(Copy for Mr. Ruhl)

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REPORT NO. 349

LIST OF MICHIGAN FISHES, WITH NATURAL HISTORY NOTES

This list of Michigan fishes gives briefly a few items of general interest regarding each of the 140 species occurring in the state. Subspecies (local varieties), which increase the known list to more than 170, are generally not indicated.

LAMPREYS (family Petromyzonidae)

The eel-like lampreys are the lowest of Michigan fishes in terms of evolution. They may be known by the seven gill openings on the side of the head.

NORTHERN LAMPREY (Ichthyomyzon sp.) is the only native parasitic lamprey in Lake Erie and Lake Huron, where it is common, and also in Lake Michigan. Spawns on gravel in streams, clearing out a nest. Attaches itself to food fishes, rasping open a hole in the skin to gorge themselves on the blood of their victim, and is therefore a destructive creature. Reaches a length of 13 inches.

MICHIGAN BROOK LAMPREY (Ichthyomyzon fossor) lives in creeks and small rivers over the state, most abundantly in the Lower Peninsula. Spawns like other lampreys. The young live for several years in the mud bottom as toothless, almost blind larvae before transforming into adults, which never feed. Adult size about 4 to 7 inches.

WESTERN LAMPREY (Ichthyomyzon castaneus), confined in Michigan to the western side of the Lower Peninsula, has habits like those of the Northern Lamprey. A blood-sucking parasite attaining a size of about 12 inches.

SEA LAMPREY (Petromyzon marinus) has reached Michigan (Huron River and Lake St. Clair) only in recent years, having migrated through Welland Canal and Lake Erie from Lake Ontario, where this species is land-locked. May become a destructive parasite in our waters. 15 to 18 inches long when mature.

AMERICAN BROOK LAMPREY (Entosphenus appendix) occurs in small streams over the entire state, most commonly southward. Spawns in early spring on fine gravel riffles. Larvae live about 4 years in the bottom silt before transforming into adults at a length of 5 to 8 inches. The adults do not feed, and therefore are not destructive.

PADDLEFISH (Polyodontidae)

PADDLEFISH; spoonbill cat(Polyodon spathula) is very rare in Michigan waters, having been found only in the west end of Lake Erie near Monroe. Found quite commonly in the Mississippi River. This fish has been given the name paddlefish because of its very long, paddle-shaped snout. Spawning habits unknown. Feeds upon aquatic insects and other small animals. An efficient strainer composed of long gill rakers enables the paddlefish to strain small organisms from the water while swimming along with its mouth open. Paddlefish roe brings a good price on the market and is a delicacy in restaurants in the south. Occasionally reaches a maximum length of six feet and a weight of 150 pounds.

STURGEONS (Acipenseridae)

ROCK STURGEON (Acipenser fulvescens) inhabits all of the Great Lakes and the St. Lawrence River, migrating up the smaller rivers during early summer. Now very rare; the supply of this fish in the Great Lakes has been greatly reduced by commercial fishermen. From 1880 to 1900 commercial fishermen, each year, took over 1,000,000 pounds of sturgeon from the Great Lakes; the catch continually declined until, in 1929, only 7,000 pounds were taken. Its mouth is sucker-like and located on the under side of the head. It feeds upon insects, snails, small fish and other small organisms living on the bottom of lakes and streams. The sturgeon occasionally reaches a length of ten feet or more and a weight of several hundred pounds.

GARS (Lepisosteidae)

The gars are very primitive fishes belonging to a group of fishes which were very abundant on the earth millions of years ago, and are consequently called "living fossils."

SHORT-NOSED GAR; duck-bill gar (Lepisosteus platostomus) in Michigan is usually found only in the two southern tiers of counties of the Lower Peninsula, usually in lakes. Spawns in early summer. Feeds mostly upon fish. Reaches a length of 2 to 3 feet.

LONG-NOSED GAR; billfish (Lepisosteus osseus) occurs commonly in lakes of the Lower Peninsula in Michigan and in the lower Great Lakes; abundant in some localities, especially in weedy lakes. Spawns in late spring or early summer in shoal water in grass and weeds. Feeds almost entirely upon fish, destroying many of the valuable game fish. Rarely used for human food. Occasionally reaches a length of 5 feet.

BOWFIN (Amiidae)

BOWFIN; dogfish (Amia calva) in Michigan is found only in the Lower Peninsula and abundantly only in the southern part of this range. Prefers weedy lakes. Spawns during the spring in weedy shallows where the male hollows out a nest in the muddy and weedy bottom. Food consists mostly of fish and crayfish. Occasionally eaten by humans but its flesh is not particularly palatable. Generally considered a predator species. This fish may reach a length of 2 feet or more.

MOONEYES (Hiodontidae)

MOONEYE; toothed herring (Hiodon tergisus) in Michigan is found only in Lake Erie and Lake St. Clair. Its food is mostly insects, snails, small minnows and other aquatic animals. The mooneye is not used to any great extent for human food. It reaches a maximum length of about 12 inches.

HERRINGS (Clupeidae)

ALEWIFE (Pomolobus pseudo-harengus) is typically a marine species of which spawning runs ascend the rivers of eastern North America. It has spread and become established as a permanent resident in many lakes and rivers of the Eastern states and we now have a record indicating that it has reached the Michigan waters of Lake Huron, no doubt by canal route. It spawns in late spring or summer over gravel in streams. Feeds mostly on small, free-floating aquatic animals. Is a very important food for game fish in many eastern lakes. Lives for four or five years and reaches a length of 10 inches or more.

GIZZARD SHAD (Dorosoma cepedianum) is found abundantly in Lake Erie, and in some years also in Lake St. Clair and the southern half of Lake Huron. Occasionally it migrates up the rivers in the southeastern part of our state, but is not found in any of our inland lakes. Feeds on small (microscopic), free-floating, plants and animals, which it strains from the water by means of its comb-like series of long gill-rakers. Of no value as human food, but one of the most important of forage fishes. Occasional individuals reach a length of 15 inches or more.

SMELTS (Osmeridae)

American SMELT (Osmerus mordax). Introduced in 1912 from Green Lake, Maine into Crystal Lake at Beulah, Michigan, and into several other localities in northern Michigan, the smelt has spread into Lakes Michigan, Huron and Superior and into some of the coastwise inland lakes. It has become very abundant in Lakes Michigan and Huron. Spawns over gravel in streams in early spring. Feeds mostly upon small fishes and insects. A very good food fish for human use. Reaches a length of 8 to 14 inches and occasionally lives for six or more years.

WHITEFISHES AND CISCOES (Coregonidae)

The fishes of this family are especially characteristic of the Great Lakes fauna. The species and subspecies are more numerous here than in any similar area.

