

An Annotated List of the Fishes of Eagle, Stotts and Rattlesnake Creeks in Central Indiana

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Introduction

Since the extensive statewide ichthyofaunal survey of Gerking (3), relatively few studies have focused on the fishes of central Indiana streams. Distributional studies such as these are important in evaluating the impact of man's activities on the environment as well as assessing long term changes in fish distribution.

A study of the fishes of Eagle Creek, Stotts Creek and Rattlesnake Creek, all tributaries of the west fork of the White River, was conducted during the summers of 1978, 1979 and 1980 as part of the Model Implementation Program (MIP). The project, initiated by the U. S. Environmental Protection Agency and the Department of Agriculture, utilized the resources of various state agencies and universities to monitor and model the response of stream biota and water quality to institution of best agricultural land management practices within the Eagle Creek and Stotts Creek watersheds. Rattlesnake Creek was chosen to serve as a control stream for the project.

The purpose of this report is to provide new and updated distributional information on the fishes of these three streams, and to compare their faunal composition.

Materials and Methods

Fish were collected twice each summer during 1978, 1979, and 1980 from permanent stations established on Eagle Creek, Stotts Creek and Rattlesnake Creek, unless otherwise noted (see STUDY AREA). Each station consisted of a pool and its adjacent upstream riffle. Most of the collections were made using a 30-foot electroseine powered by a 1350-watt A.C. generator, with additional samples obtained by using a one-eighth-inch-mesh nylon seine, and a D.C.-powered electrofishing apparatus mounted on a john boat. Most of the fish were identified, weighed and measured in the field to prevent the reduction or elimination of less common species. Representative voucher specimens of each species were preserved and are deposited in the DePauw University museum. Laboratory identifications of the preserved specimens were made using the keys of Trautman (8), Pflieger (5) and Smith (7). One hundred nine individual collections were made during the three-year study.

Study Area

Eagle Creek is located northwest of Indianapolis in central Indiana, and lies within four counties: Hendricks, Boone, Hamilton and Marion (Fig. 1). The study area included that portion of the watershed which drains into Eagle Creek reservoir; encompassing about 419 km² (103,000 acres). Land usage within the water-

