



**STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES**

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**Jordan River Assessment
Appendix**

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and
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MICHIGAN DEPARTMENT OF NATURAL RESOURCES FISHERIES DIVISION

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Appendix 1

Distribution Maps of Fish Species

This appendix contains maps of known past and present fish distributions within the Jordan River watershed. The distributions of fish species were compiled from records located at the University of Michigan, Museums Fisheries Library; Michigan Department of Natural Resources, Institute for Fisheries Research; and Central Lake Michigan Management Unit offices in Traverse City and Cadillac.

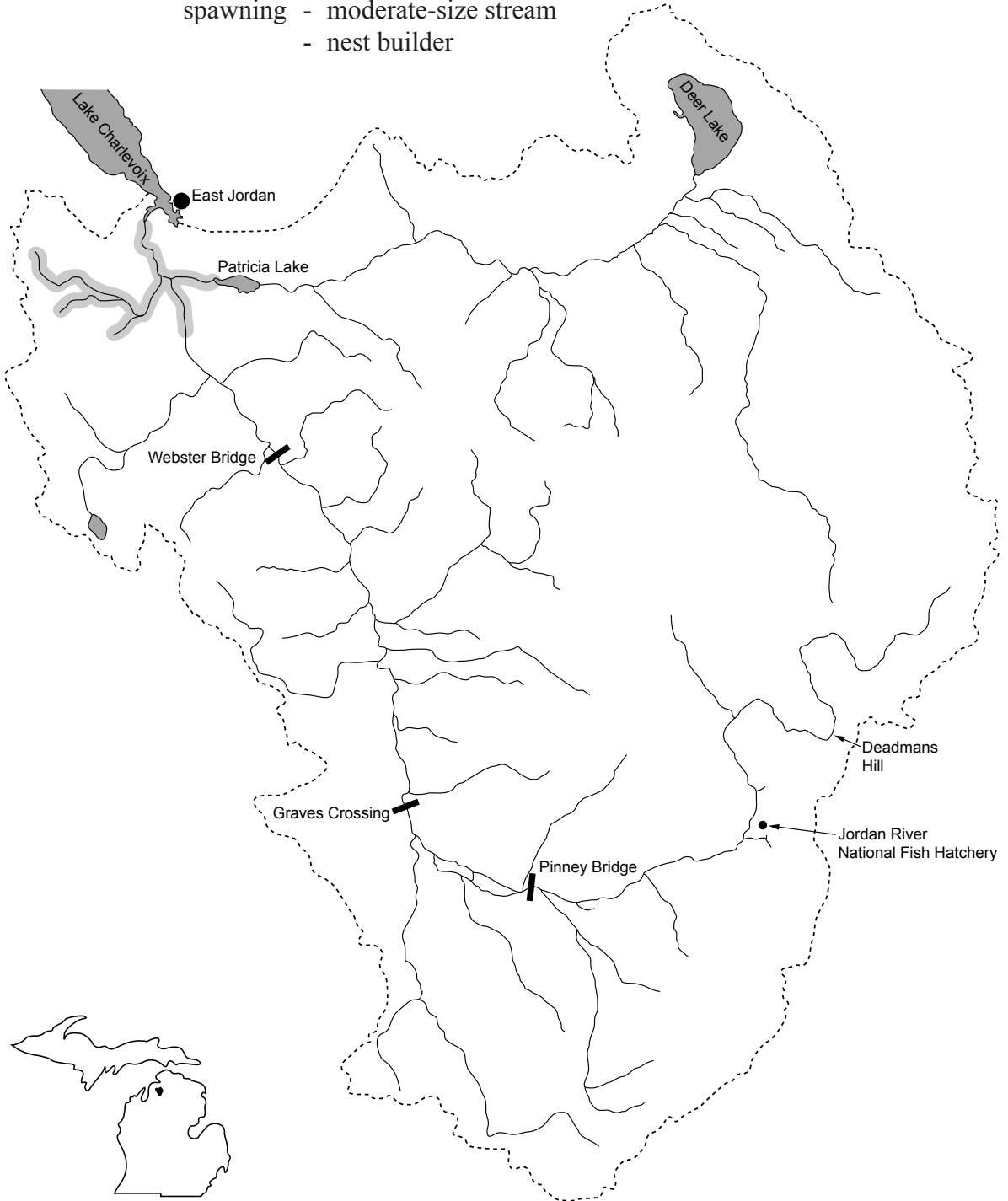
Habitat descriptions were compiled from the Fishes of Ohio (Trautman 1982), Freshwater Fishes of Canada (Scott and Crossman 1973), Fishes of Wisconsin (Becker 1983), Fishes of Missouri (Pflieger 1975) and fishes of the Great Lakes Region (Hubbs and Lagler 1947).

Chestnut lamprey (*Ichthyomyzon castaneus*)

Habitat:

- feeding - stable substrate of sand and silt with light growth of chara or quiet backwaters of muck and silt with dense rooted vegetation
- moderately current
- clear moderate-size water

- spawning - moderate-size stream
- nest builder



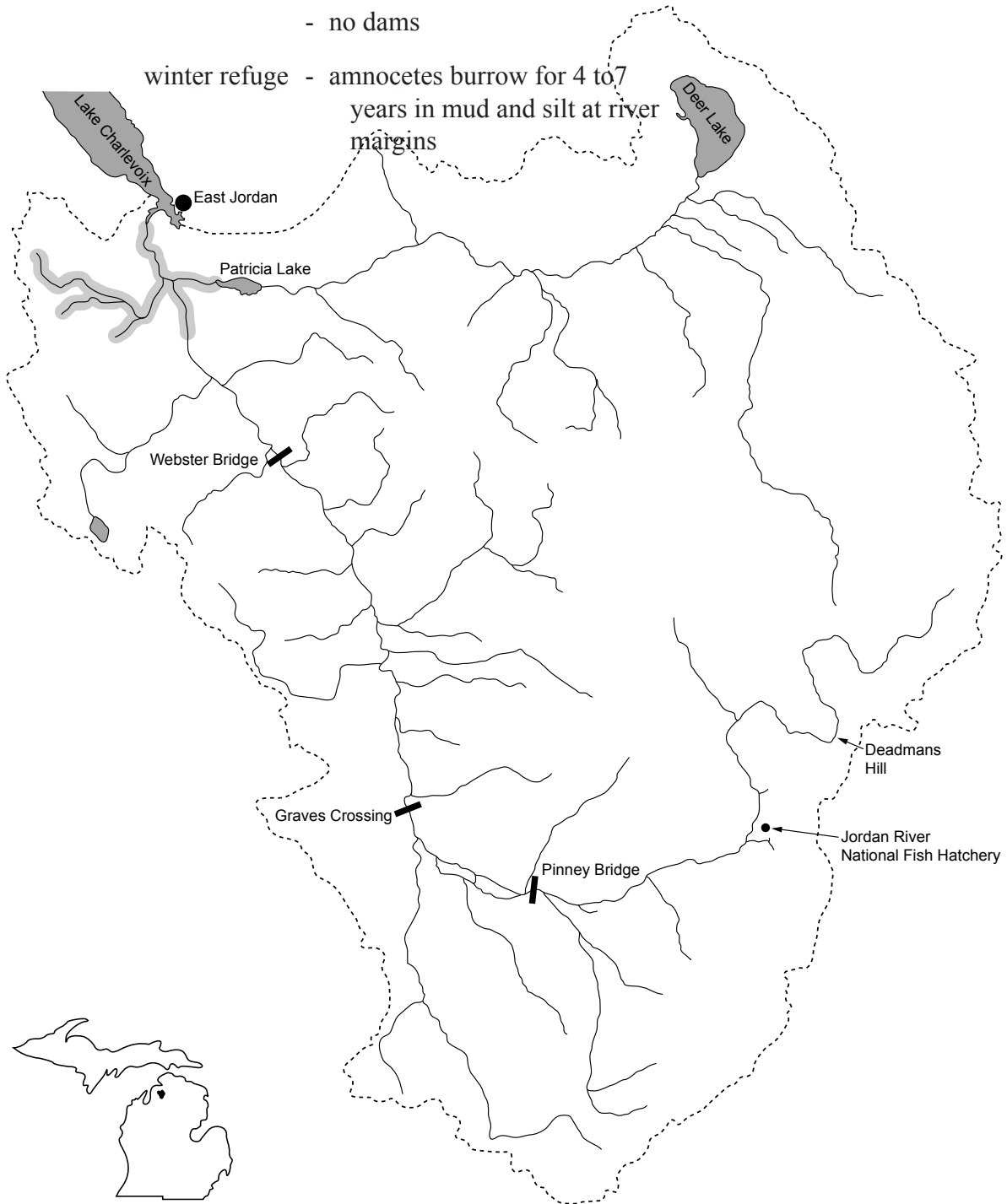
Silver lamprey (*Ichthyomyzon unicuspis*)

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



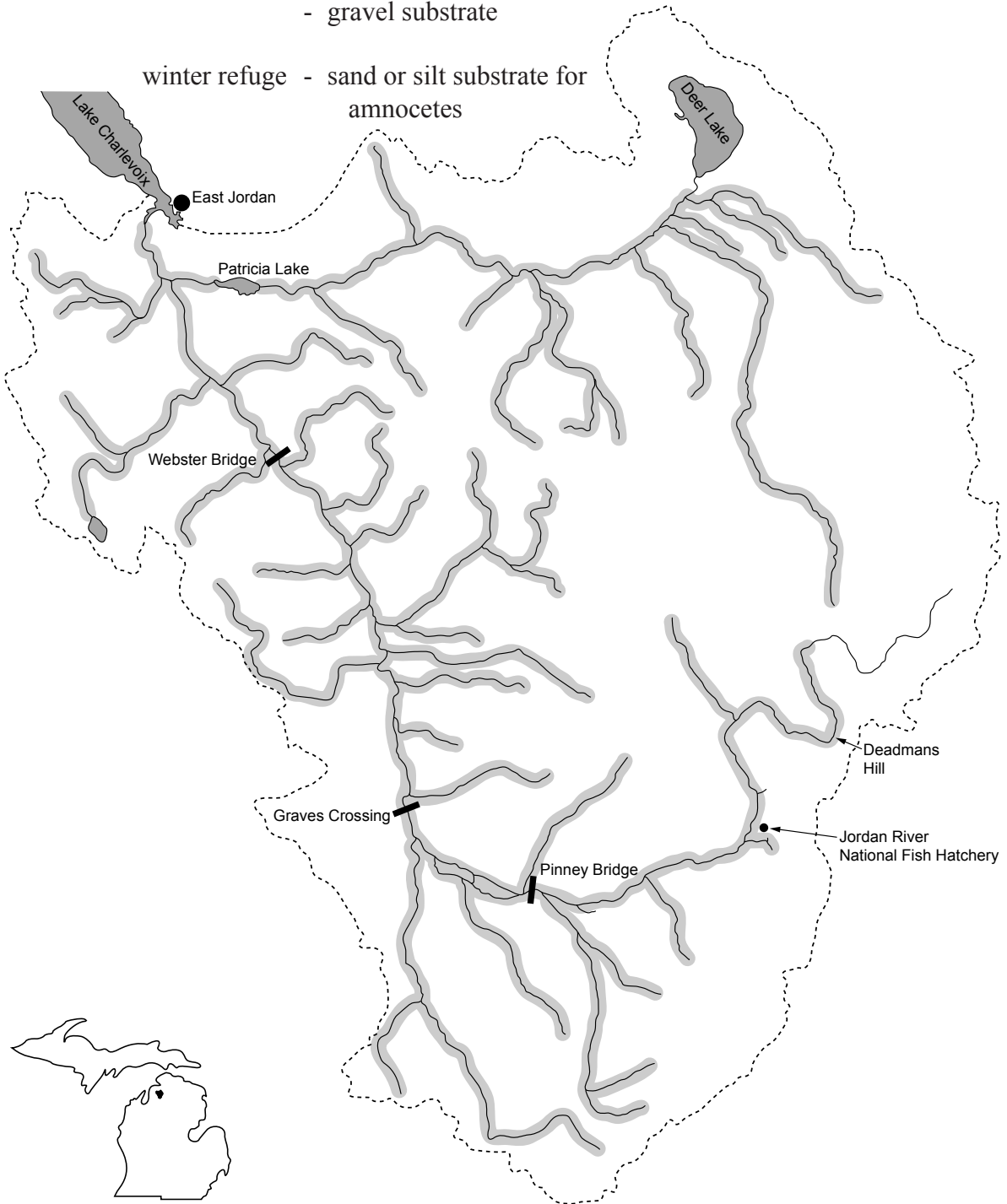
American brook lamprey (*Lampetra appendix*)

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 ammocetes

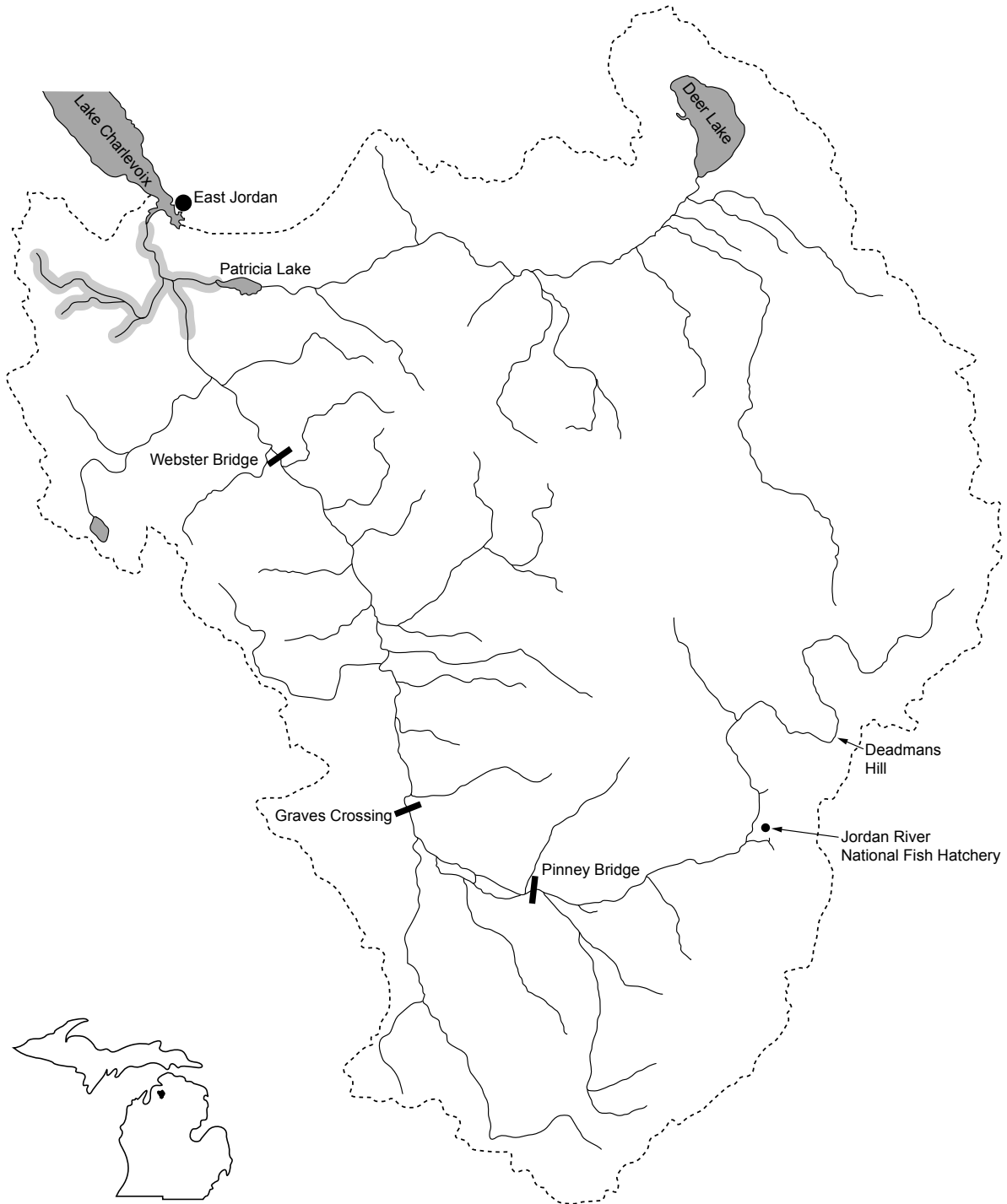


Sea lamprey (*Petromyzon marinus*)

Habitat:

- feeding - young: substrate with beds of sand mixed with organic debris
- cannot tolerate silt
- adults: clear cool water of Lake Michigan

- spawning - no dams
- riffles with sand and gravel substrates



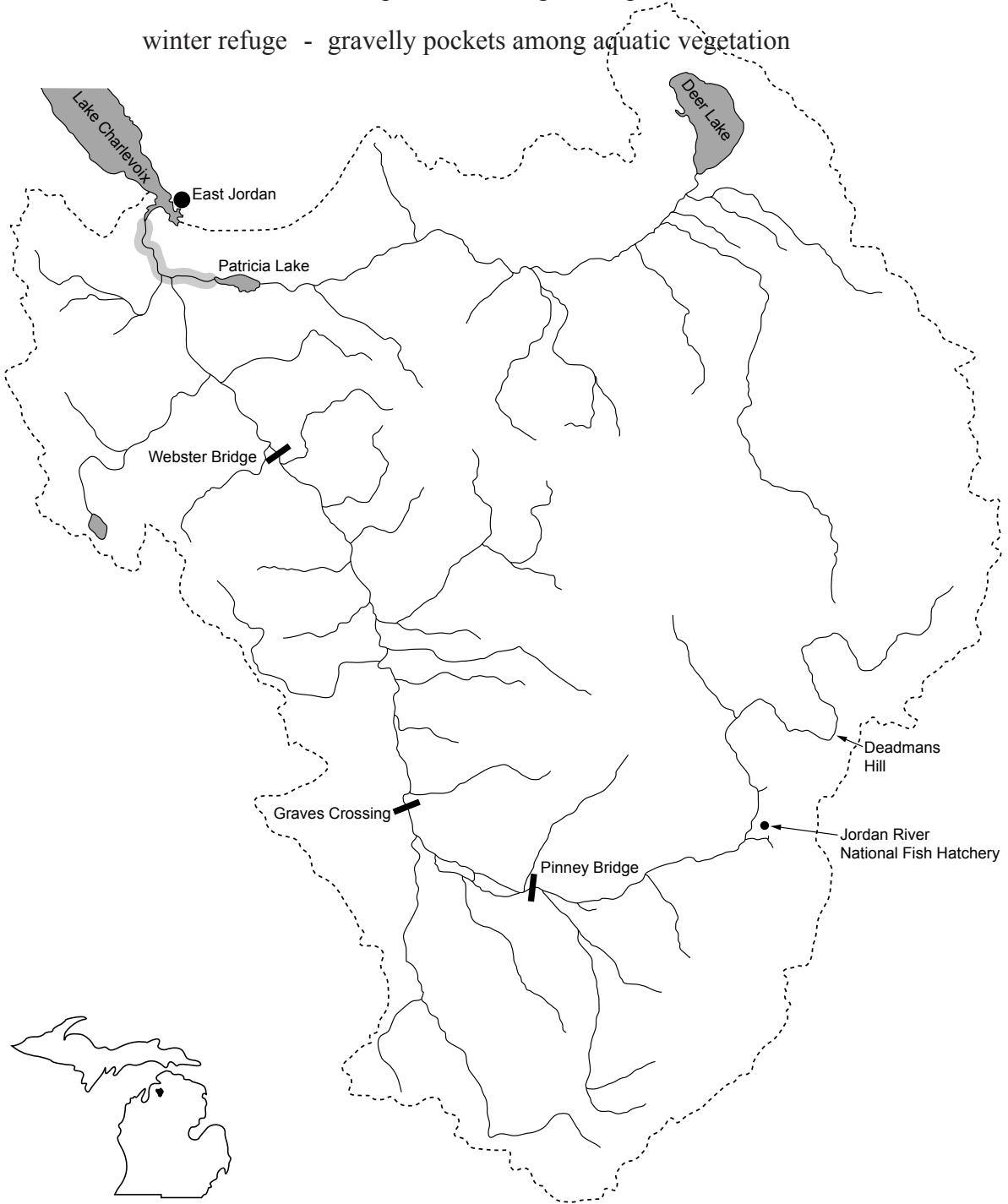
Bowfin (*Amia calva*)

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



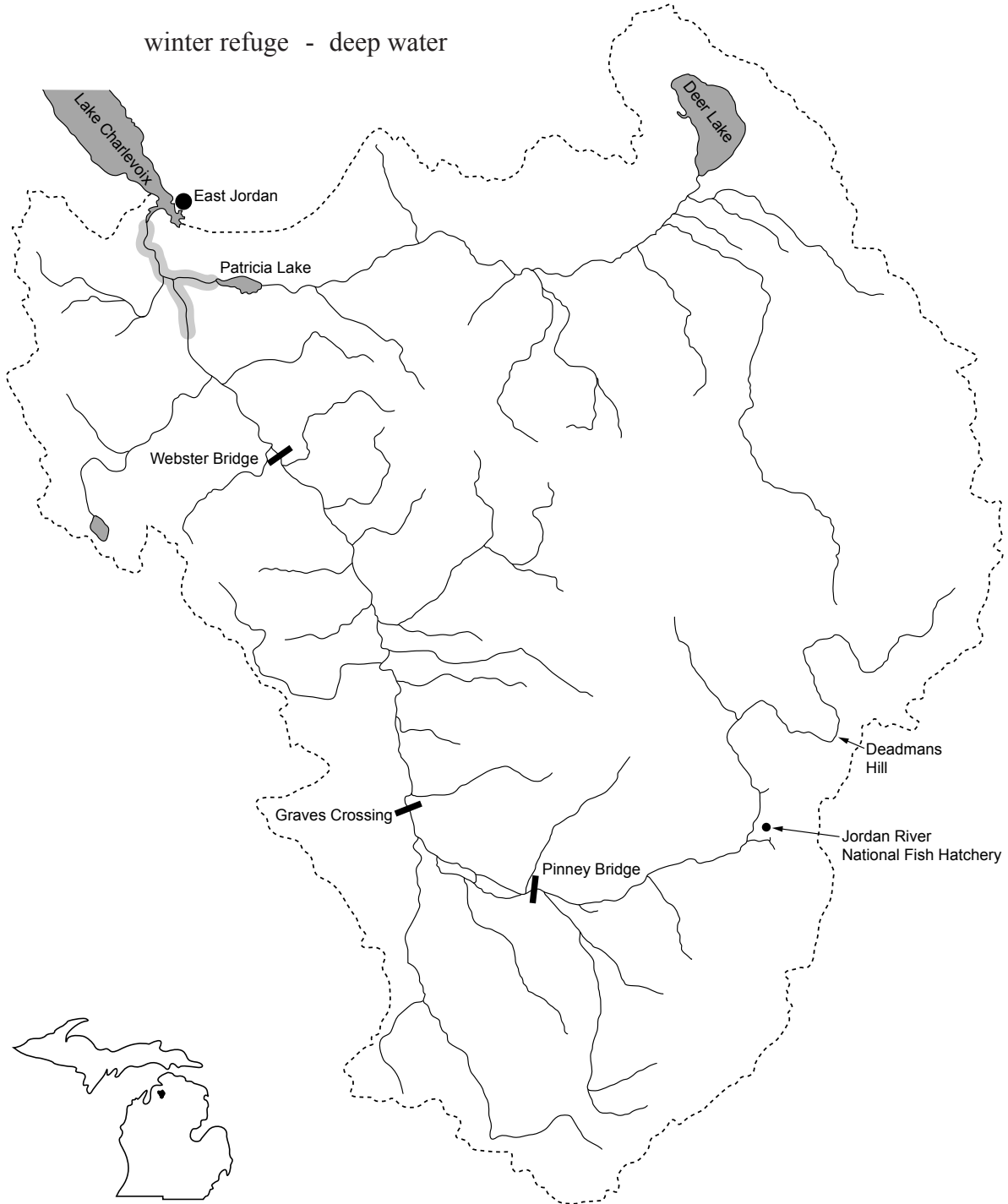
Alewife (*Alosa pseudoharengus*)

Habitat:

- feeding - adults: deep water of Lake Michigan
- young: shallow water of Lake Michigan
- prefers warmer waters

- spawning - streams or shallow beaches of lake
- sand or gravelly substrate

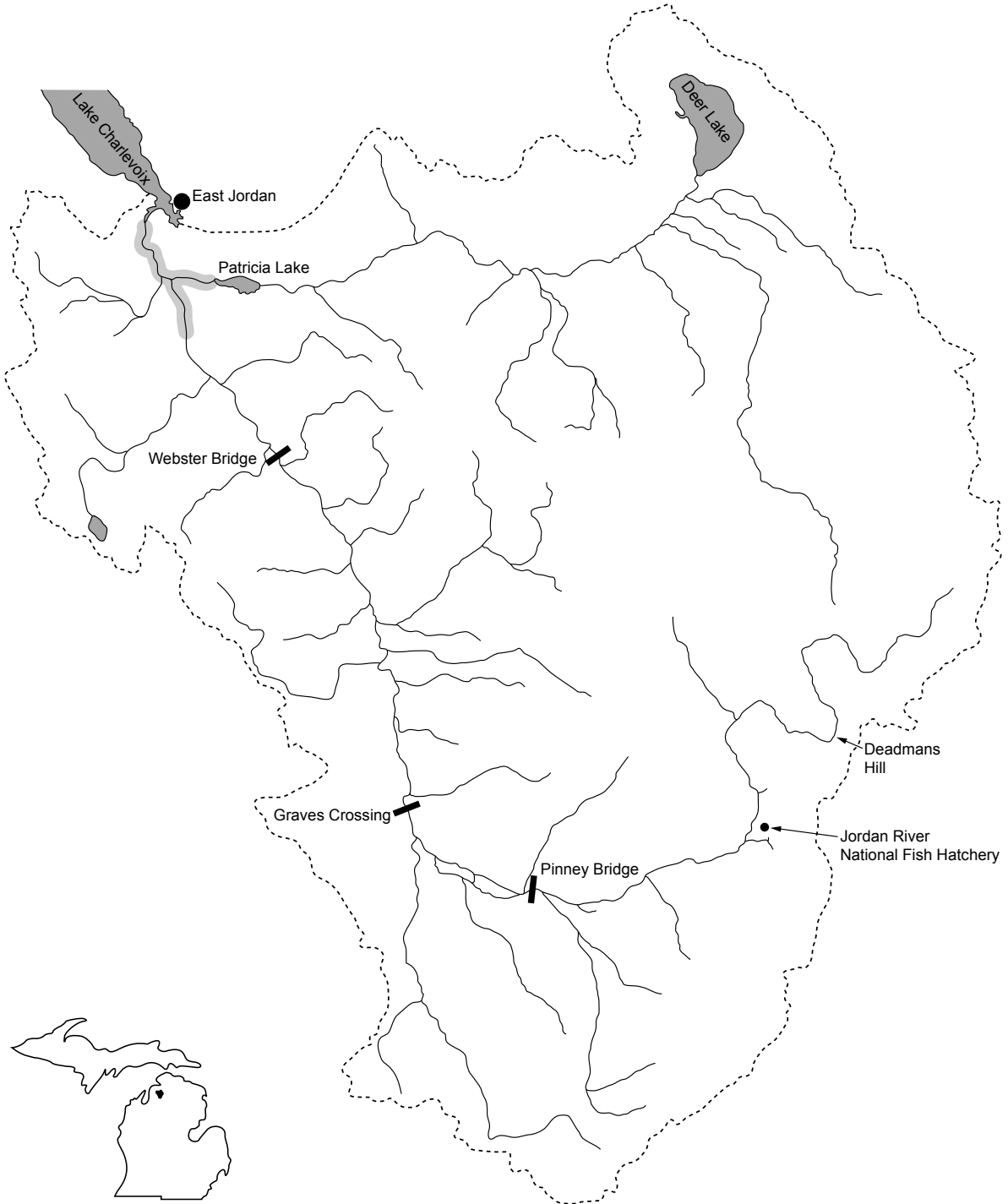
- winter refuge - deep water



Common carp (*Cyprinus carpio*)

Habitat:

