Southeastern Fishes Council Proceedings

Volume 1
Number 22 *Number 22 (October 1990)*

Article 2

10-1-1990

Fishes of Springs and Spring-Fed Creeks of Calhoun County, Alabama

Douglas R. Sizemore

W. Mike Howell

Fishes of Springs and Spring-Fed Creeks of Calhoun County, Alabama

Southeastern Fishes Council
PROCEEDINGS
DEDICATED TO THE PRESERVATION OF SOUTHEASTERN FISHES

Number 22

October 1990

FISHES OF SPRINGS AND SPRING-FED CREEKS OF CALHOUN COUNTY, ALABAMA

Douglas R. Sizemore and W. Mike Howell

Department of Biology
Samford University
Birmingham, Alabama 35229

Abstract – A survey of the fish fauna inhabiting the springs and spring-fed creeks of Calhoun County, Alabama, was conducted between May, 1986 and February, 1987. Additional data were obtained from collections made prior to this study on the Fort McClellan Military Reservation, a limited access area. Forty-five species and two hybrids representing 24 genera and 11 families were collected from 83 stations.

New populations of *Hemitremia flammea* and *Etheostoma ditrema* were discovered. Range extensions were documented for *Notropis texanus*,*Lepomis humilis*, and the undescribed "upland snubnose" darter, *Etheostoma sp*.

INTRODUCTION

Calhoun County, Alabama, possesses an abundant supply of ground water much of which surfaces in the form of springs. These springs range in size from small seepage areas to large thrust fault springs. The largest spring in the county is Coldwater Spring, with a minimum daily discharge of 32 million gallons (Warman and Causey, 1962). Ichthyologists from various universities and government agencies have made relatively few collections of the spring ichthyofauna within Calhoun County; however, some important discoveries have been made within the area. The pygmy sculpin, *Cottus pygmaeus* (Williams, 1968), and a rare darter *Etheostoma ditrema* (Ramsey and Suttkus, 1965), were discovered in Coldwater Spring near Anniston, AL. And, in nearby Talladega County, specimens of the flame chub, *Hemitremia flammea*, were discovered in a spring tributary of Kelley Creek (Smith-Vaniz, 1968). These important ichthyological findings, coupled with the fact that springs throughout much of north Alabama serve as habitats for spring restricted fishes, have led us to conduct a comprehensive ichthyofaunal survey within Calhoun County. Due to population growth and environmental pressures facing the numerous unique spring ecosystems within Calhoun County, we felt that an ichthyological survey was needed immediately. The purpose of this study is to document the diversity and distribution of the ichthyofauna of springs and spring-fed creeks of Calhoun County, AL, prior to any further environmental degradation.

The majority of Calhoun County is located within the Valley and Ridge Physiographic Province of northeastern Alabama. That portion of the county lying outside the Valley and Ridge Province parallels the Calhoun-Cleburne county line. This narrow strip of land is situated within the Ashland Plateau of the Piedmont Province. Topography is generally mountainous since the county is located within the foothills of the Appalachian Mountains. The Coosa River and its tributaries drain the county.

MATERIALS AND METHODS

Seventy-one collections of springs and spring distributaries were made from 20 May 1986 through 7 February 1987. All collections during this period were made by the authors. Additional data were obtained from 12 collections made by M.F. Mettee and P.E. O'Neil between 24 May 1979 and 11 October 1979. Data from these collections were utilized because the samples were made on the Fort McClellen Military Reservation, a restricted public access area.

All collections were made using either 4 or 6 foot minnow seines. All specimens were immediately preserved in 10% formalin and returned to the laboratory for identification.

Collecting stations are plotted on a dot distribution map of Calhoun County (Fig. 1). The collecting stations are in no particular order throughout the county. Two springs just outside Calhoun County were included since they were less than 100 meters from the county line.

The List of Species is presented below. Species are arranged alphabetically within a family. The families are arranged in the sequence proposed by Greenwood *et al.* (1966). The Collecting Stations section contains information concerning the location of each collecting station as well as the species collected at each station.

