



Rivers: Cold Large Rivers

Description

Large rivers are wadeable and non-wadeable systems that have a midpoint catchment area from 180 to 620 square miles. Large rivers are intermediate stream order systems with diverse substrate and habitat. Cold large rivers in Michigan are typically groundwater-driven with high to very high baseflow and low to moderate peak flow, and pass through several different valley types including unconfined glacial and alluvial valleys, as well as confined and sporadically confined glacial valleys. July weekly mean temperature in these rivers is less than 19°C (66°F).

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

INSECTS

extra-striped snaketail (*Ophiogomphus anomalus*)

REPTILES

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

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Altered flow regime; Road crossings, mostly county roads can change flows
- Fragmentation: Poorly designed road crossings (often county roads) can be barriers to aquatic species.

POLLUTION

- Altered sediment loads: Past logging practices, bank stabilization, and buffer strips can still be problematic; ORV use; Road crossing can cause heavy inputs of sand; Sand bed load; Sedimentation; Bank stabilization and development
- Urban, municipal, and industrial pollution: Road crossing can cause heavy of inputs of salt (low threat)

HABITAT CONVERSION

- Dams: Beaver and man-made dams
- Dredging and channelization: Channelization; Past logging practices
- Riparian modifications: Agricultural practices; Past logging practices, bank stabilization, and buffer strips can still be problematic; Riparian development that ignores zoning; Riparian changes that cause erosion; Road/stream crossings; Shoreline development; Bank stabilization and development

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: (low threat)

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry practices: Past logging practices
- Removal of wildlife: (low threat)

Conservation Actions Needed (Threats addressed)

LAND & WATER PROTECTION

- Continue to support landowner incentive programs to foster conservation on private land (variety of threats)

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, forestry practices, riparian modifications)
- Maintain or rehabilitate river to original flow path and hydrologic functions, i.e. seasonal flooding, connect meanders, throughflow, wetlands (altered hydrologic regimes)
- Manage beaver populations for a variety of natural resource uses (dams)
- Manage or modify remaining dams to mimic natural river conditions (altered hydrologic regimes, dams)
- Rehabilitate channel diversity where possible (dredging and channelization)
- Soften or remove hard river structures (riparian modifications)

LAW & POLICY

- Assess dam siting to ensure minimal affects and require fish passage both upstream and downstream (dams)
- Continue Natural Rivers planning (variety of threats)
- Continue to work on forest certification endeavors (forestry practices)
- Encourage clustered development rather than evenly spaced home lots (riparian modifications)
- Encourage green space planning (riparian modifications)
- Encourage use of bridges over culverts for new crossings (altered hydrologic regimes, fragmentation)

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

- Encourage use of natural materials or soft engineering techniques for any riparian modifications (riparian modifications)
- Enforce the use of sediment barriers and best management practices during road siting, construction, and maintenance (altered sediment loads)
- Impose mitigation practices to minimize logging effects (forestry practices)
- Limit water withdrawals in groundwater fed systems (altered hydrologic regimes)
- Protect and rehabilitate groundwater recharge by requiring that all development-related runoff be captured by infiltration basins (altered hydrologic regimes)
- Protect aquatic resources by screening turbine intakes at operating hydroelectric dams (dams)
- Protect the public trust by requiring dam owners to make appropriate financial provisions for future dam removal or perpetual maintenance (dams)
- Remove dams to rehabilitate natural hydrology, stream and riparian habitat, and habitat connectivity (altered hydrologic regimes, dams, fragmentation)
- Remove lake-level control structures (altered hydrologic regimes, dams)
- Require natural fishways, i.e., rock arch ramps and bypass channels, for both upstream and downstream movements at dams (dams)
- Restrict dredging and channelization activities, especially during spawning and migration seasons and around mussel beds (dredging and channelization)
- Work with local governments to develop and refine planning and zoning regulations and ordinances that consider natural processes (variety of threats)
- Work with local officials on setback and buffer ordinances (riparian modifications)
- Work with road commissions and forest management agencies on placement and maintenance of new road crossings (altered hydrologic regimes, fragmentation)
- Work with road commissions and forest management agencies to fix perched culverts (altered hydrologic regimes, fragmentation)
- Work with road commissions to limit use of salt near rivers (urban, municipal, and industrial pollution)

EDUCATION & AWARENESS

- Continue to educate boaters and other river users on preventing the spread of aquatic invasive species (invasive plants and animals)
- Educate landowners on the importance of vegetated riparian buffers (riparian modifications)
- Educate legislators, other policy makers, and the public on the natural processes of large rivers and the value of macrophytes, riparian vegetation, natural shorelines, wetlands, and stewardship issues (variety of threats)

CAPACITY BUILDING

- Support watershed councils

Research and Survey Needs

- Determine stream temperatures in areas where data is lacking
- Determine the numbers of dams and identify those that are no longer necessary
- Ensure that existing dams operate as run-of-the-river
- Determine the number and condition of areas that are disconnected from the river
- Inventory erosion sites and conduct remediation activities
- Inventory stream crossings and address those which are eroding or interfering with stream flow
- Model hydrologic flow of each watersheds
- Survey nutrient loadings to rivers and develop strategies to reduce problems
- Test and compare benefits of best management practice's as conservation tools

Monitoring

- Forestry practices
- Indicator species
- Land use changes
- Riparian modifications
- Sediment loading
- Stream modification
- Water temperatures
- Water withdrawals