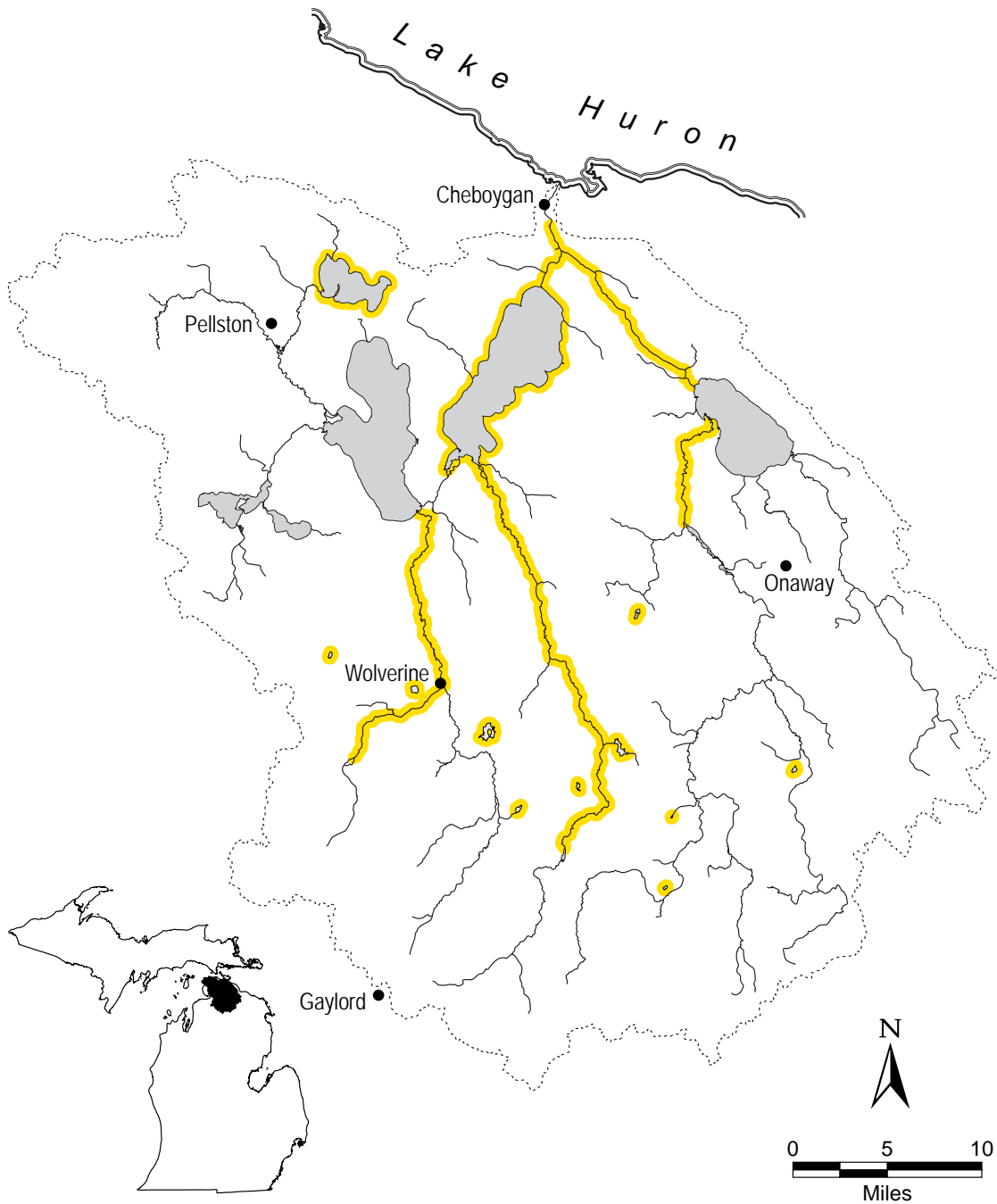


Green sunfish *Lepomis cyanellus*

Habitat:

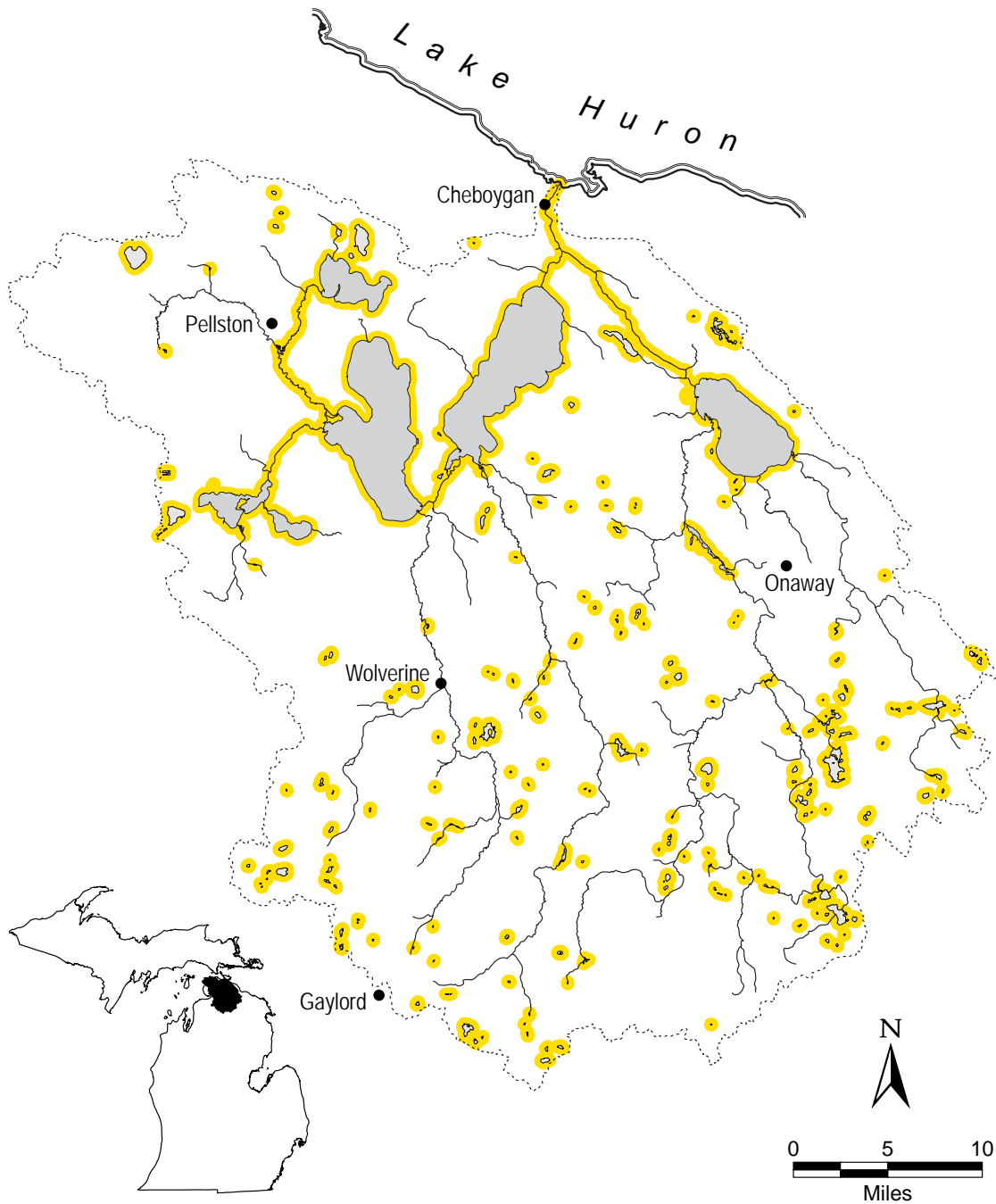
- feeding - impoundments and lakes, and low-current streams and rivers
- no substrate preference
- spawning - nests in shallow areas sheltered by rocks, logs, or aquatic vegetation



Pumpkinseed *Lepomis gibbosus*

Habitat:

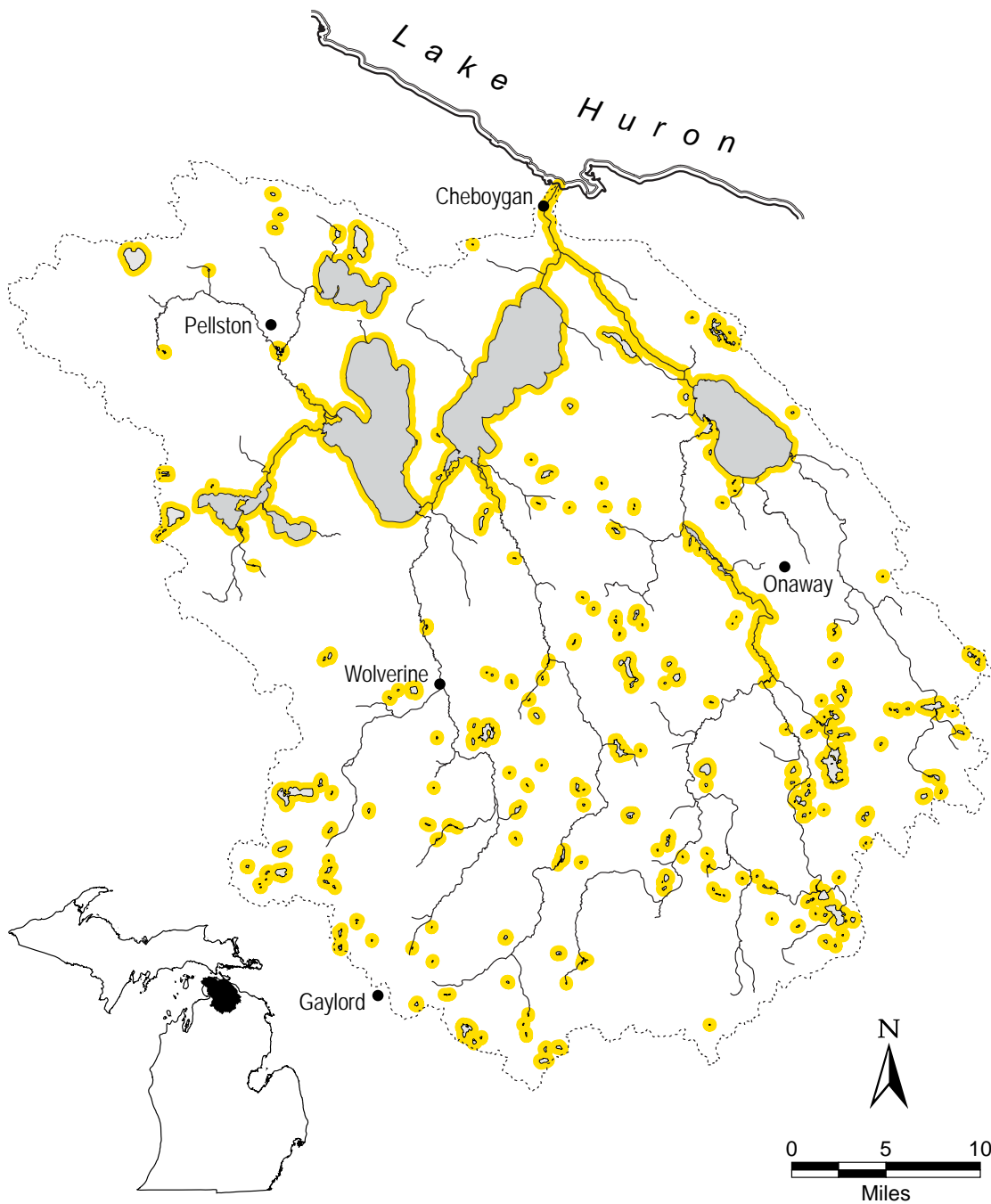
- feeding - non-flowing clear water in streams and rivers; also lakes and impoundments
- muck or sand partly covered with organic debris substrate
- dense beds of submerged aquatic vegetation
- spawning - nest in sand, gravel, or rock substrate
- in shallow water near submerged vegetation