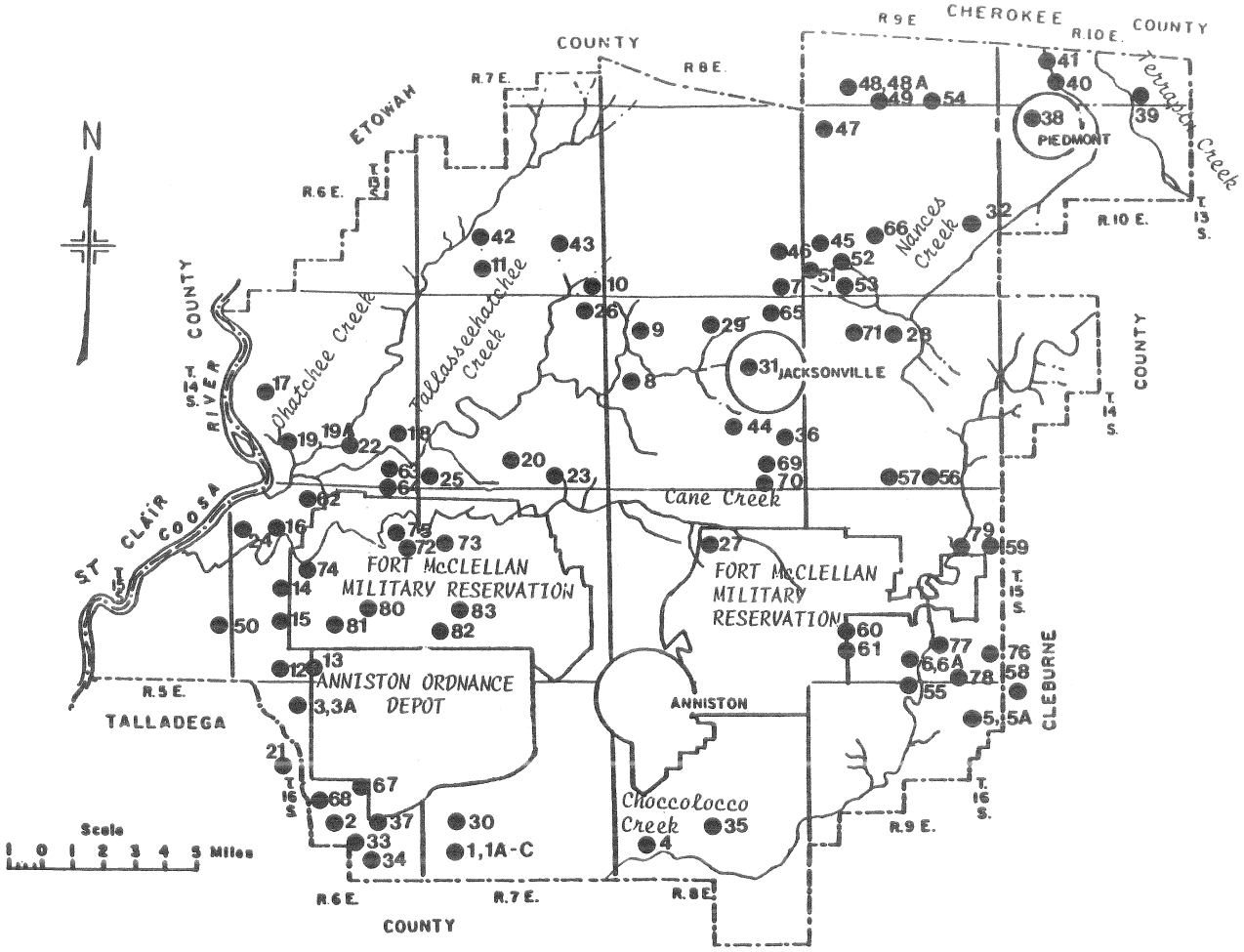

Figure 1. Map depicting collection stations within Calhoun County, AL. Base map from Warman and Causey, 1962

LIST OF SPECIES

CLUPEIDAE – HERRINGS

1. *Dorosoma petenense* (Gunther). Threadfin shad.
   Station: 18

SALMONIDAE – TROUT

2. *Salmo gairdneri* Richardson. Rainbow trout.
   Rainbow trout were introduced into Willett Spring for angling purposes. Station: 72.

ESOCIDAE – PIKES

3. *Esox americanus* Gmelin. Redfin pickerel.
   Station: 1A.
4. *Esox niger* Lesueur. Chain pickerel.
   Stations: 25, 72, 73, 76, 80.