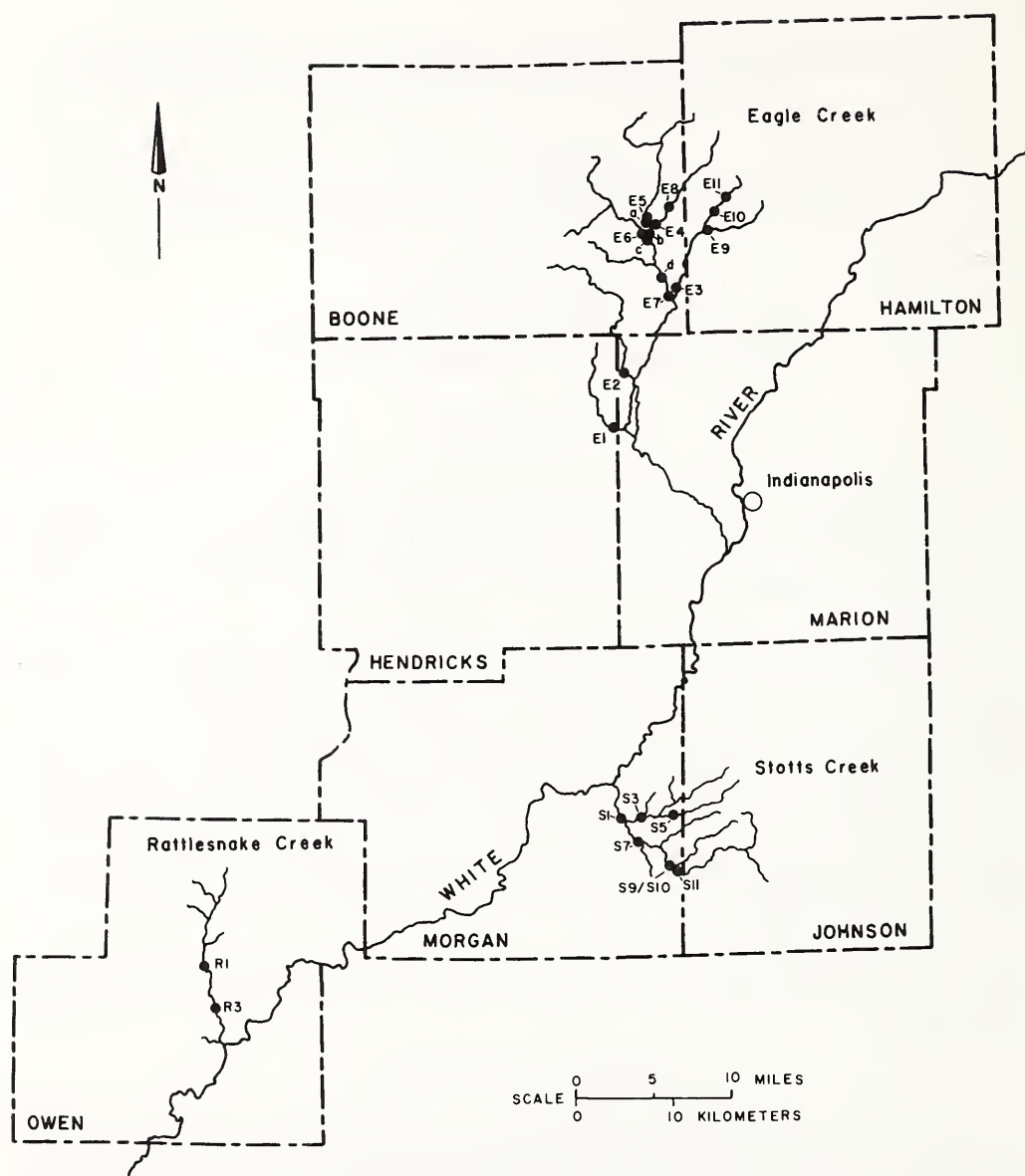


FIGURE 1. Map of the study streams showing the location of the sampling stations.

shed is dominated by croplands which comprise 70% of the area. Livestock is an important farming practice and numerous feedlots are found within the watershed. About 5% of the land is presently developed as urban and transportation areas, and forests cover 13.% of the watershed (Indiana Heartland Model Implementation Project, 1980 status report).

Seven permanent sampling stations were established on Eagle Creek and its tributaries. Eight additional stations were sampled only once during the study. The stations were similar in physical dimensions and are generally characterized by having relatively stable substrates, good riparian habitat and constant flow. Below are brief descriptions of the Eagle Creek collecting stations including: station number, stream order, section, township and range designations, stream location descriptions, and various physical and habitat characteristics:

El. School Branch; order II; sec. 17, T.16N., R.2E.; morphometry — $\bar{X}$ length 45 m (42-49), $\bar{X}$ width 5.7 m (2.7-7.0), $\bar{X}$ depth 24 cm (3-100); substrate — sand-granule-

silt; riparian—forest with trees and shrubs lining moderate to steeply sloping banks, dense canopy.

El. Fishback Creek; order III; sec. 29, T.17N., R.2E.; morphometry— $\bar{X}$ length 42 m (33-53), $\bar{X}$ width 5.7 m (2.7-9.0), $\bar{X}$ depth 26 cm (4-90); substrate—cobble-pebble-sand; riparian—forest with trees and grasses lining gradually sloping banks, moderate canopy; comments—pool and riffle 0.1 miles upstream from bridged sampled in 1978.

E3. Little Eagle Creek; order III; sec. 25, T.18N., R.2E.; morphometry— $\bar{X}$ length 54 m (47-68), $\bar{X}$ width 10.0 m (6.0-14.7), $\bar{X}$ depth 25 cm (2-92); substrate—pebble-cobble-sand; riparian—forest with trees and shrubs lining moderate to steeply sloping banks, dense canopy.

E4. Finley Creek; order II; sec. 11, T.18N., R.2E.; morphometry— $\bar{X}$ length 27 m (26-31), $\bar{X}$ width 4.3 m (2.0-5.7), $\bar{X}$ depth 26 cm (3-60); substrate—silt-cobble-pebble, sewage fungus occasionally blanketed the riffles; riparian—trees lined gradually sloping banks, moderate canopy; comments—active landfill operation immediately upstream from station.

