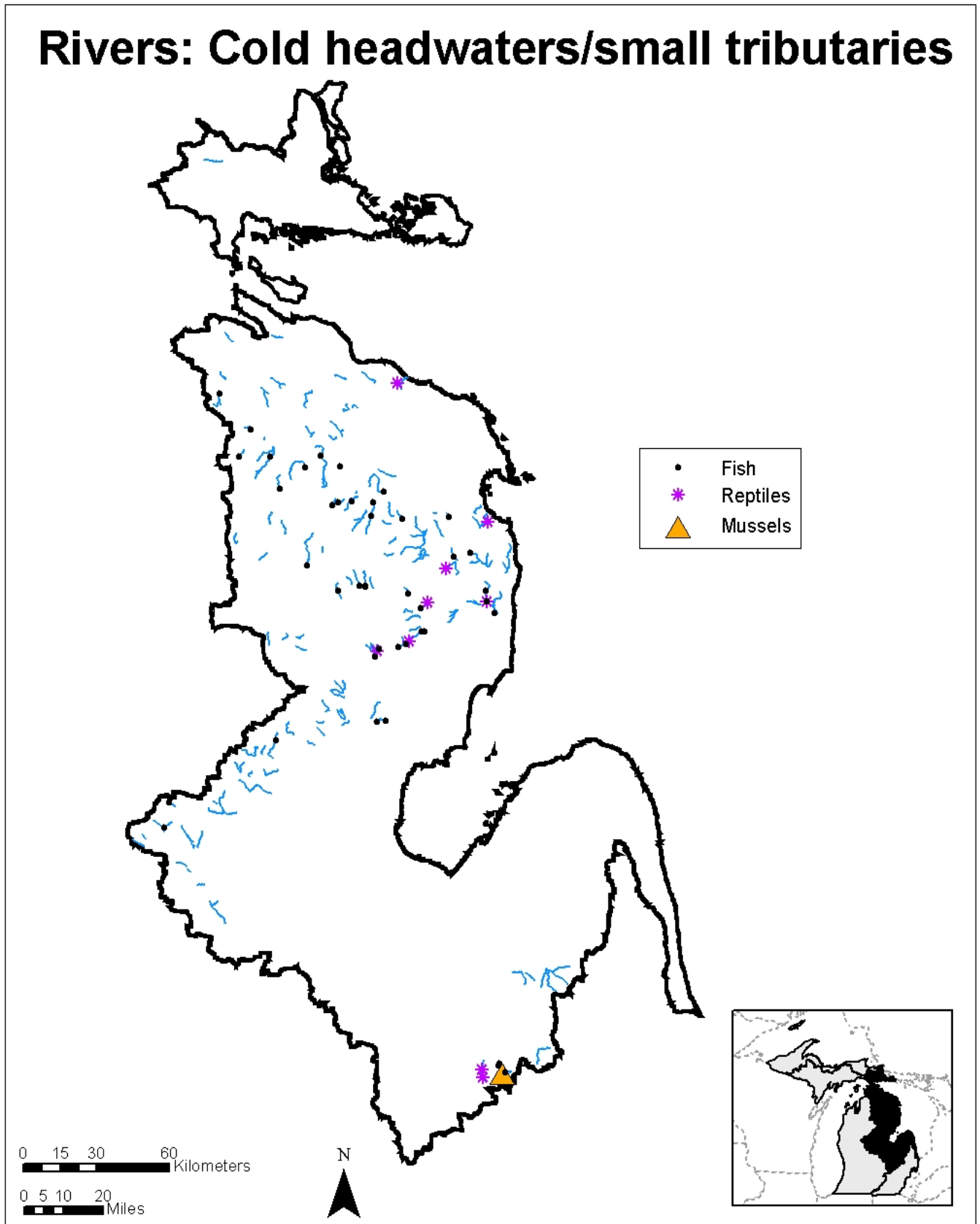


# Rivers: Cold headwaters/small tributaries



## **Rivers: Cold Headwaters & Small Tributaries**

### Description

Headwater streams and small tributaries are wadeable systems that have a midpoint catchment area (the land area above the midpoint of the stream from which water drains towards the stream) less than 40 square miles. These low stream order systems join together to form larger streams and rivers, or run directly into other streams, rivers, and lakes. They have great influence on the collective health and functioning of the primary stream network to which they belong. Headwater streams and small tributaries tend to be strongly affected by riparian vegetation

Cold headwater streams and small tributaries in Michigan are typically groundwater-dominated systems that pass through unconfined alluvial valleys of varying gradient, although some runoff-driven systems occur. Baseflows are relatively high and stable. July weekly mean temperature in these streams is less than 19°C (66°F). These systems are relatively common in glacial till plains, moraine and glacial outwash areas in the northern Lake Huron basin but are less common in the southern Lake Huron basin.

