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AN ANNOTATED LIST OF THE FISHES OF LAKE ERIE AND ITS TRIBUTARY WATERS EXCLUSIVE OF THE DETROIT RIVER[1, 2]

HARRY D. VAN METER

U. S. Bureau of Commercial Fisheries, Sandusky Biological Station, Sandusky, Ohio

AND

MILTON B. TRAUTMAN

Curator of Vertebrate Collections and Professor, Faculty of Zoology, The Ohio State University, Columbus, Ohio

ABSTRACT

Dramatic fluctuations have occurred in the abundance of many species in Lake Erie and its tributary waters in the last century. Some fishes of former economic importance have become commercially extinct. Several species apparently have been extirpated, especially in the tributaries. It is believed that further changes in the abundance of other species will occur in the near future. This publication consolidates the confirmed records of fish species for Lake Erie and its tributaries. One hundred and thirty-eight species of fishes are listed and, where appropriate, brief comments on present and past distribution, and abundance and economic status are given. Selected references are listed as additional sources of information for each species.

FOREWORD

Throughout historic times, Lake Erie (fig. 1) has provided a larger variety of fish species than has any of the other Great Lakes, apparently because of its southernmost position. The shallow warm character of this lake and the diversity of habitats it contains also have long contributed to its high productivity. Yet considerable evidence exists that the white man's presence in the Lake Erie watershed before 1900 had some effects, adverse or otherwise, upon the fish populations. It was not until the middle of the present century, however, that the activities of man caused major modifications in the fish fauna. By the late 1960's, several species of fishes had been extirpated from the lake or from its tributaries.

More than 35 species of food fishes have at some time been of commercial importance in Lake Erie; many of these species have now become so decreased in abundance that they are of little or no economic value to the commercial fishery. Other species of lesser importance have increased in numbers. Because of the extensive changes that have taken place in the fish fauna of Lake Erie, we felt it proper to publish an annotated list of the lake's fishes.

A total of 138 species of fishes is listed and, where appropriate, comments on present and past distribution, and abundance and economic status are given. The numbers in parentheses at the end of the last statement for each species refer to the publications in *Literature cited*. For convenience only 12 references are

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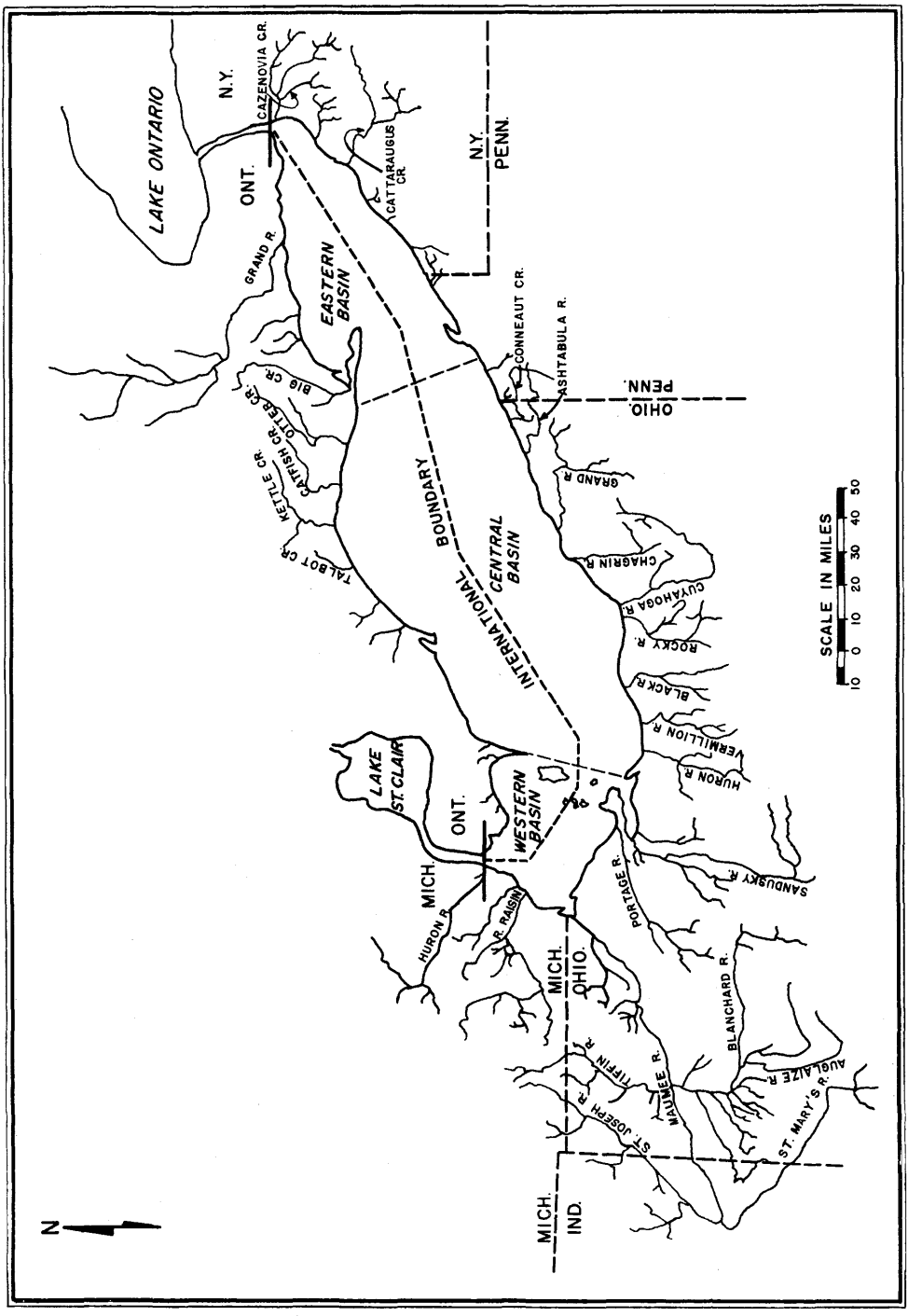

