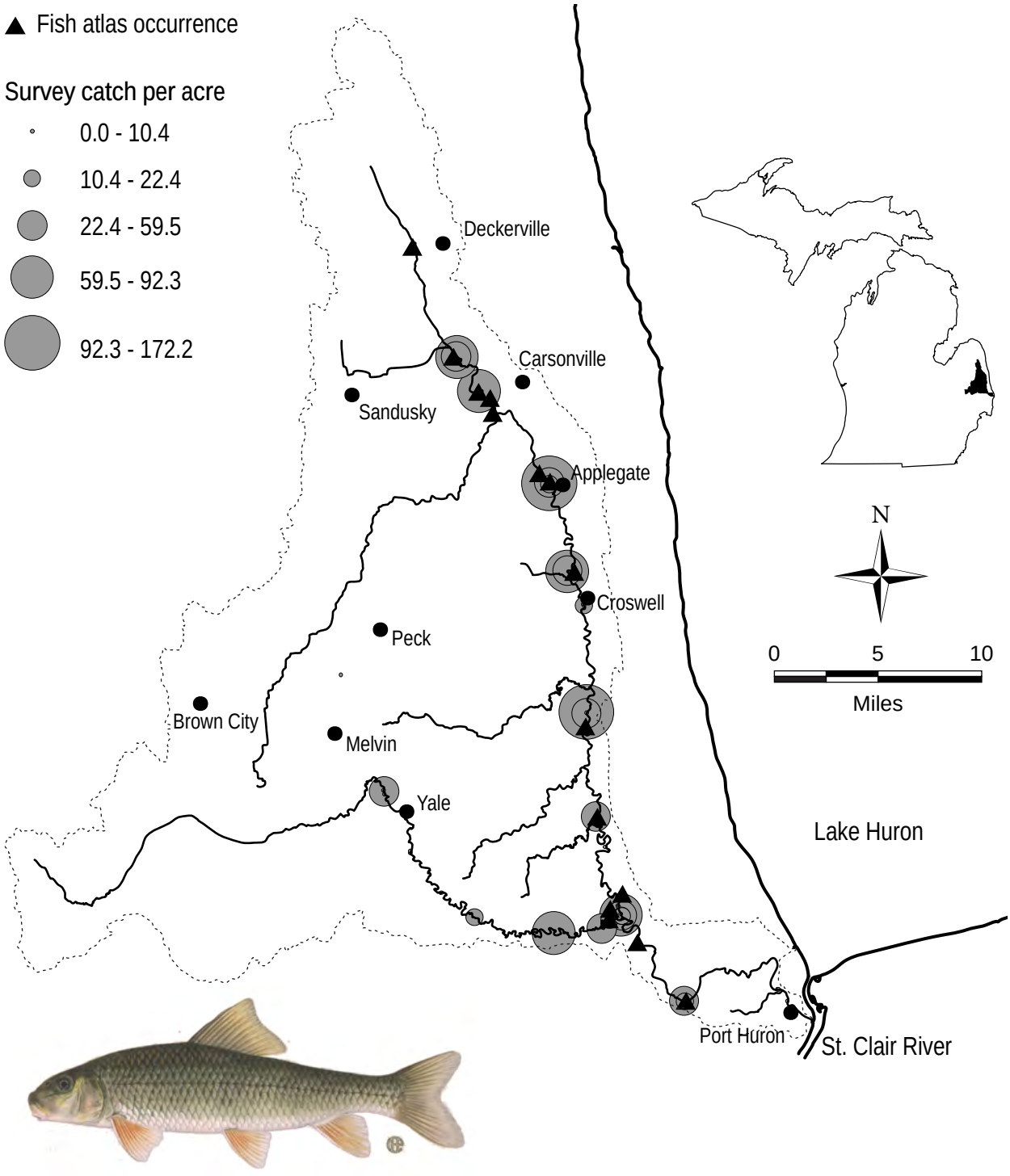
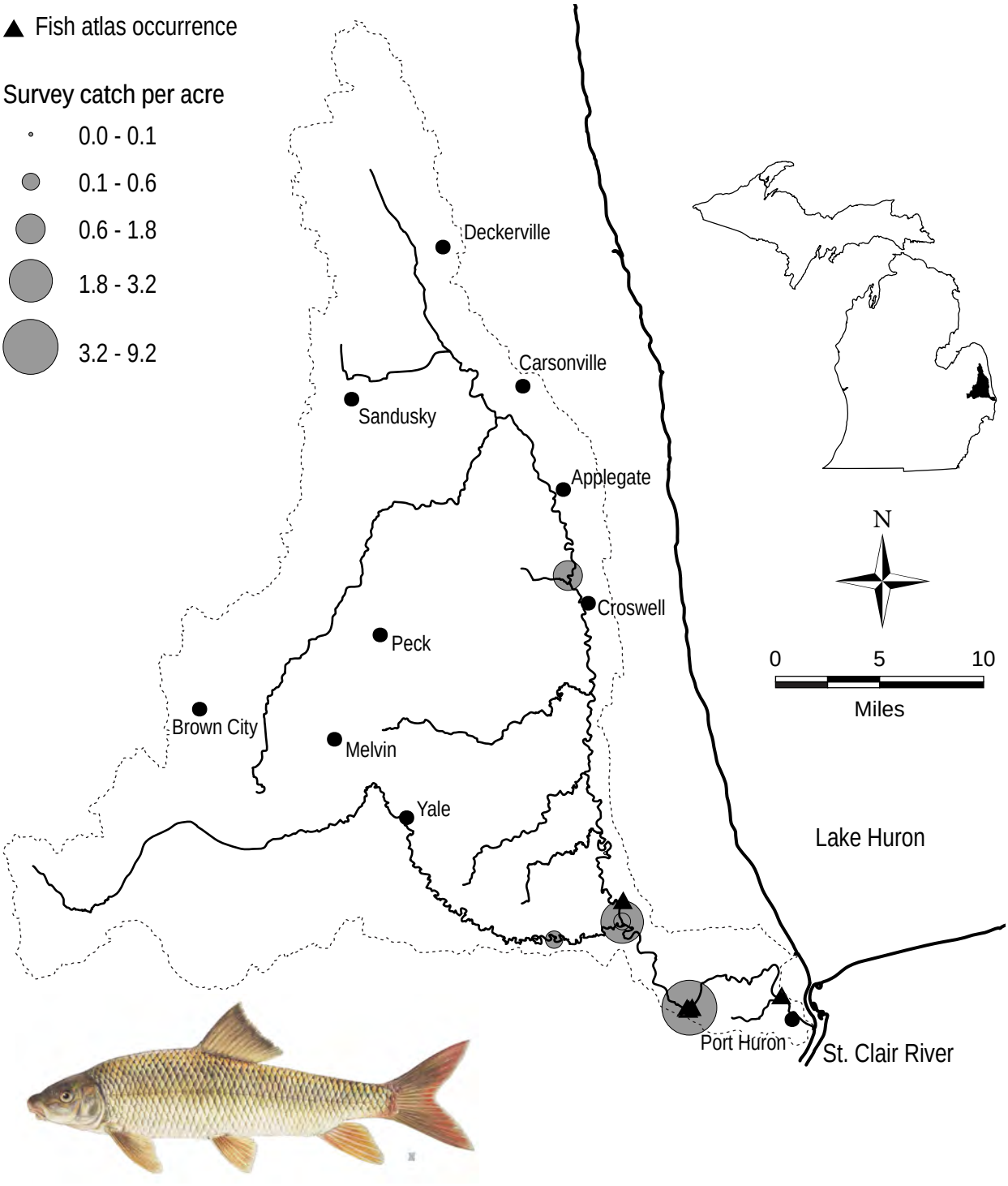


Golden redhorse (*Moxostoma erythrurum*)

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

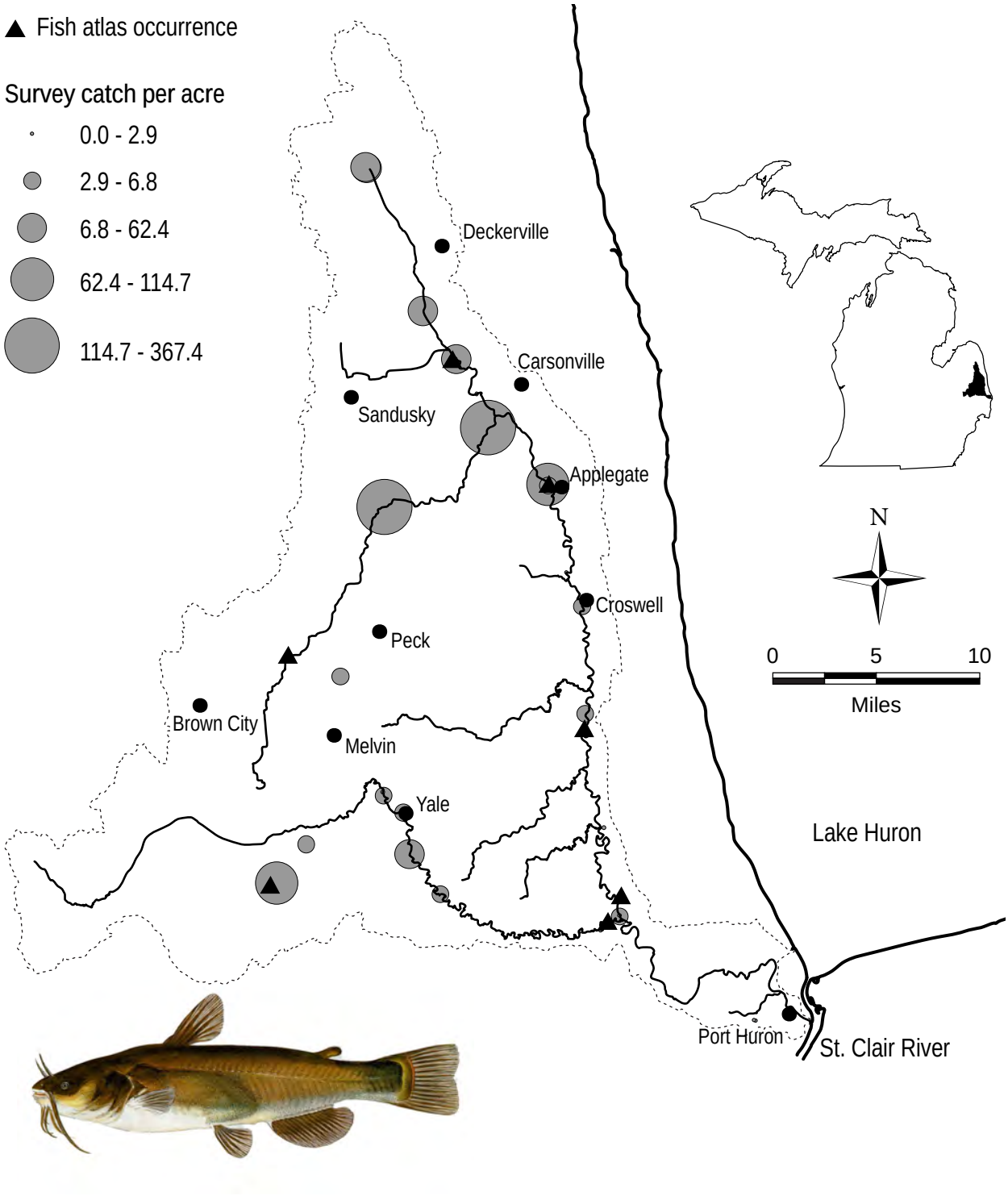


Shorthead redhorse (*Moxostoma macrolepidotum*)

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

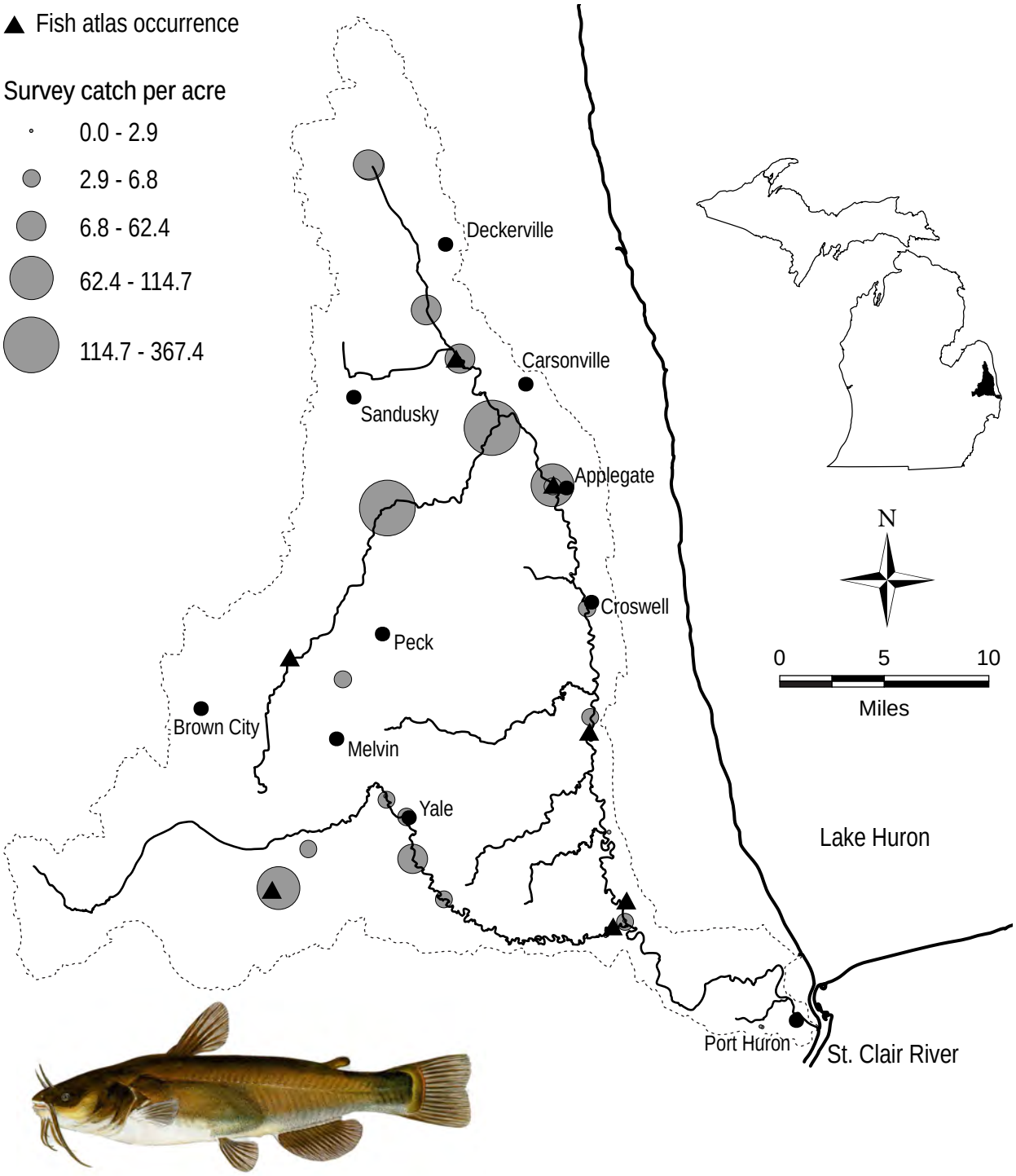


Greater redhorse (*Moxostoma valenciennesi*)

Habitat**:**

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

spawning - moderately rapid current

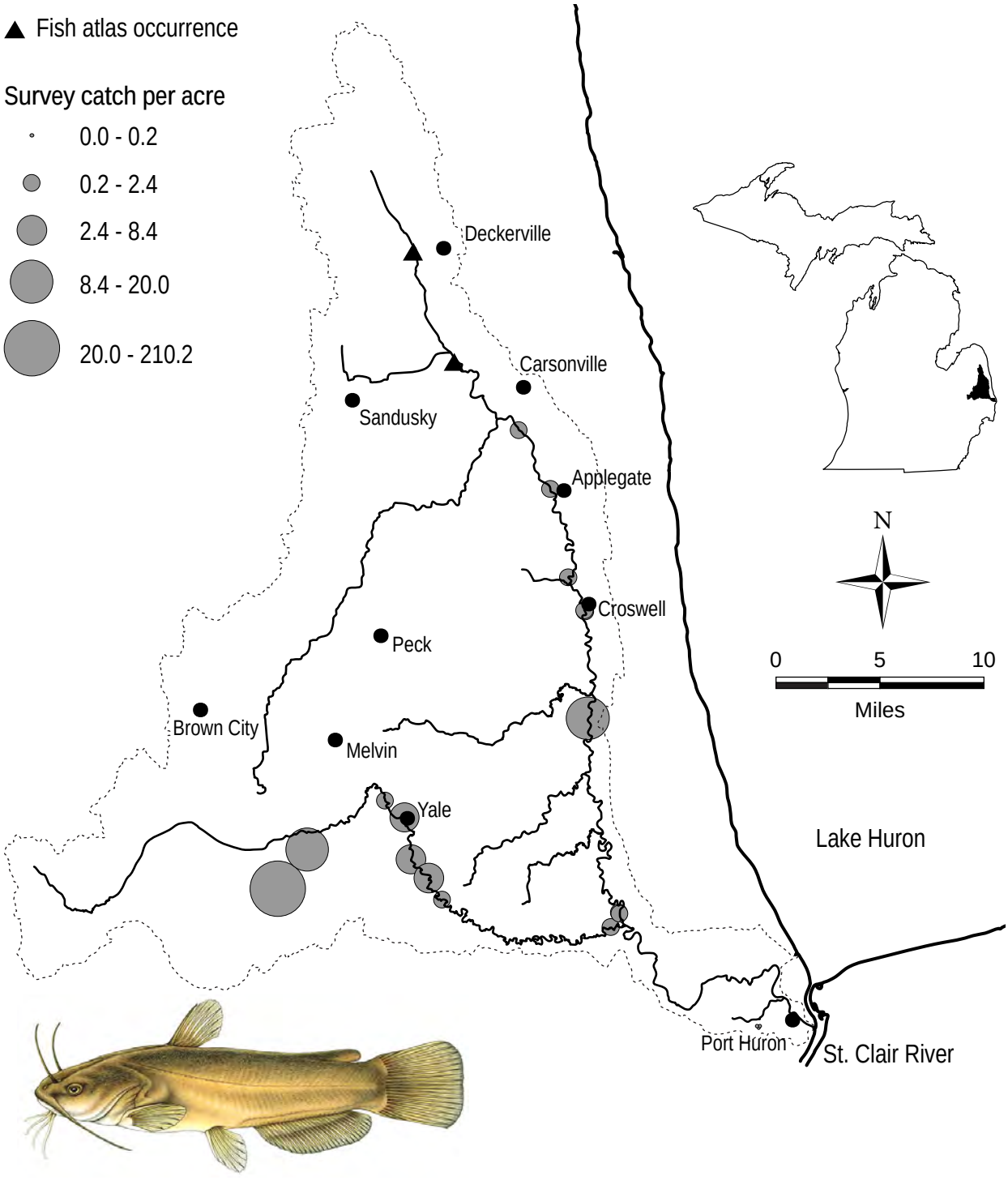


Black bullhead (*Ameiurus melas*)

Habitat:

feeding
- turbid water
- silt bottom
- low gradient small to medium streams, pools, and headwaters of large rivers; also in lakes and impoundments
- can tolerate very warm water and very low dissolved oxygen

spawning
- nest in moderate to heavy vegetation or woody debris and under overhanging banks

