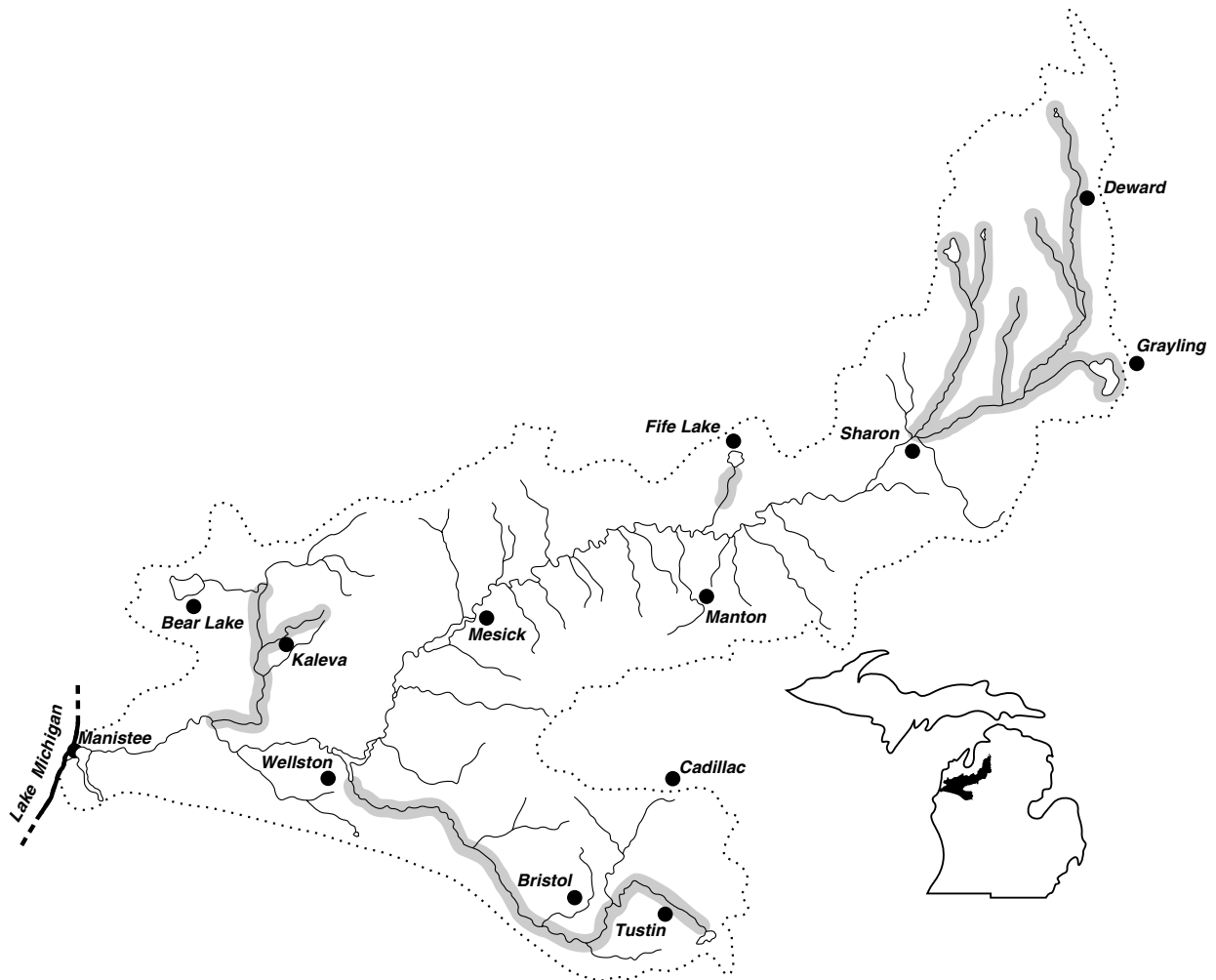


Central mudminnow (*Umbra limi*)

Habitat:

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

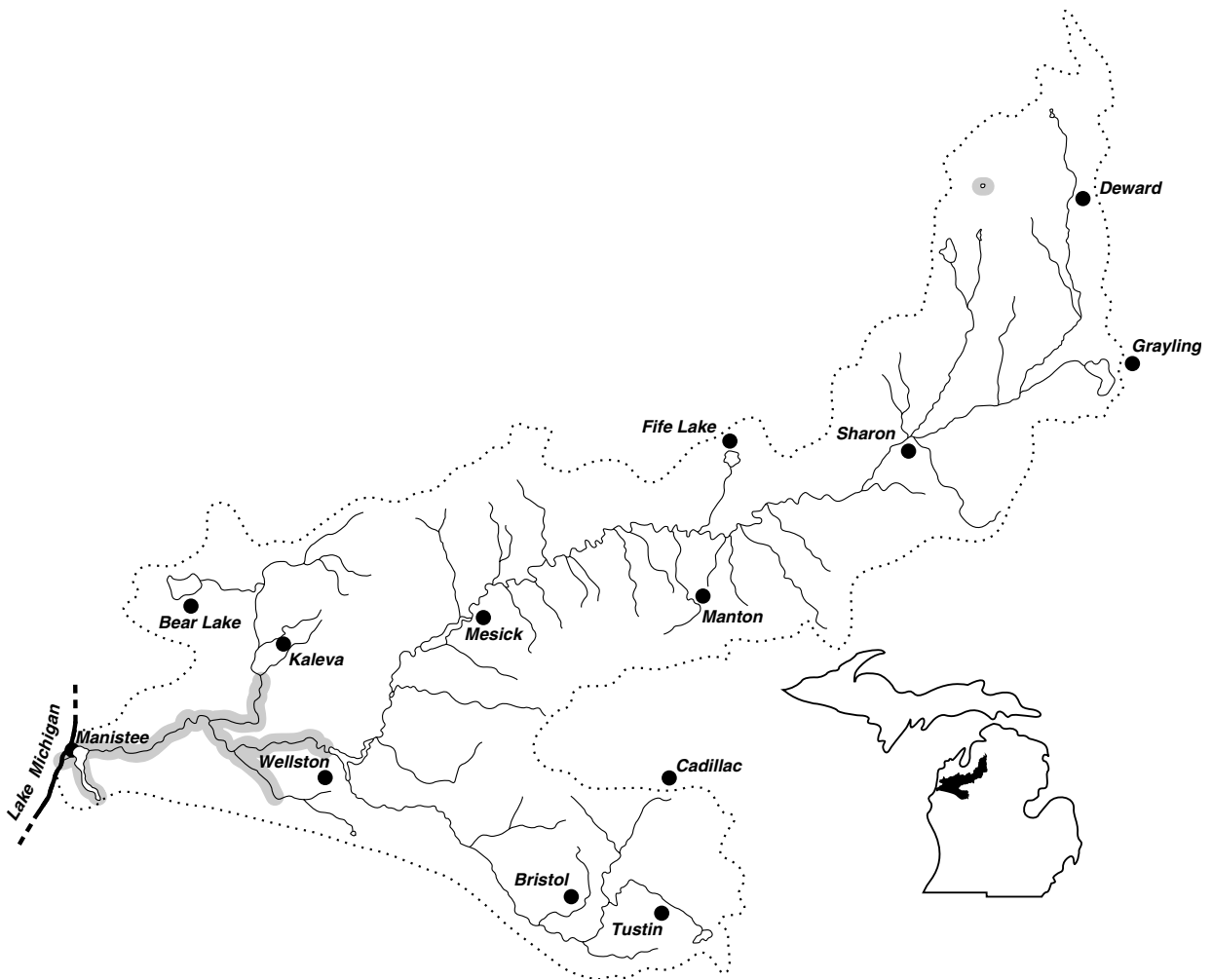
- spawning - floodplain areas, on vegetation



Rainbow Smelt (*Osmerus mordax*)

Habitat:

- feeding - midwater of lakes; 42-192 ft. in Lake Michigan
- spawning - in streams or off-shore shoals in Lake Michigan
 - gravel substrate
 - swift current



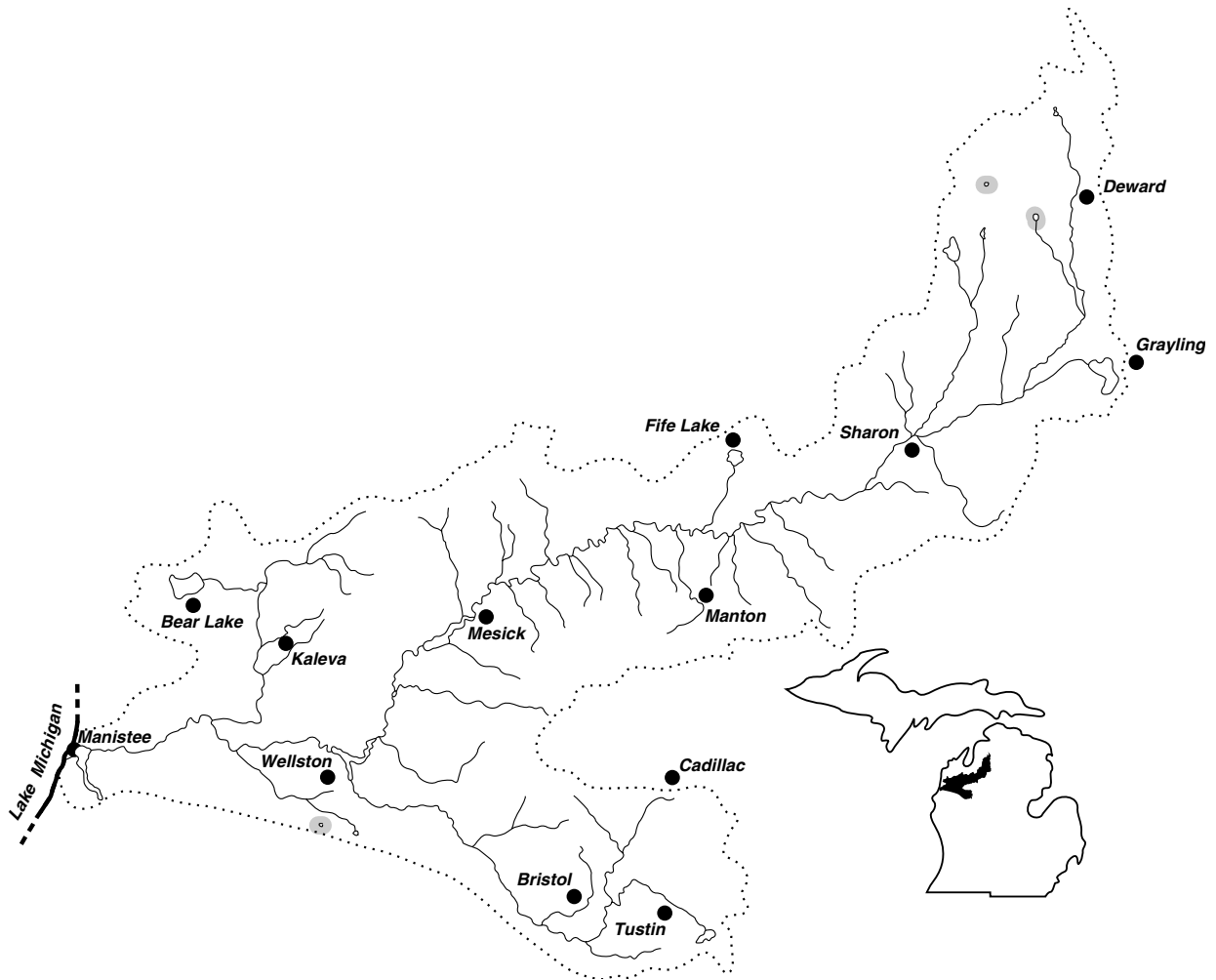
Cisco {Lake herring} (*Coregonus artedii*)

Habitat:

feeding - deep cool lakes, preferably oligotrophic

spawning - usually in lakes

- 3 to 6 feet of water with no vegetation
- often over gravel or stony substrate

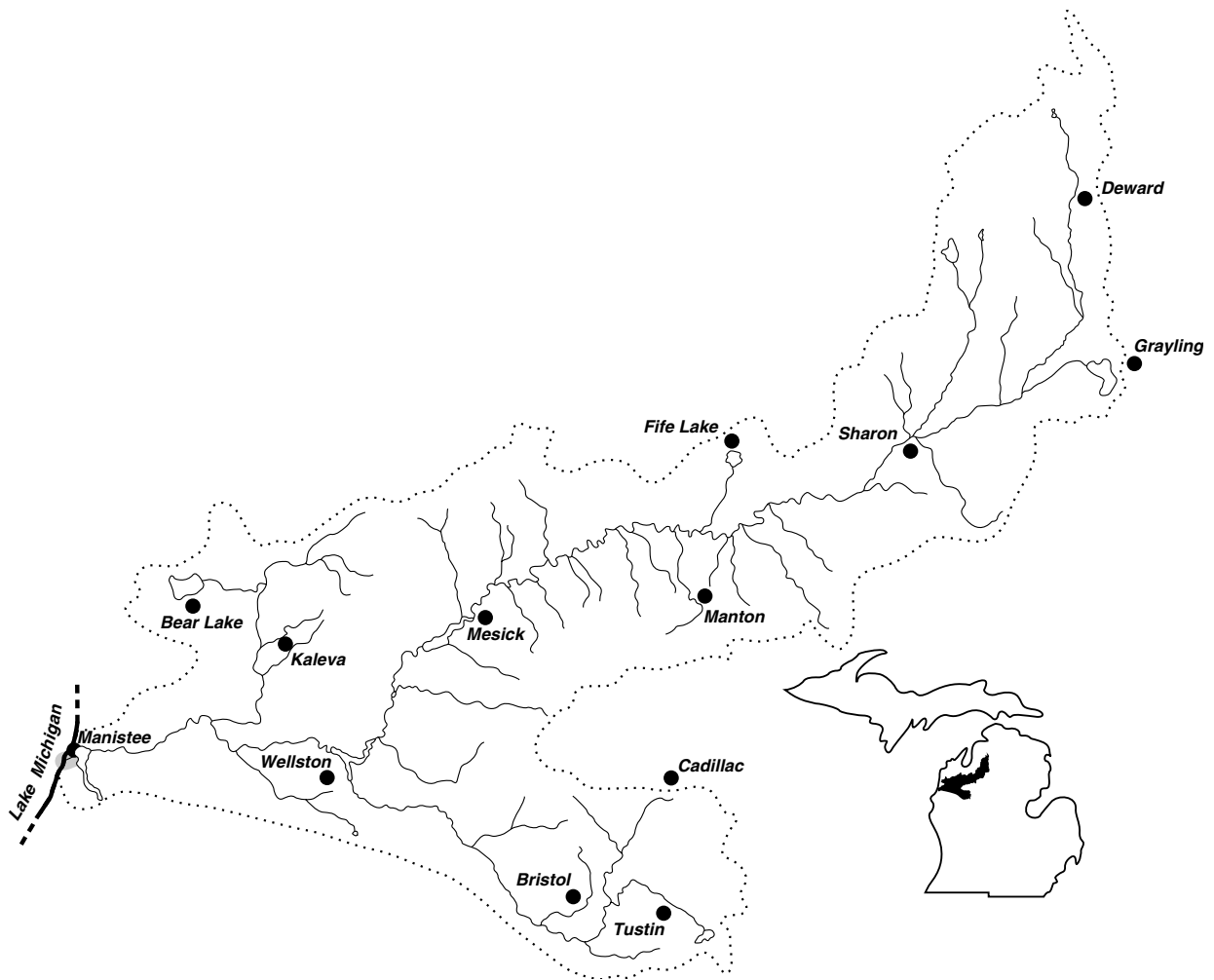


Lake Whitefish (*Coregonus clupeaformis*)

Habitat:

- feeding - large cool water; Lake Michigan
- shallow water (for coregonids; 55-105 ft.)

