

**APPENDIX 5. List of Fish Species Native to the Lower St. Louis River and Their Requirements**

Common Name	Latin Name	Family	Family (Latin)	Adult Food Items	Young Food Items	Spawning Habitat	General Habitat	Other Comments
Lake Sturgeon	<i>Acipenser fulvescens</i>	sturgeons	Acipenseridae	snails, clams, crayfish, immature insects, other aquatic animals		tributary streams; no nests		
Bowfin	<i>Amia calva</i>	bowfin	Amiidae	fish, other small aquatic animals		bite off vegetation and fan away sediments in small streams or weedy bays	slow-moving water or backwaters; streams or lakes	
American Eel	<i>Anguilla rostrata</i>	freshwater eels	Anguillidae	small fish, insect nymphs, crayfish, snails, worms		spawn in ocean (catadromous)	hide under cover, or bury in mud at night, and in winter	
Highfin Carpsucker	<i>Carpiodes velifer</i>	suckers	Catostomidae	algae, ooze, and insects from bottom		likely in gravelly riffles of rivers	rivers, oxbows, sloughs, and ponds over sand or gravel bottom; generally in rivers where current is moderate to swift or in quiet water adjacent to river channels	northern limit of range; declining due to habitat loss (Phillips et al 1982); extirpated from some states, and S1, S2 in several; G4G5
Longnose Sucker	<i>Catostomus catostomus</i>	suckers	Catostomidae	mostly bottom invertebrates		flowing shallow stream water over gravel; otherwise in lakes	cold clear water in large lakes, but usually shallower water; sometimes congregates at mouths of North Shore streams	
White Sucker	<i>Catostomus commersoni</i>	suckers	Catostomidae	bottom feeder; small animals (e.g., chironomid larvae, zooplankton, small crayfishes), plants and "ooze"	protozoans, diatoms, small crustaceans, and bloodworms near surface of water	shallow swift water or rapids in lakes or streams over rocky or gravelly bottom, or on lake shoals, beaches, or rivermouths (areas with wave action in lentic habitats)	Usually in small, clear, cool creeks and small to medium rivers	adaptable to variety of environmental conditions; Phillips et al (1982) state that it is NOT found in Lake Superior drainage; often dominates a body of water
Silver Redhorse	<i>Moxostoma anisurum</i>	suckers	Catostomidae	immature insects, mollusks, algae, detritus, and other small organisms		main channel of turbid rivers in 1-3 ft. of water over gravel to rubble bottoms	Typically in silty to firm-bottomed pools and runs of small to large rivers; also in natural lakes and impoundments	
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>	suckers	Catostomidae	mainly mollusks, microcrustaceans, and immature insects, though considerable plant materials sometimes may be consumed		usually over gravel in runs and riffles; may move out of larger bodies of water into smaller rivers and streams to spawn	rocky pools, runs, and riffles of small to large rivers, natural lakes, and impoundments	most adaptable of the redhorses in Minnesota
Redhorse species (unidentified)	<i>Moxostoma spp.</i>	suckers	Catostomidae					
Rock Bass	<i>Ambloplites rupestris</i>	sunfishes	Centrarchidae	insects, snails, small fish		depression in gravel	shallow, weedy places in lakes; soft-bottomed lakes and streams	
Green Sunfish X Warmouth	<i>Lepomis cyanellus x gulosus</i>	sunfishes	Centrarchidae	aquatic insects, other small aquatic animals		depression nests	lakes and streams	Warmouth supposedly only in SE MN
Pumpkinseed	<i>Lepomis gibbosus</i>	sunfishes	Centrarchidae	insects, snails, small fish, other small organisms in weed beds		depression nests in shallow, quiet water	lakes and streams	Introduced to Lake Superior drainage?
