

4.—THE FISHES OF THE NEUSE RIVER BASIN.

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In the summer of 1890 a small collection of fishes was made for the writers in the streams near Raleigh, N. C., by Messrs. H. H. and C. S. Brimley, taxidermists and natural-history dealers of that city. Collecting was done in the Neuse River itself, in Walnut Creek and its smaller tributaries, and in various backwater holes, ponds, and ditches that at times are connected with the creek or the river. Though the number of species represented in the collection is small, it shows us what are the common species of the locality and the relative abundance of each.

The greater parts of five days in June and July were given to the work of collecting, and seining was done in all manner of places, which are described in the collectors' notes, from which we quote:

Collecting was done in Neuse River, in Walnut Creek about a mile above its union with the river, and in neighboring mud-holes. The river is a fairly swift stream, bottom mostly sand or gravel, very much broken with small, medium, and huge granite boulders. Nearly all fish from the river were caught along shore, where the bottom is mostly mud and exceedingly snaggy. Water seldom over shoulder-deep and temperature warm.

July 8.—The top minnows [*Gambusia affinis*] were caught by dip net, from a pond of water fed by springs in a granite quarry on the edge of town. These seem to be the only fish found in this place. The balance of the specimens from Walnut Creek and lake holes near here, say 8 miles from mouth of creek. We were particular about fishing the riffles and sand-bars for darters, but failed to get any. Most of the round-bodied shiners [*Hybognathus nuchalis* and *Notropis niveus*] were caught in fishing for darters. Nearly all the rest of the fish came from a lake hole connected with the creek.

Walnut Creek is a medium swift stream, bottom chiefly sand. Very few fish seem to stay in the clear, open reaches, where it is possible to seine. One haul of the net, some two hundred yards down a straight reach, with an even depth of from 1 to 2½ feet, clear sand bottom, seine taking in full width of stream, resulted in absolutely nothing, not a single specimen of any kind coming to hand. The fish that are in the creek seem only to frequent the eddies and around logs and tree roots and tops, just where a net can not be used. The backwater holes have, almost invariably, a mud bottom. Some have a deep layer of soft mud and dead leaves, others a fairly firm bottom, but always more or less muddy. Some are permanently connected with the creek, some only when the waterworks turbines at the next dam above where we fished are running (daily or oftener). Others again take high water or even heavy freshets to make the connection. We had no means of determining the temperature of the water, but in some of the smaller and more exposed holes the water seemed very warm.

The small perch with rather faint vertical bars [*Lepomis megalotis*] was not very plentiful.

June 18.—This day's collecting was in the valley of Walnut Creek. No specimens came from the creek itself and only a few from the smaller tributary streams. These included a few "top minnows" [*Gambusia affinis*], a very small percentage of shiners and cats, and the pirate perch. All the other species came from the meadow ditches. On this day we did not use the seine, but used small dip nets of fine mesh (mosquito netting). All specimens taken of the following were preserved: Shiners of all kinds, the larger perch [*Acantharchus pomotis*], which we have never taken elsewhere; pike [*Lucius americanus* and *Lucius vermiculatus*], cats, mullets, and speckled perch [*Enneacanthus gloriosus*]. The use of the dip nets accounts for the large number of "top minnows" taken where we had never secured any with the seine.

June 23.—Walnut Creek again, but further up stream. Three top minnows were found in a shallow mud-hole in the meadows. All the rest came from a long "lake hole" connected with the creek, a small stream flowing through it. This hole is about 150 yards long, with an average width of 20 feet. The bottom is of a soft mud, in some places 2 feet deep. The water will average waist-deep, and is warm. Pike and mullets [*Erimyzon sucetta*] were plentiful, while perch occurred in greater numbers than found anywhere previously; large shiners were common, but many were injured by contact with other fish and trash in the net and by gilling themselves in the meshes. None of the small, round-bodied shiners was taken; all seemed to be of the "shad roach" type [*Notemigonus crysoleucas*].

Fourteen specimens of "mudfish" [*Umbra pygmaea*], the only specimens of the species we have ever taken, were obtained from a ditch back from Walnut Creek in an open meadow. This ditch is 3 or 4 feet wide and 3 feet deep, including a layer of soft mud about 1 foot thick. The surrounding meadow is springy and marshy, the water is not stagnant, though it is not connected with the creek except in times of freshets. In this ditch were also found pike [*Lucius vermiculatus*] and several species of sunfish and shiners. In a pond near by, which has a muddy bottom but a constant stream flowing through it, were found "white perch" [*Pomoxis sparoides*], pike, and "mulletts" [*Erimyzon sucetta*].

