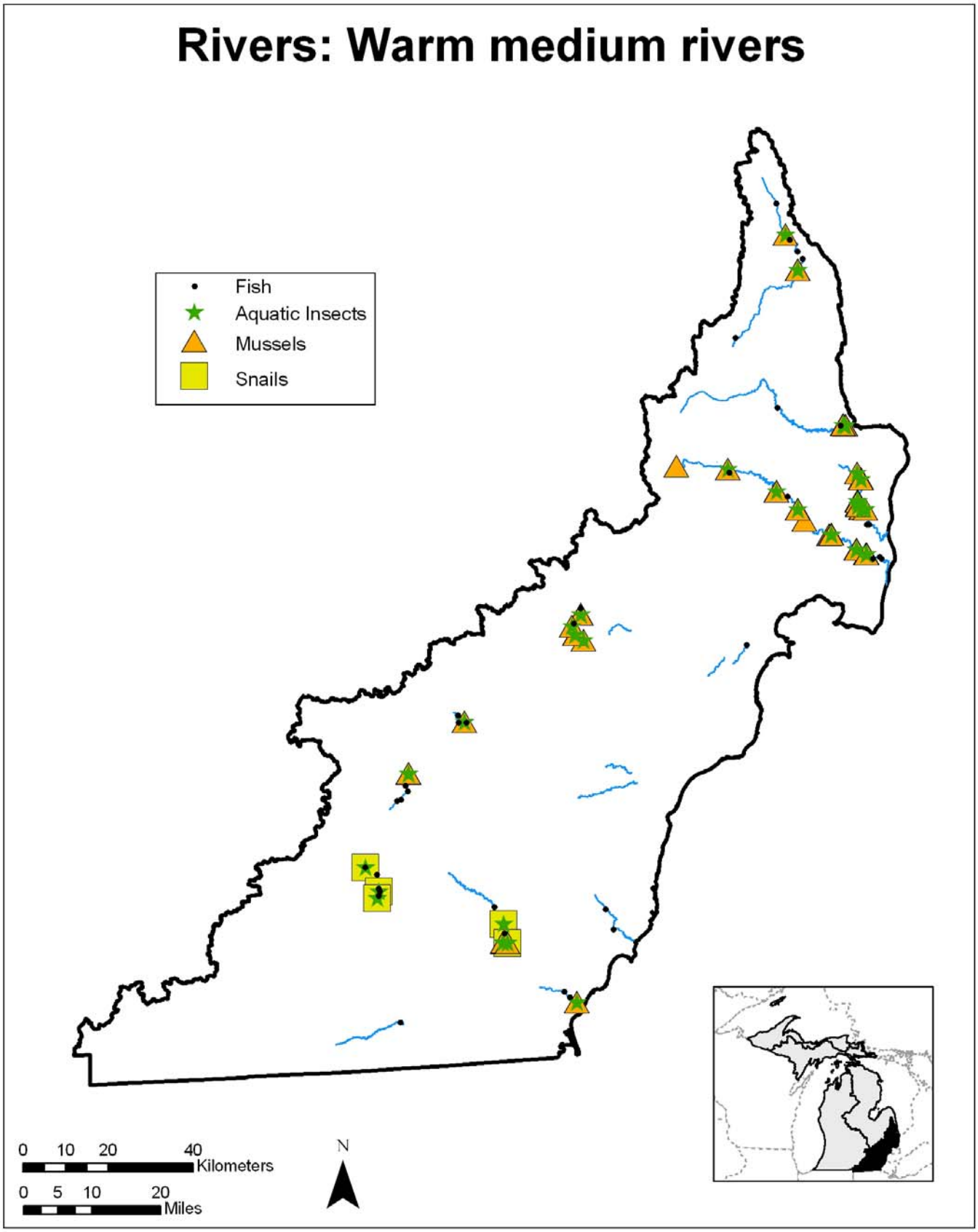
Rivers: Warm medium rivers
Fish
Aquatic Insects
Mussels
Snails
0 10 20 40
Kilometers
0 5 10 20
Miles
N

Rivers: Warm 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. Warm medium rivers In Michigan are generally runoff-driven systems with low baseflow and high peak flow. Most are low gradient and flow through unconfined alluvial valleys. July weekly mean temperatures in these systems are greater than 22^{o}C (72^{o}F). These systems are common in the lacustrine clay and silt areas of the Lake Erie basin.