Bluegill	<i>Lepomis macrochirus</i>	sunfishes	Centrarchidae	insects, other small animals, plants	insects, snails, small fishes, plants	depression nest	rivers and streams; lakes except in NE	
Smallmouth Bass	<i>Micropterus dolomieu</i>	sunfishes	Centrarchidae	crayfish, small fish, emerging insects		nests		
Largemouth Bass	<i>Micropterus salmoides</i>	sunfishes	Centrarchidae	small fish, crayfish, frogs, insects	small aquatic animals	shallow, quiet water 60* F; depression nest, or in vegetation or among roots	small to medium lakes w clear water, sandy shores, weed beds; also backwaters of rivers	
Black Crappie	<i>Poxomis nigromaculatus</i>	sunfishes	Centrarchidae	small aquatic animals incl fishes		depression nest	streams, small to medium lakes	

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Mottled Sculpin	<i>Cottus bairdi</i>	sculpins	Cottidae	benthic feeder; forages among rocks, mainly on immature aquatic insect larvae, especially mayflies, chironomid midges, and stoneflies; larger individuals also eat caddisflies and crayfish; crustaceans, annelids, fishes, fish eggs and plant material also may be eaten; may take swimming prey from water column		under flat rock or ledge, in crevice among large gravel, or among aquatic plants	clear, cold to warm (typically cool) headwaters, creeks, springs, small rivers, and lakes, with sand and gravel or (more typically) rocky substrate; often under rocks or vegetative cover	
Mottled Sculpin X Slimy Sculpin	<i>Cottus bairdi x cognatus</i>	sculpins	Cottidae					
Slimy Sculpin	<i>Cottus cognatus</i>	sculpins	Cottidae	mainly immature aquatic insects and crustaceans obtained from bottom; also eats other invertebrates, fish eggs, and plant material			Deep oligotrophic lakes and swift rocky-bottomed streams (spring-fed streams in south). May move into lake shallows at night, into deeper water during day (often 30-100+ m deep).	
Lake Chub	<i>Couesius plumbeus</i>	minnows	Cyprinidae	insect larvae, zooplankton, and algae; sometimes fishes		river shallows, along rocky shores, in shoals of lakes; may migrate up to 1.6 km upstream from lakes to spawning areas	Varied habitats, standing or flowing water, large or small bodies of water; most common in gravel-bottomed pools and runs of streams and along rocky lake margins (Page and Burr 1991). More common in rivers in north (but in lakes if available). Often in shallows but may move into deeper parts of lakes in summer.	
Hornyhead Chub	<i>Nocomis biguttatus</i>	minnows	Cyprinidae	mainly aquatic invertebrates		small depressions or piles of small stones in riffles of small to medium streams	small to medium size, moderate to low gradient, cool to warm, typically clear, gravelly streams; in pools and slow to moderate runs	
Golden Shiner	<i>Notemigonus crysoleucas</i>	minnows	Cyprinidae	more on zooplankton (chiefly Cladocera) than on any other group; insects, diatoms, and algae are often important foods also; feeds mostly at or near surface		beds of submerged vegetation	usually in clean, quiet, vegetated water with access to extensive shallows	
Emerald Shiner	<i>Notropis atherinoides</i>	minnows	Cyprinidae	drifting terrestrial and aquatic insects chiefly in the middle and upper parts of the water column; largely insects, especially terrestrial ones in summer, immature aquatic insects and amphipods in winter; in lakes, eats microcrustaceans, plankton, and insects	mainly rotifers	In lakes, spawns over detritus-free substrate offshore at night at depths of 2-6 m (Becker 1983). Spawns over various substrates, typically over gravel.	large open rivers, lakes, and reservoirs; pools and runs of rivers with low or moderate gradient, also mouths of smaller streams. Most common in clear water over sand or gravel. Often aggregates in large schools in mid-water or near surface. May move closer to surface at night.	

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Common Shiner	<i>Notropis cornutus</i>	minnows	Cyprinidae	mainly aquatic insects, adults and larvae, algae, and other plant material		gravel beds in running water, in nests made in gravel by male in running water, or in nests of other species in running or still water	creeks and small to medium rivers with clear cool weedless water, moderate to swift current, gravel to rubble bottom, and alternating pools and riffles (usually avoids riffles). Also lakes and reservoirs, especially in north.	
