

UNIVERSITY OF TORONTO STUDIES

PUBLICATIONS OF THE
ONTARIO FISHERIES RESEARCH LABORATORY

No. 4

A PROVISIONAL LIST OF THE FISHES OF
LAKE ERIE

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TORONTO
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1922

A PROVISIONAL LIST OF THE FISHES OF LAKE ERIE

Considering the value of its fisheries, surprisingly little systematic study has been devoted to the fishes of Lake Erie. Our knowledge of the species occurring in the lake appears to have been gained incidentally in connection with investigations on some of the species of commercial importance and through surveys of neighbouring areas.

Although Lake Erie is one of the most productive fishing grounds in the world, its productivity could no doubt be increased by proper management. Investigations with this object in view have been made from time to time, but for the most part these investigations have been confined to the species whose numbers it was desired to increase. No study of the problem as it affects the lake as a whole has yet been undertaken. When such a study comes to be made, information as to the species that occur in the lake, their distribution and relative prevalence will be of fundamental importance. The present list is intended to be a contribution towards such a study. It at least indicates how unsatisfactory is our present knowledge of the fish fauna of the lake, especially in Canadian waters.

The list contains 91 species of fish and two species of lamprey. No species is included which has not been authentically recorded from Lake Erie. Except in the case of commercial species or those recorded in official reports, the authority for including it is given in the case of each species. Brief reference has also been made to the general range or habitat of the less common species found in the lake.

In the preparation of this list, the publication "Fishes of Ohio", Osburn ('01), has been found to be of great assistance. It includes not only the results of his own observations, but

also those of Rafinesque, Kirtland, Jordan, Henshall and others. Many species not elsewhere recorded for the lake are included as a result of Osburn's observations in Sandusky bay in the summers of 1899 and 1900. I am also indebted to Professor Osburn for the identification of several specimens of *Cyprinidae* and of *Cottus ictalops* reported herein.

Other lists consulted contain only occasional references to the occurrence of species in Lake Erie. The expression "Great Lakes Region", often met with in describing the range of species, is unsatisfactory for the preparation of a list such as the present one. Even where a species is said to occur "in the Great Lakes", the reference is hardly less unsatisfactory, for the fauna of each of the lakes exhibits peculiarities of its own. Among the works consulted the following were found to be of most value: Jordan and Evermann ('96), Forbes and Richardson ('08), Bean ('03), and Nash ('08). Many other publications have been consulted but only those containing definite reference to the occurrence of species in Lake Erie are included in the list of literature cited.

The basis of the present list was obtained by reference to two collections from Lake Erie made during the summer of 1920, one by Dr. W. A. Clemens, University of Toronto, and the other by a party from the Royal Ontario Museum of Zoology. Dr. Clemens concerned himself principally with the ciscoes (lake herrings) but he secured specimens of all the species brought in by the fishermen. Most of his specimens, other than ciscoes, were taken at Merlin, Ontario.

The Museum party was stationed at Point Pelee. Their primary object was to secure typical specimens of some of the chief commercial species from which to make casts and colour sketches for permanent museum exhibition specimens. Their specimens were also secured from fishermen.

The species secured by Dr. Clemens were *Ichthyomyzon concolor*, *Acipenser rubicundus*, *Lepisosteus osseus*, *Amia calva*, *Ictalurus punctatus*, *Ameiurus nebulosus*, *Catostomus commersonii*, *Cyprinus carpio*, *Notropis rubrifrons*, *Hybopsis*

storerianus, *Hiodon tergisus*, *Dorosoma cepedianum*, *Coregonus albus*, *Leucichthys harengus*, *Leucichthys sisco huronius*, *Leucichthys artedi*, *Leucichthys eriensis*, *Leucichthys prognathus*, *Lucius lucius*, *Pomoxis sparoides*, *Ambloplites rupestris*, *Lepomis pallidus*, *Eupomotis gibbosus*, *Micropterus salmoides*, *Stizostedion vitreum*, *Stizostedion canadense griseum*, *Perca flavescens*, *Percina caprodes zebra*, *Roccus chrysops*, *Aplodinotus grunniens*, *Lota maculosa*.