CYPRINIDAE – MINNOWS

5. *Campostoma oligolepis* Hubbs and Green. Large scale stoneroller. Stations: 1, 1A, 3, 3A, 8 19A, 23, 24, 27, 30, 31, 34, 38, 39, 41, 42, 50, 55, 64, 69, 72 -82.
6. *Campostoma oligolepis* x *Luxilus chrysocephalus*.
   This single specimen apparently represents a natural intergeneric hybrid minnow. Although the hybrid was intermediate in some characteristics that differentiate the presumed parental species, it was closer morphologically to *Luxilus chrysocephalus* (Sizemore and Howell, 1987). Station: 1.
7. *Cyprinella trichroistius* (Jordan and Gilbert). Tricolored shiner. Stations: 34, 55, 56, 58, 76-78.
8. *Cyprinella venustus* (Girard). Blacktail shiner.
   Stations: 41, 55, 64.
9. *Cyprinus carpio* Linnaeus. Carp.
   Stations: 25, 64.
10. *Hemitremia flammea* (Jordan and Gilbert). Flame chub.
    Previous collections by many ichthyologists have revealed *H. flammea* at only one locality within the Mobile Basin – an

unnamed spring tributary to Kelly Creek, 4.5 miles northeast of Talladega along Hwy 21, Talladega County, AL (Smith-Vaniz, 1969). Two heretofore unknown populations of the flame chub were discovered within the study area. These populations are separated by approximately 24 miles. Blue Eye Spring, Station 3A, supported a healthy population of flame chubs. Joseph Spring, Station 6, produced only one specimen. Stations: 3A, 6.

11. *Luxilus chrysocephalus* (Rafinesque). Striped shiner.
Stations: 1, 1A, 1B, 72, 73, 80.
12. *Lythrurus lirus* (Jordan). Mountain shiner.
Stations: 55, 73, 74, 80.
13. *Notemigonus crysoleucas* (Mitchill). Golden shiner.
Stations: 16, 17, 19A,22, 72.
14. *Notropis asperifrons* Suttkus and Ramsey. Burrhead shiner.
Stations: 6, 34, 42, 43, 55, 57.
15. *Notropis chrosomus* (Jordan). Rainbow shiner.
Stations: 6, 49, 53, 54, 56, 59, 63-65, 72-75, 78-82.
16. *Notropis stilbius* (Jordan). Silverstripe shiner.
Stations: 1, 74, 75.
17. *Notropis texanus* (Girard). Weed shiner.
The weed shiner is rare above the Fall Line (Swift, 1979). This record of *N. texanus* is a significant range extension above the Fall Line well into the upper Coosa River system. Station: 50.
18. *Notropis xaenocephalus* (Jordan). Coosa shiner.
Stations: 27, 58, 73, 76.
19. *Rhinichthys atratulus* (Hermann). Blacknose dace.
Stations: 7, 31, 32, 47, 49, 53, 54, 60, 61, 64, 65, 81.
20. *Semotilus atromaculatus* (Mitchill). Creek chub.
Stations: 1A, 3, 6, 6A, 7, 8, 16, 22-24, 29, 30, 33, 36, 39, 41, 43, 44, 47, 49, 53, 54, 56, 57, 59, 60-65, 70-72, 74-81, 83.

CATOSTOMIDAE – SUCKERS

21. *Hypentelium etowanum* (Jordan). Alabama hog sucker.
Stations: 1, 8, 23, 30, 38, 52,55, 65, 72-75, 77, 78, 80-82.
22. *Moxostoma duquesnei* (Lesueur). Black redhorse.
Station: 78.
23. *Moxostoma erythrurum* (Rafinesque). Golden redhorse.
Station: 75.

ICTALURIDAE – CATFISHES

24. *Ameiurus melas* (Rafinesque). Black bullhead.
Stations: 2, 34, 72.
25. *Ameiurus natalis* (Lesueur). Yellow bullhead.
Stations: 19A, 80.

FUNDULIDAE – KILLIFISHES

26. *Fundulus stellifer* (Jordan). Southern studfish.
Stations: 78.

POECILIIDAE – LIVERBEARERS

27. *Gambusia affinis* (Baird and Girard). Mosquitofish.
Stations: 2-5A, 8, 12-14, 17-24, 27, 32-34, 37-41, 46, 48, 48A, 50, 53, 56, 67, 69, 72, 76, 79.

