

9.—NOTES ON THE STREAMS AND FISHES OF CLINTON COUNTY, KENTUCKY, WITH A DESCRIPTION OF A NEW DARTER.

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Clinton County is one of the smallest counties in Kentucky, having an area of only about 206 square miles. It lies between the Cumberland River (to which all of its streams are tributary) and the Tennessee State line, and between the counties of Wayne on the east and Cumberland on the west. Albany is the county seat.

The surface is hilly and much broken by the deeply cut valleys of the water courses. The central Poplar Mountain range, together with a series of much lower elevations, form a watershed extending in a general northwest and southeast direction, dividing the county into two nearly equal areas. On the north of this watershed the drainage is by means of Indian and Willis creeks directly into the Cumberland River; on the south by means of Spring and Ill-will creeks into Wolf River, thence through Obeys River into the Cumberland, at Celina, Tennessee.

PRINCIPAL STREAMS OF THE NORTHERN WATER SYSTEM.

Indian Creek rises at the foot of Poplar Mountain, 4 miles northeast of Albany, flows 9 miles in a northerly direction, and empties into the Cumberland River in Russell County. It receives numerous tributaries and, in connection with Willis Creek, drains nearly the whole of the northern half of the county. The bottom lands in the upper courses are narrow and densely wooded, while in the middle and lower courses they are wider and under cultivation, and are bordered by high sloping bluffs. The channels of the tributaries are mostly through solid limestone, covered with loose, irregular rock and boulders which have fallen from the bluffs. The channel of the main stream has a bottom of gravel, with occasional limestone shoals. Collections were made from the lower course of the main stream, and in the deep gorge below Seventy-Six Falls, in the principal western branch. At the latter point the stream has a width of 20 feet and a vertical fall of 86 feet into a deep gorge, from which the mist rises high into the air, presenting varied rainbow tints. The depth of this gorge is nearly 200 feet below the bordering hills. The bottom of the channel is composed of slate. Investigations made 2 miles above the falls resulted in the collection of only two species, *Rhinichthys atronasus* (Mitchill) and *Ameiurus nebulosus* (Le Sueur). The latter found its way into the stream from Capt. Hurt's fish pond,

Willis Creek rises 8 miles northwest of Albany, flows 7 miles in a northwest direction, and empties into the Cumberland River in Cumberland County. The bottom land is narrow and bordered by high, steep bluffs. The bottom of the channel is solid limestone; the water is shallow and swift. This stream was investigated from the "three forks" to its mouth, a distance of about 5 miles.

PRINCIPAL STREAMS OF THE SOUTHERN WATER SYSTEM.

Wolf River enters the county from Tennessee and, with a general westerly course, crosses and recrosses the State line, and finally empties into Obeyes River in Tennessee. Only a few specimens from this stream were observed. Its principal tributaries are Ill-will and Spring creeks.

Ill-will Creek rises 8 miles northwest of Albany, flows south 10 miles, and empties into Wolf River. The specimens from this stream were taken by local fishermen.

Spring Creek is $3\frac{1}{2}$ miles south of Albany. The three creeks forming its head waters rise, respectively, in Duval, Hog Thief, and Kogar valleys, in the southeastern part of the county. It flows in a southwest direction $10\frac{1}{2}$ miles, and empties into Wolf River. The bottom lands along its course are narrow and mostly wooded. The stream runs for the most part over rough limestone, everywhere covered with loose, irregular rocks of all shapes and sizes. It is exceedingly hard to work. Collections were made from the middle course, from the mouth of Albany Branch to that of Smith Creek, a distance of 2 miles. Its principal tributaries are Smith Creek and Albany Branch.

Smith Creek rises at the foot of Poplar Mountain, $3\frac{1}{2}$ miles northeast of Albany, flows south about 5 miles, and empties into Spring Creek. Its banks are mostly wooded, and the bottom of the channel is of rather smooth limestone. Like most of the streams in this region, it is fed by many springs along its course. This stream was investigated throughout its entire length.

