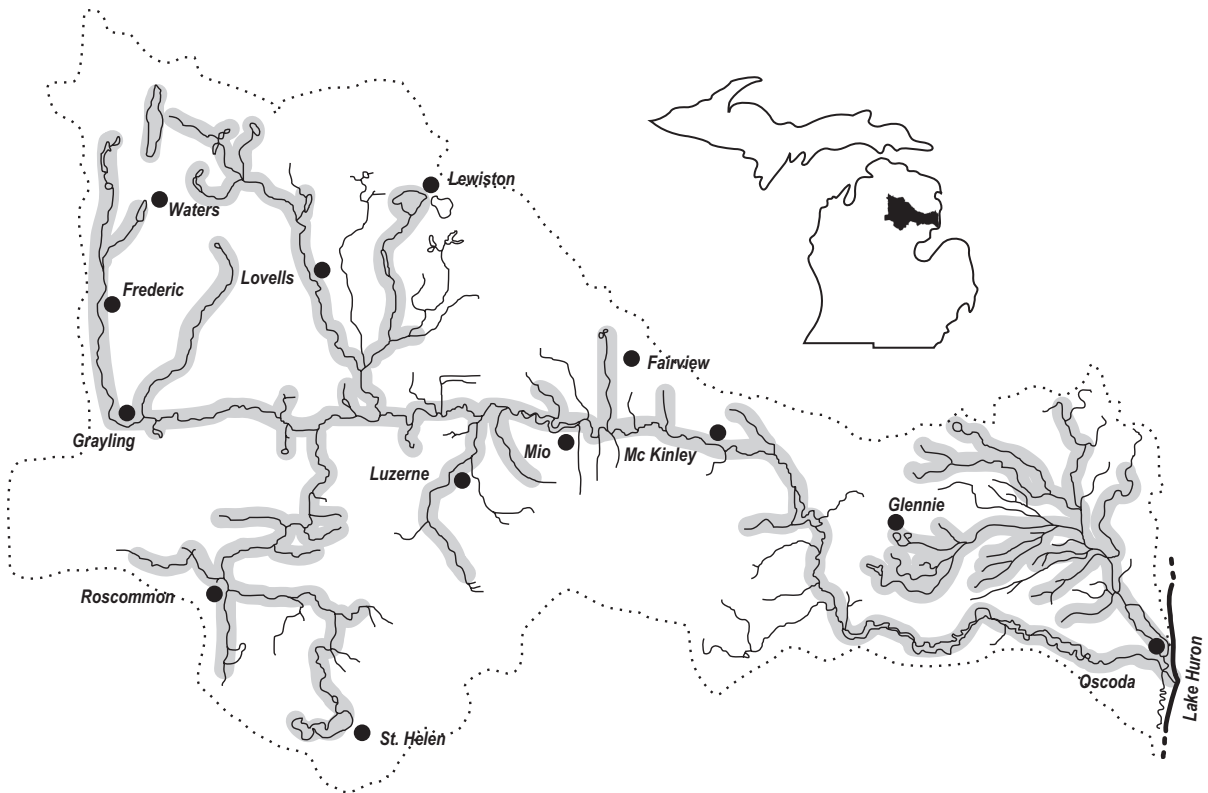


**Central mudminnow (*Umbra limi*)**

**Habitat:**

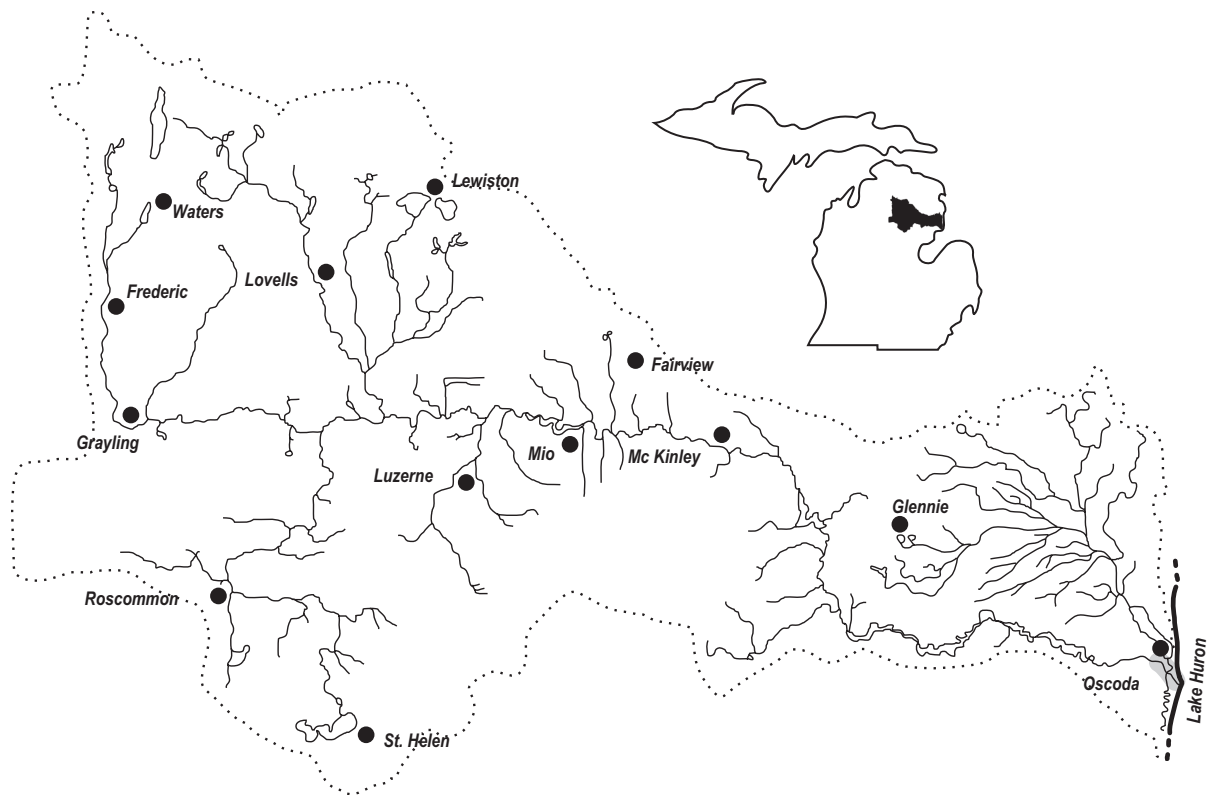
- feeding - undisturbed clear, low-gradient streams or rivers and lakes and impoundments
- organic debris, muck, or peat substrates
- aquatic vegetation
  
- spawning - floodplain areas, on vegetation



**Rainbow smelt (*Osmerus mordax*)**

**Habitat:**

- feeding - young: close inshore lake habitat along sand and gravel beaches
- cold water
  
- spawning - clear high-gradient streams or wave swept shoreline
- riffles with coarse sand or gravel substrate
  
- winter refuge - midwaters of lakes or inshore coastal waters



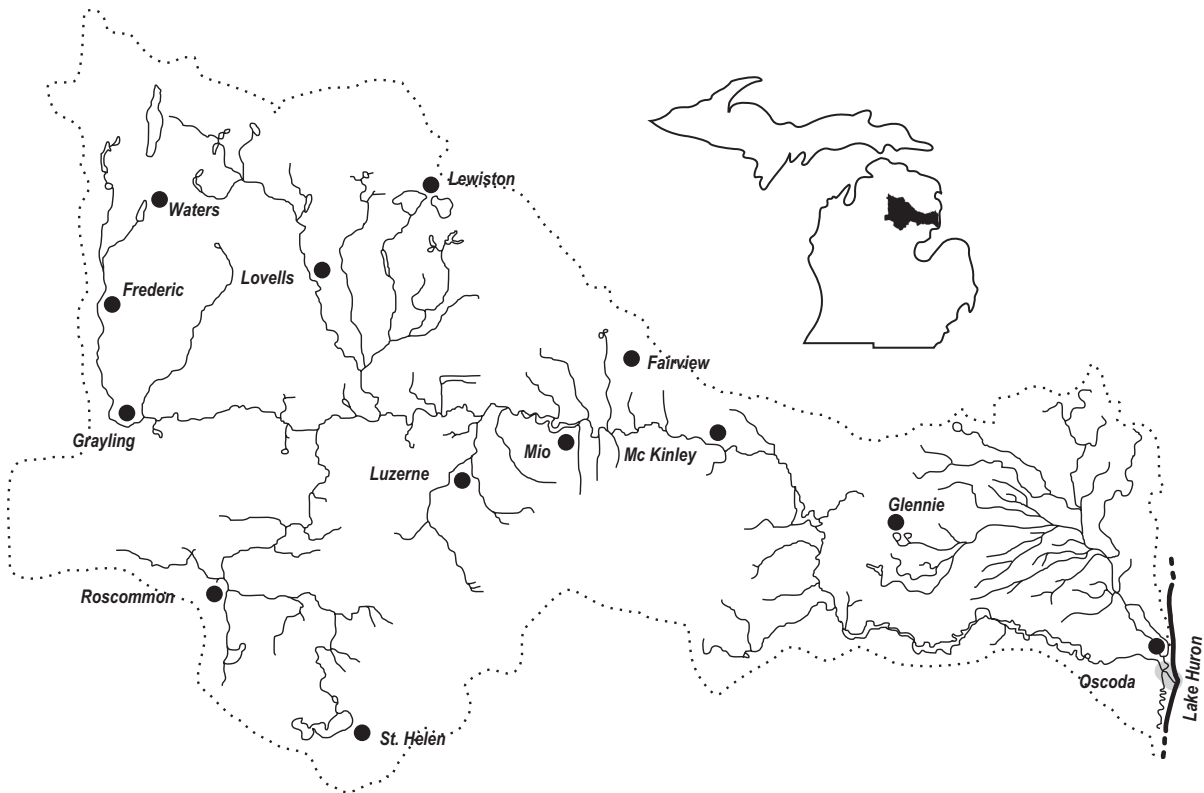
**Lake whitefish (*Coregonus dupeaformis*)**

**Habitat:**

feeding - cold deep lakes; Lake Huron

spawning - shallow water (<25 feet)

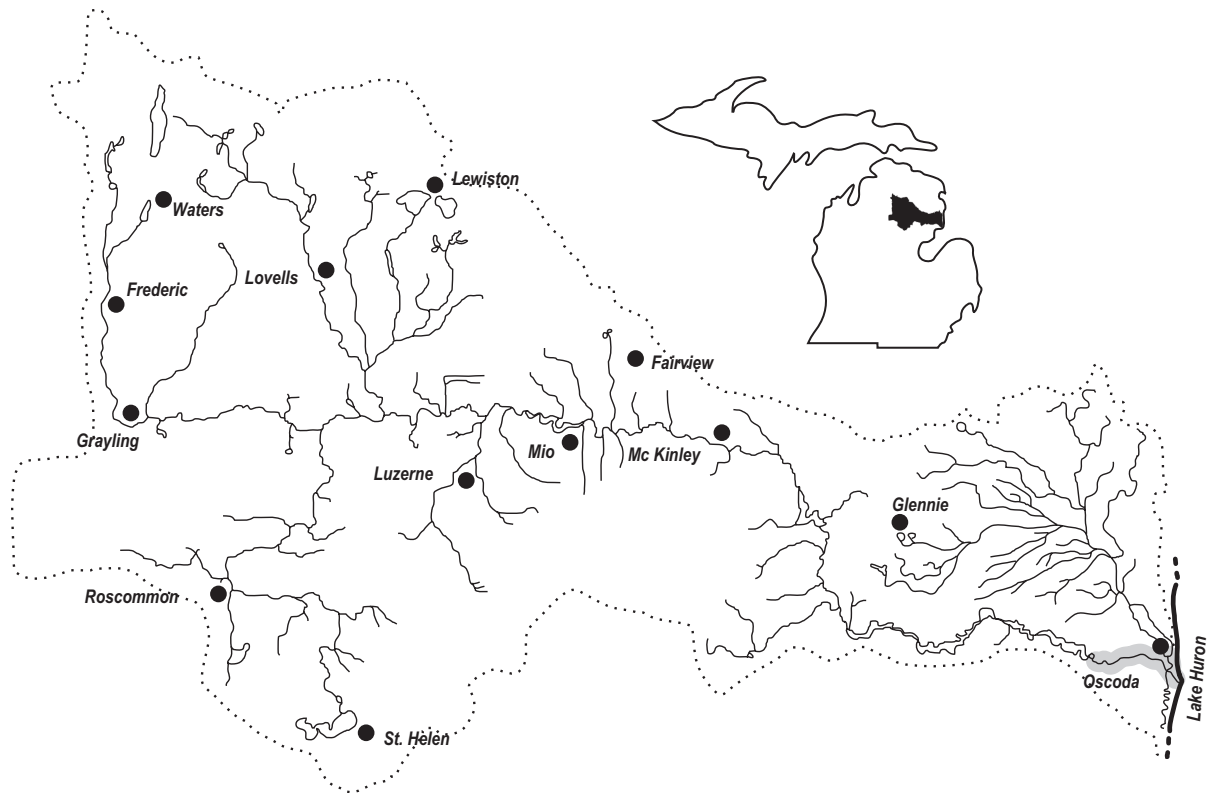
- hard or stony substrate



**Pink salmon (*Oncorhynchus gorbuscha*)**

**Habitat:**

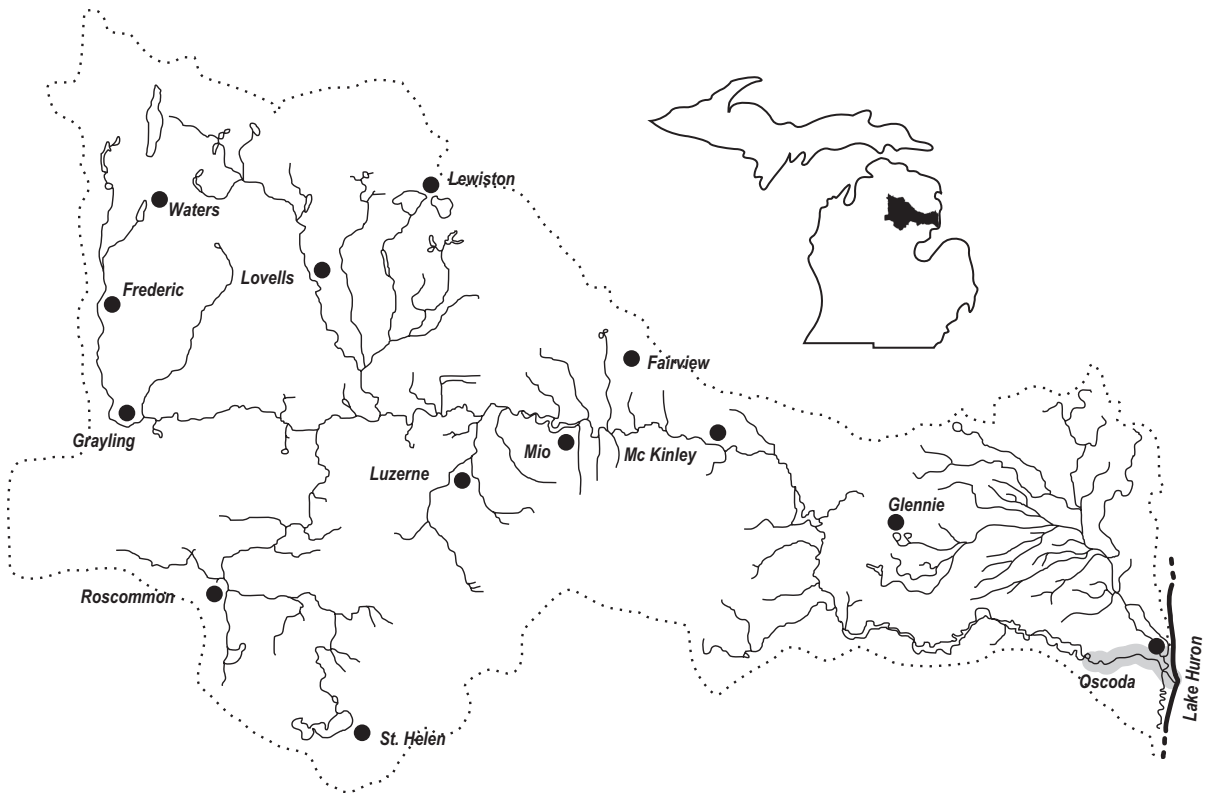
- feeding - large cold deep lakes - Lake Huron
- spawning - gravel substrate in rivers
  - female prepares and guards nest until death