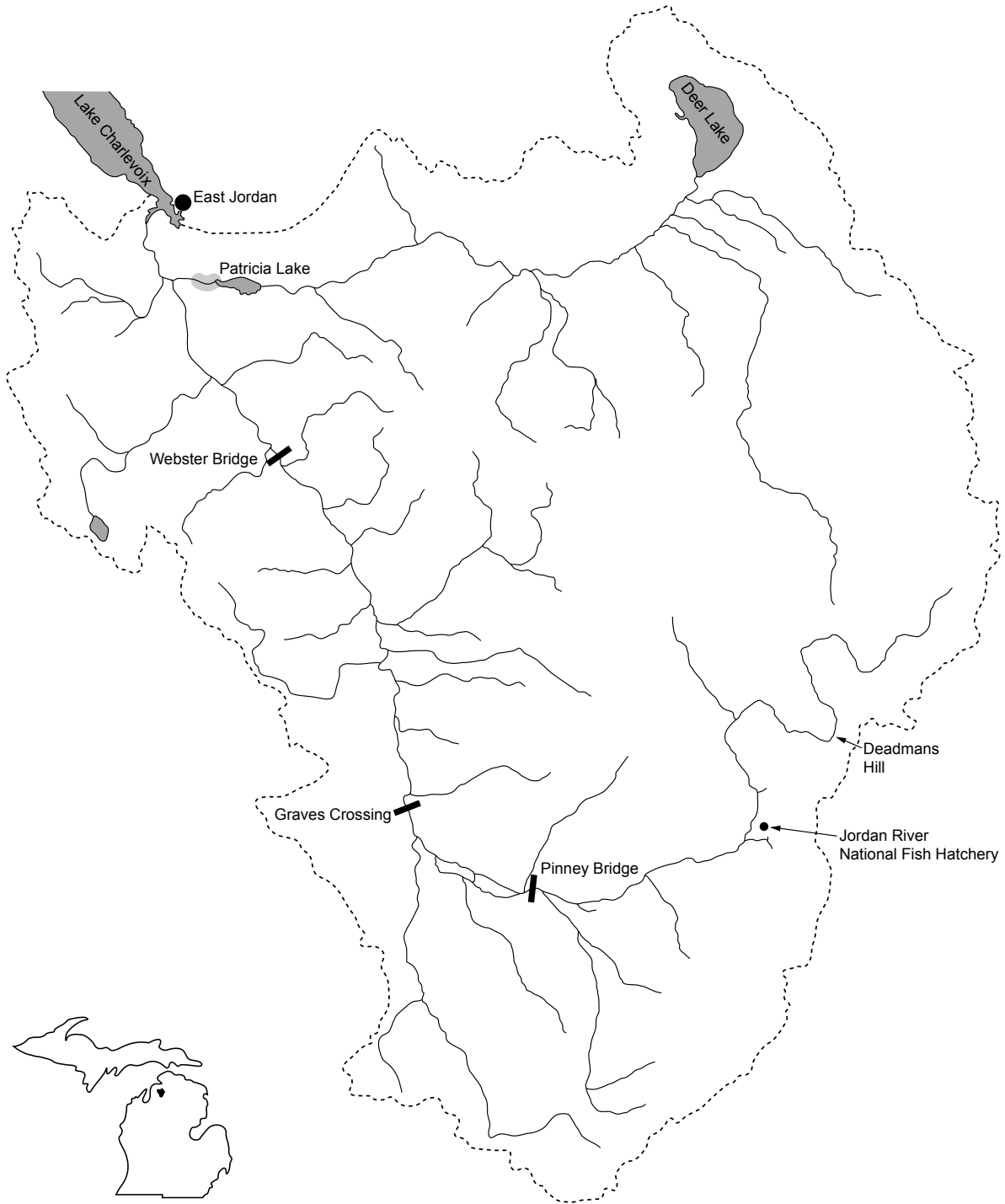
- feeding - low gradient fertile streams, rivers, lakes, and impoundments
 - abundance of aquatic vegetation or organic matter
 - tolerant of all substrates and clear to turbid water
- spawning - weedy or grassy shallows



Brassy minnow (*Hybognathus hankinsoni*)

Habitat:

- feeding - cool acidic streams
- slow to moderate current
- sand or gravel substrate

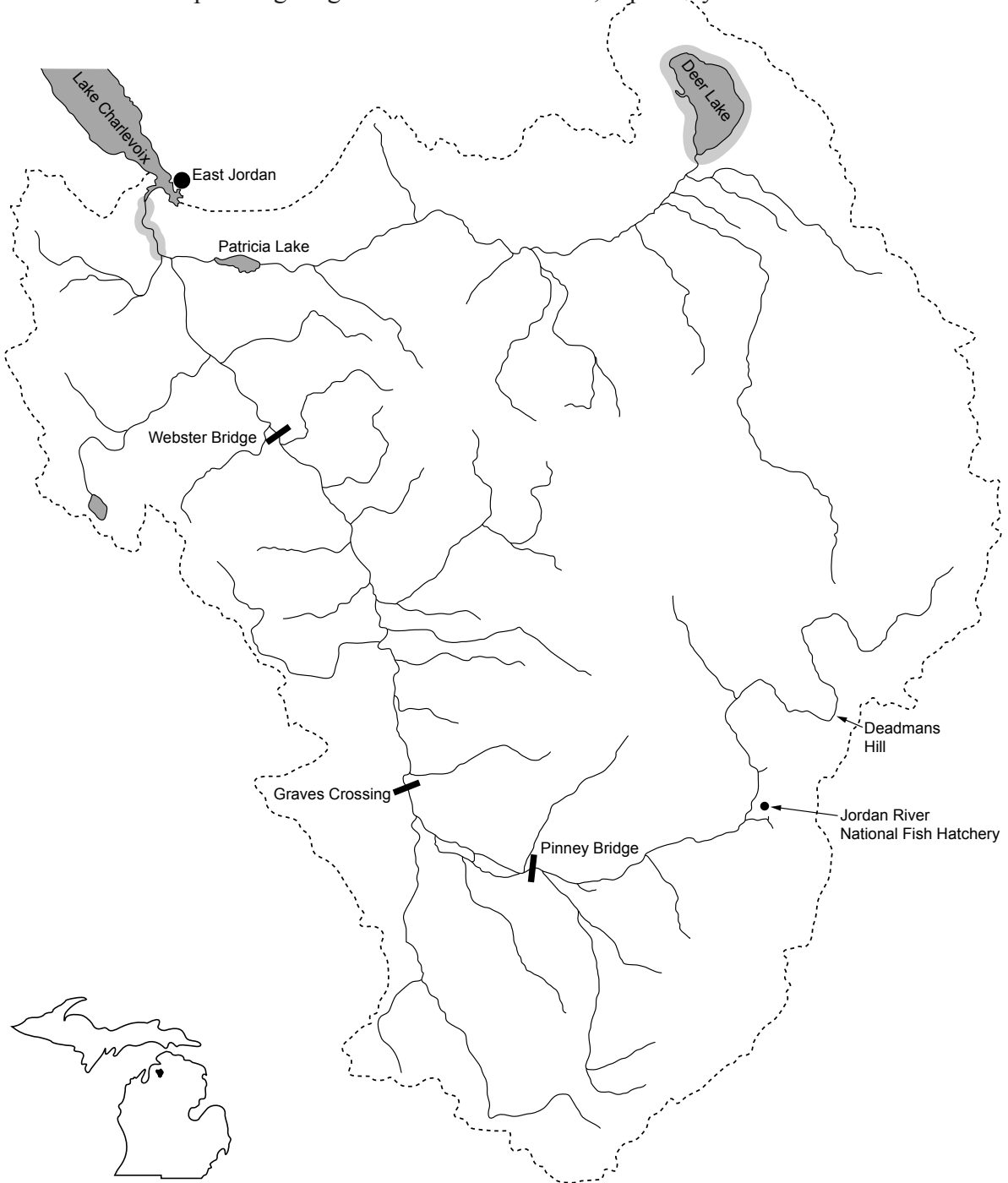


Common shiner (*Luxilus cornutus*)

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

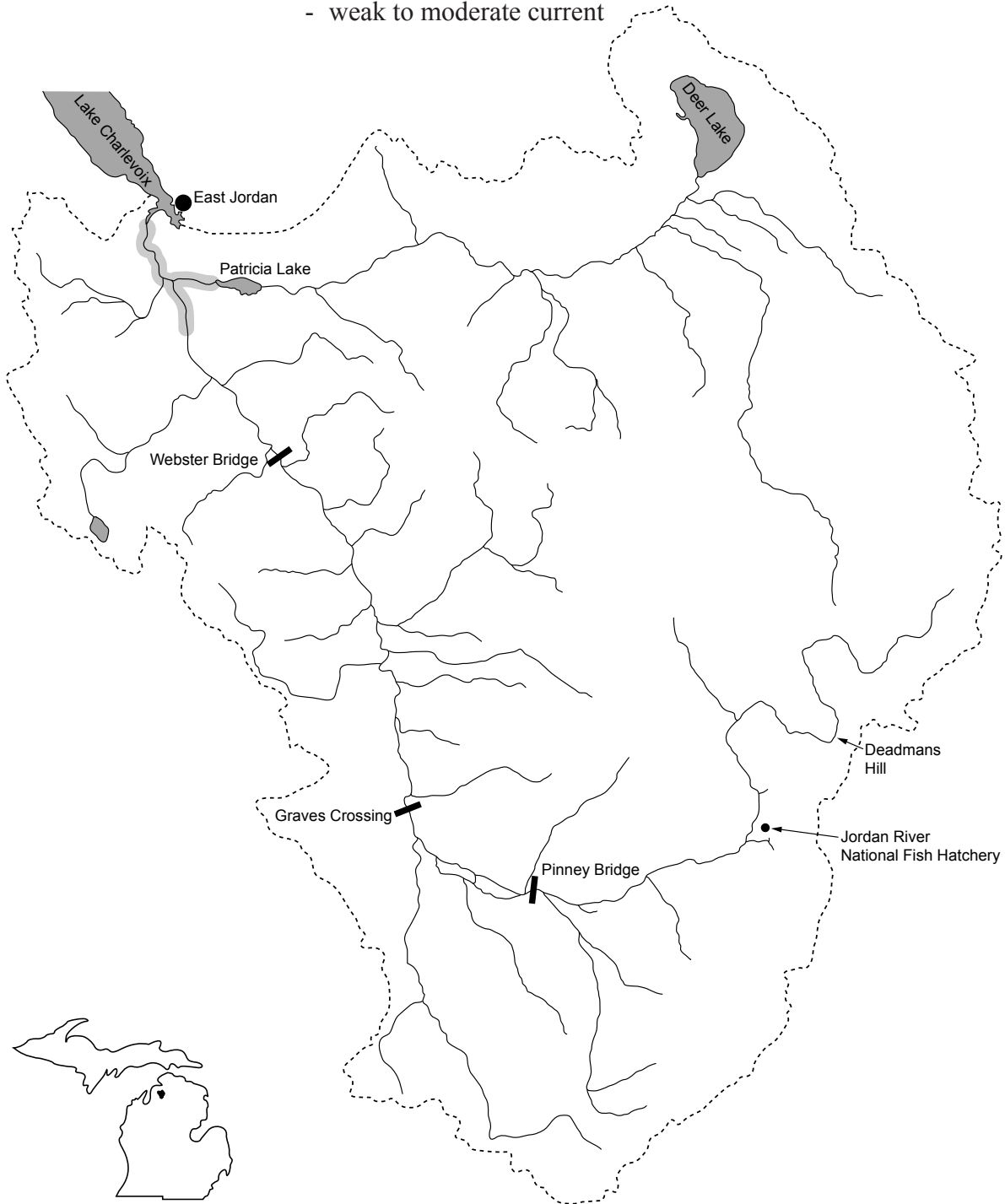


Pearl dace (*Margariscus margarita*)

Habitat:

- feeding - cool, neutral to acidic streams and lakes
- clear to slightly turbid water

- spawning - males are territorial
- clear water, 18-24 inches deep
- sand or gravel substrate
- weak to moderate current

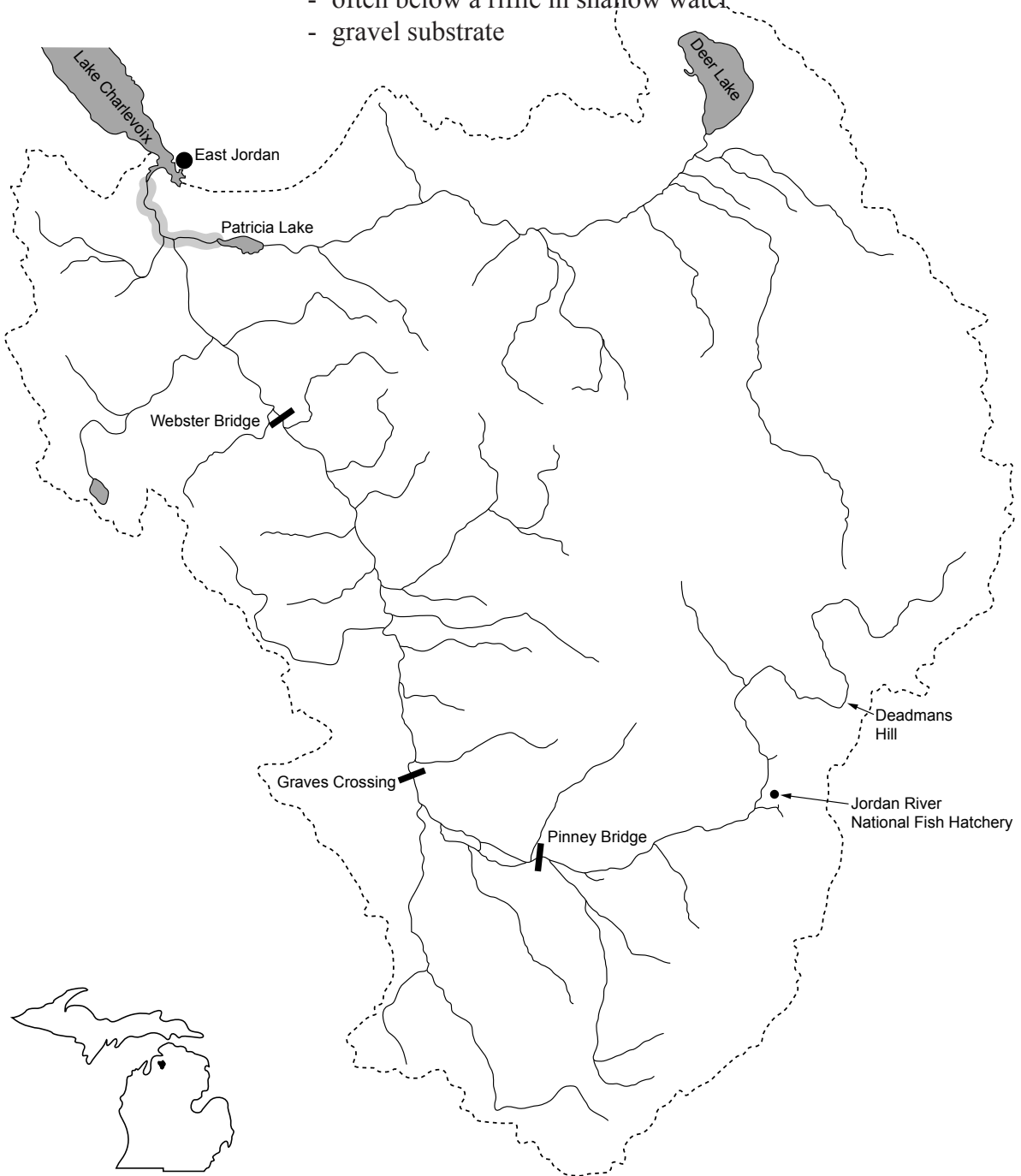


Hornyhead chub (*Nocomis biguttatus*)

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

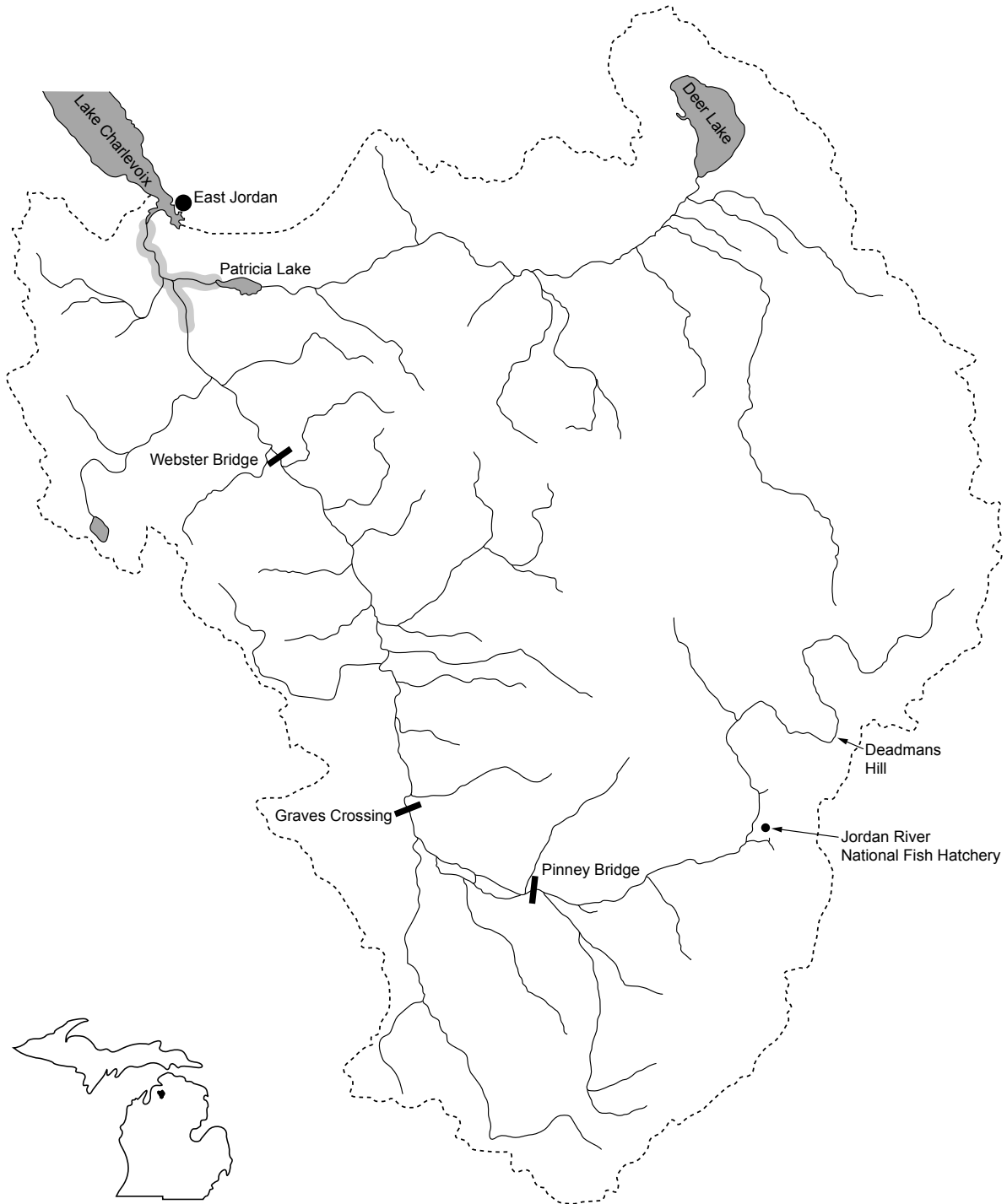


Golden shiner (*Notemigonus crysoleucas*)

Habitat:

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

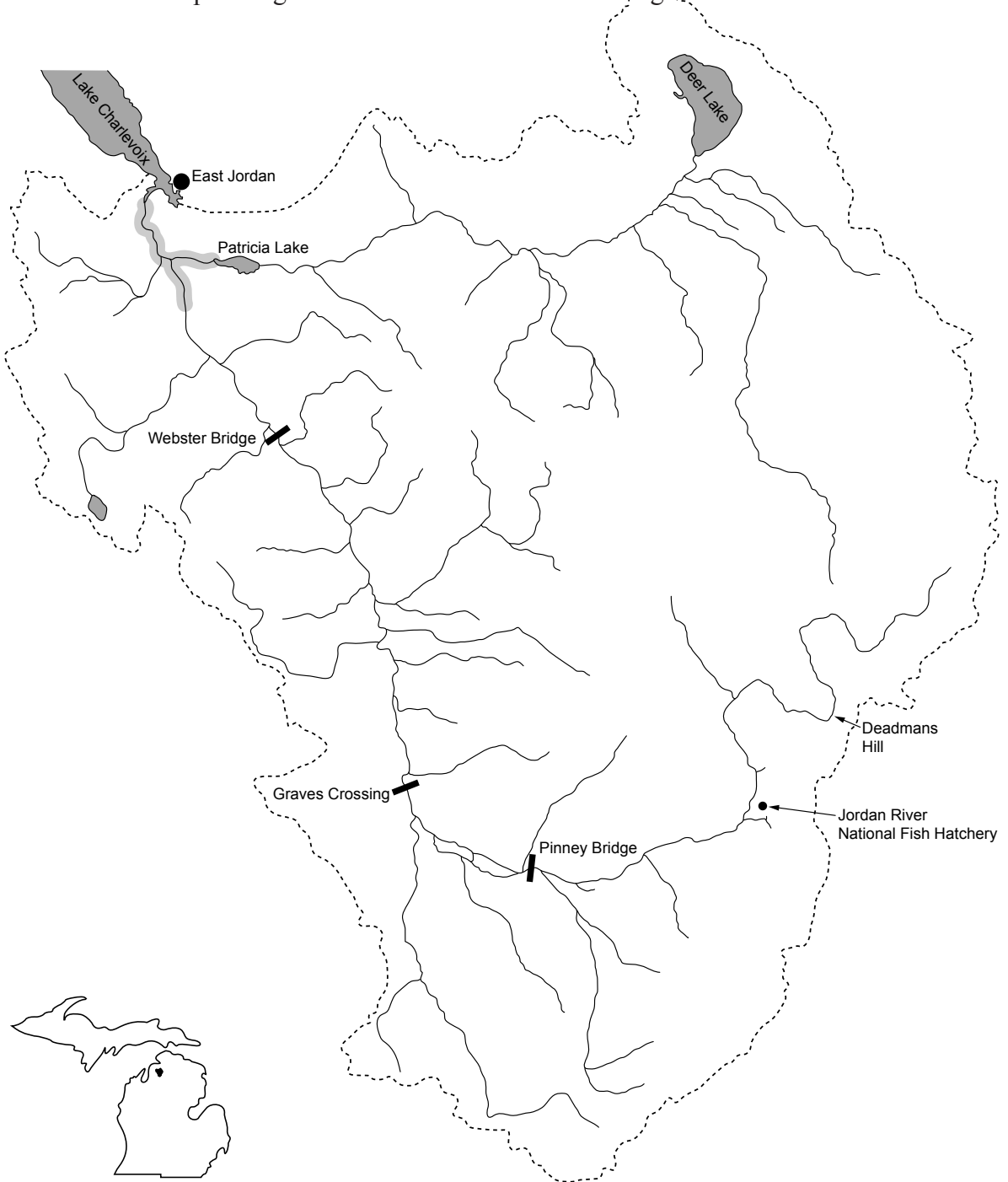
spawning - vegetation



Emerald shiner (*Notropis atherinoides*)

Habitat:

- feeding - open-large stream channels and lake
 - low to moderate gradient
 - range of turbidities and bottom types
 - midwater or surface preferred, substrate of little importance
 - avoids rooted vegetation
- spawning - sand or firm mud substrate or gravel shoals

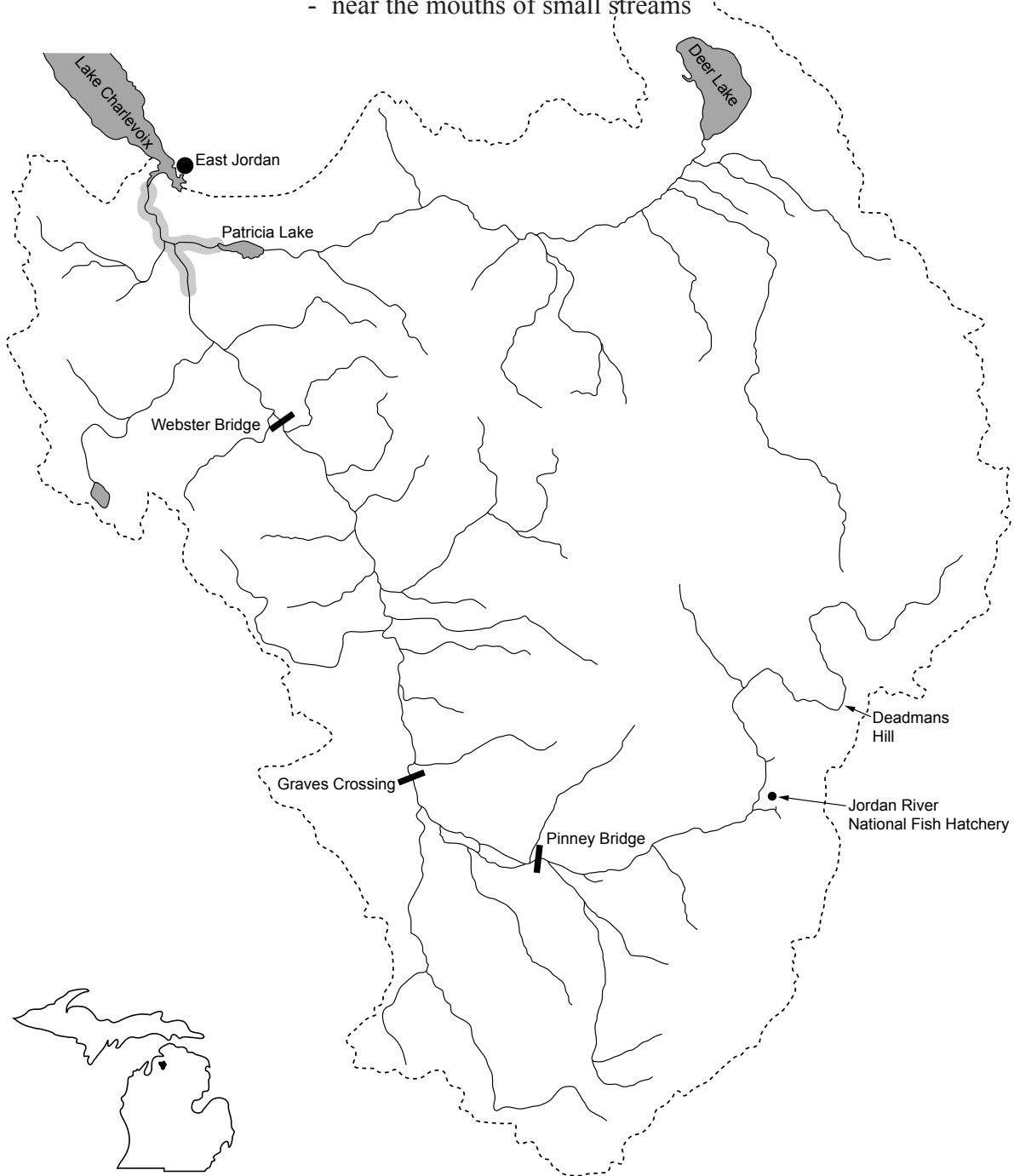


Spottail shiner (*Notropis hudsonius*)

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

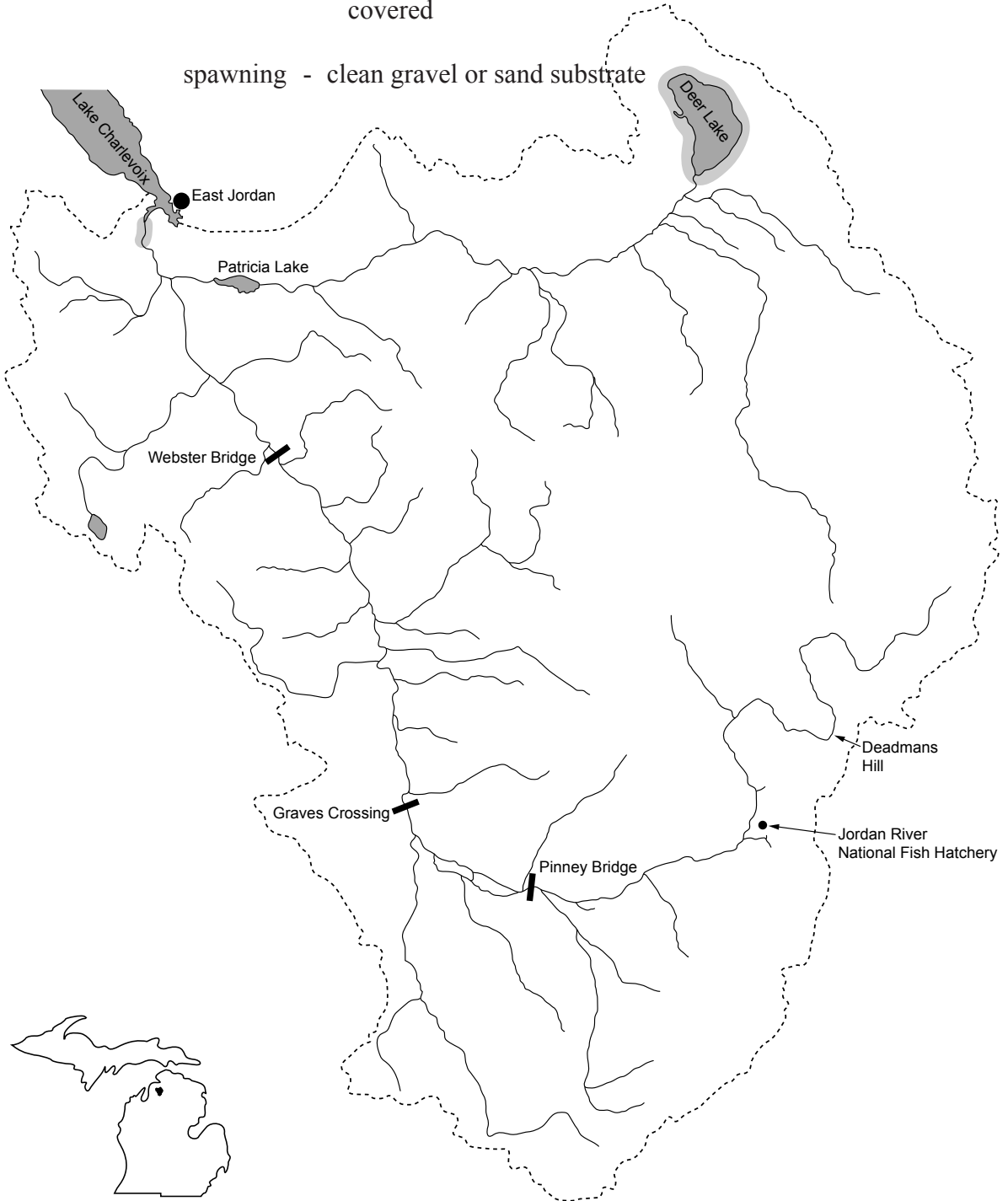


Sand shiner (*Notropis stramineus*)

