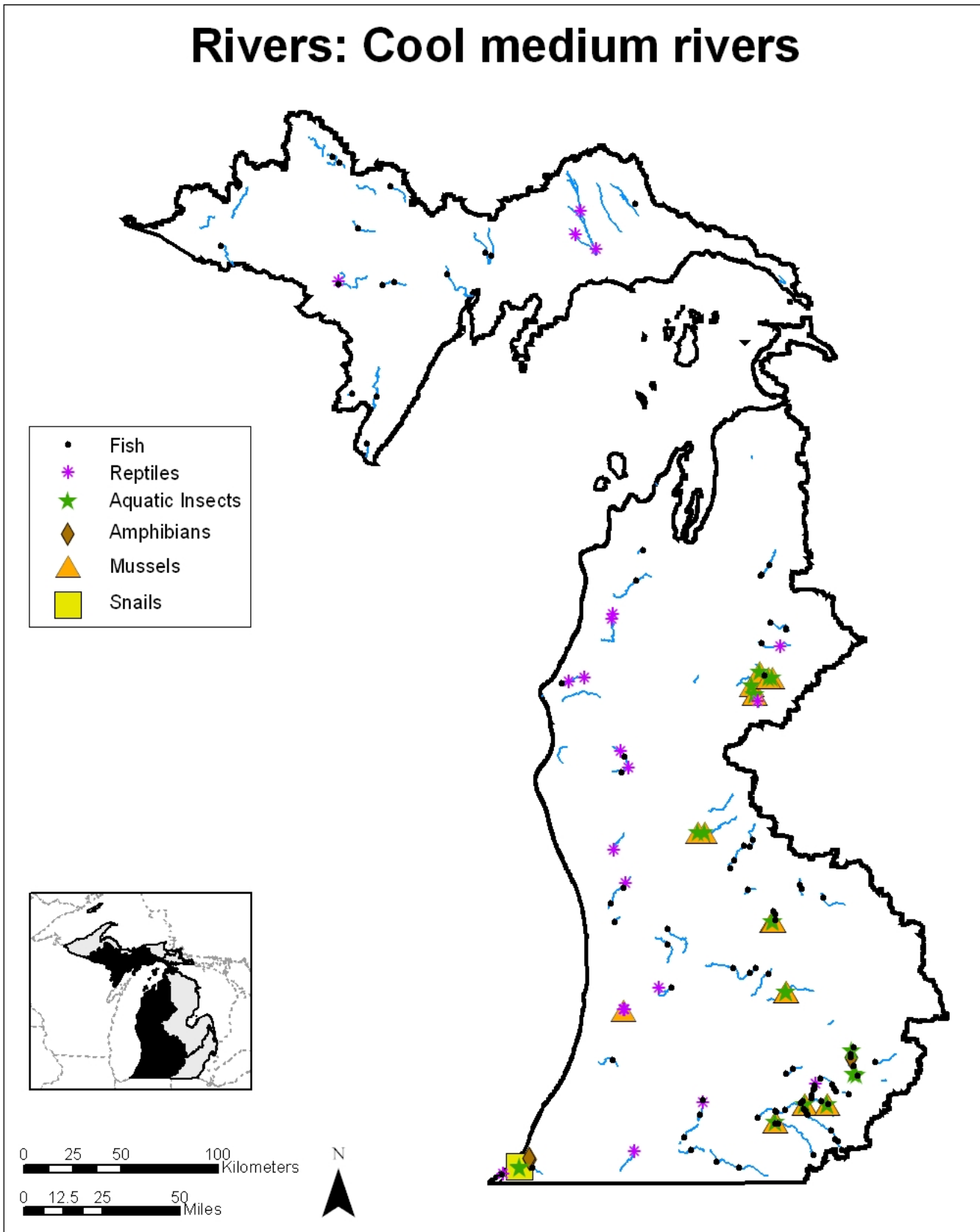


## Rivers: Cool medium rivers



## Rivers: Cool Medium Rivers

### Description

Medium rivers are wadeable systems that have a midpoint catchment area from 40 to 179 square miles. They are intermediate stream order. Substrate and habitat are variable and more diverse than headwater systems. Cool medium rivers in Michigan are usually runoff-driven with low to moderate baseflow and fair to moderate peak flow, with the exception of a few systems that are groundwater-driven. The majority of these rivers are low gradient and flow through unconfined glacial or alluvial valleys. July weekly mean temperature in cool medium rivers ranges from 19-22°C (66-72°F).

### General Condition of Feature

This habitat is considered 40% in good to excellent condition, 25% in fair condition, and 35% in degraded to very degraded condition.

### Associated Species of Greatest Conservation Need

#### MUSSELS

rainbow (*Villosa iris*)

#### SNAILS

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

#### INSECTS

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

#### FISH

lake sturgeon (*Acipenser fulvescens*)

spotted gar (*Lepisosteus oculatus*)

mooneye (*Hiodon tergisus*)

brassy minnow (*Hybognathus hankinsoni*)

striped shiner (*Luxilus chrysocephalus*)

river chub (*Nocomis micropogon*)

pugnose shiner (*Notropis anogenus*)

bigmouth shiner (*Notropis dorsalis*)

#### FISH cont.

finescale dace (*Phoxinus neogaeus*)

black redhorse (*Moxostoma duquesnei*)

golden redhorse (*Moxostoma erythrurum*)

brown bullhead (*Ameiurus nebulosus*)

stonecat (*Noturus flavus*)

grass pickerel (*Esox americanus*)

slimy sculpin (*Cottus cognatus*)

fantail darter (*Etheostoma flabellare*)

banded darter (*Etheostoma zonale*)

