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Fishes of the Buttahatchee River System of Alabama and Mississippi

FISHES OF THE BUTTAHATCHEE RIVER SYSTEM OF ALABAMA AND MISSISSIPPI

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Abstract

The Buttahatchee River serves as a potential refugium for riverine fishes and invertebrates once found in the Tombigbee River of western Alabama and eastern Mississippi. Changes in physical characteristics of the Tombigbee, resulting from recent completion of the Tennessee-Tombigbee waterway, means that many species either will be eliminated or will survive in reduced numbers only in a few large tributaries, such as Bull Mountain Creek (Pierson and Schultz 1984) and the Sipsey and Buttahatchee rivers. The present survey was conducted for the purpose of obtaining baseline data on the fish fauna for the last of those potential refugia listed above.

Introduction

Construction of the Tennessee-Tombigbee waterway (TTW) has resulted in change of the Tombigbee River proper from a lentic river with firm substrate to a lotic environment with a mud-silt bottom. Two predictable effects of this project will be (a) the complete elimination or severe reduction in numbers of many Tombigbee species and (b) mixing of the Tennessee and Tombigbee faunas in ways yet to be determined. If any riverine species native to the Tombigbee are to survive in this area, their only hope is several Tombigbee River tributaries still containing remnants of big-river habitat, such as the Buttahatchee River. It is important to document the fish fauna of the Buttahatchee at this time in order to provide baseline data that can be used to measure the impacts of future invasions of fishes from the Tennessee River and to monitor the survival of big-river species.

The Buttahatchee River, a major tributary of the Tombigbee River, drains an area of 870 sq. mi., and has an average discharge of 1265 cfs at Caledonia, Mississippi, a point 19 miles from its mouth. The system is situated almost entirely within the Fall Line Hills physiographic district; only a few miles of the lowermost part of the river is in the Black Belt physiographic district. The headwater streams in Marion County, Alabama, begin at approximately 900 feet elevation. As the river meanders southwestward, it enters the upper Tombigbee River (Columbus Reservoir) at the Monroe-Lowndes County line in Mississippi, where the elevation is about 230 feet above sea level. The tributaries typically consist of alternating riffles and pools; the river proper above the Fall Line usually flows over rock and rubble. Below the Fall Line the river deepens and begins to meander over a gravel and sand substrate.

Several studies have reported on the species occurring in the Buttahatchee (Caldwell 1969; Schultz 1971, 1981, 1982; Boschung 1973); however, this is the first comprehensive list of species published.

The species list contained herein was compiled from 99 seine, hoop net, and rotenone collections at 34 stations during 1968-1973 and 1979-1981 (Fig. 1). Hoop nets, seldom used in ichthyological surveys in the southeastern U.S., were employed for 560 net days and