FIGURE 1. Lake Erie and its tributaries.

listed, although many other publications, which entirely or in part relate to the fishes of the area, have been consulted.

With few exceptions, the list of generic, specific, and common names published by the American Fisheries Society has been followed. We have included subspecific names only when it was believed that their inclusion was justified and when we were reasonably sure that they were truly the subspecies of the Lake Erie area. Those species that lack factual records have purposely been omitted from the list to avoid forcing our conjectures relative to hypothetical species.

LIST OF SPECIES

Petromyzontidae—lampreys

Ichthyomyzon unicuspis Hubbs and Trautman—silver lamprey
Numerous until the early 1900's; has decreased markedly, especially in recent years; present in lake and many of its tributaries. (2–4–5–7–10–12)

Ichthyomyzon fossor Reighard and Cummins—northern brook lamprey
Present in some tributary waters in Province of Ontario and in all states except possibly Pennsylvania; local in distribution. (7–12)

Petromyzon marinus Linnaeus—sea lamprey
First reported for Lake Erie in 1921; remains uncommon; spawning runs observed in tributaries in Province of Ontario and the states. (7–11–12)

Lampetra lamottei (Lesueur)—American brook lamprey
Occurs in some tributaries of Ontario and the states; local in distribution. (5–10–11–12)

Acipenseridae—sturgeons

Acipenser fulvescens Rafinesque—lake sturegon
Formerly abundant in Lake Erie, where it spawned in the larger tributaries; now rare. (2–4–8–11–12)

Polyodontidae—paddlefishes

Polyodon spathula (Walbaum)—paddlefish
At least two well-authenticated records for western Lake Erie, both before 1910. (5–7–11–12)

Lepisosteidae—gars

Lepisosteus oculatus (Winchell)—spotted gar
Specimens taken since 1950 were from widely scattered localities in Lake Erie, and in adjacent streams, bays, and marshes, especially from the western basin, including Sandusky Bay. (10–11–12)

Lepisosteus osseus (Linnaeus)—longnose gar
Occurs in many of the tributaries and in the more shallow waters of the western basin, including areas adjacent to the islands, Sandusky Bay, and marshes; decreasing in abundance. (3–4–8–10–11–12)

Amiidae—bowfins

Amia calva Linnaeus—bowfin
Present in many of the tributaries and in the shallow, clearer, vegetated marshes, harbors, and low-gradient streams; present but less numerous in the open lake; of little commercial value. (8–10–11–12)

Clupeidae—herrings

Alosa pseudoharengus (Wilson)—alewife
First reported for Lake Erie near Long Point in 1931; believed to have entered the lake through the Welland Canal; now abundant. (7–10–12)

Alosa sapidissima (Wilson)—American shad
Repeated introductions in Lake Erie since the late 1870's and until at least 1900; a few adults reported, one as late as 1924. (5–7–12)

Dorosoma cepedianum (Lesueur)—gizzard shad
Present in the lake and many of its tributaries; most abundant in the western basin; appears to fluctuate greatly in abundance from year to year. (4–6–7–10–11–12)

Salmonidae—trouts, whitefishes, and graylings

Oncorhynchus kisutch (Walbaum)—coho salmon
Repeatedly stocked, often by the thousands, since 1870 without success; experimental introductions continuing. A few adults captured in the lake in 1967–68 are believed to have emigrated from the upper Great Lakes. (10–12)

Oncorhynchus nerka (Walbaum)—sockeye salmon
Several adults captured in an Ontario tributary in 1967; believed to have emigrated from Lake Huron. Land-locked form known as kokanee. (10)

Oncorhynchus tshawytscha (Walbaum)—chinook salmon
Repeatedly stocked since 1876, sometimes by the thousands, without becoming established. (8–12)

Salmo salar Linnaeus—Atlantic salmon
Thousands introduced in Lake Erie between 1876 and 1885, but species did not become established. (12)

Salmo trutta Linnaeus—brown trout
Repeatedly introduced in several tributaries and in the lake since at least 1900; few captured in the open lake; propagates in a few cold streams. (4–12)

Salmo gairdneri Richardson—rainbow trout
Repeatedly introduced in Lake Erie since at least 1885; only an occasional specimen is captured in the open lake; propagates in a few cold streams. (2–4–12)

Salvelinus fontinalis (Mitchill)—brook trout
Originally present in some of the coldest tributaries of the eastern half of the lake; introduced since 1868 in Cold Creek (near Sandusky, Ohio) and a few other tributaries of the western half of the lake. (12)

Salvelinus namaycush (Walbaum)—lake trout
Formerly common in deeper waters of central and eastern basins; moderate numbers taken by the commercial fishery until early 1900's; rare since 1940. (2–3–4–7–10–11–12)

