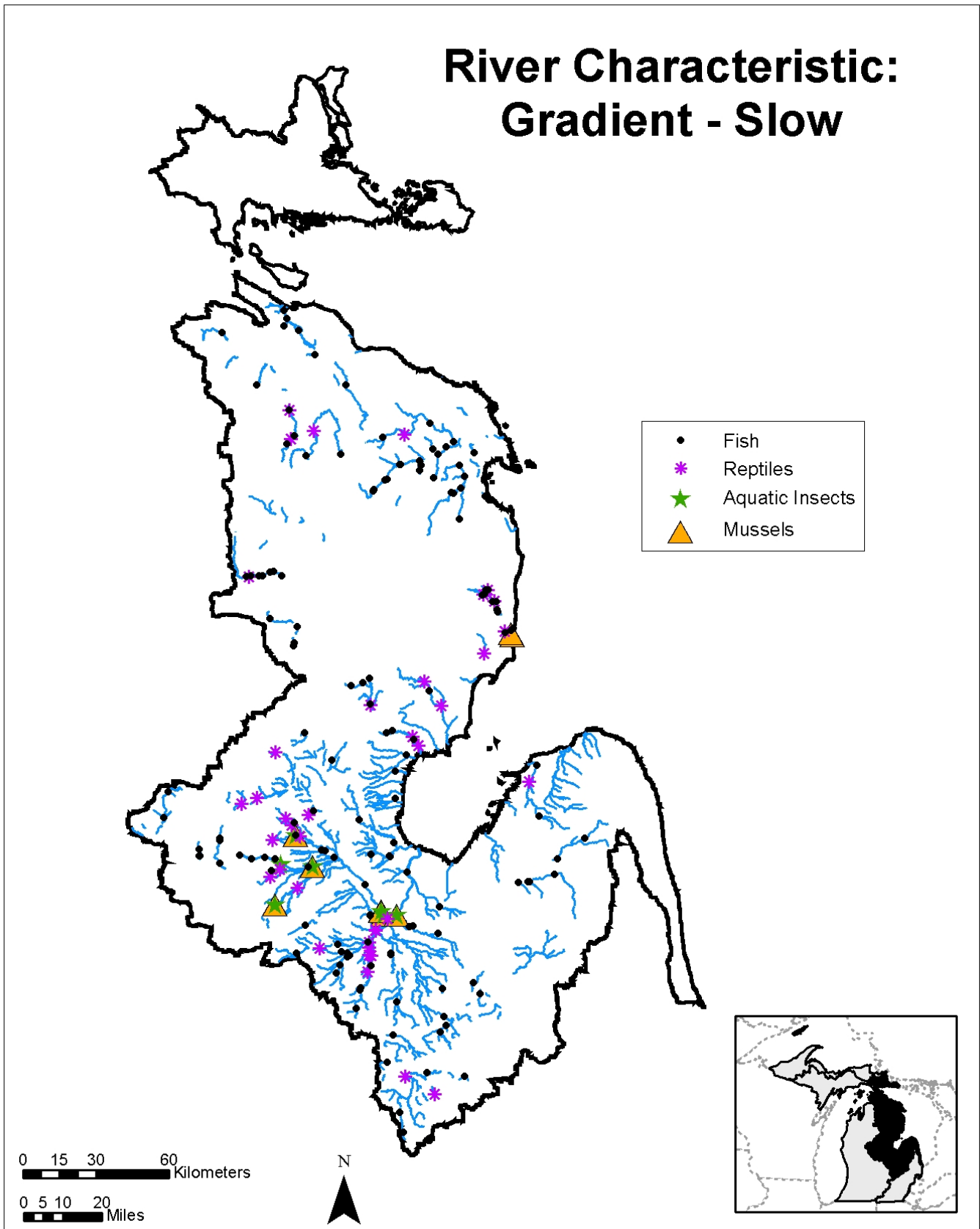


River Characteristic: Gradient - Slow



River Characteristic: Gradient – Slow

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. Slow gradient is defined as having a change in the vertical elevation of the water surface of a flowing stream ranging from 0.0-3.9 feet per mile.

