NOTES ON THE FISHES OF LAKE ONTARIO.

By BARTON WARREN EVERMANN AND WILLIAM C. KENDALL.

During the summer of 1894 a considerable collection of fishes was made in northern New York for the United States Fish Commission by Dr. Evermann, assisted by Dr. R. R. Gurley, Mr. Barton A. Bean, and Mr. R. H. Hinkley, jr. The larger part of the collection was obtained in Lake Ontario or from streams tributary to it. Since then various small collections have been received from time to time from the same region. The principal localities represented are as follows: Cape Vincent, Watertown, Sacketts Harbor, Chaumont Bay, Oswego, Charlotte, Point Breeze, Nine-mile Point, Pultneyville, Great Sodus Bay, Henderson Bay, Selkirk, North Hamlin, Buena Vista, Belleville, and Pulaski. The localities visited in the vicinity of Cape Vincent were Grenadier Island, Mud Creek, and various places in the lower end of the lake.

In the present paper is given a list of the 66 species obtained in Lake Ontario and the streams tributary to it, together with notes on their relative abundance and any structural peculiarities noticed. Seven other species not obtained by these collectors are included because they are of special interest and have been previously recorded from the lake. The list embraces 73 species, and is of value in showing the distribution and abundance of the various species in this part of the State.

1. Acipenser rubicundus Le Sueur. Lake Sturgeon.

Not uncommon in the east end of the lake. Numerous specimens seen at Cape Vincent.

2. Lepisosteus osseus (Linnæus). Bill-fish.

Seen at Cape Vincent and Sacketts Harbor; doubtless common throughout the lake and its larger tributaries.

3. Amia calva Linnæus. Bowfin.

Not obtained by us, but previously recorded from Lake Ontario. It is probably not uncommon in the lake.

4. Ictalurus punctatus (Rafinesque). Channel Cat.

One specimen obtained at Fox Island June 29; not noticeably different from Mississippi River specimens.

5. Ameiurus nebulosus (Le Sueur). Common Bullhead.

This fish is abundant in nearly all the waters examined. Specimens are in the collection from the following places: Stony Creek near Henderson Harbor; Black River at Huntingtonville; Cemetery Creek near Watertown; Mud Creek near Cape Vincent; Chaumont River; Guffon Creek near Chaumont; Stony Island near Lakeview Hotel, 7 miles northeast of Oswego; mouth of Salmon River; mouth of Little Salmon Creek; creek at Pultneyville; Four-mile Creek at Nine-mile Point; Marsh Creek near Point Breeze; Long Pond near Charlotte; and Sandy Creek at North Hamlin.

6. Ameiurus melas (Rafinesque). Black Bullhead.

Much less common than the preceding. Specimens only from Mill Creek near Sacketts Harbor and Sandy Creek near North Hamlin.

7. Noturus flavus (Rafinesque). Yellow Cat.

Apparently not common; only two specimens from Nine-mile Point.

8. Schilbeodes gyrinus (Mitchill). Mad Tom.

Not common; obtained only in Mill Creek near Sacketts Harbor, Guffon Creek near Chaumont, and Long Pond near Charlotte.

9. Schilbeodes miurus (Jordan). Mottled Mad Tom.

Rare: obtained only from Sandy Creek at North Hamlin.

10. Catostomus catostomus (Forster). Long-nosed Sucker.

Not uncommon; several fine specimens obtained in gill nets near Grenadier Island. One of the most important food-fishes of the family. Among the suckers of Lake Ontario this species may always be known by its long nose, fine scales, and red sides.

11. Catostomus commersonii (Lacépède). Common White Sucker.

Common everywhere, and numerous specimens obtained, representing the following localities: Cape Vincent; Grenadier Island; Sacketts Harbor; Mill Creek near Sacketts Harbor; Little Stony Brook; Henderson Bay; Cemetery Creek near Watertown; Guffon Creek, Chaumont; Big Sandy Creek at Belleville; Spring Brook and Wart Creek, Pulaski; mouth of Salmon River at Selkirk; Three-mile Creek, Oswego; Four-mile Creek and Salt Brook at Nine-mile Point; Marsh Creek at Point Breeze.

