

## A Fish Faunal Survey of Posey County, Indiana

THOMAS R. KOZEL, GORDON K. WEDDLE, KATHY L. WELBORN, JOHN T. DAILEY,  
DON C. DAILEY and MELVIN W. DENNER  
Department of Biology, Indiana State University Evansville,  
Evansville, Indiana 47712

### Introduction

Posey County is the southwesternmost county in the state of Indiana. It is bounded on the south by the Ohio River and on the west by the Wabash River. Land area in the county is about 1072 km<sup>2</sup>. It contains approximately 426 km of waterways, 169 of which are contributed by the Ohio and Wabash Rivers.

The county consists principally of rolling uplands with flat plains along the two major rivers. Elevations range from approximately 102 m above sea level near the confluence of the Ohio and Wabash Rivers in the southwest corner to approximately 175 m above sea level near the town of St. Wendel in the northeast corner of the county. The bedrock geology of the county is Pennsylvanian, primarily shale, sandstone and limestone - sloping gently from northeast to southwest.

According to the most recent United States Department of Agriculture Soil Survey (9), approximately 90% of the land in Posey County is actively farmed. Woodlands are restricted to steeper areas and the undrained lowlands. Cypress swamps occur intermittently along the Ohio River and extreme lower Wabash River.

Due to its geographic location, and the presence of two major rivers, Posey County offers a variety of aquatic habitats. These include large river, swamp or slough, sand lakes, streams of moderate gradient and streams of low gradient. A rather diverse fish fauna might be expected to occur in such a situation and the following survey was begun to determine the present composition of this fauna.

The impetus for this work was twofold. First, although several ichthyologists including Rafinesque (12), LeSueur (7), Jordan (6), Gerking (4), and Smith (pers. comm.) have collected in the county, no systematic inventory has been published listing fishes of both the Ohio/Wabash system and the interior streams and lakes. Second, the Indiana Natural Heritage Program is presently evaluating potential natural sites for preservation and the data obtained in this survey is being made available as an aid to the program.

### Materials and Methods

Fishes were collected at approximately one week intervals during the period 4 June 1980 - 19 October 1980. A total of thirty-four collections were made from thirty-one collecting sites (Figure 1). The following list of these sites includes, in order, geographic location, collection date(s) and general habitat type (I - large river, II - swamp or slough, III - sand lake, IV - stream of moderate gradient, V - stream of low gradient).

Fishes were obtained using electroshock and by seining. The electric generator produced 12 V.A.C. at 15 A supplied to 2 40 cm diameter loops of 1 cm copper tubing attached to 3 m poles. The current could be pulsed or run continually. Minnow seines of 5 mm<sup>2</sup> mesh size, and dip- and landing nets were employed to actually capture the fish.