CENTRARCHIDAE – SUNFISHES

28. *Lepomis auritus*(Linnaeus). Redbreast sunfish.
Station: 41.
29. *Lepomis cyanellus* (Rafinesque). Green sunfish.
Stations: 1, 2, 3A, 5A, 6, 12-14, 17, 18A, 19A, 21, 23, 25, 29, 47, 48, 59, 62, 63, 67, 71, 73, 75, 76, 79, 80, 81.
30. *Lepomis cyanellus* x *Lepomis megalotis*.
This was the only hybrid sunfish collected during the survey.
Station: 23.
31. *Lepomis gulosus* (Cuvier). Warmouth.
Stations: 72, 73.
32. *Lepomis humilis* (Girard). Orangespotted sunfish.
This species does not occur naturally within the Coosa River system (Lee, 1978; Smith-Vaniz, 1968). The specimen collected here most likely resulted from pond-stocking or other accidental or purposed introduction by humans. Station: 22.
33. *Lepomis macrochirus* (Rafinesque). Bluegill.
Stations: 12, 15, 17, 18, 18A, 21, 23, 24, 27, 30, 34, 39, 42, 50, 52, 57, 63, 66, 67, 72-76, 79, 81.
34. *Lepomis megalotis* (Rafinesque). Longear sunfish.
Stations: 4, 6, 9, 25, 32, 34, 40, 41, 50, 64, 68, 71, 73, 74, 78.
35. *Lepomis microlophus* (Gunther). Redear sunfish.
Stations: 25, 74.
36. *Lepomis punctatus* (Valenciennes). Spotted sunfish.
Stations: 26, 48A, 49, 73, 75.
37. *Micropterus coosae* (Hubbs and Bailey). Redeye bass.
Stations: 6, 58, 59, 75, 77, 78, 80, 83.
38. *Micropterus punctulatus* (Rafinesque). Spotted bass.
Station: 1.
39. *Micropterus salmoides* (Lacepede). Largemouth bass.
Stations: 4, 11, 19A, 21, 25, 27, 29, 33, 34, 68, 73, 74.
40. *Pomoxis nigromaculatus* (Lesueur). Black crappie.
Station: 72.

PERCIDAE – PERCHES

41. *Etheostoma coosae* (Fowler). Coosa darter.
Stations: 6, 8, 10, 17, 19, 19A, 23, 26, 32, 42, 43, 47, 63, 73, 74, 76, 77, 78, 80, 81.
42. *Etheostoma ditrema* (Ramsey and Suttkus). Coldwater darter.
This uncommon darter was collected at two new localities during the study. Stations: 1C, 30, 40, 41.
43. *Etheostoma stigmaeum* (Jordan). Speckled darter.
Station: 55.
44. *Etheostoma* sp. "Upland snubnose" darter.
Stations: 55, 58, 59.
45. *Percina nigrofasciata* (Agassiz). Blackbanded darter.
Stations: 32, 55, 73, 75, 78.

COTTIDAE – SCULPINS

46. *Cottus carolinae* (Gill). Banded sculpin.
Stations: 2, 3, 3A, 7, 8, 10, 19, 20, 23, 26, 32, 38-44, 46, 48, 49, 51, 53, 65, 72-77, 81, 82, 83.
47. *Cottus pygmaeus* (Williams). Pygmy sculpin.
Approximately 30 specimens of the pygmy sculpin were captured and released at Coldwater Spring, the type-locality for this species. Several springs which appeared physically similar to Coldwater Spring were collected but no pygmy sculpins were found. Station: 30.

COLLECTING STATIONS

1. Coldwater Creek, sec 32, T 16S, R 7E, approximately 150 meters up-stream from U.S. Hwy 78 bridge. Species: 5, 6, 11, 16, 21, 29, 38.

