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Fishes of the Fourche River in Northcentral Arkansas

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ABSTRACT

A survey of the fishes of Fourche River in northcentral Arkansas was made between June 1974 and March 1976. Field collections and literature records revealed that the river system was inhabited by 94 species of fish representing 21 families.

The collected fishes represent both the Ozark and the lowland faunal groups. Fourteen species of *Etheostoma* and four species of *Percina* were collected. The records of *Etheostoma asprigene* and *Ellossoma zonatum* represent extensions of the previously known ranges of these species within the state. *Noturus gyrinus* and *Etheostoma histrio* were recorded from the Black River system in Arkansas for the first time since 1894. Predominant highland species of minnows included *Campostoma anomalum*, *Dionda nubilis*, *Notropis boops*, *Notropis cornutus chrysocephalus*, *Notropis telescopus*, and *Notropis zonatus*. Predominant lowland species of minnows were *Hybognathus nuchalis*, *Notemigonus crysoleucas*, *Notropis texanus*, and *Notropis venustus*.

INTRODUCTION

Fourche River is predominantly a clear, spring-fed stream originating in Ripley County, Missouri, and flowing into the Black River near Pocahontas, Arkansas, in Randolph County, approximately 40 miles from the stream's origin.

Pflieder (1971) reported 27 species from the Missouri part of the stream. With the exception of a 1953 survey conducted by the Arkansas Game and Fish Commission, no investigations of the fishes found south of the Arkansas-Missouri line are known for Fourche River. Studies were conducted in Randolph County on the Current River and Jane's Creek by Green and Beadles (1974) and Fowler and Harp (1974), respectively. Twenty-five floodwater-retarding structures have been proposed for the Fourche River watershed (U.S. Soil Conservation Service 1966). At the present time four have been completed.

The following report includes a preliminary list of the fish fauna found in the Fourche River watershed.

DESCRIPTION OF AREA

Fourche River cuts through the Salem Plateau of the Ozark Mountain physiographic province (Fenneman 1938) and drains onto the Coastal Plain between the Ozark Uplands and Crowley's Ridge. The Salem Plateau in this region is composed of Gasconade and Potosi limestone, dolomite, and sandstone of Ordovician age (Sauer 1920).

The river originates approximately 16 miles northwest of Doniphan, Missouri, at an elevation of approximately 850 feet. It flows southeastward to the Arkansas-Missouri line over a substrate of gravel and limestone rock at depths of 8 to 36 inches before turning southward to Pocahontas, Arkansas. Near the state line the stream becomes wider (50 ft) and the pools range to 12 feet in depth. In Arkansas the substrate is gravel and limestone rock in the upper third of the stream, gravel and sand in the middle third, and sand and mud in the lower third. The watershed contains 298 square miles, of which 191 are in Arkansas and 107 are in Missouri. Approximately 71% of the watershed is rugged uplands, 12% is rolling hill land, and 17% is bottomland (USSCS 1966).

Lamonds et al. (1969) reported the flow characteristics of Fourche River above Pocahontas. On 27 July 1966 the mean discharge was 36 cubic feet per second. Discharge during annual flooding was computed at 8,600 cubic feet per second. Farming activities have caused an increase in turbidity in the Arkansas part of the stream.

The average annual rainfall in Randolph County is 49.64 inches. Air temperature ranges from 121F to -22F (Hickmon 1941).

The watershed is bounded on the east by Current River, on the north by Buffalo Creek, on the west by Eleven Point River, and on the south by Black River.

METHODS

Collections were taken with the following seines: 10 ft, 1/8-inch mesh; 12 ft, 1/4-inch mesh; 20 ft, 1/4-inch mesh; 30 ft, 3/16-inch mesh; and 50 ft, 1/4-inch mesh. A 45 ft, 1/4-inch mesh gill net was used at three stations. Also, various hook and line methods were used. Specimens were preserved in 10% formalin, placed in 40% isopropyl alcohol, and stored in the Arkansas State University fish museum.