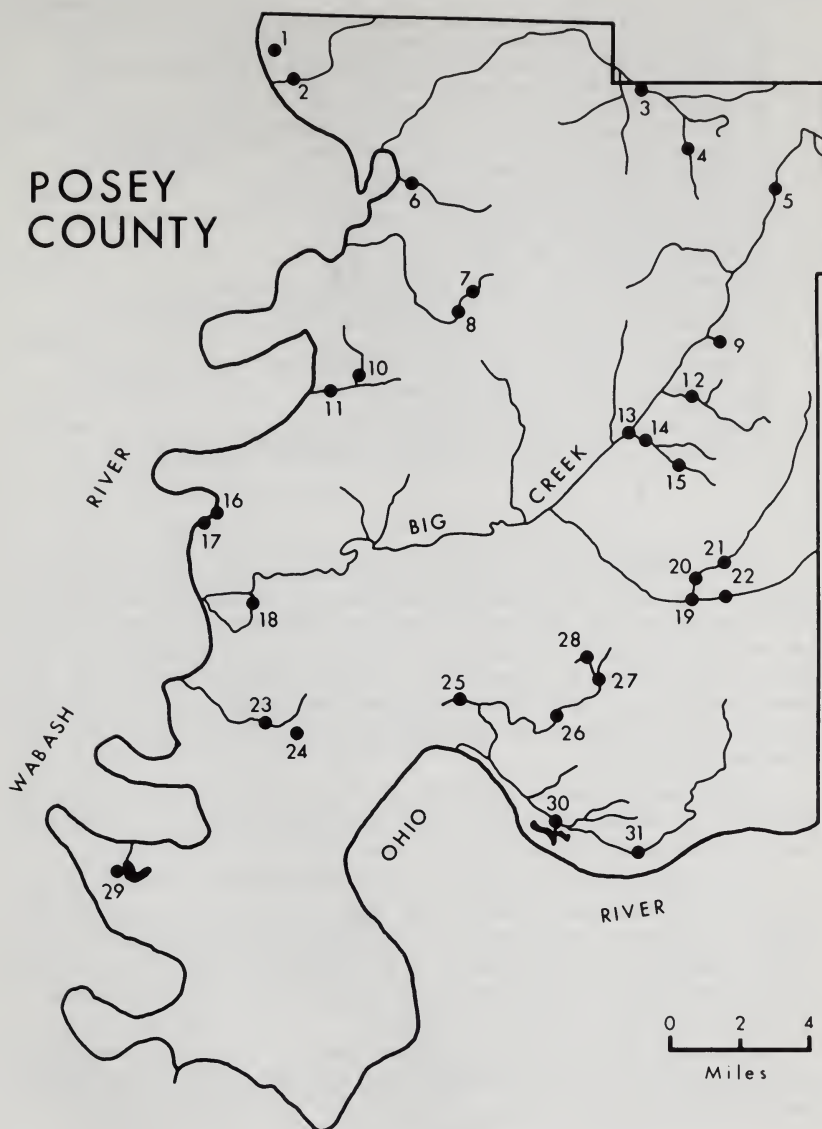


FIGURE 1. *Collection Sites*

1. Lake next to I-64, T3S, R14W, S33, 11 Oct. 80, III
2. Big Bayou Cr. at 250 W. Rd., T3S, R14W, S3, 11 Oct. 80, V
3. Black R. at Ind. 165 Hwy., T4S, R12W, S6, 16 Oct. 80, IV
4. Black R. at I-64, T4S, R12W, S17, 16 Oct. 80, V
5. Big Cr. at I-64, T4S, R12W, S23, 16 Oct. 80, V
6. Unnamed Cr. at 70E Rd., T4S, R13W, S19, 11 Oct. 80, V
7. Harmony Cr. at 250 E. Rd., T5S, R13W, S4, 19 Sep. 80, V
8. Harmony Cr. at 470 N. Rd., T5S, R13W, S9, 19 Sep. 80, V
9. Unnamed branch of Big Cr. at 960 E. Rd., T5S, R12W, S10, 25 Jun. 80, IV
10. Hawthorne Cr. at 275 N. Rd., T5S, R14W, S24, 16 Jul. 80, IV

11. Rush Cr. at 100 W. Rd., T5S, R14W, S23, 16 Jul. 80, IV
12. Unnamed branch of Big Cr. at 850 E. Rd., T5S, R12W, S21, 25 Jun. 80, V
13. Confluence of Big Cr. and unnamed branch, T5S, R12W, S30, 18 Jun. 80, V
14. Unnamed branch of Big Cr. at 675 E. Rd., T5S, R12W, S30, 18 Jun. 80, V
15. Unnamed branch of Big Cr. at 50 N. Rd., T5S, R12W, S33, 18 Jun. 80, IV
16. Wabash R. between island and shore at end of 100 S. Rd., T6S, R14W, S8, 19 Oct. 80, I
17. Wabash R. between two islands at end of 100 S. Rd., T6S, R14W, S8, 19 Oct. 80, I
18. Big Cr. Slough at 350 W. Rd., T6S, R14W, S21, 6 Aug. 80, II
19. Confluence of Neu Cr. and Little Cr., T6S, R12W, S21, 11 Jun. 80, V
20. Neu Cr. at 300 S. Rd., T6S, R12W, S21/16, 11 Jun. 80, V
21. Neu Cr. at 900 E. Rd., T6S, R12W, S15/16, 11 Jun. 80, V
22. Little Cr. at 900 E. Rd., T6S, R12W, S22, 11 Jun. 80, V
23. Pitcher Cr. at 300 W. Rd., T7S, R14W, S4, 4 Jun. 80, V
24. Lake 0.75 km S. of 675 S. Rd., T7S, R14W, S10, 30 Jul. 80, III
25. Unnamed branch of McFadden Cr. at 225 E. Rd., T7S, R13W, S4, 2 Jul. 80, IV
26. McFadden Cr. at Ind. 62 Hwy., T7S, R13W, S2, 2 Jul. 80, V
27. McFadden Cr. at 550 S. Rd., T6S, R12W, S31, 2 Jul. 80, IV
28. McFadden Cr. at 500 S. Rd., T6S, R13W, S36, 2 Jul. 80, V
29. Half Moon Pond, T7S, R15W, S25/36, 20 Aug. 80, II
30. Cypress Slough/Goose Pond, T7S, R13W, S24, 4 Jun. 80, 23 Jul. 80, 28 Jul. 80, II
31. Castleberry Cr. (Cypress Slough) at 700 E. Rd., T7S, R12W, S29, 4 Jun. 80, V