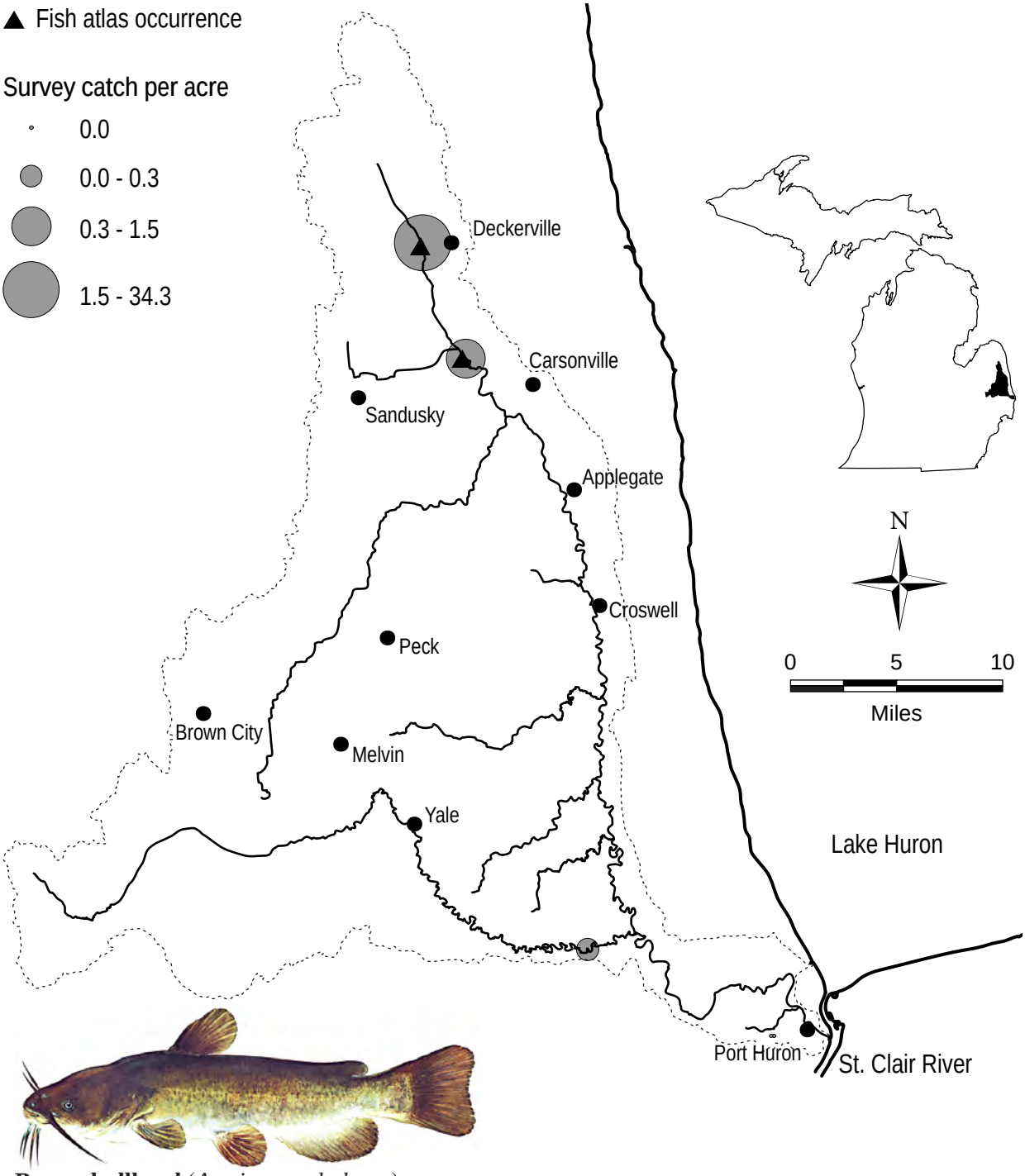


Yellow bullhead (*Ameiurus natalis*)

Habitat**:**

feeding - clear flowing water
- heavy vegetation
- low gradient streams, lakes, and impoundments
- tolerant of low oxygen

spawning - nest under a stream bank or near stones or stumps



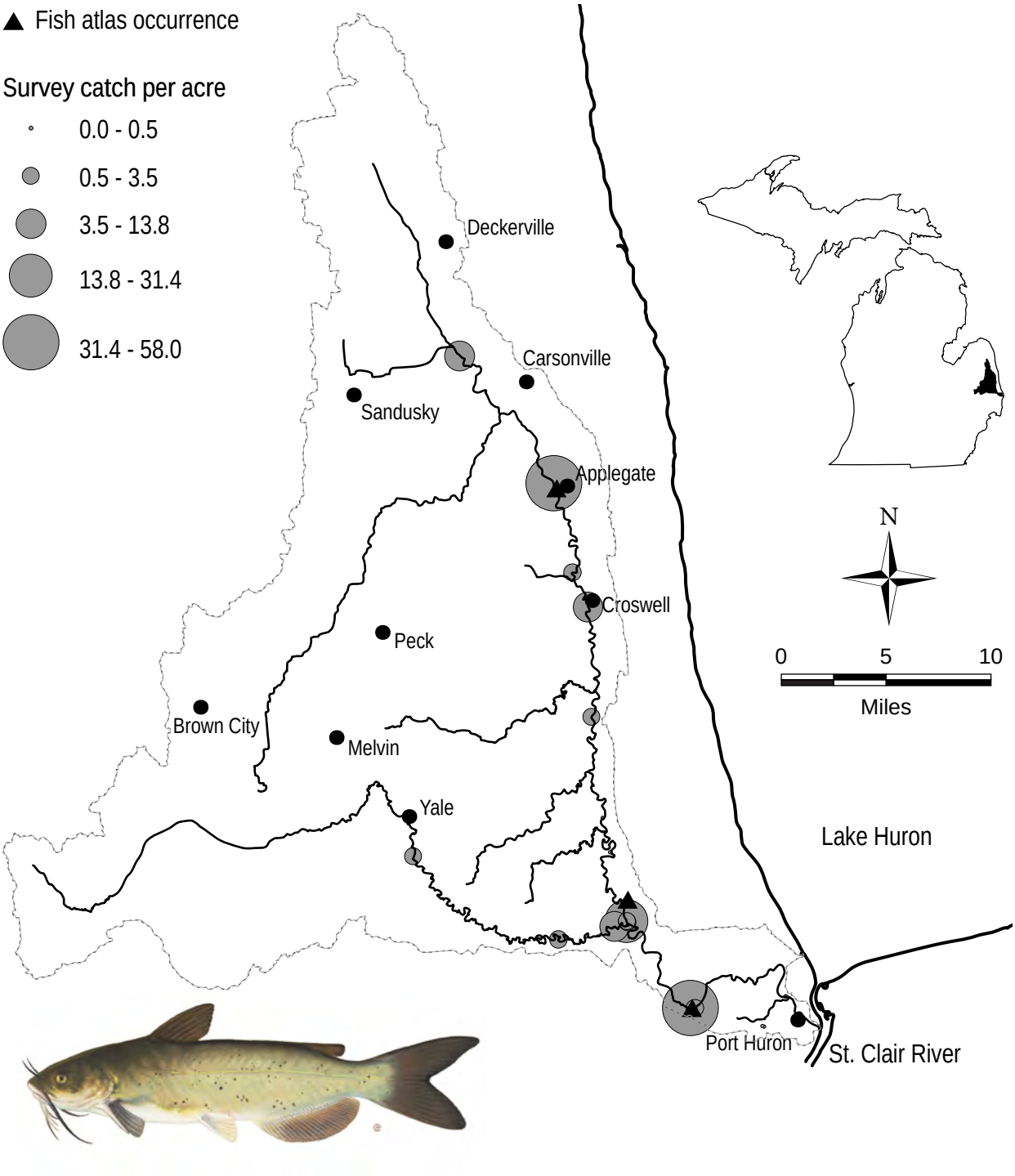
Brown bullhead (*Ameiurus nebulosus*)

Habitat**:**

feeding - larger streams and rivers, lakes and impoundments
- clear cool water with little clayey silt
- moderate amounts of aquatic vegetation
- sand, gravel, or muck substrate
- not tolerant of turbid water
- tolerant of warm water and low oxygen

spawning - nest in mud or sand substrate among rooted aquatic vegetation usually near a stump, tree, or rock

winter refuge - in muddy bottoms

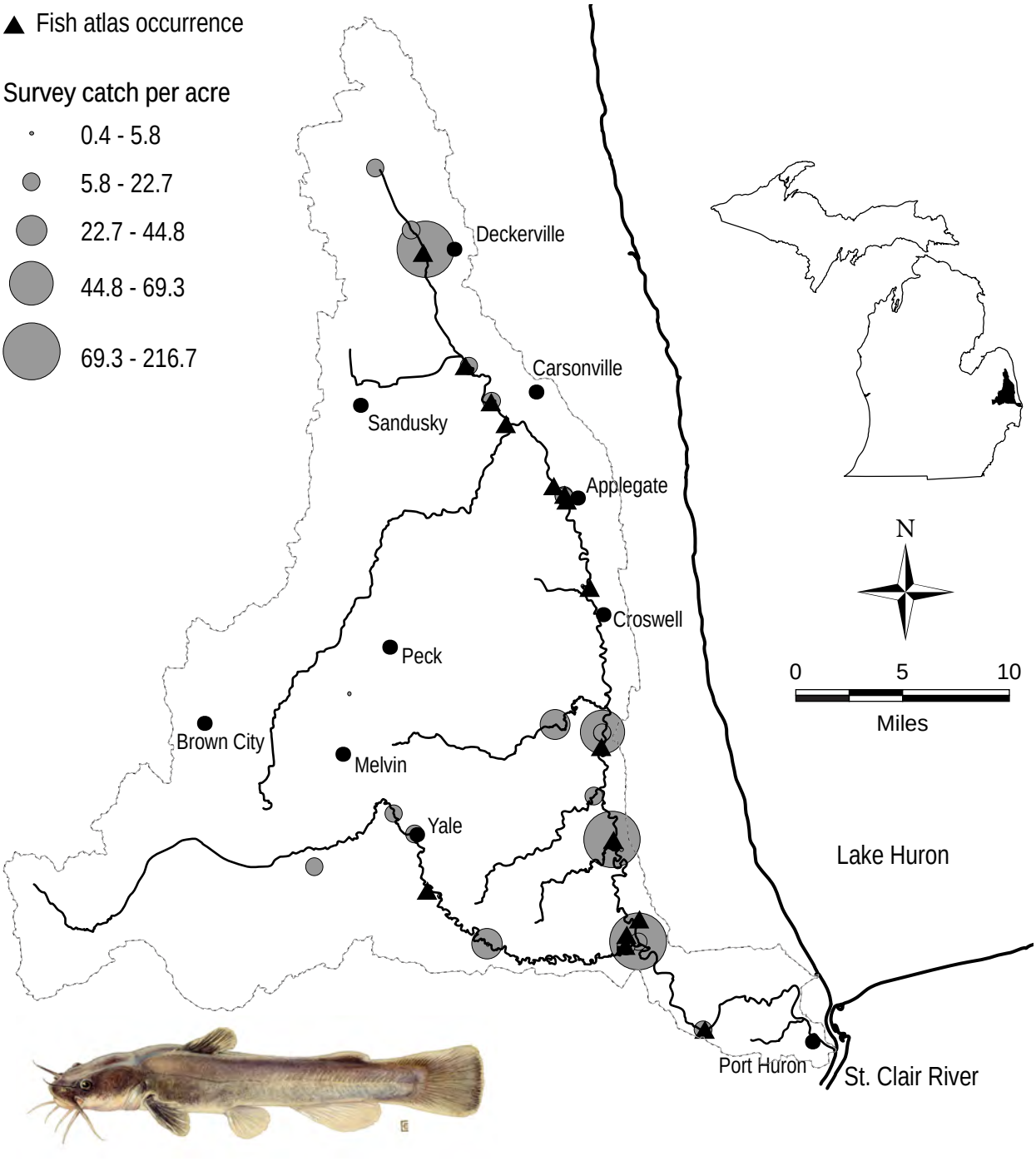


Channel catfish (*Ictalurus punctatus*)

Habitat**:**

feeding - moderately-clear, deeper waters of rivers, lakes, and impoundments
- sand, gravel, or rubble substrate
- low to moderate gradient

spawning - secluded semi-dark areas such as holes, under banks, log jams, or rocks

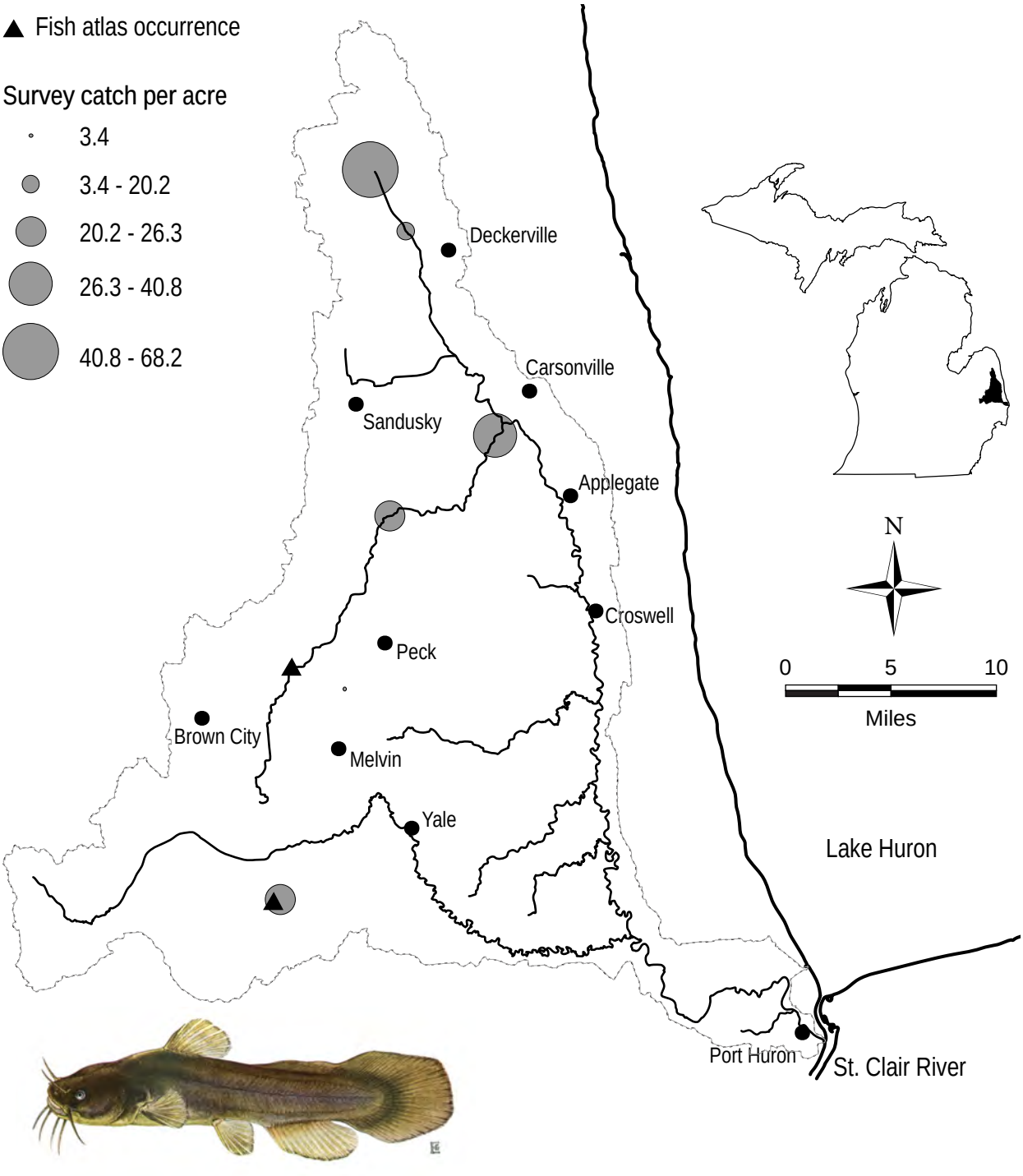


Stonecat (*Noturus flavus*)

Habitat**:**

feeding - consistent low to moderate gradient flowing water
- rocky riffles of larger streams and smaller rivers
- not tolerant of silt
- tolerant of low oxygen and pollution

spawning - eggs deposited beneath stones
- shallow rocky areas of streams or lakes

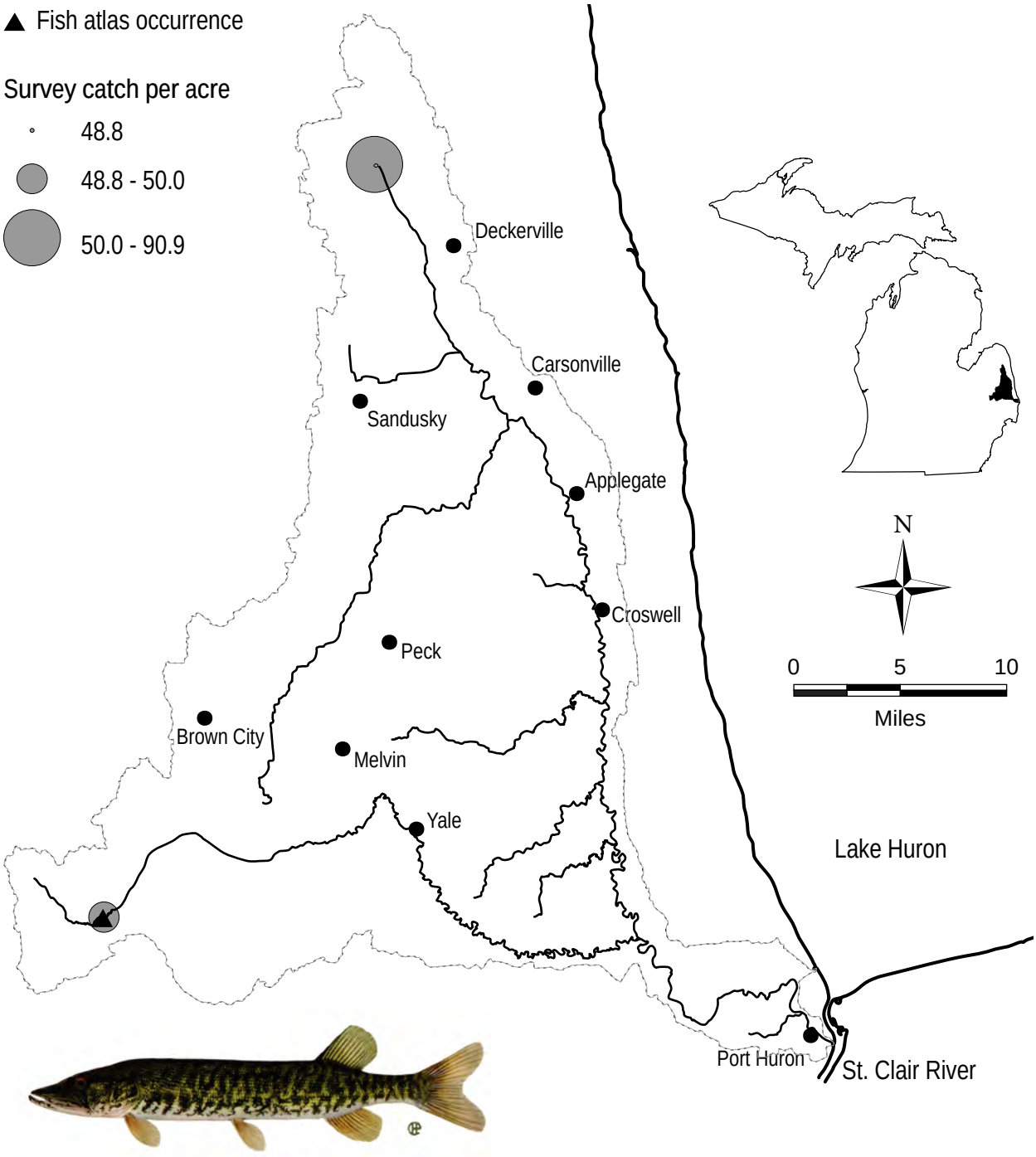


Tadpole madtom (*Noturus gyrinus*)

Habitat**:**

feeding - vegetative cover in low-moderate current waters
- muddy substrate with extensive vegetation
- clear waters of streams, rivers, and lakes

spawning - mostly in rivers, sometimes shallows of lakes
- nests in dark cavities (ex: beneath boards, logs, crayfish burrows)