E5. Eagle Creek; order III; sec. 3, T.18N., R.2E.; morphometry— $\bar{X}$ length 36 m (30-39), $\bar{X}$ width 10.7 m (7.3-13.7), $\bar{X}$ depth 40 cm (4-110); substrate—cobble-pebble-sand, rooted aquatic plants in riffles; riparian—cropland with trees and brush lining gradual to moderately sloping bank, moderate canopy.

E5a-d. Four 0.17 km reaches of the mainstem of Eagle Creek were sampled on 15 September 1978, using a D.C. powered electroshocker mounted to a boat. The stations included: E5a above the mouth of Finley Creek, E5b below the mouth of Finley Creek, E5c below the mouth of Mounts Run, and E5d near O'Neal Avenue bridge (Sec. 16, T.18N., R.2E.). Habitat data were not recorded.

E6. Mounts Run; order III; sec. 10, T.18N., R.2E.; morphometry— $\bar{X}$ length 27 m (26-28), $\bar{X}$ width 17.7 m (1.0-8.3), $\bar{X}$ depth 31 cm (5-85); substrate—pebble-granule-sand; riparian—willow shrubs and a few trees lined gradual to steeply sloping banks, sparse canopy.

E7. Eagle Creek; order IV; sec. 35, T.18N., R.2E.; comments—seined once during a low flow period in the summer of 1980. No habitat data were recorded.

E8. Finley Creek; order I; sec. 35, T.19N., R.2E.; morphometry— $\bar{X}$ length 38 m (33-37), $\bar{X}$ width 15.3 m (3.7-5.7), $\bar{X}$ depth 20 cm (8-50); substrate—sand-cobble-silt; riparian—cropland with shrubs and some trees lining moderately sloping banks, sparse canopy.

E9. Drainage ditch above county road bridge, 1.7 miles SW of Eagleton, order II; sec. 8, T.18N., R.3E.; morphometry—length 24 m, $\bar{X}$ width 2.3 m (1.3-3.7), $\bar{X}$ depth 14 cm (5-30); substrate—silt-mud-sand; riparian—cropland with willow shrubs and grass on steeply sloping banks forming dense canopy; comments—4 seine hauls were made on 4 August 1978.

E10. Little Eagle Creek; order II; sec. 33, T.19N., R.3E.; comments—collections were made on 9 July 1980. No habitat data were recorded.

E11. Little Eagle Creek; order II; sec. 5, T.18N., R.3E.; comments—collections were made on 23 July 1980. No habitat data were recorded.

The Stotts Creek watershed near Martinsville, Indiana, lies within Morgan and Johnson counties and drains about 212 square kilometers (52,461 acres). Croplands account for about 58% of the land use in the watershed whereas forests comprise nearly one-third of the total area.

Five permanent sampling stations on Stotts Creek and its tributaries were sampled twice each summer during the study with six additional sites being sampled only in 1978. With the exception of one station (S5), the stream bottom substrate was dominated by sand, granule and pebble particle sizes (0.06-64.0 mm diameter). The combination of small size substrate particles and frequent flooding resulted in major changes in the stream topography in which some of our previously sampled pools were reduced to shallow raceways and riffles.

A description of the sampling stations is given below:

S1. Stotts Creek; order V; sec. 21, T.12N., R.2E.; morphometry— $\bar{X}$ length 48 m (43-52), $\bar{X}$ width 7.3 (3.3-9.3), $\bar{X}$ depth 26 cm (13-104); substrate—granule-sand-pebble; riparian—trees and brush on gradual to moderately sloping bank, moderate canopy; comments—adjacent upstream pool and riffle (S2) were sampled twice in 1978.

S3. North Prong Stotts Creek; order IV; sec. 22, T.12N., R.2E.; morphometry— $\bar{X}$ length 42 m (39-47), $\bar{X}$ width 6.3 m (4.0-8.0), $\bar{X}$ depth 20 cm (1-77); substrate granule-pebble-sand; riparian—trees, willow shrubs and grasses bordered gradual to steeply sloping banks, moderate canopy; comments—three adjacent pools and riffles were sampled during the study including S4.

