

NOTES ON INDIANA FISHES.

BY BARTON W. EVERMANN AND OLIVER P. JENKINS.

The material upon which the following paper is based consists chiefly of collections made (1) in the streams flowing through Carroll County, in August, 1887, by B. W. Evermann; (2) in Lake Maxinkuckee and the Tippecanoe River, in August, 1886, by O. P. Jenkins; (3) in southeastern Indiana, made at various times by the writers and W. P. Shannon; and (4) in Dearborn and Ohio Counties, in August, 1887, by O. P. Jenkins. Most of the collecting was done with a small Baird seine.

UPPER WABASH AND ITS TRIBUTARIES.

Collections were made in the Wabash, the Tippecanoe, Deer Creek, Little Deer Creek, Wild Cat Creek, and Honey Creek. Less than a day was devoted to the Wabash River at Delphi. About two days each were given to Deer Creek and Wild Cat Creek, good-sized creeks flowing nearly due west through Carroll County, the first emptying into the Wabash near Delphi, the second, near La Fayette. Little Deer Creek is a small branch of Deer Creek a few miles north of Wild Cat, while Honey Creek is a small stream which flows into Wild Cat from the southeast about 3 miles east of the Carroll County line. About a half day was given to each of these, in Honey Creek at Russiaville, and in Little Deer Creek near the east line of the county. Wild Cat was seined in the vicinity of Burlington and Deer Creek at Camden, 10 miles above its mouth.

All these creeks flow over bottoms more or less rocky or gravelly, with occasional stretches of sand or mud.

Most of the collection from the Tippecanoe River was made by Mr. O. P. Jenkins, in August, 1886, while floating in a boat down that stream from Lake Maxinkuckee. Hauls were made at various places from where the Logansport and Terre Haute Railroad crosses the river, to its mouth, 10 miles below Delphi.

1. *Petromyzon concolor* (Kirtland.) *Silvery Lamprey*.

One specimen, 9 inches long, taken in the Wabash River at Delphi. The only other Indiana records, so far as we are able to learn, are those given by Dr. Jordan of one taken at New Albany and one in the White River at Indianapolis.

2. *Polyodon spathula* (Walbaum.) *Spoon-bill Cat*.

No specimens of this species were obtained, but several years ago I had a specimen which had been taken from the Wabash near Delphi. (Evermann.) It is still reported to be common in the spring.

3. *Scaphirhynchus platorhynchus* (Raf.). *Shovel-nosed Sturgeon.*

Occasionally seen in the Wabash. Several years ago I had a specimen from the river near Delphi. (Evermann.)

4. *Lepisosteus osseus* (L.). *Common Gar.*

Common in the Wabash and Tippecanoe Rivers, especially in the spring.

5. *Noturus gyrinus* (Mitchill).

One specimen taken in the Wabash and one in Little Deer Creek.

6. *Noturus miurus* Jordan.

Specimens of this species were obtained in Wild Cat Creek, Deer Creek, and the Wabash, but it does not appear to be very common in any of these streams.

7. *Noturus exilis* Nelson.

One specimen taken in the Tippecanoe. (Jenkins)

8. *Noturus flavus* Rafinesque. *Yellow Stone-Cat.*

Taken in Wild Cat, the two Deer Creeks, and the Wabash, in all of which it was rather common. It was not found in Honey Creek, in fact no species of Catfish was seen in that stream.

9. *Ameiurus melas* (Raf.).

A few specimens taken in each of the two Deer Creeks. (E.) Common in the Tippecanoe. (J.)

10. *Ameiurus nebulosus* (Le Sueur).

One specimen from the Tippecanoe. (J.)

11. *Ameiurus natalis* (Le S.)

Found only in the two Deer Creeks. Rare.

12. *Ameiurus nigricans* Le S. *Mississippi Cat.*

Frequent in the Wabash where I have seen it. (E.)

13. *Ictalurus punctatus* (Raf.). *Channel Cat.*

Common in the Wabash, but less so in the Tippecanoe. Specimens were obtained from each stream.

14. *Ictiobus cyprinella* (Cuv. & Val.). *Red-mouthed Buffalo.*

Frequently taken by fishermen from the Wabash, but none were seen at this time.

15. *Ictiobus urus* (Agassiz). *Razor-backed or Mongrel Buffalo.*

Found only in the Wabash. Less common than the preceding.

16. *Ictiobus bubalus* (Raf.). *Sucker-mouthed Buffalo.*

Rather common in the Wabash. No specimens of these last three species were obtained, but I have seen them all at other times in the Wabash at Delphi. (E.)

17. *Ictiobus velifer* (Raf.). *Quill-back.*

Quite common in the Wabash, but less so in the Tippecanoe.

18. *Catostomus teres* (Mitchill). *Fine-scaled Sucker.*

Rather common in all the streams.

19. *Catostomus nigricans* Le S. *Hog Sucker.*

Common everywhere.

20. *Erimyzon sucetta oblongus* (Mitchill.) *Chub Sucker.*

Found only in Little Deer Creek and Honey Creek, from which but three specimens were obtained.

21. *Moxostoma duquesnei* (Le S.) *Red Horse.*

Abundant everywhere except in Honey Creek, where it was not noticed.