- spawning - cold shallow water (<25 ft.)
- hard, stony, or sand substrate



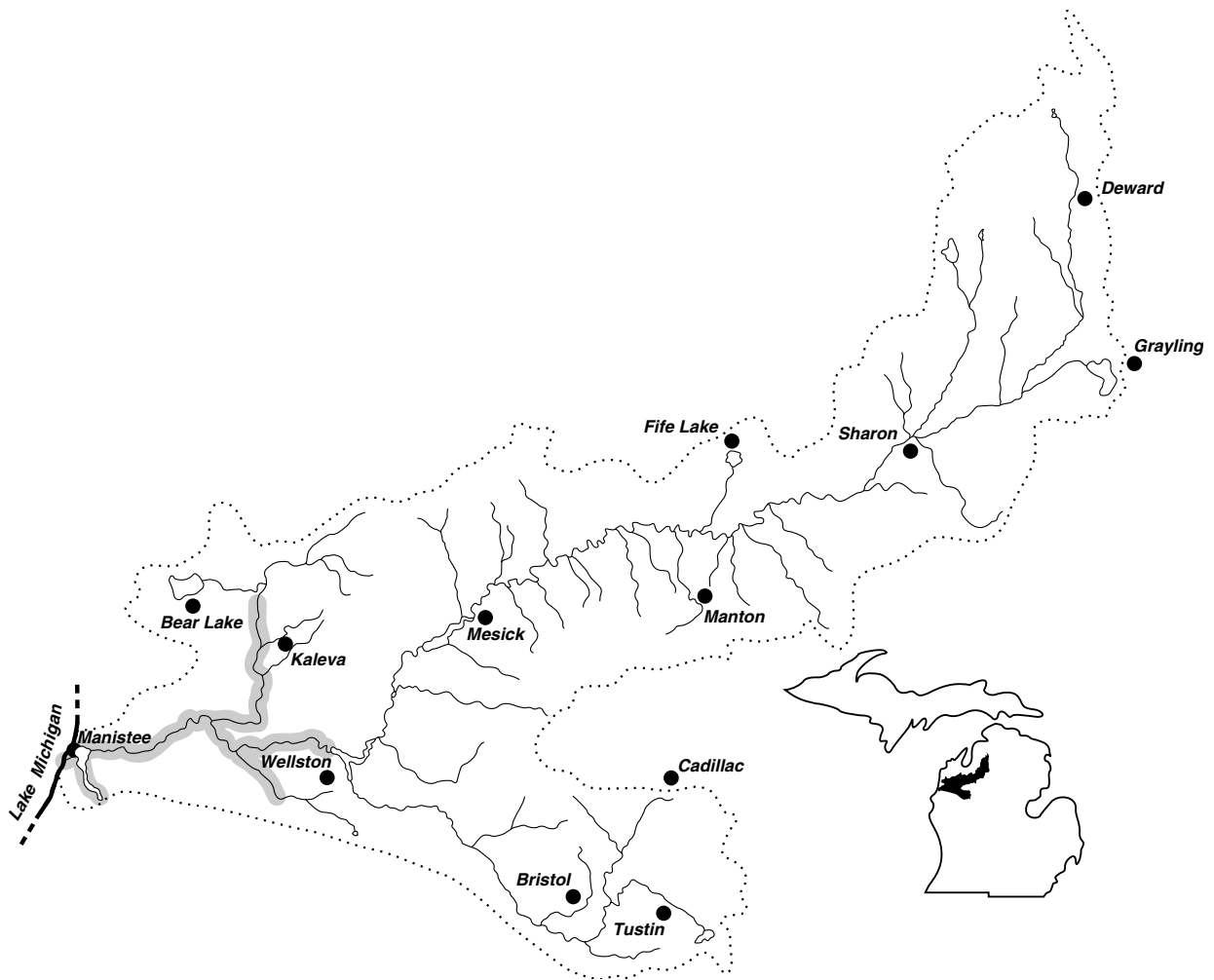
Pink salmon (*Oncorhynchus gorbuscha*)

Habitat:

feeding - large cold deep lakes - Lake Michigan

spawning - gravel substrate in rivers

- female prepares and guards nest until death

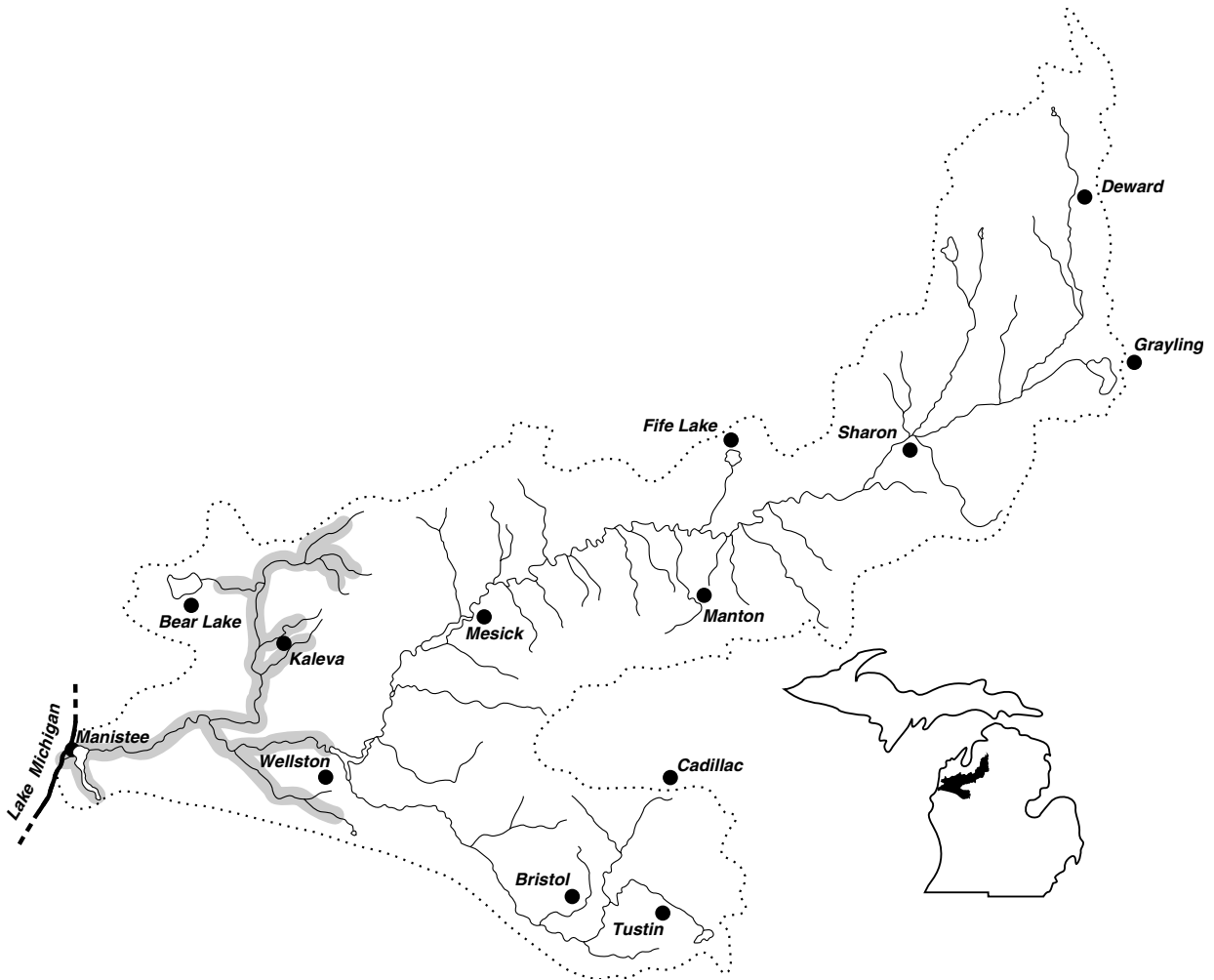


Coho salmon (*Oncorhynchus kisutch*)

Habitat:

- feeding - adults: Lake Michigan
- young: shallow gravel substrate in cold streams, later into pools

- spawning - cold streams and rivers
- swifter water of shallow gravelly substrate

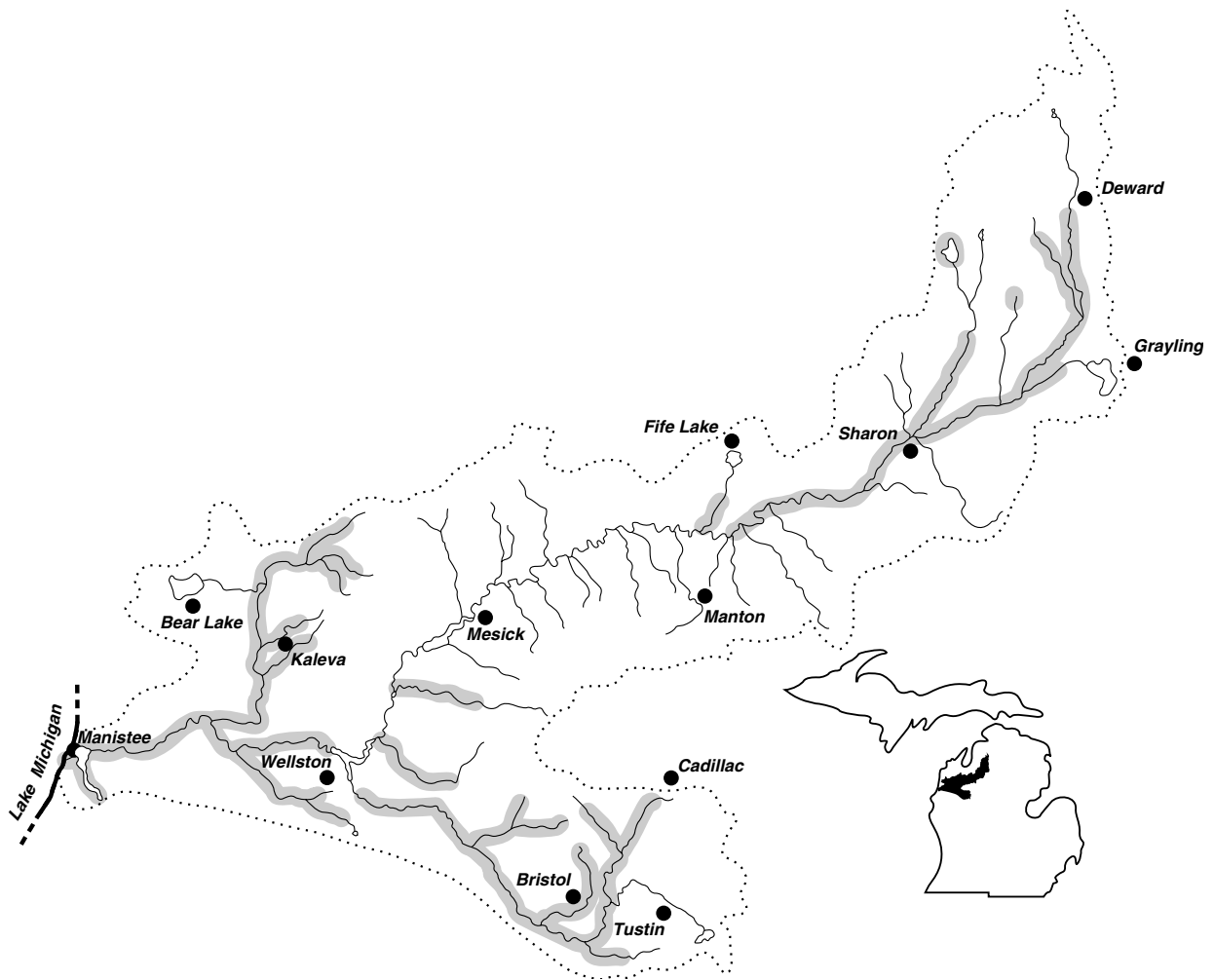


Rainbow trout (*Oncorhynchus mykiss*)

Habitat:

- feeding - cold clear water of rivers and Lake Michigan
- moderate current

- spawning - gravelly riffles above a pool
- smaller tributaries

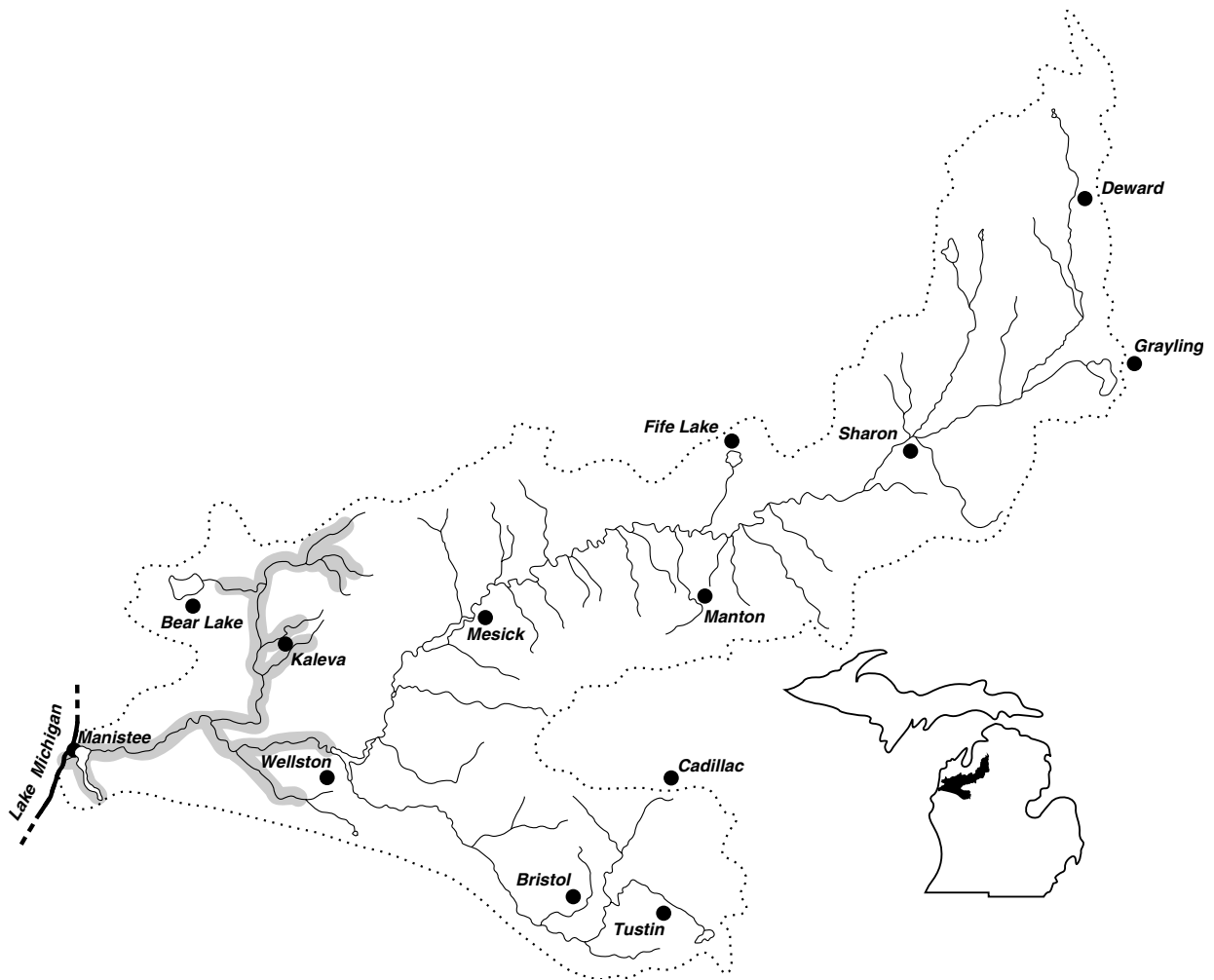


Chinook salmon (*Oncorhynchus tshawyscha*)

Habitat:

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

- spawning - gravelly substrate in cool streams

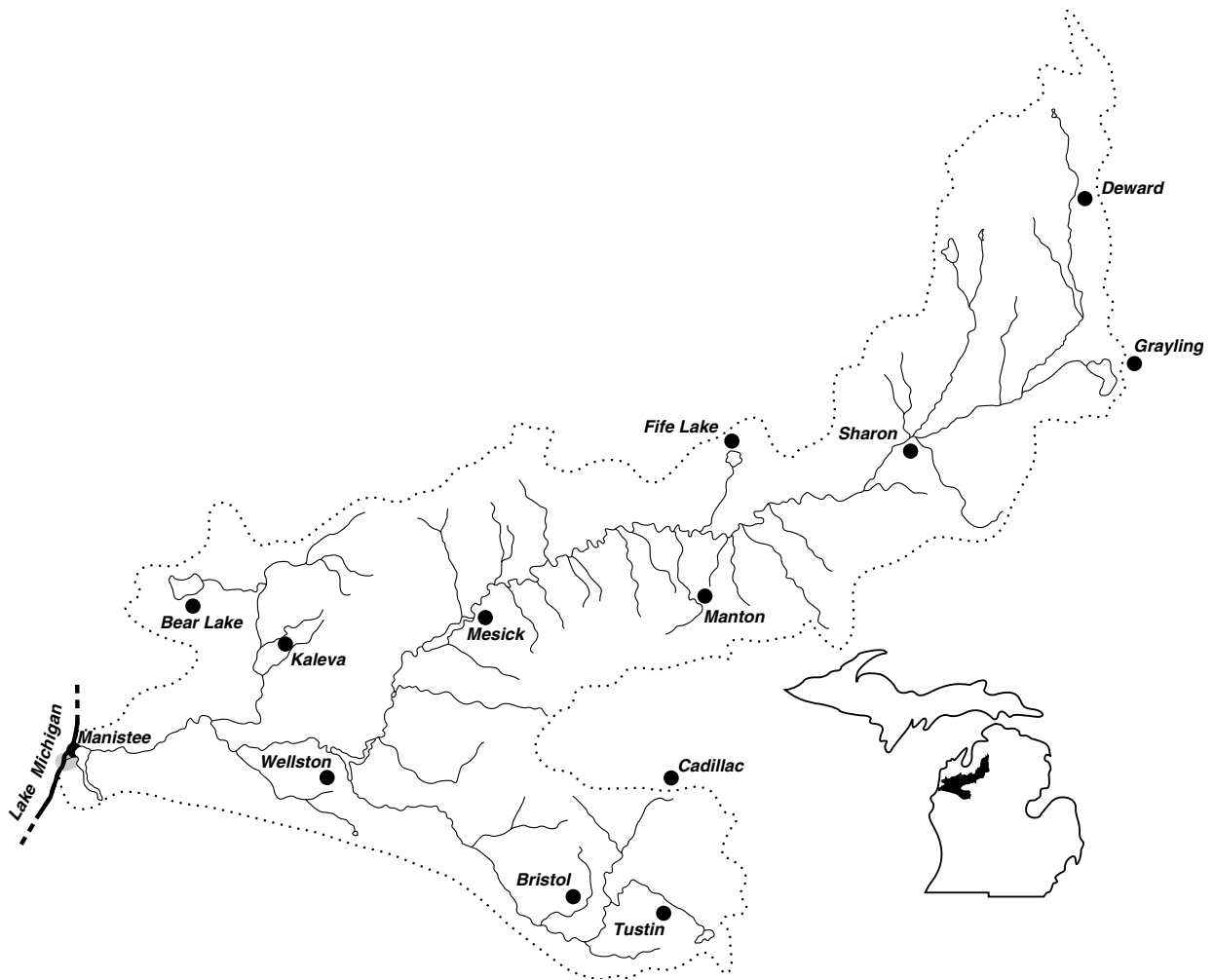


Round whitefish (*Prosopium cylindraceum*)