S5. North Prong Stotts Creek; order III; sec. 24, T.12N., R.2E.; morphometry— $\bar{X}$ length 48 m (45-50), $\bar{X}$ width 7.0 m (3.3-10.0), $\bar{X}$ depth 26 cm (3-67); substrate—cobble-pebble-silt with soft erodable clay; riparian—trees and willow shrubs on gradual to steeply sloping banks, moderate canopy; comments—adjacent upstream station (S6) was sampled during 1978.

S7. South Prong Stotts Creek; order IV; sec. 27, T.12N., R.2E.; morphometry— $\bar{X}$ length 49 m (42-58); $\bar{X}$ width 6.3 m (4.0-11.7), $\bar{X}$ depth 24 cm (3-83); substrate—pebble-granule-sand; riparian—trees and grasses on steep to gradual sloping banks, dense canopy; comments—massive fish kill noted 26 July 1978 evidenced by dead bullheads on shore and paucity of fish in collections; adjacent upstream pool (S8) sampled during 1978.

S9/S10. South Prong Stotts Creek; order IV; sec. 1, T.11N., R.2E.; comments—three adjacent pools and riffles were sampled during 1978. The stations had an average length of 45 m, average width of 5.0 m and an average depth of 19 cm. The substrate was dominated by pebble-granule-sand, and the riparian habitat consisted of forest and cropland with trees lining the banks forming a dense canopy. Instream cover, comprised of submerged roots and trees, was abundant.

S11. South Prong Stotts Creek; order III; sec. 1, T.11N., R.2E.; morphometry— $\bar{X}$ length 30 m (25-35), $\bar{X}$ width 5.0 m (3.7-5.7), $\bar{X}$ depth 20 cm (4-49); substrate—sand-granule-pebble; riparian—moderately sloping banks devoid of vegetation due to recent removal by bulldozer, no canopy; comments—not sampled on 1978.

Rattlesnake Creek lies within Owen County and enters the White River near Spencer, Indiana. The drainage area is 65 square kilometers (16,121 acres) with the upper portion of the watershed draining portions of the Owen-Pubnam State Forest, and the lower portion coursing through bottomland fields and influenced by agriculture. Two permanent sampling stations were established on Rattlesnake Creek, with one additional station being sampled only in 1978. The stations are described below:

R1. Rattlesnake Creek; order III; sec. 2, T.10N., R.4W.; morphometry— $\bar{X}$ length 44 m (34-50), $\bar{X}$ width 6.7 m (4.7-7.7), $\bar{X}$ depth 21 cm (3-85); substrate—pebble-granule-sand; riparian—trees and shrubs on steep to moderately sloping

banks, dense canopy; comments—large upstream pool and riffle (R2) were sampled in 1978.

R3. Rattlesnake Creek; order III; sec. 13, T.10N., R.4W.; morphometry— $\bar{X}$ length 65 m (64-66), $\bar{X}$ width 7.3 m (5.3-9.3), $\bar{X}$ depth 32 cm (3-83); substrate—sand-granule-pebble; riparian—pastureland with grasses and mud on steep sloping banks, no canopy; comments—sewage drainpipe draining into upper end of pool.

Annotated List of Fishes

A total of 51 species representing 31 genera and 12 families were collected from the three streams combined during the study. In the list that follows, Eagle Creek is designated as "EC", Stotts Creek as "SC" and Rattlesnake Creek as "RC". Common and scientific names follow Robbins et al. (6).

Petromyzontiade

Ichthyomyzon castaneus Girard. Chestnut lamprey.

EC—no collections. SC—no collections. RC—four adult specimens (235-282 mm TL) were taken on 5 August 1980 from R3.

Twelve ammocete larvae (73-138 mm TL) with continuous dorsal fins and myomere counts ranging from 51 to 55 were taken in 1978 and 1979 from R1, R2, and R3. These specimens were not assigned to a species due to the lack of sufficient keys for larvae of this type.