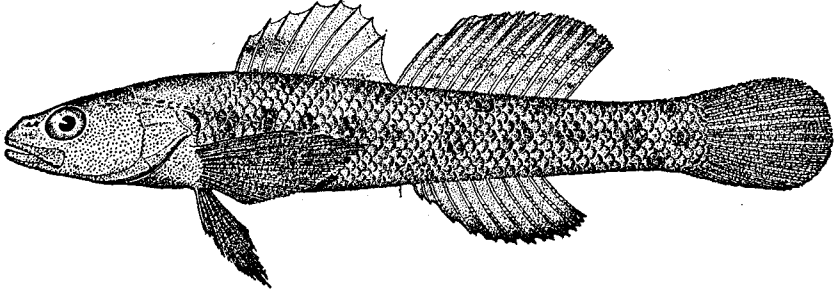
Albany Branch issues from the ground at Albany in a clear, sparkling stream 15 feet wide, flows south $3\frac{1}{2}$ miles, and empties into Spring Creek. Much of the upper course is through cleared land; the bottom of the channel is limestone, mostly covered with loose rocks and gravel. It contains an abundance of fish and is easily worked. The specimens noted were from the upper and middle courses.

Nearly all the specimens on which the following list of fishes has been based were collected by the writer during the autumn of 1889 and the spring of 1890. In the notes and descriptions the following abbreviations have been employed: In denotes Indian Creek; Wl, Willis Creek; Wf, Wolf River; Il, Ill-will Creek; Sp, Spring Creek; S, Smith's Creek; and A, Albany Branch.

THE FISHES OF CLINTON COUNTY, KENTUCKY.

1. *Polyodon spathula* (Walbaum). *Spoonbill cat.* (In, Wf.)
2. *Lepisosteus osseus* (L.). *Gar-pike.* (In, Wl, Il.)
3. *Ictalurus punctatus* (Raf.). *Spotted cat.* (In, Wl.)
4. *Ameiurus nebulosus* (Le Sueur). *Catfish.* (In, S, A.) Very abundant on muddy bottom in Long's mill pond at Albany. Color, dark brown, not mottled; ventral portion light yellow.
5. *Ictiobus cyprinella* (Cuv. & Val.). *Buffalo fish.* (In.)
6. *Catostomus teres* (Mitchill). *White sucker.* (In, Wl, Wf.)
7. *Catostomus nigricans* (Le Sueur). *Hog sucker.* (In, Wl, Sp, A.) Abundant in swift water in all the streams. Especially numerous in the lower courses of Indian Creek.
8. *Campostoma anomalum* (Raf.). "*Little brown sucker.*" (Wl, Sp, S, A.) Rather common; the largest specimen taken 4 inches in length. Fins plain, the dark vertical bar behind opercle not conspicuous.
9. *Chrosomus erythrogaster* Raf. *Red-bellied minnow.* (In, S, A.) Generally common, and very abundant in Albany Branch. In far the greater number the upper dark lateral band is broken up throughout its whole length into irregular spots. D. 7; A. 8.
10. *Pimephales notatus* (Raf.). *Blunt-nosed minnow.* (In, S, A.) Largest, 3½ inches; The smaller specimens have no black spot on front of dorsal. D. 8; A. 8.
11. *Notropis whipplei* (Girard). (In.) Rare. Largest specimen taken, 3 inches long.
12. *Notropis galacturus* (Cope). (In, Wl, Sp, S.) Very common in Spring and Smith creeks. D. 8; A. 8 to 9.
13. *Notropis megalops* (Raf.). *Common shiner.* (In, Wl, Sp, S, A.) Equally common. Eighteen scales before the dorsal.
14. *Notropis leuciodus* (Cope). (S.) Five specimens taken, 2 to 2½ inches in length.
15. *Notropis umbratilis cyanocephalus* (Copeland). (In, Wl, Sp, S, A.) Abundant in all the streams. Specimens variable in color, from almost white to a deep metallic luster. Others with dark crossbars on the sides.
16. *Notropis telescopus* (Cope). (In.) The single specimen taken is 2½ inches long.
17. *Rhinichthys atronasmus* (Mitchill). *Black-nosed dace.* (In, Wl, S, A.) Common in the upper courses of all the streams. Specimens 2 to 3½ inches long. D. 7 to 8; A. 7 to 8.
18. *Hybopsis amblops* (Raf.). (In.) Very rare. Only one specimen taken, 2½ inches long. Fourteen scales before dorsal.
19. *Hybopsis kentuckiensis* (Raf.). *Chub.* (Sp, S, A.) Not abundant. Dark bar behind opercle indistinct.
20. *Semotilus atromaculatus* (Mitchill). *Chub.* (In, Sp, S, A.) Especially abundant in Albany Branch. Largest taken, 11 inches long. D. 8.
21. *Clupea chrysochloris* (Raf.). (Wl.) Six small specimens were taken near the mouth of Willis Creek.
22. *Fundulus catenatus* (Storer). (In, Wl.) Abundant in Willis Creek. Those from Indian Creek highly colored. D. 13; A. 15.
23. *Anguilla chrysypa* (Raf.). *Eel.* (Il, Wf.)
24. *Ambloplites rupestris* (Raf.). *Goggle-eye.* (In, Sp, S, A.) Common.
25. *Lepomis cyanellus* (Raf.). *Green sunfish.* (In, Wl, Sp, S.)
26. *Lepomis megalotis* (Raf.). *Long-eared sunfish.* (In.) Common in the lower course of Indian Creek. D. 10-13; A. 10.
27. *Etheostoma blennioides* Raf. *Hogfish.* (In, Sp, S.) Very abundant in swift currents in Spring Creek. Specimens 3 to 6 inches long. D. XIII-12.
28. *Etheostoma caprodes* (Raf.). (Wl.) One specimen taken.
29. *Etheostoma rufolineatum* (Cope). (In.) A single specimen, 1½ inches long; highly colored.
30. *Etheostoma flabellare* Raf. (In, S, A.) Rather common in clear, shallow water.
31. *Etheostoma cœruleum* Storer. (In, Wl, Sp, S, A.) Equally common in all the streams. Second dorsal, 12 to 13.

