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Fishes of the Choctawhatchee River System in Southeastern Alabama and Northcentral Florida

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Fishes of the Choctawhatchee River System in Southeastern Alabama and Northcentral Florida

Abstract

The diversity and distribution of fish species occurring in the Choctawhatchee River drainage in southeastern Alabama and northcentral Florida were surveyed to obtain historical baseline information. Three hundred seventy-four sites were evaluated for species diversity and distribution in the drainage, including compilation of unpublished records from southeastern natural history museums. The greatest diversity at any single site was 37 species. Sixty-eight sites were represented by 15 species or more, and 26 sites were represented by a single species. The most frequently encountered species includes *Gambusia holbrooki*, *Percina nigrofasciata*, *Esox americanus*, *Notropis texanus*, *Lepomis macrochirus*, *Cyprinella* n. sp. cf *venusta*, *Notropis amplamala*, and *Aphredoderus sayanus*. New records for *Hybopsis* n. sp. cf *winchelli* and *Etheostoma parvipinne* were found in the drainage, and range extensions were found for 14 other species. Our study increases the known number of fish species in the Choctawhatchee River drainage to 132 species and two hybrids, including 83 native freshwater, 10 introduced freshwater, 24 estuarine, and 17 marine species.

Keywords

Distribution, Conservation Status, Species List, Marine, Estuarine, Freshwater

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INTRODUCTION

The decline of native fishes in the southeastern United States is a result of land-use changes, which has altered and fragmented habitats resulting in community degradation and isolation (Angermeier 1995, Warren et al. 1997, Neves et al. 1997, Master et al. 1998, Warren et al. 2000). The limited temporal fish distribution information for most southeastern Coastal Plain rivers draining the northern Gulf of Mexico has precluded our understanding of the changing fish assemblage composition (Cook 1959, Smith-Vaniz 1968, Douglas 1974, Lee et al. 1980, Swift et al. 1986, Gilbert 1992, Mettee et al. 1996, Ross 2001, Boschung and Mayden 2004). The Choctawhatchee River drains the southeastern Coastal Plain of Alabama and the northcentral panhandle of Florida. Despite drainage-wide land use changes, fish species richness in the drainage has remained high (Morris et al. 2003, Livingston 1992).

Detailed published accounts of the fishes of the Choctawhatchee River drainage are lacking. Hay (1885) produced the first publication on the fishes of the Choctawhatchee River drainage based on fishes collected from areas mostly around St. Augustine and included additional collections from the Choctawhatchee River at Westville (Gilbert 2009). Prior to mid-1960, neither the distribution nor relative abundance of fish assemblages in southern Alabama was well understood. Swift et al. (1986) examined drainage-specific distributions of all fish species in both Alabama and Florida. Published works on Choctawhatchee River fishes were restricted to statewide distribution maps included within treatments for all Alabama fishes (Mettee et al. 1996, Boschung and Mayden 2004) and rare Florida fishes (Gilbert 1992).

The Choctawhatchee River drainage contains about 39% of the native fish species richness for the State of Alabama and 60% of Florida's native fish species richness. Mettee (1970) provided the most comprehensive treatment of species status information for the drainage. Swift et al. (1986) documented 74 native freshwater and 15 marine species, not including Choctawhatchee Bay. Mettee et al (1996) and Boschung and Mayden (2004) documented 80 species from 40 sites in the watershed; however, both of these studies reported information mostly based on Mettee (1970).

This study evaluates the distribution, introduction, and range extension of freshwater, marine, and estuarine species in the Choctawhatchee River drainage. Range extension in this paper refers to new records within the Choctawhatchee River drainage.

STUDY AREA

The Choctawhatchee River drainage lies in the Gulf Coastal Plain among four physiographic sections including the Alluvial Deltaic Plain, Dougherty Plain, Southern Red Hills, and Chunnenuggee Hills (Jenkins et al. 1972, Swift et al. 1986). The drainage encompasses about 13,856 km² in southeastern Alabama and northcentral Florida (Figure 1), which includes the East and West Branches of the Choctawhatchee River, Pea River, Wrights Creek, Holmes Creek, and tributaries into the Choctawhatchee Bay. The bay is separated from the Gulf of Mexico along most of its length, but connects through the Pensacola and East passes entering through the south at Destin Pass. The current study includes all estuarine and freshwater tributaries draining into Choctawhatchee Bay that were historically sampled.

The Choctawhatchee River drainage has experienced extensive land-use alterations during the 20th century (Morris et al. 2003). These anthropogenic alterations, combined with heavy rainfall and highly erodible soils, created increased sediment erosion that led to extensive non-point source pollution (Witmer et al. 2009). Recently, construction, road grading, chicken farming, cultivation on sloping areas, and clear cutting of timber have contributed to increased non-point source pollution, as well as accelerated stream bank and surface erosion rates (USDA 1993, Grace 2000).

METHODS

All voucher specimens are cataloged into the permanent research collection at the Florida Museum of Natural History (UF), Tulane Museum of Zoology (TU), the University of Alabama Ichthyological Collection (UAIC), and Indiana Biological Survey – Aquatic Research Center (INBS). Original data sheets from Troy University are stored at the Aquatic Research Center. To simplify spatial interpretation of the data, site numbers across all collections were labeled relative to increasing latitude.

Recent sampling methods generally followed protocols outlined by Morris et al. (2007) based on a random probability General Random Tessellated Sample (GRTS) survey design (Stevens and Olsen 2004). However, other unpublished collection data includes information gathered by ichthyologists from southeastern universities including the University of Alabama, Tulane University, and University of Florida (Table 1). Collections described herein were made for many