Lampetra aepyptera (Abbott). Least brook lamprey

EC—no collections. SC—no collections. RC—a total of five ammocetes (112-149 mm TL) were collected at R1, R2, and R3 in 1978, 1979, and 1980. Identification of the specimens was based on myomere counts (57-59) and pigmentation patterns discussed by Vladykiv (9) and Distler (1).

Lampetra appendix (DeKay). American brook lamprey.

EC—no collections. SC—no collections. RC—a total of four ammocete larvae (77-177 mm TL) were taken from all three stations during the 3-year study period. Their identification was based on myomere counts (67-69) and pigmentation patterns also discussed in Vladykov (9) and Distler (1).

Clupeidae

Dorsoma cepedianum (Lesueur). Gizzard shad.

EC—occasional specimens taken from the slow-flowing, deep pools on the mainstem of Eagle Creek (E5, E5a, E5d, and E7) and at E1 which drains directly into the reservoir. Also captured at upstream tributary station, E8, which often runs turbid. SC—three specimens taken from S5, a large upstream pool that is usually turbid. RC—no collections.

Esocidae

Esox americanus vermiculatus Lesueur. Grass pickerel.

EC—common in slow-flowing, weedy pools (E5 and E6), occasional elsewhere and absent from E1, E2, and E3 collections. SC—no collections. RC—commonly taken from R1, 2 specimens collected at downstream station (R3).

Cyprinidae

Campostoma anomalum (Rafinesque). Central stoneroller.

EC—most abundant species collected, taken from most upstream tributary stations, less abundant in mainstem, early summer collections dominated by juveniles. SC—one of the two most abundant species collected, taken from all stations. RC—most abundant minnow species at downstream station (R3), common in upstream (R1) collections.

Carassius auratus (Linnaeus). Goldfish.

EC—no collections. SC—one small specimen and a goldfish-carp hybrid collected from S9/S10. A large goldfish hatchery is located on Clear Creek, just downstream from Stotts Creek. RC—no collections.

Cyprinus carpio Linnaeus. Common carp.

EC—taken mainly from the large pools of Eagle Creek (E5, E5a-d), also captured at E1, a direct tributary of reservoir, and E6, the first deep pool upstream from mainstem Eagle Creek. SC—one 1500 g specimen taken from upstream station (E5) following a flood. RC—no collections.

Ericymba buccata Cope. Silverjaw minnow.

EC—occasional specimens collected from all upstream tributary stations, none taken from mainstem Eagle Creek. SC—fourth most abundant minnow species collected, taken from all stations and typically found in association with blunt-nose minnows and common stonerollers. RC—taken in greater abundance from downstream station (R3) than upstream stations (R1, R2).

Hybopsis amblops (Rafinesque). Bigeye chub.

EC—no collections. SC—no collections. RC—commonly collected at upstream stations (R1, R2), occasional at R3.

Notropis chrysocephalus (Rafinesque). Striped shiner.

EC—common in tributary stations with clear water, moderate current, and cobble-pebble substrate (E2, E3, E5, and E6), occasional elsewhere. SC—fifth most abundant minnow species, taken from all stations. RC—second most abundant minnow species collected, found equally abundant at upstream and downstream stations.

Notropis spilopterus (Cope). Spotfin shiner.

EC—one specimen collected in 1979 from E2. SC—occasionally captured at all stations except S11, most abundant at S1 and S10. RC—occasional specimens, more abundant at R3.

Notropis stramineus (Cope). Sand shiner.

EC—no collections. SC—common in collections from S1, S3, and S4, occasional elsewhere. RC—common at downstream station (R3), occasional upstream.

Notropis umbratilis (Girard). Redfin shiner.

EC—common only in collections from E3 where breeding schools were observed over sunfish spawning nests, occasional elsewhere. SC—occasional specimens

from all stations. RC—commonly taken from upstream stations, 1 specimen collected at R3.

Notropis volucellus (Cope). Mimic shiner.

EC—no specimens. SC—occasional specimens collected from downstream stations S1 and S3. RC—three specimens were collected, one from R1 and two from R3.

Phenacobius mirabilis (Girard). Suckermouth minnow.

EC—three specimens collected, two from E2, the other from E6. SC—occasional specimens taken from S1 and S3. RC—taken mainly from R1, a few specimens collected at R3.

