



**STATE OF MICHIGAN  
DEPARTMENT OF NATURAL RESOURCES**

---

Number 23

October 1998

# **River Raisin Assessment Appendix**

Kenneth E. Dodge

**MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
FISHERIES DIVISION**

**Fisheries Special Report 23  
October 1998**

**River Raisin Assessment  
Appendix**

**Kenneth E. Dodge**

The Michigan Department of Natural Resources, (MDNR) provides equal opportunities for employment and for access to Michigan's natural resources. State and Federal laws prohibit discrimination on the basis of race, color, sex, national origin, religion, disability, age, marital status, height and weight. If you believe that you have been discriminated against in any program, activity or facility, please write the MDNR Equal Opportunity Office, P.O. Box 30028, Lansing, MI 48909, or the Michigan Department of Civil Rights, 1200 6th Avenue, Detroit, MI 48226, or the Office of Human Resources, U.S. Fish and Wildlife Service, Washington D.C. 20204.

For more information about this publication or the American Disabilities Act (ADA), contact, Michigan Department of Natural Resources, Fisheries Division, Box 30446, Lansing, MI 48909, or call 517-373-1280.



*Printed under authority of Michigan Department of Natural Resources  
Total number of copies printed 400 — Total cost \$1,587.22 — Cost per copy \$3.96*

Suggested Citation Format

Dodge, Kenneth E. 1998. River Raisin Assessment Appendix. Michigan Department of Natural Resources, Fisheries Division, Special Report 23. Ann Arbor, Michigan.

## Appendix

This appendix contains maps of known past and present fish distributions within the Raisin River watershed. Historic fish distributions were compiled from records located at the University of Michigan, Museums Fisheries Library and from historic anecdotal records. Historic distributions (black bars) are noted only when they are significantly different from more recent distributions. Fish species may have been present historically in areas designated as present distribution. Present fish distributions (gray shaded) were compiled from seining survey records (Smith et al. 1981), rotenone survey records (Towns 1985), and survey files located at the Michigan Department of Natural Resources offices at the Institute for Fisheries Research and Jackson District Headquarters. Fish distribution maps prepared by J. N. Taylor (Smith et al. 1981) were particularly helpful. Personal communications from G. Smith, U of M Ruthven Museum; R. Haas, MDNR, Lake St. Clair Research Station; C. Latta, Institute for Fisheries Research; and L. Goedde, Ohio Division of Wildlife yielded valuable information.

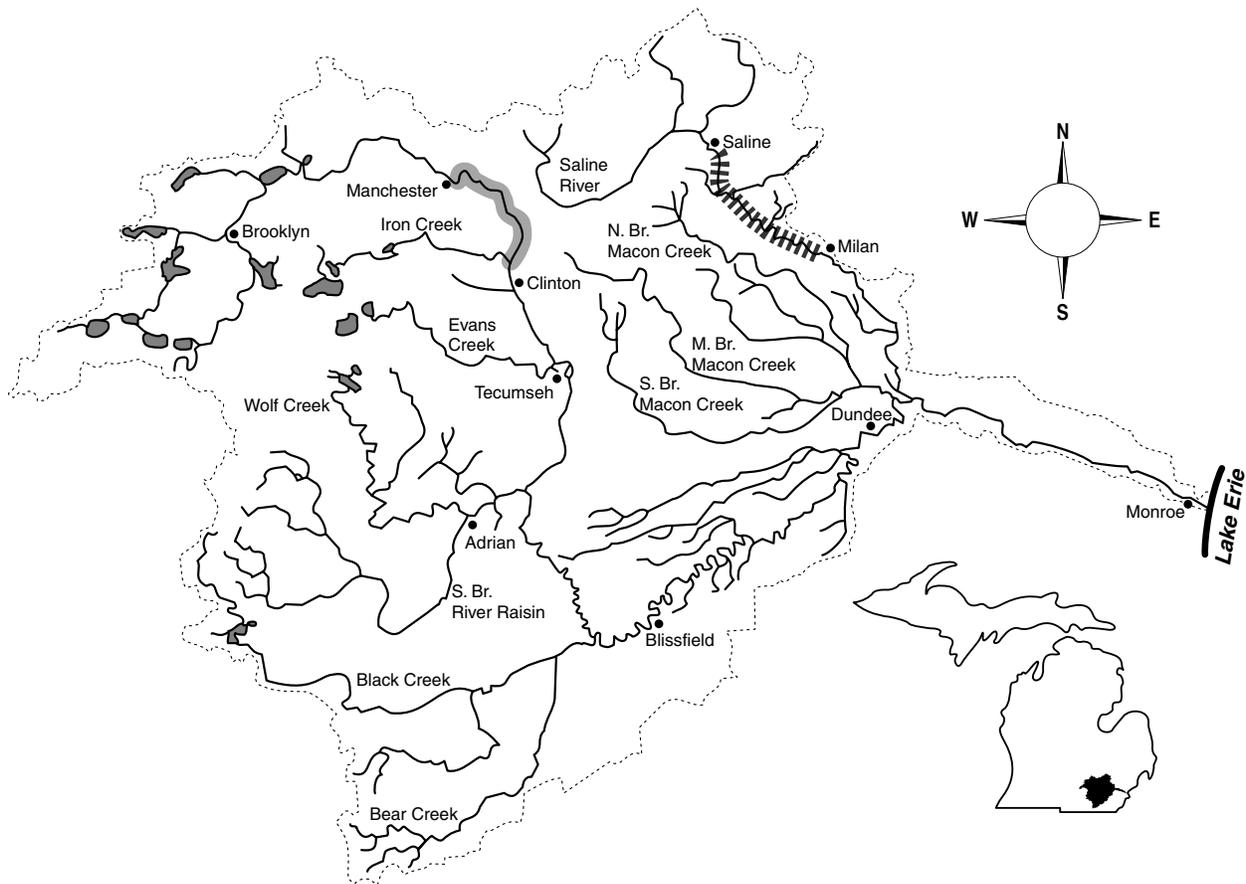
Scientific names and phylogenic order follow Robins et al. 1991. For species that are listed under Michigan's Endangered Species Act (Section 36505 (1a) Part 324 of Act 451, 1994), their status follows their scientific name.

The habitat descriptions were compiled from Fisheries of the Great Lakes Region (Hubbs and Lagler 1947), Freshwater Fishes of Canada (Scott and Crossman 1973), Fishes of Missouri (Pflieger 1975), The Fishes of Ohio (Trautman 1982), and Fishes of Wisconsin (Becker 1983).

**Northern brook lamprey (*Ichthyomyzon fossor*) - rare**

**Habitat:**

- feeding - young: low gradient, substrate with bars and beds of mixed sand and organic debris
- moderately warm water
  
- spawning - clear, high gradient streams (<15 feet wide)
- riffles with sand or gravel substrate



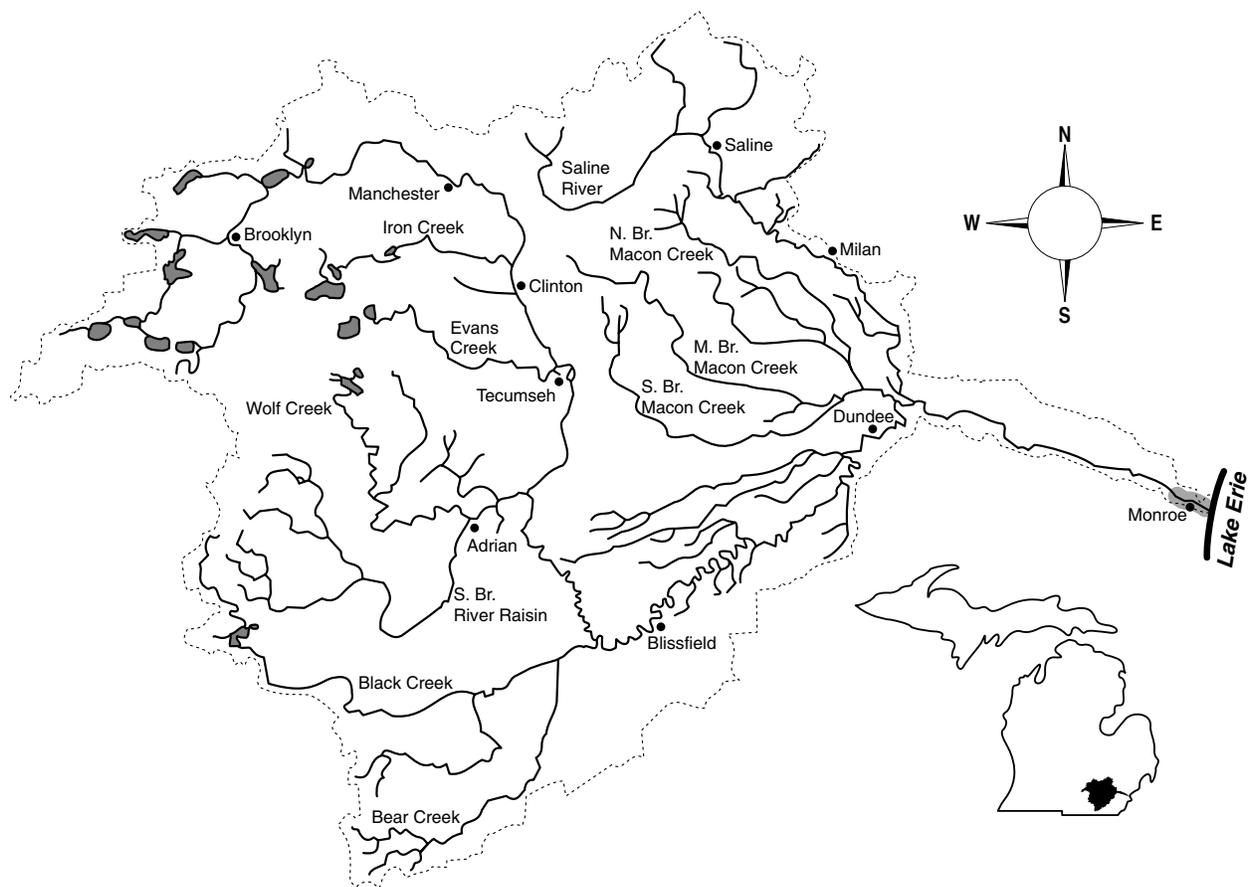
**Silver lamprey (*Ichthyomyzon unicuspis*)**

**Habitat:**

- feeding - young: sand, muck, or organic debris substrate
- adults: clear river water with prey species

- spawning - gravel and sand substrate
- moderate gradient
- moderate size stream
- cannot tolerate silt
- no dams

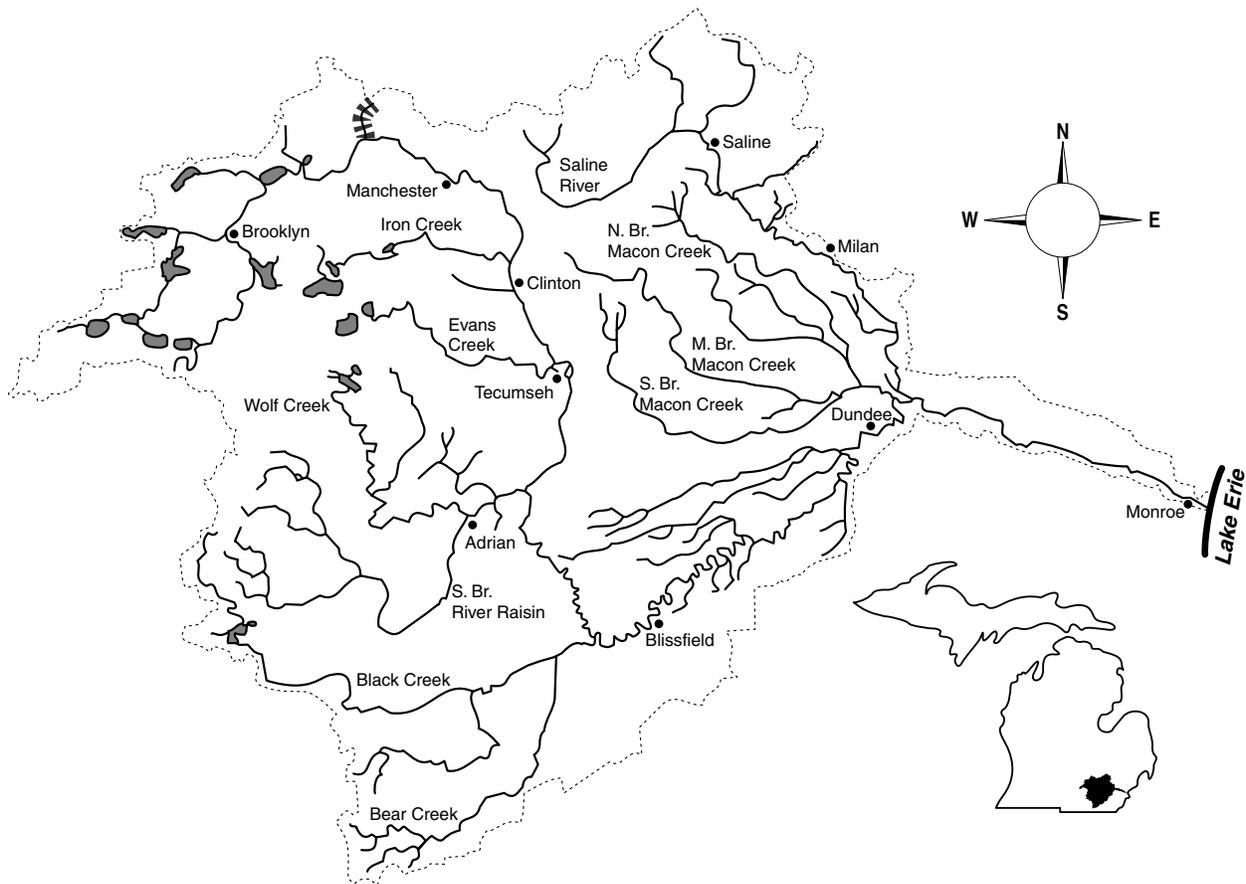
- winter refuge - ammocetes burrow for 4 to 7 years in mud and silt at river margins



**American brook lamprey (*Lampetra appendix*) - rare**

**Habitat:**

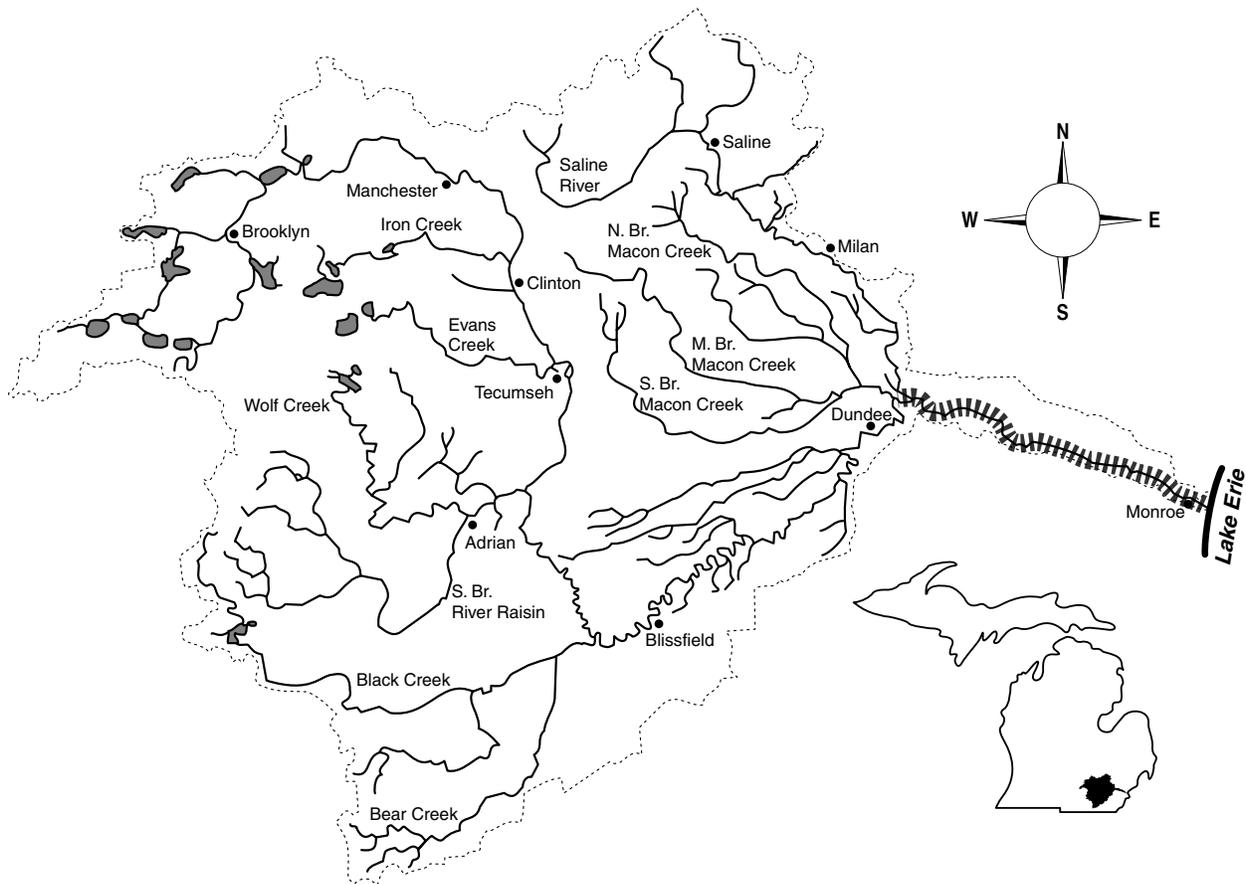
- feeding - young: low gradient, substrate with bars and beds of mixed sand and organic debris
  - clear cool stream water, sensitive to turbidity
  
- spawning - clear, high gradient streams (>15 feet wide)
  - cold water
  - gravel substrate
  
- winter refuge - sand or silt substrate for ammocoetes



**Lake sturgeon (*Acipenser fulvescens*) - threatened**

**Habitat:**

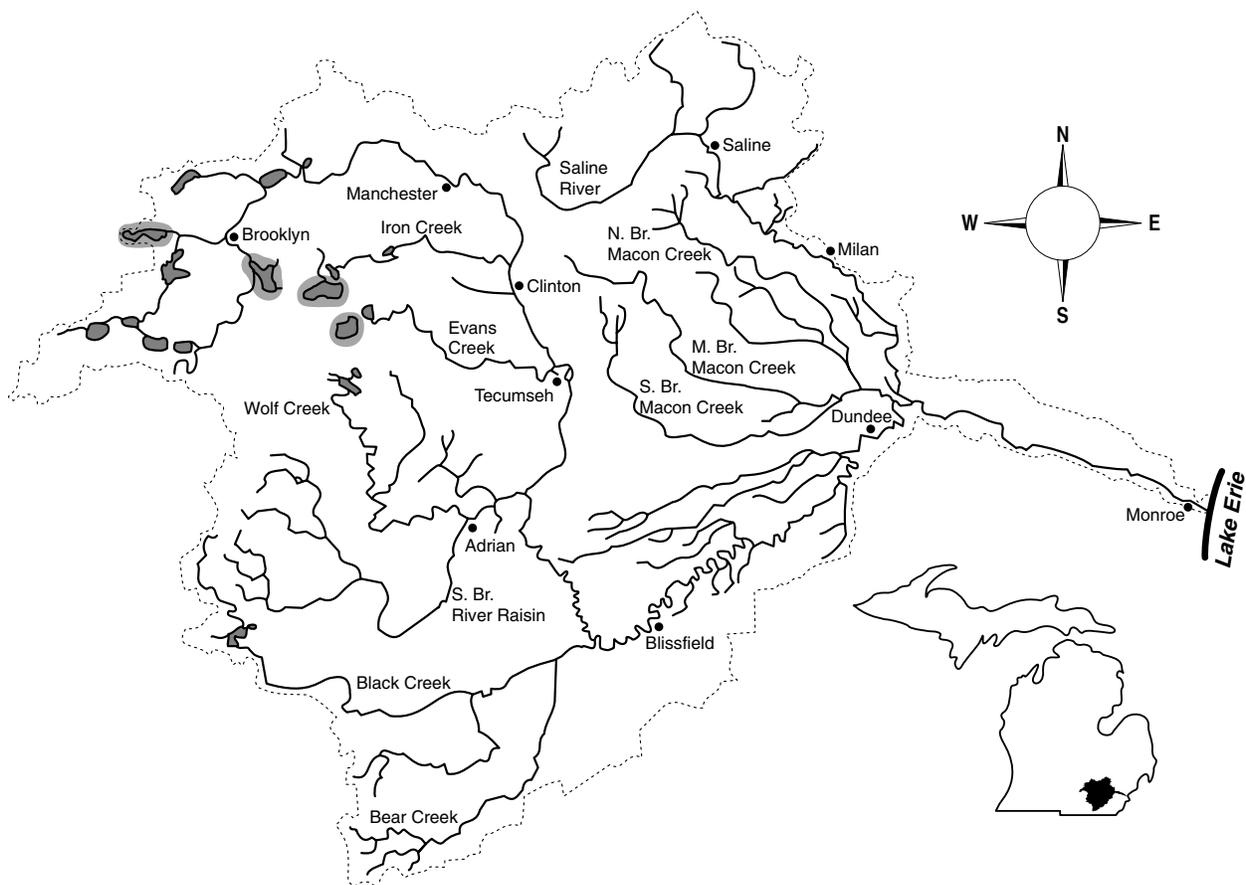
- feeding
  - shoal areas of large rivers, lakes, and impoundments
  - gravel, sand, rock substrates
  
- spawning
  - in or before rapids, at the base of dams in rivers
  - in 2-15 feet of water
  - swift current
  - rocky ledges or around rocky islands in Great Lakes