Coregonus artedii Lesueur—cisco or lake herring
Of great commercial importance between 1870 and 1924, after which it declined in abundance; species now scarce; two subspecies and their intergrades occur in the lake: *Coregonus a. artedii* Lesueur, Great Lakes cisco, and *Coregonus artedii albus* Lesueur, Lake Erie cisco, the latter essentially a shallow-water form. (2–3–4–7–10–11–12)

Coregonus alpenae (Koelz)—longjaw cisco
Several specimens taken recently in the eastern basin; presumably present in the past, but perhaps misidentified. (10)

Coregonus clupeaformis (Mitchill)—lake whitefish
Of great commercial importance between 1850 and 1950; declined rapidly in abundance after 1953 and is now scarce. (2–3–4–10–11–12)

Osmeridae—smelts

Osmerus eperlanus mordax (Mitchill)—American smelt
Presumably entered Lake Erie from the Welland Canal or the Detroit River; first reported in 1932; now abundant and commercially valuable. This is a subspecies of *Osmerus eperlanus* (Linnaeus) according to McAllister (1968, Bull. Nat. Mus. Canada, Biol. Ser. 71: 191). (7–10–12)

Hiodontidae—mooneyes

Hiodon tergisus Lesueur—mooneye
Distributed throughout the lake, although most numerous in shallow areas; present in some of the larger tributaries; limited commercial value. (3–4–7–10–11–12)

Umbridae—mudminnows

Umbra limi (Kirtland)—central mudminnow
Inhabits low-gradient vegetated tributaries, shallow protected bays, the area around the islands, the marshes adjacent to the lake, and the lake proper; has decreased in abundance in recent years. (3–4–6–12)

Esocidae—pikes

Esox americanus vermiculatus Lesueur—grass pickerel
Present in the vegetated marshes and shallows of the lake shore and islands, and in the lower gradient, vegetated tributaries; more numerous before extensive marsh drainage. (2–4–6–10–11–12)

Esox niger Lesueur—chain pickerel
Introduced into several Lake Erie tributaries along the south shore, where it possibly may have become established. (4)

Esox lucius Linnaeus—northern pike
Once of considerable commercial importance, especially in the western basin; now greatly reduced in numbers, although still present in Lake Erie and many of its weedy, shallow bays and marshes, and in low-gradient, vegetated tributaries. (3–8–10–11–12)

Esox masquinongy Mitchill—muskellunge
Abundant and commercially important before 1850, especially in the western basin and its tributaries; decreased steadily until at present it is rare; two subspecies occur: the native *Esox m. masquinongy* Mitchill, Great Lakes muskellunge, and *Esox masquinongy ohioensis* Kirtland, Ohio muskellunge, introduced recently in some southern tributaries. (2–3–4–10–11–12)

Cyprinidae—minnows and carps

Cyprinus carpio Linnaeus—carp
First introduced in Lake Erie in 1879; increased rapidly and became commercially important, especially in the western basin, its tributaries, and Sandusky Bay; hybrids between carp and goldfish at times compose the major portion of seine catches. (2–3–10–11–12)

Carassius auratus (Linnaeus)—goldfish
Introduced in Lake Erie in the late 1880's; now common and widely distributed; greatest concentrations are in the shallow waters of the western basin; of limited commercial value; variations in morphology and color are common. (2–4–5–7–10–11–12)

Notemigonus crysoleucas (Mitchill)—golden shiner
Previously abundant in weedy, sheltered bays and vegetated marshes adjacent to Lake Erie,and in the vegetated sections of many of its tributaries; much reduced in numbers, but still common in suitable habitats. (2–3–4–6–7–10–12)

Hybopsis biguttata (Kirtland)—hornyhead chub
Formerly numerous in many tributaries, especially in those entering from the southwest; has declined greatly in abundance; never reported from the lake. (4–6–7–10–12)

Hybopsis micropogon (Cope)—river chub
Once numerous in many tributaries entering the lake from the south and west, currently much less common. No lake record. (3–4–6–10–12)

Hybopsis storeriana (Kirtland)—silver chub
Formerly common to abundant in the lake, especially in the western basin;

occasionally found in larger tributaries near their confluences with the lake; numbers have greatly decreased since 1955. (2–3–4–10–11–12)

Hybopsis a. amblops (Rafinesque)—bigeye chub
Previously numerous in tributaries entering lake from south; strays occasionally recorded in the lake; has decreased in abundance since 1930. (4–11–12)

Rhinichthys atratulus meleagris Agassiz—blacknose dace
Formerly abundant in tributaries, especially in clear, cool headwaters having moderate to high gradients; has greatly decreased in many localities since 1925; strays occasionally found in lake. (3–4–6–12)

Rhinichthys cataractae (Valenciennes)—longnose dace
Present in the central and eastern basins of Lake Erie and in several of their tributaries; during winter occurs in shallow shore waters of the lake and in its tributaries. (2–3–4–12)

Semotilus a. atromaculatus (Mitchill)—creek chub
Abundant in most of the tributaries; strays occasionally taken in the lake. (2–3–4–6–9–11)

Semotilus m. margarita (Cope)—pearl dace
Found in a few of the colder tributaries entering the lake from the northeast and east. (6–7)