22. *Moxostoma crassilabre* Cope. *Red Horse.*

Not seen at this time, but there is a specimen in Dr. Jordan's collection at the Indiana University which I collected in Deer Creek, near Camden, in 1884. (E.)

23. *Placopharynx carinatus* Cope. *Big-jawed Sucker.*

I examined three specimens of this large sucker which had just been taken in the Tippecanoe River by Mr. Harry Van Der Volgen, who reports it to be rather common in both the Tippecanoe and the Wabash. In Dr. Jordan's Report on the Fishes of Ohio he mentions "a pair of pharyngeal bones of this species taken by Dr. G. M. Levette from a specimen taken in the Wabash at Terre Haute, where the fish is said to be abundant." Since examining these three from the Tippecanoe, I have seen several specimens from the Wabash in the Terre Haute market, but I can not say that it is really "abundant" at that place. In the same connection Dr. Jordan mentions "a pharyngeal bone from 'post-Pliocene' deposits at the Falls of the Ohio, by Dr. John Sloan." (Evermann.)

These are, so far, the only records of its occurrence in Indiana. It will probably be found, however, in all the large streams.

24. *Lagochila lacera* Jordan & Brayton. *Hare-lip Sucker.*

It affords us pleasure to add this interesting fish to Indiana's known fish fauna. On August 25, 1887, two specimens were taken by Mr. Harry Van Der Volgen in the Tippecanoe River, west of Delphi, and were examined by Mr. Evermann at that time. Mr. Van Der Volgen informs us that he has also taken it in the Wabash, but does not think it to be very common in either stream.

It is known here as the Pea-lip Sucker. Until now the species, described in 1877 by Professors Jordan and Brayton, had been reported only from the Scioto, Clinch, and Chickamauga Rivers, and White River, Arkansas. This is, therefore, the first record of its appearance in Indiana.

25. *Campostoma anomalum* (Raf.). *Stone-roller.*

An abundant species in all the streams of the county.

26. *Chrosomus erythrogaster* Raf. *Red-bellied Dace.*

This pretty minnow was not seen in any of the streams of Carroll County, but was quite common in Honey Creek, just over the line, in Howard County. This little stream, which flows into Wild Cat a few miles east of the east line of Carroll County, is fed almost exclusively by springs, and the water is perceptibly colder than that of any of the other streams which were seined. This fact accounts for the presence in this stream of both this species and the Black-nosed Dace.

27. *Hybognathus nuchalis* Agassiz. *Silvery Minnow.*

Noticed only in Wild Cat, Little Deer Creek, and the Wabash, but it doubtless occurs in all the streams of the county.

28. *Pimephales notatus* (Raf.). *Blunt-nosed Minnow.*

Abundant in all the streams.

29. *Cliola vigilax* Baird & Girard. *Bull-head Minnow.*

We found this species only in the Wabash, where we obtained a few specimens.

30. *Notropis deliciosus* (Girard).

Not uncommon in both the Wabash and Tippecanoe, where about a dozen specimens were taken. These specimens are of the variety *stramineus*, as given in Jordan & Gilbert's Synopsis of Fishes of North America, but Professor Gilbert informs us that he now sees no good reason for separating the two. The lateral line in these specimens now before us counts from 34 to 38, thus justifying Professor Gilbert's conclusion.

31. *Notropis boöps* Gilbert.

A single specimen, which we refer with some doubt to this species, was taken in the Wabash. It agrees with *boöps*, except that there is no angle in front of the dorsal, the anterior profile being gently curved, the number of scales in the lateral line is 30 instead of 36, and there is a small dark blotch at the base of the dorsal fin. (E.)

32. *Notropis whipplei* Girard.

Abundant everywhere except in Honey Creek, where it was not found.

33. *Notropis megalops* (Raf.).

Common in all streams seined.

34. *Notropis lythrurus* Jordan.

A few specimens were taken in each stream seined, except the Tippecanoe.

35. *Notropis atherinoides* (Raf.).

Found to be rather common in all the streams except Honey Creek and Little Deer Creek, where none were seen.

36. *Notropis arge* (Cope).

This species was originally described in 1836 by Prof. E. D. Cope, from specimens probably from southeastern Michigan, whether from the Detroit River or from St. Joseph River of the Maumee he did not know.

Dr. Jordan has always regarded it as identical with *Notropis atherinoides* (Raf.), but upon examining specimens from Wild Cat and Deer Creek he agrees with us in regarding it as a good species.

As the only printed description of this species is that found in Cope's "Cyprinidae of Pennsylvania," 1866, p. 387, it seems desirable to reprint it in this connection:

"*Alburnellus arge* Cope. Diameter of orbit greater than length of muzzle, three times in length of head; head five and one-half times in total, four and one-half to base of tail. Scales 5-39-3. A dark vertebral line and definite lateral silver band." And in a foot note:

"*Alburnellus arge*, n. sp. nov. Also an elongate species, less than the preceding, with deeper head and larger eye. Muzzle from orbit less than diameter of latter; end of os maxillare opposite anterior rim of same; mandible acuminate, not projecting when closed, no symphysel knob. Frontal breadth two thirds temporal and three-fourths orbital. Greatest depth a little over seven times in total length, equal from end muzzle to preopercular border. Proportion and formula of fins as in the last [*Alburnellus jaculus*=*Notropis atherinoides*]. Lateral line straight. A silver band along anteriorly above the latter, dark-edged above and below. Muzzle and lips blackish. Length, 2.75.