LAKE HERRING; cisco (Leucichthys artedi). Many races or subspecies of the lake herring or cisco occur in the waters of Michigan, throughout all the Great Lakes and in many of the deeper inland lakes over the entire state. It spends most of its life in the deeper and colder waters. Its long gill-rakers arranged on the gill arch like the teeth on a comb make a strainer by which it takes microscopic plants and animals from the water for its food; it also feeds upon insects and other small organisms living on the bottom of lakes. It is the most important of all the ciscoes of the Great Lakes as a commercial fish. In our inland lakes it is speared by fishermen from the spawning grounds during early winter. It is an excellent food fish. The cisco may live to be about 12 years old and occasionally reaches a length of 18 inches or more.

SISKOWIT LAKE CISCO (Leucichthys bartletti) is found only in Siskowit Lake on Isle Royale. Reaches a length of 7 to 8 inches.

SHORT-NOSED CHUB (Leucichthys reighardi) in Michigan is found only in the open waters of Lake Michigan (Leucichthys reighardi reighardi) and Lake Superior (Leucichthys reighardi dymondi). An important commercial fish. Reaches a length of about one foot.

IVES LAKE CISCO (Leucichthys hubbsi) occurs only in Ives Lake in Marquette County, Michigan. Spawns in May. Feeds mainly upon free-floating, aquatic animals. Often reaches a length of one foot.

SHORT-JAWED CHUB (Leucichthys zenithicus) is found in the open waters of Lakes Huron, Michigan and Superior. Lives at water depths of 60 to 600 feet. An important commercial species. Seldom reaches a length of over 1 foot.

LONG-JAWED CHUB (Leucichthys alpenae) lives in the open waters of Lakes Michigan and Huron. Spawns in late November. Lives mostly at the moderate depths of 100 to 500 feet. An important commercial species. One of the largest of the Great Lake ciscoes, it often reaches a length of 15 inches and a weight of two pounds.

Great Lakes BLOATER (Leucichthys hoyi) lives in the open waters of Lakes Huron, Michigan and Superior, where it is one of the most abundant of the ciscoes. Lives in water at depths of 50 feet or less to over 500 feet. Due to its small size it is of no commercial value as a food fish, but is netted in large numbers for bait for lake trout. Seldom reaches a length of over 8 inches.

KIYI (Leucichthys kiyi) inhabits the open waters of Lakes Huron, Michigan and Superior. Lives only in very deep water, usually at depths of over 300 feet. Of some importance as a commercial fish in Lake Michigan. One of the smaller of the ciscoes, seldom reaching a length of over 10 inches.

BLACKFIN (Leucichthys nigripinnis) lives in the open waters of Lakes Huron and Michigan and, as the BLUEFIN (Leucichthys nigripinnis cyanopterus), in Lake Superior. Lives only in the deeper waters, at depths of 200 to 600 feet and more. Was once very abundant in the Great Lakes but the population has been nearly cleaned out by the commercial fishermen. Is now abundant only in the deeper waters of Lake Huron. Reaches a length of about 14 inches and a weight of 1½ pounds.

DEEPWATER CISCO (Leucichthys johannae) lives in the open waters of Lakes Huron and Michigan. Lives only in the deeper waters, at depths of 200 to 600 feet. Not very abundant and thus not very important as a commercial species. Reaches a length of about 1 foot and a weight of 1½ pounds.

WHITEFISH (Coregonus clupeaformis) is found (as several subspecies) in all of the Great Lakes and in some of the deeper inland lakes of Michigan, such as Torch Lake. It lives in the deep and cold waters. Its food is mostly insects and other aquatic organisms living on the bottom of lakes. A very important commercial fish in the Great Lakes and a very popular food for human use. It is seldom caught on hook and line by sports fishermen. It sometimes lives to be 20 to 25 years old and reaches a length of two feet.

MENOMINEE WHITEFISH; round whitefish; pilot (Prosopium quadrilaterale) lives in Lakes Huron, Michigan and Superior, and in some of the inland lakes and larger rivers of the Upper Peninsula and the upper part of the Lower Peninsula of Michigan. Considerably smaller than the common whitefish, seldom reaching a length of over 12 to 15 inches.

GRAYLINGS (Thymallidae)

MICHIGAN GRAYLING (Thymallus tricolor) is a much celebrated fish with a large and beautiful dorsal (back) fin, which once was quite common in the streams of the northern part of our state but, since the lumbering days, has become almost if not entirely extinct. Until the past few years a few grayling were still found in the Otter River in the Upper Peninsula but, even in this one stream, they now seem to have disappeared. In the pioneer days of Michigan's history the grayling was an important game fish. Reached length of about 18 inches.

SALMONS and TROUTS (Salmonidae)

The fishes of this family are outstandingly important as game and food species, in the cooler waters of the Great Lakes region.

LAND-LOCKED SALMON (Salmo salar sebago), a native of the waters of the east coast of North America, has been stocked into our waters many times by state and federal hatcheries. So far it has become established in only a few Michigan lakes. In its native haunts the adults live in lakes, and migrate up streams to spawn. The adults, living in lakes, feed mostly upon fish. The land-locked salmon is a famous game fish, and an excellent food. It is propagated in hatcheries, particularly in the eastern states. It may live to be at least 6 to 8 years old and often reaches a length of nearly 3 feet.

BROWN TROUT (Salmo trutta), introduced into this country from Europe, is found in many of the cold water streams of the state, particularly in the northern half of the Lower Peninsula. Spawns in streams over beds of gravel in late fall. Food is chiefly insects and small fishes. A very beautiful and often popular game fish. It is propagated and distributed throughout a large part of the state by our own state hatcheries. Grows to a length of 2½ to 3 feet in about 7 years.

RAINBOW TROUT; steelhead trout (Salmo gairdnerii) was introduced into Michigan waters from the Pacific coast streams, directly and indirectly. Quite common in the cool rivers of the Lower Peninsula, particularly along the west side of the state, and in Lakes Michigan and Huron, and not uncommon in Lake Superior. Some rainbow trout (the "steelheads") live most of their lives and grow large in the Great Lakes, migrating up the rivers only to spawn, the young fish living in the streams; other rainbow remain in the streams throughout their life. Young rainbows feed mostly on insects, and the large adults feed mostly upon fish and crayfish. Each year our hatcheries plant many thousands of rainbows in our streams, and many are caught each year by fishermen. The rainbow trout is one of the most beautiful and one of the more important game fishes of our state. The migrating rainbow reaches a length of about 3 feet in 7 years, but the non-migratory type is much smaller. The Shasta rainbow (S. g. shasta) was the first form to be introduced into Michigan waters, but it apparently has not maintained itself.