Habitat:

feeding - lakes, rivers, and streams

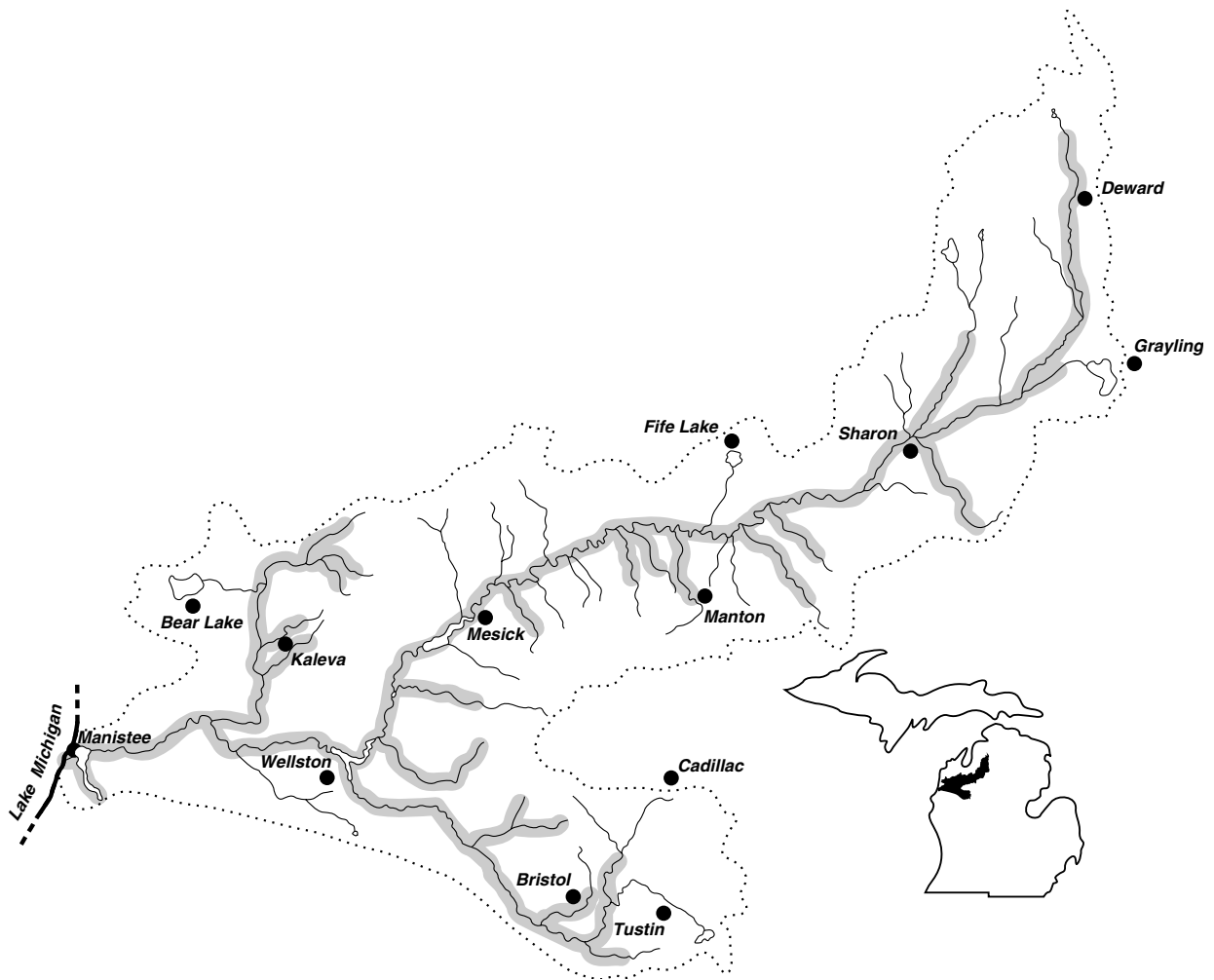
spawning - shallows of lakes and rivers
- gravel or rock substrate



Brown trout (*Salmo trutta*)

Habitat:

- feeding - cold, clear streams, rivers, and lakes (not >72°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

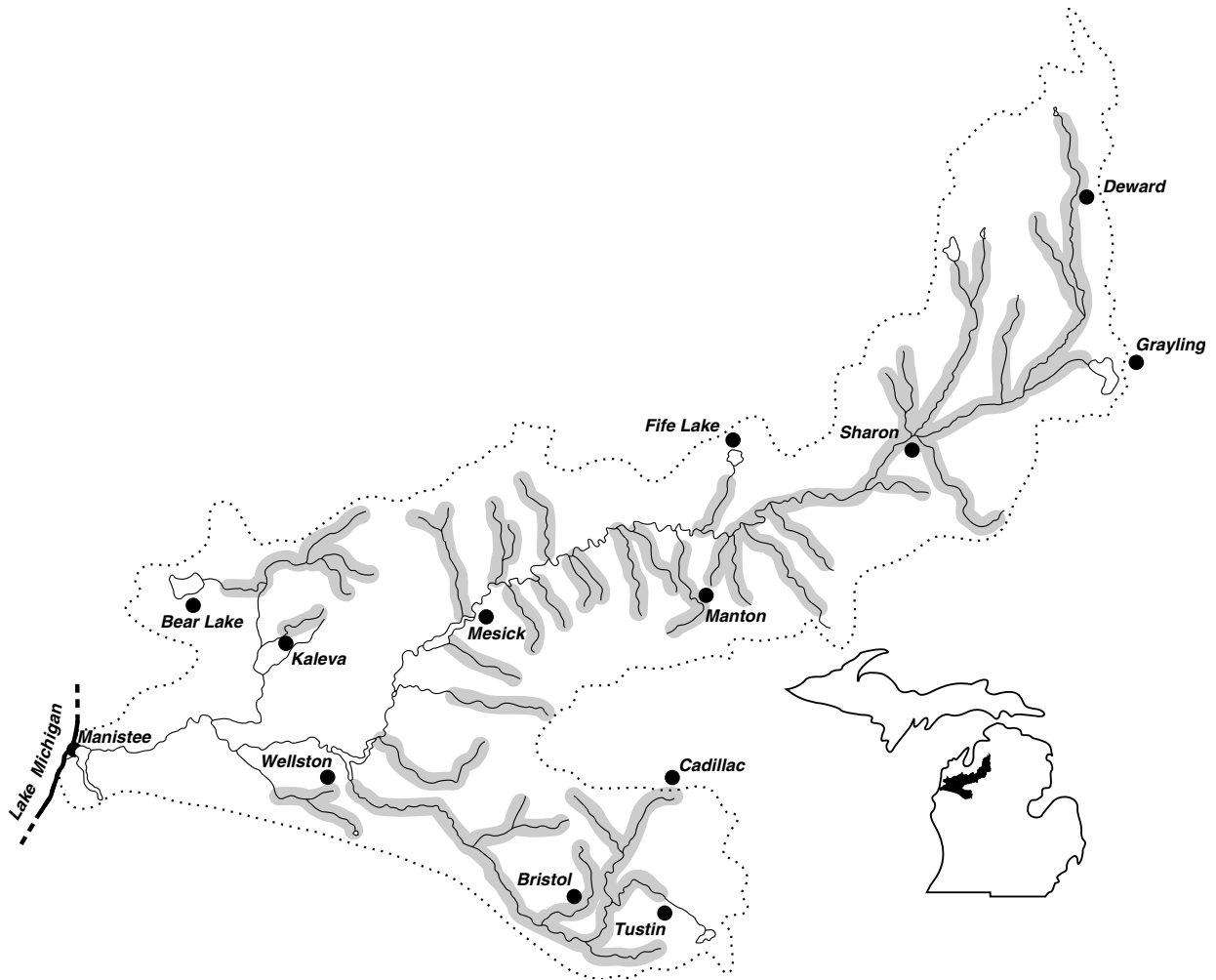


Brook trout (*Salvelinus fontinalis*)

Habitat:

- feeding - cold, clear streams, rivers, and lakes (not >72°F)
- low current
- well oxygenated water

- spawning - gravelly riffles; shallow or headwater streams

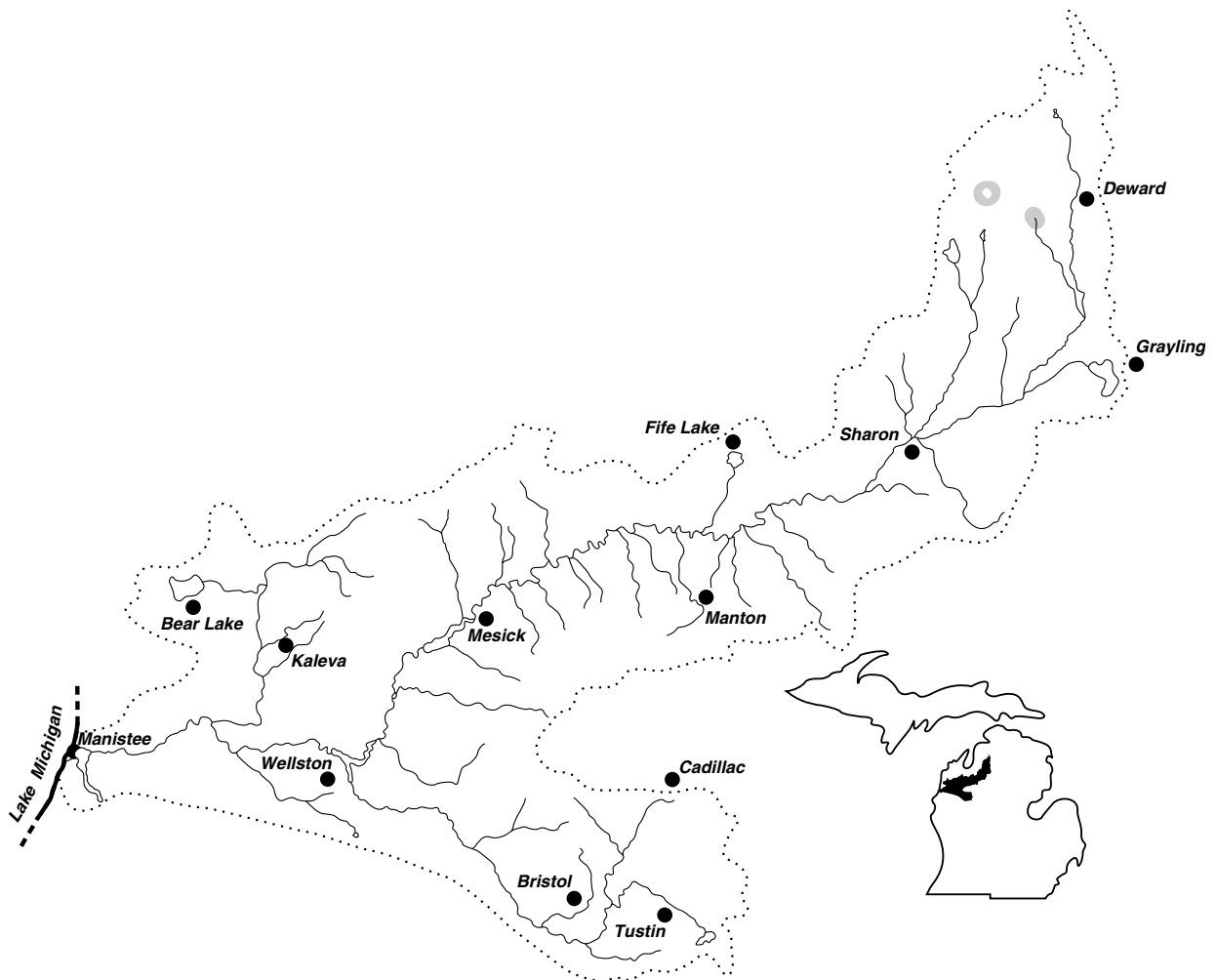


Splake (*Salvelinus fontinalis* x *Salvelinus namaycush*)

Habitat:

- feeding - littoral habitat
- cool water lakes; also Lake Michigan

- spawning - hatchery produced cross of brook and lake trout
- offspring usually fertile, but with lower fecundity than either parent species

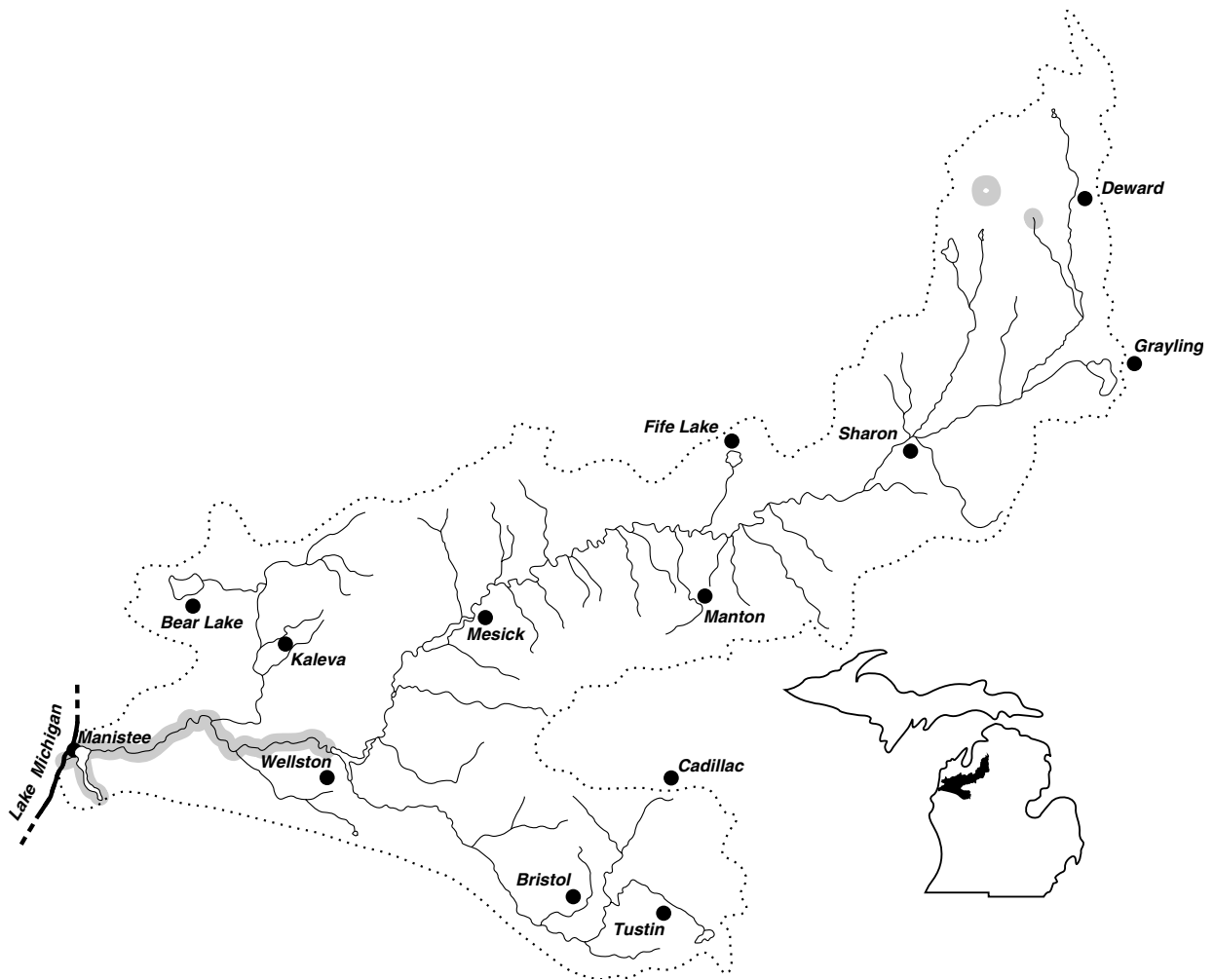


Lake trout (*Salvelinus namaycush*)

Habitat:

feeding - cold lakes and rivers

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

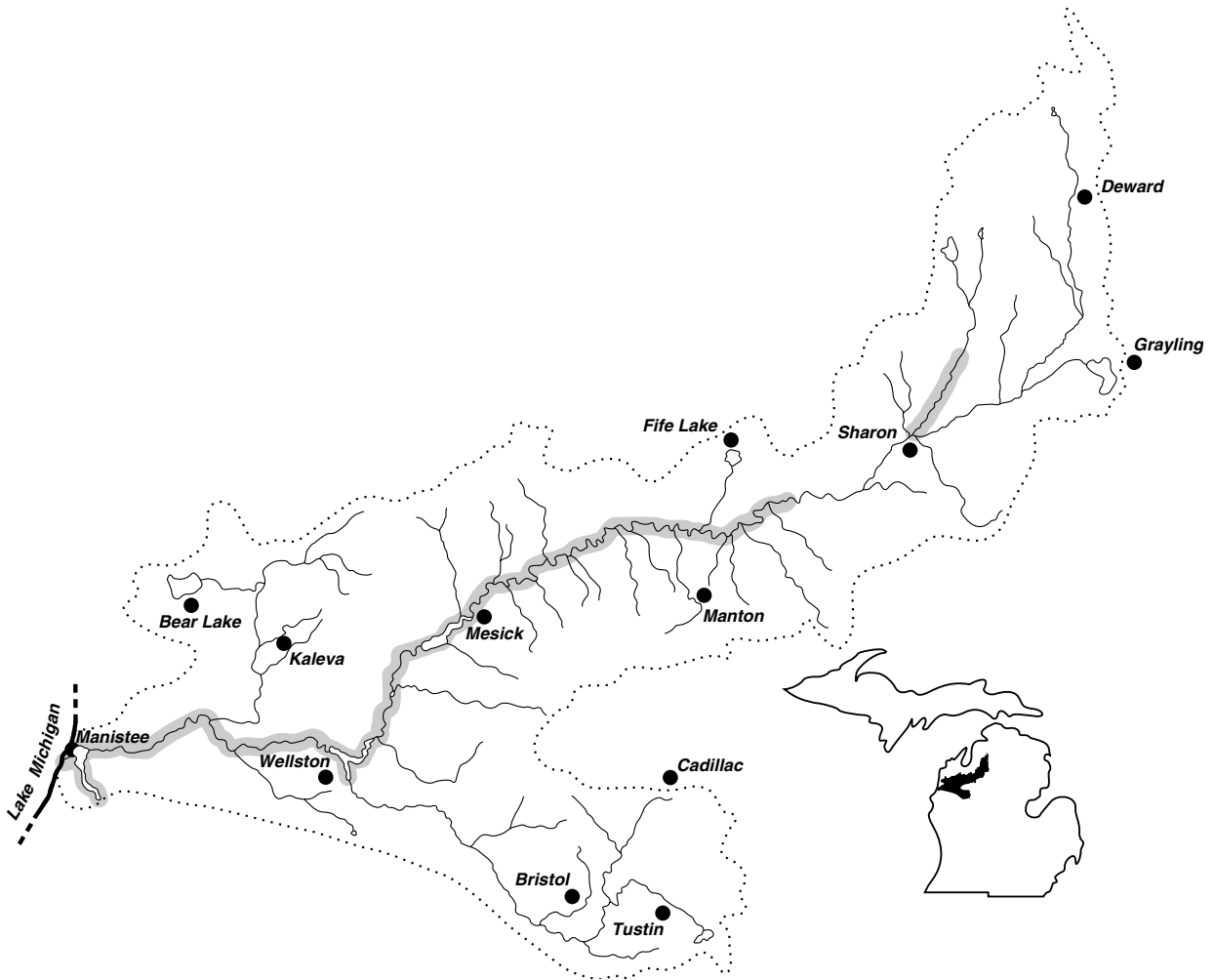


Trout-perch (*Percopsis omiscomaycus*)