**Coho salmon** (*Oncorhynchus kisutch*)

**Habitat:**

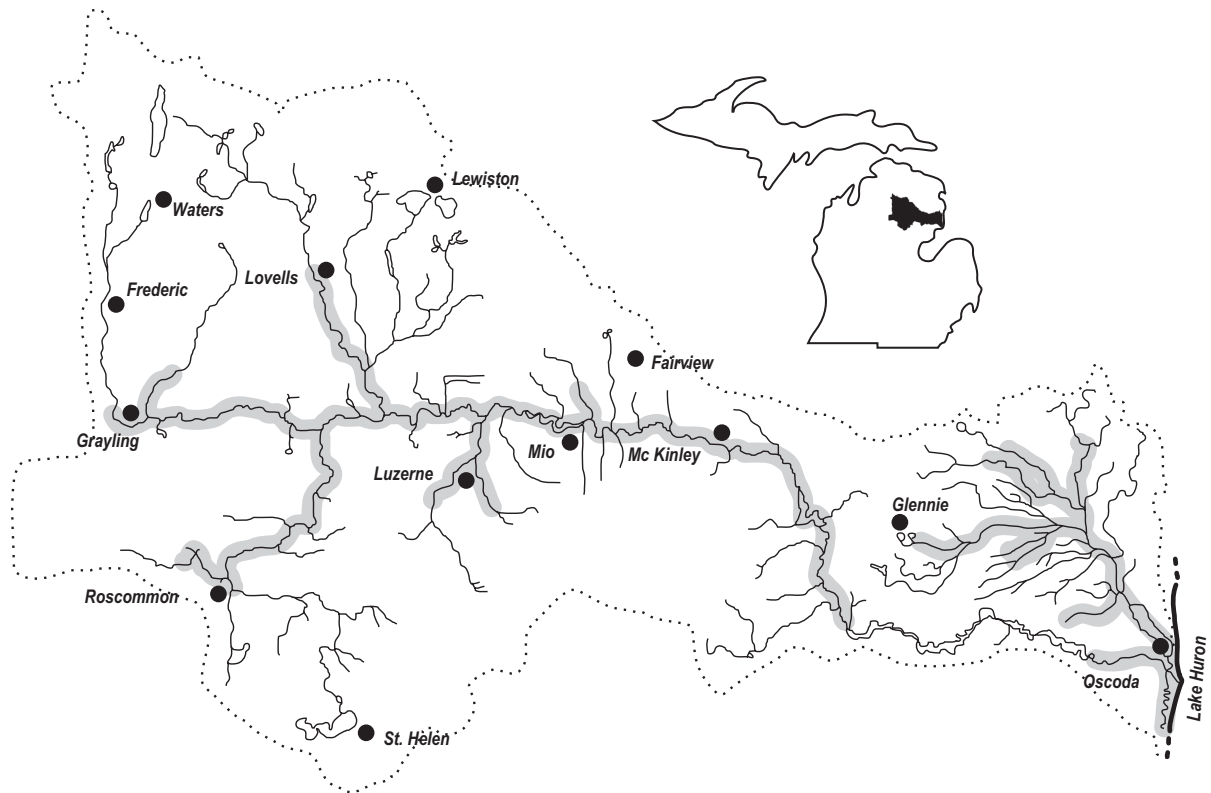
- feeding - adults: Lake Huron
- young: shallow gravel substrate in cold streams, later into pools
  
- spawning - cold streams and rivers
- swifter water of shallow gravelly substrate



**Rainbow trout (*Oncorhynchus mykiss*)**

**Habitat:**

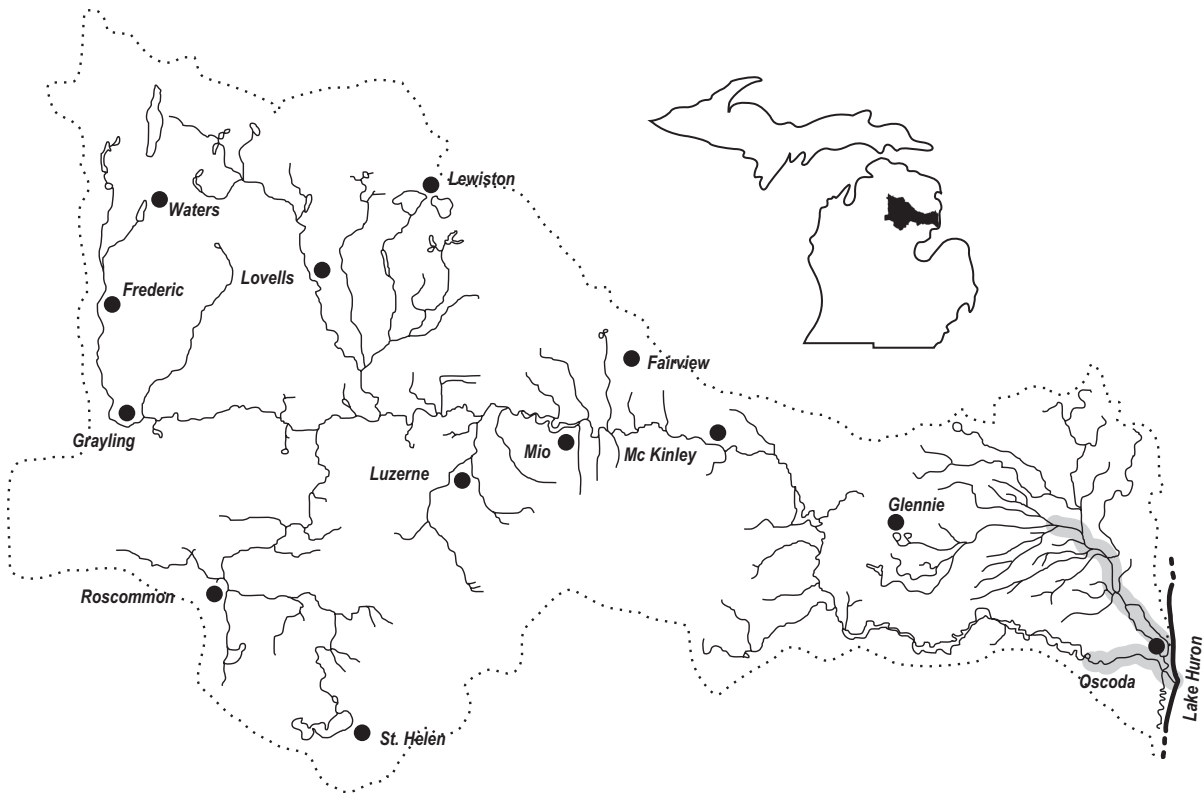
- feeding - cold clear water of rivers and Lake Huron
- moderate current
  
- spawning - gravelly riffles above a pool
- smaller tributaries



**Chinook salmon (*Oncorhynchus tshawyscha*)**

**Habitat:**

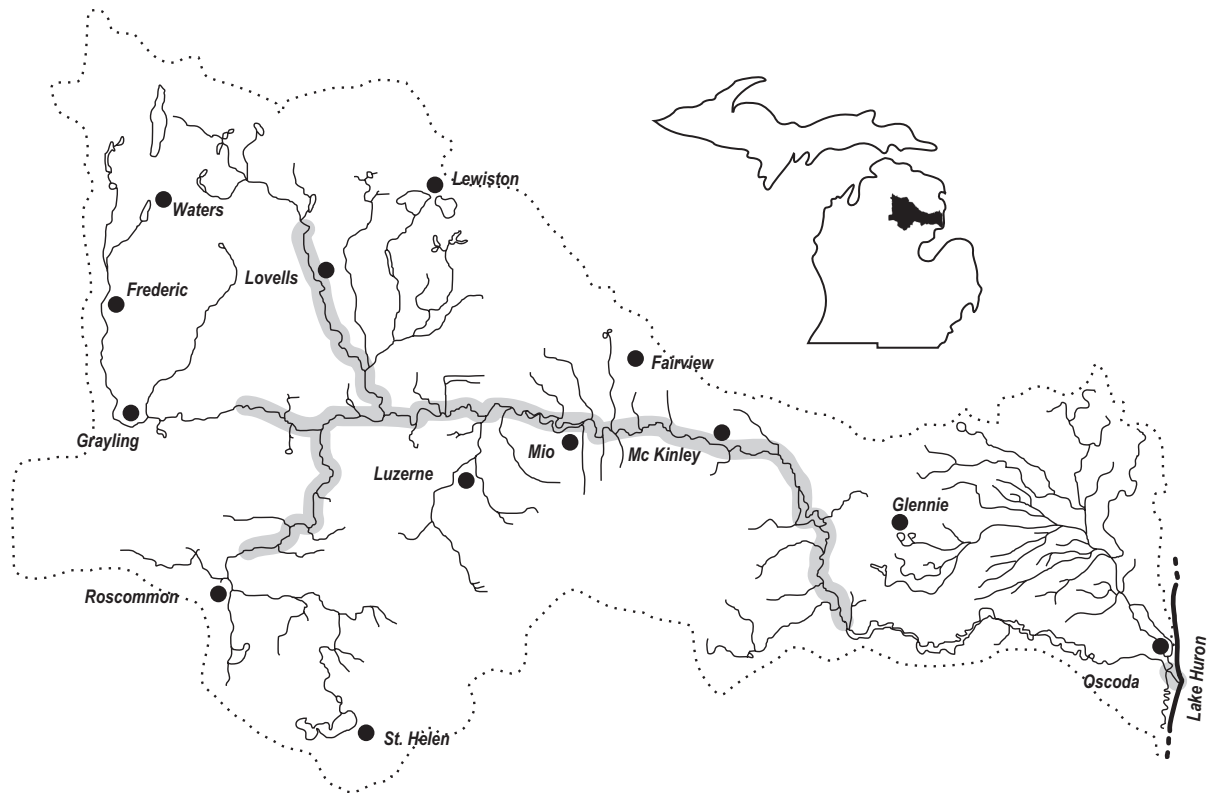
- feeding - adults: Lake Huron
- young: shallow gravel substrate in cool streams, later into pools
  
- spawning - gravelly substrate in cool streams



**Round whitefish** (*Prosopium cylindraceum*)

**Habitat:**

- feeding - lakes, rivers, and streams
- spawning - shallows of lakes and rivers
  - gravel or rock substrate

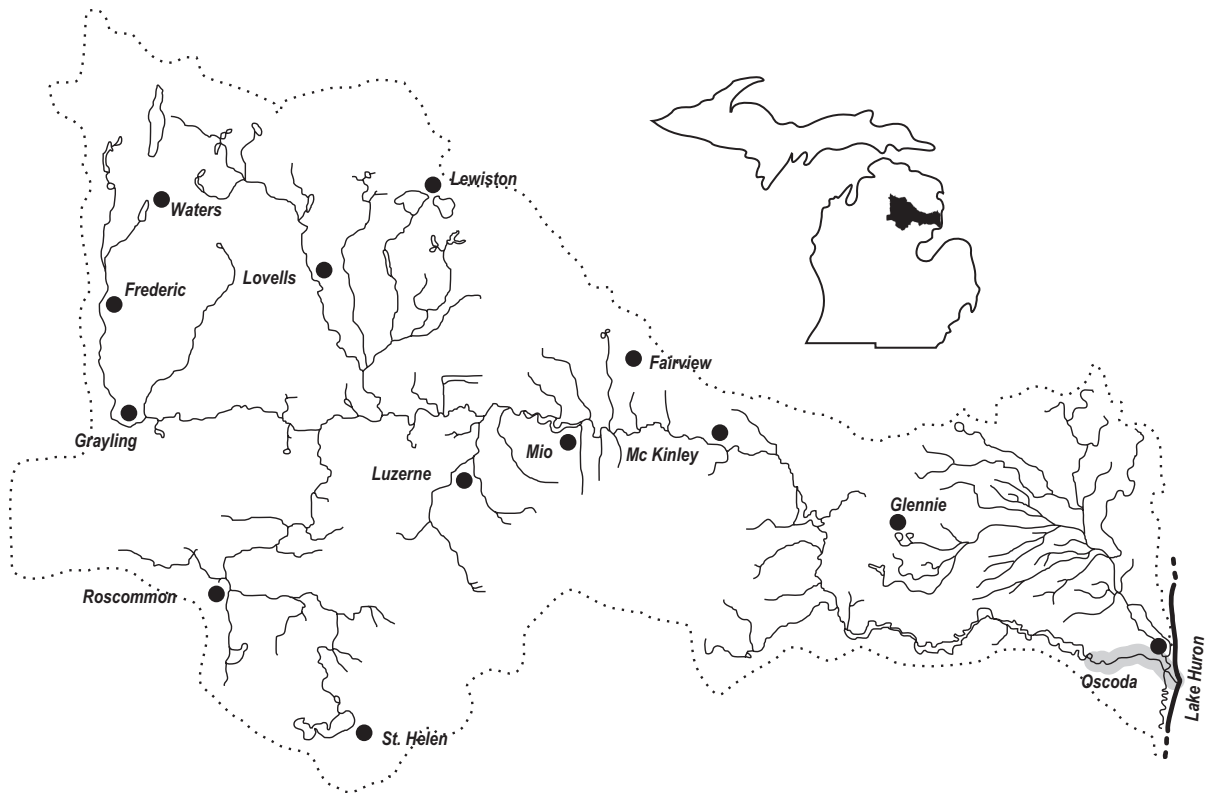




**Atlantic salmon (*Salmo salar*)**

**Habitat:**

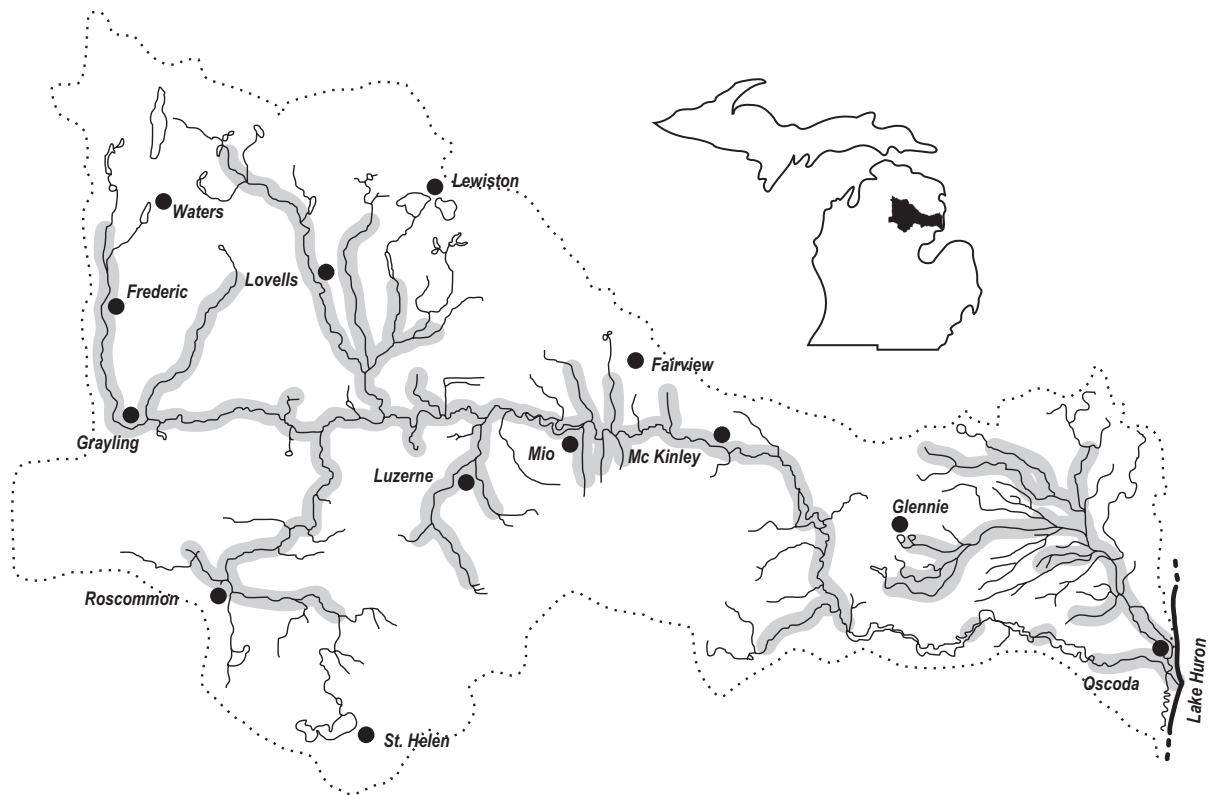
- feeding - young: gravel substrate streams
- adults: Lake Huron
  