"*Habitat*: Either Detroit River or the St. Joseph's; the locality confused. Numerous specimens."

The species differs quite evidently from *Notropis atherinoides*, the species which it most resembles. It is more slender, the snout is heavier and not so pointed, the eye is larger, equaling the interorbital space and exceeding the snout, $3\frac{1}{2}$ in head, while in *N. atherinoides* the eye does not equal the interorbital space, just equals the snout, and is contained $3\frac{1}{2}$ times in head. The origin of the dorsal in *N. arge* is but little nearer end of snout than base of caudal; in the other it is midway between end of snout and free end of caudal; the first has a broad plumbeous lateral band, bordered below with silvery, extending straight from the opercle to base of caudal, while in the second this line is little more than a silvery one. *Notropis arge* has a well-marked black vertebral line, which is scarcely evident in *atherinoides*, and the lateral line is less decurved than in *atherinoides*.

D., 8; A., 10; eye, $3\frac{1}{2}$; head, 4; depth, $5\frac{3}{8}$; lateral line, 5-10-4; teeth, 2-4-4-2.

37. *Notropis rubrifrons* (Cope).

Six specimens from Wild Cat, a dozen from Deer Creek, seven from the Wabash, and many from the Tippecanoe. Not noticed elsewhere.

38. *Ericymba buccata* Cope.

Abundant everywhere.

39. *Rhinichthys atronasus* (Mitchill).

This species was found only in Honey Creek, where out three specimens were taken. Special search was made for it and *Chrosomus erythrogaster* in several other streams, but without finding it.

40. *Hybopsis kentuckiensis* (Raf.). *River Chub*.

Common everywhere.

41. *Hybopsis amblops* (Raf.)

Specimens are in the collections from Wild Cat, Deer Creek, the Wabash, and the Tippecanoe, in all of which it was tolerably common.

42. *Hybopsis dissimilis* (Kirtland).

Found only in the Wabash and Tippecanoe. Common.

43. *Hybopsis hyostomus* Gilbert.

This minnow was described in 1884 by Prof. Chas. H. Gilbert, from specimens taken by him in the East Fork of White River at Bedford, Ind. Other specimens were afterwards taken at Gosport from the West Fork of White River, these being the only Indiana records.

It was quite common in the Wabash at Delphi, numerous specimens being taken at nearly every haul in the river channel.

44. *Semotilus atromaculatus* (Mitchill). *Chub*.

Common. Specimens from Little Deer Creek, Deer Creek, Wabash, and Honey Creek.

45. *Notemigonus crysoleucas* (Mitchill). *Golden Shiner*.

One or two specimens from Deer Creek—the only stream in which it was found.

46. *Hiodon tergisus* Le Sueur. *Toothed Herring*.

Found only in the Tippecanoe, where several specimens were taken. (E.)

47. *Clupea chrysochloris* (Raf.). *Ohio Shad*.

A few specimens were obtained from the Wabash.

48. *Dorosoma cepedianum* (Le Sueur). *Hickory Shad*.

Common in the Wabash. Not seen elsewhere.

49. *Zygonectes notatus* (Raf.). *Top Minnow*.

One large specimen and several small ones taken in Wild Cat, and a few small ones in Deer Creek.

50. *Umbra limi* (Kirtland). *Mud Minnow*.

A few specimens were obtained in Little and Big Deer Creeks, while in Honey Creek it was very abundant. In the spring of 1879 I found a number of specimens in cow-tracks and other small depressions at the lower end of the Armstrong Pond at Camden. (E.)

51. *Esox vermiculatus* Le Sueur. *Pike; Little Pickerel.*

Specimens were obtained from both Deer Creeks, Wild Cat, the Wabash, and Tippecanoe.

52. *Anguilla anguilla rostrata* (Le Sueur). *Common Eel.*

No eels were seen at this time, but on former occasions I have seen specimens from Wild Cat, Deer Creek, and the Wabash. In 1883 I got two fine ones from Deer Creek, near Camden. (E.)

53. *Labidesthes sicculus* Cope. *Skip-jack; Brook Silverside.*

Common in Wild Cat, Wabash, and Tippecanoe. Rare in Deer Creek.

54. *Pomoxis sparoides* (Lacépède). *Calico Bass.*

Noted only in the Wabash, where it appears to be rather common.

55. *Ambloplites rupestris* (Raf.). *Red-eye; Goggle-eye.*

Common. Specimens obtained from all the streams except Honey Creek, where it was not seen.

56. *Lepomis cyanellus* (Raf.). *Common Sunfish.*

Apparently common everywhere except in Honey Creek, where no specimens of the genus were seen.

57. *Lepomis megalotis* (Raf.).

The collection contains specimens from all the streams seined except Honey Creek.

58. *Lepomis pallidus* (Mitchill).

Not seen anywhere except in the Tippecanoe, where I found it to be common. (J.)

59. *Micropterus salmoides* (Lacépède). *Large-mouthed Black Bass.*

Apparently not common, but most so in the larger streams. Taken in Wild Cat, Deer Creek, Wabash, and the Tippecanoe.

