



## **Rivers: Cold Medium Rivers**

### Description

Medium rivers are wadeable systems that have a midpoint catchment area from 40 to 179 square miles. They are intermediate stream order. Substrate and habitat are variable and more diverse than headwater systems. Cold medium rivers in Michigan are typically groundwater-driven with high baseflow and peak flow, although a few systems are runoff-driven with fair to moderate baseflow and peak flow. Most are low to moderate gradient and flow through unconfined alluvial valleys, while a smaller number of cold medium rivers flow through confined, sporadically confined, or unconfined glacial valleys. July weekly mean temperature in these rivers is less than 19°C (66°F).

### General Condition of Feature

This habitat is considered 70% in good to excellent condition, 20% in fair condition, and 10% in degraded to very degraded condition.

### Associated Species of Greatest Conservation Need

#### *INSECTS*

extra-striped snaketail (*Ophiogomphus anomalus*)

#### *FISH*

spoonhead sculpin (*Cottus ricei*)

#### *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 (low threat)
- Fragmentation: Road crossings

#### *POLLUTION*

- Altered sediment loads: Road crossings need to be modified to halt erosion

#### *HABITAT CONVERSION*

- Dams: Beaver dams - although most dams will flow out from spring snowmelt flooding they usually do so at the banks eroding several cubic yards of material each time
- Dredging and channelization: Channelization
- Riparian development: Canopy removal; Road crossings; Development; Development on private land

#### *BIOLOGICAL INTERACTIONS*

- Invasive plants and animals: (low threat)

#### *CONSUMPTIVE BIOLOGICAL RESOURCE USE*

- Forestry practices: Logging

### Conservation Actions Needed (Threats addressed)

#### *LAND & WATER PROTECTION*

- Create and expand conservation easements (variety of threats)
- Support landowner incentive programs to foster conservation on private land (variety of threats)

#### *LAND, WATER & SPECIES MANAGEMENT*

- Control and prevent aquatic invasive species introductions and establishments (invasive plants and animals)
- Develop integrated pest management plans (invasive plants and animals)
- Encourage use of natural materials or soft engineering techniques for any riparian modifications (riparian modifications)
- Engineered drainage channels should mimic natural streams channel stability, i.e., channel dimension, pattern, and profile (dredging and channelization)
- If culverts are necessary, use single large capacity culverts that match bankfull channel width (altered hydrologic regimes, fragmentation)
- Maintain and establish riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits (altered hydrologic regimes, altered sediment loads, forestry practices, riparian modifications)
- Maintain or rehabilitate streams to original flow paths and hydrologic functions, i.e., throughflow and wetlands (altered hydrologic regimes)
- Manage beaver populations for a variety of natural resources uses (dams, fragmentation)
- Soften or remove hard river structures (riparian modifications)
- Work with road commissions and forest management agencies to fix perched culverts (altered hydrologic regimes, fragmentation)

*LAW & POLICY*

- Continue Natural Rivers planning (variety of threats)
- Continue to work on forest certification endeavors (forestry practices)
- Continued vigilance and cooperation on preventing more aquatic invasive species establishments (invasive plants and animals)
- Encourage clustered development rather than evenly spaced home lots (riparian modifications)
- Encourage green space planning (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 flow-limited or groundwater-fed systems (altered hydrologic regimes)
- Pipeline and utility crossings should use existing stream crossings and bore and jack or directional drill installation methods (fragmentation)
- Protect and rehabilitate groundwater recharge by requiring that development-related runoff be captured by infiltration basins (altered hydrologic regimes)
- Remove dams to rehabilitate natural hydrology and habitat connectivity (altered hydrologic regimes, dams, fragmentation)
- Remove lake-level control structures (altered hydrologic regimes, dams)
- Remove unnecessary or abandoned bridges (fragmentation)
- Restrict dredging and channelization activities, especially during spawning and migrations season and around mussel beds (dredging and channelization)
- Use best management practices (variety of threats)
- 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 on maintenance and placement of new bridges (altered hydrologic regimes, altered sediment loads, fragmentation)

*EDUCATION & AWARENESS*

- Educate legislators, other policy makers, landowners, and the public on the importance of headwater systems and natural processes (variety of threats)
- Increase education to boaters and others on preventing the spread of aquatic invasive species (invasive plants and animals)

*CAPACITY BUILDING*

- Support watershed councils and regional conservation groups (variety of threats)

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 number and condition of dams and those that no longer necessary
- Model hydrologic flow of entire watersheds
- Survey loadings of sediment within watershed and develop strategies to reduce identified problems

Monitoring

- Channelization
- Dam operations
- Indicator species
- Land use changes
- Logging activities
- Riparian modifications
- Stream modification
- Water temperatures