BROOK TROUT; speckled trout (Salvelinus fontinalis), the best known, the most prized and probably the most beautiful of all of our Michigan game fishes, now occurs in most of our cold-water streams and rivers and in many lakes. It is most abundant in the northern part of the state north of the Thumb region. Native to the northernmost part of the state, it was introduced into many of the now best trout streams of Michigan. It is extensively propagated and planted from our state hatcheries. When small, this trout feeds mostly upon insects, but after reaching a length of about 10 inches, it feeds to a large extent upon fish. The Cascapedia trout (S. f. hudsonicus ?) has been introduced from the Cascapedia River in Quebec into several Michigan trout streams but apparently has now become diffused into the native brook trout stock.

LAKE TROUT; Mackinaw trout (Cristivomer namaycush). The lake trout is found quite abundantly in Lakes Huron, Michigan and Superior and in some of the larger inland lakes of upper Michigan, where it lives in deep water. It feeds almost entirely upon other fishes. An important commercial fish in the Great Lakes and a prize when taken by the angler. It is almost never found in streams or rivers in our state. It grows to a length of about 3 feet and more and may live for 15 to 20 years. Several races of lake trout are recognized by fisherman, but only 3 forms in Michigan have received scientific names.

The SISCOWET (Cristivomer namaycush siscowet), found in Lake Superior, and possibly in Lake Michigan, is characterized by the deep body and very fat flesh (possibly caused by its feeding on the deep-water "chubs"); it lives in the deeper waters, and its market value is inferior to that of ordinary lake trout.

The RUSH LAKE TROUT (Cristivomer namaycush huronicus) is a very small form of the lake trout which lives only in Rush Lake in Marquette County, Michigan, where it inhabits the deeper parts of the lake down to a depth of about 275 feet. Reaches a length of about 1½ feet and a weight of 2 pounds. Spawns in late summer.

SUCKERS (Catostomidae)

The species of the sucker family, numbering 15 in Michigan, are usually recognizable by the form of the mouth.

BLACK BUFFALOFISH (Ictiobus niger) occurring in Michigan only in the southern end of Lake Michigan and about the mouths of some of the larger rivers in this region. Commonly reaches a length of about 3 feet. Generally rare and of little economic value in Michigan.

SMALL-MOUTHED BUFFALOFISH (Ictiobus bubalus) is known from Michigan only as one record from the St. Joseph River. One of the larger of the suckers, this species feeds mostly upon molluscs and insects.

QUILLBACK (Carpiodes cyprinus) in Michigan lives only in the southern part of the Great Lakes basin, and in the inland waters only in the southern part of the Lower Peninsula. Generally rare and of little economic value in Michigan. Occasionally reaches a length of 1½ feet.

WHITE SUCKER; black sucker; common sucker (Catostomus commersonnii) is the most abundant of all the suckers in Michigan; common to abundant in all of the Great Lakes and in most of the streams and inland lakes. In early spring large numbers from the Great Lakes run up the rivers to spawn. They also spawn on the wave-washed shores of some inland lakes. During the spring runs, fishermen catch the sucker with both nets and hook and line. It is also an important commercial fish in the Great Lakes. Those taken from the cold water in early spring are very good fish to eat, though bony. Occasionally attaining a length of 18 to 24 inches.

STURGEON SUCKER; red-sided sucker; fine-scaled sucker (Catostomus catostomus) occurs in the Great Lakes, most abundantly toward the north, and is present in some of the rivers and inland lakes in the northern part of Michigan. Usually lives in the deeper waters of lakes. Of some importance as a commercial fish in the Great Lakes, but of inferior market value. Adults usually about 12 to 20 inches long.

HOG MOLLY; hog-nosed sucker; stone-roller; black sucker (Hypentelium nigricans) occurs quite commonly in the warm-water streams of the Lower Peninsula; uncommonly in the Great Lakes and Upper Peninsula. Lives mostly on the bottom of streams among stones and rocks where its protective coloration makes it difficult to see. It seldom becomes very abundant locally and is not used to any great extent as food. Reaches a maximum length of about 12 to 14 inches.

LAKE CHUBSUCKER (Erimyzon sucetta) is common in the weedy lakes of the southern part of the Lower Peninsula. Lays its eggs in masses of aquatic plants. Rarely if ever eaten by humans, but is probably of some value as food for game fish. Reaches its maximum length of about 10 inches in 6 to 8 years.

CREEK CHUBSUCKER (Erimyzon oblongus) in Michigan is found only in the extreme southern end of the Lower Peninsula. It lives almost entirely in streams. One of the rarest of the suckers in our state, and the smallest of the family, reaching a length of only about 6 inches.

SPOTTED SUCKER (Minytrema melanops) is found occasionally in Lake Erie and in the larger rivers of the southern part of the state. Except locally, one of the rarest of our suckers. It reaches a length of about eighteen inches.

BLACK MULLET(Moxostoma duquesnii) in Michigan is found only in the southern part of the Lower Peninsula where it is barely common in the larger streams and rivers. Rarely reaches a length of 1½ feet. Caught occasionally by fishermen by nets and by hook and line.

GREATER REDHORSE (Moxostoma rubrecques) occurs over most of the state but most commonly in the southern part of the Lower Peninsula. Common in the larger rivers. Spawns in early spring over gravel riffles. Often reaches a length of over 2 feet and occasionally weighs 8 to 14 pounds. Commonly taken by fishermen by both nets and hook and line.

GOLDEN MULLET (Moxostoma erythrurum) is a river species found commonly in the southern part of the Lower Peninsula and rare to absent northward. Commonly caught by net and hook and line. Its flesh is rather coarse but very good to eat. One of the most common of the large-scaled suckers, it reaches a maximum length of nearly 2 feet.

SILVER MULLET (Moxostoma anisurum) occasionally lives in the larger rivers of the Lower Peninsula and in the lower Great Lakes. Spawns over gravel riffles in streams in early spring. One of the largest of our suckers, reaching a weight of 8 pounds.

NORTHERN REDHORSE; short-headed redhorse (Moxostoma aureolum) is especially abundant in Lakes Erie and St. Clair, barely common in some rivers and lakes over the state. Taken commonly by nets by fishermen from the rivers of the southeastern part of the Lower Peninsula. One of the smaller of the redhorse or mullet type of suckers. Adults usually 12 to 20 inches long.

RIVER REDHORSE (Placopharynx carinatus) is a large species known in our state only from the Detroit River.

MINNOWS (Cyprinidae)

The minnow family is the largest family of freshwater fishes (both in number of species and in number of individuals) in Michigan, North America and the world. The majority of the species are small and feeble. They live in a great variety of fresh water habitats. Their chief economic importance is their value as food for game fish in natural waters and their value as bait.

CARP (Cyprinus carpio), a native of Asia, was introduced into this country from Europe about 1870. It was distributed over much of the United States by the United States Bureau of Fisheries, but has now become generally regarded as a nuisance in most places. A scavenger in food habits, it occasionally reaches a length of over 4 feet and a weight of 40 or more pounds. In Michigan it has become quite common in parts of the Lower Peninsula, very abundant in Lakes Erie and St. Clair. An important commercial fish in Lake Erie.