60. *Micropterus dolomieu* Lacépède. *Small-mouthed Black Bass.*

Much more common than the preceding. Numerous specimens taken in all the streams except Honey Creek, where none were seen.

61. *Etheostoma pellucidum* Baird. *Sand Darter.*

Apparently rare in all the streams except the Wabash and Tippecanoe. Only one specimen was obtained in Wild Cat, although careful search was made for it, and none were found in Honey Creek, Little Deer Creek, or Deer Creek; in the last, however, several specimens were seen in 1884 and 1885. It was found to be very abundant in the Wabash just below Delphi and Pittsburgh bridge.

62. *Etheostoma pellucidum clarum* Jordan & Meek.

In the Proceedings of the U. S. National Museum for 1885 (p. 8), Professors Jordan and Meek described the supposed new Darter, *Ammocrypta clara*, from the Des Moines River at Ottumwa, Iowa. These

specimens differed from *E. pellucidum* chiefly in the less complete squamation, "the cheeks and opercles [being furnished] with rather few thin scales imbedded in the skin," and the "body naked, except for a strip of scales along the lateral line, consisting of five or six series of small imbedded, wide-set, ctenoid scales. On the caudal peduncle this band widens out, covering the whole depth of the tail."

In typical *E. pellucidum*, the cheeks, temporal region, and opercles are covered with imbedded, more or less eyeloid scales.

A large lot of "Sand Darters" were collected in the Wabash at Delphi, and an examination of the series shows that there are several specimens which fill the description of *E. clarum* very well, while others show all degrees of squamation from the very imperfectly scaled *clarum* to the almost completely scaled *pellucidum*. In some specimens the cheeks are bare and the opercles densely scaled, in others the opercles have but few scales, while in yet others no scales can be detected upon the head at all. Corresponding differences are found in the scales of the body, some almost scaleless, others with a few rows along the lateral line, and others with more and more rows. No constant or important differences can be noticed in measurements.

The dorsal rays of a large series were counted and X-10 was found to be the usual number, though a few counted IX-10, and one XI-10.

From a consideration of these facts we feel justified in reducing *E. clarum* to subspecific rank, making it stand as *Etheostoma pellucidum clarum*.

We may add that specimens recently collected from the Wabash at Terre Haute show a similar gradation, with possibly a greater percentage of the subspecific form.

63. *Etheostoma nigrum* Raf. Johnny Darter.

Everywhere; perhaps the most abundant Darter of the region. Some exceedingly large individuals were obtained in Honey Creek.

64. *Etheostoma blennioides* Raf. Green-sided Darter.

Rather common in Wild Cat, but less so in the two Deer Creeks and the Wabash. Found by Professor Jenkins in the Tippecanoe. Not seen in Honey Creek.

65. *Etheostoma copeiandi* (Jordan).

Abundant in the Wabash at Delphi, but not seen elsewhere. This little Darter was first described in 1877, by Dr. Jordan, from the White River at Indianapolis. Since then it has been reported from the White River at Gosport, Ind., and numerous specimens were taken in September, 1887, by Professor Evermann, from the Wabash, at Terre Haute. The home of the species seems to be in Arkansas, it having been found very common in tributaries of the Arkansas River near Fort Smith, and in the Washita at Arkadelphia, and the Saline at Benton by Professors Jordan and Gilbert.

66. *Etheostoma shumardi* (Girard).

Two specimens from the Wabash at Delphi. This species was described by Girard in 1859 from the Arkansas River. Since then other specimens have been obtained by Dr. Jordan from the Wabash, opposite Hutsonville, Ill., by Professor Forbes from the Illinois River, and by Jordan & Gilbert in the Arkansas. So this is the second Indiana record of the species.

67. *Etheostoma caprodes* (Raf.) *Log Perch*.

One specimen from Wild Cat and a few each from the two Deer Creeks and the Wabash. Professor Jenkins obtained it from the Tippecanoe.

68. *Etheostoma phoxocephalum* Nelson.

Four fine specimens of this beautiful Darter were taken in the Wabash at Delphi. I have since obtained it in the Wabash, at Terre Haute. (E.)

69. *Etheostoma aspro* Cope & Jordan. *Black-sided Darter*.

Not uncommon in Wild Cat, the two Deer Creeks, and the Wabash. Taken by Jenkins in the Tippecanoe.

70. *Etheostoma evides* Jordan & Copeland.

A single specimen taken in the Wabash at Delphi, and two specimens taken by Professor Jenkins in the Tippecanoe. The other Indiana localities from which it has been reported are the West Fork of White River at Indianapolis, and Gosport.

71. *Etheostoma scierum* (Swain).

One specimen gotten in the Tippecanoe. (J.)

This interesting Darter, described in 1883 by Professor Swain, from Bean Blossom Creek, Indiana, is said to be abundant in the streams of Arkansas and Texas. It has been taken in Indiana only in the Tippecanoe, West Fork of White River, at Gosport, Bean Blossom, and Salt Creek.

72. *Etheostoma camurum* (Cope).

One specimen taken in the Tippecanoe by Professor Jenkins. Found by Dr. Jordan also in the White River at Indianapolis. These are the only Indiana records.

73. *Etheostoma flabellare* Raf.