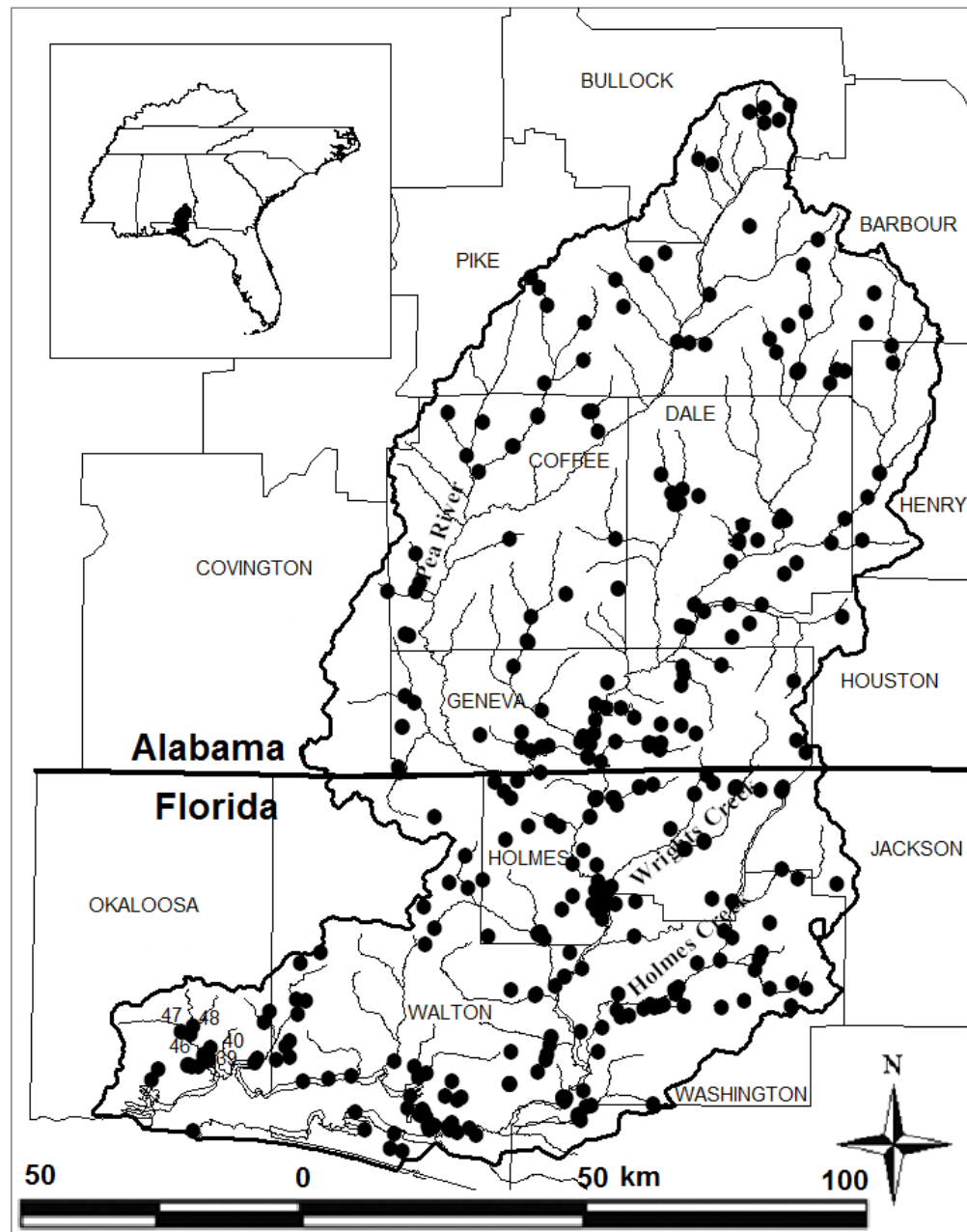


Figure 1. Sites sampled for survey of the fishes of the Choctawhatchee River drainage in southeast Alabama and northcentral Florida.

purposes and used a variety of gear types, ranging from seines to various forms of electrofishing. All habitats in the stream reach were sampled relative to occurrence using various sized seines or a Smith-Root Model 12-B battery

powered backpack electrofishing unit. All large specimens were identified in the field and released, but voucher specimens were retained from each site. Each species' relative abundance was recorded. Records for *Ctenopharyngodon idella*, *Cyprinus carpio*, *Morone saxatilis*, *Morone saxatilis* x *M. chrysops*, and *Perca flavescens* do not have specific locations but are based on unpublished information. Specimens, when retained, were preserved in 10% formalin, rinsed in tap water, transferred to either 70% ethanol or 55% isopropanol, and identified using Etnier and Starnes (1994), Mettee et al. (1996), and Boschung and Mayden (2004).

In the species accounts, species are designated as freshwater (F), marine invaders (M), or those that are anadromous, catadromous, typically occupy both habitats or estuarine water (F/M). Introduced species are also noted (I). Species are arranged in phylogenetic order by family and alphabetically by species within family, with all taxonomy and common names following Page et al. (2013), with the exception of the recently described *Notropis amplamala* (formerly *N. buccatus*, Pera and Armbruster 2006), *Elassoma gilberti* (formerly *E. okefenokee*, Snelson et al. 2009), and the recognition of some subspecies as full species and six others that are recognized as undescribed species. Relative abundance information is defined by Smith (1965), Burr and Warren (1986), and Simon et al. (2002).

RESULTS AND DISCUSSION

Drainage Diversity

The present faunal list for the Choctawhatchee River drainage includes 83 freshwater, 17 marine and 24 estuarine species. Range extensions add to the previously known distribution information for the Choctawhatchee and Pea River drainages. Accurate distribution information is essential to assess an accurate conservation status of freshwater fishes for the southeastern United States (Warren et al. 1997, 2000).

One hundred-thirty two fish species representing 28 freshwater and marine families were collected from the 374 sites within the Choctawhatchee River drainage from 1899 to 2001 (Tables 1 & 2, Appendix 1). The greatest diversity at any single site was 37 species at the Choctawhatchee River on Alabama Hwy 2, about 6 miles south of Geneva, AL. Sixty-eight sites were represented by 15 species or more, and 26 sites were represented by a single species. Through accidental or deliberate release, 10 non-native species of freshwater fish have become established and a single hybrid has been stocked for recreational purposes. Currently, two species require conservation or protection efforts due to

Table 1. Localities of all sites sampled in the Choctawhatchee River drainage. Site numbers correspond to species information reported in the text and are shown in Figure 1. Source codes follow: Florida Museum of Natural History (UF), Tulane Museum of Zoology (Tulane), the University of Alabama Ichthyological Collection (UAIC), and Indiana Biological Survey – Aquatic Research Center (INBS).