Scientific names of fishes follow those of Bailey et al. (1970) except where noted.

ACKNOWLEDGEMENTS

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ANNOTATED CHECKLIST OF FISHES OF FOURCHE RIVER

Petromyzontidae (Lampreys)

Ichthyomyzon castaneus Girard. Chestnut lamprey.

A single specimen was collected on 6 March 1976 while it was attached to a host. A local fisherman reported a lamprey attached to a sucker in February 1976. Baker (1954) and Pflieder (1971) reported *I. castaneus*, *Lampetra aepyptera* (Abbott), and *L. lamottei* (Lesueur) from the Current and Eleven Points Rivers.

Acipenseridae (Sturgeons)

Scaphirhynchus platyrhynchus (Rafinesque). Shovelnose sturgeon.
Collected in the lower part of the river.

Polyodontidae (Paddlefish)

Polyodon spathula (Walbaum). Paddlefish.

Reported as present in the lower parts of the system. Probably migrates in and out of the Black River (Arkansas Game and Fish Commission 1953).

Lepisosteidae (Gars)

Lepisosteus oculatus (Winchell). Spotted gar.

Rare inhabitant. Was found in a long, deep pool.

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Lepisosteus osseus (Linnaeus). Longnose gar.
Common inhabitant of the middle and lower parts of the system.

Lepisosteus platostomus Rafinesque. Shortnose gar.
Reported as fairly abundant in the lower part of the stream (Arkansas Game and Fish Commission 1953).

Lepisosteus spatula Lacepede. Alligator gar.
Reported as present in the lower part of the stream. It is an uncommon inhabitant of the Black River; however, it probably migrated in and out of the Black River (Arkansas Game and Fish Commission 1953).

Amiidae (Bowfins)

Amia calva Linnaeus. Bowfin.
Abundant in the Arkansas part of the river.

Anguillidae (Freshwater Eels)

Anguilla rostrata (Lesueur). American eel.
Taken on a trot line near the Arkansas-Missouri state line.

Clupeidae (Herrings)

Dorosoma cepedianum (Lesueur). Gizzard shad.
Abundant and widespread in the main river channel.

Hiodontidae (Mooneyes)

Hiodon tergisus Lesueur. Mooneye.
Common inhabitant of clear large pools.

Esocidae (Pikes)

Esox americanus varmiculatus Lesueur. Grass pickerel.
Relatively uncommon; taken from still shallow water.

Esox niger Lesueur. Chain pickerel.
Reported by the Arkansas Game and Fish Commission (1953).

Cyprinidae (Minnows and Carps)

Camptostoma anomalum (Agassiz). Central stoneroller.
Abundant and widespread throughout the system, particularly in shallow pools and riffles.

Camptostoma oligolepis Hubbs and Greene. Largescale stoneroller.
Often found with the central stoneroller; fairly abundant and widespread within the system.

Cyprinus carpio Linnaeus. Carp.
Common inhabitant of both shallow and deep pools, especially in the dredged ditches.

Dionda nubilus (Forbes). Ozark minnow.
One of the most abundant minnows. Found in the clear head-water regions near riffles.

Hybognathus nuchalis Agassiz. Silvery minnow.
Common in the lower part of the system.

Hybopsis amblops (Rafinesque). Bigeye chub.
This species was not collected in the writers' study although it was reported by Pflieger (1971).

Nocomis biguttatus (Kirtland). Hornyhead chub.
Occasionally taken from the headwaters.

Notemigonus crysoleucas (Mitchill). Golden shiner.
Common in ditches and quiet pools.

Notropis atherinoides (Rafinesque). Emerald shiner.
Common in deep pools with a sandy bottom.

Notropis boops Gilbert. Bigeye shiner.
Abundant and widespread throughout the Ozark part of the system.

Notropis cornutus chrysocephalus (Rafinesque). Striped shiner.
The writers follow R.J. Miller (1968) in considering *N. chrysocephalus* a subspecies of *N. cornutus* (Mitchill). The striped shiner was a common inhabitant of rocky pools.