Phoxinus erythrogaster (Rafinesque). Southern redbelly dace.

EC—five specimens collected at E6. SC—occasional specimens taken from stations on South Prong, most common at S7 where a subteranean spring enters the pool. RC—no specimens.

Pimephales notatus (Rafinesque). Bluntnose minnow.

EC—third most abundant species collected, taken from all tributary stations and in mainstem. SC—the most abundant species collected, predominantly found in shallow pools at stations S1, S4, S8, and S9/S10. RC—third most abundant minnow species collected, equally abundant at upstream and downstream stations.

Pimephales promelas Rafinesque. Fathead minnow.

EC—one specimen collected from E4. SC—three specimens collected, two from S11, one from S7. RC—no collections.

Rhinichthys atratulus (hermann). Blacknose dace.

EC—no collections. SC—taken from all stations but most common in upstream collections on South Prong. RC—four specimens collected at R1.

Semotilus atromaculatus (Mitchill). Creek chub.

EC—second most abundant minnow species collected, particularly abundant in collections from E1, E4, and E8. SC—third most abundant minnow species collected, taken from all stations. RC—fourth most abundant minnow species collected, generally more abundant upstream at R1.

Catostomidae

Catostomus commersoni (Lacepède). White sucker.

EC—most abundant sucker species taken, 1979 collections dominated by juveniles, especially at E4 (below landfill) where juvenile creek chub and common stonerollers were also very abundant. SC—most abundant sucker species collected, especially at stations S3, S5, S9/S10, and S11. RC—occasionally collected at all three stations.

Erimyzon oblongus (Mitchill). Creek chubsucker.

EC—occasionally taken from all stations except E1, E3, and the downstream mainstem stations. SC—one specimen taken from S5 in 1979. RC—three specimens collected from R1.

Hypentelium nigricans (Lesueur). Northern hog sucker.

EC—no collections. SC—second most abundant sucker species collected, common in riffles and raceways of downstream stations S1, S2, S3, and S4. RC—the most abundant sucker species collected, taken mainly from the riffle-raceway habitat of R3.

Minytrema melanops (Rafinesque). Spotted sucker.

EC—occasionally taken from large pools of mainstem stations, one specimen taken from upstream station E8. SC—no collections. RC—no collections.

Moxostoma duquesnei (Lesueur). Black redhorse.

EC—no collections. SC—commonly taken in association with golden redhorse from the raceways and deep pools of Stations S1, S3, S8, and S9/S10, absent from collections at S11. RC—common in collections from R3 and in deep pool of R2, a few specimens taken from R1.

Moxostoma erythrurum (Rafinesque). Golden redhorse.

EC—no collections. SC—more abundant in our collections than black redhorse, with which it was always found to occur. RC—occasionally taken with black redhorse which were two times more abundant in our collections.

Ictaluridae

Ictalurus melas (Rafinesque). Black bullhead.

EC—occasionally captured at all stations except E2 and E6, most abundant at E1 which is just upstream from the backwater of Eagle Creek reservoir. SC—three specimens collected, two from S5 and one from S11. RC—no collections.

Ictalurus natalis (Lesueur). Yellow bullhead.

EC—occasionally collected at all stations except E1 and E5. One-half as abundant as black bullheads in our collections. SC—occasionally taken from all stations except S11. RC—no collections.

Noturus miurus Jordon. Brindled madtom.

EC—no collections. SC—occasionally collected in pools from all stations except S5, S9/S10, and S11. RC—no collections.

Cyprinodontidae

Fundulus notatus (Rafinesque). Blackstripe topminnow.

EC—occasional specimens from upstream stations E10 and E11. SC—no collections. RC—no collections.

Atherinidae

Labidesthes sicculus (Cope). Brook silverside.

EC—a few specimens collected from Stations E1 and E7. SC—no collections. RC—no collections.

Centrarchidae

Ambloplites rupestris (Rafinesque). Rock bass.

EC—common in large pools of mainstem stations and E6. SC—no collections. Gerking (4) reported this species from Stotts Creek in the only other published study of this stream. RC—the second most abundant sunfish taken in our collections, equally abundant at upstream and downstream stations.