Site No.	Source	State	County	Locality	Lat	Lon
1	UF	Florida	Walton	Pate Branch on Rte 20, 7.0 mi. W of Bruce	30° 28.67'	86° 4.38'
2	UF	Florida	Bay	Big Crooked Creek at old bridge crossing below jct. of Lilly Miller Branch	30° 20.18'	85° 49.63'
3	UAIC	Florida	Walton	Bowman Bayou Trib. Creek at jct. of Hwy 331 and 98, 10 mi. S of Freeport, FL, E of Santa Rosa Beach	30° 21.74'	86° 10.02'
4	Tulane	Florida	Walton	Trib. of Choctawhatchee Bay near jct. of Rts. 83 & 98	30° 22.01'	86° 11.16'
5	Tulane	Florida	Walton	Sister's River, 1 mi. upstream from Choctawhatchee River	30° 23.31'	86° 02.61'
6	UF	Florida	Walton	SW of Causeway of US Hwy 331, Choctawhatchee Drainage, station S3	30° 23.42'	86° 10.75'
7	Tulane	Florida	Okaloosa	East Pass of Choctawhatchee Bay, at Hwy 98, at Destin	30° 23.66'	86° 30.90'
8	Tulane	Florida	Walton	Reedy Branch, 0.25 mi. from Choctawhatchee River	30° 23.61'	86° 04.50'
9	UF	Florida	Walton	Bayou off Choctawhatchee Bay off Co. Rd. 393 at Charles E. Cessna Landing	30° 23.91'	86° 13.73'
10	Tulane	Florida	Walton	Choctawhatchee River at mouth of Middlemouth	30° 23.89'	86° 07.30'
11	UF	Florida	Walton	Choctawhatchee River at the bunker	30° 23.90'	86° 05.23'
12	Tulane	Florida	Walton	Mouth of Little Sister River & Choctawhatchee River	30° 23.93'	86° 03.25'
13	Tulane	Florida	Walton	Choctawhatchee River 0.25 mi. upstream of Choctawhatchee Bay	30° 23.98'	86° 07.11'
14	Tulane	Florida	Walton	Choctawhatchee River just above Live Oak Cutoff	30° 24.17'	86° 05.38'
15	Tulane	Florida	Walton	Choctawhatchee River, 0.5 mi. upstream from bay, in slough on left	30° 24.21'	86° 06.79'
16	Tulane	Florida	Walton	Mouth of Cypress River and Williams Lake	30° 24.25'	86° 07.45'
17	Tulane	Florida	Walton	Cypress River, 0.75 mi. upstream from its mouth	30° 24.35'	86° 07.30'
18	Tulane	Florida	Walton	Live Oak Cut-off. 0.5 mi. from Choctawhatchee River	30° 24.58'	86° 04.96'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
19	UF	Florida	Washington	Pine Log Creek, at St Rte 79, S of Ebro	30° 24.80'	85° 52.12'
20	Tulane	Florida	Walton	Williams Lake at E end of Choctawhatchee Bay	30° 25.12'	86° 07.51'
21	UF	Florida	Washington	Pine Log Cr. on Rte 79 at Washington-Bay Co Line, 2.5 mi. S of Ebro	30° 25.08'	85° 52.22'
22	UAIC	Florida	Washington	Pine Log Creek, Limesink on FL Hwy 77 ca. 5.5 mi. S of Warren	30° 25.11'	85° 52.30'
23	Tulane	Florida	Washington	Pine Log Creek, 2.5 mi. SE Ebro	30° 25.13'	85° 52.28'
24	Tulane	Florida	Walton	Mouth of Mitchells River near Fluffy Landing	30° 25.31'	86° 08.26'
25	Tulane	Florida	Walton	Mitchell River, 0.25 mi. upstream from Choctawhatchee Bay	30° 25.33'	86° 07.98'
26	UF	Florida	Washington	Small creek on Rte 79, 0.25 mi. N of Pine Log Creek	30° 25.35'	85° 52.42'
27	Tulane	Florida	Walton	Choctawhatchee Bay at Live Oak Point (6-LC)	30° 25.66'	86° 14.74'
28	Tulane	Florida	Walton	Jolly Bay	30° 25.62'	86° 07.84'
29	Tulane	Florida	Walton	Bayou, trib. to Jolly Bay, near Fluffy Landing	30° 25.81'	86° 07.99'
30	Tulane	Florida	Walton	Choctawhatchee Bay, W side US Hwy 331, boat canal	30° 25.95'	86° 09.38'
31	UF	Florida	Bay	Pine Log Creek	30° 26.08'	85° 51.58'
32	UAIC	Florida	Washington	Morrow Lake at FL Hwy 20, 1.5 mi. W of Ebro	30° 26.66'	85° 53.68'
33	Tulane	Florida	Walton	Black Creek in slough 3 mi. from Bay	30° 26.85'	86° 04.50'
34	Tulane	Florida	Walton	Black Creek 5.3 mi. SE of Freeport	30° 27.04'	86° 04.10'
35	UF	Florida	Washington	Choctawhatchee R. and sloughs at St Rd 20 bridge, 2 mi. W of Ebro	30° 26.98'	85° 53.87'
36	UF	Florida	Washington	Choctawhatchee River upstream from Us Hwy 90 to power-line crossing, at Caryville	30° 26.98'	85° 53.87'
36	UF	Florida	Washington	East side of Choctawhatchee River from Ebro bridge to 3 mi. below Whittlow Fish Camp	30° 26.98'	85° 53.87'
37	UAIC	Florida	Washington	Choctawhatchee River, at FL Hwy 20, 1.5 mi. W of Ebro	30° 26.98'	85° 53.60'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
38	UF	Florida	Washington	Choctawhatchee River, Hwy 20 bridge downstream to first river bend, approximately 1 mi. W of Ebro	30° 27.06'	85° 53.90'
38	UF	Florida	Walton	Choctawhatchee River at the Highway 20 bridge	30° 27.06'	85° 53.90'
39	Tulane	Florida	Washington	Choctawhatchee River at Ebro	30° 27.06'	85° 53.88'
40	UAIC	Florida	Walton	Choctawhatchee River, W side, at FL Hwy 20, 3.75 mi. E of Bruce	30° 27.07'	85° 53.87'
41	Tulane	Florida	Washington	Choctawhatchee River at FL 20, W of Ebro	30° 27.07'	85° 53.88'
42	UAIC	Florida	Washington	Crystal Lake ca. 1 mi. NW of Crystal Lake, Washington Co. FL	30° 26.96'	85° 40.58'
43	Tulane	Florida	Washington	Choctawhatchee River N of Hwy 20 bridge in slough next to river	30° 27.08'	85° 53.56'
44	UAIC	Florida	Walton	Mouth of Rushing Cutoff into Mitchell River, 4 mi. S of Freeport	30° 27.18'	86° 05.72'
45	UF	Florida	Walton	Bay Grove Rd. near mouth of Mallet Bayou, Choctawhatchee Bay	30° 27.23'	86° 09.21'
46	UF	Florida	Washington	Creek between Ebro and Miller's Ferry on St Hwy 79	30° 27.81'	85° 51.81'
47	UF	Florida	Walton	Black Creek on St Rte 20, 1.6 mi. W of Bruce	30° 28.38'	85° 59.26'
48	Tulane	Florida	Walton	Black Creek at FL Hwy 20, 1.5 mi. W Bruce	30° 28.43'	85° 59.27'
49	UF	Florida	Walton	Black Creek	30° 28.43'	85° 59.22'
50	Tulane	Florida	Walton	Black Creek at Hwy 20, 1.5 mi. W of Bruce	30° 28.43'	85° 59.28'
51	UF	Florida	Walton	Mullet Creek on Rte 20, 12.9 mi. W of Freeport	30° 28.63'	86° 19.93'
52	Tulane	Florida	Okaloosa	Garnier Creek 2 mi. W Hwy 85 on Hwy 85A, 3 mi. N Fort Walton	30° 28.81'	86° 35.11'
53	UF	Florida	Walton	Turnpike Branch of Black Creek on Rte 28, 3.6 mi. E of Freeport	30° 28.73'	86° 04.97'
54	Tulane	Florida	Walton	Trout Creek, trib. To Choctawhatchee Bay	30° 28.93'	86° 17.31'