Notropis galacturus (Cope). Whitetail shiner.
Found throughout the system in clear pools with moderate current.

Notropis telescopus (Cope). Telescope shiner.
Abundant in the higher-gradient tributary streams.

Notropis texanus (Girard). Weed shiner.
Present in the lowland part of the stream.

Notropis umbratilis (Girard). Redfin shiner.
Widespread throughout the system; found in both upland and lowland pools.

Notropis venustus (Girard). Blacktail shiner.
Found fairly often in the lowland reaches of the system.

Notropis volucellus (Cope). Mimic shiner.
Rare inhabitant of the lowland dredged ditches.

Notropis zonatus (Putnam). Bleeding shiner.
Abundant in the upland reaches of the system. Taken most often over gravel substrates in fast-flowing water in or near riffles.

Phoxinus erythrogaster (Rafinesque). Southern redbelly dace.
Taken occasionally in the smaller spring-fed tributary streams.

Pimephales notatus (Rafinesque). Bluntnose minnow.
Common and widespread throughout the system.

Semotilus atromaculatus (Mitchill). Creek chub.
Common in the headwaters.

Catostomidae (Suckers)

Carpiodes cyprinus (Lesueur). Quillback.
Reported by the Arkansas Game and Fish Commission (1953). Not collected during this study; however, it is a common inhabitant of the Black River system.

Catostomus commersoni (Lacepede). White sucker.
Reported as fairly abundant by the Arkansas Game and Fish Commission (1953), though not collected during this study.

Erimyzon oblongus (Mitchill). Creek chubsucker.
Commonly collected in clear pools with a gravel substrate.

Hypentelium nigricans (Lesueur). Northern hog sucker.
Very common in clear shallow pools and deep riffles throughout the Ozark part of the stream.

Ictiobus bubalus (Rafinesque). Smallmouth buffalo.
Reported in the lower part of the river by local fishermen.

Ictiobus cyprinellus (Valenciennes). Bigmouth buffalo.
Reported by the Arkansas Game and Fish Commission (1953) and local fishermen.

Ictiobus niger (Rafinesque). Black buffalo.
An inhabitant of large pools.

Minytrema melanops (Rafinesque). Spotted sucker.
Uncommon resident of the lowland ditches.

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Moxostoma duquesnei (Lesueur). Black redhorse.
Common in the shallow and deep pools of the river.

Moxostoma erythrurum (Rafinesque). Golden redhorse.
Common in pools of the river and larger tributaries.

Ictaluridae (Freshwater Catfishes)

Ictalurus furcatus (Lesueur). Blue catfish.
Reported by the Arkansas Game and Fish Commission (1953).
Probably an immigrant from Black River.

Ictalurus melas (Rafinesque). Black bullhead.
Uncommon; collected in the lower reaches.

Ictalurus natalis (Lesueur). Yellow bullhead.
Abundant throughout the river and its tributaries.

Ictalurus punctatus (Rafinesque). Channel catfish.
Common in the deep pools of the river. Has been stocked occasionally in the river by Game and Fish Commission personnel.

Noturus albater Taylor. Ozark madtom.
Most abundant madtom collected. Taken from riffles with a rocky substrate.

Noturus eleutherus Jordan. Mountain madtom.
A single specimen was collected from a riffle area with a gravel substrate and strong current.

Noturus exilis Nelson. Slender madtom.
Collected only at night from shallow pools just above riffles. Not common.

Noturus gyrinus (Mitchill). Tadpole madtom.
Collected from a dredge ditch in the lowlands. This was the second record of this species from the Black River system within Arkansas. Meek (1894) reported it from the Strawberry River system.

Noturus nocturnus Jordan and Gilbert. Freckled madtom.
Rare ictalurid from a lowland dredged ditch.

Pylodictis olivaris (Rafinesque). Flathead catfish.
Reported as common by a local commercial fisherman.

Cyprinodontidae (Killifishes)

Fundulus catenatus (Storer). Northern studfish.
Common in small clear headwater tributaries.