The collection made by the Royal Ontario Museum of Zoology party included *Ichthyomyzon concolor*, *Lepisosteus osseus*, *Ictalurus punctatus*, *Ameiurus natalis*, *Ameiurus nebulosus*, *Noturus flavus*, *Catostomus commersonii*, *Hybopsis storerianus*, *Hiodon tergisus*, *Coregonus albus*, *Pomoxis sparoides*, *Stizostedion vitreum*, *Stizostedion canadense griseum*, *Roccus chrysops*, *Aplodinotus grunniens*.

During the spring and summer of 1921 a number of Lake Erie fishermen preserved for the Department of Biology specimens of the fish taken in their nets, especially the less common species. Mr. A. E. Crewe, of Merlin, Ontario, sent *Ichthyomyzon concolor*, *Petromyzon marinus unicolor*, *Notropis rubrifrons*, *Hybopsis storerianus*, and *Cottus ictalops*. Mr. W. D. Bates, of Ridgetown, Ontario, sent the following taken at Rondeau, Lake Erie: *Ichthyomyzon concolor*, *Catostomus commersonii*, *Moxostoma breviceps*, *Moxostoma aureolum*, *Hybopsis storerianus*, *Coregonus albus*, *Salmo gairdneri*, *Pomoxis sparoides*, *Stizostedion vitreum*, *Perca flavescens*, *Roccus chrysops*. From Mr. A. B. Hoover, of Nanticoke, Ontario, were received *Carpiodes thompsoni*, *Catostomus commersonii*, *Moxostoma breviceps*, *Notropis rubrifrons*, *Hybopsis storerianus*, *Hiodon tergisus*, *Dorosoma cepedianum*, *Percopsis guttatus*, *Pomoxis sparoides*, *Ambloplites rupestris*.

The abbreviations used in the following pages refer uniformly to the following authorities:—

- | | |
|-------------------------|---|
| Osburn ('01) | "Fishes of Ohio" |
| J. & E., Bull. 47 ('96) | "The Fishes of North and Middle America." |
| Jordan & Evermann ('08) | "American Food and Game Fishes." |

- Jordan ('82) "Report on the Fishes of Ohio."
 Forbes & Richardson ('08) "The Fishes of Illinois."
 Bean ('03) "Catalogue of the Fishes of New York."
 Nash ('08) "Vertebrates of Ontario."
 Clemens The collection made by Dr. W. A. Clemens from Lake Erie during the summer of 1920.
 R.O.M.Z. Party The collection made by a party from the Royal Ontario Museum of Zoology stationed at Point Pelee during the summer of 1920.
 Crewe The collection received from Mr. A. E. Crewe as mentioned above.
 Bates The collection received from Mr. W. D. Bates as mentioned above.
 Hoover The collection received from Mr. A. B. Hoover as mentioned above.

The nomenclature adopted is that of Jordan and Evermann ('96) except in the case of *Coregonus* and *Leucichthys*, for which their later publication ('11) "Review of the Salmonoid Fishes of the Great Lakes" has been followed.

ANNOTATED LIST OF SPECIES

Ichthyomyzon concolor (Kirtland). Silvery Lamprey

The only species of lamprey previously recorded from Lake Erie. Specimens secured by Clemens and R.O.M.Z. party in 1920, and by Crewe and Bates in 1921. Also recorded by Huntsman ('17) from Lake Erie.

Petromyzon marinus unicolor (De Kay). Lake Lamprey

A specimen, 21 inches long, was taken on November 8th, 1921 in Lake Erie at Merlin, Ontario by Mr. A. E. Crewe.

Polyodon spathula (Walbaum). Paddle-fish

"A single example has been recorded from Lake Erie which it doubtless reached through the Wabash and Erie canal" Jordan and Evermann ('08). Common in the larger streams of the Mississippi valley.