Phenacobius mirabilis (Girard)—suckermouth minnow
Invaded from the west; first recorded in the Maumee River in 1920; by 1968 it inhabited the southern and western tributaries of the western basin; rarely taken in the lake. (12)

Chrosomus eos Cope—northern redbelly dace
Present only in a few northern tributaries; introduced unsuccessfully into several Lake Erie tributaries in Ohio in 1939 and 1940; never recorded from the lake. (12)

Chrosomus erythrogaster (Rafinesque)—southern redbelly dace
Occurs sparingly and locally in some tributaries in all of the states and Province of Ontario; common only in some tributaries entering lake from the south; formerly more numerous. (3–4–6–7–11–12)

Clinostomus elongatus (Kirtland)—redside dace
Present in a few widely scattered tributaries entering the lake from the west, south, and east. (3–4–7–11–12)

Opsopoeodus emiliae Hay—pugnose minnow
Formerly numerous in some of the tributaries entering from the west and south, and around the islands in the western basin; at present rare or extirpated in the Lake Erie watershed. (7–11–12)

Notropis atherinoides Rafinesque—emerald shiner
Common throughout the lake, although possibly decreasing in abundance; ascends streams, primarily those of low gradients; an important forage and bait species. (2–3–4–6–10–11–12)

Notropis photogenis (Cope)—silver shiner
Inhabits a few of the least turbid tributaries of southeastern Michigan and northwestern Ohio; apparently decreasing in numbers. (9–10–11–12)

Notropis rubellus (Agassiz)—rosyface shiner
Present in all U. S. tributaries and in many of those in Ontario, especially in the higher gradient portions of tributaries; rarely strays into Lake Erie; apparently decreasing in abundance in many localities. (2–3–4–6–11–12)

Notropis umbratilis cyanocephalus (Copeland)—redfin shiner
More numerous in tributaries entering the lake from the west and south than in those entering from the north; rare or absent in tributaries of the eastern basin. (10–11–12)

Notropis chrysocephalus (Rafinesque)—central common shiner
Abundant in many tributaries, especially those entering from the south and west; occasionally strays into the lake. (3–4–6–7–10–11–12)

Notropis cornutus (Mitchill)—northern common shiner
Occurs in many tributaries, especially in headwaters and in those entering the central and eastern basins; recently considered to be specificially distinct from *Notropis chrysocephalus*. (10, page 126; 12)

Notropis hudsonius (Clinton)—spottail shiner
Abundant throughout the lake, ascending streams for short distances; an important forage and bait species. (2–3–4–11–12)

Notropis heterodon (Cope)—blackchin shiner
Apparently once numerous in Sandusky Bay, around the islands in the western basin, and in tributaries scattered about the lake; decreased numerically during the present century. (2–6–7–10–11–12)

Notropis boops Gilbert—bigeye shiner
Recorded from the Maumee River until 1941; may now be extirpated; apparently very intolerant of turbid waters. (12)

Notropis spilopterus (Cope)—spotfin shiner
Present in many tributaries and in the shallow waters of the lake; most numerous in those tributaries entering the western basin. (6–11–12)

Notropis dorsalis (Agassiz)—bigmouth shiner
Recorded only from the Black and Rocky Rivers in Ohio; decreasing in abundance. (12)

Notropis stramineus (Cope)—sand shiner
Present and often common in the shallower portions of the lake and in many of its tributaries; of considerable importance as a forage species. (3–6–7–11–12)

Notropis v. volucellus (Cope)—mimic shiner
Present and often numerous in the shallow portions of the lake, especially around the islands of the western basin; abundant in many of the tributaries; an important forage species. (4–6–7–11–12)

Notropis buchanani Meek—ghost shiner
Recorded from Talbot Creek, Ontario, a tributary to the central basin; may occur in other tributaries in Ontario. (7, page 84)

Notropis heterolepis Eigenmann and Eigenmann—blacknose shiner
Formerly numerous in vegetated shallow waters of the lake and in many tributaries; recently has decreased greatly in abundance and has become extirpated in some areas. (3–4–6–12)

Notropis ariommus (Cope)—popeye shiner
One authentic record from the Maumee River, taken 16 August 1893 by P. H. Kirsch; recently verified by Dr. Carter R. Gilbert [Systematics and Distribution of the American Cyprinid Fishes *Notropis ariommus* and *Notropis telescopus* Copeia 1969(3) 474–92]. (12, page 40)

Notropis anogenus Forbes—pugnose shiner
Has been reported from the Ohio islands and the harbors of the western basin, Point Pelee, and Rondeau Harbor in Ontario. (7–9–10–12)

Ericymba buccata Cope—silverjaw minnow
In some tributaries in Michigan, Ohio, and Pennsylvania; some strays recorded from the lake. (5–11–12)

Hybognathus hankinsoni Hubbs—brassy minnow
Recorded from Talbot, Catfish, and Swamp Creeks in Ontario and from Cazenovia Creek in New York. (6–10)

Pimephales vigilax perspicuus (Girard)—bullhead minnow
One specimen recorded from the Maumee River drainage, presumably from the release of bait minnows. (7–12)

Pimephales p. promelas Rafinesque—fathead minnow
Inhabits a number of tributaries in Ontario and most tributaries along the south shore; abundant in some of them; strays or small populations in the shallower waters of the western basin. (3–4–6–9–11–12)