#### AMPHIBIANS

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

#### REPTILES

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

### Associated Threats

#### MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Water withdrawals; Storm water control
- Climate change: (low threat)
- Fragmentation: Dams fragment habitats; Road crossings and culverts can fragment habitat because species can't or don't pass through them

#### POLLUTION

- Altered nutrient inflows
- Altered sediment loads: Increased sediment due to riparian clearing
- Pesticides and herbicides
- Thermal changes: Riparian modification can increase water temperatures
- Urban, municipal, and industrial pollution: Municipal effluent

#### HABITAT CONVERSION

- Dams
- Dredging and channelization: Dredging
- Incompatible natural resources management
- Riparian modification: Riparian development

#### BIOLOGICAL INTERACTIONS

- Disease, pathogens, and parasites: (low threat)
- Invasive plants and animals: (low threat)
- *CONSUMPTIVE BIOLOGICAL RESOURCE* Use
- Forestry practices: Can result in increased sediment in streams (low threat)
- Removal of wildlife: (low threat)

#### EDUCATION

- Lack of scientific knowledge: (low threat)

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

Conservation Actions Needed (Threats addressed)

*LAND & WATER PROTECTION*

- Support landowner incentive programs to foster conservation on private land (variety of threats)

*LAND, WATER & SPECIES MANAGEMENT*

- Decrease the amount of impervious surfaces within watershed (altered hydrologic regimes)
- Engineered drainage channels should mimic natural stream channel stability, i.e., channel dimension, pattern, and profile (dredging and channelization)
- If culverts are necessary, use single large capacity culverts that match bankfull channel width (altered hydrologic regimes, fragmentation)
- Maintain or establish riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits (altered hydrologic regimes, altered sediment loads, riparian modification, thermal changes)
- Maintain or rehabilitate river to original flow path and hydrologic functions, i.e., seasonal flooding, throughflow (altered hydrologic regimes)
- Manage beaver populations for a variety of natural resource uses (altered hydrologic regimes, dams)
- Reduce herbicide and pesticide use (pesticides and herbicides)
- Soften or remove hard stream structures (riparian modification)
- Survey erosion sites within watersheds and develop strategies to reduce identified problems (altered sediment loads)
- Work with road commissions on placement and maintenance of stream crossings (altered sediment loads)
- Work with road commissions to fix perched culverts that are barriers to aquatic species movements (altered hydrologic regimes, fragmentation)

*LAW & POLICY*

- Assess dam siting to ensure minimal affects and require fish passage both upstream and downstream
- Avoid stream relocations (dredging and channelization)
- Continue Natural Rivers planning (variety of threats)
- Encourage green space planning (riparian modification)
- Encourage townships to separate combined sewer systems (altered hydrologic regimes, altered nutrient inflows)
- Encourage use of bridges over culverts for new crossings (altered hydrologic regimes, fragmentation)
- Encourage use of natural materials or soft engineering techniques for any shoreline modification (riparian modification)
- Enforce the use of sediment barriers and best management practices during road siting, construction, and maintenance (altered sediment loads)
- Implement and continually improve storm water and non-point source best management practices (variety of threats)
- Limit water withdrawals in flow-limited or groundwater fed systems (altered hydrologic regimes)
- Protect and rehabilitate groundwater recharge by requiring that all development-related runoff be captured by infiltration basins (altered hydrologic regimes)
- Protect the public trust by requiring dam owners to make appropriate financial provisions for future dam removal or perpetual maintenance (dams)
- Reduce effluent flow (Urban, municipal, and industrial pollution)
- Remove dams to rehabilitate natural hydrology and connectivity of system (dams, fragmentation)
- Remove lake-level control structures (altered hydrologic regimes, dams)
- Require existing dams to operate mimicking natural flow conditions (altered hydrologic regimes, dams)
- Restrict dredging and channelization activities on headwater streams (dredging and channelization)
- Strengthen existing environmental laws and enforcement of permits controlling effluent discharge (Urban, municipal, and industrial pollution)
- Use best management practices (variety of threats)
- Work with Drain Commissioners to use natural channel processes to allow a stream to manage sediment and flow and decrease the amount of channelization needed (altered hydrologic regimes, altered sediment loads, dredging and channelization)
- 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 modification)

*EDUCATION & AWARENESS*

- Educate legislators, other policy makers, and the public on natural processes (social attitudes)
- Educate the public on the use of and reasons for maintaining septic systems (altered nutrient inflows)
- Work with and educate ORV groups to provide environmentally friendly stream crossings (altered sediment loads)
- Work with Extension services to educate farmers and landowners on the natural processes of rivers (variety of threats)

*CAPACITY BUILDING*

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

Research and Survey Needs

- Determine mussel distributions
- Determine stream temperature trends in areas lacking data
- Determine the number of groundwater withdrawals in each watershed
- Determine the use of cool medium rivers by snail, amphibian, and reptile SGCN
- Develop alternatives to current drainage practices
- Educate the public on stewardship issues
- Inventory dams and determine those which are no longer needed
- Inventory erosion sites and conduct remediation activities
- Inventory septic systems and their condition
- Model hydrologic flows

Monitoring

- Channelization
- Dam operations
- Effluent: municipal wastewater treatment plants and septic systems
- Indicator species
- Riparian modifications
- Road crossings
- Sediment loading
- Storm water flows
- Stream modification
- Water temperature