12. Erimyzon sucetta oblongus (Mitchill). Chub Sucker.

This sucker was found only in Black Creek, tributary to Oswego River.

13. Moxostoma anisurum (Rafinesque). White-nosed Sucker.

Specimens obtained at Fox Island and Point Breeze. These specimens differ from the descriptions in having the lower lip rather lunate than V-shaped or U-shaped. Head 4; depth 3.14; eye 5; cheek 3; D. 16; A. 7; scales 6-42-5.

14. Moxostoma aureolum (Le Sueur). Redhorse.

Specimens from the lake near Oswego; near Nine-mile Point; mouth of Salmon River; Long Pond at Charlotte; Sandy Creek at North Hamlin. This is a common species in the lake.

15. Campostoma anomalum (Rafinesque). Stone-roller.

Common in many places. Found in creek at Pultneyville; Salt Brook near Ninemile Point; Long Pond at Charlotte; and Marsh Creek at Point Breeze.

16. Chrosomus erythrogaster Rafinesque. Red-bellied Dace.

Cemetery Creek near Watertown; Salt Brook near Nine-mile Point; Long Pond at Charlotte.

17. Hybognathus nuchale Agassiz. Silvery Minnow.

Mill Creek near Sacketts Harbor; Salt Brook near Nine-mile Point; and Cemetery Creek near Watertown.

18. Pimephales promelas Rafinesque. Fathead Minnow.

Obtained in Three-mile Creek at Oswego; Mill Creek near Sacketts Harbor; and Salt Brook near Nine-mile Point.

19. Pimephales notatus (Rafinesque). Blunt-nosed Minnow.

Abundant; specimens obtained at Cape Vincent; Mud Creek near Cape Vincent; Grenadier Island; Horse Island; Sacketts Harbor; Mill Creek near Sacketts Harbor; Stony Island; Little Stony Brook; Henderson Bay; Black River at Huntingtonville; Guffon Creek, Chaumont Bay; Chaumont River; Marsh Creek near Point Breeze; Salt Brook near Nine-mile Point; and Long Pond at Charlotte.

20. Semotilus corporalis (Mitchill). Fall-fish.

Not common. Cape Vincent; Big Stony Creek, Henderson Harbor; Wart Creek near Centerville; Salmon River near Selkirk; Sandy Creek near North Hamlin.

21. Semotilus atromaculatus (Mitchill). Creek Chub.

Very common. Specimens from Mill Creek near Sacketts Harbor; Big Stony Creek at Henderson Harbor; Little Stony Brook at Henderson Bay; Cemetery Creek near Watertown; Big Sandy Creek at Belleville; Wart Creek at Centerville; Threemile Creek at Oswego; Four-mile Creek at Webster; Salt Brook near Nine-mile Point; and Long Pond at Charlotte.

22. Leuciscus elongatus (Kirtland.) Red-sided Minnow.

Found only in Wart Creek; Spring Brook at Pulaski; and Three-mile Creek at Oswego. This is the first record of this minnow for the State of New York.

23. Leuciscus margarita (Cope). Pearly Minnow.

Thirteen specimens of a minnow we identify with this species were obtained in Cemetery Creek near Watertown, July 5. They give the following comparative measurements: Head 4; depth 4.4; eye 3.5; D. 9; A. 9; teeth 2, 5-6, 1 or 1, 5-4, 0; scales 11-58-6.

24. Abramis crysoleucas (Mitchill). Roach.

Common. Cape Vincent; Grenadier Island; Black River at Huntingtonville; Guffon Creek, Chaumont; Chaumont River; Black Creek at Scriba Corner; Salmon River at Selkirk; and Salt Brook near Nine-mile Point.