GOLDFISH (Carassius auratus), another member of the minnow family native to Asia, was brought into this country as an aquarium pet, but has escaped and is now abundant in Lake Erie and adjacent waters. In nature most individuals retain their dark color phase similar to that of the carp. Hybrids between goldfish and carp are common.

NORTHERN CHUB (Couesius plumbeus) in Michigan occurs inland only in the Upper Peninsula; also ranges to the southern part of Lake Michigan. It reaches a maximum length of about 10 inches.

HORNY-HEADED CHUB (Nocomis biguttatus) occurs commonly in the creeks and rivers of the Lower Peninsula, more rarely in the Upper Peninsula. Spawns on gravel riffles in streams, the male hollowing out a nest by carrying stones in its mouth. A hardy and popular bait minnow. Reaches a length of about 8 inches.

RIVER CHUB (Nocomis micropogon) is a species found commonly in the larger streams of the Lower Peninsula. Spawns on gravel bottom in riffles. Feeds mostly on insects, small fish and crayfish. A hardy and popular bait minnow. Reaches a maximum length of about 12 inches.

SILVER CHUB (Hybopsis storerianus) in Michigan found only in Lake Erie and connected waters. Generally a species of large rivers. Reaches a maximum length of about 8 inches.

BIG-EYED CHUB (Hybopsis amblops) occurs only in the creeks and streams in the southeastern corner of the Lower Peninsula. It is a small species of minnow, seldom becoming more than 3 inches long.

BLACK-NOSED DACE (Rhinichthys atromaculus) is one of the most abundant species, of fish, of Michigan, occurring in small streams, including trout streams, over the entire state. Spawns on gravel riffles. Feeds mostly on small aquatic insects. It is often used as a bait minnow. Reaches a maximum length of about 3 inches.

LONG-NOSED DACE (Rhinichthys cataractae) occurs in the northern part of the Lower Peninsula, in the Upper Peninsula and Lake Superior. Lives commonly in cold trout streams especially in the rapids sections. Reaches a maximum length of about 5 inches.

CREEK CHUB; horned dace (Semotilus atromaculatus) is common to abundant in most of the streams of the entire state. Spawns in beds of gravel in stream riffles; the males cover the eggs with layers of small stones which he transports in his mouth. Feeds on insects, crayfish and small fish. The creek chub, reaching a maximum length of about 10 or 11 inches, is one of the most important of the bait minnows.

NORTHERN DACE (Margariscus margarita) is common in the northern half of the Lower Peninsula and in the Upper Peninsula, often in trout waters. Typically a stream minnow, spawning on gravel. It reaches a length of about 5 inches.

FINE-SCALED DACE (Pfrille neogaea) is a northern species found commonly in bog streams and bog ponds and lakes. Reaches a length of about 4 inches. Of little economic importance.

SOUTHERN RED-BELLIED DACE (Chrosomus erythrogaster) in Michigan lives only in a few streams in the southeastern part of the Lower Peninsula. Spawns on gravel riffles in streams. Feeds mostly on small insects. An extremely beautiful minnow when in breeding colors. Often sold by dealers as aquarium pets. Reaches a maximum length of about 3 inches.

NORTHERN RED-BELLIED DACE (Chrosomus eos) occurs over most of the state, except the extreme southern part. Is quite abundant in the bog streams and bog lakes in the northern part of the state. Usually abundant in beaver ponds. Lays its eggs in masses of the thread-like aquatic plants or filamentous algae. Is probably eaten to some extent by trout in natural waters. An extremely beautiful minnow when in breeding colors. Reaches a length of 2½ inches.

RED-SIDED DACE (Clinostomus elongatus) is a small minnow, with a maximum length of about 4 inches, which once lived in a few streams in the southeastern part of the state, but is probably now extinct in Michigan.

PUG-NOSED MINNOW (Opsopoeodus emiliae) has been taken in Michigan only near the mouth of the River Raisin. Spawns during early summer. A very small minnow seldom becoming more than 2 inches long.

GOLDEN SHINER (Notemigonus crysoleucas) is found over the entire state, most abundantly in weedy lakes and in the quiet sections of larger streams. Feeds on aquatic insects, small molluscs and water fleas. Reaches a maximum length of about 10 inches and lives for as much as 6 to 8 years. One of the most important items of food of the warm water game fish such as the bass and pike. Used to a considerable extent as bait.

BLACK-CHINNED SHINER (Notropis heterodon) is common to abundant in the weedy lakes over the entire state. It is an important bait minnow for such fish as perch and crappies, and is an important natural food for game fish, especially large-mouthed bass. A small minnow seldom becoming more than 2½ inches long.

WEED SHINER (Notropis mux) is found in only a few of the larger rivers in the south-western part of Michigan. Nothing is known of its life history. Of little or no economic importance. Reaches a maximum length of about 3 inches.

PUG-NOSED SHINER (Notropis anogenus) is very rare and local in Michigan, though rather wide spread. Of no economic importance. Reaches a maximum length of less than 2 inches.

BLACK-NOSED SHINER (Notropis heterolepis) lives abundantly in weedy lakes over the entire state. Reaches a maximum length of about 3 inches. A very important minnow as food for game fish, especially the basses.

MIMIC SHINER (Notropis volucellus) is found in lakes and sluggish streams over the entire state. Also present in the shallow waters of the Great Lakes. An important minnow as food for the warm-water game fish, and an important bait minnow. Reaches a maximum length of about 3 inches.

SAND SHINER (Notropis deliciosus) lives in lakes or the larger streams over most of the state. Prefers sand-bottom, wave-washed beaches of lakes or currents in streams. It is an important bait minnow and an important natural food for bass and other warm-water game fish. Grows to a length of 3 inches.

BIG-MOUTHED SHINER (Notropis dorsalis) occurs in a few streams in the southwestern drainage of the Lower Peninsula and in a few streams in the western part of the Upper Peninsula. Almost rare except in a few localities. Reaches a maximum length of about three inches. Of little or no economic importance.

GREAT LAKES SPOT-TAILED SHINER (Notropis hudsonius) occurs abundantly in all of the Great Lakes; also common in many of the larger rivers and inland lakes. Spawns in streams in late spring. Is an important food for game fish, and a popular bait minnow. Reaches a length of 4 to 6 inches.

STEEL-COLORED MINNOW (Notropis whipplii) occurs commonly in the southern half of the Lower Peninsula. Found usually in sluggish streams, occasionally in lakes. Lays its eggs in crevices of submerged objects, especially beneath the bark of logs. Reaches a length of about 4 inches.