June 27.—Collecting done in Neuse River, Walnut Creek—about the last mile before joining the river—and neighboring mud-holes. The gar [*Lepisosteus osseus*] came from the river; all the darters were taken in the creek, in swift shallow water, with gravel or sand bottom. Black bass came from a mud-hole connected with the creek only at quite high water. Water in it was shallow and warm and mud quite deep. Most of the fork-tailed cats [*Ameiurus catus*] came from a mud-hole, shoulder-deep in places, connected with the river during freshets. This hole is fed by a small spring and the water is very cold (comparatively). We have on former occasions taken a small barred or spotted cat from this place, but could find none this time. Most of the other specimens came from the river with the exception of some few shiners, cats, redhorses, and sunfish found in the creek and holes. All darters, shiners, and small cats taken were preserved; likewise the only flounder. One other gar and black bass were caught.

Several species of turtle and terrapin were abundant in the places fished, and many were caught. No "snappers" caught, although they are found in these places. Bonnet lilies grow in some of the mud-holes, and marsh grasses grow around the edges in the shallower parts of others. Well-grown bullfrogs often come up in the seine, also other frogs.

The total number of species contained in the collection is 30, distributed among 12 families and 23 genera, as follows: Lepisosteidae, 1; Siluridae, 3; Catostomidae, 3; Cyprinidae, 6; Pœciliidae, 1; Esocidae, 2; Anguillidae, 1; Umbridae, 1; Aphredoderidae, 1; Centrarchidae, 8; Percidae, 2; and Pleuronectidae, 1.

Or, as to genera: *Lepisosteus*, 1; *Ameiurus*, 2; *Noturus*, 1; *Erimyzon*, 1; *Moxostoma*, 2; *Notemigonus*, 1; *Notropis*, 2; *Hybopsis*, 1; *Semotilus*, 1; *Hybognathus*, 1; *Gambusia*, 1; *Lucius*, 2; *Anguilla*, 1; *Umbra*, 1; *Aphredoderus*, 1; *Pomoxis*, 1; *Chaenobryttus*, 1; *Acantharchus*, 1; *Emmeacanthus*, 1; *Lepomis*, 3; *Micropterus*, 1; *Etheostoma*, 2; *Achirus*, 1.

It will be noticed that almost half of the species belong in the two families, the Centrarchidae and the Cyprinidae.

The following is a list of the species of fishes which the collection contains:

1. *Lepisosteus osseus* (Linnæus). *Gar*. One small specimen, 13 inches long.
2. *Ameiurus natalis* (Le Sueur). *Yellow Cat*. Very abundant; nearly 100 specimens, 1½ to 5½ inches long.
3. *Ameiurus catus* (Linnæus).
Ameiurus niveiventris Cope, Proc. Am. Philos. Soc. 1870, 486. Type locality, Neuse River, N. C.
Fourteen specimens, agreeing well with the original description of Professor Cope. Body not slender; head not narrow, its width 1⅓ in its length; base of anal equal to length of head, or 4 in total length; length of humeral spine about half that of pectoral spine, but variable. Dorsal inserted midway between snout and adipose fin. A. 20.
4. *Noturus insignis* (Richardson). Five specimens, 4 to 5 inches long.
5. *Erimyzon sucetta* (Lacépède). "*Mullet*"; *Chub Sucker*. Five specimens. Called "mullet" by the collectors. Scales, 44 to 46.

