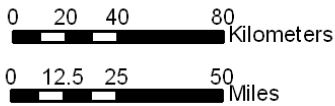
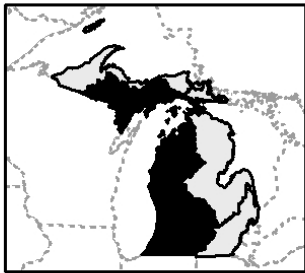


River Characteristic: Gradient - Very Fast



River Characteristic: Gradient – Very 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 very fast gradient is defined as having a change in the vertical elevation of the water surface of a flowing stream greater than 70.0 feet per mile.

General Condition of Feature

This habitat is considered 55% in good to excellent condition, 20% in fair condition, and 25% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

MAMMALS

water shrew (*Sorex palustris*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Water diversions; Dams, road crossings, and culverts can change gradient

POLLUTION

- Altered sediment loads: Bank erosion

HABITAT CONVERSION

- Dams: Hydropower; Beaver and human-made; Dams change gradient
- Dredging and channelization: Dredging

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)
- Maintain or establish riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits (altered hydrologic regimes, altered sediment loads, riparian modification)
- Maintain or rehabilitate natural hydrology (altered hydrologic regimes)
- Maintain or rehabilitate original flow paths and hydrologic functions, i.e., seasonal flooding, connect meanders, throughflow, wetlands (altered hydrologic regimes)
- Preserve woody riparian vegetation to reduce sedimentation (altered sediment loads, dredging and channelization)
- Rehabilitate channel diversity where possible (dredging and channelization)
- Survey erosion sites within watersheds and develop strategies to reduce identified problems (altered sediment loads)
- Work with road commissions on siting new and maintaining river crossings (altered hydrologic regimes, altered sediment loads, fragmentation)

LAW & POLICY

- Encourage use of bridges over culverts for new stream crossings (altered hydrologic regimes, fragmentation)
- Enforce the use of sediment barriers and best management practices during road siting, construction and maintenance (altered sediment loads)
- Limit water withdrawals in flow-limited or groundwater-fed systems (altered hydrologic regimes)
- Manage or modify existing dams to release water to mimic natural river conditions (altered hydrologic regimes, dams)
- Protect and rehabilitate groundwater recharge by requiring all development-related runoff be captured by infiltration basins (altered hydrologic regimes)
- Protect the natural seasonal flow patterns of the river by incorporating best management practices (altered hydrologic regimes)
- Remove dams to rehabilitate natural hydrology (altered hydrologic regimes, dams)
- Restrict dredging and channelization activities (dredging and channelization)
- Work with Drain Commissioners to use natural channel processes to allow a river to manage sediment and flow and decrease the amount of channelization needed (variety of threats)

Research and Survey Needs

- Inventory dams and stream enclosures and note those that are no longer necessary
- Model hydrologic flow of very fast gradient areas
- Survey existing dams and ensure that they operate as run-of-the-river

Monitoring

- Dam operations

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

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