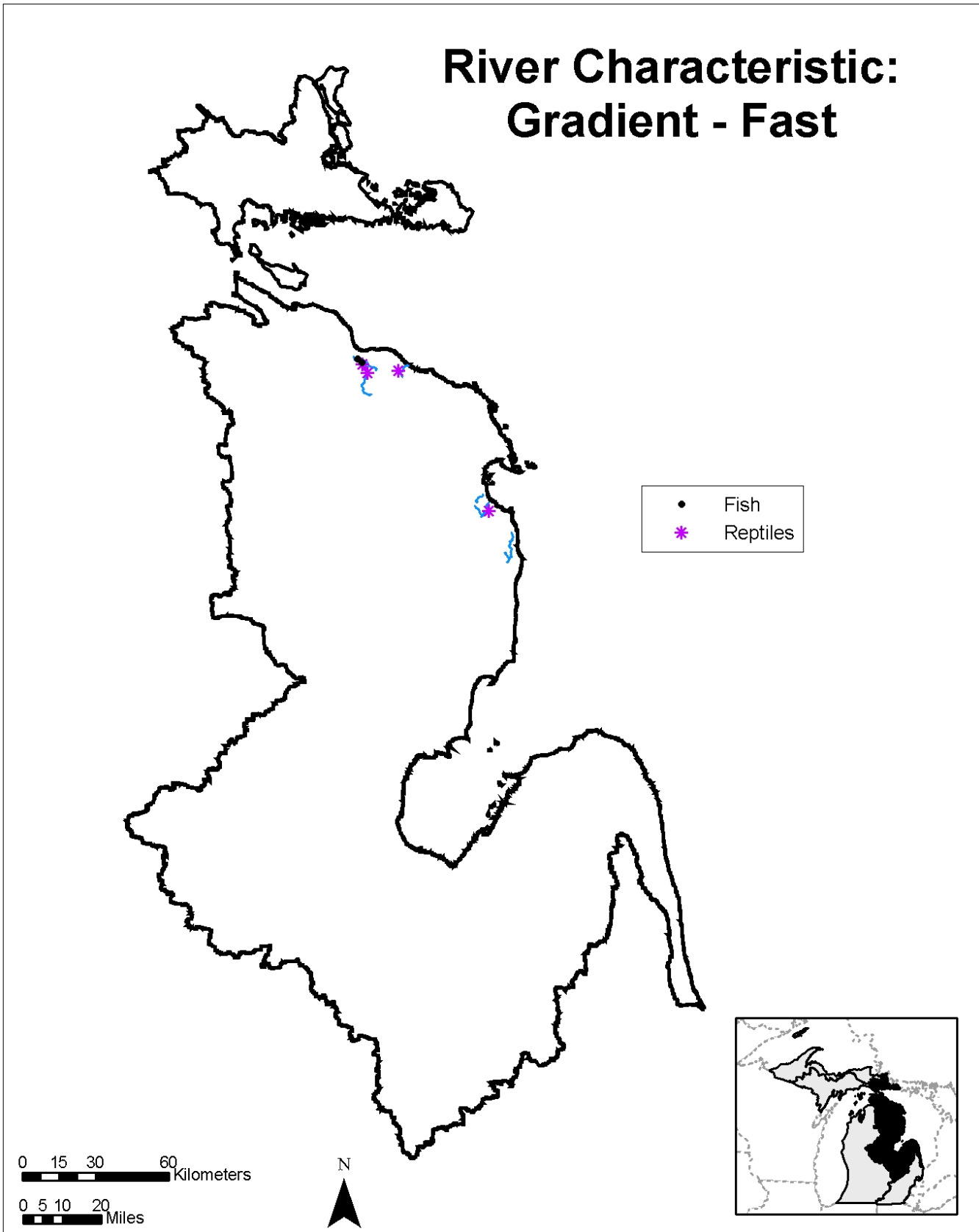


River Characteristic: Gradient - Fast



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 25% in good to excellent condition, 15% in fair condition, and 60% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