LAKE EMERALD SHINER (Notropis atherinoides) lives in Michigan only in the Great Lakes and connecting waters, where it is probably the most abundant of all species of fishes. Thought to spawn in the open water of the lake, the eggs floating until they hatch. Probably the most important food to most of the fish-eating fishes of the Great Lakes. Reaches a length of about 5 inches.

SILVER SHINER (Notropis photogenis), a fine, silvery shiner, is known in Michigan only from the rapids of the Huron River in Washtenaw County. Occasionally reaches a length of 6 inches.

ROSY-FACED SHINER (Notropis rubellus) occurs over most of the state, being especially common in the Lower Peninsula. Lives mostly in the smaller, warmer streams but is also found abundantly in some lakes. Spawns in mid-water over gravel riffles in streams. Feeds mostly upon aquatic insects. An important food for game fish in some localities, and used to some extent as a bait minnow. Reaches a maximum length of about 3 inches.

COMMON SHINER (Notropis cornutus) occurs over the entire state as Notropis cornutus frontalis and in the southern part of the Lower Peninsula as Notropis cornutus chrysocephalus. Typically a stream minnow. Spawns over gravel riffles, and on the nests made by other minnows, in streams. An excellent and popular bait minnow, and an important food for warm-water game fish living in streams. Reaches a length of about 9 inches.

RED-FINNED SHINER (Notropis umbratilis) occurs commonly in Michigan only in the larger rivers of the southern and eastern parts of the Lower Peninsula. Of little economic importance. Reaches a maximum length of about 5 inches.

SILVER-JAWED MINNOW (Ericymba buccata) occurs in Michigan only in a few streams in the southeast corner of the Lower Peninsula. Prefers the sandy regions of streams. Of no economic importance. Reaches a maximum length of about 4 inches.

BRASSY MINNOW (Hybognathus hankinsoni) occurs commonly in the northern half of the Lower Peninsula and in the Upper Peninsula. Lives mostly in boggy ponds and streams. Of little economic importance. Reaches a maximum length of about 3 inches.

BLUNT-NOSED MINNOW (Hyborhynchus notatus), probably our most abundant minnow, lives in most lakes and many streams over the entire state. Prefers the sandy and moderately weedy regions. Lays its eggs on the under side of submerged objects such as boards, logs, rocks, etc.; the male guards the eggs until they hatch. Feeds mostly upon aquatic insects and waterfleas. Reaches a length of about 3½ inches in about 3 years. It is the most important minnow furnishing food

for bass, perch and pike in our inland waters. Also a very important bait minnow. The Michigan Conservation Department is improving many of our lakes by placing in them objects under which this minnow can spawn, thus furnish more food for the game fishes.

FAT-HEADED MINNOW (Pimephales promelas) occurs over most of our state but commonly only in scattered localities. Prefers small streams and small lakes and ponds. Lays its eggs on the under side of submerged objects such as logs, boards, rocks, lily-pads, etc.; the males guard the eggs until they hatch. Feeds upon small aquatic animals and plants. Not very important as a food for game fish. Reaches a length of about 3 inches.

STONE-ROLLER MINNOW (Campostoma anomalum) is found in Michigan only in the southern half of the Lower Peninsula. Lives almost entirely in streams. Spawns over gravel riffles in streams. Feeds upon small aquatic animals and plants which it picks up from the stream bottom by its sucker-like mouth. This minnow differs from all other known fishes by having its intestine wound in many coils about the air bladder. Males often reach a length of 6 inches or more.

BULLHEADS AND CATFISHES (Ameiuridae)

The bullhead and catfish family includes 10 Michigan species, 5 of which become large and are valuable food fishes, the remaining 5 species being small. As a group these fishes are readily identified by the absence of scales and the presence of barbels on the head.

CHANNEL CATFISH (Ictalurus lacustris punctatus) occurs commonly in Lakes Erie and St. Clair, in the southern halves of Lakes Huron and Michigan and in many of the larger rivers of the southern half of the Lower Peninsula. This is one of the larger of the catfishes, often attaining a weight of 5 or more pounds, rarely a weight of 25 pounds. Feeds upon insects, snails, small fish and aquatic plants. In eating snails it breaks the shell in its jaws, swallows only the fleshy body of the snail and discards the pieces of shell. This catfish is an important food fish, especially along the Mississippi and Ohio rivers.

BLACK BULLHEAD (Ameiurus melas) occurs quite commonly in the lowland waters of the southern part of the Lower Peninsula, rare northward. Lives in sluggish streams and in lakes. Abundant in Lakes Erie and St. Clair. One of the smaller of the bullheads, seldom reaching a length of more than 12 inches. Feeds chiefly on insects and molluscs. The eggs are laid, in masses something like frog eggs, in holes in the stream bank or in holes beneath objects. A hardy fish which can live quite well in stagnant waters. Due to its small size it is not as important for human food as are some of the larger bullheads.

BROWN BULLHEAD; common bullhead (Ameiurus nebulosus) occurs over the whole state, most abundantly in the southern part of the Lower Peninsula. Abundant in many inland lakes and rivers and in the southern Great Lakes, especially Erie. Feeds mostly upon insects, molluscs, crayfish and small fish. Lays its eggs in holes or in cavities in or beneath objects. An important game fish in many lakes and an important commercial species in Lake Erie. Reaches a length of about 15 inches.

YELLOW BULLHEAD (Ameiurus natalis) is found in the larger, clear streams and the lakes over the entire state, being most abundant in many mud-bottomed lakes in the Lower Peninsula. In diet it is in part a scavenger, but also feeds on insects, molluscs, crayfish and small fish. The yellow bullhead and the brown bullhead are the two important bullheads taken by our line fishermen from so many inland lakes in the southern part of the state. Commonly reaches a length of about 15 inches.

SHOVEL-HEADED CATFISH (Pilodictis olivaris) is very rare in Michigan; it has been found only in the larger rivers of the southwestern part of the Lower Peninsula. A very large catfish with flat head and a projecting lower jaw. A common commercial species of the Mississippi River.

STONECAT (Noturus flavus) occurs commonly in the larger rivers of the southern half of the Lower Peninsula. Is usually found hiding beneath large boulders. Lays its eggs in depressions beneath logs and rocks. Is of little or no value as food due to its small size. The person who handles this little fish is apt to receive a very painful stab from the fin spines located just behind the gill cover; these spines have poison glands which liberate a poison (not dangerous but only painful) into the wound. Occasionally reaches a length of 10 inches.

TADPOLE MADTOM (Schilbeodes gyrinus) occurs in Michigan commonly only in mud-bottomed and weedy lakes and sluggish, weedy portions of streams of the Lower Peninsula. Feeds upon insects and other small aquatic animals. Its only economic value is in its use as a bait minnow; in some of the eastern states it is a very popular black bass bait. The back and lateral fins of this little fish have sharp spines which are armed with poison glands; thus the madtom is able to inflict a very painful wound to anyone who handles it without caution. Seldom reaches a length of over 4 inches.