The availability of both the electric generator and boats was not uniform throughout the collecting period and therefore some collections were made with seines and dipnets only. In interior streams the width was always less than 10 m and the depth generally less than 1 m so, when necessary, the use of seines and dipnets only was deemed appropriate at these sites. Additional seine passes were made at these sites in an attempt to compensate for the lack of electroshock gear. Large river, slough and lake sites were sampled with electroshock apparatus - most often mounted in a boat.

The approximate number of individuals of each species collected at each site is listed, not for comparative purposes due to the lack of uniformity in collecting techniques and available time, but as an indication of relative abundance.

Common species were identified in the field and returned to the water alive. Fishes which could not be identified in the field, or those deemed unusual in some respect, were fixed in 10% formalin and returned to the laboratory. The keys of Clay (2), Eddy (3), Nelson and Gerking (10), Pflieger (11) and Smith (13) were used to aid identification. The scientific and common names of fishes collected are those approved by the American Fisheries Society (1).

A reference collection based on material from this work has been established at Indiana State University Evansville. Field data has been stored in computer files for future reference.

## Results

Fifty-six species in 16 families have been identified from Posey County in the present study. Following is a list of these species, the site(s) at which they were collected and the approximate number of specimens obtained at each site (1 - single individual, 2 - 2-10, 3 - 11-100).

## Species List

### Acipenseridae

*Scaphirhynchus platyrhynchus* (Rafinesque), shovelnose sturgeon. Single specimen caught by fisherman at Old Dam on Wabash River

**Lepisosteidae***Lepisosteus oculatus* (Winchell), spotted gar

30 (2)

*Lepisosteus platostomus* (Rafinesque), shortnose gar

30 (2)

**Amiidae***Amia calva* Linnaeus, bowfin

24 (1), 29 (2), 30 (2)

**Anguillidae***Anguilla rostrata* (Lesueur), American eel

16 (1)

**Clupeidae***Dorosoma cepedianum* (Lesueur), gizzard shad

1 (3), 11 (3), 18 (3), 24 (3), 25 (3), 29 (3), 30 (3), 31 (2)

**Esocidae***Esox americanus vermiculatus* Lesueur, grass pickerel

2 (1), 19 (1), 21 (1), 23 (1)

**Cyprinidae***Camptostoma anomalum* (Rafinesque), stoneroller

9 (3), 12 (3), 15 (3), 22 (2)

*Carassius auratus* (Linnaeus), goldfish

3 (2)

*Cyprinus carpio* Linnaeus, carp

1 (3), 2 (1), 3 (2), 5 (3), 11 (2), 16 (3), 18 (3), 20 (1), 23 (1), 24 (2), 25 (2), 29 (3), 30 (3), 31 (1)

*Ericymba buccata* Cope, silverjaw minnow

6 (3), 7 (2), 9 (3), 10 (2), 11 (3), 12 (3), 21 (3), 22 (3), 26 (3), 27 (3), 28 (3)

*Hybognathus nuchalis* Agassiz, silvery minnow

11 (2), 27 (3)

*Hybopsis storeriana* (Kirtland), silver chub

18 (3)

*Notemigonus crysoleucas* (Mitchill), golden shiner

6 (2), 9 (2), 12 (3), 14 (3), 15 (3), 19 (1), 20 (2), 30 (3), 31 (2)

*Notropis atherinoides* Rafinesque, emerald shiner

11 (2), 30 (2), 31 (2)

*Notropis blennioides* (Girard), river shiner

16 (3), 17 (2)