MUSSELS

snuffbox (*Epioblasma triquetra*)

INSECTS

a sand minnow mayfly (*Siphloplecton basale*)

rapids clubtail (*Gomphus quadricolor*)

riverine snaketail (*Stylurus amnicola*)

stygian shadowdragon (*Neurocordulia yamaskanensis*)

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

FISH

lake sturgeon (*Acipenser fulvescens*)

mooneye (*Hiodon tergisus*)

brassy minnow (*Hybognathus hankinsoni*)

FISH cont.

river chub (*Nocomis micropogon*)

black redhorse (*Moxostoma duquesnei*)

golden redhorse (*Moxostoma erythrurum*)

stonecat (*Noturus flavus*)

slimy sculpin (*Cottus cognatus*)

spoonhead sculpin (*Cottus ricei*)

fantail darter (*Etheostoma flabellare*)

river darter (*Percina shumardi*)

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 withdrawal

POLLUTION

- Altered sediment loads: Sedimentation; Erosion

HABITAT CONVERSION

- Dams
- Dredging and channelization: (low threat)

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: (low threat)

Conservation Actions Needed (Threats addressed)

LAND, WATER & SPECIES MANAGEMENT

- Engineered drainage channels should mimic natural stream channel stability (channel dimension, pattern, and profile) (altered hydrologic regimes, altered sediment loads, dredging and channelization)
- Explore other options to dams (i.e., seasonal electric barriers) (dams)
- Maintain or rehabilitate rivers to their original flow paths and natural hydrology (altered hydrologic regimes, altered sediment loads)
- Maintain or rehabilitate vegetated riparian buffers (altered hydrologic regimes, altered sediment loads)
- Manage beaver population for a variety of natural resource uses (dams)
- Protect the natural seasonal flow patterns of the river by incorporating best management practices (altered hydrologic regimes)
- Remove dams to rehabilitate natural hydrology and other natural processes (altered hydrologic regimes, altered sediment loads, dams)
- Survey erosion sites within watershed and conduct remediation activities at those sites (altered sediment loads)
- Work with road commissions and forest management agencies to fix perched culverts and rehabilitate eroding stream crossings (altered hydrologic regimes, altered sediment loads)
- Work with road commissions and forest management agencies to site and build effective new stream crossings (altered hydrologic regimes, altered sediment loads)

LAW & POLICY

- Continue regulation facilities that remove and discharge water into streams (altered hydrologic regimes)
- Continue working towards developing and refining planning and zoning regulations and ordinances (altered hydrologic regimes, altered sediment loads)

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

- Enforce the use of sediment barriers and best management practice's during road siting, construction, and maintenance (altered sediment loads)
- Ensure that existing environmental laws are enforced (altered hydrologic regimes, altered sediment loads)
- Limit water withdrawals in groundwater fed systems (altered hydrologic regimes)
- Protect remaining natural wetlands and rehabilitate degraded wetlands (altered hydrologic regimes, altered sediment loads)
- Protect riparian greenbelts through adoption and enforcement of zoning standards (altered hydrologic regimes, altered sediment loads)
- Protect the natural hydrologic regime of streams by protecting existing wetlands, floodplains, and natural upland areas (altered hydrologic regimes, altered sediment loads)
- Redraft the Michigan drain code (altered hydrologic regimes, altered sediment loads)
- Require existing dams to operate mimicking natural flow conditions (altered hydrologic regimes, dams)

EDUCATION & AWARENESS

- Continue working with and educating Drain Commissioners (altered hydrologic regimes, altered sediment loads)
- Educate the public on the importance of natural riparian buffers (altered hydrologic regimes, altered sediment loads)

Research and Survey Needs

- Determine unknown life history requirements for SGCN associated with fast gradient
- Inventory the number of dams and stream enclosures and note those that are no longer necessary
- Model hydrologic flow of fast gradient areas
- Survey existing dams and ensure that they operate as run-of-the-river

Monitoring

- Dam operations
- Riparian modification
- Stream crossings
- Wetland and floodplain modification