

1977

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Recommended Citation

Frazier, George C. and Beadles, John K. (1977) "Fishes of Sylamore Creek, Stone County, Arkansas," *Journal of the Arkansas Academy of Science*: Vol. 31, Article 13.

Available at: <https://scholarworks.uark.edu/jaas/vol31/iss1/13>

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The Fishes of Sylamore Creek, Stone County, Arkansas

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ABSTRACT

A survey of the fishes of Sylamore Creek in northcentral Arkansas yielded a total of 15,041 specimens representing 44 species, including one hybrid, distributed among 11 families. The three most abundant fishes collected were: *Notropis pilsbryi* Fowler, *Dionda nubilis* (Forbes), and *Notropis telescopus* (Cope), respectively. Two species, *Campostoma anomalum pullum* (Agassiz), and *N. pilsbryi*, were collected at every station.

Sylamore Creek is a clear predominately spring-fed stream that originate in the Ozark Mountains of northcentral Arkansas and empties into the White River 72.3 km above Batesville. Sylamore Creek is composed of two branches, North and South Sylamore, which comprise the bulk of the watershed. Both branches flow through extremely rugged and scenic country before joining to form Sylamore Creek proper. After the confluence of both branches, the Creek flows 0.8 km before emptying into the White River at Allison, Arkansas.

INTRODUCTION

Sylamore Creek is a clear, predominately spring-fed stream that originates in the Ozark Mountains of northcentral Arkansas and empties into White River 72.3 km above Batesville, Arkansas. Sylamore Creek consists of two branches, North Sylamore and South Sylamore. North Sylamore has its origin in the Ozark National Forest and flows through national forest land. South Sylamore originates and flows predominately through private lands. Both branches converge at the town of Allison to form Sylamore Creek which empties into White River 0.8 km downstream. Both branches flow through similar geological areas. However, the land bordering North Sylamore is used mainly for recreation, while that bordering South Sylamore is predominately in pasture. Both branches are considered to have excellent fishing but are not large enough to float.

The development of Blanchard Springs Caverns on North Sylamore and the newly completed Folk Center at nearby Mountain View have greatly increased the tourism in this area and will most likely have an impact upon the pristine nature of the stream.

Similar studies have been completed on other Ozark streams. Matthews and Harp (1974) reported 44 species of fish from Piney Creek, which is comparable to Sylamore Creek in size and also empties into White River. Jackson and Harp (1973) reported 33 species of fish from Big Creek, while Fowler and Harp (1974) reported 52 species from Jane's Creek. Investigations of larger Ozark streams include Robison and Beadles (1974) who reported 95 species from Strawberry River while Green and Beadles (1974) reported 96 species from the Current River within Arkansas.

Only two previous studies have been conducted on Sylamore Creek. A study by the Arkansas Game and Fish Commission (Baker, 1952) provided no quantitative list of fishes present nor did it include a list of the cyprinids. Memphis State University (Simco, 1969) collected fishes from Sylamore, however, did not make seasonal collections nor a quantitative list. Thus no comprehensive investigation has been conducted on the Sylamore Creek watershed.

DESCRIPTION OF THE AREA

Two main branches of Sylamore Creek comprise the bulk of the watershed. North Sylamore originates in Rorie Township in the northwestern part of Stone County and flows southeasterly for 24.1 km before joining Sylamore Creek. There are two dams on North Sylamore. One is at Gunner Pool Recreational Area, and the other is at Blanchard Springs. Both create small impoundments of less than two ha in surface area. Main tributaries of North Sylamore are Cap Fork, Bear Pen Creek, and Mill Creek. South Sylamore originates in westcentral Stone County and flows northeasterly for 32.2 km before emptying into Sylamore Creek. Main tributaries of South Sylamore

are Roasting Ear Creek, Lick Fork, and Panther Creek. Sylamore Creek arises from the junction of these two branches and flows 0.8 km before emptying into the White River.

