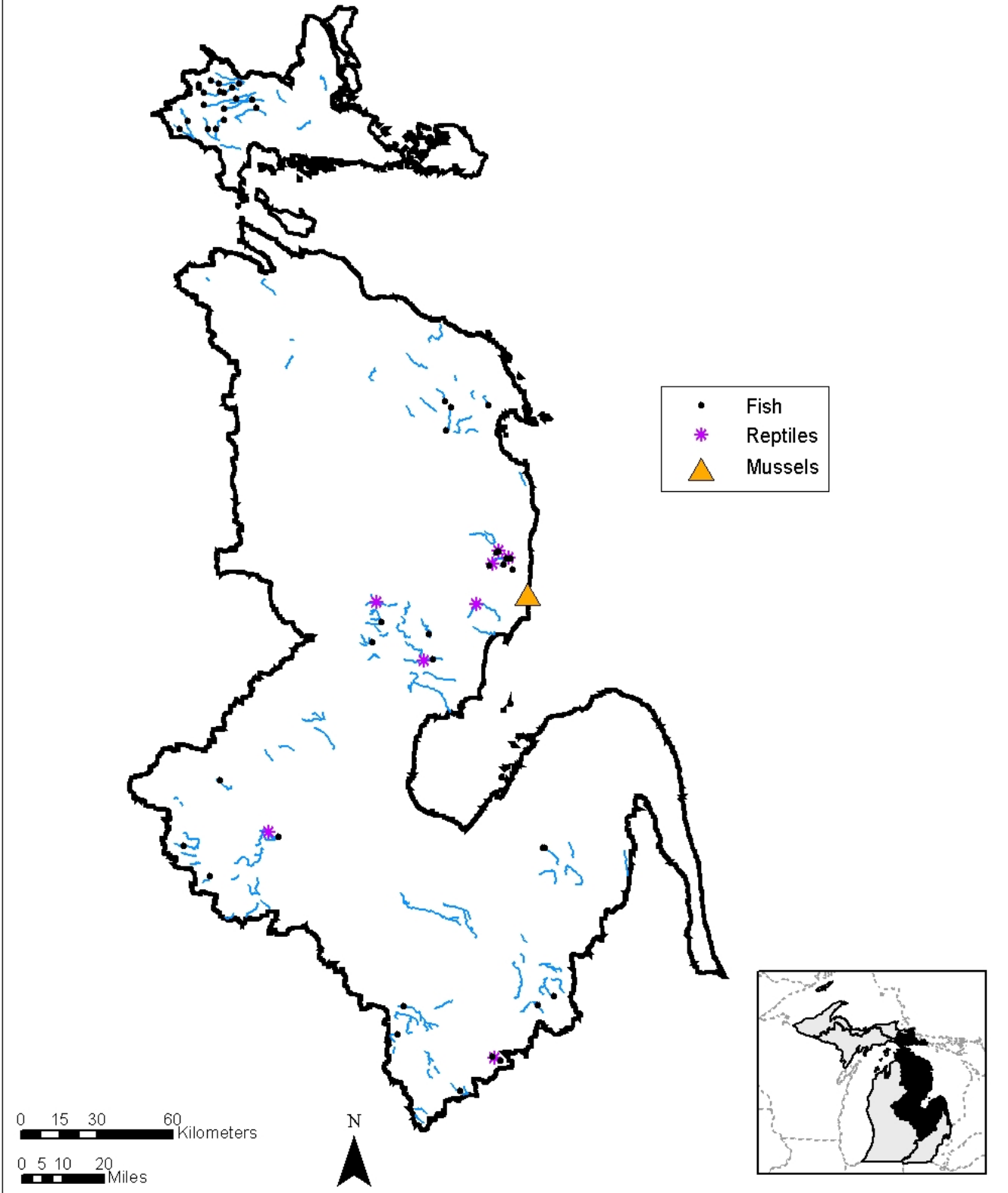


# Rivers: Cool headwaters/small tributaries



## Rivers: Cool 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.

Cool headwater streams and small tributaries are usually low-gradient, runoff-driven systems with fair to moderate baseflows and moderate to high peak flows. Many of these systems pass through unconfined alluvial valleys. July weekly mean temperature in cool headwater streams range from 19-22°C. These systems are common in the till plains of the 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

rainbow (*Villosa iris*)