### General Condition of Feature

This habitat is considered 60% in good to excellent condition, 20% in fair condition, and 20% in degraded to very degraded condition.

### Associated Species of Greatest Conservation Need

#### *MUSSELS*

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

#### *FISH*

brassy minnow (*Hybognathus hankinsoni*)  
finescale dace (*Phoxinus neogaeus*)  
slimy sculpin (*Cottus cognatus*)  
spoonhead sculpin (*Cottus ricei*)  
channel darter (*Percina copelandi*)

#### *REPTILES*

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

#### *MAMMALS*

water shrew (*Sorex palustris*)

### Associated Threats

#### *MODIFICATION OF NATURAL PROCESSES*

- Altered hydrologic regimes: In-line ponds; Road crossings; Culverts

#### *POLLUTION*

- Altered sediment loads: Erosion; Sedimentation
- Thermal changes: Increased thermal loading (low threat)

#### *HABITAT CONVERSION*

- Dams: Beaver dams; Impoundments (low threat)
- Dredging and channelization: Dredging; Filling (low threat)
- Incompatible natural resources management:: Stocking (low threat)
- Riparian modification: Land use practices within stream corridors, for example logging, urbanization, agriculture, etc.

#### *BIOLOGICAL INTERACTIONS*

- Invasive plants and animals: (low threat)

#### *CONSUMPTIVE BIOLOGICAL RESOURCE USE*

- Forestry practices: Logging (low threat)

#### *EDUCATION*

- Social attitudes: (low threat)

### Conservation Actions Needed (Threats addressed)

#### *LAND & WATER PROTECTION*

- Create or expand conservation easements (all threats)
- Support land conservancy purchase of undeveloped land (all threats)

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

- Continue working with and educating Drain Commissioners (altered hydrologic regimes)
- Develop comprehensive management plans that consider all interest groups (all threats)
- Encourage green-space planning (riparian modification)
- 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, thermal changes)
- Use best management practices (altered hydrologic regimes, altered sediment loads, riparian modification)

- Rehabilitate wetlands and natural floodplains (altered hydrologic regimes, altered sediment loads)
- Remove dams to rehabilitate natural hydrology (altered hydrologic regimes, altered sediment loads, dams)
- Rehabilitate native flora (riparian modification)
- Rehabilitate original hydrologic functions including seasonal flows (i.e., connect meanders, through flow, wetlands, etc.) (altered hydrologic regimes)
- Work with road commissions to fix perched culverts and rehabilitate eroding stream crossings (altered hydrologic regimes, altered sediment loads)
- Work with road commissions to site and build effective new stream crossings (altered hydrologic regimes, altered sediment loads)

#### *LAW & POLICY*

- Continue Natural Rivers planning (riparian modification)
- Continue working with, developing, and refining planning and zoning regulations and ordinances (altered hydrologic regimes, altered sediment loads, riparian modification)
- Enforce the use of sediment barriers and best management practice's during road siting, construction, and maintenance (altered sediment loads)
- Ensure that existing environmental laws are enforced (sedimentation, endangered species, etc.) (altered sediment loads)
- Work with local officials to develop planning and zoning guidelines that consider natural processes (riparian modification)
- 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, altered sediment loads)
- Protect the natural hydrologic regime of streams by protecting existing wetlands, floodplains, and natural upland areas (altered hydrologic regimes, altered sediment loads, riparian modification)
- Redraft the Michigan Drain code (altered hydrologic regimes)
- Work with Federal agencies on Wild and Scenic River designation in Michigan (riparian modification)

#### *EDUCATION & AWARENESS*

- Educate legislators, local planning boards, and other policy makers on the importance of natural processes
- Educate riparian owners on the importance of vegetated buffers along streams and rivers (altered hydrologic regimes, altered sediment loads, riparian modification)

#### Research and Survey Needs

- Determine the number and condition of road and stream crossings
- Determine use of cold headwaters and small tributaries by mussel and reptile SGCN
- Determine ways to decrease temperature swings from retention and detention basins in urbanized watersheds
- Inventory erosion sites and conduct remediation activities
- 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