

NOTES ON THE FISHES OF SWITZ CITY SWAMP, GREENE COUNTY, INDIANA.

By CHAS. H. GILBERT.

A short distance south of Switz City, Greene County, Indiana, is a low-lying treeless "prairie," of circular outline, and from two to four miles in diameter. During the winter and spring this tract is overflowed to a considerable depth, and in seasons of unusually high water it has free communication with the West Fork of White River, which flows near it. When visited by the writer during the last week of August, 1883, water covered most of the swamp to a depth of less than a foot, most of the fishes having been obliged to retire to a narrow, ditch-like depression near its middle. Here they were gathered in such numbers that the farmer lads of the vicinity were catching fine strings of black bass and sunfish, and still larger strings of "pond-fish" (*Amia*) by thrusting a pitch-fork rapidly and at random through the muddy water.

The species enumerated below may serve as some indication of the fauna characterizing the numerous swamps and bayous of Southwestern Indiana. Of the fourteen species obtained, one is thought to be new, and five are here for the first time recorded as occurring abundantly in Indiana.

1. *Amia calva* Linn.

Found in great numbers in this and all other swamps and bayous along the lower course of White River. This fish has the reputation of being totally unfit for food, but I was assured by the boys who were taking them home that, although not very good, they were still good enough to eat. I also saw a string of them sold for a good price to a (perhaps unsophisticated) inhabitant of Switz City. The species is universally known in Greene County as the "Pond-Fish."

2. *Amiurus melas* Raf.

3. *Amiurus nebulosus marmoratus* Holbrook.

Numerous specimens from 5 to 10 inches long, all showing very conspicuously the characteristic coloration of this form.

Head dusky; sides of body, and all the fins, sharply mottled with silvery-white, greenish, and dusky.

Head  $3\frac{1}{2}$  in length; depth  $3\frac{2}{3}$ . A. 22.

Body deep, closely compressed, the back much elevated; profile rising rapidly in a straight line from snout to base of dorsal spine. Head not broad, comparatively little depressed, narrowing rapidly forwards, the snout sharp and conical. Mouth narrow, the two jaws equal, the distance between the bases of the maxillaries equaling about  $\frac{1}{3}$  length of head. Maxillary barbel reaching end of basal fourth of pectoral spine.

Eye large,  $4\frac{1}{2}$  in interorbital width, which is slightly more than half length of head. Front of dorsal about equidistant between tip of snout and front of adipose fin, the spine less than half length of head by diameter of pupil. Pectoral spine slightly more than half length of head. Base of anal  $\frac{1}{4}$  length of body. This specimen (10 inches long) seems to differ from those previously described in its shorter spines.

The significance of the marmorations of this form is not yet certainly known, and no other characters have been pointed out separating it from *nebulosus*, which is itself often obscurely mottled. Until more light is thrown upon the question, we may distinguish the sharply marmorated form as a subspecies. The *marmoratus* has been recorded by Professor Forbes from Southern Illinois, but has not before been reported from Indiana.

#### 4. *Ictiobus bubalus* Raf.

Several specimens of this species were seen, none of them adult. An example, one foot long, shows the following characters:

Dusky brownish above and on sides, light below. Fins blackish.

Head  $3\frac{3}{4}$  in length; depth  $2\frac{4}{5}$ . D. I, 25; A. II, 9. Lat. l.  $38\frac{8}{6}$ .

Back strongly carinate from occiput to front of dorsal, the anterior profile well arched, much more so than ventral outline.

Upper lip very thin, finely and evenly plicate; lower lip thicker, also plicate, the folds much broken into papillæ. Mandible very obliquely set, its length about equaling snout,  $3\frac{1}{2}$  in head. Opercle wide,  $2\frac{1}{3}$  in head, with strong striæ radiating from its upper anterior angle. Eye small, 6 in head, its center at the end of first  $\frac{1}{3}$  of head. Interorbital width  $1\frac{6}{7}$  in head.

