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ON SOME COLLECTIONS OF
FISHES

BY

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CHICAGO, U. S. A.

June, 1896.

PUBLICATIONS OF THE MUSEUM.

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FREDERICK J. V. SKIFF,
Director.

ON SOME COLLECTIONS OF FISHES MADE IN THE KANKAKEE AND ILLINOIS RIVERS.

O. P. HAY, PH.D.

The fishes referred to in this paper were collected during brief trips made in the summer of 1895. The localities visited were Water Valley, Lake county, Indiana, at the crossing of the Monon railroad; Momence, Kankakee county, Illinois, on the Kankakee River; and Havana, Mason county, Illinois, on the Illinois River. At the first two places the collections were made by means of a fine-meshed minnow net. At Havana most of the fishes were obtained from the large seines of the various fishermen, although some use was made of the minnow net.

COLLECTION MADE AT WATER VALLEY, LAKE COUNTY, INDIANA.

1. *Amia calva* Linn. BOW-FIN. DOGFISH.

2. *Noturus gyrinus* (Mitch.). STRIPED STONE CAT.

Three individuals of this species were taken. These fishes are as disagreeable to handle as bumblebees. The wounds inflicted by their sharp spines are very painful.

3. *Ameiurus natalis* (Le S.). YELLOW CAT.

One cat-fish having a length of eleven inches is referred to this species, although some doubt is occasioned from the fact that nearly the whole of the anal fin had recently been bitten off deep into the flesh.

4. *Catostomus melanops* Raf. STRIPED SUCKER.

Minytrema melanops, Jordan.

Eleven specimens of this species were taken, all having a length of four inches, including the tail fin. The longitudinal lines formed by spots on the scales are quite distinct. The upper surface is dusky, with suggestions of a darker cross-band at the front of the dorsal fin, another just behind the dorsal, and a third a little further back.

In all these specimens, which like all the fishes described in this paper, were preserved in "formalin," there is seen a bright yellow band running from the snout through the eye to the tips of the caudal rays. Considerable yellow is also seen about the bases of the pectoral fins and on the belly. However, since I have neither observed this yellow in other specimens of this fish, nor seen mention made of it, and, furthermore, find unexpectedly in some other species yellow markings similarly distributed, I have come to regard it as due in some way to the action of the formalin.

5. *Catostomus sucetta* (Lac.). CHUB SUCKER.

Erimyzon sucetta, Jordan.

Seven individuals are in the collection. Of these the largest has a total length of $4\frac{3}{4}$ inches; the smallest $2\frac{7}{8}$ inches. In all but the smallest specimen, the dark lateral band is broken up into more or less distinct blotches, and in some there are indications of dusky cross-bands.

6. *Pimephales notatus* (Raf.).

This species was abundant. In all of the nine specimens saved there is a very distinct lateral dark band, terminating behind in a black caudal spot.

7. *Notropis heterodon* (Cope).

Numerous specimens of this handsome, but rather puzzling species were captured. In all, the lateral band is black and terminates in front on the snout and upper lip. There is also a line of jet-black specks running from the vent to the base of the caudal fin. In some cases, probably all, the teeth are 2, 4—4, 2. Is it not possible that this is the normal number and that the two inner teeth, when not seen, have been shed and not yet replaced, or have been broken away in the process of extracting the bones? It sometimes requires very close observation with a good microscope to discover that the inner teeth have only recently been removed.

8. *Notropis hudsonius* (De Witt Clinton). SPAWN-EATER.

This species appears to be common in the Kankakee river.

9. *Notropis megalops* (Raf.). SHINER. RED-FIN.

Abundant.

10. *Notemigonus chrysoleucus* (Mitch.). GOLDEN SHINER.

Five specimens taken, the largest $3\frac{1}{2}$ inches in total length. The descriptions of this fish do not usually at most, state that there

is sometimes present a dusky lateral band. It is present in all the specimens that I have taken in the Kankakee. It is most distinct in the posterior half of the body. It seems to disappear in adult life.