1A. Coldwater Creek, sec 32, T 16S, R 7E, approximately 300 meters up-stream from U.S. Hwy 78 bridge. Species: 3, 5, 11, 20.
1B. Coldwater Creek, sec 32, T 16S, R 7E, approximately 400 meters up-stream from U.S. Hwy 78 bridge. Species: 11.
1C. Coldwater Creek, sec 32, T 16S, R 7E, approximately 500 meters up-stream from U.S. Hwy 78 bridge. Species: 42.
2. Everett's Spring, NW 1/4 of sec 21, T 16S, R 6E. Species: 24, 27, 29, 46.
3. Blue Eye Spring, sec 6, T 16S, R 6E. Species: 5, 20, 27, 46.
3A. Blue Eye Spring, sec 6, T 16S, R 6E. Species: 5, 10, 27, 29, 46.
4. Oxford Spring Lake and runoff, sec 29, T 16S, R 8E. Species: 27, 34, 39.
5. Talley Spring, sec 11, T 16S, R 9E. Species: 27.
5A. Talley Spring, sec 11, T 16S, R 9E. Species: 27, 29.
6. Joseph Spring, sec 27, T 15S, R 9E. Species: 10, 14, 15, 20, 29, 34, 37, 41.
6A. Joseph Spring, sec 27, T 15S, R 9E. Species: 20.
7. Germania Spring, sec 36, T 13S, R 8E. Species: 19, 20, 46.
8. Cedar Spring, sec 18, T 14S, R 8E. Species 5, 20, 21, 27, 41, 46.
9. Angle Spring, NW 1/4, sec 8, T 14S, R 8E. Species: 34.
10. Seven Springs, sec 36, T 13S, R 7E. Species: 41, 46.
11. Crystal Springs, sec 33, T 13S, R 7E. Species: 39.
12. Unnamed spring-fed pond, sec 31, T 15S, R 6E. Species: 27, 29, 33.
13. Unnamed spring-fed pond, sec 32, T 15S, R 6E. Species: 27, 29.
14. Unnamed spring, sec 18, T 15S, R 6E. Species: 27, 29.
15. Sulphur Spring, sec 30, T 15S, R 6E. Species: 33.
16. Boling Spring, sec 8, T 15S, R 6E. Species: 13, 20.
17. Winn Spring, sec 20, T 14S, R 6E. Species: 13, 27, 29, 33, 41.
18. T.T. McCullars' Spring distributary, sec 25, T 14S, R 6E. Species: 1, 27, 29, 33.
18A. T. T. McCullars' Spring distributary, sec 25, T 14S, R 6E. Species: 27, 29, 33.
19. Guthrie Spring, sec 29, T 14S, R 6E. Species: 27, 41, 46.
19A. Guthrie Spring, sec 29, T 14S, R 6E. Species: 5, 13, 25, 27, 29, 39, 41.
20. Unnamed springs, sec 28, T 14S, R 7E. Species: 27, 46.
21. Plumb Spring, sec 20, T 16S, R 6E. Species: 27, 29, 33, 39.
22. Unnamed spring distributary, sec 27, T 14S, R 6E. Species: 13, 20, 27, 32.
23. Alexandria Spring, sec 34, T 14S, R 7E. Species: 5, 20, 21, 27, 29, 30, 33, 41, 46.
24. Unnamed spring distributary, sec 7, T 15S, R 6E. Species: 5, 20, 27, 33.
25. H.T. McCullars' Spring, sec 31, T 14S, R 7E. Species: 4, 9, 29, 34, 35, 39.
26. Unnamed spring distributary, sec 1, T 14S, R 7E. Species: 36, 41, 46.
27. Blue Spring, sec 15, T 15S, R 8E. Species 5, 18, 27, 33, 39.
28. Whites Gap Spring, sec 9, T 14S, R 9E. Species: None collected.
29. Unnamed spring distributary, sec 9, T 14S, R 8E. Species: 20, 29, 39.
30. Coldwater Spring, sec 29, T 16S, R 7E. Species: 5, 20, 21, 33, 42, 47.
31. Big Spring, sec 14, T 14S, R 8E. Species: 5, 19.
32. Maxwellborn Spring, sec 24, T 13S, R 9E. Species: 19, 27, 34, 41, 45, 46.
33. Jack Dunn Spring, sec 27, T 16S, R 6E. Species: 20, 27, 39.
34. Unnamed spring distributary, sec 27, T 16S, R 6E. Species: 5, 7, 14, 24, 27, 33, 34, 39.
35. Boiling Springs, sec 27, T 16S, R 8E. Species: none collected.
36. Unnamed spring distributary, sec 24, T 14S, R 8E. Species: 20.
37. Unnamed spring at distributary, sec 27, T 16, T 6E. Species: 27.
38. Unnamed spring at Piedmont City Park, sec 5, T 13S, R 10E. Species 5, 21, 27, 46.
39. Smith Spring, sec 35, T 12S, R 10E. Species: 5, 20, 27, 33, 46.
40. Smart Spring, sec 33, T 12S, R 10E, 1.3 miles N U.S. 278, near Northside Baptist Church. Species: 27, 34, 42, 46.
41. Todd Spring, S1/2 sec 28, T 12S, R 10E, 1.3 miles N U.S. 278 past Northside Baptist Church. Species: 5, 8, 20, 27, 28, 34, 42, 46.
42. Read's Spring, sec 27, T 13S, R 7E. Species: 5, 14, 33, 41, 46.
43. Blue Pond Spring, sec 26, T 13S, R 7E. Species: 14, 20, 41, 46.
44. Tolbert Spring, SW 1/4, sec 22, T 14S, R 8E. Species: 20, 46.
45. Unnamed spring distributary, sec 19, T 13S, R 9E. Species: none collected.
46. Holders Spring, sec 25, T 13S, R 8E. Species: 27, 46.
47. Unnamed spring, sec 6, T 13S, R 9E. Species: 19, 20, 29, 41.
48. Bennefield Spring, sec 32, T 12S, R 9E. Species: 27, 29, 46.
48A. Bennefield Spring, sec 32, T 12S, R 9E. Species: 27, 36.
49. Unnamed spring, sec 33, T 12S, R 9E. Species: 15, 19, 20, 36, 46.
50. Nance Spring, sec 25, T 15S, R 5E. Species: 5, 17, 27, 33, 34.
51. Unnamed spring distributary, sec 30, T 13S, R 9E. Species: 46.
52. Unnamed spring distributary, sec 30, T 13S, R 9E. Species: 21, 33.
53. Unnamed spring, sec 30, T 13S, R 9E. Species: 15, 19, 20, 27, 46.
54. Unnamed spring distributary, sec 33, T 12S, R 9E. Species: 15, 19, 20.
55. Unnamed spring distributary, W 1/2, sec 3, T 16S, R 9E. Species: 5, 7, 8, 12, 14, 21, 43, 44, 45.
56. Unnamed spring tributary, sec 34, T 14S, R 9E. Species: 7, 15, 20, 27.
57. Cheatwood Spring, sec 33, T 14S, R 9E. Species: 14, 20, 33.
58. Unnamed spring distributary, sec 6, T 16S, R 10E. Species: 7, 18, 37, 44.
59. Unnamed spring distributary, sec 24, T 15S, R 9E. Species: 20, 29, 37, 44.
60. Unnamed spring distributary, sec 30, T 15S, R 9E. Species: 19, 20.
61. Unnamed spring distributary, W 1/2, sec 30, T 15S, R 9E. Species: 19, 20.
62. Braswell Spring, sec 4, T 15S, R 6E. Species: 20, 29.
63. Unnamed spring, sec 35, T 14S, R 6E. Species: 15, 20, 29, 33, 41.
64. Unnamed spring distributary, sec 35, T 14S, R 6E. Species: 5, 8, 9, 15, 19, 20, 34.
65. Williams Spring, sec 2, T 14S, R 8E. Species: 15, 19, 20, 21, 46.
66. Hoague Spring, sec 21, T 13S, R 9E. Species: 33.
67. Miller's Spring, sec 22, T 16S, R 6E. Species: 27, 29, 33.
68. Russ Spring, sec 28, T 16S, R 6E. Species: 34, 39.
69. Sloup Spring, sec 35, T 14S, R 8E. Species: 5, 27.
70. Fourmile Spring, S 1/2, sec 35, T 14S, R 8E. Species 20.
71. Unnamed spring distributary, sec 9, T 14S, R 9E. Species: 20, 29, 34.