**Longnose gar (*Lepisosteus osseus*)**

**Habitat:**

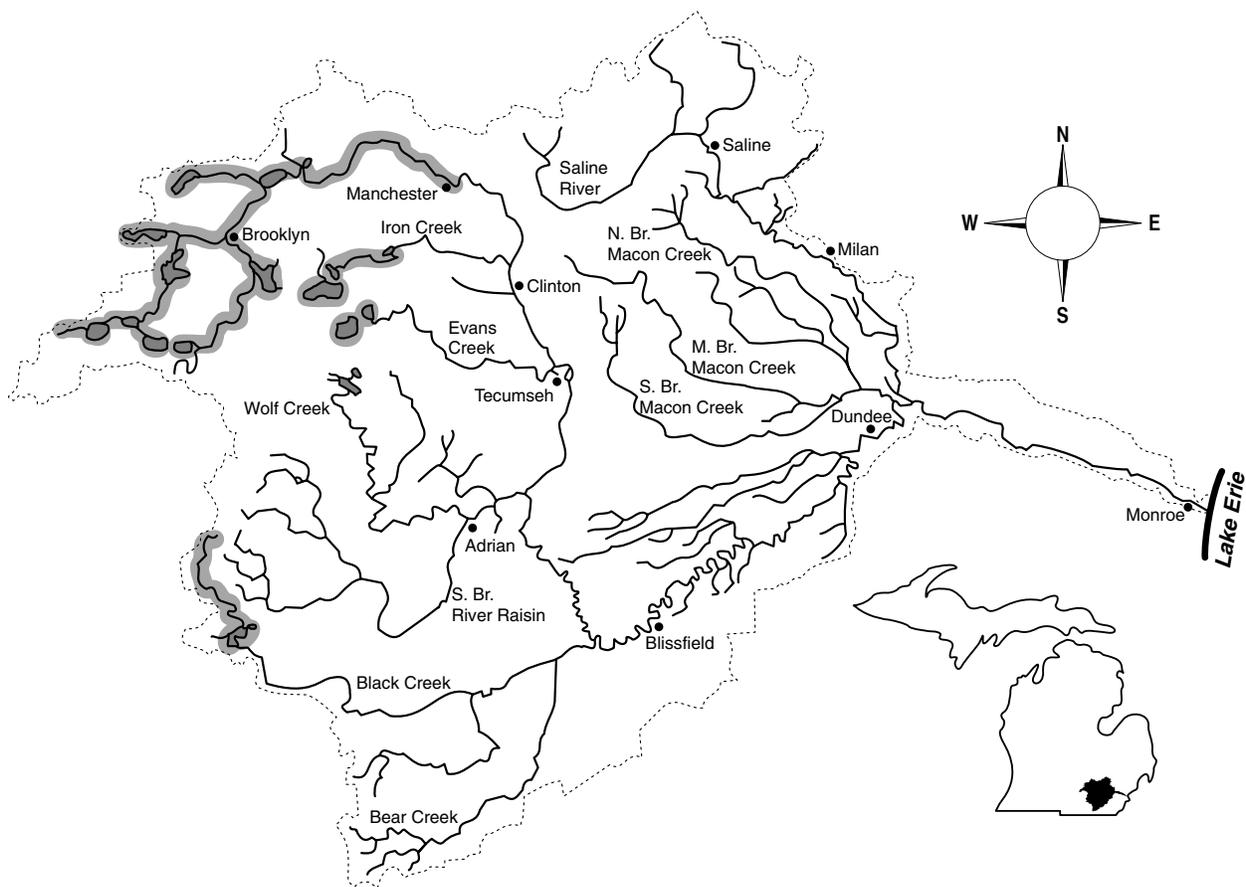
- feeding - adults: in deeper water
  - young: in shallows
  - clear water, low-gradient streams, lakes, and impoundments
  - will feed in moderate current
  - aquatic vegetation preferred, but not necessary
  - open water fish
- spawning - warm shallow water of lakes or streams over vegetation



**Bowfin** (*Amia calva*)

**Habitat:**

- feeding
  - clear water
  - abundant rooted aquatic vegetation
  - low gradient streams, lakes, and impoundments
  - tolerate only small amount of silt
  
- spawning
  - need vegetated water, 1 to 2 feet deep
  - can spawn under logs, stumps, or bushes
  
- winter refuge
  - gravelly pockets among aquatic vegetation

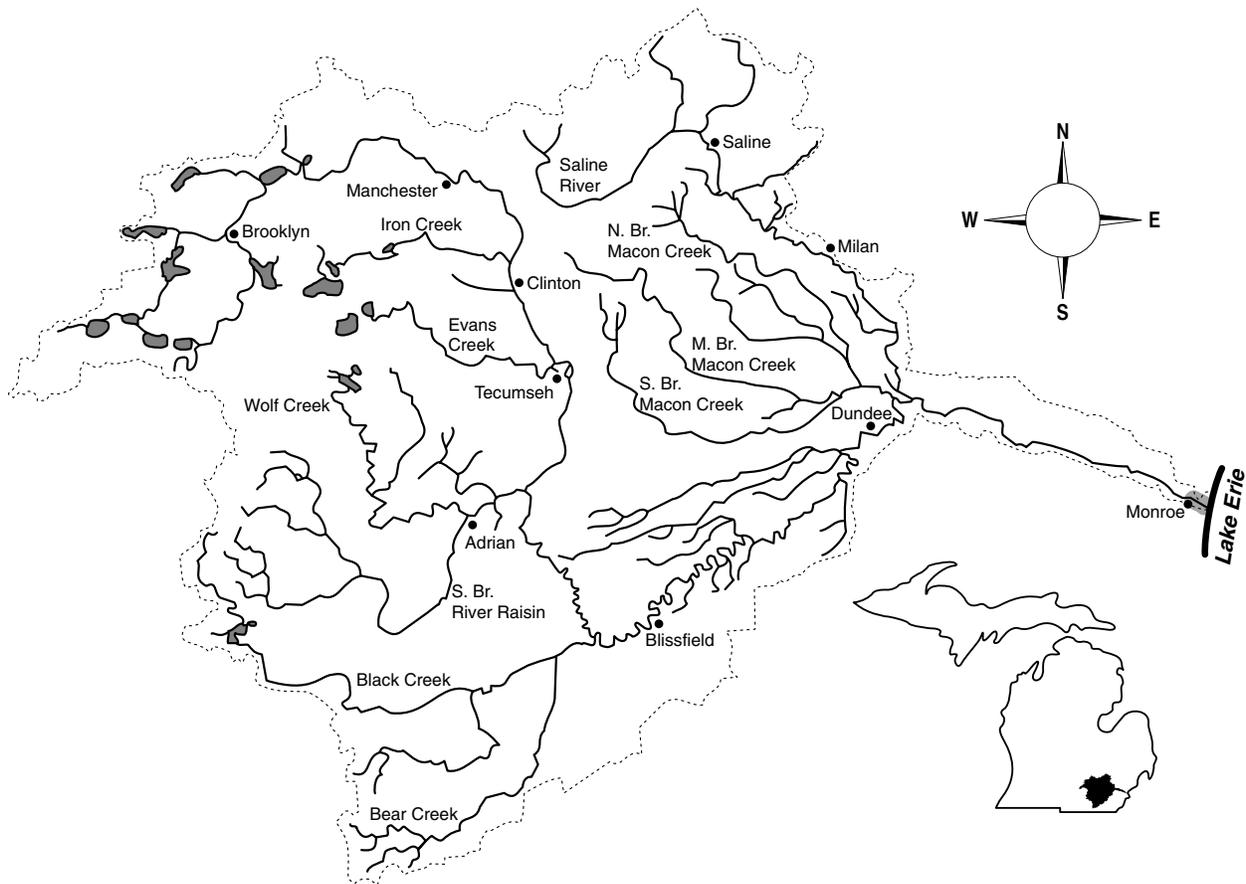


**Mooneye (*Hiodon tergisus*) - threatened**

**Habitat:**

- feeding - swift waters to feed at or near water surface
- cannot tolerate silted habitats nor turbidity
- lives in largest rivers and their interconnecting lakes; larger pools of streams and open reservoirs

- spawning - large, clear streams



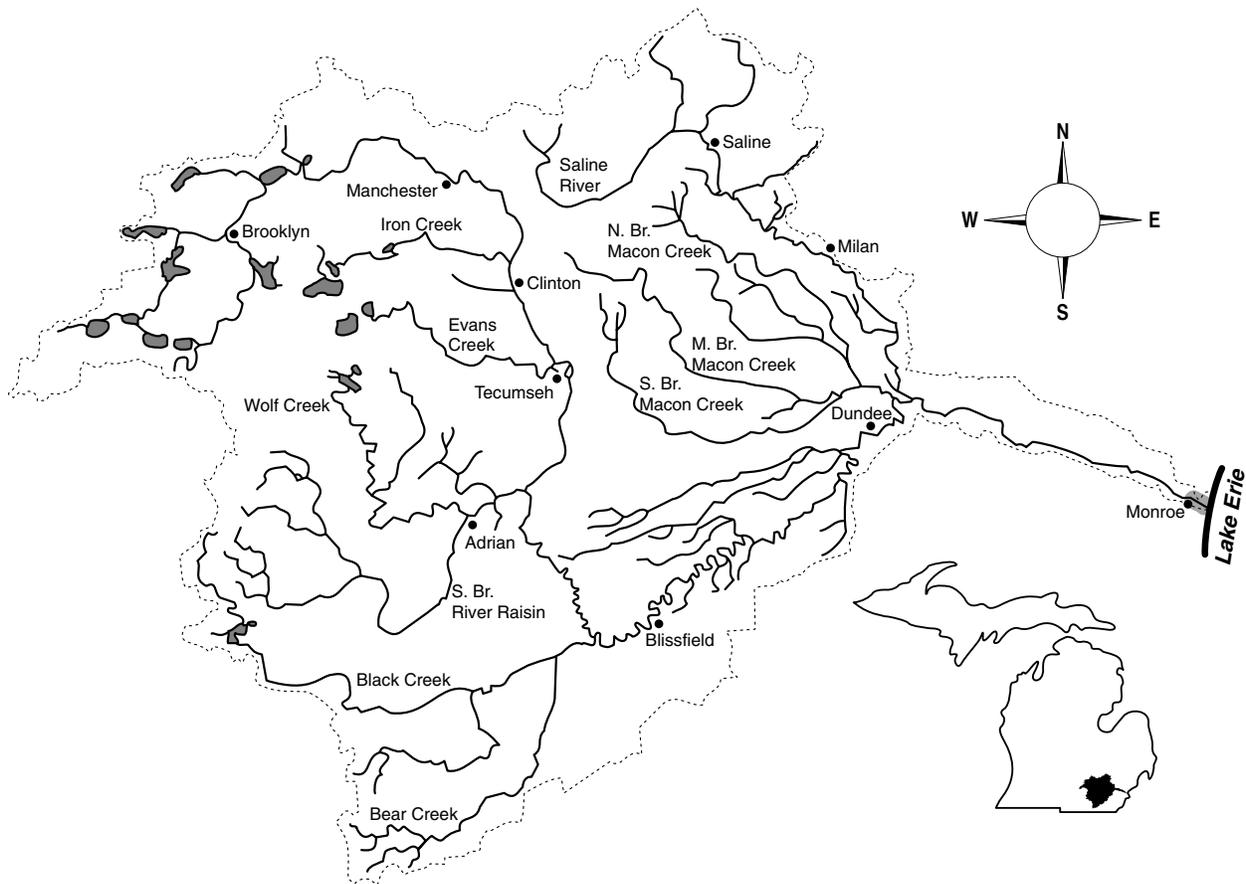
**American eel (*Anguilla rostrata*) - rare**

**Habitat:**

- feeding - medium to large rivers and Lake Erie
- must have current
- moderately clear water
- avoid cool spring-fed streams

- spawning - catadromous
- occurs in the SW portion of the North Atlantic called the Sargasso Sea

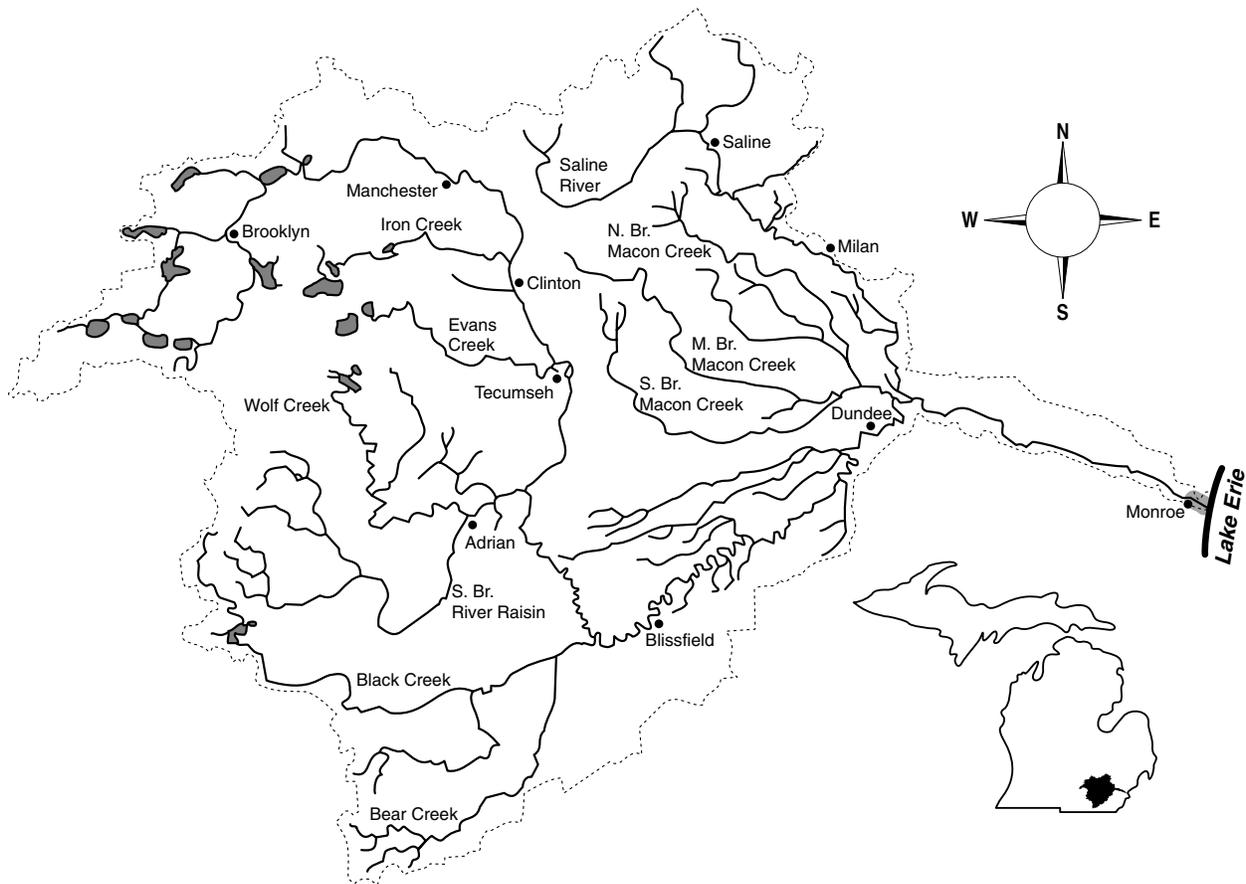
- winter refuge - buried in muddy or silty substrate



**Alewife** (*Alosa pseudoharengus*)

**Habitat:**

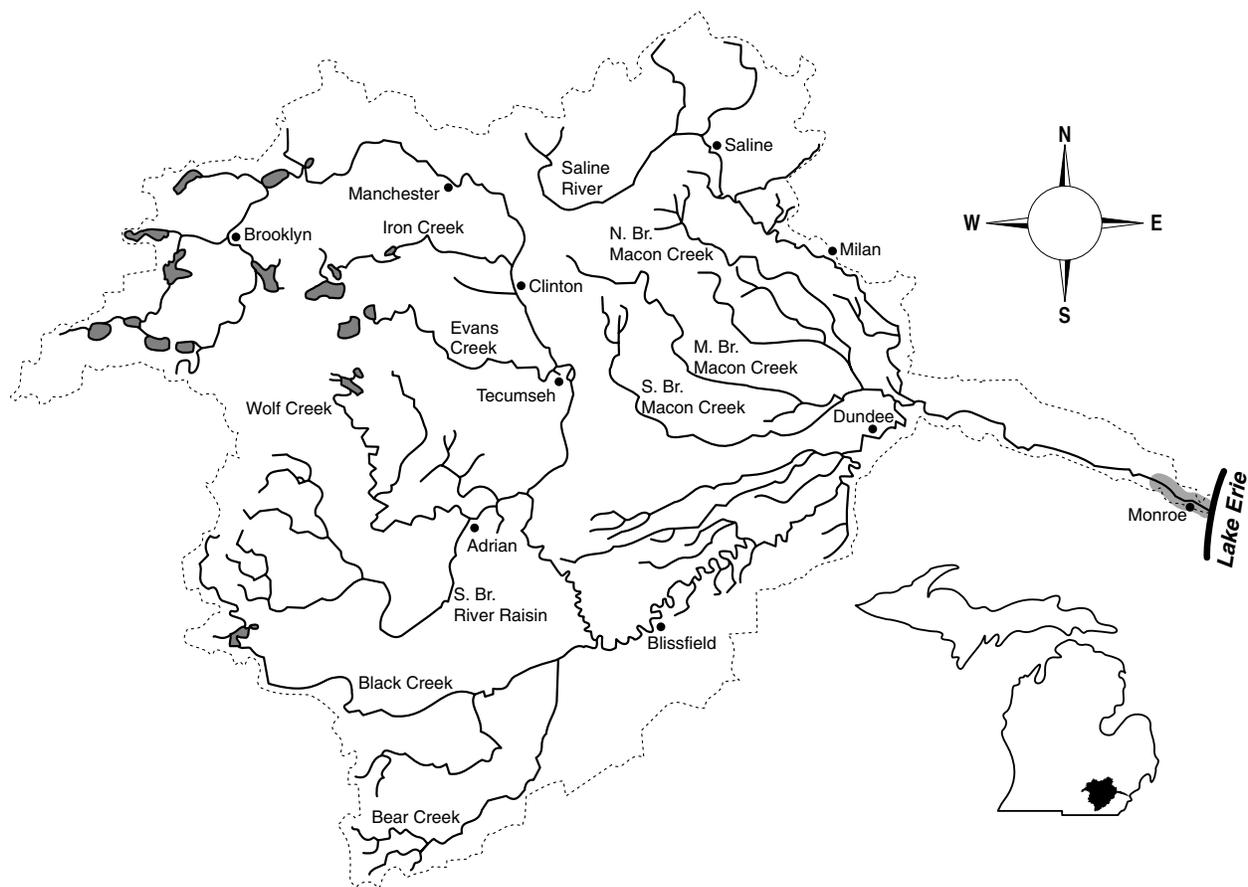
- feeding
  - adults: deep water of Lake Erie
  - young: shallow water of Lake Erie
  - prefers warmer waters
  
- spawning
  - streams or shallow beaches of lake
  - sand or gravelly substrate
  
- winter refuge
  - deep water



**Gizzard shad (*Dorosoma cepedianum*)**

**Habitat:**

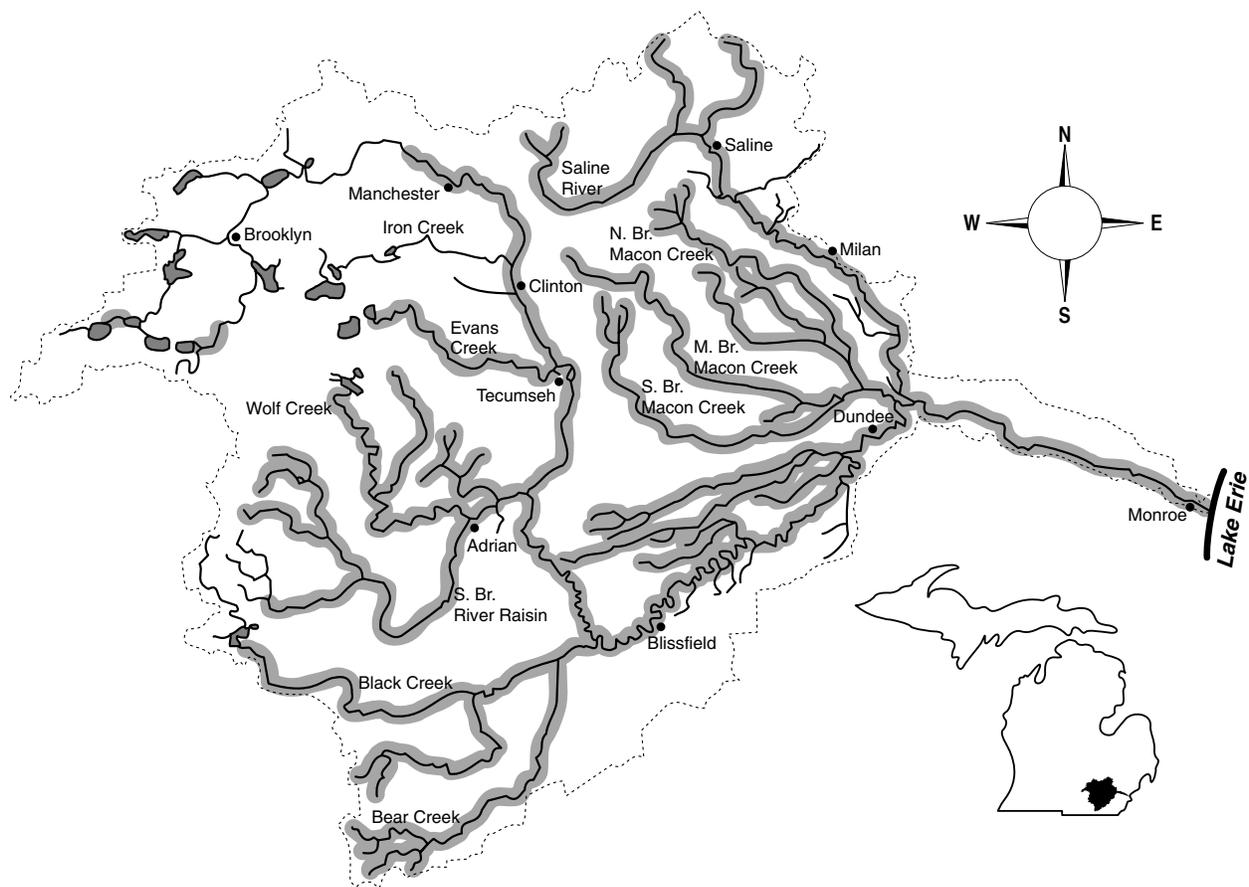
- feeding - large streams with low gradient, impoundments, and Lake Erie
- tolerant of clear and turbid water
  