25. Notropis cayuga Meek. Cayuga Minnow.

Common. Mud Creek near Cape Vincent; Mill Creek near Sacketts Harbor; Cemetery Creek near Watertown; Guffon Creek near Chaumont; Chaumont River; Black Creek at Scriba Corner; Little Salmon Creek; Three-mile Creek near Oswego; Great Sodus Bay; Four-mile Creek at Nine-mile Point.

This interesting little minnow, originally described from Cayuga Lake, is now found to be quite abundant throughout western New York.

26. Notropis heterodon (Cope). Black-chin Minnow.

Found in the lake near Cape Vincent, at Stony Island, and in Guffon Creek at Chaumont. Teeth 1, 4-4, 0, in specimen examined.

27. Notropis blennius (Girard). Straw-colored Minnow.

A common minnow. Cape Vincent; Grenadier Island; Little Stony Brook at Henderson Bay; Big Sandy Creek at Belleville; Salmon Bay at Selkirk; and Great Sodus Bay. This species is one of the smallest minnows, too small for use as bait.

28. Notropis hudsonius (Clinton). Spot-tail Minnow.

An abundant and important minnow. Obtained at the following places: Cape Vincent; Grenadier Island; Horse Island; Sacketts Harbor; Salmon River at Selkirk; Little Salmon Creek; Three-mile Creek at Oswego; Long Pond and lake at Charlotte; Great Sodus Bay; and Salt Brook near Nine-mile Point. This is one of the most useful bait minnows in the State; called "Shiner" at Cape Vincent and elsewhere. On June 28 we saw a very large school of this minnow at the head of Grenadier Island. They were swimming at a depth of 6 to 18 inches below the surface in water 3 feet deep, and in a very compact body. There were apparently several thousand in the school. Several that we caught were full of ripe spawn. They were believed to be young white-fish by a local fisherman.

29. Notropis whipplii (Girard). Satin-fin Minnow.

Quite common. Found at the following localities: Cape Vincent; Grenadier Island; Horse Island at Sacketts Harbor; Mill Creek near Sacketts Harbor; Cemetery Creek near Watertown; Chaumont River; Great Sodus Bay and creek near Pultneyville.

30. Notropis cornutus (Mitchill). Redfin Shiner.

Very abundant, and found at nearly all places where collections were made. Mud Creek near Cape Vincent; Mill Creek near Sacketts Harbor; Big Stony Creek and Little Stony Brook at Henderson Harbor; Black River at Huntingtonville; Big Sandy Creek at Belleville; Black Creek at Scriba Corner; Spring Brook at Pulaski; Wart Creek near Buena Vista; Three-mile Creek at Oswego; Marsh Creek at Point Breeze; creek at Pultneyville; Four-mile Creek at Nine-mile Point; Salt Brook near Nine-mile Point; Long Pond at Charlotte; and Sandy Creek at North Hamlin.

These specimens have the snout short; 16 scales before the dorsal in the Sandy Oreek specimens.

31. Notropis atherinoides Rafinesque. Slender Minnow.

Not common. Obtained only at Cape Vincent and Grenadier Island. Head 4.5 to 5; depth 5 to 5.5; eye 3.25; D. 8; A. 11 to 13; scales 6-38 to 42-2 or 3; teeth 2, 4-4, 2; 20 or 21 scales before the dorsal.

32. Notropis rubrifrons (Cope). Red-fronted Minnow.

Not very common. Obtained only in Mill Creek near Sacketts Harbor; Salt Brook near Nine-mile Point; Wart Creek near Buena Vista; and Sandy Creek near North Hamlin.

33. Rhinichthys atronasus (Mitchill). Black-nosed Dace.

Very abundant everywhere. Mud Creek at Cape Vincent; Horse Island; Stony Island; Little Stony Brook at Henderson Bay; Black River at Huntingtonville; Big Sandy Creek at Belleville; Mill Creek at Pulaski; Wart Creek near Buena Vista; Three-mile Creek at Oswego; Great Sodus Bay; Four-mile Creek near Webster; Salt Brook near Nine-mile Point; Long Pond at Charlotte.