The total area of the Sylamore watershed is 42,756 ha. The elevation of the stream bed ranges from 163 m at the uppermost collecting station to 91 m at the mouth of Sylamore Creek near Allison, with a gradient of 3 m/km (U.S. Geologic Survey, 1969).

The area is predominately in the Salem Plateau of the Ozark Highlands with part of the area in the extreme southeast part of the Springfield Plateau (Divine, 1972). The most abundant rocks are those of limestone and dolomite, with no visible signs of igneous rocks (Fenneman, 1938).

METHODS AND MATERIALS

Twelve collecting stations were chosen to provide adequate coverage of the watershed. To provide seasonal information, fishes were collected 29-30 November 1974, 8-9 March, 20-22 June, and 27-28 September 1975. Supplementary samples were collected from station NS on 1 August 1975 and 2 July 1976. To study habitat preference, both pool and riffles were sampled. Fishes were collected within the following areas:

N-1	SE¼	Sec. 14,	T15N, R11W	(North Sylamore, station 1)
N-2	NE¼	Sec. 5,	T15N, R11W	(North Sylamore, station 2)
N-3	NW¼	Sec. 25,	T16N, R12W	(North Sylamore, station 3)
N-4	SW¼	Sec. 15,	T16N, R12W	(North Sylamore, station 4)
NS	SE¼	Sec. 11,	T15N, R11W	(Sylamore Creek)
S-1	NE¼	Sec. 14,	T15N, R11W	(South Sylamore, station 1)
S-2	NW¼	Sec. 21,	T15N, R11W	(South Sylamore, station 2)
S-3	SE¼	Sec. 30,	T15N, R11W	(South Sylamore, station 3)
S-4	SE¼	Sec. 34,	T15N, R12W	(South Sylamore, station 4)
LF	NW¼	Sec. 8,	T14N, R11W	(Lick Fork)
REC	NW¼	Sec. 27,	T15N, R12W	(Roasting Ear Creek)
M	NE¼	Sec. 5,	T15N, R12W	(Mill Creek)

Qualitative and quantitative fish samples were taken by the use of a 9.2 x 1.8 m seine with a 0.6 cm bar measure mesh, a 3.7 x 1.2 m seine with a 0.6 cm bar measure mesh, a 3.7 x 1.2 m seine with a 0.3 cm bar measure mesh, and a 30.5 m gill net with a 5.1 cm bar measure mesh. All fish were killed and hardened in 10% formalin for at least 3 days, washed for 24 hours, and preserved in 40% isopropanol. Nomenclature is in accordance with Bailey, et al. (1970), except where noted.

RESULTS

This study yielded a total of 15,041 specimens representing 44 species, including one hybrid, distributed among 11 families. A total of 1,875 specimens were collected from riffles while 13,166 were taken from pools. Seven species were confined to the riffles and 17

were found only in the pools. More fishes were collected in the summer and fall than in the winter and spring.

The following is an annotated checklist of the fishes of Sylamore Creek. The list represents both field collections and literature records from previous studies.

Petromyzontidae (Lampreys)

Ichthyomyzon castaneus Girard. Chestnut lamprey.

Not collected by the writers but several local fishermen reported finding lampreys on trout caught in White River. The writers observed on a redhorse what might have been a scar left by a lamprey.

Lampetra aepyptera (Abbott). Least brook lamprey.

This species was collected only in the spring and only from station N-4. Only three specimens were collected in a swift riffle over a rough gravel bottom.

Lepisosteidae (Gars)

Lepisosteus osseus (Linnaeus). Longnose gar.

Rare inhabitant of Sylamore Creek. One specimen was collected from station NS with the use of a gill net.

Anguillidae (Eels)

Anguilla rostrata (Lesueur). American eel.

Not collected by the writers but reported to be fairly abundant by Baker (1952). Local fishermen reported catching eels quite often on trot-lines. Meek (1894) reported the eel to be a common inhabitant of the upper White River.

Salmonidae (Trouts)

Salmo gairdneri Richardson. Rainbow trout.