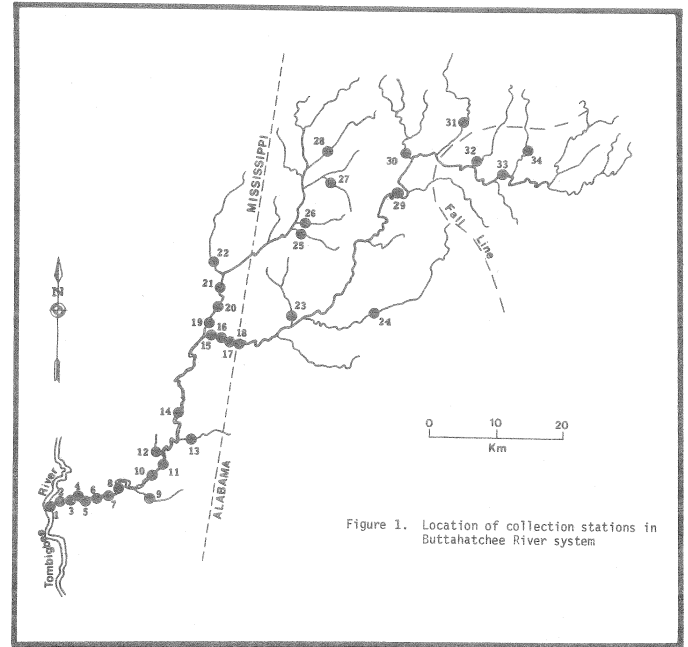


Figure 1. Location of collection stations in Buttahatchee River system

yielded 26 species, five of which were not collected by other methods. Rotenone collections accounted for 69 species, of which seven were not otherwise collected. Hoop nets are selective for larger, more mobile fishes such as catostomids, ictalurids and centrarchids. Conventional seine collecting accounted for 79 species, 16 of which were not collected by rotenone or hoop nets. Overall, 94 species can be documented from the Buttahatchee system. Most of the 11,550 specimens resulting from these collections are housed in the University of Alabama Ichthyological collection, the Mississippi Museum of Natural Science, Auburn University, and Mississippi State University fish collections.

Table 1 lists all collection localities by numbers corresponding to collecting stations in Figure 1. After the locality description, fishes collected at each station are listed numerically in phylogenetic sequence as they appear in Table 2. Table 2 lists all species collected during the study, as well as stations where each species was found.

Table 1

Collection localities in the
Buttahatchee River system of Alabama and Mississippi
(species listed by number as referenced in Table 2;
sampling method indicated by s (seine), h (hoop
net, and r (rotenone))

1. Buttahatchee R., 11.7 km SW of New Hamilton, at confluence with Tombigbee R., Monroe Co., MS. T16S,R19W,Sec.22. Sampling method: s. 24 July 1982, 11 Aug. 1980, 12 Aug. 1980. Species: 4,7-8, 12,15-19,21,23-34,36,40,44,48,50-52,56-59,64-66, 68-70,72-74,76-77,80-82,86,89-94.
2. Buttahatchee R., 11.5 km. SW of New Hamilton, Monroe Co., MS. T16S,R19W,Sec.22. Sampling method: s. 16 Oct. 1981. Species: 15,23,25-26,28-30,34, 64,82,89-90,92.
3. Buttahatchee R., 9.6 km SSW of New Hamilton, Monroe Co., MS. T16S,R19W,Sec.23. Sampling method: s. 16 Oct. 1979. Species: 12,15-16,19,23,28-30,32-33, 40,51-52,56,65,73-74,76,80-82,88-90,92.

