



Aquatic Characteristic: Soft Substrates

Description

Soft substrates are predominately composed of particles less than 2 mm often described as sand, silt, mud, or organic matter.

General Condition of Feature

This habitat is considered 75% in good to excellent condition, 25% in fair condition, and 0% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

MUSSELS

eastern elliptio (*Elliptio complanata*)

SNAILS

spindle lymnaea (*Acella haldemani*)

INSECTS

rapids clubtail (*Gomphus quadricolor*)

arrowhead spiketail (*Cordulegaster obliqua*)

FISH

lake sturgeon (*Acipenser fulvescens*)

brassy minnow (*Hybognathus hankinsoni*)

bigmouth shiner (*Notropis dorsalis*)

finescale dace (*Phoxinus neogaeus*)

FISH cont.

brown bullhead (*Ameiurus nebulosus*)

cisco or lake herring (*Coregonus artedii*)

deepwater sculpin (*Myoxocephalus thompsonii*)

least darter (*Etheostoma microperca*)

AMPHIBIANS

pickerel frog (*Rana palustris*)

REPTILES

Blanding's turtle (*Emydoidea blandingii*)

wood turtle (*Glyptemys insculpta*)

eastern box turtle (*Terrapene carolina carolina*)

Associated Threats

POLLUTION

- Urban, municipal, and industrial pollution: Contaminant loading (low threat)

HABITAT CONVERSION

- Dams
- Dredging and channelization
- Incompatible natural resources management: (low threat)
- Riparian modifications
- Wetland modifications: Dredging

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Mining practices

Conservation Actions Needed (Threats addressed)

LAND, WATER & SPECIES MANAGEMENT

- Engineered drainage channels should mimic natural stream channel stability, i.e., channel dimension, pattern, and profile (dredging and channelization)
- Maintain or establish riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits (riparian modifications)
- Restore native flora (riparian modifications)
- Soften or remove hard river structures (riparian modifications)

LAW & POLICY

- Encourage green space planning (riparian modifications)
- Implement and continually improve storm water and non-point source best management practices (urban, municipal, and industrial pollution pollution)
- Include wetland protections in zoning and planning ordinances (wetland modification)
- Manage or modify lake-level controls and water releases of dams to mimic natural river conditions (dams)
- Remove dams to rehabilitate natural hydrology and stream habitats (dams)
- Restrict dredging and channelization (dredging and channelization)
- Strengthen existing water quality and wetland laws, mitigation requirements, and enforcement (urban, municipal, and industrial pollution pollution, wetland modification)
- Use best management practices (variety of threats)
- Use natural materials or soft engineering instead of hard structures for riparian modifications (riparian modifications)
- 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 (dredging and channelization)
- Work with local governments to develop and refine planning and zoning regulations and ordinances that consider natural processes (variety of threats)

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

- Work with local officials on setback and buffer ordinances (riparian modifications)

Research and Survey Needs

- Determine and implement methods to handle runoff
- Determine incompatible natural resource management threats
- Determine life history requirements for SGCN associated with soft substrates
- Determine number of dams and those that are no longer necessary
- Determine number and condition of road crossings
- Determine number and location of sand mining operations in the basin
- Model hydrologic flows in each watershed

Monitoring

- Dredging and channelization
- Riparian modifications
- Sand mining operations
- Sedimentation
- Wetland modification