Blacknose Shiner	<i>Notropis heterolepis</i>	minnows	Cyprinidae	mainly various small invertebrates, and some plant material; probably feeds mainly on bottom or in beds of aquatic vegetation		Spawns probably over sandy places	typically in cool weedy creeks, small rivers, and lakes, usually over sand	
Spottail Shiner	<i>Notropis hudsonius</i>	minnows	Cyprinidae	mainly insects, crustaceans, and filamentous algae		gravelly riffles near mouths of brooks, or along sandy shoals of lakeshores	all MN drainage basins; more closely restricted to large rivers and lakes, usually over sandy or rocky shallows with scant vegetation; intolerant of silt-laden or polluted waters	intolerant of silt-laden or polluted waters
Mimic Shiner	<i>Notropis volucellus</i>	minnows	Cyprinidae	daphnia, emerging diptera and terrestrial insects, other invertebrates, algae, and detritus		May scatter eggs over aquatic vegetation in deeper weedy littoral areas in lakes.	clear streams, from medium-sized creeks to small rivers; also clear, moderately weedy lakes; may move to bottom in deeper water at night in lakes	
Bluntnose Minnow	<i>Pimephales notatus</i>	minnows	Cyprinidae	bottom feeder, eats mostly algae in winter, mainly insects and plant material in summer		nest under object on bottom on sandy or gravelly shoals, eggs attached to underside of cover	lakes, ponds, rivers, and creeks in a variety of habitats; most common in clear rocky streams; schools in midwater or near bottom.	
Fathead Minnow	<i>Pimephales promelas</i>	minnows	Cyprinidae	feeds opportunistically in soft bottom mud; eats algae and other plants, insects, small crustaceans, and other invertebrates		underside of object in quiet water in nest	lakes, ponds, headwaters, creeks, small rivers, ditches, reservoirs, residual pools of intermittent streams (where sometimes very abundant); usually in sluggish or still water with abundant floating and submerged vegetation; tolerant of high temperature, turbidity, low oxygen	
Blacknose Dace	<i>Rhinichthys atratulus</i>	minnows	Cyprinidae	immature aquatic insects, amphipods, and various other aquatic invertebrates; also eats algae and diatoms, which may be of little nutritional value		nests of small pebbles in fast water of shallow riffles in June, early July	quieter waters near the feet of rapids; cool, gravelly or rocky headwaters, creeks, and small rivers of high to moderate gradient; generally found in pools and slower runs; often rests on bottom under or beside stones	

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Longnose Dace	<i>Rhinichthys cataractae</i>	minnows	Cyprinidae	benthic insects, especially Diptera and mayflies; also eats algae and plant material		probably in riffles over a gravelly bottom; shallow, pebble-bottomed, wave-swept shorelines of lakes	very rapid waters, cataracts, near the bottom and in rock crevices; clean, swiftly flowing, gravel or bouldery creeks and small to medium rivers; also in inshore waters of lakes over gravel or boulder bottoms; may move offshore to deeper water in summer in warm lakes. Rests under stones when inactive	
Creek Chub	<i>Semotilus atromaculatus</i>	minnows	Cyprinidae	opportunistically on various plants and animals, from surface drift to benthos; mostly invertivorous but large individuals often piscivorous	chironomid larvae and other larval insects important in diet of young	small gravelly streams in smooth water near a riffle, or over littoral areas of gravel in lakes	Clear headwaters, creeks, and small rivers; prefers streams less than 12 m wide and with gravel-sand-silt substrate; occasionally in shallows of small clear lakes.	
Northern Pike	<i>Esox lucius</i>	pikes	Esocidae	fish, other vertebrates small enough to be engulfed	large zooplankton and immature aquatic insects; after 7-10 days fishes begin to enter diet and eventually dominate	shallow flooded marshes associated with lakes or with inlet streams to those lakes	clear small lakes, shallow vegetated areas of larger lakes, marshes, creeks, and small to large rivers; moves to deeper cooler water in summer	
Muskellunge	<i>Esox masquinongy</i>	pikes	Esocidae	fishes and other available vertebrates	initially zooplankton	water less than 1 m deep in heavily vegetated flooded areas.	Warm heavily vegetated lakes, stumpy weedy bays, pools and backwaters of creeks and small to large rivers with abundant vegetation; often in large lakes with both extensive deep and shallow basins and tributary streams.	