Fundulus olivaceus (Storer). Blackspotted topminnow.
Common pool inhabitant throughout the system.

Poeciliidae (Livebearers)

Gambusia affinis (Baird and Girard). Mosquitofish.
Common in pools of lower reaches of the system.

Aphredoderidae (Pirate Perches)

Aphredoderus sayanus (Gilliams). Pirate perch.
Rare. Taken from a lowland slough and Mud Creek.

Atherinidae (Silversides)

Labidesthes sicculus (Cope). Brook silverside.
Common in pools throughout the system.

Percichthyidae (Temperate Basses)

Morone chrysops (Rafinesque). White bass.
Reported from the lower part of the river by the Arkansas Game and Fish Commission (1953).

Centrarchidae (Sunfishes)

Ambloplites rupestris (Rafinesque). Rock bass.
Abundant in the clear rocky shallow pools.

Centrarchus macropterus (Lacepede). Flier.
Uncommon inhabitant of the lowlands.

Chaenobryttus gulosus (Cuvier). Warmouth.
The writers follow Miller and Robison (1973) in retaining the genus *Chaenobryttus*. Fairly common in pools of the lower part of the river.

Lepomis cyanellus Rafinesque. Green sunfish.
Abundant and widespread.

Lepomis humilis (Girard). Orangespotted sunfish.
Uncommon inhabitant of lowland areas with mud bottoms.

Lepomis macrochirus Rafinesque. Bluegill.
Common and widespread.

Lepomis megalotis (Rafinesque). Longear sunfish.
Abundant and widespread.

Lepomis microlophus (Gunther). Redear sunfish.
Uncommon in lowland pools.

Micropterus dolomieu Lacepede. Smallmouth bass.
Common in the clearer parts of the river and larger tributaries.

Micropterus punctulatus (Rafinesque). Spotted bass.
Widespread and abundant.

Micropterus salmoides (Lacepede). Largemouth bass.
Abundant, especially in the lower two-thirds of the system.

Pomoxis annularis Rafinesque. White crappie.
Common in the lower deeper pools of the river.

Pomoxis nigromaculatus (Lesueur). Black crappie.
Commonly found in the longer clearer pools of the upper part of the river.

Elassomatidae (Pygmy Sunfishes)

Elassoma zonatum Jordan. Banded pygmy sunfish.
Several specimens were collected from a slough and dredged ditch in the lowlands. This collection represents the first record of *E. zonatum* in the Black River system in Arkansas.

Percidae (Perches)

Etheostoma asprigene (Forbes). Mud darter.
Collected only from the lowland ditches with a mud substrate. This is the first record of *E. asprigene* from the Black River system in Arkansas.

Etheostoma blennioides Rafinesque. Greenside darter.
Abundant throughout the upper parts of the system; collected from the riffles.

Etheostoma caeruleum Storer. Rainbow darter.
Very abundant in the clear riffles of the main river and tributaries.

Etheostoma chlorosomum (Hay). Bluntnose darter.
Inhabitant of the lower sluggish parts of the system.

Etheostoma euzonum (Hubbs and Black). Arkansas saddled darter.
Inhabitant of deep clear riffles in the middle part of the main river.

Etheostoma flabellare Rafinesque. Fantail darter.
Very abundant in the fast shallow riffles of the tributaries and river.

Etheostoma gracile (Girard). Slough darter.
Inhabitant of the shallow pools of the lowland tributaries.

Etheostoma histrio Jordan and Gilbert. Harlequin darter.
Three specimens were taken from a strong clear current flowing over a substrate of sand and gravel in a lowland dredged ditch. Tsai (1968) reported this to be the typical habitat of *E. histrio*. Before this collection only one specimen had been reported from the Black River system in Arkansas (Meek, 1894). Meristic characteristics and measurements for the three individuals are: L. 1. 53, 50, 51; A. II, 8, II, 7, II, 7; D. X-13, XI-13, IX-13; P. 1, 14, 14, 14; P. 6, 6, 6; standard length, 53 mm, 46 mm, 44 mm; head length, 13.5 mm, 11 mm, 11 mm; body depth, 11 mm, 11 mm, 10 mm.

