

THE FISH POPULATION OF SUGAR CREEK, ILLINOIS

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INTRODUCTION

Sugar Creek is a picturesque tributary of the south fork of the Saline River, into which it empties northeast of Creal Springs, Williamson County, Illinois. It is approximately 15 miles long.

This study of the fish population of Sugar Creek is a facet of an overall study which has as its purpose the determination of species composition and distribution of the fish fauna of southern Illinois.

Seven collecting stations were set up along the 15 miles of stream, station number 1 being in the headwaters and number 7 located near the confluence of Sugar Creek and the south fork of the Saline River. Samples of fishes were taken by an electro-fishing apparatus described by Lewis and Elder (1953) and a 0.25-inch knot seine. A sample at a particular station consisted of the majority of the fishes found in a pool and connected riffles. All collections were preserved in 10% formalin and returned to the laboratory for study. The majority of the collections was made during the months of July and August, 1954.

This was a cooperative study between the Division of Fisheries, Illinois Department of Conservation, and the Cooperative Fisheries Laboratory and the Department of Zoology of Southern Illinois University.

COLLECTING STATIONS

Only the headwater stations of Sugar Creek exhibited distinct riffle-pool development. Pools ranged in length from 30 to 75 feet with widths of 15 to 20 feet and depths of 3 to 5 feet. Riffles ranged in length from 50 to 75 feet with widths of 15 to 20 feet and depths of 6 to 12 inches. Although the middle and lower extents of the stream did not exhibit distinct riffle-pool development, deep and shallow areas were recognizable. The deep areas ranged in length from 30 to 300 feet with a width of 15 to 35 feet and a depth of 2 to 8 feet. The shallows ranged in length from 50 to 75 feet with a width of 15 to 20 feet and a depth approximating one foot.

A Bristol recording thermometer was used to determine simultaneously the air and water temperatures over a period of one week. Water temperatures from June 27 to July 5, 1955, ranged from 21° to 29° C., at which time the air temperatures ranged from 11° to 29° C. These data indicated that the water temperature approximated the average air temperature. On this basis, it was assumed that no quantity of spring water entered the stream. The water of Sugar Creek was crystal clear except during periods of flooding or heavy spring rains. Stream flow approximated 7.2 cubic feet per second.

The bottoms of the four uppermost stations consisted of bedrock and gravel, whereas those of the lowermost stations consisted of bedrock overlaid by mud. The banks of most stations were of mud and relatively steep; however, some were bounded by large rock exposures. Signs of flooding were evident along the entire length of the stream, and log jams were prevalent in some areas. Approximately 60% of the watershed consisted of cultivated fields and the remaining 40% consisted mainly of woodland.

ANNOTATED LIST OF SPECIES

Following is a list of the fishes collected during the survey. Annotations include distribution within the stream, habitat conditions, and abundance expressed as percent of the total number of fish taken. In general, scientific names are after Hubbs and Lagler (1949).

Family Petromyzontidae

Entosphenus lamottenii (LeSueur), American brook lamprey. 0.1%—One adult male.

Family Catostomidae

Erimyzon oblongus claviformis (Girard), creek chubsucker. 5.9%. Young-of-the-year numerous at practically all stations. Adults taken only in deeper pools.

Catostomus commersonnii commersonnii (Lacépède), common white sucker. 3.1%—All specimens taken in headwaters over gravel bottom.

Moxostoma erythrurum (Rafinesque), golden redhorse. 1.3%—Ten specimens taken in middle segment of stream.

Minytrema melanops (Rafinesque), spotted sucker. 0.6%—Five specimens taken in middle reaches of stream.

Family Cyprinidae

Notropis umbratilis cyanocephalus (Copeland), redfin shiner. 35.3%—Young-of-the-year, sub-adults, and adults were distributed rather evenly throughout entire stream.

Pimephales notatus (Rafinesque), bluntnose minnow. 13.2%—Young-of-the-year, sub-adults, and adults distributed rather evenly throughout the entire stream.

