



Rivers: 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. Headwater streams and small tributaries can range in temperature from cold to warm. This landscape feature is a catch-all for species with no recorded water temperature preferences as reported in primary literature.

General Condition of Feature

This habitat is considered 55% in good to excellent condition, 40% in fair condition, and 5% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

CRAYFISH

- devil crawfish (*Cambarus diogenes*)
- digger crayfish (*Fallicambarus fodiens*)

INSECTS

- ocellated damer (*Boyeria grafiana*)
- splendid clubtail (*Gomphus lineatifrons*)
- rapids clubtail (*Gomphus quadricolor*)
- arrowhead spiketail (*Cordulegaster obliqua*)
- a stonefly (*Ostrocerca albidipennis*)
- a stonefly (*Arcynopteryx compacta*)
- a dobsonfly (*Nigronia fasciatus*)

FISH

Specific associations with this landscape feature were not found in the literature without water temps associated

AMPHIBIANS

- four-toed salamander (*Hemidactylium scutatum*)
- mudpuppy (*Necturus maculosus maculosus*)

REPTILES

- Blanding's turtle (*Emydoidea blandingii*)
- wood turtle (*Glyptemys insculpta*)
- eastern box turtle (*Terrapene carolina carolina*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Altered flow regime (low threat)

POLLUTION

- Altered sediment loads: Sedimentation (low threat)

HABITAT CONVERSION

- Dams: Beaver activities
- Dredging and channelization: Channelization (low threat)
- Riparian modifications: Canopy removal; Riparian alteration and development; Road/stream crossings

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: (low threat)

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry 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 (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)
- Rehabilitate channel diversity where possible (dredging and channelization)
- Work with road commissions on maintenance and placement of new bridges (altered sediment loads)

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

LAW & POLICY

- Avoid stream relocations (dredging and channelization)
- 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)
- Impose mitigation practices to minimize logging effects (forestry practices)
- Limit water withdrawals in flow-limited or groundwater-fed systems (altered hydrologic regimes)
- Remove dams to rehabilitate natural hydrology (altered hydrologic regimes, dams)
- Remove lake-level control structures (altered hydrologic regimes, dams)
- Restrict dredging and channelization activities in headwater streams (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)

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

- Complete life history strategies for SCGN that use headwaters and small tributaries
- Create hydrologic models of headwaters and small tributaries and their watersheds
- Determine amphibian and reptile movement corridors
- Determine crayfish distributions
- Determine the number and condition of road and stream crossings
- 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

- Amphibian and reptile corridors
- Forestry practices
- Land use changes
- Riparian modifications
- Road crossings
- Stream modification
- Stream water temperatures