34. Hybopsis storerianus (Kirtland). Storer's Minnow.

Found only in Long Pond at Charlotte, where but three specimens were obtained.

35. Hybopsis kentuckiensis (Rafinesque). River Chub.

Not seen by us, but reported by Dr. H. M. Smith as being very common.

36. Exoglossum maxillingua (Le Sueur.) Split-lip Minnow.

This curious and interesting species was obtained at 7 localities, as follows: Big Stony Creek at Henderson Harbor; Little Stony Brook at Henderson Bay; Black River at Huntingtonville; Big Sandy Creek at Belleville; Spring Brook at Pulaski; Wart Creek near Buena Vista; Salmon River at Selkirk.

37. Anguilla chrysypa (Rafinesque). Common Eel.

Not seen by us, but common as far as Niagara Falls.

38. Pomolobus pseudoharengus (Wilson). Alewife.

Cape Vincent; Grenadier Island; Salmon River at Selkirk; lake and Long Pond at Charlotte.

During June and July, 1894, this fish was found dead in considerable numbers at all places visited in the eastern part of the lake.

[Alosa sapidissima (Wilson). Common Shad. Shad were planted in Lake Ontario in 1870, 1871, 1872, 1873, 1877, and 1878. A few only of these survived, and since 1885 few, if any, have been seen.]

39. Coregonus clupeiformis (Mitchill). Common White-fish.

As the time of our visit to Lake Ontario was not the fishing season for this species, but few specimens were seen. It was seen at Cape Vincent, but we are not sure where the specimens came from.

40. Argyrosomus artedi (Le Sueur). Lake Herring or Cisco.

Seen only at Cape Vincent and Grenadier Island. The specimens seen were caught in gill nets on Charity Shoal in 140 to 160 feet.

41. Argyrosomus prognathus (H. M. Smith), Long-jaw White-fish.

Numerous specimens seen at Grenadier Island which had been taken June 28 in gill nets on Charity Shoal, 6 miles off Grenadier Island and near Duck Island, in 140 to 160 feet. Others were obtained by Dr. Gurley, August 26, at Wilson. They had been caught in gill nets about 3 miles off, in 105 fathoms.

42. Salmo salar Linnæus. Atlantic Salmon.

Though at one time a common fish in some of the tributaries of this lake, but few have been seen in recent years. None was seen by us.

43. Cristivomer namaycush (Walbaum).* Lake Trout.

None seen by us, but ocasionally taken.

44. Umbra limi (Kirtland). Mud Minnow.

Apparently not common, specimens having been obtained only in Mill Creek near Sacketts Harbor and Guffon Creek near Chaumont.

45. Lucius vermiculatus (Le Sueur). Grass Pike.

Rather common in all suitable waters. Black Creek at Scriba Corner; Lakeview west of Oswego; Wart Creek near Buena Vista; Great Sodus Bay; outlet of Long Pond near Charlotte; and Marsh Creek near Point Breeze.

46. Lucius reticulatus (Le Sueur). Common Pickerel.

Found only in Black River at Huntingtonville, where two specimens were obtained.

47. Lucius lucius (Linnæus). Common Pike.

Mud Creek near Cape Vincent; Chaumont River; and Long Pond near Charlotte. Doubtless common in all suitable places.

48. Fundulus diaphanus (Le Sueur). Grayback.

Generally abundant in the lake. Mud Creek near Cape Vincent; Grenadier Island; Horse Island at Sacketts Harbor; Mill Creek near Sacketts Harbor; Stony Island;

^{*} Thymallus ontariensis Cuvier & Valenciennes, Hist. Nat. Poiss., xx1, 452, 1848, was based upon a specimen of grayling said to have been brought by Milbert from Lake Ontario, but it certainly did not come from Lake Ontario. It was probably the ordinary European grayling, Thymallus thymallus.

