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## THE FISHES OF MICHIGAN

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One hundred and seventy-seven different kinds of fishes are now recognized as inhabitants of the waters of our state, Michigan. This number includes the local forms or varieties which are termed subspecies, but the number of fully distinct species has now been increased to 140. These 140 species are classified in 85 genera and 28 families. Because the average fisherman probably knows no more than 40 of the 140 distinct species of Michigan fishes, this brief enumeration and discussion of our fish fauna has been prepared.

Lowliest among our fishes—so low in fact that many authorities do not even include them among fishes—are the eel-like creatures known as lampreys. Of these we have 5 species, more than has any other state. Three kinds are parasitic lampreys, which when adult attach themselves leech-like to a fish, by means of a round sucking mouth; then rasp open the side of the fish by the movements of their sharp, horny teeth, and finally gorge themselves upon the blood of their victim. Two kinds of Michigan lampreys in contrast are small, harmless creatures, living a worm-like larval existence several years in creek bottoms, as do their parasitic relatives, but unlike them never partaking of food after they become adult.

Next lowly of Michigan fishes in terms of evolution, queerest of all in appearance, and rarest of all since it is known to have been taken but once in our limits, is the Paddlefish. This name appropriately refers to the long, oar-like snout of this odd fish.

Less rare, though now perhaps approaching extinction in our limits, is the ~~Rock~~ Sturgeon. Once so common as to be considered a nuisance by the net fishermen, who threw them on the bank to die, ~~Sturgeon~~ now rank among the rarest and most prized catches of the commercial fisherman, bringing him a price of about 60 cents a pound for the flesh and even more for the roe from which caviar is made.

The two species of gars or "bill-fish" occurring in Michigan are despised by anglers as worthless aquatic wolves, destroyers of game fish, but themselves unfit for food. They may not be so destructive as thought, however, and are edible especially when baked in their thick shell of diamond-shaped, enamelled scales. These odd scales and other characteristics of gars are of enormous scientific interest, for geologists who study fossils have learned that most fishes over the earth at one time, some millions of years ago, had similar scales, and other features. For this reason the gars, which are now confined to North America, are often referred to as "living fossils".

Another despised predator to the sportsman, or living fossil to the naturalist, is the ~~Bowfin~~, more commonly known in our state as "dogfish". This large fish is of interest also for the manner in which the bright green male herds together and jealously guards his young.

Three of our fishes are rather close relatives of the true herring, which is the most important of all marine food fishes. These <sup>Relatives of True Herring</sup> (3) species are the silvery ~~Mooneye~~ of the lower Great Lakes; the ~~Alewife~~, a recent arrival by canal route from Lake Ontario, and the ~~Gizzard Shad~~, which is one of the most important forage fishes, by which name we designate fishes which serve as food for the important food and game species.

The ~~Smelt~~ is an introduced fish which has escaped into the Great Lakes from Crystal ~~Lake~~, where it was planted to provide food for land-locked salmon. The ~~Smelt~~ has found Great Lakes waters so favorable and so free of natural enemies,

parasites and diseases, that it has multiplied and spread with almost unbelievable rapidity, until now the smelt runs at Beulah, Boyne City and other points annually attract thousands of persons who scoop these delectable fish out of the small streams into which they have run to spawn, using hand nets, baskets, sacks or what have they.

The Whitefish family, which like the smelt is closely related to the trout family, is represented by many kinds in Michigan—probably by more kinds than in any other area of similar size. The Lake Herring, not a true herring at all, is perhaps our commonest representative of the whitefish group. This species varies so greatly in appearance in different waters that 17 subspecies or local varieties are now recognized in this state. Most of these local forms occur in different inland lakes, where the species is known as cisco. The ciscoes live in deep water in summer, but come into shallow water in cool fall weather, when these delicious fish are speared and occasionally caught on hook. Two of the inland-lake ciscoes are classed as distinct species. The so-called Chubs, and the Floater, Kiyi, Blackfin and Bluefin of the deep waters of the Great Lakes, also members of the Whitefish family, have become seriously depleted of recent years through overfishing. The Whitefish proper, of several subspecies, is probably the best known of the Great Lakes fishes from an epicurean standpoint. The queer Menominee Whitefish ends our long list of fishes belonging to the Whitefish family.

### *Grayling Most Famous*

One of the most famous of our fishes, now unhappily on the actual verge of extinction if it has not already been pushed over that dismal brink, is the Michigan Grayling. Once common in the rivers of the northern part of the Lower Peninsula, this fish has for about 20 years been making a last stand in the Otter River of the Upper Peninsula. Famed for its game qualities and flavor, even more for the resplendent color of its fan-like dorsal fin, the Michigan Grayling indelibly impressed itself on the memory of the older fishermen who sought their

sport in the then ~~Great North Woods~~.