SLENDER MADTOM (Schilbeodes exilis) is very rare in Michigan, having been found only once in this state and then near the Ohio border. Of no economic importance in our state. Reaches a maximum length of 3 to 4 inches.

BRINDLED MADTOM (Schilbeodes miurus) occurs only in a few streams of southeastern Michigan where it lives beneath boulders in the stream riffles. Quite rare and of no economic importance. Like other madtoms this fish can inflict a painful wound by its sharp fin spines which are armed with poison glands. Reaches a maximum length of about 3 inches.

FURIOUS MADTOM (Schilbeodes eleutherus) is found in Michigan only in the Huron River in the southeastern part of the Lower Peninsula where it lives under stones in swift water. Reaches a maximum length of about 5 inches.

MUDMINNOWS (Umbridae)

WESTERN MUDMINNOW (Umbra limi), a relative of the pikes, is found over the entire state, living in small, stagnant ponds, in mud-bottomed streams and in weedy lakes. Often mistaken by fishermen for young dogfish. They feed chiefly on small aquatic plants and animals. The adhesive eggs are laid singly on leaves of aquatic plants and they hatch in about one week. A very hardy little fish which should make an interesting aquarium pet. Probably eaten to a small extent by game fish. Reaches a length of 4 to 6 inches.

PIKES (Esocidae)

The pikes are in general the most voracious and the fastest-growing of our native game fishes. Readily identified by the duck-bill shape of the head.

MUD PICKEREL; little pickerel; pickerel (Esox vermiculatus) occurs only in the southern half of the Lower Peninsula and only abundant southward. Lives usually in weedy lakes and quiet weedy sections of streams. Thus it is not a valuable game fish for it seldom reaches the legal size. In some lakes it is probably harmful to the fishing for it competes with the valuable northern pike much like weeds in the garden compete with the desirable plants. The smallest of the pikes in Michigan, the little pickerel seldom reaches a length of over 12 inches.

NORTHERN PIKE; great northern pike; grass pike (Esox lucius) occurs abundantly in lakes and many streams over the entire state. Prefers weedy areas. Spawns in early spring along marshy shores of lakes and in quiet, weedy sections of streams. Feeds almostly entirely upon fishes. Almost all of the pike caught by our sports fishermen are members of this species. A very important game fish. It may live 12 to 14 years and reach a length of 4 feet and a weight of 30 pounds or more.

Great Lakes MUSKELLUNGE (Esox masquinongy) is found commonly only in the Great Lakes, less commonly in a few of the large inland lakes such as Gull Lake. The largest game fish in the waters of our state, it often reaches a length of 4 or 5 feet and a weight of 40 pounds or more. Feeds almost entirely on fishes and grows very rapidly. Sport fishermen take many "muskies" from our Great Lakes, notably Lake St. Clair. The tiger muskellunge (E.m. immaculatus) occurs in Michigan only near the Wisconsin-Michigan border.

EELS (Anguillidae)

American EEL (Anguilla bostoniensis), introduced years ago into many waters of the Lower Peninsula by the Michigan Fish Commission, it is now very rare in our state. The American eel spawns only in the tropical area of the Atlantic Ocean. The young eels reach the shores of North America when about 3 years old. They migrate up the streams where they live until they are adults; they then migrate back into the ocean to spawn. The chances are very slight of young eels from the Atlantic Ocean reaching our state, and the adult eel will not spawn in our fresh waters. Often reaches a length of 4 feet.

TOPMINNOWS (Cyprinodontidae)

The topminnows, all small and feeble fishes, represent a group of fishes which are essentially tropical in their distribution. They are close relatives of the popular, live-bearing, aquarium fishes—the "mollies" and "guppies."

BANDED KILLIFISH; top minnow; gray back (Fundulus diaphanus) is common to abundant in the waters of the Lower Peninsula, but rare in the Upper Peninsula. Abundant in inland lakes and the margins of the lower Great Lakes. Prefers the weedy shallows. Deposits its eggs in masses of thread-like, aquatic plants. A close relative of the popular aquarium pets—the mollies and guppies. An important food for bass and a fairly good bait minnow. Reaches a length of 3½ inches.

STAR-HEADED TOPMINNOW (Fundulus dispar) occurs in Michigan only in a few lakes in the extreme southcentral part of the Lower Peninsula (St. Joseph drainage). This little fish has the peculiar habit of swimming at the surface with its head and back nearly out of water. Reaches a maximum length of about 2½ inches.

BLACK-STRIPED TOPMINNOW (Fundulus notatus) occurs in Michigan only in a few lakes and sluggish streams in the southern fourth of the Lower Peninsula. Usually found in the weedy shallows of lakes. Usually swims near the surface. Is probably eaten to some extent by bass. Reaches a length of about 3 inches.

TROUT-PERCHES (Percopsidae)

TROUT-PERCH (Percopsis omiscomaycus) is common to abundant in the Great Lakes and waters immediately adjacent to them, but rare in the waters of the interior part of the state. A very interesting fish to the student of fishes because in some characters it resembles the trouts and in other characters it resembles the perch-like fishes--thus its name. Reaches a length of about 6 inches.

PIRATE PERCHES (Aphredoderidae)

PIRATE PERCH (Aphredoderus sayanus) occurs in a very few localities in the southern half of the Lower Peninsula. Feeds on insects and other small aquatic animals and occasionally on small fishes. Generally rare in our state and of little economic importance. Reaches a length of 4 inches.

SEA BASSES (Serranidae)

WHITE BASS; striped bass (Lepibema chrysops) occurs in a few lakes in the southern half of the Lower Peninsula; found commonly in the lower Great Lakes but abundant only in Lake Erie. Primarily a lake fish. Feeds on insects, small crustaceans and small fishes. It bites well on both artificial and natural baits and is about as good eating as the black basses. Reaches a length of about 15 inches.

PERCHES AND DARTERS (Percidae)

The perch family includes two rather distinct groups of fishes: the perch and walleyes which are large species and valuable food and game fishes, and the darters which are small, generally retiring in habits and economically important only as food for the game species.

YELLOW PERCH (Perca flavescens) is distributed over the entire state, abundantly in the Great Lakes and almost all of the inland lakes, less abundantly in streams. The most abundant game fish in most of our inland waters. In early spring it lays its eggs in strings of jelly over aquatic plants. Feeds upon insects and to a large extent upon fishes. Most individuals live about 6 to 8 years. Many fishermen regard the perch as the best eating fish in our state. It is one of the most important of our game fish. Occasionally reaches a length of more than a foot and a weight of more than a pound.

