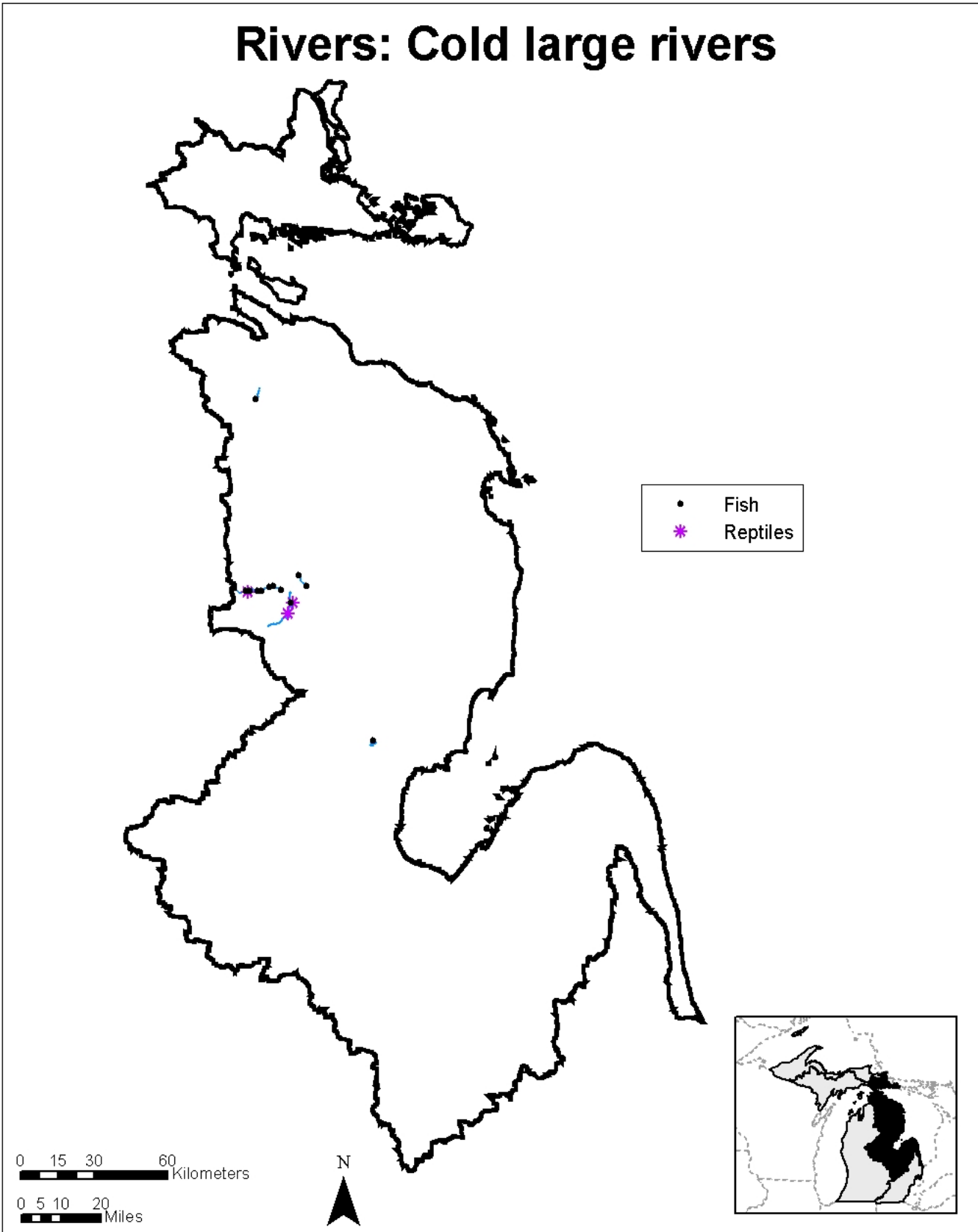


Rivers: Cold large rivers



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). This system is rare in the southern part of the Lake Huron basin.

General Condition of Feature

This habitat is considered 45% in good to excellent condition, 20% in fair condition, and 35% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

FISH

- lake sturgeon (*Acipenser fulvescens*)
- channel darter (*Percina copelandi*)

REPTILES

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

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Increased impervious surfaces on the landscape
- Fragmentation: (low threat)

POLLUTION

- Altered nutrient inflows: Nutrient loading - nitrogen = unionized ammonia (low threat)
- Altered sediment loads: Erosion; Sedimentation
- Thermal changes: Altered thermal regimes due to increased impervious surfaces on the landscape

HABITAT CONVERSION

- Dams: Fish passage & habitat fragmentation
- Dredging and channelization: Channelization; Dredging; Filling
- Riparian modification: Riparian development

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: (low threat)

EDUCATION

- Social attitudes: Riparian landowners fail to understand their impacts on the river (low threat)

