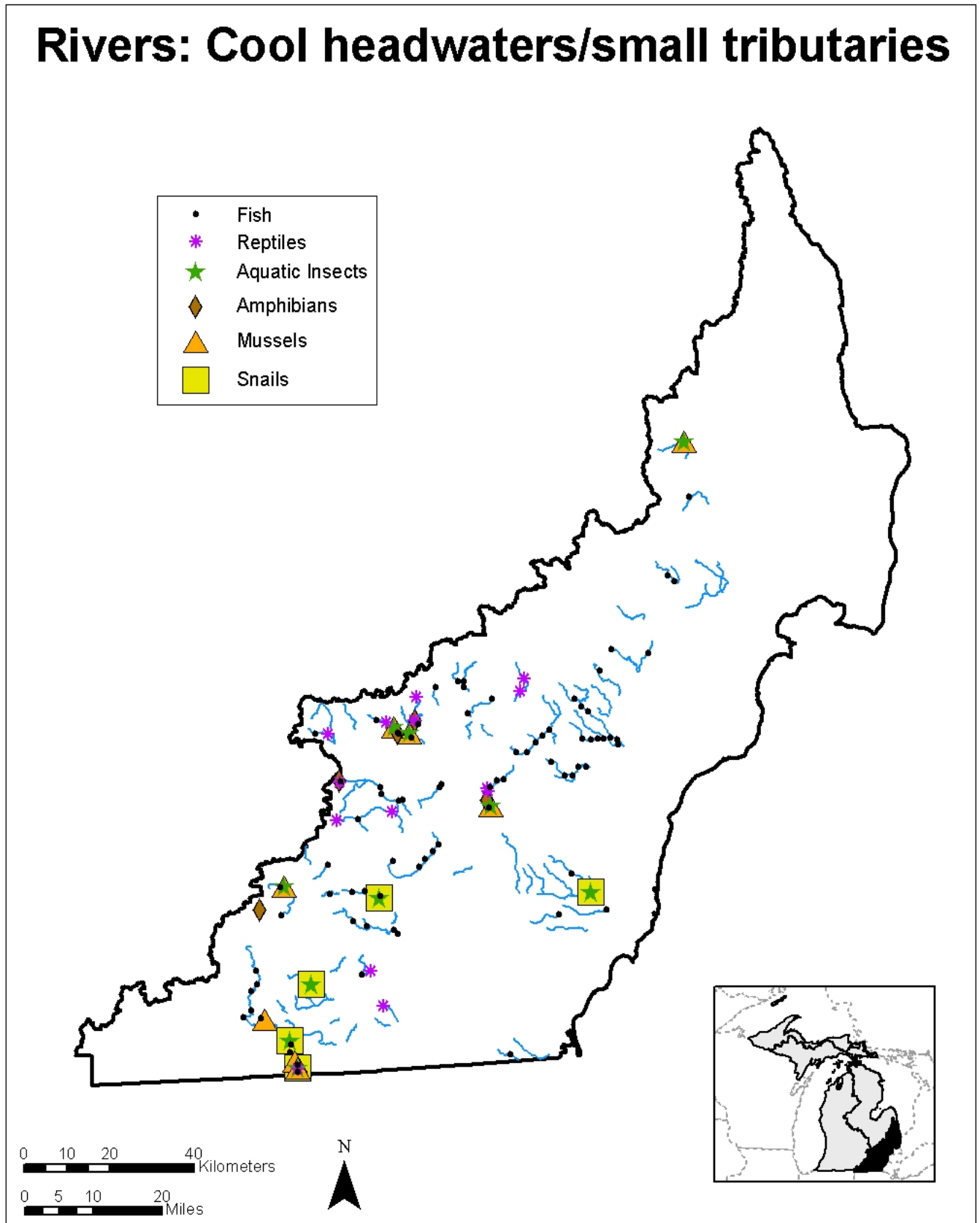


Rivers: Cool headwaters/small tributaries



Rivers: Cool Headwaters and 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 Erie basin.

General Condition of Feature

This habitat is considered 40% in good to excellent condition, 30% in fair condition, and 30% in degraded to very degraded condition.

