

XIX.—*Notes on a Collection of Fishes from the Monongahela River.*

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During July and August, 1885, Mr. Bollman made a small collection of fishes in the Monongahela River and a few small creeks flowing into it. The bulk of the collection was made in the Monongahela at Monongahela City, at Lock Number Nine, on that river, near where it enters the State of Pennsylvania from West Virginia, and in a little stream called Pigeon Creek, which flows into the river near Monongahela City. As the collecting was done with a small twelve-foot seine, the smaller or more common shallow-water species constitute the chief part of the collection.

The common names given are those in local use. The numbers in parentheses refer to Dr. Jordan's Catalogue of North American Fishes.* All the specimens of this collection are now in the museum of the Indiana University, Bloomington, Ind.

1. *LEPISOSTEUS OSSEUS* (Linnæus). (107.)
Gar Pike.
Abundant at Lock No. 9.
2. *NOTURUS FLAVUS* Rafinesque. (119.)
Found to be common in Pigeon Creek.
3. *ICTALURUS FUNCTATUS* (Rafinesque). (134.)
Channel Cat.
One specimen taken at Lock No. 9; very common in the river at Monongahela City.

* A Catalogue of the Fishes known to inhabit the waters of North America, North of the Tropic of Cancer, with notes on the species discovered in 1883 and 1884. By David Starr Jordan, Washington.

4. *ICTALURUS FURCATUS* (Cuvier & Valenciennes). (135.)
Two specimens secured at Lock No. 9.
5. *ICTIOMUS VELIFER* (Rafinesque). (148.)
Carp Sucker.
One seen at Lock No. 9; common at Monongahela City.
6. *CATOSTOMUS TERES* (Mitchill). (170.)
Common Sucker.
Common in Pigeon Creek.
7. *CATOSTOMUS NIGRICANS* Le Sueur. (171.)
"Mullet;" Stone-Roller.
Abundant at all places visited.
8. *MOXOSTOMA MACHOLEPIDOTUM* (Le Sueur). (185.)
White Sucker.
Very common everywhere.
9. *CAMPOSTOMA ANOMALUM* (Rafinesque). (219.)
Rather common in Pigeon Creek; a few taken in the river at Lock No. 9.
10. *PIMEPHALES NOTATUS* (Rafinesque). (219.)
Taken from the river at Monongahela City; not common.
11. *CLIOLA VIGILAN* Baird & Girard. (223.)
Abundant at all places scined.
12. *NOTROPIS DELICIOSUS STRAMINEUS* (Cope). (233b.)
Only one specimen taken.
13. *NOTROPIS HUDSONIUS* (Clinton). (246, 246b.)

Clupea hudsonia Clinton, Ann. Lyc. Nat. Hist., N. Y., I, 49, pl. 2, fig. 2, 1824 (Hudson River).

Leuciscus hudsonius DeKay, Nat. Hist. N. Y., 206, pl. 34, fig. 109, 1842 (Hudson River). Agassiz, Lake Superior, 372, 1850, (Lakes Superior and Huron). Storer, Synopsis Fish., 400, 1845. Günther, Cat. Fish., VII, 251, 1868.

Hypopsis hudsonius Cope, Proc. Acad. Nat. Sci. Phila., 1864, 279 (Michigan). Cope, Cypr. Penn., 386, 1866 (Delaware River). Abbott, Am. Naturalist, VIII, 1874, 332 (Delaware River). Nelson, Bull. Ill. Mus. Nat. Hist., I, 46, 1876. Forbes, Bull. Ill. Lab. Nat. Hist., 82, 1888. Uhler and Lugger, Fishes Md., 149, 1876 (Patapsco River).

Alburnops hudsonius Jordan, Cat. Fresh Water Fish N. A., 419, 1878. Jordan, Ann. N. Y. Acad. Sci., 1877, I, 109 (Delaware River). Jordan, Bull. Ill. Mus. Nat. Hist., II, 56, 1878. Jordan, Man. Vert., 220, 1880.