Habitat:

- feeding
 - clean sand or fine gravel substrate
 - long deep pools in low gradient streams and Lake Michigan
 - highly intolerant of clayey silts
 - avoids rooted aquatic vegetation

- spawning
 - over rocks in shallows
 - over sand and gravel substrates in Lake Michigan

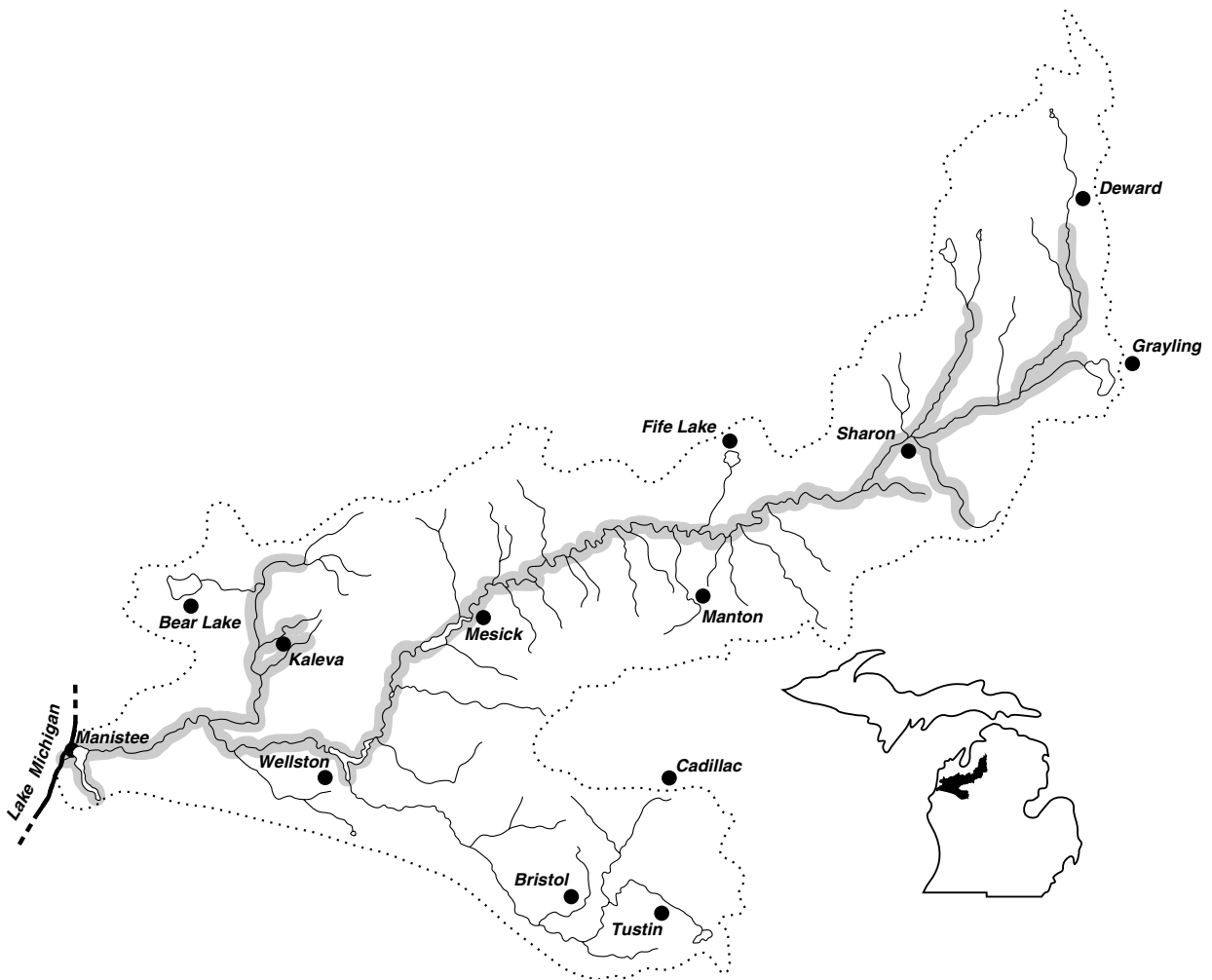


Burbot (*Lota lota*)

Habitat:

- feeding - deep cold lakes and large cool rivers
 - mud, sand, rubble, boulder, silt, and gravel substrates

- spawning - in 1 to 4 feet of water in shallow bays or on shoals 5-10 feet deep usually in lakes, sometimes rivers
 - over sand or gravel substrate
 - under ice

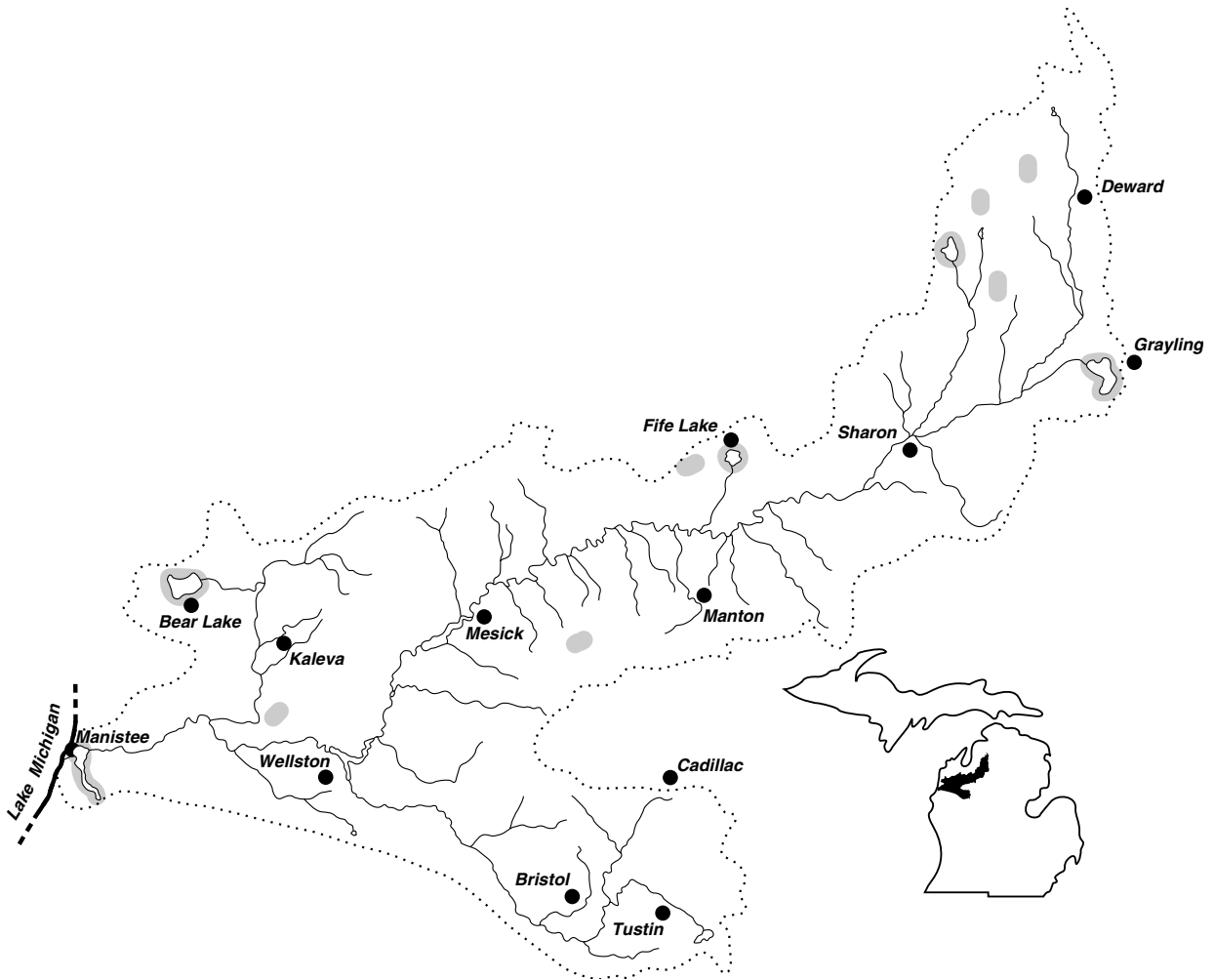


Banded killifish (*Fundulus diaphanus*)

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

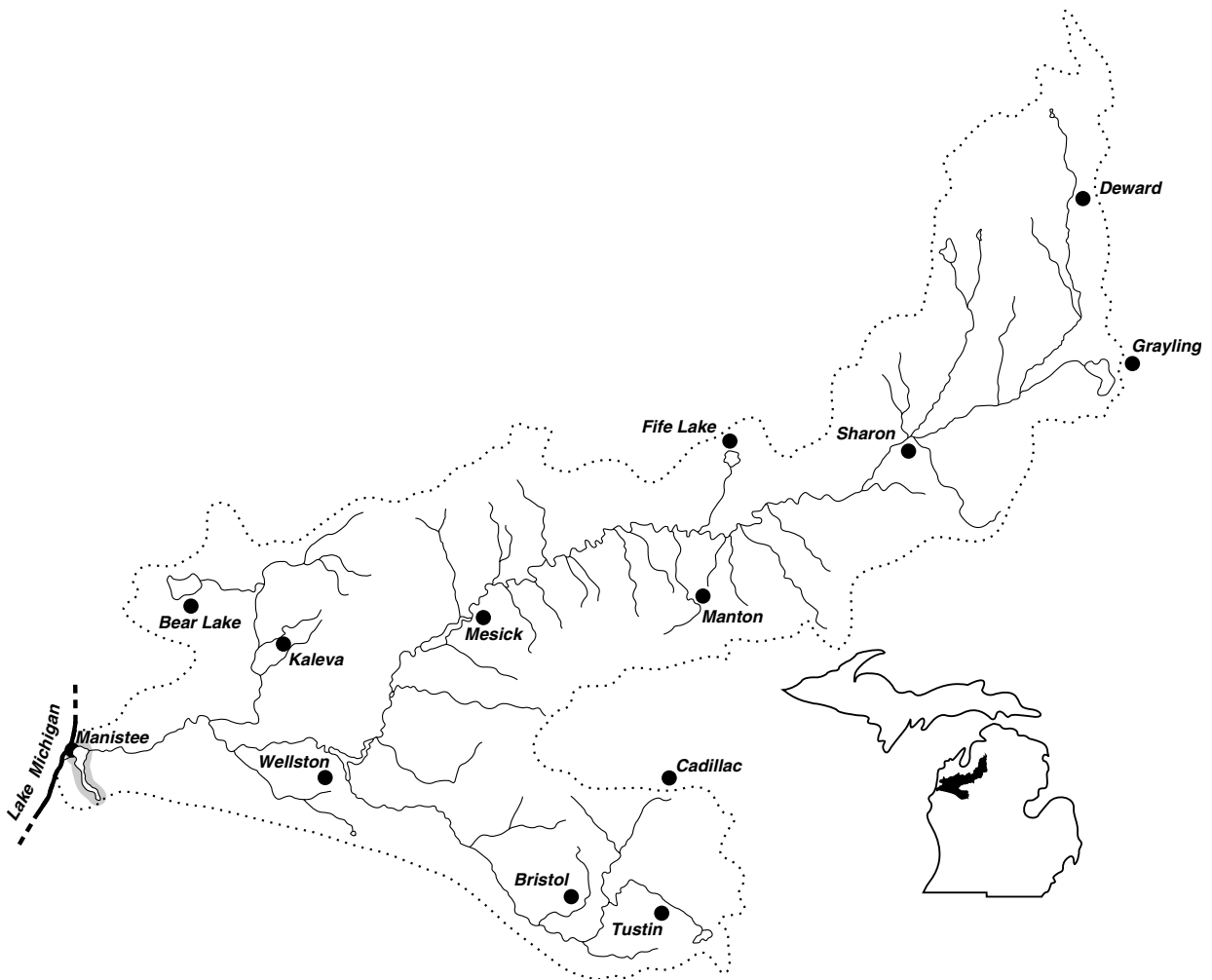


Brook silverside (*Labidesthes sicculus*)

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

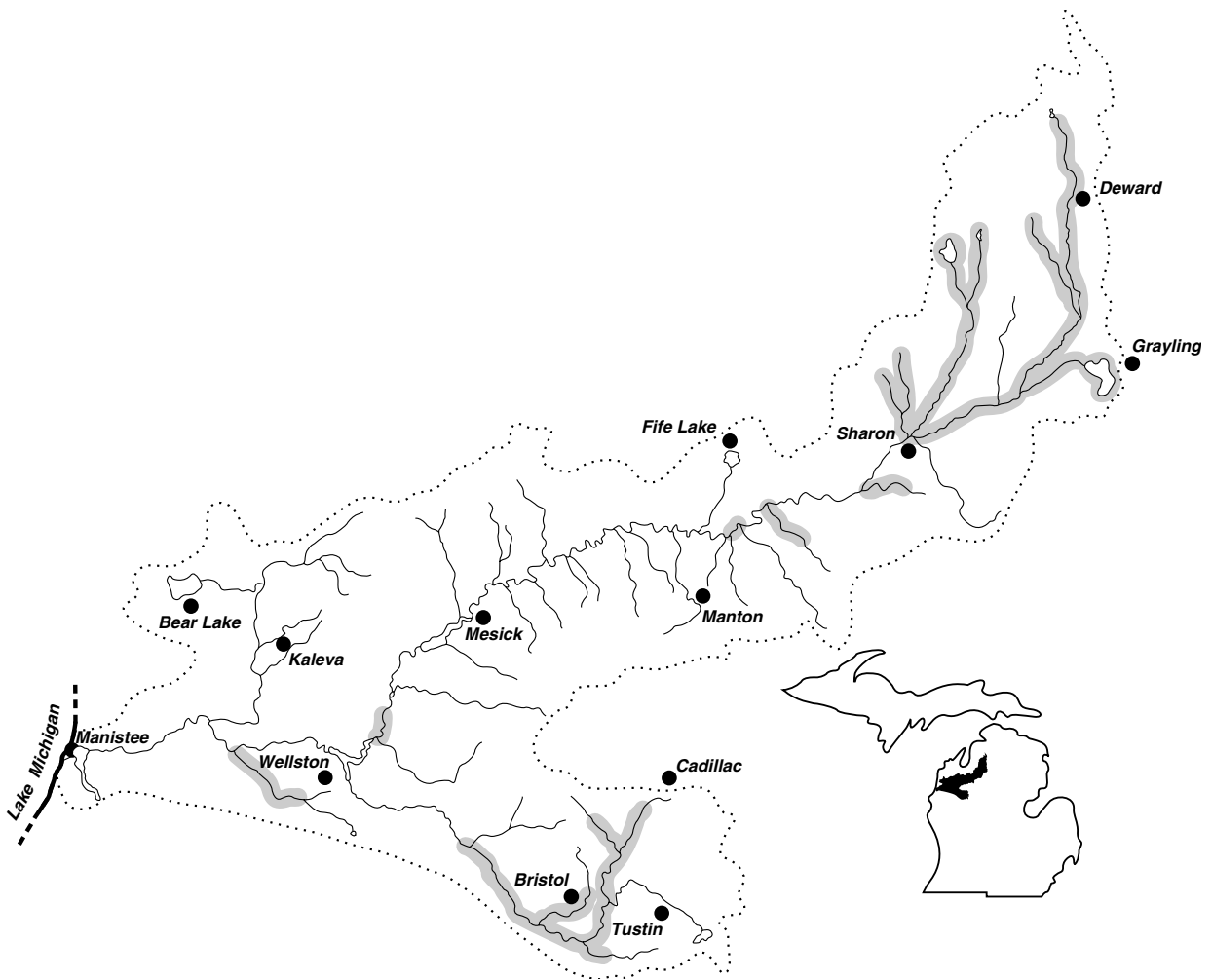


Brook stickleback (*Cluaea inconstans*)