*Notropis spilopterus* (Cope), spotfin shiner

2 (3), 9 (2), 21 (2)

*Notropis stramineus* (Cope), sand shiner

6 (2)

*Notropis umbratilis* (Girard), redbfin shiner

12 (2), 14 (3), 19 (3), 20 (3), 21 (3), 22 (2)

*Notropis volucellus* (Cope), mimic shiner

9 (2), 12 (3), 13 (3), 19 (3), 20 (3), 21 (2)

*Notropis whipplei* (Girard), steelcolor shiner

11 (3), 13 (3), 22 (2)

*Phenacobius mirabilis* (Girard), suckermouth minnow

9 (2), 11 (2), 12 (2), 16 (3), 17 (2), 22 (2)

*Pimephales notatus* (Rafinesque), bluntnose minnow

3 (3), 5 (3), 6 (3), 7 (3), 9 (3), 12 (3), 13 (2), 20 (3), 21 (2), 22 (3), 28 (3)

*Pimephales vigilax* (Baird and Girard), bullhead minnow

16 (2), 22 (2)

*Semotilus atromaculatus* (Mitchill), creek chub

3 (3), 7 (3), 8 (3), 9 (3), 10 (3), 11 (3), 12 (3), 13 (3), 14 (3), 15 (3), 20 (2), 21 (3), 22 (3), 25 (3), 26 (3), 27 (3), 28 (3)

**Catostomidae***Carpoides carpio* (Rafinesque), river carpsucker

2 (1), 29 (2)

*Carpoides cyprinus* (Lesueur), quillback

2 (2), 11 (1), 19 (1), 20 (1)

*Catostomus commersoni* (Lacépède), white sucker

9 (1), 11 (1), 18 (1)

- Erimyzon oblongus* (Mitchill), creek chubsucker  
12 (1)  
*Ictiobus bubalus* (Rafinesque), smallmouth buffalo  
2 (2), 18 (2), 24 (2), 29 (2)  
*Minytrema melanops* (Rafinesque), spotted sucker  
29 (1)

**Ictaluridae**

- Ictalurus melas* (Rafinesque), black bullhead  
3 (2), 12 (2), 14 (1), 29 (1)  
*Ictalurus natalis* (Lesueur), yellow bullhead  
5 (2), 15 (1), 16 (1), 19 (1), 23 (1), 29 (2), 30 (1)  
*Ictalurus nebulosus* (Lesueur), brown bullhead  
20 (1), 29 (2), 30 (2)  
*Ictalurus punctatus* (Rafinesque), channel catfish  
16 (1)  
*Noturus flavus* Rafinesque, stonecat  
17 (1)  
*Pylodictis olivaris* (Rafinesque), flathead catfish  
30 (1)

**Aphredoderidae**

- Aphredoderus sayanus* (Gilliams), pirate perch  
30 (1)

**Cyprinodontidae**

- Fundulus notatus* (Rafinesque), blackstripe topminnow  
2 (3), 3 (3), 4 (3), 5 (3), 6 (3), 7 (3), 9 (3), 12 (3), 14 (2), 15 (3), 16 (1), 19 (2), 20 (3), 21 (3), 22 (3), 23 (3), 25 (3), 26 (3),  
27 (3), 28 (3), 29 (3), 30 (3), 31 (3)

**Poeciliidae**

- Gambusia affinis* (Baird and Girard), mosquitofish  
2 (3), 3 (3), 6 (3), 11 (3), 16 (2), 23 (3), 25 (3), 26 (3), 28 (3), 29 (3), 30 (3), 31 (3)

**Atherinidae**

- Labidesthes sicculus* (Cope), brook silverside  
1 (3), 2 (3), 16 (3)