11. *Fundulus notatus* (Raf.). TOP-MINNOW.
Zygonectes notatus auctorum.
A single specimen.
12. *Fundulus dispar* (Ag.).
Zygonectes dispar auctorum.
Twenty individuals taken.
13. *Lucius vermiculatus* (Le S.). LITTLE PICKEREL.
Six specimens.
14. *Labidesthes sicculus* Cope. BROOK SILVERSIDE.
Many specimens.
15. *Aphredoderus sayanus* (Gilliams). PIRATE PERCH.
Many specimens.
16. *Pomoxys sparoides* (Lac.). CALICO-BASS. GRASS-BASS.
Four individuals.
17. *Chænobryttus gulosus* (C. & V.). WAR-MOUTH. RED-EYED
BREAM.
One specimen.
18. *Lepomis pallidus* (Mitch.). BLUE SUNFISH.
Two specimens. One of the commonest sun-fishes.
19. *Lepomis gibbosus* (Linn.). PUMPKIN-SEED.
Six specimens; some small, one eight inches in total length.
20. *Micropterus salmoides* (Lac.). LARGE-MOUTHED BLACK BASS.
Six specimens, all small.
21. *Boleosoma nigrum* (Raf.). JOHNNY.
Seven specimens were taken of this widely distributed darter.
22. *Etheostoma zonale* (Cope).
A single specimen. This is a rather rare species, it having been found up to this time, in Indiana, in only some half a dozen localities.

23. **Etheostoma aspro** (*Cope & Jord.*). BLACK-SIDED DARTER.
Percina aspro, Boulenger.

Nine specimens of this beautiful darter were secured.

24. **Etheostoma microperca** (*Jord. & Gilb.*). LEAST DARTER.

A single specimen of this species was taken. It is one of the smallest of fishes.

COLLECTION MADE AT MOMENCE, ILLINOIS.

1. *Noturus gyrinus* (*Mitch.*). STRIPED STONE CAT.
A single specimen.
2. *Ictiobus velifer* (*Raf.*). QUILL-BACK. RIVER CARP.
Two individuals, the largest having a length of $5\frac{3}{4}$ inches.
3. *Catostomus teres* (*Mitch.*). WHITE SUCKER.
A single small specimen.
4. *Catostomus nigricans* *Le S.* HOG SUCKER. HAMMER-HEAD.
One specimen four inches long.
5. *Catostomus melanops* *Raf.* STRIPED SUCKER.
A single specimen of this species was taken, whose length is fourteen inches. The lateral line is developed on all the scales except one or two of the hindermost. The fins are all dusky in color. The mucus pores on the head are very conspicuous.
6. *Moxostoma duquesnei* (*Le S.*). RED HORSE.
One specimen having a length of three inches.
7. *Pimephales notatus* (*Raf.*).
Many specimens taken. A young fish $1\frac{1}{3}$ inches in total length is slenderer and of a paler color than the fully grown adults. Its lateral band and caudal spot are very dark.
8. *Notropis heterodon* (*Cope*).
Numerous specimens taken. They are in no way different from those taken in Indiana.
9. *Notropis hudsonius* (*De Witt Clinton*). SPAWN-EATER.
Six specimens.
10. *Notropis megalops* (*Raf.*). SHINER. RED-FIN.
Many specimens, ranging in total length from two to six inches.
11. *Ericymba buccata* *Cope*.
Ten specimens; abundant.

12. *Hybopsis kentuckiensis* (Raf.). HORNY HEAD. RIVER CHUB.
Nine individuals, ranging from $2\frac{1}{2}$ to $5\frac{1}{2}$ inches
13. *Notemigonus chrysoleucus* (Mitch.). GOLDEN SHINER.
A single specimen.
14. *Fundulus notatus* (Raf.). TOP-MINNOW.
Six specimens.
15. *Fundulus dispar* (Ag.).
Six specimens.
16. *Lucius vermiculatus* (Le S.). LITTLE PICKEREL.
Two specimens.
17. *Labidesthes sicculus* Cope. BROOK SILVERSIDE.
Seven examples secured.
18. *Aphredoderus sayanus* (Gilliams). PIRATE PERCH.
Only one taken.
19. *Pomoxys sparoides* (Lac.). CALICO BASS. GRASS BASS.
Two individuals, the largest $3\frac{1}{2}$ inches in total length.

20. *Ambloplites rupestris* (Raf.). GOGGLE-EYE.

Ten specimens were taken, the largest but little more than two inches to the tip of caudal fin. The six anal spines enable us to distinguish the young of this species from any of the other *Centrarchidæ*, except the species of *Pomoxys*. The relatively small number of soft anal rays enable the distinction to be made here. Besides the broad dark cross-bars, the specimens taken have very distinct dark longitudinal stripes, one on each row of scales.

21. *Chænobryttus gulosus* (C. & V.). WAR-MOUTH. RED-EYED BREAM.

One young individual having a total length of $2\frac{7}{8}$ inches. The dorsal fin begins distinctly behind the perpendicular line through the base of the pectoral. The sides of the body are adorned with large, dark, irregularly shaped blotches. Above the lateral line these form more or less defined cross-bars. Across the cheeks and opercles run longitudinal stripes of dusky. The vertical fins are mottled with the same color. The mottled coloration, the projecting lower jaw and the large eye, will probably enable observers to distinguish the young of this species, even when the teeth on the tongue and roof of the mouth cannot be demonstrated.