Common inhabitant of Mill Creek, which is formed from Blanchard Springs. Collected from deep pools at the base of swift riffles.

Cyprinidae (Minnows)

Camptostoma anomalum pullum (Agassiz). Central stoneroller.

Collected at every station in both pools and riffles. Inhabitant of pools more often than riffles.

Camptostoma oligolepis Hubbs and Greene. Largescale stoneroller.

Collected throughout the watershed, most often from pools. More abundant than *C. anomalum pullum*.

Dionda nubila (Forbes). Ozark minnow.

Ranked as second most abundant fish. Inhabitant of pools with gravel bottoms.

Hybopsis amblops (Rafinesque). Bigeye chub.

Rare inhabitant, found only at the mouth of the stream. Collected from sandy bottomed pools in late summer and early fall.

Hybopsis dissimilis (Kirtland). Streamline chub.

A single specimen was collected at station N-1 from a deep pool with a gravel-sand bottom.

Nocomis biguttatus (Kirtland). Hornyhead chub.

Collected throughout the stream but never in great numbers. Inhabitant of both pools and riffles, but more abundant in the pools.

Notropis boops Gilbert. Bigeye shiner.

Rare inhabitant. Only two specimens were collected, and both came from station NS. Inhabitant of pools with sand bottoms.

Notropis cornutus chrysocephalus (Rafinesque). Striped shiner.

The writers follow R.J. Miller (1968) in considering *N. chrysocephalus* a subspecies of *N. cornutus* (Mitchell). Common cyprinid throughout the stream but seldom collected in any great numbers. Two specimens were caught on hook and line using artificial lures. Inhabitant of pools with gravel bottoms.

Notropis galacturus (Cope). Whitetail shiner.

Collected throughout N. Sylamore but never in S. Sylamore. Inhabitant of pools with rock and gravel bottoms.

Notropis pilsbryi Fowler. Dusky stripe shiner.

Most abundant fish in the watershed. Collected at every station. Inhabitant of both pools and riffles but more abundant in pools.

Notropis pilsbryi x *N. rubellus*

Only one individual was collected from a pool at station N-1. This fish had characteristics of both *N. pilsbryi* and *N. rubellus*. The writers could not differentiate the specimen and shipped it to Dr. George Moore who described it as being a hybrid. The writers at this time concur with Dr. Moore's description. The fish is presently housed in the Arkansas State University Fish Museum, cat. no. 6572.

Notropis rubellus (Agassiz). Rosyface shiner.

Collected throughout the stream but primarily in the lower regions. Inhabitant of pools over gravel bottoms.

Notropis telescopus (Cope). Telescope shiner.

Common cyprinid throughout the stream. Ranked as third most abundant fish. Inhabitant of pools over gravel and sand bottoms.

Phoxinus erythrogaster (Rafinesque). Southern redbelly dace.

Collected only in the cold waters of the upper regions and the tributaries. Ninety-three percent were collected from Mill Creek. Collected from pools with moderate current over rocky bottoms.

Pimephales notatus (Rafinesque). Bluntnose minnow.

Collected only in the headwater regions. Similar habitat to that of *P. erythrogaster*. Uncommon.

Catostomidae (Suckers)

Erimyzon oblongus (Mitchell). Creek chubsucker.

Rare inhabitant. The only specimen collected came from the mouth of Sylamore Creek. Inhabitant of pools over sandy bottoms.

Hypentelium nigricans (Lesueur). Northern hog sucker.

Observed throughout the watershed but only a few individuals were collected. Collected from deep pools with gravel and sand bottoms.

Moxostoma duquesnei (Lesueur). Black redhorse.

Inhabitant of pools with moderate current over gravel bottoms. The writers observed this sucker quite often, but few individuals were caught. Most abundant sucker taken.

Moxostoma erythrum (Rafinesque). Golden redhorse.

Only four individuals were taken and all from stations near the mouth of the creek. Inhabitant of pools with moderate current over gravel and sand bottoms.