6. *Moxostoma papillosum* (Cope). *Redhorse*; *White Mullet*.
Ptychostomus papillosus Cope, Proc. Amer. Philos. Soc. Phila. 1870, 470.
 Type localities, Catawba and Yadkin rivers, N. C. One specimen obtained June 27 from Walnut Creek.
7. *Moxostoma cervinum* (Cope). *Redhorse*; *Jumping Mullet*. One specimen obtained with the preceding. Both of these species of *Moxostoma* are common in the Neuse River basin.
8. *Notemigonus crysoleucas* (Mitchill). "*Small Roach*"; *Roach*; *Golden Shiner*. Excessively abundant, especially in the meadow ditches and isolated pools and ponds.
9. *Notropis niveus* (Cope). *Shiner*.
Hybopsis nircus Cope, Proc. Amer. Philos. Soc. Phila. 1870, 460.
 Type locality, Catawba River, N. C. The collection contains five samples of this species.
10. *Notropis albeolus* (Jordan). "*Shiner*." Not uncommon; six specimens in the collection.
11. *Hybopsis kentuckiensis* (Rafinesque). *River Chub*; *Jerker*. Abundant in the creek; 16 specimens in the collection. Head more slender and pointed than in northern examples. Head, 4 to 4½; depth, 4 to 4½; eye, 2; snout, 2½ to 2¾. D. 8; A. 7; scales, 7-41-4.
12. *Semotilus atromaculatus* (Miteaill). Several small specimens from Walnut Creek.
13. *Hybognathus nuchalis* Agassiz. Common. Called "round-bodied minnow" or "shiner" in the collectors' notes.
14. *Gambusia affinis* Girard. "*Top Minnow*." Abundant in the small ponds, springs, and pools. This was the only species found in a pond in a granite quarry near Raleigh.
15. *Lucius americanus* Gmelin. "*Pike*." Several small specimens, 2 to 7 inches long. Common in grassy places in ditches and ponds.
16. *Lucius vermiculatus* (Le Sueur). "*Pike*." Several small specimens, 5 to 6 inches long, which agree with this species rather than with *L. reticulatus*. The snout is shorter and the scales are larger than in *L. reticulatus*, the number in the lateral line being about 104.
17. *Anguilla chrysypa* Rafinesque. *Common Eel*. One specimen.
18. *Umbra limi pygmæa* (De Kay). *Mud Minnow*; "*Mudfish*." Fourteen specimens from a ditch near Walnut Creek. These vary from 2½ to 4 inches in length.
19. *Aphredoderus sayanus* Gilliams. *Pirate Perch*. A dozen good-sized examples of this species.
20. *Pomoxis sparoides* (Lacépède). *Calico Bass*; *Strawberry Bass*; "*White Perch*." Three small specimens from the ponds.
21. *Chaenobryttus gulosus* (Cuvier & Valenciennes). *Wormmouth*; *Red-eyed Bream*. Numerous specimens; abundant in the ponds.
22. *Acantharchus pomotis* (Baird). "*Perch*"; *Mud Sunfish*. Ponds along Walnut Creek, common. Two specimens. D. XII, 10 or 11; A. VI, 10.
23. *Enneacanthus gloriosus* (Holbrook). "*Speckled Perch*." Two small examples from pond near Walnut Creek, which we refer to this species.
24. *Lepomis auritus* (Linnaeus). *Long-cared Sunfish*; *Yellow-belly*. Two small specimens.
25. *Lepomis megalotis* (Rafinesque). *Long-cared Sunfish*. Only one specimen in the collection.
26. *Lepomis gibbosus* (Linnaeus). *Common Sunfish*. Apparently the most common sunfish of the region. Many specimens in the collection.
27. *Micropterus salmoides* (Lacépède). *Large-mouth Black Bass*. Two small specimens from Walnut Creek. Common in the Neuse River basin and the entire South.
28. *Etheostoma peltatum* Stauffer. One specimen. Head, 3½; depth, 6. D. XIV, 13; A. II, 9; scales, 8-65-9; some scales on preopercle and lower part of opercle.
29. *Etheostoma vitreum* (Cope).
Pacilichthys vitreus Cope, Proc. Amer. Philos. Soc. Phila. 1870, 263.
 The collection contains seven specimens of this interesting darter, which, with *E. peltatum*, was found on the riffles in the creek.
30. *Achirus fasciatus* Lacépède. "*Flounder*"; *Sole*. A single example of this species.

We have thought it might prove valuable to bring together all accessible references to fishes of the Neuse River basin, and have therefore taken this opportunity to go over the literature and compile all the definite references to localities in the basin of that stream. We give (1) the title of the paper containing the reference, (2) a list of the species mentioned in each paper, and (3) a complete list of all the species now known from the Neuse River basin, together with all the definite localities within that basin from which each has been reported, and a citation to the authority for the same.

1870a. E. D. COPE. On some Etheostomine Perch from Tennessee and North Carolina. <Proc. Amer. Philos. Soc., XI, 1870, 261-270.

In this paper Professor Cope describes as new two species of darters collected by him from Neuse River. In the following table we give (1) the page on which the species is mentioned in the paper cited, (2) the name under which the species was there recorded, (3) our identification of the nominal species, (4) the locality as given in the paper cited. Names of new species and new genera are printed in italics.

Page.	Species as recorded	Identification.	Locality.
261	<i>Etheostoma nevisense</i>	<i>Etheostoma peltatum</i>	Neuse River near Raleigh.
264	<i>Pœciliichthys vitreus</i>	<i>Etheostoma vitreum</i>	Walnut Creek, Neuse River, Wake County.

1870b. EDW. D. COPE, A. M. A Partial Synopsis of the Fishes of the Fresh Waters of North Carolina. <Proc. Amer. Philos. Soc., XI, 1870, 448-495.

In this, the most important contribution to our knowledge of the fishes of North Carolina that has yet appeared, Professor Cope credits 36 species to the Neuse River basin. Of these, 34 are given in the body of the paper and 2 additional species (*Esox ravenelii* and *Hybopsis ? amarus*) are mentioned in the table at the end of the article. In the table, however, only 32 species are credited to the Neuse, all having been collected by Professor Cope. Seven of the 36 species are described as new; the names of these are printed in italics in the following summary:

Page.	Nominal species.	Identification.	Locality.
449	<i>Stizostedion</i> , sp.....	<i>Stizostedion</i>	Neuse River.
448	<i>Perca flavescens</i>	<i>Perca flavescens</i>	Neuse River.
448	<i>Roccus lineatus</i>	<i>Roccus lineatus</i>	Neuse River.
449	<i>Pœciliichthys vitreus</i>	<i>Etheostoma vitreum</i>	Walnut Creek.
449	<i>Etheostoma nevisense</i>	<i>Etheostoma vitreum</i>	Neuse River.
451	<i>Micropterus nigricans</i>	<i>Micropterus salmoides</i>	Neuse River.
451	<i>Pomoxys hexacanthus</i>	<i>Pomoxis sparoides</i>	Neuse River.
451	<i>Centrarchus irideus</i>	<i>Centrarchus macropterus</i>	Neuse River.
452	<i>Chænobryttus gillii</i>	<i>Chænobryttus gulosus</i>	All streams of North Carolina east of the Alleghany Mountains.
452	<i>Enneacanthus guttatus</i>	<i>Enneacanthus obesus</i>	Neuse River.
452	<i>Lepomis rubricauda</i>	<i>Lepomis auritus</i>	Neuse River.
455	<i>Pomotis maculatus</i>	<i>Lepomis gibbosus</i>	All the rivers of North Carolina east of the Alleghany range.
455	<i>Aphredodirus sayanus</i>	<i>Aphredodorus sayanus</i>	Sluggish waters tributary to the Neuse River in Wake County.
457	<i>Haplochilus melanops</i>	<i>Gambusia affinis</i>	Still water of the Neuse River basin, Wake County.
457	<i>Esox affinis</i>	<i>Lucius reticulatus</i>	Neuse River.
457	<i>Semotilus corporalis</i>	<i>Semotilus atromaculatus</i>	Neuse River.
459	<i>Ceraticthys biguttatus</i>	<i>Hybopsis kentuckiensis</i>	Neuse River.
459	<i>Hypsolepis cornutus cornutus</i>	<i>Notropis megalops</i>	Neuse River.
459	<i>Hypsolepis analostanus</i>	<i>Notropis analostanus</i>	Neuse River.
463	<i>Photogenis leucops</i>	<i>Notropis photogenis</i>	Neuse River near Raleigh.
465	<i>Alburnellus matulinus</i>	<i>Notropis umbratilis matulinus</i>	Neuse River, Wake County.
465	<i>Stilbe americana</i>	<i>Notemigonus crysoleucas</i>	Neuse Basin.
468	<i>Catostomus teres</i>	<i>Catostomus teres</i>	All the rivers of the State on both sides of Alleghany watershed.
468	<i>Moxostoma oblongum</i>	<i>Erimyzon suetta</i>	Neuse River.
471	<i>Ptychostomus collapsus</i>	<i>Moxostoma collapsum</i>	Neuse River.
473	<i>Ptychostomus robustus</i>	<i>Moxostoma robustum</i>	Neuse River.
474	<i>Ptychostomus lachrymatis</i>	<i>Moxostoma macrolepidotum</i>	Neuse River near Raleigh.
477	<i>Ptychostomus crassilabre</i>	<i>Moxostoma crassilabre</i>	Neuse River at Newbern.
487	<i>Amiurus lynx ?</i>	<i>Ameiurus catus</i>	Neuse River.
488	<i>Amiurus niveiventris</i>	<i>Ameiurus catus</i>	Neuse River.
491	<i>Anguilla</i> , sp.....	<i>Anguilla chrysypa</i>	All Atlantic waters of the State.
494	<i>Perca flavescens</i>	<i>Perca flavescens</i>	Neuse River.
494	<i>Boleosoma maculaticeps</i>	<i>Etheostoma olmstedii</i>	Neuse River.
494	<i>Pomoxis hexacanthus</i>	<i>Pomoxis sparoides</i>	Neuse River.
494	<i>Lepomis rubricauda</i>	<i>Lepomis auritus</i>	Neuse River.
494	<i>Esox ravenelii</i>	<i>Lucius americanus</i>	Neuse River.
494	<i>Hybopsis ? amarus</i>	<i>Notropis amarus</i>	Neuse River.
495	<i>Acipenser</i> , sp.....	<i>Acipenser sturio oxyrhynchus</i>	Neuse River.
495	<i>Lepidosteus</i> , sp.....	<i>Lepisosteus osseus</i>	Neuse River.
495	? <i>Amia</i>	<i>Amia calva</i>	Neuse River.

1877. DAVID S. JORDAN. Contributions to North American Ichthyology, II. <Bulletin U. S. Nat. Mus., No. 10, 1877.

In this paper (p. 27) *Enneacanthus pinniger* Gill & Jordan is described as new, from specimens obtained by J. W. Milner at Kingston. *Amiurus niveiventris* Cope (= *A. catus*) is also mentioned from the Neuse (p. 83).

1878. DAVID S. JORDAN AND ALEMBERT W. BRAYTON. On the Distribution of the Fishes of the Alleghany Region of South Carolina, Georgia, and Tennessee, with Descriptions of new or little-known species. <Contributions to North American Ichthyology, No. III, A; <Bull. U. S. Nat. Mus., No. 12, 1878, 1-96.