4. Buttahatchee R., 8.5 km S of New Hamilton, Monroe Co., MS. T16S,R18W,Sec.17. Sampling methods: s,r. Dates: 14 July 1971, 19 June 1980. Species: 2,7-8, 12,24,28,30-32,34,36,40-41,44-45,48,51-52,56,62, 64-65,69-70,72-74,76-77,80-82,89-90,92.
5. Buttahatchee R., 9.8 km SSW of New Hamilton, Monroe Co., MS. T16S,R18W,Sec.19. Sampling method: r. 27 Aug. 1968. Species: 7,9,13,15,17-18,23,27-31, 34,36,40,45,48-49,54-56,59,62,64-65,69-70,82,86-88, 90,94.
6. Buttahatchee R., 7.7 km SSE of New Hamilton, Monroe Co., MS. T16S,R18W,Sec.19. Sampling methods: s,r. 5 Oct. 1970, 14 April 1981. Species: 7,9,12,22-25, 27-28,30-31,34,36,41,45,48,52,56,65,69-70,74,80-82, 90,92,94.
7. Buttahatchee R., 7.5 km SSE of New Hamilton, Monroe Co., MS. Sampling method: h. 21 collections between January and December 1981. Species: 3-5,7,9, 13,36,39-45,48,54,59,62,64-66,69-71,93-94.
8. Buttahatchee R., 6.9 km SE of New Hamilton, Monroe Co., MS. T16S,R18W,Sec.11. Sampling method: s. 18 June 1980, 21 Aug. 1980. Species: 12,15,18-19, 22-25,27-30,32-34,40,48,51-52,56,59,64-65,69,72,74, 76-77,80-82,86,90,92.
9. Unnamed tributary to Buttahatchee R., 3.7 km W of Caledonia, Lowndes Co., MS. T16S,R17W,Sec.18. Sampling method: r. 27 Sept. 1979. Species: 10, 12,19-20,22-23,25,29-30,32-33,35,37,47,49,51,55-56, 62-63,65,77,83,89.
10. Buttahatchee R., 3.8 km NNW of Caledonia, Lowndes Co., MS. T15S,R17W,Sec.32. Sampling method: s. 13 Jan. 1981. Species: 23-24,28-32,34,51-52,56-58, 65,74,77,80-82,90,92.
11. Buttahatchee R., 5.6 km N of Caledonia, Lowndes Co., MS. T15S,R17W,Sec.28. Sampling method: s. 8 May 1980. Species: 11-12,15,22-25,28,30-31, 51-52,56-58,65,69-70,74,80-81,89-90,92.
12. Grub Springs Branch, 8.6 km E of Hamilton, Monroe Co., MS. T15S,R9E,Sec.21. Sampling method: r. 13 March 1969. Species: 12,19-23,25,27-29,50,60-61, 77,79-80,82-83,88-90.
13. Rye Cr., 13.8 km SSW of Gattman, Monroe Co., MS. T15S,R17W,Sec.10. Sampling method: r. 24 Aug. 1979. Species: 1,10,19-20,22-23,25,29,33,35,37, 45-47,49,55-56,62-65,67,69,77-78,80,83,85,88-89.
14. Buttahatchee R., 10.7 km S of Greenwood Springs, Monroe Co., MS. T15S,R17W,Sec.3. Sampling methods: s,r. 2 Oct. 1968, 29 July 1972, 14 Sept. 1981. Species: 7,9,11,14-15,17-18,23,28-30,32,34, 36,40-42,48,53-54,56-57,62,64-65,69,73,77,79-82,84, 86-88,90-92,94.
15. Buttahatchee R., 5.3 km W of Gattman, downstream from U.S. hwy. 278, Monroe Co., MS. T14S,R10E, Sec.2. Sampling method: s. 4 Nov. 1981. Species: 12,19,22-25,27-32,34,40,45,48,50-52,56-58,62,64-65, 68,74-77,79-82,85,88-90,92.
16. Buttahatchee R., 5.1 km W of Gattman, 0.3 km downstream from U.S. hwy. 278, Monroe Co., MS. T14S, R10E,Sec.2. Sampling method: r. 17 Sept. 1980. Species: 4,7,12,18,24,28-30,34,36,40,44-45,48-49, 52,54,59,62,64-65,68,70,76,80,82,87,89-90,92-94.
17. Buttahatchee R., 4.3 km WNW of Gattman, 1.6 km upstream from U.S. hwy. 278, Monroe Co., MS. T13S, R17W,Sec.36. Sampling method: r. 17 Aug 1971. Species: 4-7,9,15,17-18,23,28-31,34,36,41,43,45,48, 53-54,59,65,69,74,82,90,92,94.