Bluegill *Lepomis macrochirus*

Habitat:

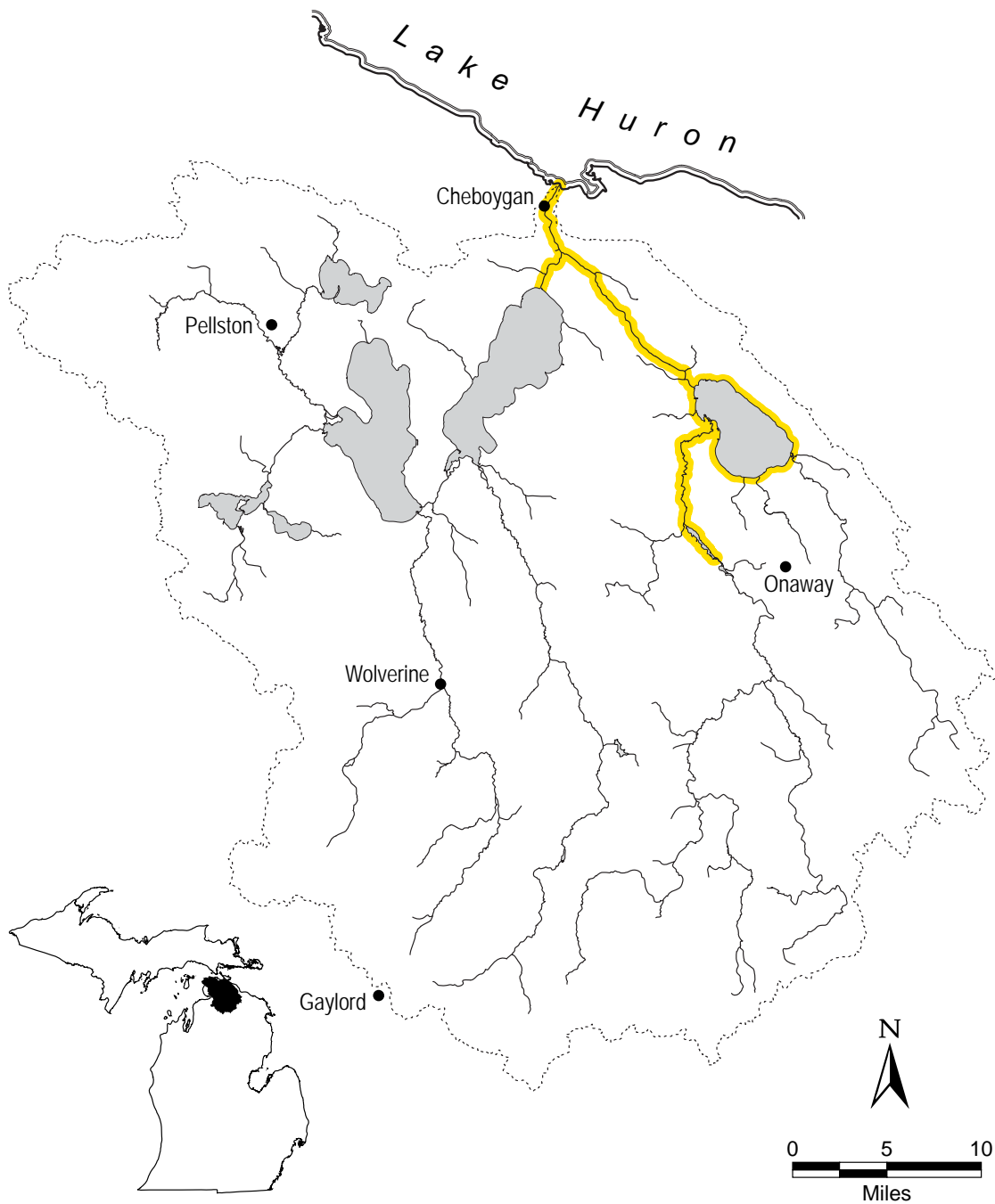
- feeding - non-flowing clear streams and rivers; also lakes and impoundments
- sand, gravel, or muck containing organic debris substrate
- scattered beds of aquatic vegetation
- cannot tolerate low oxygen or continuous high turbidity and siltation
- spawning - nests in firm substrate of gravel, sand,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



Northern longear sunfish *Lepomis peltastes*

Habitat:

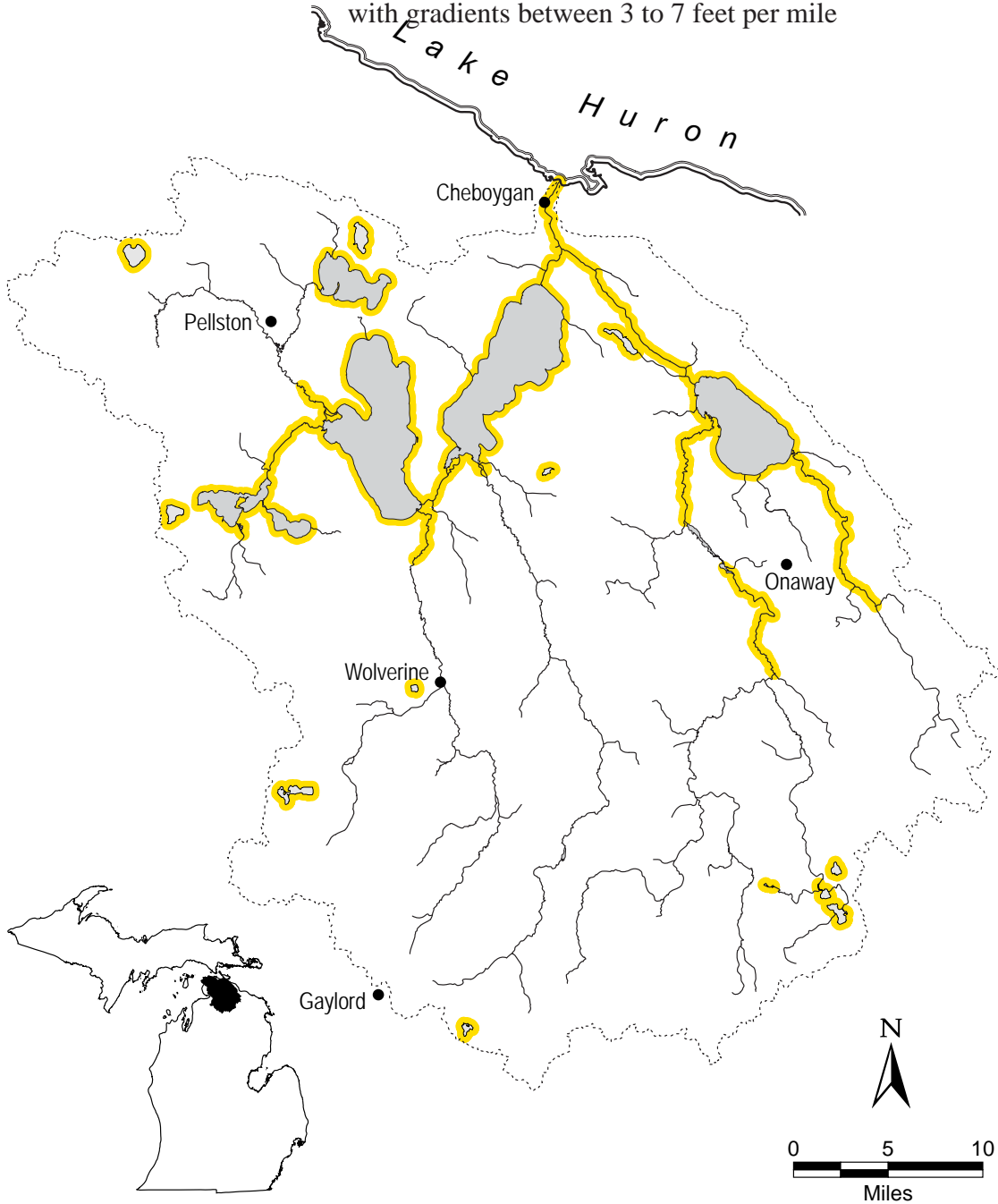
- feeding - clear moderate-sized shallow streams with moderate vegetation
- rocky substrates
- little to no current
- spawning - nests in gravel, sand, or hard rock substrate