Front of dorsal about midway of body, falling slightly in advance of base of ventrals; anterior rays elevated, about  $\frac{1}{2}$  length of base of fin,  $1\frac{2}{7}$  in head. Last dorsal ray over middle of anal, the first rays of which reach base of caudal. Pectorals not reaching ventrals,  $1\frac{2}{7}$  in head; ventrals equaling pectorals, not nearly reaching vent.

#### 5. *Erimyzon sucetta* Lac.

Not very abundant.

#### 6. *Notropis heterodon* Cope.

The specimens on which the following description is based are referred with doubt to the *Hemitremia heterodon* of Cope. The characters shown by them are very different from those assigned to *heterodon*, inasmuch as the lateral line is complete, the teeth 2-4-4-2, and the snout sharp, with a terminal mouth. A large amount of material in the Illinois Laboratory of Natural History, taken from the streams of Illinois, shows such a complete gradation between the two forms, however, that I do not venture at present to assign specific rank to that represented by my specimens.

Body slender, compressed, the back little elevated, rising from snout to front of dorsal. Head small; snout short and rather sharp, slightly

decurved. Mouth terminal, small, oblique, the maxillary barely reaching vertical from front to orbit, equaling length of snout, which is 4 in head. Eye large, very slightly longer than interorbital width, 3 in head. Teeth (in the three specimens examined) uniformly 2-4-4-2, with strong groove-like grinding surface, the sharp edges of the grooves finely denticulated on three of the teeth.

Ventrals inserted under second or third ray of dorsal, the origin of which is constantly slightly nearer snout than base of middle caudal rays. Longest dorsal ray about  $\frac{4}{5}$  length of head, twice the length of the base of the fin, and three times the length of the last ray. Caudal longer than head. Pectorals not nearly reaching ventrals, the latter about to vent.

Scales not crowded, the exposed surface little higher than long, 13 in front of dorsal fin. Lateral line, complete, very little decurved anteriorly where it runs along the lower edge of the dark lateral stripe.

Head 4 in length; depth,  $4\frac{2}{3}$ ; D. 8; A. 7; L. lat., 37.

Head dusky above; back with outlines of scales rendered conspicuous with dusky specks; a faint dark vertebral line, usually double in front of dorsal, single behind. Sides and below light, with some silvery luster, but the sides without distinct silvery streak; a dusky streak along middle of sides ends in a black spot at base of caudal, and extends anteriorly across opercles and around snout. This streak is composed of minute black dots, some of which are clustered around the pores of the lateral line rendering these very conspicuous. A series of specks along base of anal, continued as a double series along lower edge of caudal peduncle to tail. Fins unmarked.

Three specimens, each about two inches long.

#### 7. *Notemigonus chrysoleucus* Mitch.

Abundant.

Maxillary equaling diameter of eye, 4 in head. A. 13. Lateral line 50.

#### 8. *Zygonectes dispar* Agassiz.

Found occurring in myriads everywhere in the shallow waters of the swamp. The differences in coloration of males and females were sharply marked. The largest specimens seen were about two inches long. There is a small dark blotch in front of upper rim of orbit, not extending much beyond nostrils; the dark blotch below eye is very conspicuous, and covers nearly all of cheek.

This species had previously been taken in Central and Southern Illinois, and in Northern Indiana.

#### 9. *Esox vermiculatus* Le Sueur.

Very abundant. Coming from the swamp, these specimens are very dark, the dark markings on back and upper part of sides confluent, these regions uniform greenish black. A narrow black streak backward from eye, as well as that leading forward, and the conspicuous

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vertical bar. Anterior dorsal rays reddish. D. IV, 12 or 13. B. 11, 12 or 13.

**10. *Pomoxys sparoides* Lac.**

Not abundant.

**11. *Chænobryttus gulosus* C. & V.**

Taken in great numbers; the most abundant sunfish in the swamp. Males marked with bright coppery-red on sides, the females light greenish-yellow. This species occurs, but not abundantly, in Northern Indiana and Illinois, and is very common in Southern Illinois.

**12. *Lepomis pallidus* Mitch.**

Abundant.

**13. *Micropterus salmoides* Lac.**

Abundant.

