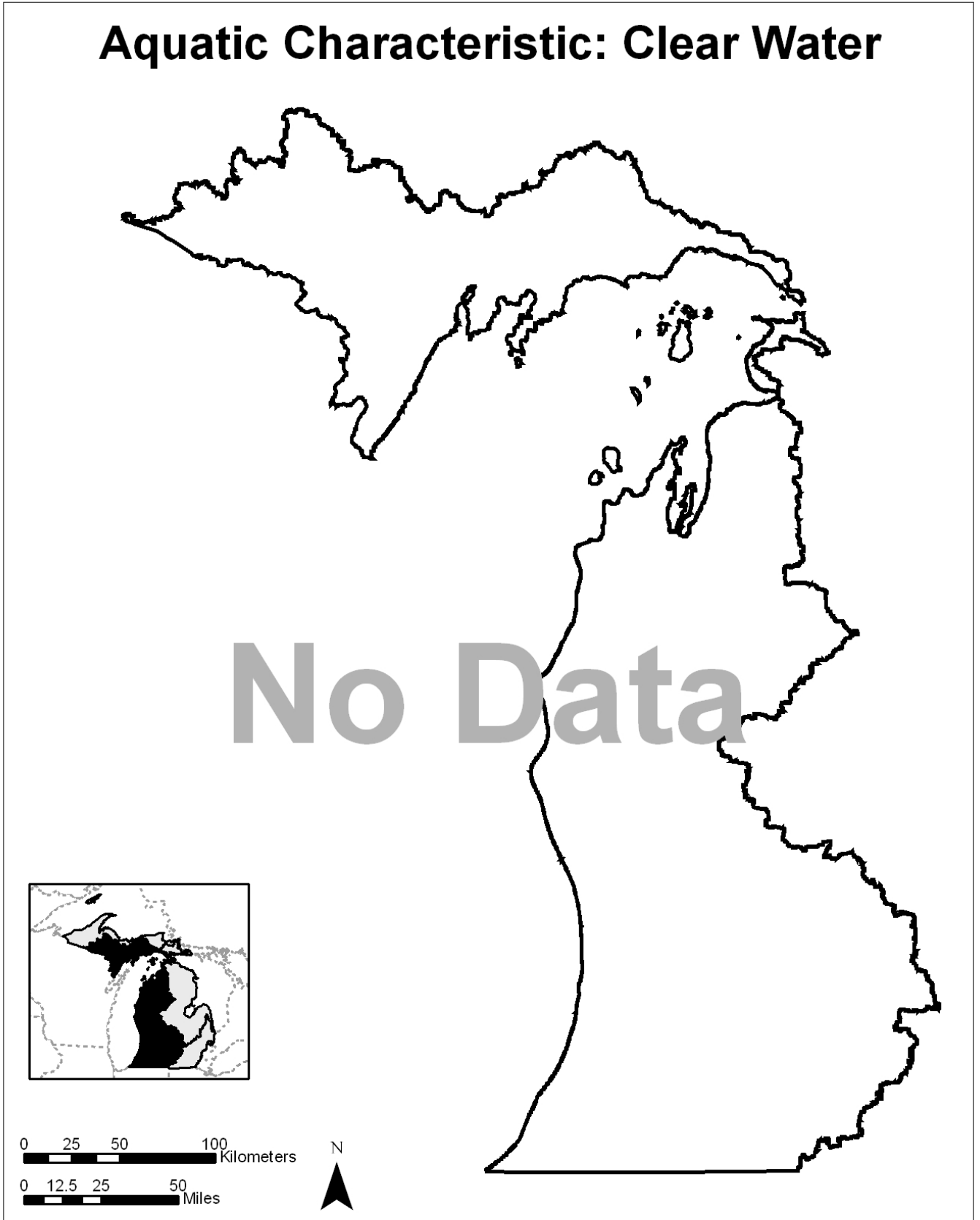


Aquatic Characteristic: Clear Water



Aquatic Characteristic: Clear Water

Description

Clear water is water that has little particulate matter suspended in the water column and allows large quantities of light to aquatic plants and animals.

General Condition of Feature

This habitat is considered 40% in good to excellent condition, 20% in fair condition, and 40% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

INSECTS

- rapids clubtail (*Gomphus quadricolor*)
- a net-winged midge (*Blepharicera tenuipes*)

FISH

- bigmouth shiner (*Notropis dorsalis*)
- cisco or lake herring (*Coregonus artedii*)
- kiyi (*Coregonus kiyi*)
- pygmy whitefish (*Prosopium coulterii*)
- least darter (*Etheostoma microperca*)

AMPHIBIANS

- pickerel frog (*Rana palustris*)

REPTILES

- wood turtle (*Glyptemys insculpta*)

MAMMALS

- water shrew (*Sorex palustris*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Water withdrawal; Altered flow regime
- Climate change: (low threat)
- Fragmentation