22. *Lepomis pallidus* (Mitch.). BLUE SUNFISH.
Two specimens.

23. *Lepomis megalotis* (Raf.). BIG-EARED SUNFISH.
Five examples were secured, which range in size from $2\frac{5}{8}$ to $3\frac{3}{8}$ inches total length. In the larger ones the opercular flap has begun to enlarge, but in the smaller specimens it is inconspicuous. In all the young specimens before me, including four from the Desplaines river, the black opercular flap is margined behind with a pale stripe, which was red in life. All the specimens, too, have a minutely spotted appearance, which arises from the fact that the center of each scale is dusky. In some cases there are also faint traces of six or eight narrow cross-bands on the sides. Longitudinal dark stripes are sometimes present on the cheeks, sometimes absent.

24. *Lepomis gibbosus* (Linn.). PUMPKIN-SEED.
A single specimen of this species, so common in the lake region, was secured.

25. *Micropterus dolomieu* Lac. SMALL-MOUTHED BLACK BASS.
Four specimens, varying from $2\frac{1}{2}$ to $4\frac{7}{8}$ inches, total length.

26. *Micropterus salmoides* (Lac.). LARGE-MOUTHED BLACK BASS.
A single individual.

27. *Etheostoma aspro* (Cope & Jord.). BLACK-SIDED DARTER.
Four specimens.

28. *Etheostoma microperca* Jord. & Gilb. LEAST DARTER.
Six specimens were obtained.

29. *Stizostedion vitreum* (Mitch.). WALL-EYE. JACK SALMON.
One specimen $8\frac{3}{4}$ inches long. Base of the pectoral fin with a dark spot.

COLLECTION MADE AT HAVANA, ILLINOIS.

1. *Lepisosteus platostomus* Raf. SHORT-NOSED GAR.

Six specimens were secured. It is a very abundant fish, and is heartily and justly despised by the fishermen. It must do an immense amount of damage in the way of destroying the valuable food fishes. Meanwhile its slender form permits it to escape through the meshes of any kind of seine that may be legally used.

2. *Amia calva* Linn. BOW-FIN. DOGFISH.

Common. Two were secured.

3. *Ictalurus punctatus* (Raf.). CHANNEL CAT. WHITE CAT.

Two specimens.

4. *Ameiurus natalis* (Le S.). YELLOW CAT.

Three specimens; Museum numbers, 341, 342, 344.

5. *Ameiurus nebulosus* (Le S.). BULLHEAD.

Three specimens; Museum numbers, 339, 340, 343.

6. *Ameiurus melas* Raf. BLACK CAT.

One specimen; Museum number, 345.

Of the seven specimens of the genus *Ameiurus* which were secured at Havana, some have been assigned as above with some doubts. No. 345 belongs to *A. melas*, in case this species is distinct from *A. nebulosus*. It has only 19 rays in the anal fin, and the base of this is contained in the length of the fish, to base of caudal fin, $4\frac{1}{3}$ times. No. 340 seems clearly to belong to *A. nebulosus*, its anal fin having 21 rays and its basis being contained in the length of the body $4\frac{2}{3}$ times. The color of the sides of the body is nearly uniform dark olive or blackish. Nos. 341, 342 and 344 appear quite as clearly to belong to *A. natalis*. No. 341 has 23 anal rays, anal basis in the body $3\frac{1}{3}$ times, and nearly uniform coloration. No. 342 has 25 anal rays, anal basis $3\frac{5}{8}$, and sides mottled with whitish. No. 344 has 25 anal rays, anal basis $3\frac{1}{2}$, and nearly uniform coloration.

Nos. 339 and 343 are most doubtful. The former has 22 or 23 anal rays, anal basis $3\frac{2}{3}$, coloration mottled, and the dorsal fin nearer the adipose than to the snout. The latter specimen, No. 343, has 22 anal rays, and basis $3\frac{2}{3}$, the coloration mottled and the dorsal

nearer to the adipose fin. Cases such as are described above are well adapted to arouse doubts as to the distinctness of the species *natalis* and *nebulosus*.

7. *Ictiobus cyprinella* (C. & V.). RED-MOUTHED BUFFALO.

A single individual was procured. It is a common fish in the river.

8. *Ictiobus bubalus* (Raf.). SMALL-MOUTHED BUFFALO.

Two specimens.

9. *Cliola vigilax* (B. & G.).

Three specimens were obtained. This species ranges from northern Indiana to southern Mississippi.