The following stations were collected by M.F. Mettee and P.E. O'Neil from 24 May 1979 to 11 October 1979 on the Fort McClellen Military Reservation.

72. Willett Spring, sec 13, T 15S, R 6E. Species: 2, 4, 5, 11, 13, 15, 20, 21, 24, 27, 31, 33, 40, 46.
73. Unnamed spring distributary, sec 18, T 15S, R 7E. Species: 4, 5, 11, 12, 15, 18, 21, 29, 31, 33, 34, 36, 39, 41, 45, 46.
74. Unnamed spring distributary, sec 18, T 15S, R 6E. Species: 5,

12, 15, 16, 20, 21, 33, 34, 35, 39, 41, 46.

75. Willett Spring, sec 13, T 15S, R 6E. Species: 5, 15, 16, 20, 21, 23, 27, 29, 33, 36, 37, 45, 46.
76. Unnamed spring distributary, sec 36, T 15S, R 9E. Species: 4, 5, 7, 18, 20, 29, 33, 41, 46.
77. Unnamed spring distributary, sec 27, T 15S, R 9E. Species: 5, 7, 20, 21, 37, 41, 46.
78. Unnamed spring distributary, sec 35, T 15S, R 9E. Species: 5, 7, 15, 20,21, 22, 26, 34, 37, 41, 45.
79. Tributary from Willis Spring, sec 23, T 15S, R 9E. Species: 5, 15, 20, 27, 29, 33.
80. Unnamed spring distributary, sec 22, T 15S, R 6E. Species: 4, 5, 11, 12, 15, 20, 21, 25, 29, 37, 41.
81. Unnamed spring distributary, sec 28, T 15S, R 6E. Species: 5, 15, 19, 20, 21, 29, 33, 41, 46.
82. Unnamed spring distributary, sec 30, T 15S, R 7E. Species: 5, 15, 21, 46.
83. Unnamed spring distributary, sec 20, T 15S, R 7E. Species: 20, 37, 46.