18. Buttahatchee R., 1.6 km NE of Gattman and 0.8 km N of U.S. hwy. 278, Lamar Co., AL. T13S,R17W,Sec.33. Sampling method: s. 29 July 1972. Species: 12,18, 22-23,25,28-30,32,35,40,45,49,51,56,65,80-82,89-90.
19. Sipsey Cr., 5.8 km NE of Gattman, Monroe Co., MS. T13S,R10E,Sec.24. Sampling method: r. 27 Sept. 1971. Species: 10-11,40,42,45,47-48,55,59,62-65, 69-70,93-94.
20. Sipsey Cr., 7.2 km NNW of Gattman, Monroe Co., MS. T13S,R10E,Sec.7. Sampling methods: s,r. 16 Aug. 1979, 20 Aug. 1980. Species: 11-12,15,19,22-23,25, 28-30,35,40,45,49,51-52,55-56,59,61-63,65,69,80-83, 85-86,89,92.
21. Sipsey Cr., 7.4 km NNW of Gattman, Monroe Co., MS. T13S,R10E,Sec.6. Sampling method: r. 20 Aug. 1980. Species: 11-12,15,18-19,22-25,28-30,40,45, 48-49,51-52,55-56,59,62,65,80,82,85-86,88-89,92-93.
22. Splunge Cr., 3.0 km NNE of Splunge, Monroe Co., MS. T12S,R10E,Sec.30. Sampling method: r. 26 Aug. 1968. Species: 10-11,23,29,55-56,60-64,67,69,82.
23. Pine Cr., 2.4 km NNW of Sulligent, Lamar Co., AL. T13S,R15W,Sec.18. Sampling method: s. 9 Aug. 1971. Species: 12,20,22-25,29-31,35,38,40,47,57, 61,64-65,77,81,90.
24. Beaver Cr., 0.7 km NW of Beaverton, Lamar Co., AL. T13S,R14W,Sec.17. Sampling method: s. 9 Aug. 1971. Species: 12,19,23-25,27-30,42,56,62-63,65, 69,80-81,85.
25. Aston Branch, 5.1 km NE of Detroit, on st. hwy. 17, Marion Co., AL. T11S,R15W,Sec.33. Sampling method: s. 30 Sept. 1971. Species: 11-12,19,22-23, 25,29,37,40,49,51,56,64,69,78,80-82,85,89.
26. Factory Cr., 6.7 km NNE of Detroit, on st. hwy. 19, Marion Co., AL. T11S,R15W,Sec.29. Sampling method: s. 29 Sept. 1971. Species: 19,22-23,25,32, 37,40,50-51,53,56-57,63-64,77,80-81,83,85,89.
27. Barnesville Cr., 8.6 km W of Hamilton, Marion Co., AL. T11S,R15W,Sec.2. Sampling method: s. 29 Sept. 1971. Species: 19,22-23,25,29,40,51,56, 64-65,77,81,85,89.
28. Boardtree Cr., 10.5 km WNW of Hamilton, Marion Co., AL. T10S,R15W,Sec.27. Sampling method: s. 30 Sept. 1971. Species: 12,19,22-23,25,29,40,45,56, 65,69,77,80-81,85.
29. Buttahatchee R., 4.0 km S of Hamilton, on U.S. hwy. 78, Marion Co., AL. T11S,R14S,Sec.15. Sampling method: s. 9 Aug. 1971. Species: 15,20,23-25,28, 30-33,48,56,59,64-65,69,74,81,89.
30. Williams Cr., 1.7 km NNE of Hamilton, on U.S. hwy. 43, Marion Co., AL. Sampling method: s. 9 Aug. 1971. Species: 12,15,18-19,22-25,30,32-35,37,40, 44,46,51,56,65,68,77,80-81,90.
31. Slifty Cr., 10.4 km NE of Hamilton, Marion Co., AL. T10S,R13W,Sec.15. Sampling method: s. 10 Aug. 1971. Species: 12,15,22,24-25,30,32,35,37,40,44, 48,51,56,65,77,80,85,89-90.
32. Camp Cr., 10.7 km E of Hamilton, Marion Co., AL. T10S,R13W,Sec.35. Sampling method: s. 10 Aug. 1971. Species: 12,15,22,24-25,32-33,35,40,44,48, 68,77,80-81,89-90.
33. Buttahatchee R., 16 km E of Hamilton, on st. hwy. 253, Marion Co., AL. T11S,R12W,Sec.5. Sampling method: s. 30 Sept. 1971. Species: 12,23-25,28, 30-31,33,49,51,56,59,64-65,69,77,80-81,85,89.
34. Barn Cr., 13.3 km SW of Bear Cr., on co. rd. 48, Marion Co., AL. T10S,R12W,Sec.22. 10 Aug. 1971. Species: 12,19,22-25,35,37,40,56,62,65,69,77,80-81, 85,89.