Lepomis cyanellus Rafinesque. Green sunfish.

EC—taken from all tributary stations except E9, E10, and E11. Common in collections at stations E2 and E3, but sparse in mainstem collections. SC—the most abundant sunfish collected, taken from all stations and particularly abundant at S5. RC—occasionally collected at upstream and downstream stations.

Lepomis gulosus (Cuvier). Warmouth.

EC—no collections. SC—one specimen taken from station S5. RC—no collections.

Lepomis macrochirus Rafinesque. Bluegill.

EC—commonly taken from tributary stations, less abundant in mainstem collections. SC—commonly collected from all stations, most abundant at S5. RC—occasional collections at upstream and downstream stations.

Lepomis megalotis (Rafinesque). Longear sunfish.

EC—the most abundant sunfish collected, common in mainstem collections and at station E3. SC—occasionally collected at all stations except S11. RC—the most abundant sunfish collected, considerably more numerous at downstream station R3.

Lepomis microlophus Günther). Redear sunfish.

EC—one specimen collected from station E5c on Eagle Creek below Mounts Run. SC—one specimen taken from station S5. RC—two specimens collected, one from station R1 the other from R3.

Micropterus dolomieu Lacepede. Smallmouth bass.

EC—three specimens collected; one 215 mm adult from station E5 and two juveniles from E6. SC—commonly taken from all stations except S7, abundant at S5 where several large adults were collected. RC—occasionally taken from upstream and downstream stations.

Micropterus punctulatus (Rafinesque). Spotted bass.

EC—occasional specimens, mostly juvenile, collected from tributary stations, less abundant in mainstem. SC—juvenile specimens commonly collected from all stations. RC—six specimens taken, one from R3, the rest from upstream stations.

Micropterus salmoides (Lacepede). Largemouth bass.

EC—occasionally taken from all tributary stations, except E9, E10, and E11, absent from mainstem collections except E5 where several large adult specimens were captured. SC—occasional specimens taken from all stations except S9/S10 and S11, most numerous at S5 where several large adults were collected. RC—occasionally collected at both upstream and downstream stations.

Pomoxis annularis Rafinesque. White crappie.

EC—common in mainstem collections, also taken from E1, E6, and E8. SC—four specimens collected at S9/S10. RC—no collections.

Pomoxis nigromaculatus (Lesueur). Black crappie.

EC—no collections. SC—one specimen taken from S9/S10. RC—no collections.

Percidae

Etheostoma blenniodes Rafinesque. Greenside darter.

EC—no collections. Previously reported by Fisher and Gammon (2), however, no voucher specimens were available for verification. SC—common in larger, permanent riffles at S5 and S7, occasional elsewhere. RC—occasionally collected in upstream riffles, a few specimens taken downstream.

Etheostoma caeruleum Storer. Rainbow darter.

EC—common in collections from E5 and E6, occasional or absent elsewhere. SC—abundant in riffles at S3, S5, and S7, occasional elsewhere, absent from S11. RC—the most abundant darter species collected, five times more abundant upstream (R1) than downstream (R3).

Etheostoma flabellare Rafinesque. Fantail darter.

EC—no collections. SC—occasionally collected at all stations except S11. RC—no collections.

Etheostoma nigrum Rafinesque. Johnnny darter.

EC—one of the two most abundant darters collected, taken in abundance from sandy pool habitat of E3, E6, and E8. SC—abundant in collections from all stations, especially S7 and S11. RC—abundant; twice as many collected downstream (R3) than upstream (R1, R2).

Etheostoma spectabile (Agassiz). Orangethroat darter.

EC—most abundant darter species collected, taken in abundance from riffles at all stations except E4, E5, and mainstem stations where riffle habitat was not sampled. SC—most abundant of the darters, taken from all stations, and especially numerous at S3, S7, and S11. RC—equally common at upstream and downstream riffles.

Percina caprodes (Rafinesque). Logperch.

EC—commonly taken from E1, E2, and E5 in deep, swift-moving water below riffles, occasionally collected at E6 and E5d. SC—no collections. RC—no collections.

Percina maculata (Girard). Blackside darter.

