

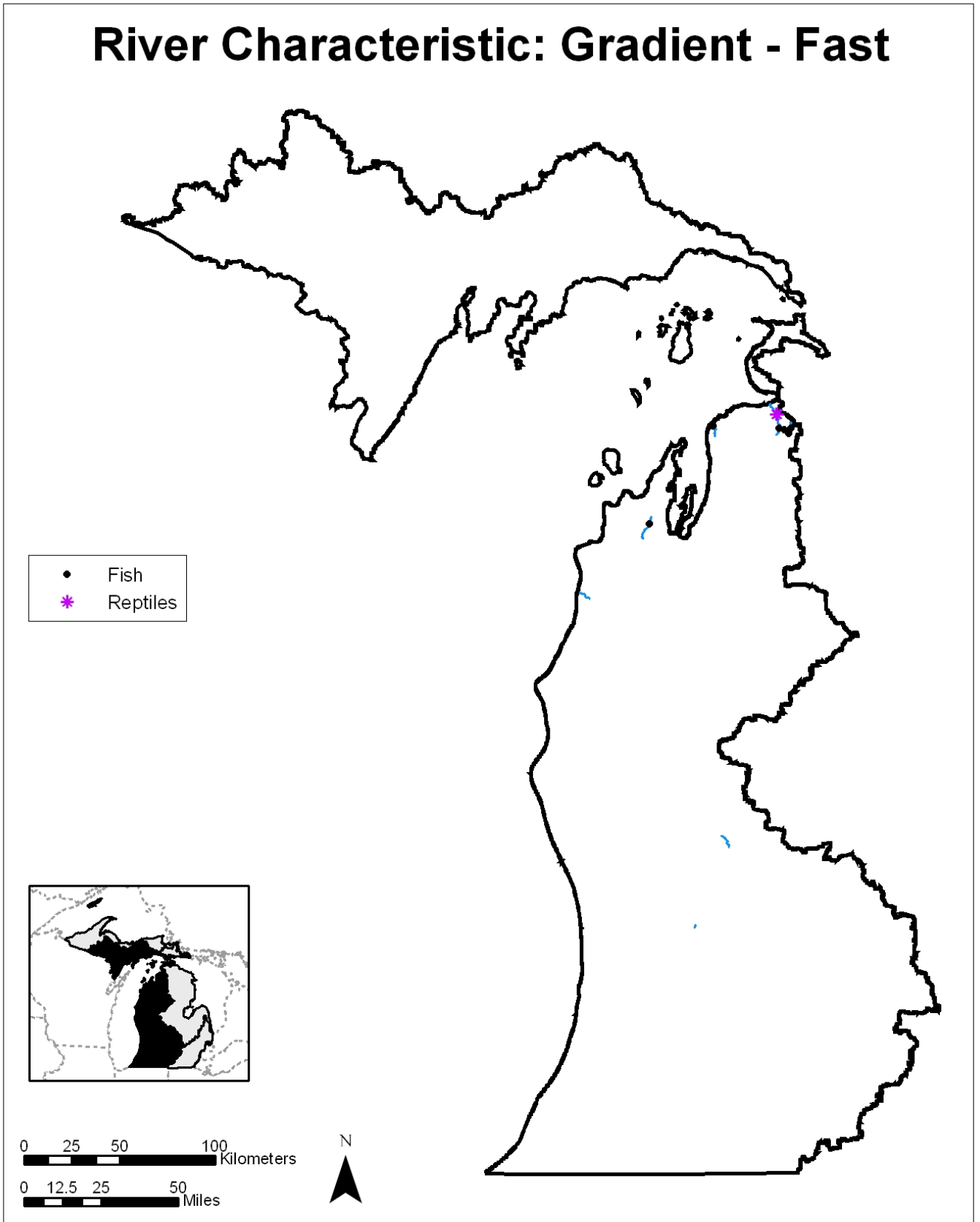
MICHIGAN'S WILDLIFE ACTION PLAN
AQUATIC SYSTEMS: LAKE MICHIGAN BASIN

- Survey erosion sites within watersheds and develop strategies to reduce identified problems
- Survey sediment loadings to streams and develop strategies to reduce amount

Monitoring

- Aquatic invasive species
- Dredging and channelization
- Erosion sites
- Riparian modification
- Road crossings
- Sediment loading
- Stream crossings
- Wetland and floodplain modifications

River Characteristic: Gradient - Fast



River Characteristic: Gradient – Fast

Description

Gradient is the general slope, or the change in vertical elevation per unit of horizontal distance, of the water surface in a flowing stream. The fast gradient category is defined as having a change in the vertical elevation of the water surface of a flowing stream ranging from 10.0-69.9 feet per mile.

General Condition of Feature

This habitat is considered 15% in good to excellent condition, 15% in fair condition, and 70% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

MUSSELS

snuffbox (*Epioblasma triquetra*)

INSECTS

a sand minnow mayfly (*Siphloplecton basale*)

ocellated damer (*Boyeria graefiana*)

rapids clubtail (*Gomphus quadricolor*)

pygmy snaketail (*Ophiogomphus howei*)

riverine snaketail (*Stylurus amnicola*)

Hungerford's crawling water beetle (*Brychius hungerfordi*)

FISH

lake sturgeon (*Acipenser fulvescens*)

mooneye (*Hiodon tergisus*)

river chub (*Nocomis micropogon*)

FISH cont.

river redhorse (*Moxostoma carinatum*)

black redhorse (*Moxostoma duquesnei*)

golden redhorse (*Moxostoma erythrurum*)

stonecat (*Noturus flavus*)

slimy sculpin (*Cottus cognatus*)

fantail darter (*Etheostoma flabellare*)

banded darter (*Etheostoma zonale*)

REPTILES

Specific associations with this landscape feature were not found in the literature

MAMMALS

water shrew (*Sorex palustris*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Water diversions; Associated with dams; Road crossings and culverts can alter gradient
- Fragmentation: Dams usually found in high gradient areas and are a major threat to lake sturgeon spawning by fragmenting habitat; Road crossings and culverts can be barriers to fish

POLLUTION

- Altered nutrient inflows: (low threat)
- Altered sediment loads: (low threat)
- Pesticides and herbicides: (low threat)
- Thermal changes: (low threat)
- Urban, municipal, and industrial pollution: (low threat)

HABITAT CONVERSION

- Dams: Beaver and human-made; Hydropower development
- Dredging and channelization
- Incompatible natural resources management
- Riparian modification
- Wetland modification

BIOLOGICAL INTERACTIONS

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

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry practices: (low threat)
- Mining practices: (low threat)
- Removal of wildlife: Maybe high for some species (low threat)

EDUCATION

- Lack of scientific knowledge: (low threat)
- Social attitudes: (low threat)

Conservation Actions Needed (Threats addressed)

LAND, WATER & SPECIES MANAGEMENT

- Decrease amount of impervious surfaces (altered hydrologic regimes)
- Engineered drainage channels should mimic natural stream channel stability, i.e., channel dimension, pattern, and profile (dredging and channelization)