Ictalurus punctatus numerically was the dominant fish appearing in hoop-net samples, a total of 248 individuals (32.1% of total) having been collected. This was followed by *Lepomis macrochirus* (89;11.5%), *Moxostoma poecilurum* (84;10.9%), *Pomoxis annularis* (78; 10.1%), *Lepomis megalotis* (54;7.0%), *Pylodictis olivaris* (41;5.3%), and *Lepisosteus osseus* (39;5.1%). *P. olivaris* comprised by far the greatest percentage of total biomass (39.6%), followed by *I. punctatus* (20.9%) and *M. carinatum* (5.0%). No other species made up more than 3.3% of the total biomass.

Several of the Buttahatchee's riverine species are assigned conservation status in Alabama and Mississippi. *Noturus munitus* and *Percina lenticula* are currently under status review by the U.S. Fish and Wildlife Service. Ramsey (1976) listed *Noturus munitus* as "endangered" and *Percina lenticula* and *Ammocrypta asprella* as "threatened" in Alabama. Clemmer et al (1975) considered *Noturus munitus* and *Ammocrypta asprella* to be "endangered" and *Percina lenticula* "rare" in Mississippi.

It is encouraging to find that the Buttahatchee is serving as a refugium for these large-stream species. *Percina lenticula* was represented by a total of five specimens, and *Noturus munitus* and *Ammocrypta asprella* were present in larger numbers (111 and 53, respectively). We presume that the above species will be

Table 2

List of fishes collected at 34 localities in the
Buttahatchee River system of Alabama and Mississippi⁴