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

- cylindrical papershell (*Anodontooides ferussacianus*)
- eastern pondmussel (*Ligumia nasuta*)

CRAYFISH

- digger crayfish (*Fallicambarus fodiens*)

INSECTS

- a sand minnow mayfly (*Siphloplecton basale*)
- splendid clubtail (*Gomphus lineatifrons*)
- Laura's snaketail (*Stylurus laurae*)
- a stonefly (*Taeniopteryx burksi*)
- a stonefly (*Taeniopteryx maura*)

FISH

- mooneye (*Hiodon tergisus*)
- brassy minnow (*Hybognathus hankinsoni*)
- striped shiner (*Luxilus chrysocephalus*)
- pugnose shiner (*Notropis anogenus*)
- finescale dace (*Phoxinus neogaeus*)
- lake chubsucker (*Erimyzon sucetta*)
- spotted sucker (*Minytrema melanops*)
- golden redhorse (*Moxostoma erythrurum*)

FISH cont.

- brown bullhead (*Ameiurus nebulosus*)
- tadpole madtom (*Noturus gyrinus*)
- grass pickerel (*Esox americanus*)
- pirate perch (*Aphredoderus sayanus*)
- fantail darter (*Etheostoma flabellare*)
- least darter (*Etheostoma microperca*)
- channel darter (*Percina copelandi*)
- river darter (*Percina shumardi*)
- sauger (*Sander canadensis*)

AMPHIBIANS

- four-toed salamander (*Hemidactylium scutatum*)
- mudpuppy (*Necturus maculosus maculosus*)
- Blanchard's cricket frog (*Acris crepitans blanchardi*)

REPTILES

- queen snake (*Regina septemvittata*)
- Blanding's turtle (*Emydoidea blandingii*)

MAMMALS

- water shrew (*Sorex palustris*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes

POLLUTION

- Altered sediment loads: Sedimentation; Sedimentation will fill up the pools and make channel shallow
- Thermal changes: (low threat)

HABITAT CONVERSION

- Dams: (low threat)
- Dredging and channelization: Channelization; Dredging

Conservation Actions Needed (Threats addressed)

LAND, WATER & SPECIES MANAGEMENT

- Engineered drainage channels should mimic natural stream channel stability (channel dimension, pattern, and profile) (dredging and channelization)
- Maintain or rehabilitate riparian areas (altered hydrologic regimes, altered sediment loads, thermal changes)
- Maintain or rehabilitate river to their original flow paths and hydrologic functions (i.e., seasonal flooding, connect meanders, throughflow, wetlands) (altered hydrologic regimes, altered sediment loads, thermal changes)
- Protect remaining natural wetlands and rehabilitate degraded wetlands (altered hydrologic regimes, altered sediment loads)
- Protect the natural seasonal flow patterns of the river by incorporating best management practices (altered hydrologic regimes, altered sediment loads, thermal changes)
- Rehabilitate channel diversity (dredging and channelization)
- Remove dams to rehabilitate natural hydrology and other processes (altered hydrologic regimes, altered sediment loads, dams, thermal changes)
- Survey erosion sites within watersheds 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)

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

- 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 regulating facilities that remove and discharge water into streams (altered hydrologic regimes, altered sediment loads, thermal changes)
- Continue working toward developing and refining planning and zoning regulations and ordinances (altered hydrologic regimes, altered sediment loads, thermal changes)
- Enforce the use of sediment barriers and best management practice's during road siting, construction, and maintenance (altered sediment loads)
- Ensure existing environmental laws are enforced (altered sediment loads)
- Work with regulatory agencies to restrict dredging and channelization activities especially during spawning and migration season and around mussel beds (dredging and channelization)

EDUCATION & AWARENESS

- Continue working with and educating Drain Commissioners (altered hydrologic regimes, altered sediment loads, thermal changes)
- Educate Drain Commissioners on the use of natural channel processes to allow a river to manage sediment and flow and decrease the amount of channelization needed (dredging and channelization)
- Educate public on the importance of vegetated buffers along rivers (altered sediment loads)

Research and Survey Needs

- Determine unknown life history requirements for SGCN associated with slow gradient
- Develop alternatives to current drainage practices
- Model hydrologic flow of slow gradient areas
- Survey sediment loadings to streams and develop strategies to reduce amount

Monitoring

- Dredging and channelization
- Erosion
- Riparian modification
- Stream crossings
- Wetland and floodplain modification