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

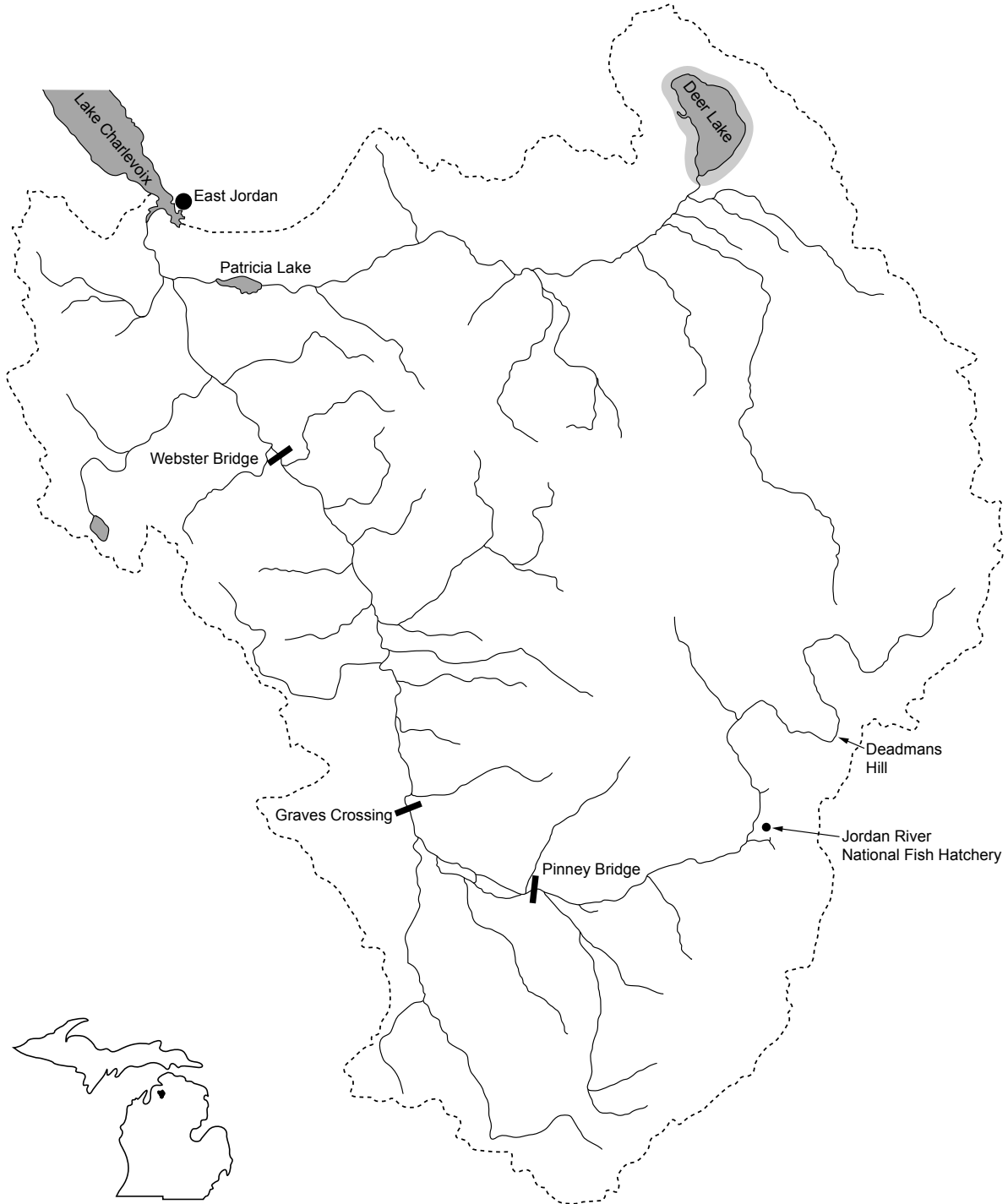


Mimic shiner (*Notropis volucellus*)

Habitat:

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

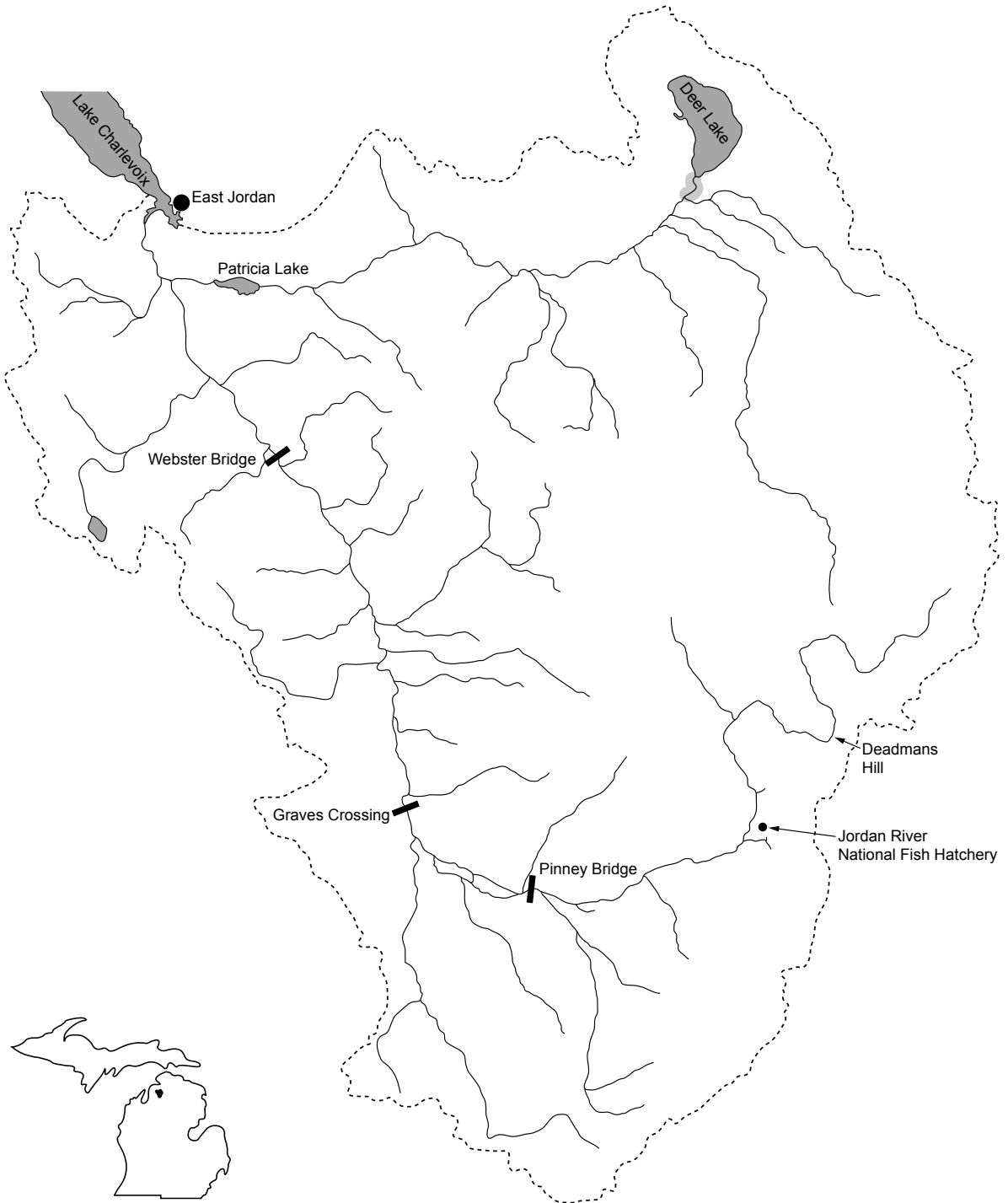
spawning - aquatic vegetation necessary



Finescale dace (*Phoxinus neogaeus*)

Habitat:

- feeding - cool bog lakes and streams
- neutral to slightly acidic waters
- various substrates

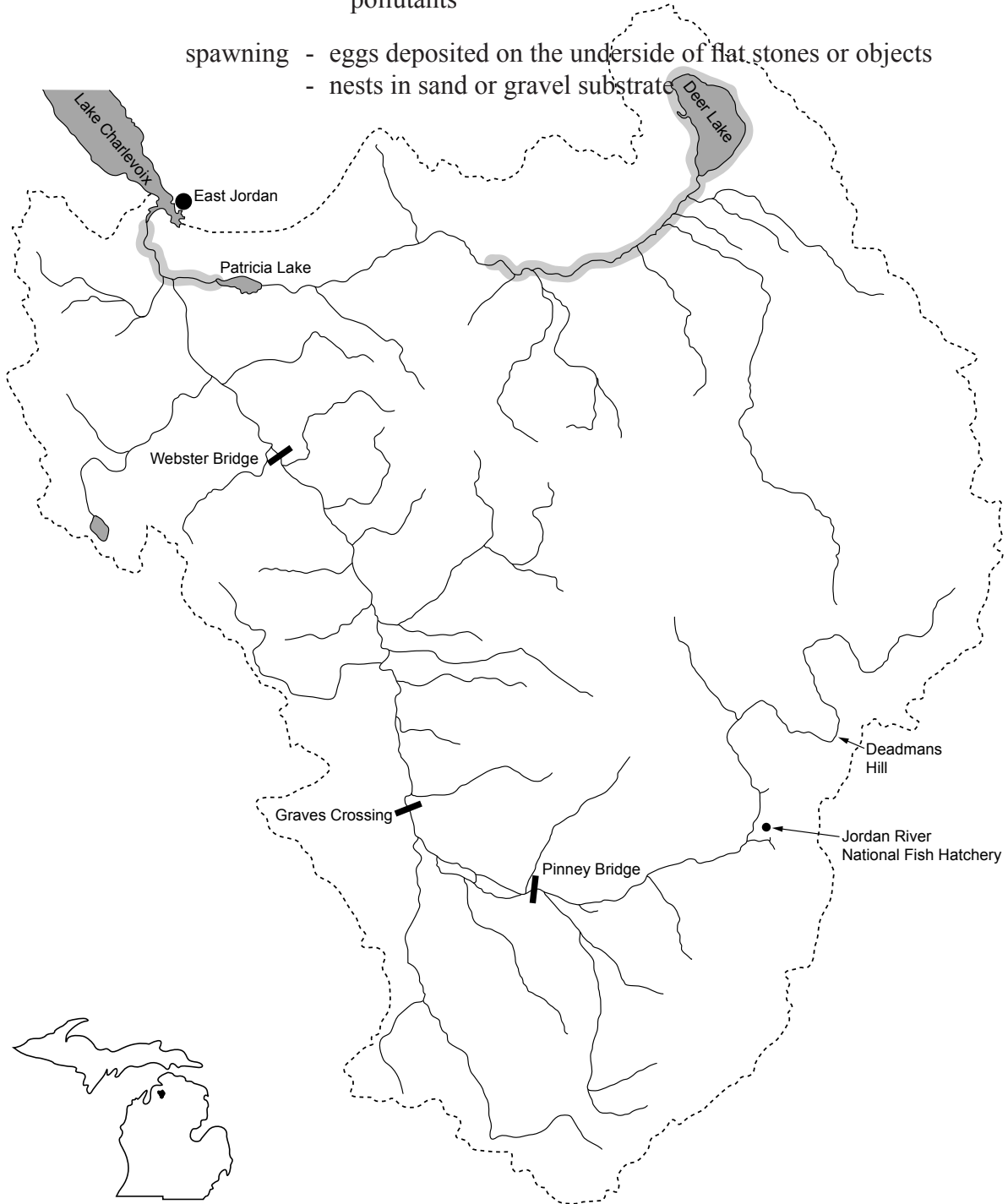


Bluntnose minnow (*Pimephales notatus*)

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

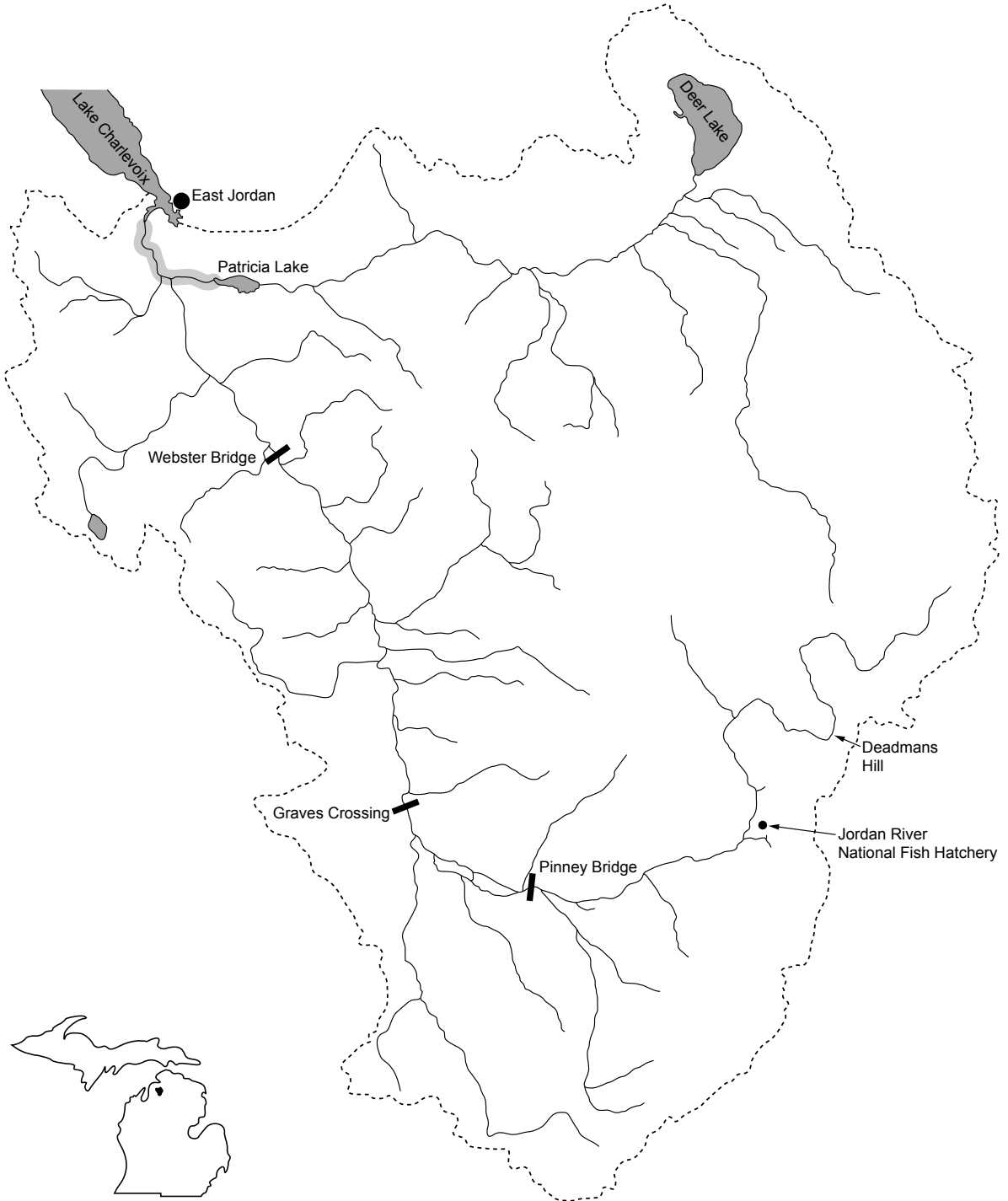


Fathead minnow (*Pimephales promelas*)

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



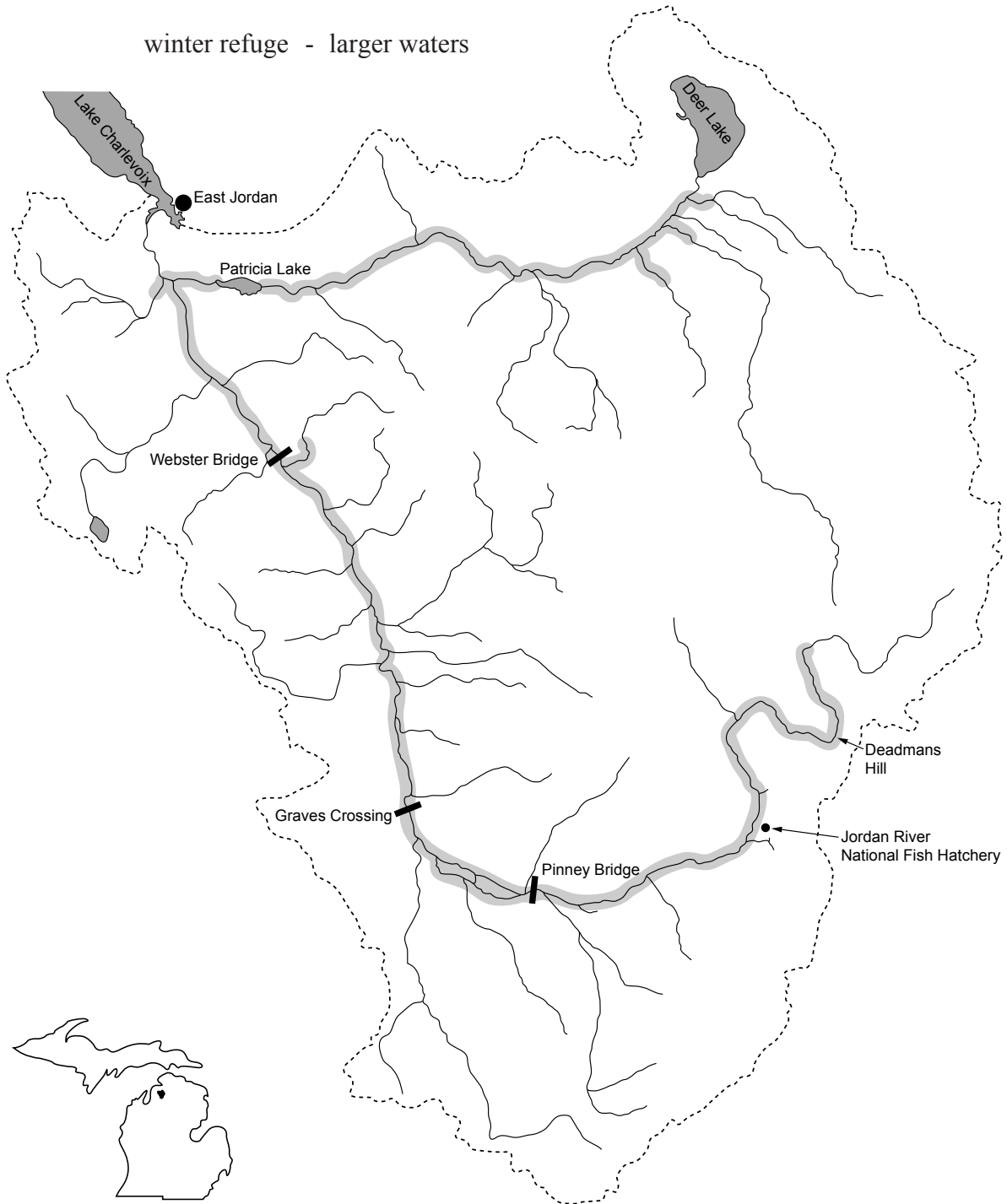
Blacknose dace (*Rhinichthys atratulus*)

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

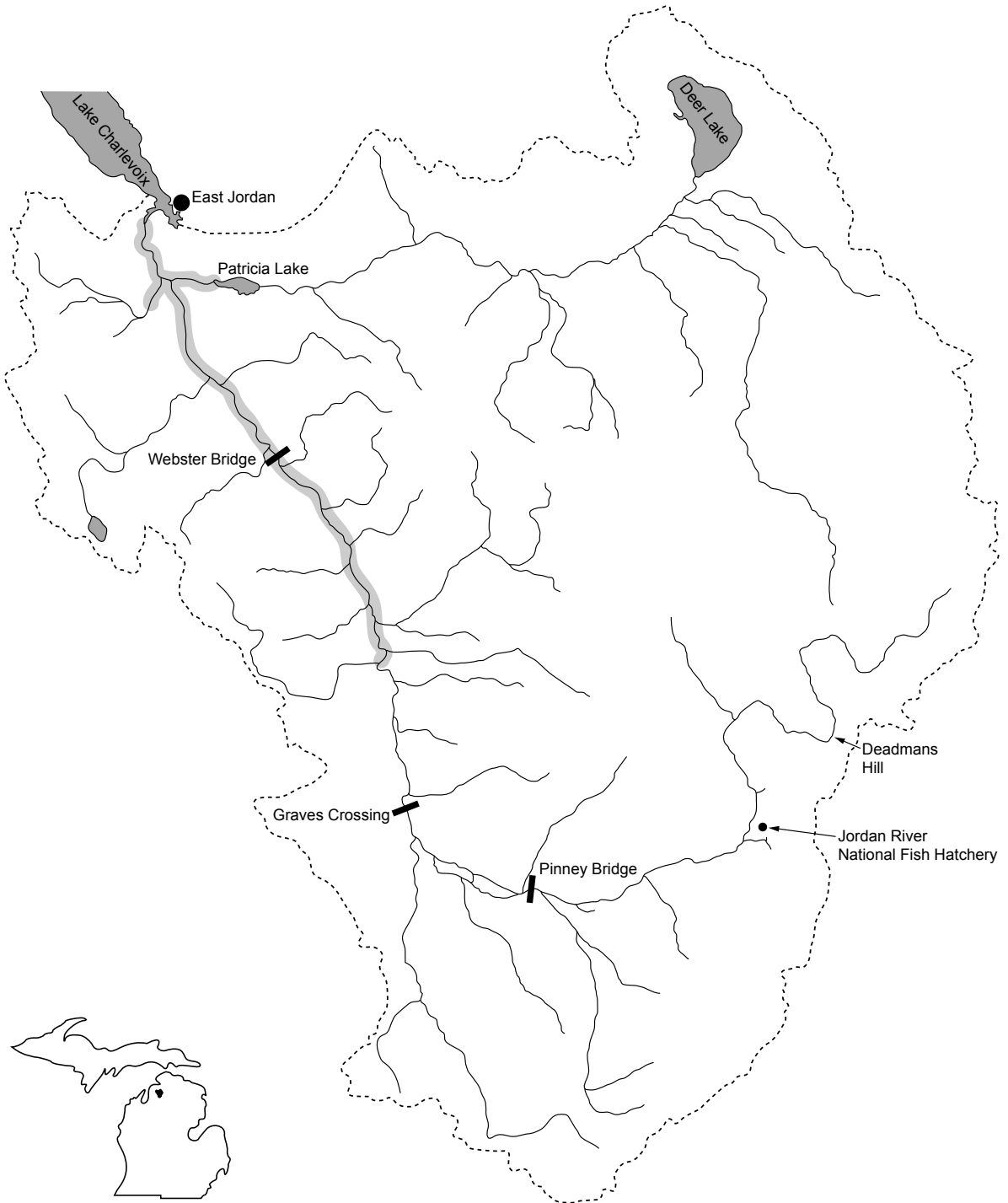
winter refuge - larger waters



Longnose dace (*Rhinichthys cataractae*)

Habitat:

- feeding - lakes and streams
- high gradient
- gravel or boulder substrate



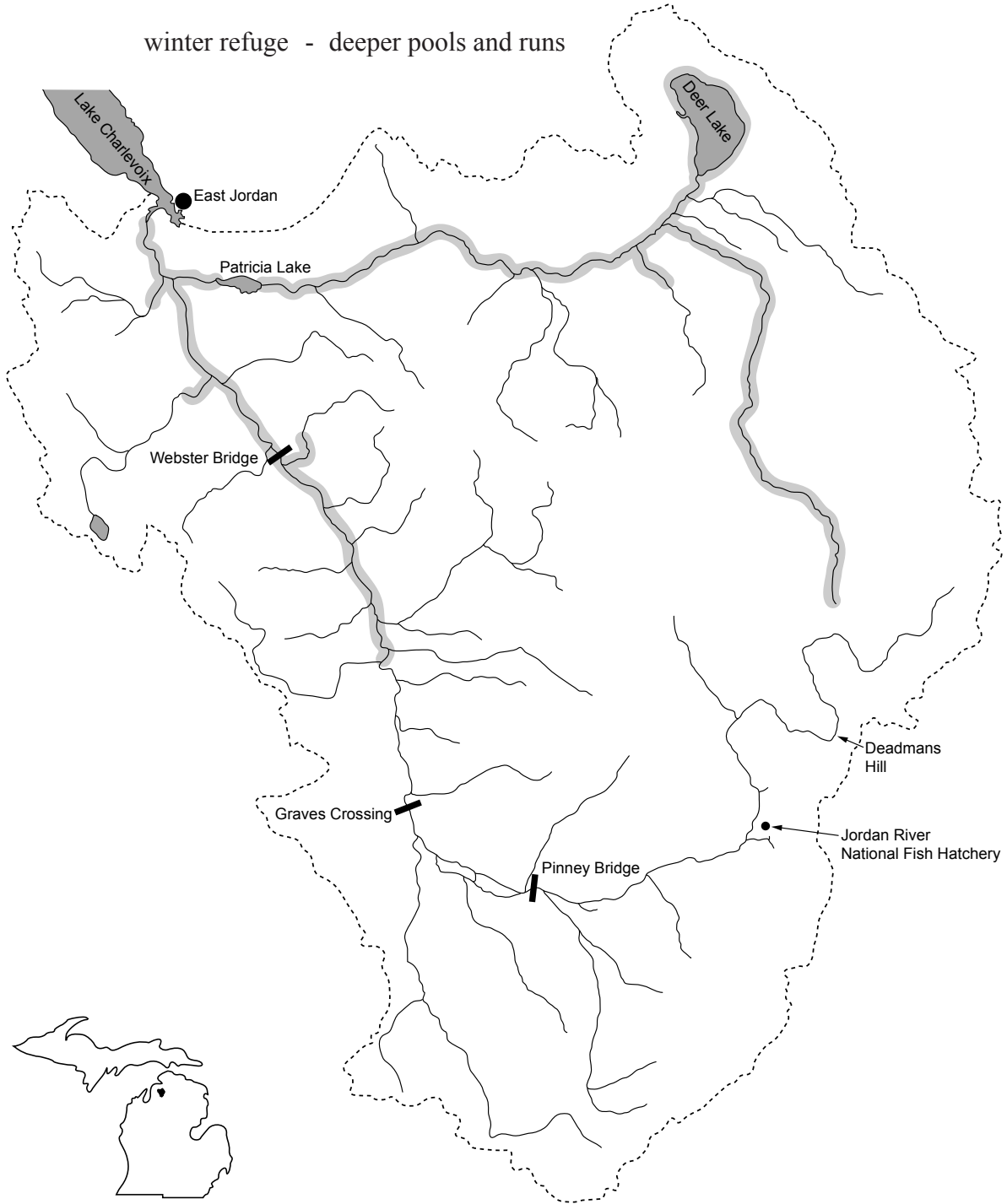
Creek chub (*Semotilus atromaculatus*)