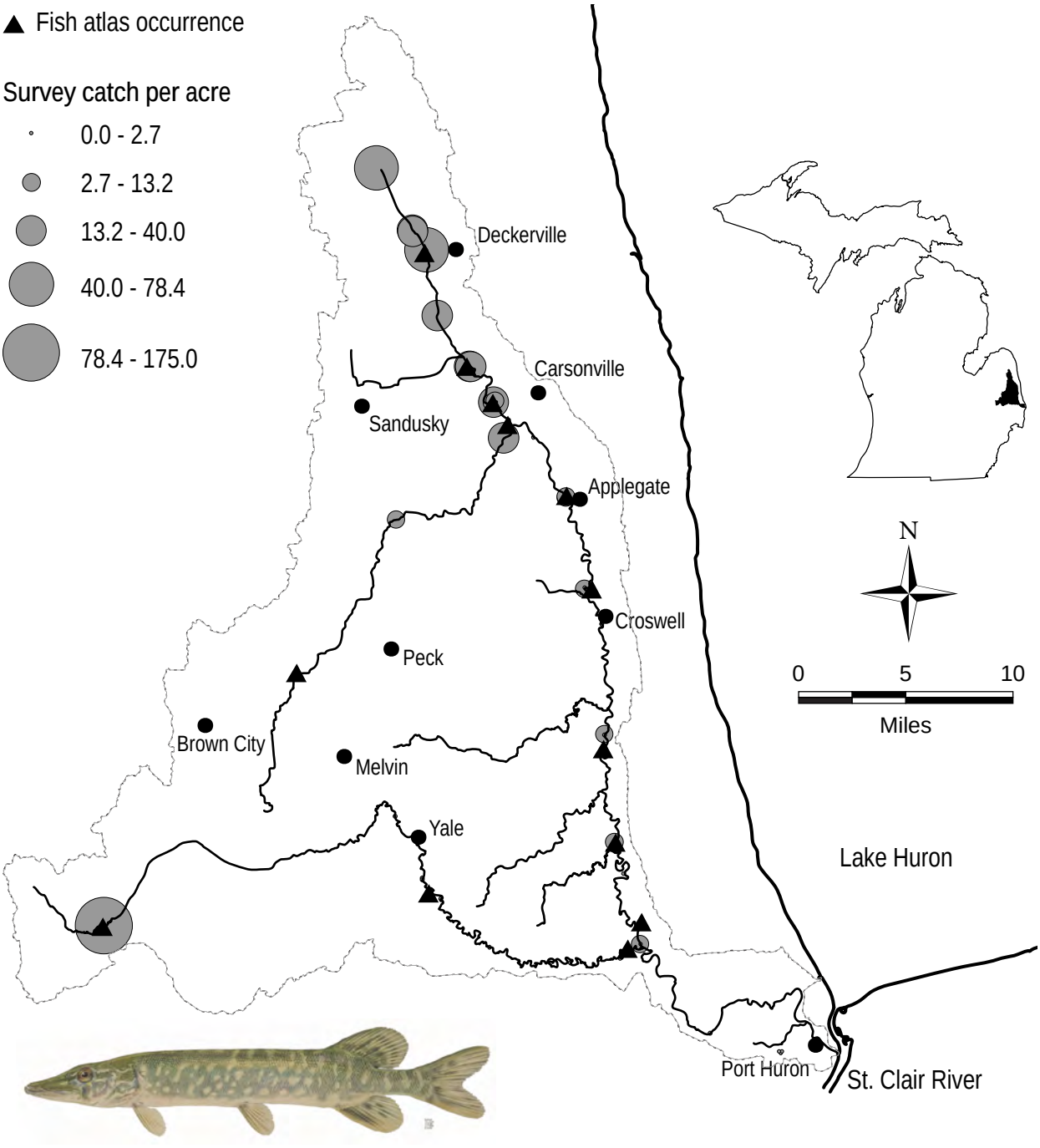


Grass pickerel (*Esox americanus vermiculatus*)

Habitat**:**

feeding - juveniles: along shore
- adults: in deeper portions of streams, rivers, lakes, and impoundments
- clear water, little current, dense vegetation
- tolerates low oxygen concentrations

spawning - broadcast spawner over submerged vegetation

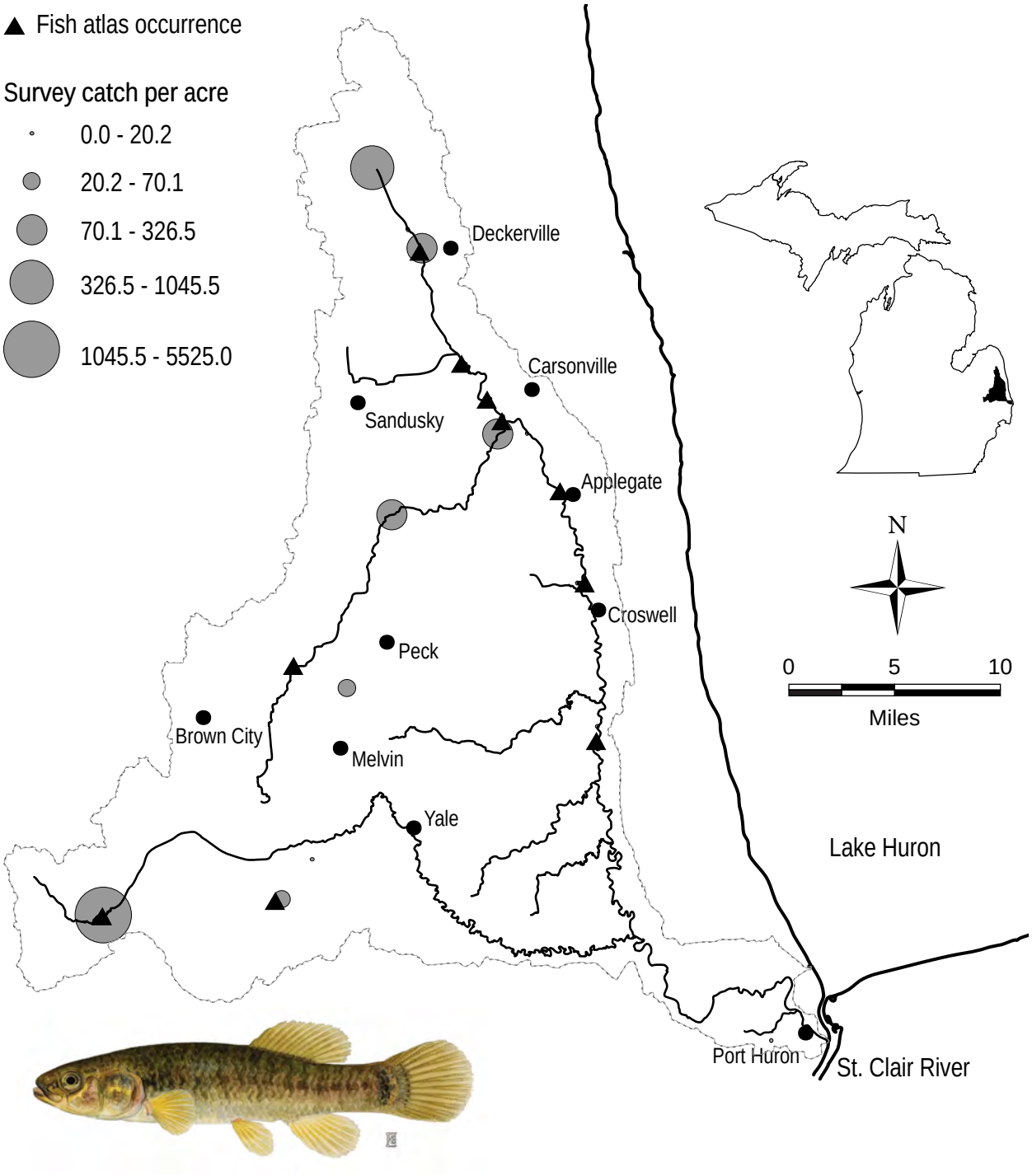


Northern pike (*Esox lucius*)

Habitat**:**

feeding - cool to moderately warm streams, rivers, lakes, and impoundments
- vegetation in slow to moderate current

spawning - submerged vegetation with slow current in shallow water

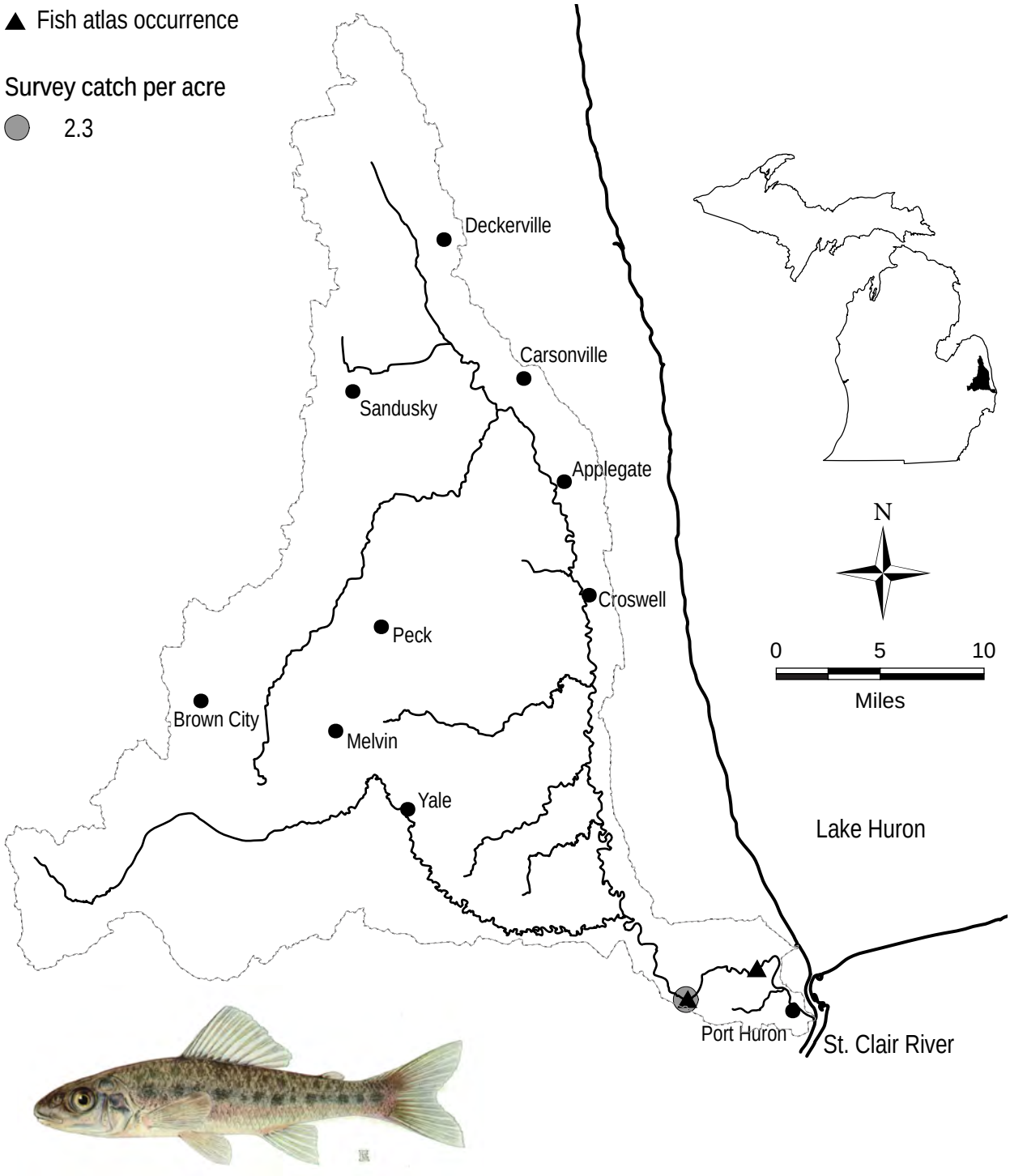


Central mudminnow (*Umbra limi*)

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

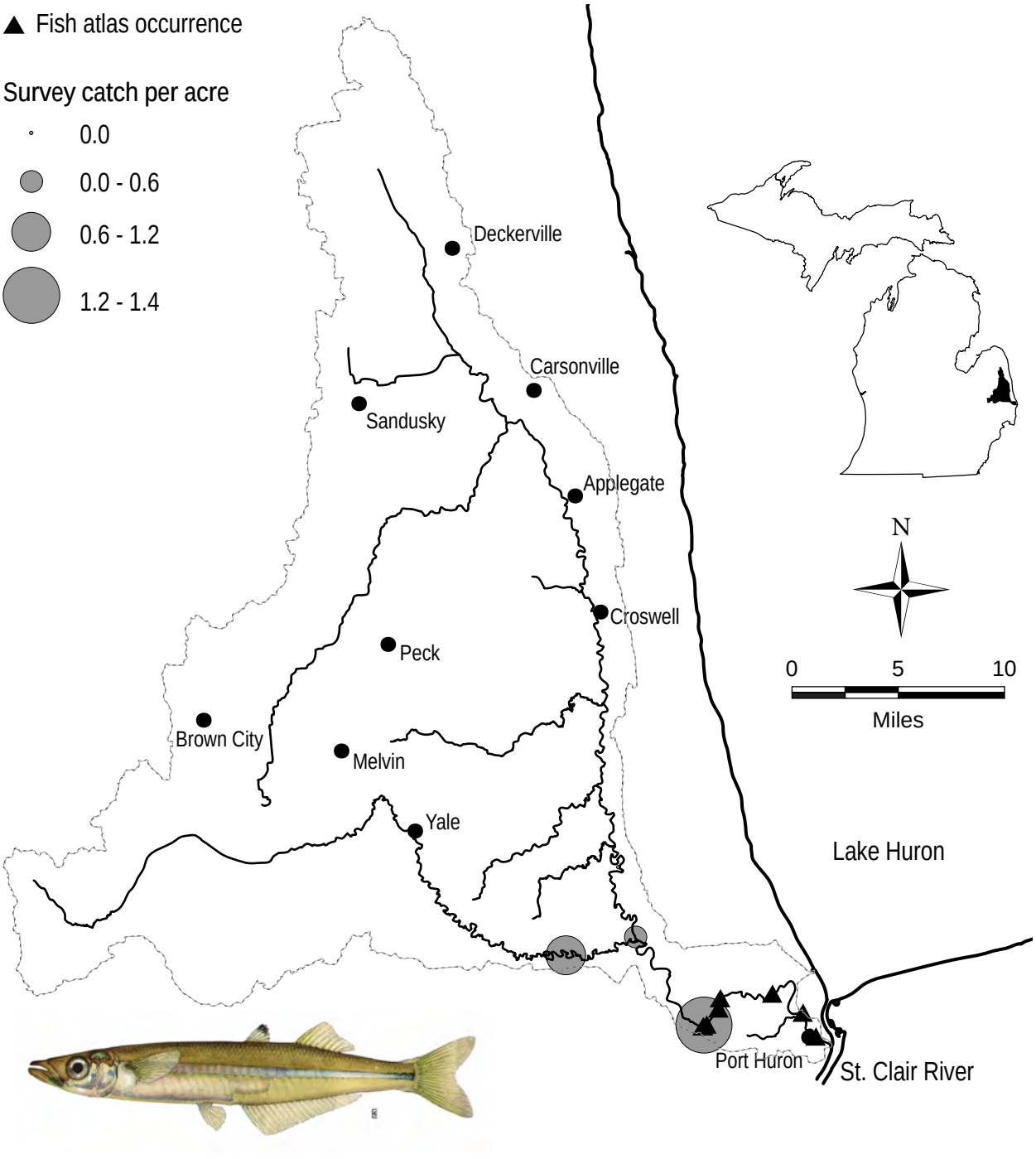


Trout-perch (*Percopsis omiscomaycus*)

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

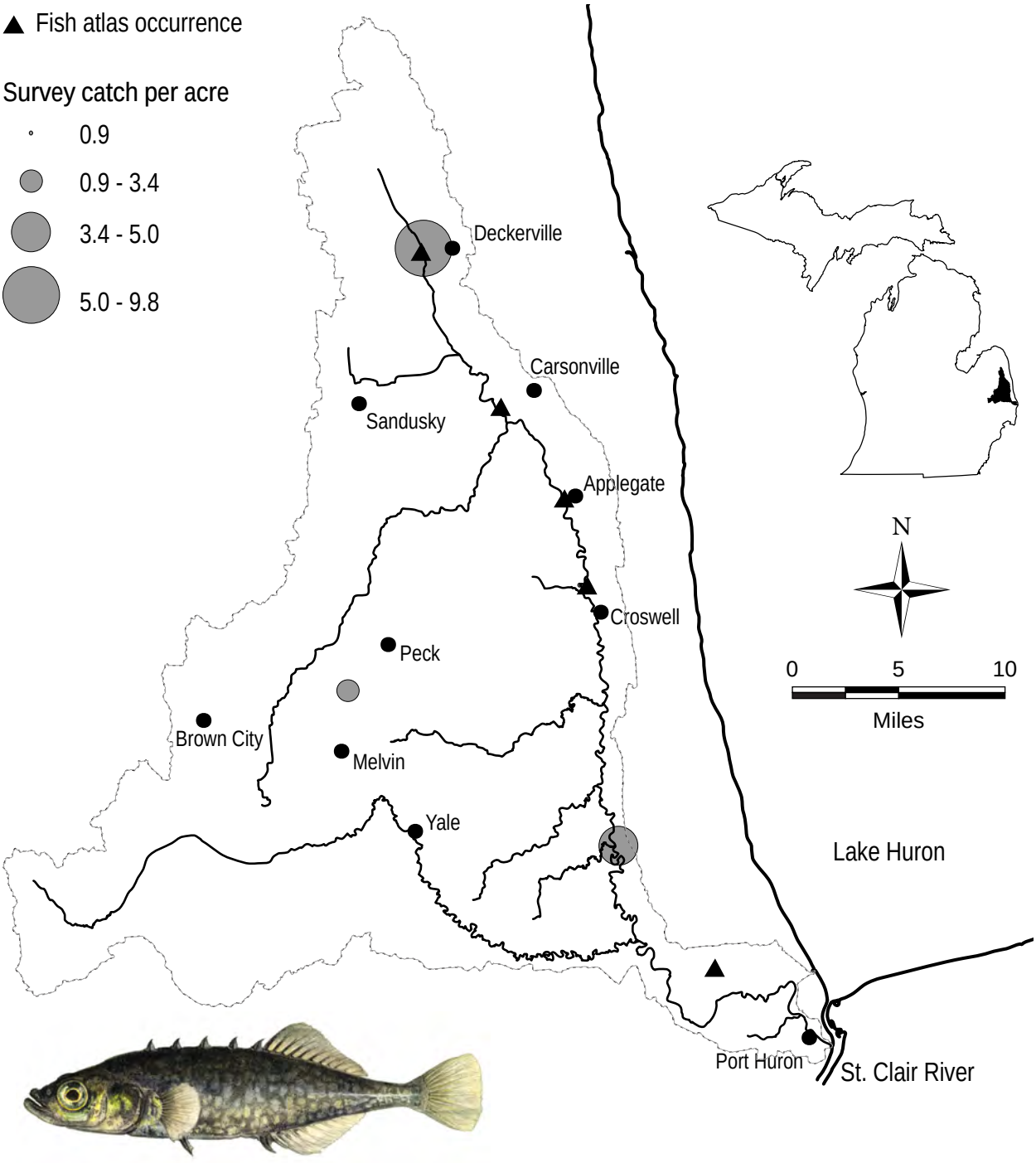


Brook silverside (*Labidesthes sicculus*)