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

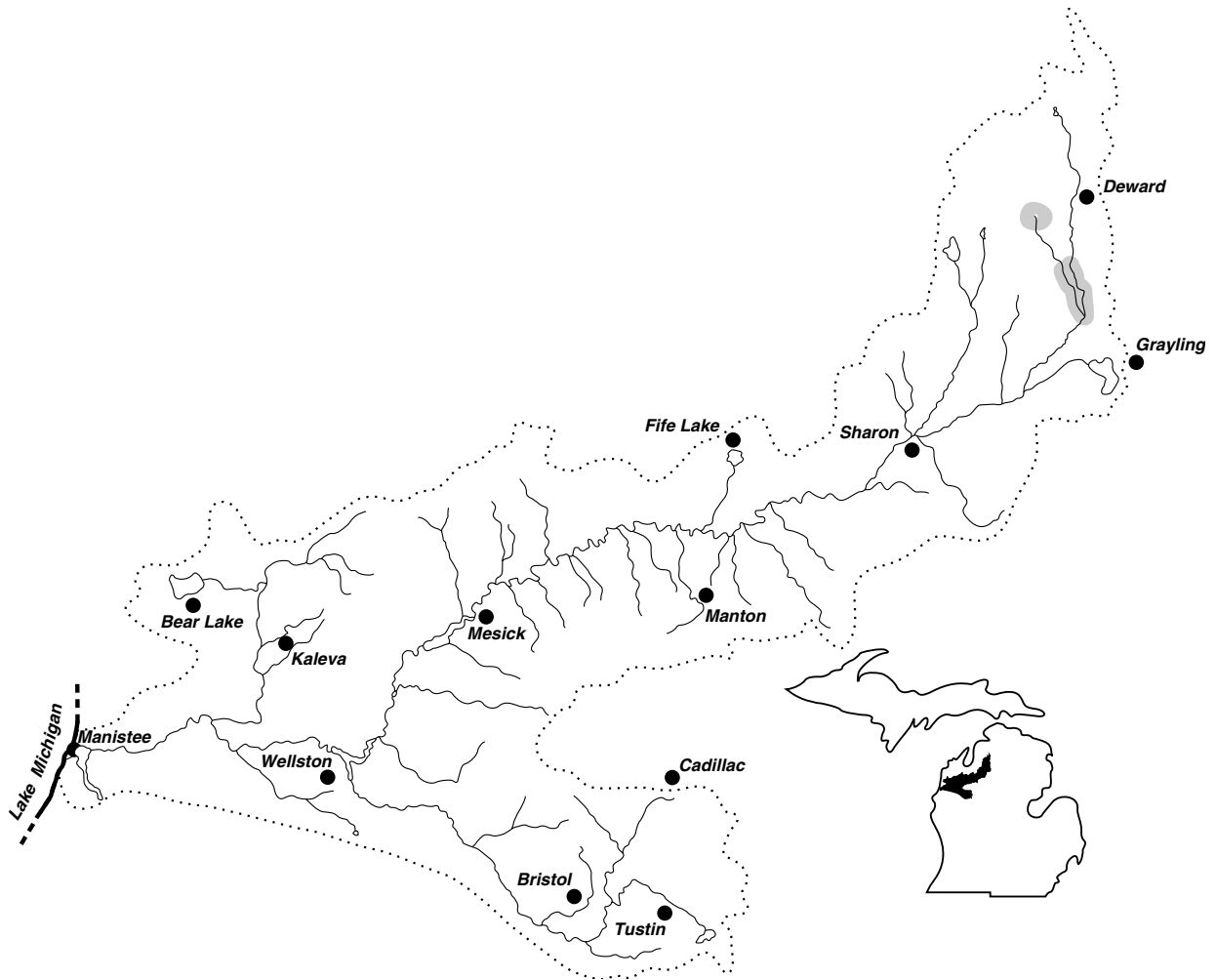


Ninespine stickleback (*Pungitius pungitius*)

Habitat:

- feeding - open water of lakes; also Lake Michigan
- cool quiet waters

- spawning - builds nests among aquatic vegetation in creeks and streams

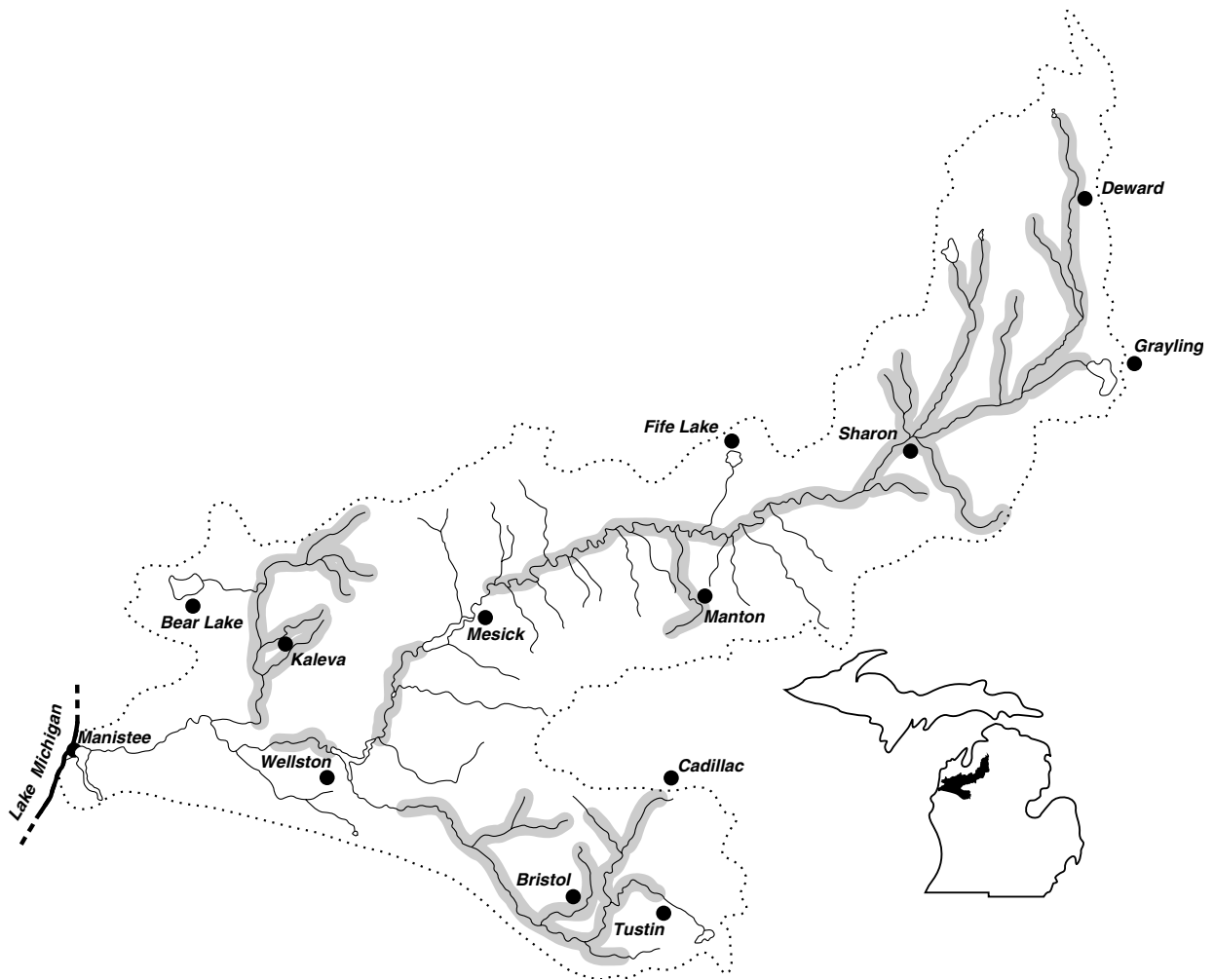


Mottled sculpin (*Cottus bairdi*)

Habitat:

- feeding - cool to cold streams
- riffle and rock substrates preferred
- clear to slightly turbid shallow water

- spawning - nests under logs or rock

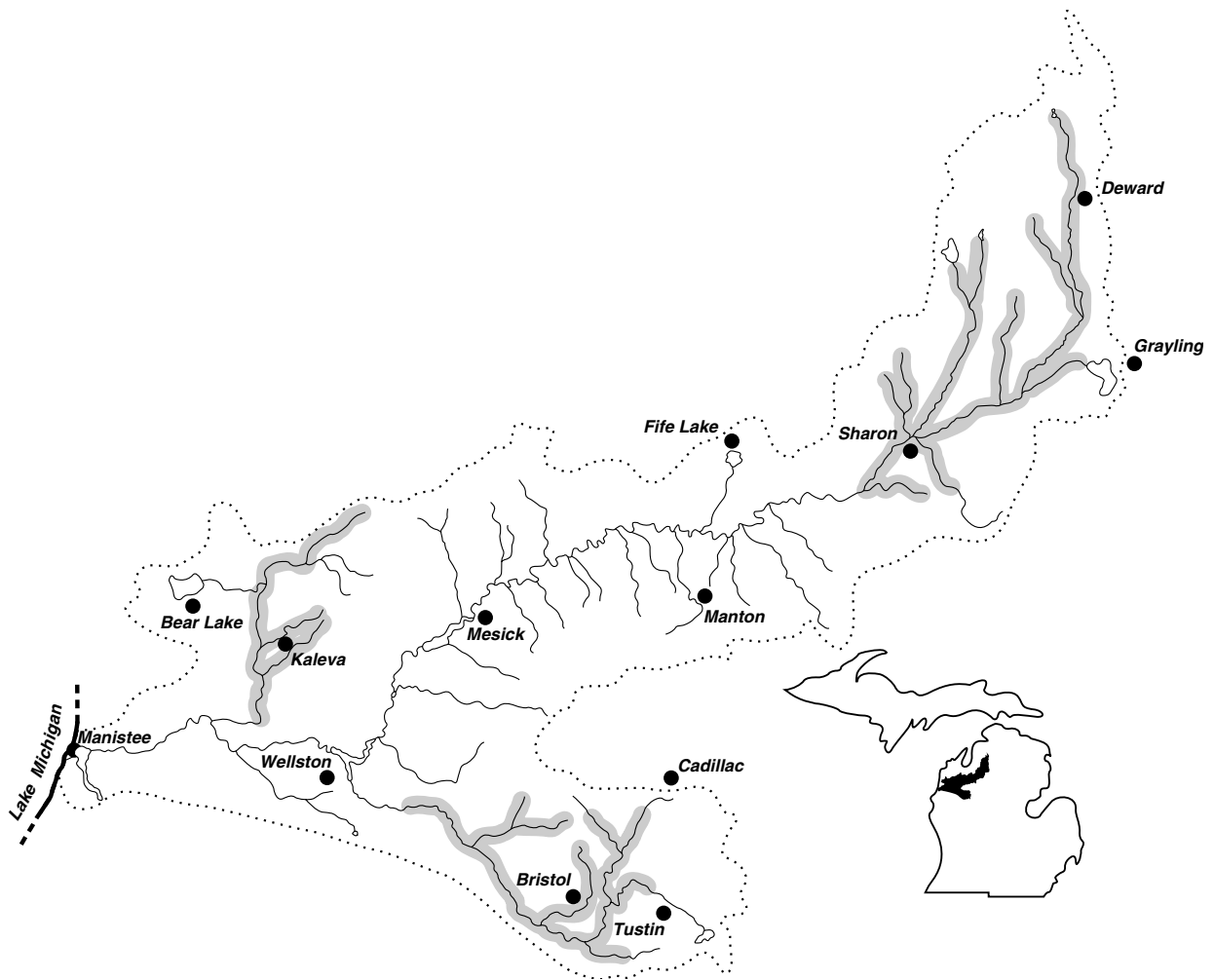


Slimy sculpin (*Cottus cognatus*)

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

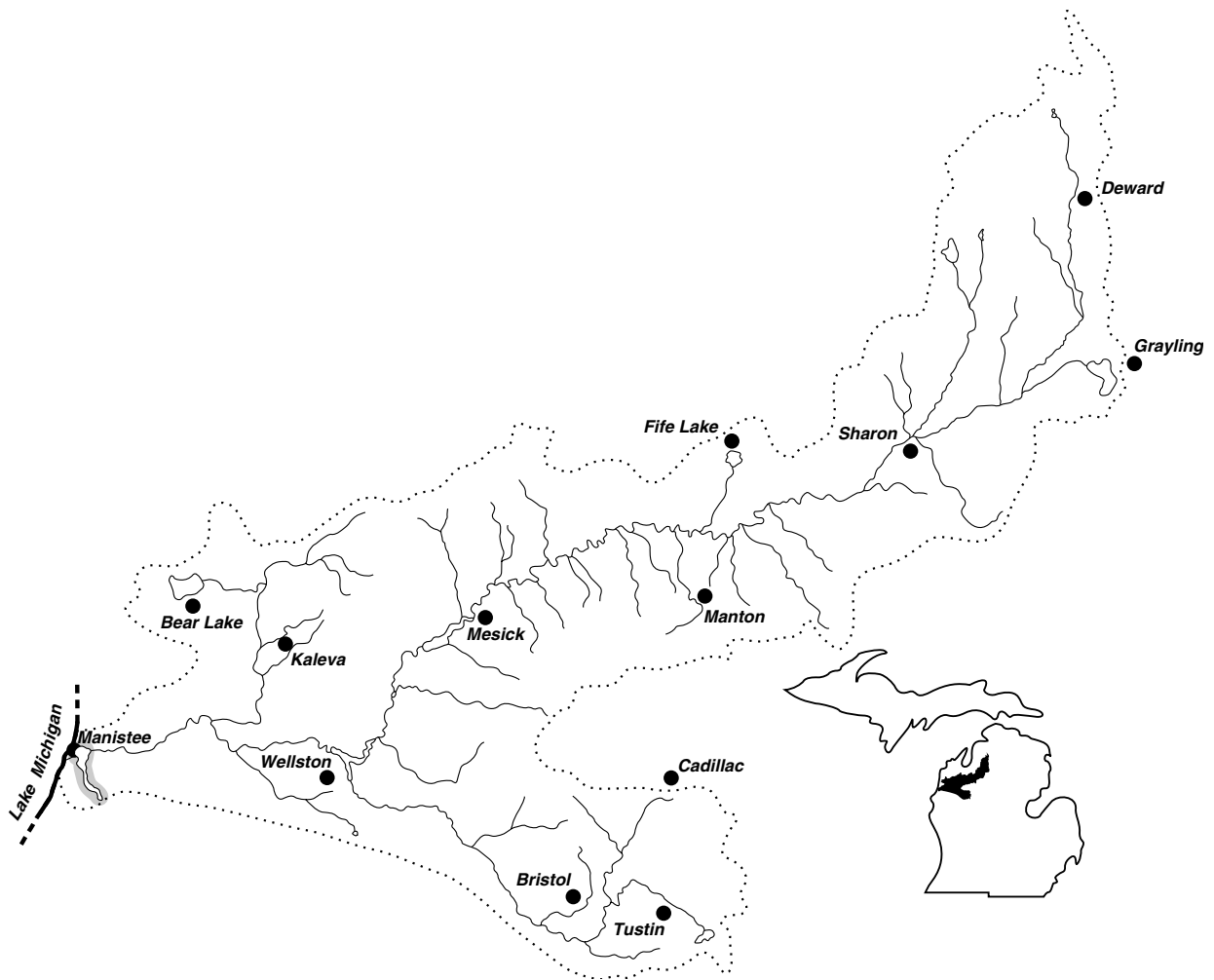


White bass (*Morone chrysops*)

Habitat:

- feeding - large lakes, impoundments, and Lake Michigan
- clear water of 30 feet or less depth
- firm substrate

- spawning - tributary streams or shallow water of lakes
- over firm substrate



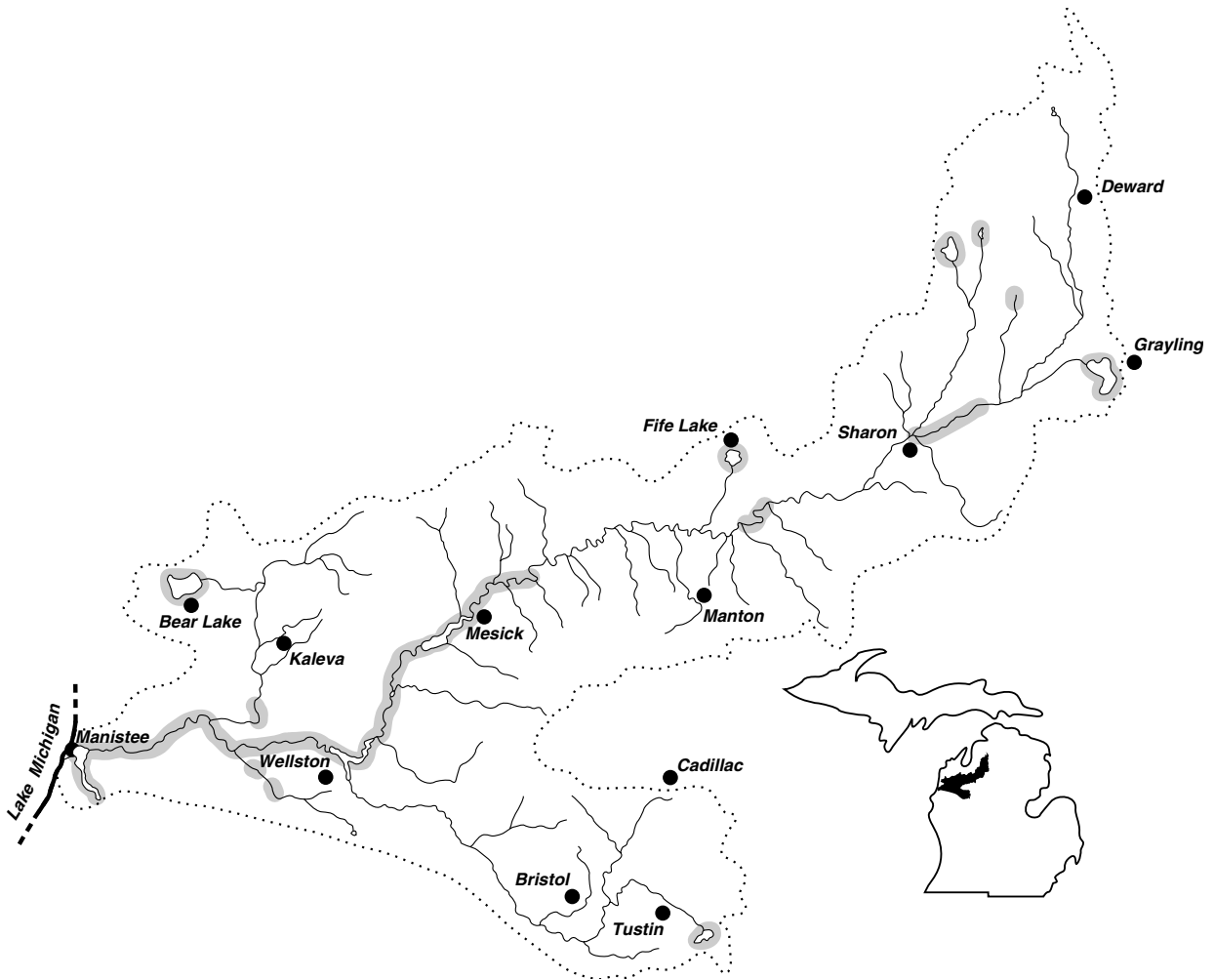
Rock bass (*Ambloplites rupestris*)