#### INSECTS

Hungerford's crawling water beetle (*Brychius hungerfordi*)

#### FISH

brassy minnow (*Hybognathus hankinsoni*)  
striped shiner (*Luxilus chrysocephalus*)  
finescale dace (*Phoxinus neogaeus*)

#### FISH cont.

fantail darter (*Etheostoma flabellare*)  
least darter (*Etheostoma microperca*)  
channel darter (*Percina copelandi*)

#### AMPHIBIANS

pickereel frog (*Rana palustris*)

#### REPTILES

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

### 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

#### HABITAT CONVERSION

- Dams: Beaver dams; Impoundments
- Dredging and channelization: Dredging; Filling
- 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: Land use practices such as logging practices

#### EDUCATION

- Social attitudes:

### 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

- Avoid stream relocations (altered hydrologic regimes, altered sediment loads, dredging and channelization, riparian modification)
- Continue working with and educating Drain Commissioners (altered hydrologic regimes, altered sediment loads, dredging and channelization)
- Develop comprehensive management plans that consider all interest groups (all threats)
- Encourage use of, maintain, or establish riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits (altered hydrologic regimes, altered sediment loads, thermal changes, riparian modification, forestry practices)

## **MICHIGAN'S WILDLIFE ACTION PLAN**

### **AQUATIC SYSTEMS: LAKE HURON BASIN**

- Engineered drainage channels should mimic natural stream channel stability (channel dimension, pattern, and profile) (altered hydrologic regimes, altered sediment loads, dredging and channelization)
- Explore other options to dams (i.e., seasonal electric barriers) (dams)
- Manage beaver populations for a variety of natural resource uses (dams)
- Remove dams to rehabilitate riparian & stream habitat and natural hydrology when possible (altered flows, altered sediment loads, dams)
- Rehabilitate channel diversity (dredging and channelization)
- Rehabilitate rivers to their original flow paths and hydrologic functions (i.e., seasonal flooding, connect meanders, throughflow, wetlands, etc.) (altered hydrologic regimes)
- Rehabilitate wetlands (altered hydrologic regimes, altered sediment loads)
- 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**

- Assess dam siting to ensure minimal affects and require fish passage both upstream and downstream, using natural fishways (exp. Rock arch ramps and bypass channels) where feasible (dams)
- Continue regulating facilities that remove and discharge water into rivers (altered hydrologic regimes, thermal changes)
- Continue working with, developing, and refining planning and zoning regulations and ordinances (altered hydrologic regimes)
- Discourage and limit water withdrawals in flow limited and groundwater fed systems (altered hydrologic regimes)
- 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 (altered sediment loads)
- Protect and rehabilitate groundwater recharge by requiring that all development-related runoff be captured by infiltration basins (altered hydrologic regimes)
- Protect riparian greenbelts through adoption and enforcement of zoning standards (altered sediment loads)
- Protect the natural hydrologic regime of streams by protecting existing wetlands, floodplains, and natural upland areas (altered hydrologic regimes)
- 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)
- Work with regulatory agencies to restrict dredging and channelization activities, especially during spawning & breeding and migration seasons and around mussel beds (dredging and channelization)

#### **EDUCATION & AWARENESS**

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

#### **Research and Survey Needs**

- Determine mussels distributions
- Determine use of cool headwaters and small tributaries by reptile SGCN
- Develop alternatives to current drainage practices
- Inventory dams and determine those which no longer serve a useful purpose
- Inventory erosion sites and conduct remediation activities

#### **Monitoring**

- Dam operations
- Dredging and channelization
- Indicator species
- Riparian modification
- Sediment loading
- Stream modification
- Water temperature