10. *Notropis heterodon* (Cope).

Eight specimens were secured. I have observed no differences between them and the specimens from the Kankakee River. The teeth of such as were examined were 2, 4--4, 2. The largest individual, 2 inches long, has a very distinct dark lateral band. The smaller ones, 1½ inch, are paler, with the lateral band indistinct, but with a conspicuous tail-spot.

11. *Notropis lutrensis* (B. & G.).

Seventeen specimens of this fine minnow were obtained. It is a very common little fish in the streams of Kansas and southward to the Rio Grande. It was found some years ago in southern Illinois, and was described by Dr. Jordan (Bull. Ill. Lab. Nat. Hist., Vol. II, p. 57, 1878) under the name of *Cyprinella forbesi*. Its discovery at Havana extends considerably northward its published range.

12. *Notropis umbratilis* (Girard).

Nine specimens. This is another species whose center of distribution lies toward the west and southwest. It had, however, been previously found in the State and described by Dr. S. A. Forbes, under the name of *Notropis macrolepidotus*. Although the Illinois specimens show some differences when compared with those from further west, they are probably not distinct. Those secured by me are small. Scales of the lateral line 40, of which 20 lie before the dorsal fin; anal rays 10; a dusky dorsal line made up of black specks; a lateral band of similar specks, the band being broadest and most distinct behind.

13. *Phenacobius mirabilis* (Girard).

Four specimens are in the collection. This species had been

found some years ago in streams in McLean county, but it is more abundant in Kansas and south to Texas.

14. *Notemigonus chrysolencus* (Mitch.). GOLDEN SHINER.

A single specimen only is in the collection. It is, however, without doubt abundant in this locality.

15. *Cyprinus carpio* Linn. GERMAN CARP.

Two small specimens of this fish were seined. Their presence in the river here shows how widely and thoroughly this species is becoming naturalized in our waters. The prospect is that it will yet become a great nuisance.

16. *Dorosoma cepedianum* (Le S.). HICKORY SHAD.

Eight specimens were taken. A fish at once abundant and worthless, except as food for other species.

17. *Anguilla anguilla* (Linn.). EEL.

Two specimens were seen in the possession of fishermen.

18. *Pomoxys sparoides* (Lac.). GRASS BASS.

Three specimens, about 7 inches long to base of the caudal fin, were obtained.

19. *Pomoxys annularis* Raf. CRAPPIE. BACHELOR.

Two specimens, 5 and 7 inches long to base of caudal, are in the collection. Dr. Boulenger, in his recently published "Catalogue of the Fishes in the British Museum," Vol. I, p. 7, has united this and the preceding species. I do not believe that this course is yet justifiable, although the two are very closely related. Furthermore, some of the characters which have been relied on to distinguish the two forms do not hold good. The profiles of the two species are not greatly, if at all, different, nor am I able to see that the snout of *P. annularis* projects more than that of the other. But *P. sparoides* has almost uniformly a more copious mottling of green on the body and the vertical fins, and there is one more dorsal spine. I believe, too, that the mouth of *P. sparoides* is slightly smaller and more oblique. The depth of the fish, as compared with the length, will also be found to be greater than in *P. annularis*.

20. *Chænobryttus gulosus* (C. & V.). WAR-MOUTH. RED-EYED BREAM.

One specimen.

21. *Lepomis pallidus* (Mitch.). BLUE SUNFISH.

Five specimens of this common fish are in the collection. One

with a total length of eight inches is everywhere a dull blue, including the fins; the sides below the lateral line relieved by the pale edges of the scales. In earlier life the general color is quite pale, then justifying the specific title *pallidus*. The young, 2 and 2½ inches long, are decidedly pale, but with more or less distinct dusky bands across the sides. The black spot on the last rays of the soft dorsal is usually more or less distinct in the young down to about two inches in length. The opercular flap is devoid of a pale edge.

22. *Lepomis garmani* Forbes. GARMAN'S SUNFISH.

Four specimens of this species were obtained. The largest has a length, from the snout to the base of the caudal, of 5¼ inches; the others are but a trifle smaller. They are somewhat larger than the original specimens described by Dr. Forbes. A comparison of my specimens with published descriptions, as that of Dr. Jordan in his "Manual of Vertebrates" and that of Mr. C. H. Bollman in his "Review of the *Centrarchidae*," shows some differences, which are perhaps due to their larger size. The general color is that described. The chin, throat, snout, and interorbital space are dull blue. In all my specimens there is a distinct pale spot just above the opercular flap, and this spot may originally have been orange. The longitudinal rows of orange spots are very distinct, and they are continued down on the belly, and are about a dozen in number. At the base of the caudal fin there is a perpendicular dusky bar, followed by one of orange. The opercular spot is much larger than the eye and is adorned above and below by a pale margin. This is continued around the hinder border of the spot, but is here very narrow. Snout equal to, or longer than, the diameter of the eye. Pectoral fins very short and obtuse, reaching backward only to a perpendicular through the vent. Ventrals in some specimens reaching the anal fin; in others, falling considerably short of it. Head in the length 3; depth 1¾.