- spawning - streams and rivers
- nests in gravel substrate
- swift current



**Brown trout (*Salmo trutta*)**

**Habitat:**

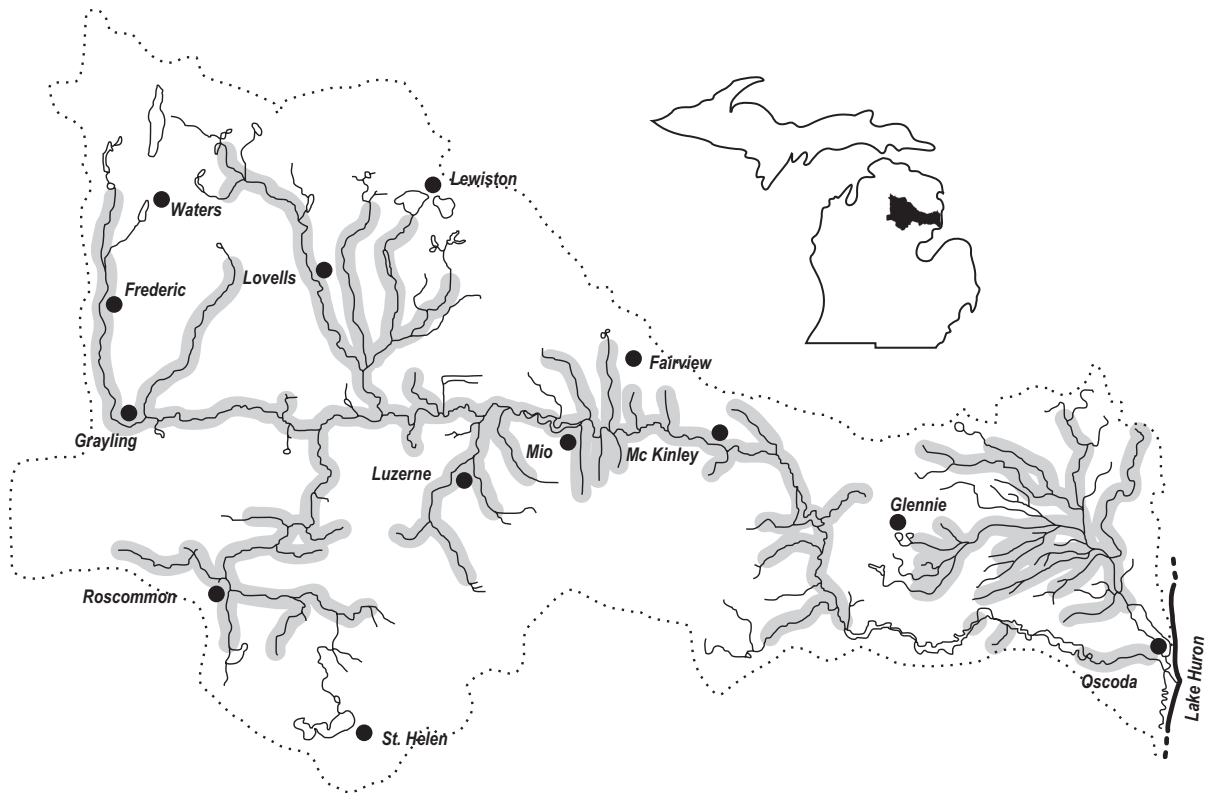
- feeding - cold, clear streams, rivers, and lakes (not >70°F)
  - medium to swift current in streams
  - does not tolerate silt well
  - prefers few individuals and species around
  - abundance of aquatic and land insects
- spawning - gravelly riffles; shallow headwater areas



**Brook trout (*Salvelinus fontinalis*)**

**Habitat:**

- feeding - cold, clear streams, rivers, and lakes (not >65°F)
- low current
- well oxygenated water
  
- spawning - gravelly riffles; shallow or headwater streams

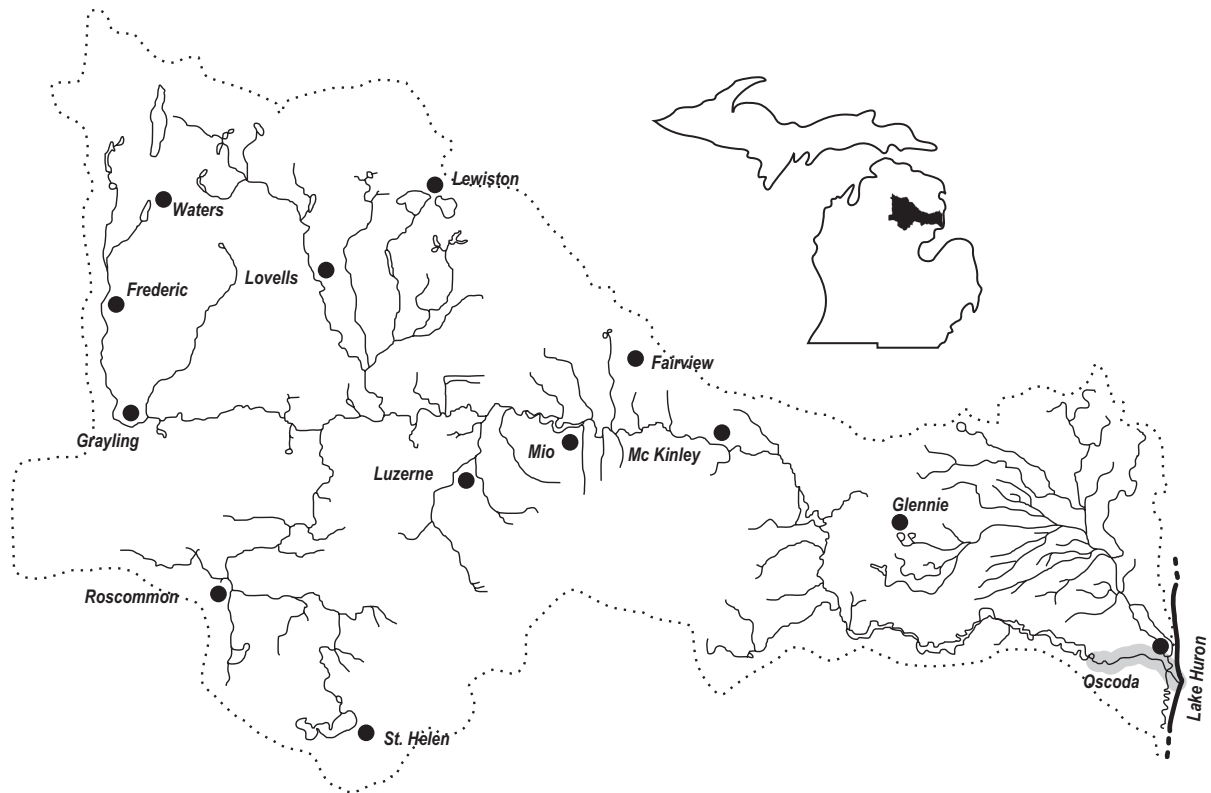


**Lake trout** (*Salvelinus namaycush*)

**Habitat:**

feeding - cold lakes and rivers

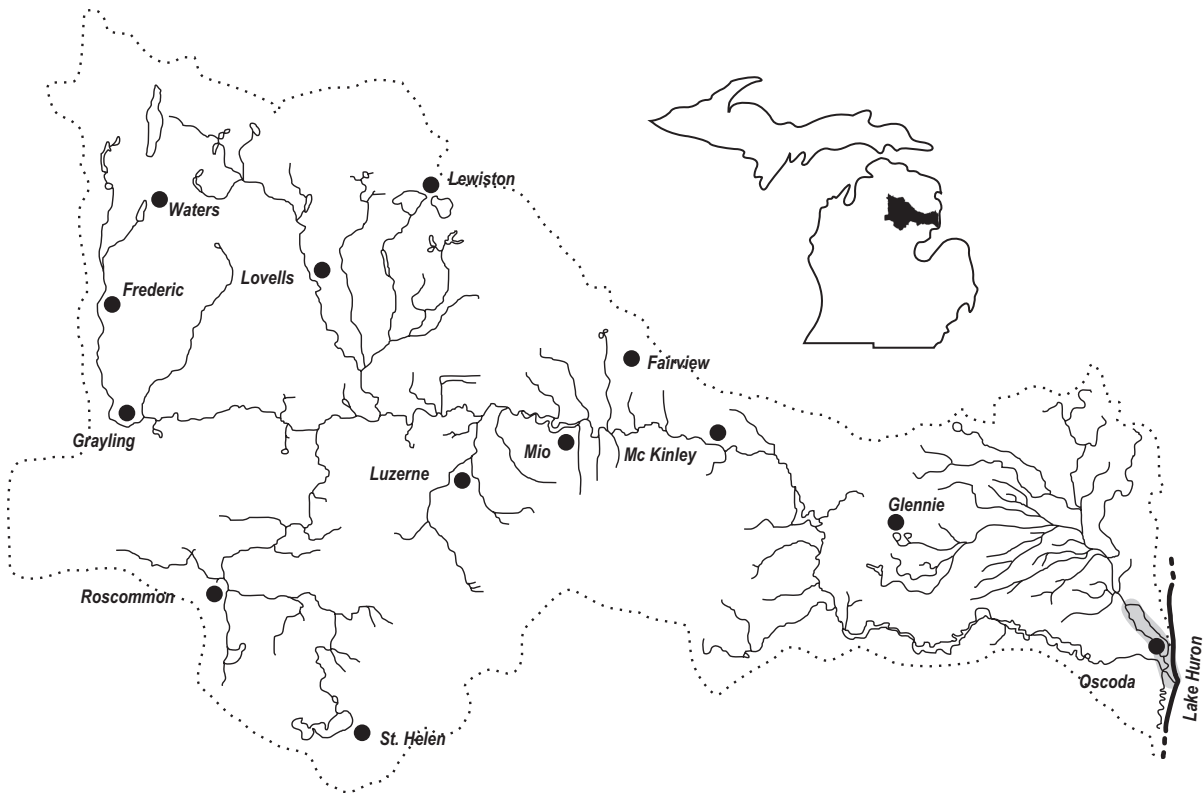
spawning - large boulder or rubble substrate  
- shallow water of lakes and rivers



**Trout-perch (*Percopsis omiscomaycus*)**

**Habitat:**

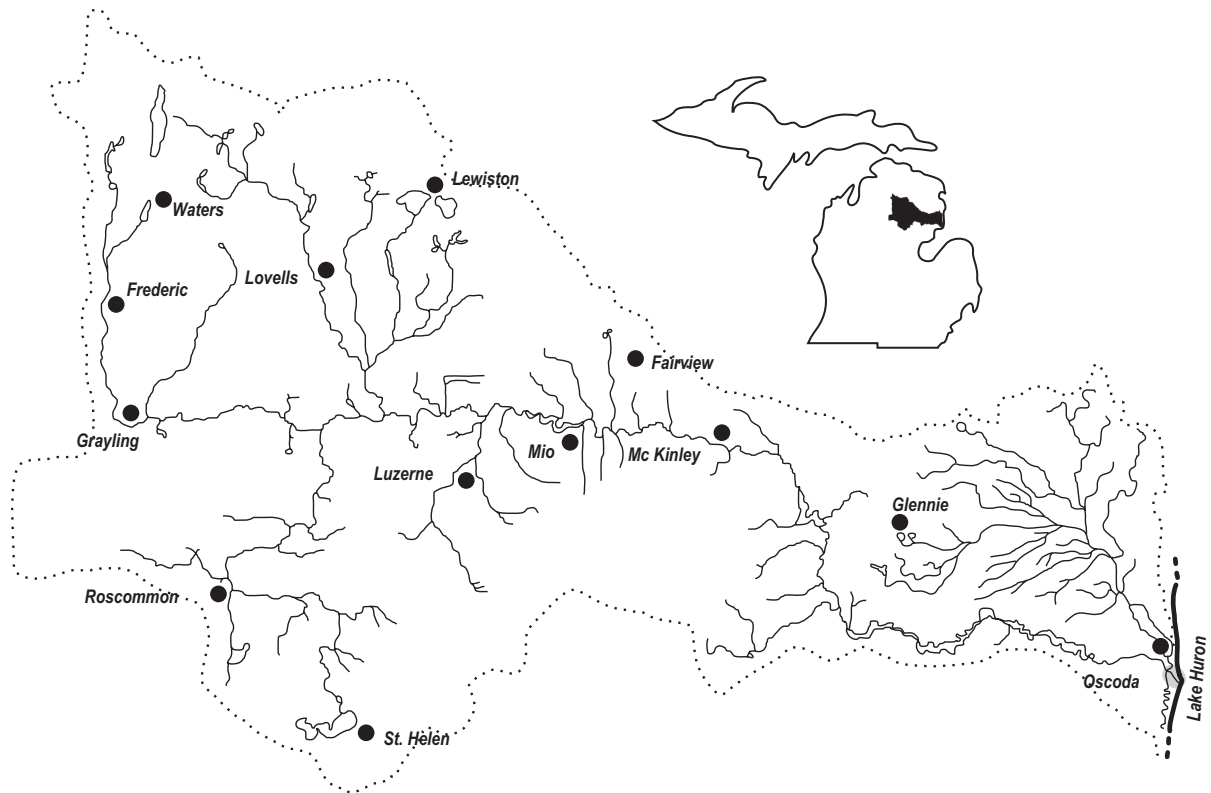
- feeding - clean sand or fine gravel substrate
- long deep pools in low gradient streams and Lake Huron
- highly intolerant of clayey silts
- avoids rooted aquatic vegetation
  
- spawning - over rocks in shallows
- over sand and gravel substrates in Lake Huron



**Burbot** (*Lota lota*)

**Habitat:**

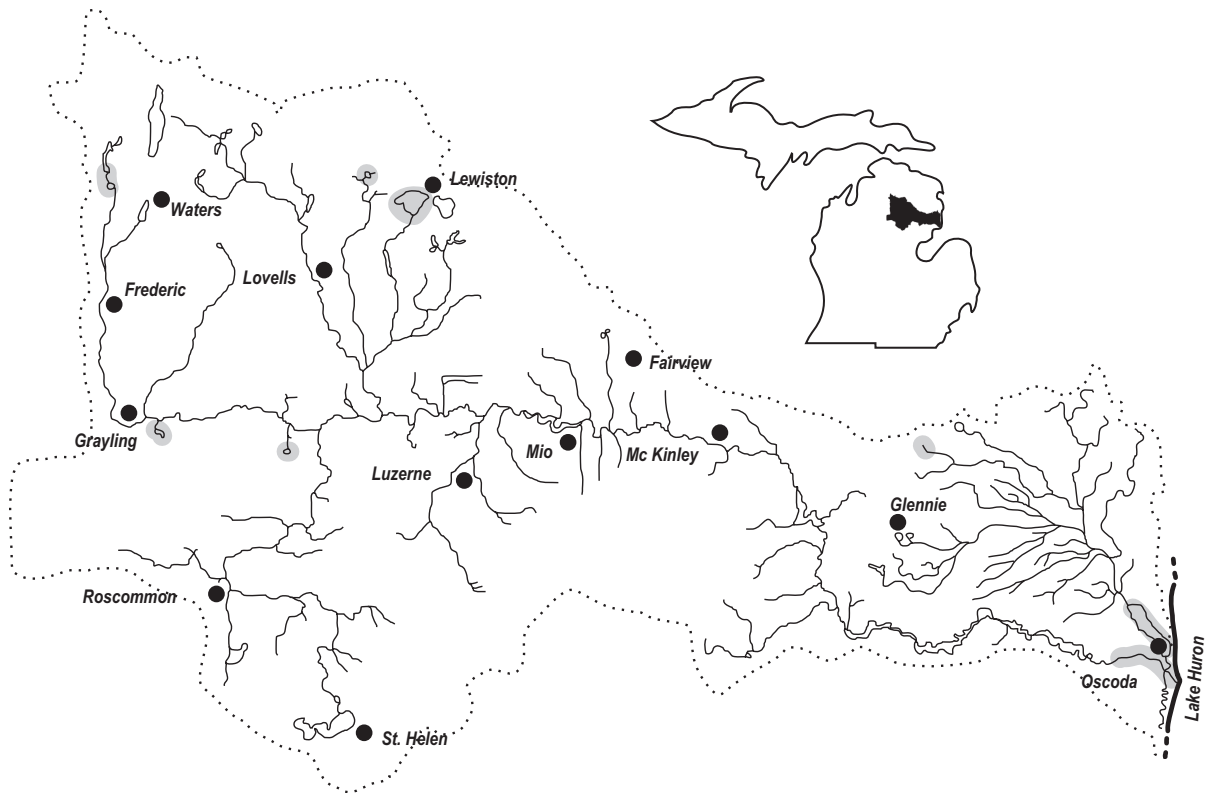
- feeding - cool rivers and lakes
- post-spawning movement into tributaries
- all substrates
  