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

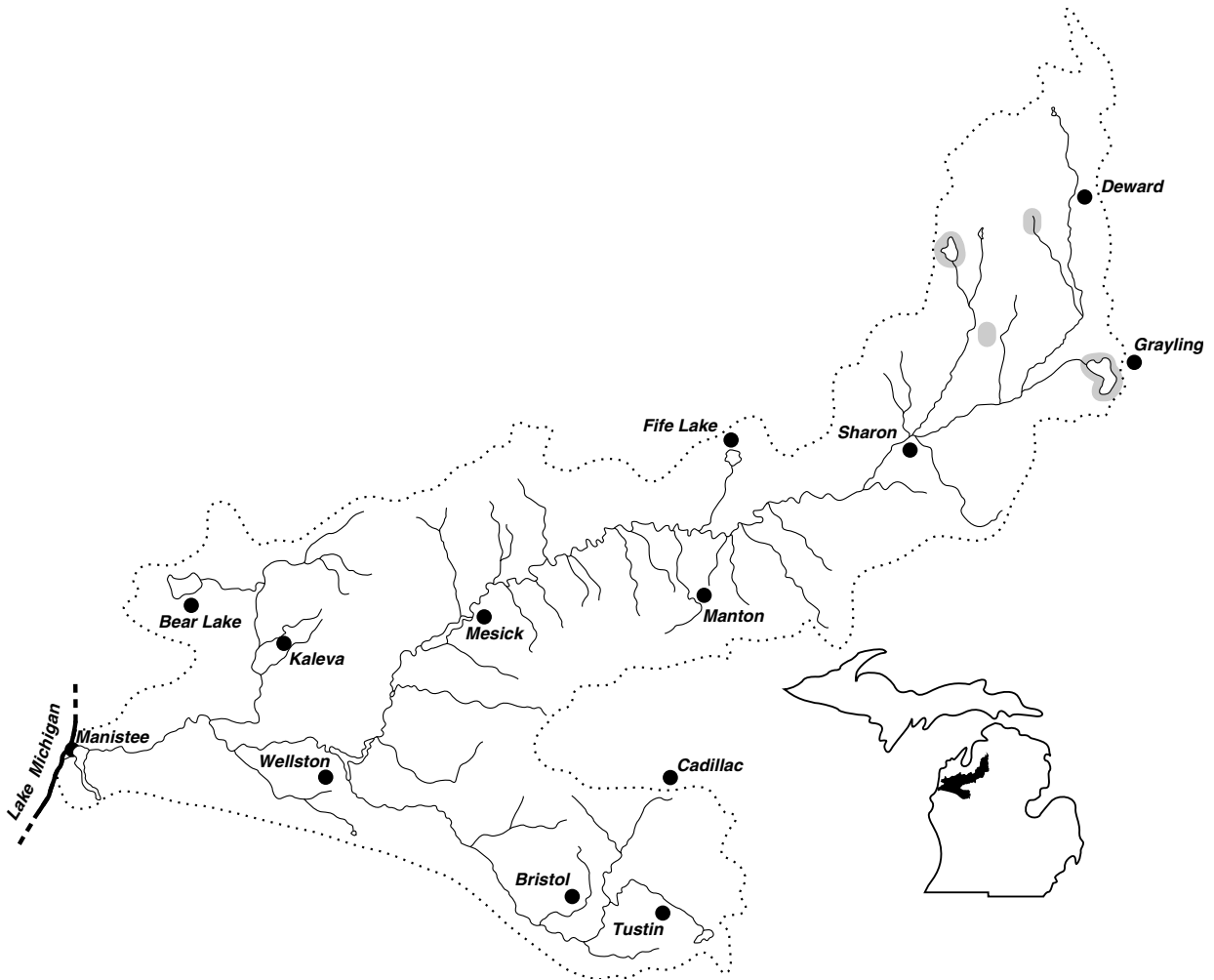


Green sunfish (*Lepomis cyanellus*)

Habitat:

- feeding - impoundments and lakes, and low-current streams and rivers
- no substrate preference

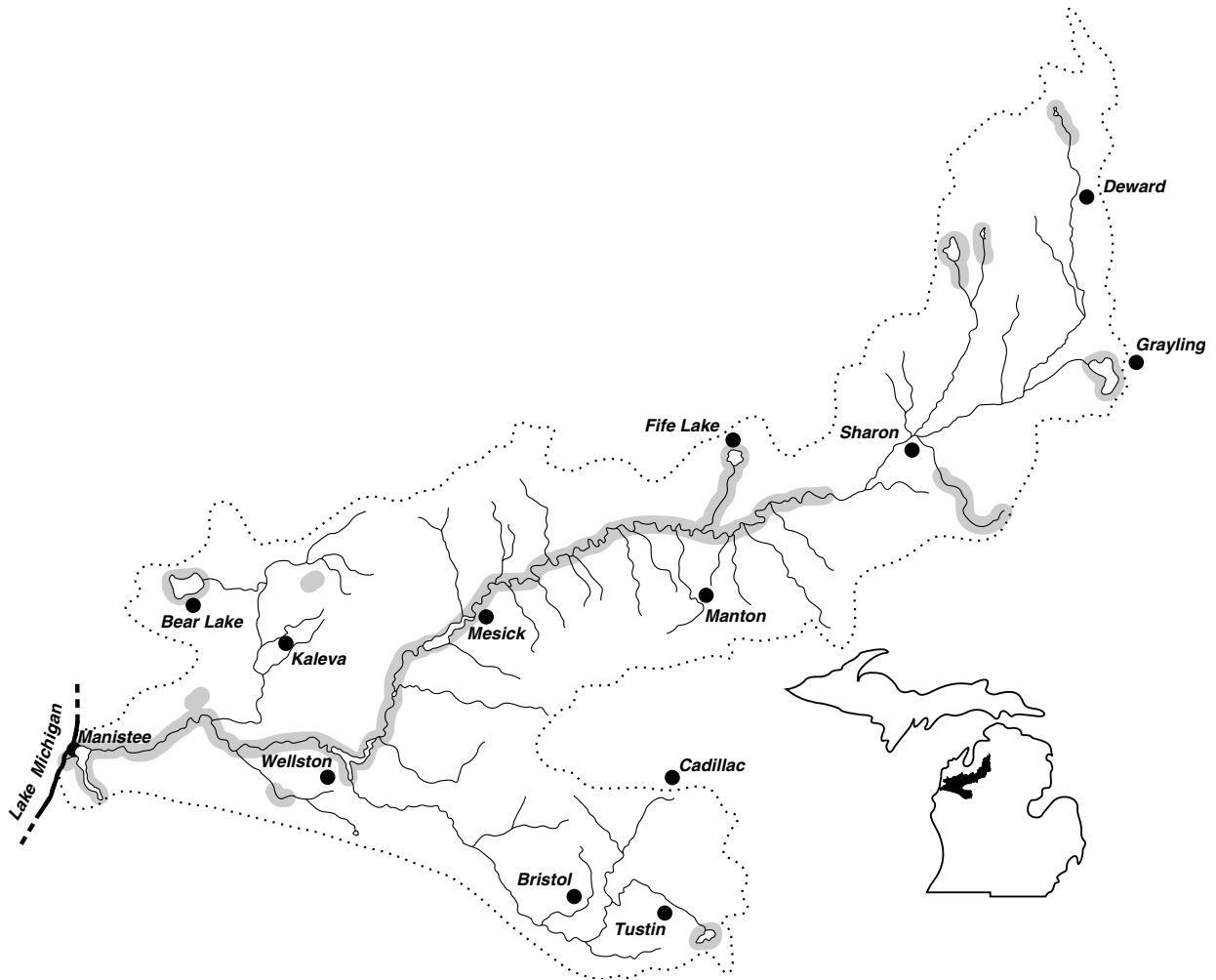
- spawning - nests in shallow areas sheltered by rocks, logs, or aquatic vegetation



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



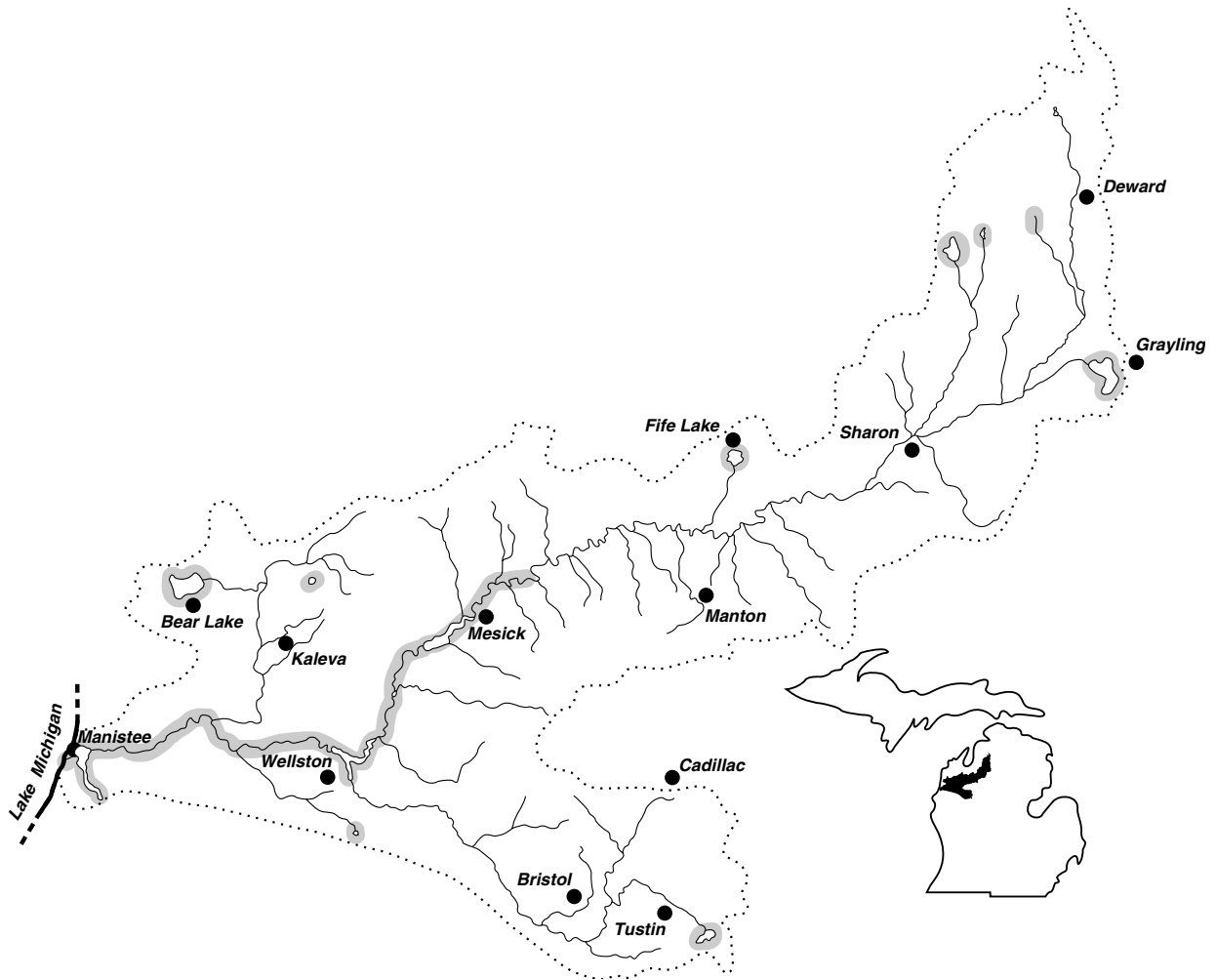
Bluegill (*Lepomis macrochirus*)

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

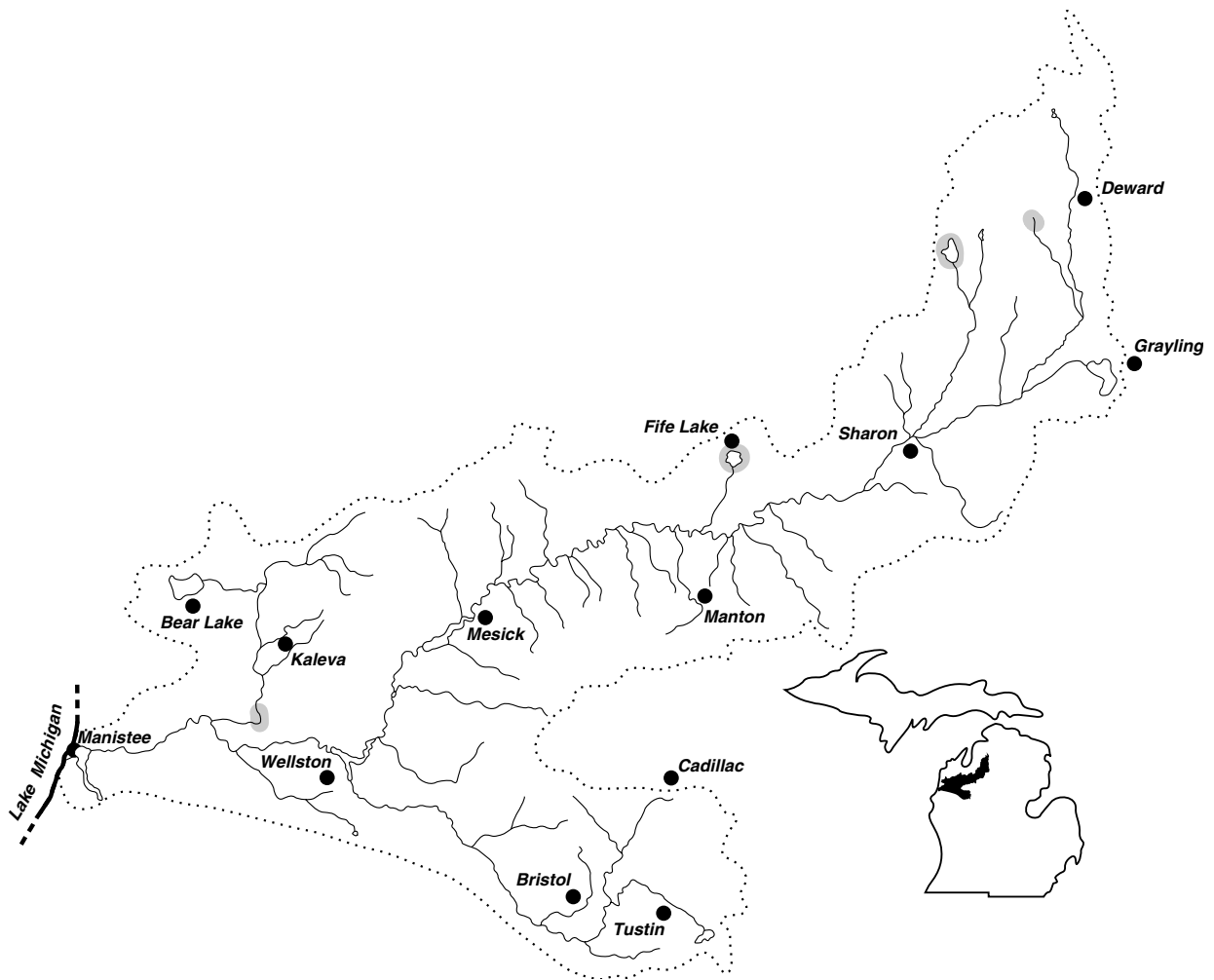


Longear sunfish (*Lepomis megalotis*)

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



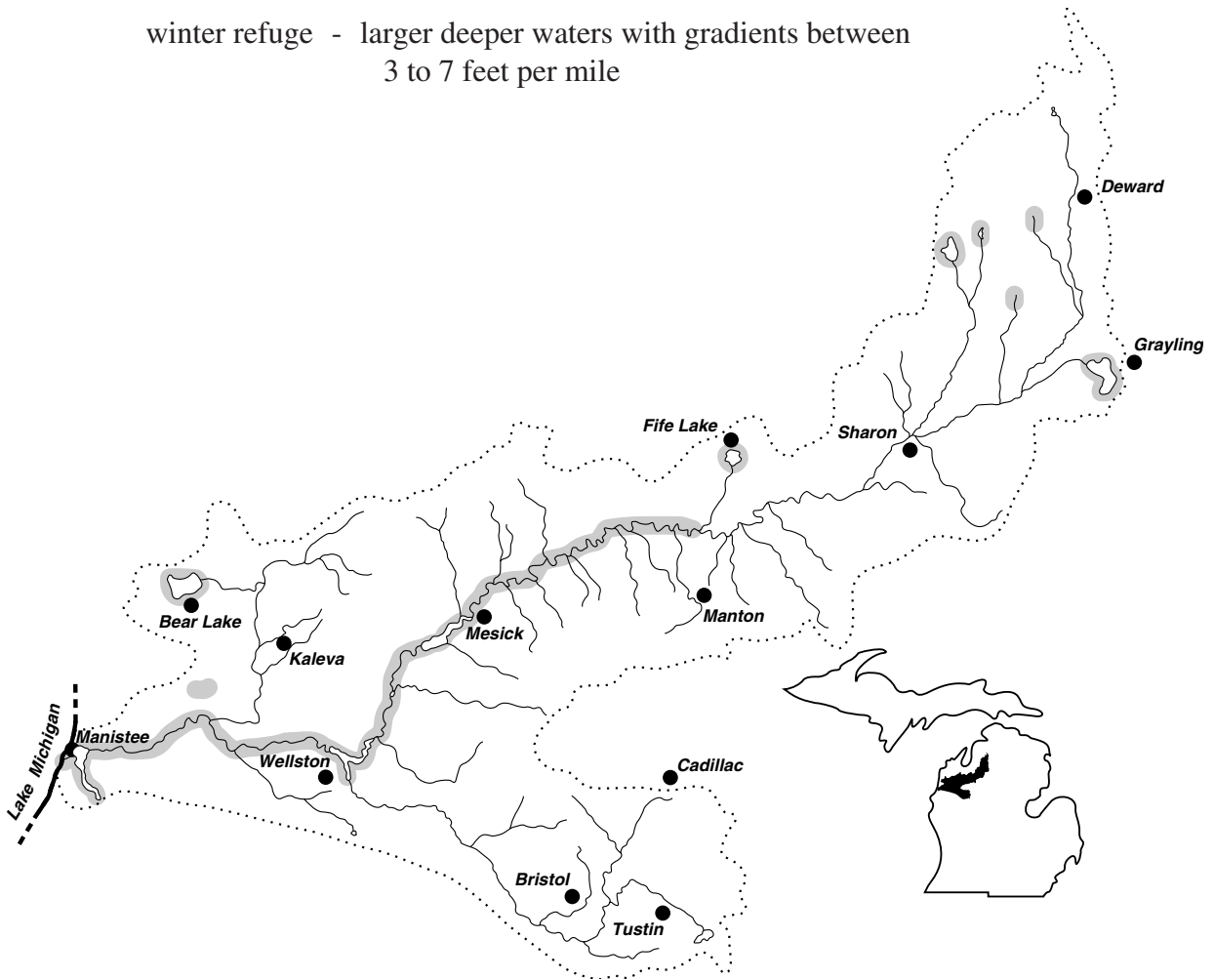
Smallmouth bass (*Micropterus dolomieu*)