This species has up to this time been taken in southern Illinois and southern Indiana. It is said by Mr. Bollman to have been taken in the Illinois River valley, but I do not know where.

23. *Lepomis gibbosus* (Linn.). PUMPKIN SEED.

Two specimens each 6½ inches in total length were obtained. I am not aware that this species has hitherto been reported in Illinois south of Peoria. In Indiana, it has been captured as far south as Vincennes.

It is difficult to distinguish the young of this fish, 2 to 2½ inches in length, from those of *L. pallidus*. The dark color on the sides

tends, in the latter species, to arrange itself in cross-bands; in the former, more in longitudinal rows of spots. *L. gibbosus* may even have a little mottling on the hinder dorsal rays, which simulates that on the dorsal of *L. pallidus*.

24. ***Micropterus salmoides* (Lac.).** LARGE-MOUTHED BLACK BASS.

Many fine specimens of this fish were seen in the catches of the fishermen.

25. ***Etheostoma jessiae asprigine* (Forbes).**

(*Pæcilichthys aspriginis*, Forbes in Jordan's Cat. of the Fishes of Illinois, 1877, p. 41).

Three specimens of this little fish were secured, the largest of which has a total length of $1\frac{3}{8}$ inches. My specimens are in some respects different from published descriptions of this form. The cheeks and opercles are scaly and the lateral line is incomplete. The fin formula is D. X, 12; A. II, 7. The soft anal rays are thus somewhat reduced in number. The scales are 5-53-8. Head rather long, in the length to caudal $3\frac{2}{3}$ times. Depth in the length $4\frac{1}{2}$. The dusky color on the sides assumes the form of squarish blotches, about a dozen in number from the head to the tail. From these the color, more faintly developed, runs upward and downward, so as to produce cross-bands.

26. ***Perca flavescens* (Mitch.).** YELLOW PERCH. RINGED PERCH.

A single specimen having a total length of $6\frac{1}{2}$ inches was secured. In Illinois this species has been reported from the Illinois River at Pekin. In the Wabash River it has been taken as far south as Terre Haute. I was told by a fisherman at Havana that he had seen this perch at Meredosia, sixty miles further down the Illinois River.

27. ***Morone interrupta* Gill.** YELLOW BASS.

Three specimens were obtained. Two were adults, and one a young fish having a total length of a little less than two inches. This is very pale in color, with only feeble indications of the longitudinal stripes on the upper half of the body.

The yellow bass is especially an inhabitant of the lower Mississippi valley, but it has been taken as far north in the Illinois River as Henry (Jordan, Cat. of the Fishes of Illinois).

28. ***Roccus chrysops* (Raf.).** WHITE BASS.

One specimen, nine inches long, total length, was secured. This is a fish of northern range, being common in the Great Lake region.

In Dr. Jordan's "Catalogue of Illinois Fishes" it has been reported as having been taken at Henry, on the Illinois River, and at Quincy, on the Mississippi.

29. *Aplodinotus grunniens* (Raf.). WHITE PERCH. DRUM.

Two specimens. A common fish.

I take pleasure in acknowledging my obligations to Dr. S. A. Forbes, and his assistants connected with the Biological Station maintained at Havana, for information and assistance rendered me during my stay at that place.

SKULL OF *TOXOCHELYS LATIROSTRIS* COPE

PLATE XIV.

Skull of *Toxochelys latiremis* Cope.

View from above.

- dp. Descending process of parietal.
- ex. Exoccipital.
- ju. Portion of jugal.
- mx. Maxillary.
- par. Paroccipital.
- pmx. Premaxillary.
- pro. Proötic.
- pt. Pterygoid.
- qu. Quadrate.
- so. Superoccipital.

SKULL OF *TOXOCHELYS LATIREMIS* COPE.

SKULL OF *TOXOCHELYS LATIREMIS* COPE.

PLATE XV.

Skull of *Toxochelys latiremis* Cope.

View from below.

- eo. Exoccipital.
- mx. Maxillary.
- pal. Palatine.
- par. Paroccipital.
- pmx. Premaxillary.
- pt. Pterygoid.
- qu. Quadrate.

SKULL OF TOXOCHELYS LATIREMIS COPE.

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