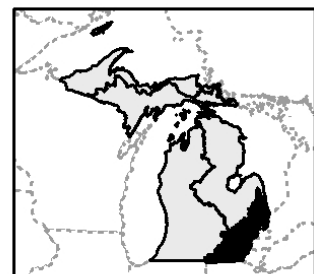


Aquatic Characteristic: Rock Substrates

No Data



0 10 20 40 Kilometers

0 5 10 20 Miles



Aquatic Characteristic: Rock Substrates

Description

Rock substrates are predominately composed of a mass of stone of any size, consolidated or unconsolidated, of various mineral compositions often described as bedrock, rock, cobble, and gravel.

General Condition of Feature

This habitat is considered 25% in good to excellent condition, 30% in fair condition, and 45% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

MUSSELS

elktoe (*Alasmidonta marginata*)
slippershell mussel (*Alasmidonta viridis*)
round pigtoe (*Pleurobema coccineum*)
ellipse (*Venustaconcha ellipsiformis*)
rainbow (*Villosa iris*)
purple wartyback (*Cyclonaias tuberculata*)
clubshell (*Pleurobema clava*)
pimpleback (*Quadrula pustulosa*)
cylindrical papershell (*Anodontooides ferussacianus*)
creek heelsplitter (*Lasmigona compressa*)
salamander mussel (*Simpsonaias ambigua*)
white catspaw (*Epioblasma obliquata perobliqua*)
northern riffleshell (*Epioblasma torulosa rangiana*)
snuffbox (*Epioblasma triquetra*)
wavy-rayed lampmussel (*Lampsilis fasciola*)
black sandshell (*Ligumia recta*)
threehorn wartyback (*Obliquaria reflexa*)
round hickorynut (*Obovaria subrotunda*)
kidneyshell (*Ptychobranthus fasciolaris*)
purple lilliput (*Toxolasma lividus*)
fawnsfoot (*Truncilla donaciformis*)
rayed bean (*Villosa fabalis*)

INSECTS

ocellated darner (*Boyeria grafiana*)
rapids clubtail (*Gomphus quadricolor*)
a stonefly (*Helopicus nalatus*)
a caddisfly (*Rhyacophila* sp.)
a dobsonfly (*Nigronia fasciatus*)

FISH

lake sturgeon (*Acipenser fulvescens*)
reidside dace (*Clinostomus elongatus*)
brassy minnow (*Hybognathus hankinsoni*)
striped shiner (*Luxilus chrysocephalus*)

FISH cont.

silver chub (*Macrhybopsis storeriana*)
river chub (*Nocomis micropogon*)
pugnose shiner (*Notropis anogenus*)
silver shiner (*Notropis photogenis*)
southern redbelly dace (*Phoxinus erythrogaster*)
western creek chubsucker (*Erimyzon claviformis*)
lake chubsucker (*Erimyzon sucetta*)
black buffalo (*Ictiobus niger*)
spotted sucker (*Minytrema melanops*)
river redhorse (*Moxostoma carinatum*)
black redhorse (*Moxostoma duquesnei*)
golden redhorse (*Moxostoma erythrurum*)
stonecat (*Noturus flavus*)
tadpole madtom (*Noturus gyrinus*)
brindled madtom (*Noturus miurus*)
northern madtom (*Noturus stigmosus*)
grass pickerel (*Esox americanus*)
cisco or lake herring (*Coregonus artedii*)
slimy sculpin (*Cottus cognatus*)
eastern sand darter (*Ammocrypta pellucida*)
fantail darter (*Etheostoma flabellare*)
least darter (*Etheostoma microperca*)
orangethroat darter (*Etheostoma spectabile*)
channel darter (*Percina copelandi*)
river darter (*Percina shumardi*)
sauger (*Sander canadensis*)

AMPHIBIANS

smallmouth salamander (*Ambystoma texanum*)
mudpuppy (*Necturus maculosus maculosus*)

REPTILES

queen snake (*Regina septemvittata*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Construction runoff due to inadequate runoff control; Changes in flow due to urbanization

POLLUTION

- Altered nutrient inflows: (low threat)
- Altered sediment loads: Construction runoff due to inadequate runoff control; Sedimentation due to stream bank erosion and riparian erosion; Increased embeddedness
- Pesticides and herbicides: (low threat)
- Thermal changes: (low threat)
- Urban, municipal, and industrial pollution: (low threat)

HABITAT CONVERSION

- Dams: Channel modification due to dams; Impoundments can cover good rocky substrates
- Dredging and channelization
- Riparian modification: Shoreline hardening; Rock and gravel substrates seen very critical for many mussel species. Perhaps important for recruitment. Sedimentation from riparian disturbance destroying many gravel reaches

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

- Wetland modification

BIOLOGICAL INTERACTIONS

- Invasive plants and animals

EDUCATION

- Social attitudes: Aquatic resource education - need for public to understand the uniqueness of rocky substrates and species which use this niche (low threat)

Conservation Actions Needed (Threats addressed)

LAND, WATER & SPECIES MANAGEMENT

- Control aquatic invasive species (invasive plants and animals)
- Monitor sand and gravel operations (dredging and channelization)
- Prevent establishment of new aquatic invasive species (invasive plants and animals)
- Protect, maintain, and establish riparian buffers to at least 50 ft., but 500 ft. or wider maximizes conservation benefits (altered hydrologic regimes, altered sediment loads, riparian modification)
- Protect, maintain, and establish important movement corridors for amphibians and reptiles (riparian modifications, species issue)
- Rehabilitate rivers to their original flow paths (altered hydrologic regimes)
- Shoreline and riparian modification should be completed with natural materials and soft engineering (riparian modification)

LAW & POLICY

- Remove dams to rehabilitate riparian and stream habitats and natural hydrologic conditions (altered hydrologic regimes, dams)
- Use Best management practices (variety of threats)
- Use sediment barriers and Best management practices near any water body (altered sediment loads)
- Work with and educate Drain Commissioners (variety of threats)
- Work with road commissions to site and maintain road crossings (altered hydrologic regimes, altered sediment loads)

EDUCATION & AWARENESS

- Educate riparian owners on the values of riparian buffers to decrease sediment into a water body (riparian modification, social attitudes)

Research and Survey Needs

- Determine effective prevention, control, and survey techniques for aquatic invasive species
- Determine amount of sediment loading to the watershed
- Determine life history requirements for SGCN associated with rock substrates
- Determine the number and condition of erosion sites

Monitoring

- Aquatic invasive species
- Dam operations
- Erosion sites
- Riparian modification
- Road crossings
- Sand and gravel mining