55	UF	Florida	Walton	Freeport Channel Marker #3, Choctawhatchee Drainage station FC4	30° 29.12'	86° 8.39'
56	UF	Florida	Walton	Basin Creek at Eglin AFB range rd 222 (SF-12)	30° 29.22'	86° 15.03'
57	UF	Florida	Walton	Lafayette Creek on St Rte 20, 0.7 mi. E of Freeport	30° 29.55'	86° 07.55'
58	UF	Florida	Okaloosa	Swift Creek at Eglin AFB range road 285 below OWJC Pond	30° 29.85'	86° 34.50'
59	UF	Florida	Walton	Small pool on N side of Hwy 81, 2 mi. E of Bruce, Fla	30° 29.65'	85° 56.40'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
60	UF	Florida	Okaloosa	Toms Creek at North Gate Road bridge on Eglin Air Force Base	30° 30.15'	86° 30.45'
61	Tulane	Florida	Okaloosa	Tom's Creek on Rt. 85, about 1 mi. SW of Valpariso	30° 30.20'	86° 31.12'
62	Tulane	Florida	Walton	Fourmile Creek on Rt. 20, trib. of Lafayette Creek 0.7 mi. W of Freeport	30° 30.11'	86° 08.76'
63	Tulane	Florida	Okaloosa	Tom's Creek at Hwy 85, about 0.75 mi. W of Niceville	30° 30.34'	86° 31.43'
64	UF	Florida	Okaloosa	Swift Creek at St Rte 190 bridge, below College Pond	30° 30.36'	86° 31.47'
65	UF	Florida	Okaloosa	Toms Creek at powerline crossing between St Rtes 85 and 123	30° 30.37'	86° 31.45'
66	UF	Florida	Walton	Little Rocky Creek, well off range road, ca halfway between range road 200 bridge and its mouth	30° 30.53'	86° 24.81'
67	UF	Florida	Walton	Little Rocky Creek at end of unnumbered road off range road 477, just S of range road 200, on Eglin Air Force Base	30° 30.62'	86° 24.76'
68	UF	Florida	Walton	Small trib. on Rte 20, 1.25 mi. E of Portland	30° 30.72'	86° 10.73'
69	Tulane	Florida	Okaloosa	Boggy Bayou, inlet trib. to Choctawhatchee Bay between Valparaiso & Niceville	30° 30.83'	86° 29.28'
70	UF	Florida	Walton	Long Creek at Range Road on Eglin Air Force Base ca. 6 air mi. E of Niceville	30° 30.83'	86° 22.67'
71	UF	Florida	Okaloosa	Little Rocky Creek at dead end of range road 521, less than 0.1 mi. above mouth of Middle Rocky Creek	30° 30.92'	86° 24.50'
72	Tulane	Florida	Walton	Trib. to Choctawhatchee River on Hwy 81, 4.0 mi. N Bruce	30° 30.78'	85° 55.58'
73	UF	Florida	Walton	Long Creek about 7.5 air mi. E of Niceville, 0.75 mi. NW of Windham Fire Tower	30° 31.10'	86° 21.22'
74	UF	Florida	Okaloosa	Turkey Creek at W edge of Niceville (head of Boggy Bayou)	30° 31.15'	86° 29.87'
75	UF	Florida	Okaloosa	Turkey Creek at St. Rte. 20 bridge in Niceville	30° 31.38'	86° 29.93'
76	UF	Florida	Walton	Trib of Choctawhatchee River on Rte 81, 4.7 mi. N of Bruce	30° 31.04'	85° 55.43'
77	UAIC	Florida	Walton	Seven Runs Creek at Hwy 81, at Bruce	30° 31.63'	85° 59.11'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
78	UF	Florida	Washington	Small Creek on highway 79, 6.5 mi. north of Ebro	30° 31.71'	85° 50.31'
79	UF	Florida	Okaloosa	Mill Creek at St Rte 190 bridge, just N of Niceville	30° 32.08'	86° 29.18'
80	UF	Florida	Walton	Hickory Creek above bend in lower third of creek, off range rd 217, 3000 ft NE of jct. range roads 217 & 219 (Eglin AFB)	30° 32.23'	86° 21.68'
81	Tulane	Florida	Walton	Seven Runs Creek at Hwy 81, 6 mi. N Bruce	30° 32.29'	85° 55.24'
82	UF	Florida	Walton	Headwaters of Hickory Creek S of jct. range roads 426 and 428 on Eglin Air Force Base	30° 32.72'	86° 21.25'
83	Tulane	Florida	Walton	Trib. to Seven Runs Creek at Hwy 81, 7.2 mi. N Bruce	30° 33.18'	85° 54.99'
84	UAIC	Florida	Walton	Seven Runs Creek at FL Hwy 81, 3 mi. S of Red Bay	30° 33.19'	85° 55.00'
85	Tulane	Florida	Okaloosa	Juniper Creek on Rt. 85, 2.5 mi. N of Niceville	30° 33.43'	86° 31.18'
86	Tulane	Florida	Okaloosa	West Turkey Creek at Range Road 232 Eglin Air Force Base	30° 33.71'	86° 32.17'
87	UF	Florida	Washington	Small Creek 1.5 mi. S of Live Oak, Fla., W of Vernon	30° 33.70'	85° 52.15'
88	Tulane	Florida	Okaloosa	Ten Mile Creek at Range Road 231 Eglin Air Force Base	30° 34.20'	86° 30.95'
89	UF	Florida	Washington	Effluent creek Mill Pond on Armstrong Mill Rd. S of Hwy 284 A	30° 34.10'	85° 49.94'
90	UF	Florida	Walton	Rocky Creek at Eglin Range Rd 376 (SF-1), 4.5 mi. S of Mossyhead	30° 34.55'	86° 23.86'
91	UAIC	Florida	Holmes	Trib. to Choctawhatchee River at New Hope, FL	30° 35.13'	85° 48.07'
92	UF	Florida	Walton	East Rocky Creek at range road 214 bridge on Eglin AFB	30° 35.40'	86° 20.45'
93	UF	Florida	Washington	Small Creek on Hwy 79, 2 mi. N of New Hope	30° 35.35'	85° 47.20'
94	UF	Florida	Walton	Middle Rocky Creek at range road 422 bridge on Eglin AFB	30° 35.75'	86° 23.30'
95	UF	Florida	Washington	Unnamed creek flowing into Holmes Creek	30° 35.88'	85° 48.51'
96	UF	Florida	Washington	Trib. of Holmes Creek on Rte 79, 4.3 mi. SW of Vernon	30° 35.98'	85° 48.80'
97	Tulane	Florida	Washington	Trib. To Choctawhatchee River at Hwy 79, 14.2 mi. NE Ebro	30° 36.15'	85° 44.74'
98	UF	Florida	Washington	Thornhead Branch in SW quarter of section	30° 36.10'	85° 38.02'
99	UF	Florida	Washington	Thornhead Branch	30° 36.00'	85° 41.70'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
100	Tulane	Florida	Washington	Trib. To Holmes Creek at Hwy 79, 15.2 mi. NE Ebro	30° 36.28'	85° 44.10'
101	UF	Florida	Washington	2 mi. S of Vernon on St Hwy 79	30° 36.30'	85° 43.75'
102	UF	Florida	Washington	Sink, 5 mi. W of junction of SR 20 and US 231, 100ft N of Econfina Blue Spring	30° 36.20'	85° 30.92'
103	UF	Florida	Holmes	Small spring on NW side of Holmes creek	30° 36.40'	85° 45.10'
104	UF	Florida	Walton	East Rocky Creek at Range Rd. 201 bridge on Eglin AFB	30° 36.77'	86° 19.60'
105	UF	Florida	Walton	Rocky Creek at range road 201 bridge on Eglin AFB	30° 36.87'	86° 20.62'
106	Tulane	Florida	Washington	Ditch on FL Hwy 278W, 3.5 mi. from jct. US 90 & FL 278	30° 36.79'	85° 35.68'
107	UF	Florida	Walton	Bruce Creek on Rte 81, 2.4 mi. N of Redbay	30° 37.37'	85° 56.60'
108	Tulane	Florida	Walton	Bruce Creek at Hwy 81, about 2.2 mi. N of Redbay	30° 37.46'	85° 56.55'