Pimephales notatus (Rafinesque)—bluntnose minnow
Widespread and common in shallow waters and bays, and in the island region; uncommon to abundant in the tributaries; an important forage and bait species. (3–4–6–11–12)

Campostoma anomalum (Rafinesque)—stoneroller
Widespread and often abundant in the tributaries entering from the west and south; less numerous in tributaries from the north and east; strays occasionally into the lake. Two subspecies and their intergrades occur: *Campostoma anomalum pullum* (Agassiz), central stoneroller minnow, the dominant form, and *Campostoma a. anomalum* (Rafinesque), Ohio stoneroller minnow, confined largely to the southern portions of the southern tributaries. (3–4–11–12)

Catostomidae—suckers

Ictiobus cyprinellus (Valenciennes)—bigmouth buffalo
Recorded from tributaries entering from Michigan and western Ohio; a fair-sized population in Sandusky Bay; occasionally taken in the island region and shallow waters of the western and central basins as far east as Cleveland; apparently native, but introductions have been made. (5–12)

Carpiodes cyprinus (Lesueur)—quillback
Common and widely distributed throughout the lake and in many of the larger tributaries; especially numerous in tributaries entering from the west and south. Two subspecies and their intergrades occur: *Carpiodes c. cyprinus* (Lesueur), eastern quillback, which is largely confined to the lake, and *Carpiodes cyprinus hinei* Trautman, central quillback, confined almost entirely to the larger tributaries. (3–4–7–10–11–12)

Carpiodes carpio (Rafinesque)—river carpsucker
A few specimens collected in 1927 in the Maumee River drainage; probably were introduced, but failed to become established. (7–12)

Moxostoma anisurum (Rafinesque)—silver redhorse
Formerly common and widespread in the lake and in some of its larger tributaries, especially those entering from the west and south; apparently decreasing in abundance. (3–5–9–10–11–12)

Moxostoma duquesnei (Lesueur)—black redhorse
At times numerous in some tributaries entering from all states; apparently rare in Ontario tributaries; occurs sparingly in the lake. (4–6–9–10–11–12)

Moxostoma erythrurum (Rafinesque)—golden redhorse
Common to abundant in the tributaries entering from the west and south; apparently less numerous in Ontario tributaries; a small population in the lake, frequently observed in shallow waters and around the islands. (4–6–7–10–11–12)

Moxostoma m. macrolepidotum (Lesueur)—northern redhorse
Abundant in lake; contributes significantly to the commercial fishery; occurs in tributaries, especially during the spawning season. (3–4–6–10–11–12)

Moxostoma valenciennesi Jordan—greater redhorse
Present in some of the larger tributaries of the lake in southeastern Michigan, northwestern Ohio, and in some Ontario tributaries; apparently has greatly decreased in numbers recently; may have formerly occurred in the lake. (10–11–12)

Lagochila lacera Jordan and Brayton—harelip sucker
Originally in the Maumee River drainage before 1900; now believed to be extinct throughout its range. (7–12)

Hypentelium nigricans (Lesueur)—northern hog sucker
Usually numerous in most of the lake tributaries of Ontario and the states; occasionally taken in shallow waters of the lake and near the mouths of streams. (3–4–6–10–11–12)

Catostomus c. commersoni (Lacépède)—white sucker
Common to abundant in almost all of the tributaries of the lake; numerous in the shallow waters of the lake; contributes significantly to the commercial fishery. (2–3–4–6–11–12)

Catostomus c. catostomus (Forster)—longnose sucker
Distributed throughout the lake, mostly in the eastern basin; apparently decreasing in abundance; reported in some Ontario tributaries. (8–9–10–11–12)

Minytrema melanops (Rafinesque)—spotted sucker
Present in small numbers in the lake and in some tributaries from southeastern Michigan eastward to New York; recorded for the Ontario waters of the lake; apparently is decreasing in numbers. (2–4–7–11–12)

Erimyzon sucetta kennerlyi (Girard)—lake chubsucker
Present in a number of tributaries around the lake, especially those in southeastern Michigan and northwestern Ohio; also present in marshes adjacent to and in shallower waters of the lake; has recently decreased markedly in some tributaries. (4–7–10–11–12)

Erimyzon oblongus claviformis (Girard)—creek chubsucker
Once numerous in the lake tributaries of southeastern Michigan and northwestern Ohio, occurring sporadically eastward to Pennsylvania; recent marked decrease in abundance. (7–11–12)

Ictaluridae—freshwater catfishes

Ictalurus punctatus (Rafinesque)—channel catfish
Common throughout the lake and in all of the larger and many smaller tributaries; long important to the commercial fishery. (2–3–4–6–8–10–11–12)

Ictalurus catus (Linnaeus)—white catfish
Introduced about 1939 into Sandusky Bay and the western basin, but did not become established. (7–12)

Ictalurus natalis (Lesueur)—yellow bullhead
Formerly common in the shallow waters of the lake and in many of its tributaries, especially those entering from the west and south; at present reduced in numbers, occurring usually in the lake, bays, marshes, and streams wherever rooted aquatic plants are present and turbidity is low. (2–3–4–6–8–10–11–12)

Ictalurus nebulosus (Lesueur)—brown bullhead
Numerous throughout the shallow waters of the lake and its bays, especially those of the western basin, and in some of the deeper waters of the adjacent marshes; occurs in smaller numbers in the larger tributaries. (2–3–4–5–9–11–12)