Associated Species of Greatest Conservation Need

MUSSELS

rainbow (*Villosa iris*)

INSECTS

a stonefly (*Isogenoides doratus*)

FISH

reeside dace (*Clinostomus elongatus*)

striped shiner (*Luxilus chrysocephalus*)

southern redbelly dace (*Phoxinus erythrogaster*)

finescale dace (*Phoxinus neogaeus*)

black redbhorse (*Moxostoma duquesnei*)

FISH cont.

golden redbhorse (*Moxostoma erythrurum*)

eastern sand darter (*Ammocrypta pellucida*)

fantail darter (*Etheostoma flabellare*)

least darter (*Etheostoma microperca*)

AMPHIBIANS

pickrel 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: Due to increased runoff from urbanization; Runoff patterns disrupted due to development; Flow alteration due to development and impervious surfaces and runoff; Groundwater levels (agriculture, water supply to wells- extraction); changes to riparian vegetation; water inputs to channels (exceeding natural variability); Enclosed streams
- Climate change
- Fragmentation: Dam and connectivity

POLLUTION

- Altered nutrient inflows: Surface water runoff - nutrients
- Altered sediment loads: Erosion; Siltation; Sedimentation and erosion due to construction, etc
- Pesticides and herbicides
- Thermal changes: Altered temperature regime; Temperature impacts due to retention, detention basins, and storm water runoff
- Urban, municipal, and industrial pollution

HABITAT CONVERSION

- Dams: Altered hydrologic regimes due to dams and control structures; loss of connectivity
- Dredging and channelization: Channelization
- Riparian modification: Unprotected riparian area; Development within riparian zones; Removal of natural vegetation at rivers edge
- Wetland modification: Loss of wetlands (low threat)

EDUCATION

- Lack of scientific knowledge: In almost all cases, we know relatively little about ecological and other life histories of aquatic insects in this basin - taxonomic accuracy, sampling effort, etc. (low threat)
- Social attitudes: Lack of education on how to protect these systems and the impacts of human actions; Lack of understanding by riparian owners

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)

LAND, WATER & SPECIES MANAGEMENT

- Allow seasonal flooding (altered hydrologic regimes)
- Decrease the amount of impervious surfaces (altered hydrologic regimes)
- Maintain natural corridors between wetlands and upland areas (fragmentation)
- Maintain or establish riparian buffers to at least 50 ft., however 500 ft provides for better conservation value (altered hydrologic regimes, altered sediment loads, riparian modification)
- Maintain stream crossings (altered hydrologic regimes, altered sediment loads)
- Preserve woody riparian vegetation to reduce sedimentation (altered sediment loads, riparian modification)
- Remove unnecessary or abandoned stream crossings and enclosures (altered hydrologic regimes, altered sediment loads)
- Rehabilitate damaged wetlands and protect existing natural wetlands (wetland modification)
- Rehabilitate streams to original flow paths (altered hydrologic regimes)
- Soften or remove hard stream riparian structures (riparian modification)
- Use natural materials or soft engineering techniques for riparian modification (riparian modification)
- Use sediment barriers and Best management practices during road and stream crossing constructions (altered sediment loads)
- Work with road commission on rehabilitating eroding stream crossings (altered sediment flows)
- Work with road commissions to site new stream crossings (altered hydrologic regimes, altered sediment loads)

LAW & POLICY

- Avoid stream relocations (altered hydrologic regimes, dredging and channelization, riparian modification)
- Continue working with and educating Drain Commissioners (altered hydrologic regimes, altered sediment loads, riparian modification, wetland modification)
- Encourage clustered home development rather than evenly spaced housing (riparian modification)
- Encourage use of bridges over culverts for new crossings (altered hydrologic regimes, fragmentation)
- If culverts are used, use single culverts that are sized for bankfull flows (altered hydrologic regimes, fragmentation)
- Operate remaining dams at run-of-the-river (altered hydrologic regimes, dams)
- Reduce effluent flow (thermal pollution, Urban, municipal, and industrial pollution)
- Remove unnecessary dams to rehabilitate flow and habitat (altered hydrologic regimes, dams, fragmentation)
- Restrict dredging during spawning and migration seasons (dredging and channelization)
- Strengthen existing environmental laws (sedimentation, municipal waste, etc.) (altered sediment loads, thermal changes, Urban, municipal, and industrial pollution)
- Work with local governments to develop and refine planning and zoning regulations (altered hydrologic regimes, altered sediment loads, riparian modification, wetland modification)

EDUCATION & AWARENESS

- Educate legislators, local planning boards, and other policy makers on the importance of natural processes (social attitudes)
- Educate private land owners on the value of riparian areas (riparian modification, social attitudes)
- Expand education programs for the public on natural processes, hydrologic cycles, and stewardship issues (social attitudes)
- Work with watershed councils and regional conservation groups on identifications skills and habitat restorations (social attitudes)

Research and Survey Needs

- Determine use of cool headwaters and small tributaries by snail and reptile SGCN
- Model hydrologic flows in each watershed
- Need more information about aquatic insect life histories
- Need more information about sampling effort needed to collect aquatic insects
- Need effective methods of communicating with the public their stewardship role

Monitoring

- Effluent discharges: waste water treatment plants, septic systems, industrial
- Dams
- Indicator species
- Riparian modification
- Enforcement of environmental laws