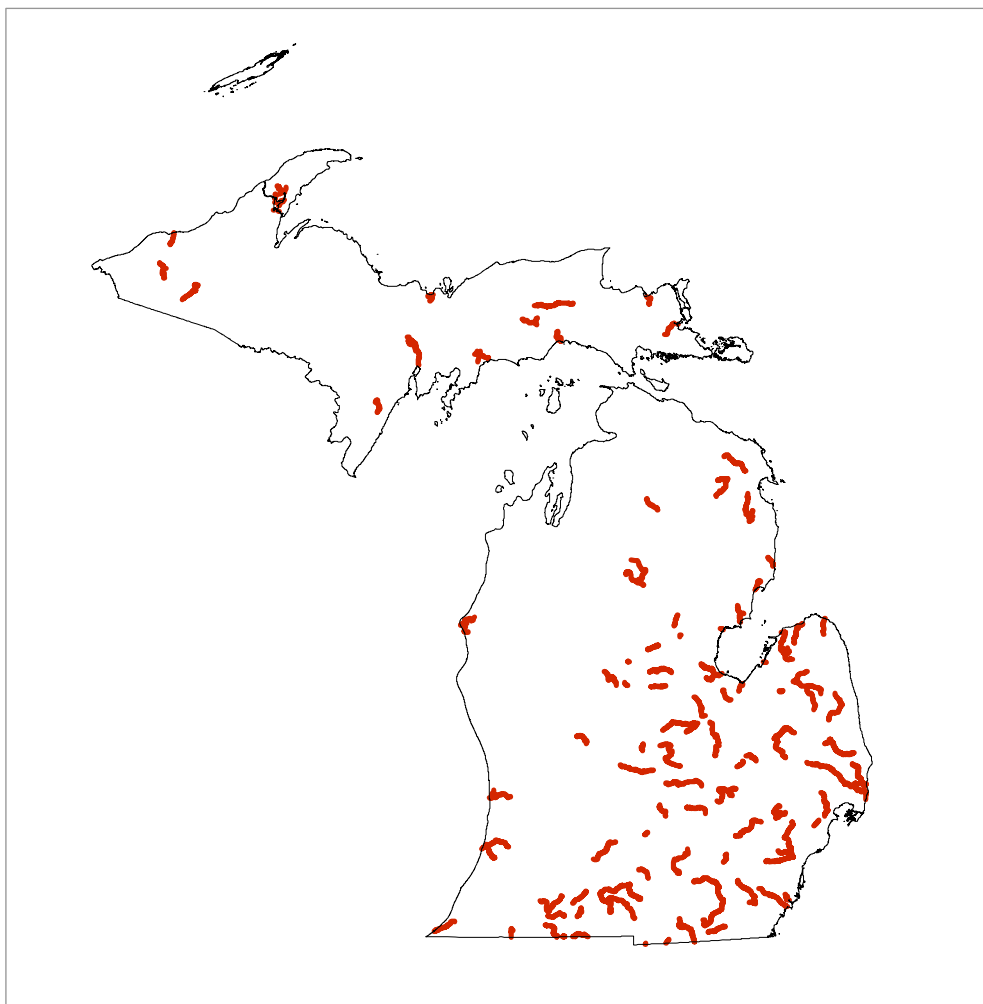


Warm Small River

A Brief Ecological Description of this Michigan River Type

Warm Small River segments are defined (by the Michigan Department of Natural Resources, Fisheries Division) as typically having drainage areas between 80 mi² and 300 mi² and warm July mean water temperatures greater than 69.8°F. **Warm Small Rivers** occur where **Warm Stream** or **Warm-transitional Stream** headwaters grow to a river size where temperatures are warm and fairly diurnally stable. **Warm Small Rivers** occur in landscapes of fine textured, silt/clay geologies and flat topography, where groundwater deliveries to stream channels are minimal; and are most common in southeastern Michigan.