None seen in Honey Creek, but rather common in all the other streams.

74. *Etheostoma cœruleum* Storer. *Rainbow Darter*.

Everywhere; one of the most abundant and generally distributed of the Darters. The specimens taken in Honey Creek and some from the other small streams are of the *spectabile* form described by Agassiz in 1854, but there seems to be no sufficient difference to justify any separation.

75. *Etheostoma jessiae* (Jordan & Brayton).

A single specimen of this species was taken in the Wabash at Delphi. Total length, 48^{mm}; length to base of caudal, 40^{mm}; eye, 5, longer than snout; head, 4; depth, 4 $\frac{3}{4}$; D., XI-11; A., II-7; scales, 6-52-8; tubes developed on about 38. Cheeks and opercles well scaled. The lower jaw is a little longer than the upper.

This Darter, described in 1878 by Professors Jordan & Brayton from the Chickamauga River, Georgia, was redescribed a little later by Dr. Forbes under the name *Pacilichthys asprigenis*, from a small creek at Pekin, Ill., and again by Dr. Jordan in 1884 as *Pacilichthys swaini* from a single specimen from a tributary of the Pearl River, Mississippi. All these are now regarded by Dr. Jordan as one species.

Several specimens were collected by Jordan & Gilbert in the Sabine River, at Longview, Tex., in September, 1884.* The above are the only localities from which it has been reported outside of Illinois.

76. *Etheostoma eos* Jordan & Copeland.

Apparently quite rare; one specimen taken in the Tippecanoe. (J.)

77. *Cottus richardsoni* Agassiz. *Miller's Thuml.*

A few specimens were taken in each of the two Deer Creeks, while in Honey Creek it was found to be very common. Exceedingly large specimens were obtained from this creek.

In the following tabulated statement an attempt is made to indicate the distribution and abundance of each species in the various streams from which collections were made. The relative abundance of each species in each stream is indicated by the figures—1 (*very rare*), 2 (*rare*), 3 (*tolerably common*), 4 (*common*), 5 (*abundant*).

Species.		Tippecanoe River.	Wabash River.	Deer Creek.	Little Deer Creek.	Wild-Cat Creek.	Honey Creek.
PETROMYZONTIDÆ.							
1	<i>Petromyzon concolor</i> (Kirtland)		1				
POLYDONTIDÆ.							
2	<i>Polyodon spathula</i> (Walbaum)		2				
ACIPENSERIDÆ.							
3	<i>Scaphirhynchus platyrhynchus</i> Raf.		2				
LEPIDOSTEIDÆ.							
4	<i>Lepisosteus osseus</i> L.	4	4				
SILURIDÆ.							
5	<i>Noturus gyrinus</i> (Mitchill)		1		1		
6	<i>Noturus miurus</i> Jordan		2	2		2	
7	<i>Noturus exilis</i> Nelson	1					
8	<i>Noturus flavus</i> Rafinesque		4	4	4	4	

* Proc. U. S. Nat. Mus. 1886, 16.

	Species.	Tippecanoe River.	Wabash River.	Deer Creek.	Little Deer Creek.	Wild-Cat Creek.	Honey Creek.
PETROMYZONTIDÆ—Continued.							
9	<i>Ameiurus melas</i> Raf.	2		1	1		
10	<i>Ameiurus nebulosus</i> Le Sueur	1					
11	<i>Ameiurus natalis</i> Le S.			1	2		
12	<i>Ameiurus nigricans</i> (Le S.)		3				
13	<i>Ictalurus punctatus</i> (Raf.)	3	4				
CATOSTOMIDÆ.							
14	<i>Ictiobus cyprinella</i> Cuv. & Val		3				
15	<i>Ictiobus urus</i> Agassiz		2				
16	<i>Ictiobus bubalus</i> (Raf.)		4				
17	<i>Ictiobus velifer</i> Raf.	4	5				
18	<i>Catostomus teres</i> Mitchill.	4	5	5	5	5	5
19	<i>Catostomus nigricans</i> Le S.	5	5	5	5	5	4
20	<i>Erimyzon succetta oblongus</i> Mitchill.				1		1
21	<i>Moxostoma duquesnei</i> (Le S.)	5	5	5	5	5	
22	<i>Moxostoma crassilabre</i> Cope.			1			
23	<i>Placopharynx carinatus</i> Cope	2					
24	<i>Lagochila lacera</i> Jor. & Brayt.	1					
CYPRINIDÆ.							
25	<i>Camptostoma anomalum</i> (Raf.)	5	5	5	5	5	5
26	<i>Chrosomus erythrogaster</i> Agassiz						5
27	<i>Hybognathus nuchalis</i> Agassiz		3		3	3	
28	<i>Pimephales notatus</i> (Raf.)	5	5	5	5	5	5
29	<i>Cliola vigilax</i> Baird & Girard		2				
30	<i>Notropis boops</i> Gilbert		1				
31	<i>Notropis whipplei</i> Girard	5	5	5	5	5	
32	<i>Notropis megalops</i> Raf.	5	4	4	4	4	4
33	<i>Notropis lythrurus</i> Jor.		2	2	2	3	2
34	<i>Notropis deliciosus</i> Girard		2				
35	<i>Notropis atherinoides</i> Raf.	5	3	2		4	
36	<i>Notropis rubrifrons</i> (Cope.)	5	4	4		3	
37	<i>Notropis arge</i> (Cope.)			4		3	
38	<i>Erieymba buccata</i> Cope	5	5	5	5	5	5
39	<i>Rhinichthys atronasus</i> (Mitch.)						2
40	<i>Hybopsis kentuckiensis</i> Raf.	5	2	3	3	3	3
41	<i>Hybopsis amblops</i> (Raf.)	4	2	2		3	
42	<i>Hybopsis dissimilis</i> Kirtland.	4	3				
43	<i>Hybopsis hyostomus</i> Gilbert		5				
44	<i>Semotilus atromaculatus</i> Mitch.		2	3	3		3
45	<i>Notemigonus chrysoleucas</i> (Mitch.)			2			
HIODONTIDÆ.							
46	<i>Hiodon tergisus</i> Le S.	3					
CLUPEIDÆ.							
47	<i>Clupea chrysochloris</i> (Raf.)		3				
DOROSOMIDÆ.							
48	<i>Dorosoma cepedianum</i> (Le S.)		4				
CYPRINODONTIDÆ.							
49	<i>Zygionectes notatus</i> (Raf.)			2		2	
UMBRIDÆ.							
50	<i>Umbra limi</i> (Kirtland)			3	3		5
ESOCIDÆ.							
51	<i>Esox vermiculatus</i> Le S.		3	3	3	3	
ANGUILLIDÆ.							
52	<i>Anguilla anguilla rostrata</i> Le Sueur		2	2		2	
ATHERINIDÆ.							
53	<i>Labidesthes sicculus</i> Cope	3	3	2		3	

