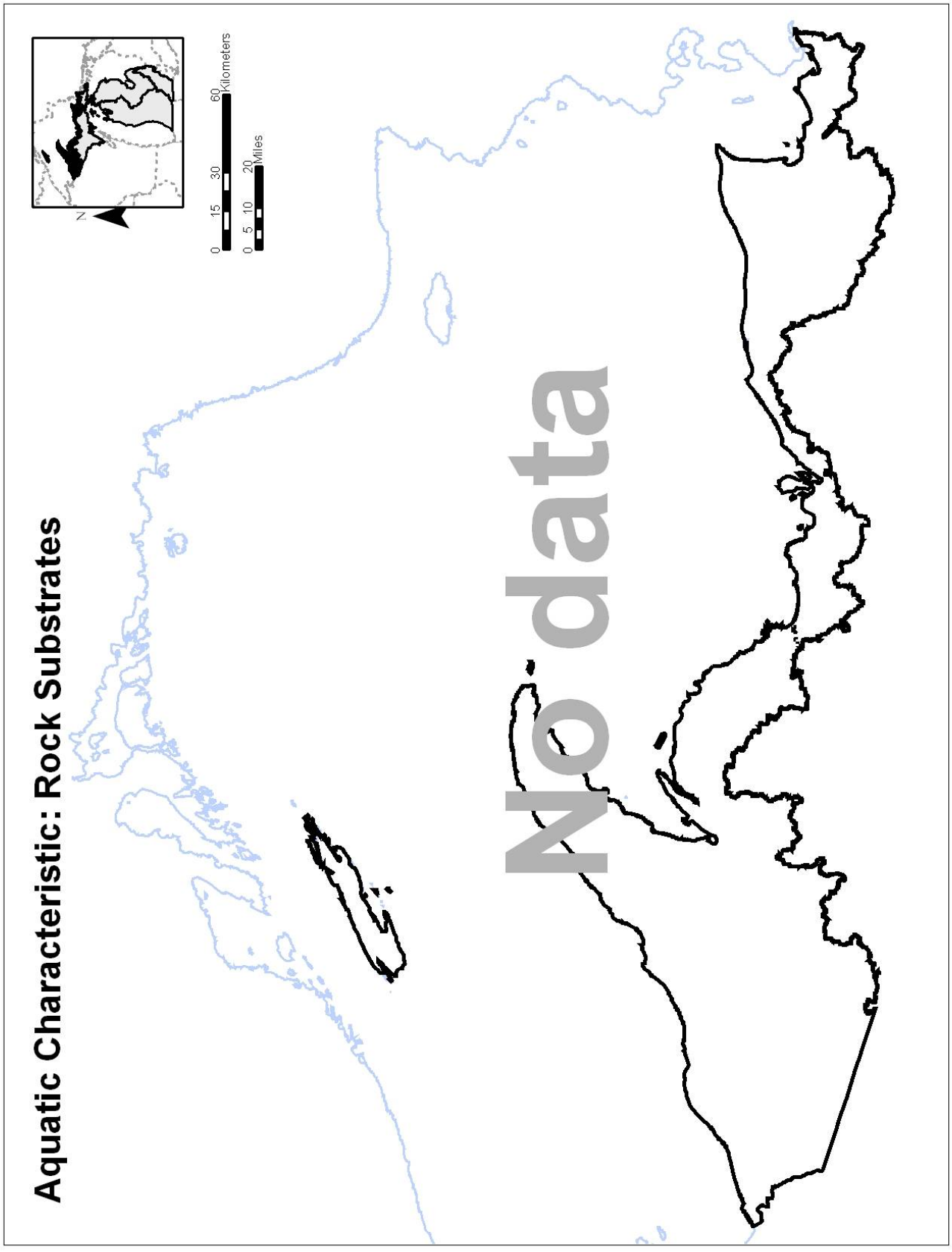
Aquatic Characteristic: Rock Substrates
No data
N
0 15 30 60 Kilometers
0 5 10 20 Miles

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 55% in good to excellent condition, 30% in fair condition, and 15% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

MUSSELS
eastern elliptio (*Elliptio complanata*)

INSECTS
ocellated darner (*Boyeria grafiana*)
rapids clubtail (*Gomphus quadricolor*)
arrowhead spiketail (*Cordulegaster obliqua*)
stygian shadowdragon (*Neurocordulia yamaskanensis*)
a stonefly (*Ostrocerca albidipennis*)
a stonefly (*Arcynopteryx compacta*)
a stonefly (*Helopicus nalatus*)
a net-winged midge (*Blepharicera tenuipes*)
a dobsonfly (*Nigronia fasciatus*)

FISH
lake sturgeon (*Acipenser fulvescens*)
redside dace (*Clinostomus elongatus*)
brassy minnow (*Hybognathus hankinsoni*)

FISH cont.
bigmouth shiner (*Notropis dorsalis*)
brown bullhead (*Ameiurus nebulosus*)
cisco or lake herring (*Coregonus artedi*)
pygmy whitefish (*Prosopium coulterii*)
slimy sculpin (*Cottus cognatus*)
deepwater sculpin (*Myoxocephalus thompsonii*)
least darter (*Etheostoma microperca*)
sauger (*Sander canadensis*)

AMPHIBIANS
mudpuppy (*Necturus maculosus maculosus*)

REPTILES
wood turtle (*Glyptemys insculpta*)

MAMMALS
water shrew (*Sorex palustris*)

Associated Threats

POLLUTION
- Altered nutrient inflows: Nutrient loading (low threat)
- Altered sediment loads: Sedimentation; Embedded with sand

HABITAT CONVERSION
- Dams: Beaver dams; man-made dams

Conservation Actions Needed (Threats addressed)

LAND, WATER & SPECIES MANAGEMENT
- Maintain or establish riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits (altered sediment loads)

LAW & POLICY
- Encourage townships to separate combined sewer systems (altered nutrient inflows)
- Enforce use of sediment barriers and best management practices during road siting, construction, and maintenance (altered sediment loads)
- 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)
- Upgrade septic systems (altered nutrient inflows)
- Use best management practices (altered nutrient inflows)
- Work with road commissions and forest management agencies on placement and maintenance of new stream crossings (altered sediment loads)

Research and Survey Needs
- Determine amount of sediment loading to each watershed
- Determine life history requirements for SGCN associated with rock substrates
- Determine number of dams and identify those which no longer serve a necessary purpose
- Determine number and condition of erosion sites
- Determine number of sand and gravel mining operations in each watershed
- Model hydrologic flows
- Survey loadings of sediments in watershed and develop strategies to reduce identified problems

Monitoring
- Dam operations

- Erosion sites
- Riparian modifications
- Road and stream crossings
- Sand and gravel mining
- Sediment loadings