32. *Etheostoma obeyense* sp. nov. Related to *Etheostoma flabellare* Raf., but with thicker and blunter head and different coloration. Head, $3\frac{3}{4}$; depth, $5\frac{1}{2}$ ($4\frac{1}{2}$ to 6). D. VIII-X, 12-13. A. II, 8 (7-9). Lateral line, 44 (42-45). Length, $2\frac{1}{4}$ inches.



ETHEOSTOMA OBEYENSE.

Body rather slender, somewhat compressed, the back not elevated in adults, more so in the young. Head moderate, heavier, and less pointed than in *E. flabellare*. Interorbital space narrow; eye about as long as snout, 4 in head, the maxillary extending nearly to below its middle. Mouth rather small, little oblique. Jaws subequal, premaxillaries not protractile, the skin on middle of forehead continuous with that on tip of snout; teeth rather strong. Head, nape, and breast naked. Margin of first dorsal rounded, its longest spine 2 in base; second dorsal larger than first, its margin nearly straight, the anterior ray about $1\frac{1}{2}$ in base; caudal moderate, equal in length to caudal peduncle, also to base of first dorsal, its margin subtruncate; anal smaller than second dorsal and placed opposite or slightly behind that fin; pectorals equal in length to base of second dorsal; ventrals equal in length to base of anal. Lateral line almost straight, beginning at upper edge of preopercle and extending backward, slightly descending, to past middle of first dorsal, developed on about 12 scales.

Color of adult male light-olive; dorsal region marked with seven dark crossbars, the first being on the nape and the last on the end of the caudal peduncle; on the sides are 10 or 11 irregularly shaped dark spots. Top of head dusky or black. Fins of adult males a dusky white. Black spot on membrane of first 3 or 4 dorsal spines, vanishing posteriorly; second dorsal with faint traces of bars; caudal plain; margin of anal jet black; pectorals faintly barred; ventrals dusky or black. The female and younger specimens are similarly, but more deeply, colored. Black humeral scale very large and distinct, as in *E. flabellare*. The anal, pectorals, and ventrals of the female and younger specimens are plain white, while the dorsals and caudal are distinctly barred. On the cheek is a smooth, light-colored area, extending from below the eye obliquely upward and backward to a distance twice the length of eye, and terminating at upper edge of preopercle. [This characteristic was by mistake not shown in the above cut.] This area is constricted into two parts, the anterior somewhat the larger, and everywhere bounded by a silvery band.

Very abundant in all the streams. In Indian Creek 21 specimens were taken; Spring Creek, 36; Smith Creek, 23; Albany Branch, 130. In all, 210 specimens were secured.

33. *Stizostedion canadense* (C. H. Smith). "*Spotted trout*." (In.) Common in the lower course of this stream.

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