Species.		Tippecanoe River.	Wabash River.	Deer Creek.	Little Deer Creek.	Wild-Cat Creek.	Honey Creek.
CENTRARCHIDÆ.							
54	<i>Pomoxis sparoides</i> Lacépède		3				
55	<i>Ambloplites rupestris</i> Raf.	3	4	4	2	3	
56	<i>Lepomis cyanellus</i> Raf.	4	4	4	4	4	
57	<i>Lepomis megalotis</i> Raf.	12	3	3	12	3	
58	<i>Lepomis pallidus</i> (Mitch.)	4					
59	<i>Micropterus salmoides</i> Lacépède	2	3	2		2	
60	<i>Micropterus dolomieu</i> Lac.	4	4	4	4	4	
PERCIDÆ.							
61	<i>Etheostoma pellucidum</i> Baird	4	5	2		1	
62	<i>Etheostoma pellucidum clarum</i> Jordan & Meek		12				
63	<i>Etheostoma nigrum</i> Raf.	5	5	5	5	5	5
64	<i>Etheostoma blennioides</i> Raf.	4	3	3	3	4	
65	<i>Etheostoma copelandi</i> Jordan		5				
66	<i>Etheostoma shumardi</i> (Girard)		1				
67	<i>Etheostoma caprodes</i> (Raf.)	1	3	3	3	1	
68	<i>Etheostoma phoxocephalum</i> Nelson		12	3	3	3	
69	<i>Etheostoma aspro</i> Cope & Jordan	12	3	3	3	3	
70	<i>Etheostoma evides</i> Jordan & Copeland	1	1				
71	<i>Etheostoma scierum</i> (Swain)	1					
72	<i>Etheostoma camurum</i> Cope	1					
73	<i>Etheostoma flabellare</i> Raf.	3	3	3	3	1	
74	<i>Etheostoma cæruleum</i> Storer	5	5	5	5	5	5
75	<i>Etheostoma jessie</i> Jor. & Brayt.		1				
76	<i>Etheostoma eos</i> Jordan & Copeland	1					
COTTIDÆ.							
77	<i>Cottus richardsoni</i> Agassiz			2	2		5
Number of species in each stream		41	57	38	30	33	16

The following species were found common to all the streams seined:

Catostomus teres Mitch.

Catostomus nigricans Le S.

Camptostoma anomalum (Raf.).

Notropis megalops Raf.

Eriocymba buccata Cope.

Pimephales notatus (Raf.).

Hybopsis kentuckiensis Raf.

Etheostoma cæruleum Storer.

Etheostoma nigrum Raf.—9 species.

The following were found in but one stream:

In the Tippecanoe River:

Noturus exilis Nelson.

Ameiurus nebulosus Le S.

Placopharynx carinatus Cope.

Lagochila lacera Jor. & Brayt.

Hiodon tergisus Le S.

Lepomis pallidus (Mitch.).

Etheostoma scierum (Swain.).

Etheostoma camurum Cope.

Etheostoma eos Jordan & Copeland.—9 species.

In the Wabash River:

Petromyzon concolor (Kirt.).

Polyodon spathula (Walb.).

Scaphirhynchus platyrhynchus Raf.

Ameiurus nigricans Le S.

Ictiobus cyprinella Cuv. & Val.

Ictiobus urus Agassiz.

Ictiobus bubalus (Raf.).

Cliola vigilax B. & G.

Notropis boöps Gilbert.

Notropis deliciosus Girard.

Hybopsis hyostomus Gilbert.

Clupea chrysochloris (Raf.).

Dorosoma cepedianum (Le S.).