In the Recapitulation at the end of this paper (pp. 82-96) the following species are referred to the Neuse River, chiefly on the authority of Professor Cope:

Nominal species.	Identification.	Nominal species.	Identification.
<i>Ioa vitrea</i>	<i>Etheostoma vitreum</i> .	<i>Luxilus cornutus</i>	<i>Notropis megalops</i> .
<i>Alvordius crassus</i>	<i>Etheostoma peltatum</i> .	<i>Photogenis analostanus</i>	<i>Notropis analostanus</i> .
<i>Alvordius nevisensis</i>	<i>Etheostoma peltatum</i> .	<i>Alburnops chlorocephalus</i> *	<i>Notropis chlorocephalus</i> .
<i>Boleosoma maculatiiceps</i>	<i>Etheostoma nigrum olustadi</i> .	<i>Alburnops amarus</i>	<i>Notropis amarus</i> .
<i>Perca americana</i>	<i>Perca flavescens</i> .	<i>Notropis photogenis</i> *	<i>Notropis photogenis</i> .
<i>Micropterus pallidus</i>	<i>Micropterus salmoides</i> .	<i>Notropis matutinus</i>	<i>Notropis umbratilis matutinus</i> .
<i>Acantharchus pomotis</i>	<i>Acantharchus pomotis</i> .	<i>Notemigonus americanus</i>	<i>Notemigonus crysoleucas</i> .
<i>Cbaenobryttus viridis</i>	<i>Cbaenobryttus gulosus</i> .	<i>Ceraticthys biguttatus</i>	<i>Hybopsis kentuckiensis</i> .
<i>Lepiopus auritus</i>	<i>Lepomis auritus</i> .	<i>Semotilus corporalis</i>	<i>Semotilus atromaculatus</i> .
<i>Eupomotis aureus</i>	<i>Lepomis gibbosus</i> .	<i>Moxostoma velatum</i>	<i>Moxostoma</i> .
<i>Enneacanthus pinniger</i>	<i>Enneacanthus gloriosus</i> .	<i>Moxostoma crassilabre</i>	<i>Moxostoma crassilabre</i> .
<i>Enneacanthus margarotis</i>	<i>Enneacanthus gloriosus</i> .	<i>Moxostoma macrolepidotum</i>	<i>Moxostoma macrolepidotum</i> .
<i>Centrarchus irideus</i>	<i>Centrarchus macropterus</i> .	et vars.	
<i>Pomoxys nigromaculatus</i>	<i>Pomoxis sparoides</i> .	<i>Erimyzon sucetta</i>	<i>Erimyzon sucetta</i> .
<i>Pomoxys annularis</i>	<i>Pomoxis annularis</i> .	<i>Catostomus comersoni</i>	<i>Catostomus teres</i> .
<i>Aphredoderus sayanus</i>	<i>Aphredoderus sayanus</i> .	<i>Amiurus albidus</i>	<i>Ameiurus catus</i> .
<i>Zygonectes melanoops</i>	<i>Gambusia affinis</i> .	<i>Amiurus niveiventris</i>	<i>Ameiurus catus</i> .
<i>Zygonectes atrilatus</i>	<i>Gambusia affinis</i> .	<i>Amiurus natalis</i>	<i>Ameiurus uatalis</i> .
<i>Melanura pygmaea</i>	<i>Umbrina pygmaea</i> .	<i>Amiurus catus</i>	<i>Ameiurus catus</i> .
<i>Esox reticulatus</i>	<i>Lucius reticulatus</i> .	<i>Noturus cletherus</i>	<i>Noturus cletherus</i> .
<i>Esox ravenelii</i>	<i>Lucius americanus</i> .	<i>Anguilla vulgaris</i>	<i>Anguilla chrysopa</i> .
<i>Hybognathus argyritis</i>	<i>Hybognathus nuchalis</i> .		

* Probably erroneously credited to the Neuse River basin.

1884. GEORGE BROWN GOODE. The Black Bass Family—Centrarchida. <The Fishery Industries of the United States, Part I, 401-404, 1884.

In this article the large-mouth black bass (*Micropterus salmoides*) is mentioned as being known as "Welshman" on the Neuse River.

1889. DAVID STARR JORDAN. Descriptions of Fourteen Species of Fresh-water Fishes collected by the U. S. Fish Commission in the Summer of 1888. <Proc. U. S. Nat. Mus., XI, 1888 (1889), 351-362, plates XLIII-XLV.

Two of these (*Noturus furiosus* and *Etheostoma roanoka*) were found in the Neuse River at Milburnie, near Raleigh, and the latter also in Little River at Goldsboro. The jumping mullet, *Moxostoma cervinum* (Cope), is also mentioned from the Neuse River.

1890. DAVID STARR JORDAN. Report of Explorations made during the Summer and Autumn of 1888, in the Alleghany Region of Virginia, North Carolina and Tennessee, and in Western Indiana, with an Account of the Fishes found in each of the River Basins of those Regions. <Bull. U. S. Fish Comm., VIII, 1888 (1890), 97-173, plates XIII-XV.

This paper records 41 species from the Neuse River basin, a larger number than has been reported in any other paper. The new species contained in this collection were described in the paper cited above. The collections from the Neuse River basin recorded in this paper were made by Dr. O. P. Jenkins and Prof. S. E. Meek.