Acipenser rubicundus Le Sueur. Lake Sturgeon

Less abundant than formerly but still of considerable commercial importance.

Lepisosteus osseus (L.).¹ Common Gar Pike

Common.

Lepisosteus platostomus Rafinesque. Short-nosed Gar Pike

Rare. "Sandusky bay, one specimen" Osburn ('01). The specimen described by Bean ('03) is No. 3241 U.S. Nat'l Mus. from Cleveland. Common throughout the Mississippi valley.

Amia calva L.¹ Bowfin; Dogfish

Common. Of little or no value as a food fish.

Ictalurus punctatus (Rafinesque). Spotted Catfish

Taken in larger numbers than any other catfish by the fishermen on the Canadian side of the lake, at least at Merlin and Point Pelee. "Taken most frequently [in our waters] in Lakes Erie and Ontario" Nash ('08). Taken by Clemens and R.O.M.Z. party, 1920. Ranges south through the Mississippi valley and north at least as far as Winnipeg.

Ameiurus lacustris (Walbaum). Great Lake Catfish

"Generally distributed throughout the Great Lakes and in deep rivers, but is more abundant in Lake Erie than any other of our waters" Nash ('08).

Ameiurus natalis (Le Sueur). Yellow Catfish

"In Lakes Ontario, Erie and Huron" Nash ('08). Commonly taken in the nets off Point Pelee (R.O.M.Z. party).

¹"The time will doubtless come when thoroughgoing measures will be taken to keep down to the lowest practicable limit the dogfish and the gars—as useless and destructive in our productive waters as wolves and foxes formerly were in our pastures and poultry-yards." Forbes and Richardson ('08).

Ameiurus vulgaris (Thompson). Long-jawed Catfish
 "Taken in Lake Erie" Jordan ('82). "Occasionally taken in the Ohio river, but is more abundant in Lake Erie" Bean ('03). "Lower jaw more or less projecting; in other respects scarcely distinct from *A. nebulosus*, with which it may intergrade" J. & E. Bull. 47 ('96).

Ameiurus nebulosus (Le Sueur). Common Bullhead
 Commonly taken by fishermen at Merlin (Clemens) and at Point Pelee (R.O.M.Z. party). Said by Bean ('03) to be the most abundant catfish in Lake Erie and its tributaries.

Ameiurus melas (Rafinesque). Black Bullhead
 "Sandusky bay at Black Channel" Osburn ('01). "Generally speaking, it is not distributed so far to the northward or eastward as our other abundant bullheads . . . through the Great Lakes of Ontario, Erie and Michigan" Forbes and Richardson ('08). "Variable, much resembles *A. nebulosus* but smaller, with shorter, deeper anal and especially shorter pectoral spines" J. & E. Bull. 47 ('96).

Leptops olivaris (Rafinesque). Mud Cat
 Osburn ('01) quotes McCormick of 1892 as follows, referring to the occurrence of this species in Lake Erie, "Quite rare; I have seen but one specimen fresh, though I have noticed heads on the beach." A fish of the Mississippi valley and Gulf States.

Noturus flavus Rafinesque. Stone Cat
 "Lake Erie at Sandusky, frequently thrown up dead on the beach by the waves; not noticed in Sandusky bay" Osburn ('01). Secured at Point Pelee by R.O.M.Z. party.

Schilbeodes gyrinus (Mitchill). Tadpole Stone Cat
 Osburn ('01) reports having observed it to be common among decaying vegetation in shallow water in Sandusky bay in 1896.

Schilbeodes miurus (Jordan). Mad Tom

"Sandusky bay" Osburn ('01).

Carpiodes thompsoni Agassiz. Drum; Lake Carp
 "Lake Erie at Toledo" J. & E. Bull. 47 ('96). "Common in Lake Erie" Nash ('08). Taken by Hoover, 1921.