**14. *Pæcilichthys palustris*, sp. nov.**

Allied to *Pæcilichthys eos*, Jordan & Copeland.

Color in life, olivaceous, much mottled with brownish; 11 or 12 cross-blotches of bright green on back, and an equal number on middle of sides the two series separated by a light streak along lateral line; belly dusky. Cheeks dusky greenish, with a black blotch below eye. Membrane of spinous dorsal mostly black on basal half; above this a translucent streak, then a yellowish-red series of spots. Second dorsal and caudal marked with dusky. In spirits the green blotches on sides appear blackish.

Head  $3\frac{1}{2}$  or  $3\frac{2}{3}$  in length; depth 6; D. IX or X — 10; A. II, 6; Lat. l., 50 to 52 (20 or 21 pores).

Body very slender, terete, little compressed; caudal peduncle especially long and slender, its length behind anal three times its depth. Head but little compressed, nearly as wide as high; snout short and rather blunt, not at all overhanging the small oblique mouth; premaxillaries on a level with lower edge of pupil; maxillary reaching beyond front of orbit,  $3\frac{2}{3}$  in head. Premaxillaries not protractile. Breast, snout, and top of head naked, cheeks and opercles closely scaled. Eye very large,  $3\frac{1}{3}$  in head; snout  $5\frac{1}{2}$  in head, the interorbital width less than length of snout, concave.

Dorsals well separated, short, the distance from origin of spinous dorsal to end of soft dorsal equaling one-third total length; highest, dorsal spine  $2\frac{1}{3}$  in head. Caudal rounded,  $1\frac{2}{3}$  in head; length of caudal peduncle  $3\frac{1}{4}$  in body. Anal spines very small, the second smaller than the first, (in one specimen obscure.)

Scales very strongly ctenoid, present everywhere except on top of head, snout, breast, and a very narrow streak in front of dorsal. Lateral line with a rather weak arch anteriorly, the pores continuing on 20 or 21 scales, discontinued about under base of last dorsal spine.

Two specimens (probably males) were picked out of the mud in the bag of the seine.

INDIANA UNIVERSITY, *May 10, 1884.*

## REMARKS ON THE SPECIES OF THE GENUS *CEPPHUS*.

By **LEONHARD STEJNEGER.**

The following papers were originally prepared for publication separately. When the last one was finished they were found to constitute a kind of monograph of the genus *Cepphus*, and it was therefore thought more useful to have them published together under one heading. The occasional repetitions are thus accounted for.

For the sake of completeness, the synonymy of the generic name is here added.

### *Cepphus* PALLAS.

- < 1758.—*Alca* LIN., Syst. Nat., 10 ed., I, p. 130.
- < 1760.—*Uria* BRISS., Orn. VI, p. 70.
- < 1766.—*Colymbus* LIN., Syst. Nat., 12 ed., I, p. 220.
- < 1769.—*Cepphus* PALL., Spic. Zool., V, p. 33 (type *C. lacteolus*).
- = 1819.—*Grylle* LEACH, in Ross's Voy. Discov. N. W. Pass., App., p. LI (type *G. scapularis* LEACH).

### I.—*CEPPIUS* MOTZFELDI (BENICKEN).

I wish to call the attention of ornithologists, and especially those in North America, to the fact that, in all probability, a black-winged Guillemot occurs in the North Atlantic, having mostly been overlooked or regarded as a melanotic phase of the Common Guillemot since its first discovery sixty years ago. It would be exceedingly interesting to ascertain the status of the alleged species, a question of special concern to American ornithologists since the type was received from Greenland.

The information at hand is very scanty and the sources of rather difficult access to many ornithologists; even Prof. A. Newton failed in finding one of the original descriptions. I therefore intend to give in the following a complete extract of all that has been written about the matter, as far as it is known and accessible to me, believing that such a bringing together of all the material may facilitate the work of future investigators, and hoping that it may stimulate to further research when it is seen how little is known about a bird inhabiting the seas between North America and Europe.

In a paper entitled "*Beyträge zur nordischen Ornithologie*" (=Contributions to Northern Ornithology) and published in the August num-