Smallmouth bass *Micropterus dolomieu*

Habitat:

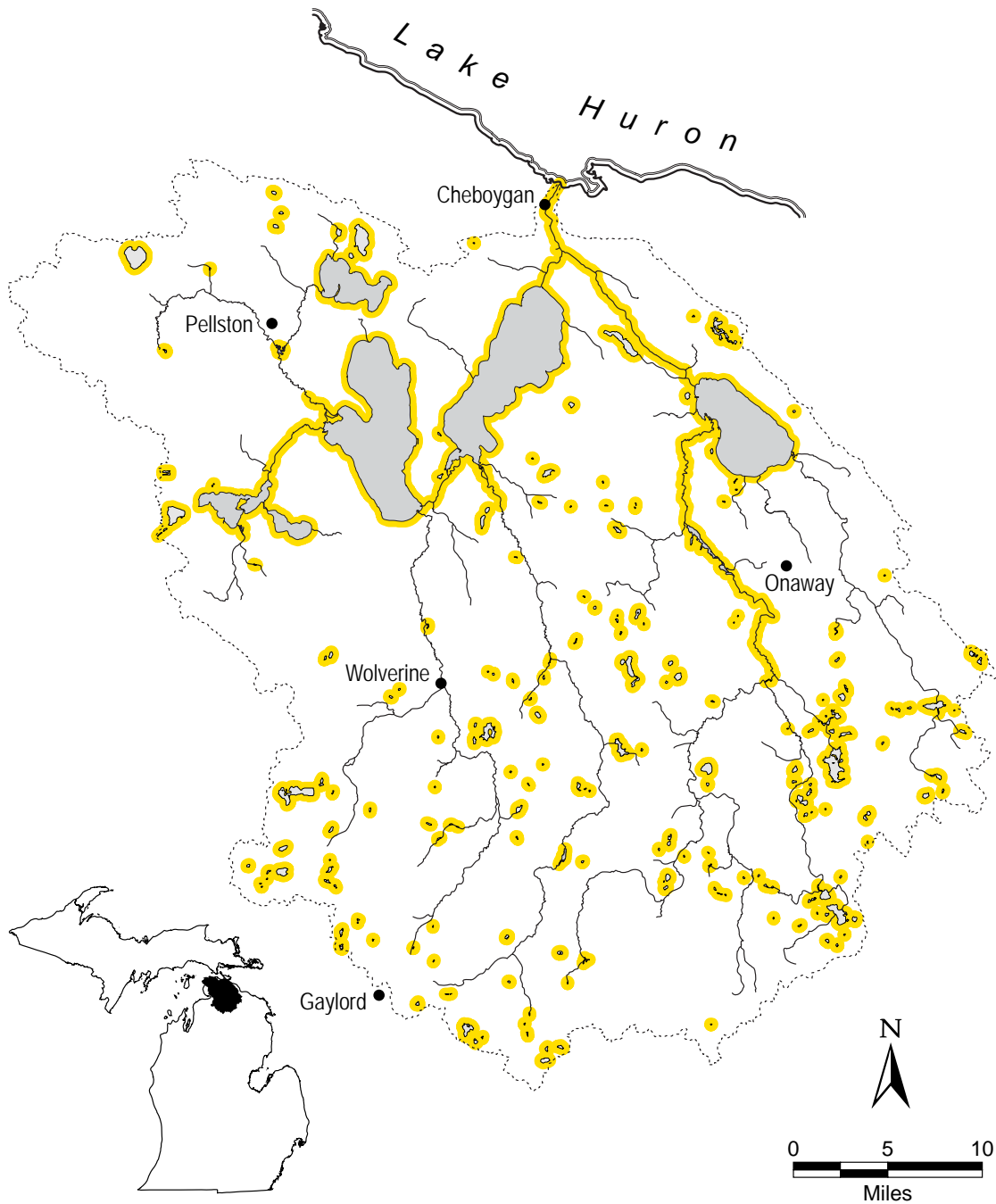
- feeding - clear, cool, deep lakes and rivers
- streams where 40% consists of riffles over clean gravel, boulder, or bedrock substrate
- in pools with a current and >4 feet of depth
- gradients between 4 and 25 feet per mile
- spawning - nest in sandy, gravel, or rocky substrate
- gradients 7 to 25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

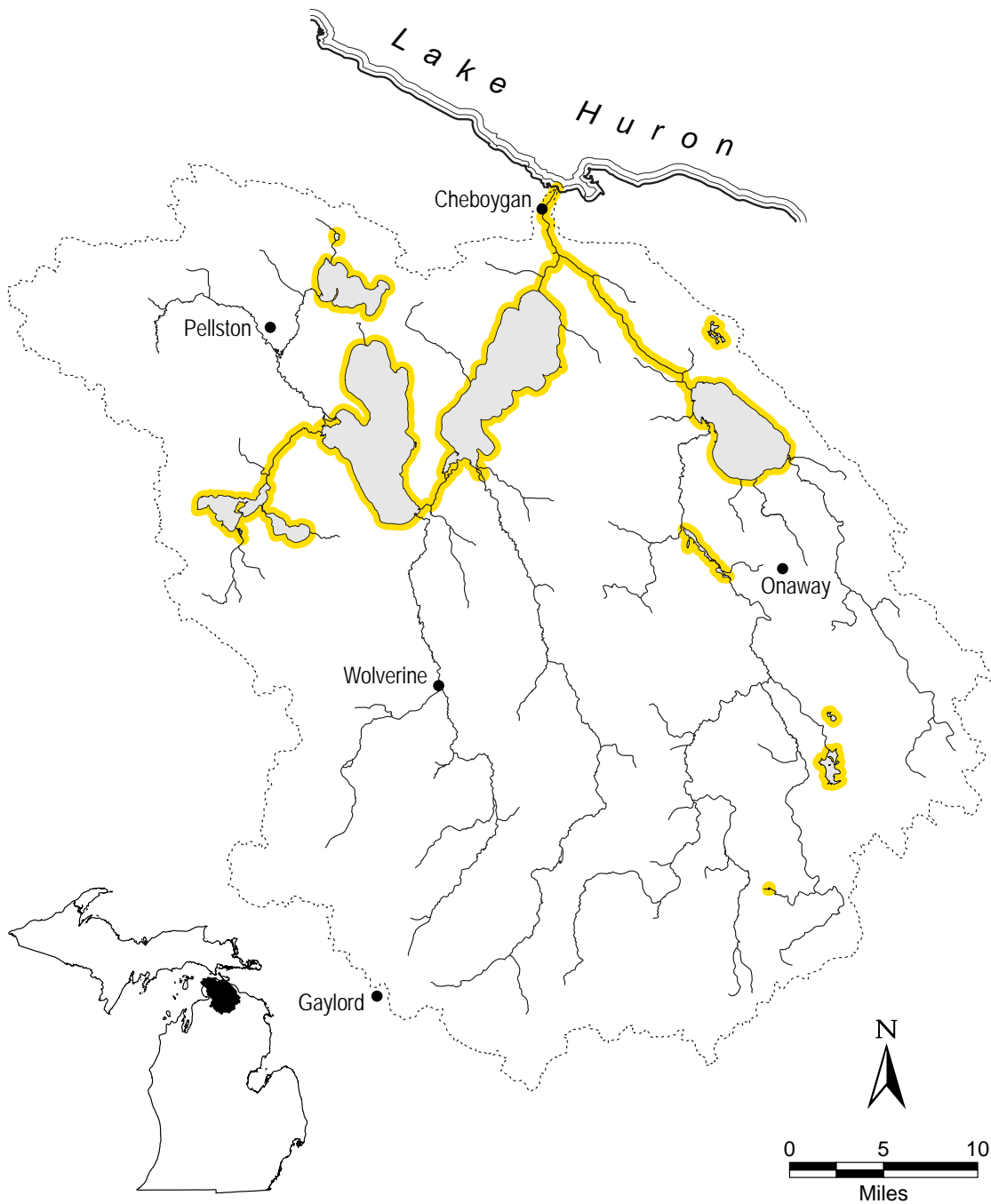
- feeding - non-flowing clear waters - lakes, impoundments, and pools of streams
- abundant aquatic vegetation
- soft muck, organic debris, gravel, sand, and hard non-flocculent clay substrates
- spawning - nest in gravelly sand to marl and soft mud substrates
- emergent vegetation
- quiet shallow bays;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



Black crappie *Pomoxis nigromaculatus*

Habitat:

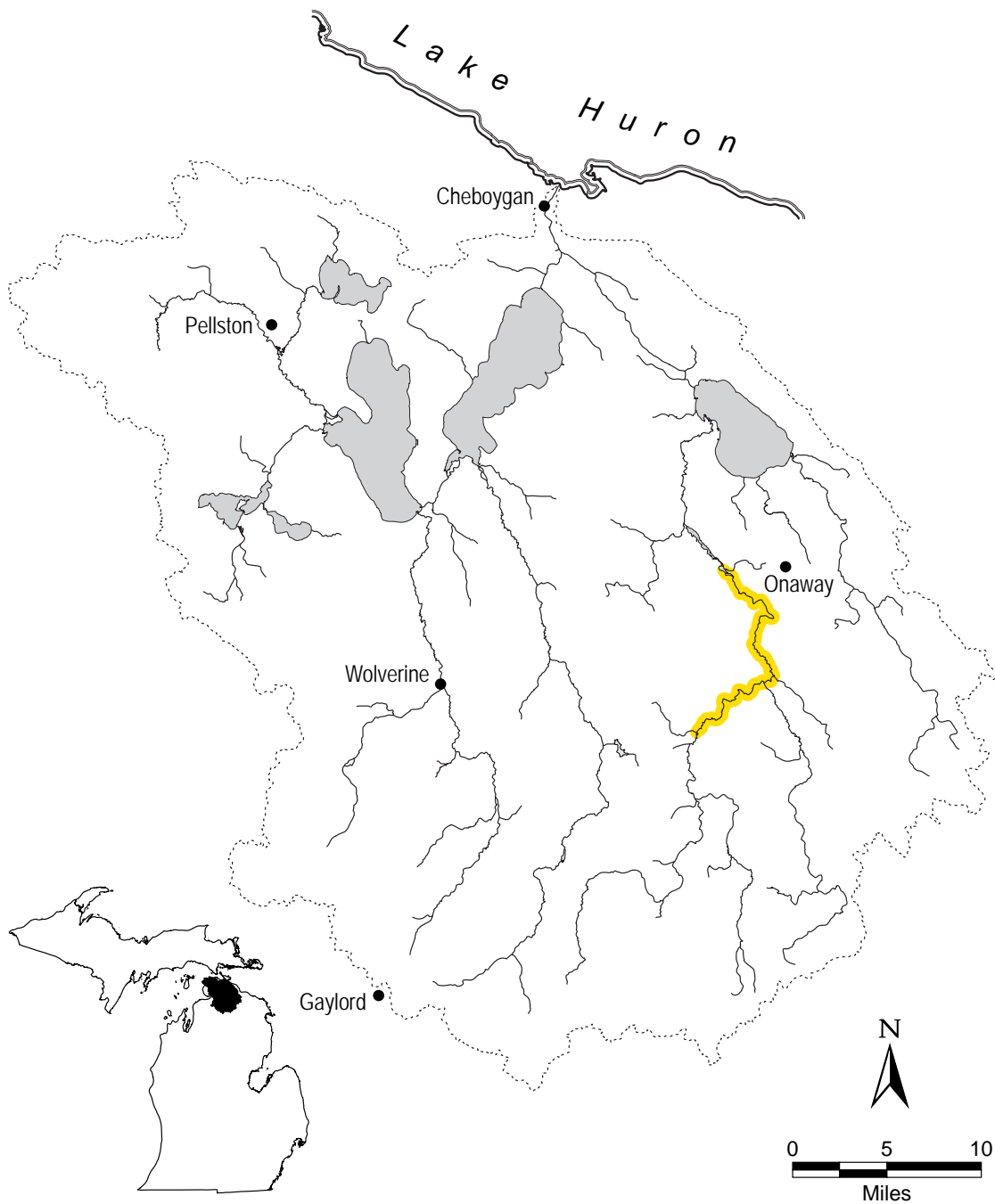
- feeding - larger clear non-silty low-gradient rivers; also in lakes and impoundments
 - clean hard sand or muck substrate
 - associated with submerged aquatic vegetation
 - does not tolerate silt or turbidity well
- spawning - nests in gravel, sand, or mud substrate
 - some vegetation must be present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



Rainbow darter *Etheostoma caeruleum*

Habitat:

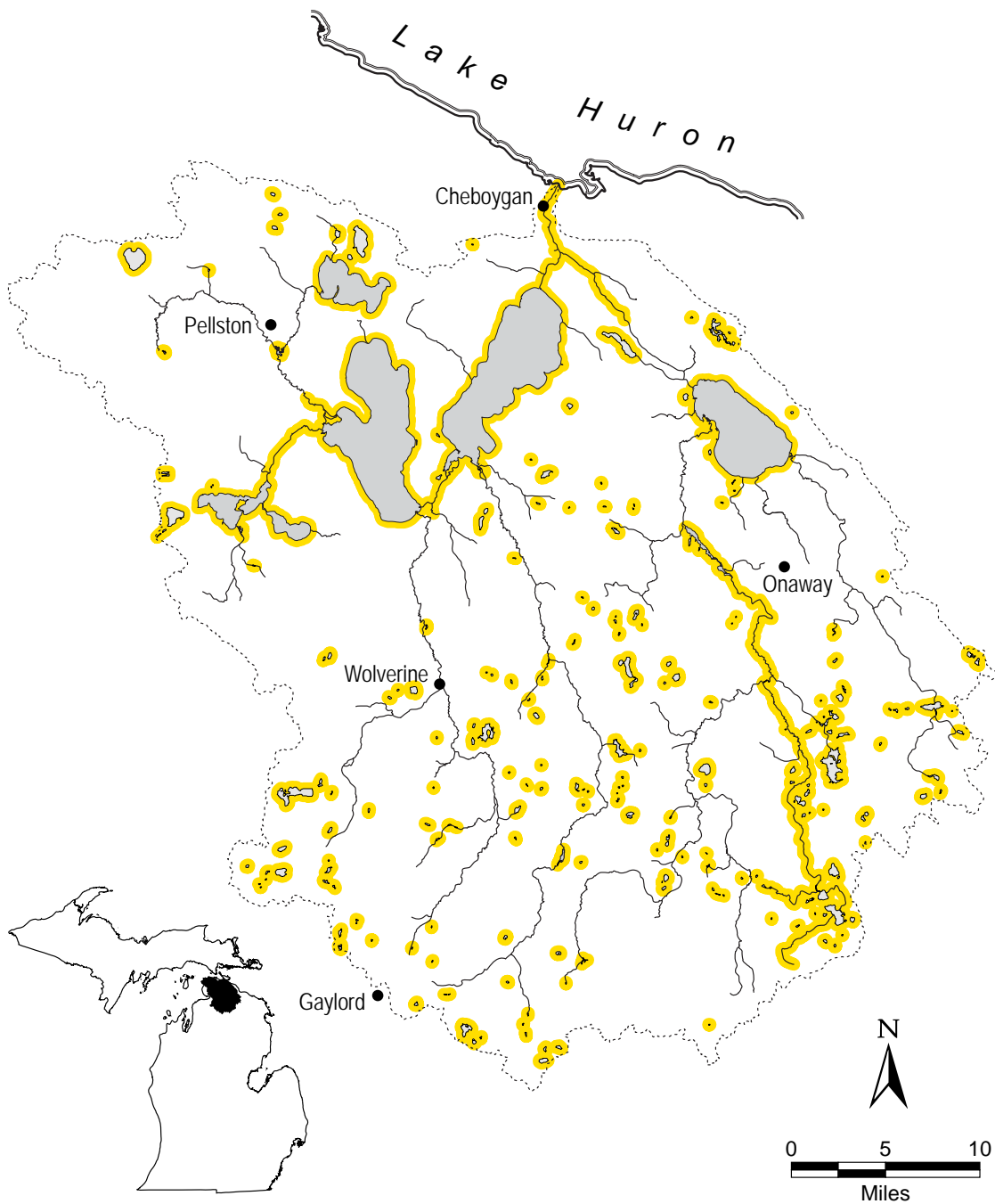
- feeding - gravelly high gradient riffles
- clear, moderate to large streams
- in shallows (average 1 foot)
- spawning - gravel or rubble riffles



Iowa darter *Etheostoma exile*

Habitat:

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



Least darter *Etheostoma microperca*

Habitat:

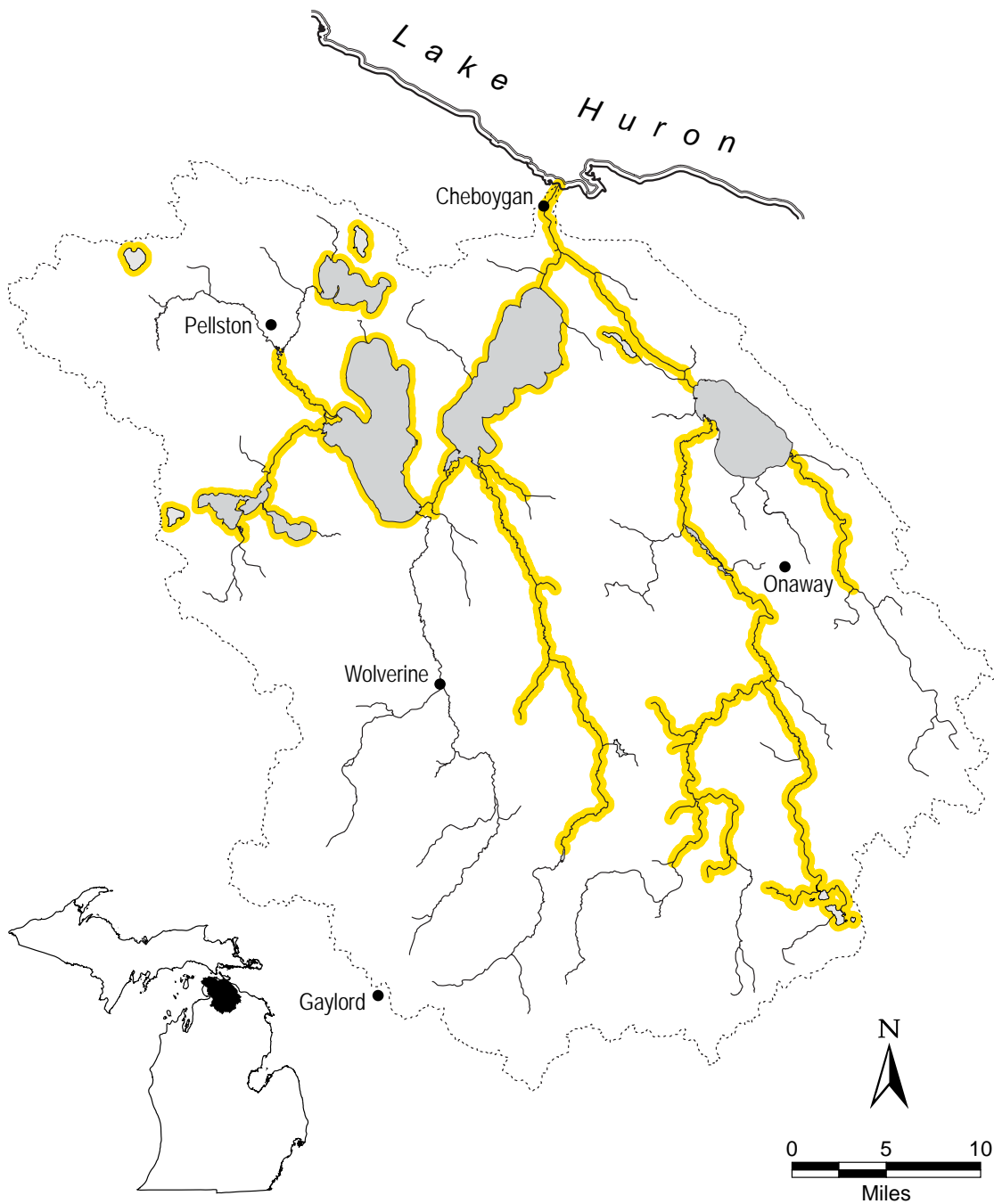
- feeding - moderate to warm temperature
- clear quiet low-gradient vegetated streams (wetlands, floodplains)
- soft substrate
- spawning - spawning occurs on stems of plants
- male guards a territory in a vegetated area