Conservation Actions Needed (Threats addressed)

LAND, WATER & SPECIES MANAGEMENT

- Assess dam siting to ensure minimal affects and require both upstream and downstream fish passage (dams, fragmentation)
- Encourage and incorporate best management practices (altered hydrologic regimes, altered nutrient inputs, altered sediment loads, riparian modification, thermal changes)
- Encourage the use of, maintain, or establish riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits (altered hydrologic regimes, altered nutrient inputs, altered sediment loads, riparian modification, thermal changes)
- Explore other options to dams (i.e., seasonal electric barriers) (dams, fragmentation)
- Protect and rehabilitate groundwater recharge by requiring that all development-related runoff be captured by infiltration basins (altered hydrologic regimes)
- Protect and rehabilitate wetland functions (altered hydrologic regimes, altered nutrient inputs, altered sediment loads)
- Rehabilitate or maintain rivers to their original flow paths and hydrologic functions (i.e., seasonal flooding, connect meanders, throughflow, wetlands)
- Remove dams to rehabilitate natural hydrology and riparian & stream habitat (altered hydrologic regimes, altered nutrient loads, altered sediment loads, dams)
- Remove hard engineered streams sections and use natural materials or soft engineering techniques for any river modification (riparian modification)
- Work with road commissions and forest management agencies to fix perched culverts and rehabilitate eroding stream crossings (altered hydrologic regimes, altered sediment loads, forestry practices, fragmentation)
- Work with road commissions and forest management agencies to site and build effective new stream crossings (altered hydrologic regimes, altered sediment loads, forestry practices, fragmentation)

MICHIGAN'S WILDLIFE ACTION PLAN

AQUATIC SYSTEMS: LAKE HURON BASIN

LAW & POLICY

- Continue developing and refining planning and zoning regulations and ordinances (altered hydrologic regimes, altered nutrient inputs, altered sediment loads, riparian modification, thermal changes)
- Continue Natural Rivers planning (all threats)
- Continue regulating facilities that remove and discharge water into streams (altered hydrologic regimes, thermal changes)
- Discourage water withdrawals in flow limited and groundwater fed systems (altered hydrologic regimes)
- Encourage clustered development rather than evenly spaced home lots (riparian modification)
- Encourage green-space planning (riparian modification)
- Enforce existing environmental laws (sedimentation, endangered species, effluent discharges, etc.) (all threats)
- Enforce the use of sediment barriers and best management practice's during road siting, construction, and maintenance (altered sediment loads)
- Work with local officials to develop planning and zoning guidelines that consider natural processes (riparian modification)
- Manage water releases of dams to mimic natural river conditions, both in flow and temperature (altered hydrologic regimes, dams, thermal changes)
- Protect fishery resources by screening turbine intakes at operating hydroelectric dams (dams)
- Protect riparian greenbelts through adoption and enforcement of zoning standards (altered hydrologic regimes, altered nutrient inputs, altered sediment loads, riparian modification, thermal changes)
- Protect the natural hydrologic regime of streams by protecting existing wetlands, floodplains, and natural upland areas (altered hydrologic regimes, altered nutrient inputs, altered sediment loads, riparian modification, thermal changes)
- Protect the public trust by requiring dam owners to make appropriate financial provisions for future dam removal or perpetual maintenance (dams)
- Redraft the Michigan Drain code (altered hydrologic regimes)
- Require natural fishways (rock arch dams and bypass channels) for both upstream and downstream fish passage at dams (dams, fragmentation)
- Strengthen water quality laws that relate to temperature (thermal changes)
- Work with Federal agencies on Wild and Scenic River designation in Michigan (all threats)

EDUCATION & AWARENESS

- Continue working with and educating Drain Commissioners (altered hydrologic regimes, altered nutrient inputs, altered sediment loads, riparian modification, social attitudes, thermal changes)
- Educate the landowners and townships on the importance of vegetation riparian buffers (altered hydrologic regimes, altered nutrient inputs, altered sediment loads, riparian modification, social attitudes, thermal changes)

Research and Survey Needs

- Determine stream temperatures in areas where data is lacking
- Determine the number and condition of road and stream crossings
- Determine the numbers of dams and identify those that are no longer necessary
- Determine use of cold large rivers by reptile SGCN
- Ensure that existing dams operate as run-of-the-river
- Determine ways to decrease temperature swings from retention and detention basins in urbanized watersheds
- Determine the number and condition of areas that are disconnected from the river
- Develop alternatives to current drainage practices
- Inventory erosion sites and conduct remediation activities
- Model hydrologic flow of each watersheds
- Test and compare benefits of Best Management Practice's as conservation tools

Monitoring

- Indicator species
- Land use changes
- Riparian modification
- Sediment loading
- Stream modification
- Water temperatures
- Water withdrawals
- Wetland modification