- Cliola hudsonius* Jordan & Gilbert, Synopsis, 171, 1883.
- Notropis hudsonius* Forbes, Rept. Ill. Fish Comm., 1884, 77. Cragin, Bull. Washburn Coll. Lab. Nat. Hist., I, 108, 1885 (Wild Cat Creek). Jordan, Cat. Fish. N. A., 24, 1885.
- Hybopsis storerianus* Cope, Proc. Acad. Nat. Sci. Phila., 1864, 209 (Michigan). Cope, Cypr. Penn., 386, 1866 (Delaware and Potomac Rivers). Jordan, Geol. Rept. Ind., 1874. Nelson, Bull. Ill. Mus. Nat. Hist., I, 46, 1876.
- Leuciscus storerianus* Günther, Cat. Fish., VII, 250, 1868 (Susquehanna River).
- Alburnops storerianus* Jordan, Cat. Fresh Water Fish. N. A., 419, 1878.
- Hudsonius storerianus* Jordan, Man. Vert., 200, 1880.
- Cliola storeriana* Jordan & Gilbert, Synopsis, 171, 1883.
- Hudsonius fluviatilis* Girard, Proc. Acad. Nat. Sci. Phila., 1850, 200 (Chicago). Jordan, Man. Vert., 290, 1880.
- Hudsonius amarus* Girard, Proc. Acad. Nat. Sci. Phila., 1850, 200 (Potomac River).
- Hybopsis amarus* Cope, Fresh Water Fish. N. C., 460, 1877 (Catawba River).
- Alburnops amarus* Jordan, Ann. N. Y. Acad. Sci., 1877, I, 109 (Ocmulgee River). Jordan, Cat. Fresh Water Fish. N. A., 419, 1878.
- Notropis hudsonius amarus* Jordan, Cat. Fish. N. A., 24, 1885.
- Hybopsis phaëna* Cope, Proc. Acad. Nat. Sci. Phila., 1864, 270 (Delaware River). Abbott, Am. Naturalist, VIII, 1874, 333 (Delaware River).
- Alburnops saludanus* Jordan & Brayton, Bull. U. S. Nat. Mus., XII, 16, 1878 (Saluda and Catawba Rivers). Jordan, Cat. Fresh Water Fish. N. A., 419, 1878 (Santee Basin).
- Cliola saludana* Jordan & Gilbert, Synopsis, 170, 1883 (Santee Basin).
- Luxilus selene* Jordan, Bull. U. S. Nat. Mus., X, 60, 1877 (Bayfield, Wis.). Jordan Ann. N. Y. Acad. Sci., 1877, I, 110, (Lake Superior). Jordan, Man. Vert., 293, 1880.
- Minnilus selene* Jordan & Gilbert, Synopsis, 188, 1883 (Lake Superior).
- Hudsonius euryopa* Bean, Proc. U. S. Nat. Mus. 1879, 285 (McBean Creek, Ga.).
- Cliola euryopa* Jordan & Gilbert, Synopsis, 171, 1883 (Savannah River).

Habitat.—Great Lakes east and southward to Georgia and Alabama. Lakes Superior, Michigan and Huron; Hudson River; Delaware River; Susquehanna River; Patapsco River; Potomac River; Catawba River; Ocmulgee River; Saluda River; McBean Creek, Ga.; Savannah River; Kankakee River; Manhattan, Kans.

We have compared specimens of *hudsonius* and the supposed *amarus* from different localities and believe them to be identical. An examination of the teeth of a number of specimens shows that the difference, 1, 4-4, 0 or 1, and 2, 4-4 2 or 1, is too variable to be considered a reliable character. The caudal spot, prominent in the young, is most persistent in those specimens from sluggish and reedy streams, and we are convinced that this and other color characters depend simply upon the nature of the streams which the particular individuals inhabit.

We have examined numerous specimens from the following localities: Potomac River, U. S. Fish Comm. Carp Ponds, Kankakee River, Lake Michigan, Manhattan, Kans., and the Monongahela.

In this connection we wish to say that an examination of considerable material leads us to agree with Profs. Jordan and Gilbert in making *Ceratichthys lucens* equal to *Rutilus storerianus* Kirtland. Among the specimens examined, is one which was collected by Prof. Baird and Dr. Kirtland in Yellow Creek, Ohio, in August, 1853. In this specimen, the barbel is very evident. The synonymy of these species has been greatly confused heretofore, and it is with the hope of clearing up the confusion as much as possible that we have given the synonymy of *N. hudsonius* so far as we have been able to determine it.