Catostomus catostomus (Forster). Northern Sucker

"Quite abundant in Lake Erie" Jordan ('82). "Occurs in the Great Lakes and northwest to Alaska in clear, cold waters. It is very common in Lake Erie" Bean ('03).

Catostomus commersonii (Lacépède). Common Sucker

Common at Merlin (Clemens) and Point Pelee (R.O.M.Z. party). Bates and Hoover collections, 1921. "Most abundant of all the suckers in Ontario waters" Nash ('08). Osburn ('01) speaks of it as "one of the commonest species", in Ohio.

Catostomus nigricans Le Sueur. Hog Sucker

Said by Nash ('08) to be found in Lake Erie.

Erimyzon sucetta oblongus (Mitchill). Chub Sucker

"Sandusky bay" Osburn ('01). "Great Lakes region to Maine and the Dakotas, south to Virginia . . . gradually passing southward into the typical *sucetta*" J. & E. Bull. 47 ('96).

Minytrema melanops (Rafinesque). Striped Sucker

"Found in the Great Lakes and south . . . In Pennsylvania it is limited to Lake Erie and the Ohio valley" Bean ('03). Reported from Lake Erie by Nash ('08).

Moxostoma anisurum (Rafinesque). White-nosed Sucker

Reported by Jordan ('82) from Lake Erie as *M. carpio*. "Great Lakes region; not very common, but widely distributed" J. & E. Bull. 47 ('96).

Moxostoma aureolum (Le Sueur).¹ Common Mullet; Redhorse

"Sandusky bay" Osburn ('01). "Inhabits the Great Lakes and the region northward . . . common in Lake Erie" Bean ('03). "Formerly abundant in the waters of the Lakes from the St. Lawrence to Lake Superior, but owing to persistent netting during the spawning season it has become comparatively scarce" Nash ('08). Taken by Bates, 1921.

¹Until very recent years this has been recorded as two species, the short-headed, small-mouthed form as *M. aureolum*; and the more ordinary form as *M. macrolepidotum duquesnii* (Le Sueur). This matter is cleared up by Jordan and Evermann (Bull. 47, U. S. Nat. Mus.). It is very probable that some collectors have confused the short-headed form with *M. breviceps* (Cope)." Osburn ('01).

Moxostoma breviceps (Cope). Short-headed Mullet
 "Abundant in Lake Erie" J. & E. Bull. 47 ('96). "Seems to be confined entirely to Lake Erie so far as our province is concerned" Nash ('08). Taken by Bates and Hoover, 1921.
Placopharynx duquesnii (Le Sueur)

Osburn ('01) quotes McCormick of 1892 as follows, "Lake Erie, common with other mullets". A southern species.

Cyprinus carpio L. Carp

Very abundant, especially at Rondeau.

Carassius auratus (L.). Goldfish

Found by Turner ('20) along the shore of Middle and South Bass Islands, Lake Erie. Reported by fishermen at Point Pelee, Ontario, but no specimen taken.

Pimephales notatus (Rafinesque). Blunt-nosed Minnow

"Sandusky bay" Osburn ('01). Forbes and Richardson ('08) say this species seems to find a satisfactory place of residence in streams of any size or lakes or ponds of any description.

Semotilus atromaculatus (Mitchill). Creek Chub

Essentially a creek species but recorded by Osburn ('01) from Sandusky bay.

Leuciscus elongatus (Kirtland). Red-sided Shiner

"Generally speaking, a brook species though Dr. Kirtland, who described the species, records it from Lake Erie" Osburn ('01).

Opsopæodus emiliae Hay

"Lake Erie" J. & E. Bull. 47 ('96). Southern in general range.

Abramis crysoleucas (Mitchill). Golden Shiner

Sandusky bay" Osburn ('01). Frequents sluggish waters.

Notropis anogenus Forbes

Taken at Put-in-Bay by Ward ('19) in connection with a study of fish parasites.

Notropis cayuga Meek

Osburn ('01) reports it as common in Sandusky bay.