**Centrarchidae**

- Ambloplites rupestris* (Rafinesque), rock bass  
11 (2)  
*Centrarchus macropterus* (Lacepede), flier  
25 (1)  
*Lepomis cyanellus* Rafinesque, green sunfish  
2 (1), 3 (3), 5 (3), 7 (3), 8 (2), 9 (2), 11 (2), 12 (2), 13 (2), 15 (2), 18 (2), 19 (2), 20 (1), 21 (2), 22 (2), 24 (1), 26 (3), 27 (3),  
29 (2), 30 (3)  
*Lepomis gulosus* (Cuvier), warmouth  
2 (3), 18 (2), 24 (2), 29 (1), 30 (3), 31 (2)  
*Lepomis humilis* (Girard), orangespotted sunfish  
2 (1), 23 (2), 29 (2), 30 (2), 31 (1)  
*Lepomis macrochirus* Rafinesque, bluegill  
1 (3), 2 (3), 3 (3), 4 (2), 5 (3), 6 (2), 7 (2), 8 (3), 16 (3), 18 (3), 21 (3), 22 (3), 23 (2), 24 (2), 25 (3), 26 (3), 29 (3), 30 (3), 31  
(3)  
*Lepomis megalotis* (Rafinesque), longear sunfish  
2 (2), 18 (1), 22 (2), 24 (2), 29 (1)  
*Lepomis microlophus* (Günther), redear sunfish  
24 (2)  
*Micropterus dolomieu* Lacepede, smallmouth bass  
20 (1)  
*Micropterus punctulatus* (Rafinesque), spotted bass  
2 (2), 10 (1), 16 (2)  
*Micropterus salmoides* (Lacepede), largemouth bass  
24 (2), 29 (1)  
*Pomoxis annularis* Rafinesque, white crappie  
1 (2), 2 (1), 5 (2), 22 (2), 23 (2), 29 (3), 30 (3), 31 (2)  
*Pomoxis nigromaculatus* (Lesueur), black crappie  
11 (2), 29 (2), 30 (3)

**Percidae**

*Etheostoma gracile* (Girard), slough darter

14 (1)

**Sciaenidae**

*Aplodinotus grunniens* Rafinesque, freshwater drum

2 (3), 16 (3), 29 (1), 30 (3)

**Discussion**

Jordan (6) listed 73 species from Posey County. With the exception of one site on Big Creek all of his collections were made on or near the Ohio and Wabash Rivers. Most of the 56 species caught during the present work were also found by him. Additional species in his collections were principally the darters and madtoms.

Gerking (4, 5) listed approximately 60 species of fishes from Posey County. These were taken from stations on the Wabash River, Big Creek, Black River, Rush Creek, Hovey Lake and a slough near the confluence of the Wabash and Ohio Rivers. Forty-eight of these species were taken in the present survey. Some species listed by Gerking, but not collected in this study, have been reported numerous times to the latter by commercial and sportfisherman in the region. These include: *Polyodon spathula*, *Lepisosteus osseus*, *Ictiobus cyprinellus* and *Stizostedion canadense*. Five of the remaining species were darters and madtoms.

Among the species not seen by Gerking, but collected here are: *Carassius auratus* (wild gray coloration), *Notropis umbratilis*, *Catostomus commersoni*, *Ambloplites rupestris*, *Centrarchus macropterus* and *Micropterus dolomieu*.

During the mid-1960s and early 1970s Smith (personal communication) and his colleagues at the Illinois Natural History Survey collected in the Wabash River and nearby in some of its tributaries including the Black River and Rush Creek. In addition to other species, they collected *Lepisosteus osseus*, *Alosa chrysochloris*, *Dorosoma petenense*, *Hybopsis aestivalis*, *Notropis fumeus*, *Rhinichthys atratulus*, *Noturus eleutherus*, *Stizostedion canadense*, *Percina phoxocephala*, *Etheostoma asprigene*, *Etheostoma squamiceps* and *Roccus chrysois*.

The greatest diversity of fishes was found in the large rivers and sloughs. At Collecting Site 2, for example, near the confluence of Big Bayou Creek and the Wabash River, 17 species were collected. Fourteen species, including the only madtom, were collected at Sites 16 and 17 adjacent to one another on the Wabash River. Twenty species each were obtained from Sites 29 and 30, both sloughs.

Interior streams were characterized by fewer species, but larger numbers of individuals of each species. *Cyprinus carpio*, *Ericymba buccata*, *Pimephales notatus*, *Semotilus atromaculatus*, *Fundulus notatus*, *Gambusia affinis*, *Lepomis cyanellus* and *Lepomis macrochirus* were the most abundant fishes in the interior streams. Overall, *Fundulus notatus* could be considered the most abundant and widespread fish in Posey County.