109	UF	Florida	Washington	Trib. Of Holmes Creek on road 6.3 mi. W of Vernon	30° 37.45'	85° 48.03'
110	UF	Florida	Washington	Trib. On Rte 277, 0.2 mi. NE of center of Vernon	30° 37.48'	85° 42.53'
111	UF	Florida	Walton	Crooked Creek on St Rte 183, 3.8 air mi. NW of Redbay	30° 37.78'	85° 59.03'
112	UF	Florida	Washington	Trib. Of Holmes Creek just W of St Rte 79, 0.8 mi. N of Vernon	30° 37.78'	85° 42.73'
113	Tulane	Florida	Washington	Hard Labor Creek 2.5 mi. E of jct. FL S-278 & 77 on FL S-278	30° 37.99'	85° 33.15'
114	UF	Florida	Walton	Choctawhatchee River, 2 mi. below Morrison Spring Run	30° 38.22'	85° 54.70'
115	Tulane	Florida	Washington	Hard Labor Creek at Hwy 237, Gilberts Mill	30° 38.01'	85° 29.55'
116	UF	Florida	Washington	Holmes Creek off of Highway 79, N of Vernon	30° 38.15'	85° 42.22'
117	UF	Florida	Washington	Springs on N side of road, 5.0 mi. E of Wausau	30° 38.51'	85° 30.85'
118	UF	Florida	Walton	Choctawhatchee River, Morrison Spring Run	30° 39.14'	85° 53.64'
119	UF	Florida	Walton	Morrison Spring off FL Rte 81 at mouth of Creek, ca. 5 mi. S of Ponce de Leon	30° 39.21'	85° 53.74'
120	UF	Florida	Holmes	Choctawhatchee River, 5 mi. SE Ponce de Leon Springs, upstream Cedar Log Lake	30° 40.00'	85° 52.00'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
121	Tulane	Florida	Washington	Trib. Of Holmes Creek on Rte 77, 8.5 mi. S of Chipley	30° 39.83'	85° 34.63'
122	UF	Florida	Walton	Rocky Creek at headwaters on range rd 395 on Eglin AFB	30° 40.48'	86° 20.18'
123	UF	Florida	Washington	Unnamed creek flowing into Holmes Creek on Levi Johnson Rd.	30° 40.55'	85° 40.45'
124	UF	Florida	Washington	Hard Labor Creek on St Rte 277, 6.5 mi. NE of Vernon	30° 40.82'	85° 38.17'
125	Tulane	Florida	Washington	Pond along W side of Hwy 77, 7.1 mi. S of Chipley	30° 40.96'	85° 34.15'
126	UF	Florida	Walton	Above pond above range rd 376 in the headwaters of Rocky Creek on Eglin AFB	30° 40.96'	85° 34.15'
127	UAIC	Florida	Walton	Reedy Creek at FL Hwy 181, 6 mi. SSW of Westville	30° 41.56'	85° 53.16'
128	UF	Florida	Washington	Flat Creek on St Hwy 77, 6.6 mi. SSW of Chipley	30° 41.62'	85° 33.90'
129	UF	Florida	Walton	Bear Creek, Choctawhatchee Drainage, station S1	30° 42.36'	86° 7.73'
130	Tulane	Florida	Holmes	Trib. to Choctawhatchee R. at southern limits of Ponce de Leon	30° 42.98'	85° 55.66'
131	UF	Florida	Holmes	Creek on U.S. Hwy 90, 5 mi. W of Ponce de Leon	30° 43.17'	86° 1.40'
132	UF	Florida	Washington	Jeffers Branch 4.9 mi. SW of jct. of US Hwys 90 & 277, W of Chipley on St Rte 277	30° 47.12'	85° 36.88'
133	UF	Florida	Washington	Dram Br. and Gum Cr. on Rte 279, ca 2 and 4 mi. S of Caryville	30° 43.26'	85° 46.71'
134	UAIC	Florida	Holmes	Ponce de Leon Spring to Sandy Creek in Ponce de Leon	30° 43.39'	85° 56.27'
135	UF	Florida	Holmes	Sandy Creek at St Rte 81S in Ponce de Leon	30° 43.42'	85° 56.10'
136	UAIC	Florida	Holmes	Blue Creek at roadside park along US Hwy 90, Ponce de Leon	30° 43.50'	85° 56.40'
137	UF	Florida	Holmes	Sandy Creek on US 90, 7 mi. W of Westville	30° 43.53'	85° 56.35'
138	Tulane	Florida	Holmes	Blue Creek at Ponce de Leon	30° 43.56'	85° 56.11'
139	UF	Florida	Holmes	Blue Creek at Ponce de Leon	30° 43.66'	85° 56.12'
140	UF	Florida	Holmes	Blue Creek, Ponce de Leon	30° 43.67'	85° 56.12'
141	UF	Florida	Walton	West Sandy Creek on Rte 83, 1.1 mi. N of DeFuniak Springs	30° 44.03'	86° 06.72'
142	UF	Florida	Washington	Trib. Of Holmes Creek on St Rte 280, 6 air mi. SW of Chipley	30° 43.82'	85° 37.67'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
143	UAIC	Florida	Washington	Blue Lake along Hwy 77, ca 1.5 mi. S of Chipley, Florida	30° 44.54'	85° 33.06'
144	UAIC	Florida	Holmes	Choctawhatchee River trib., temporary pools, at FL Hwy 10, at Westville, 6 mi. E of Ponce De Leon	30° 44.90'	85° 49.98'
145	UF	Florida	Washington	Choctawhatchee River downstream of I-10 bridge, near Caryville boat ramp off state Hwy 90	30° 45.83'	85° 49.90'
146	UAIC	Florida	Holmes	Holmes Creek at FL Hwy 90, 0.6 mi. W Washington County line in swamp	30° 45.93'	85° 54.02'
147	UAIC	Florida	Walton	Juniper Bay W of FL Hwy 83, 3 mi. N of DeFuniak Springs	30° 46.18'	86° 07.77'
148	UAIC	Florida	Holmes	Choctawhatchee River at jct. of Wrights Creek to below I-10, near Caryville	30° 46.23'	85° 49.79'
149	UF	Florida	Washington	Choctawhatchee River at US Hwy 90 bridge at Caryville	30° 46.35'	85° 49.72'
150	UAIC	Florida	Holmes	Choctawhatchee River, overflow W of US 90, 1 mi. E of Westville	30° 46.45'	85° 50.86'
151	UAIC	Florida	Holmes	Hathaway Mill Creek at Beaver Pond, Caryville	30° 46.49'	85° 48.65'
152	Tulane	Florida	Holmes	Choctawhatchee River from US Hwy 90 bridge upstream 1.5 mi.	30° 46.51'	85° 49.65'
153	UF	Florida	Washington	Choctawhatchee River 0.5 mi. upstream of US Hwy 90 at Caryville	30° 46.52'	85° 49.57'
154	UF	Alabama	Holmes	Choctawhatchee River ca 3 mi. N of US 90 at Caryville	30° 46.54'	85° 49.67'
155	UAIC	Florida	Holmes	Choctawhatchee River, overflow at FL 90, 1.5 mi. W of Coryville	30° 46.55'	85° 50.65'
156	UF	Florida	Holmes	Buckhead slough at US Highway 90	30° 46.56'	85° 50.66'
157	UAIC	Florida	Holmes	E bank Choctawhatchee R. on US Hwy 90, ca. 9 mi. W of Bonifay	30° 46.57'	85° 49.61'
158	UF	Florida	Washington	On Rte 90, 2 mi. E of Caryville	30° 46.68'	85° 46.53'
159	UAIC	Florida	Holmes	Holmes Creek at Hwy 90, 3.5 mi. East of Bonifay	30° 46.72'	85° 36.94'
160	UAIC	Florida	Holmes	Holmes Creek at US Hwy 90, 0.75 mi. E of Bonifay	30° 46.98'	85° 38.92'
161	UF	Florida	Holmes	Big Reedy Creek on Rte 181, 4 mi. N of Westville	30° 47.22'	85° 52.93'
162	UAIC	Florida	Holmes	Choctawhatchee River, 2.25 air mi. N of Caryville	30° 47.68'	85° 49.52'
163	UAIC	Florida	Holmes	Mouth of branch of Choctawhatchee R.. 2.25 air mi. N of Carville	30° 47.76'	85° 50.00'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