Notropis heterodon (Cope)

"Sandusky bay" Osburn ('01).

Notropis blennioides (Girard). Straw-coloured Minnow
 "Sandusky bay" Osburn ('01).

Notropis hudsonius (DeWitt Clinton). Spawn-eater; Spot-tailed Minnow; Smelt

"Lake Erie, near Sandusky, abundant" Osburn ('01), "Abundant in the Great Lakes" J. & E. Bull. 47 ('96). "Abundant in the Great Lakes and at the mouths of the rivers opening into them" Forbes and Richardson ('08). Essentially a minnow of the larger rivers and lakes.

Notropis whipplii (Girard). Silver-fin

"Sandusky bay" Osburn ('01). Characteristically a minnow of clear streams.

Notropis cornutus (Mitchill). Shiner; Dace

"Sandusky bay" Osburn ('01). "Almost everywhere the most abundant fish in small streams" J. & E. Bull. 47 ('96).

Notropis atherinoides Rafinesque

"Exceedingly common in Lake Erie" Jordan ('82). "Through the Great Lakes It moves and feeds in large schools, thousands being frequently seen together near the surface" Forbes and Richardson ('08).

Notropis rubrifrons (Cope). Rosy-faced Minnow

"Sandusky bay and Lake Erie at Sandusky" Osburn ('01). Secured by Clemens at Merlin, 1920; also by Crewe and Hoover, 1921. "Delights in the clear waters of rapid streams" Forbes and Richardson ('08).

Rhinichthys cataractæ (Cuvier & Valenciennes). Long-nosed Dace

Although fond of clear, swift waters, Jordan ('82) reports it as found in the tributaries of Lake Erie and even in the lake itself.

Hybopsis dissimilis (Kirtland). Spotted Shiner

"Lake Erie" J. & E. Bull. 47 ('96). Great Lakes region, west and south.

Hybopsis storerianus (Kirtland). Lake Minnow

"Abundant in Lake Erie" Jordan ('82). "Lake Erie near Sandusky" Osburn ('01). Common at Merlin (Clemens) and Point Pelee (R.O.M.Z. party) 1920. Taken by Crewe,

Bates and Hoover, 1921. "Lake Erie to Nebraska . . . abundant in the larger streams, especially in Iowa" J. & E. Bull. 47 ('96).

Anguilla chrysope Rafinesque. American Eel

"According to Kirtland the eel did not formerly inhabit the Lake Erie drainage, but if not, it has found its way there through the canals" Osburn ('01).

Hiodon tergisus Le Sueur. Moon-eye

Taken in considerable numbers in the fishermen's nets. Of little commercial importance. Clemens and R.O.M.Z. party, 1920. Hoover, 1921. "Great Lakes and the Mississippi valley; north to Assiniboine river" J. & E. Bull. 47 ('96).

Dorosoma cepedianum (Le Sueur). Gizzard Shad

Common. "Cape Cod to Mexico; abundant southward . . . permanently resident (var. *heterurum*) everywhere in the Mississippi valley in the larger streams; also introduced into Lake Michigan and Lake Erie" J. & E. Bull. 47 ('96). Clemens, 1920. Hoover, 1921.

Pomolobus chrysochloris Rafinesque. Blue Herring; Saw-belly

Originally confined to the Gulf of Mexico and Mississippi valley. "Introduced through the canals into Lake Erie and Lake Michigan" J. & E. Bull. 47 ('96).

Coregonus albus Le Sueur. Lake Erie Whitefish

"This species is the common whitefish of Lake Erie. It is very close to *Coregonus clupeaformis*, the whitefish of the other lakes, differing only in form and colour. Compared with the latter, the Erie whitefish has a smaller head, higher nape, more angular form, and the colour is almost pure olive-white, without dark shades or dark stripes along the back. The flesh is softer, containing more fat. All these differences may be correlated with the fact that Lake Erie is shallow, and its southern shore is fed by warm, shallow, muddy, or milky rivers" Jordan & Evermann ('11).