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Little Stony Brook at Henderson Bay; Guffon Creek and Chaumont River near Chaumont; Great Sodus Bay; Long Pond near Charlotte.

49. Eucalia inconstans (Kirtland). Brook Stickleback.

Common in suitable places. Cape Vincent; Mill Creek near Sacketts Harbor; Black River at Huntingtonville; Three-mile Creek near Oswego; Four-mile Creek at Nine-mile Point; Salt Brook near Nine-mile Point; Long Pond near Charlotte.

50. Gasterosteus bispinosus Walbaum. Common Stickleback.

Not common. Found only at Grenadier Island, Horse Island, and in Salt Creek near Nine-mile Point. These seem to be the first records of the occurrence of this salt-water fish in the Great Lakes.

51. Percopsis guttatus Agassiz. Trout Perch.

Probably not uncommon in the lake, but specimens were obtained only at Cape Vincent, Grenadier Island, and Nine-mile Point. Several specimens were found dead.

52. Labidesthes sicculus (Cope). Skipjack.

Probably common in the lake. Stony Island; Great Sodus Bay; Long Pond at Charlotte, and Sandy Creek at North Hamlin. No large schools were seen.

53. Pomoxis sparoides (Lacépède). Calico Bass.

Found only in Long Pond near Charlotte.

54. Ambloplites rupestris (Rafinesque). Rock Bass.

Common everywhere. Cape Vincent; Grenadier Island; Mill Creek near Sacketts Harbor; Little Stony Brook at Henderson Bay; Cemetery Creek near Watertown; Guffon Creek near Chaumont; Chaumont River; Salmon River and Little Salmon Creek; Black Creek near Scriba Corner; Great Sodus Bay; Salt Brook near Nine-mile Point; Sandy Creek near North Hamlin; Marsh Creek near Point Breeze.

55. Lepomis pallidus (Mitchill). Bluegill.

Doubtless common, but actually obtained only at Stony Island off Sacketts Harbor.

56. Eupomotis gibbosus (Linnæus). Pumpkin Seed.

Very abundant and found at nearly every place where collections were made. Mud Creek and lake near Cape Vincent; Grenadier Island; Horse Island; Stony Island; Big Stony Creek at Henderson Harbor; Cemetery Creek near Watertown; Black River at Huntingtonville; Guffon Creek and Chaumont River near Chaumont; Black Creek near Scriba Corner; Lakeview near Oswego; Little Salmon Creek and Salmon River; Three-mile Creek near Oswego; Great Sodus Bay; creek at Pultneyville; Four-mile Creek at Nine-mile Point; Long Pond near Charlotte; Sandy Creek near North Hamlin; Marsh Creek at Point Breeze.

57. Micropterus dolomieu Lacépède. Small-mouth Black Bass.

An abundant and important game-fish. Numerous examples from 3 to 12 inches long seen in a cove on Grenadier Island. It was doubtless seen elsewhere, but no specimens were retained.

58. Micropterus salmoides (Lacépède). Large-mouth Black Bass.

Common everywhere. Cape Vincent; Grenadier Island; Stony Island; Chaumont River; Salmon River and Little Salmon Creek; Three-mile Creek at Oswego; Great Sodus Bay; creek at Pultneyville; Four-mile Creek at Nine-mile Point; Long Pond at Charlotte; Marsh Creek at Point Breeze, and Lakeview.

59. Stizostedion vitreum (Mitchill). Wall-eyed Pike.

Cape Vincent, Oswego River, and Point Breeze. An abundant and valued food-fish. Usually called "yellow pike" on this lake. Various vernacular names for the walleyed pike are heard among fishermen and anglers, among which may be mentioned blue pike, yellow pike, doré, and jack salmon, the last an absurd name in use in various places in Indiana, Kentucky, and Tennessee. "Pike perch" is a book name largely in use by fish-culturists and in the publications of the United States Fish Commission.

