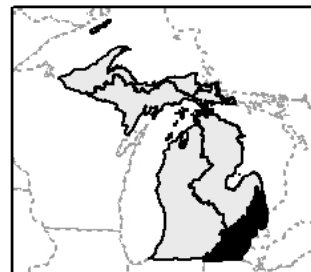
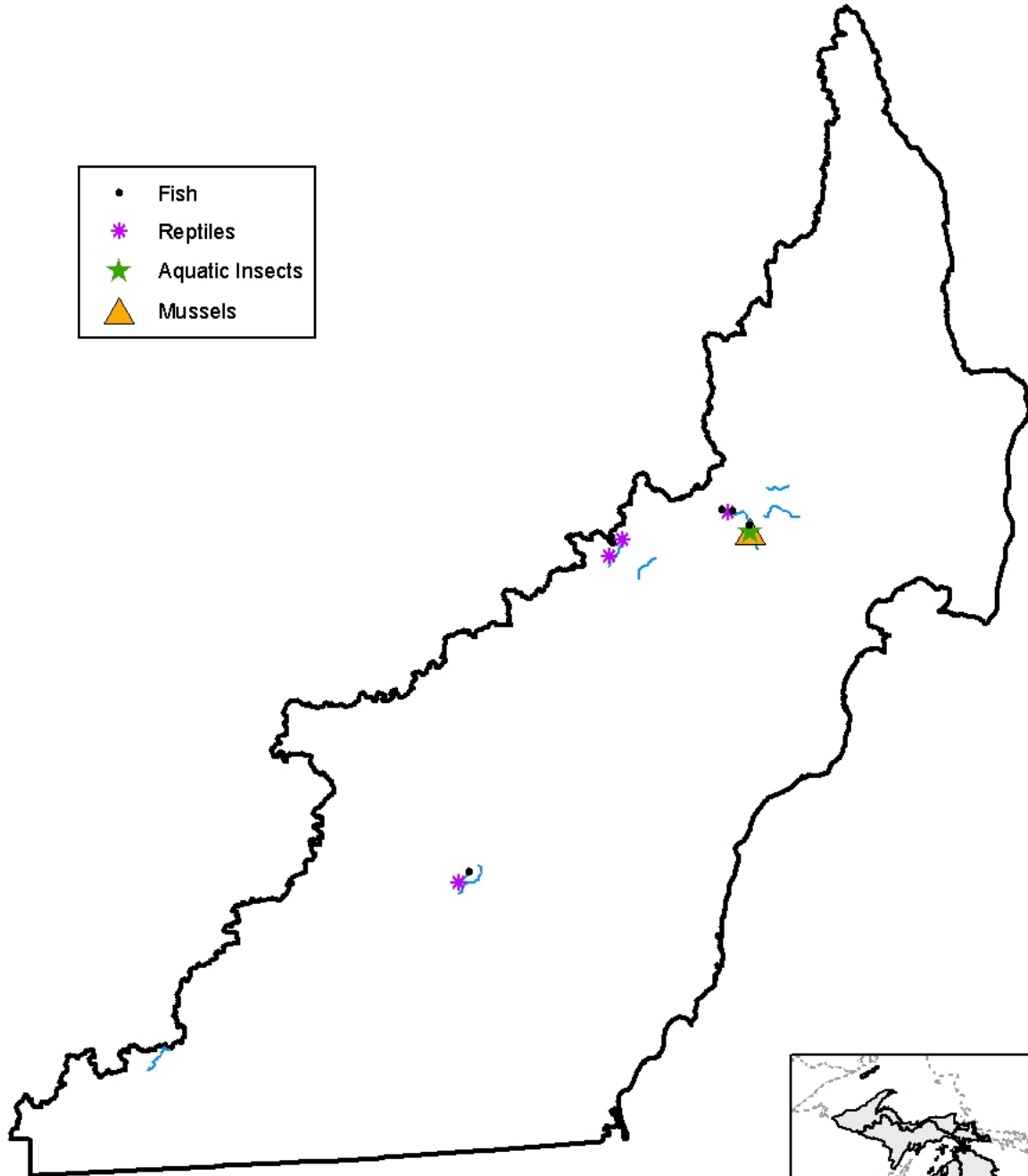


Rivers: Cold headwaters/small tributaries

- Fish
- * Reptiles
- ★ Aquatic Insects
- ▲ Mussels



0 10 20 40 Kilometers

0 5 10 20 Miles



Rivers: Cold 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

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). In the Lake Erie basin these systems are rare due to flat topography and clay soils present in the region.

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

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

INSECTS

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

FISH

reeside dace (*Clinostomus elongatus*)

REPTILES

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

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Increased runoff due to urbanization; Altered runoff patterns and recharge areas are affected by development

POLLUTION

- Altered sediment loads: Erosion and sediment runoff from uplands
- Thermal changes: Temperature affects from detention, runoff, etc

HABITAT CONVERSION

- Dams
- Dredging and channelization: Channelization (low threat)
- Riparian modification

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

- Decrease amount of impervious surface in a watershed (altered hydrologic regimes)
- Maintain or establish riparian buffers to at least 50 ft., however 500 ft provides for better conservation value (altered sediment loads, riparian modification, thermal changes)
- Remove dams to rehabilitate connectivity, habitat, and natural hydrology (altered hydrologic regimes, dams)
- Rehabilitate original hydrologic functions (altered hydrologic regimes)
- Use sediment barriers and Best management practices during road and stream crossing construction (altered sediment loads)
- Work with road commissions and forest management agencies on rehabilitating eroding stream crossings (altered sediment flows)
- Work with road commissions to site new stream crossings (altered sediment flows)

LAW & POLICY

- Operate remaining dams as run-of-the river (altered hydrologic regimes, dams)
- Protect groundwater recharge by requiring all development runoff be captured by infiltration basins (altered hydrologic regimes)
- Protect the public trust by requiring dam owners to make appropriate financial provision for future dam removal (dams)

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

Research and Survey Needs

- Create hydrologic models of cold headwaters and small tributaries and the watershed
- Determine effects of thermal changes on the aquatic invertebrate communities
- Determine location and condition of cold water tributaries
- Determine use of cold headwaters and small tributaries by mussels, aquatic insects, and reptiles SGCN
- Determine ways of decreasing imperviousness in a watershed
- Determine ways to decrease temperature swings from retention and detention basins
- Explore other options to dams
- Model hydrologic flows in each watershed

Monitoring

- Channelization
- Dam operations
- Indicator species
- Riparian development
- Stream water temperature and flows