164	UF	Florida	Holmes	Choctawhatchee River ca 3 mi. upstream from US Hwy 90 bridge at Caryville	30° 47.85'	85° 50.60'
165	UF	Florida	Holmes	Choctawhatchee River about 3 mi. above US 90 at Caryville	30° 47.85'	85° 49.77'
166	UAIC	Florida	Walton	Sandy Creek on Hwy 183, 1 mi. W of jct. 183A	30° 48.03'	86° 03.35'
167	UAIC	Florida	Holmes	slough off of Choctawhatchee River, ca. 2 1/4 air mi. N Caryville	30° 48.13'	85° 49.04'
168	UF	Florida	Holmes	Choctawhatchee River about 2.5 mi. above US 90 at Caryville	30° 48.22'	85° 50.08'
169	UF	Florida	Walton	Big Branch Creek on Rte 183A, 7.7 mi. NNE of DeFuniak Springs	30° 48.55'	86° 05.28'
170	UF	Florida	Holmes	Choctawhatchee River ca 3 mi. N of US 90 at Caryville	30° 48.48'	85° 26.40'
171	UF	Florida	Holmes	Choctawhatchee River upstream from GFC boat ramp 3 mi. N of Caryville	30° 48.78'	85° 50.32'
172	UAIC	Florida	Holmes	Lake Cassidy, 7.5 mi. Straight NE of DeFuniak Spring, FL	30° 48.88'	86° 01.86'
173	UF	Florida	Washington	Alligator Creek on Rte 273 about 4 mi. NNE of Chipley	30° 49.07'	85° 30.33'
174	UF	Florida	Jackson	Alligator Creek on St Hwy 77, 4.0 mi. N of Chipley	30° 50.00'	85° 31.95'
175	UF	Florida	Holmes	Roadside ditch, trib. to Paul's Branch 1 mi. W of Union Church, 6 mi. N of Caryville	30° 50.28'	85° 50.52'
176	UF	Florida	Holmes	Choctawhatchee River ca 7 mi. upstream from US 90 at Caryville	30° 50.47'	85° 52.93'
177	UF	Florida	Walton	Sandy Creek on Rte 183A, 9.2 mi. NNE of DeFuniak Springs	30° 51.28'	86° 03.62'
178	UF	Florida	Holmes	Sikes Creek 2 mi. N of Union church	30° 51.61'	85° 51.85'
179	UF	Florida	Holmes	Wright's Creek Trib. on Rte 177, 5.9 mi. N of Bonifay	30° 51.92'	85° 41.63'
179	UF	Florida	Holmes	Wright's Creek on St Rte 177, 6.0 mi. N of Bonifay	30° 51.92'	85° 41.63'
180	Tulane	Florida	Holmes	Trib. on Rt. 177, 3 mi. NW jct. of Hwys 177 & 79	30° 51.94'	85° 41.69'
181	UF	Florida	Holmes	Wright's Creek at SR 79, ca 6.5 air mi. NNE of Bonifay	30° 52.67'	85° 39.73'
182	UF	Florida	Holmes	11.5 mi. N of Westville on Hwy 181	30° 52.88'	85° 59.67'
183	UAIC	Florida	Holmes	Wright's Creek at bridge, 7 mi. S of Esto, 7 mi. N of Bonifay	30° 52.74'	85° 39.68'
184	Tulane	Florida	Walton	Trib. to Choctawhatchee River on Hwy 70 6 mi. S of Esto 7 mi. N of Bonifay	30° 50.75'	85° 30.71'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
185	UF	Florida	Holmes	Tennile Creek on St Rte 177, 7.0 mi. NNE of Bonifay	30° 53.36'	85° 6.36'
186	Tulane	Florida	Holmes	Little Creek, trib. to Ten Mile Creek, 6.5 mi. NNW of jct. Hwy 79 & 177	30° 54.01'	85° 43.09'
187	Tulane	Florida	Holmes	West Pittman Creek (Pine Log Creek), 12.4 mi. SSW of Geneva	30° 54.25'	85° 57.38'
188	UF	Florida	Holmes	Creek on Hwy 179A, 11.0 mi. N of Westville	30° 54.77'	85° 55.02'
189	UF	Florida	Walton	Tributary of Chestnut Cr. on St Rte 2, 5.5 mi. WSW of Darlington	30° 55.22'	86° 06.82'
190	UF	Florida	Holmes	Choctawhatchee River near Izagora	30° 55.19'	85° 51.16'
191	UF	Florida	Holmes	Choctawhatchee River near Curry Ferry	30° 55.19'	85° 51.16'
192	Tulane	Florida	Holmes	Small trib. to E Pittmann Creek on Hwy 2, 1 mi. E of Pittman	30° 56.44'	85° 48.43'
193	UF	Florida	Holmes	Choctawhatchee River at St Rte 2, ca 1.5 air mi. WNW of Pittman	30° 56.93'	85° 50.60'
194	Tulane	Florida	Holmes	Choctawhatchee River on Hwy 2, ca 1.5 mi. W of Pittman	30° 56.97'	85° 50.63'
195	Tulane	Florida	Holmes	Choctawhatchee River at FL Hwy 2, 1.4 mi. W Pittman	30° 57.00'	85° 50.59'
196	Tulane	Florida	Holmes	Stream on FL Hwy 2, 8.6 mi. SW of Geneva, AL	30° 57.08'	85° 59.03'
197	UAIC	Florida	Holmes	Choctawhatchee River at FL Hwy 2, 1.5 to 2 mi. W of Pittman	30° 57.02'	85° 50.55'
198	UF	Florida	Holmes	Choctawhatchee River on St Rd 2, ca 6 mi. S of Geneva, AL	30° 57.02'	85° 50.59'
199	UAIC	Florida	Holmes	East Bank Choctawhatchee River on FL 2, 1.5 mi. W of Pittman	30° 57.02'	85° 50.54'
200	UAIC	Florida	Holmes	Choctawhatchee River at FL Hwy 2, 0.5-1 mi. W of East Pittman	30° 57.05'	85° 50.54'
201	Tulane	Florida	Holmes	East Pittman Creek on dirt road, 0.8 mi. N East Pittman	30° 57.04'	85° 48.76'
202	UAIC	Florida	Holmes	East Pittman Creek on Hwy 179, 0.8 mi. N of Pittman	30° 57.05'	85° 48.76'
203	UF	Florida	Holmes	East Pittman Creek 0.8 mi. N of Pittman	30° 57.07'	85° 48.85'
203	UF	Florida	Holmes	East Pittman Creek on dirt road, 0.8 mi. N of Pittman	30° 57.07'	85° 48.85'
204	UF	Florida	Holmes	Tennile Creek on Rte 2, 9.3 mi. W of Graceville railroad station	30° 57.50'	85° 40.67'
205	UAIC	Florida	Holmes	Small creek ca. 3-4 mi. E of jct. of Hwy 2 and 177, 4 mi. S of Black	30° 57.54'	85° 40.63'
206	UF	Florida	Holmes	Hurricane Creek	30° 57.80'	85° 59.80'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
207	UF	Florida	Jackson	Holmes Creek on Rte 2, on western edge of Graceville, 1.4 mi. NW of railroad station	30° 57.78'	85° 31.95'
208	UAIC	Florida	Holmes	Holmes Creek at FL Hwy 2, 6 mi. E of Esto	30° 57.84'	85° 34.03'
209	UAIC	Florida	Jackson	Holmes Creek at Mill Pond, Graceville	30° 57.85'	85° 31.96'
210	UAIC	Florida	Holmes	Holmes Creek on Hwy 2, 1 mi. W of Graceville	30° 57.86'	85° 31.92'
211	Tulane	Florida	Jackson	Holmes Creek at Hwy 2, Graceville city limits	30° 57.86'	85° 31.91'
212	Tulane	Florida	Holmes	Pittman Creek on Hwy 177A, 2 mi. N of Hwy 2	30° 58.11'	85° 46.16'
213	UF	Florida	Holmes	East Pittman Creek at St Rte 177A	30° 58.12'	85° 46.17'
214	UF	Florida	Holmes	Pittman Creek at Hwy 177-A	30° 58.12'	85° 46.18'
215	UF	Florida	Holmes	Pittman Creek	30° 58.12'	85° 46.18'
216	UF	Florida	Holmes	Wrights Creek on St Rte 2, 6.0 mi. W of Graceville	30° 58.03'	85° 36.60'
217	Tulane	Florida	Holmes	Wrights Creek, 2.3 mi. E jct. Hwy 79 & 2 on Hwy 2, E Noma	30° 58.13'	85° 36.53'