Pomoxys sparoides Lac.

Etheostoma pellucidum clarum J. & M.

Etheostoma copelandi Jor.

Etheostoma shumardi (Girard).

Etheostoma phoxocephalum Nels.

Etheostoma jessie Jor. & Brayt.—19 species.

In Deer Creek :

Moxostoma crassilabre Cope.*Notemigonus chrysoleucus* (Mitch.)—2 species.

In Honey Creek :

Chrosomus erythrogaster Ag.*Rhinichthys atronasus* (Mitch.)—2 species.

NOTE.—In a paper published in the *Hoosier Naturalist*, 1887, on Fishes of Vigo County, Ind., by O. P. Jenkins, the following were given from the Wabash at that point, which we did not obtain :

1. *Acipenser rubicundus* Le Sueur.6. *Cycleptus elongatus* Le Sueur.2. *Lepisosteus platystomus*.7. *Pomoxis annularis* Raf.3. *Amia calva* Lin.8. *Morone interrupta* Gill.4. *Leptops olivaris* Lin.9. *Aplodinotus grunniens* Raf.5. *Ictiobus difformis* Cope.

LIST OF FISHES FOUND IN LAKE MAXINKUCKEE.

The outlet of Lake Maxinkuckee is a small winding stream which empties into the Tippecanoe River a short distance below the Logansport and Terre Haute Railroad Bridge. The distance of the mouth of this stream from its origin is about 3 miles on a straight line, but by its windings about 9 miles. At the present time a high dam on the stream effectually prevents the passage of fish to the lake from the river. Residents in the vicinity state that before the dam was built many fishes not now found in the lake, but known in the river, were abundant in the lake. The waters of the lake are clear and cold, being fed in part by small streams, but also by many strong springs in the bottom of the lake. This lake is about 2 miles long by 1 wide. It has recently been sounded and found to be in one part 76 feet deep.

The following fishes were obtained from the lake during the month of August, 1886, by O. P. Jenkins :

1. *Lepisosteus osseus*. One specimen obtained by Dr. Scovell in 1887; one seen by Professor Evermann.
2. *Amia calva*. Common.
3. *Ameiurus melas*. Common.
4. *Ameiurus natalis*. One specimen.
5. *Pimephales notatus*. Common.
6. *Notropis heterodon*. One specimen by Dr. Scovell.
7. *Semotilus atromaculatus*. Common.
8. *Fundulus diaphanus meunoni*. Very abundant.
9. *Labidesthes sicculus*. Common.
10. *Lepomis cyanellus*. Very common.
11. *Lepomis megalotis*. Obtained by Dr. Scovell.
12. *Lepomis pallidus*. Common. One specimen was obtained which was 11 inches to the base of the caudal fin.
13. *Micropterus salmoides*. Abundant.
14. *Micropterus dolomieu*. Common.
15. *Perca flavescens*. Abundant.
16. *Ambloplites rupestris*. Abundant.
17. *Etheostoma nigrum*. Common.
18. *Etheostoma eos*. Several specimens.

NOTE.—In other lakes tributary to the Upper Wabash the following have been reported by Dr. Jordan in the *Proc. Acad. Nat. Sci., Phila., 1877*, pp. 53, 67 :

Zygonectes dispar Agassiz.*Etheostoma caprodes zebra* Agassiz=*Percina manitou* Jord.

SOUTHEASTERN INDIANA.

I.—FOURTEEN-MILE CREEK, CLARKE COUNTY.

The following fishes were obtained from Fourteen-mile Creek, Clarke County, by Professor Jenkins, in August, 1887:

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|-------------------------------------|------------------------------------|
| 1. <i>Notropis megalops.</i> | 14. <i>Pomoxis sparoides.</i> |
| 2. <i>Noturus miurus.</i> | 15. <i>Pomoxis annularis.</i> |
| 3. <i>Notropis lythrurus.</i> | 16. <i>Moxostoma duquesnei.</i> |
| 4. <i>Notropis whipplei.</i> | 17. <i>Catostomus nigricans.</i> |
| 5. <i>Notropis rubrifrons.</i> | 18. <i>Dorosoma cepedianum.</i> |
| 6. <i>Notropis atherinoides.</i> | 19. <i>Zygonectes notates.</i> |
| 7. <i>Campostoma anomalum.</i> | 20. <i>Lepomis cyanellus.</i> |
| 8. <i>Pimephales notatus.</i> | 21. <i>Lepomis megalotis.</i> |
| 9. <i>Erieymba buccata.</i> | 22. <i>Etheostoma blennioides.</i> |
| 10. <i>Semotilus atromaculatus.</i> | 23. <i>Etheostoma caprodes.</i> |
| 11. <i>Micropterus dolomieu.</i> | 24. <i>Etheostoma cœruleum.</i> |
| 12. <i>Micropterus salmoides.</i> | 25. <i>Etheostoma nigrum.</i> |
| 13. <i>Ambloplites rupestris.</i> | |

II.—LAUGHERY CREEK, OHIO COUNTY.