Tiger Musky	<i>Esox masquinongy x lucius</i>	pikes	Esocidae					
Burbot	<i>Lota lota</i>	codfishes	Gadidae	insects, crayfish, smaller fishes, fish eggs		spawns in winter in shallow water in lakes and small streams; no nests	deep water in rivers and large lakes	
Brook Stickleback	<i>Culaea inconstans</i>	sticklebacks	Gasterosteidae	fish, fish eggs, other small aquatic animals, algae		nest of algae, sticks & plant fragments, on bottom or attached to aquatic plant in shallow water	cool, clear weedy streams and ponds	
Ninespine Stickleback	<i>Pungitius pungitius</i>	sticklebacks	Gasterosteidae	fish, fish eggs, other small aquatic animals, algae		nests of plant fragments, rootlets and algae built above bottom among vegetation or among rocky places with little vegetation	rivers, streams, coastal areas of sea	
Black Bullhead	<i>Ictalurus melas</i>	catfish	Ictaluridae	vegetation, insects, frogs, crayfish, small fish, other organisms; omnivorous bottom feeder; often eats aquatic insects, crustaceans, molluscs, occasionally fishes and carrion	planktivorous; at about 27 mm TL, feed largely on crustaceans and midge larvae	shallow nest on bottom in mud or sand, in secluded areas such as under logs or mats of aquatic vegetation	stagnant or slow water; tolerates warm, muddy, low-oxygen waters; ponds, small lakes, river backwaters, swamps, impoundments, small stream pools with warm and turbid water, muddy bottoms, slow currents, and few other fish species. Adults inactive in schools in aquatic vegetation during day.	

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Yellow Bullhead	<i>Ictalurus natalis</i>	catfish	Ictaluridae	wide variety of living and dead plant and animal material; primarily piscivorous but also eat aquatic insect larvae, crustaceans, snails, and algae	generalists; mainly entomostracans and insect larvae	saucer-shaper depression beside or beneath a bank, log, or tree root, or in burrow or in or under debris on bottom	Shallow weedy parts of clear warm lakes, ponds, or slow-moving streams or canals. More tolerant of pollution than are most other ictalurids.	
Brown Bullhead	<i>Ictalurus nebulosus</i>	catfish	Ictaluridae	bottom feeder: larger insect larvae and fishes, also fish eggs, mollusks, carrion, and plant material	chironomid larvae and small crustaceans	open excavation in sand, gravel, or (rarely) mud, often in shelter of logs, rocks, or vegetation, or in holes, burrows, or debris; nest usually around shore or in coves or creek mouths	Ponds, lakes, sluggish streams, sloughs, backwaters, reservoirs. Usually in vegetated shallows over sand, rock, mud, or silt, in clear to turbid water. May burrow into soft bottom and become inactive in winter.	
Channel Catfish	<i>Ictalurus punctatus</i>	catfish	Ictaluridae	bottom feeder; large fish are mainly piscivorous (Moyle 1976); also ingests plant material	young eat mainly small invertebrates; as they grow, fishes and crayfish become increasingly important, though all sizes eat abundant aquatic insects	eggs are laid in cavelike sites, such as old muskrat burrows, undercut banks, or log jams, or debris	Main channels of small to large rivers, from clear, rapidly flowing, firm-bottomed ones to turbid, mud-bottomed ones; avoids upland streams; also in ponds, reservoirs, lakes. Adults usually in pools or under log jams or cut banks by day, move into riffles at night.	
Tadpole Madtom	<i>Noturus gyrinus</i>	catfish	Ictaluridae	mainly insect larvae, crustaceans, and occasionally small fishes; larger fishes rely more on insects; feeds at night on bottom and among aquatic plants	Smaller individuals apparently depend on crustaceans and oligochaetes	usually in rivers but also in lakes in shallow water; eggs are laid under objects or in cavities on bottom	Typically in quiet or slow-moving waters, especially over soft muddy bottom with extensive vegetation; lakes, reservoirs, sloughs, swamps, backwaters, lowland creeks and small to large rivers. Usually in fairly clear water	
White Bass	<i>Morone chrysops</i>	temperate basses	Percichthyidae	fishes, zooplankton, aquatic insects, oligochaetes, and crayfish; fishes often dominate diet of adults		prefers running water of tributary streams for spawning, but may spawn along lake shores with high wave action; usually spawns over rock or gravel bottom in water 0.6-3 m deep	Open waters of large lakes and reservoirs and pools of slow-moving small to large rivers. Usually in surface waters, roaming in schools. Tends to be offshore during day, inshore at night. Tends to avoid areas of continuous turbidity.	
Iowa Darter	<i>Etheostoma exile</i>	perches	Percidae	mainly various invertebrates; commonly ingested food items of adults are midge larvae, mayfly naiads, and amphipods; apparently feeds on swimming organisms and those on bottom	invertebrates, especially copepods and cladocerans	shallow water of lake margins and quiet areas of streams; eggs are laid on submerged roots or debris, occasionally on gravel and sand	Clear sluggish vegetated headwaters, creeks, and small to medium rivers; weedy portions of glacial lakes, marshes, ponds; over substrates of sand, peat, and/or organic debris. Occurs in deeper lake waters and in stream pools when not breeding.	