Leucichthys harengus (Richardson). Georgian Bay Cisco

Clemens ('22) records this species as occurring sparingly in Lake Erie.

Leucichthys cisco huronius (J. & E.). Lake Huron Cisco

"Occasionally enters Lake Erie" Jordan & Evermann ('11). Clemens ('22) found it fairly abundant especially in western portion of the lake.

Leucichthys artedi (Le Sueur). Lake Erie Cisco

"Abounds in Lake Erie especially in its southern parts" Jordan & Evermann ('11). Clemens ('22) reports it as abundant in Canadian waters.

Leucichthys eriensis (J. & E.). Jumbo Cisco

"Inhabits especially the north shore of Lake Erie, where it is extremely abundant" Jordan & Evermann ('11). Clemens ('22) found it very abundant, particularly west of Long Point. On account of its great abundance, size and quality, the most important cisco of Lake Erie.

Leucichthys prognathus (Smith). Lake Ontario Cisco; Long-jaw

Clemens ('22) found this species very abundant east of Long Point. Typically inhabits the deep water of the eastern end of the lake.

Leucichthys macropterus Bean

A specimen remarkable for the development of its fins has been described by Bean ('16) as *L. macropterus*.

Salmo gairdneri Richardson. Steelhead Trout

A specimen was taken at Rondeau, Lake Erie, on July 6, 1921, by Mr. W. D. Bates, of Ridgetown, Ontario. This species is propagated by the U.S. Fish Commission and has been introduced into Lake Superior.

Cristivomer namaycush (Walbaum). Great Lake Trout

The Annual Reports of the Department of Game and Fisheries, Province of Ontario, show that approximately two thousand pounds are taken annually from the Canadian waters of Lake Erie. It is found more especially at the eastern end of the lake.

Umbra limi (Kirtland). Mud Minnow

Osburn ('01) found it abundant in the "Black Channel" in Sandusky bay. Usually met with in ponds and creeks with a soft muddy bottom.

Lucius vermiculatus (Le Sueur). Little Pickerel

Taken by Osburn ('01) in Sandusky bay. An inhabitant of the Ohio and Mississippi rivers and streams flowing into Lake Erie and Lake Michigan from the south.

Lucius lucius (L.). Common Pike

Still of considerable commercial importance in Lake Erie, although less abundant than formerly. A cosmopolitan species of the northern hemisphere.

Lucius masquinongy (Mitchill). Maskinonge

Nash ('08) gives the range of this species in Ontario as follows: "In the St. Lawrence about the Thousand Islands, in the waters of the Trent valley, Lake Scugog, Lake Simcoe, and many of our inland lakes, but I have no record of its occurrence in any of the Great Lakes except Lake Erie and the Georgian Bay, where it is quite common."

Fundulus diaphanus menona (Jordan & Copeland). Killifish

Osburn ('01) found it common in Sandusky bay.

Eucalia inconstans (Kirtland). Brook Stickleback

"The Great Lakes from Ontario to Superior" Forbes and Richardson ('08).

Percopsis guttatus Agassiz. Trout Perch

According to Osburn ('01), McCormick of 1892 found this species to be common in Lake Erie. Forbes and Richardson ('08) report it as common in the Great Lakes but rare south of them. Nash ('08) says it ranges all through the Great Lakes and their tributaries north to Hudson Bay. Hoover took it at Nanticoke, 1921.

Aphredoderus sayanus (Gilliams). Pirate Perch

Reported for Lake Erie by Osburn ('01) on the authority of Henshall in 1889. "Occurs in Lake Erie" Bean ('03). "Through the Great Lakes at least as far east as Lake Erie" Forbes and Richardson ('08). Apparently confined to the Great Lakes and southward.

Labidesthes sicculus Cope. Silversides

"Very abundant on sandy bottom in shallow water in Sandusky bay" Osburn ('01). "Found in Lake Ontario,

Lake Erie and the Detroit river" Nash ('08). "In all the Great Lakes" Forbes and Richardson ('08). A species of southern distribution.