Johnny darter *Etheostoma nigrum*

Habitat:

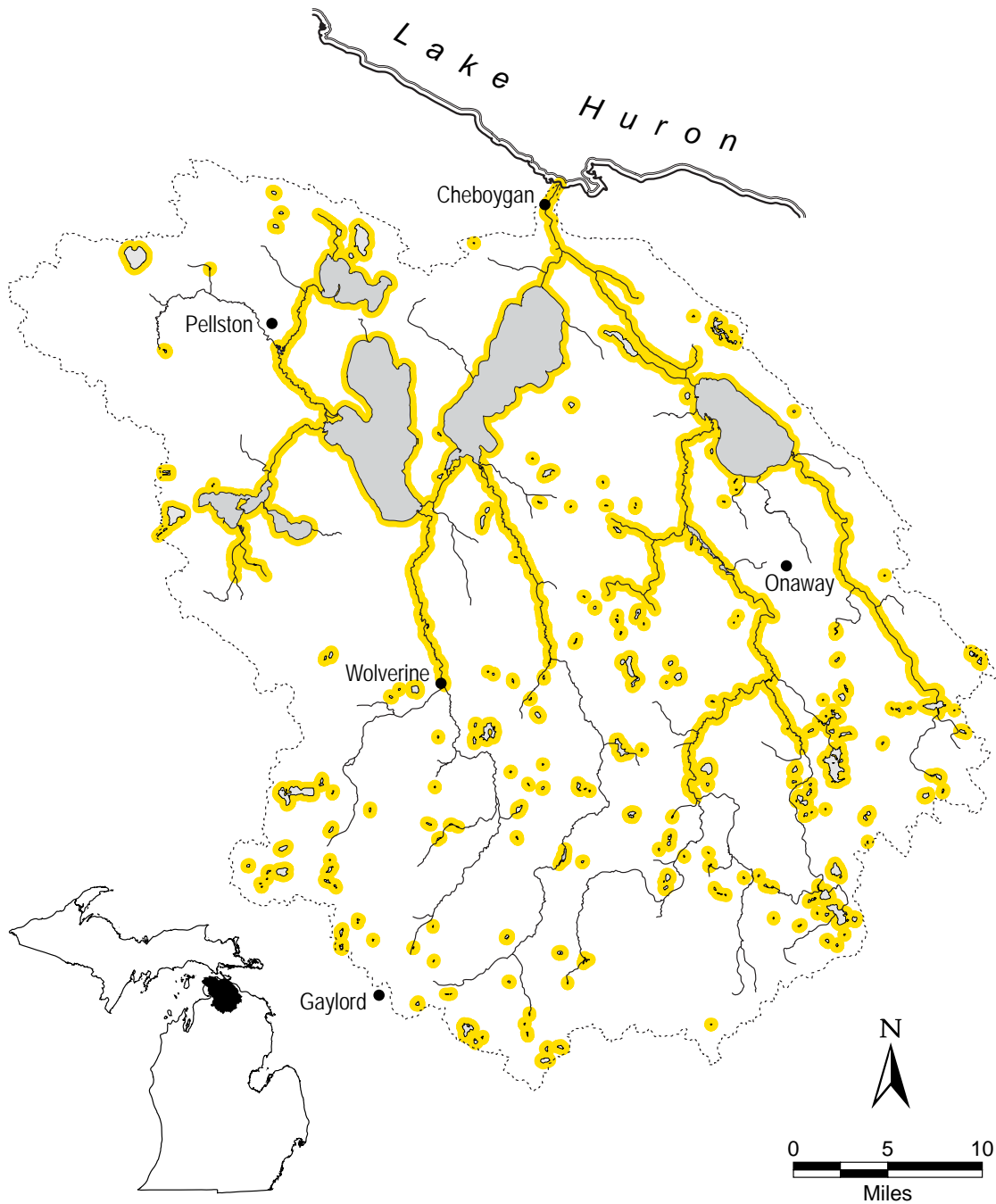
- feeding - sand and silt substrate
- little to moderate current
- shallow areas of streams, rivers, lakes, and impoundments
- tolerant of many organic and inorganic pollutants and turbidity
- spawning - underneath rocks
- in stream pools or protected shallows of lakes



Yellow perch *Perca flavescens*

Habitat:

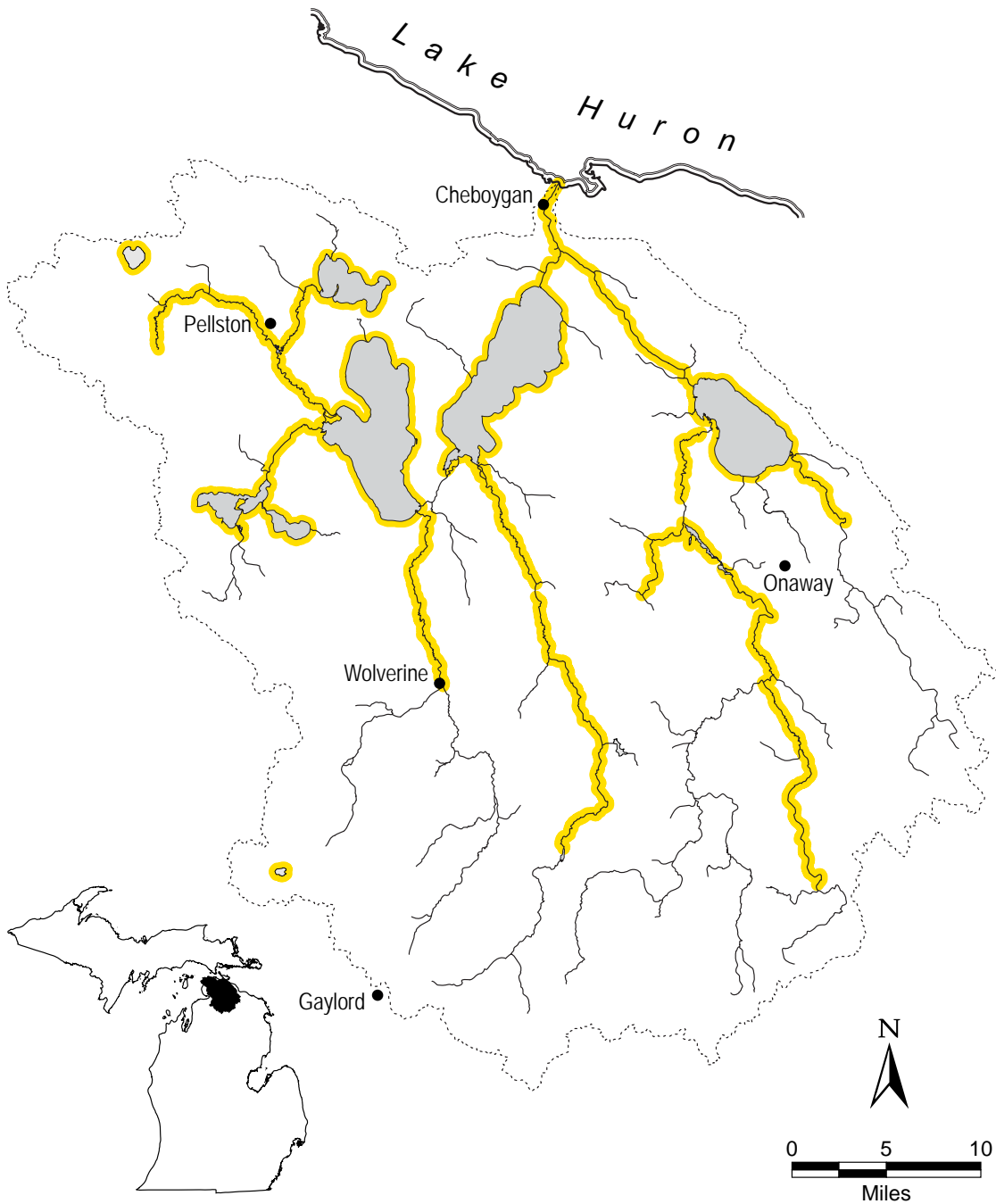
- feeding - clear lakes and impoundments; also Lake Huron
- low gradient rivers
- abundance of rooted aquatics
- muck, organic debris, sand, or gravel substrate
- does not tolerate turbidity and siltation
- spawning - shallows of lakes, tributaries of streams
- occurs over rooted vegetation, submerged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



Northern logperch *Percina caprodes semifasciata*

Habitat:

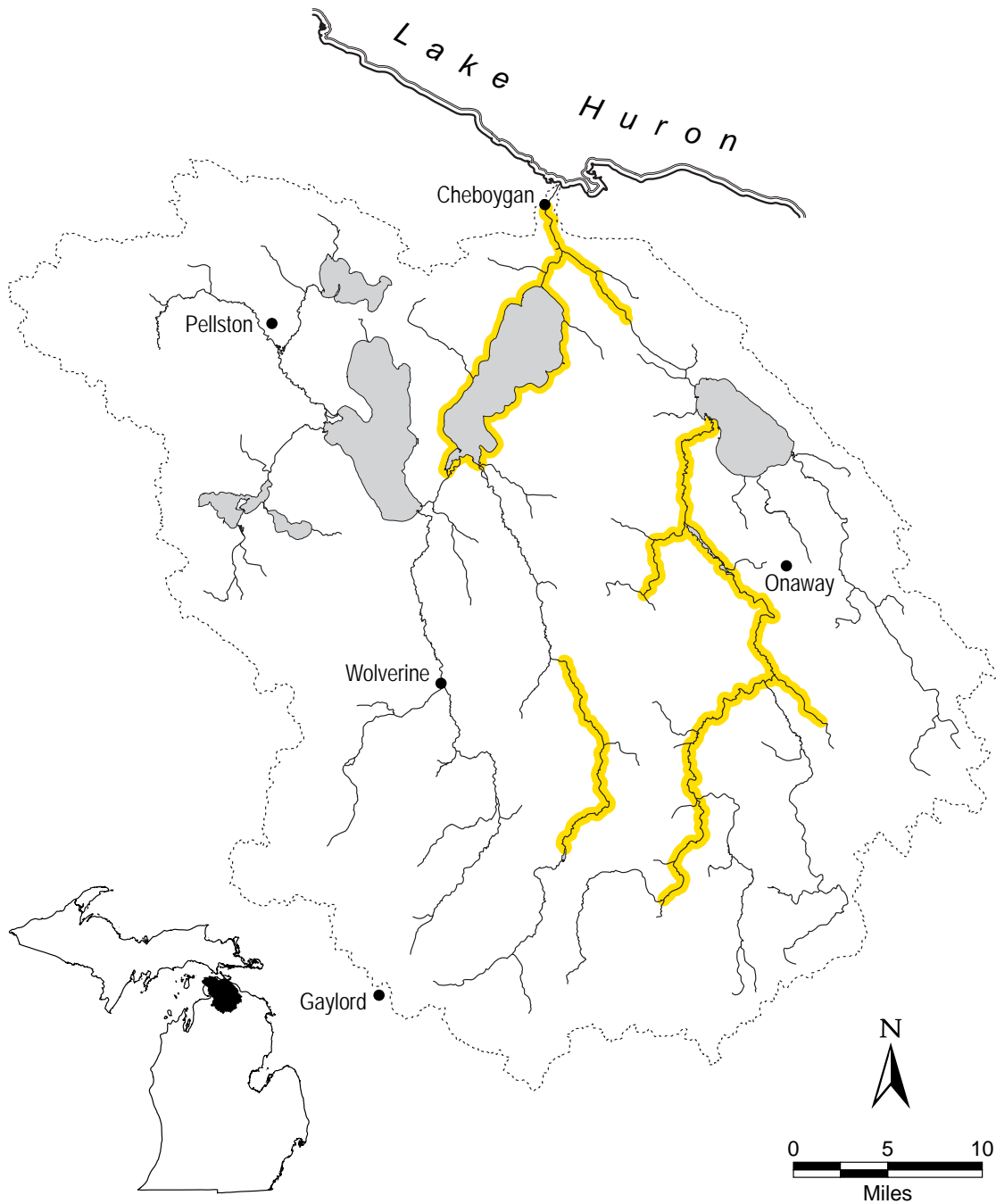
- feeding - gravel riffles, deeper slower sections of rivers
- medium size streams; also lakes, impoundments, and Lake Huron
- sand, gravel, or rock substrate
- avoids turbidity and silt
- spawning - riffles or sandy in-shore shallows



Blackside darter *Percina maculata*

Habitat:

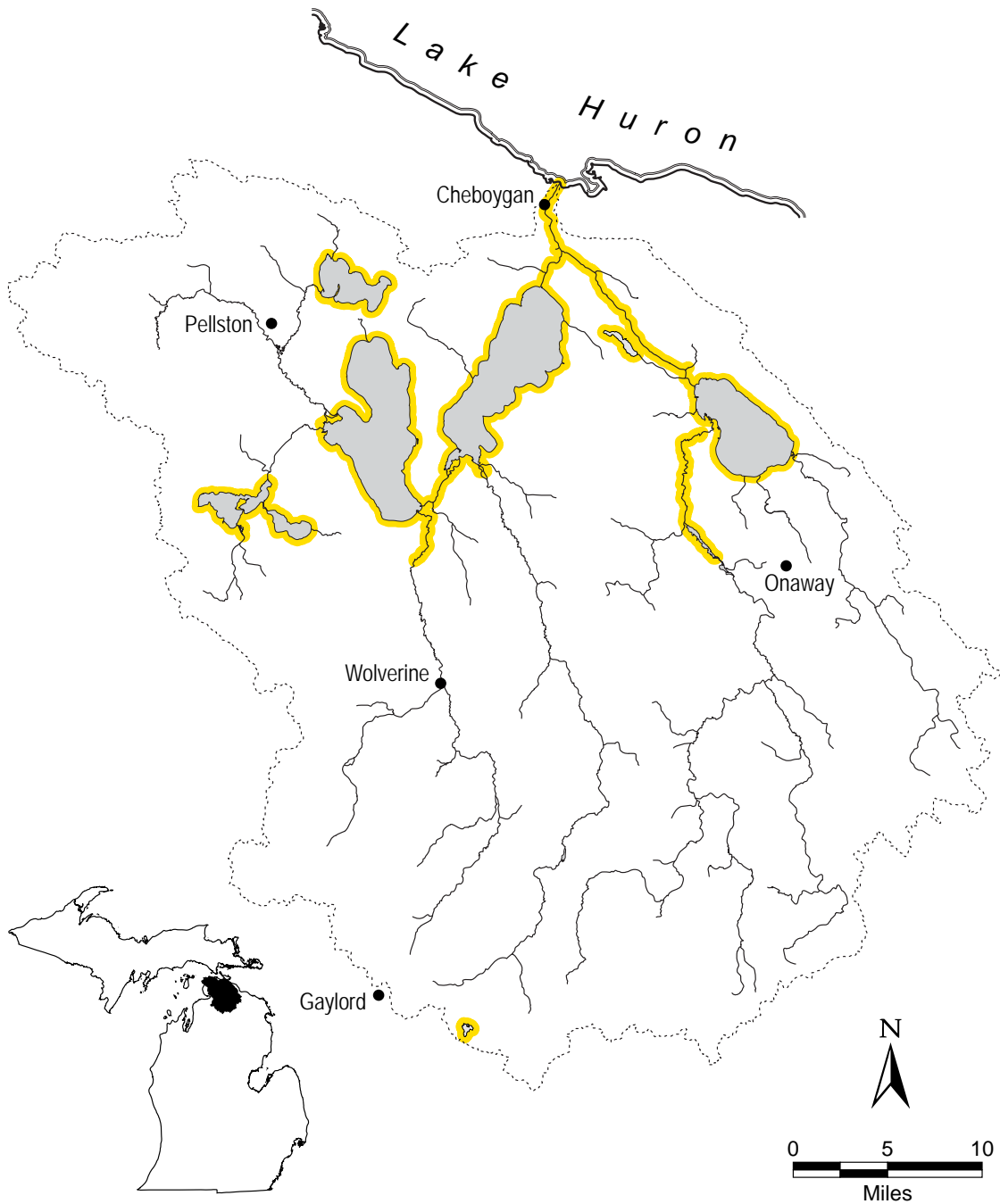
- feeding - small to medium streams
- low to medium gradient
- gravel and sand substrate
- tolerate some turbidity
- spawning - gravel and sand substrate



Walleye *Sander vitreus*

Habitat:

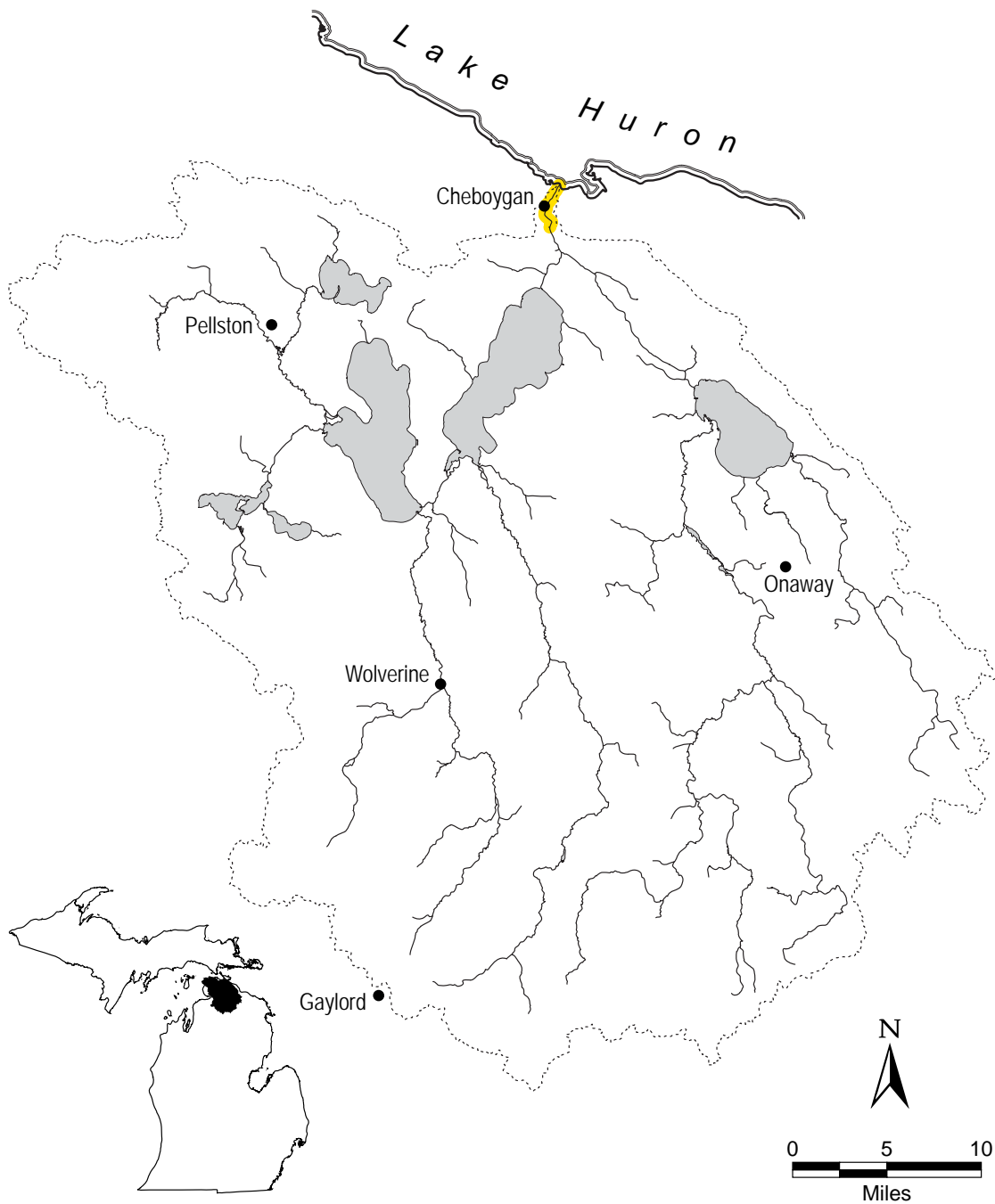
- feeding - larger, deeper streams and in large, shallow, turbid lakes and impoundments; also Lake Huron
- gravel, bedrock, and firm substrates preferred
- does not tolerate a lot of turbidity or low oxygen
- spawning - rocky substrates in high gradient water in rivers
- boulder to coarse gravel shoals in lakes
- winter refuge - avoids strong currents