60. Stizostediun canadense (Smith). Sauger.

Not seen by us, but occasionally taken, especially about Chaumont Bay.

61. Perca flavescens (Mitchill). Yellow Perch.

Abundant everywhere. Cape Vincent; Grenadier Island; Stony Island; Little Stony Brook at Henderson Bay; Chaumont River; Black Creek near Scriba Corner; Little Salmon Creek and Salmon River; creek at Pultneyville; Great Sodus Bay; Four-mile Creek and Salt Brook near Nine-mile Point; Lakeview and Three-mile Creek near Oswego; Long Pond near Charlotte.

62. Percina caprodes zebra (Rafinesque). Log Perch.

Common in all suitable places. Grenadier Island; Cape Vincent; Horse Island; lake at Nine-mile Point; Little Salmon Creek; Salmon River near Selkirk; and Marsh Creek near Point Breeze.

63. Hadropterus aspro (Cope & Jordan). Black-sided Darter.

Found only in Marsh Creek, near Point Breeze, where three specimens were obtained. These have the scales 9-68-11, 9-65-11, and 9-65-11, respectively.

64. Diplesion blennioides (Rafinesque). Green-sided Darter.

Three specimens obtained in Sandy Creek at North Hamlin.

65. Boleosoma nigrum olmstedi (Storer). Olmsted's Darter.

Cape Vincent and Mud Creek near Cape Vincent; Horse Island; Grenadier Island; Mill Creek near Sacketts Harbor; Stony Island; Little Stony Brook at Henderson Bay; Cemetery Creek near Watertown; Guffon Creek and Chaumont River near Chaumont; Spring Brook near Pulaski; Salmon River; Little Salmon Creek; Three-mile Creek near Oswego; Great Sodus Bay; Long Pond near Charlotte; Sandy Creek near North Hamlin.

66. Etheostoma coruleum Storer. Rainbow Darter.

Found by us only in Marsh Creek near Point Breeze, and Sal. Brook near Ninemile Point.

67. Etheostoma flabellare Rafinesque. Fan-tailed Darter.

Quite common and well distributed throughout the western part of the State. Numerous specimens obtained at the following places: Grenadier Island; Horse Island: Mill Creek near Sacketts Harbor; Little Stony Brook at Henderson Bay; Cemetery Creek near Watertown; Chaumont River; Big Sandy Creek near Belleville; Spring Brook near Pulaski; Wart Creek near Buena Vista; Three-mile Creek near Oswego; Great Sodus Bay; Four-mile Creek and Salt Brook near Nine-mile Point; Sandy Creek near North Hamlin; Marsh Creek near Point Breeze

68. Boleichthys fusiformis (Girard). Fusiform Darter.

Obtained only in Mud Creek near Cape Vincent at Grenadier Island and in Guffon Creek near Chaumont. Head 4; depth 5.5; D. 1x-11; A. 11 8; scales 5-57-9; specimen 2.25 inches long, from Mud Creek.

69. Roccus chrysops (Rafinesque). White Bass.

Found by us only at Horse Island, Sacketts Harbor, where three examples were obtained June 30. Published reference to the occurrence of *Roccus lineatus* in this lake are all probably based upon specimens of this species.

70. Aplodinotus grunniens Rafinesque. Fresh-water Drum or Sheepshead.

Seen only at Point Breeze, where one specimen was obtained from the lake.

71. Cottus ictalops (Rafinesque). Common Blob.

Specimens obtained at Grenadier and Stony islands.

72. Triglopsis thompsoni Girard. Deep-water Blob.

Three specimens from Nine-mile Point, one from the lake, the two others from a small creek.

73. Lota maculosa (Le Sueur). Ling.

One specimen obtained 4 miles off Nine-mile Point.