218	UF	Florida	Holmes	Wrights Creek on St Rte 2, 6.1 mi. W of Graceville railroad station	30° 58.15'	85° 36.53'
219	UAIC	Florida	Holmes	Wrights Creek about 1 mi. E of Noma Junction	30° 58.15'	85° 36.52'
220	UAIC	Florida	Jackson	Collin's Mill Pond at Graceville, portion of Holmes Creek	30° 58.19'	85° 31.77'
221	Tulane	Florida	Holmes	East Pitman Creek on Hwy 177, ca. 16.3 mi. NW Graceville	30° 58.36'	85° 44.76'
222	UF	Florida	Holmes	Camp Creek on St Rd 2, about 4.2 mi. NE of Darlington	30° 58.63'	86° 0.65'
223	UAIC	Florida	Holmes	Five Mile Creek, at Esto	30° 58.57'	85° 38.76'
224	UAIC	Florida	Holmes	Pea River trib., at Sweet Gum Head	30° 58.76'	85° 58.44'
225	UF	Florida	Holmes	Hurricane Creek on St Rte 2A, trib. of Pea River 1 mi. W of Sweet Gum Head	30° 58.78'	85° 58.46'
226	UF	Florida	Walton	Eight Mile Creek on dirt road, 2.7 mi. WNW of Gaskin	30° 59.61'	86° 10.28'
227	UAIC	Florida	Holmes	Trib. of Wright Creek on U.T. Kirkland property, Esto	30° 59.37'	85° 39.38'
228	Tulane	Florida	Holmes	Trib. of Choctawhatchee River 4.7 mi. SSW of Geneva	30° 59.63'	85° 56.06'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
229	UF	Florida	Walton	Natural Bridge Creek at Natural Bridge, 4.5 mi. WNW of Gaskin	31° 0.22'	86° 10.39'
230	Tulane	Alabama	Geneva	Choctawhatchee River 2 mi. below confluence of Pea River	31° 00.68'	85° 50.05'
231	Tulane	Alabama	Geneva	Choctawhatchee River just below junction of Choctawhatchee & Pea Rivers at town of Geneva	31° 01.13'	85° 51.26'
232	Tulane	Alabama	Geneva	Mouth of Pea River to upstream about 6 mi.	31° 01.30'	85° 51.46'
233	UAIC	Alabama	Geneva	Sandy Creek, 5 mi. W of Geneva (Pea River)	31° 01.76'	85° 57.08'
234	UAIC	Alabama	Geneva	Holmes Creek at AL Hwy 109, 6 mi. NE of Graceville	31° 01.62'	85° 29.53'
235	UAIC	Alabama	Geneva	Spring Creek on Hartford-Black Hwy, ca 2.5 mi. NNE of Black	31° 01.86'	85° 44.10'
236	UAIC	Alabama	Geneva	Sandy Creek, ca. 5 mi. W of Geneva (Pea River)	31° 02.16'	85° 58.01'
237	UAIC	Alabama	Geneva	Pea River Trib. on Geneva-Leddon Rd, 2.75 mi. SW of Geneva	31° 02.20'	85° 56.03'
238	UAIC	Alabama	Geneva	Small swampy creek on Geneva-Leddon Farm-to Market Rd, ca 3 mi. SW National Guard Armory	31° 02.33'	85° 55.36'
239	INBS	Alabama	Geneva	Wrights Creek trib. at CR 91, 4.85 mi. south of Slocomb	31° 02.35'	85° 30.43'
240	Tulane	Alabama	Geneva	Choctawhatchee River at Geneva	31° 02.44'	85° 51.11'
241	Tulane	Alabama	Geneva	Choctawhatchee River on AL Hwy 12, 3 mi. E Hartford	31° 02.45'	85° 51.13'
242	Tulane	Alabama	Geneva	Trib. to Choctawhatchee River, 1.8 mi. N Black	31° 02.51'	85° 44.83'
243	Tulane	Alabama	Geneva	Trib. to Choctawhatchee River 2.2 mi. N Black	31° 02.56'	85° 44.08'
244	INBS	Alabama	Geneva	Spring Creek at CR 55, 7.21 mi. E of Geneva	31° 02.59'	85° 45.20'
245	INBS	Alabama	Geneva	Spring Creek at CR 6, 4.16 mi. E of Geneva	31° 02.67'	85° 48.65'
246	UAIC	Alabama	Geneva	Double Bridge Cr. & small slough, 0.4 mi. upstream from bridge in Geneva	31° 02.78'	85° 52.13'
247	INBS	Alabama	Geneva	Holmes Creek at CR 48, 4.66 mi. SE of Slocomb	31° 02.82'	85° 30.43'
248	INBS	Alabama	Geneva	Sandy Creek at Johnson Rd, 3.98 mi. south of Samson	31° 03.41'	86° 02.22'
249	UAIC	Alabama	Geneva	Choctawhatchee R. ca. 0.5 mi. upstream from Choctawhatchee R. Bridge. at Geneva	31° 02.86'	85° 05.89'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
250	UAIC	Alabama	Geneva	Choctawhatchee River, about 1-2 mi. N of a Choctawhatchee River Bridge at Genev	31° 03.49'	85° 50.76'
251	INBS	Alabama	Geneva	Little Sandy Creek at CR 16, 5.59 mi. W of Geneva	31° 03.67'	85° 58.04'
252	UAIC	Alabama	Geneva	Hartford Lake Catfish Pond # 20, ca. 3 mi. S of Hartford	31° 03.51'	85° 40.58'
253	INBS	Alabama	Geneva	Corner Creek at CR 54, 7.58 mi. SW of Samson	31° 04.19'	86° 09.95'
254	UAIC	Alabama	Geneva	Corner Creek (branch of Flat Creek?), in Hacoda (Pea River)	31° 04.20'	86° 09.96'
255	Tulane	Alabama	Geneva	Trib. to Choctawhatchee River, 5.2 mi. N Black	31° 04.33'	85° 42.03'
256	INBS	Alabama	Geneva	Justice Mill Creek at CR 16, 2.55 mi. SW of Hartford	31° 04.41'	85° 43.98'
257	INBS	Alabama	Coffee	Negro Church Branch at Hwy 52, 6.65 mi. NE of Geneva	31° 05.12'	85° 46.73'
258	INBS	Alabama	Geneva	Boggy Branch at CR 8, 4.54 mi. NW of Geneva	31° 05.78'	85° 56.06'
259	UAIC	Alabama	Geneva	Small spring behind Highfall Church, 5.75 air mi. NE of Choctawhatchee River Bridge	31° 06.13'	85° 48.03'
260	UAIC	Alabama	Geneva	Clemmons Dead River, 3.5 mi. N of Geneva	31° 06.11'	85° 49.54'
261	UAIC	Alabama	Geneva	Flat Creek on AL Hwy 54, 7 mi. W of Samson (Pea River)	31° 06.60'	86° 08.76'
262	Tulane	Alabama	Geneva	Adams Creek, 6.5 mi. S Bellwood	31° 06.51'	85° 50.65'
263	INBS	Alabama	Geneva	Panther Creek, 6.46 mi. W of Samson	31° 07.26'	86° 09.78'
264	Tulane	Alabama	Geneva	Trib. to Choctawhatchee River at Hwy 66, 2.8 mi. N Hartford	31° 08.33'	85° 41.96'
265	UAIC	Alabama	Geneva	Providence Creek, at Bellwood Hwy, 6.5 mi. NE of Geneva	31° 08.70'	85° 49.45'
266	UAIC	Alabama	Geneva	Small trib. to Newton Creek, Malvern	31° 08.73'	85° 30.70'
267	Tulane	Alabama	Geneva	Choctawhatchee River at AL Hwy 66, 3.2 mi. N Hartford	31° 09.41'	85° 41.79'
268	UAIC	Alabama	Geneva	Double Bridge Creek, off of AL Hwy 87, 4 mi. NE of Samson	31° 10.21'	85° 58.81'
269	Tulane	Alabama	Geneva	Trib. to Choctawhatchee River at Hwy 66, 5.5 mi. N Hartford	31° 10.26'	85° 41.88'
270	INBS	Alabama	Geneva	Pates Creek at Hwy 123, 5 mi. N of Slocomb	31° 10.35'	85° 37.98'
271	INBS	Alabama	Coffee	Double Bridges Creek at CR 655, 9.38 mi. SW of Enterprise	31° 12.68'	85° 57.34'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
272	UF	Alabama	Coffee	Bridges Cr. 3.25 mi. W of Union Academy, 7 air mi. SW of Enterprise	31° 12.79'	85° 57.48'