Of the trout family proper, only the ~~Brook Trout~~ and the several races of ~~Lake Trout~~ are natives of Michigan. Even the ~~Brook Trout~~ is an introduced fish in nearly all of the lower Peninsula waters it now inhabits. In fact all of the now famous Lower Peninsula trout streams, the Au Sable, Manistee, Pere Marquette, Boardman, Rifle, to mention only a few names to stir the angler's memories and emotions, were originally grayling waters, without any trout until these were introduced by man. The ~~Brown Trout~~ came from Europe; the ~~Rainbow~~ or ~~Steelhead Trout~~ from the Pacific Coast; the ~~Land-locked Salmon~~ from Maine. Apparently unsuccessful efforts have also been made to acclimatize ~~Cut-throat Trout~~, ~~Pacific Salmon~~ and even Japanese trout to our waters.

(The sucker family is represented in our lakes and streams by 15 distinct species, some of which are very rare or of very local occurrence. Most fishermen are unaware that two species of bulky buffalofish and the silvery ~~Quillback~~ are recorded for Michigan. The ~~White Sucker~~ abounds almost everywhere, and the ~~Sturgeon Sucker~~ and the odd ~~Hog Molly~~ are common in their chosen waters. Two species of ~~Chub-sucker~~, the ~~Spotted Sucker~~, and 6 species of the ~~Redhorse~~ and ~~Mullet~~ group, conclude the Michigan Sucker list.

*Carp Family Largest*  
(The largest family of fishes in Michigan, as in most fresh water areas, is the minnow or carp family. Properly the word "minnow" is not used for the fry or fingerling stages of food and game fishes, but rather applies to a family which includes fishes as large as a man and with scales as large as his hand. The ~~Carp~~, the largest member of this family in Michigan, and the most despised was introduced in the early 70's. The ~~Goldfish~~, a close relative of the carp, has also been introduced into our waters, and has become especially common about Lake Erie, into which it escaped about 30 years ago from a private pond. It has reverted to the olive color normal to the wild goldfish of Asia (the golden

form is merely a color sport which has been cultivated by man).

The native minnows, chubs, dace and shiners of Michigan number no fewer than 34 species, none of which attain a length of 12 inches, and few of which exceed 6 inches. A few of these fishes give a bit of angling pleasure, at least to boys, and all are good to eat, provided one has the necessary patience to clean them and to remove the many sharp bones which fill their flesh. Most of them, however, fit into our human scheme of things as food for the commercial species and the game fishes. The Lake Emerald ~~Shiner~~, which swarms in our Great Lakes as do the sardines of the oceans, is a particularly important element in the food chain of important market fishes. Many of the minnows are consumed by the predatory game fishes of our inland waters, for instance by the ~~Small-mouthed and Large-mouthed Bass~~, the ~~Northern Pike~~, the ~~Yellow Pike-perch~~ or ~~Walleye~~, even by the several species of trout in some waters. Special efforts are being made, for instance in our own Institute for Fisheries Research, to learn how minnows can be reared in ponds for sale as bait, and for feeding hatchery fish, and how their natural production can be increased in lakes now deficient in this excellent food supply for large game fishes. To increase the spawning of ~~Blunt-nosed Minnows~~ in our lakes, the ~~CFC~~ units have installed many flat objects on the shoals, for it is on the smooth under-surface of such objects that the female of this species plasters its eggs, leaving them then to the very efficient care of the male fish. Some minnow species may be of economic significance also as destroyers of the spawn or fry of game fishes. Some of our native minnows, particularly the brilliant ~~Red-bellied Dace~~, are sought to some extent for display in aquaria.

### *Bullhead and Catfish Family*

The bullhead and catfish family is represented in our state by an even 10 species, several of which are fished for by both sportsmen and commercial fishermen. The homely, bewhiskered appearance of these fishes beguiles their

excellent flavor. All of the species, so far as known, guard their eggs and their young, putting on a fine exhibit of parental care. The most favored fish of this group is the ~~Channel~~ ~~Catfish~~; the homliest and largest is the ~~Shovel-headed~~ ~~Catfish~~, which occurs in the southwestern rivers of the state. There are three species of bullheads in the state; also the ~~Stonecat~~, which lives under boulders in rapids. The ④ species of ~~Madtom~~ make up for their small size—none of ours reaches a length of ⑥ inches—by inflicting very painful jabs with their poisonous spines.