Pomoxis annularis Rafinesque.¹ Crappie

Jordan ('82) reports it as rarely taken in Lake Erie. "Occurs rarely in Lake Erie" Nash ('08).

Pomoxis sparoides (Lacépède). Calico Bass

"In the Great Lakes in large numbers" Jordan ('82). Taken in 1920 at Point Pelee (R.O.M.Z. party) and at Merlin (Clemens). Bates and Hoover, 1921. See footnote under preceding species.

Ambloplites rupestris (Rafinesque). Rock Bass

"Sandusky bay" Osburn ('01). Forbes and Richardson ('08) state that this species has been taken from Lakes Huron, Erie and Ontario, but that it lives by preference in clear waters flowing over a rock bottom. Clemens, 1920. Hoover, 1921.

Chænobryttus gulosus (Cuvier & Valenciennes). Warmouth

"Lakes Michigan and Erie seem to mark its most northerly distribution . . . everywhere a fish of the bayous, mud-bottomed ponds, and lakes, and lowland streams" Forbes and Richardson ('08).

Lepomis megalotis (Rafinesque). Long-eared Sunfish

"Sandusky bay" Osburn ('01). "In Lakes Erie, Huron and Michigan" Forbes and Richardson ('08). Abundant southward.

¹It is worthy of note that in Chippewa Lake, which drains into the Ohio river system, this species (*P. annularis*) was found exceedingly abundant, but none of the next species (*P. sparoides*) were taken, while in Summit Lake, with very similar surroundings, but draining into Lake Erie, only *P. sparoides* was taken. These lakes are but a short distance apart, the former being near Medina, the latter at Akron." Osburn ('01).

"A tendency to geographical separation is shown by the fact that *annularis* is the more abundant southward . . . and *sparoides* northward—the latter, indeed, also ranging somewhat the farther to the north." Forbes and Richardson ('08).

Lepomis pallidus (Mitchill). Blue Sunfish

"Very abundant in Sandusky bay" Osburn ('01). "Occurs abundantly in some parts of Lakes Ontario and Erie" Nash ('08). "In the Great Lakes from Ontario westward, ranging thence to the south and west" Forbes and Richardson ('08). Taken by Clemens at Merlin, 1920. Jordan and Evermann ('08) say that it is *the* sunfish of the lakes, whether large or small, but it is decidedly more abundant in the smaller ones.

Eupomotis gibbosus (L.). Pumpkin Seed

"In Sandusky bay . . . it is the most abundant sunfish" Osburn ('01). "In Lakes Huron, Erie, Ontario and Champlain" Forbes and Richardson ('08). Clemens took it at Merlin, 1920.

Micropterus dolomieu Lacépède. Small-mouthed Black Bass

"Sandusky bay" Osburn ('01). Less common in Lake Erie than the next species. Prefers running water.

Micropterus salmoides (Lacépède). Large-mouthed Black Bass

"Sandusky bay" Osburn ('01). Clemens took it at Merlin, 1920. "Prefers lakes, bayous and other sluggish waters" Jordan and Evermann ('08).

Stizostedion vitreum (Mitchill). Pike Perch

Very abundant and of great commercial importance. Three colour phases occur and have received distinctive vernacular names, viz. gray pickerel, yellow pickerel and blue pickerel. The significance of these colour phases is not understood.

Stizostedion canadense griseum (DeKay). Sauger

Abundant in Lake Erie; of much less commercial importance than *S. vitreum*.

Perca flavescens (Mitchill). Yellow Perch

Very abundant. One of the most important commercial species in the lake.

Percina caprodes (Rafinesque). Log Perch

"Lake Erie at Sandusky" Osburn ('01). To the northward this species is represented by the following variety.

Percina caprodes zebra (Agassiz). Manitou Darter

Said to be the common form in the Great Lakes. "Lake Erie at Sandusky" Osburn ('01). Clemens took it at Merlin, 1920.