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

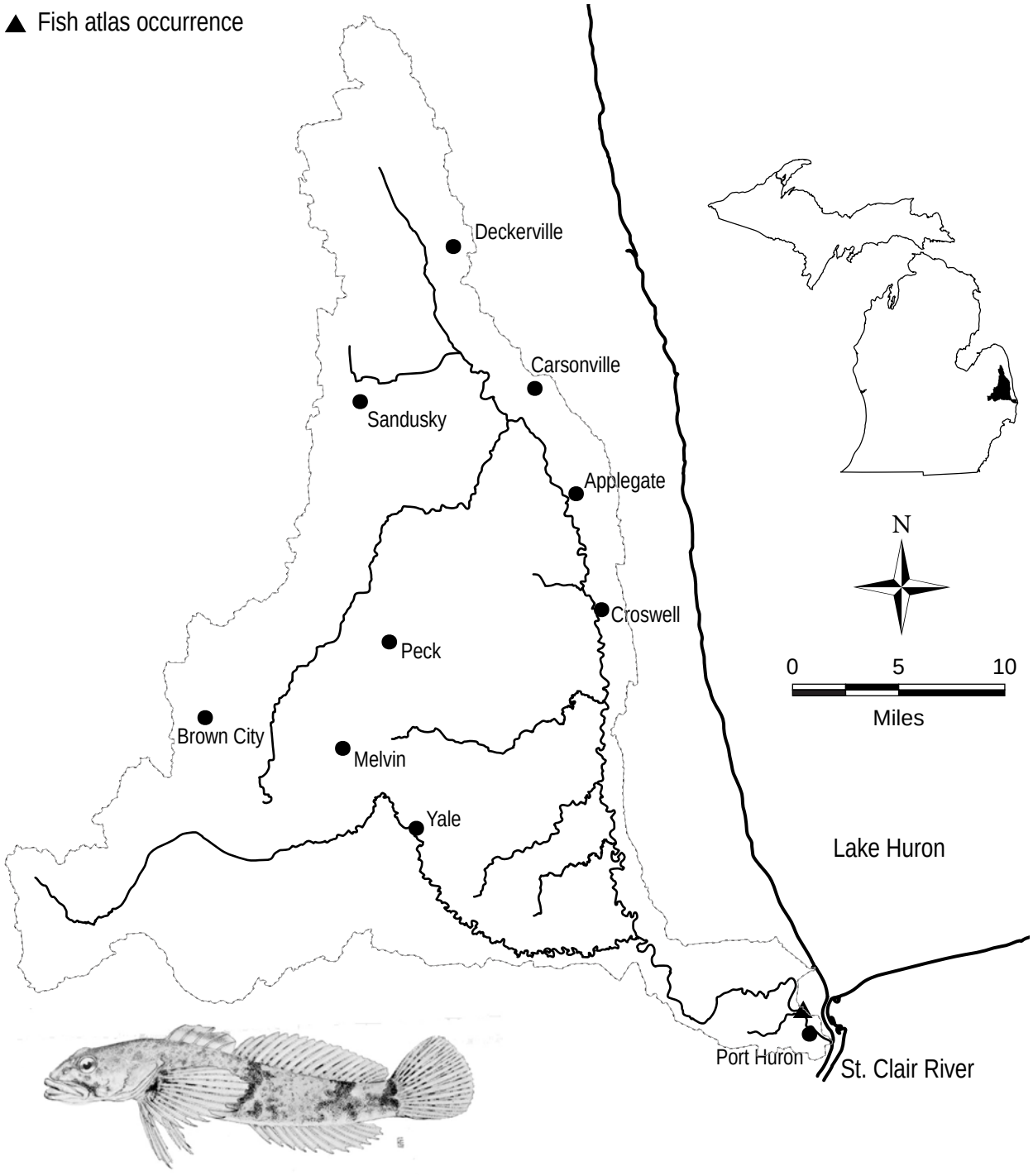


Brook stickleback (*Culaea inconstans*)

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

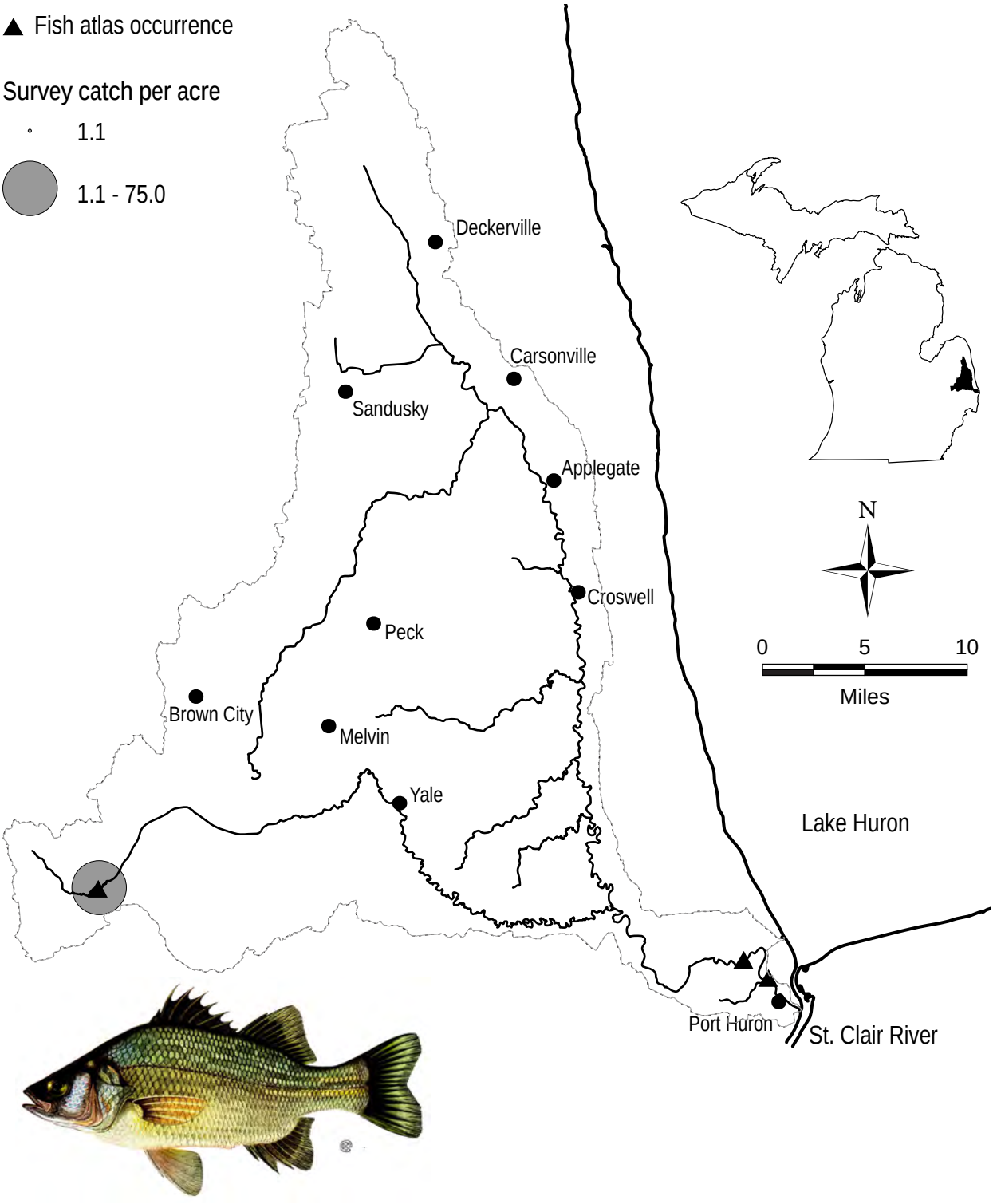


Mottled sculpin (*Cottus bairdii*)

Habitat**:**

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

spawning - nests under logs or rock

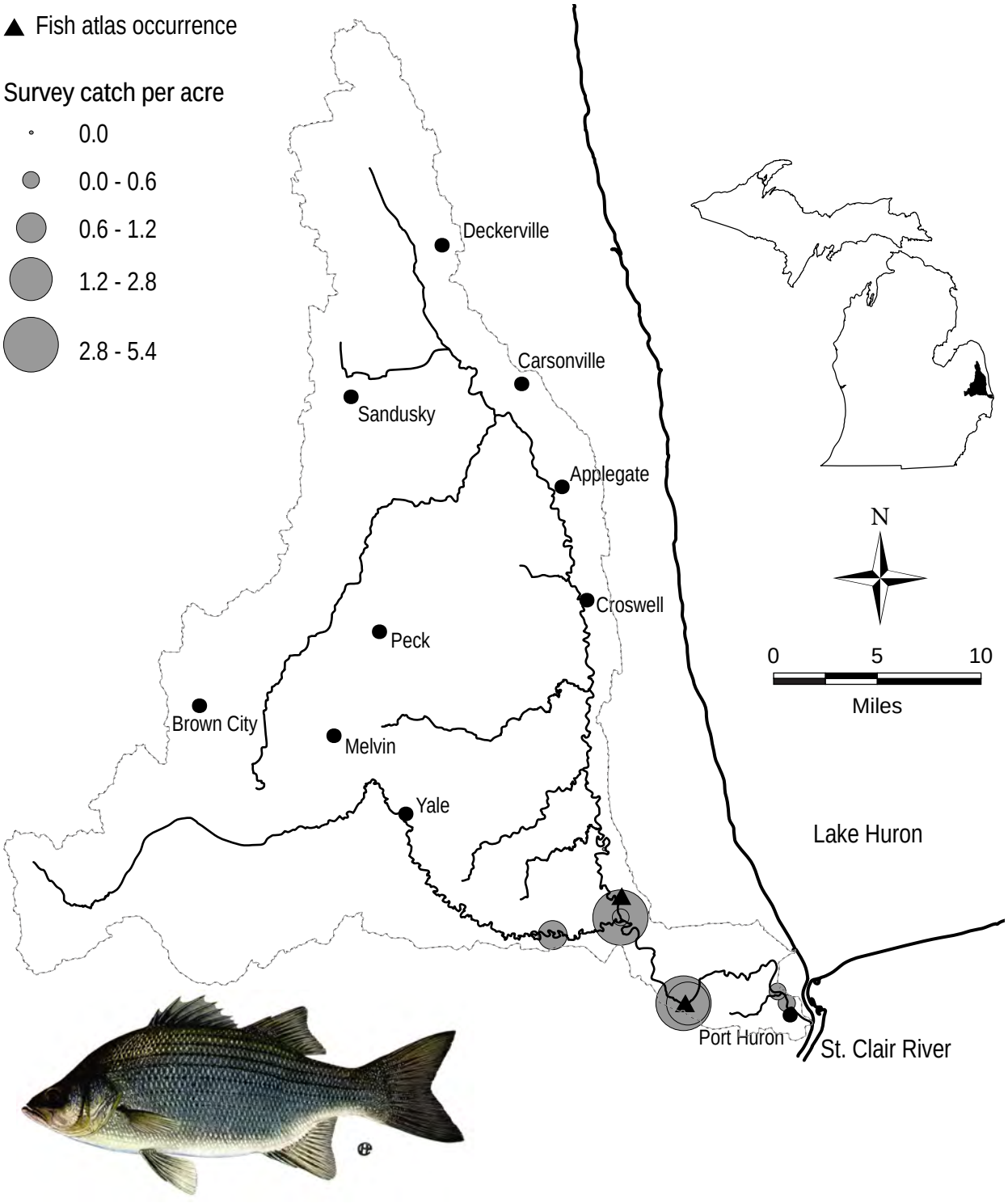


White perch (*Morone americana*)

Habitat:

feeding - clear, warm water of low-gradient streams, lakes, impoundments, and Lake Erie

spawning - shallow water over firm substrate

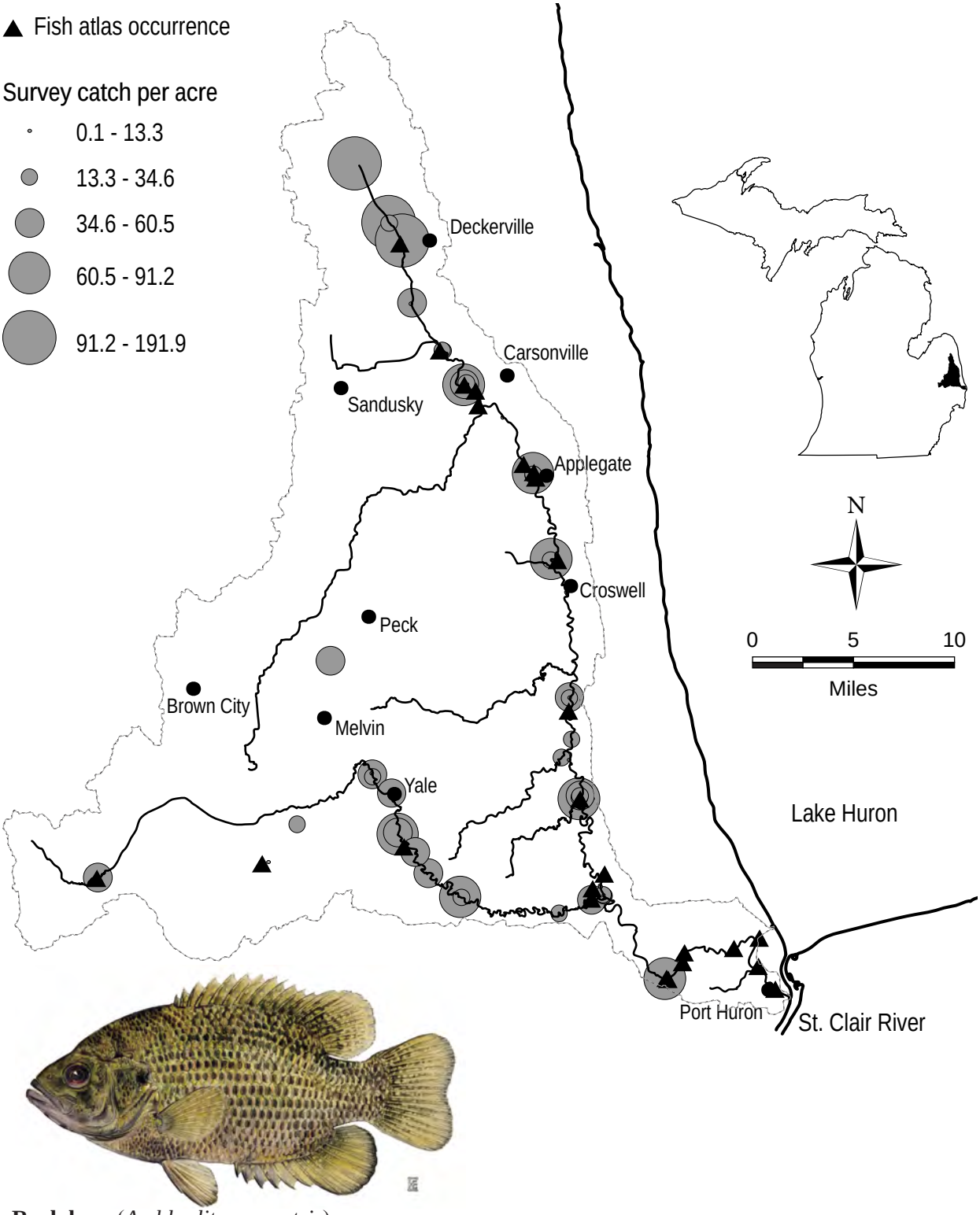


White bass (*Morone chrysops*)

Habitat:

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

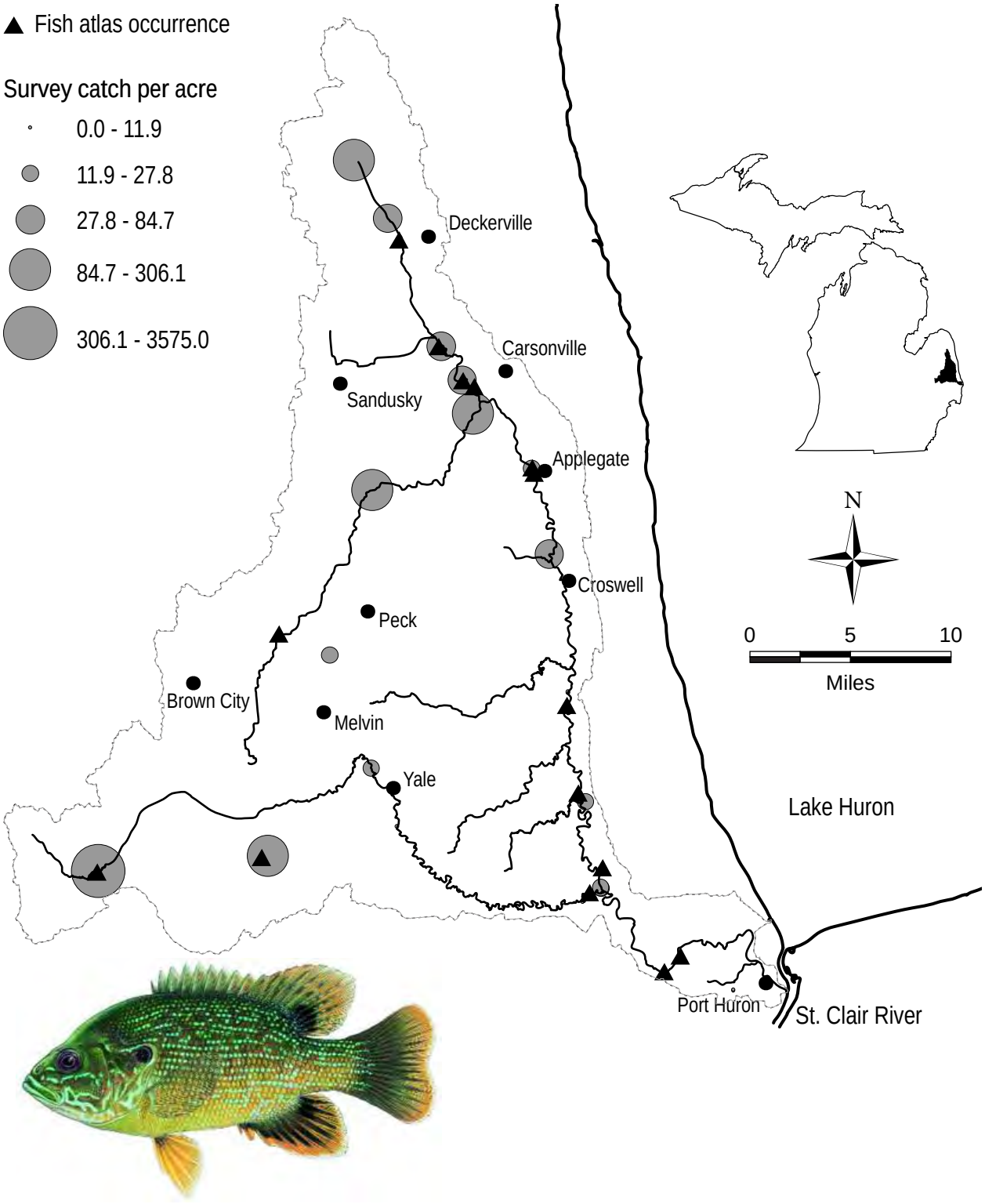
spawning - tributary streams or shallow water of lakes
- over firm substrate



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

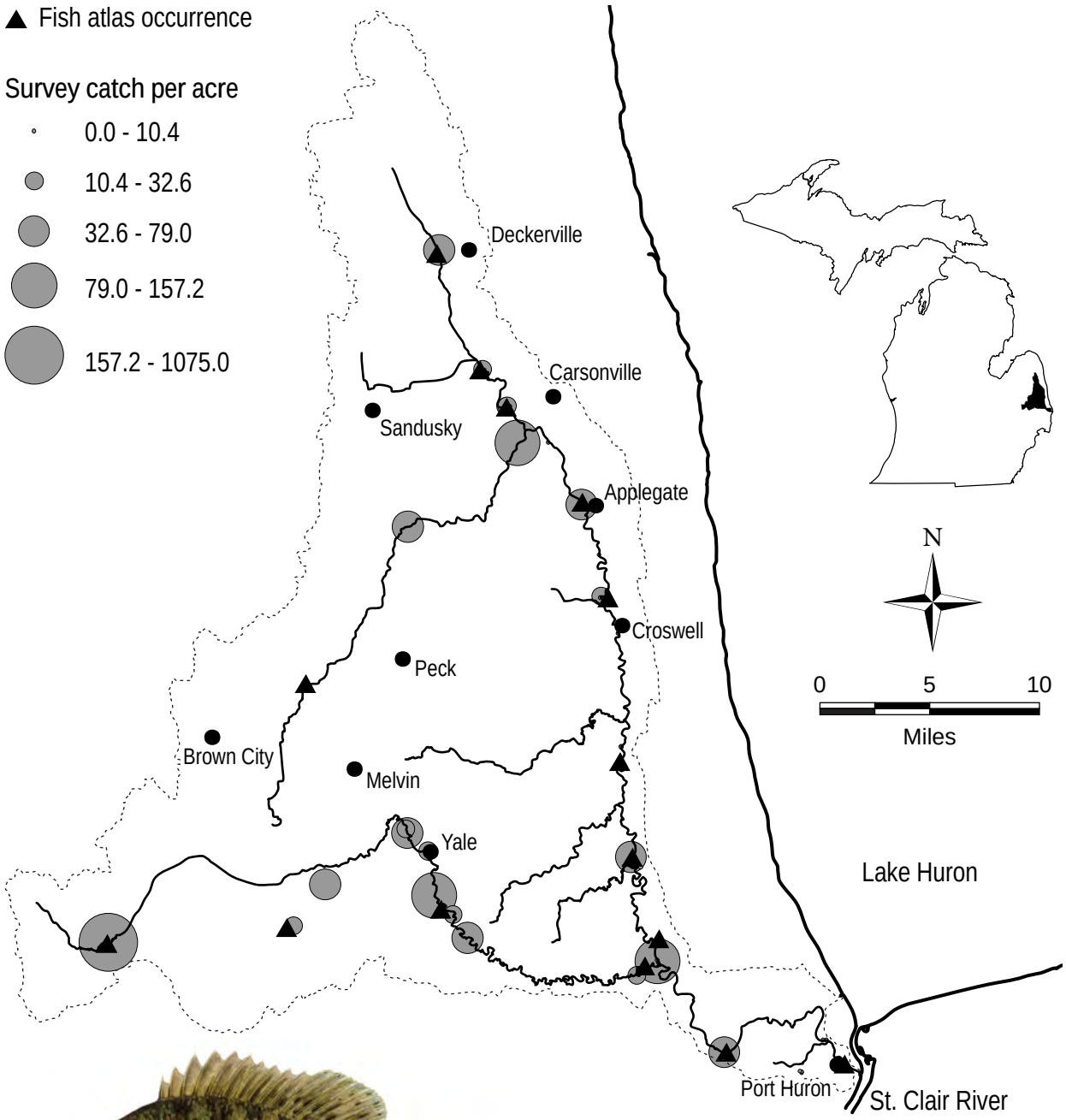


Green sunfish (*Lepomis cyanellus*)