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

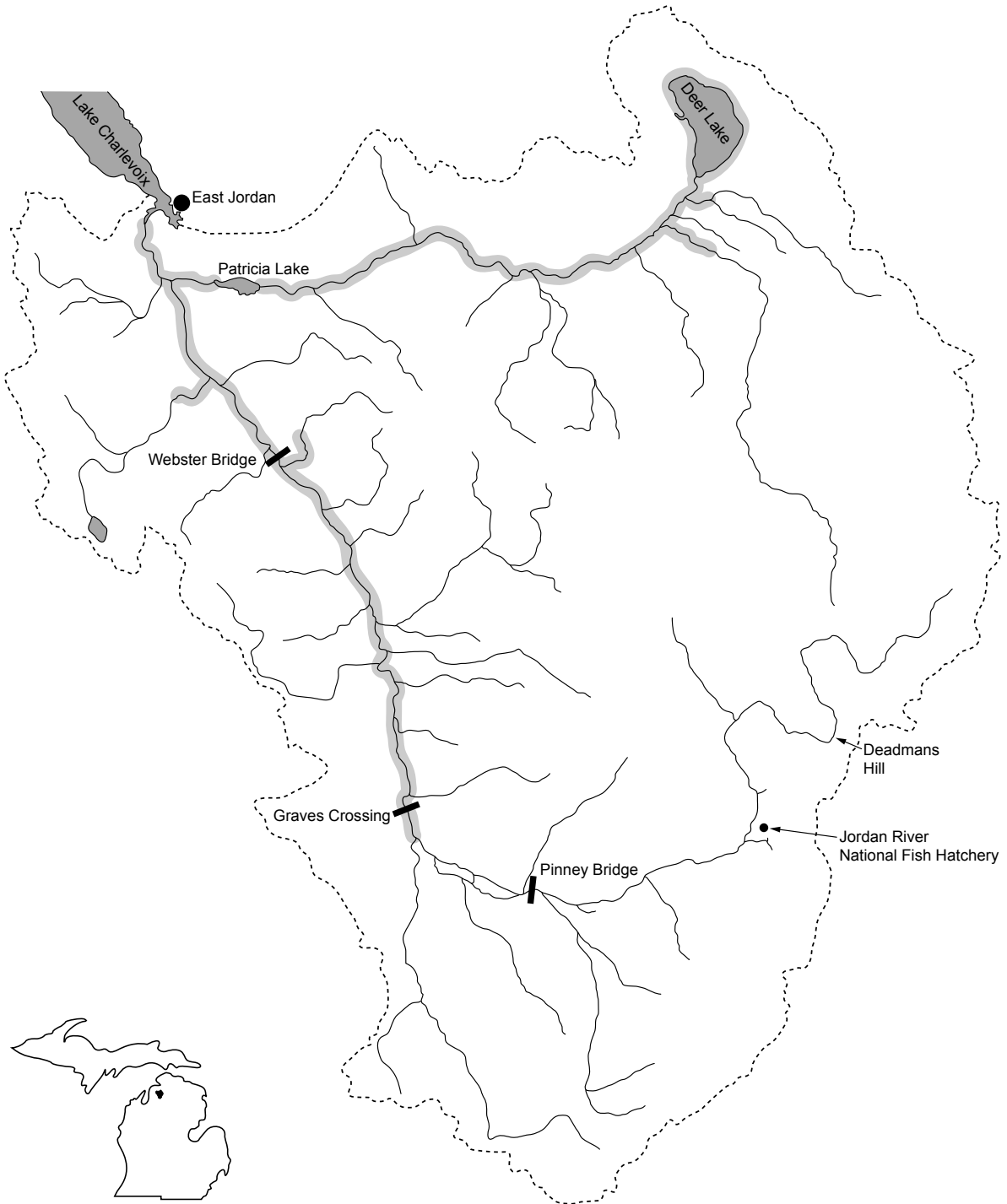


White sucker (*Catostomus commersoni*)

Habitat:

- feeding - streams, rivers, lakes, and impoundments
- can inhabit highly turbid and polluted waters

- spawning - quiet gravelly shallow areas of streams



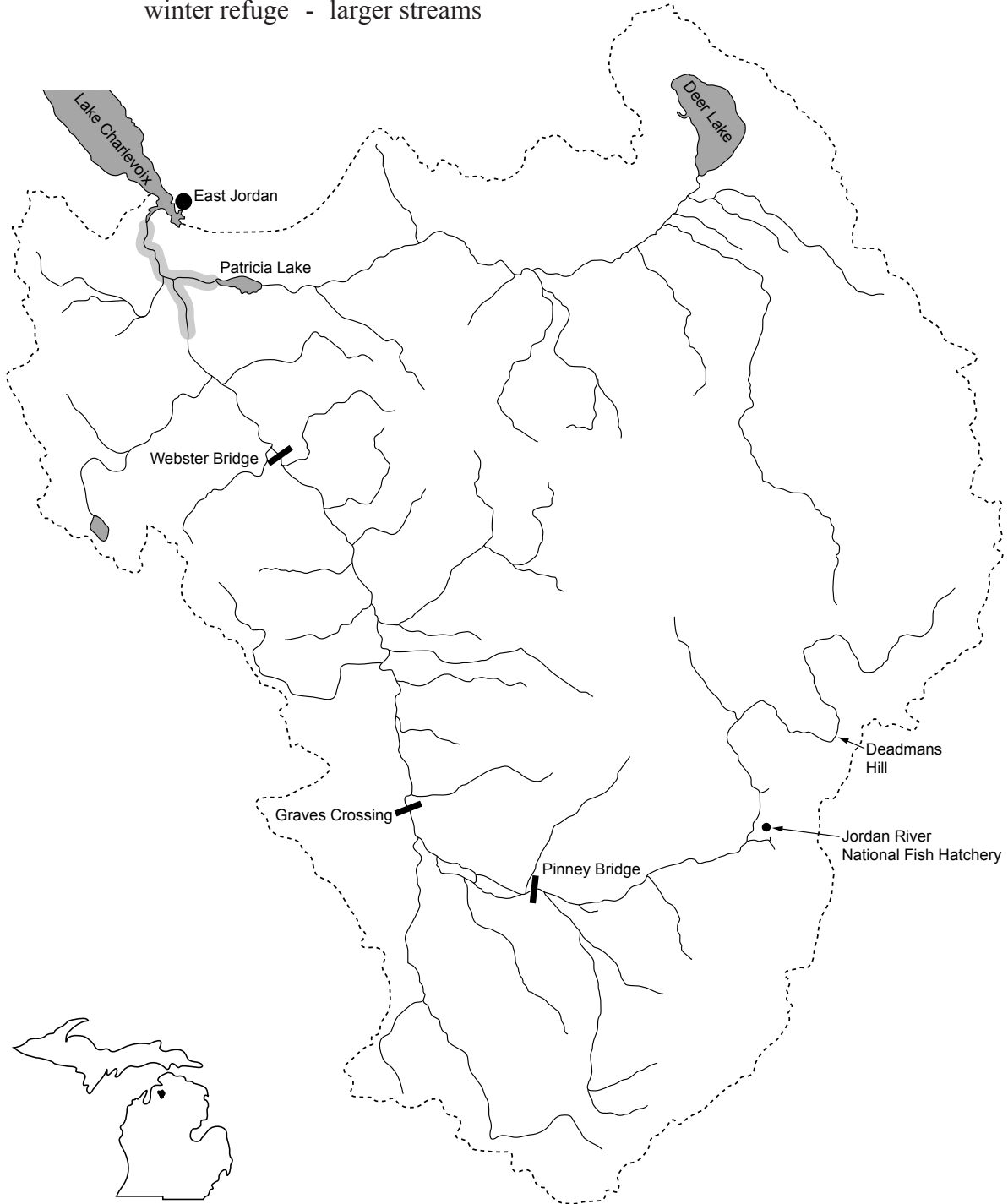
Golden redhorse (*Moxostoma erythrurum*)

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

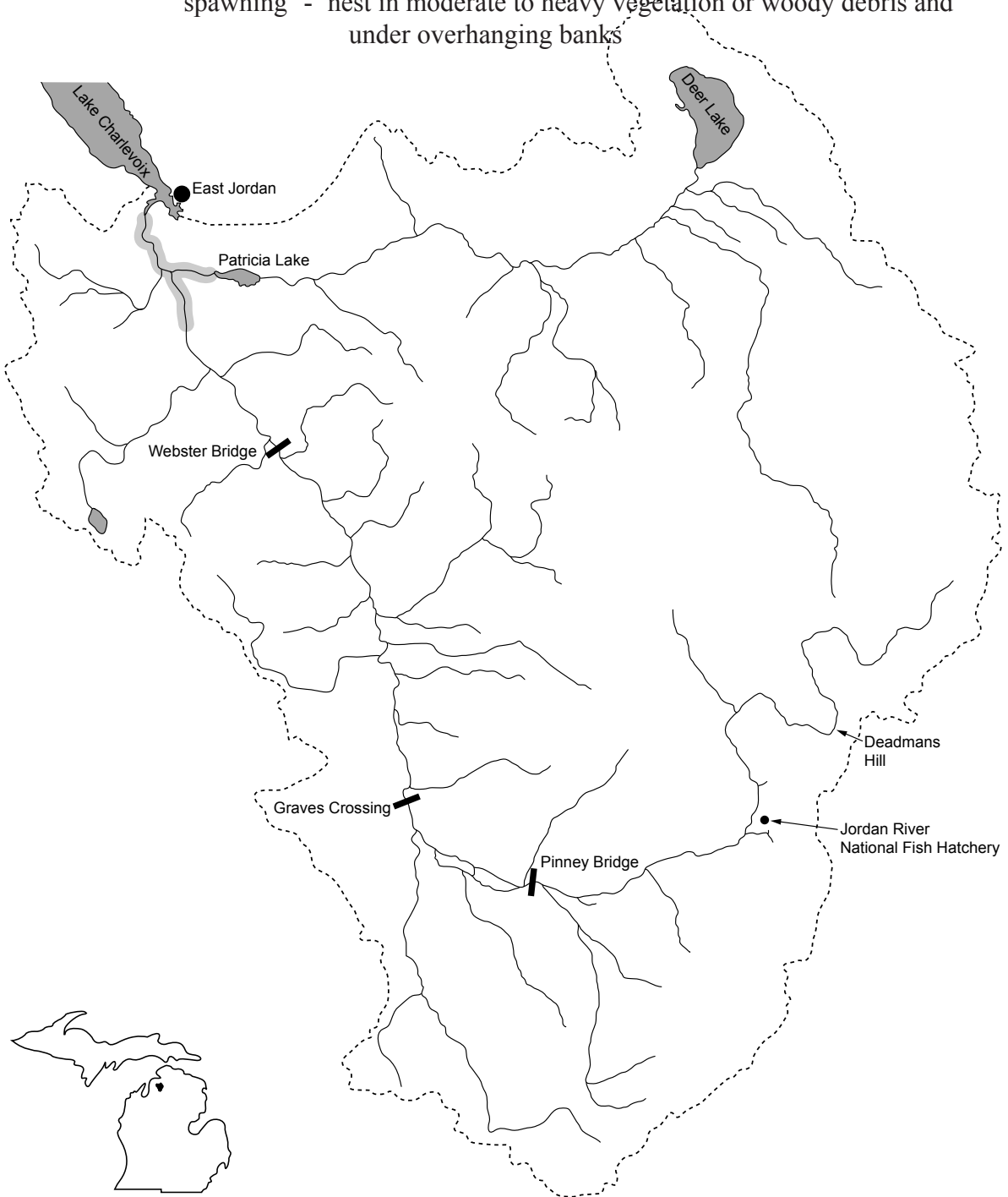
- winter refuge - larger streams



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



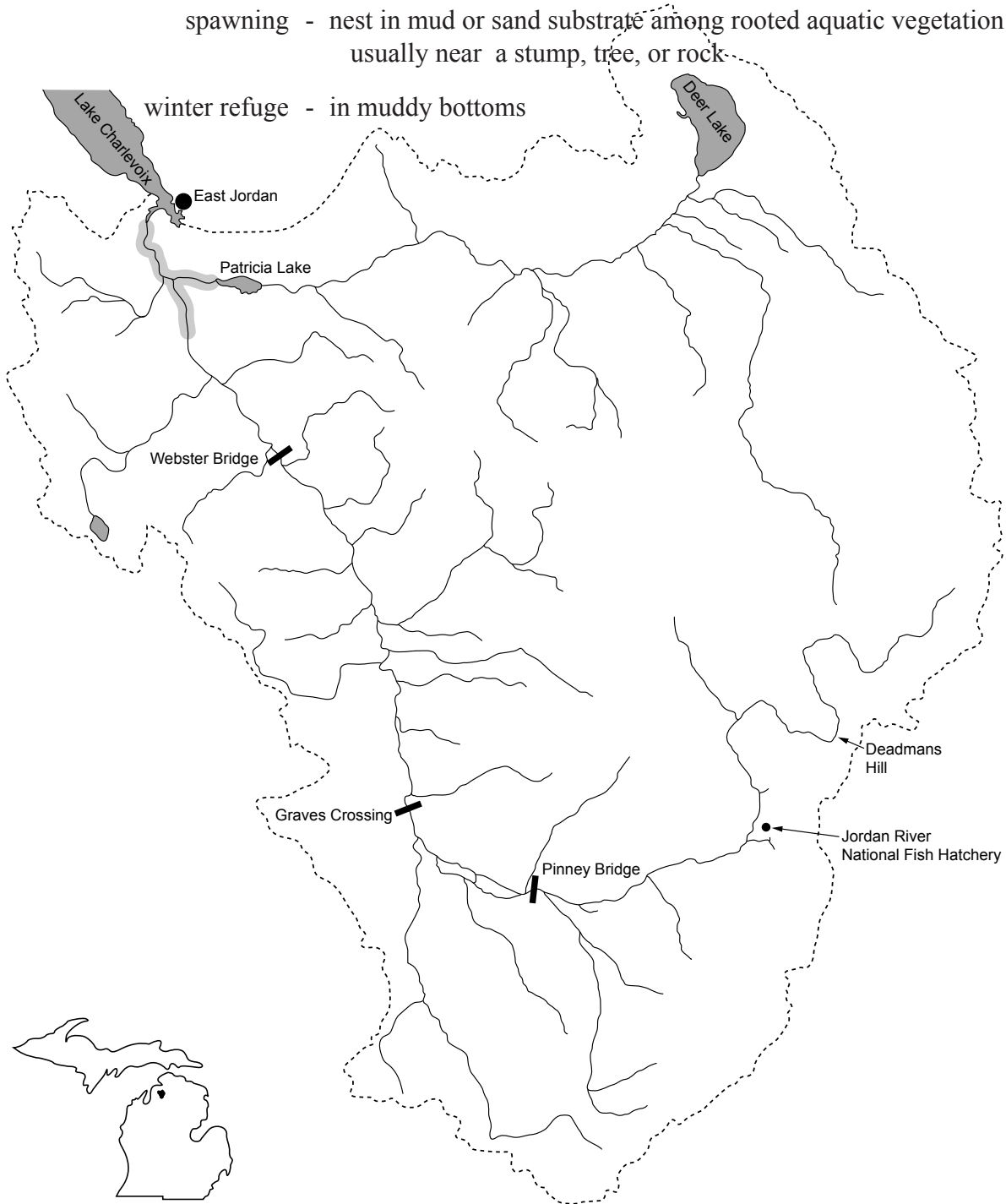
Brown bullhead (*Ameiurus nebulosus*)

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

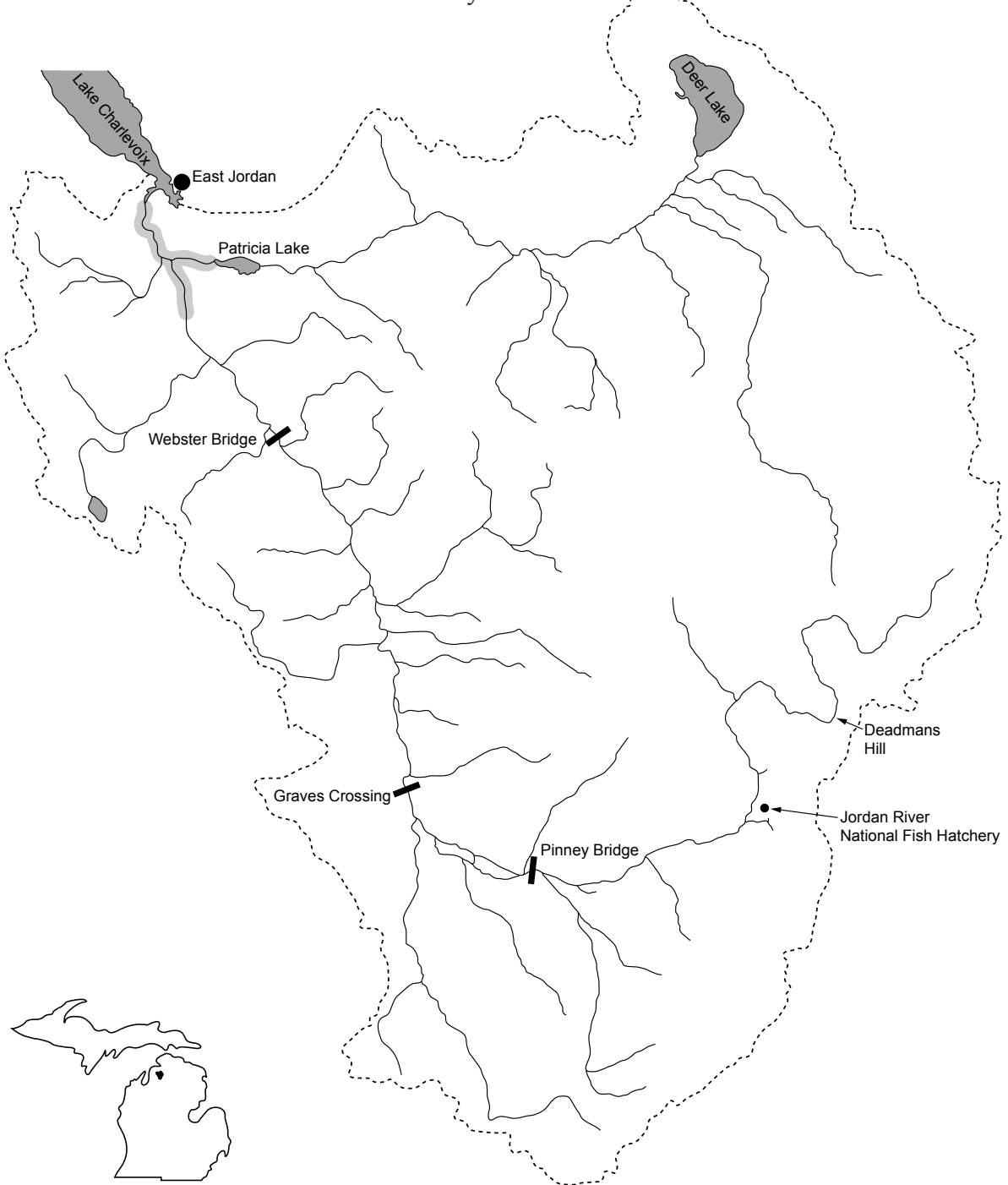


Stonecat (*Noturus flavus*)

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

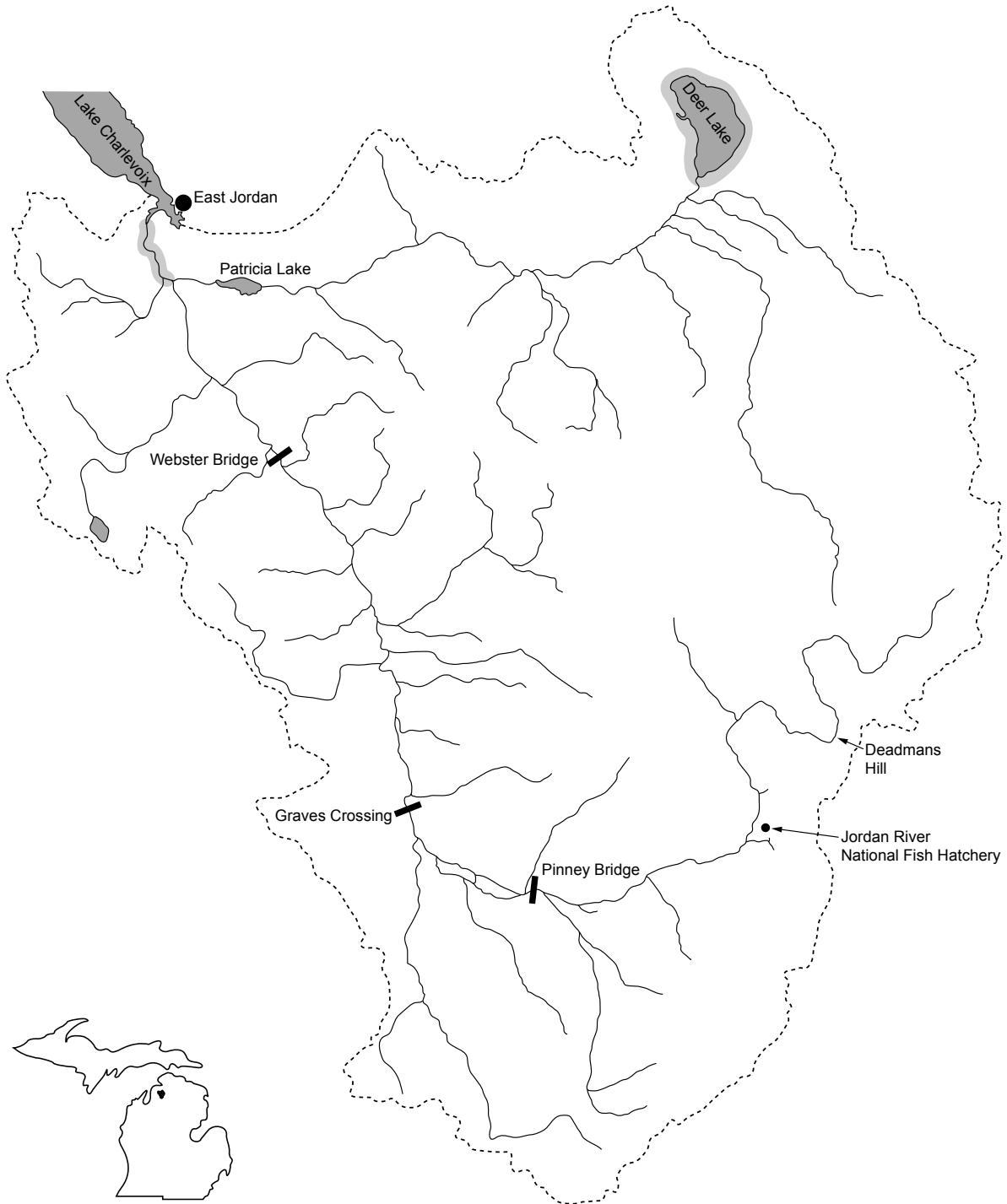
- spawning - eggs deposited beneath stones
- shallow rocky areas of streams or lakes



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

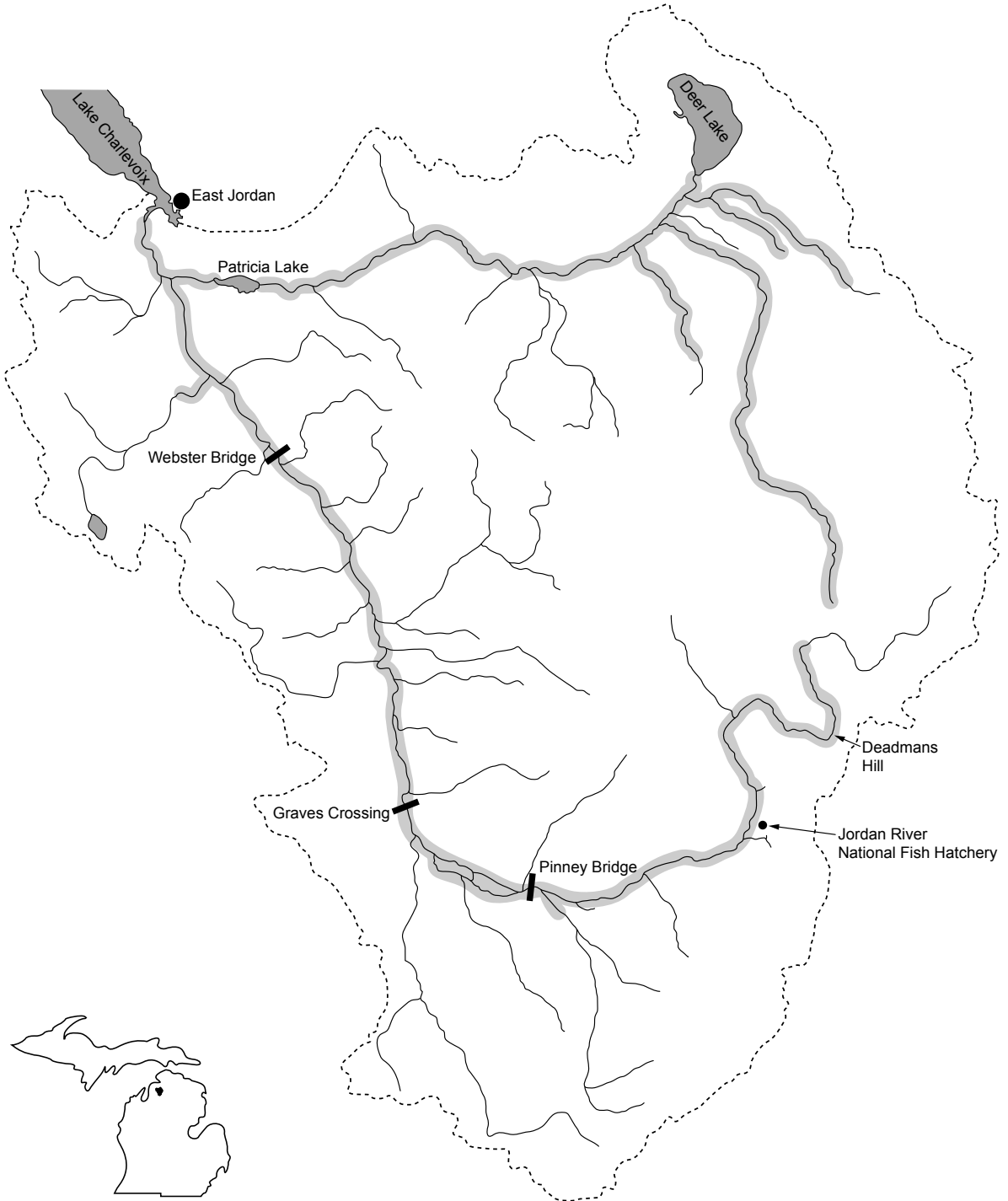


Central mudminnow (*Umbra limi*)

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



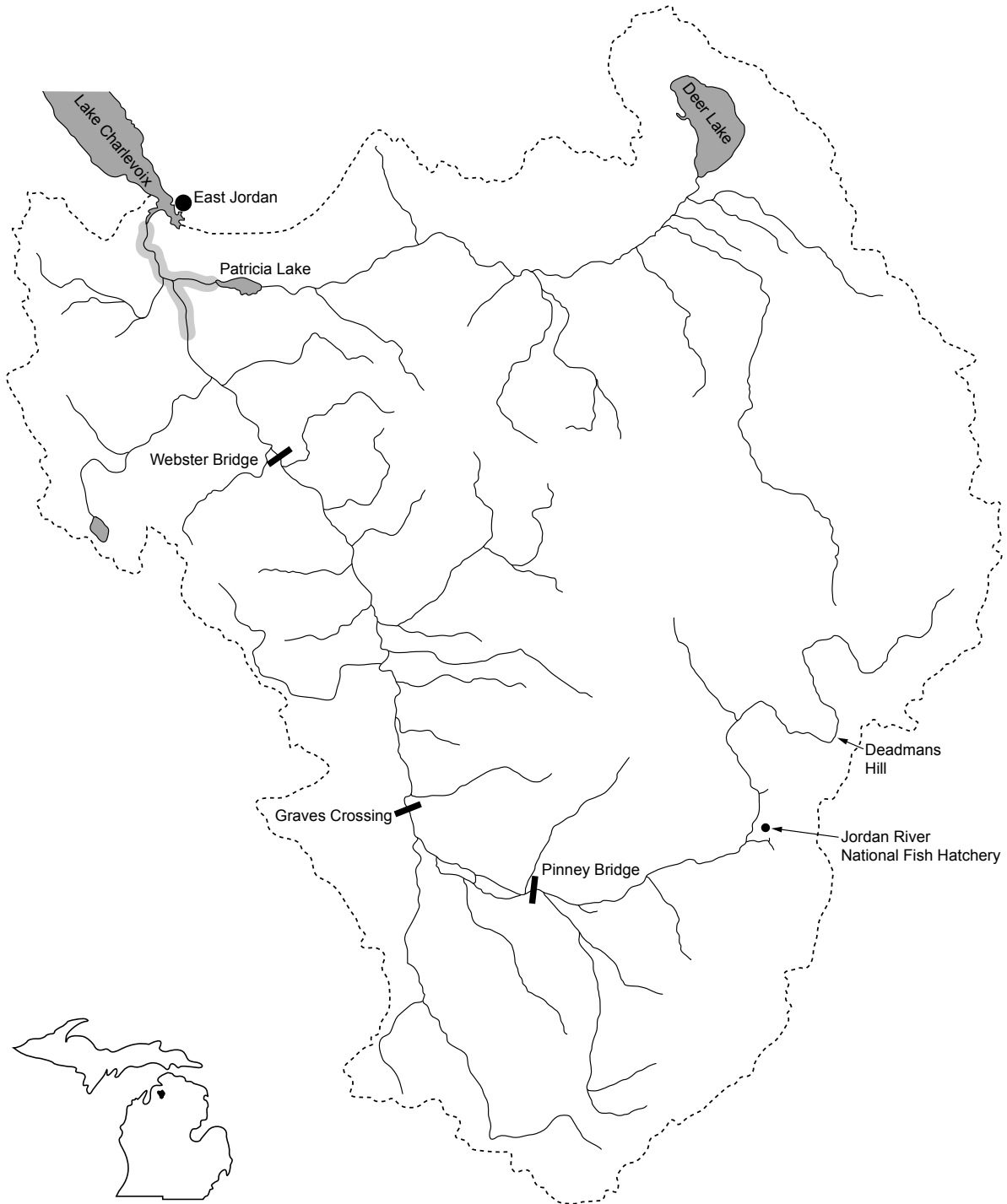
Rainbow smelt (*Osmerus mordax*)