- spawning - shallow areas of lakes and rivers
- sand or gravel substrate



**Banded killifish (*Fundulus diaphanus*)**

**Habitat:**

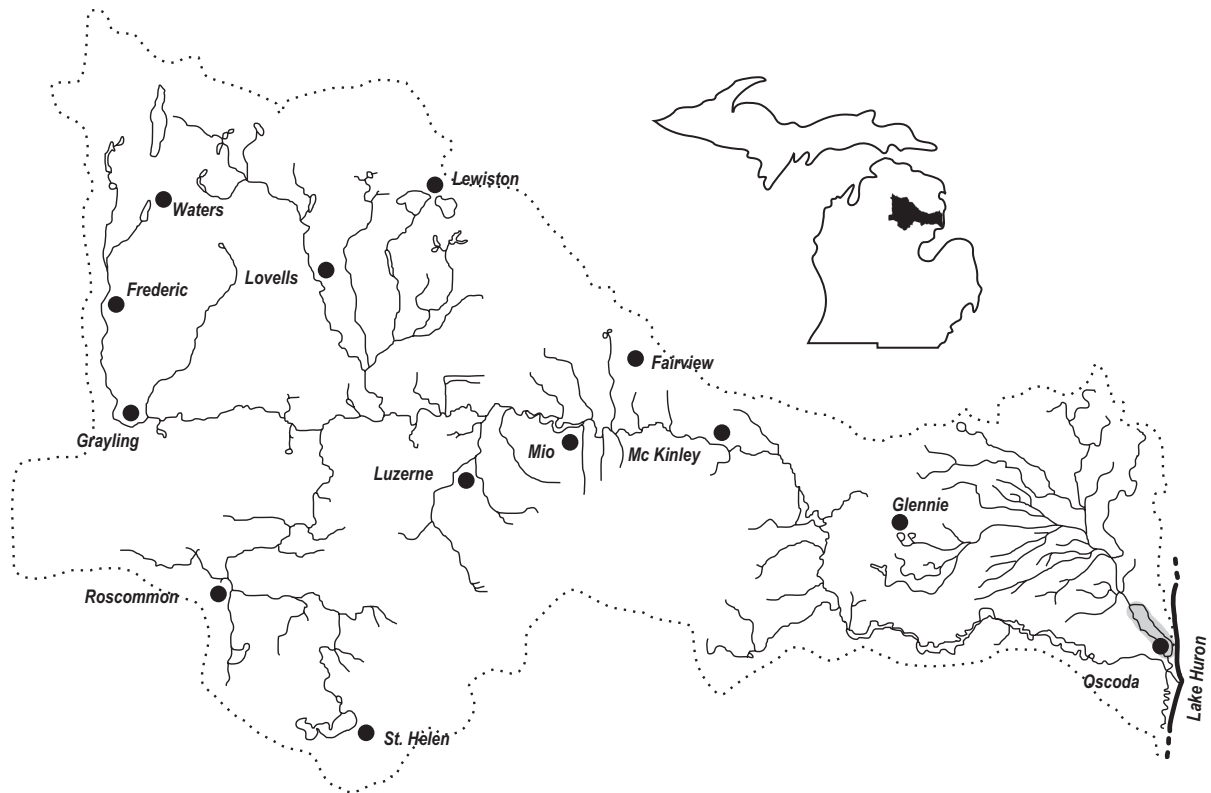
- feeding - quiet backwaters at the mouths of streams and lakes
  - substrate of sand, gravel, and a few boulders
  - also found over detritus substrate where patches of submerged aquatic vegetation are present
- spawning - quiet areas of weedy pools



**Brook silverside** (*Labidesthes sicculus*)

**Habitat:**

- feeding - clear, warm pools in streams and rivers; also lakes
  - does not tolerate turbidity
  - most frequently at surface
- 
- spawning - in and around aquatic vegetation or over gravel substrate with a moderate current

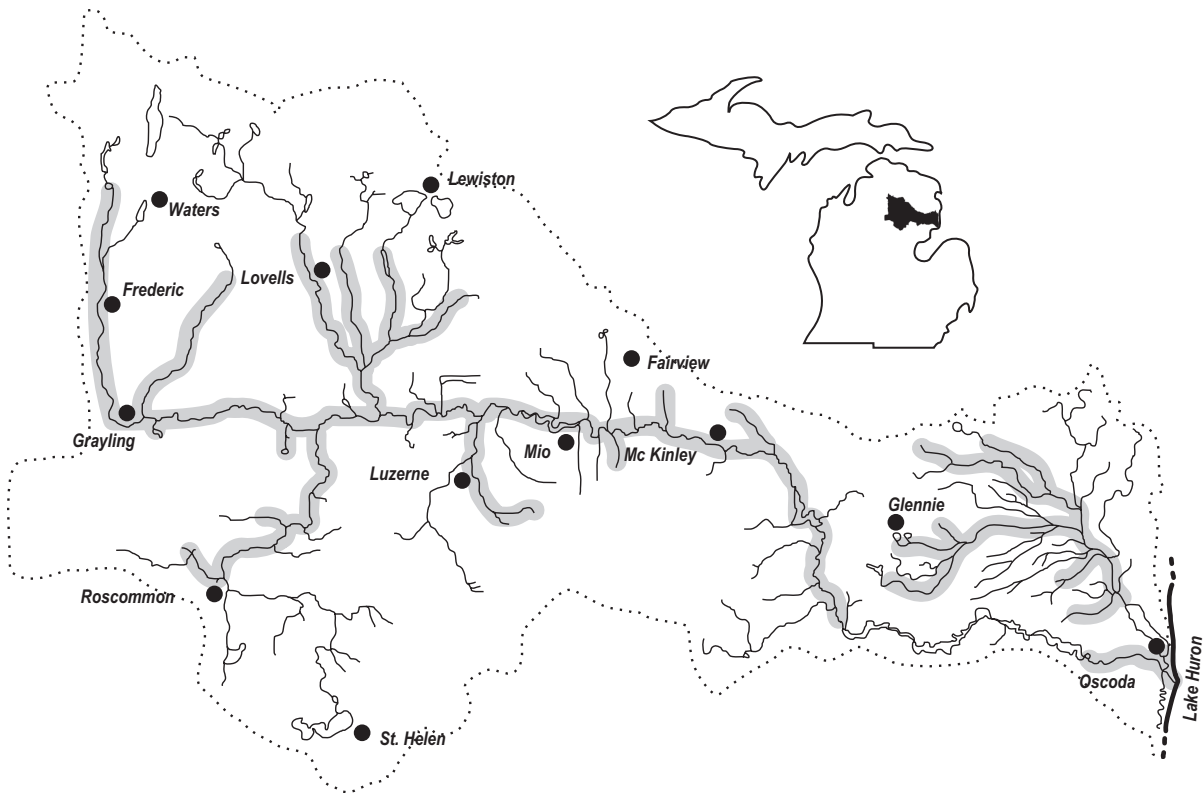




**Brook stickleback (*Clupea inconstans*)**

**Habitat:**

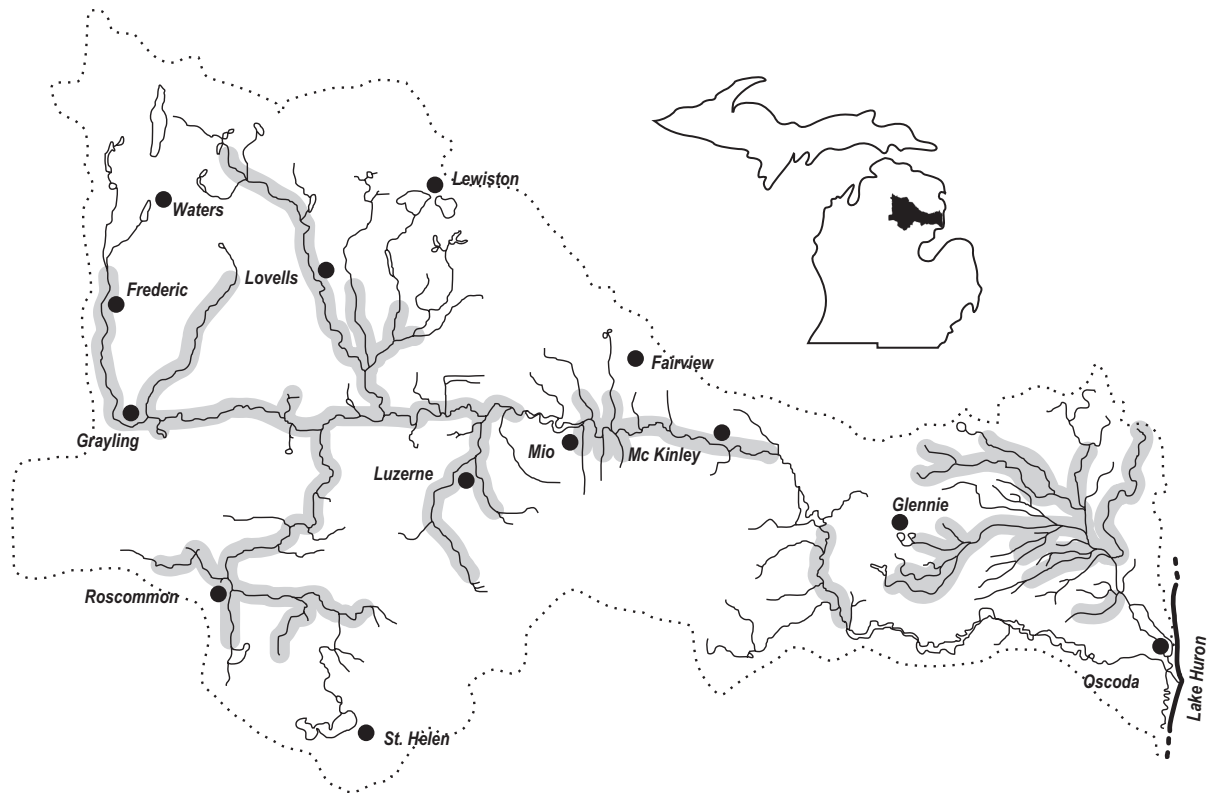
- feeding - clear, cold, densely vegetated streams, and swampy margins of lakes
- low gradient
- muck, peat, or marl substrate
- not tolerant of turbidity
  
- spawning - shallow cool (<66°F) water
- aquatic reeds or grasses necessary



**Mottled sculpin** (*Cottus bairdi*)

**Habitat:**

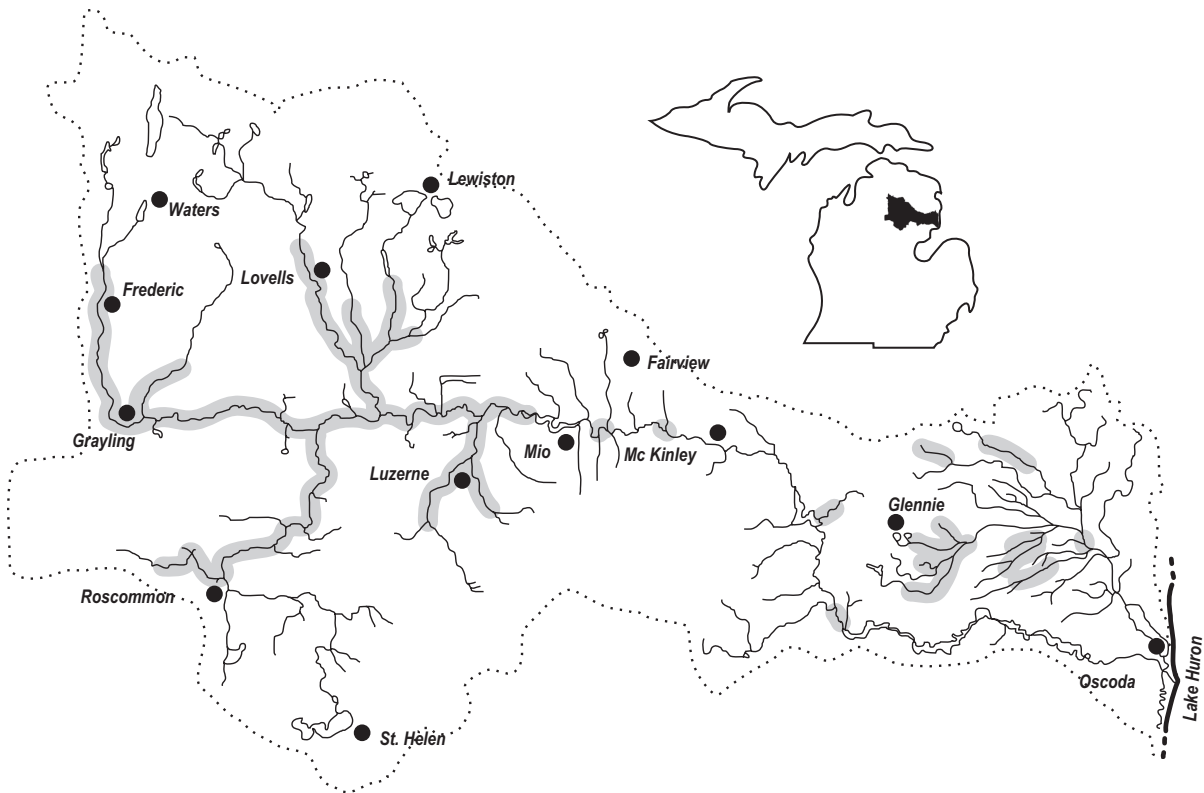
- feeding - cool to cold streams
- riffle and rock substrates preferred
- clear to slightly turbid shallow water
  
- spawning - nests under logs or rock



**Slimy sculpin (*Cottus cognatus*)**

**Habitat:**

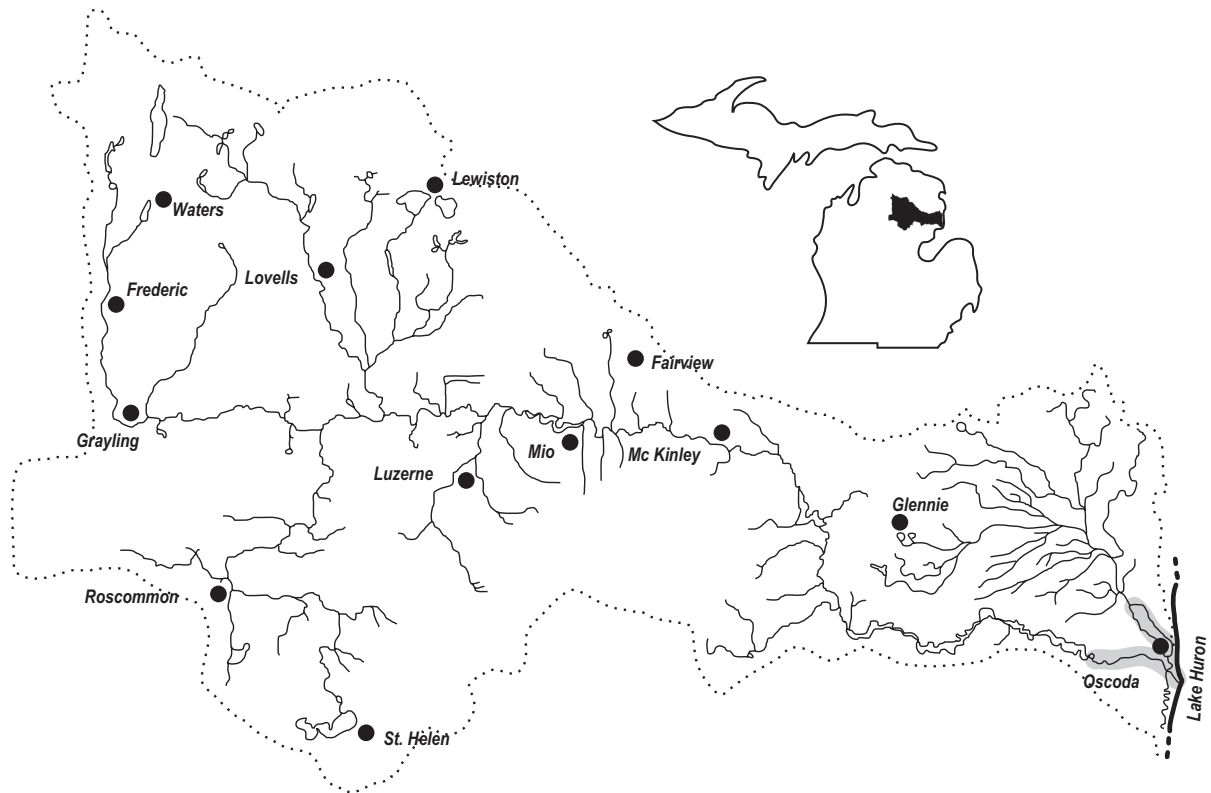
- feeding - cool lakes, impoundments, rivers, and streams
- gravel or rock substrate
  
- spawning - nest in shallow areas of lakes
- gravel substrate or rock ledge
- male parental care



**White bass** (*Morone chrysops*)

**Habitat:**

- feeding - large lakes, impoundments, and Lake Huron
- clear water of 30 feet or less depth
- firm substrate
  