Johnny Darter	<i>Etheostoma nigrum</i>	perches	Percidae	larger individuals eat mainly midge larvae and mayfly larvae	young eat mainly midge larvae and microcrustaceans	eggs laid on underside of a stone or other object	Most often found over sand or silt in quiet or sluggish areas of headwaters, creeks, and small to medium rivers, less often over gravel or in weedy areas of lakes or sandy lake shallows. Small to medium streams in pools over sand or bedrock.	

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Yellow Perch	<i>Perca flavescens</i>	perches	Percidae	feed among plants and along bottom on larger invertebrates and small fishes	larvae and young primarily zooplankton feeders; older young eat mostly invertebrates associated with bottom and with aquatic plants	submerged beds of aquatic plants or brush, or over sand, gravel, or rubble, in quiet water in lake shallows or into tributary streams	clear weedy backwaters or pools of creeks and small to large rivers, shallow waters of lakes, and large ponds. Associated with heavy growths of aquatic plants in lakes, tends to occur in loose schools at 1-10 m.	
Log Perch	<i>Percina caprodes</i>	perches	Percidae	mainly immature aquatic insects such as midges, mayflies, and caddisflies; uses snout to overturn stones and other objects while searching for food	mainly small crustaceans	sand in lake shallows, or in gravel or sand in swift current, often in riffles, in streams	Small creeks to rivers, lakes, and reservoirs. Prefers clean riffles and runs over mixed sand and gravel. Often associated with bottom debris.	
Walleye	<i>Stizostedion vitreum</i>	perches	Percidae	Feed opportunistically on various fishes and larger invertebrates. In native range, yellow perch is preferred prey of adults and juveniles. Some populations feed almost exclusively on emerging larval and adult insects.	Young up to 6 weeks old eat mainly copepods, Cladocera, and small fishes.	turbulent rocky areas in rivers, boulder to coarse gravel shoals of lakes, along riprap on dam face of reservoirs, and flooded marshes	Lakes; pools, backwaters, and runs of medium to large rivers; generally in moderately deep waters. Generally in quiet water when not spawning. Often in beds of aquatic vegetation, in holes among tree roots, or in or near similar cover by day. Adults avoid temperatures above 24 C, if possible. Greatest population densities under moderately turbid conditions or in deep clear lakes with strong deepwater forage base	
Trout-Perch	<i>Percopsis omiscomaycus</i>	trout-perches	Percopsidae	small aquatic animals on or near bottom in shallow water during night: insects, crustaceans, and other invertebrates; larger individuals may feed on fishes in winter	zooplankton	shallow water over sand or gravel bottoms, often in shallow tributaries	in lakes but also in deep flowing pools of creeks and small to large rivers; usually over sand; deeper water, concealed in debris during day	
Lake Herring	<i>Coregonus artedii</i>	salmons	Salmonidae	zooplankton; also invertebrates from surface, fish eggs and fry		Often spawns in shallow water (1-3 m) over gravel or stony substrate, but also may spawn pelagically in midwater	Open waters of lakes and large rivers. Moves into deeper water, to just below thermocline, in summer. Sometimes in large rivers.	
Lake Trout	<i>Salvelinus namaycush</i>	salmons	Salmonidae	Fishes, when available, are important but may subsist on zooplankton when surface waters are too warm and fishes are absent in deeper colder waters	Zooplankton (Mysis and Pontoporeia crustaceans); later includes small benthic invertebrates	over boulder or rubble bottom in shallower part of lake; no spawning bed	Deep lakes in south, shallow and deep lakes and rivers in north. Usually in deep water, especially in summer when surface waters warm.	
Central Mudminnow	<i>Umbra limi</i>	mudminnows	Umbridae	Primarily a bottom feeder; eats mainly midges, crustaceans, molluscs; also small fishes		Spawns in overflow areas along creeks. Eggs stick to vegetation.	moderately to densely vegetated streams, sloughs, or swamps; often in ooze and detritus on bottom; tolerant of low oxygen and high temperature	does not adapt well to silt over the bottom or to turbidity; siltation, drainage of lowlands and destruction of aquatic vegetation cause decline

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