- spawning - shallow areas of ponds, lakes, and large rivers
- low gradient



**Central stoneroller (*Campostoma anomalum*)**

**Habitat:**

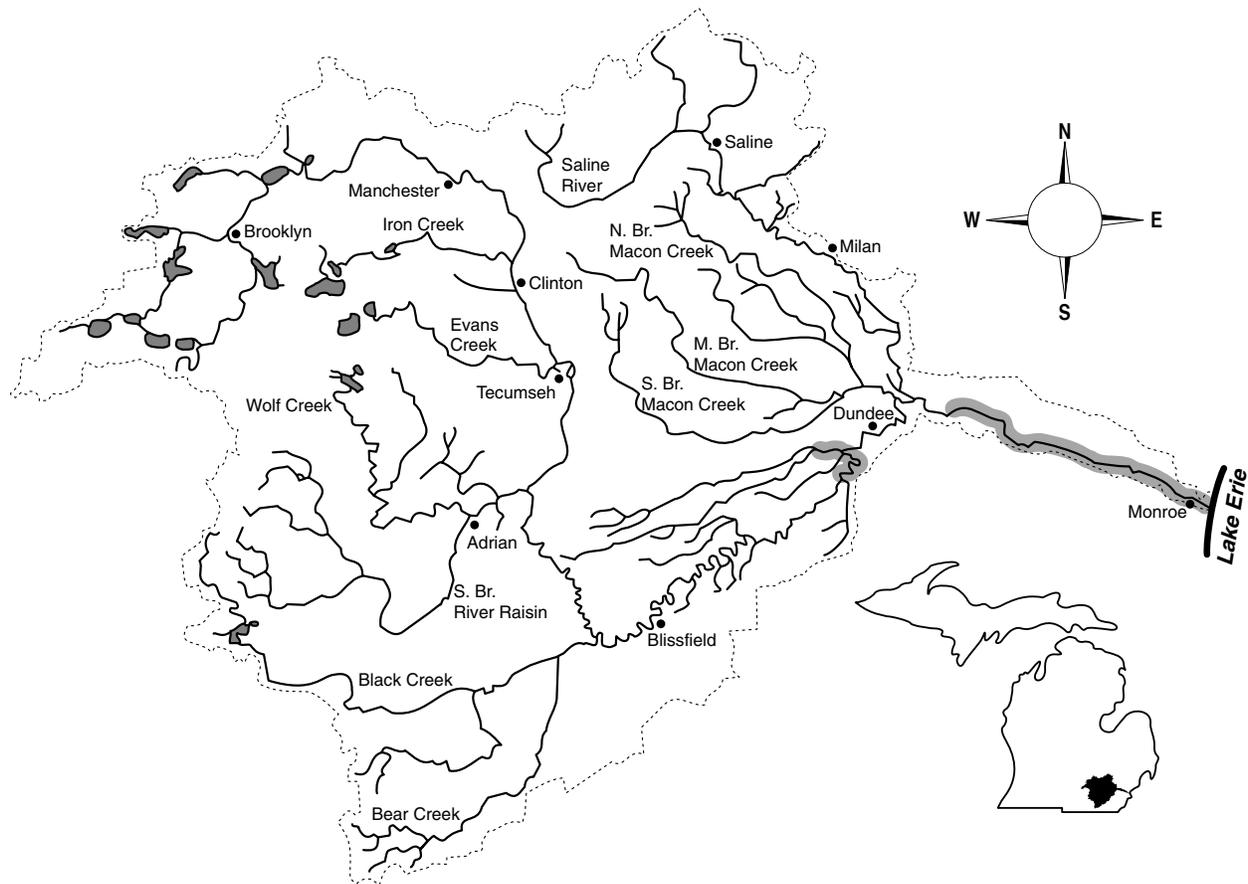
- feeding - moderate to high gradients
  - rocky riffles
  - somewhat tolerant of turbidity
  - riffles and adjacent pools of warm, clear, shallow streams
  - gravel or cobble substrate
- spawning - riffles



**Goldfish** (*Carassius auratus*)

**Habitat:**

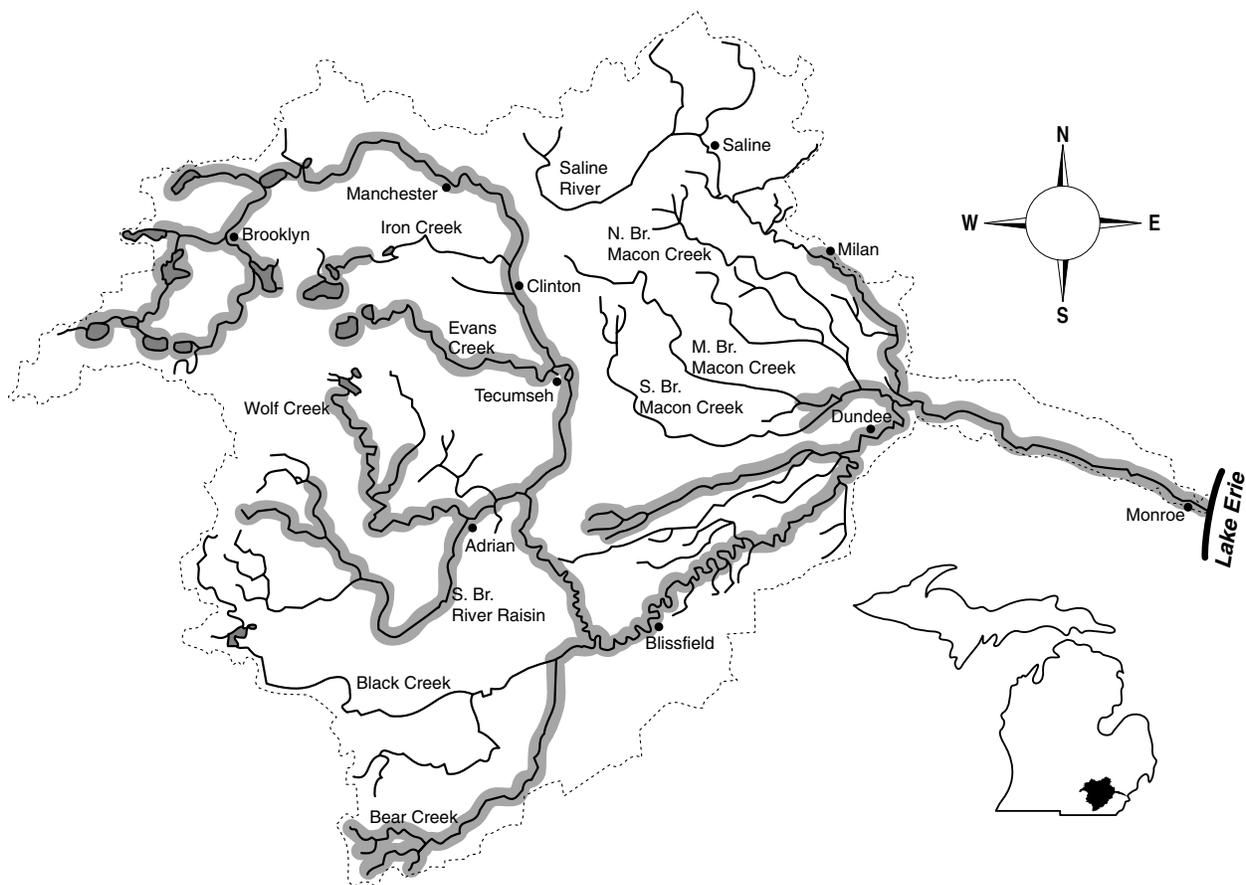
- feeding - vegetation
  - low gradient, shallow, warm water streams, rivers, lakes, and impoundments
  - tolerates some turbidity and siltation
- spawning - warm, weedy shallows



**Spotfin shiner** (*Cyprinella spiloptera*)

**Habitat:**

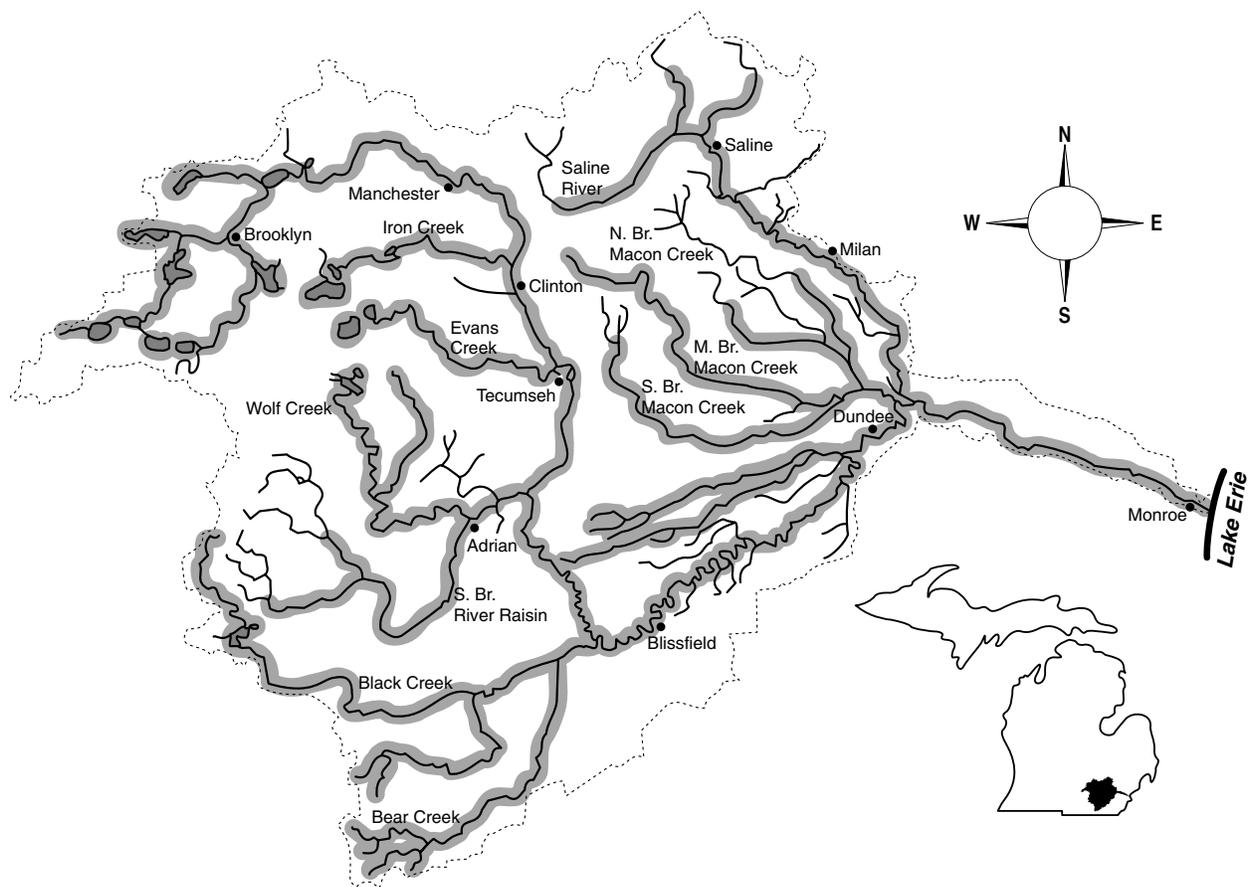
- feeding - clear water tolerant of turbidity and siltation
- some current
- shallow depths
- medium sized streams, lakes, and impoundments
- clear sand or gravel substrate
  
- spawning - swift current
- crevice spawner or on underside of submerged logs and roots



**Common carp (*Cyprinus carpio*)**

**Habitat:**

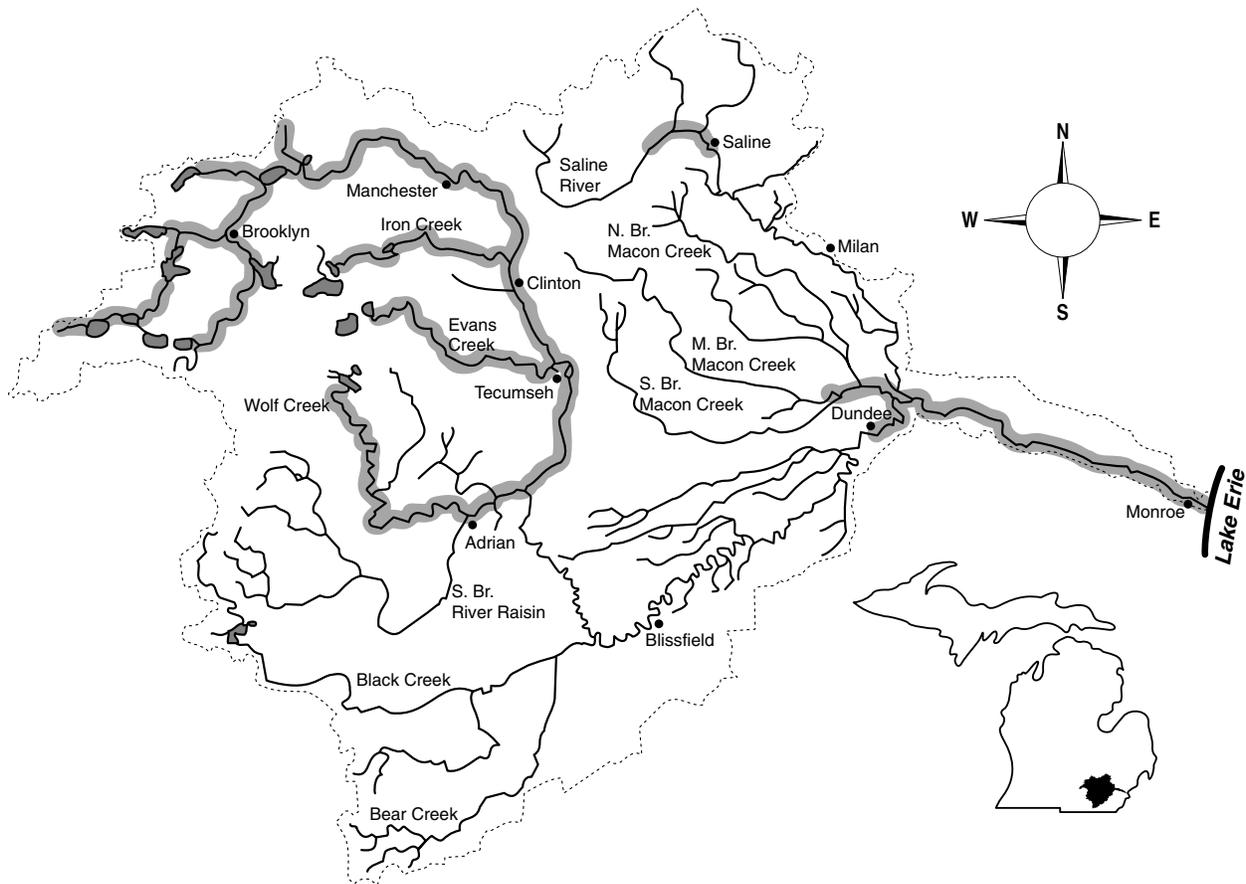
- feeding - low gradient fertile streams, rivers, lakes, and impoundments
  - abundance of aquatic vegetation or organic matter
  - tolerant of all substrates and clear to turbid water
- 
- spawning - weedy or grassy shallows



**Striped shiner** (*Luxilus chrysocephalus*)

**Habitat:**

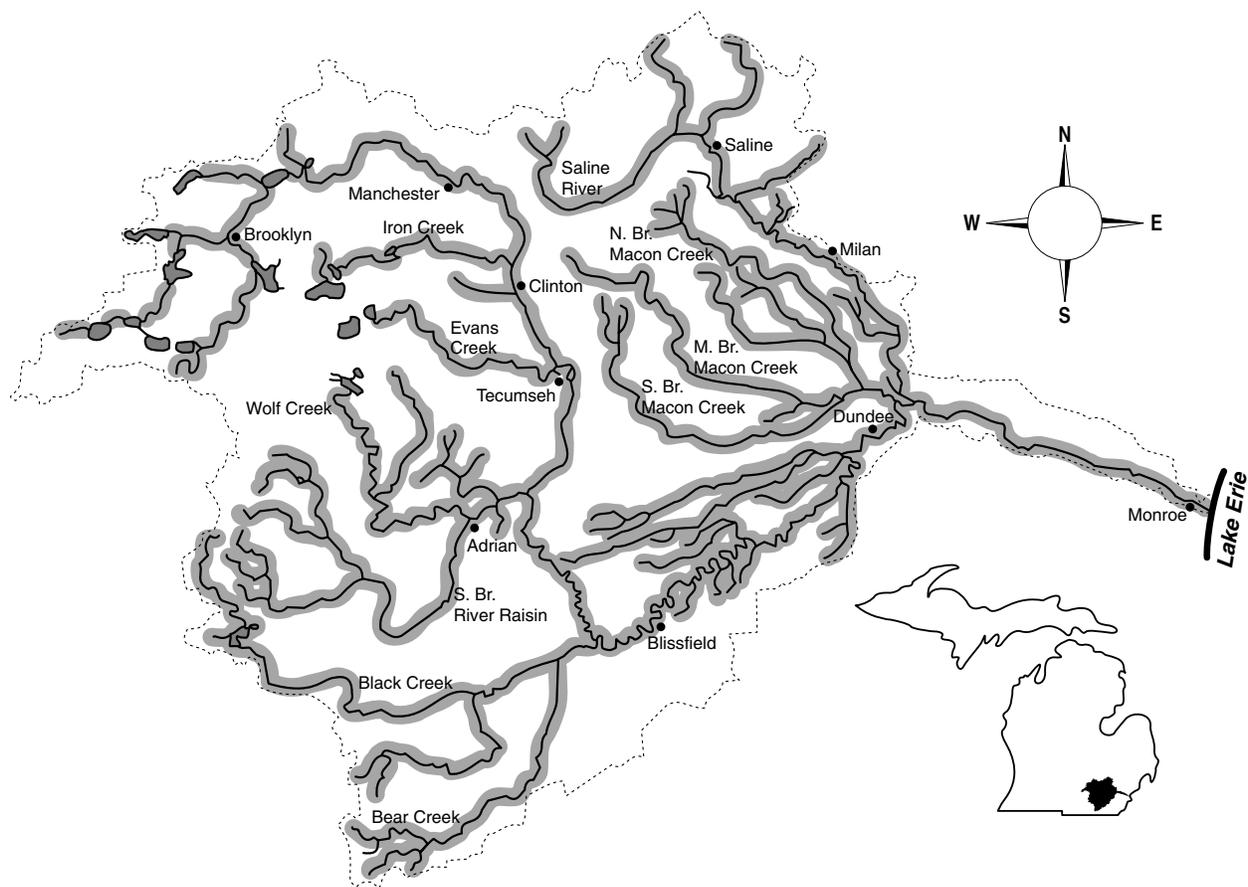
- feeding - clear to slightly turbid streams and rivers
  - gravel substrate
  - low gradient
  
- spawning - gravel, boulder, bedrock, or sand substrate
  - clear water in small streams with moderate to high gradient
  
- winter refuge - in large deep pools of low gradient rivers



**Common shiner** (*Luxilus cornutus*)

**Habitat:**

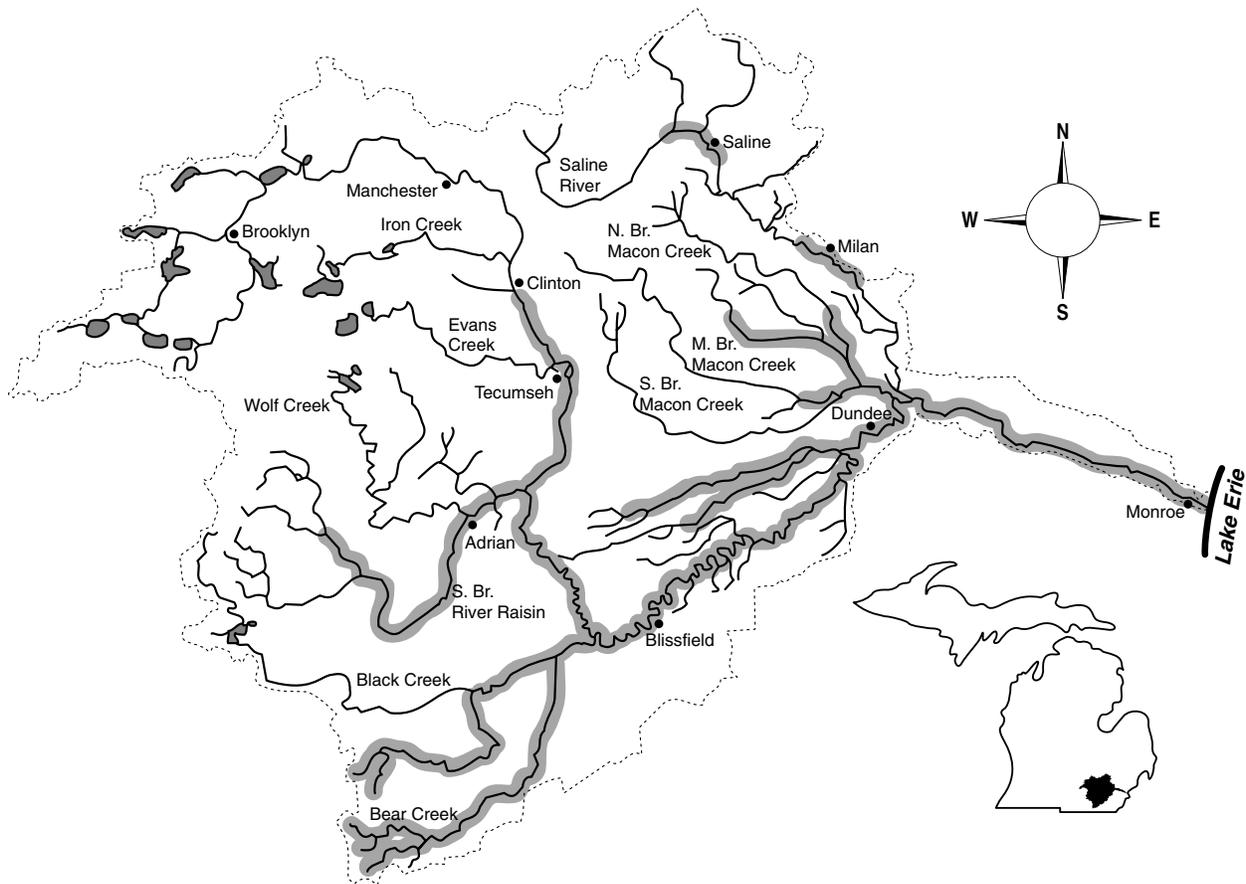
- feeding - small, clear, high-gradient streams and rivers, or shores of clear water lakes and impoundments
  - gravel substrate
  - can tolerate some submerged aquatic vegetation
  - not very tolerant of turbidity or silted waters
  
- spawning - gravel nests of other fish, especially those at the head of a riffle



**Redfin shiner (*Lythrurus umbratilis*)**

**Habitat:**

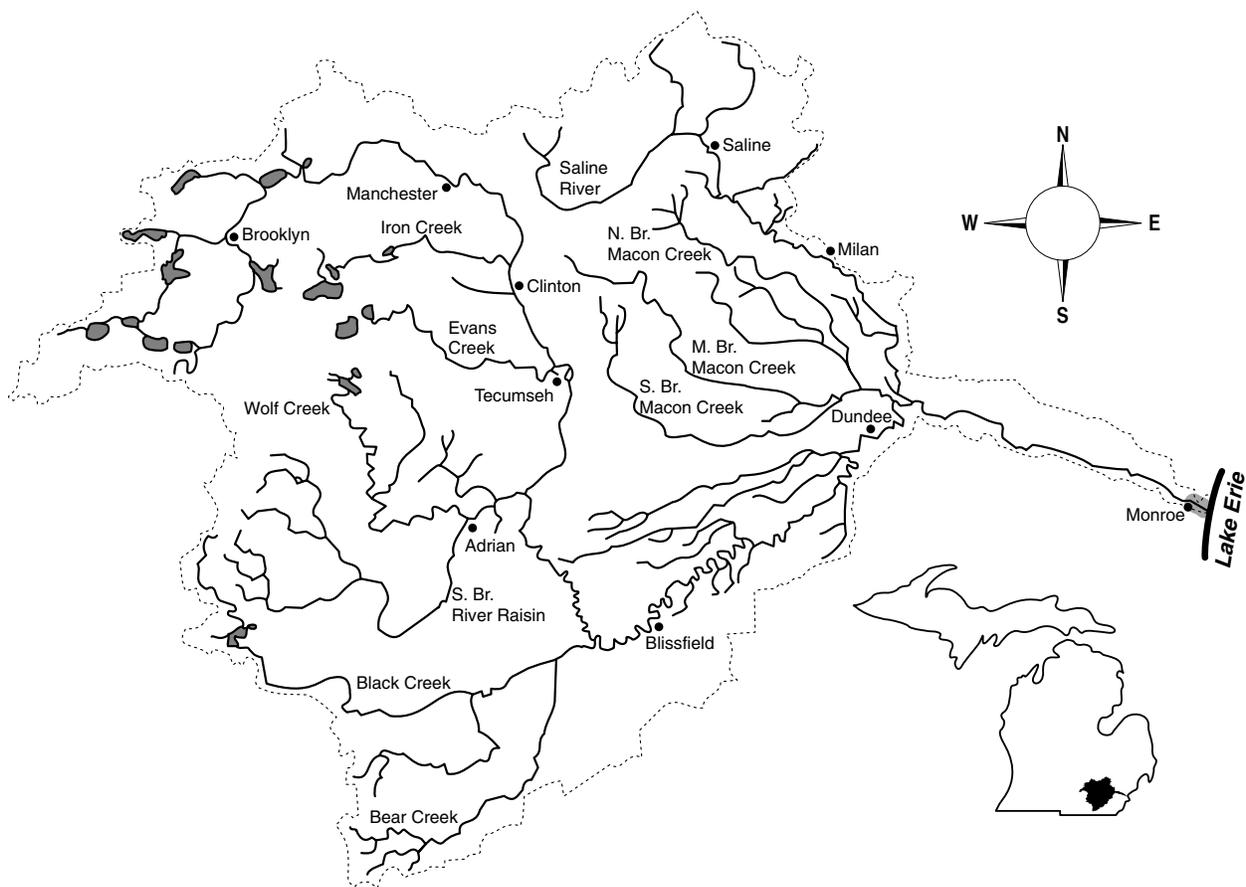
- feeding - clear, quiet warm rivers in weedy pools
  - little to no current
  - abundant submerged and emergent vegetation
- spawning - over sand and gravel substrate in slow moving sections of streams