Semotilus atromaculatus atromaculatus (Mitchill), creek chub. 5.8%—Forty-six creek chubs taken in headwaters over gravel bottom. *Ceraticthys perspicuus* (Girard), bullhead minnow. 0.9%—Seven specimens taken over bedrock in headwaters.

Family Ameiuridae

Ameiurus natalis natalis (LeSueur), yellow bullhead. 0.9%—Seven specimens.

Ameiurus melas melas (Rafinesque), black bullhead. 0.7%—Only young-of-the-year taken.

Family Esocidae

Esox vermiculatus LeSueur, mud pickerel. 0.7%—Of six adults taken, five in headwaters.

Family Cyprinodontidae

Fundulus notatus (Rafinesque), blackstripe topminnow. 6.8%—Collected at all stations.

Family Aphredoderidae

Aphredoderus sayanus gibbosus (LeSueur), pirateperch. 4.3%—Collected at all stations.

Family Percidae

Boleosoma nigrum nigrum (Rafinesque), Johnny darter. 0.9%—Seven specimens taken over gravel and bedrock.

Poecilichthys caeruleus (Storer), rainbow darter. 0.7%—Six specimens taken from three uppermost stations over gravel and bedrock bottoms.

Etheostoma kennicotti (Putnam), stripe-tailed darter. 0.2%—Two specimens taken over bedrock.

Etheostoma gracile (Girard), swamp darter. 0.1%—Single specimen. Hubbs and Cannon (1935), in listing specimens they examined for a revision of the genera *Hololepis* and *Villora*, included a specimen taken from Sugar Creek by Stephen A. Forbes on October 16, 1900. *Hololepis gracilis* (Girard) is a synonym used previously for the species currently referred to as *Etheostoma gracile* (Girard).

Hadropterus maculatus (Girard), blackside darter. 0.1%—Single specimen.

Family Centrarchidae

Lepomis cyanellus Rafinesque, green sunfish. 10.4%—Evenly distributed along entire stream.

Lepomis megalotis (Rafinesque), longear sunfish. 4.6%—Rather evenly distributed along entire stream.

Micropterus punctulatus (Rafinesque), spotted bass. 1.7%—Largest spotted bass (9 inches total length) taken in lowermost stations; young-of-the-year and subadults more abundant upstream.

Pomoxis annularis Rafinesque, white crappie. 0.7%—Six young-of-the-year.

Chaenobryttus coronarius (Bartram), warmouth. 0.5%—Four young-of-the-year taken in lower reaches of stream.

Micropterus salmoides (Lacépède), largemouth bass. 0.4%—Three specimens taken in uppermost stations.

Lepomis macrochirus Rafinesque, bluegill. 0.1%—Single specimen.

DISCUSSION

The redbfin shiner, which constituted 35.3% of the total sample, was the most abundant species collected in Sugar Creek. The bluntnose minnow, which constituted 13.2% of the total sample, was second in abundance. Thus, these two species alone accounted for almost one-half of the total sample.

It is of interest to compare the fish population of Sugar Creek with the populations of some other southern Illinois streams. Roaring Springs Creek near Anna, Illinois, contains a population in which the creek chub and the stoneroller are the most abundant species and constitute 39.2% and 22.9%, respectively, of the total sample (unpubl. data). The most abundant species in Clear Creek, near Alto Pass, Illinois, was found to be the stoneroller which constituted 65% of the total population (Lewis and Elder, 1953). The stoneroller and bluntnose minnow are the most abundant species in the Big Creek drainage of Hardin county, Illinois (unpubl. data).

FISHERY VALUES

In order of abundance, the fishes of Sugar Creek that might interest

the angler are: green sunfish, longear sunfish, spotted bass, yellow and black bullheads, white crappie, warrmouth, largemouth bass, and bluegill. Scarcity rules out the importance of the latter six species. The spotted bass, longear sunfish, and green sunfish might prove of some importance but cannot offer too much fishing due to their small size in this particular fish population. The stream might best be used as a bait source, since it contains several good bait species, namely the redfin

shiner, bluntnose minnow, and creek chub.

LITERATURE CITED

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