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

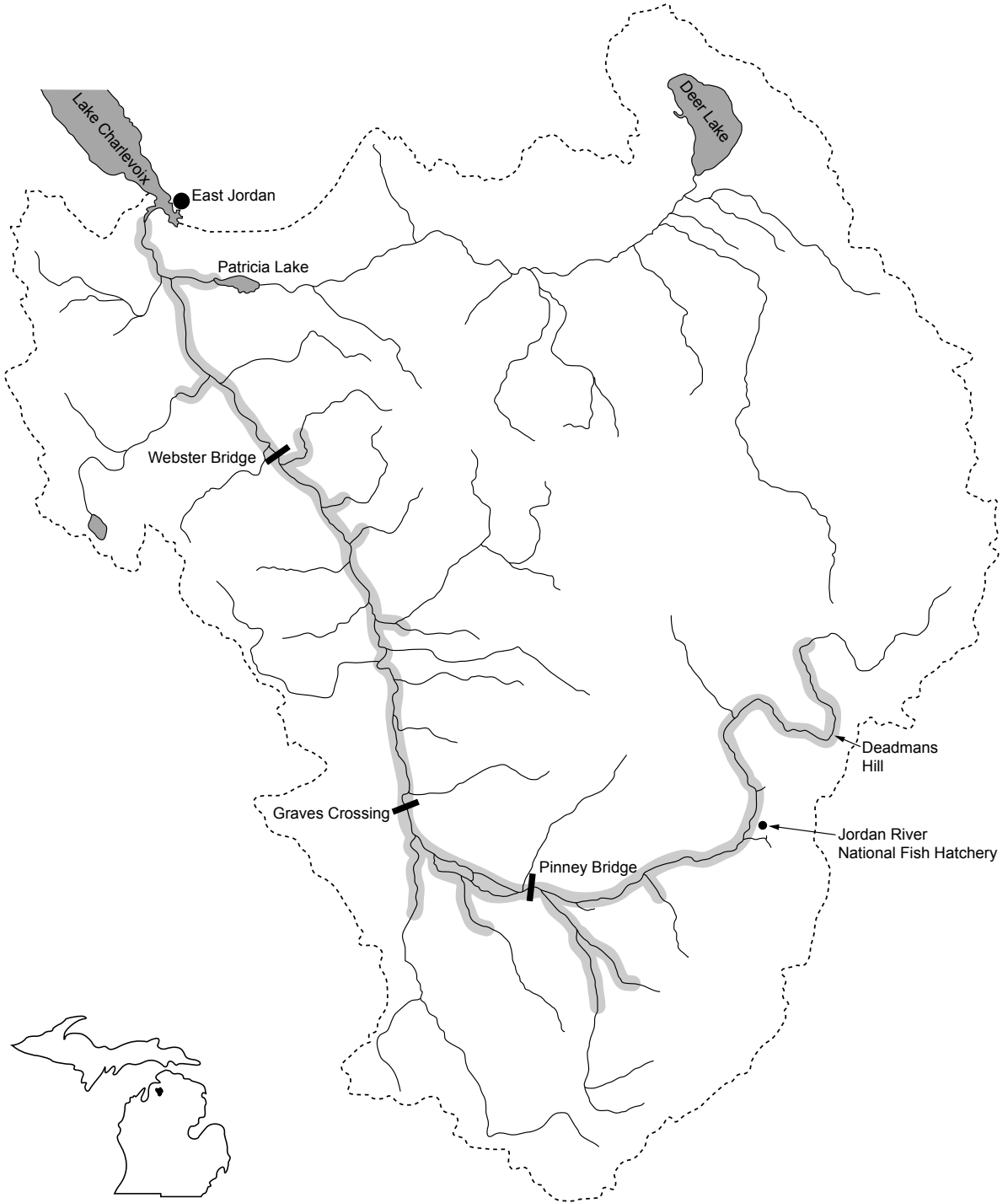


Coho salmon (*Oncorhynchus kisutch*)

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

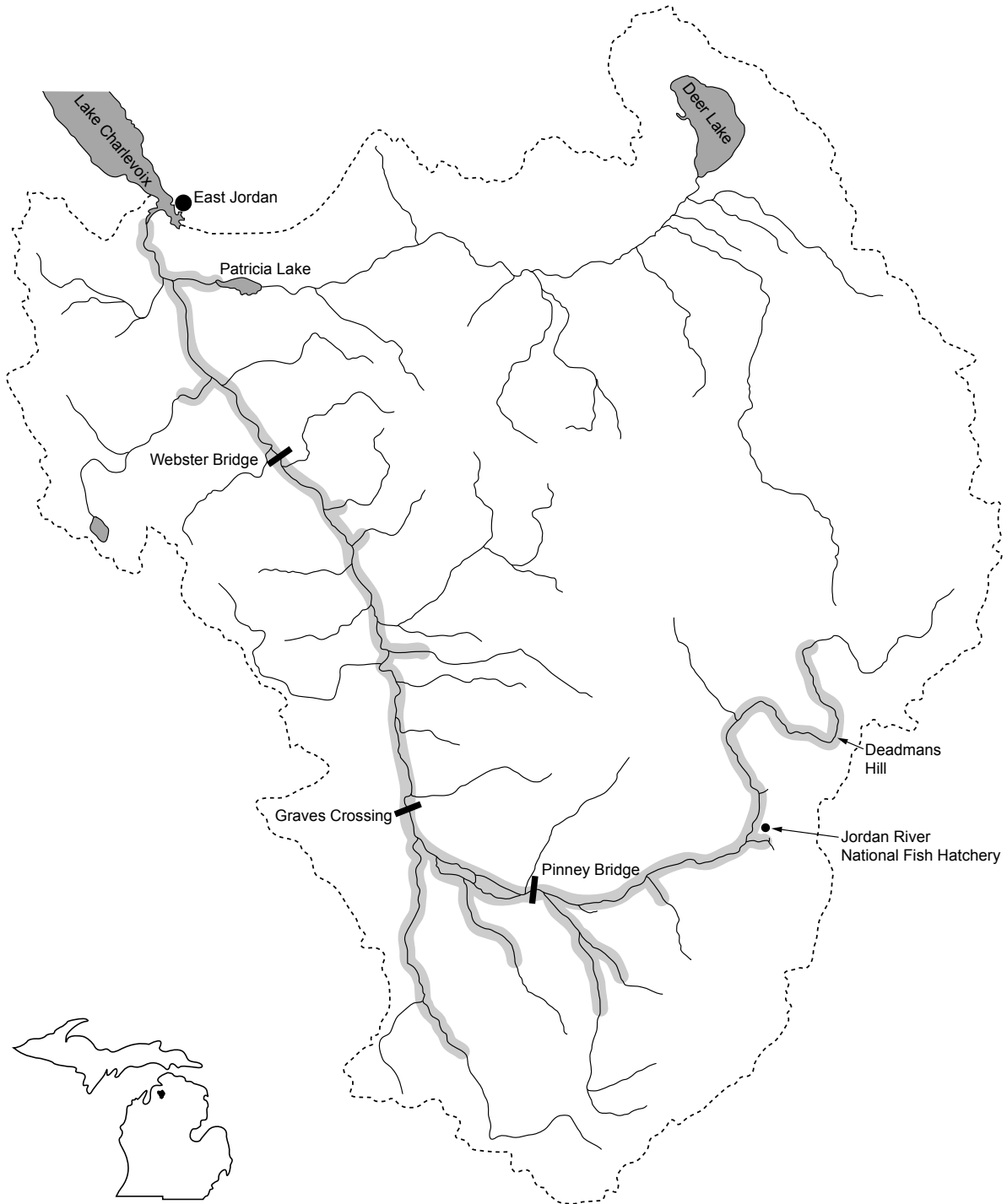


Rainbow trout (*Oncorhynchus mykiss*)

Habitat:

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

- spawning - gravelly riffles above a pool
- smaller tributaries

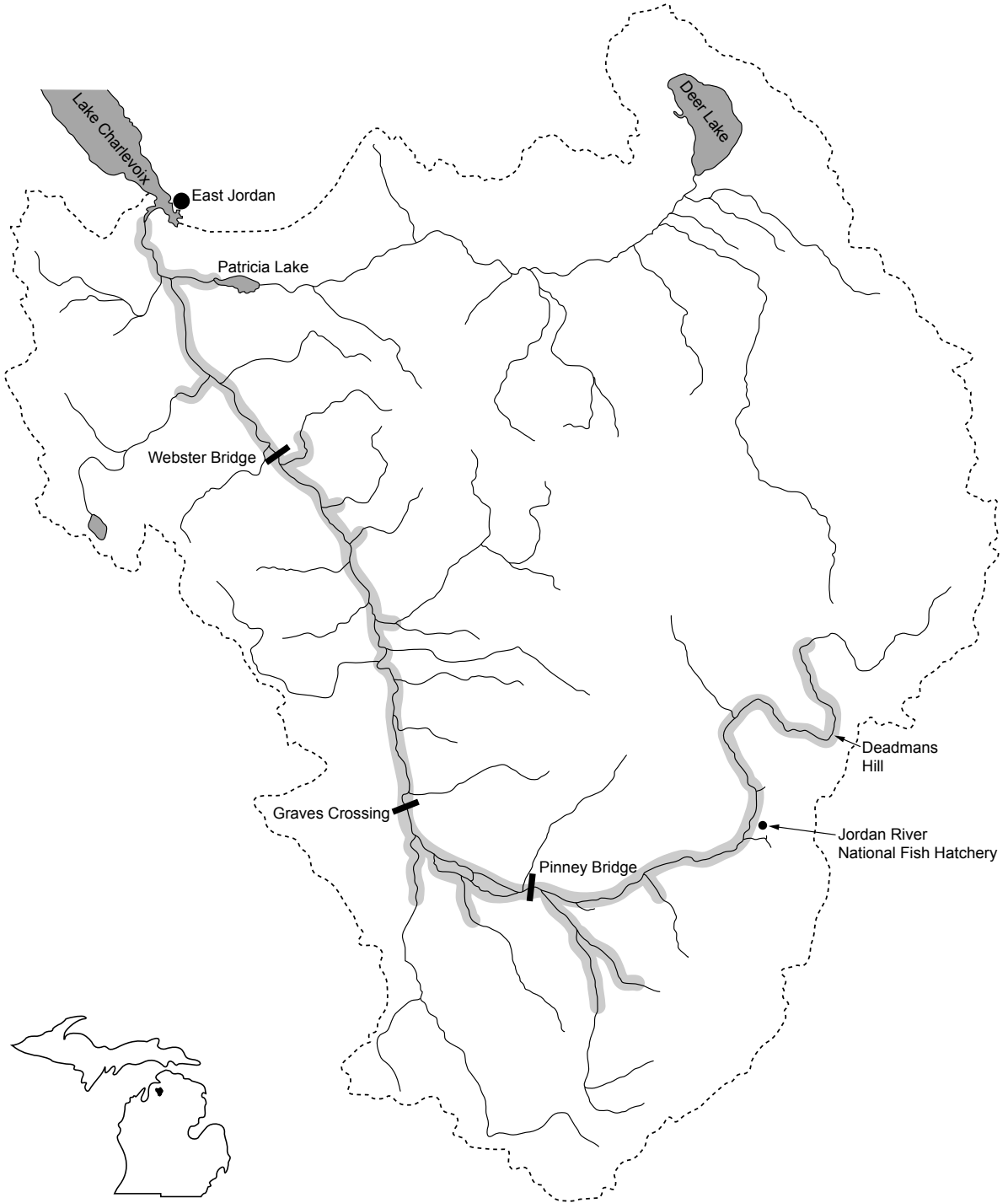


Chinook salmon (*Oncorhynchus tshawytscha*)

Habitat:

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

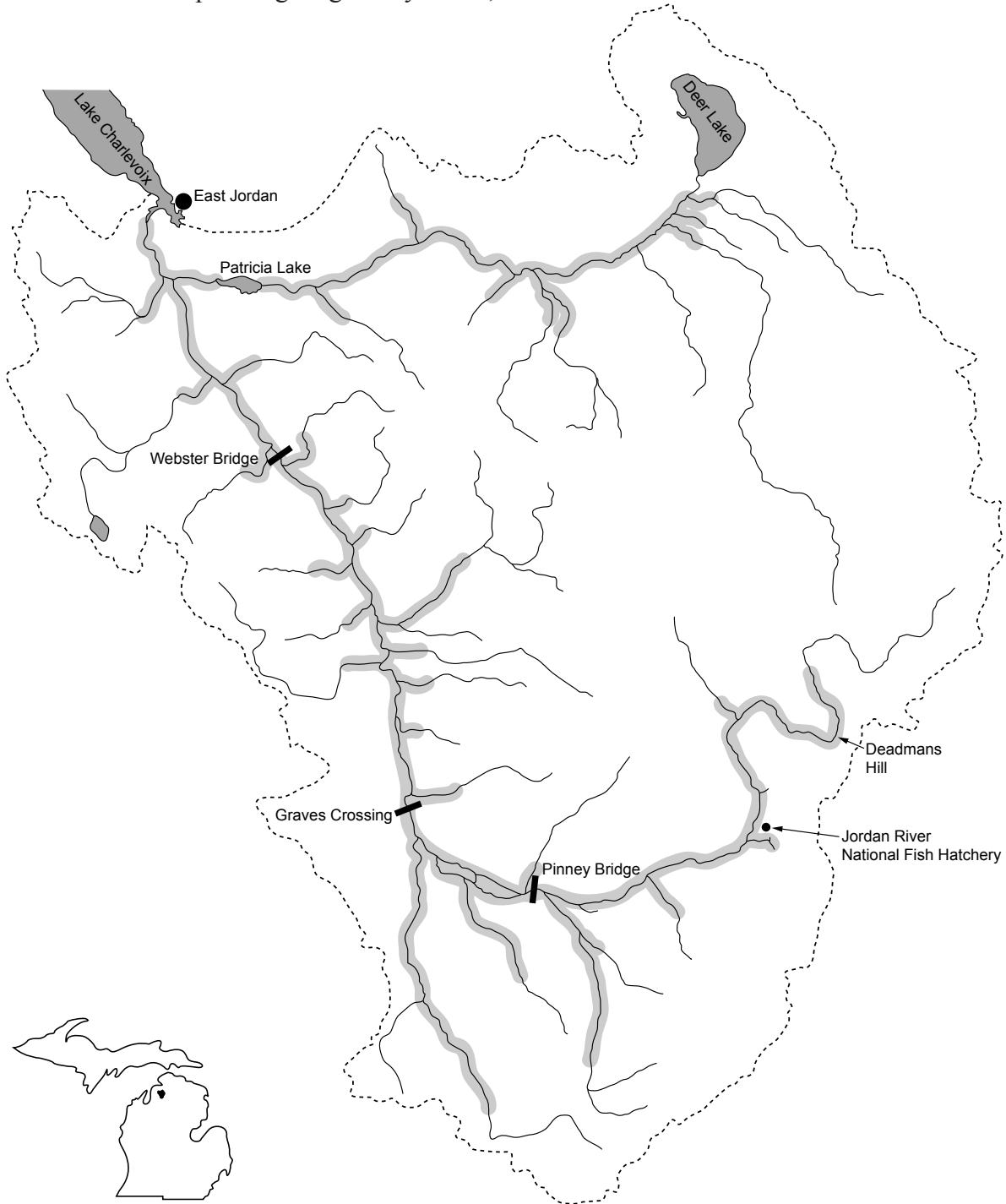
- spawning - gravelly substrate in cool streams



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

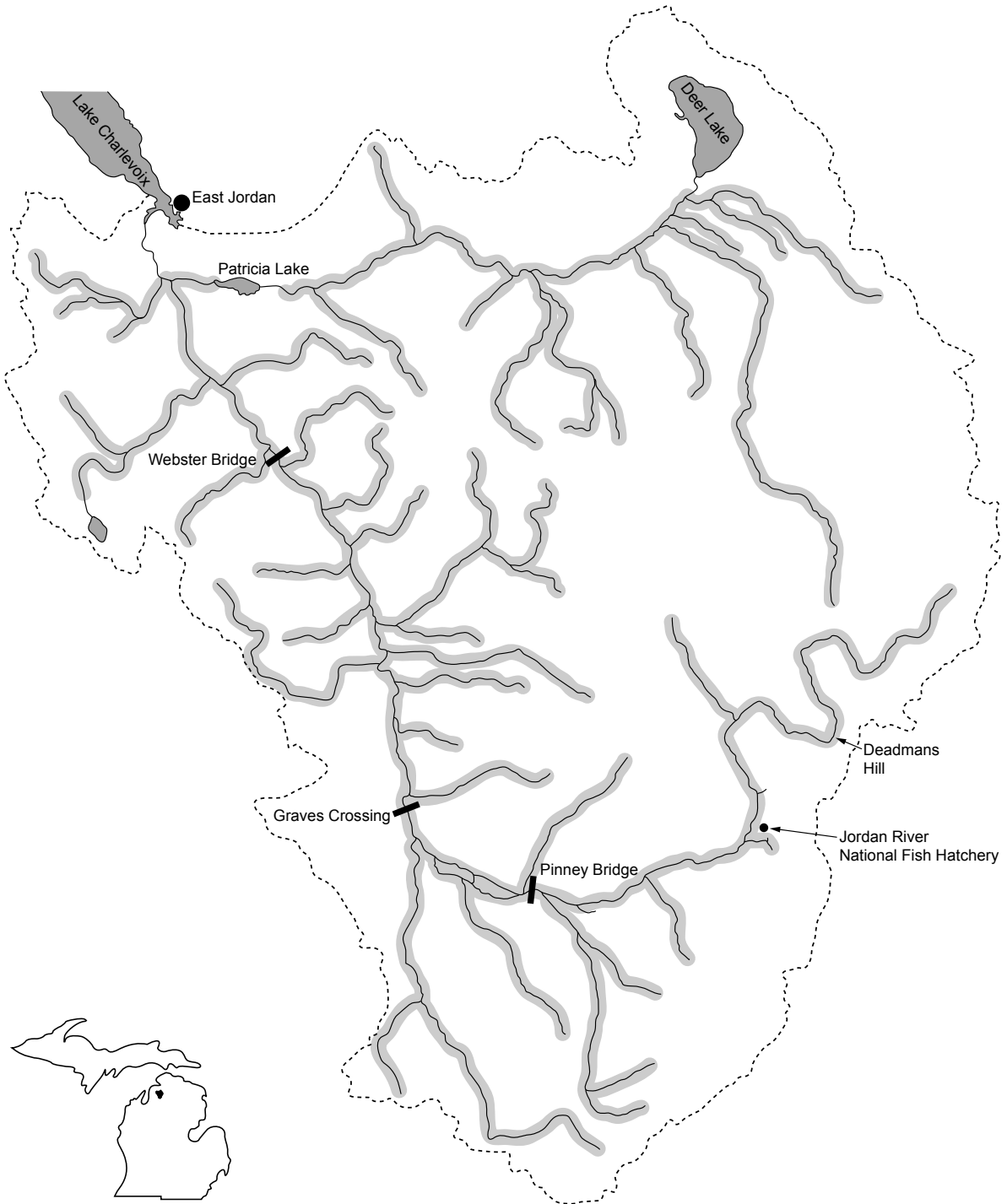


Brook trout (*Salvelinus fontinalis*)

Habitat:

- feeding - cold, clear streams, rivers, and lakes (not >65°F)
- low current
- well oxygenated water

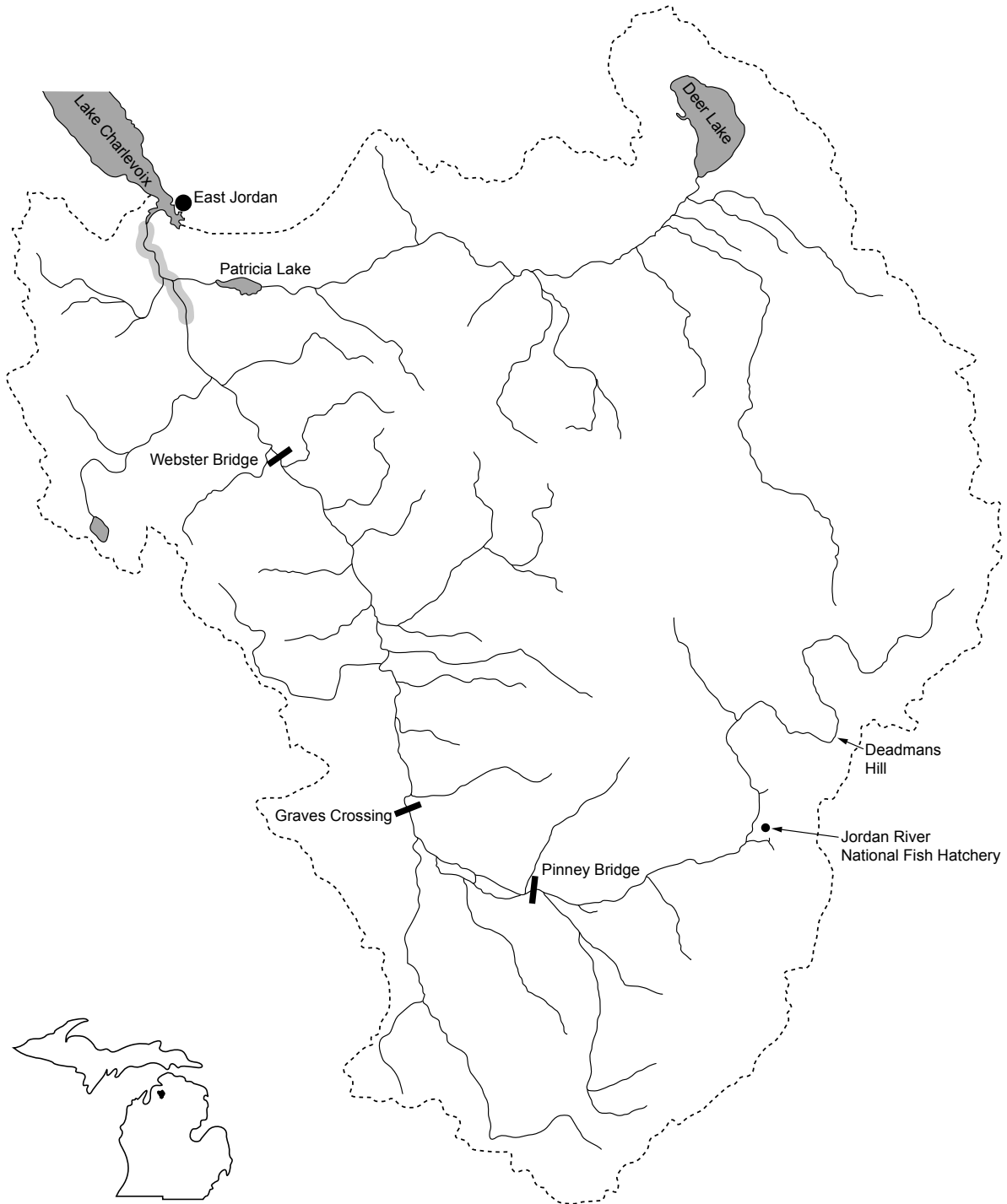
- spawning - gravelly riffles; shallow or headwater streams



Lake trout (*Salvelinus namaycush*)

Habitat:

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

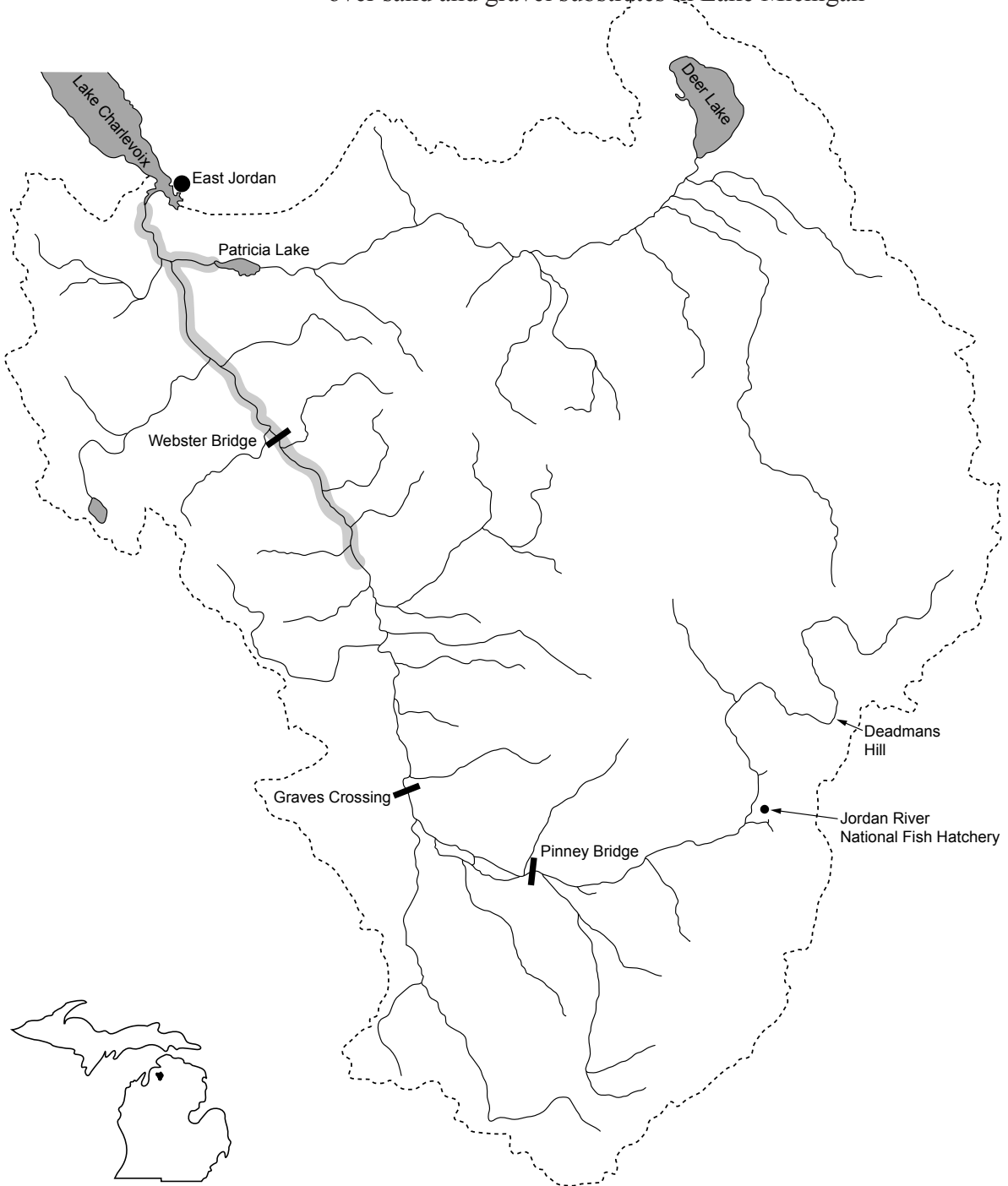


Trout-perch (*Percopsis omiscomaycus*)

Habitat:

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

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

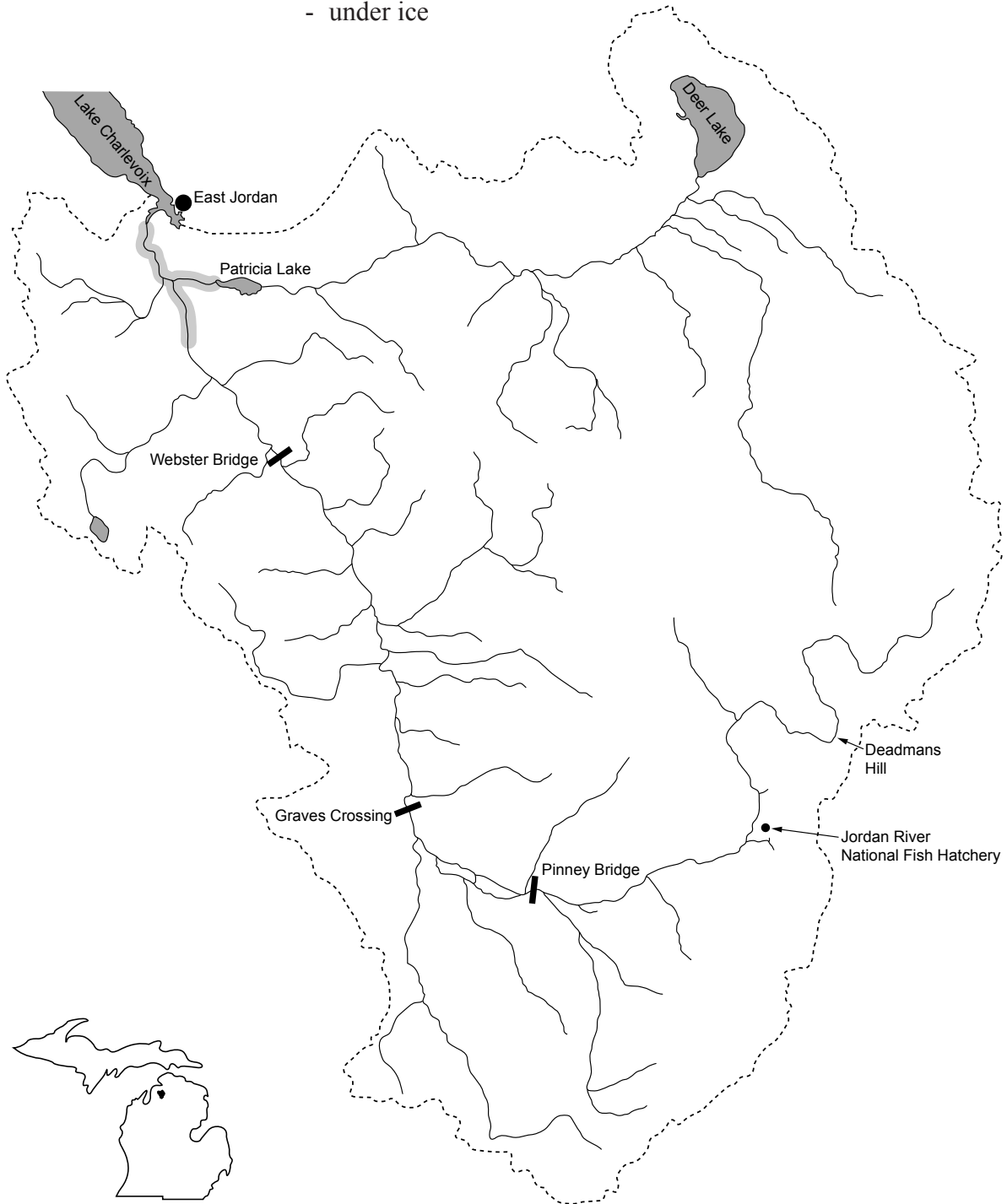


Burbot (*Lota lota*)

Habitat:

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

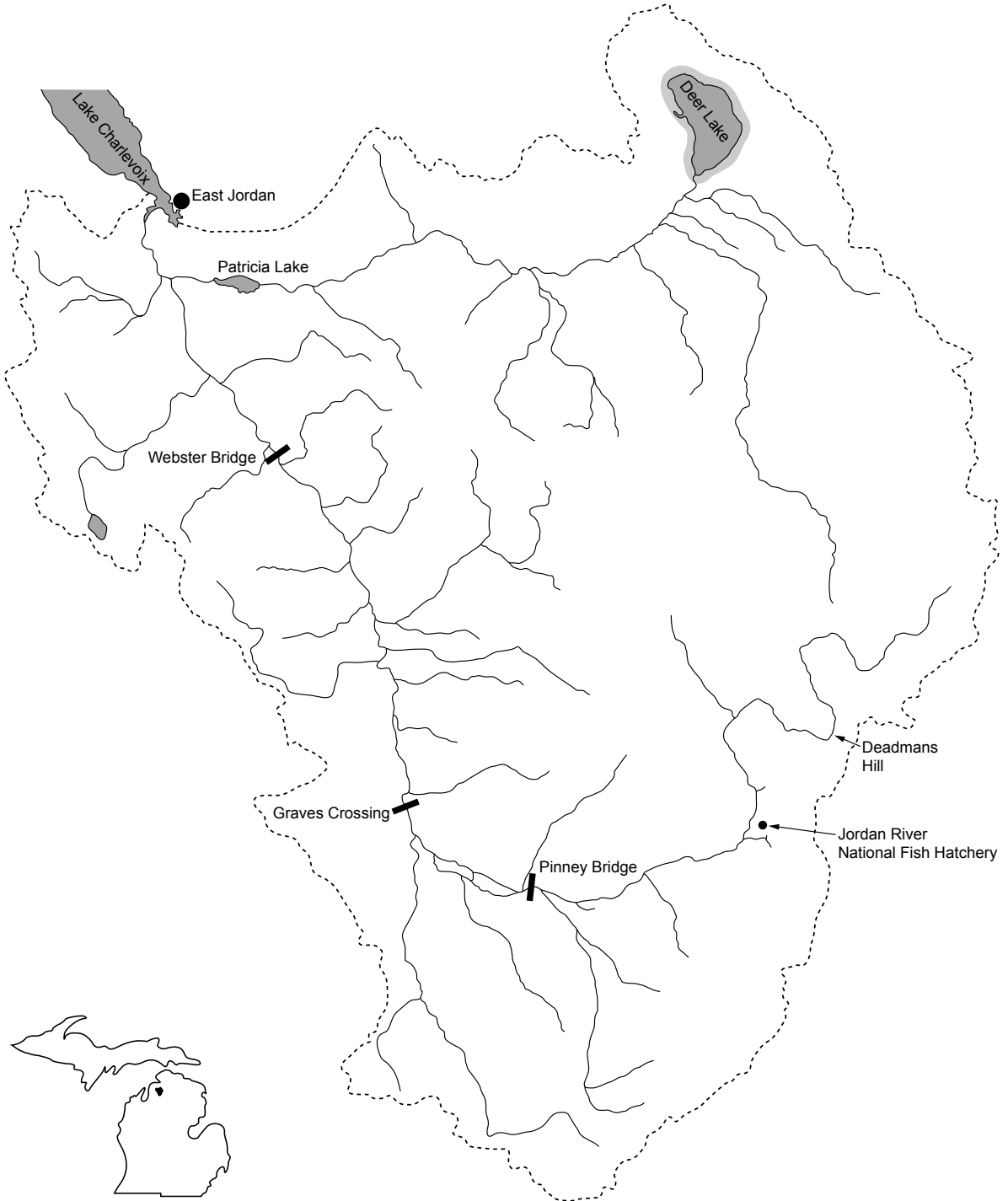
- spawning - in 1 to 4 feet of water in shallow bays or on shoals 5-10 feet deep usually in lakes,sometimes rivers
- over sand or gravel substrate
- under ice



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 stickleback (*Clupea inconstans*)

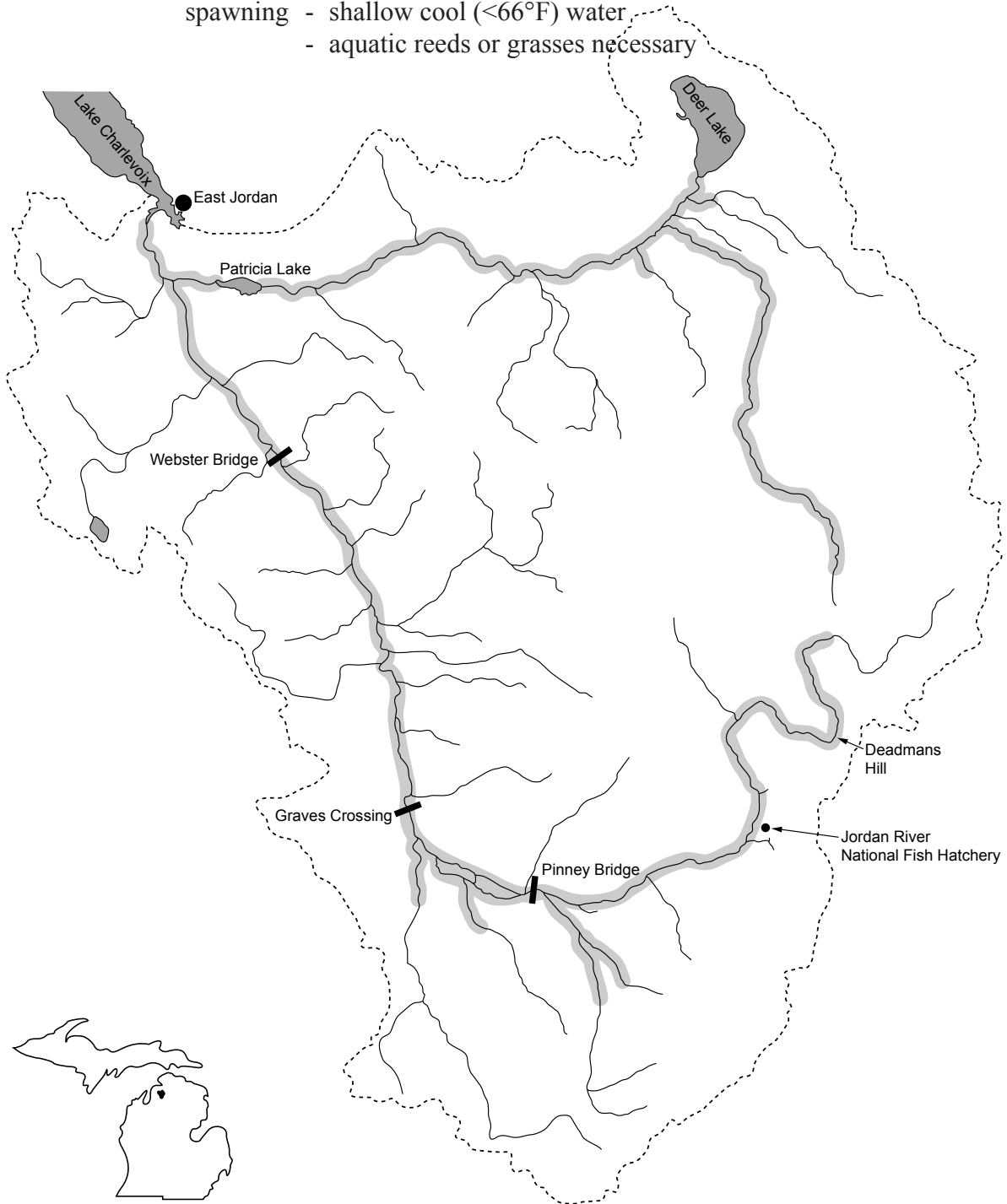
Habitat:

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

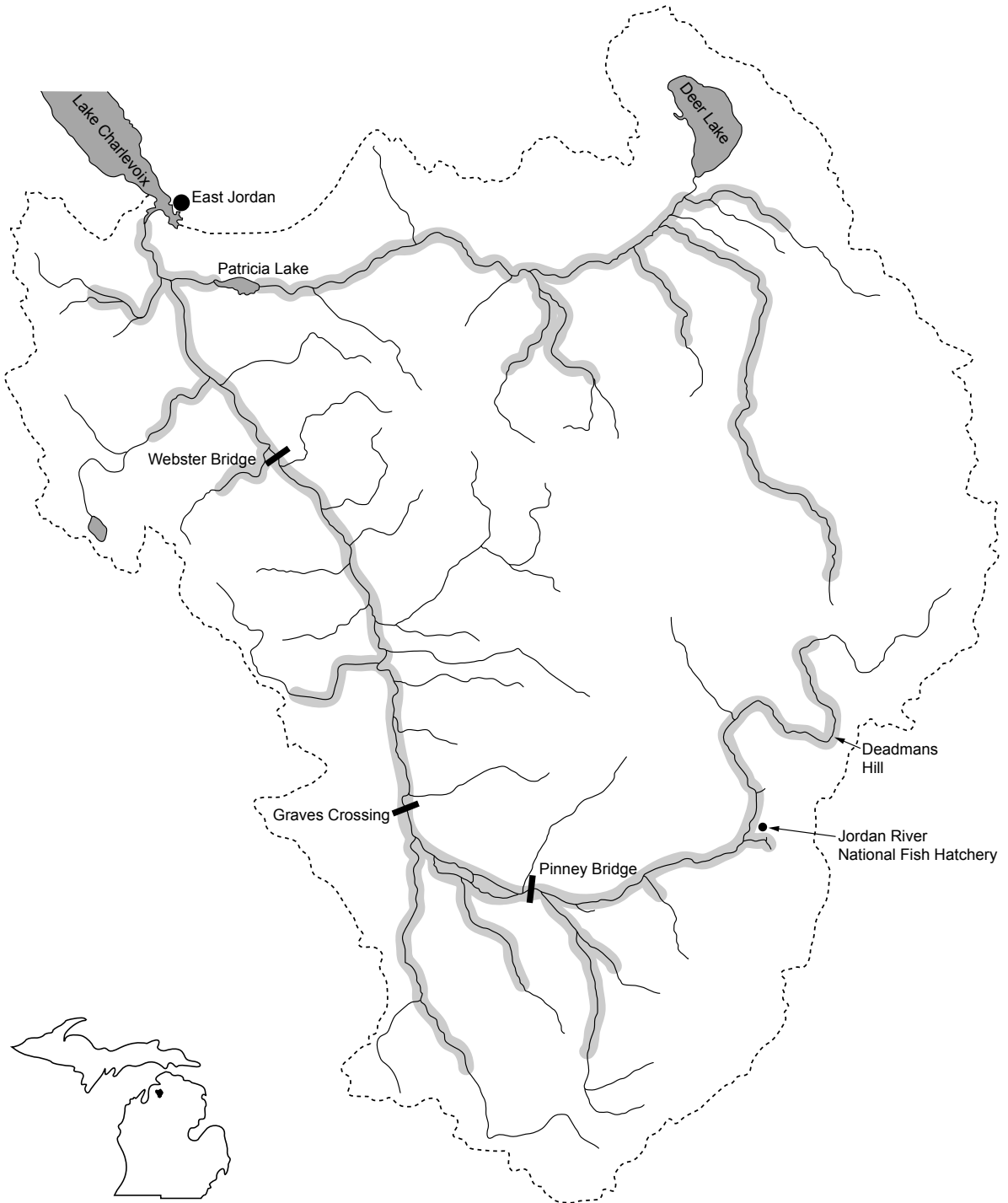
- aquatic reeds or grasses necessary



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

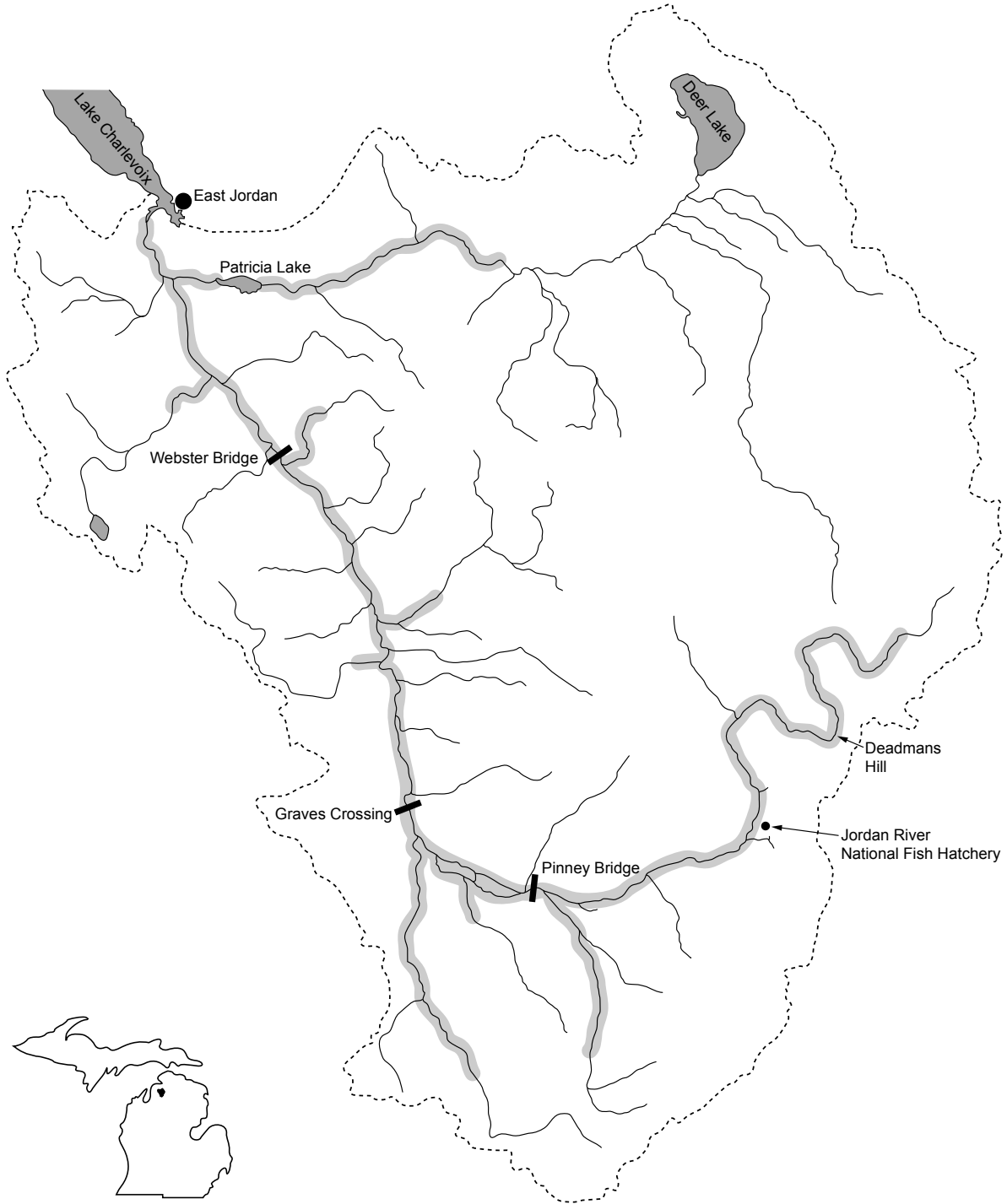


Slimy sculpin (*Cottus cognatus*)

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



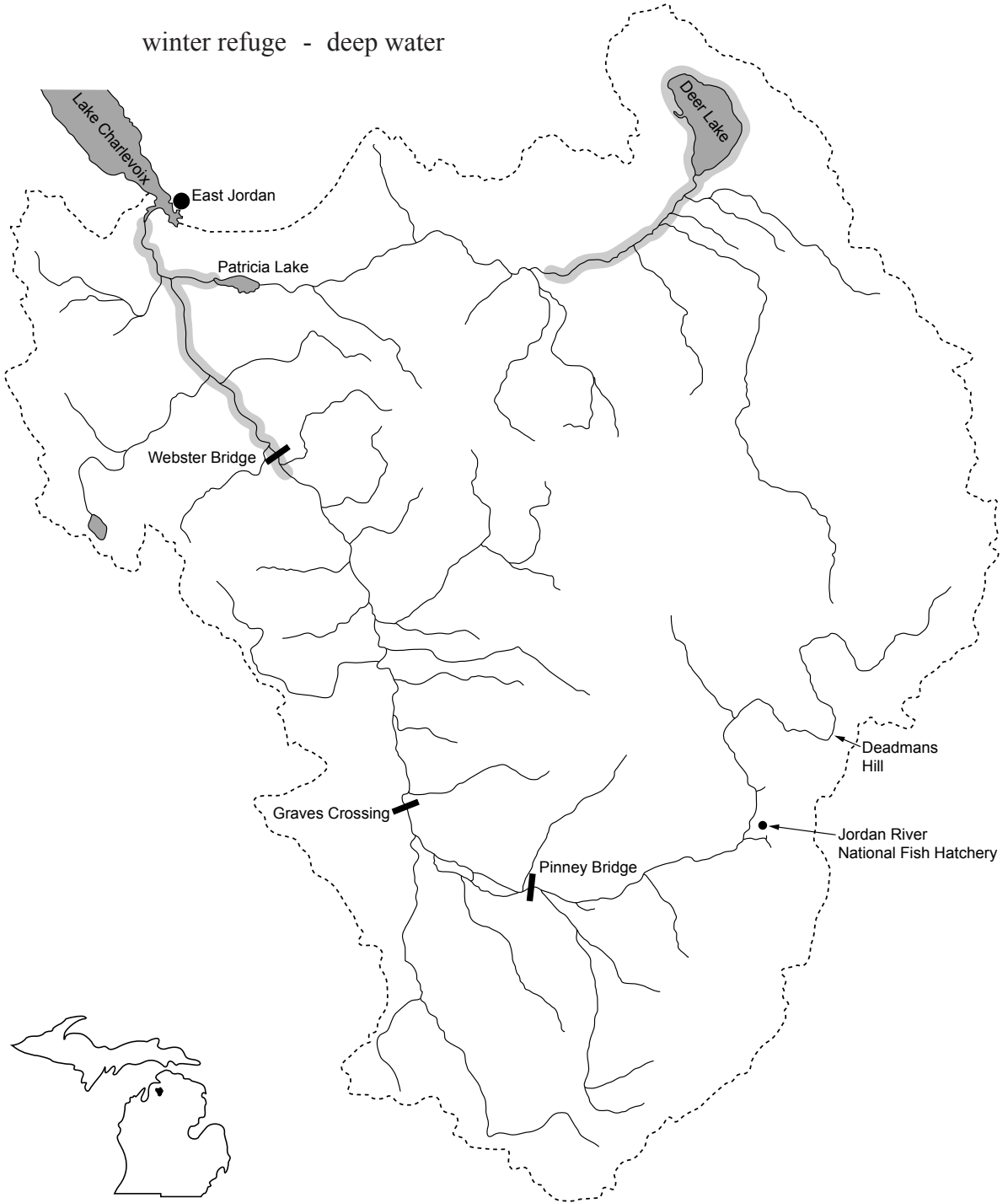
Rock bass (*Ambloplites rupestris*)

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

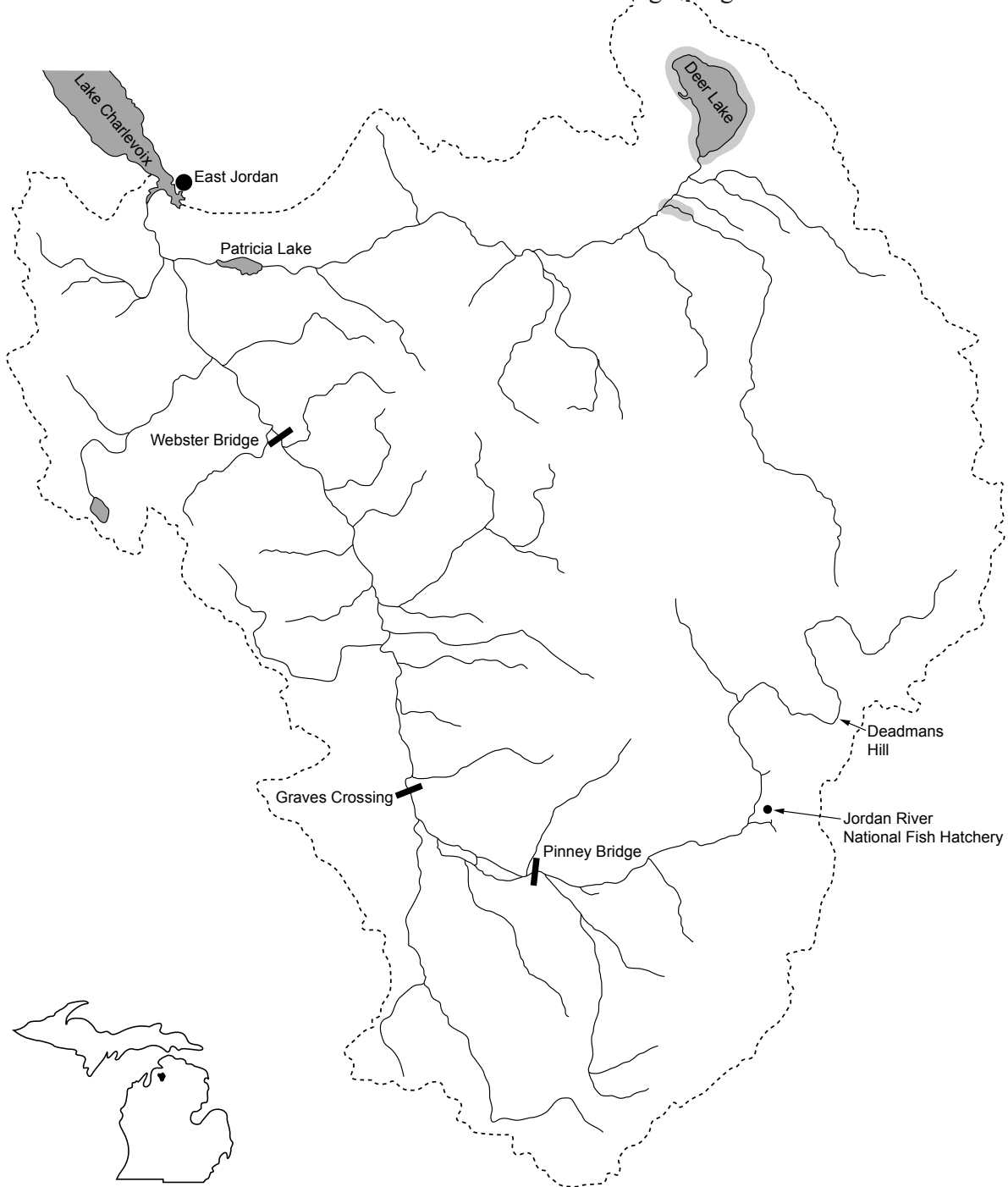


Pumpkinseed sunfish (*Lepomis gibbosus*)

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



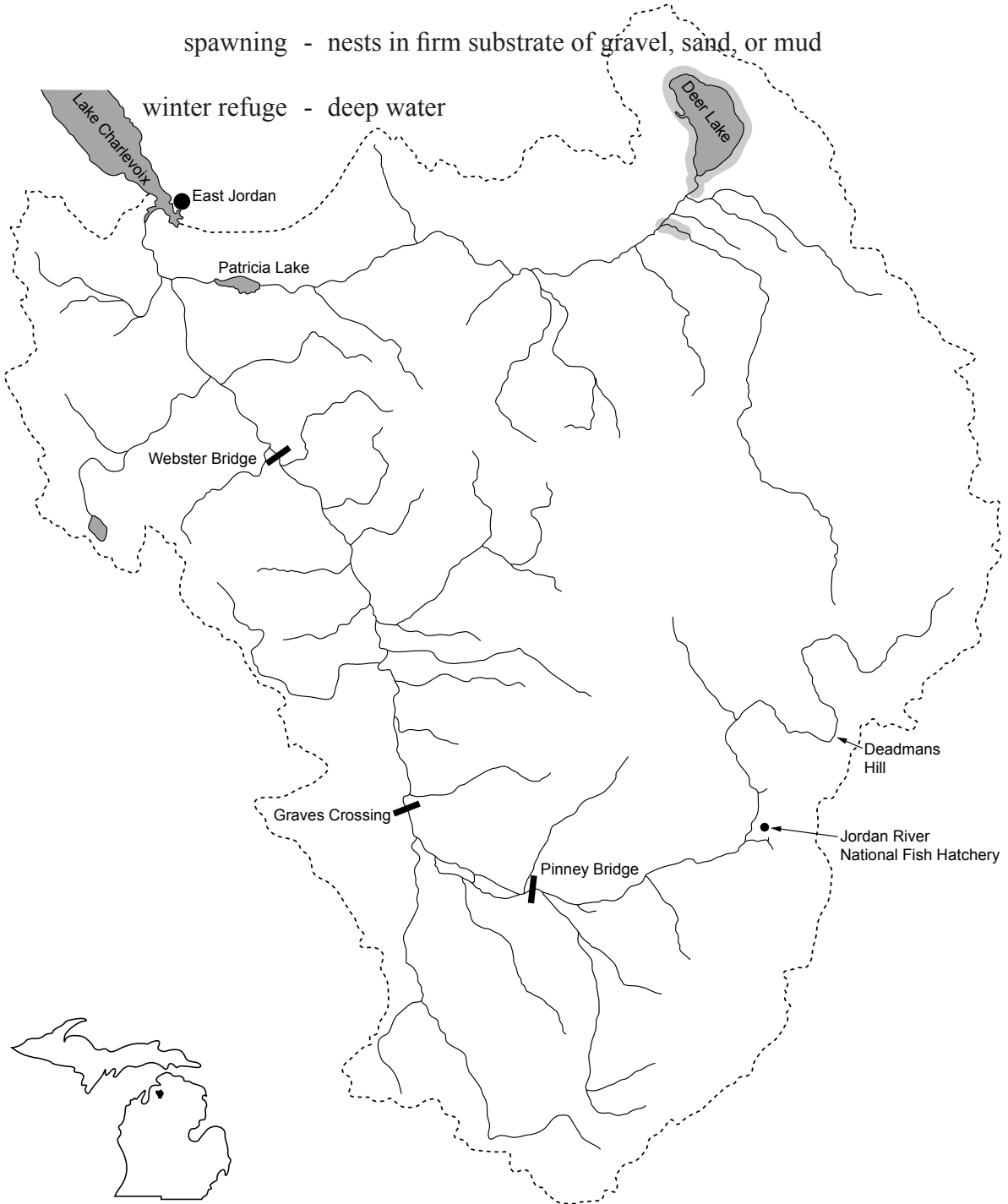
Bluegill (*Lepomis macrochirus*)