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

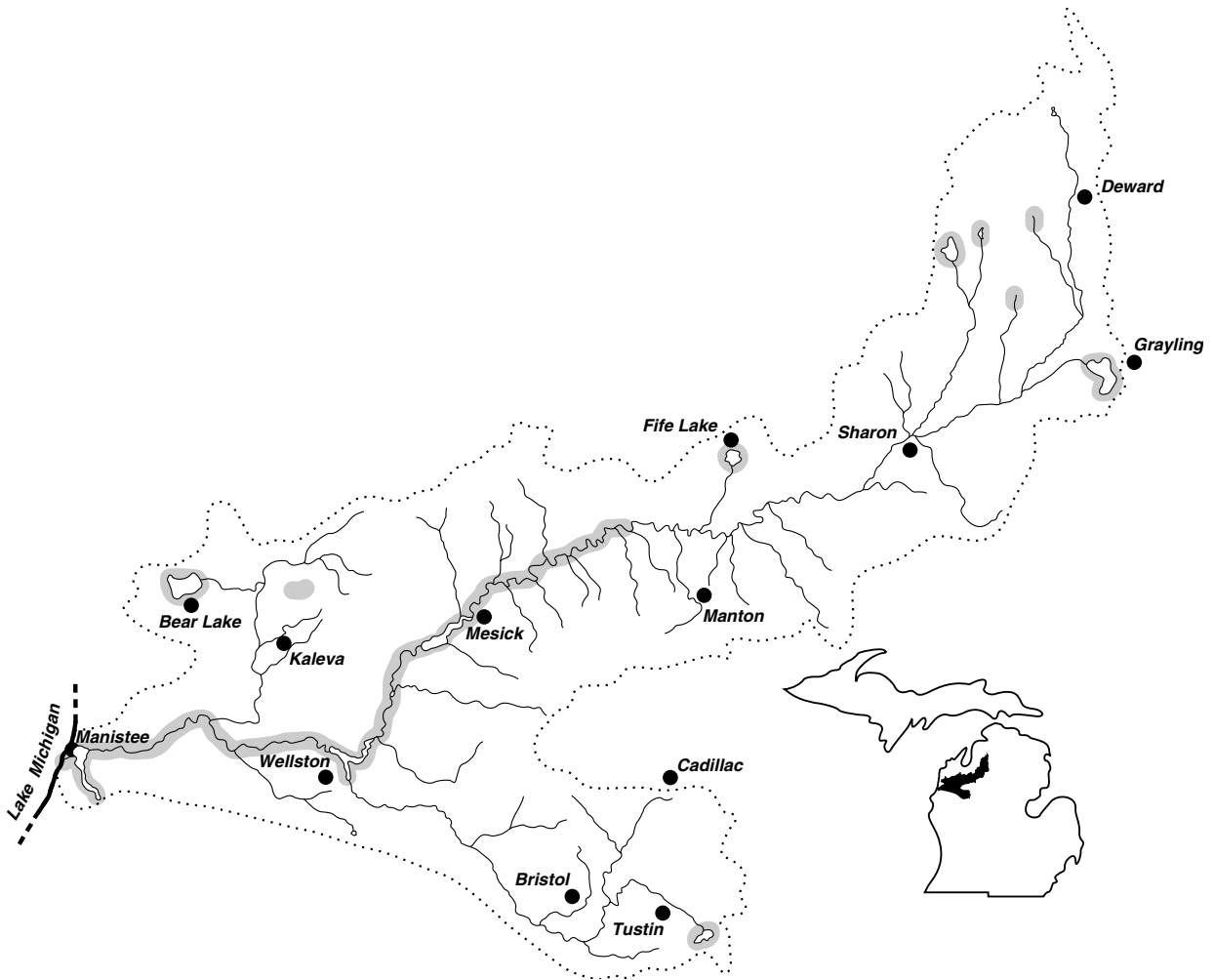
- winter refuge - larger deeper waters with gradients between 3 to 7 feet per mile



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

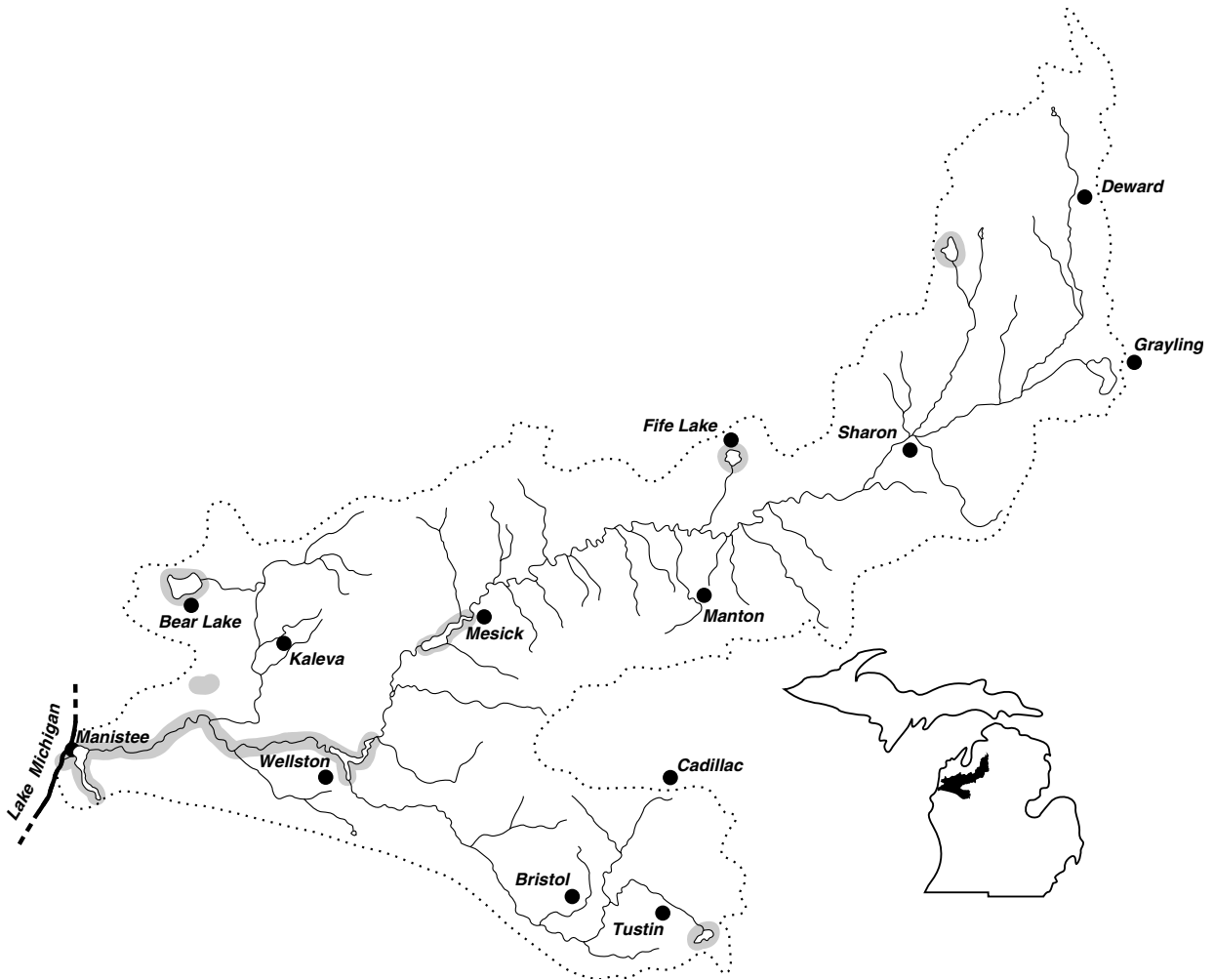


Black crappie (*Pomoxis nigromaculatus*)

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

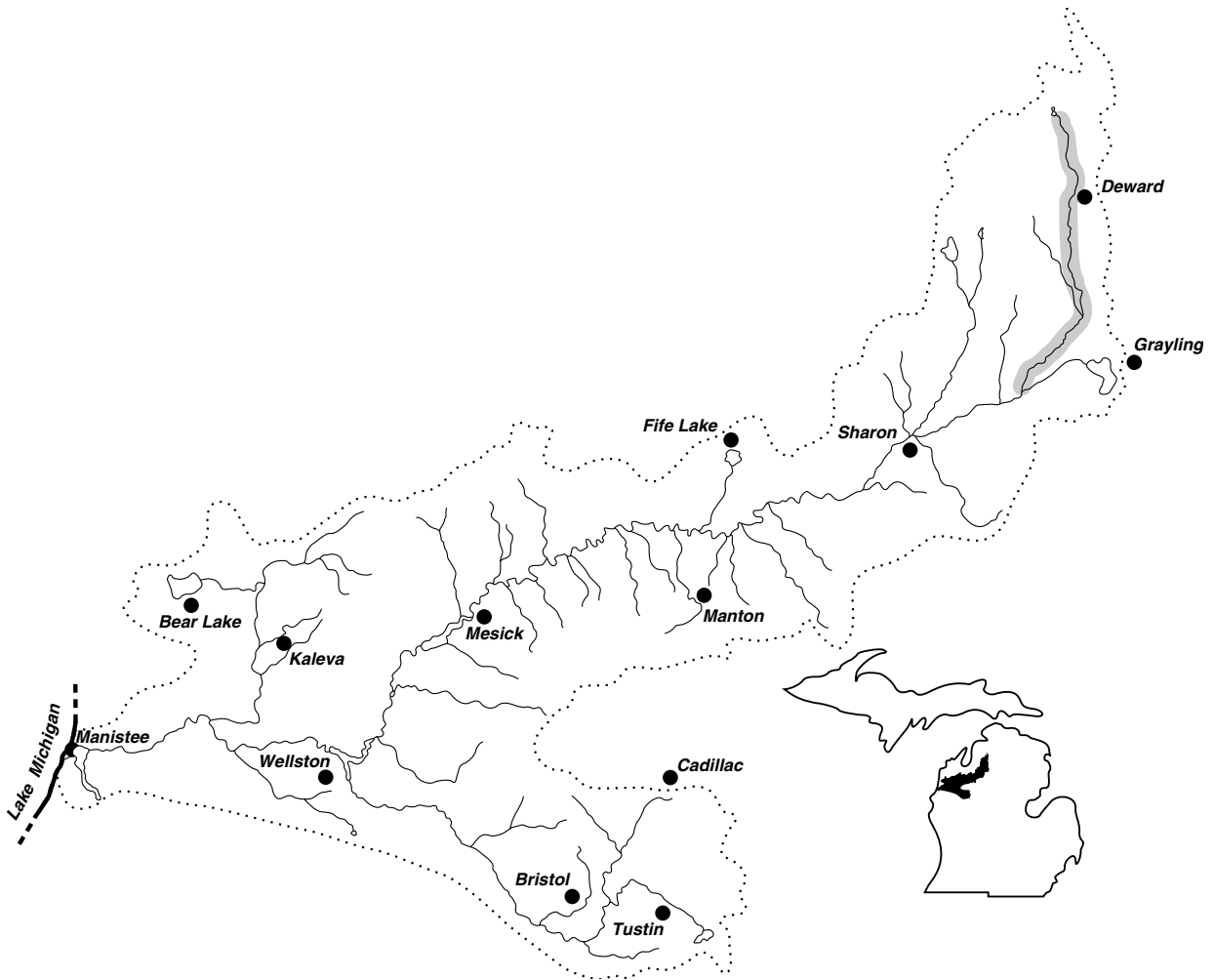
- spawning - nests in gravel, sand, or mud substrate
 - some vegetation must be present
 - sometimes nests under banks



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

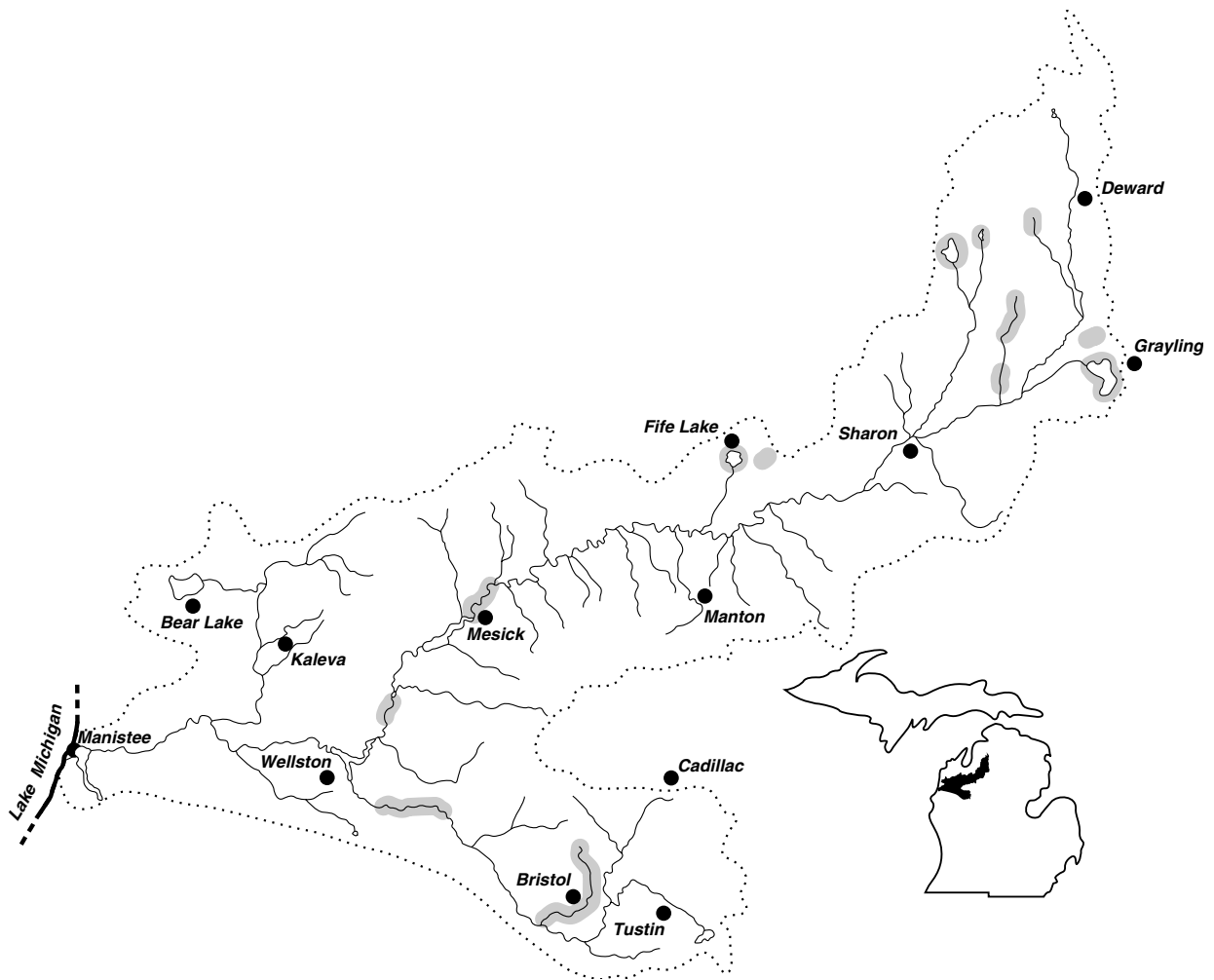


Iowa darter (*Etheostoma exile*)

Habitat:

- feeding - clear, slow moving streams and lakes
 - sandy to muddy substrates
 - intolerant of turbid water
 - lives in rooted aquatic vegetation