General Condition of Feature

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

Associated Species of Greatest Conservation Need

SNAILS
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
striped shiner (*Luxilus chrysocephalus*)
river chub (*Nocomis micropogon*)
pugnose shiner (*Notropis anogenus*)
pugnose minnow (*Opsopoeodus emiliae*)
western creek chubsucker (*Erimyzon claviformis*)
lake chubsucker (*Erimyzon sucetta*)

FISH cont.
spotted sucker (*Minytrema melanops*)
brown bullhead (*Ameiurus nebulosus*)
stonecat (*Noturus flavus*)
tadpole madtom (*Noturus gyrinus*)
grass pickerel (*Esox americanus*)
pirate perch (*Aphredoderus sayanus*)
eastern sand darter (*Ammocrypta pellucida*)
fantail darter (*Etheostoma flabellare*)

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

Associated Threats

MODIFICATION OF NATURAL PROCESSES
- Altered hydrologic regimes: Channel modification and flow alteration; Altered flows due to development, dams, impervious surfaces, urbanization, etc.; Enclosed streams
- Climate change
- Fragmentation: Habitat loss and fragmentation

POLLUTION
- Altered nutrient inflows: Surface runoff – nutrients
- Altered sediment loads: Erosion; Siltation; Sedimentation
- Thermal changes: Altered temperature regime
- Urban, municipal, and industrial pollution: Surface runoff - contaminants

HABITAT CONVERSION
- Dams
- Dredging and channelization: Channelization
- Riparian modification: Lack of woody structure; Loss of floodplain
- Wetland modification: Loss of wetlands; Wetland modification (low threat)

BIOLOGICAL INTERACTIONS
- Invasive plants and animals

NON-CONSUMPTIVE BIOLOGICAL RESOURCE USE
- Macrophyte removal

EDUCATION
- Social attitudes: Lack of understanding by riparian owners

Conservation Actions Needed (Threats addressed)

LAND, WATER & SPECIES MANAGEMENT
- Allow seasonal flooding (altered hydrologic regimes)
- Removal of exotic vegetation should preserve 60-80% of native vegetation and be in conjunction with a watershed management plan (invasive plants and animals, macrophyte removal)
- Encourage use of natural materials or soft engineering techniques for modification (riparian modification)
- Maintain or rehabilitate natural corridors between wetlands and uplands (fragmentation, riparian modification)
- Maintain or establish riparian buffers to at least 50 ft., but 500 ft. or wider maximizes conservation benefits (altered hydrologic regimes, altered sediment loads, riparian modification)

- Preserve woody riparian vegetation (riparian modification)
- Rehabilitate damaged wetland and stream hydrology (altered hydrologic regimes, wetland modification)
- Rehabilitate original hydrologic functions (altered hydrologic regimes)
- Rehabilitate streams to original flow paths (altered hydrologic regimes)
- Soften or remove hard stream riparian structures (riparian modification)
- Work with road commissions on maintenance and placement of new bridges (altered hydrologic regimes, altered sediment loads)

LAW & POLICY

- Avoid stream relocations (dredging and channelization)
- If culverts are necessary, use single large capacity culverts that match bankfull width (altered hydrologic regimes, fragmentation)
- Protect the public trust by requiring dam owners to make appropriate financial provisions for future dam removal (dams)
- Reduce effluent inflow (thermal changes, Urban, municipal, and industrial pollution)
- Remove dams to rehabilitate habitat (altered hydrologic regimes, altered sediment loads, dams, fragmentation)
- Remove unnecessary or abandoned stream crossings or enclosures and dams (altered hydrologic regimes, altered sediment loads, dams, fragmentation)
- Require remaining dams to operate at run-of-the-river (altered hydrologic regimes, dams)
- Restrict dredging during spawning or migration seasons of fish and around mussel beds (dredging and channelization)
- Strengthen existing environmental laws and continue enforcement of permits controlling effluent discharge (thermal changes, Urban, municipal, and industrial pollution)
- Use sediment barriers and Best management practices during road and stream crossing constructions (altered sediment loads)
- Work with Drain Commissioners to limit amount of woody structure removed from a system (altered hydrologic regimes, altered sediment loads)
- Work with local planning and zoning to develop ordinances that include natural processes (general threats, social attitudes)

EDUCATION & AWARENESS

- Create awareness of environmental issues (social attitudes)
- Educate legislators, local planning boards, and other policy makers on the importance of natural processes (social attitudes)
- Educate private landowners on the value of riparian areas (riparian modification, social attitudes)
- Educate the public on prevention and control of aquatic invasive species and the affects of invasives (invasive plants and animals, social attitudes)
- Work with conservation groups to emphasize the value of riparian areas and woody structure in streams (social attitudes)

Research and Survey Needs

- Determine effective prevention, control, and survey techniques for aquatic invasive species (biological, mechanical, chemical, etc.)
- Determine affects of aquatic invasive species on native communities
- Establish effective methods of communication with the public about stewardship
- Investigate life history strategies of SGCN where this information is lacking
- Survey loadings of nutrients and sediments to streams and develop strategies to reduce problems
- Update dam inventory and determine those dams which are no longer used or useful

Monitoring

- Aquatic invasive species
- Dam operations
- Effluent discharges: waste water treatment plants, septic systems, industrial
- Indicator species
- Riparian modification
- Stream modification