Ictalurus melas (Rafinesque)—black bullhead
Common in shallow waters of the shores, marshes, bays, and islands of the western basin and in the tributaries entering from the west and southwest, becoming less numerous or absent to the east and north; usually the most numerous bullhead in the more turbid and non-vegetated waters of the western basin. (2–4–6–10–11–12)

Pylodictis olivaris (Rafinesque)—flathead catfish
Specimens occasionally taken in the western and central basins; a small population in the Huron River, Ohio, where a few are taken annually and where they have been reported since at least 1890; possibly native. (7–12)

Noturus flavus Rafinesque—stonecat
Common throughout the lake and many of its tributaries; most numerous in the island region and around reefs and shoals of the western basin, and in its tributaries. (2–3–4–6–7–10–11–12)

Noturus stigmosus Taylor—northern madtom
Present, at least before 1940, in tributaries of the western basin, such as the Huron River and the Maumee River drainages; not recorded for the lake.

(1969. William Ralph Taylor. A Revision of the Catfish Genus Noturus Rafinesque, with an Analysis of higher groups in the Ictaluridae. U. S. Nat'l. Mus., Bull. No. 282: 173) (6–7–11–12)

Noturus miurus Jordan—brindled madtom
Present and formerly numerous in the western basin and in many tributaries of southeastern Michigan and northwestern Ohio; rare or absent elsewhere. (9–10–11–12)

Noturus gyrinus (Mitchill)—tadpole madtom
Found in tributaries in Ontario and the states; most numerous in low-gradient tributaries, marshes, and bays of the western basin; occasionally found in the lake, especially in the island region; now less abundant because of draining and ditching of streams and marshes. (2–10–12)

Anguillidae—freshwater eels

Anguilla rostrata (Lesueur)—American eel
Strays that presumably enter through the Welland Canal are occasionally reported from the lake and some of its tributaries; fairly numerous for several years during the 1880's following introductions of elvers. (4–7–10–12)

Cyprinodontidae—killifishes

Fundulus diaphanus menona Jordan and Copeland—banded killifish
Originally numerous in the tributaries, marshes, sheltered bays, and island region of the western basin; far less numerous and sporadic in distribution eastward; has decreased greatly both numerically and from its former range. (3–4–10–11–12)

Fundulus notatus (Rafinesque)—blackstripe topminnow
Present in some of the tributaries of the western basin, in southeastern Michigan and northwestern Ohio. (12)

Poeciliidae—livebearers

Gambusia a. affinis (Baird and Girard)—mosquitofish
First introduced in 1947 in a few small tributaries in northwestern Ohio; frequent introductions since. (12)

Gadidae—codfishes and hakes

Lota lota lacustris (Walbaum)—burbot
Common to abundant in the lake, most numerous in the deeper waters; rarely occurs in streams, then usually at their mouths in winter; of limited commercial importance; has decreased recently. (2–3–10–12)

Gasterosteidae—sticklebacks

Culaea inconstans (Kirtland)—brook stickleback
Present originally in heavily vegetated springs, streams, and sheltered bays of the watershed; has declined in abundance or has been extirpated from many areas, especially where the aquatic vegetation has been destroyed. (5–10–12)

Percopsidae—trout-perches

Percopsis omiscomaycus (Walbaum)—trout-perch
Formerly common to abundant throughout the lake except perhaps in the deepest portions and in some of the low-gradient tributaries; recently has decreased in abundance. (2–3–4–6–7–11–12)

Aphredoderidae—pirate perches

Aphredoderus sayanus (Gilliams)—pirate perch
A few records from the Maumee system in Ohio and Indiana, and from Cayuga Creek, New York. (2–4–9–12)

Serranidae—sea basses

Morone chrysops (Rafinesque)—white bass
Abundant throughout the lake, contributing significantly to the commercial and sport fishery; present and at times numerous in many tributaries, especially near mouths of the larger ones. (2–3–4–8–10–11–12)

Morone americanus (Gmelin)—white perch
First reported in 1953 from the central and eastern basins of the lake; other observations reported but unconfirmed. (7–10–12)

Centrarchidae—sunfishes

Pomoxis annularis Rafinesque—white crappie
Widespread and usually common to abundant in marshes, bays, and shallow waters of the western basin and in some of its tributary streams; less numerous in the lake and tributary streams of the central and eastern basins. (2–4–7–9–10–11–12)

Pomoxis nigromaculatus (Lesueur)—black crappie
Widespread and sometimes numerous in marshes, bays, and shallow waters of the lake, and in some tributaries containing rooted aquatic vegetation; decreasing in abundance in areas where vegetation has disappeared and turbidity has increased. (2–4–8–10–11–12)

Ambloplites rupestris (Rafinesque)—rock bass
Common throughout the shallower waters of the lake, in bays, and in all except the smallest tributaries; presumably more abundant in earlier years when it contributed to the commercial fishery until its sale was prohibited. (2–3–4–6–10–12)

Micropterus d. dolomieui Lacépède—smallmouth bass
Formerly abundant in the lake and especially in the shallow western basin, contributing significantly to the commercial fishery before its sale was prohibited in 1902; also originally abundant in all except the smallest tributaries; abundance has decreased irregularly since about 1900; now rare or absent in many tributaries. (2–3–4–6–11–12)