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

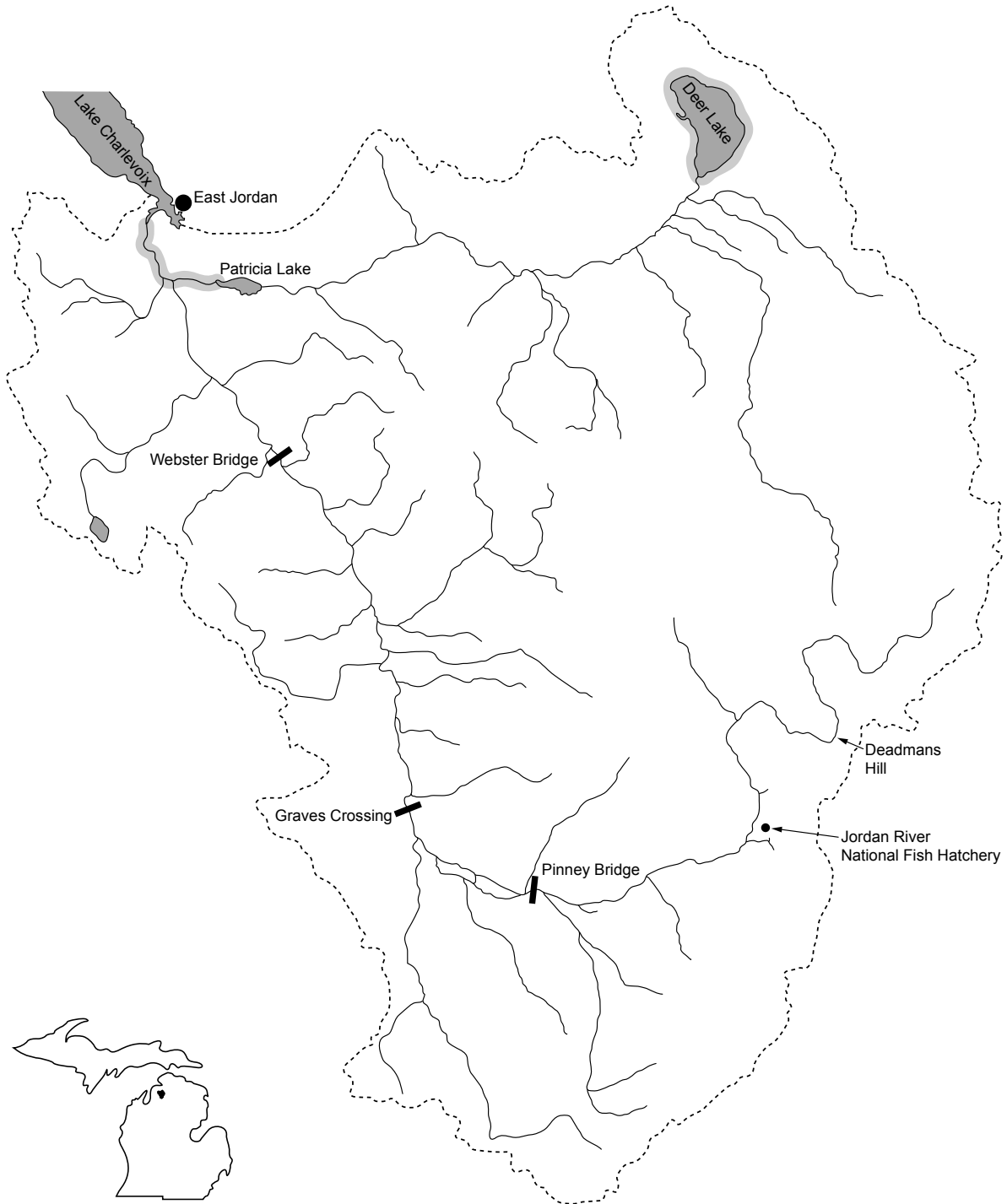


Longear sunfish (*Lepomis megalotis*)

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



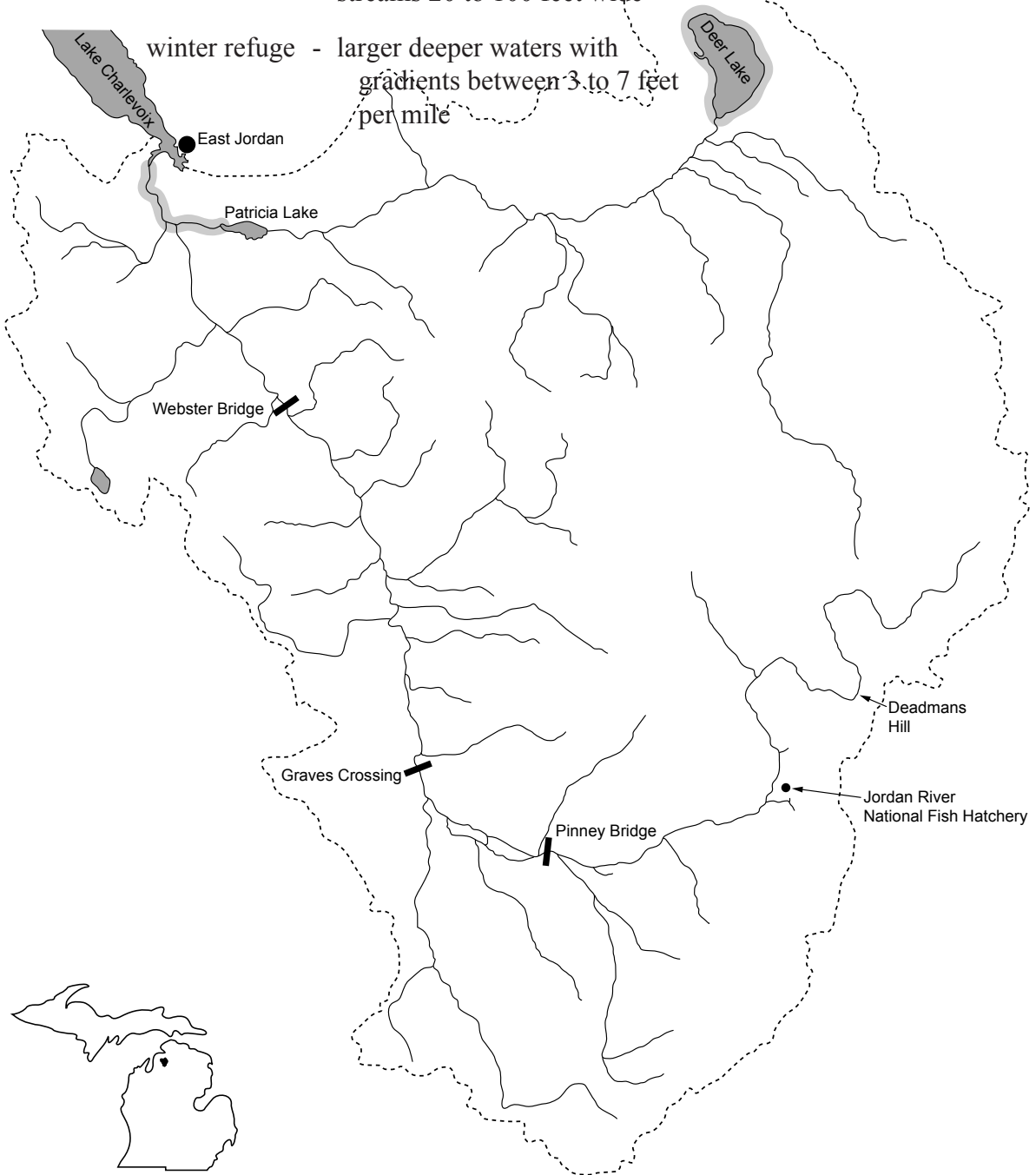
Smallmouth bass (*Micropterus dolomieu*)

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

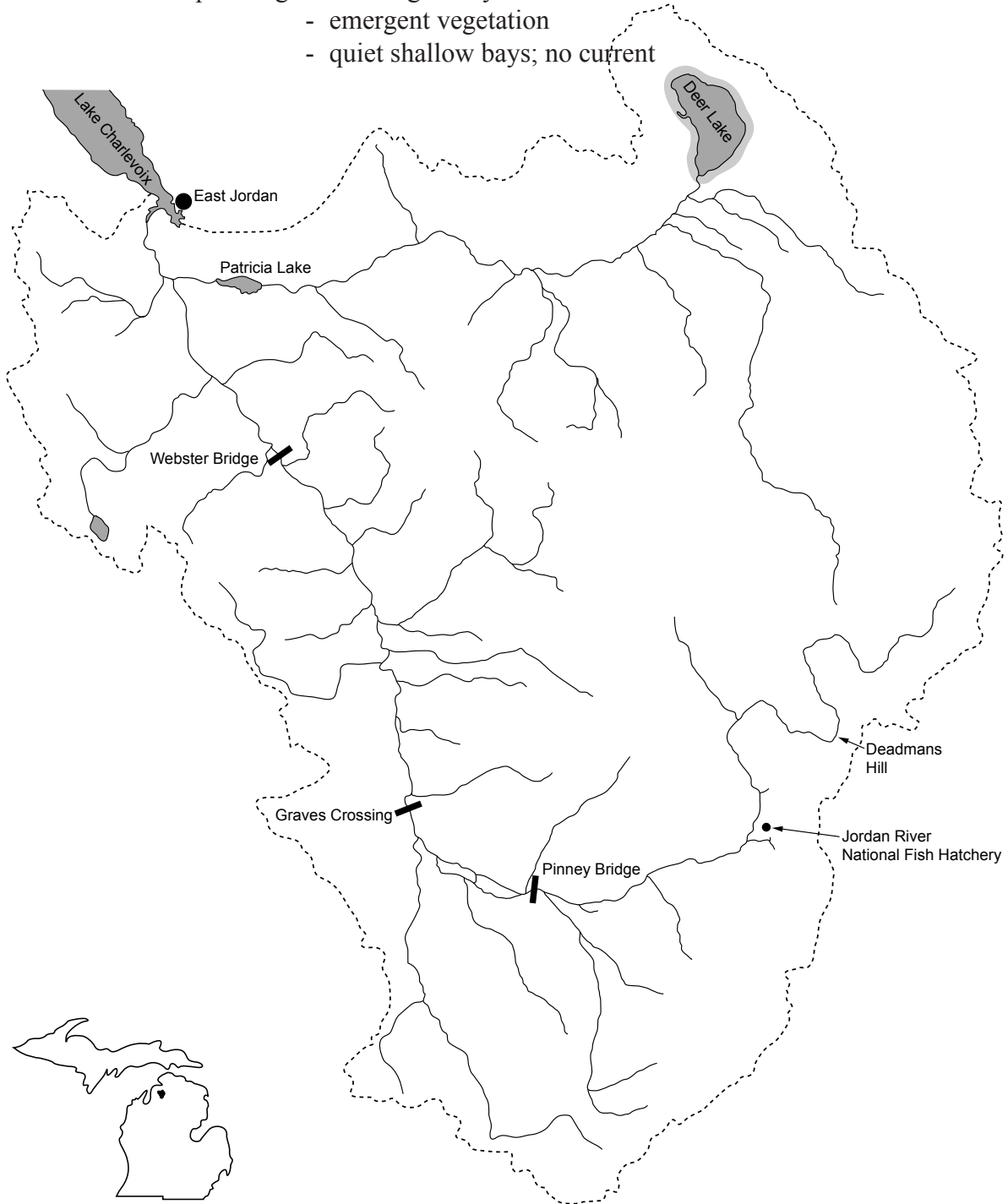


Largemouth bass (*Micropterus salmoides*)

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

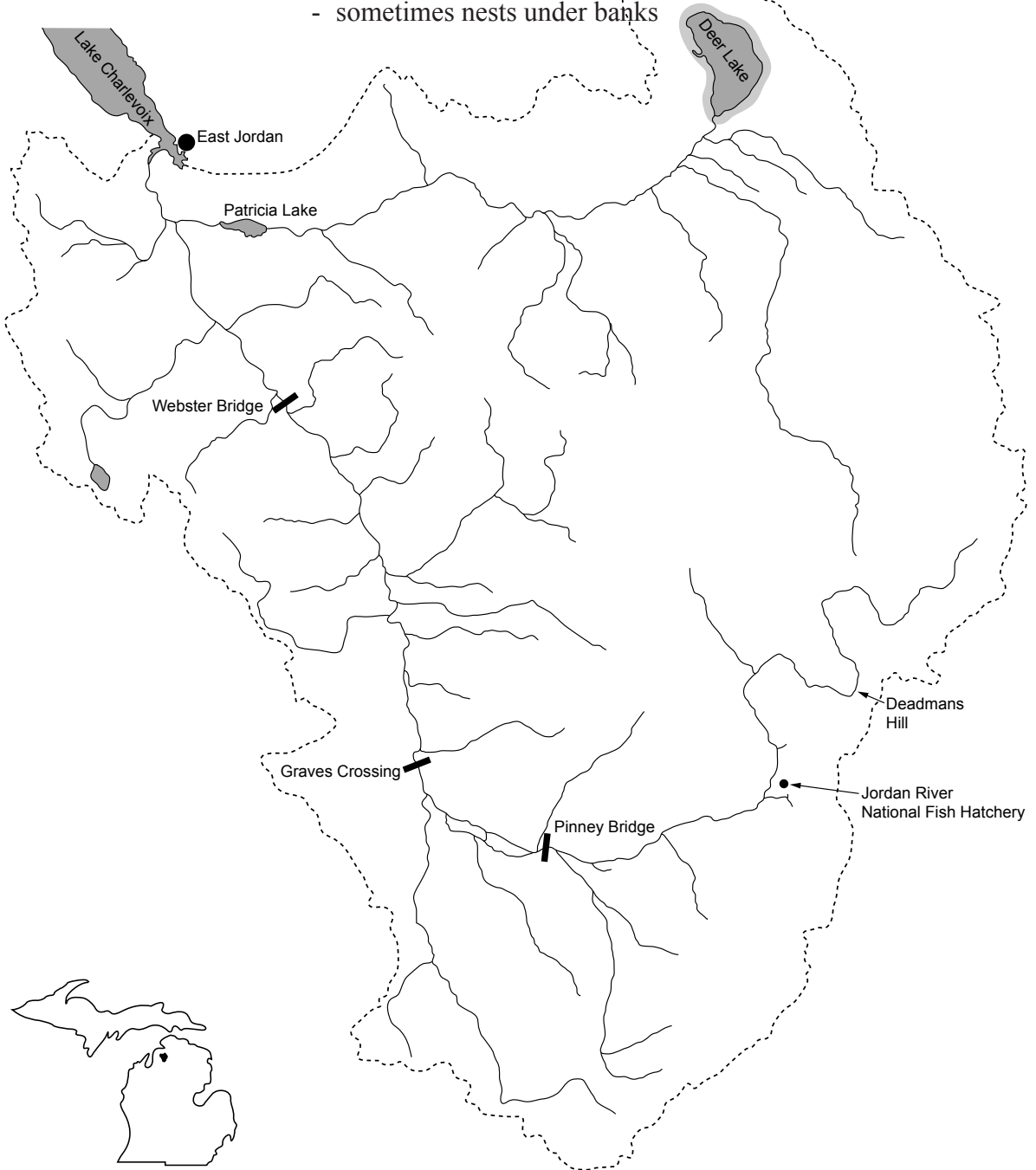


Black crappie (*Pomoxis nigromaculatus*)

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

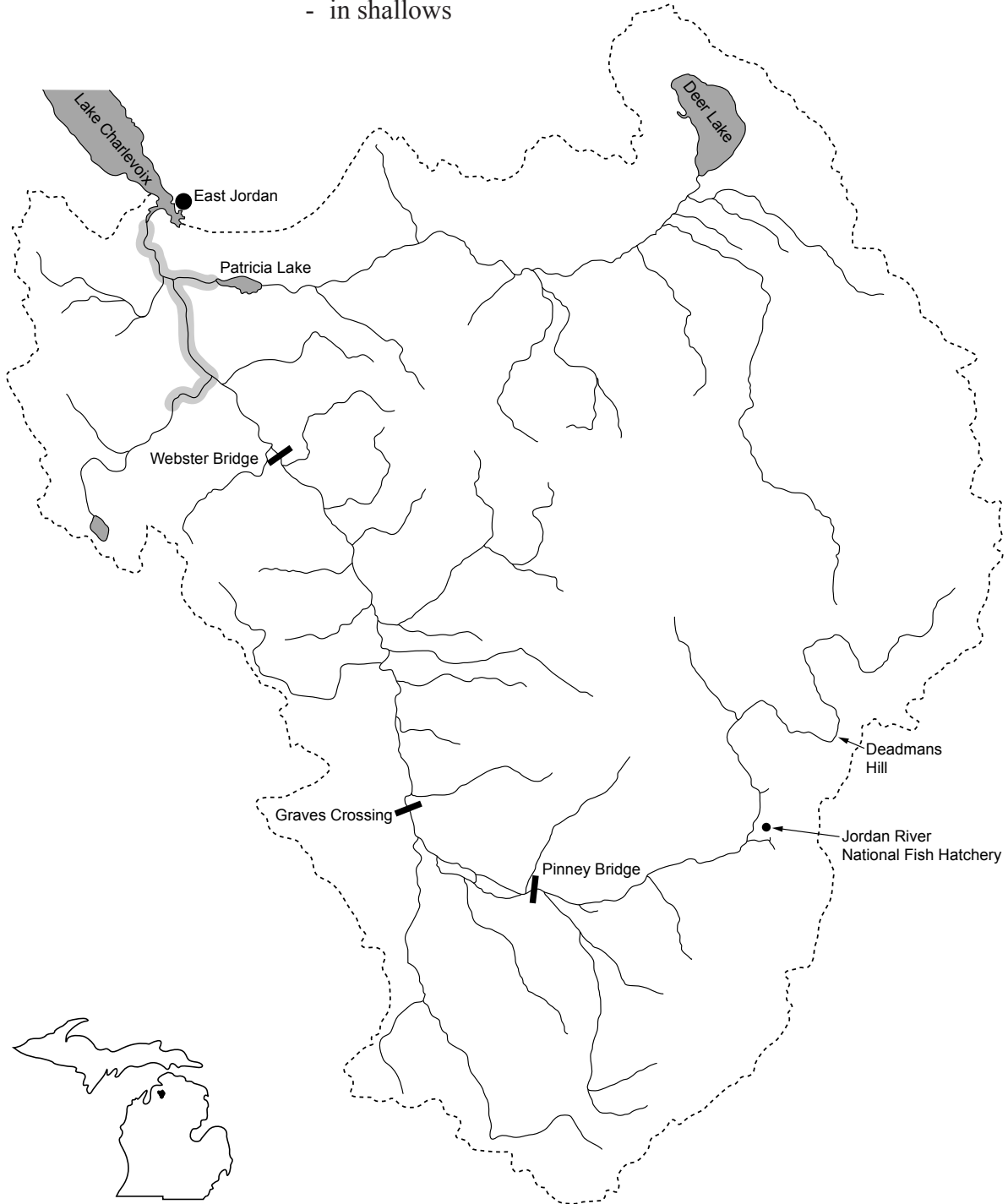
- spawning - nests in gravel, sand, or mud substrate
- some vegetation must be present
- sometimes nests under banks



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

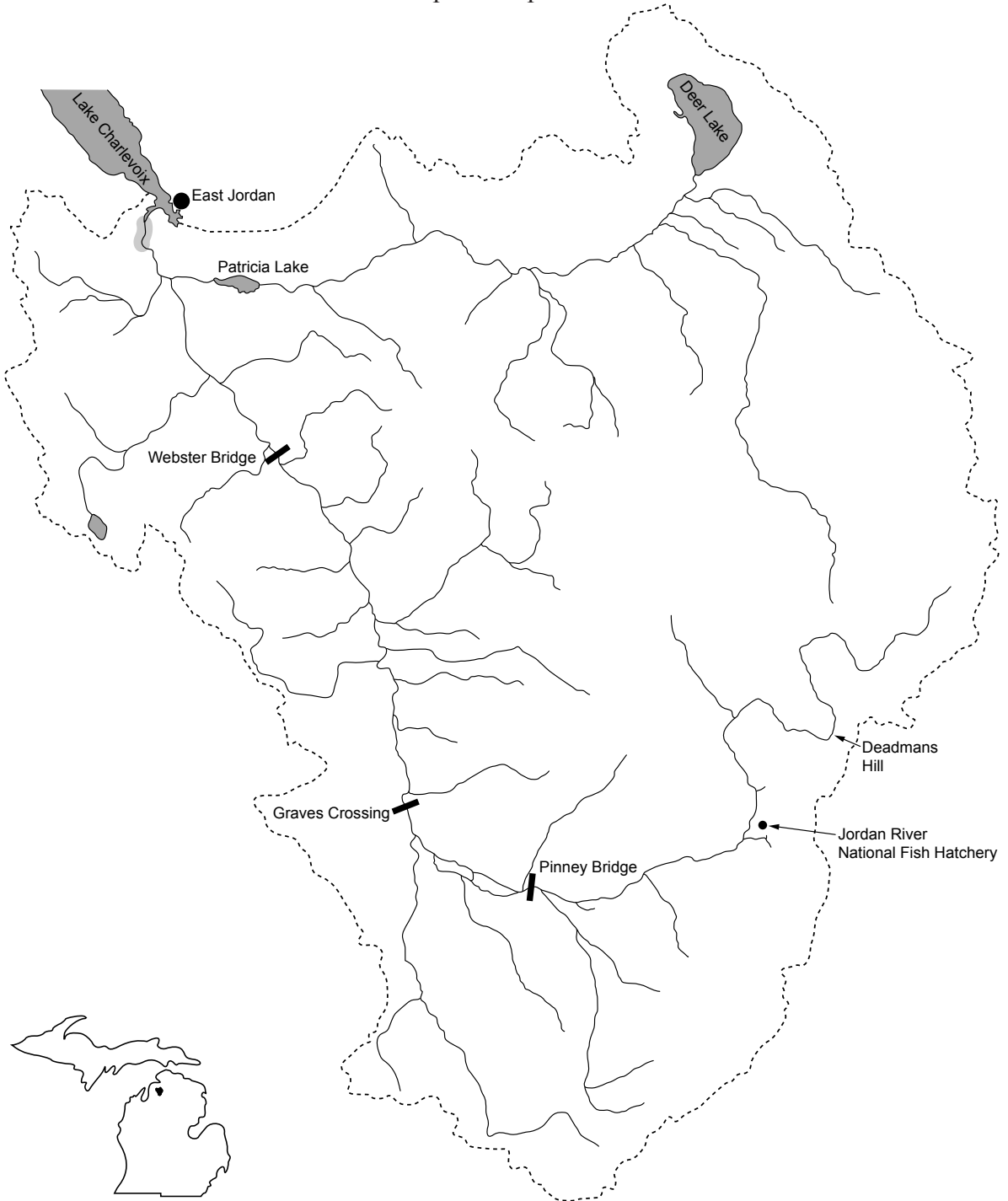


Johnny darter (*Etheostoma nigrum*)

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

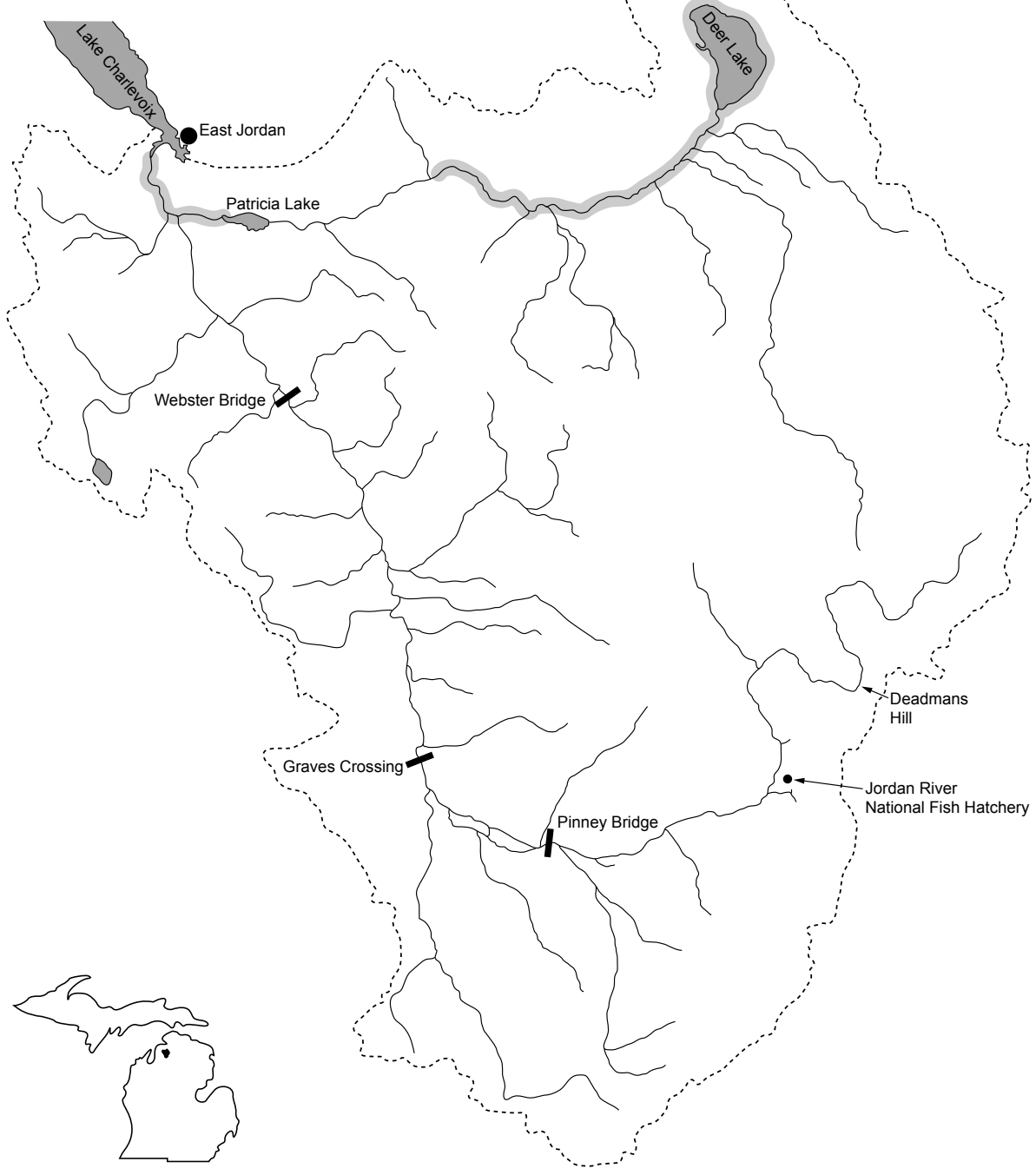


Yellow perch (*Perca flavescens*)