14. *NOTROPIS WHIPPLEI* (Günrd). (261.)
Very common at all places seined.
15. *NOTROPIS MEGALOPS* (Rafinesque). (273.)
Siverside.
Very common everywhere.
16. *NOTROPIS JEJUNUS* (Forbes). (288.)
But two specimens from Lock No. 9. These we have compared with Forbes's type and find them identical.
17. *NOTROPIS ATHERINOIDES* Rafinesque. (308.)
Two specimens.
18. *NOTROPIS RUBIFRONS* (Cope). (310.)
The collection contains but two specimens, which are from Pigeon Creek.
19. *ERICYMBA BUCCATA* Cope. (314.)
Three specimens in the collection.

20. *RHINICHTHYS ATRONABUS* (Mitchill). (321.)
A single specimen from Pigeon Creek. Others were seen, however.
21. *HYPOPSIS STORERIANUS* (Kirtland). (330.)
Abundant in the river. There is little doubt that this species equals
Ceraticichthys lucens Jordan.
22. *SEMOTILUS ATROMACULATUS* (Mitchill). (347.)
Chub.
Very abundant in Pigeon Creek.
23. *DORONOMA CREPIDIANUM* (Le Sueur). (455.)
Abundant in the river.
24. *PERCOPSIS GUTTATUS* Agassiz. (532.)
Very common in the river.
25. *POMOXIS ANNULARIS* Rafinesque. (842.)
Calico Bass.
Very common.
26. *POMOXIS GRAPHOIDES* (Lacépède). (848.)
Calico Bass.
Found in about equal numbers with the preceding.
27. *AMBLOPLITES RUPESTRIS* (Rafinesque). (845.)
Red eye ; Goggle eye.
Abundant in the creek, less so in the river.
28. *MICHOPTERUS DOLOMIEI* (Lacépède). (877.)
Small-mouthed Black Bass.
Abundant in the river.
29. *ETHEOSTOMA PELLUCIDUM* Baird. (880.)
Common everywhere in suitable places.
30. *ETHEOSTOMA NIGRUM* Rafinesque. (885d.)
One of the most abundant darters of the locality.
31. *ETHEOSTOMA BIENNIODES* Rafinesque. (894.)
Not very common.
32. *ETHEOSTOMA CAPRODES* Rafinesque. (899.)
Very common, especially at Lock No. 9.
33. *ETHEOSTOMA PHOXOCEPHALUM* Nelson. (901.)
The collection contains four specimens, all from Lock No. 9.
34. *ETHEOSTOMA VARIATUM* Kirtland. (912.)

Little, if anything, was known of this interesting darter since

1840, when it was first described by Dr. Kirtland, until recently. Two specimens were obtained April 25, 1885, by Mr. Amos W. Butler, at Brookville, Indiana; and a day later, Prof. Charles H. Gilbert obtained a specimen from lower down in the same river, —the Whitewater. The collection made by Mr. Bollman contains a single specimen which he obtained from the Monongahela, about one-half mile below Lock No. 9. This specimen is 1½ inches in length, and does not differ materially from the Brookville specimens. A full description of the Brookville specimens was published by Dr. Jordan in the Proceedings of the United States National Museum for 1885, pp. 163-165.

35. *ETHEOSTOMA ZONALE* (Cope.) (910.)

Zoned Darter.

But one specimen of this darter was obtained.

36. *ETHEOSTOMA FLABELLARE* Rafinesque. (923.)

Fan-tail Darter.

Very abundant everywhere.

37. *ETHEOSTOMA CÆRULEUM* Storer. (936.)

Rainbow Darter.

Perhaps the most abundant darter in the Monongahela.

38. *STIZOSTEDION VITREUM* (Mitchell). (948.)

Yellow Pike.

Only one specimen taken in the river at Monongahela City.

39. *APLODINOTUS GRUNNIENS* Rafinesque. (1083.)

White Perch.

This species was abundant in the river.

40. *COTTUS RICHARDSONI* Agassiz. (1820.)

Miller's Thumb.

Not very common; two or three specimens were obtained at Lock No. 9.

INDIANA UNIVERSITY,

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