Ictaluridae (Catfishes)

Ictalurus natalis (Lesueur). Yellow bullhead.

Only one specimen was taken, although Baker (1952) reported this species to be abundant in Sylamore Creek. Inhabitant of deep pools with gravel and sand bottoms. Pflieger (1975) reported the yellow bullhead to be a more common inhabitant of clear Ozark streams than the black bullhead.

Ictalurus punctatus (Rafinesque). Channel catfish.

Baker (1952) reported the channel catfish to be present in Sylamore Creek. No individuals were collected in this study, but the absence could be attributed to the collecting technique.

Noturus albater Taylor. Ozark madtom.

Inhabitant of swift riffles with rock and gravel bottoms. Rarely collected and taken only from S. Sylamore.

Noturus exilis Nelson. Slender madtom.

Most common madtom in the watershed although never collected in N. Sylamore. Inhabitant of swift riffles with rock and gravel bottoms. Some individuals were taken from pools.

Noturus flavater Taylor.

Not collected by the writers. Robison (1977, personal communication), reported catching several at night near the mouth of S. Sylamore.

Cyprinodontidae (Killifishes)

Fundulus catenatus (Storer). Northern studfish.

Common throughout the watershed. More abundant than *F. olivaceus*. Inhabitant of quiet pools over sand and gravel bottoms.

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Fundulus olivaceus (Storer). Blackspotted topminnow.

Widely distributed throughout the watershed but never in great numbers. Inhabitant of quiet pools over sand and gravel bottoms.

Atherinidae (Silversides)

Labidesthes sicculus (Cope). Brook silverside.

Collected only at station NS. Inhabitant of shallow, quiet pools over sand bottoms. Rare.

Centrarchidae (Sunfishes)

Ambloplites rupestris (Rafinesque). Rock bass.

Few individuals were collected, but local fishermen report this to be a major sunfish found on most stringers. Inhabitant of deep pools around large boulders, which limited its being collected by seining.

Lepomis cyanellus Rafinesque. Green sunfish.

Uncommon centrarchid. Inhabitant of the lower regions of the stream in quiet pools and backwaters.

Lepomis macrochirus Rafinesque. Bluegill.

Only two individuals were collected. Inhabitant of quiet pools over sand and gravel bottoms.

Lepomis megalotis (Rafinesque). Longear sunfish.

Most abundant sunfish in the watershed. Distributed throughout the watershed but difficult to collect. Inhabitant of pools with moderate current over gravel and rocky bottoms.

Micropterus dolomieu Lacepede. Smallmouth bass.

Collected throughout the watershed. More abundant at the head of pools where the riffles end. Local fishermen prize the smallmouth bass as the top game fish of this stream.

Micropterus punctulatus (Rafinesque). Spotted bass.

Collected only from station NS. Rarely found. Inhabitant of deep

Micropterus punctulatus (Rafinesque). Spotted bass.

Collected only from station NS. Rarely found. Inhabitant of deep pools with gravel and rocky bottoms.

Micropterus salmoides (Lacepede). Largemouth bass.

Uncommon. Found only at the lowest station. Inhabitant of deep pools over gravel and rocky bottoms. Pflieger (1975) reported the largemouth bass to be more abundant in delta streams than in Ozark streams.

Percidae (Perches)

Etheostoma blennioides Rafinesque. Greenside darter.

Uncommon darter. Found only at stations near the mouth. Collected from swift riffles with gravel and rock bottoms.

Etheostoma caeruleum Storer. Rainbow darter.

Most common and abundant darter in the watershed. Inhabitant of riffles with gravel bottoms but also collected from pools.

Etheostoma flabellare Rafinesque. Fantail darter.

Common throughout the watershed. Inhabitant of shallow riffles with gravel bottoms.

Etheostoma juliae Meek. Yoke darter.

Uncommon darter in N. Sylamore. Most specimens were collected from S. Sylamore where it outnumbered *E. caeruleum* at several stations. Collected from swift riffles over gravel bottoms.