DISCUSSION

Eighty-three springs or spring distributaries in Calhoun County, Alabama, were surveyed to determine the diversity and distribution of the ichthyofauna. Forty-five species and two hybrids belonging to twenty-four genera and eleven families were collected. An average of 5.3 species were taken from each station. Three springs, however, yielded no fishes (Stations: 28, 35, 45). The modal number of species collected per station was 3, and one spring harbored 16 species (Station: 73). Considering all species collected, the following were the most commonly taken: *Semotilus atromaculatus* (43 stations), *Gambusia affinis* (38 stations), *Cottus carolinae* (33 stations), *Campostoma oligolepis* (31 stations), and *Lepomis macrochirus* (26 stations). Ten of the species collected were present at fifteen or more stations.

Many of the fishes are known to inhabit rivers, creeks and lakes as well as springs. Four species, however, seem to be restricted to springs or spring tributaries within the study area: *Cottus pygmaeus, Hemitremia flammea, Etheostoma ditrema* and *Rhinichthys atratulus*. *Rhinichthys atratulus* is not, however, restricted to springs in its range north of the study area. In terms of frequency of collection, the spring restricted species rank as follows: *R. atratulus* (12 stations); *E. ditrema* (4 stations); *H. flammea* (2 stations); and *C. pygmaeus* (1 station).

Cottus pygmaeus has the most geographically limited distribution of the spring restricted species. The pygmy sculpin was taken only at Station 30, Coldwater Spring, the type locality. Aside from this survey, several workers have made numerous collections within the Valley and Ridge Province in unsuccessful efforts to locate additional populations of *C. pygmaeus*.

The pygmy sculpin is relatively abundant in Coldwater Spring and in the effluent spring-creek immediately below the spring basin. On 26 September 1986,30 specimens were collected in the spring run and others were observed in the spring basin. Mature individuals were collected in the spring run for approximately 100 meters downstream. At this point, the effluent run of the spring confluences with an unnamed creek. Formerly this creek was visibly polluted (per. comm. R.A. Stiles); however, now the creek appears to be pollution free. Almost certainly this creek checked the downstream advancement of *C. pygmaeus* with its warmer water and pollutants. Sampling continued for approximately 50 meters beyond the point of confluence and no specimens of *C. pygmaeus* were collected.

As a result of this study, range extensions for the following species were noted: *H. flammea, E. ditrema, Lepomis humilis* and *Notropis texanus*. Prior to this study the range of *H. flammea* in Alabama was thought to be limited to springs and clear tributaries in the Tennessee River system, plus the previously mentioned spring tributary to Kelly Creek near Talladega, AL. This survey revealed the presence of two populations of *H. flammea* within the study area: Blue Eye Spring (Station 3A) and Joseph Spring (Station 6).

Within the study area *Etheostoma ditrema* was historically present in Martin Spring (now inundated by Weiss Lake) and Coldwater Spring. Thorough sampling of the immediate effluent run of Coldwater Spring revealed the presence of only three specimens of *E. ditrema*. Later collections of Coldwater Creek approximately 400 meters downstream from the spring basin fortuitously produced one specimen of the coldwater darter.

Two new populations of *E. ditrema* were located in Calhoun County: Smart Spring (Station 40) and Todd Spring (Station 41). The new localities for the coldwater darter increase the number of known populations of this species in Alabama to only five (Glencoe Spring and Waxahatchee Creek being additional populations, Ramsey et al, 1986). However, considering the status of this fish, any range extension of *E. ditrema* is significant since this darter has been classified as threatened by Deacon et al. (1979). A more recent treatment of threatened vertebrates in Alabama place *E. ditrema* in a category of special concern (Ramsey et al. 1986).

Lepomis humilis was not previously known from the Coosa River drainage; the most probable explanation for the occurrence of this species in the Coosa River drainage is pond stocking.