Species and Methods of Collection	Collection Localities
1. <i>Ichthyomyzon gagei</i> (r)	13
2. <i>Polyodon spathula</i> (r)	4
3. <i>Lepisosteus oculatus</i> (h)	7
4. <i>Lepisosteus osseus</i> (s,h,r)	1,7,16-17
5. <i>Anguilla rostrata</i> (h,r)	7,17
6. <i>Alosa chrysocloris</i> (r)	17
7. <i>Dorosoma cepedianum</i> (s,h,r)	1,4-7,14,16-17
8. <i>Dorosoma petenense</i> (s)	1,4
9. <i>Hiodon tergisus</i> (h,r)	5-7,14,17
10. <i>Esox americanus</i> (r)	9,13,19,22
11. <i>Esox niger</i> (s,r)	11,14,19-22,25
12. <i>Campostoma oligolepis</i> (s,r)	1,3-4,6,8-9,11-12,15-16,18,20-21, 23-25,28,30-34
13. <i>Cyprinus carpio</i> (h)	5,7
14. <i>Hybognathus hayi</i> (s)	14
15. <i>Hybognathus nuchalis</i> (s,r)	1-3,5,8,11,14,17,20-21,29-32
16. <i>Hybopsis</i> sp. cf. <i>aestivalis</i> (s)	1,3
17. <i>Hybopsis storeriana</i> (s,r)	1,5,14,17
18. <i>Hybopsis winchelli</i> (s,r)	1,5,8,14,16-18,21,30
19. <i>Nocomis leptoccephalus</i> (s,r)	1,3,8-9,12-13,15,20-21,24-28,30,34
20. <i>Notemigonus crysoleucas</i> (s,r)	9,13,23,29
21. <i>Notropis atherinoides</i> (s)	1
22. <i>Notropis baileyi</i> (s,r)	6,9,11,13,15,18,20-21,23-28,30-32,34
23. <i>Notropis bellus</i> (s,r)	1-3,5-6,8-9,10-15,17-18,20-30,33-34
24. <i>Notropis callistius</i> (s,r)	1,4,6,8,10-11,15-16,21,23-24,29-34
25. <i>Notropis chrysoccephalus</i> (s,r)	1-2,6,8-9,11-13,15,18,20-21,23-34
26. <i>Notropis edwardianeyi</i> (s)	1-2
27. <i>Notropis emiliae</i> (s)	1,5-6,8,12,15,24
28. <i>Notropis stilbius</i> (s,r)	1-6,8,10-12,14-18,20-21,24,29,33
29. <i>Notropis texanus</i> (s,r)	1-5,8-10,12-18,20-25,27-28
30. <i>Notropis venustus</i> (s,r)	1-6,8-11,14-18,20-21,23-24,29-31,33
31. <i>Notropis volucellus</i> (s,r)	1,4-6,10-11,15,17,23,29,33
32. <i>Notropis</i> sp. cf. <i>longirostris</i> (s,r)	1,3-4,8-10,14-15,18,26,29-30,32
33. <i>Pimephales notatus</i> (s,r)	1,3,8-9,13,29-30,32-33
34. <i>Pimephales vigilax</i> (s,r)	1-2,4-6,8,10,14-17,30
35. <i>Semotilus atromaculatus</i> (s,r)	9,13,18,20,23,30-32,34
36. <i>Carpodacus velifer</i> (s,r)	1,4-7,14,16-17
37. <i>Erimyzon oblongus</i> (s)	9,13,25-26,30-31,34
38. <i>Erimyzon sucetta</i> (s)	23
39. <i>Erimyzon tenuis</i> (r)	7
40. <i>Hypentelium etowanum</i> (s,h,r)	1,3-5,7-8,14-16,18-21,23,25-28,30-32, 34
41. <i>Ictiobus bubalus</i> (h)	4,6-7,14,17
42. <i>Minytrema melanops</i> (s,r)	7,14,19,24
43. <i>Moxostoma carinatum</i> (h)	7,17
44. <i>Moxostoma erythrum</i> (s,h,r)	1,4,7,16,30-32
45. <i>Moxostoma poecilurum</i> (s,h,r)	4-7,13,15-21,28
46. <i>Ictalurus melas</i> (s,r)	13,30
47. <i>Ictalurus natalis</i> (s,r)	9,13,19,23
48. <i>Ictalurus punctatus</i> (s,h,r)	1,5-8,14-17,19,21,9,31-32
49. <i>Noturus funebris</i> (s,r)	5,9,13,16,18,20-21,25,33
50. <i>Noturus gyrinus</i> (s)	1,12,15,26
51. <i>Noturus leptacanthus</i> (s,r)	1,3-4,8-11,15,18,20-21,25-27,30-31,33
52. <i>Noturus munitus</i> (s,r)	1,3-4,6,8,10-11,15-16,20-21
53. <i>Noturus nocturnus</i> (s,r)	14,17,26
54. <i>Pyloodictis olivaris</i> (s,h,r)	5,7,14,16-17
55. <i>Aphredoderus sayanus</i> (s,r)	5,9,13,19-22
56. <i>Fundulus olivaceus</i> (s,r)	1,3-6,8-11,13-15,18,20-22,24-31,33-34