Etheostoma punctulatum (Agassiz). Striped darter.

Collected only from the cold spring-fed waters of Lick Ford. Inhabitant of shallow riffles over rocky bottoms.

Etheostoma spectabile (Agassiz). Orangethroat darter.

Inhabitant of shallow riffles of the headwaters and tributaries. Uncommon darter of this watershed.

Etheostoma zonale (Cope). Banded darter.

Rare inhabitant. Collected only at the mouth of the creek and from S. Sylamore. Inhabitant of swift riffles over gravel bottoms.

Cottidae (Sculpins)

Cottus bairdi Girard. Mottled sculpin.

Common throughout the stream. More abundant than *C. caro-*

linae in the colder headwaters and tributaries. Inhabitant of swift riffles over gravel and rock bottoms.

Cottus caroliniae (Gill). Banded sculpin.

More abundant than *C. bairdi* in the lower regions of the stream. Inhabitant of swift riffles over gravel and rock bottoms. It was not collected in the spring-fed waters of Mill Creek, however, *C. bairdi* was a common inhabitant there.

DISCUSSION

Sylamore Creek yielded a total of 15,041 specimens representing 44 species, including one hybrid, distributed among 11 families. This was expected and supported by previous investigations of similar Ozark streams which included Matthews and Harp (1974), 44 species; Fowler and Harp (1974), 52 species; and Jackson and Harp (1973), 33 species. Sylamore Creek had no lowland areas, while many of the studies cited above were from larger watersheds which possessed lowland areas.

The cold tailwaters of Lake Norfolk and Lake Bull Shoals entered White River several km above Sylamore Creek and caused the temperature of White River to be significantly lower than that of Sylamore Creek. Due to this temperature barrier, it was unlikely that many species migrated into or out of Sylamore Creek, although this probably occurred before these impoundments were constructed. Today the White River near Allison supports good trout fishing, but few of the original fishes were still present. Local fishermen reported catching redhorse, but the smallmouth bass fishing for which the upper White River was once famous is a thing of the past.

Sylamore Creek had basically the same geological features throughout its watershed. Although different habitats were present, each was generally found at all stations. Due to the conformity of habitats throughout the watershed no significant longitudinal zonation was noted. Matthews and Harp (1974) found limited zonation in Piney Creek. However, several fishes preferred either headwater or downstream areas. *Pimephales notatus*, *Phoxinus erythrogaster*, *E. punctulatum*, and *E. spectabile* were collected only in the headwaters, while *L. osseus*, *H. amblops*, *H. dissimilis*, *N. boops*, *E. oblongus*, *I. natalis*, *M. punctulatus*, and *M. salmoides* were collected only in the lower stations. Other species collected were generally found throughout the watershed.

The three most abundant species collected during the study were *N. pilsbryi*, *D. nubilus*, and *N. telescopus*, respectively. *N. pilsbryi* represented thirty-five percent of the total number of individuals collected.

Two species, *C. anomalum pullum* and *N. pilsbryi*, were collected at every station. Other fishes having a wide distribution throughout the stream were: *C. oligolepis*, *N. biguttatus*, *N. cornutus chrysocephalus*, *N. rubellus*, *F. catenatus*, *F. olivaceus*, *L. megalotis*, *M. dolomieu*, *E. caeruleum*, *E. flabellare*, *C. bairdi*, and *C. caroliniae*.

Four species were collected predominately from S. Sylamore. These were: *N. albater*, *N. exilis*, *E. juliae*, and *E. zonale*. In contrast, *N. galacturus* was collected only in N. Sylamore and at the mouth of Sylamore Creek.

ACKNOWLEDGMENTS

The writers express sincere appreciation to Drs. George L. Harp, Arkansas State University, and G.A. Moore of Oklahoma State University who aided in the identification of some of the fishes. Appreciation is also expressed to Ricky Holman, Wayne Kelly, and other ASU students who aided in the collection of the fishes.

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