EC—occasionally collected from E2, E5, and E8 in habitat similar to that of logperch darters. SC—no collections. RC—occasional specimens taken upstream at R1 and R2, one specimen found downstream at R3.

Cottidae

Cottus bairdi Girard. Mottled sculpin.

EC—common in the riffles at stations E1, E6, and E8, occasional or absent

elsewhere. SC—no collections. RC—commonly collected at upstream and downstream sites.

Discussion

Thirty-five species representing 10 families were identified from our collections of Eagle Creek and its tributaries. Five species, the central stoneroller *Camptostoma anomalum*, striped shiner *Notropis chrysocephalus*, bluntnose minnow *Pimephales notatus*, creek chub *Semotilus atromaculatus*, and white sucker *Catostomus commersoni*, comprised 71% of the total number of fish caught and 63% of the total weight of the catch.

The fish community of Eagle Creek has changed considerably in the past fifteen years following treatment of the entire drainage with rotenone and the subsequent impoundment of the stream in 1966 (Fisher and Gammon 2). Most evident is the apparent loss of northern hog suckers *Hypentelium nigricans* and golden redhorse *Moxostoma erythrurum* along with several minnow and darter species from the system, and the paucity of smallmouth bass *Micropterus dolomieu*. Factors such as increased agriculturization and urbanization within the watershed have no doubt also played a role in altering the community composition of this stream system.

The collections from Stotts Creek contained 39 species representing six families. Of those thirty-nine, the central stoneroller, striped shiner, bluntnose minnow, creek chub, and white sucker again accounted for three-fourths of the total numbers and two-thirds of the total weight of the catch. Cyprinid species were particularly numerous in Stotts Creek, and in general appeared best able to sustain the large fluctuations in stream flow and resultant shifting of bottom sediments observed both by us and Gerking (4).

Thirty-five species from seven families were taken in our collections at Rattlesnake Creek. They represented a strikingly different community from that of both Eagle Creek and Stotts Creek. The central stoneroller, striped shiner, bluntnose minnow, and creek chub comprised nearly one-half of the total catch, while two-thirds of the total biomass was attributed to four different species: the northern hog sucker, golden redhorse, black redhorse *Moxostoma duquesnei*, and rock bass *Ambloplites rupestris*. The occurrence of three species of lampreys, family petromyzontidae, in our collections further exemplifies the unique character of this stream. Vladykov (9) noted that ammocetes belonging to two or more species could often be found in the same section of a stream.

The compositional similarities and differences of the three streams can be further illustrated in a comparison of the relative abundance of the major families (i.e., cyprinids, catostomids, centrarchids, and all other families combined) (Fig. 2). The biomass of the fish communities of both Eagle Creek and Stotts Creek is dominated by cyprinids; to a lesser extent catostomids, and with relatively few centrarchids. In contrast, Rattlesnake Creek was dominated by catostomids, with cyprinids and centrarchids contributing almost equally to the total biomass of our collections. These compositional differences can be attributed to various factors including: drainage basin size and morphology, geologic and environmental history, land usage, and man's activities within the watershed.

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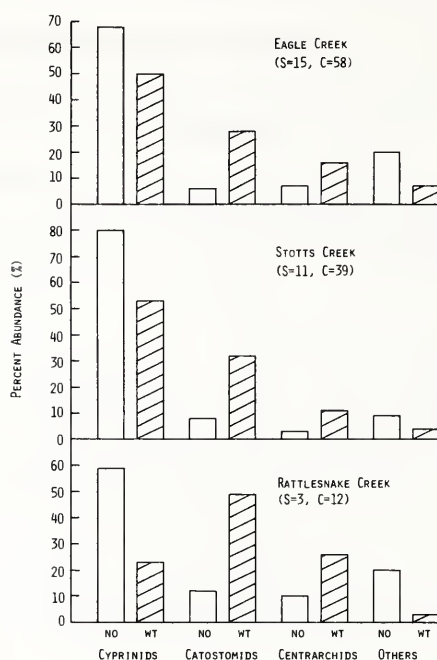


FIGURE 2. Relative numeric and biomass abundance of the major families of fish of Eagle, Stotts and Rattlesnake Creeks. *S* denotes number of collecting stations, *C* denotes number of collections.

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