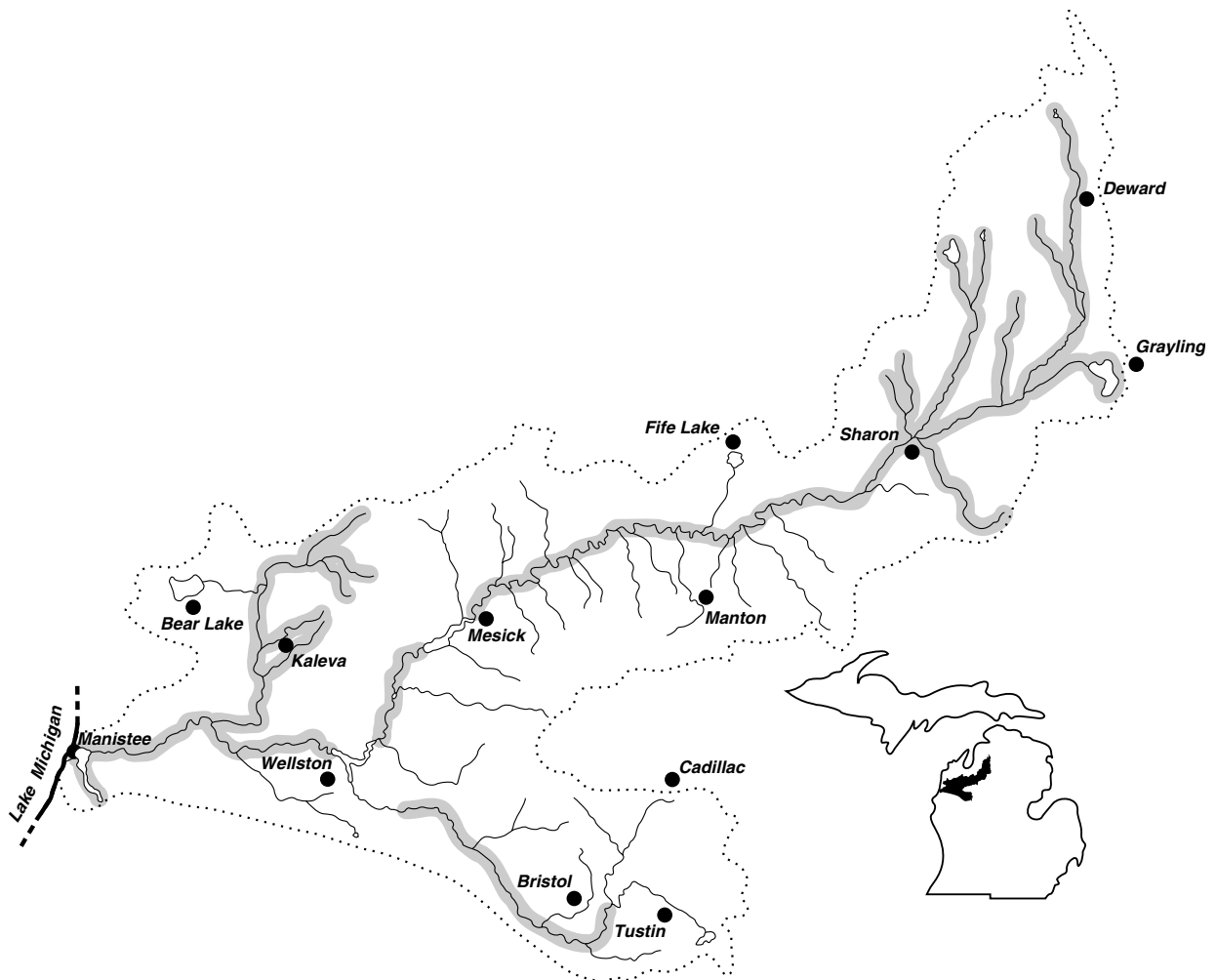
- spawning - in pond-like extensions of streams on organic matter or roots
 - in shallows



Johnny darter (*Etheostoma nigrum*)

Habitat:

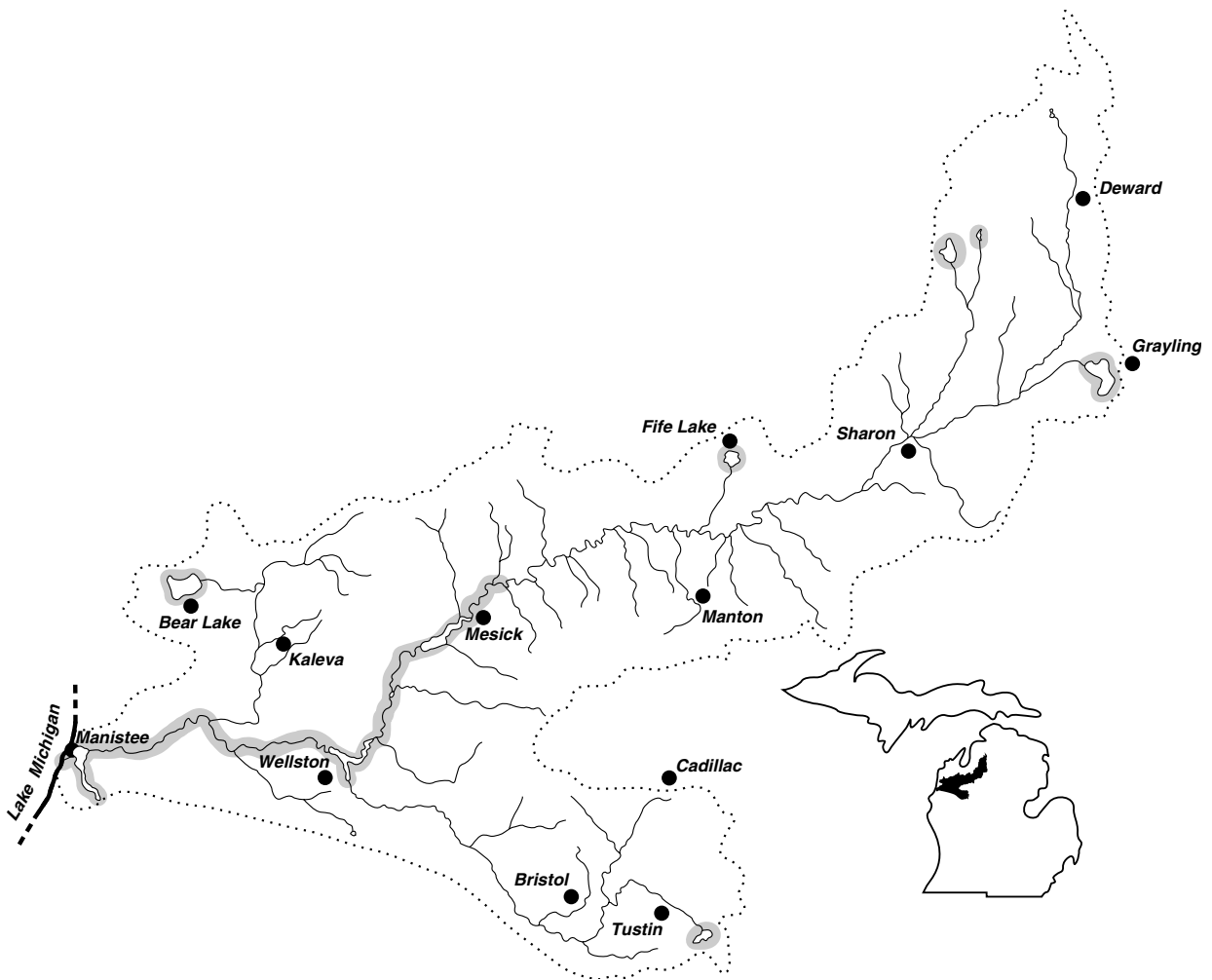
- feeding - sand and silt substrate
 - little to moderate current
 - shallow areas of streams, rivers, lakes, and impoundments
 - tolerant of many organic and inorganic pollutants and turbidity
-
- spawning - underneath rocks
 - in stream pools or protected shallows of lakes



Yellow perch (*Perca flavescens*)

Habitat:

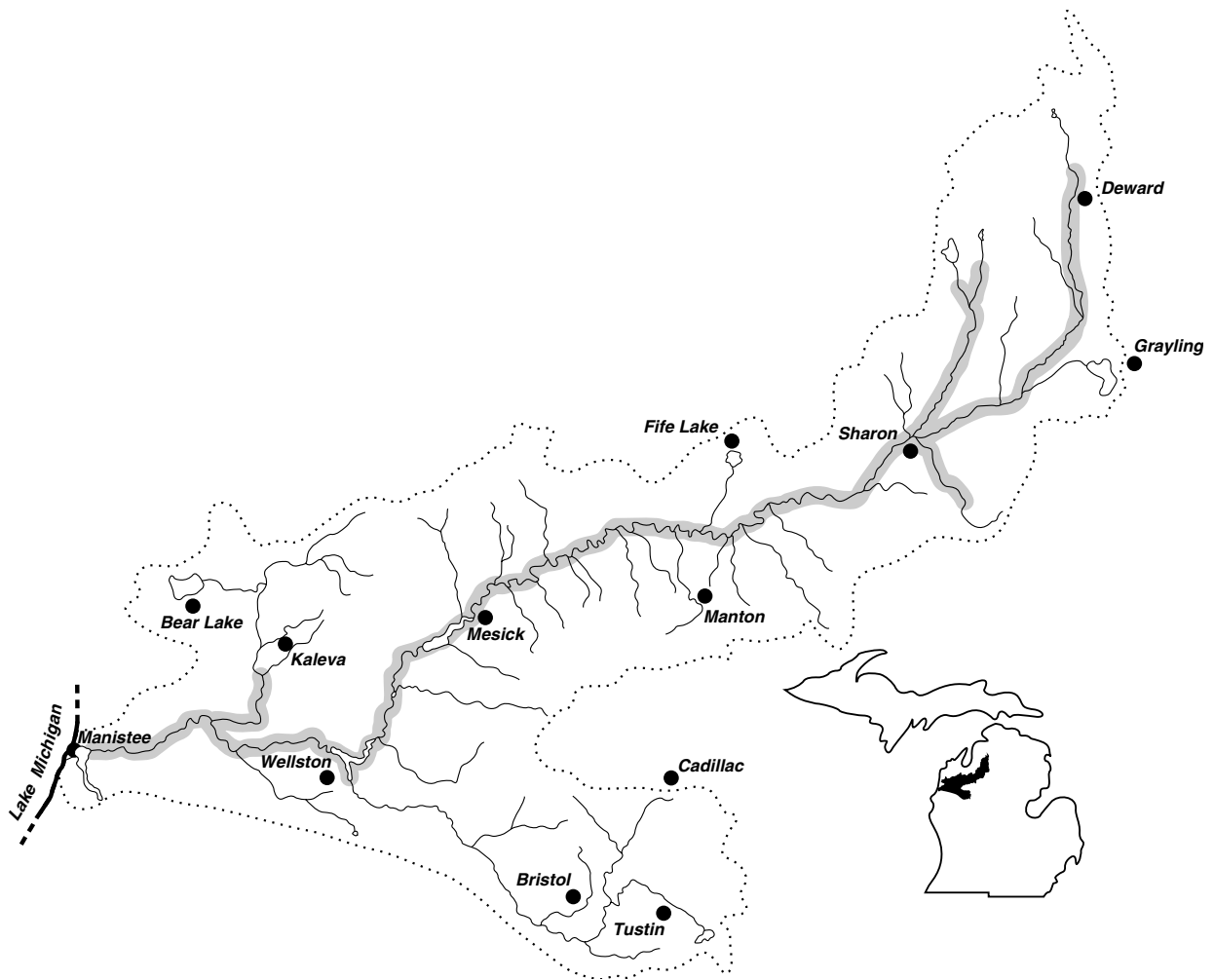
- feeding - clear lakes and impoundments; also Lake Michigan
 - low gradient rivers
 - abundance of rooted aquatics
 - muck, organic debris, sand, or gravel substrate
 - does not tolerate turbidity and siltation
-
- spawning - shallows of lakes, tributaries of streams
 - occurs over rooted vegetation,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



Logperch (*Percina caprodes*)

Habitat:

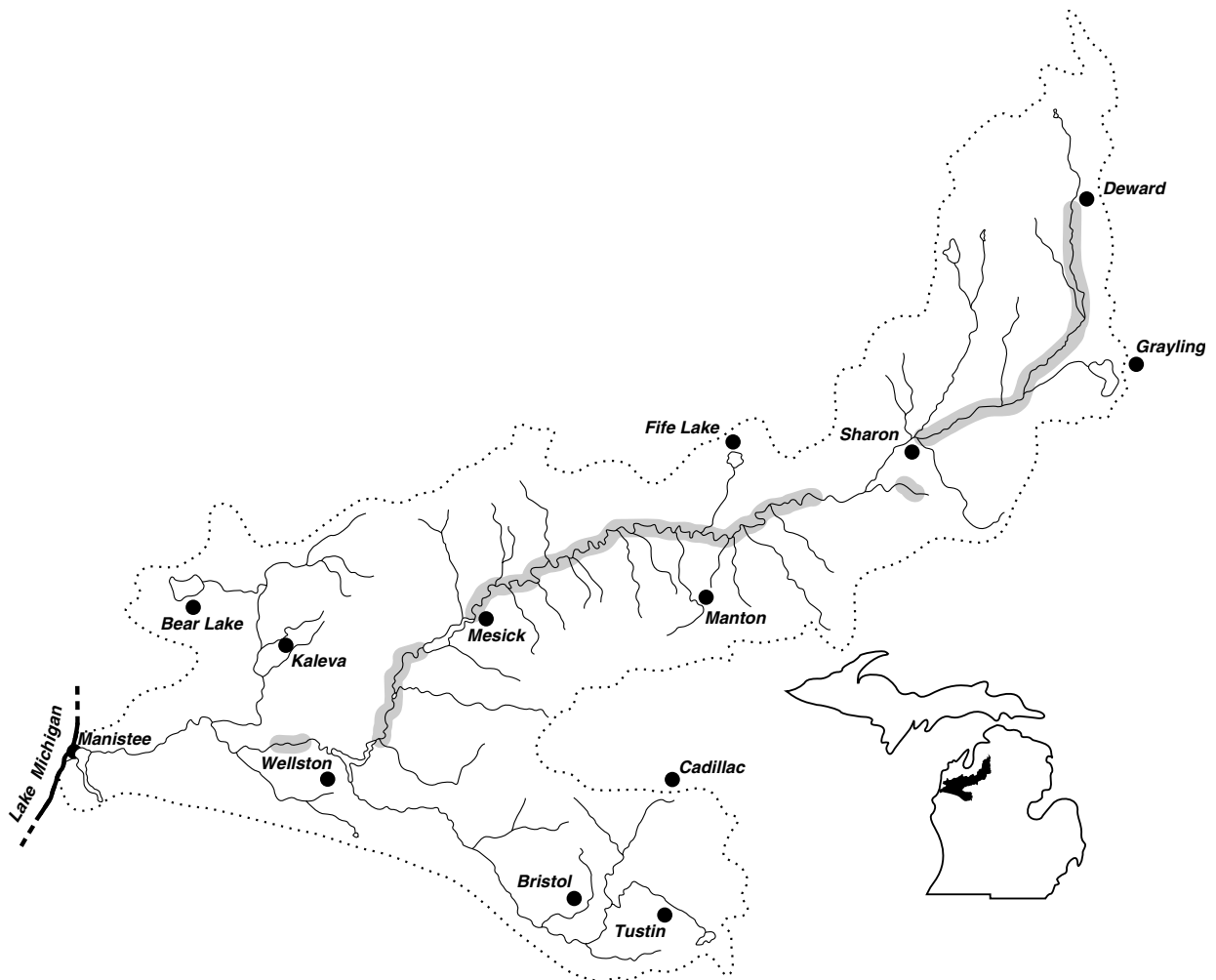
- feeding - gravel riffles, deeper slower sections of rivers
 - medium size streams; also lakes, impoundments, and Lake Michigan
 - sand, gravel, or rock substrate
 - avoids turbidity and silt
- spawning - riffles or sandy in-shore shallows



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



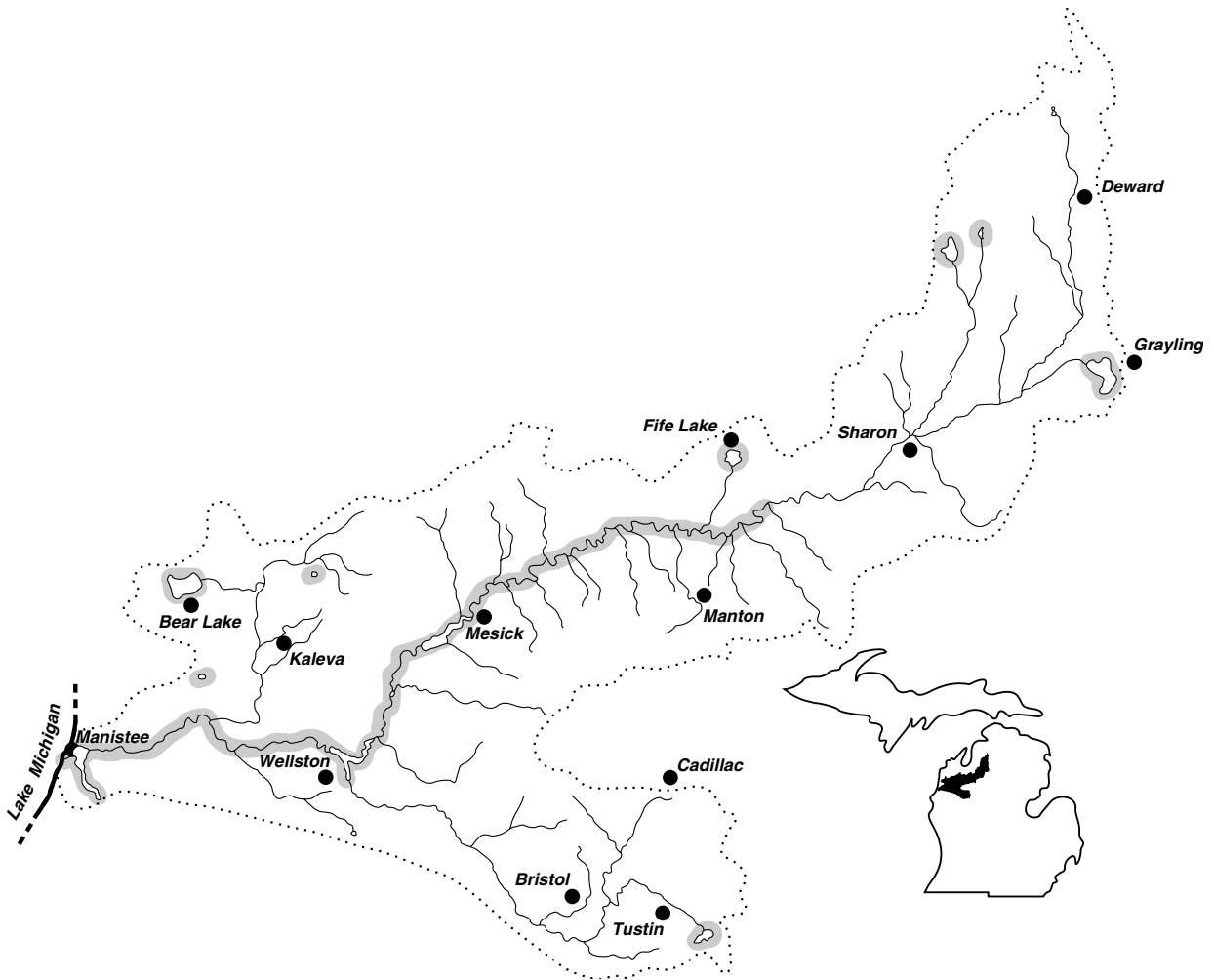
Walleye (*Stizostedion vitreum*)

Habitat:

- feeding - larger, deeper streams and in large, shallow, turbid lakes and impoundments; also Lake Michigan
 - 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 Michigan
- 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