Freshwater drum *Aplodinotus grunniens*

Habitat:

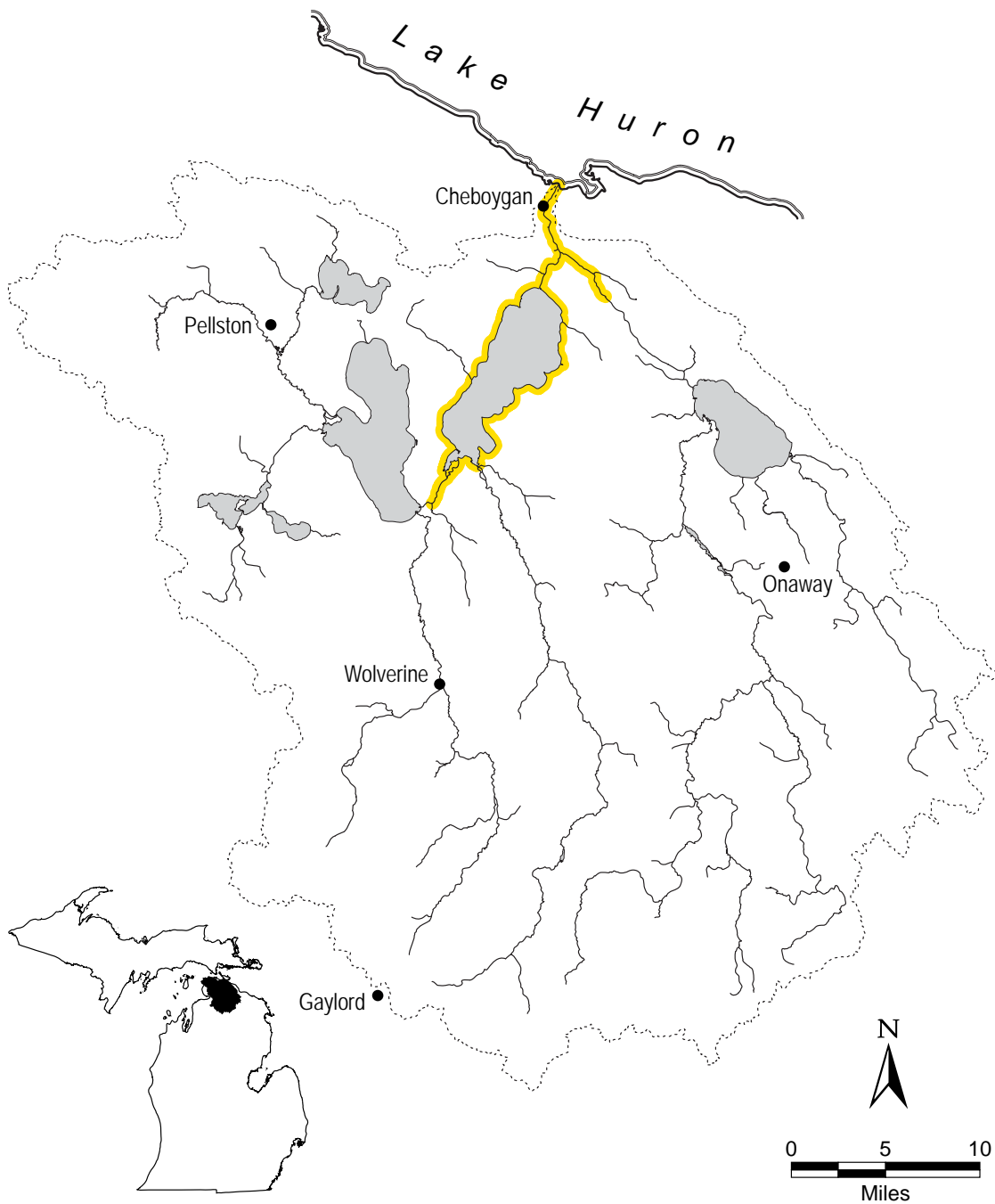
- feeding - deeper pools of rivers and Lake Huron
- in shallows
- prefers clear waters and clean substrates
- can adapt to high turbidity levels
- spawning - pelagically, in open water, over sand or mud substrate
- occurs in bays or lower portions of marshes



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



This page was intentionally left blank.

Appendix 4

Direct contact angler creel data for various streams and lakes in the Cheboygan River watershed. Numbers are direct observations from conservation officers and not subject to number expansion over time.

This page was intentionally left blank.

Appendix 4.-Direct contact angler creel data for various streams and lakes in the Cheboygan River watershed. Numbers are direct observations from conservation officers and not subject to number expansion over time.

County	Lake/River	Year	Total hours	Species																		
				Brook tr.	Brown tr.	Rainbow tr.	Smallmouth	Largemouth	Bluegill	P'seed	Rock bass	Crappie	Perch	Grass Pike	Walleye	Northern pike	Bullheads	Channel cat	Carp	Suckers	Smelt	Other
Charlevoix																						
	Hoffman Lake	35-46	111.50	21		13	6		10		2											
	Lake Louise (Thumb Lake)	28-29	312.50	2		6	4															
		31-34	92.50					1			30											
		40-49	1777.25	50		75	142	49	100	25	10											
		50-59	4902.00	489	6	726	142	54	259	54	32											2
		60-65	2374.00			576	9		17	5												69
	Sturgeon River	38	23.50	11																		
		42	16.00	10																		
		52	1.50	1																		
	Sturgeon River West Branch	43-46	55.50	53																		
		51-53	31.50	76																		
		62	2.00		2																	
Charlevoix+Otsego																						
	Booth Lake (Standard Lake)	42-49	206.50				2	20	49													
		50-59	406.50				9	55	257	11												
		62-64	8.00						13													
Cheboygan																						
	Black Lake	30-39	276.00				6	4	15	16	24		100	73	64	27	2					
		40-41	318.50				8		11	56	31		31		9	3						
	Burt Lake	28-29	441.00			2	2		7		1		32	57	235							1
		30-39	725.00	1		59	10	2		5	11		544	86	548		1					
		40-49	3438.55			14	6	3					604		517	73						2
		50-59	8506.00	2	2	56	8		3	4	60		1303		856	71	1					16
		60-65	11799.75		1	18	18	5	11	11	80		1418	25	1133	53	2					1

Appendix 4.-Continued

County	Lake/River	Year	Total hours	Species																	
				Brook tr.	Brown tr.	Rainbow tr.	Smallmouth	Largemouth	Bluegill	P'seed	Rock bass	Crappie	Perch	Grass Pike	Walleye	Northern pike	Bullheads	Channel cat	Carp	Suckers	Smelt
	Cedar Creek	39	5.00			1															
	Cheboygan River	37-38	25.75				3		10		21		3	3	2						
		40-49	1401.25				35	2		31	293		1546	30	42					1	
		50-59	1227.50				15	1	10	16	232		1420	17	18					1	
		60-64	338.00				17	2	15	29	78		347	44	1						
	Cochran Lake (North Twin Lake)	46	4.50																		
		50-59	124.75				4	5	129	3			181		1	1					
		60-62	89.00							1											
	Crooked River	30	5.00											1	1						
		62-63	6.00								1										
	Devereaux Lake	41-46	33.50				2			9											
		53-54	13.00								2		44								
	Dog Lake	32-39	12.50											4							
		40-47	77.75												3						
	Douglas Lake	28-30	184.00				8	6		8	31		6	55	2						
		40-49	878.25				24	17	17	78	57		46			67	1			9	
		50-59	2200.50				28	32	368	444	264		110	5	171	1				13	
		60-64	1184.00				44	17	451	86	173		154	4	83	8					
	Hemlock Lake	34-35	668.00	315																	
		40-47	35.00	4		10															
	Lancaster Lake	48-56	17.00	1			1			4				1	1						
		61	67.50							49											
	Lance Lake	29-38	13.50					3	40	1			8								
		51-63	16.75						3				22								
	Laperell Creek	30	2.00	6																	
		41-49	154.00	98	1																
		56-59	17.00	3																	
		60	25.00	6																	

Appendix 4.-Continued

County	Lake/River	Year	Total hours	Species																			
				Brook tr.	Brown tr.	Rainbow tr.	Smallmouth	Largemouth	Bluegill	P'seed	Rock bass	Crappie	Perch	Grass Pike	Walleye	Northern pike	Bullheads	Channel cat	Carp	Suckers	Smelt	Other	
	Little Carp River	44-48	25.00	4		1																	
		53-59	68.00	31	1	4																	
		61	45.00	38	2	16																	
	Little Pigeon River	29	36.00	32																			
		40-48	140.50	50																			
		50-58	11.50	4																			
		61-62	10.00	8																			
	Long Lake	40-49	166.00				6	2	1	2	43		1				7					3	
		60-62	95.00				2	1	26		8		3		3		3						
	Lost Lake	34	69.00	27																			
	Maple River	28	13.00	15											4							2	
		30-39	32.00	56		2																	
		41-48	56.00	7	3	72					1												
		58	14.00																				
	McLavey Lake	42-59	40.00										12				5						
	McPhee Creek	35	3.50	1																			
	Mud Creek	29	4.00	6																			
	Mud Lake	43-58	5.00														1						
	Mullett Lake	28-29	102.00				1				8		10	19	2			5				1	
		30-38	216.50				1						1	37	64							2	
		40-49	2745.05				25	5	18	30	105		612	1	105	92	3					1	
		50-59	4588.00				30	1		6	148		796		135	95	13						
		60-64	2146.25				19	10	2	3	47		587		91	52							29
	Munro Lake	41-48	108.50				2	5	5	7	1		21				15						
		60-62	108.00										7				12						
	Osmun Lake	42-47	121.00				9	17	21	23			2										
		50-54	12.50					1		7			5										