The following were obtained by Professor Jenkins in Laughery Creek, near Milton, in August, 1887:

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|------------------------------------|------------------------------------|
| 1. <i>Noturus flavus.</i> | 13. <i>Micropterus salmoides.</i> |
| 2. <i>Noturus miurus.</i> | 14. <i>Ictiobus velifer.</i> |
| 3. <i>Ictalurus punctatus.</i> | 15. <i>Moxostoma duquesnei.</i> |
| 4. <i>Ameiurus natalis.</i> | 16. <i>Catostomus nigricans.</i> |
| 5. <i>Leptops olivaris.</i> | 17. <i>Lepomis cyanellus.</i> |
| 6. <i>Notropis whipplei.</i> | 18. <i>Lepomis megalotis.</i> |
| 7. <i>Notropis lythrurus.</i> | 19. <i>Dorosoma cepedianum.</i> |
| 8. <i>Campostoma anomalum.</i> | 20. <i>Etheostoma blennioides.</i> |
| 9. <i>Semotilus atromaculatus.</i> | 21. <i>Etheostoma flabellare.</i> |
| 10. <i>Pimephales notatus.</i> | 22. <i>Etheostoma nigrum.</i> |
| 11. <i>Erieymba buccata.</i> | 23. <i>Etheostoma cœruleum.</i> |
| 12. <i>Micropterus dolomieu.</i> | 24. <i>Etheostoma asprellus.</i> |

One specimen of this last was given me by Dr. T. E. Alden, who obtained it at Rising Sun. This is the first record of *Etheostoma asprellus* Jordan, in the State. The species was described first in the Bull. Ill. Lab. Nat. Hist. as *Pleurolepis asprellus*, sp. n. In this account it is stated that numerous specimens were in the Illinois State collection from the Little Wabash, in Effingham County, Ill., and two from Hancock County, Ill.

A specimen is in the National Museum from Alabama (Jordan).

Jordan & Gilbert obtained three specimens from the Washita River at Arkadelphia, Ark., in 1884. (Proc. Nat. Mus., 1886, p. 12.) These are the only records of its occurrence thus far.

As this specimen differs somewhat from the descriptions given, the following points are noted: Length of body to base of caudal fin, 4 inches. Head, 4.56 in length. Depth, 8 in length. Dorsal fin, XIV-15.

Anal, 1-14. Lateral line, 100. Coloration, pale, with four dark bands meeting over back; the first three, in width, equal to depth of body; fourth, narrower, all extending somewhat obliquely forward to lateral line. First band beginning on head and extending to first dorsal; second, beginning at middle of first dorsal, extending to second dorsal; third, beginning at middle of second dorsal and extending to a little past second dorsal; fourth, on caudal peduncle to caudal fin. A dark streak along lateral line; darker as it passes through the dark bands.

* (*Pleurolepis asprellus* Jordan, Bull. Ill. Lab. Nat. Hist., 2, p. 33, 1873.

Pleurolepis asprellus Jordan, Manual Vert., ed. 2, 404.

Ammocrypta asprella Jordan & Gilbert, Synop. Fishes, N. A., p. 490.

Crystallaria asprella Jordan & Gilbert, Proc. U. S. Nat. Mus., 1886, p. 12.

Crystallaria asprella Jordan, Cat. Fishes N. A., 1885, p. 73.)

III.—FRANKLIN COUNTY.

In Bulletin No. 2 of the Brookville Society of Natural History, Mr. Evermann published "A List of the Fishes observed in the Vicinity of Brookville, Franklin County, Indiana."

This list, printed in March, 1886, contained thirty-five species. About the 20th of May following a little time was spent by W. P. Shannon and O. P. Jenkins seining Little Salt Creek, in the northwestern part of the county, which enables us to add the following nine species to the list:

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|--|---|
| 1. <i>Catostomus teres</i> Mitchill. | 6. <i>Notropis atherinoides</i> (Raf.). |
| 2. <i>Chrosomus erythrogaster</i> Agassiz. | 7. <i>Eriocymba buccata</i> Cope. * |
| 3. <i>Hybognathus nuchalis</i> Agassiz. | 8. <i>Rhinichthys atronasus</i> (Mitchill). |
| 4. <i>Notropis whipplei</i> Girard. | 9. <i>Semotilus atromaculatus</i> (Mitchill). |
| 5. <i>Notropis lythrurus</i> Jordan. | |

IV.—OCCURRENCE OF THE BROOK STICKLEBACK (*EUCALIA INCONSTANS* Kirt.) IN THE OHIO BASIN.

Jordan & Gilbert give *Eucalia inconstans* as ranging from "New York to Kansas and Greenland, in fresh waters only; abundant in the Great Lake region." So far as we are able to learn it has never been reported from the Ohio Valley until now. To W. P. Shannon, of Greensburgh, Ind., belongs the credit of its discovery in this region.

In a "List of the Fishes of Decatur County, Indiana," recently printed privately by Mr. Shannon, he reports that he took about twenty specimens in some ponds which were tributary to Clifty and Flat Rock Creeks, which flow through that county. These were obtained in June, 1887. Specimens of this fish have been introduced into Clear Creek, in the State University campus at Bloomington, from Cayuga Lake, New York.

The following species are here reported for the first time from Indiana:

Lagochila lacera Jor. & Brant.

Etheostoma pellucidum clarum Jor. & Meek.

Notropis arge (Cope).

Etheostoma jessie Jor. & Brant.

Etheostoma asprellus Jordan.