



Rivers: Warm 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.

Warm headwater streams and small tributaries are generally low-gradient, runoff-driven systems that pass through unconfined alluvial valleys, but tend to have lower baseflows and higher peak flows than cool headwater systems. July weekly mean temperatures in these systems are greater than 22°C (72°F).

General Condition of Feature

This habitat is considered 50% in good to excellent condition, 45% in fair condition, and 5% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

FISH

- bigmouth shiner (*Notropis dorsalis*)
- least darter (*Etheostoma microperca*)

REPTILES

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

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Low levels in groundwater; Altered flow regime

POLLUTION

- Altered sediment loads: Sedimentation (low threat)

HABITAT CONVERSION

- Dams
- Dredging and channelization: Channelization
- Riparian modifications: Road / stream crossings
- Wetland modifications: (low threat)

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: (low threat)

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Mining practices

Conservation Actions Needed (Threats addressed)

LAND & WATER PROTECTION

- Create and expand conservation easements (variety of threats)
- Support land conservancy purchase of undeveloped land (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)
- Engineered drainage channels should mimic natural stream channel stability, i.e., channel dimension, pattern, and profile (dredging and channelization)
- Maintain and establish riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits (riparian modifications)
- Maintain and rehabilitate natural hydrology (altered hydrologic regimes)
- 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)
- Protect existing natural wetlands and rehabilitate degraded wetlands (wetland modification)
- Rehabilitate channel diversity where possible (dredging and channelization)
- Work with road commissions on maintenance and placement of new bridges (altered sediment loads)

LAW & POLICY

- Avoid stream relocations (dredging and channelization)
- Continue Natural Rivers planning (variety of threats)

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

- 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)
- Limit water withdrawals in flow-limited or groundwater-fed systems (altered hydrologic regimes)
- 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 (altered hydrologic regimes)
- Remove lake-level control structures (altered hydrologic regimes, dams)
- Restrict dredging and channelization activities in headwater streams (dredging and channelization)
- Restrict mining operations and impose mitigation and remediation requirements for mining impacts (mining practices)
- Restrict surface disturbances to no closer than ¼ mile to any surface water (mining practices)
- 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)

EDUCATION & AWARENESS

- Educate legislators, other policy makers, landowners, and the public on the importance of headwater systems and natural processes (variety of threats)

CAPACITY BUILDING

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

Research and Survey Needs

- Create hydrologic models of warm headwaters and small tributaries and their watersheds
- Explore other options to dams
- Inventory dams and determine those that no longer serve a useful purpose
- Inventory stream crossings and address those which are interfering with stream flow

Monitoring

- Channelization
- Indicator species
- Land use changes
- Mining operations
- Riparian modifications
- Stream enclosures
- Stream modifications
- Water withdrawals