Micropterus s. salmoides (Lacépède)—largemouth bass
Previously common in bays, marshes, protected shallow waters of the lake, and in the larger tributaries, especially in vegetated areas; was taken commercially before its sale was prohibited in 1902; abundance has decreased in recent years, except in those areas where suitable habitat has been preserved or established. (2–3–4–6–11–12)

Chaenobryttus gulosus (Cuvier)—warmouth
Present in isolated localities in lake drainage of southeastern Michigan and Ohio; recent introductions in many tributaries, a few successful. (7–12)

Lepomis cyanellus Rafinesque—green sunfish
Present and sometimes abundant in tributaries of southeastern Michigan and Ohio; rapidly becoming rare or local in the south-shore tributaries east of Ohio; occurs in shallow protected areas of the lake, especially in the western basin; occasionally introduced. (12)

Lepomis m. macrochirus Rafinesque—bluegill
Formerly abundant in shallow, protected bays, harbors, and marshes of the lake, and especially in the western half, where it was commercially important before 1900; also present but less numerous in the tributaries. (2–4–6–10–11–12)

Lepomis humilis (Girard)—orangespotted sunfish
First recorded in the Maumee River drainage in 1929; moved rapidly eastward in Ohio as far as Sandusky Bay and the island region, and northward into some southeastern Michigan tributaries. (7–12)

Lepomis megalotis peltastes Cope—longear sunfish
Present in some of the tributaries in Ontario and the states; most numerous in those tributaries entering the western half of the lake; rare or absent in the lake, bays, and marshes; has decreased in many areas. (2–4–5–6–7–10–12)

Lepomis microlophus (Günther)—redear sunfish
A southern species, recently introduced in many farm ponds within the watershed; becoming established in some localities and escaping into the lake tributaries. (12)

Lepomis gibbosus (Linnaeus)—pumpkinseed
Previously common in the protected, vegetated shallow portions of the lake, its bays, harbors, and marshes; also in vegetated areas of many tributaries; contributed considerably to the commercial fishery before 1900; recently has decreased in abundance in areas where aquatic vegetation has been destroyed. (2–3–4–6–11–12)

Percidae—perches

Stizostedion canadense (Smith)—sauger
Formerly abundant in the lake, especially in the western basin around the Bass Islands; less numerous in the larger tributaries; of commercial importance until numbers became sharply reduced; now rare. (2–3–4–5–7–10–11–12)

Stizostedion vitreum (Mitchill)—walleye
Two subspecies and intergrades occur: *Stizostedion v. vitreum* (Mitchill), known as the yellow walleye, present in the lake and many of its tributaries; formerly abundant, especially in the western half of the lake; now greatly reduced in numbers and threatening commercial and sport fisheries; *Stizostedion vitreum glaucum* Hubbs, the blue pike, once abundant in the central and eastern basins, contributed greatly to the commercial fishery until the mid-1950's when its numbers became drastically decreased; now commercially extinct. (2–3–4–6–7–10–11–12)

Perca flavescens (Mitchill)—yellow perch
Currently distributed widely and abundantly throughout the lake; far less numerous in the marshes and tributaries than in the lake; a very important sport and commercial species. (2–3–4–6–8–12)

Percina maculata (Girard)—blackside darter
Present in all tributaries except the smallest or the most polluted; occasionally strays into the lake. (3–4–6–10–12)

Percina shumardi (Girard)—river darter
Taken sparingly in the island region of the lake and Sandusky Bay, and in a few low-gradient tributaries entering the western basin. (2–7–10–12)

Percina copelandi (Jordan)—channel darter
Formerly numerous along the shores and island region of the lake; was less common in some of the larger tributaries; recently decreased greatly; now extirpated in some areas where it formerly was numerous. (2–3–4–7–10–11–12)

Percina evides (Jordan and Copeland)—gilt darter
A few specimens collected in the Maumee River drainage in Ohio and Indiana before 1900. (5–7–9–12)

Percina caprodes (Rafinesque)—logperch
Formerly numerous and well distributed along the shores, bays, and island region of the lake and in its tributaries; decreased recently in some areas. Two subspecies and intergrades occur: *Percina c. caprodes* (Rafinesque), Ohio logperch, in the tributaries, and *Percina caprodes semifasciata* (DeKay), northern logperch, principally in the lake. (2–3–4–5–6–7–12)

Ammocrypta pellucida (Baird)—eastern sand darter
Once numerous along clean sandy shores, shallow bays, and island region of the lake and in its tributaries; decreased greatly in numbers or has become

extirpated in many sections of the lake and streams, apparently because of turbidity, silt, and pollutants. (2–4–6–10–12)

Etheostoma nigrum Rafinesque—Johnny darter
Widely distributed and often common along the shores, bays, and island region of the lake, and in its tributaries. Two subspecies and intergrades occur: *Etheostoma n. nigrum* Rafinesque, central Johnny darter, an inhabitant of the tributaries, and *Etheostoma nigrum eulepis* (Hubbs and Greene), scaly Johnny darter, which primarily inhabits the lake. (2–3–4–6–12)

Etheostoma blennioides Rafinesque—greenside darter
Previously common along the shallow, vegetated southern shores of the lake, in the island region, and in the tributaries entering from the west and south; at present greatly reduced in numbers in many areas; in 1968 the subspecies inhabiting Lake Erie waters was described as *Etheostoma blennioides pholidotum* by R. V. Miller [A systematic study of the greenside darter, *Etheostoma blennioides* Rafinesque (Pisces; Percidae). Copeia No. 1: 1–40]. (2–4–9–12)