- spawning - tributary streams or shallow water of lakes
- over firm substrate



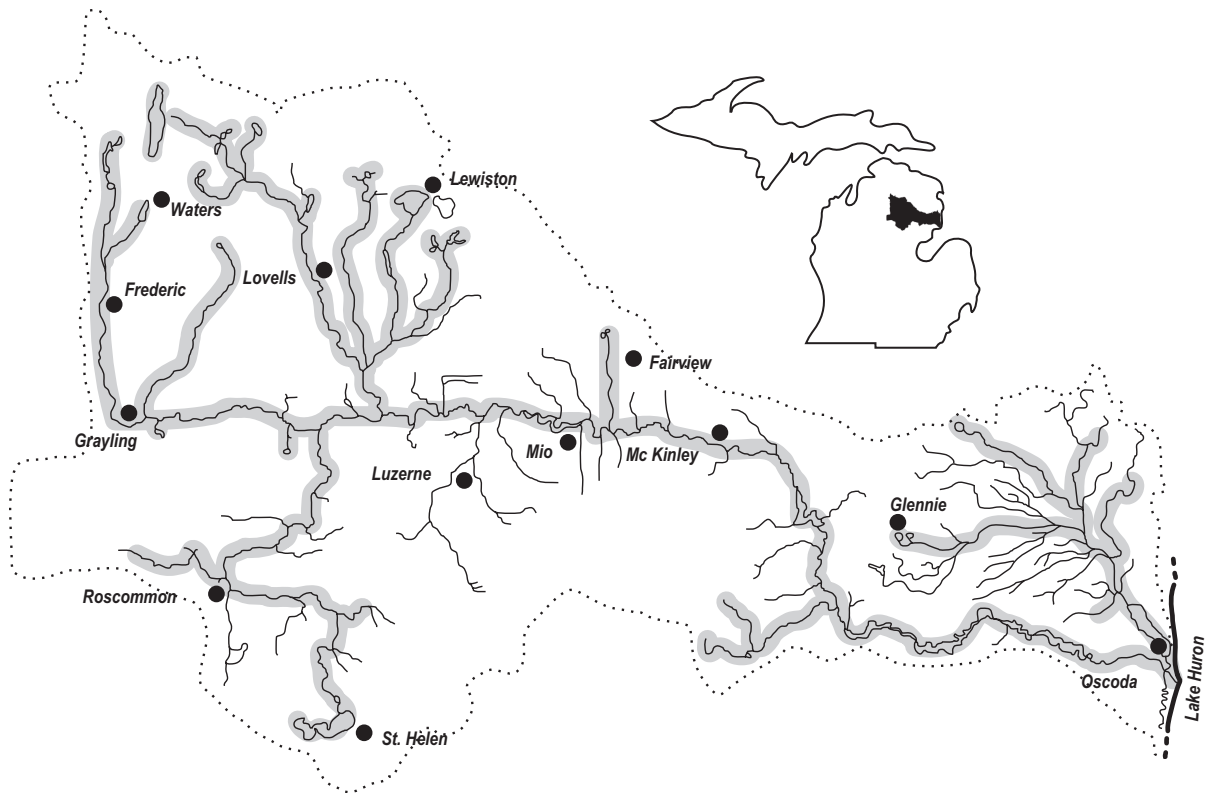
**Rock bass (*Ambloplites rupestris*)**

**Habitat:**

- feeding - clear, cool streams, rivers, and lakes
- rocky to sand substrate
- woody or vegetative cover

- spawning - sand or gravel nests
- shallow water

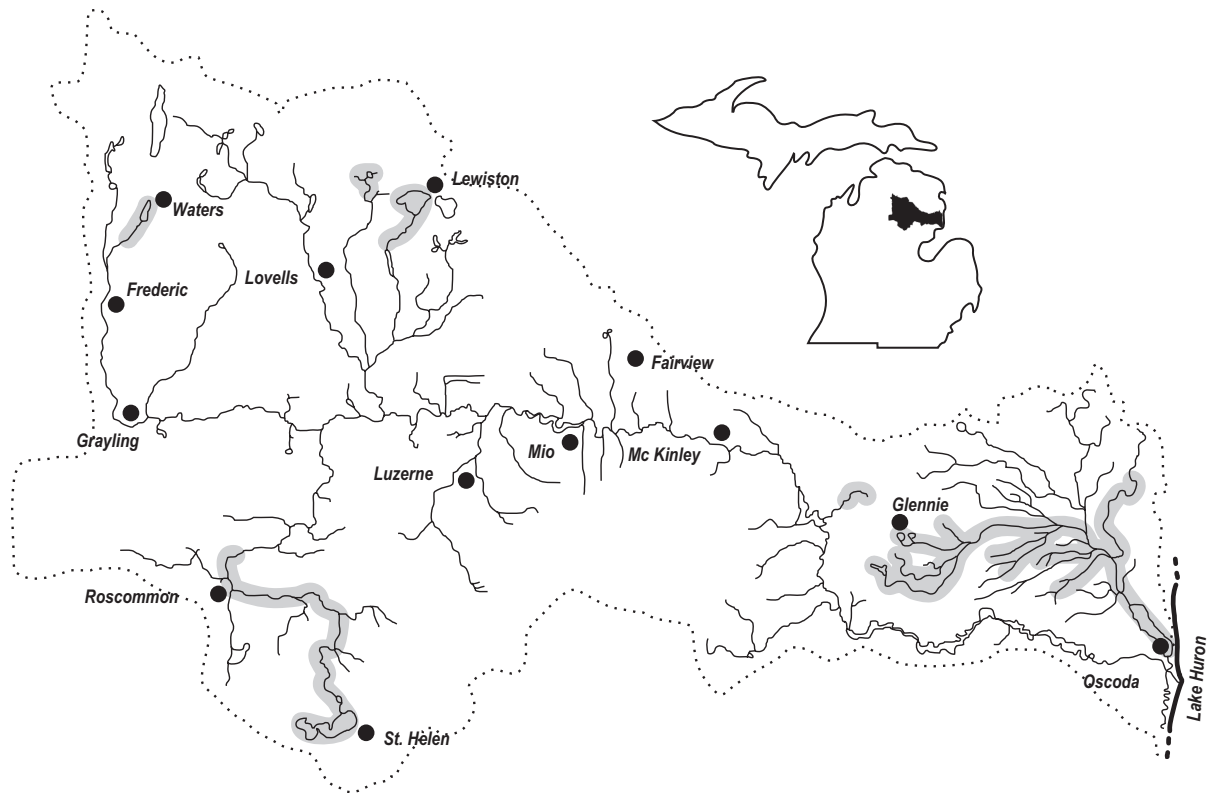
- winter refuge - deep water



**Green sunfish (*Lepomis cyanellus*)**

**Habitat:**

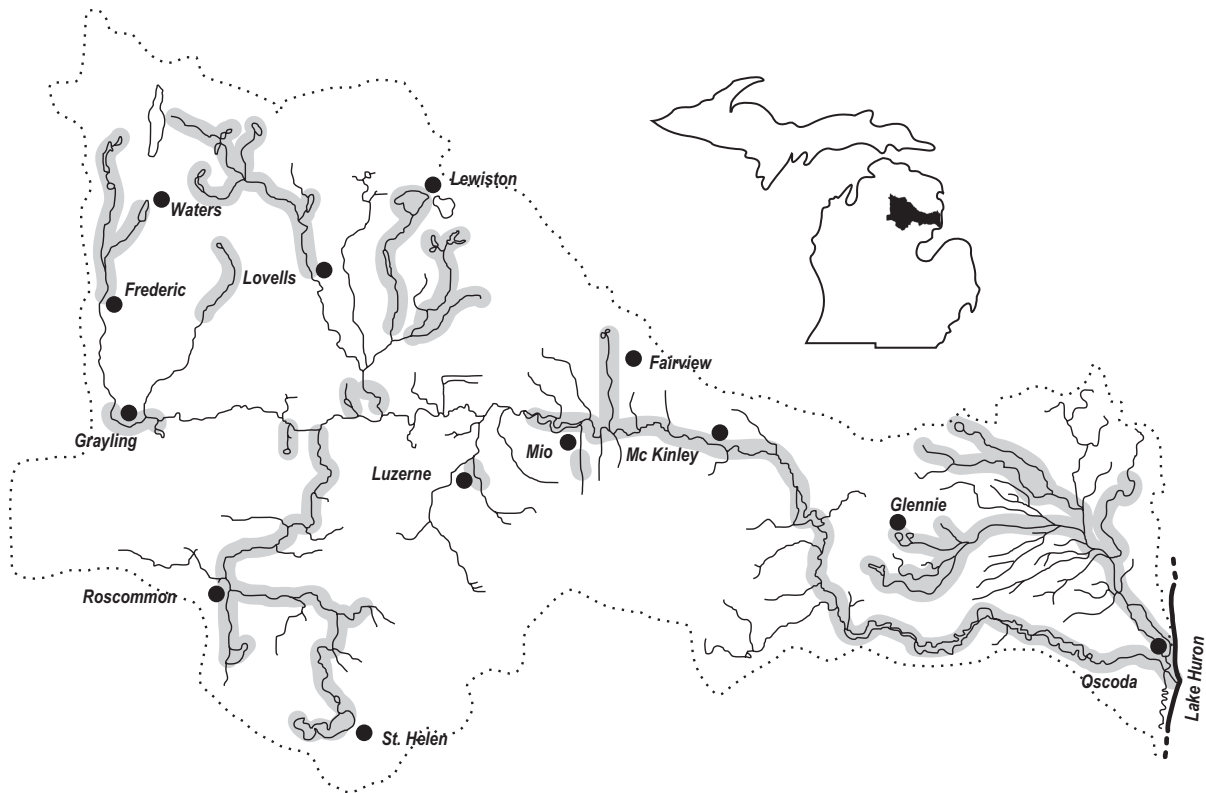
- feeding - impoundments and lakes, and low-current streams and rivers
- no substrate preference
  
- spawning - nests in shallow areas sheltered by rocks, logs, or aquatic vegetation



**Pumpkinseed sunfish (*Lepomis gibbosus*)**

**Habitat:**

- feeding - non-flowing clear water in streams and rivers; also lakes and impoundments
- muck or sand partly covered with organic debris substrate
- dense beds of submerged aquatic vegetation
  
- spawning - nest in sand, gravel, or rock substrate
- in shallow water near submerged vegetation



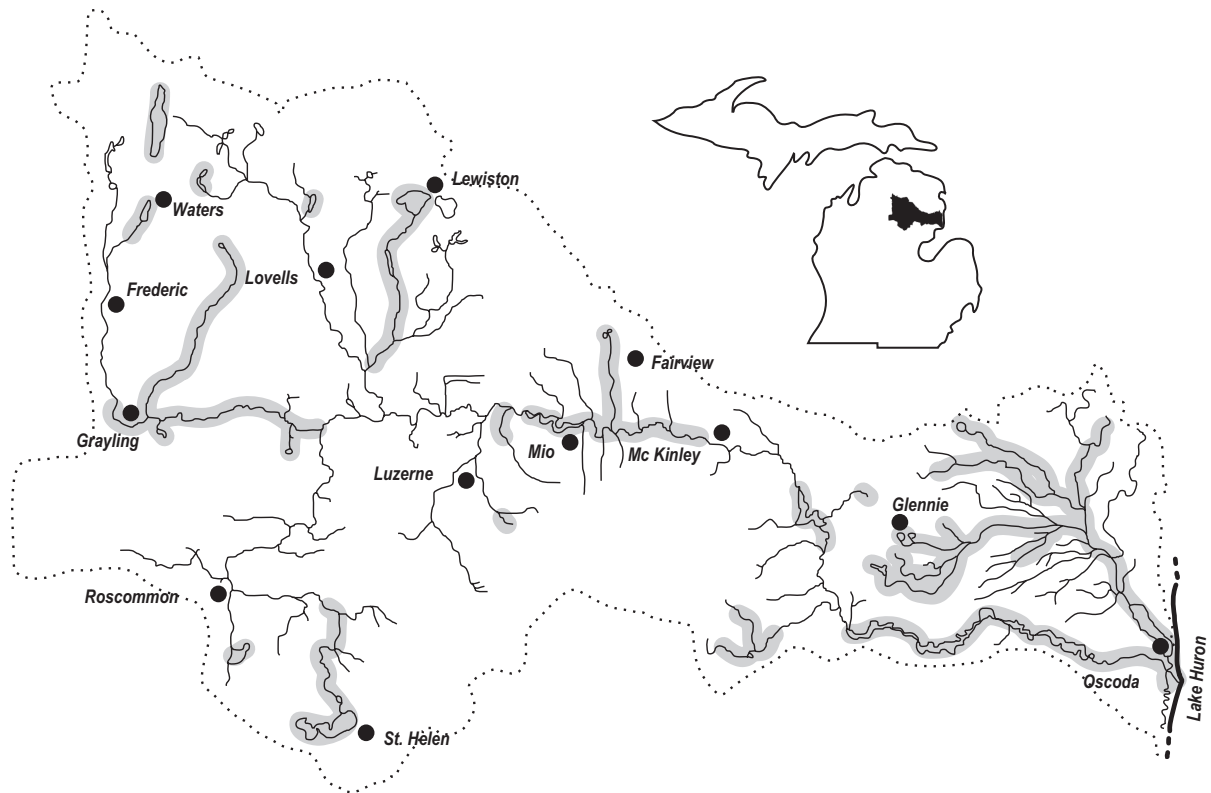
**Bluegill** (*Lepomis macrochirus*)

**Habitat:**

- feeding - non-flowing clear streams and rivers; also lakes and impoundments
- sand, gravel, or muck containing organic debris substrate
- scattered beds of aquatic vegetation
- cannot tolerate low oxygen or continuous high turbidity and siltation

spawning - nests in firm substrate of gravel, sand, or mud

winter refuge - deep water

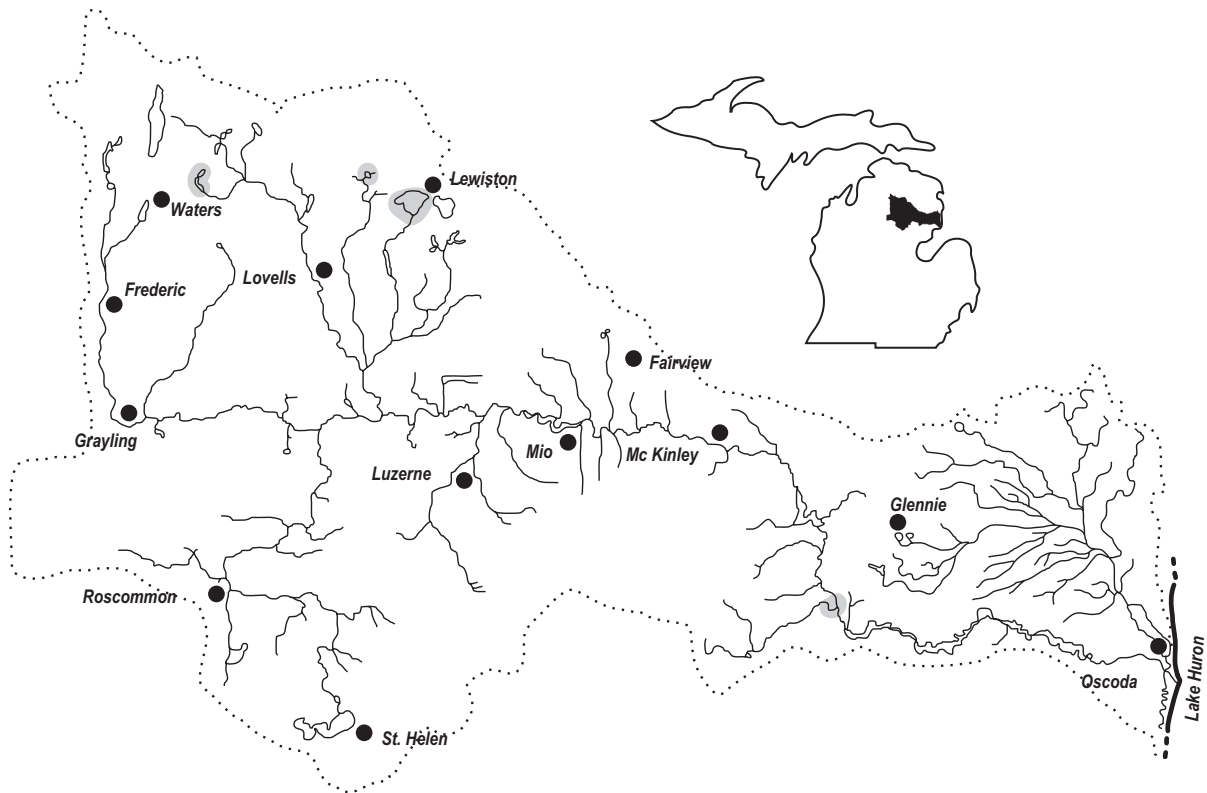




**Longear sunfish (*Lepomis megalotis*)**

**Habitat:**

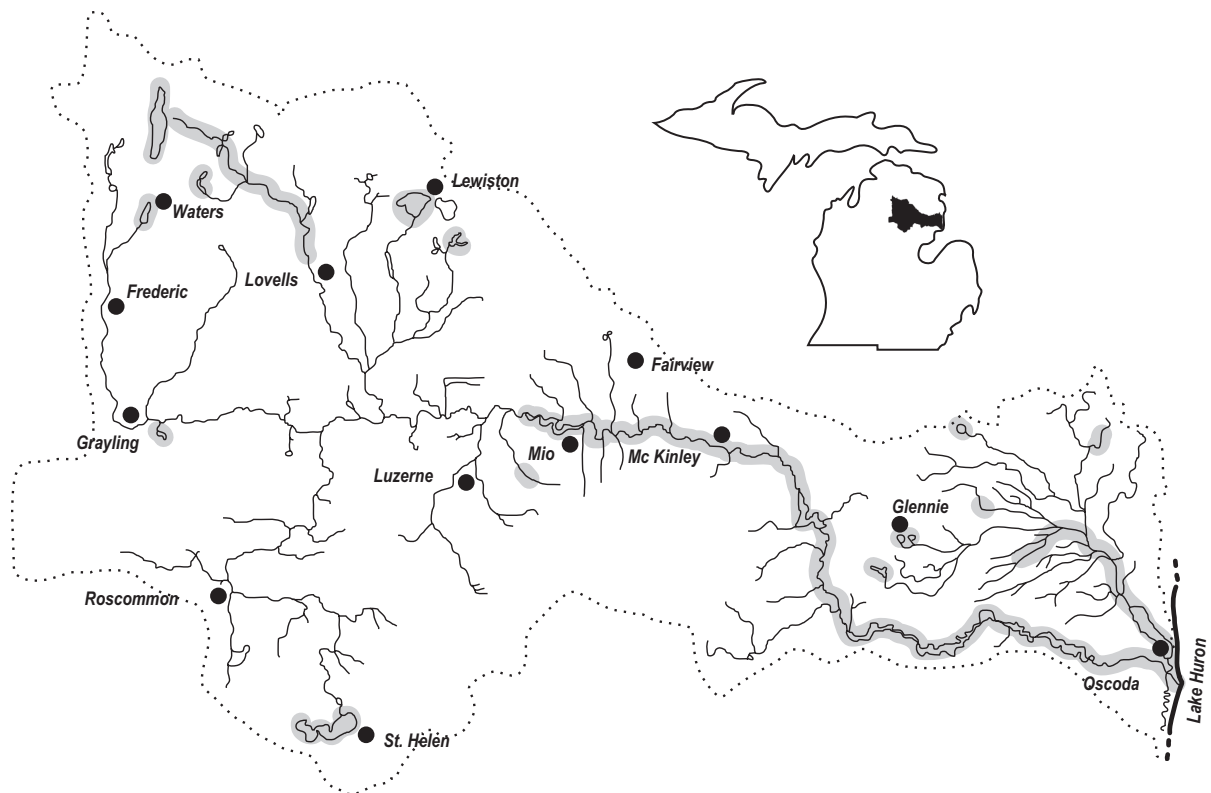
- feeding - clear moderate-sized shallow streams with moderate vegetation
- rocky substrates
- little to no current
  