The major change in the fish fauna of Posey County seems to have been an overall decrease in species diversity principally due to the apparent absence of many darters and madtoms, fish which generally require a gravelly or rocky substrate and rather clear, unpolluted, swiftly flowing water. The change in diversity is probably the result of habitat alteration which has accompanied the increased use of Posey County land for agriculture and urban development. Many of the interior streams are now channelized with steep-sided banks almost devoid of trees and shrubs. Crops are often planted within 2-3 m of the stream bank. Pines spray-

ing herbicides directly on the banks and the channel of several streams have been observed. Siltation and runoff, including herbicides, pesticides and sewage, have probably contributed to the alteration of the piscine habitats of interior streams. These same streams empty their loads of silt and man-made products into the Wabash and Ohio Rivers contributing to habitat alterations in these bodies of water as well. Fishes such as the paddlefish, various sturgeons and catfishes, although still caught in the large rivers, are rapidly declining in both numbers and size.

The alteration of habitats and the trends mentioned are not presented as unique to Posey County or of necessarily recent origin. Gerking (4) mentioned similar problems, although at the time less severe, in many Indiana streams. The problems deserve mention here because of their continued widespread occurrence.

The Indiana Natural Heritage Program is currently attempting to identify natural sites, not necessarily large, worthy of preservation. Many of these sites have been of interest for some time (8). The cypress sloughs along the lower Wabash River and the Ohio River as well as some of the forested sites farther north in the county along the Wabash River (ie. Old Dam) deserve consideration for preservation status. Future, more intensive collecting efforts will concentrate on species of darters and madtom.

#### Literature Cited

1. BAILEY, R. M., J. E. FITCH, E. S. HERALD, E. A. LACHNER, C. C. LINDSEY, C. R. ROBINS and W. B. SCOTT. 1970. A list of common and scientific names of fishes from the United States and Canada. 3rd Ed. Amer. Fish. Soc. Spec. Publ. No. 6: 1-150.
2. CLAY, W. M. 1975. The Fishes of Kentucky. Ky. Dept. Fish Wildl. Res., Frankfort, Ky. 416 p.
3. EDDY, S. 1969. The Freshwater Fishes. Wm. C. Brown, Dubuque, Iowa. 286 p.
4. GERKING, S. D. 1945. The distribution of the fishes of Indiana. Investigations of Indiana Lakes and Streams. 3 (1): 1-137.
5. \_\_\_\_\_. 1955. Key to the fishes of Indiana. Investigations of Indiana Lakes and Streams. 4:49-86.
6. JORDAN, D. S. 1890. Report of explorations made during the summer and autumn of 1888 in the Allegheny region of Virginia, North Carolina and Tennessee, and in Western Indiana, with an account of the fishes found in each of the river basins of those regions. Bull. U. S. Fish. Comm. 1888, 8:97-173.
7. LESUEUR, C. A. 1827. American Ichthyology, or natural history of the fishes of North America. New Harmony, Ind. 44 p.
8. LINDSEY, A. A., D. V. SCHMELZ and S. A. NICHOLS. 1969. Natural Areas in Indiana and Their Preservation. Ind. Nat. Areas Sur., Purdue Univ., Lafayette, Ind. 594 p.
9. McWILLIAMS K. M. 1979. Soil Survey of Posey County, Indiana. United States Dept. Agric., Soil Cons. Serv. and Purdue Univ. Agric. Exp. Stn. U. S. Government Printing Office, Washington, D.C. 155 p.
10. NELSON, J. S. and S. D. GERKING. 1968. Annotated Key to the Fishes of Indiana. Indiana Aquatic Research Unit, Bloomington, Ind. 84 p.
11. PFLIEGER, W. L. 1975. The Fishes of Missouri. Missouri Dept. of Conserv., Jefferson City, Mo. 343 p.
12. RAFINESQUE, C. S. 1820. Ichthyologica Ohiensis, or natural history of the fishes inhabiting the River Ohio and its tributary streams, preceded by a physical description of the Ohio and its branches. Lexington, Ky. 90 p.
13. SMITH, P. W. 1979. The Fishes of Illinois. Ill. State Nat. Hist. Sur., Univ. Ill. Press, Urbana, Ill. 314 p.

**Acknowledgments**

The authors would like to express their thanks to Russell Murray for his art work and to the Department of Biology, Indiana State University Evansville for making funds available for this project.