Etheostoma exile (Girard)—Iowa darter
Present in suitable habitats in the lake and adjacent marshes, especially in the western basin, including Sandusky Bay; also in widely scattered tributaries and inland lakes within the watershed; decreased or has become extirpated in many localities in recent years. (2–3–4–12)

Etheostoma caeruleum Storer—rainbow darter
Present, often plentiful, in clear tributaries that have a moderate to high gradient; accidental in the lake. (3–4–6–7–10–12)

Etheostoma s. spectabile (Agassiz)—orangethroat darter
Present in some tributaries in northwestern Ohio and southeastern Michigan, often in fair numbers. (7–12)

Etheostoma f. flabellare Rafinesque—fantail darter
Previously common in the island area of the western basin; less numerous eastward along the shores; usually present at the mouths of tributaries, especially those entering from the south with moderate or high gradients; recently decreased in abundance, particularly in the more polluted waters of the lake and tributaries. (2–3–4–5–8–10–12)

Etheostoma microperca Jordan and Gilbert—least darter
Present in several tributaries in Ontario, Michigan, and Ohio. (6–7–9–10–12)

Sciaenidae—drums

Aplodinotus grunniens Rafinesque—freshwater drum
Abundant and widespread throughout the lake; present in small numbers in some of the larger tributaries; apparently has increased in recent years, possibly because of the decline of other species; of increasing commercial importance. (2–3–4–10–11–12)

Cottidae—sculpins

Myoxocephalus quadricornis (Linnaeus)—fourhorn sculpin
A relict species first reported in 1928 from the deeper waters of the eastern basin; extremely rare. (3–4)

Cottus ricei (Nelson)—spoonhead sculpin
Collected occasionally in the deeper waters in all of the basins; uncommon. (3–4–12)

Cottus bairdi Girard—mottled sculpin
Rather widely distributed in the lake and its tributaries, especially in those streams of higher gradients and clearer water. Two subspecies and intergrades occur: *Cottus b. bairdi* Girard, central mottled sculpin, present throughout the lake but most common in the western basin and its tributaries, and *Cottus b. kumlieni* (Hay), northern mottled sculpin, apparently confined to the central and eastern basins. (2–3–4–6–7–11–12)

Cottus cognatus Richardson—slimy sculpin

Present in the deeper waters of the eastern basin. Apparently rare. (3–4)

Atherinidae—silversides

Labidesthes s. sicculus (Cope)—brook silverside

Once widespread and often abundant in the shallow, protected waters of the lake, especially in the island region and in the tributaries; has sharply decreased in numbers in recent years and has become extirpated in those areas where turbidity or other pollutants have greatly increased. (2–3–4–6–7–10–11–12)

LITERATURE CITED

1. American Fisheries Society. 1960. A list of common and scientific names of fishes from the United States and Canada. Spec. Publ. No. 2: 1–102.
2. **Dymond, J. R.** 1922. A provisional list of the fishes of Lake Erie. Univ. Toronto Studies. Biol. Series, No. 20 (Publ. Ont. Fish. Res. Lab., No. 4): 55–74.
3. **Fish, M. P.** 1932. Contributions of the early life histories of sixty-two species of fish from Lake Erie and its tributary waters. Bull. U. S. Bur. Fish., 47: 293–398, figs. 44.
4. **Greeley, J. R.** 1929. Fishes of the Erie-Niagara watershed [with annotated list] *In*: A biological survey of the Erie-Niagara system. Suppl. 18th Annual Rept. New York St. Cons. Dept. (1928): 150–179, col. pls. 8.
5. **Hubbs, C. L.** 1926. A check list of the fishes of the Great Lakes and tributary waters, with nomenclatorial notes and analytical keys. Misc. Publ. Mus. Zool. Univ. Mich., No. 15: 1–77, pls. 1–4.
6. ——— and **D. E. S. Brown.** 1929. Materials for a distributional study of Ontario fishes. Trans. Roy. Can. Inst., Pt. 1, No. 17: 1–56.
7. ——— and **K. F. Lagler.** 1964. Fishes of the Great Lakes Region. Univ. of Mich. Press. Ann Arbor: i–xv, 1–213, col. pls. 44, figs. 251.
8. **MacKay, H. H.** 1963. Fishes of Ontario. Ontario Dept. of Lands and Forests. Bryant Press, Ltd., Toronto: 1–300, pls. 31, figs. 31.
9. **Nelson, J. S.** and **S. D. Gerking.** 1968. Annotated key to the fishes of Indiana. Dept. Zool., Indiana Univ. Bloomington: 1–84.
10. **Scott, W. B.** 1967. Freshwater fishes of eastern Canada. 2nd Ed., Univ. of Toronto Press: i–x, 1–137, illus. 110.
11. **Trautman, M. B.** 1935. List of the fishes of Michigan. Mich. Dept. of Cons., Institute for Fisheries Research. Ann Arbor. Unpublished Report 279: 1–21. (Typed)
12. ———. 1957. The fishes of Ohio. Ohio State Univ. Press, Columbus: i–xv, 1–683, col. pls. 7, figs. 172, maps i–xi, 1–172.