

Aquatic Characteristic: Soft Substrates



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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 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

slippershell mussel (*Alasmidonta viridis*)
scaleshell (*Leptodea leptodon*)
round pigtoe (*Pleurobema coccineum*)
rainbow (*Villosa iris*)
purple wartyback (*Cyclonaias tuberculata*)
pimpleback (*Quadrula pustulosa*)
cylindrical papershell (*Anodontoides ferussacianus*)
creek heelsplitter (*Lasmigona compressa*)
salamander mussel (*Simpsonaias ambigua*)
wavy-rayed lampmussel (*Lampsilis fasciola*)
eastern pondmussel (*Ligumia nasuta*)
black sandshell (*Ligumia recta*)
threehorn wartyback (*Obliquaria reflexa*)
round hickorynut (*Obovaria subrotunda*)
kidneyshell (*Ptychobranhus fasciolaris*)
lilliput (*Toxolasma parvus*)
fawnsfoot (*Truncilla donaciformis*)
rayed bean (*Villosa fabalis*)

SNAILS

spindle lymnaea (*Acella haldemani*)

INSECTS

Laura's snaketail (*Stylurus laurae*)
elusive snaketail (*Stylurus notatus*)

FISH

lake sturgeon (*Acipenser fulvescens*)
brassy minnow (*Hybognathus hankinsoni*)

FISH cont.

silver chub (*Macrhybopsis storeriana*)
pugnose shiner (*Notropis anogenus*)
pugnose minnow (*Opsopoeodus emiliae*)
finescale dace (*Phoxinus neogaeus*)
western creek chubsucker (*Erimyzon claviformis*)
lake chubsucker (*Erimyzon sucetta*)
black buffalo (*Ictiobus niger*)
spotted sucker (*Minytrema melanops*)
golden redbreast (*Moxostoma erythrurum*)
brown bullhead (*Ameiurus nebulosus*)
tadpole madtom (*Noturus gyrinus*)
brindled madtom (*Noturus miurus*)
grass pickerel (*Esox americanus*)
cisco or lake herring (*Coregonus artedii*)
pirate perch (*Aphredoderus sayanus*)
eastern sand darter (*Ammocrypta pellucida*)
least darter (*Etheostoma microperca*)
channel darter (*Percina copelandi*)
river darter (*Percina shumardi*)

AMPHIBIANS

Blanchard's cricket frog (*Acris crepitans blanchardi*)
pickerel frog (*Rana palustris*)

REPTILES

spotted turtle (*Clemmys guttata*)
Blanding's turtle (*Emydoidea blandingii*)
eastern box turtle (*Terrapene carolina carolina*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: "Flashy" flow regimes due to farming and development in floodplains have blown out many of the good soft sediments; Changes in flow due to urbanization
- Climate change
- Fragmentation

POLLUTION

- Altered nutrient inflows: Low dissolved oxygen; Overgrowth of macrophyte due to eutrophication
- Altered sediment loads: Sedimentation
- Urban, municipal, and industrial pollution: Accumulation of pollutants; Contaminants

HABITAT CONVERSION

- Dams
- Riparian modification: Natural floodplains and soft substrates - development, armored, filling

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Especially plants

Conservation Actions Needed (Threats addressed)

LAND, WATER & SPECIES MANAGEMENT

- Decrease imperviousness in watersheds (altered hydrologic regimes, altered sediment loads, Urban, municipal, and industrial pollution)
- Maintain or rehabilitate natural hydrologic functions such as wetlands, meanders, throughflow (altered hydrologic regimes)

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

- Protect natural seasonal flow patterns and allow flooding (altered hydrologic regimes)
- Rehabilitate and protect riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits (altered hydrologic regimes, altered sediment loads, riparian modification)
- Rehabilitate rivers to original flow paths (altered hydrologic regimes)

LAW & POLICY

- Encourage green-space planning and clustered development (riparian modification)
- Ensure that sand mining operations are done in an ecologically sound way (altered sediment loads)
- Remove dams to allow natural sediment pathways to occur (altered hydrologic regimes, altered sediment loads)
- Use sediment barriers and Best management practices during construction (altered sediment loads)
- Work with and educate Drain Commissioners (variety of threats)
- Work with local officials on setback and buffer ordinances (riparian modification)

Research and Survey Needs

- Determine and implement methods to handle runoff
- Determine life history requirements for SGCN associated with soft substrates
- Determine the number and location of sand mining operations in the basin
- Determine ways of decreasing imperviousness in the watershed
- Model hydrologic flows

Monitoring

- Dredging and channelization
- Riparian modification
- Sand mining operations
- Sedimentation
- Storm water