( The little ~~Mudminnow~~ is in a family by itself, though it is a relative of the ~~pike~~ family. That family embraces only a half-dozen species, of which ③ occur in Michigan. One of these is the ~~Mud Pickerel~~, which seldom attains a foot in length, and never reaches 15 inches according to our records. It is nevertheless a predacious fish, carrying on its destructive ways along the marshy borders of our southern lakes and streams. The ~~Northern Pike~~ is the recipient of disdain from some but of high praise from others; all agree, however, that it is a real tourist attraction. The famous ~~Tiger Muskellunge~~ of Wisconsin barely crosses the Michigan border in Lac Vieux Desert, and a very few other waters of the Upper Peninsula which drain into the ~~Mississippi River~~. The ~~Great Lakes Muskellunge~~ is relatively scarce in our state, though known to occur in many of the lakes along the Lake Michigan shore, in a few inland lakes (as Gun and Thornapple) and, most commonly, in the so-called "connecting waters", especially Lake St. Clair and St. Marys River.

( The American eel though very rare is interesting as an inhabitant of our state. It was introduced about 50 years ago in large numbers but has generally disappeared except in a few inland lakes without outlet. They have been unable to escape from these lakes when the spawning urge has called them to travel toward the sea, where alone eels are known to spawn. They have thus

remained our prisoners for a full half century. On their return journey from the sea, the young eels are prevented by Niagara Falls from reaching the Great Lakes, but a few have gotten around the falls by passing through the shipping canals.

Only three species of the family of ~~Killifishes~~ and topminnows live in Michigan. These fishes are egg-layers, though they are related to the ~~Guppy~~, ~~Swordtail~~, ~~Moonfish~~, ~~Molly~~ and other tropical aquarium fishes which bring forth their young alive.

### *An Ancient Type*

The ~~Trout-perch~~, which presents a very strange combination of trout and perch characteristics, is another ancient type of fish now living only in North America,—including the Great Lakes waters of Michigan. Its nearest relative is a very distant cousin, the equally strange little ~~Pirate Perch~~, which is very scarce in our waters.

The true basses occur in Michigan in the form of a single species, the ~~White Bass~~, a small game fish fairly common in some of our southern waters.

The ~~Perch~~ family is rather well represented in Michigan. The ~~Yellow Perch~~ itself is one of our most wide-spread species, in both the Great Lakes and inland waters. It is highly favored as a panfish and gives a measure of sport to many thousands of still fishermen. An outstanding drawback of the perch is its tendency to become dwarfed as its numbers increase in a given body of water. In a rather large percentage of our lakes, perch seldom reach a catchable size, and in some lakes mature at a length of only 2 to 4 inches. The ~~Yellow Pike-perch~~, under its several aliases, is one of the most important fishes of the state, as of other northern waters. In some parts, it takes the name of "pike", while the true or ~~Northern Pike~~ is called "pickerel"; in other sections these names are transposed, the ~~Pike-perch~~ being known as "pickerel" and the ~~Northern Pike~~ as "pike". The most common trade name used for the ~~Pike-~~

perch by commercial fishermen in the Great Lakes is "yellow pickerel", or just "yellows" or just "pickerel", No. 1, or No. 2, depending on size. Most anglers in our region know this fish as the "walleye", or "wall-eyed pike"; Canadians call it "dore"; Southerners dub it the "jack salmon". The Pike-perch is related neither to salmon nor pike, for it belongs to the perch family and like all its true relatives has a row of spines down the back. The Blue Pike-perch, the "blue pike" of the markets, is a smaller species of Lake Erie which wanders across the western shallows of the lake into Michigan waters.

*Fifteen Others*  
Fifteen other species of Michigan fishes belong to the perch family. These are the little fishes known as darters, from their habit of darting from one long resting spot on the bottom to another retreat. Some darters choose to live in quiet, weedy waters, but the real home of the darters as a whole is the turbulent water of the riffles in our streams. Here they are able to hold on because they are stream-lined to resist the current, and because they skillfully dart from the shelter of one stone to another. The darters are among the most brilliant of all freshwater species, their reds, blues, indigos and greens rivalling the colors of tropical birds and insects. The largest of our darters, the Log-perch, seldom exceeds 6 inches in length; the smallest, or Least Darter, is among the real midgets of the fish world for its usual adult size is just about one inch.

Ten of our species are classified in the sunfish family. Included among these are two large fishes which rank along with the trouts in angling favor, namely the Small-mouthed Bass and the Large-mouthed Bass. The fine tribute of "Inch for inch and pound for pound the gamest fish that swims", given to the "Small-mouth" by the famous fish-culturist and angling enthusiast, James Alexander Henshall, has almost become a part of the fish's name. It is only by comparison with its more favored cousin that the Large-mouthed Bass loses out



in fame. They are probably the finest freshwater game fishes in the whole belt between the trout zone and the tropics. In their distribution, both overlap the trout zone and suffer little by comparison.