**Silver chub** (*Macrhybopsis storeriana*) - special concern

**Habitat:**

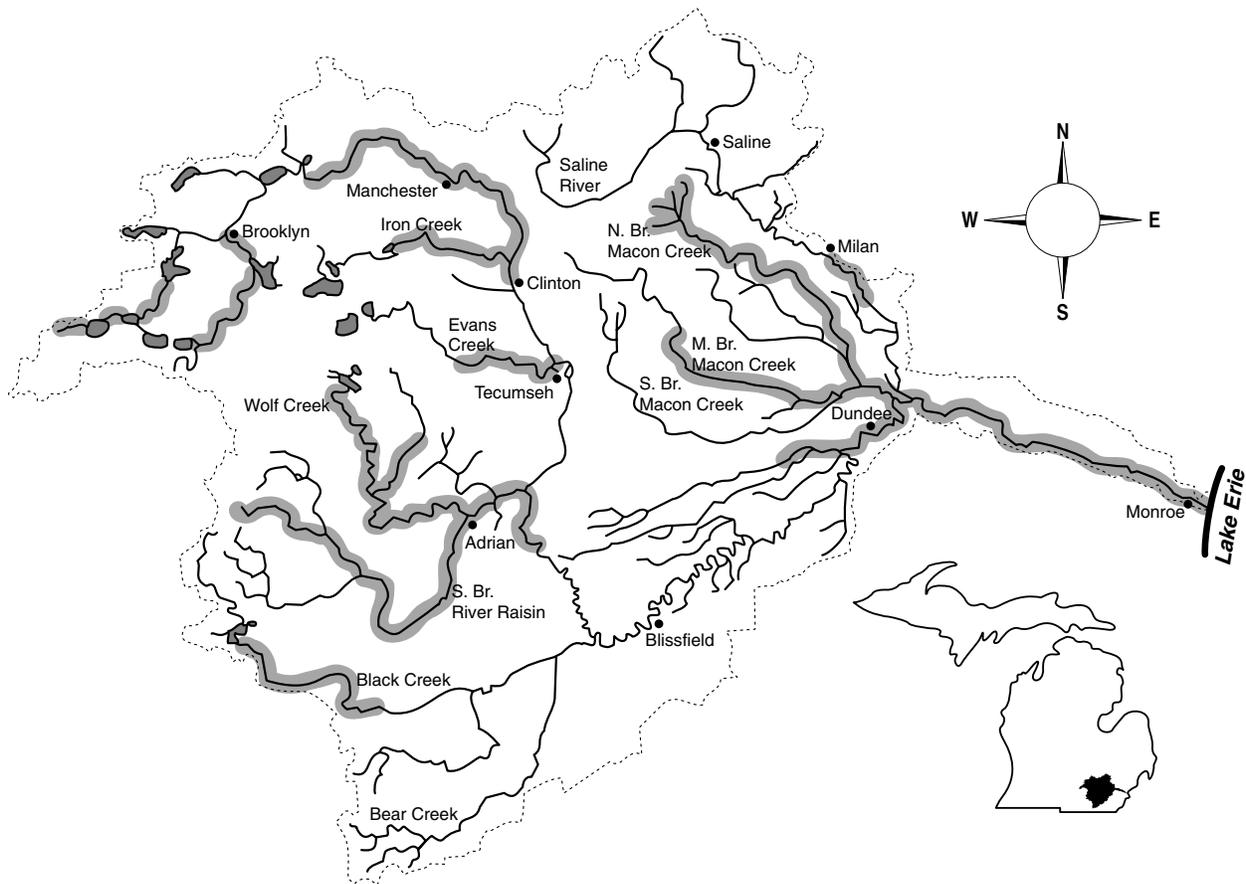
- feeding - large deep rivers with low gradient
- clean gravel or sand substrate
- cannot tolerate turbidity or silt
  
- spawning - thought to occur in open water



**Hornyhead chub** (*Nocomis biguttatus*)

**Habitat:**

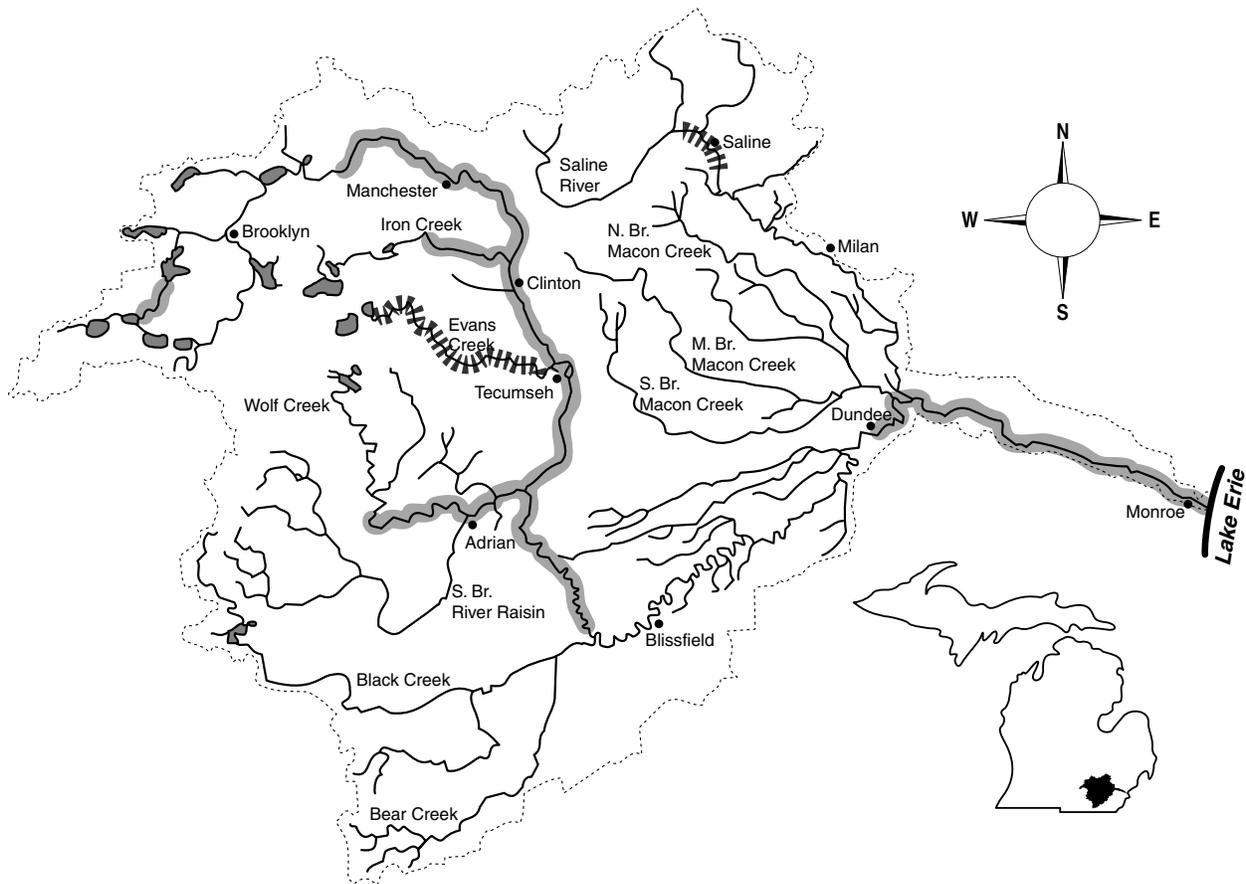
- feeding - adults: near riffles
- young: near vegetation
- clear water, does not tolerate turbidity
- gravel substrate
- low gradient streams that are tributaries to large streams
  
- spawning - large stones and pebbles present
- often below a riffle in shallow water
- gravel substrate



**River chub** (*Nocomis micropogon*)

**Habitat:**

- feeding - moderate to large streams
- moderate to high gradient
- gravel, boulder, or bedrock substrate
- little to no aquatic vegetation
- cannot tolerate turbidity or siltation

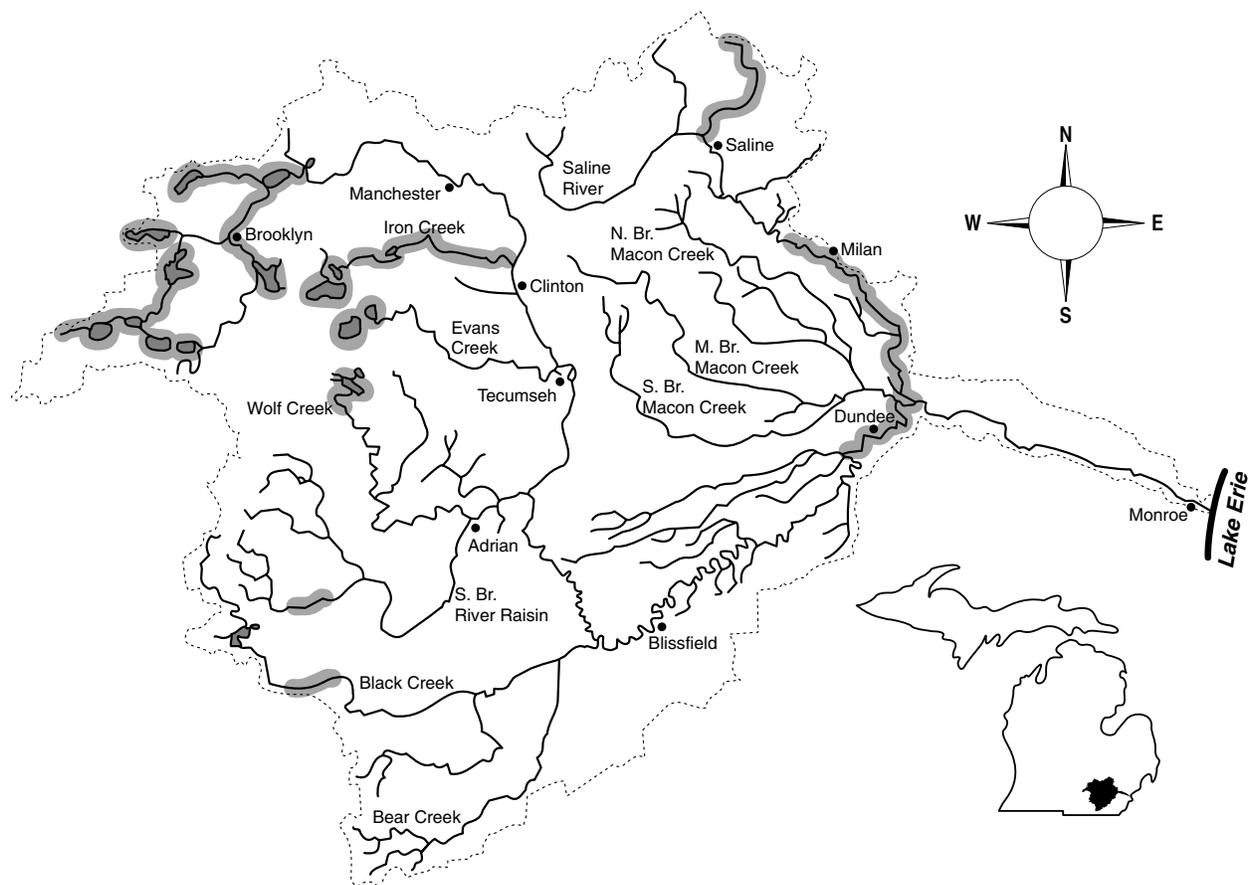


**Golden shiner** (*Notemigonus crysoleucas*)

**Habitat:**

- feeding - lakes and impoundments and quiet pools of low gradient streams
- clear shallow water
- heavy vegetation

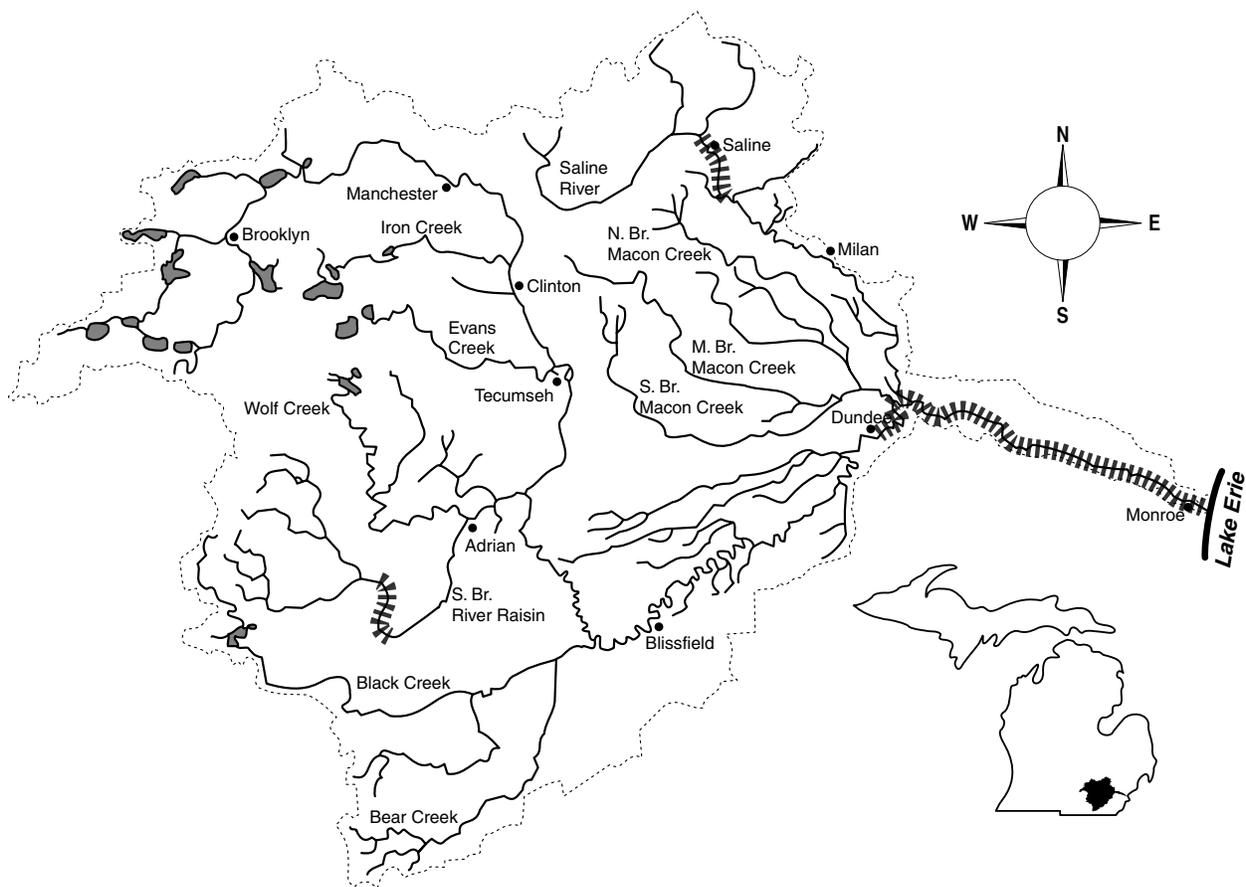
spawning - vegetation



**Bigeye chub (*Notropis amblops*) - endangered**

**Habitat:**

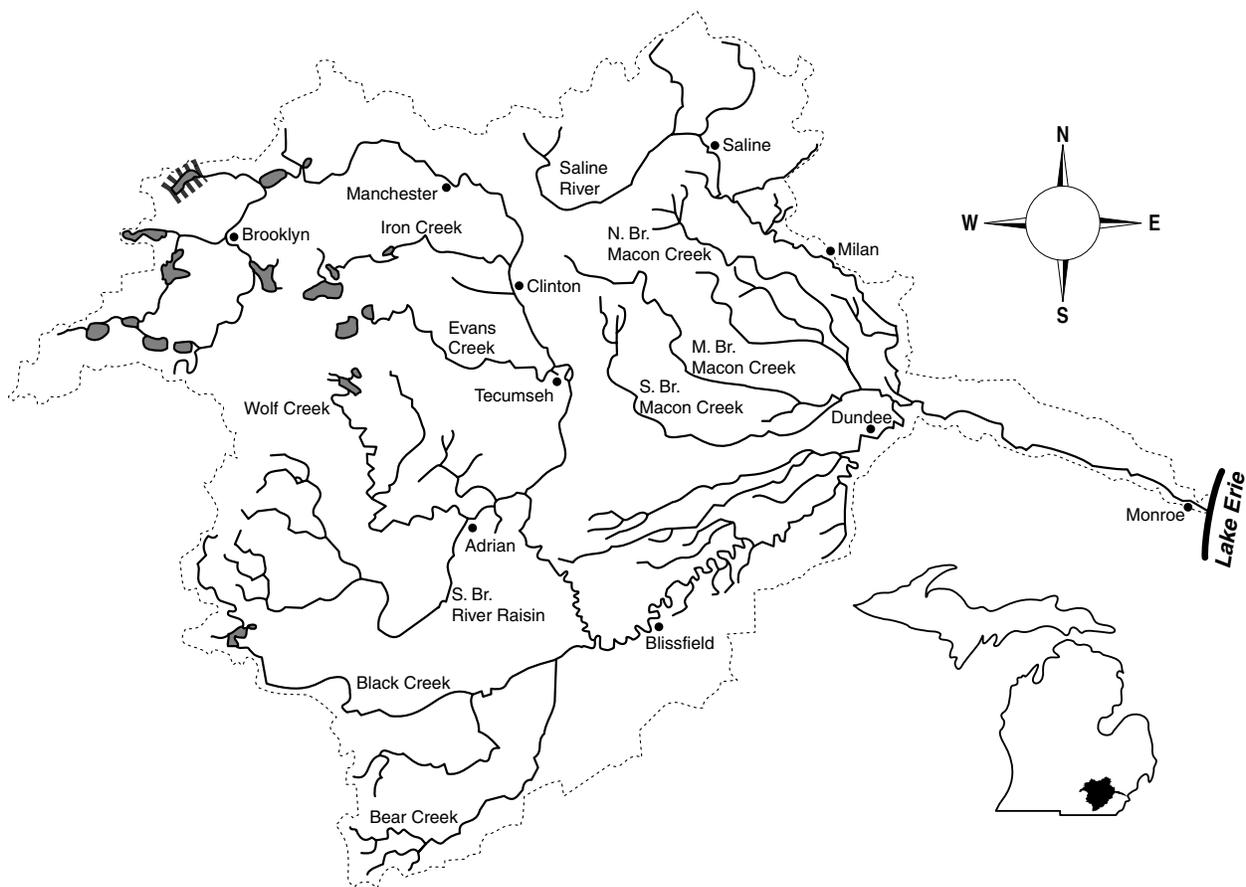
- feeding - clear streams
- silt-free, gravelly or rocky substrates
- near riffles, but not in main current also in quiet pools



**Pugnose shiner** (*Notropis anogenus*) - special concern

**Habitat:**

- feeding - very clear water of lakes, impoundments, and low-gradient streams
- aquatic vegetation
- clean sand, marl, or organic debris substrate
- extremely intolerant of turbidity

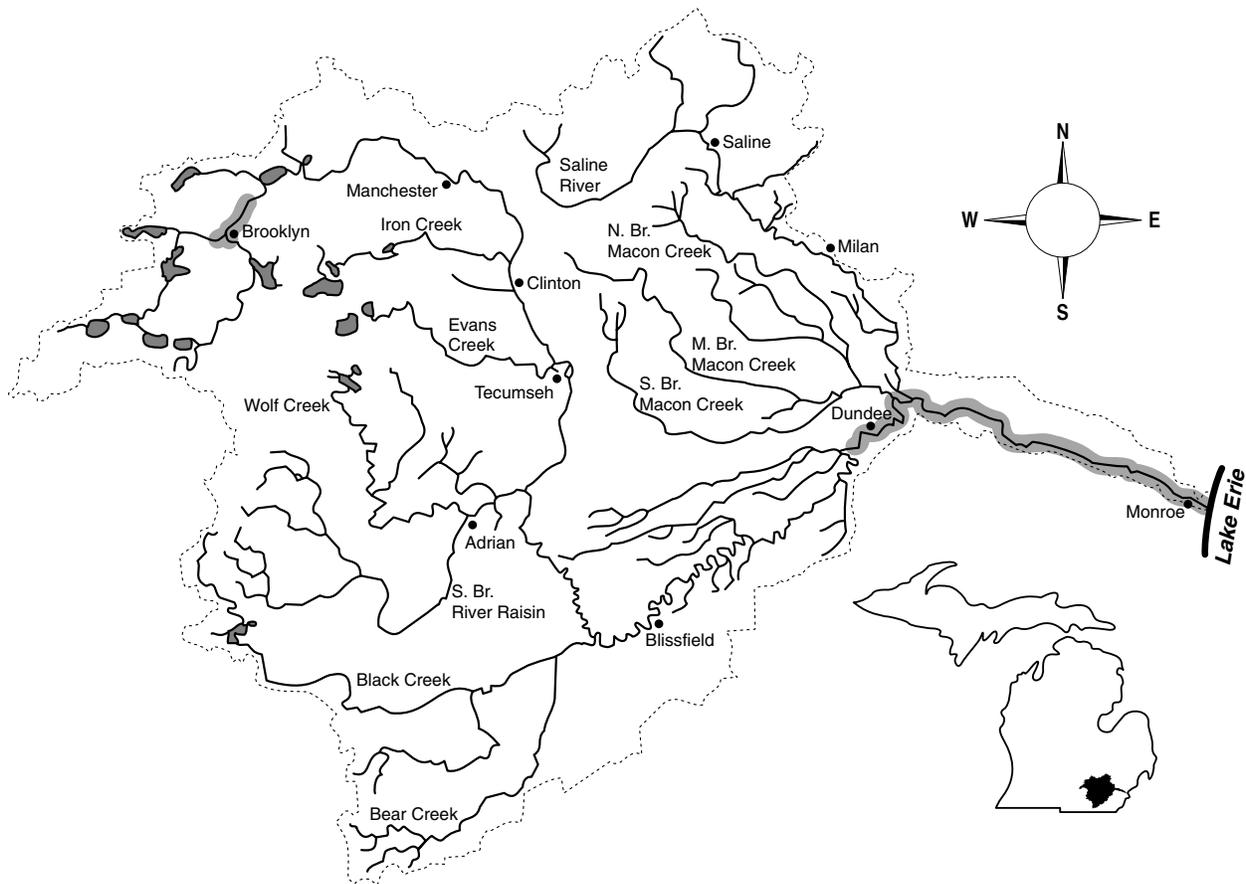


**Emerald shiner** (*Notropis atherinoides*)

**Habitat:**

- feeding - open-large stream channels
- low to moderate gradient
- range of turbidites and bottom types
- midwater or surface preferred, substrate of little importance
- avoids rooted vegetation