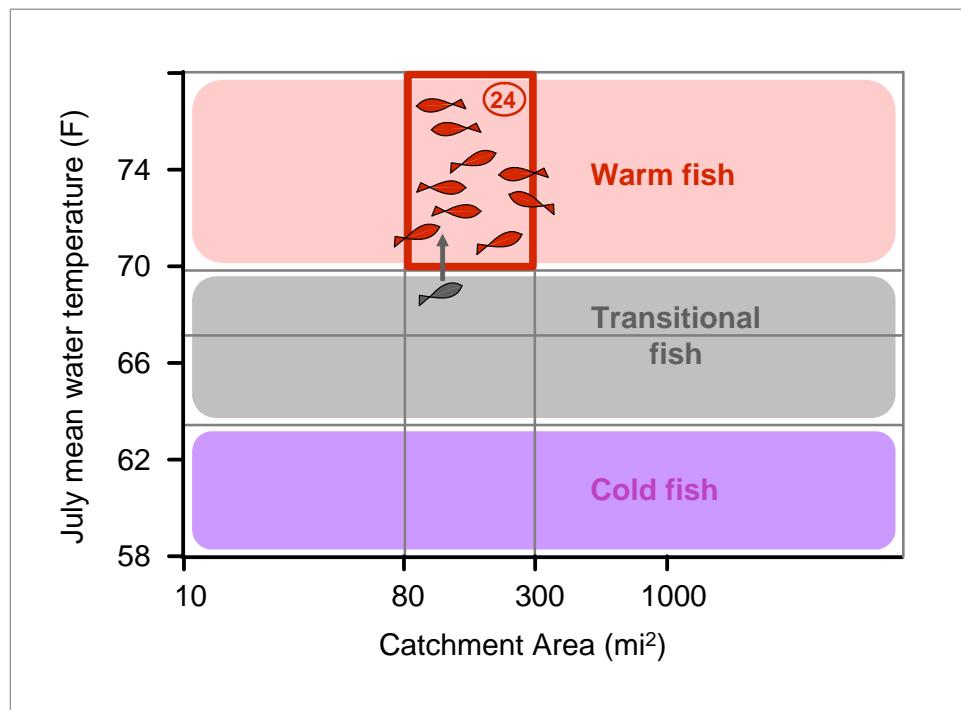
Figure 1. Geographic distribution of **Warm Small River** segments in Michigan.



Fish Species of Warm Small Rivers

The typical summer fish assemblage of a Michigan **Warm Small River** includes 20–28 fish species adapted to warm temperatures (chubs, shiners, minnows, suckers, bullheads, madtoms, pikes, darters, and sunfishes) and transitional temperatures (suckers and bullheads).

Figure 2. Michigan's **Warm Small Rivers** type highlighted (**red box**) on the environmental gradients of river segment catchment area and July mean water temperature. The typical number of characteristic fish species for this river type is shown **circled in red**. And the proportional makeup of the expected fish assemblage for this river type is shown by the number of colored fish icons representing each of three thermal preference zones.



Photos of some fish species characteristic of Michigan's **Warm Small Rivers**. Warm fishes are **red font**; thermally transitional fishes are **gray font**.



longear sunfish (www.fishbase.org)



rock bass (www.wiscfish.org)



northern pike (K. Schmidt MN DNR)



bluntnose minnow (www.nativefish.org)



common shiner (www.gwsphotos.com)



hornyhead chub (www.wiscfish.org)



rainbow darter (OH DNR)



blackside darter (K. Schmidt MN DNR)



grass pickerel (www.wiscfish.org)



white sucker (www.gwsphotos.com)

Fish species characteristic of Michigan's **Warm Small Rivers**. This is a generalized, potential species list for an "average" river site; samples from any specific site are expected to be a variable subset of this list. Fish species are listed in descending order of their preferred mean July temperature, based on Michigan river surveys (Zorn et al. In press). Warm fishes are **red font**; thermally transitional fishes are gray font.

Spotfin shiner
Mimic shiner
Golden redhorse
Smallmouth bass
Black redhorse
Northern hog sucker
Brown bullhead
Stonecat
Longear sunfish
Rock bass
Greenside darter
Tadpole madtom
Logperch
Northern pike
Bluntnose minnow
Common shiner
Hornyhead chub
Green sunfish
Rainbow darter
Blackside darter
Grass pickerel
White sucker
Black bullhead
Johnny darter

Literature on Michigan River and Stream Fish Assemblages and their Relationship to Summer Water Temperatures

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