Habitat**:**

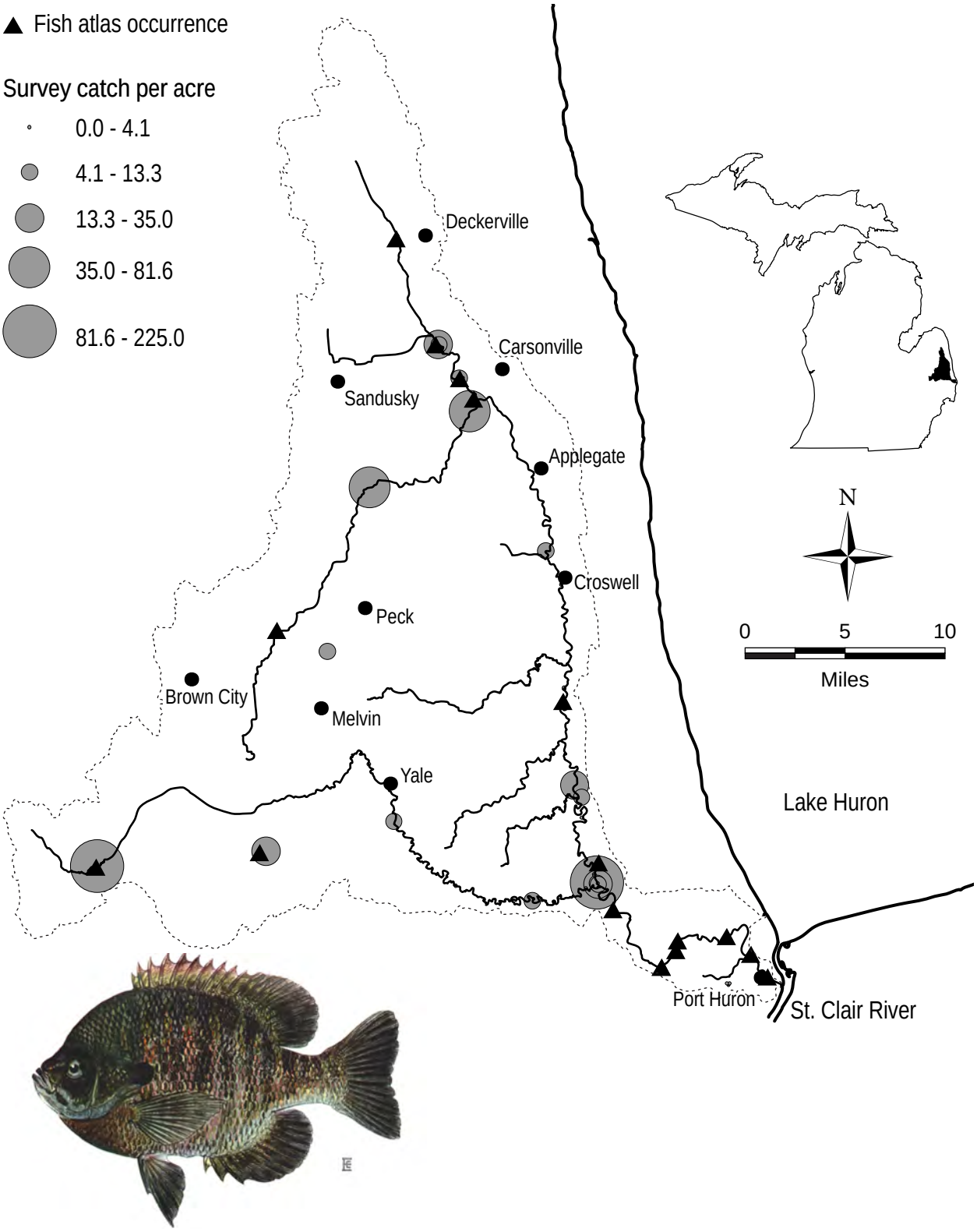
feeding - impoundments and lakes, and low-current streams and rivers
- no substrate preference

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



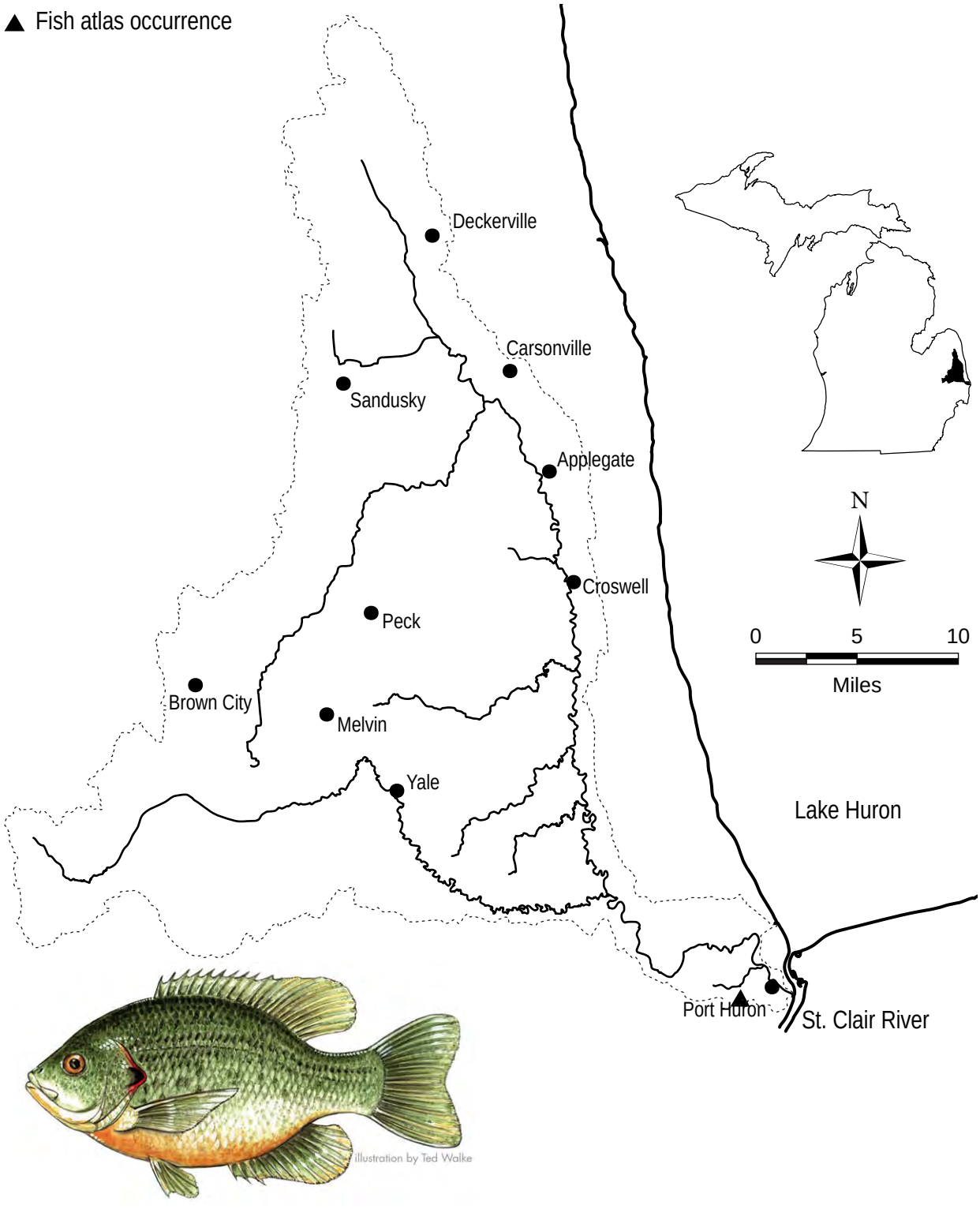
Pumpkinseed sunfish (*Lepomis gibbosus*)

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 macochirus*)

Habitat**:**
- feeding - non-flowing clear streams and rivers; also lakes and impoundments
- feeding - sand, gravel, or muck containing organic debris substrate
- feeding - scattered beds of aquatic vegetation
- feeding - cannot tolerate low oxygen or continuous high turbidity and siltation
- spawning - nests in firm substrate of gravel, sand, or mud
- winter refuge - deep water

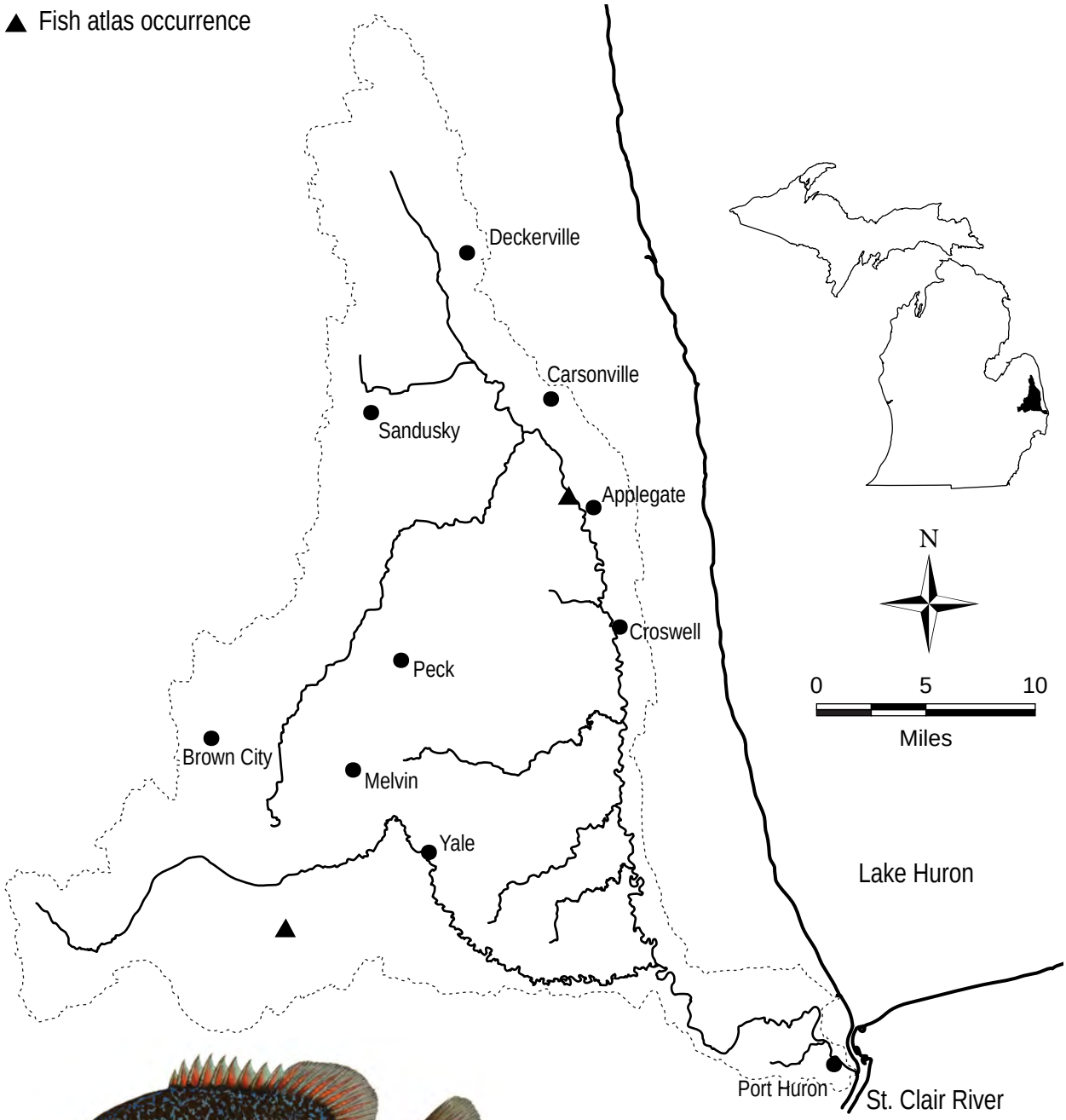


Redear sunfish (*Lepomis microlophus*)

Habitat**:**

feeding - non-flowing clear waters of streams and lakes
- some aquatic vegetation

spawning - nest in silt or gravel substrate

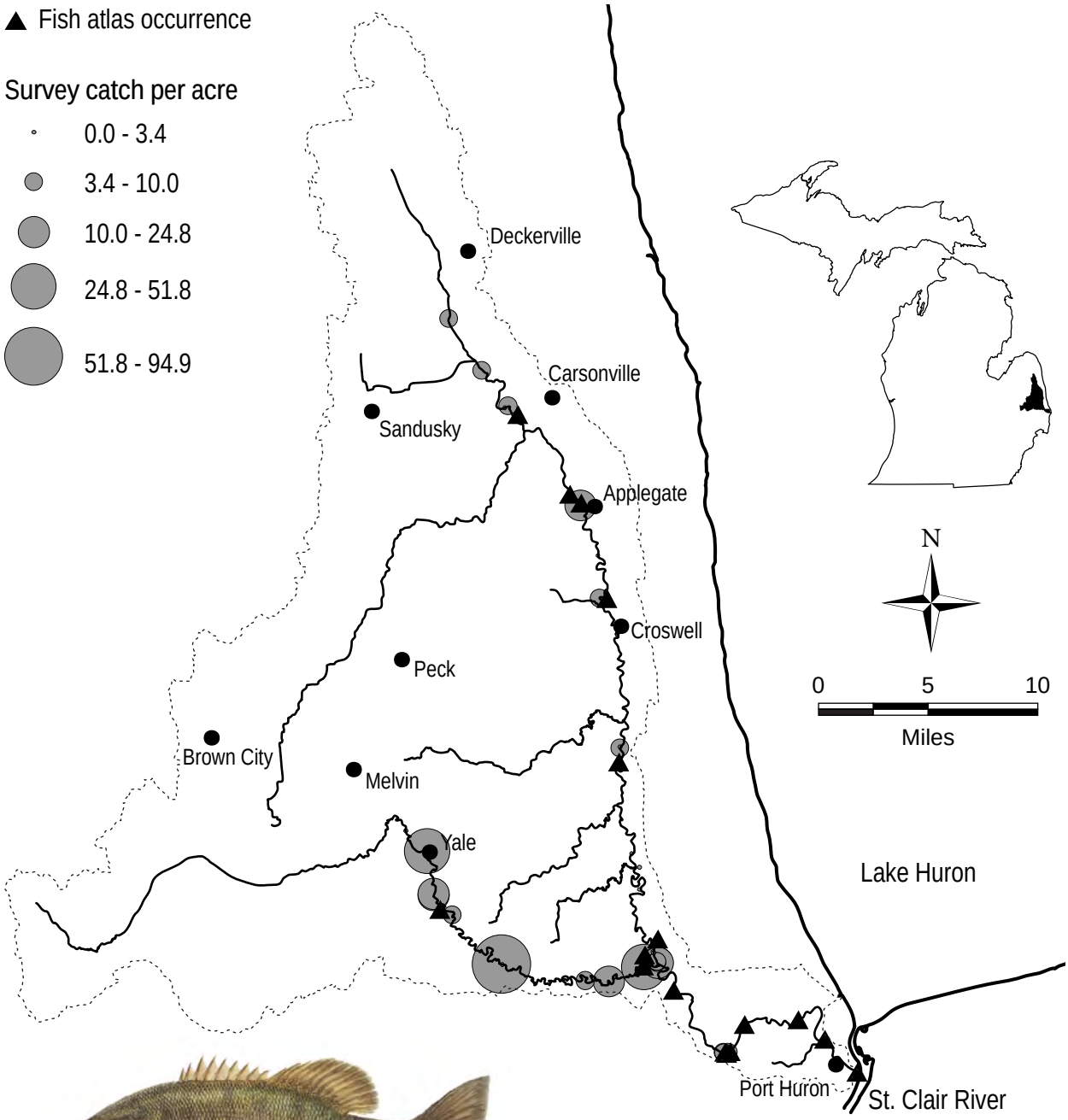


Northern longear sunfish (*Lepomis peltastes*)

Habitat**:**

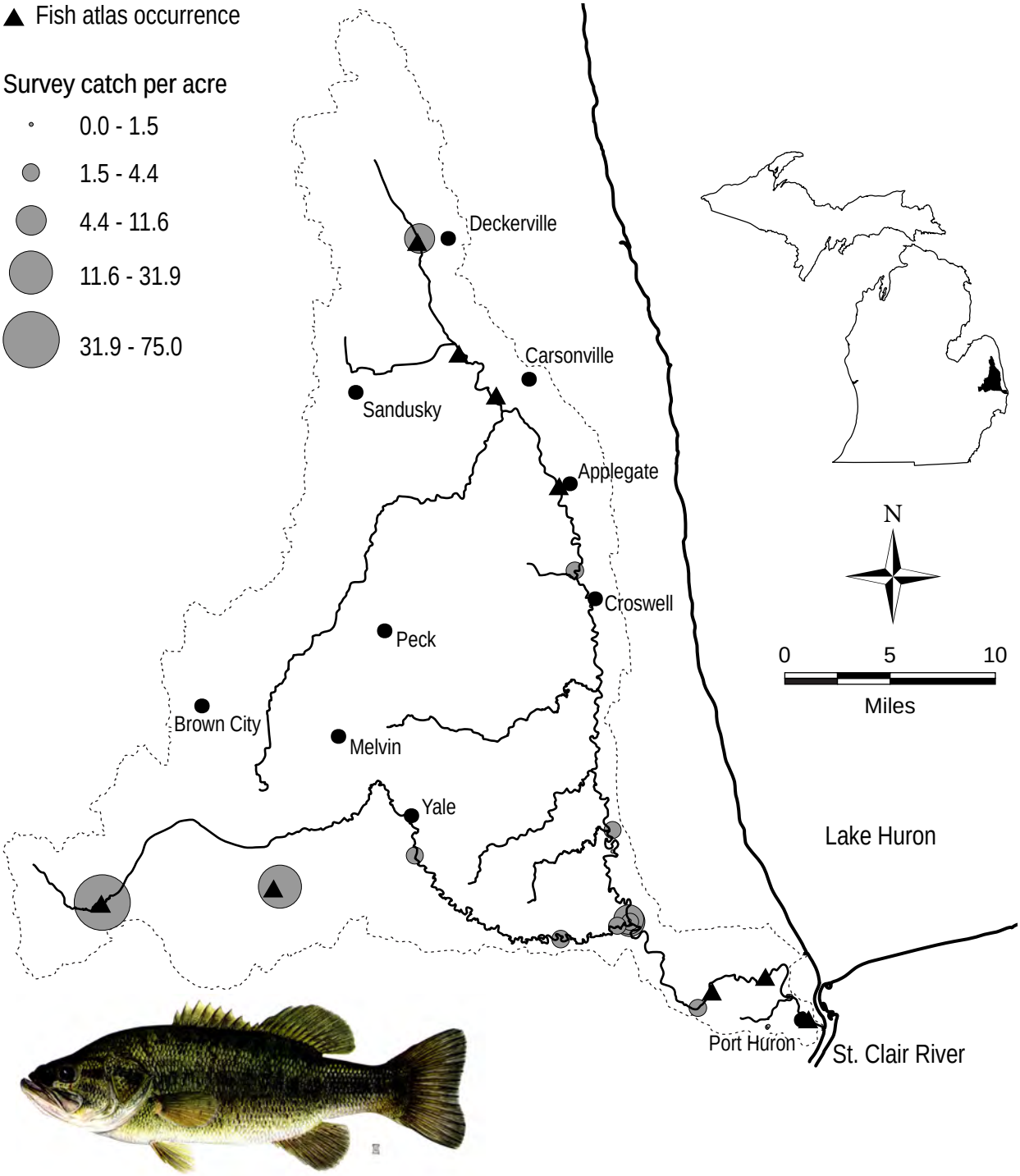
feeding - clear moderate-sized shallow streams with moderate vegetation
- rocky substrates
- little to no current