Page.	Nominal species.	Identification.	Locality.
127	<i>Amia calva</i>	<i>Amia calva</i>	Moccasin Swamp near Goldsboro.
127	<i>Noturus furiosus</i>	<i>Noturus furiosus</i>	Little River at Goldsboro and Neuse River at Milburnie.
127	<i>Noturus insignis</i>	<i>Noturus insignis</i>	Little River at Goldsboro and Neuse River at Milburnie.
127	<i>Ameiurus natalis</i>	<i>Ameiurus natalis</i>	Little River at Goldsboro and Moccasin Swamp near Goldsboro.
127	<i>Ameiurus erebennus</i>	<i>Ameiurus erebennus</i>	Moccasin Swamp near Goldsboro.
128	<i>Ameiurus niveiventris</i>	<i>Ameiurus catus</i>	Little River at Goldsboro and Neuse River at Milburnie.
128	<i>Catostomus nigricans</i>	<i>Catostomus nigricans</i>	Neuse River at Milburnie.
128	<i>Erimyzon sucetta</i>	<i>Erimyzon sucetta</i>	Moccasin Swamp near Goldsboro, Little River at Goldsboro, and Neuse River at Milburnie.
128	<i>Moxostoma papillosum</i>	<i>Moxostoma papillosum</i>	Little River at Goldsboro and Neuse River at Milburnie.
128	<i>Moxostoma conus</i>	<i>Moxostoma conus</i>	Little River at Goldsboro.
128	<i>Moxostoma crassilabre</i>	<i>Moxostoma crassilabre</i>	Little River at Goldsboro.
129	<i>Moxostoma cervinum</i>	<i>Moxostoma cervinum</i>	Neuse River at Milburnie.
129	<i>Hybognathus nuchalis</i>	<i>Hybognathus nuchalis</i>	Neuse River at Milburnie and Little River at Goldsboro.
129	<i>Notropis procne</i>	<i>Notropis procne</i>	Neuse River at Milburnie and Little River at Goldsboro.
129	<i>Notropis hudsonius</i>	<i>Notropis hudsonius</i>	Little River at Goldsboro.
129	<i>Notropis megalops albeolus</i>	<i>Notropis albeolus</i>	Neuse River at Milburnie.
129	<i>Notropis niveus</i>	<i>Notropis niveus</i>	Little River at Goldsboro and Neuse River at Milburnie.
129	<i>Notropis anconus</i>	<i>Notropis anconus</i>	Neuse River at Milburnie.
129	<i>Notropis matutinus</i>	<i>Notropis umbratilis matutinus</i>	Neuse River at Milburnie.
129	<i>Hybopsis kentuckiensis</i>	<i>Hybopsis kentuckiensis</i>	Little River at Goldsboro and Neuse River at Milburnie.
129	<i>Notemigonus chrysoleucas</i>	<i>Notemigonus chrysoleucas</i>	Little River at Goldsboro and Neuse River at Milburnie.
129	<i>Clupea sapidissima</i>	<i>Clupea sapidissima</i>	Little River at Goldsboro and Neuse River at Milburnie.
129	<i>Gambusia patruelis</i>	<i>Gambusia affinis</i>	Little River at Goldsboro and Neuse River at Milburnie.
129	<i>Lucius americanus</i>	<i>Lucius americanus</i>	Little River at Goldsboro.
129	<i>Lucius reticulatus</i>	<i>Lucius reticulatus</i>	Moccasin Swamp near Goldsboro and Little River at Goldsboro.
129	<i>Anguilla anguilla rostrata</i>	<i>Anguilla chrysypa</i>	Neuse River at Milburnie.
129	<i>Aphredoderus sayanus</i>	<i>Aphredoderus sayanus</i>	Little River at Goldsboro.
130	<i>Pomoxis sparoides</i>	<i>Pomoxis sparoides</i>	Little River at Goldsboro, Moccasin Swamp at Goldsboro, and Neuse River at Milburnie.
130	<i>Centrarchus macropterus</i>	<i>Centrarchus macropterus</i>	Moccasin Swamp near Goldsboro and Little River at Goldsboro.
130	<i>Enneacanthus gloriatus</i>	<i>Enneacanthus gloriatus</i>	Little River at Goldsboro.
130	<i>Acantharchus pomotis</i>	<i>Acantharchus pomotis</i>	Moccasin Swamp near Goldsboro.
130	<i>Chaenobryttus gulosus</i>	<i>Chaenobryttus gulosus</i>	Moccasin Swamp near Goldsboro and Neuse River at Milburnie.
130	<i>Lepomis auritus</i>	<i>Lepomis auritus</i>	Little River at Goldsboro and Neuse River at Milburnie.
130	<i>Lepomis holbrooki</i>	<i>Lepomis holbrooki</i>	Little River at Goldsboro.
130	<i>Lepomis gibbosus</i>	<i>Lepomis gibbosus</i>	Moccasin Swamp near Goldsboro.
130	<i>Micropterus dolomieu</i>	<i>Micropterus dolomieu</i>	Moccasin Swamp near Goldsboro and Neuse River at Milburnie.
130	<i>Micropterus salmoides</i>	<i>Micropterus salmoides</i>	Moccasin Swamp near Goldsboro, Little River at Goldsboro, and Neuse River at Milburnie.
130	<i>Etheostoma vitreum</i>	<i>Etheostoma vitreum</i>	Neuse River at Milburnie and Little River at Goldsboro.
130	<i>Etheostoma nigrum olmstedii</i>	<i>Etheostoma nigrum olmstedii</i>	Neuse River at Milburnie and Little River at Goldsboro.
130	<i>Etheostoma peltatum</i>	<i>Etheostoma peltatum</i>	Neuse River at Milburnie and Little River at Goldsboro.
130	<i>Etheostoma roanoka</i>	<i>Etheostoma roanoka</i>	Neuse River at Milburnie.