SAUGER; gray pike (Stizostedion canadense) occurs rarely in some of the larger rivers of the Lower Peninsula, but abundantly in Lake Erie and commonly in Lakes St. Clair, Huron and Michigan. Feeds almost entirely upon fishes. Of some importance as a commercial fish in Lake Erie. Commonly reaches a length of 15 inches and a weight of 1½ pounds.

YELLOW PIKE-PERCH; walleye pike (Stizostedion vitreum) occurs commonly in many of the inland lakes over the entire state, and abundantly in the Great Lakes where it is an important commercial species. Often reaches a length of 2½ feet and a weight of 10 to 15 pounds, rarely a weight of 50 pounds. Often lives to be 10 or 12 years old. Feeds almost entirely upon fishes. An important game fish in our state.

RIVER DARTER (Imostoma shumardi) is known from Michigan only from Saginaw Bay and the lower Au Sable River. Usually lives in water several feet deep.

BLACK-SIDED DARTER (Hadropterus maculatus) occurs commonly in the larger streams of the Lower Peninsula, and only in the southwestern part of the Upper Peninsula. Typically a stream fish. Reaches a length of about 3 inches.

LOG PERCH; zebra darter (Percina caprodes) occurs commonly over the entire state, most abundantly in the larger rivers and the larger inland lakes. Also found commonly in parts of the Great Lakes. Feeds mostly upon insects. Is an important forage for bass in some lakes. Reaches a maximum length of about 5 inches.

CHANNEL DARTER (Cottogaster copelandi) is found in Lake Erie and the Detroit River north to Saginaw Bay. A species which lives over sand or gravel bottom in large bodies of water; not found in small streams. Generally rare and of little economic importance in our state. Reaches a maximum length of three inches.

SAND DARTER (Ammocrypta pellucida) inhabits only a few streams and lakes in extreme southeastern Michigan. Lives only on a clear sandy bottom, borrowing into the sand and remaining, most of the time, buried in the sand with only its eyes showing at the surface. Feeds mostly on insect larvae. Reaches a length of two inches.

JOHNNY DARTER (Boleosoma nigrum) is the most abundant of the darters in Michigan, occurring in sluggish sections of many streams and in most lakes over the entire state. The subspecies Boleosoma nigrum eulepis occurs locally in the lower Detroit River. Lays its eggs in a single layer on the under side of boulders or other submerged objects; the male guards the eggs. A very important food for bass and other game fishes in many lakes. Reaches a length of about 3 inches.

RAINBOW DARTER (Poecilichthys coeruleus) occurs throughout the Lower Peninsula, commonly only in the southern part. Usually lives in rapid streams, occasionally along the wave-washed shores of the larger lakes. One of the most beautiful of our native fishes, it displays most of the colors of the rainbow. Lays its eggs in the gravel in stream riffles. Unfortunately it is difficult to keep this very beautiful little fish alive in an aquarium. Reaches a length of about 2 inches.

ORANGE-THROATED DARTER (Poecilichthys spectabilis) in Michigan is found only in the extreme southern part of the Lower Peninsula, in small rapid creeks. Lays its eggs in gravel in stream riffles. Like the rainbow and green sided darters, this little fish is extremely beautiful when in breeding colors. Reaches a maximum length of about 2 inches.

MUD DARTER (Poecilichthys jessiae) has been recorded but once in Michigan, from the outlet of Devil's Lake, Lenawee County.

IOWA DARTER (Poecilichthys exilis) occurs over the whole state, living typically in mud-bottomed, weedy lakes and sluggish, weedy sections of large streams. Breeding males are brilliantly colored with orange, brown and black. An important food for warm water game fish. Reaches a maximum length of 2 inches.

FAN-TAILED DARTER (Catonotus flabellaris) is found over the southern two-thirds of the Lower Peninsula (as Catonotus flabellaris flabellaris) where it occurs commonly in scattered localities, and in the streams along the northwest shore of Lake Michigan (as Catonotus flabellaris lineolatus). Lives in small and warm streams. Lays its eggs on the under side of boulders and other submerged objects. Feeds mostly upon aquatic insects and snails. Of little economic importance. Reaches a length of 2½ inches.

LEAST DARTER (Microperca punctulata) is the smallest vertebrate animal living in Michigan. Becomes adult when less than an inch in length and seldom gets to be more than 1½ inches long. Lives in rather cold and sluggish streams and in weedy lakes. Of little or no economic importance.

GREEN-SIDED DARTER (Etheostoma blennioides) is found only in the extreme southern part of the Lower Peninsula, where it lives only in stream rapids. The breeding males of this species are among the most beautiful of our native fishes. Unfortunately it is very difficult to keep this very beautiful little fish alive in an aquarium. Reaches a length of 5 inches.

BASSES AND SUNFISHES (Centrarchidae)

This family includes the majority of the important warm-water game fishes.

SMALL-MOUTHED BASS (Micropterus dolomieu) is distributed very commonly over the Lower Peninsula, less commonly in the Upper Peninsula. Common to abundant in the Great Lakes. Found most abundantly in warm, clear, gravel-bottomed streams and in clear, open sand or gravel-bottomed lakes. Most abundant in the northern part of the Lower Peninsula. Builds a nest and spawns on coarse gravel bottom in late spring. Feeds mostly on fish and crayfish. One of our most important game fishes of the state--to many fishermen it is the most prized of all our game fish. Often lives to be about 12 years old and occasionally reaches a length of 2 feet and a weight of 5 pounds.

LARGE-MOUTHED BASS (Aplites salmoides) is well distributed and abundant in the Lower Peninsula, common in the Upper Peninsula. Lives mostly in sluggish, weedy sections of streams and in weedy lakes. The largemouth builds a nest and spawns over a bottom of plant roots, sticks and other plant debris. Feeds mostly on fish and crayfish. Lives about 12 years and occasionally reaches a length of 2 feet and a weight of 5 pounds. A very important game fish in the southern part of the state.

WARMOUTH BASS (Chaenobrythus gulosus) is found quite abundantly in a few lakes in the southern part of the Lower Peninsula. An inhabitant of warm, weedy lakes and weedy streams, particularly in the mud-bottomed regions. Feeds mostly upon insects and fish. Of relatively minor importance as a game fish due to its general scarcity. Reaches a length of about 8 inches.

GREEN SUNFISH (Apomotis cyanellus) is distributed commonly over the Lower Peninsula of Michigan but abundantly only in a few small lakes in the southern part. Rare in the Upper Peninsula. Spawns in nests over gravel or root-filled bottom in early summer. Feeds mostly upon fishes, crayfish and insects. Occasionally reaches a length of 7 inches and lives about 8 years. Since it grows slowly and seldom reaches the legal length of 6 inches, this fish is not very important as a game fish; on the contrary, since it competes with the more valuable pan-fishes (bluegill and common sunfish) for food, it is an undesirable fish from the standpoint of the sportsman.