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

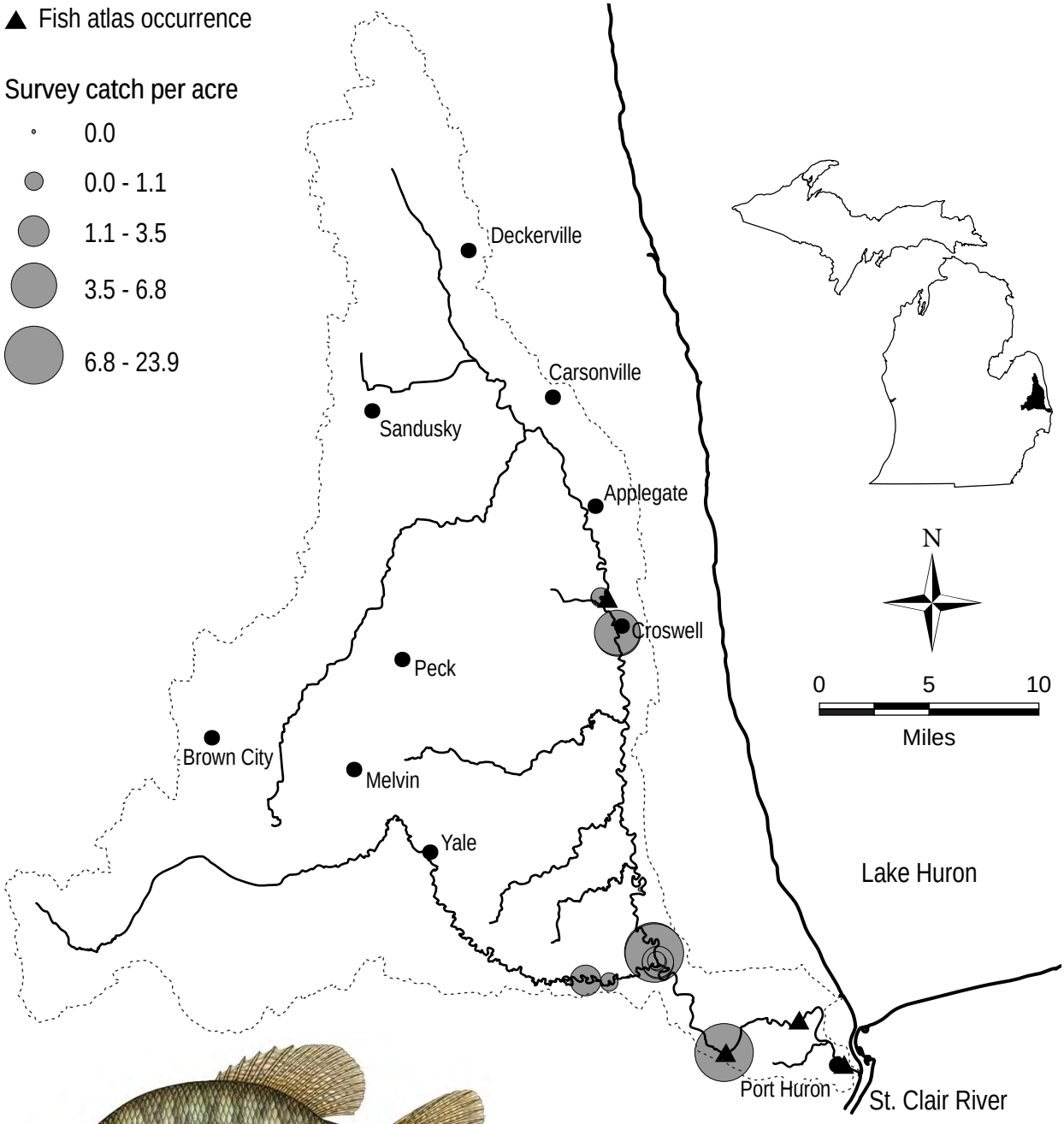


Largemouth bass (*Micropterus salmoides*)

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

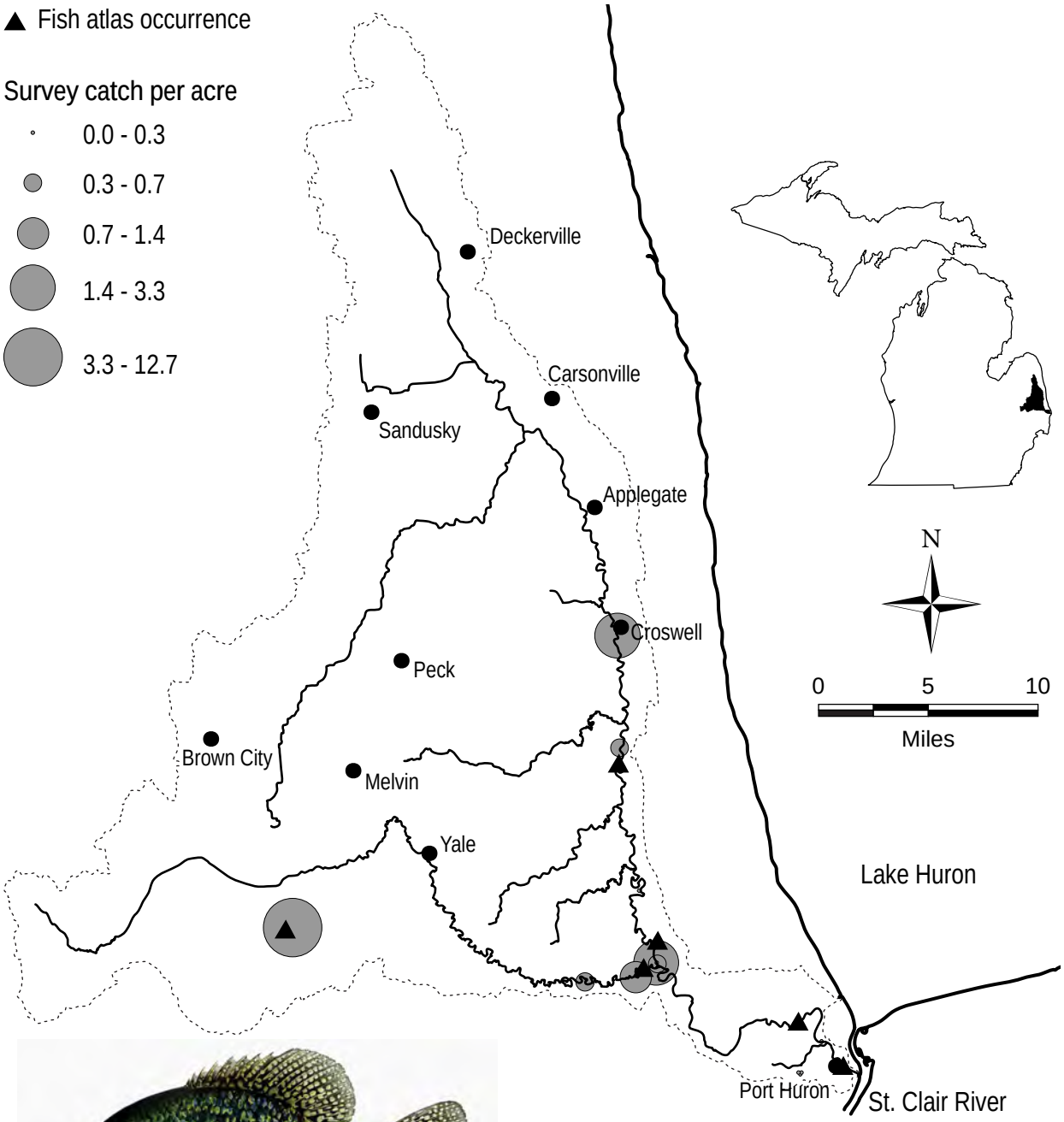


White crappie (*Pomoxis annularis*)

Habitat**:**

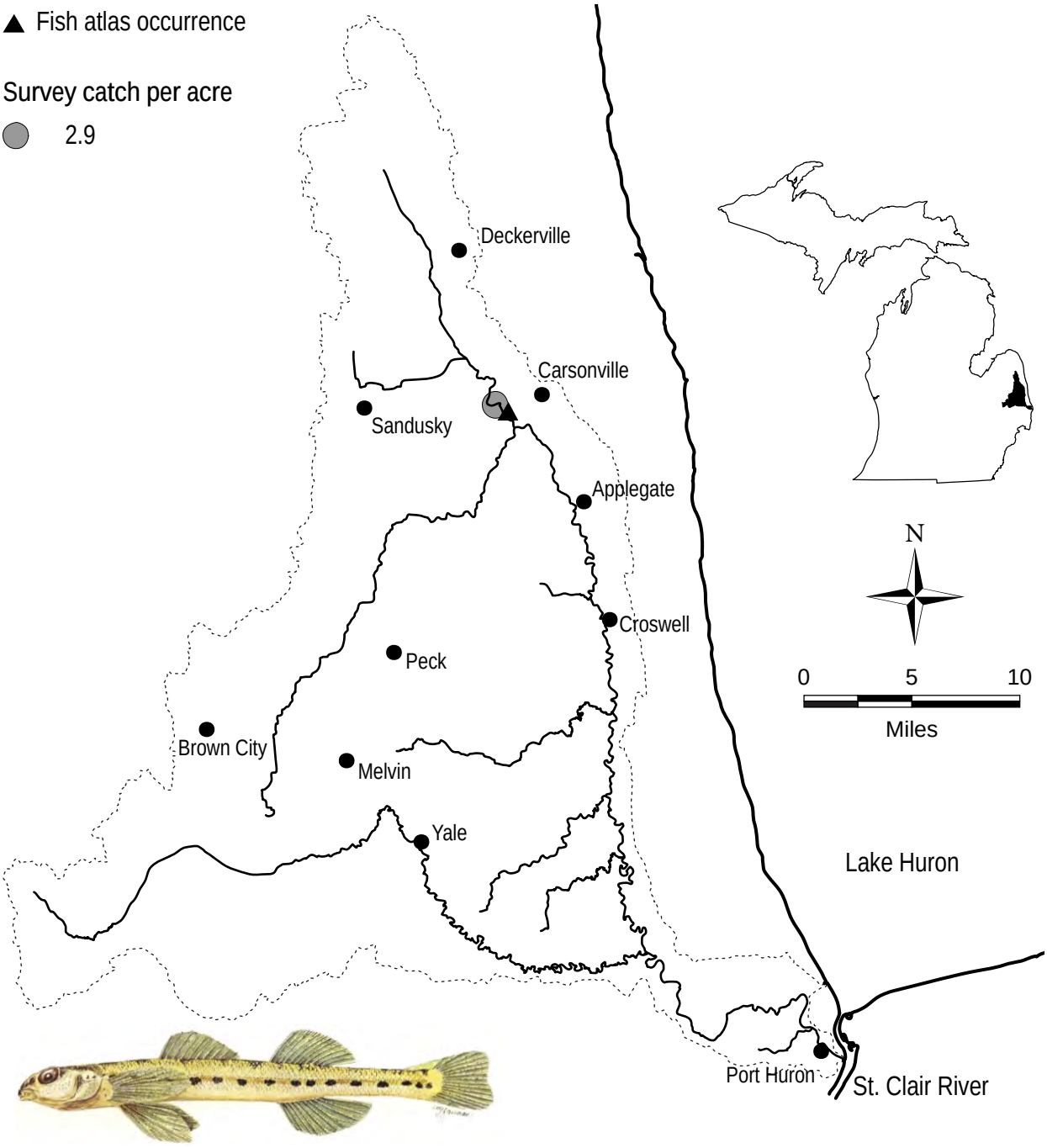
feeding - lakes and impoundments >5 acres
- sluggish pools of moderate to large low-gradient rivers
- no substrate preference
- can tolerate severe turbidity and rapid siltation

spawning - various substrates usually beside rooted aquatic vegetation
- sometimes under banks



Black crappie (*Pomoxis nigromaculatus*)

Habitat**:**
- feeding
  - larger clear non-silty low-gradient rivers; impoundments
  - clean sand or muck substrate
  - prefers submerged vegetation
- spawning
  - nests in gravel, sand, or mud substrates
  - some vegetation must be present
  - sometimes nests under banks

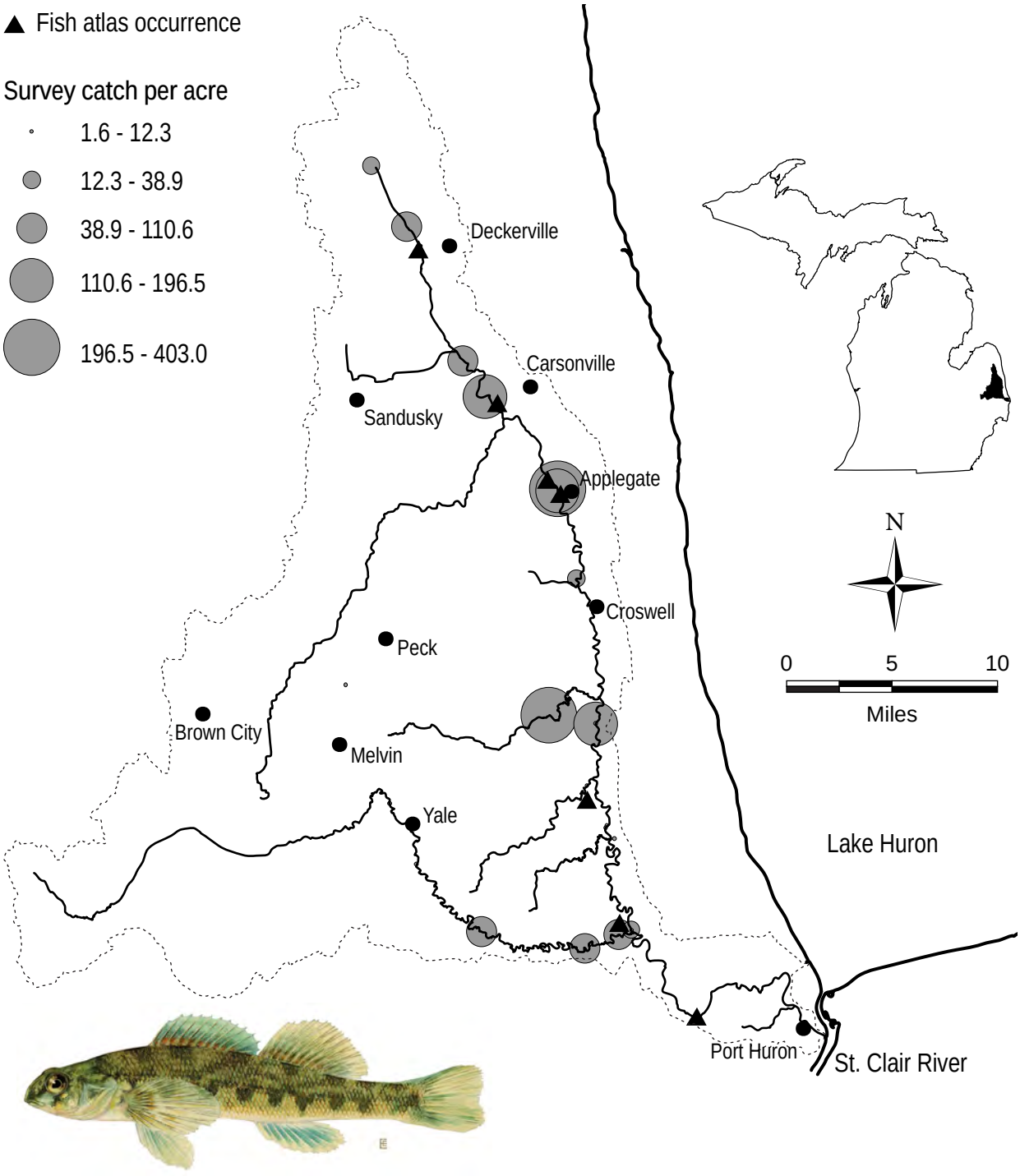


Eastern sand darter *(Ammocrypta pellucida)* – threatened

Habitat:

feeding - sandy substrate in clear streams and lakes
- does not tolerate silt well

spawning - sandy substrate

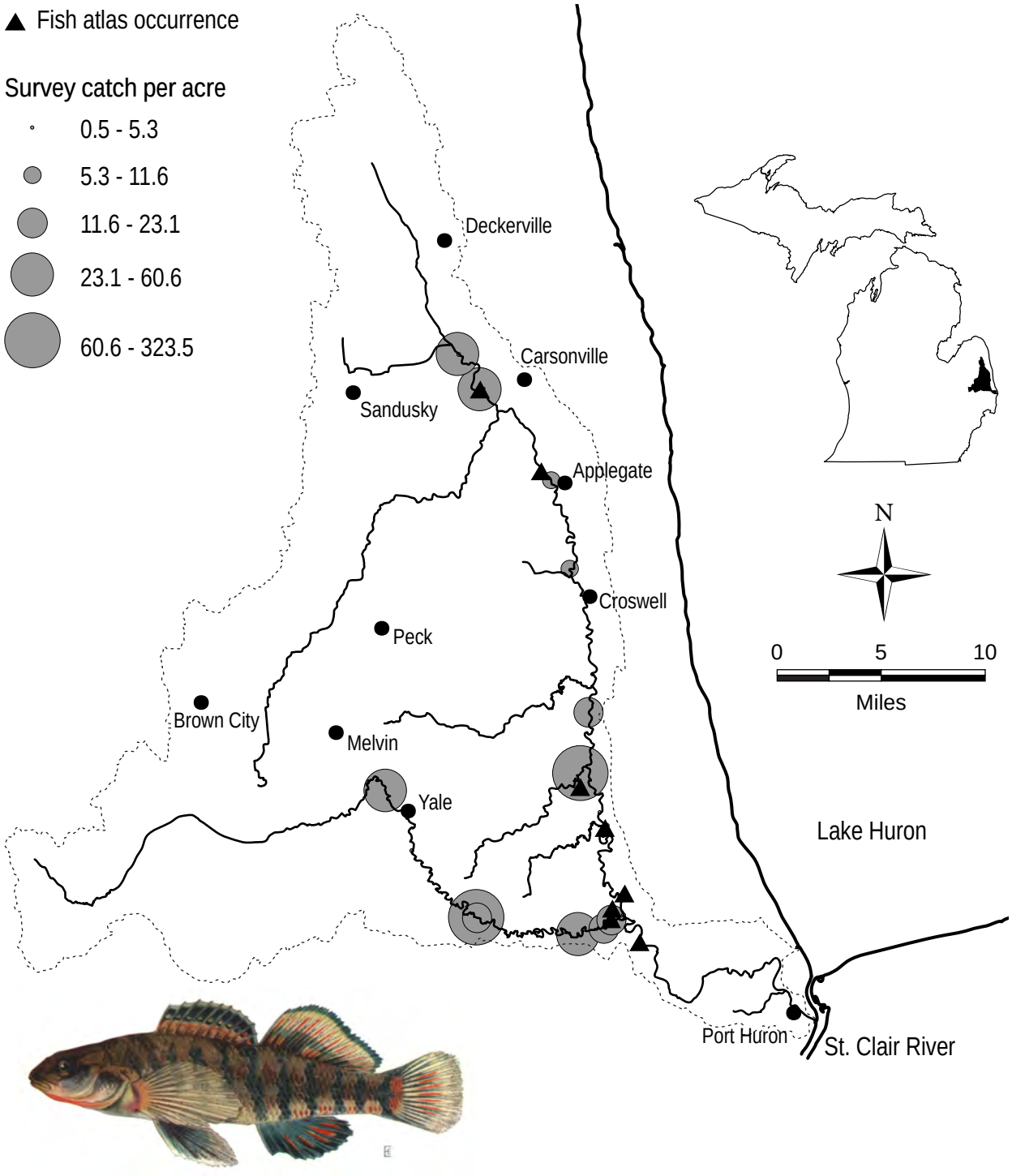


Greenside darter (*Etheostoma blennioides*)