The following is a list of all the species of fishes now known to occur in the Neuse River basin:

1. *Acipenser sturio oxyrhynchus* (Mitchill). *Common Sturgeon*. Neuse River (Cope, 1870b).
2. *Lepisosteus osseus* (Linnaeus). *Long-nosed Gar*. Neuse River (Cope, 1870b); Raleigh.
3. *Amia calva* (Linnaeus). *Dogfish*; *Bowfin*; *Blackfish*; *Brindleafish*. Neuse River (Cope, 1870b); Moccasin Swamp near Goldsboro (Jordan, 1890); Raleigh.
4. *Ameiurus catus* (Linnaeus). *White Catfish*. Neuse River at Newbern (Cope, 1870b); Raleigh.
5. *Ameiurus erebennus* Jordan. Moccasin Swamp near Goldsboro (Jordan, 1890).
6. *Ameiurus natalis* (Le Sueur). *Yellow Cat*. Little River and Moccasin Swamp, Goldsboro (Jordan, 1890).
7. *Noturus insignis* (Richardson). *Mad-Tom*. Neuse River at Milburnie and Little River near Goldsboro (Jordan, 1890); Raleigh.
8. *Noturus furiosus* (Jordan & Meek). Neuse River at Milburnie and Little River near Goldsboro (Jordan, 1889 and 1890, type).
9. *Catostomus teres* (Mitchill). *Common Sucker*; *Fine-scaled Sucker*. "All the rivers of the State" (Cope, 1870b).
10. *Catostomus nigricans* Le Sueur. *Hog Sucker*; *Hog Molly*. Neuse River, Milburnie (Jordan, 1890).
11. *Erimyzon sucetta* (Lacépède). *Chub Sucker*; "*Mullet*." Neuse River (Cope, 1890b); Moccasin Swamp near Goldsboro (Jordan, 1890); Raleigh.
12. *Moxostoma papillosum* (Cope). *White Mullet*; "*Redhorse*." Neuse River, Milburnie, and Moccasin Swamp near Goldsboro (Jordan, 1890); Walnut Creek, Raleigh.
13. *Moxostoma collapsum* (Cope). Neuse River (Cope, 1870b, type).
14. *Moxostoma robustum* (Cope). Neuse River (Cope, 1870b, type).
15. *Moxostoma macrolepidotum* (Le Sueur). *Common White Sucker*; *Large-scaled Sucker*. Neuse River (Cope, 1870b, as *Ptychostomus lachrymalis*, type).
16. *Moxostoma crassilabre* (Cope). Neuse River near Raleigh (Cope, 1870b, type); Little River at Goldsboro (Jordan, 1890).
17. *Moxostoma conus* (Cope). Little River, Goldsboro (Jordan, 1890).
18. *Moxostoma cervinum* (Cope). *Jumping Mullet*. Neuse River, Milburnie (Jordan, 1889 and 1890); Walnut Creek, Raleigh.
19. *Hybognathus nuchalis* Agassiz. *Silvery Minnow*. Neuse River at Milburnie and Little River at Goldsboro (Jordan, 1890); Raleigh.
20. *Semotilus atromaculatus* (Mitchill). *Creek Chub*. Neuse River (Cope, 1870b); Walnut Creek, Raleigh.
21. *Notemigonus crysoleucas* (Mitchill). *Golden Shiner*; *Roach*; "*Shad Roach*." Neuse River (Cope, 1870b); Neuse River at Milburnie (Jordan, 1890); Raleigh.
22. *Notropis hudsonius* (De Witt Clinton). *Shiner*. Little River at Goldsboro (Jordan, 1890).
23. *Notropis amarus* (Girard). Neuse River (Cope, 1870b).
24. *Notropis niveus* (Cope). "*Shiner*." Little River at Goldsboro (Jordan, 1890); Raleigh.
25. *Notropis analostanus* (Girard). Neuse River (Cope, 1870b).
26. *Notropis megalops* (Rafinesque). *Redfin*; *Shiner*. Neuse River (Cope, 1870b).
27. *Notropis albeolus* (Jordan). "*Shiner*." Neuse River at Milburnie (Jordan, 1890); Raleigh.
28. *Notropis amcenus* (Abbott). Neuse River at Milburnie (Jordan, 1890).
29. *Notropis photogenis* (Cope). Neuse River near Raleigh (as *Photogenis leucops*, Cope, 1870b).
30. *Notropis umbratilis matutinus* (Cope). Neuse River, Wake County (Cope, 1870b, type).
31. *Hybopsis kentuckiensis* (Rafinesque). *Horny-head*; *River Chub*; *Jerker*. Neuse River at Milburnie and Little River at Goldsboro (Jordan, 1890); Raleigh.
32. *Clupea sapidissima* Wilson. *Shad*. Neuse River at Milburnie (Jordan, 1890).
33. *Gambusia affinis* (Baird & Girard). "*Top Minnow*." Neuse River (Cope, 1870b, type of *Haplochilus melanops*); Neuse River at Milburnie (Jordan, 1890); Raleigh.
34. *Umbra pygmaea* (De Kay). *Mud Minnow*; "*Mudfish*." Ditch near Walnut Creek, Raleigh.
35. *Lucius americanus* Gmelin. *Pike*; *Banded Pickerel*. Neuse River (Cope, 1870b); Little River at Goldsboro (Jordan, 1890).
36. *Lucius reticulatus* (Le Sueur). *Common Eastern Pickerel*; *Green Pike*. Neuse River (Cope, 1870b); Moccasin Swamp and Little River near Goldsboro (Jordan, 1890).