Cottogaster copelandi (Jordan). Copeland's Darter

According to Osburn ('01), Henshall of 1889 took this species in Lake Erie at Put-in-Bay. "Great Lakes region, from Lake Champlain to Lake Huron and south" J. & E. Bull. 47 ('96).

Cottogaster shumardi (Girard)

"It occurs also in the Great Lakes and has been reported from Erie and Michigan" Forbes and Richardson ('08).

Diplesion blennioides (Rafinesque). Green-sided Darter

According to Osburn ('01), McCormick of 1892 found this species to be not uncommon in Sandusky bay. Forbes and Richardson ('08) report it "from Lakes Erie and Ontario" and south.

Boleosoma nigrum (Rafinesque). Johnny Darter

"Sandusky bay" Osburn ('01). Typically a darter of the creeks and small brooks.

Ammocrypta pellucida (Baird). Sand Darter

"Taken also in the lake [Erie]" Osburn ('01). Reported by Jordan and Evermann ('96) from Lake Erie to Minnesota, abounding in clear sandy streams.

Etheostoma flabellare Rafinesque. Fan-tailed Darter

Found by Turner ('20) along the shore of Middle and South Bass Islands, Lake Erie.

Boleichthys fusiformis (Girard)

"Rather common in shallow water in Sandusky bay" Osburn ('01).

Roccus chrysops (Rafinesque). White Bass

Abundant. A commercial species of minor importance.

Aplodinotus grunniens Rafinesque. Sheepshead

Quite an important commercial species, occurring fairly abundantly and growing to a good size.

Cottus ictalops (Rafinesque). Miller's Thumb

Found by Turner ('20) along the shore of Middle and South Bass Islands, Lake Erie. Taken by Crewe at Merlin, 1920.

Lota maculosa (Le Sueur). Burbot; Ling.

Very abundant. In the Great Lakes region it is considered of little value as food. Lake Erie fisherman destroy those taken in the nets because they believe it destructive to other fish. In some places it is esteemed as food.

LITERATURE CITED

- Bean, T. H., 1903. Catalogue of the Fishes of New York. Bull. 60, N.Y. State Mus.
- Bean T. H., 1916. Description of a New Cisco from Lake Erie. Proc. Biol. Soc. Wash., vol. XXIX, pp. 25-26.
- Clemens, W. A., 1922. A Study of the Ciscos of Lake Erie. Contributions to Canadian Biology, 1921, No. IV, The Biological Board of Canada.
- Forbes, S. A., and Richardson, R. F., 1908. The Fishes of Illinois. Nat. Hist. Surv. Ill., vol. III. Ichthyology.
- Huntsman, A. G., 1917. The Lampreys of Eastern Canada. Ottawa Nat., vol. XXXI, pp. 23-27.
- Jordan, D. S., 1882. Report on the Fishes of Ohio. Rep. Ohio Geol. Surv., vol. IV.
- Jordan, D. S., and Evermann, B. W., 1896. The Fishes of North and Middle America. Bull. U.S. Nat. Mus., No. 47, 1896-1900.
- Jordan, D. S., and Evermann, B. W., 1908. American Food and Game Fishes. Doubleday, Page & Co., N.Y.

Jordan, D. S., and Everman, B. W., 1911. A Review of the Salmonoid Fishes of the Great Lakes with notes on the Whitefishes of other Regions. Bull. U.S. Bur. Fish., vol. XXIX.

Nash, C. W., 1908. Vertebrates of Ontario. Dept. Educ., Toronto.

Osburn, R. C., 1901. The Fishes of Ohio. Special Paper No. 4, Ohio State Acad. Sci.

Turner, C. L., 1920. Distribution, Food and Fish Associates of Young Perch in the Bass Island Region of Lake Erie. Ohio Jour. Sci., vol. XX, pp. 137-151.

Ward, H. B., 1919. Notes on the North American Myxosporidia. Jour. Paras., vol. VI, pp. 49-64.