575

Appendix 4.-Continued

576

County	Lake/River	Year	Total hours	Species																				
				Brook tr.	Brown tr.	Rainbow tr.	Smallmouth	Largemouth	Bluegill	P'seed	Rock bass	Crappie	Perch	Grass Pike	Walleye	Northern pike	Bullheads	Channel cat	Carp	Suckers	Smelt	Other		
	Pigeon River	28-29	186.50	175		24								28	6									
		30-39	939.00	652	6	94								7	13									
		40-49	1740.20	753	388	382					1				2	5					3			
		50-59	173.25	28	9	115					2				1	1					127			
	Silver Creek	35	2.00	8																				
	Silver Lake	28-29	30.50				4							84										
		30-38	19.50				3	7			10			13	11	1								
		40-48	184.25	7		9		35	1		13			40	6									
		50-59	1563.50			538	4		10		4			5	5						11			
		60-64	945.25			380			4	12	29			14										
	Stewart Creek	38	16.25																					
		42-49	15.50			3																		
		59	2.00	5																				
	Sturgeon River	28-29	816.50																					
		30-39	4391.00	216	220	2151	9	3	1	1	3		5	1	77		4				31			
		40-49	3437.65	101	765	950									152						121			
		50-59	4934.00	200	343	1646		1							14						374			
		60-64	1910.10	26	156	470									5						327			
	Sturgeon River West Branch	28-29	143.00	106		11																		
		30-39	271.50	236		84																		
		40-49	1305.15	835	162	203																		
		50-59	1386.25	654	119	557																		
		60-63	310.50	187	39	81																		
	Tower Pond (Black River)	43-49	621.50	2			3		3							70	14				157			
		62-64	60.00			1							2				3				1			
		50-59	276.50													41					17			

Appendix 4.-Continued

County	Lake/River	Year	Total hours	Species																	
				Brook tr.	Brown tr.	Rainbow tr.	Smallmouth	Largemouth	Bluegill	P'seed	Rock bass	Crappie	Perch	Grass Pike	Walleye	Northern pike	Bullheads	Channel cat	Carp	Suckers	Smelt
577	Twin Lake	32-39	132.00				1		99	27	24			35					33		
		40-49	371.50				7	2	174	53	14	1	9	4	1	1	1				
		50-59	467.00				6	26	270	32	7		3			12					
		60-61	108.00				2	9	56	2	3										
	Twin Lake North+South (Cochran+Roberts Lake)	45-49	367.25				3	9	123	14	27		16			13					
		Twin Lake South (Roberts Lake)	42-43	35.00				7	1		4										
			50-59	85.00						128				27			2				
		60	15.50												1						
	Weber Lake	41-48	68.50	6			1	6	1				134								
		50-59	1498.50	994		89			145												
		60-64	576.75	91		112															
	Cheboygan+Presque Isle																				
Black Lake	42-49	2823.50						21	7	91		45		218	112				6		
	50-59	5166.50						17	4	1	34	245	348	218	139				1		
	60-64	3488.50						19	3	2	10	81	114	320	32						
Emmet																					
Arndts Lake (Arnott Lake?)	28	21.00						11													
	Brush Creek	33-34	18.50	21																	
Cedar Creek	28-29	16.00	15																		
	31-39	11.00	11																		
	42-48	118.50	227		1								2								
	50-58	91.75	134																		
	60	5.00	5																		
Cold Creek	46	1.25	1																		

Appendix 4.-Continued

County	Lake/River	Year	Total hours	Species																		
				Brook tr.	Brown tr.	Rainbow tr.	Smallmouth	Largemouth	Bluegill	P'seed	Rock bass	Crappie	Perch	Grass Pike	Walleye	Northern pike	Bullheads	Channel cat	Carp	Suckers	Smelt	Other
579	Minnehaha Creek, West Branch	56	13.00	5	1																	
	Mud Creek	29	3.00	7																		
	Mud Lake	42-43	20.00			2	3	7							3							
	Pickerel Lake	28-29	101.50			6	3	11	10			24	5	14		3						
		31-39	84.75				4	17	20	20		38	23	36		2				2		
		40-49	385.75			17	2	18	1	10		162	0	25	44					23		
		50-59	941.50			40	5	406	165	179		390	0	64	12					3		
		60-64	867.50			34	21	108	11	80		82	0	38	3							
	Round Lake	29	9.00			2							35									
		30-39	256.25			26	19	142	132	96		17	55	16								
		40-49	1041.55			63	20	304	174	258		59	23	35	258					2		
		50-59	764.50			49	22	730	275	143		143			77	3						
		60-64	512.00			10	4	499	92	26	3	46		1	11							
	Silver Creek	29	65.50			192																
		31-39	85.25			144																
40-48		112.25			185	1																
50-59		91.00			154		2															
62		6.00			11																	
Van Creek	28-43	18.50		37																		
Whites Creek	44	4.00																				
Montmorency																						
Brush Creek	28-29	18.50			36		2															
	32-39	64.00			70							17										
	40-49	674.75			446						1			2								
	50-59	934.00			921	2	3												8			
	60-64	104.00			58																	

Appendix 4.-Continued

580

County	Lake/River	Year	Total hours	Species																		
				Brook tr.	Brown tr.	Rainbow tr.	Smallmouth	Largemouth	Bluegill	P'seed	Rock bass	Crappie	Perch	Grass Pike	Walleye	Northern pike	Bullheads	Channel cat	Carp	Suckers	Smelt	Other
	Clear Lake	30-35	870.00	5		1	262			6	110		433					2		35		
		40-49	929.25			41	19	3	11	5	5		82		4							
		50-59	1732.50	16		537	5						61							134		
		60-64	3129.50		7	943							131							10		
	Foch Lakes	59	3.00												1							
		60-64	107.00						44				41		12							
	Jackson Lake	34-38	52.50				5	22	7	130			22									
		42-49	260.25				34	7	232	12			23									
		51-59	24.00						58				7									
		61-64	118.00					2	242	10	4		19									
	Lake Valentine	38	5.00				7															
	Little Joe Lake	32	3.50				2				1		2									
	Little Tomahawk Lake	55	15.00				2			6												
	Muskellunge Lake	34-37	302.50										28	12	9				7			
		46	11.00												2							
	Northern Tomahawk Lake	32	2.00										1									
	Pug Lakes	48	6.00				1	2														
		55	11.00	1					5	1			7		2							
		62-63	15.00					1	8		1		7							2		
	Tomahawk Lake	36	8.50					9					10									
	Town Carrier Lake (Town Corner Lake)	29											1									
	Twin Tomahawk Lake	40-41	16.00				2		17	8					2							
		62-64	20.00												4							
		40-49	97.00					1	45	61			5		14							
	Walled Lake	50-59	78.00					2	26	18	4		7		13							
		61-64	51.00					3	35		3		11		7							

Appendix 4.-Continued

County	Lake/River	Year	Total hours	Species																		
				Brook tr.	Brown tr.	Rainbow tr.	Smallmouth	Largemouth	Bluegill	P'seed	Rock bass	Crappie	Perch	Grass Pike	Walleye	Northern pike	Bullheads	Channel cat	Carp	Suckers	Smelt	Other
	West Town Corner Lake	42	43.00	1			25															
		61-63	53.00				4	31				4				4						
Otsego	Big Lake	51-58	390.50			170									2							
		60-62	72.25			35						2			1							
	Club Stream	28-29	6.50	19	2																	
		47-49	23.00	42																		
		59	1.00	1																		
	Finnigan Lake	37	24.00	18																		
	Ford Lake	42-48	17.50	25					4													
		51-56	9.00	2					4													
	Grass Lake	38	10.50				15	3														
		42-48	50.50				2	1	67	30					4	2						
		50-59	124.50				13		202	9					11							
		60-63	15.50		2				8	19												
	Lost Lake	30-39	1242.75	570		1																
		44-48	51.50	58																		
	North Twin Lake	45-48	34.50	26		1																
		50	42.00		43																	
	Pickerel Lake	42-49	139.00			44	2	2	146	1												
		50-59	2699.00	25	4	2189	1	23	175	27			17							120		
		60-64	302.00			209			6				1									
	Pigeon River	28-29	979.50	1106	1	76																
		30-39	1567.25	1944	37	151																
		40-49	1406.75	1113	135	178																
		50-59	590.50	471	86	40																
		60-64	93.50	119	1						2			6								

Appendix 4.-Continued

County	Lake/River	Year	Total hours	Species																	
				Brook tr.	Brown tr.	Rainbow tr.	Smallmouth	Largemouth	Bluegill	P'seed	Rock bass	Crappie	Perch	Grass Pike	Walleye	Northern pike	Bullheads	Channel cat	Carp	Suckers	Smelt
	Healy Lake	38-39	8.25	2				4	1			3			3						
	Hessler Lake	43-49	102.00				1					13									
	Krauth Lake	46-48	26.00									1									
	Little Tomahawk	42-48	93.75				11	7	38		2				3						
	Loon Lake	42-49	72.50						2	2		124					36				
	McAvoy Lake	40-49	50.00				5		38			20									
		51	20.00				1		62												
	Mud Lake	32-39	16.50					3	26	3							11				
		40-49	78.00														24				
		59	2.00						9	2		1									
		62	10.00														1				
	Rainey Lake	63	14.00									6									
	Shoepac Lake	42-49	125.00				5		48	1	23			1	3						
		50-58	179.00				37		100		11	4			15						
		64	4.00																		
	Silver Creek	36-39	2.75	6																	
		40-49	183.75	181	2	14															
		50-51	12.00																		
		63	12.00	1																	
	Spring Lake	41-48	17.50	15								1			2						
	Tomahawk Lake	63-64	9.00							6		11									

583