- spawning - nests in gravel, sand, or hard rock substrate



**Smallmouth bass (*Micropterus dolomieu*)**

**Habitat:**

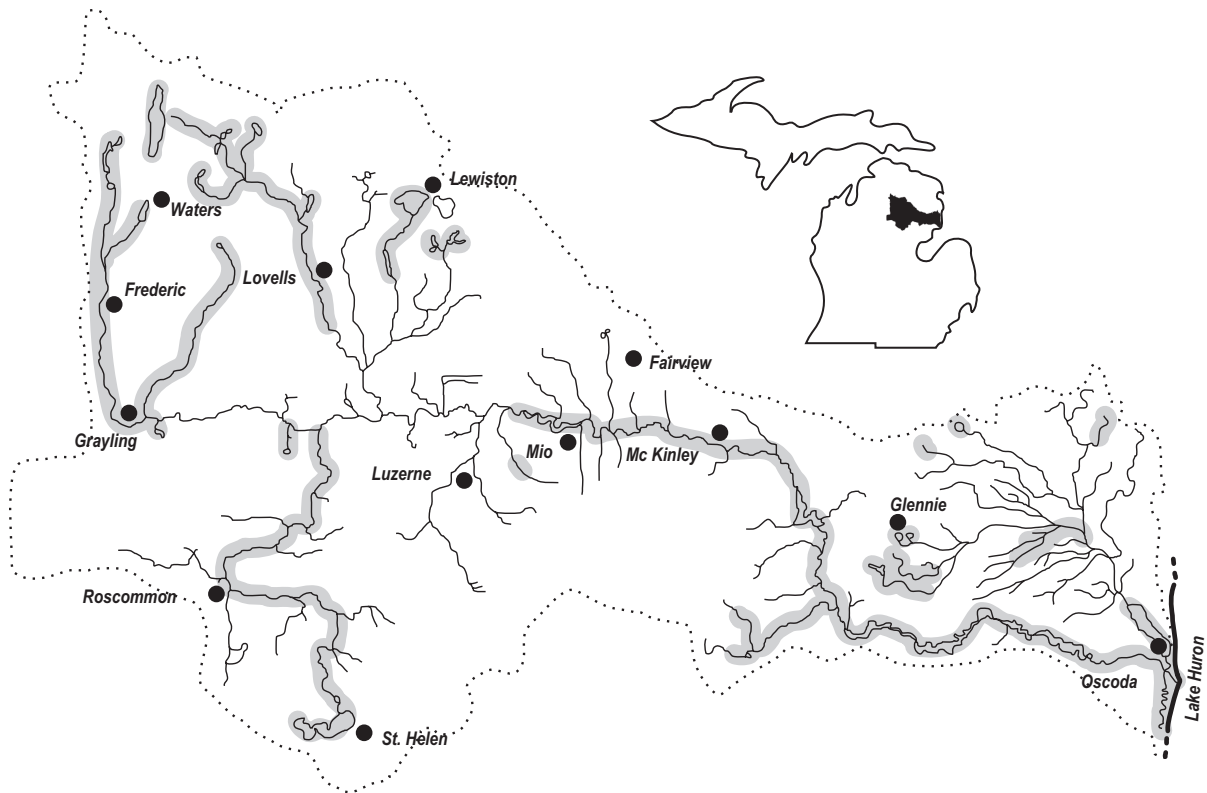
- feeding
  - clear, cool, deep lakes and rivers
  - streams where 40% consists of riffles over clean gravel, boulder, or bedrock substrate
  - in pools with a current and >4 feet of depth
  - gradients between 4 and 25 feet per mile
  
- spawning
  - nest in sandy, gravel, or rocky substrate
  - gradients 7 to 25 feet per mile
  - streams 20 to 100 feet wide
  
- winter refuge
  - larger deeper waters with gradients between 3 to 7 feet per mile



**Largemouth bass (*Micropterus salmoides*)**

**Habitat:**

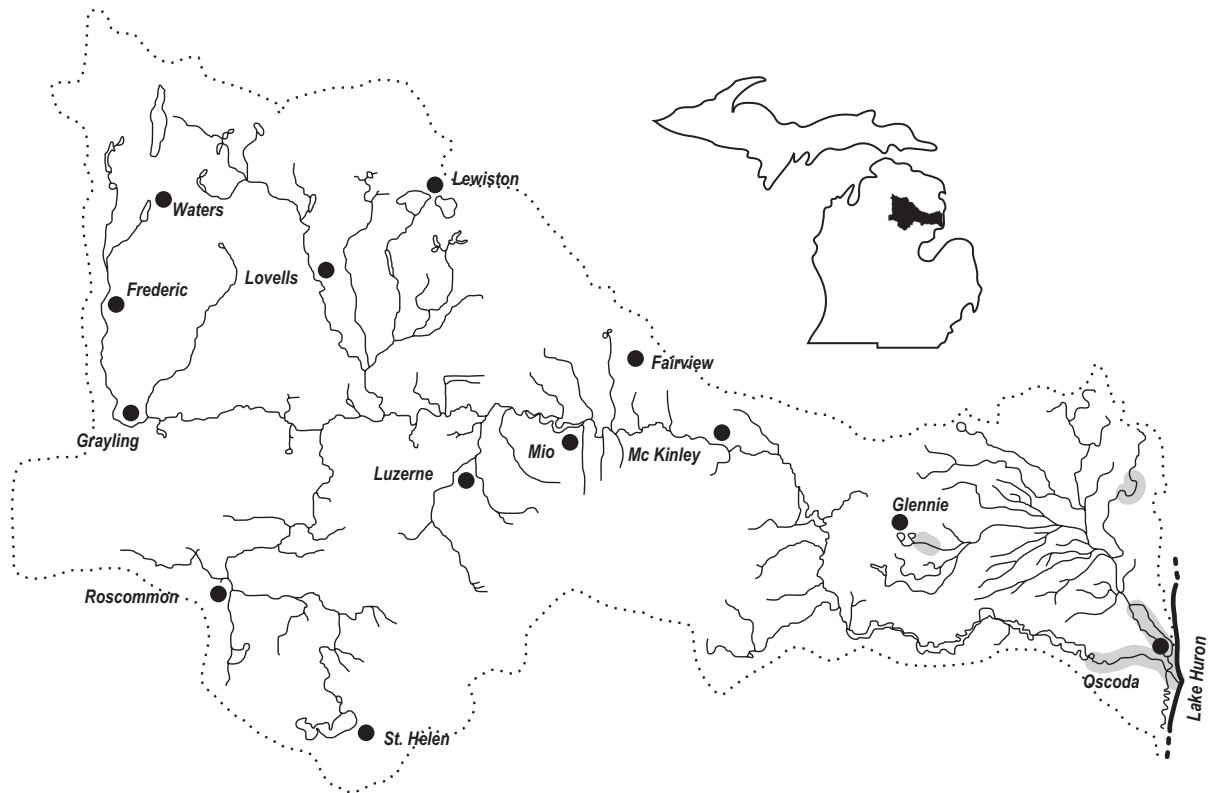
- feeding - non-flowing clear waters - lakes, impoundments, and pools of streams
- abundant aquatic vegetation
- soft muck, organic debris, gravel, sand, and hard non-flocculent clay substrates
  
- spawning - nest in gravelly sand to marl and soft mud substrates
- emergent vegetation
- quiet shallow bays; no current



**White crappie** (*Pomoxis annularis*)

**Habitat:**

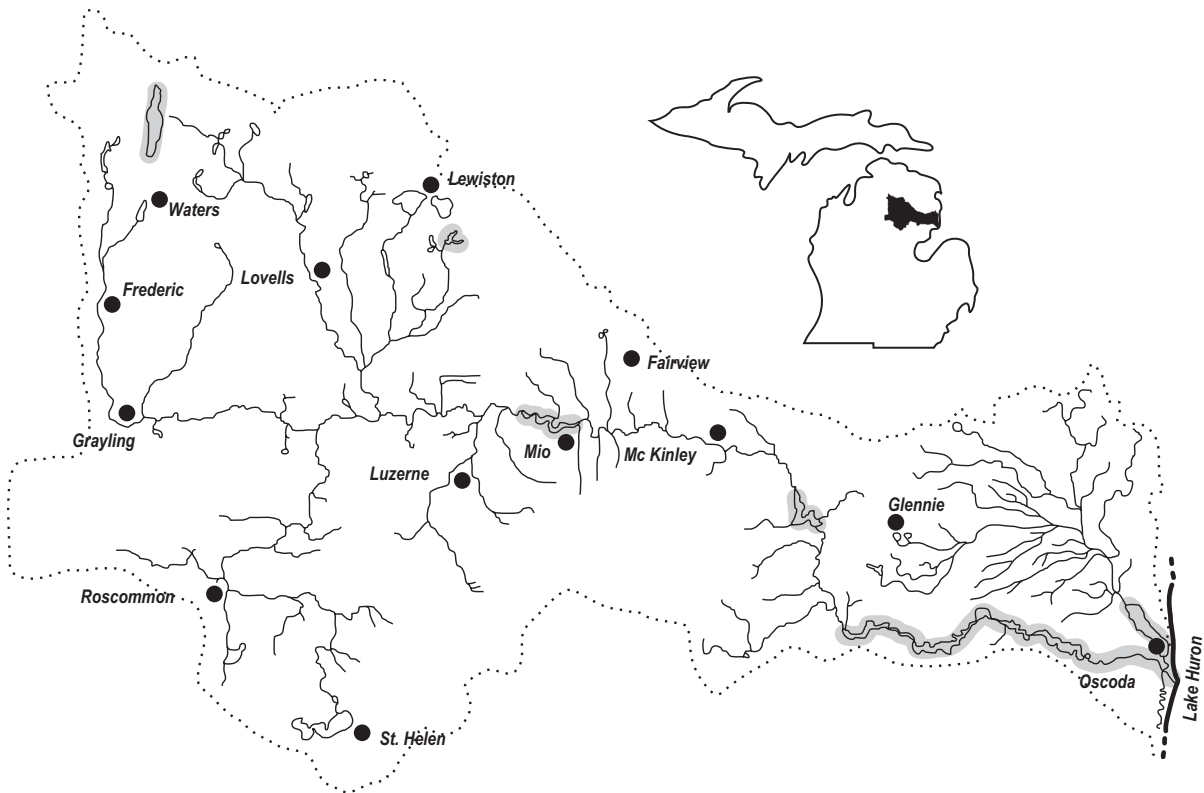
- feeding - lakes and impoundments >5 acres
- sluggish pools of moderate to large low-gradient rivers
- no substrate preference
- can tolerate severe turbidity and rapid siltation
  
- spawning - various substrates usually beside rooted aquatic vegetation
- sometimes under banks



**Black crappie** (*Pomoxis nigromaculatus*)

**Habitat:**

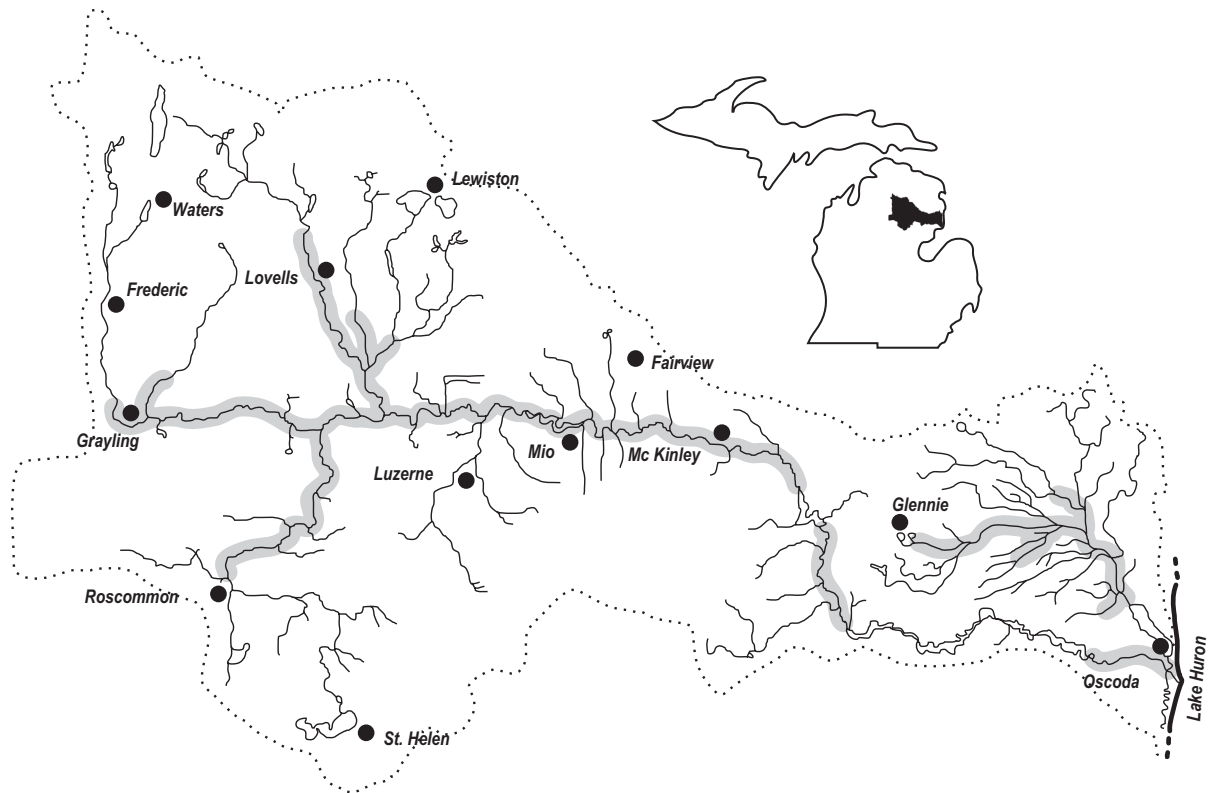
- feeding - larger clear non-silty low-gradient rivers; also in lakes and impoundments
  - clean hard sand or muck substrate
  - associated with submerged aquatic vegetation
  - does not tolerate silt or turbidity well
  
- spawning - nests in gravel, sand, or mud substrate
  - some vegetation must be present
  - sometimes nests under banks