Etheostoma nigrum Rafinesque. Johnny darter.
Common in the clear fast riffles of the upper parts of the system.

Etheostoma proeliare (Hay). Cypress darter.
Specimens were collected in a lowland tributary over a substrate of sand and mud.

Etheostoma spectabile (Agassiz). Orangethroat darter.
Common in smaller shallow tributary pools and riffles.

Etheostoma stigmaeum (Jordan). Speckled darter.
Collected from a lowland ditch with clear water.

Etheostoma whipplei (Girard). Redfin darter.
Inhabitant of the lowland dredged ditches. Rare.

Etheostoma zonale (Cope). Banded darter.
Common in the moderate-size part of the stream in clear fast riffles.

Percina caprodes (Rafinesque). Logperch.
Collected in a deep pool with a gravel substrate just above a deep riffle.

Percina maculata (Girard). Blackside darter.
A single specimen was collected in a clear lowland ditch.

Percina sciera (Swain). Dusky darter.
Collected in a clear lowland ditch near a submerged beaver dam.

Percina uranidea (Jordan and Gilbert). Stargazing darter.
Collected in a large deep clear riffle over a substrate of gravel.

Stizostedion vitreum vitreum (Mitchill). Walleye.
Though not collected in this study, local fishermen report its presence in the lower part of the river. In February and March of 1976, *Stizostedion canadense* (Smith), the sauger, and *S. v. vitreum* were caught in Eleven Point, Black, and Current Rivers, respectively. Probably a winter resident of Black River which migrates to spawn.

Sciaenidae (Drums)

Aplodinotus grunniens Rafinesque. Freshwater drum.
Present in the deeper pools of the river.

DISCUSSION

Fourche River flows from the Ozark uplands onto the lowland Coastal Plain. Because of its geographic situation it contains a wide variety of ecological habitats which are conducive to a great diversity

of fish fauna. During this study 93 species of fish representing 20 families were reported. The fish composition was of two types, Ozarkian and lowland.

Etheostoma asprigene and *Elassoma zonatum* were collected from the Black River system within the state for the first time. Both were taken from a lowland ditch containing a substrate of mud and rubble, the typical habitat of both species (Miller and Robison 1973). *Noturus gyrinus* was also taken from a lowland ditch. Meek (1894) had reported *N. gyrinus* from the Strawberry River, but Taylor (1969) questioned the validity of the identification on the basis of habitat. Robison and Beadles (1974) collected from the area but failed to produce *N. gyrinus*. One specimen of *Etheostoma histrio* had been reported from the Black River system within the state prior to this study (Meek 1894).

The family Percidae, particularly the genus *Etheostoma*, was well represented. Typical headwater species were *Etheostoma flabellare*, *E. spectabile*, *E. caeruleum*, and *E. blennioides*. The main channel species included *E. euzonum*, *E. nigrum*, *E. zonale*, *Percina caprodes*, *P. uranidea*, and *Stizostedion vitreum vitreum*. Lowland species were *Etheostoma asprigene*, *E. chlorosomum*, *E. histrio*, *E. proeliare*, *E. gracile*, *E. stigmaeum*, *E. whipplei*, *Percina maculata*, and *P. sciera*.

Several species that were expected to inhabit the river system were not collected during this study: *Notropis fumeus*, *N. greeni*, *N. maculatus*, *N. ozarcanus*, *N. rubellus*, *N. whipplei*, *Pimephales vigilax*, *Noturus miurus*, *Ammocrypta vivax*, *Percina evides*, and *Hiodon alosoides*.

The Fourche River watershed is in the heart of a county that is undergoing a rapid increase in population. The number of acres of land being cleared for farming also is increasing. Undoubtedly, these two factors will influence the ichthyofauna of the watershed in the future.

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