and species communities
- Develop socially acceptable ways of maintaining natural lake inflows and outlets
- Work with watershed councils and other local groups on identification skills and habitat restoration techniques

Monitoring

- Aquatic invasive species
- Dredging and channelization
- Effluent discharges: waste water treatment plants, septic systems
- Indicator species
- Lake-level control structures
- Land use changes
- Macrophyte removal
- pesticide and herbicide use
- Riparian modification
- Water levels downstream of water-level controlled lakes to ensure that streams continue to have sufficient flow
- Water levels in water-level controlled lakes to ensure they mimic natural hydrologic regimes within lake
- Water temperatures
- Wetland modification