POLLUTION

- Altered nutrient inflows: Eutrophication; Algae blooms; Agricultural practices; Animal waste
- Altered sediment loads: Turbidity; Erosion - bank, upland, shoreline; Sedimentation; Siltation
- Pesticides and herbicides: Pollution - pesticides, herbicides; Agricultural practices
- Thermal changes
- Urban, municipal, and industrial pollution: Industrial pollution; Municipal pollution; CSO's

HABITAT CONVERSION

- Dams
- Dredging and channelization
- Incompatible natural resources management
- Riparian modification: Agricultural development; Urban development
- Wetland modification

BIOLOGICAL INTERACTIONS

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

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry practices: Forest conversion from hardwoods to pine has changed run-off dynamics and altered water clarity (i.e., Ford River system, West Branch Escanaba River system, Sturgeon River (Alger & Delta counties); Timber harvest; Sedimentation
- Mining practices: sand and gravel, inorganic
- Removal of wildlife

NON-CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Macrophyte removal

EDUCATION

- Lack of scientific knowledge: (low threat)

Conservation Actions Needed (Threats addressed)

LAND, WATER & SPECIES MANAGEMENT

- Decrease the amount of impervious surfaces (altered hydrologic regimes)
- Maintain or establish riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits (altered hydrologic regimes, altered sediment loads, forestry practices, mining practices, riparian modification, thermal changes)
- Maintain or rehabilitate natural hydrology and hydrologic functions (altered hydrologic regimes)
- Maintain or rehabilitate river to the original flow path (altered hydrologic regimes)

- Protect and rehabilitate wetland and floodplain functions (variety of threats)
- Protect existing natural wetlands and rehabilitate degraded wetlands (wetland modification)
- Soften or remove hard river or shoreline structures (riparian modification)
- Use natural materials or soft engineering instead of hard structures for shoreline or riparian modification (riparian modification)
- Work with road commissions on installation and maintenance of new stream crossings (altered sediment loads)
- Work with road commissions on maintenance and placement of new bridges (altered hydrologic regimes, altered sediment loads)

LAW & POLICY

- Continue to work on forest certification endeavors (forestry practices)
- Enact and enforce shoreline protection regulations (riparian modification)
- Encourage townships to separate combined sewer systems (altered nutrient inflows)
- Enforce the use of sediment barriers and best management practices during road siting, construction, and maintenance (altered sediment loads)
- Implement and continually improve storm water and non-point source best management practices (altered hydrologic regimes, Urban, municipal, and industrial pollution)
- Implement USDA soil conservation practices to reduce erosion (altered sediment loads)
- Include wetland protections in zoning and planning ordinances (wetland modification)
- Manage boating use of waterways to reduce wake and wake impacts (altered natural sediment loads, incompatible natural resources management)
- Manage or modify water releases of dams to mimic natural river conditions (altered hydrologic regimes, dams)
- Protect and rehabilitate groundwater recharge by requiring that development-related runoff be captured by infiltration basins (altered hydrologic regimes)
- Reduce effluent flow (Urban, municipal, and industrial pollution)
- Reduce pesticide and herbicide use (pesticides and herbicides)
- Remove dams to rehabilitate natural hydrology and connectivity (altered hydrologic regimes, dams, fragmentation)
- Restrict beach grooming (riparian modification)
- Restrict dredging and channelization (dredging and channelization)
- Restrict mining operations and impose mitigation and remediation requirements (mining practices)
- Restrict surface disturbances to no closer than ¼ mile to any surface water (mining practices)
- Strengthen water quality laws (variety of threats)
- Strengthen wetland regulations, mitigation requirements, and enforcement (wetland modification)
- Use best management practices (variety of threats)
- Work with Drain Commissioners to use natural channel processes to allow a river to manage sediment and flow 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

- Educate landowners on the importance of shoreline vegetation and riparian buffers (riparian modification, social attitudes)
- Educate legislators, other policy makers, and the public on the values of macrophytes, riparian areas, natural shorelines, wetlands, and stewardship issues (variety of threats)
- Educate the public on the use of and reasons for maintaining septic systems (altered nutrient inflows)

CAPACITY BUILDING

- Support watershed councils and regional conservation groups (variety of threats)

Research and Survey Needs

- Develop alternatives to pesticides and herbicides
- Determine effective prevention, control, and survey techniques for aquatic invasive species
- Determine unknown life history requirements for SGCN associated with clear water
- Determine the location and condition of septic systems in each watershed
- Inventory erosion sites within watersheds and conduct remediation activities at those sites
- Survey loadings of sediments within watershed and develop strategies to reduce identified problems
- Survey loadings of nutrients within watershed and develop strategies to reduce identified problems
- Map, in GIS, this landscape feature

Monitoring

- Aquatic invasive species
- Beach grooming
- Effluent flows: municipal waste water treatment plants, septic systems

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

- Erosion sites
- Forestry practices
- Land use changes
- Mining practices
- Nutrient loading
- Pesticide and herbicide use
- Riparian modification
- Road crossings
- Sediment loading
- Water temperatures
- Wetland modification