Notropis texanus is exceedingly rare above the Fall Line (Smith-Vaniz, 1968). Only one specimen of the weed shiner was collected, from a large sandy bottomed spring run. This represents a new record for the species above the Fall Line.

Only one undescribed species was collected during this study– the "upland snubnose" darter, *Etheostoma* sp. A total of 13 specimens were taken from three large spring tributaries in the mountains of the Talladega National Forest (Stations: 55, 58,59).

In summary, Calhoun County appears to support a diverse assemblage of spring dwelling fishes, some of which occur in relative abundance. The forty-five species reported in this study represents a thorough sampling of the ichthyofauna of the spring habitat of the area. While it is assuring to see the diversity of species within the study area and to locate undiscovered populations, it must be noted that many species (such as *Etheostoma trisella* and *Cottus pygmaeus*) possibly have been exterminated in the county, or reduced in numbers, due to human activities. It has, therefore, become important to protect the natural spring habitat and the associated species that remain within Calhoun County. Consequently, a practical plan of protection and conservation should be initiated to protect the fragile spring ecosystem and the inhabitants it supports.

LITERATURE CITED

Deacon, J.E., G. Kobetich, J.D. Williams, S. Contreras, et al. 1979. Fishes of North America endangered, threatened, or of special concern: 1979. Fisheries 4 (2):29-44.

Greenwood, P. H., D. E. Rosen, S. H. Weitzman, and G. A. Myers. 1966. Phyletic studies of teleostean fishes with a provisional classification of living forms. Bull. Am. Mus. Nat. His. 131: Art. H, 341-455.

Lee, D. S. 1978. *Lepomis humilis* (Girard) orange spotted sunfish, p. 596, in D. S. Lee et. al. *Atlas of North American Freshwater Fishes*. N. C. State Mus. Nat. Hist. Raleigh i-x + 854 pp.

Ramsey, J. S. and R. D. Suttkus 1965. *Etheostoma ditrema*, a new darter of the subgenus *Oligocephalus* (Percidae) from springs of the Alabama River Basin in Alabama and Georgia. Tulane Studies in Zoology. 12(3): 65-77.

Ramsey, J. S. 1986. Coldwater darter, *Etheostoma ditrema* Ramsey and Suttkus. p. 16-17 in Mount, R. H. (ed.), Vertebrate Animals of Alabama in Need of Special Attention. Ala. Agr. Expt. Sta., Auburn University. 124 pp.

Sizemore, D. R. and W. M. Howell. 1987. A natural intergeneric hybrid minnow, *Campostoma oligolepis* X *Notropis chrysocephalus* (Pisces: Cyprinidae). Jour. Ala. Acad. Sci. Vol. 58, No. 4, 184-191.

Smith-Vaniz, W. F. 1968. *Freshwater Fishes in Alabama*. Auburn Univ., Agric. Exper. Sta., i-ix, 211 pp.

Swift, C. C. 1979. *Notropis texanus* (Girard) Weed shiner, p. 316 in D. S. Lee, et. Al. *Atlas of North American Freshwater Fishes*. N. C. State Mus. Nat. Hist. Raleigh i-x + 854 pp.

Warman, J. C. and L. V. Causey. 1962. Geology and ground water resources of Calhoun Co. Al. County Rept. 7. Geol. Surv. Ala. Bull. University, Alabama.

Williams, J. D. 1968. A new species of sculpin, *Cottus pygmaeus*, from a spring in the Alabama River basin. Copeia, 1968 (2): 334-342.

NEWS NOTE

VIDEO DOCUMENTARIES of reproductive behaviors of North American cyprinids are now available through the University of Richmond.

1. *Reproductive Behaviors of the Creek Chub*, 13-min
2. *Spawning Nests of the Bluehead Chub*, 14-min
3. *Nocomis – The Spawning Fish* 13-min
4. *Were They Accurate? Comparison Between Journal Accounts and Video Recordings of Reproductive Behaviors of Selected Cyprinids*

Contact Eugene G. Maurakis or William S. Woolcott, Biology Department, University of Richmond, Virginia 23173 (804) 289-8977/8241.

PROCEEDINGS is a publication of the Southeastern Fishes Council, Inc. and is published in New Orleans, Louisiana. Officers are: Franklin F. Snelson, Chairman; Bruce Bauer, Chairman-elect; Werner Wieland, Secretary/Treasurer. Editor for the PROCEEDINGS is Michael M. Stevenson, Biological Sciences, University of New Orleans, LA 70148. Phone: (504) 286-7057.