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

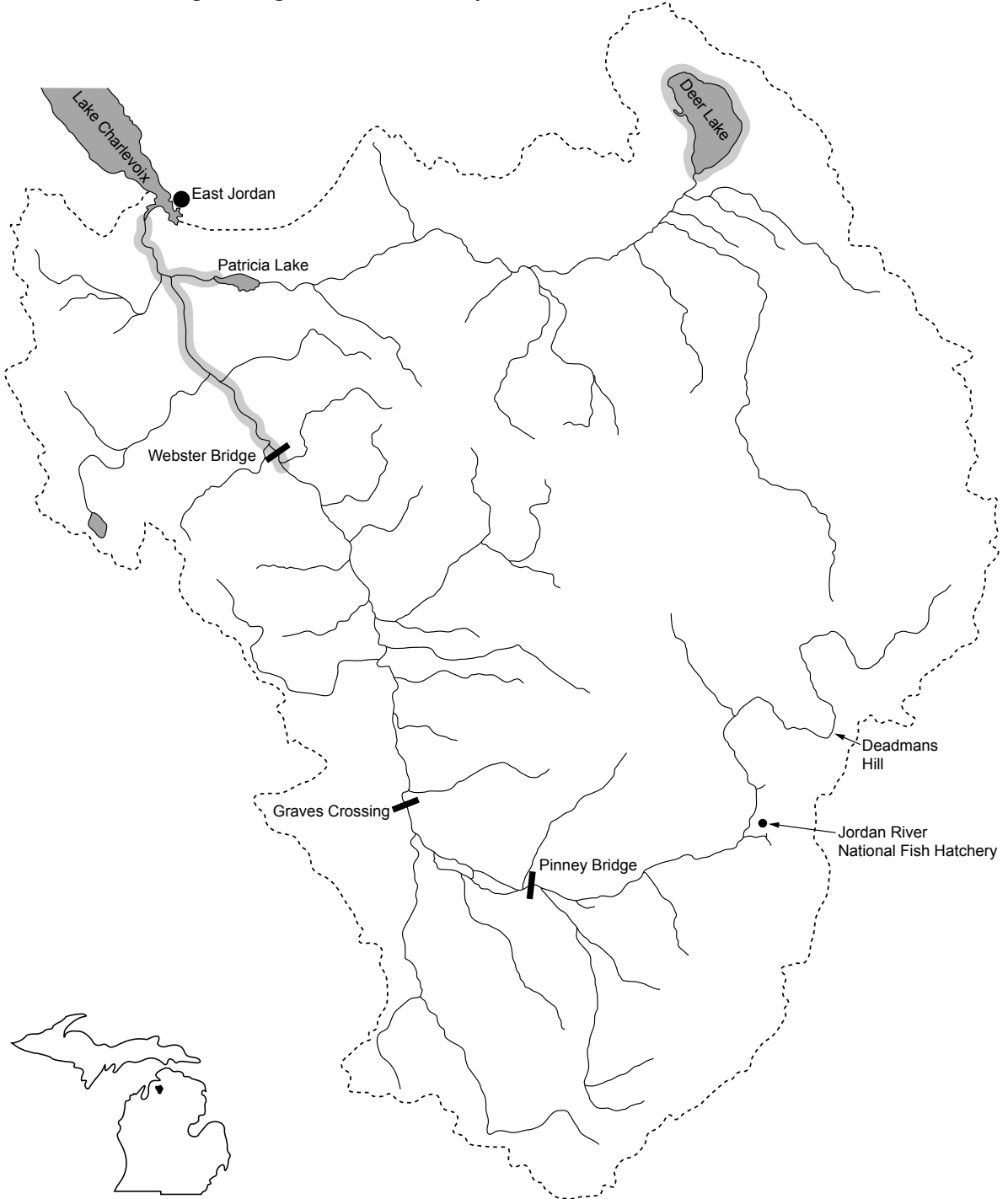
- spawning - shallows of lakes, tributaries of streams
- occurs over rooted vegetation, submerged brush, fallen trees
- may occur over sand or gravel



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



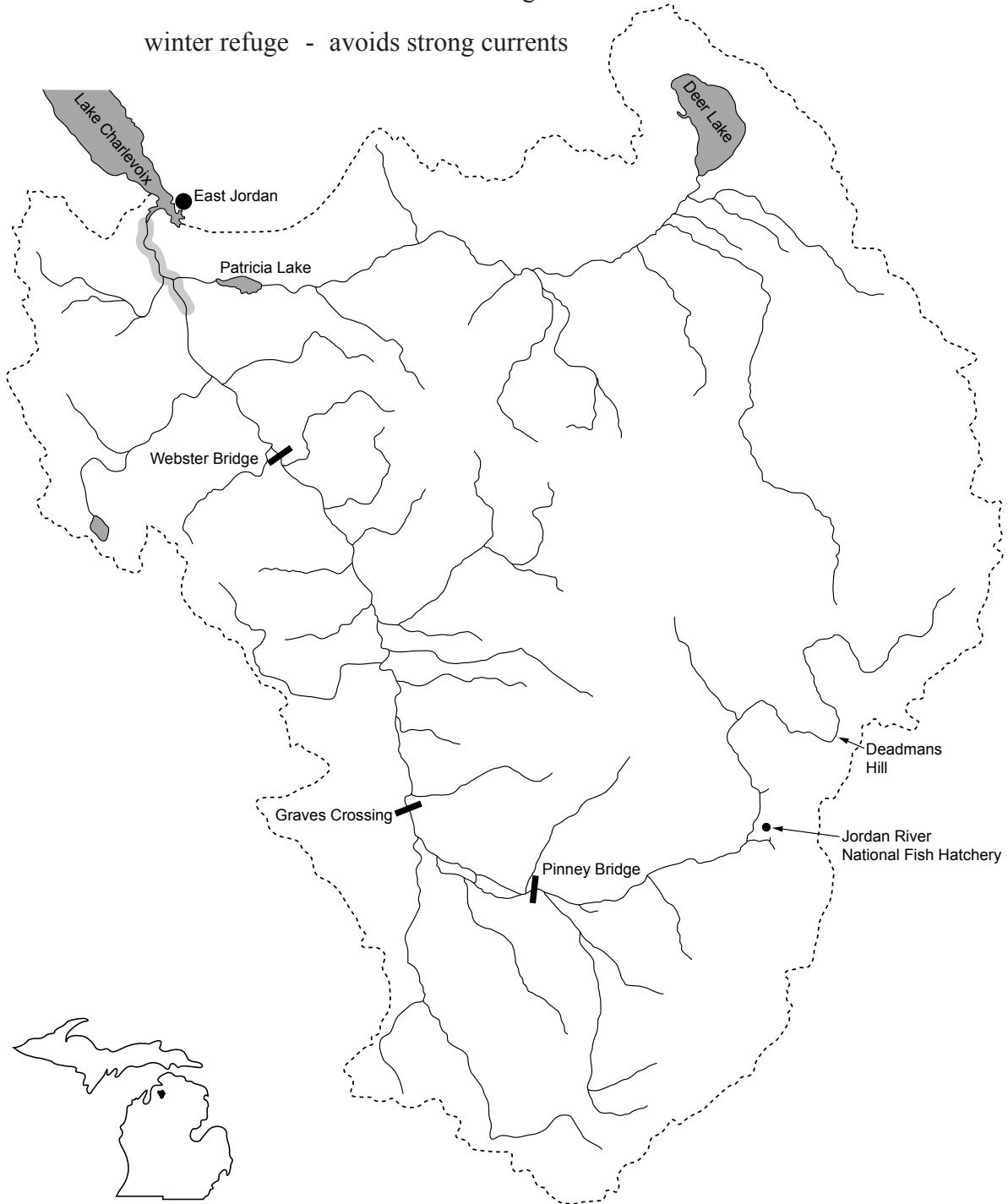
Walleye (*Stizostedion vitreum*)

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



Appendix 2

Fish Stocking in the Jordan River Watershed

This appendix contains fish stocking records for the Jordan River and tributaries from 1934-1999. Data from Michigan Department of Natural Resources, Fisheries Division. Non-indigenous species are rainbow and brown trout and chinook salmon. Blanks indicate no stockings.

Appendix 2.

Year and waterbody	Age	Brook trout	Rainbow trout	Brown trout	Chinook salmon	Walleye	SM bass	LM bass	Yellow perch	Bluegill
1934										
Barker Creek	fingerling	10,000								
Collins Creek	fingerling	2,000								
Deer Creek	fingerling	12,000								
Deer Lake	fingerling						2300		5,000	6,000
Deer Lake	fry					200,000				
Gould Creek	fingerling	2,000								
Green River	fingerling	20,000								
Hog Creek	fingerling	1,000								
Jordan River	adult		10,500							
Jordan River	fingerling	22,300								
Severance (Severn) Creek	fingerling	2,000								
Sutton Creek	fingerling	8,000								
Warner Creek	fingerling	5,000								
Total		84,300	10,500			200,000	2300		5,000	6,000
1935										
Barker Creek	fingerling	2,000								
Deer Creek	fingerling			12,450						
Deer Lake	fingerling						200		52,200	12,000
Gould Creek	fingerling	1,000								
Jordan River	fingerling	18,775								
Jordan River	yearling		12,000							
Scott (Cat) Creek	fingerling	400								
Severance (Severn) Creek	fingerling	2,000								
Sutton Creek	fingerling	2,200								
Warner Creek	fingerling	1,125								
Total		27,500	12,000	12,450			200		52,200	12,000
1936										
Collins Creek	fingerling	2,000								
Deer Creek	fingerling			72,100						
Deer Lake	fingerling						600			12,500
Green River	fingerling	13,000								
Hog Creek	fingerling	2,000								
Jordan River	fingerling	56,350								
Warner Creek	fingerling	7,500								
Total		80,850		72,100			600			12,500
1937										
Barker Creek	fingerling	5,000								
Collins Creek	fingerling	5,000								
Deer Creek	adult			3,000						
Deer Creek	fingerling	2,000	1,000	36,000						
Deer Lake	adult						473			
Deer Lake	fingerling						150	150	4,000	5,000
Gould Creek	fingerling	5,000								
Green River	fingerling	35,000								
Jordan River	adult		1,800							
Jordan River	fingerling	36,000								

Jordan River Assessment Appendix

Appendix 2.–Continued.

Year and waterbody	Age	Brook trout	Rainbow trout	Brown trout	Chinook salmon	Walleye	SM bass	LM bass	Yellow perch	Bluegill
Warner Creek	fingerling	10,000								
Webster Creek	fingerling	10,000								
Total		108,000	2,800	39,000			623	150	4,000	5,000
1938										
Barker Creek	fingerling	3,000								
Collins Creek	fingerling	2,000								
Deer Creek	fingerling			34,500						
Deer Creek	yearling			500						
Deer Lake	fingerling						500			
Deer Lake	fingerling								10,000	
Gould Creek	fingerling	2,000								
Green River	fingerling	11,000								
Green River	yearling	600								
Hog Creek	fingerling	1,000								
Jordan River	adult	150	4,681							
Jordan River	fingerling	24,000								
Jordan River	yearling	2,700	300							
Sutton Creek	fingerling	1,000								
Warner Creek	fingerling	5,000								
Webster Creek	fingerling	1,000								
Williams Creek	fingerling	3,000								
Total		56,450	4,981	35,000			500		10,000	
1939										
Deer Creek	yearling			1,000						
Deer Lake	adult						153			
Deer Lake	fingerling								25,000	
Green River	fingerling	9,000								
Green River	yearling	600								
Jordan River	adult	450	2,000	6,000						
Jordan River	fingerling	33,500								
Jordan River	yearling	2,200	1,600							
Total		45,750	3,600	7,000			153		25,000	
1940										
Cascade Creek	yearling	100								
Collins Creek	fingerling	2,000								
Deer Creek	fingerling			86,000						
Deer Lake	adult						100			
Deer Lake	yearling								1,000	
Green River	fingerling	6,000								
Hog Creek	fingerling	1,000								
Jordan River	adult	1,000	1,740							
Jordan River	fingerling	8,000								
Jordan River	yearling	1,400	6,000							
Warner Creek	fingerling	3,100								
Total		22,600	7,740	86,000			100		1,000	
1941										
Brown Creek	fingerling	3,000								
Cascade Creek	adult	250								

Appendix 2.–Continued.

Year and waterbody	Age	Brook trout	Rainbow trout	Brown trout	Chinook salmon	Walleye	SM bass	LM bass	Yellow perch	Bluegill
Collins Creek	fingerling	2,000								
Deer Creek	adult			1,250						
Deer Creek	fingerling			60,000						
Deer Lake	adult						50			
Deer Lake	fingerling									9,800
Green River	fingerling	5,000								
Green River	yearling	2,000								
Hog Creek	fingerling	2,000								
Jordan River	adult	2,235	500							
Jordan River	fingerling	22,000								
Jordan River	yearling	2,500								
Landslide Creek	adult	50								
Marvin Creek	fingerling	1,500								
Stevens Creek	adult	50								
Warner Creek	fingerling	10,000								
Total		52,585	500	61,250			50			9,800
1942										
Deer Creek	adult	299								
Deer Creek	fingerling	5,000								
Deer Lake	adult						75			
Deer Lake	fingerling									2,500
Green River	adult	300								
Green River	fingerling	2,000								
Jordan River	yearling	800								
Total		8,399					75			2,500
1943										
Cascade Creek	fingerling	10,000								
Deer Lake	fingerling						1000			
Green River	fingerling	10,000								
Green River	yearling	400								
Jordan River	fingerling	21,000								
Patricia Lake	fingerling						2000			
Stevens Creek	fingerling	5,000								
Total		46,400					3000			
1944										
Deer Creek	adult	200								
Green River	adult	500								
Jordan River	adult	2,000	500							
Jordan River	fingerling		34,500							
Landslide Creek	fingerling		4,000							
Total		2,700	39,000							
1945										
Deer Creek	adult			2,000						
Deer Creek	yearling	1,950								
Green River	fingerling	10,000								
Green River	yearling	100								
Jordan River	adult	2,500								
Jordan River	fingerling	34,000								

Jordan River Assessment Appendix

Appendix 2.–Continued.

Year and waterbody	Age	Brook trout	Rainbow trout	Brown trout	Chinook salmon	Walleye bass	SM bass	LM bass	Yellow perch	Bluegill
Jordan River	yearling	1,400								
Landslide Creek	fingerling	5,000								
Stevens Creek	fingerling	5,000								
Warner Creek	fingerling	4,000								
Warner Creek	yearling	300								
Total		64,250		2,000						
1946										
Deer Creek	adult	1,200		1,200						
Jordan River	adult	1,100	3,000							
Jordan River	fingerling	25,600								
Total		27,900	3,000	1,200						
1947										
Deer Creek	adult	900		2,000						
Jordan River	adult	4,000	2,000	1,000						
Jordan River	yearling	1,500								
Total		6,400	2,000	3,000						
1948										
Deer Creek	adult	1,000								
Jordan River	adult	3,240	4,200	1,000						
Total		4,240	4,200	1,000						
1949										
Deer Creek	adult	1,250								
Jordan River	adult	3,700	1,800	1,000						
Warner Creek	adult	250								
Total		5,200	1,800	1,000						
1950										
Deer Creek	adult	2,200								
Jordan River	adult	3,700	2,200							
Jordan River	fingerling	8,000								
Six Tile Creek	fingerling	2,300								
Total		16,200	2,200							
1951										
Deer Creek	adult	1,200								
Deer Creek	fingerling	6,000								
Jordan River	adult	2,700	2,700							
Jordan River	fingerling		9,000							
Total		9,900	11,700							
1952										
Deer Creek	adult	1,200								
Jordan River	adult	5,950	1,500							
Total		7,150	1,500							
1953										
Deer Creek	adult	1,200								
Jordan River	adult	3,600	3,600							
Total		4,800	3,600							

Appendix 2.–Continued.

Year and waterbody	Age	Brook trout	Rainbow trout	Brown trout	Chinook salmon	Walleye	SM bass	LM bass	Yellow perch	Bluegill
1954										
Deer Creek	adult	1,200								
Green River	adult	3,000								
Jordan River	adult	6,600	5,600							
Total		10,800	5,600							
1955										
Deer Creek	adult	1,562								
Green River	adult	1,500								
Jordan River	adult	6,800	12,400							
Total		9,862	12,400							
1956										
Deer Creek	adult	1,200								
Green River	adult	1,000								
Jordan River	adult	6,000	23,700							
Warner Creek	adult	900								
Total		9,100	23,700							
1957										
Deer Creek	adult	1,200								
Green River	adult	1,500								
Jordan River	adult	6,000	12,000							
Warner Creek	adult	900								
Total		9,600	12,000							
1958										
Deer Creek	adult	1,200								
Green River	adult	1,500								
Jordan River	adult	6,000	8,500							
Warner Creek	adult	900								
Total		9,600	8,500							
1959										
Deer Creek	adult	1,200								
Green River	adult	1,500								
Jordan River	adult	6,000	6,000							
Warner Creek	adult	900								
Total		9,600	6,000							
1960										
Deer Creek	adult	1,200								
Green River	adult	1,500								
Jordan River	adult	8,000	6,000							
Warner Creek	adult	900								
Total		11,600	6,000							
1961										
Deer Creek	adult	600								
Green River	adult	1,500								
Jordan River	adult	4,800	1,800							
Warner Creek	adult	600								
Total		7,500	1,800							

Jordan River Assessment Appendix

Appendix 2.–Continued.

Year and waterbody	Age	Brook trout	Rainbow trout	Brown trout	Chinook salmon	Walleye	SM bass	LM bass	Yellow perch	Bluegill
1962										
Deer Creek	adult	600								
Green River	adult	1,000								
Jordan River	adult		6,000							
Warner Creek	adult	750								
Total		2,350	6,000							
1963										
Deer Creek	adult	600								
Green River	adult	1,000								
Jordan River	adult		6,000							
Warner Creek	adult	600								
Total		2,200	6,000							
1964										
Deer Creek	adult	1,200								
Green River	adult	1,000								
Jordan River	adult		6,000							
Jordan River	fingerling		10,000							
Warner Creek	adult	900								
Total		3,100	16,000							
1965										
Deer Creek	adult	600								
Green River	adult	500								
Jordan River	adult		4,200							
Warner Creek	adult	300								
Total		1,400	4,200							
1966										
1967										
1968										
1969										
1970										
Jordan River	yearling			5,000						
Total				5,000						
1971										
Jordan River	yearling			5,042						
Total				5,042						
1972										
Jordan River	yearling		10,304	4,500						
Total			10,304	4,500						
1973										
Jordan River	yearling		5,500	5,000						
Total			5,500	5,000						

Appendix 2.–Continued.

Year and waterbody	Age	Brook trout	Rainbow trout	Brown trout	Chinook salmon	Walleye	SM bass	LM bass	Yellow perch	Bluegill
1974										
Jordan River	yearling		20,144	5,000						
Total			20,144	5,000						
1975										
Jordan River	yearling		24,174							
Jordan River	fingerling					4,970				
Total			24,174			4,970				
1976										
Jordan River	yearling		5,035							
Total			5,035							
1977										
1978										
1979										
1980										
1981										
1982										
1983										
Jordan River	fingerling				315,495					
Jordan River	yearling		10,000							
Total			10,000		315,495					
1984										
Jordan River	yearling		10,000							
Total			10,000							
1985										
Jordan River	yearling		10,000							
Total			10,000							
1986										
Jordan River	yearling		10,000							
Total			10,000							
1987										
Jordan River	yearling		9,990							
Total			9,990							
1988										
Jordan River	yearling		6,400							
Total			6,400							
1989										
Jordan River	yearling		8,600							
Total			8,600							
1990										
Jordan River	yearling		6,950							
Total			6,950							

Jordan River Assessment Appendix

Appendix 2.–Continued.

Year and waterbody	Age	Brook trout	Rainbow trout	Brown trout	Chinook salmon	Walleye	SM bass	LM bass	Yellow perch	Bluegill
1991										
Jordan River	yearling		6,400							
Total			6,400							
1992										
Jordan River	yearling		9,300							
Total			9,300							
1993										
Jordan River	yearling		8,500							
Total			8,500							
1994										
Jordan River	yearling		8,000							
Total			8,000							
1995										
Jordan River	yearling		9,000							
Total			9,000							
1996										
Jordan River	yearling		8,600							
Total			8,600							
1997										
Jordan River	yearling		8,330							
Total			8,330							
1998										
Jordan River	yearling		9,000							
Total			9,000							
1999										
Jordan River	yearling		10,000							
Total			10,000							

Appendix 3

Miscellaneous Historical Creel Data

This appendix contains miscellaneous creel data from 1928-1964 for the Jordan River and tributaries. Angler hours, catch by species, total catch, catch per effort (CPE) by species, and total catch per effort were summarized by year for each waterbody. All reported catch was harvest. These data were compiled from general creel census records (Ryckman 1981) located at Michigan Department of Natural Resources, Institute for Fisheries Research. Catch rates were calculated using ratio-of-means estimator for complete fishing trips: $CPE = \text{total catch} / \text{total hours}$ (Lockwood et al. 1999). Table shows precision to only one decimal place.

Appendix 3.

Year	Stream	Angler hrs	Brook trout				Rainbow trout				Brown Trout			
			Legal		Sub-legal		Legal		Sub-legal		Legal		Sub-legal	
			Number	CPE	Number	CPE	Number	CPE	Number	CPE	Number	CPE	Number	CPE
1928	Jordan River	306.5	347	1.13	689	2.25	6	0.02	19	0.06				
	Green River	17	50	2.94	51	3.00	3	0.18	5	0.29				
	Deer Creek	1	1	1.00	2	2.00								
	Total	324.5	398	1.23	742	2.29	9	0.03	24	0.07				
1929	Jordan River	128	134	1.05	264.5	2.07	35	0.27	81.5	0.64				
	Deer Creek	6	1	0.17	3	0.50								
	Total	134	135	1.01	267.5	2.00	35	0.26	81.5	0.61				
1930	Jordan River	348	420	1.21	809	2.32	51	0.15	78	0.22				
	Green River	5.5	9	1.64										
	Deer Creek	7	6	0.86	7	1.00	2	0.29	3	0.43				
	Total	360.5	435	1.21	816	2.26	53	0.15	81	0.22				
1931	Jordan River	405.5	340	0.84	893	2.20	43	0.11	234	0.58				
	Deer Creek	1	1	1.00										
	Total	406.5	341	0.84	893	2.20	43	0.11	234	0.58				
1932	Jordan River	127.5	135	1.06	237	1.86	44	0.35	74	0.58	1	0.01	3	0.02
	Green River	1	3	3.00	1	1.00				0.00				
	Total	128.5	138	1.07	238	1.85	44	0.34	74	0.58	1	0.01	3	0.02
1933	Jordan River	207.75	277	1.33	398	1.92	79	0.38	84	0.40				
	Total	207.75	277	1.33	398	1.92	79	0.38	84	0.40				
1934	Jordan River	152	214	1.41	250	1.64	96	0.63	107	0.70				
	Total	152	214	1.41	250	1.64	96	0.63	107	0.70				
1935	Jordan River	167.5	48	0.29	2	0.01	2	0.01						
	Green River	6	5	0.83										
	Total	173.5	53	0.31	2	0.01	2	0.01						
1936														

Appendix 3.–Continued.

Year	Stream	Angler hrs	Brook trout				Rainbow trout				Brown Trout			
			Legal		Sub-legal		Legal		Sub-legal		Legal		Sub-legal	
			Number	CPE	Number	CPE	Number	CPE	Number	CPE	Number	CPE	Number	CPE
1937	Jordan River	234.25	199.5	0.85	269	1.15	29	0.12	76	0.32				
	Green River	4			2	0.50								
	Total	238.25	199.5	0.84	271	1.14	29	0.12	76	0.32				
1938	Jordan River	28.25	21	0.74	24	0.85	4	0.14	9	0.32				
	Total	28.25	21	0.74	24	0.85	4	0.14	9	0.32				
1939	Jordan River	125.75	158	1.26			31	0.25						
	Stevens Creek	4.75	2	0.42										
	Total	130.5	160	1.23			31	0.24						
1940	Jordan River	253	90	0.36	149	0.59	272	1.08	578	2.28	3	0.01		
	Deer Creek	3.75	2	0.53			1	0.27			17	4.53		
	Martin Creek	9	7	0.78			14	1.56						
	Total	265.75	99	0.37	149	0.56	287	1.08	578	2.17	20	0.08		
1941														
1942	Jordan River	123.5	117	0.95			40	0.32			1	0.01		
	Deer Creek	41.5	22	0.53			3	0.07			5	0.12		
	Stevens Creek	2.5	7	2.80										
	Total	167.5	146	0.87			43	0.26			6	0.04		
1943	Jordan River	278.75	145	0.52			15	0.05						
	Green River	6	1	0.17										
	Deer Creek	8.5	2	0.24							2	0.24		
	Total	293.25	148	0.50			15	0.05			2	0.01		
1944	Jordan River	351.25	167	0.48			56	0.16						
	Green River	83.75	42	0.50			10	0.12						
	Stevens Creek	10.75	16	1.49			5	0.47						
	Deer Creek	6	1	0.17										
	Total	451.75	226	0.50			71	0.16						

Appendix 3.–Continued.

Year	Stream	Angler hrs	Brook trout				Rainbow trout				Brown Trout			
			Legal		Sub-legal		Legal		Sub-legal		Legal		Sub-legal	
			Number	CPE	Number	CPE	Number	CPE	Number	CPE	Number	CPE	Number	CPE
1945	Jordan River	285	131	0.46			25	0.09						
	Green River	49	27	0.55			9	0.18						
	Deer Creek	38.5	72	1.87										
	Total	372.5	230	0.62			34	0.09						
1946	Deer Creek	76.25	23	0.30							3	0.04		
	Total	76.25	23	0.30							3	0.04		
1947	Jordan River	65.5	45	0.69			21	0.32						
	Green River	33	15	0.45	4	0.12								
	Stevens Creek	77.7	171	2.20			6	0.08						
	Deer Creek	65	18	0.28			2	0.03			65	1.00		
	Total	241.2	249	1.03	4	0.02	29	0.12			65	0.27		
1948	Jordan River	266	74	0.28			54	0.20			20	0.08		
	Green River	18	13	0.72	4	0.22								
	Deer Creek	9.5	14	1.47							2	0.21		
	Total	293.5	101	0.34	4	0.01	54	0.18			22	0.07		
1949	Jordan River	173	13	0.08			34	0.20						
	Deer Creek	4									1	0.25		
	Total	177	13	0.07			34	0.19			1	0.01		
1950	Jordan River	2912	579	0.20			795	0.27			19	0.01		
	Deer Creek	6.5	31	4.77										
	Total	2918.5	610	0.21			795	0.27			19	0.01		
1951	Jordan River	103.5	23	0.22			22	0.21						
	Deer Creek	14	11	0.79										
	Total	117.5	34	0.29			22	0.19						

Appendix 3.—Continued.

Year	Stream	Angler hrs	Brook trout				Rainbow trout				Brown Trout			
			Legal		Sub-legal		Legal		Sub-legal		Legal		Sub-legal	
			Number	CPE	Number	CPE	Number	CPE	Number	CPE	Number	CPE	Number	CPE
1952	Jordan River	3499	1240	0.35			654	0.19			95	0.03		
	Total	3499	1240	0.35			654	0.19			95	0.03		
1953	Jordan River	3745	1047	0.28			1284	0.34			166	0.04		
	Green River	25.5	10	0.39			3	0.12						
	Total	3770.5	1057	0.28			1287	0.34			166	0.04		
1954	Jordan River	2881	661	0.23			1053	0.37			75	0.03		
	Green River	13.5	6	0.44										
	Deer Creek	8.5	4	0.47							1	0.12		
	Total	2903	671	0.23			1053	0.36			1	0.00		
1955	Jordan River	2266	526	0.23			1065	0.47			83	0.04		
	Green River	44	31	0.70			3	0.07						
	Total	2310	557	0.24			1068	0.46			83	0.04		
1956	Jordan River	1932.5	504	0.26			818	0.42			69	0.04		
	Green River	40	16	0.40			13	0.33			1	0.03		
	Total	1972.5	520	0.26			831	0.42			70	0.04		
1957	Jordan River	557	183	0.33			165	0.30			23	0.04		
	Green River	41.5	29	0.70			7	0.17						
	Total	598.5	212	0.35			172	0.29			23	0.04		
1958	Jordan River	2370	612	0.26			563	0.24			124	0.05		
	Green River	26.5	5	0.19			2	0.08			1	0.04		
	Deer Creek	3	4	1.33										
	Total	2399.5	621	0.26			565	0.24			125	0.05		
1959	Jordan River	2181	622	0.29			623	0.29			98	0.04		
	Total	2181	622	0.29			623	0.29			98	0.04		

Appendix 3.–Continued.

Year	Stream	Angler hrs	Brook trout				Rainbow trout				Brown Trout			
			Legal		Sub-legal		Legal		Sub-legal		Legal		Sub-legal	
			Number	CPE	Number	CPE	Number	CPE	Number	CPE	Number	CPE	Number	CPE
1960	Jordan River	610	200	0.33			156	0.26			15	0.02		
	Cascade Creek	16	22	1.38			2	0.13						
	Green River	6	5	0.83										
	Total	632	227	0.36			158	0.25			15	0.02		
1961														
1962	Jordan River	37					2	0.05			3	0.08		
	Total	37					2	0.05			3	0.08		
1963	Jordan River	657	96	0.15			378	0.58			64	0.10		
	Deer Creek	5									2	0.40		
	Total	662	96	0.15			378	0.57			66	0.10		
1964	Jordan River	456.5	169	0.37			86	0.19			96	0.21		
	Stevens Creek	15					2	0.13						