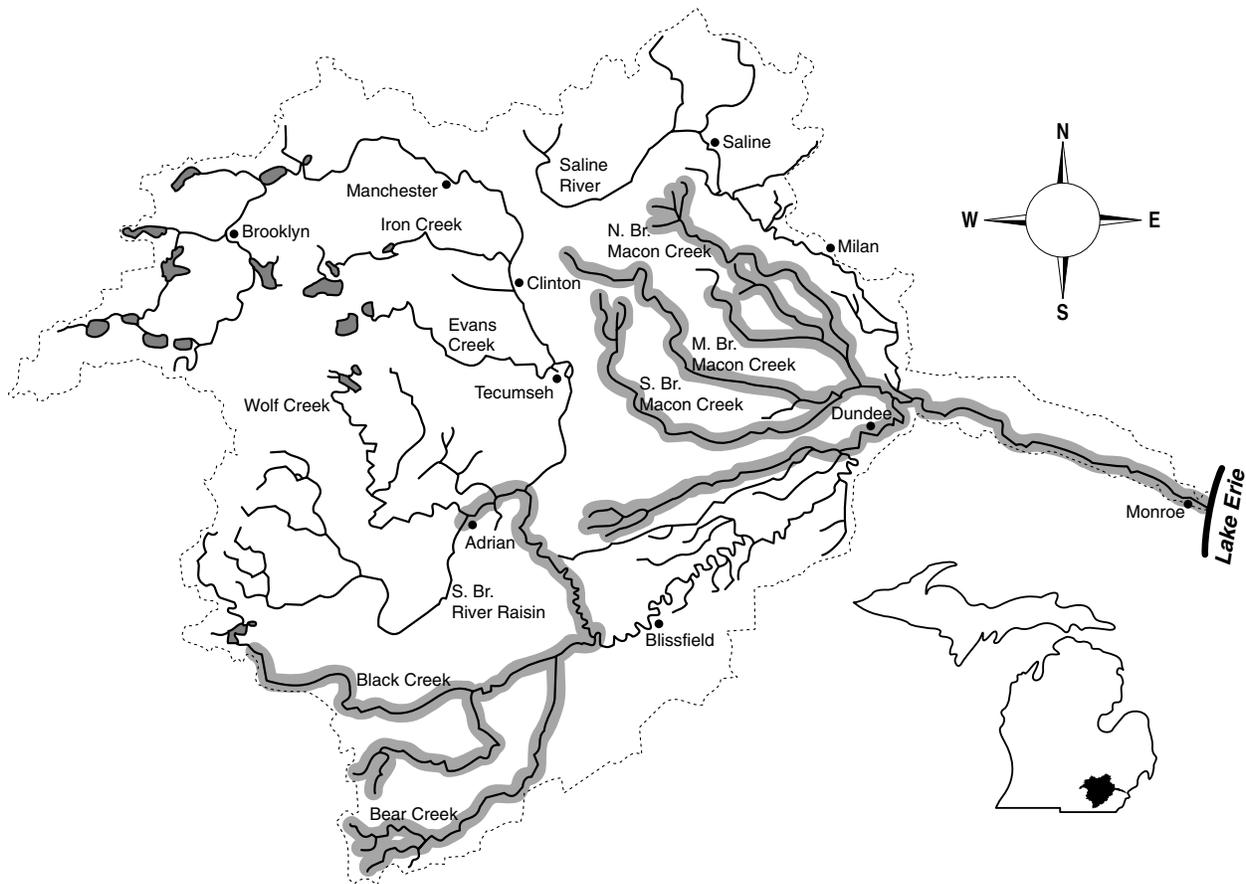
spawning - sand or firm mud substrate or gravel shoals



**Silverjaw minnow (*Notropis buccatus*)**

**Habitat:**

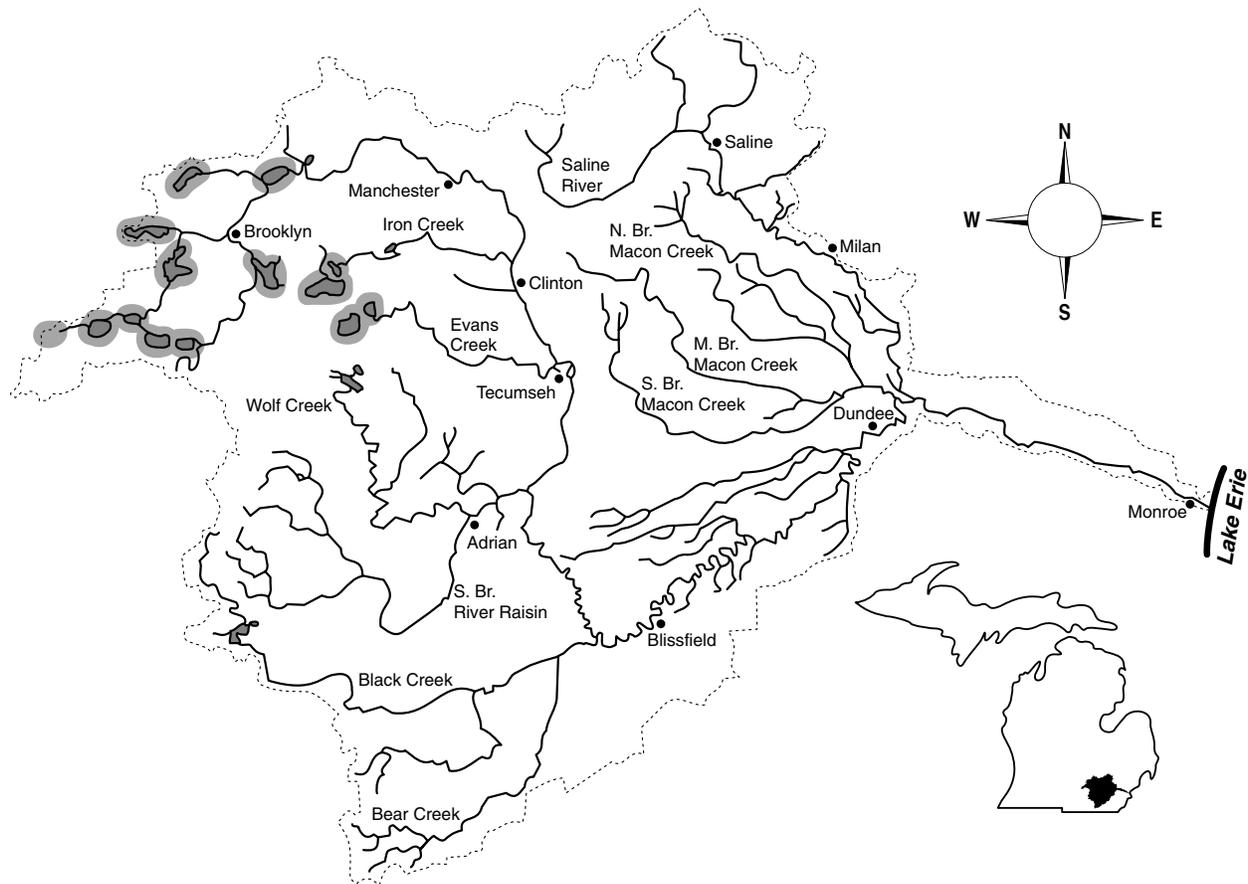
- feeding - small, clear, shallow streams
- sand substrate
- moderate gradient
- high tolerance to turbidity and domestic and industrial pollutants



**Blackchin shiner (*Notropis heterodon*)**

**Habitat:**

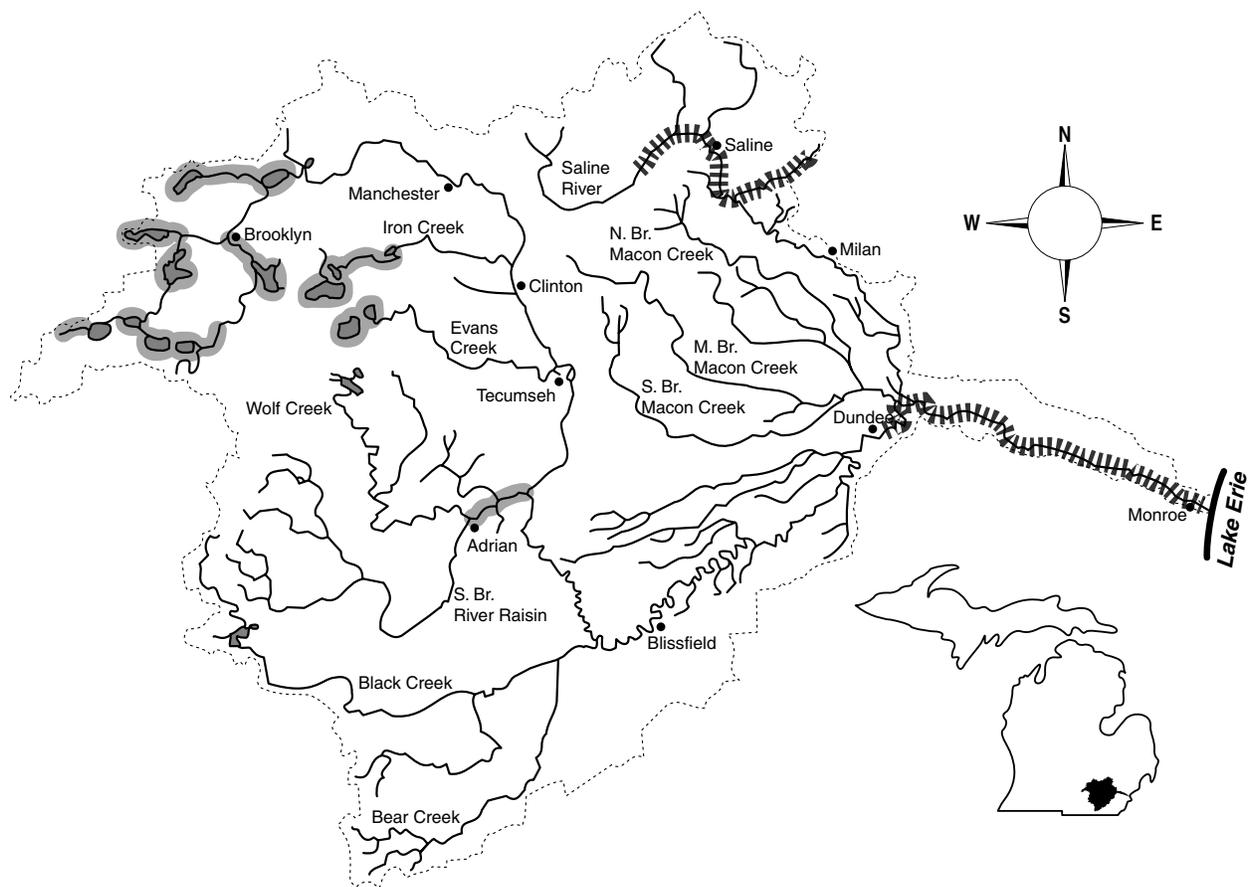
- feeding - lakes, impoundments, and quiet pools in streams and rivers
- clear water
- clean sand, gravel, or organic debris substrate
- dense beds of submerged aquatic vegetation
- cannot tolerate turbidity, silt, or loss of aquatic vegetation



**Blacknose shiner (*Notropis heterolepis*)**

**Habitat:**

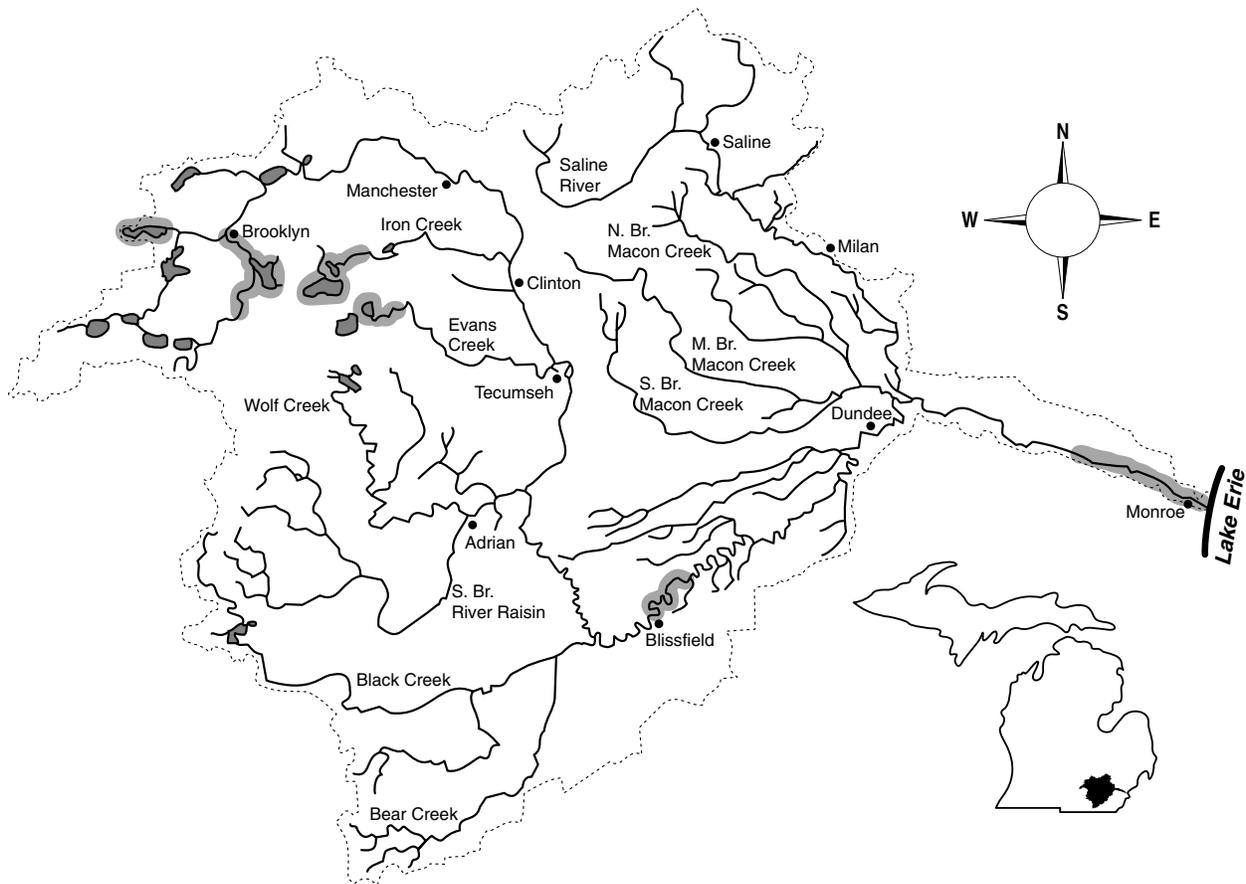
- feeding - clear lakes, impoundments, and pools of small, clear, low gradient streams
  - aquatic vegetation
  - clean sand, gravel, marl, muck, peat, or organic debris substrate
  - cannot tolerate much turbidity, much siltation, or loss of aquatic vegetation
- spawning - sandy substrate



**Spottail shiner (*Notropis hudsonius*)**

**Habitat:**

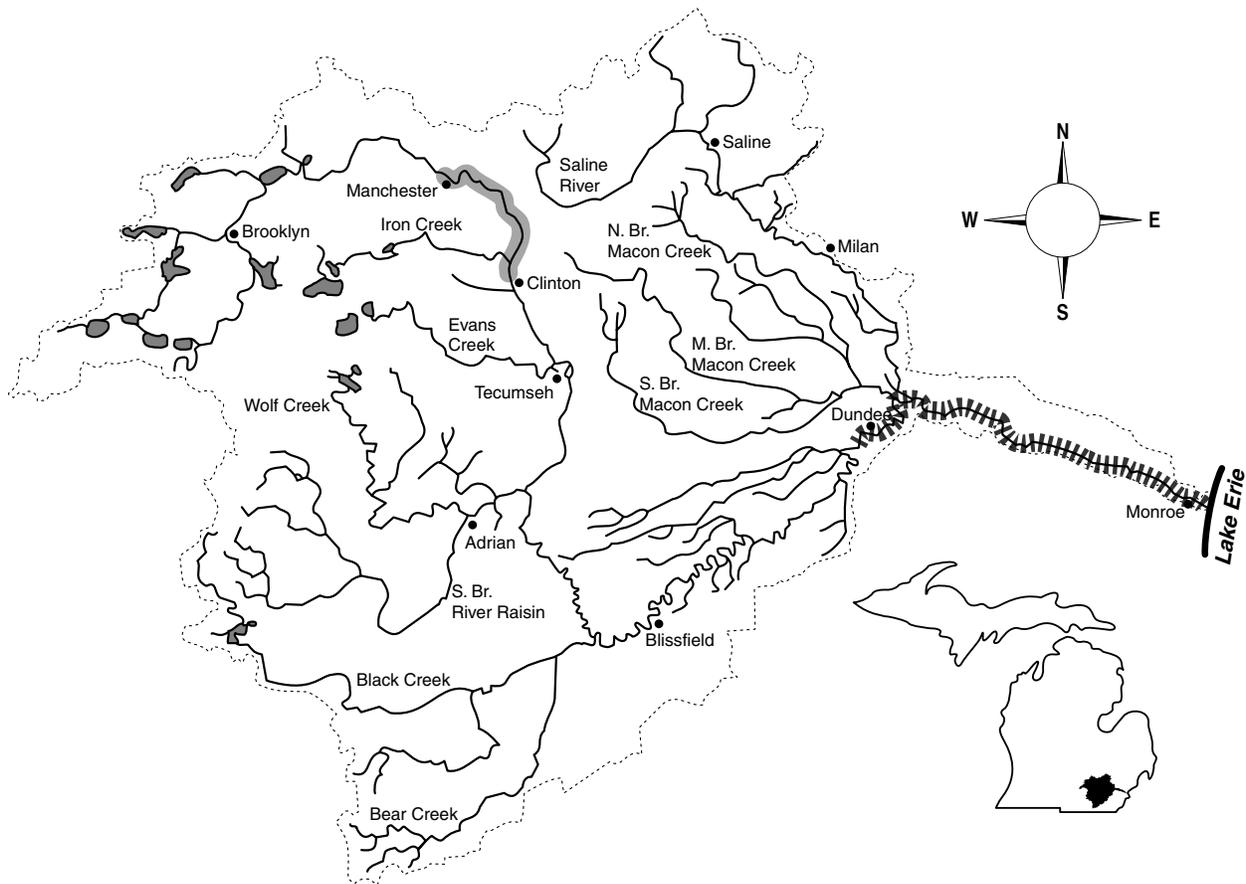
- feeding
  - large rivers, lakes, and impoundments
  - firm sand and gravel substrate
  - low current
  - sparse to moderate vegetation
  - avoids turbidity
  
- spawning
  - over sandy shoals or gravelly riffles
  - near the mouths of small streams



**Silver shiner** (*Notropis photogenis*) - endangered

**Habitat:**

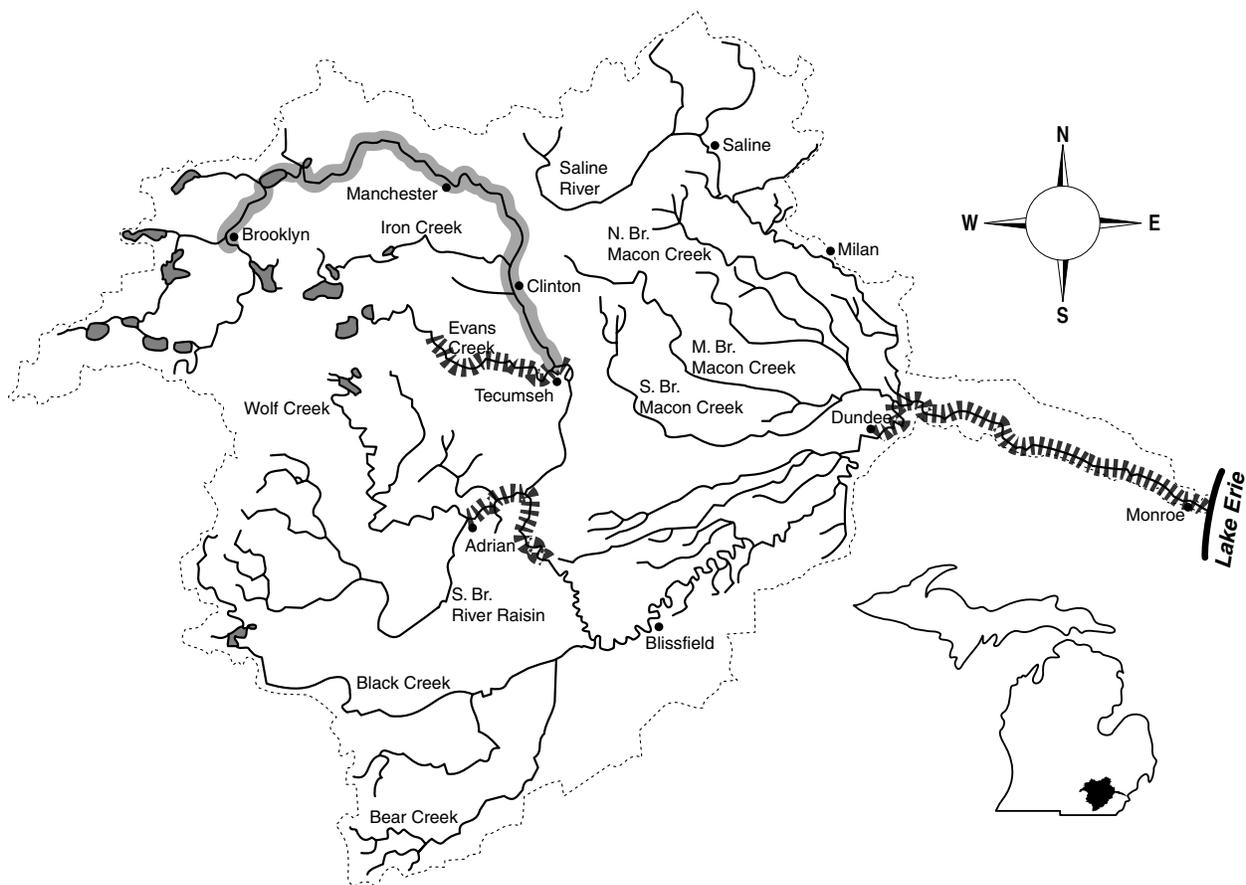
- feeding - moderate to large sized streams
- clear water with moderate to high gradients
- gravel and boulder substrate
- riffles and swifter eddies and currents of pools
- does not like silt substrate or rooted aquatic vegetation