Other Michigan members of the sunfish family are the Black Crappie and the White Crappie, the Rock Bass and the Harmouth Bass—all good and game fishes, especially when caught the really modern way, by fly fishing. Among the sunfishes proper the Bluegill is most liked, for game and for food. The Pumpkinseed, likened to a newly-minted coin, is an especial favorite of boys though not disdained by their fathers. The Green Sunfish and the Long-eared Sunfish seldom attain the legal size for sunfish over most of our state.

The remaining species in the Michigan fish list are among the few freshwater forms of essentially marine families. The family of silversides is known in Michigan only as one species. The Brook Silverside, a little wisp in silver that seems to delight in skipping back and forth into the air. The marine family of drums or croakers also has but one species in our limits, the Freshwater Sheepshead, which in Michigan is mostly restricted to Lake Erie and Saginaw Bay; it is a silvery fish with a lavender tinge, occasionally reaching a large size. The family of sculpins, of which we have 5 kinds, is also chiefly marine; our species are small, scaleless fishes with big heads and wide mouths, known to the Indians as "cockatush" and to our trout fishermen, who use them for bait, as "muddlers". Of the interesting stickleback family we have 2 little species, the Brook Stickleback, common inland, and the Nine-spined Stickleback, an essentially Arctic species occurring in the Great Lakes; sticklebacks are particularly noted for their habit of building nests surprisingly like those of birds. Last in our list is the freshwater form of the cod family known as Burbot or "l<sup>w</sup>ayer", a <sup>Burbot Homely and Eel-like</sup> homely, eel-like fish usually confined in Michigan to the Great Lakes, long thought to be worthless but now sold to some extent for food and utilized for the superior grade of liver oil which it furnishes.

( It is small wonder that Michigan furnishes the home for so many kinds of fishes—177 in all. Our state has the longest shore line of any in the Union; it covers nearly half the shores of the largest of the Great Lakes and includes much of the west end of Lake Erie. Its land surface is dotted with about five thousand smaller lakes, and its permanent creeks and several sizable rivers have a combined course of several thousand miles. It stretches from the warm marshes of Lake Erie, to the ever-cold Lake Superior waters which wash the rocky coast of Isle Royale.

( How did these 177 different kinds of fishes come to live in Michigan? The short years of Michigan history tell us of the purposeful and more or less successful introduction into the state, by man, of only (9) kinds—the Smelt, Land-locked Salmon, Brown Trout, Rainbow Trout (two subspecies), the Caspacia Brook Trout, Carp, Goldfish and Eel. The Sea Lamprey and Alewife have recently made their own way to Michigan by swimming through the shipping canals which sidetrack the barrier of Niagara Falls, and the Eel has also straggled into Michigan by that course. It has been thought that the Haddock, Herring, Shad, Shovel-nosed Catfish and perhaps other species reached the Great Lakes and Michigan waters by the way of canals leading to the Mississippi River system, but I believe these were native fishes before the white man came to disturb the natural system.

The approximately 166 kinds of native fishes are just as truly immigrants into our state. Although it was a long time ago in terms of human experience, it was hardly more than a split second ago in geological time—a mere 30,000 years or so—that all Michigan was covered hundreds of feet by the immense sheet of ice known as the Wisconsin Glacier. Then of course our hidden, frozen land now known as Michigan was wholly fishless. Finally, as heat began to conquer over cold, the great ice mass slowly retreated. As the southern face of the glacier

melted, streams were formed, carrying the ice flood waters into the Mississippi. Such cold-water fishes as the trouts and their relatives must then have made their way into southern Michigan. As the receding wall of ice moved into the Great Lakes depressions, glacial lakes were formed, which probably became fairly warm on their southern margins and in the outlets. Since the great ice mass blocked all drainage to the north or east, these lakes drained southward into the Mississippi by such routes as that now taken by the Chicago Canal. It was then that the fish life which had been forced south by the ice returned to its home in the Great Lakes region. Thus Michigan recovered its fish fauna. Some species came early and went far across the state. Others came late and are still confined to the warm southern counties.

Eventually the ice retreated far enough to open up the present St. Lawrence outlet from the Great Lakes, cutting off further immigration from the Mississippi river system. The heaving of the land after the release of its enormous load of ice is still being felt, by the occasional earthquakes such as the one we have recently experienced. The history of the retreat of the ice sheet from Michigan, and of the return migration of fish life into our state, is similarly indicated by the present distribution of the species along the former outlet routes by which the Great Lakes once drained into the Mississippi.