**Rainbow darter (*Etheostoma caeruleum*)**

**Habitat:**

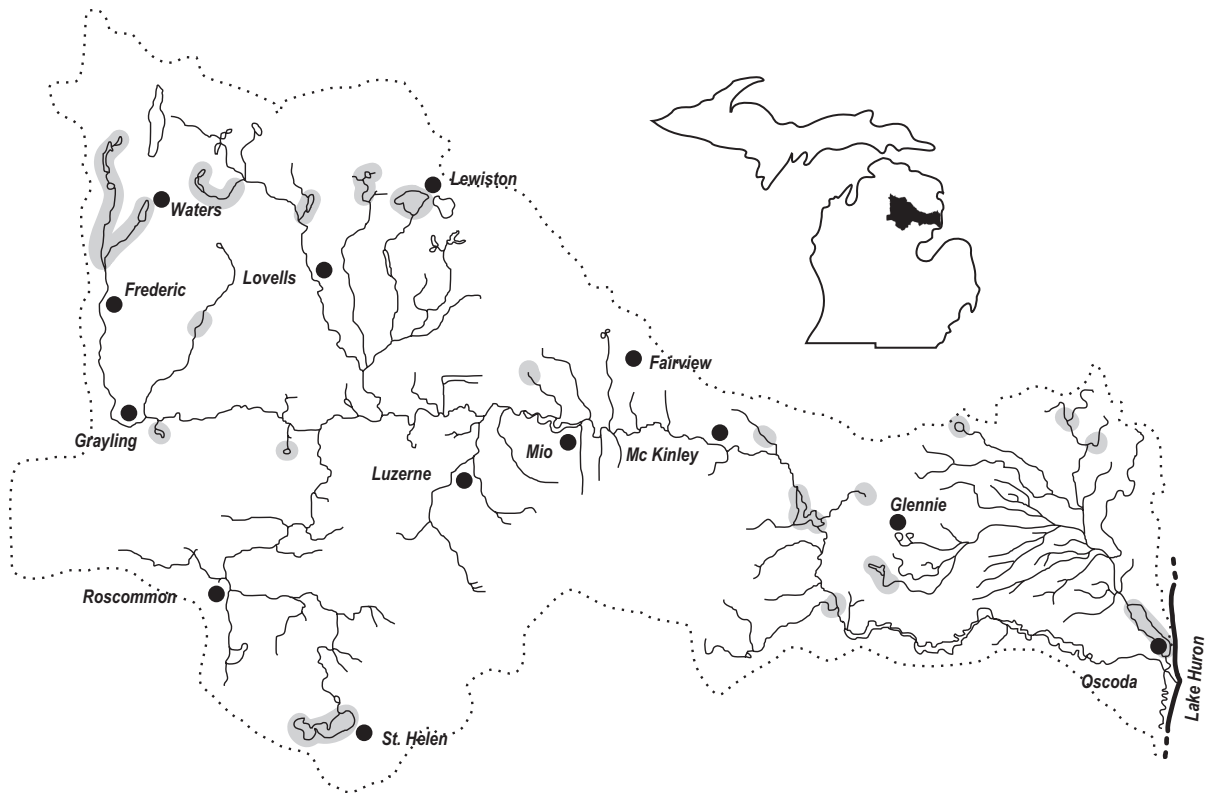
- feeding - gravelly high gradient riffles
- clear, moderate to large streams
- in shallows (average 1 foot)
  
- spawning - gravel or rubble riffles



**Iowa darter (*Etheostoma exile*)**

**Habitat:**

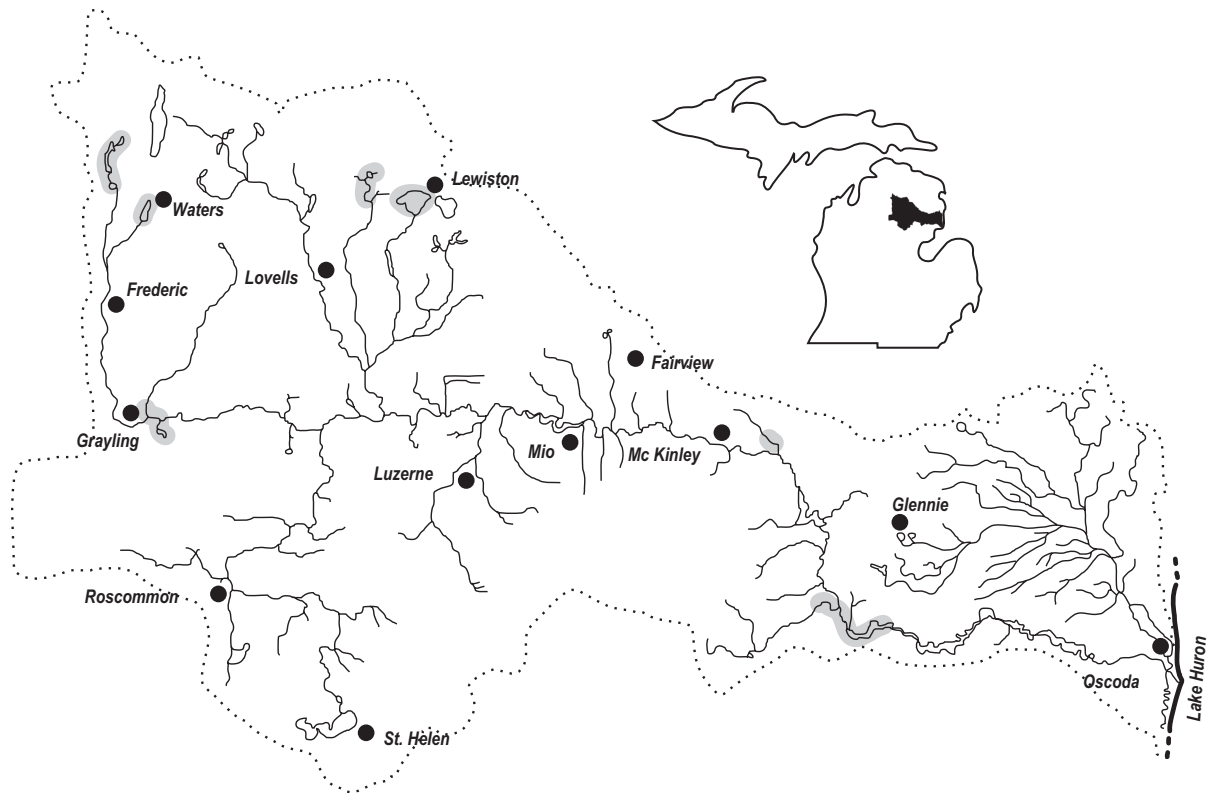
- feeding - clear, slow moving streams and lakes
  - sandy to muddy substrates
  - intolerant of turbid water
  - lives in rooted aquatic vegetation
- 
- spawning - in pond-like extensions of streams on organic matter or roots
  - in shallows



**Least darter (*Etheostoma microperca*)**

**Habitat:**

- feeding - moderate to warm temperature
- clear quiet low-gradient vegetated streams (wetlands, floodplains)
- soft substrate
  
- spawning - spawning occurs on stems of plants
- male guards a territory in a vegetated area

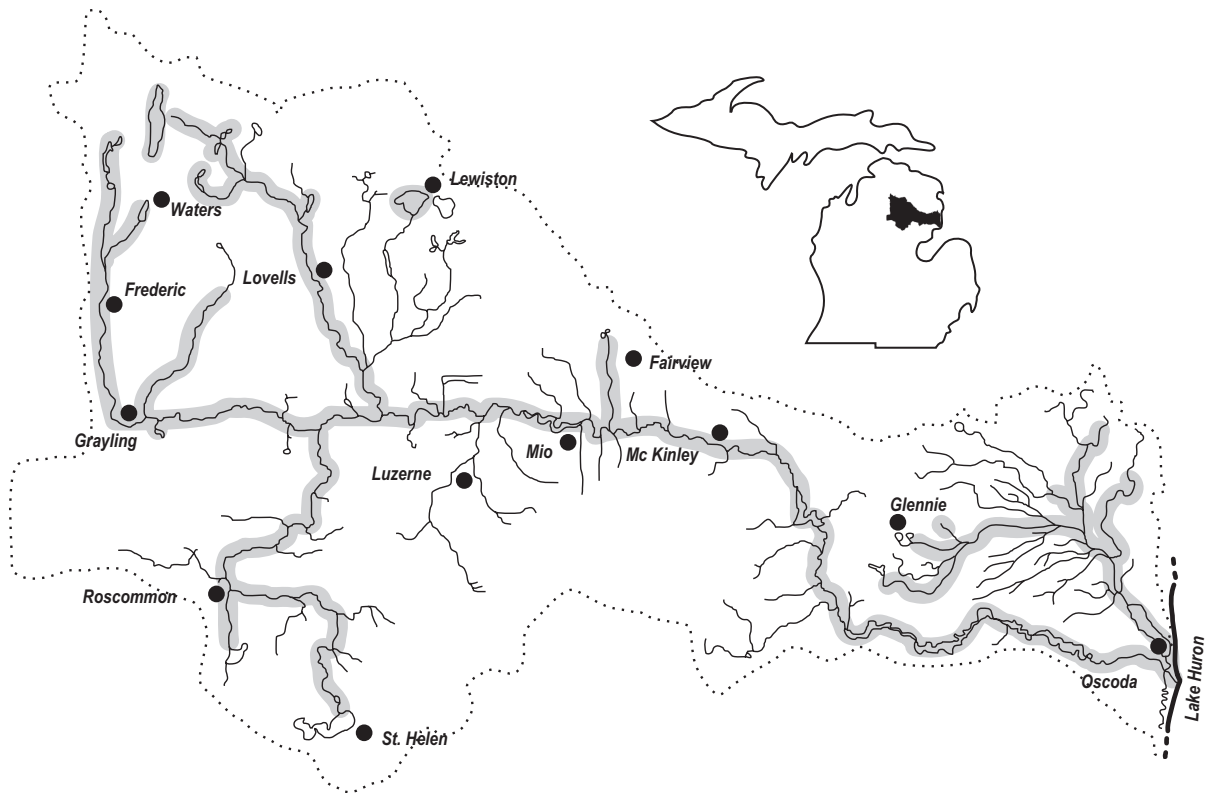




**Johnny darter (*Etheostoma nigrum*)**

**Habitat:**

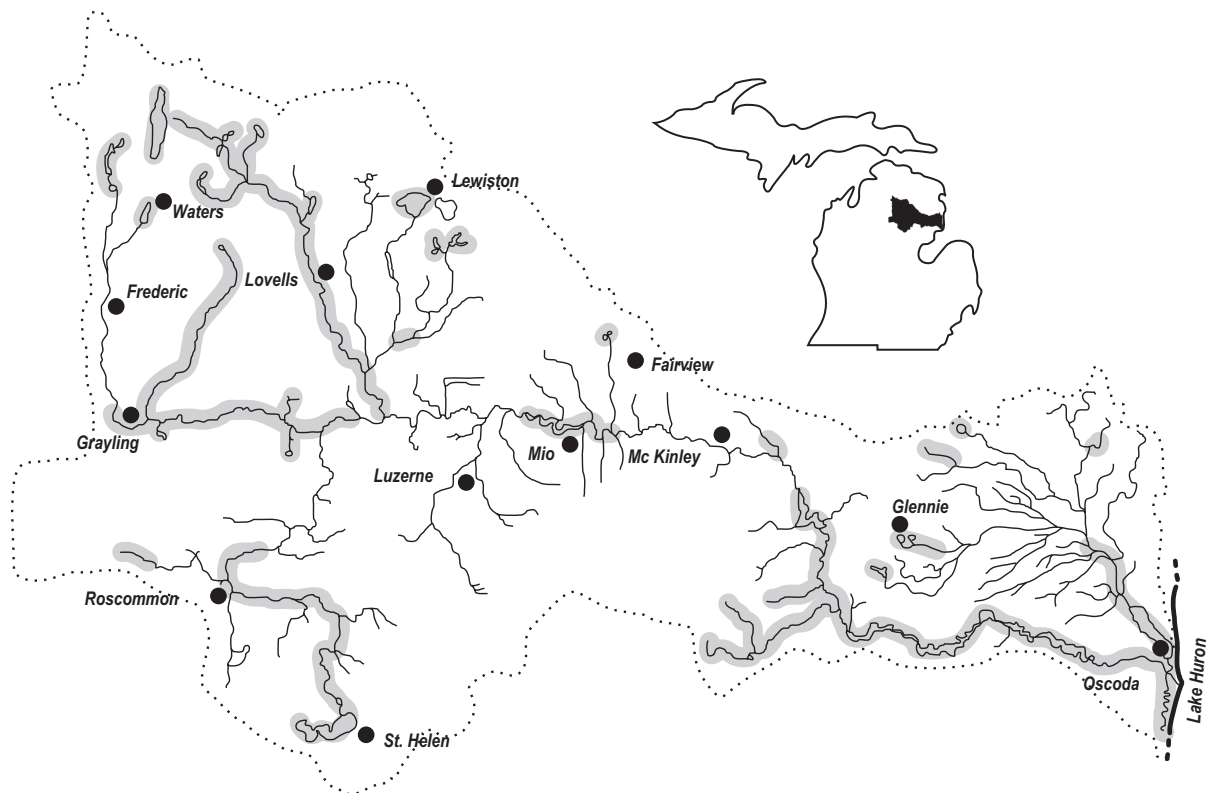
- feeding - sand and silt substrate
  - little to moderate current
  - shallow areas of streams, rivers, lakes, and impoundments
  - tolerant of many organic and inorganic pollutants and turbidity
- 
- spawning - underneath rocks
  - in stream pools or protected shallows of lakes



**Yellow perch** (*Perca flavescens*)

**Habitat:**

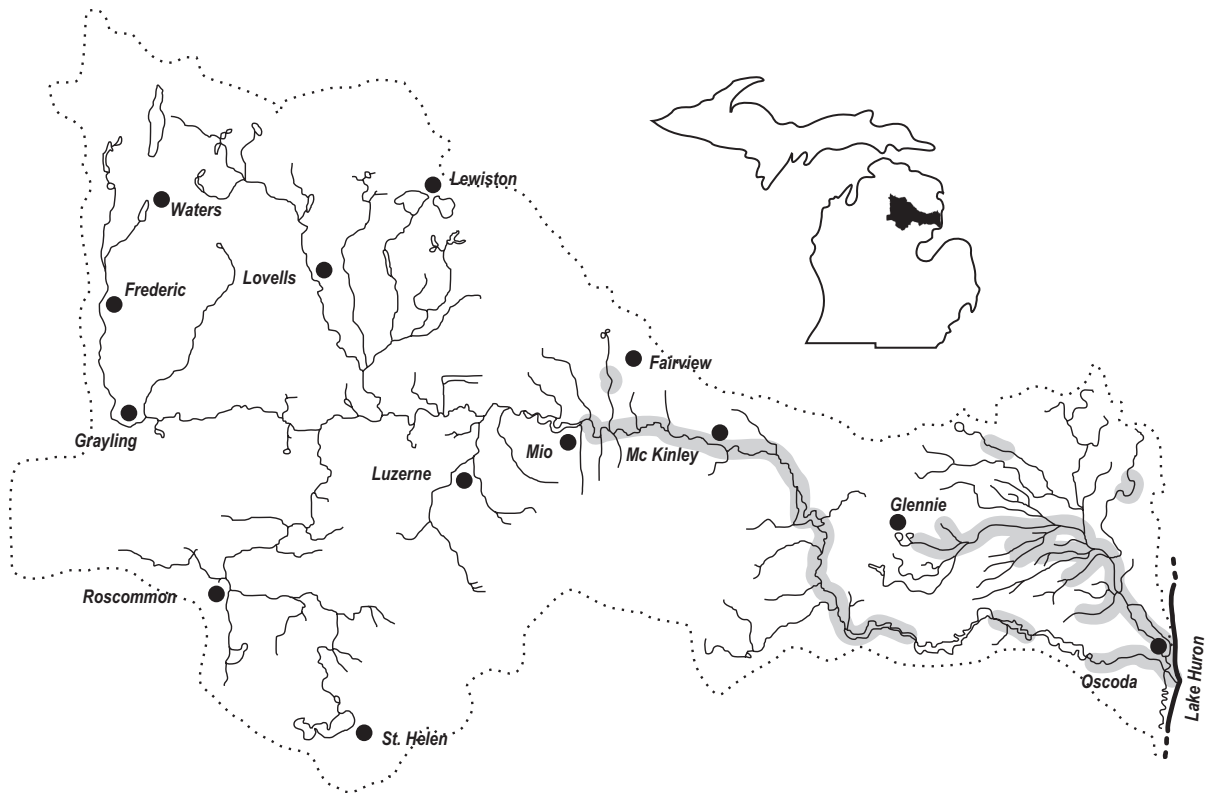
- feeding - clear lakes and impoundments; also Lake Huron
  - low gradient rivers
  - abundance of rooted aquatics
  - muck, organic debris, sand, or gravel substrate
  - does not tolerate turbidity and siltation
- 
- spawning - shallows of lakes, tributaries of streams
  - occurs over rooted vegetation, submerged brush, fallen trees
  - may occur over sand or gravel