37. *Lucius vermiculatus* (Le Sueur). *Little Pickerel*; "Pike." Raleigh.
38. *Anguilla chrysoptera* Rafinesque. *Common Eel*. "All Atlantic waters of North Carolina" (Cope, 1870b); Neuse River at Milburnie (Jordan, 1890); Raleigh.
39. *Aphredoderus sayanus* Gilliams. *Pirate Perch*. Little River at Goldsboro (Jordan, 1890); Raleigh.
40. *Centrarchus macropterus* (Lacépède). *Sunfish*; "Flyer." Neuse River (Cope, 1870b); Moccasin Swamp and Little River near Goldsboro (Jordan, 1890).
41. *Pomoxis sparoides* (Lacépède). *Calico Bass*. Neuse River (Cope, 1870b); Neuse River at Milburnie, and Moccasin Swamp and Little River near Goldsboro (Jordan, 1890); Raleigh.
42. *Chænobryttus gulosus* (Cuvier & Valenciennes). *Warmouth*; *Red-eyed Bream*. "All streams of North Carolina east of the Alleghany Mountains" (Cope, 1870b); Neuse River at Milburnie and Moccasin Swamp near Goldsboro (Jordan, 1890); Raleigh.
43. *Acantharchus pomotis* (Baird). *Mud Sunfish*. Moccasin Swamp near Goldsboro (Jordan, 1890); ponds about Raleigh.
44. *Enneacanthus obesus* (Baird). Neuse River (Cope, 1870b).
45. *Enneacanthus gloriosus* (Holbrook). Little River at Goldsboro (Jordan, 1890); ponds about Raleigh.
46. *Lepomis auritus* (Linnæus). *Yellow-belly*. Neuse River (Cope, 1870b); Neuse River at Milburnie and Little River at Goldsboro (Jordan, 1890); Raleigh.
47. *Lepomis holbrooki* (Cuvier & Valenciennes). Little River at Goldsboro and Neuse River at Milburnie (Jordan, 1890).
48. *Lepomis gibbosus* (Linnæus). *Pumpkin-seed*; *Sunny*. "All the rivers of North Carolina east of the Alleghany Mountains" (Cope, 1870b); Moccasin Swamp near Goldsboro (Jordan, 1890); Raleigh.
49. *Micropterus salmoides* (Lacépède). *Large-mouth Black Bass*; "Welshman"; "Trout." Neuse River (Cope, 1870b); Neuse River at Milburnie and Little River and Moccasin Swamp near Goldsboro (Jordan, 1890); Raleigh.
50. *Micropterus dolomieu* Lacépède. *Small-mouth Black Bass*. Neuse River at Milburnie and Moccasin Swamp near Goldsboro (Jordan, 1890).
51. *Etheostoma vitreum* (Cope). Neuse River, Wake County (Cope, 1870a, type); Neuse River and Walnut Creek (Cope, 1870b); Neuse River at Milburnie and Little River at Goldsboro (Jordan, 1890); Walnut Creek.
52. *Etheostoma peltatum* Stauffer. Neuse River at Milburnie and Little River at Goldsboro (Jordan, 1890); Walnut Creek.
53. *Etheostoma nigrum olmstedii* (Storer). Neuse River at Milburnie and Little River at Goldsboro (Jordan, 1890).
54. *Etheostoma roanoka* Jordan & Jenkins. Neuse River at Milburnie (Jordan, 1889 and 1890, type).
55. *Achirus fasciatus* Lacépède. "Flounder"; *Sole*. Neuse River at Raleigh.