Habitat:

feeding - young: in quiet water
- swift gravelly riffles or pools with current of streams and rivers

spawning - filamentous algae necessary for egg deposition

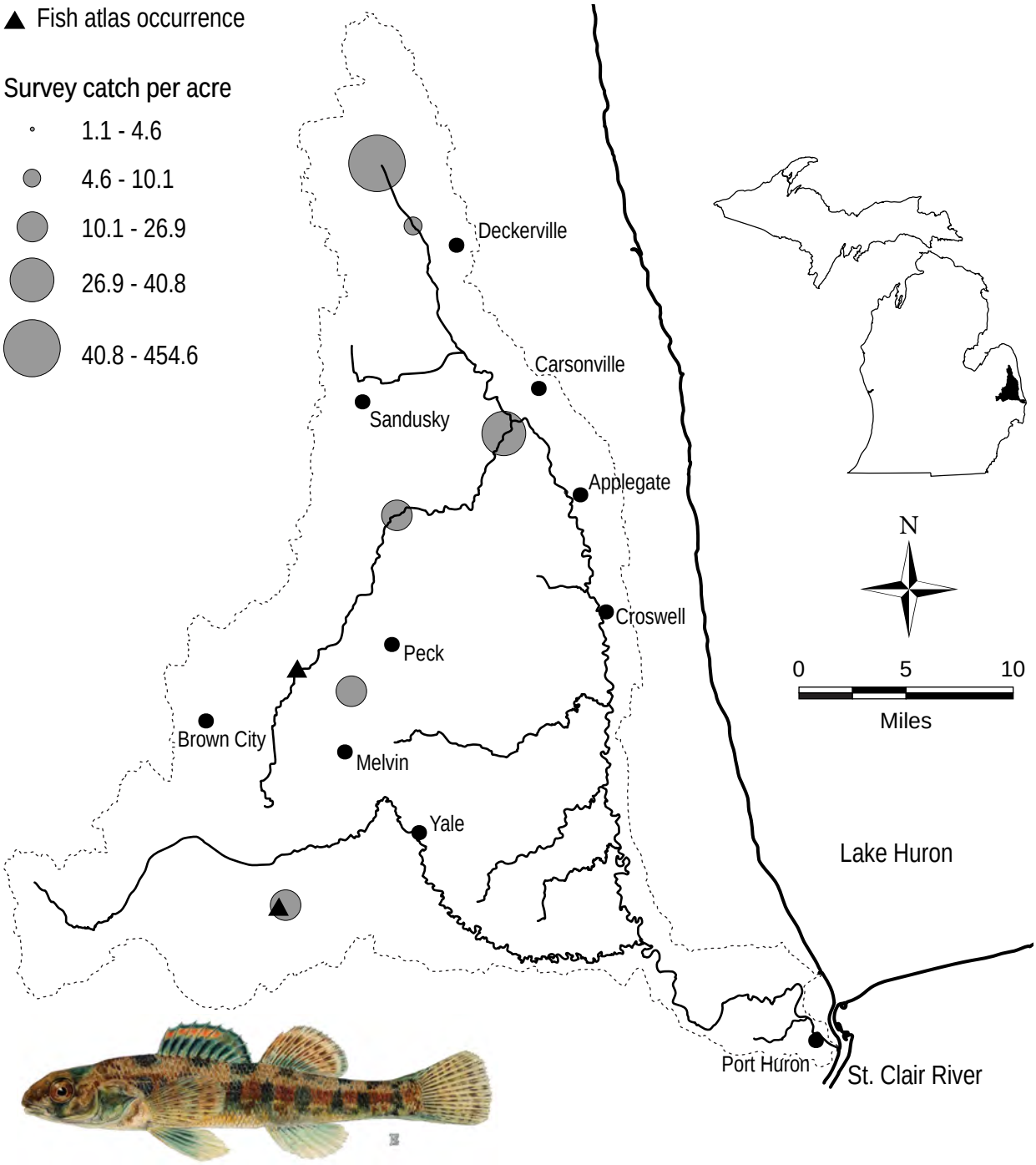


Rainbow darter (*Etheostoma caeruleum*)

Habitat**:**

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

spawning - gravel or rubble riffles

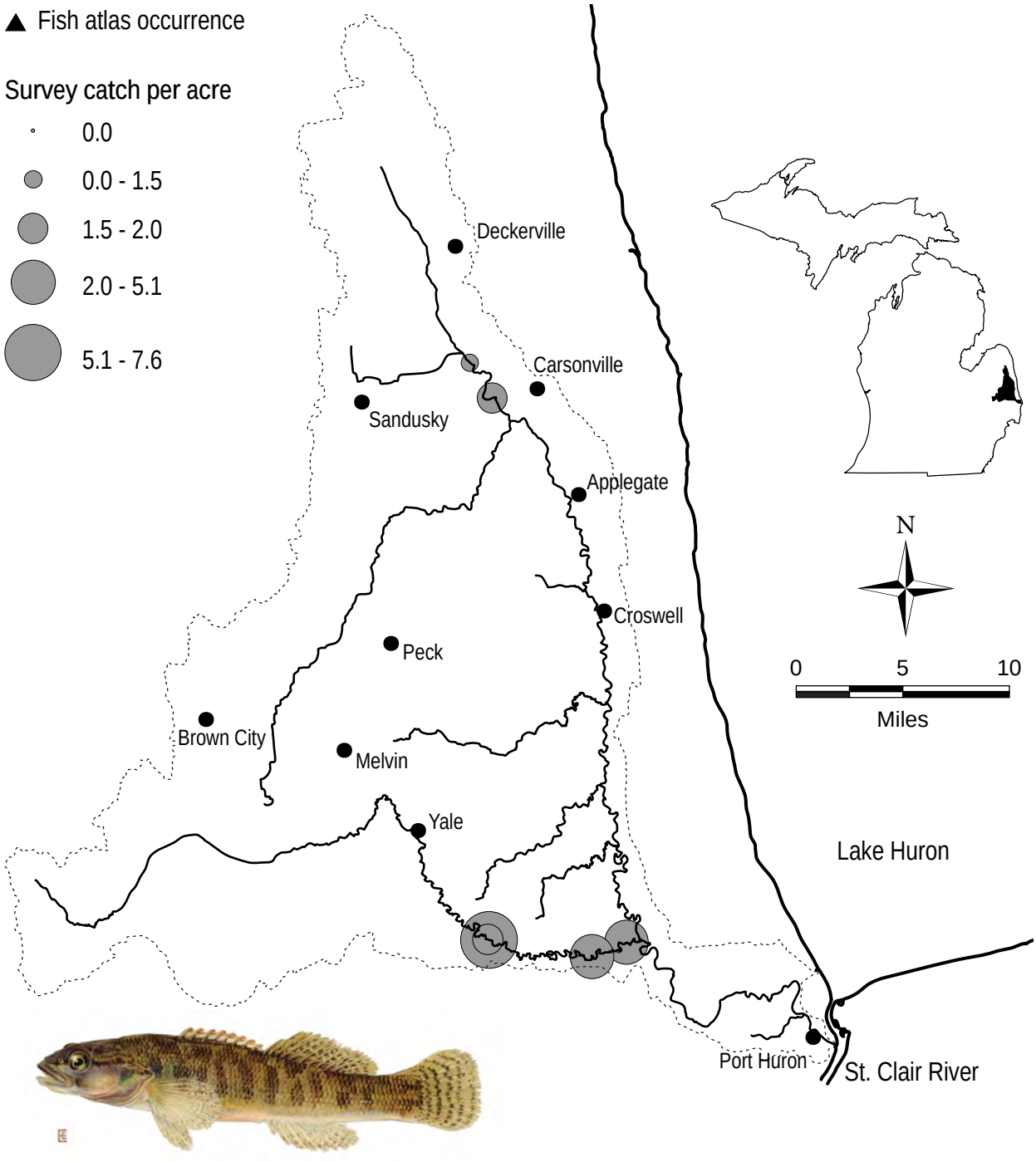


Iowa darter (*Etheostoma exile*)

Habitat**:**

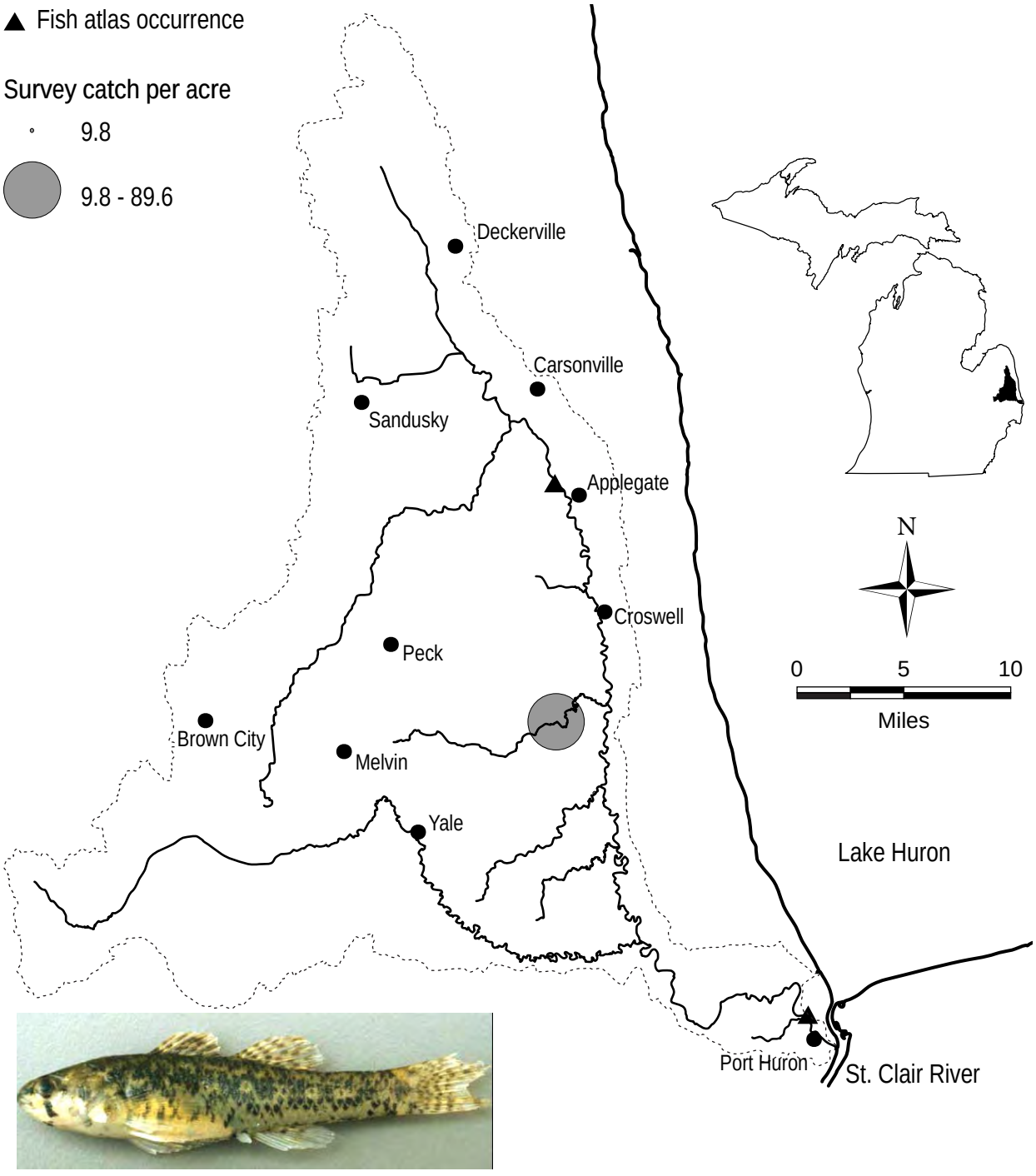
feeding - clear, slow moving streams and lakes
- sandy to muddy substrates
- intolerant of turbid water
- lives in rooted aquatic vegetation

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



Fantail darter *Etheostoma flabellare*

Habitat:	feeding	- small, shallow (<18 inches) streams
		- some tolerance of turbidity and siltation
		- clear warm waters
		- slow to moderate current
		- gravel and boulder substrate
	spawning	- gravel in slower water
		- lays eggs on underside of rocks, male guards and fans them
	winter refuge	- moves downstream to larger and deeper waters

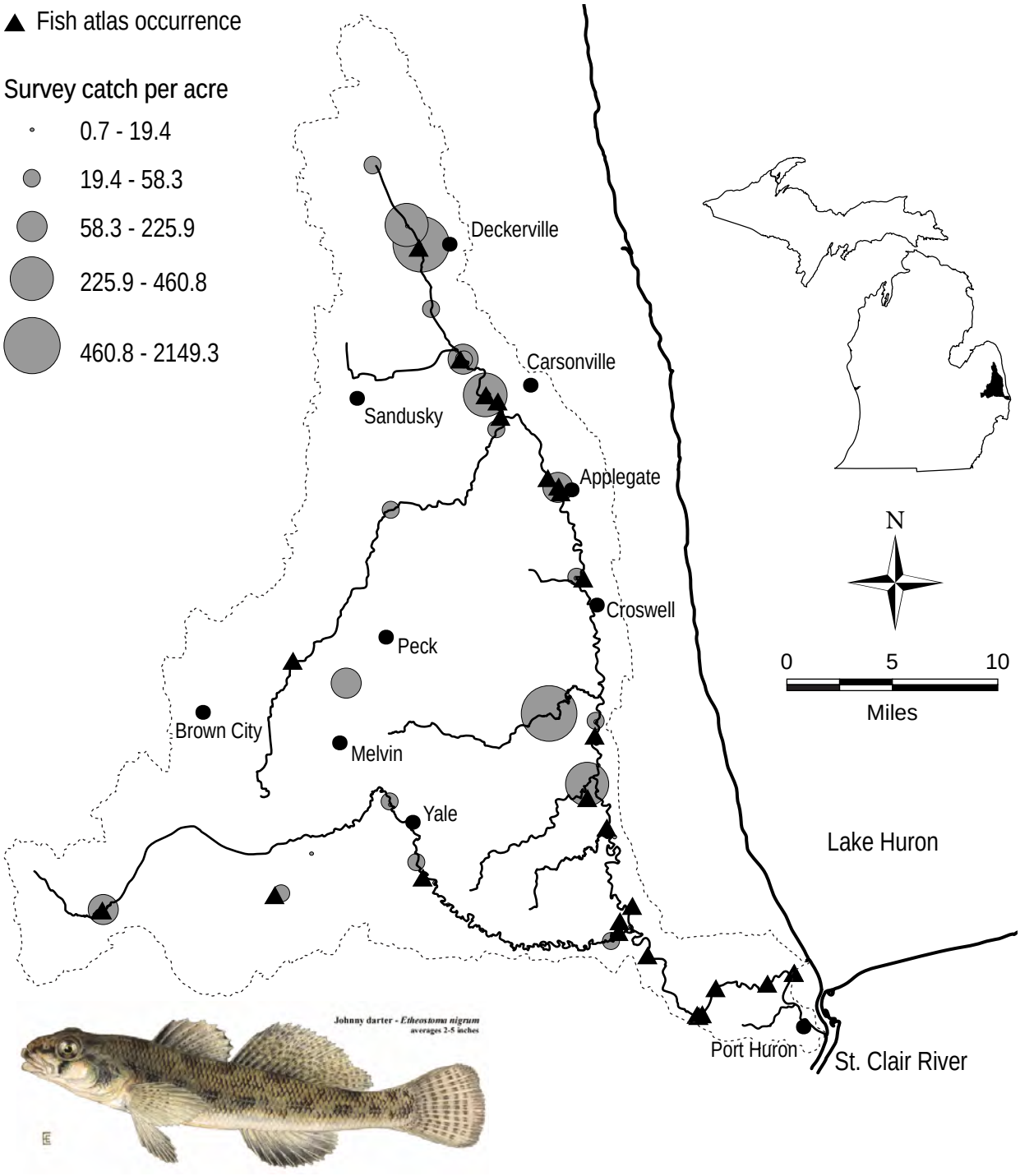


Least darter (*Etheostoma microperca*)

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

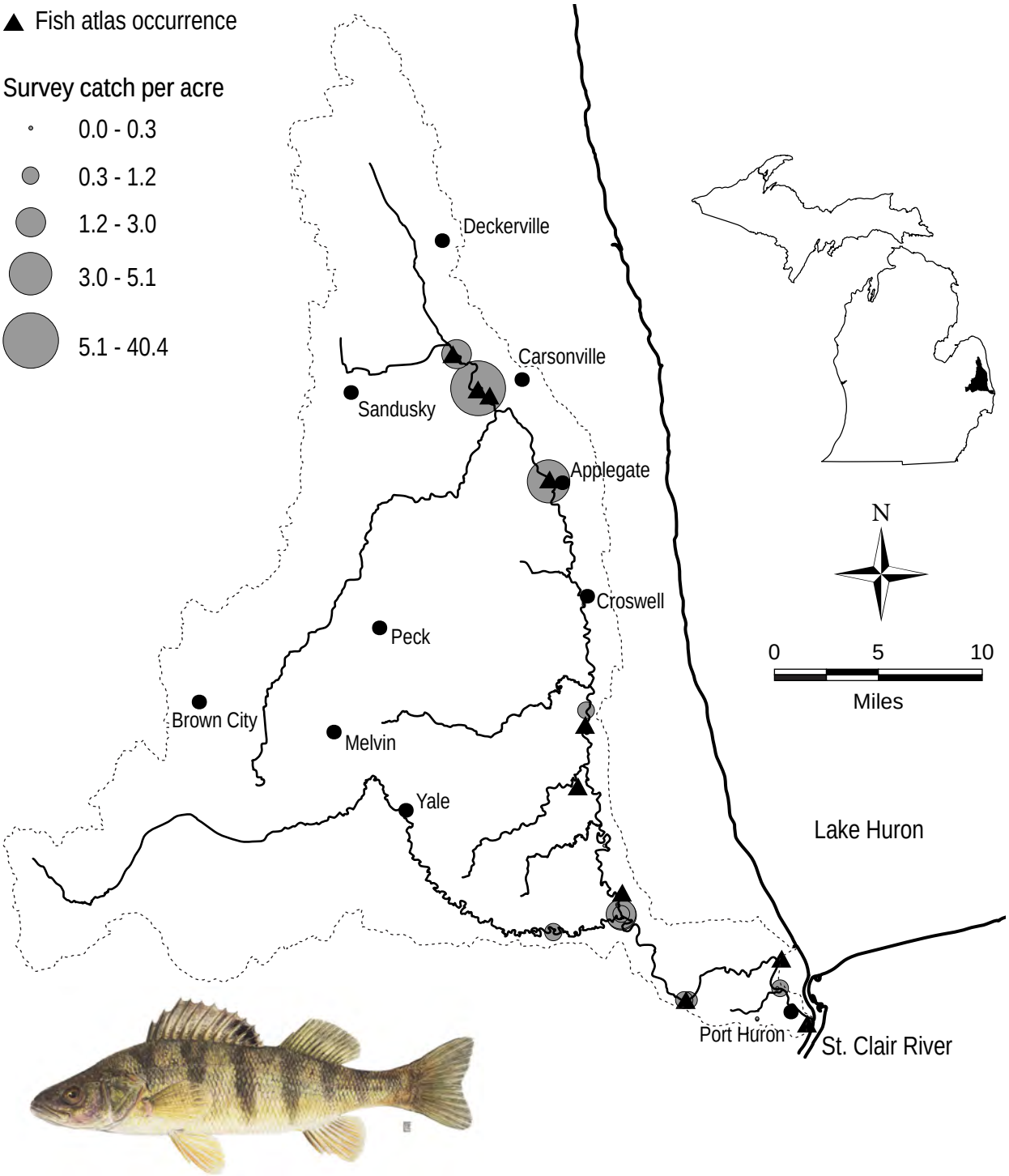


Johnny darter (*Etheostoma nigrum*)