**Rosyface shiner** (*Notropis rubellus*)

**Habitat:**

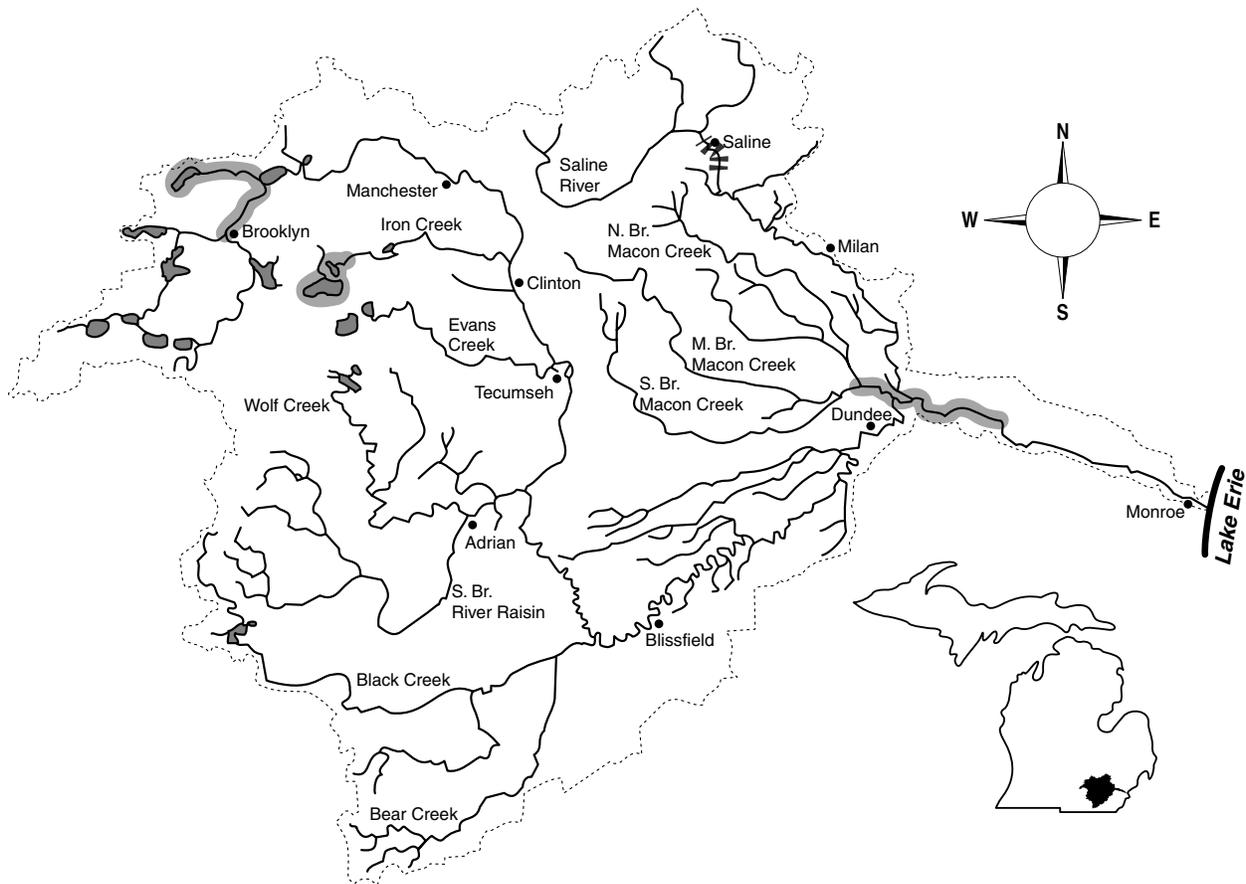
- feeding - moderate sized streams
- moderate to high gradient
- gravel or sand substrate; intolerant of silt substrate
- clear water; intolerant of turbidity
  
- spawning - on nests of hornyhead chub, chesnut lamprey, and redhorses
- sandy-gravel, gravel or bedrock substrate
- shallow high gradient water



**Sand shiner** (*Notropis stramineus*)

**Habitat:**

- feeding - sand and gravel substrate
  - shallow pools in medium size streams, lakes, and impoundments
  - clear water and low gradient
  - rooted aquatic vegetation preferred
  - tolerant of some inorganic pollutants provided substrate is not covered
- spawning - clean gravel or sand substrate

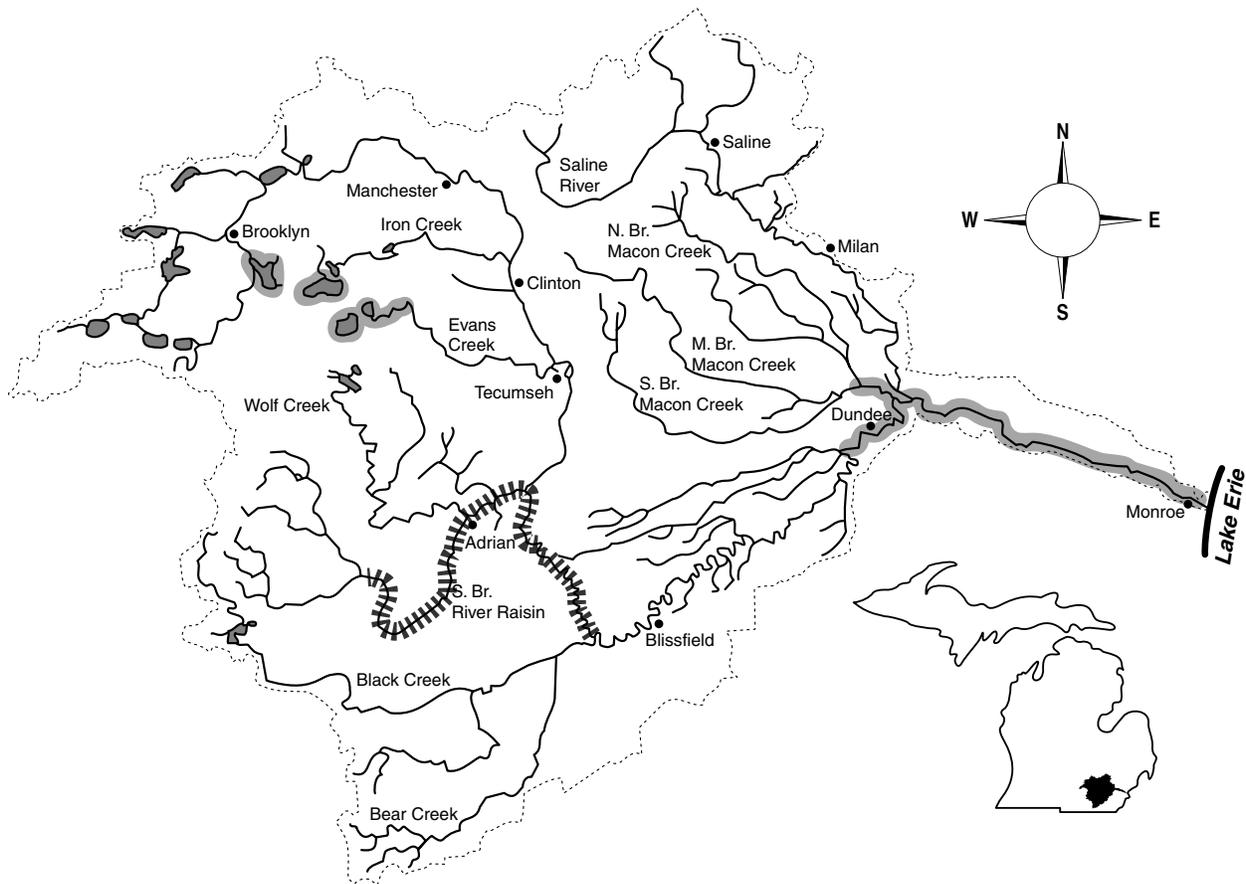


**Mimic shiner** (*Notropis volucellus*)

**Habitat:**

- feeding - pools and backwater of streams, moderately weedy lakes and impoundments
- quiet or still water
- clear shallow water

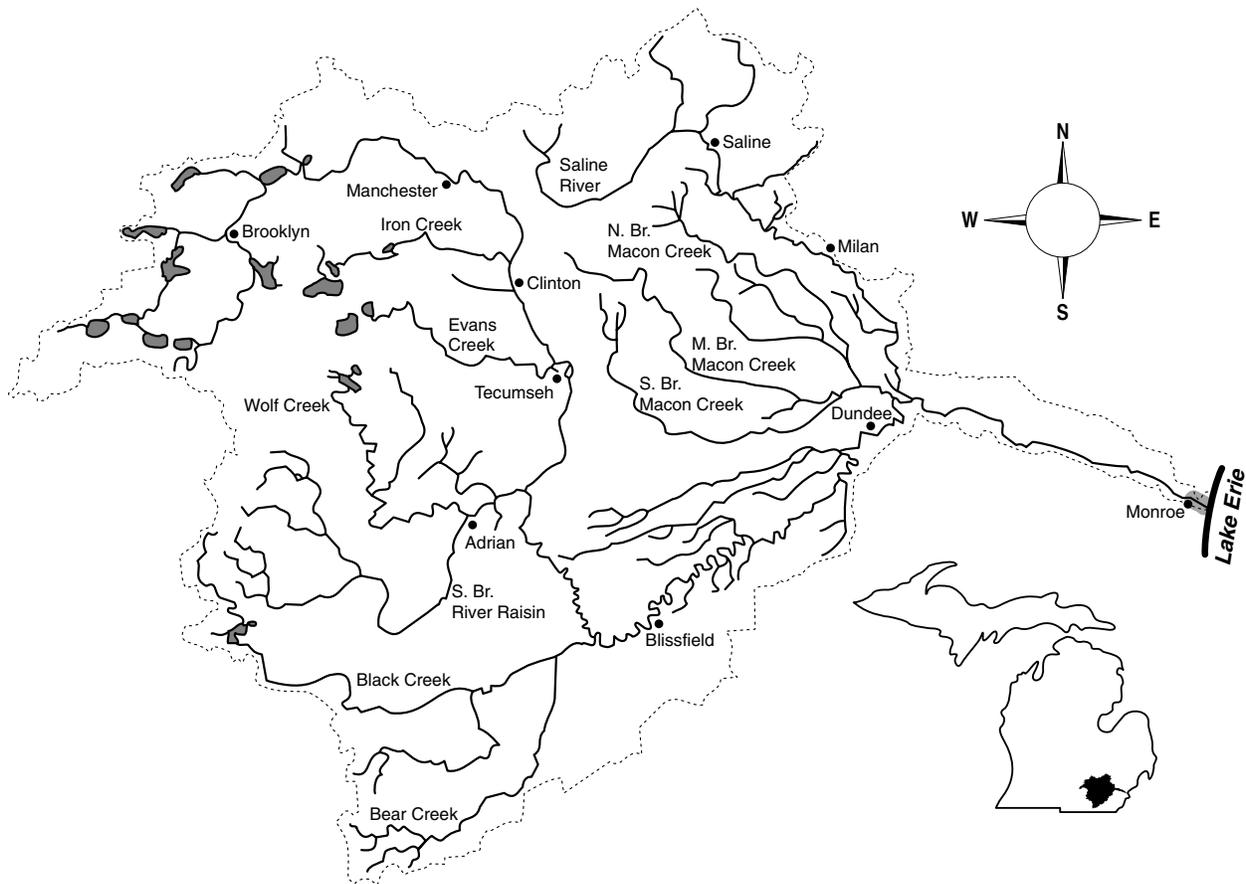
- spawning - aquatic vegetation necessary



**Pugnose minnow (*Opsopoeodus emiliae*) - threatened**

**Habitat:**

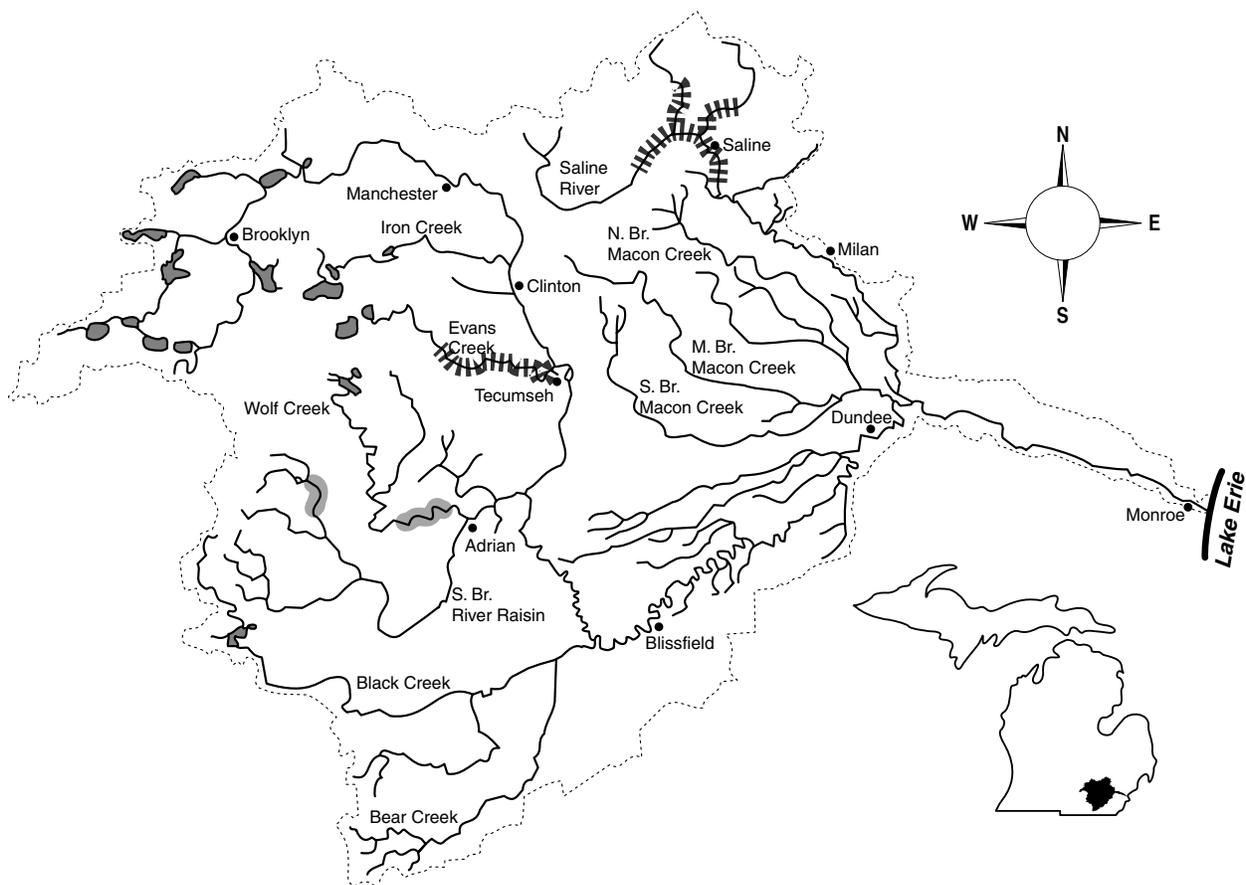
- feeding - clear vegetated rivers
- low current
- sand or mud substrates
- intolerant of turbidity



**Southern redbelly dace (*Phoxinus erythrogaster*) - threatened, may be extirpated**

**Habitat:**

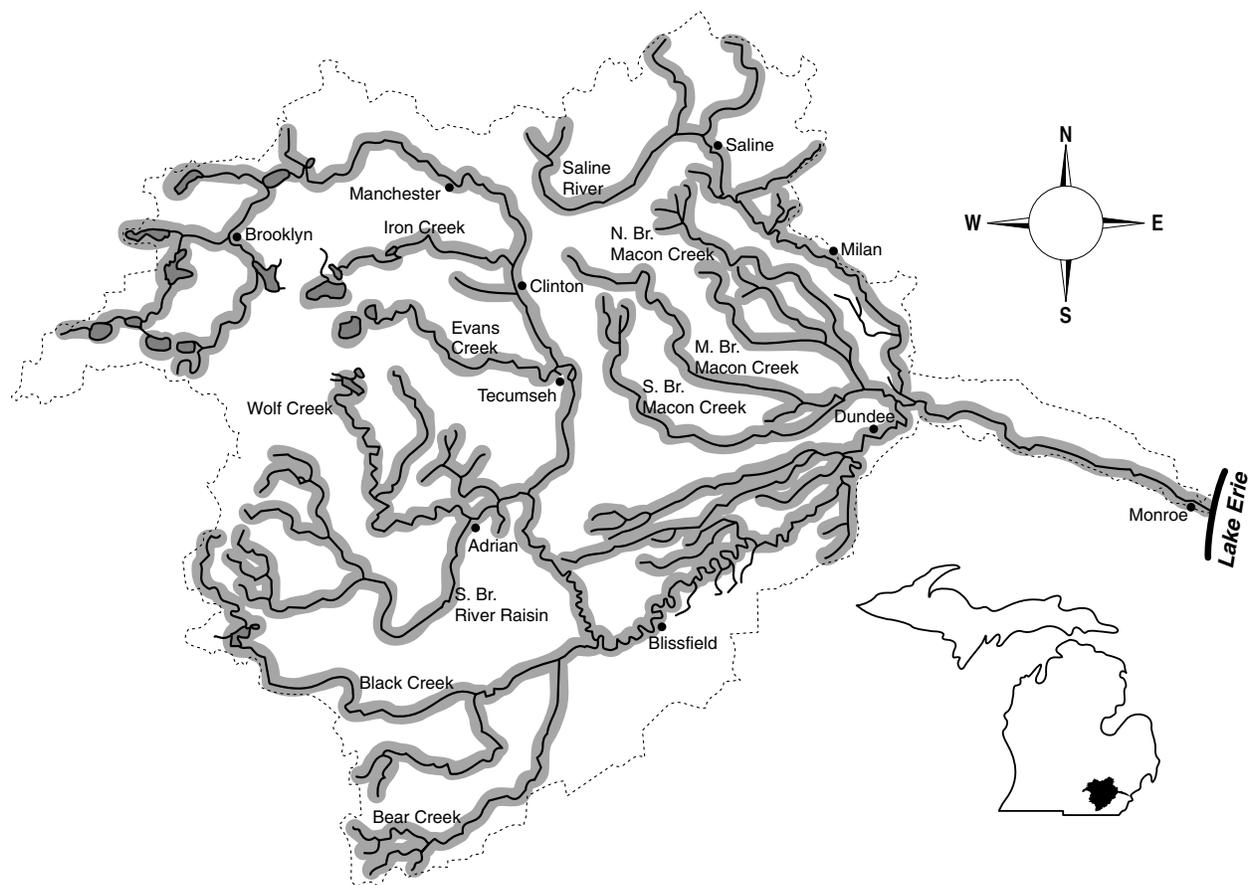
- feeding
  - cool, clear, silt-free small to medium streams
  - gravel substrate
  - cut banks overhung by vegetation
  - instream aquatic vegetation rare or absent
  
- spawning
  - gravelly riffles
  - eggs scattered in crevices and in other species nests



**Bluntnose minnow (*Pimephales notatus*)**

**Habitat:**

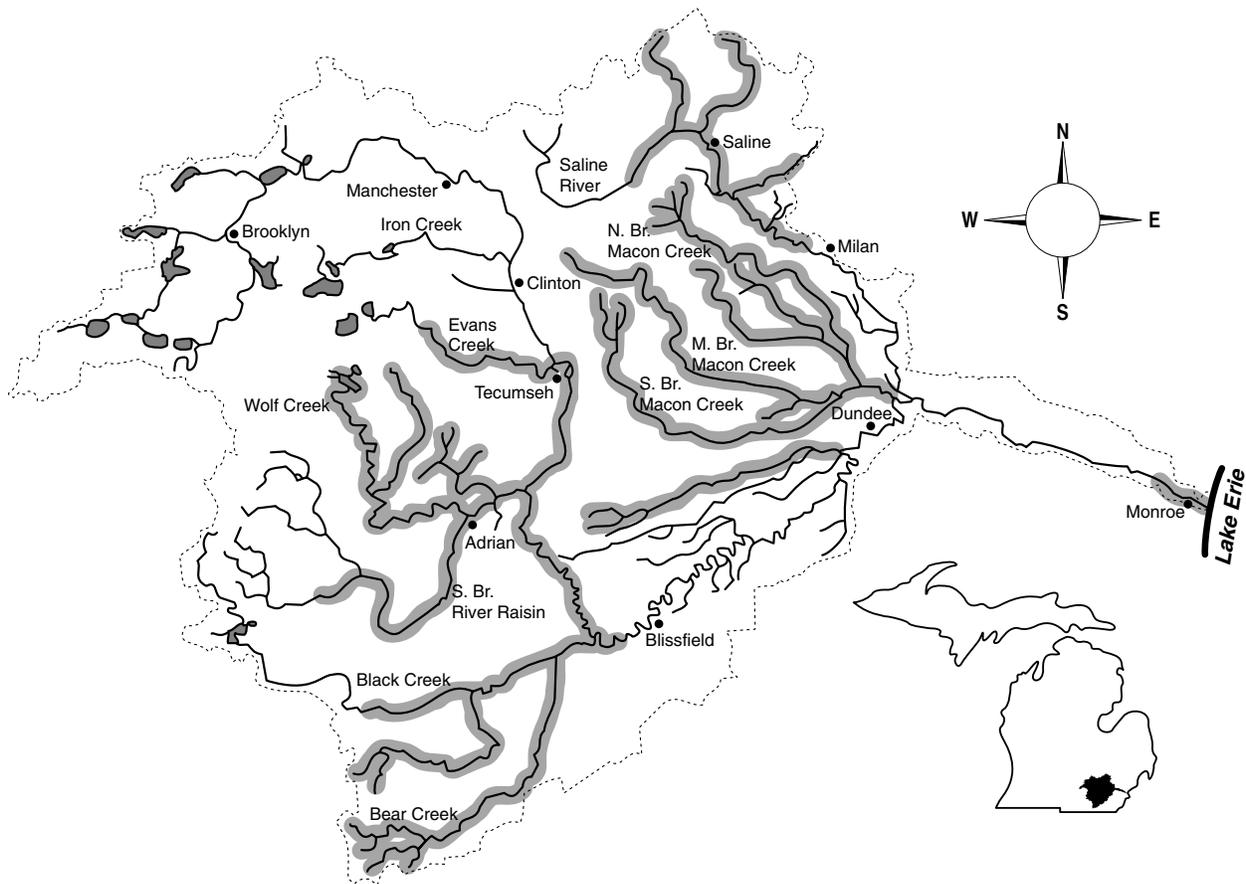
- feeding - quiet pools and backwaters of medium to large streams, lakes, and impoundments
- clear warm water
- some aquatic vegetation
- firm substrates
- tolerates all gradients, turbidity, organic and inorganic pollutants
  