**Logperch (*Percina caprodes*)**

**Habitat:**

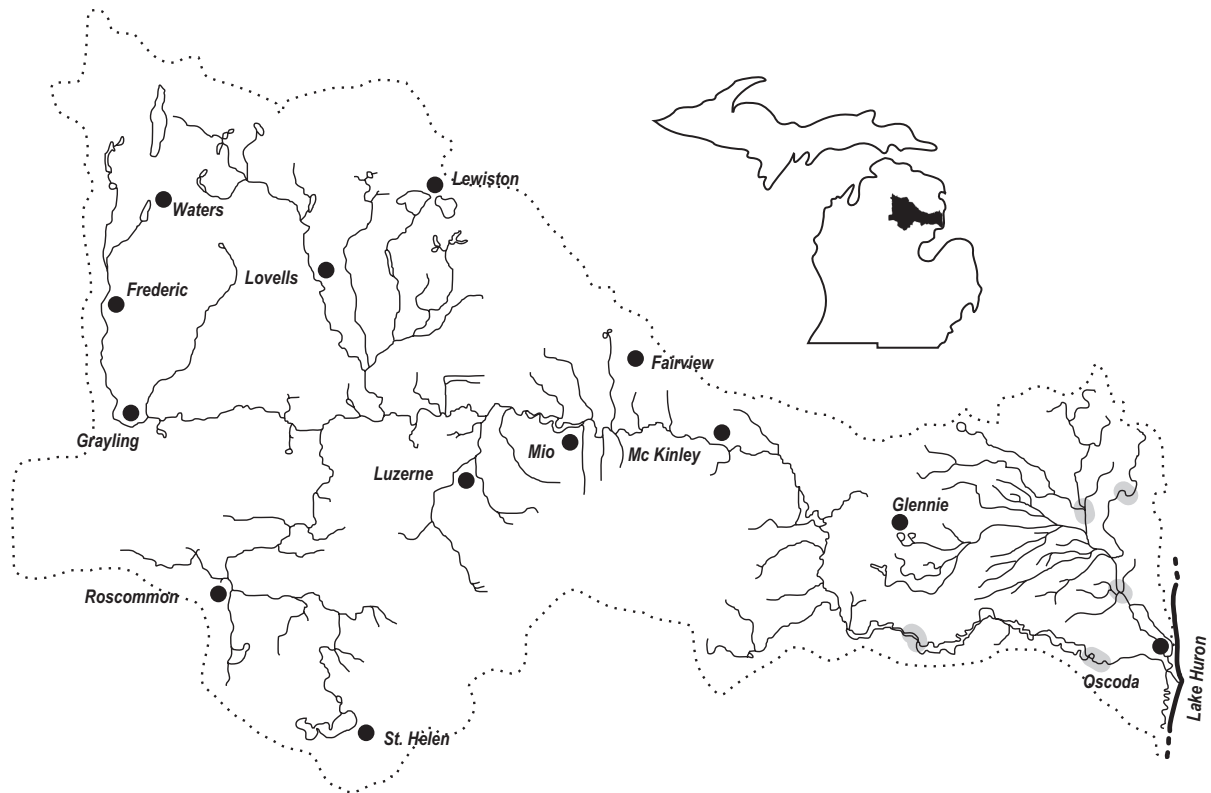
- feeding - gravel riffles, deeper slower sections of rivers
  - medium size streams; also lakes, impoundments, and Lake Huron
  - sand, gravel, or rock substrate
  - avoids turbidity and silt
- spawning - riffles or sandy in-shore shallows



**Channel darter (*Percina copelandi*) - threatened**

**Habitat:**

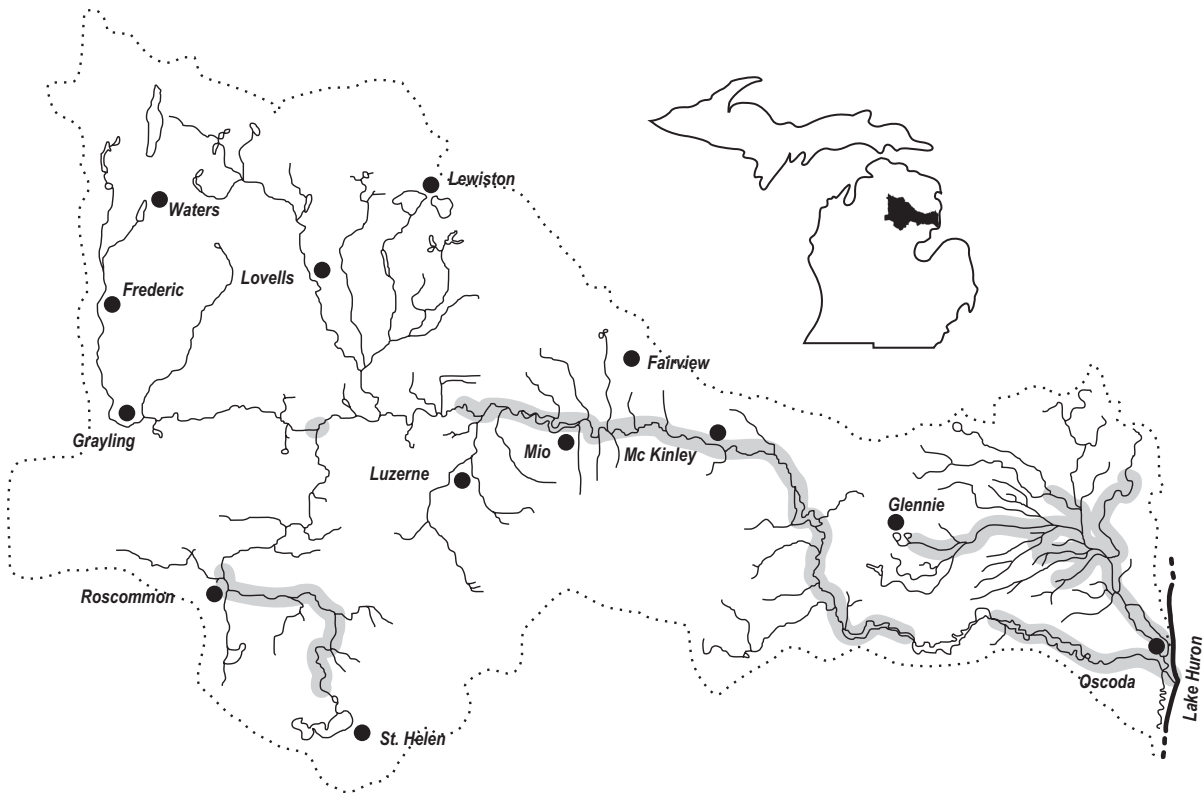
- feeding - sand and gravel bars
- slow current
- large rivers and Lake Huron
  
- spawning - some current is essential
- a territory is established over gravel



**Blackside darter (*Percina maculata*)**

**Habitat:**

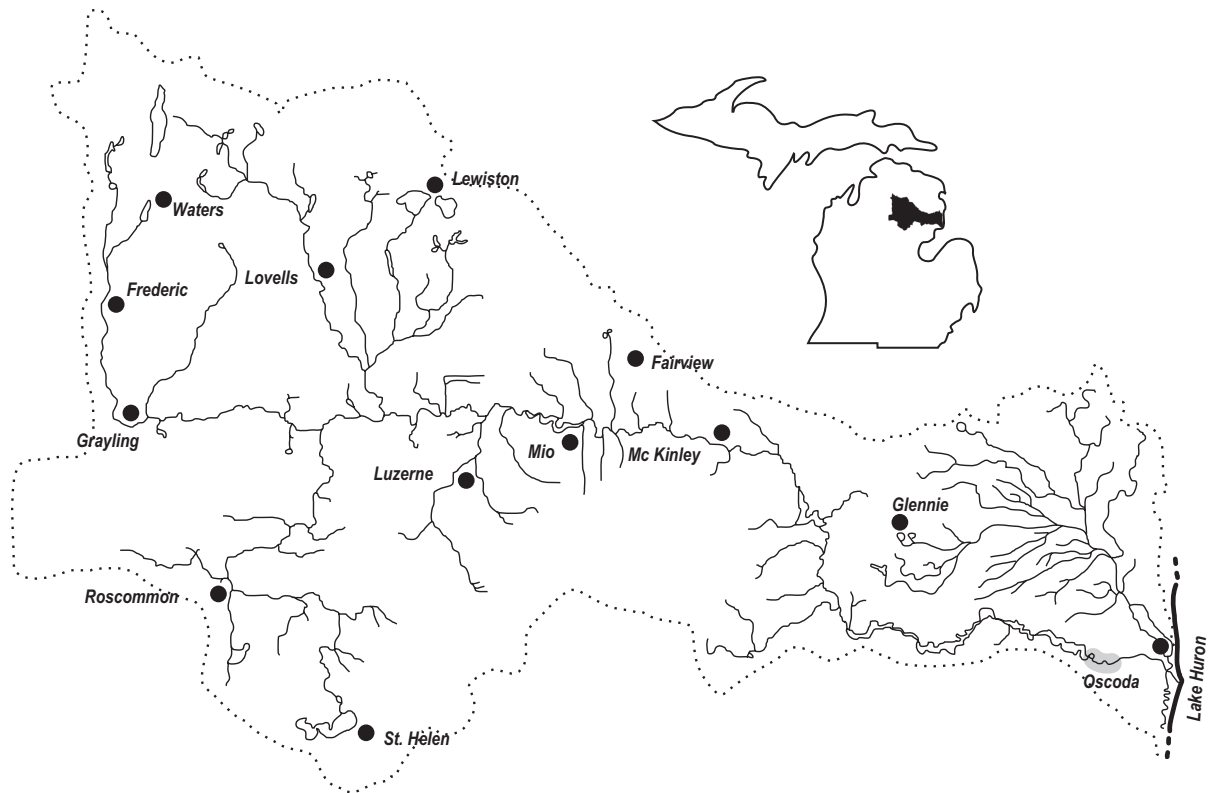
- feeding - small to medium streams
  - low to medium gradient
  - gravel and sand substrate
  - tolerate some turbidity
- 
- spawning - gravel and sand substrate



**River darter (*Percina schumardi*) - endangered**

**Habitat:**

- feeding - medium to large rivers
- moderate to swift current
- coarse rock rubble or boulder-strewn substrate
- can tolerate turbidity



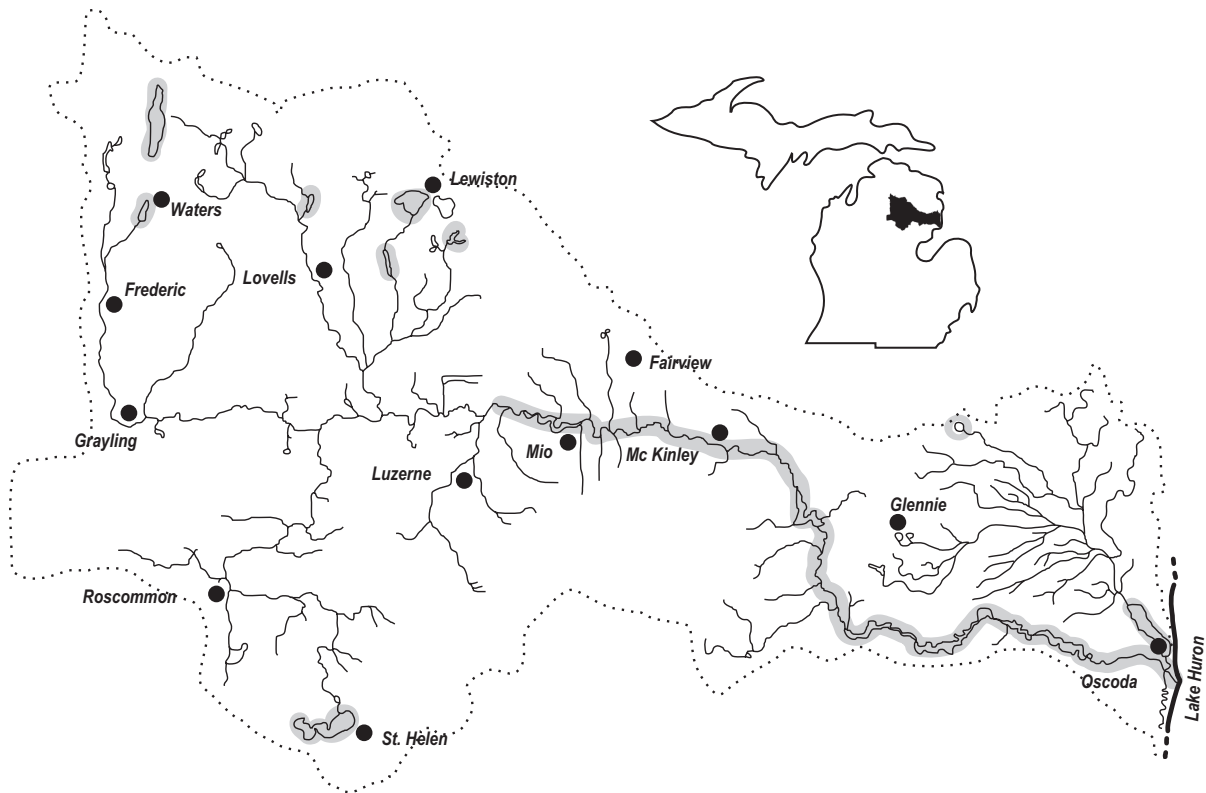
**Walleye (*Stizostedion vitreum*)**

**Habitat:**

- feeding - larger, deeper streams and in large, shallow, turbid lakes and impoundments; also Lake Huron
- gravel, bedrock, and firm substrates preferred
- does not tolerate a lot of turbidity or low oxygen

- spawning - rocky substrates in high gradient water in rivers
- boulder to coarse gravel shoals in lakes

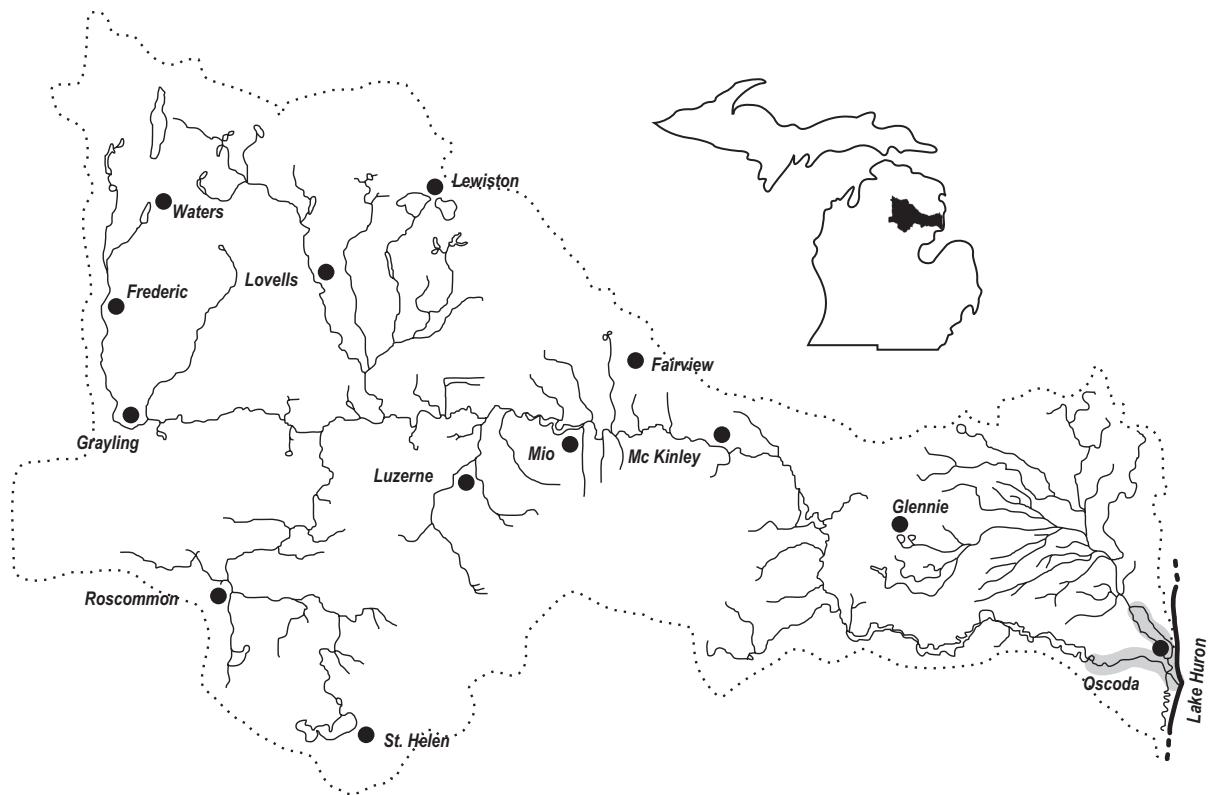
- winter refuge - avoids strong currents



**Freshwater drum** (*Aplodinotus grunniens*)

**Habitat:**

- feeding - deeper pools of rivers and Lake Huron
- in shallows
- prefers clear waters and clean substrates
- can adapt to high turbidity levels
  
- spawning - pelagically, in open water, over sand or mud substrate
- occurs in bays or lower portions of marshes





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