BLUEGILL (Helioperca macrochira) abundantly inhabits the weedy lakes of the Lower Peninsula, much less commonly in the Upper Peninsula. Most abundant in deep, weedy lakes, living mostly in the deeper waters. Spawns over beds of gravel in early summer. Feeds mostly upon aquatic insects. Often reaches a length of 1 foot and a weight of nearly a pound, rarely about 2 pounds, and occasionally lives for at least 10 years. One of the most important of the panfishes and in our state, and often the most favored. It is probably that Michigan fishermen catch more bluegills than any other species of the sunfish and bass family.

LONG-EARED SUNFISH (Xenotis megalotis) is found only in the Lower Peninsula where it is quite abundant only in a few scattered localities; most abundant in the southern part. Lives in small lakes and the quiet sections of creeks and rivers. Builds its nest and spawns over gravel bottom. Never reaches the legal length of 6 inches in Michigan and is therefore of no value as a game fish; on the contrary, it competes with the desirable panfishes (bluegill and common sunfish) and, like the green sunfish, is therefore an undesirable species from the standpoint of the sportsman.

PUMPKINSEED SUNFISH; common sunfish (Eupomotis gibbosus) occurs abundantly in the waters of the Lower Peninsula, especially the southern part; less abundantly in the Upper Peninsula. Lives in weedy lakes and in quiet sections of many streams and rivers. Builds its nest and spawns over gravel bottom. Feeds mostly upon aquatic insects. Second only to the bluegill in importance as a panfish. Often reaches a length of 10 inches and lives at least 8 years.

ROCK BASS (Ambloplites rupestris) is well distributed over most of the state of Michigan, most abundantly in the clear, gravel-bottomed lakes of the northern part of the Lower Peninsula. Builds its nest usually on gravel bottom and spawns in late spring. Feeds mainly on insects, crayfish and fish. Often lives for 8 to 10 years and reaches a length of 10 inches. An important panfish.

WHITE CRAPPIE (Pomoxis annularis) is quite rare in Michigan, being found only in a few localities in the southern part of the state and in Van Etten Lake, commonly only in Lake Erie waters. Usually occurs in sluggish water over a silt or mud bottom. Not important as a game fish in Michigan due to its scarcity, but a very important fish in states farther south. Occasionally reaches a length of 1 foot and a weight of a pound.

BLACK CRAPPIE; calico bass; strawberry bass; speckled bass (Pomoxis sparoides) occurs commonly locally throughout the Lower Peninsula; rare in the Upper Peninsula. Lives mostly in clear, open lakes and quiet sections of streams, often associated with weed beds. Builds nests in gravel bottom, often near weed beds or over plant debris. Spawns in late spring or early summer. Reaches a length of a foot and a weight of nearly a pound. On some lakes in the southern part of the state, fishermen take large catches of the crappie by line fishing through the ice in winter.

SILVERSIDES (Atherinidae)

BROOK SILVERSIDES (Labidesthes sicculus) skip-jack, a representative of an essentially marine family, occurs in Michigan only in the Lower Peninsula where it is common only southward. Is abundant in many lakes. Scatters its eggs over gravel bottom or over vegetation. Each egg has a long adhesive stalk by which the egg is attached to stones or vegetation. Reaches a length of about 3 inches. Lives only through 2 summers. A very beautiful little fish which usually swims in schools near the surface of lakes. An important food for game fish in some lakes.

DRUMS (Sciaenidae)

Freshwater SHEEPSHEAD; freshwater drum (Aplodinotus grunniens) in Michigan is almost entirely a Great Lakes species, being most abundant in the southern parts of the Great Lakes, and absent in Lake Superior. Is also found in the mouths of some of the larger rivers. Absent in the inland waters. Reaches a length of 3 feet or more, and often a weight of over 10 pounds. Theadults feed mostly upon molluscs and crayfish. The shells of the molluscs (clams and snails) are crushed by strong teeth which are set deep in the throat of this fish; the pieces of shell are discarded and the sheepshead swallows only the bodies of the molluscs.

SCULPINS (Cottidae)

The freshwater sculpins are typically small fishes living a retiring existence. They are shaped much like a tadpole with large heads and large lateral fins.

DEEPWATER SCULPIN (Triglopsis thompsonii) in Michigan is found only in the deeper waters of the Great Lakes and Torch Lake. Very little is known concerning the life history of this little fish. Of some exonomic importance, as one of the food items eaten by lake trout. Reaches a maximum length of about 6 inches.

MUDDLER; Millers thumb; common sculpin (Cottus bairdii) is widely distributed and common in inland waters over the entire state of Michigan (as Cottus bairdii bairdii), and occurs in Lakes Michigan, Huron and Superior and in Gull Lake (as Cottus bairdii kumlieni). Most abundant in the warmer, rapid streams living over gravel bottom. Less common in larger rivers and in lakes. Feeds upon insects and small fishes. Spawns in late spring and lays its eggs in masses on the under side of large stones. Reaches a length of 4 to 6 inches.

SLIMY MUDDLER; Millers thumb; sculpin (Cottus cognatus) occurs in the northern half of the Lower Peninsula and in the Upper Peninsula. Typically a trout stream species found in almost all trout streams and in some inland lakes. Reaches a length of about 3 inches. Lays its eggs in masses on the under sides of large stones. Feeds on insects and small fishes. Is a very important food for trout in our northern streams.

SPOONHEAD MUDDLER (Cottus ricei). A great Lakes species found chiefly in the deeper waters of Lakes Superior, Huron, and Michigan. Very little known concerning its life history. Reaches a maximum length of about 4 inches.

STICKLEBACKS (Casterosteidae)

BROOK STICKLEBACK (Eucalia inconstans) occurs abundantly over the whole state. Lives mostly in small, weedy lakes and ponds and in quiet, weedy sections of streams. Often abundant in old beaver ponds. The male builds a small round nest (much like the nest of an oriole) of the thread-like aquatic plants (filamentous algae). The stickleback lays its eggs in this nest during summer and the male guards the nest. Feeds mostly on insects and other small aquatic animals. Makes a very interesting aquarium pet. Length about 2 inches.

NINE-SPINED STICKLEBACK (Pungitius pungitius) occurs only in Lakes Huron, Michigan and Superior and in some of the larger inland lakes such as Gull and Higgins. Reaches a maximum length of 3 inches. Generally rare and of no economic importance.

CODFISHES (Gadidae)

American BURBOT; ling; lawyer (Lota maculosa) occurs abundantly in all of the Great Lakes; also found commonly in some of the larger rivers and inland lakes in the northern part of the state. This fish spawns during the colder months of the year on the rocky shallows of lakes or in rocky streams. Each female lays over 100,000 eggs. Feeds mostly upon fish and crayfish. In Michigan waters the ling often reaches a length of 1 to 2 feet.

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