- spawning - eggs deposited on the underside of flat stones or objects
- nests in sand or gravel substrate



**Fathead minnow (*Pimephales promelas*)**

**Habitat:**

- feeding - pools of small streams, lakes, and impoundments
- tolerant of turbidity, high temperatures, and low oxygen
  
- spawning - on underside of objects in water 2 to 3 feet deep
- prefer sand, marl, or gravel substrate



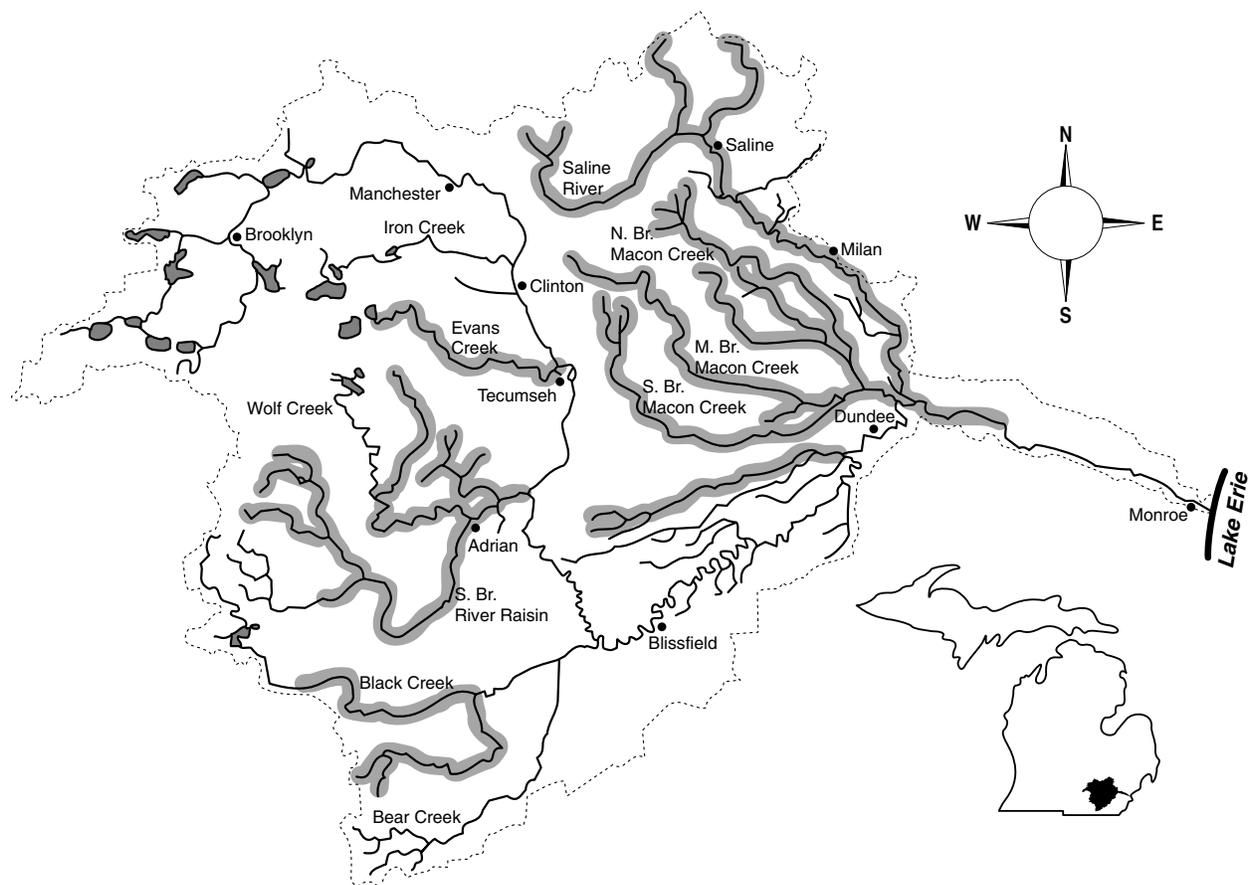
**Blacknose dace (*Rhinichthys atratulus*)**

**Habitat:**

- feeding - moderate to high gradient streams
- sand and gravel substrate
- clear cool water in pools with deep holes and undercut banks
- does not tolerate turbidity and silt well

spawning - riffles with gravel substrate and fast current

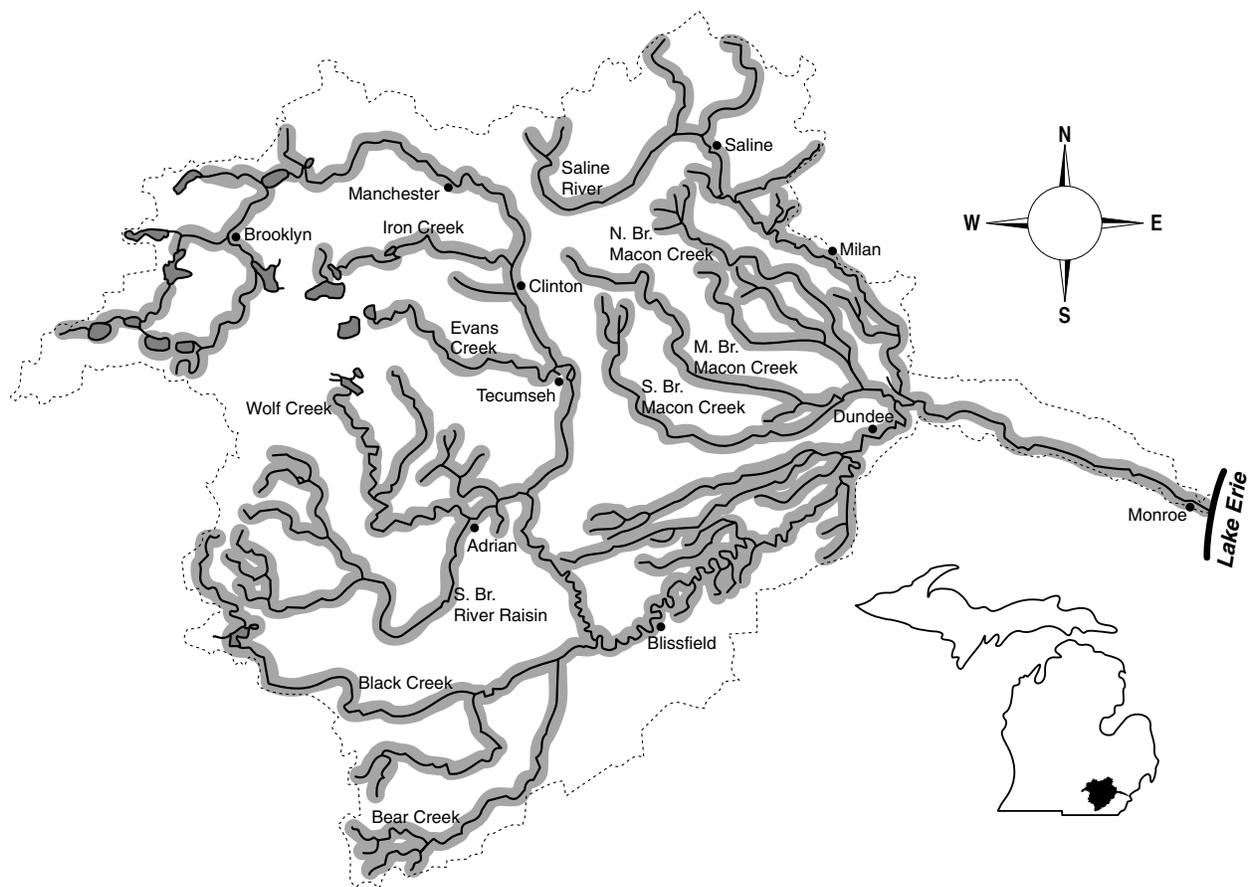
winter refuge - larger waters



**Creek chub** (*Semotilus atromaculatus*)

**Habitat:**

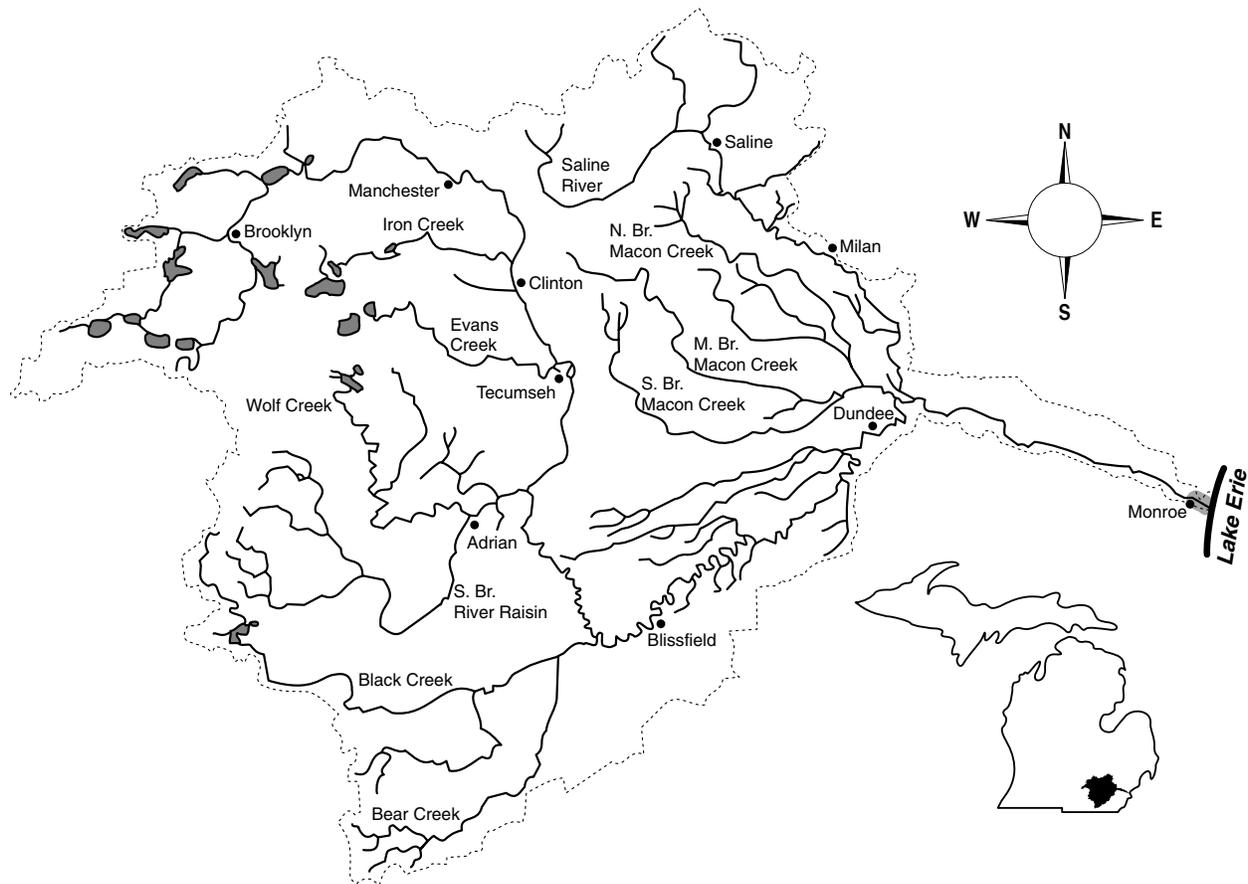
- feeding - streams, rivers, or shore waters of lakes and impoundments
  - can tolerate intermittent flows
  - tolerates moderate turbidity
  
- spawning - gravel nests
  - low current
  
- winter refuge - deeper pools and runs



**Quillback (*Carpoides cyprinus*)**

**Habitat:**

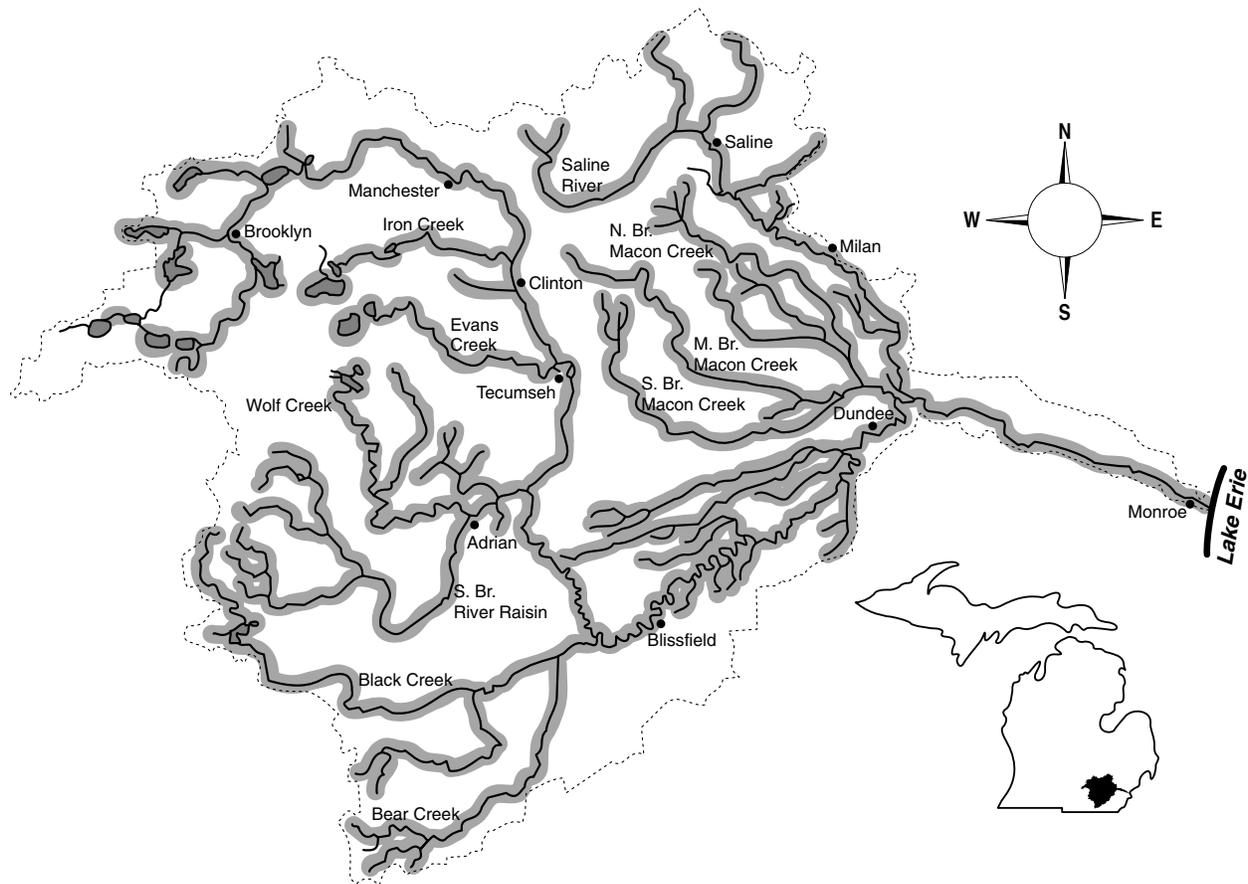
- feeding - clear to turbid water
- sand, sandy gravel, sandy silt, or clay-silt substrate
- medium- to low-gradient rivers and streams; also lakes and sloughs
  
- spawning - streams or overflow areas of bends of rivers or bays of lakes
- scatter eggs over sand or mud substrate



**White sucker (*Catostomus commersoni*)**

**Habitat:**

- feeding - streams, rivers, lakes, and impoundments
- can inhabit highly turbid and polluted waters
  
- spawning - quiet gravelly shallow areas of streams



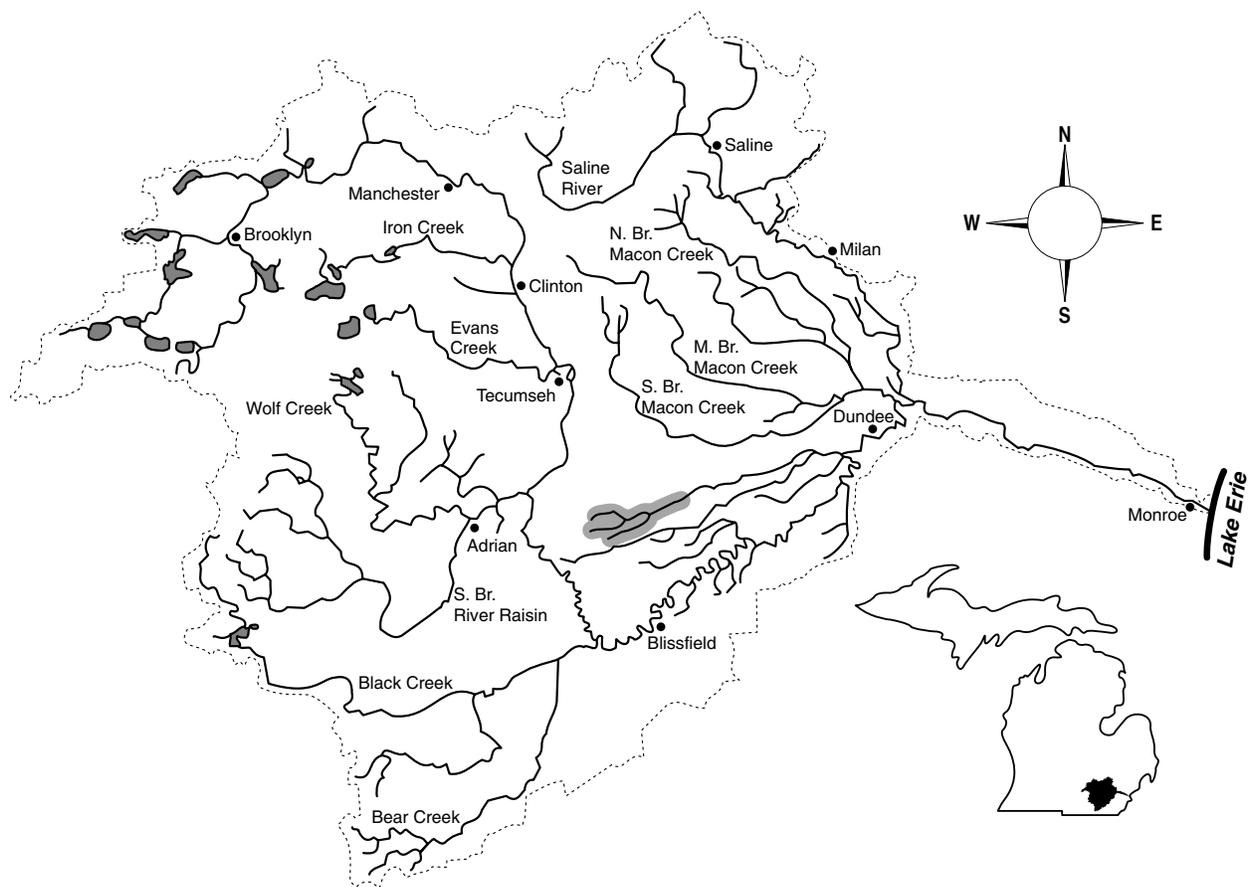
**Creek chubsucker (*Erimyzon oblongus*) - threatened**

**Habitat:**

- feeding - clear quiet waters with thick submergent vegetation
- sand, gravel, or silt mixed with organic debris substrate
- in deeper more sluggish pools, protected inlets, and overflow ponds
- moderate and high gradient

spawning - gravelly shoals of streams, riffles, or lake outlets

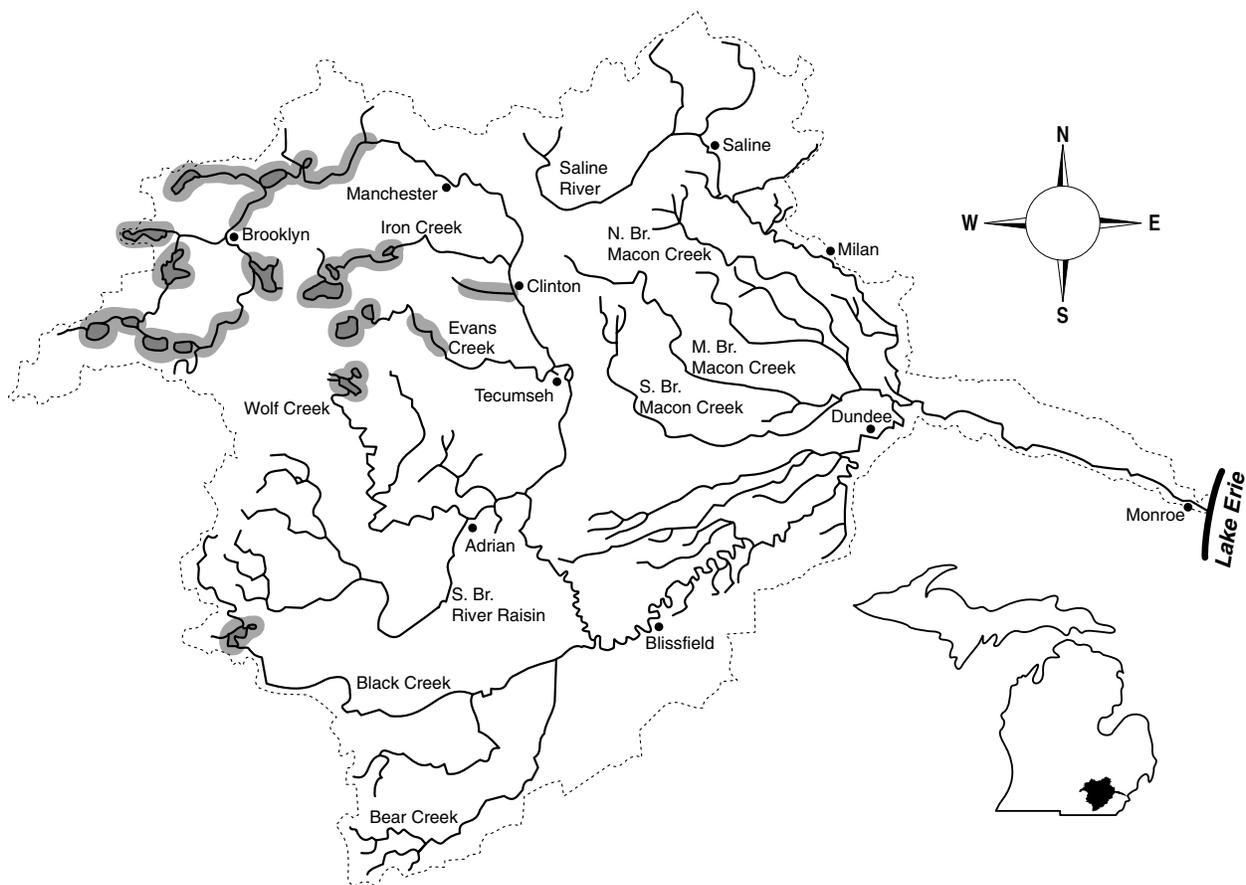
winter refuge - larger creeks



**Lake chubsucker (*Erimyzon sucetta*)**

**Habitat:**

- feeding - larger clear streams, rivers, lakes, and impoundments
- cannot tolerate turbid water
- low gradient
- prefers dense vegetation over substrate of sand or silt mixed with organic debris
  