57. <i>Gambusia affinis</i> (s)	1,10-11,14-15,23,26
58. <i>Labidesthes sicculus</i> (s)	1,10-11,15
59. <i>Ambloplites ariommus</i> (s,h,r)	1,5,7-8,16-17,19-21,21,33
60. <i>Centrarchus macropterus</i> (r)	12,22
61. <i>Elassoma zonatum</i> (s)	12,20,22-23
62. <i>Lepomis cyanellus</i> (s,h,r)	4-5,7,9,13-16,19-22,24,34
63. <i>Lepomis gulosus</i> (s,r)	9,13,19-20,22,24,26
64. <i>Lepomis macrochirus</i> (s,h,r)	1-2,4-5,7-8,13-16,19,22-23,25-27,29,33
65. <i>Lepomis megalotis</i> (s,h,r)	1,3-11,13-21,23-24,27-31,33-34
66. <i>Lepomis microlophus</i> (s,h)	1,7
67. <i>Lepomis punctatus</i> (s,r)	13,22
68. <i>Micropterus punctulatus</i> (s,r)	1,15-16,30,32
69. <i>Micropterus salmoides</i> (s,h,r)	1,4-8,11,13-14,17,19-20,22,24-25, 28-29,33-34
70. <i>Pomoxis annularis</i> (s,h,r)	1,4-7,11,16,19
71. <i>Pomoxis nigromaculatus</i> (h)	7
72. <i>Ammocrypta asprella</i> (s)	1,4,8
73. <i>Ammocrypta beani</i> (s)	1,3-4,14
74. <i>Ammocrypta meridiana</i> (s,r)	1,3-4,6,8,10-11,15,17,29
75. <i>Etheostoma chlorosomum</i> (s)	15
76. <i>Etheostoma histrio</i> (s,r)	1,3-4,8,15-16
77. <i>Etheostoma nigrum</i> (s,r)	1,4,8-10,12-15,23,26-28,30-34
78. <i>Etheostoma parvipinne</i> (s,r)	13,25
79. <i>Etheostoma proeliare</i> (s)	12,14-15
80. <i>Etheostoma rupestre</i> (s,r)	1,3-4,6,8,10-16,18,20-21,24-26,28, 30-34
81. <i>Etheostoma stigmaeum</i> (s,r)	1,3-4,6,8,10-11,14-15,18,20,23-30, 32-34
82. <i>Etheostoma swaini</i> (s,r)	1-6,8,10,12,14-18,20-22,25
83. <i>Etheostoma whipplei</i> (s,r)	9,12-13,20,26
84. <i>Etheostoma zoniferum</i> (s)	14
85. <i>Etheostoma</i> (<i>Ulocentra</i>) sp. (s,r)	13,15,20-21,24-28,31,33
86. <i>Percina</i> sp. cf. <i>caprodes</i> (s,r)	1,5,8,14,20-21
87. <i>Percina lenticula</i> (r)	5,14,16
88. <i>Percina maculata</i> (s,r)	3,5,12-15,21
89. <i>Percina nigrofasciata</i> (s,r)	1-4,9,11-13,15-16,18,20-21,25-27,29, 31-34
90. <i>Percina sciera</i> (s,r)	1-6,8,10,12,14-18,23,30-32
91. <i>Percina shumardi</i> (s)	1,14
92. <i>Percina vigil</i> (s,r)	1-4,6,8,10-11,14-17,20-21
93. <i>Stizostedion vitreum</i> (s,h,r)	1,7,16,19,21
94. <i>Aplocheilichthys grunniens</i> (s,h,r)	1,5-7,14,16-17,19

⁴Cook (1959) reported taking *Ichthyomyzon castaneus* from the Buttahatchee River

eliminated from the main channel of the Tombigbee as a result of the TIW, and hope that the Buttahatchee will continue to remain undisturbed and sustain populations of these rare or endangered species.

There are other river-dependent species that will probably invade the main channel of the Buttahatchee as their habitats are inundated or covered by silt resulting from the TIW. Such species as *Hiodon tergisus*, *Hybopsis* sp. cf. *aestivalis*, *Moxostoma carinatum*, and *Percina shumardi*, known from 4th and 5th-order parts of the Buttahatchee and documented in the Tombigbee proper by preimpoundment studies (Caldwell 1969, Boschung 1973, Schultz 1981), may continue to persist in the Buttahatchee and other large tributaries. This further illustrates the potential importance of the Buttahatchee as a refugium for riverine fishes.

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