Habitat**:**

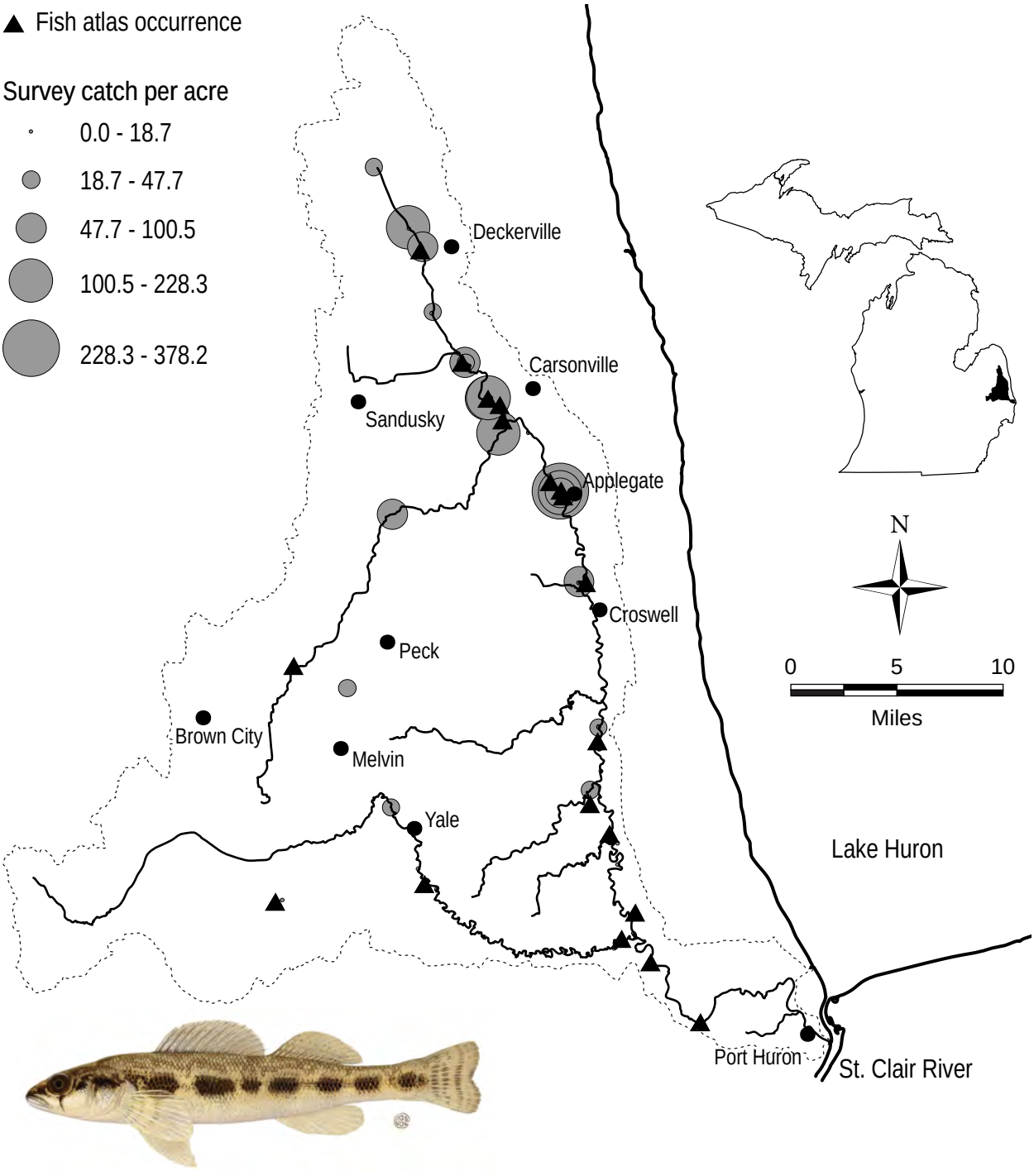
feeding - sand and silt substrate
- little to moderate current
- shallow areas of streams, rivers, lakes, and impoundments
- tolerant of many organic and inorganic pollutants and turbidity

spawning - underneath rocks
- in stream pools or protected shallows of lakes



Yellow perch (*Perca flavescens*)

Habitat**:**
- feeding
  - clear lakes and impoundments; also Lake 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

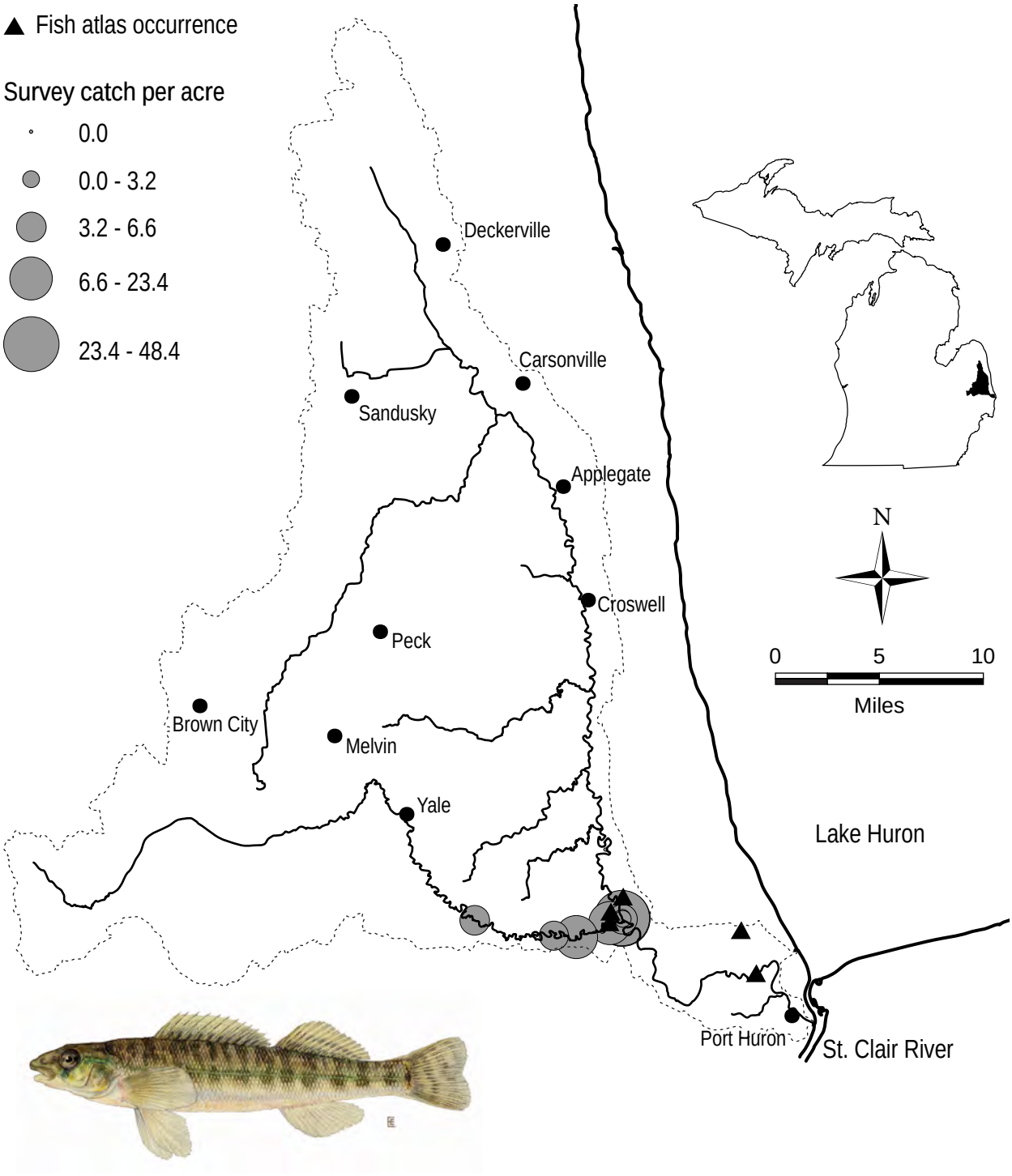


Blackside darter (*Percina maculata*)

Habitat**:**

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

spawning - gravel and sand substrate

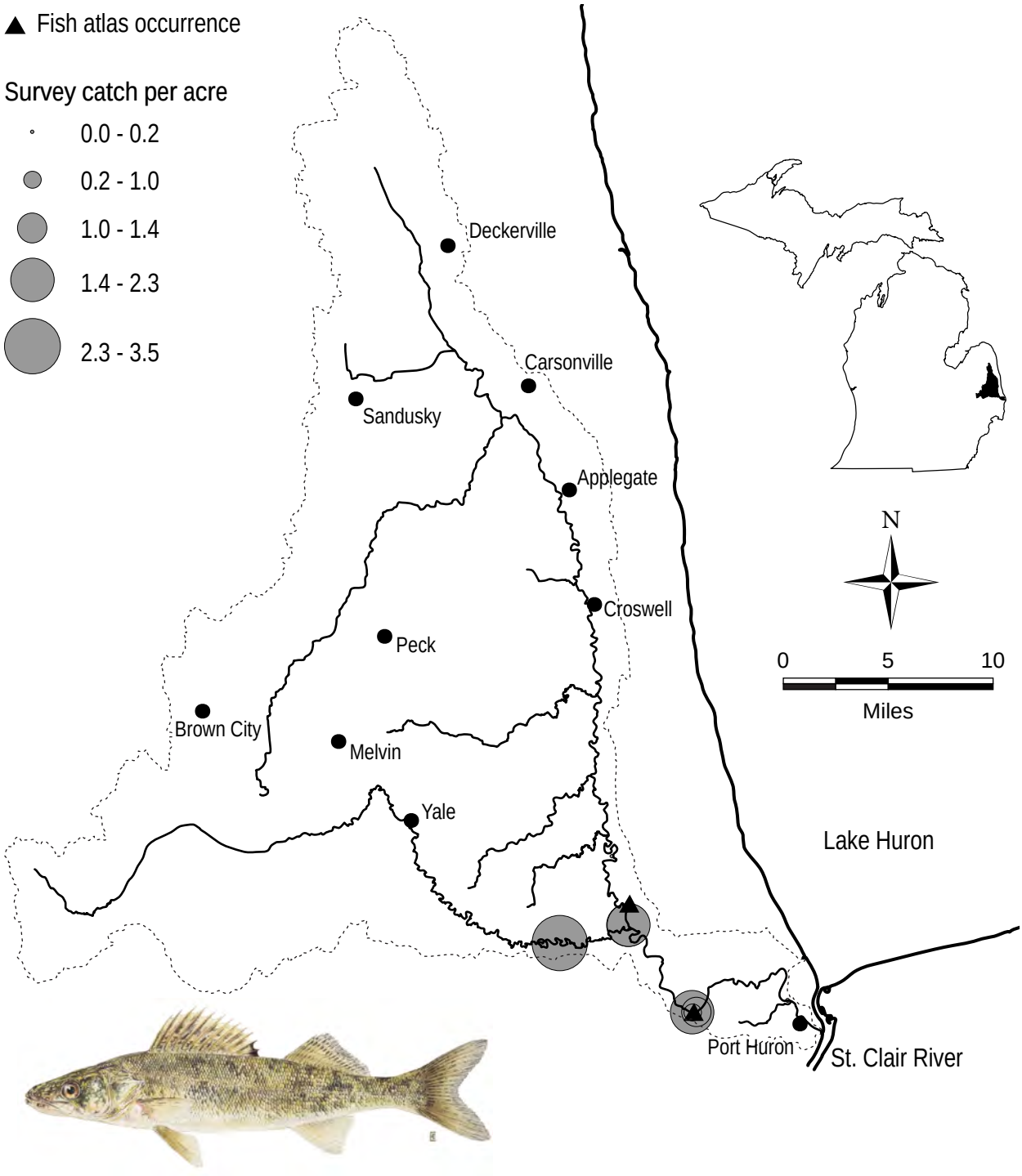


Northern logperch *Percina caprodes semifasciata*

Habitat**:**

feeding - gravel riffles, deeper slower sections of rivers
- medium size streams; also lakes, impoundments
- sand, gravel, or rock substrate
- avoids turbidity and silt

spawning - riffles or sandy in-shore shallows



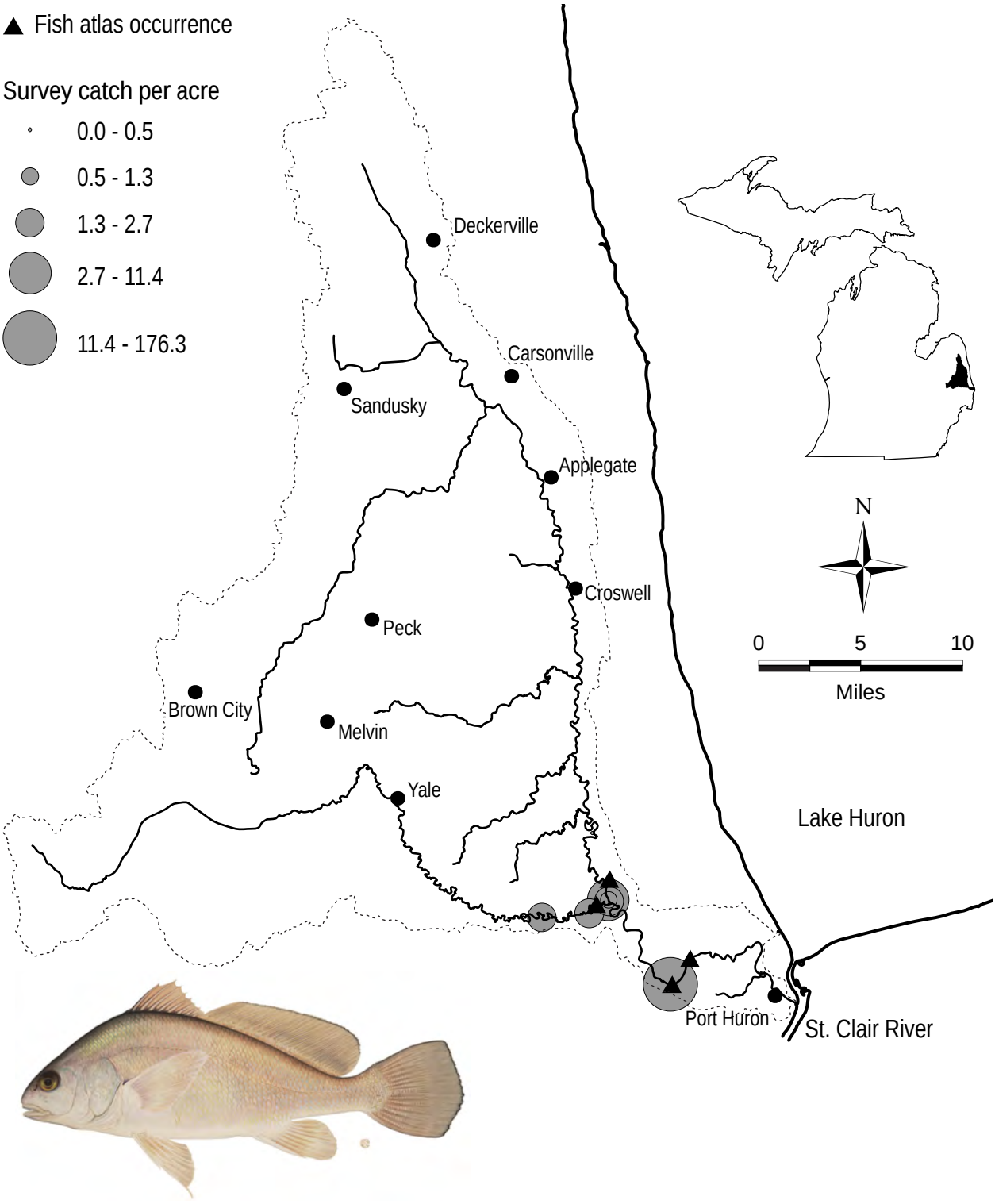
Walleye (*Sander vitreus*)

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

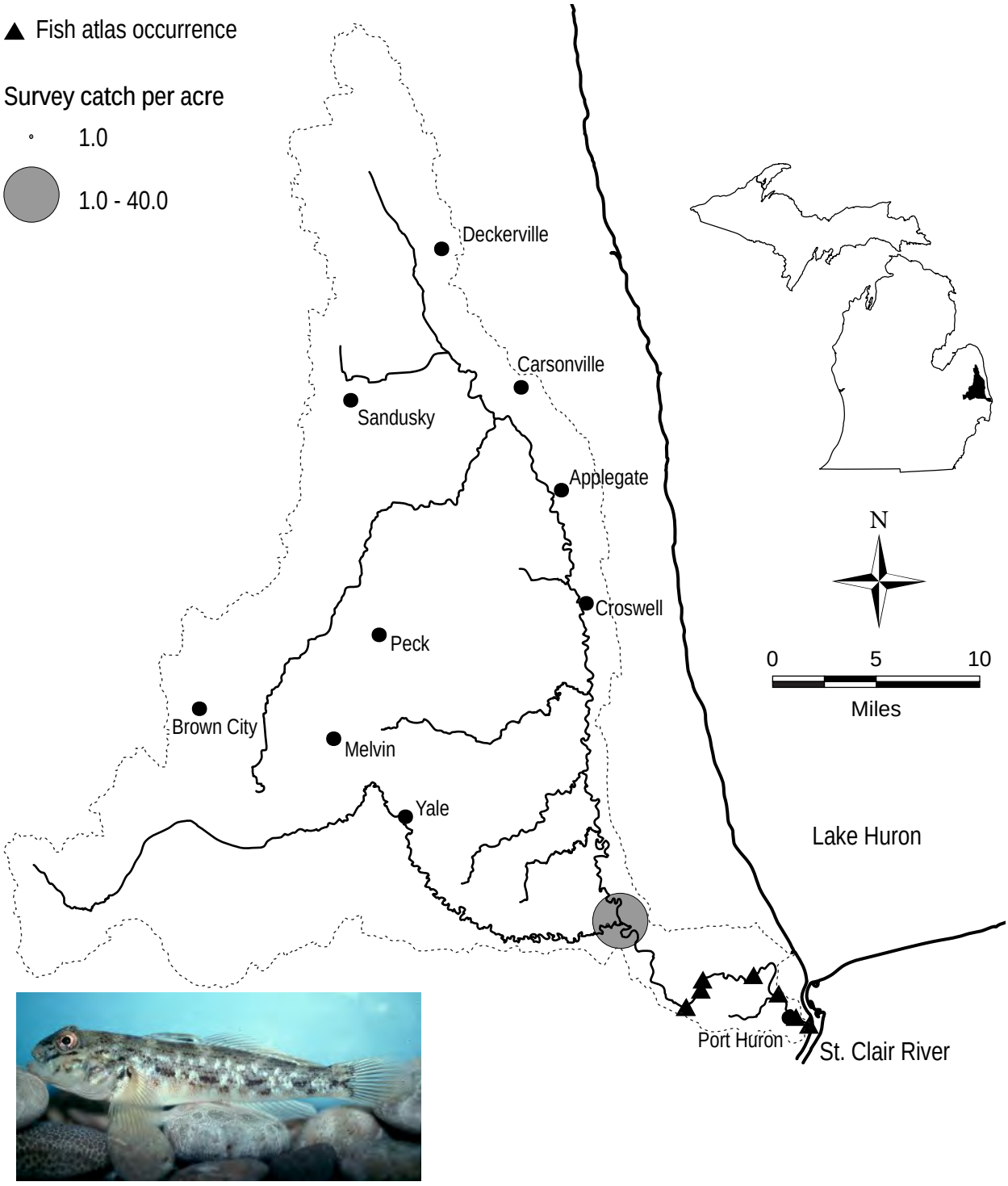


Freshwater drum (*Aplodinotus grunniens*)

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



Round goby (*Neogobius melanostomus*) - **non-native species**

Habitat**:**

feeding	-	rock,cobble,riprap,and vegetate areas of rivers and lakes
	-	young found over sand substrate
spawning	-	rocky substrate with large interstitial spaces
winter refuge	-	rocky substrate with large interstitial spaces
	-	deep water