- spawning - small clear streams with moderate to high gradient
- sand or gravel substrate; no clayey silt



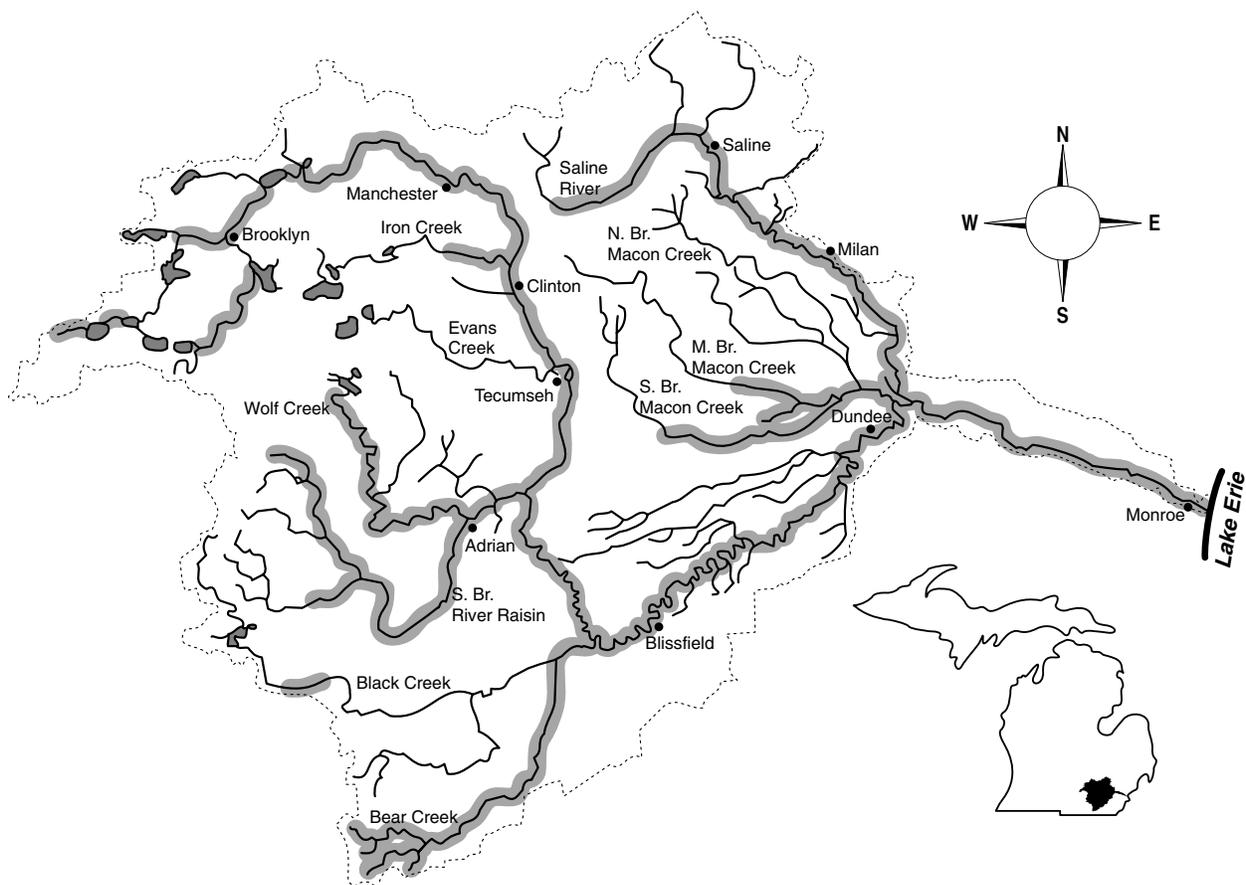
**Northern hog sucker (*Hypentelium nigricans*)**

**Habitat:**

- feeding - gravel or rubble substrate
- riffles and adjacent pools of warm shallow streams
- clear water
- doesn't like turbidity or siltation
- avoids profuse amounts of aquatic vegetation

- spawning - riffles
- shallow gravel substrate
- high gradient

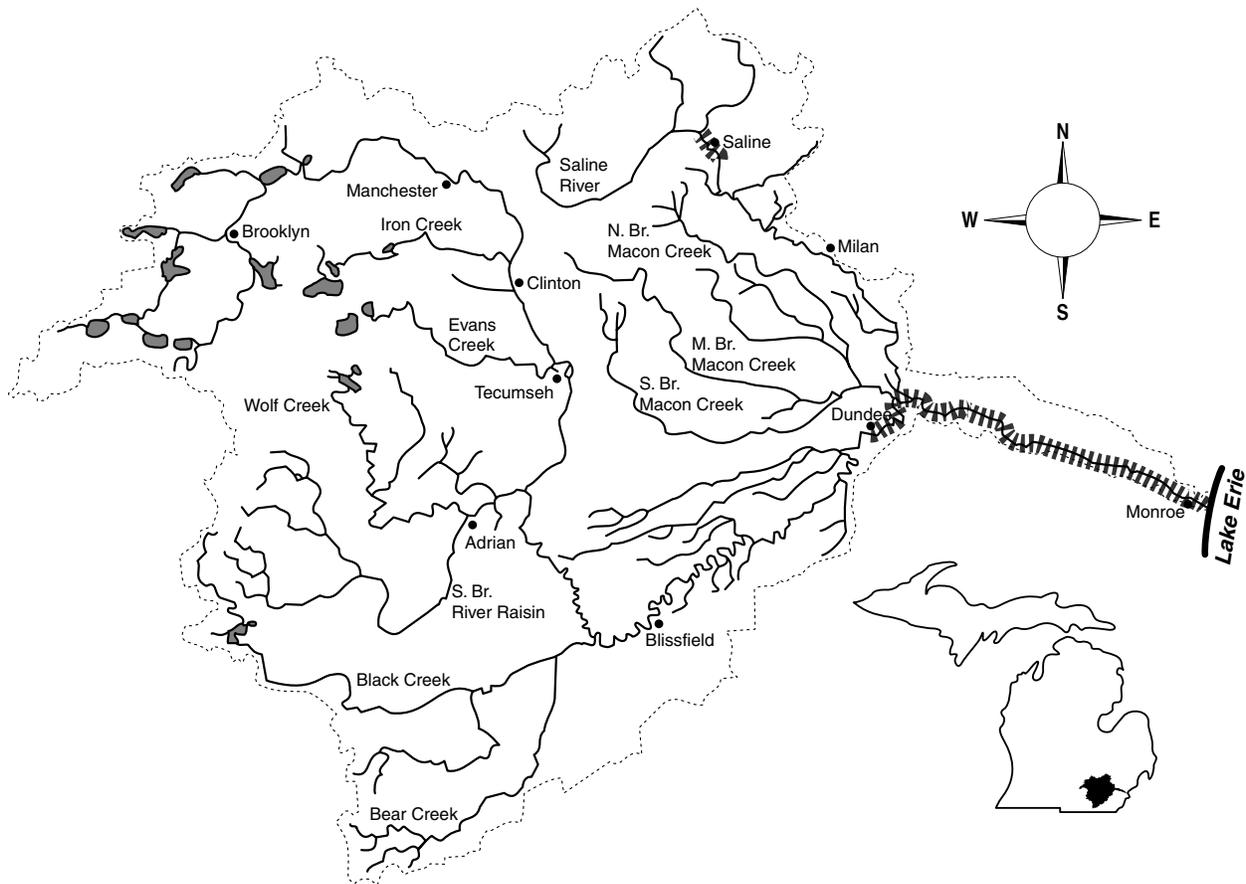
- winter refuge - deeper quieter pools



**Spotted sucker (*Minytrema melanops*) - rare**

**Habitat:**

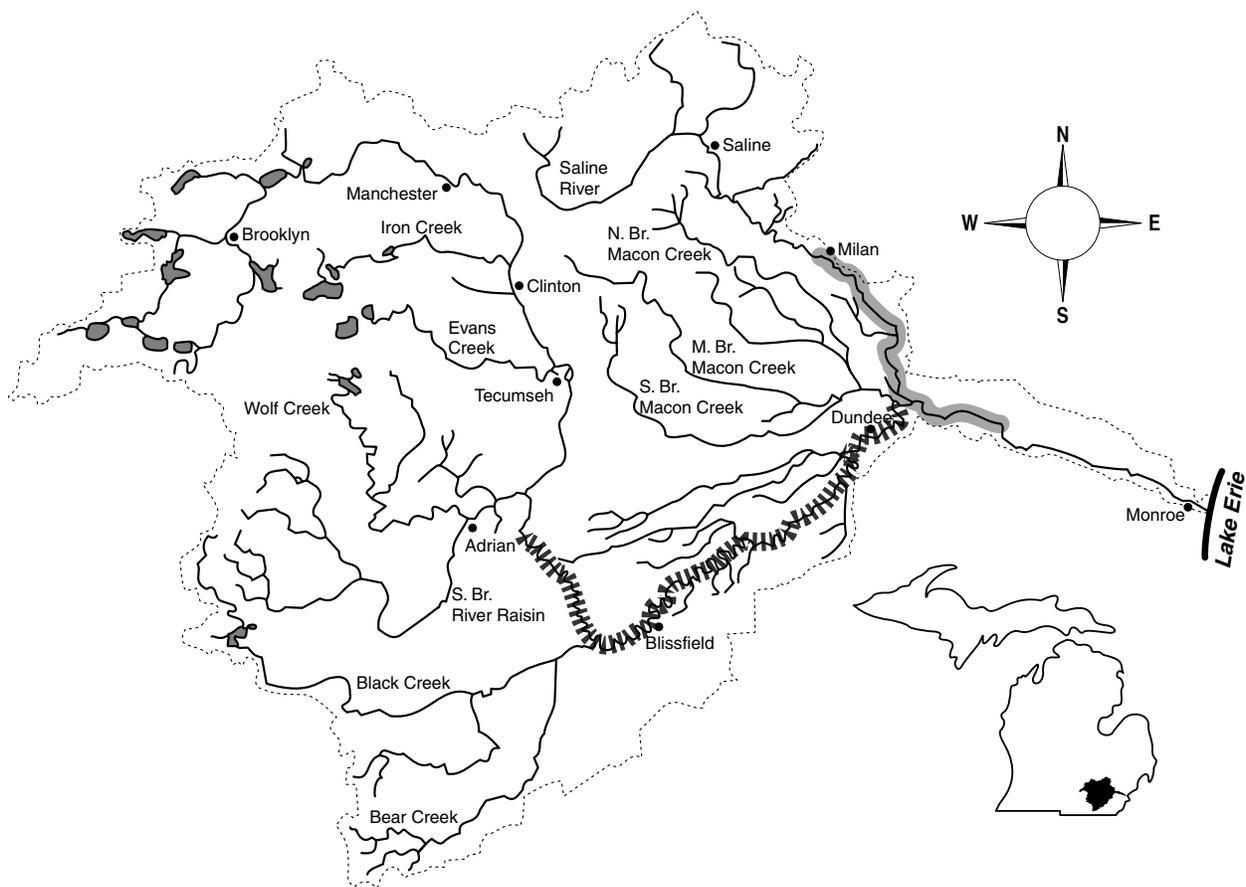
- feeding - clear warm rivers (pools, backwaters) with little current
  - abundant vegetation
  - soft substrate with organic debris
  - intolerant of turbidity
- spawning - riffles



**Silver redhorse (*Moxostoma anisurum*)**

**Habitat:**

- feeding
  - streams, rivers, lakes, and impoundments
  - low current
  - pollution and turbidity intolerant
  
- spawning
  - swift current in rivers, do not spawn in tributaries
  - males territorial
  - gravel to rubble substrate



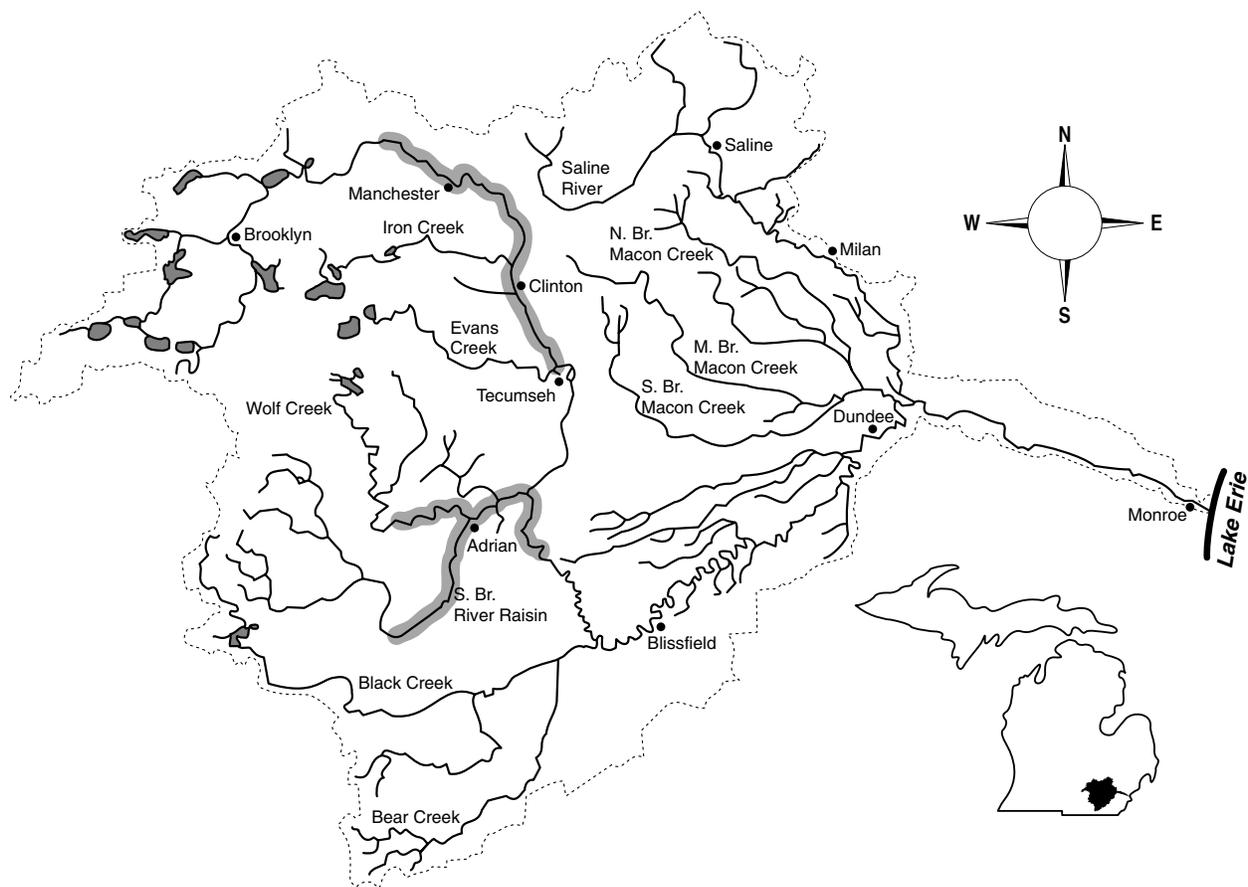
**Black redhorse (*Moxostoma duquesnei*) - special concern**

**Habitat:**

- feeding - gravel substrate
- clear water, intolerant of siltation, turbidity, and low gradients
- medium size streams
- cooler swifter streams and short rocky pools with current

spawning - gravelly riffles

winter refuge - deeper holes



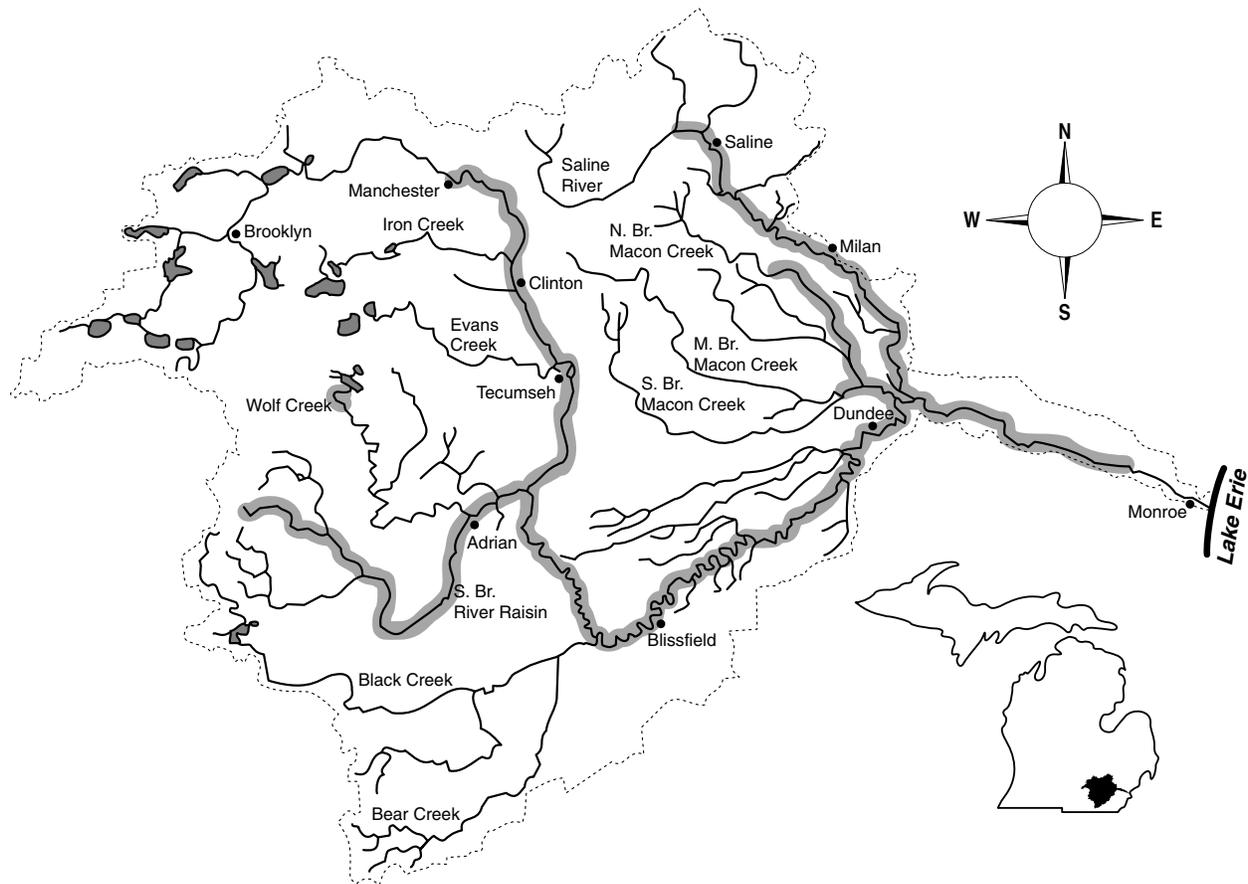
**Golden redhorse (*Moxostoma erythrurum*)**

**Habitat:**

- feeding - warm medium gradient streams and rivers
- clear riffly streams
- medium size streams and rivers
- tolerates some turbidity and silt

spawning - shallow gravelly riffles

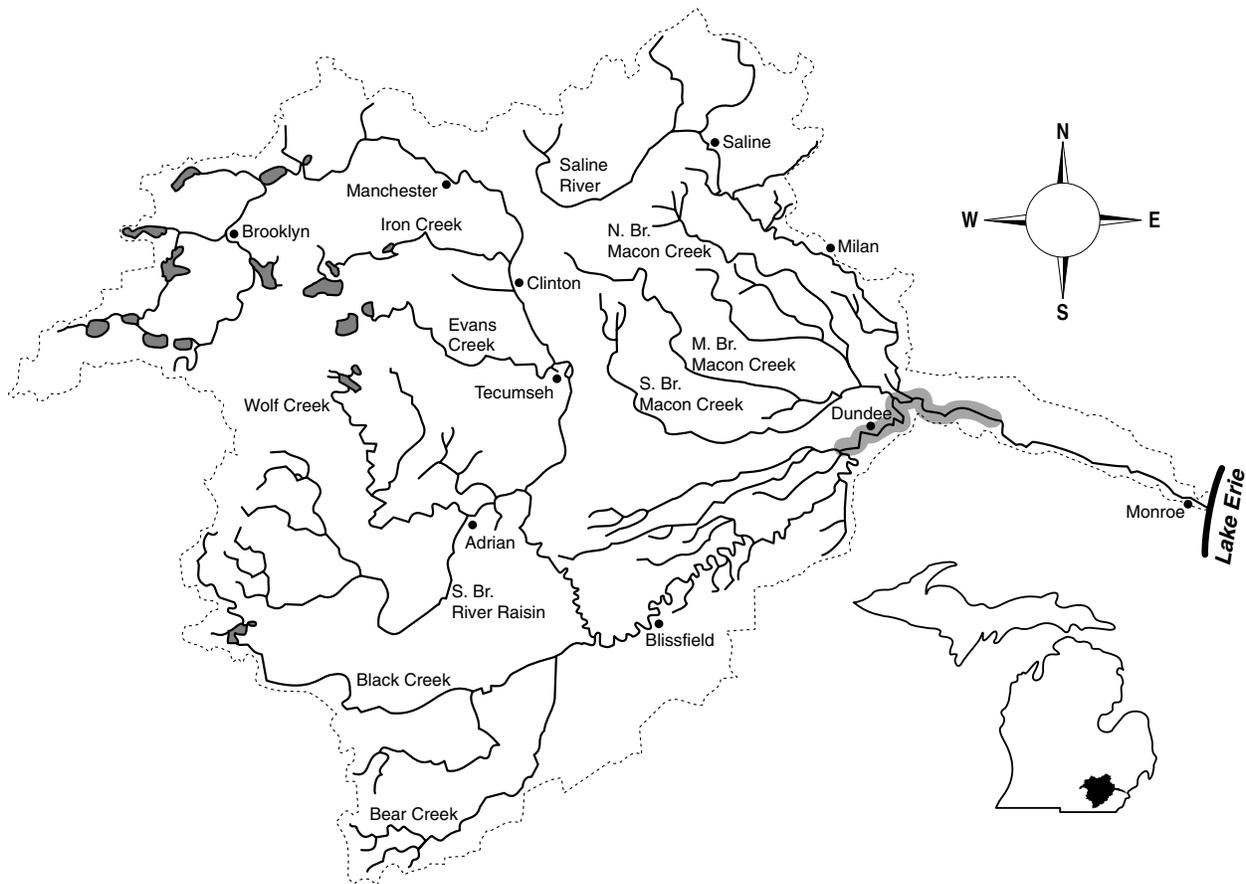
winter refuge - larger streams



**Shorthead redhorse (*Moxostoma macrolepidotum*)**

**Habitat:**

- feeding - downstream sections of large rivers, lakes, and impoundments
  - rocky substrates
  - swift water near riffles
  - clear to slightly turbid water
- spawning - gravelly riffles in smaller feeder streams



**Greater redhorse (*Moxostoma valenciennesi*) - locally extirpated**

**Habitat:**

- feeding - large clear streams
  - clean sand, gravel, or boulder substrate
  - intolerant of excessive turbidity and chemical pollutants
- spawning - moderately rapid current