273	UAIC	Alabama	Coffee	Pea River trib. at Hwy 6, 1 mi. E of Kingston	31° 13.33'	86° 09.34'
274	Tulane	Alabama	Coffee	Cripple Creek trib. to Pear River at Hwy 189, 1.1 mi. N Kinston	31° 13.53'	86° 09.71'
275	INBS	Alabama	Houston	Gilley Mill Creek at CR 2, 8.26 mi. N of Slocumb	31° 13.25'	85° 36.87'
276	UF	Alabama	Dale	Choctawhatchee River at US Hwy 84, E of Clayhatchee	31° 14.14'	85° 41.33'
277	UAIC	Alabama	Houston	Choctawhatchee River at Hwy 84, 2 mi. E of Clayhatchee	31° 14.16'	85° 41.35'
278	Tulane	Alabama	Dale	Trib. 3.7 mi. W jct. Hwys 66 & 84, 1.7 mi. E Clayhatchee	31° 14.25'	85° 41.93'
279	UAIC	Alabama	Dale	Sconyers Branch, 0.5 mi. W on US 84 from Choctawhatchee River	31° 14.26'	85° 41.95'
280	Tulane	Alabama	Houston	Panther Creek, trib. to Little Choctawhatchee River, 3 mi. W of Pinckard Farm Rd. & Hwy 84	31° 14.58'	85° 35.08'
281	UAIC	Alabama	Coffee	Little Double Bridges Creek, 4 mi. W of Enterprise	31° 15.30'	85° 57.11'
282	INBS	Alabama	Houston	Rock Creek, at Westgate Parkway	31° 15.30'	85° 25.93'
283	INBS	Alabama	Dale	Little Choctawhatchee river trib. at CR 63, 10.45 mi. NW of Dothan	31° 16.38'	85° 33.89'
284	UF	Alabama	Dale	Little Choctawhatchee River at St Rd 92 bridge	31° 16.49'	85° 40.66'
285	Tulane	Alabama	Dale	Little Choctawhatchee River, 3.9 mi. SW Pinckard	31° 16.45'	85° 37.16'
286	UF	Alabama	Dale	Choctawhatchee River at St Rte 92 bridge SE of Fort Rucker	31° 16.50'	85° 40.70'
287	Tulane	Alabama	Coffee	Blanket Creek trib. to Double Bridge Creek at Coffee Co. Road 622	31° 17.54'	85° 53.58'
288	UF	Alabama	Coffee	Pages Creek on St Rte 189, 2.25 air mi. NW of Alberton	31° 17.77'	86° 8.60'
289	UAIC	Alabama	Coffee	Pages Creek on Hwy 189, 6-7 mi. E of Kinston (Pea River)	31° 17.78'	86° 08.58'
290	Tulane	Alabama	Coffee	Choctawhatchee River at AL Hwy 134, 3.3 mi. E Enterprise	31° 18.08'	85° 48.31'
291	INBS	Alabama	Coffee	Cowpen Creek at Hwy 84, 2.9 mi. E of Enterprise	31° 18.09'	85° 48.33'
292	INBS	Alabama	Coffee	Pages Creek at CR 440, 6.15 mi. E of Opp	31° 17.66'	86° 09.32'
293	UAIC	Alabama	Coffee	Hays Creek at Hwy 189, 10 mi. SW of Siba (Pea River)	31° 18.61'	86° 08.25'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
314	Tulane	Alabama	Dale	Little Claybank Creek at Dale Co. Road 101; 100' E of Hwy 27	31° 27.30'	85° 40.28'
315	UAIC	Alabama	Henry	East Fork Choctawhatchee River, 10 mi. SW of Abbeville, 0.5 mi. from Millers Fish Camp	31° 27.16'	85° 23.31'
316	UAIC	Alabama	Dale	Claybank Creek at Isaac Rd., 5.6 mi. W of Ozark, Fort Rucker	31° 27.60'	85° 42.93'
317	UAIC	Alabama	Dale	Claybank Creek at unnumbered gravel road W of Co. Rd. 123, 4.5 mi. W of Ozark	31° 27.61'	85° 42.91'
318	Tulane	Alabama	Dale	Bear Creek, trib. To Claybank Creek at Dale Co Rd 21	31° 28.00'	85° 41.93'
319	Tulane	Alabama	Dale	Beaver Dam Creek, trib. To Claybank Creek at Dale County Rd 36	31° 29.55'	85° 43.96'
320	UAIC	Alabama	Henry	East Branch Choctawhatchee R. at Hwy 27, 5 mi. SW of Abbeville	31° 29.66'	85° 22.10'
321	UF	Alabama	Henry	East Choctawhatchee River at St Rd 27 W of Capps	31° 29.67'	85° 22.12'
322	INBS	Alabama	Coffee	Whitewater Creek at CR 224, 3.9 mi. SW of Lowry Mill	31° 30.34'	86° 05.11'
323	UAIC	Alabama	Coffee	Whitewater Creek, 4.5 mi. NE of Elba (Pea River)	31° 31.36'	86° 03.56'
324	INBS	Alabama	Pike	Pea River at Hwy 231, 5.65 mi. W of Ariton	31° 32.27'	85° 58.93'
325	INBS	Alabama	Pike	Whitewater Creek at CR 224, Lowry Mill	31° 32.38'	85° 58.83'
326	INBS	Alabama	Coffee	Bluff Creek trib. At CR 331, 10.2 mi. E of Brantley	31° 32.63'	85° 05.11'
327	INBS	Alabama	Coffee	Clearwater Creek at CR 105, 7.2 mi. W of Ariton	31° 33.84'	85° 50.28'
328	INBS	Alabama	Coffee	Cowpen Creek at CR 324, 13.3 mi. E of Brantley	31° 33.95'	86° 01.73'
329	INBS	Alabama	Coffee	Whitewater Creek at Hwy 167, 11.7 mi. SW of Brundidge	31° 35.30'	85° 56.40'
330	UAIC	Alabama	Coffee	Whitewater Creek at unnumbered Hwy, 12 mi. NE of Elba	31° 35.35'	85° 56.43'
331	INBS	Alabama	Coffee	Clearwater Creek trib. At CR 110, 7.9 mi. W of Ariton	31° 35.75'	85° 51.32'
332	UAIC	Alabama	Coffee	Clearwater Creek, below Rocton Mill Pond, 0.5 mi. W of Rocton	31° 35.83'	85° 50.83'
333	INBS	Alabama		Indian Creek at CR 331, 8.5 mi. SW of Brundidge	31° 38.70'	85° 55.78'
334	UAIC	Alabama	Barbour	Bear Creek at Hwy 10, 3 mi. of Blue Springs	31° 38.63'	85° 27.11'
335	UAIC	Alabama	Barbour	West Fork Choctawhatchee River at Blue Springs State Park, 1.5 mi. S of Blue Springs	31° 39.66'	85° 30.33'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
336	UAIC	Alabama	Barbour	Blue Springs, just S of Hwy 10 (West Fork Choctawhatchee R.)	31° 39.68'	85° 30.44'
337	UAIC	Alabama	Barbour	West Fork Choctawhatchee River at Blue Springs	31° 39.81'	85° 30.28'
338	UAIC	Alabama	Barbour	West Fork Choctawhatchee R. on AL10, at Blue Spring State Park	31° 39.83'	85° 30.26'
339	INBS	Alabama	Barbour	Dear Creek at Mavis Barroll Rd, 3.6 mi. S of Texasville	31° 39.82'	85° 25.63'
340	UF	Alabama	Barbour	Tail end of Blue Springs outflow and Choctawhatchee River, above and below confluence with spring run	31° 39.96'	85° 30.19'
341	INBS	Alabama	Barbour	Wallace Creek at Mavis Barroll Rd, 3.6 mi. SW of Texasville	31° 40.01'	85° 26.35'
342	INBS	Alabama	Pike	Mims Creek at CR 59, 3.2 mi. SW of Brundidge	31° 40.96'	85° 51.84'
343	UF	Alabama	Henry	East Fork of Choctawhatchee River 9.5 air mi. NW of Abbeville	31° 40.65'	85° 20.74'
344	UAIC	Alabama	Barbour	Sikes Creek, 3.25 mi. NW of Blue Springs	31° 41.78'	85° 32.43'
345	INBS	Alabama	Barbour	Thompson Creek at Hwy 10, 9 mi. E of Brundidge	31° 42.58'	85° 39.65'
346	INBS	Alabama	Barbour	Big Creek at Hwy 10, 7.4 mi. E of Brundidge	31° 42.66'	85° 41.18'
347	INBS	Alabama	Barbour	East Fork Choctawhatchee River at CR 75, 4.7 mi. E of Texasville	31° 42.46'	85° 20.86'
348	UAIC	Alabama	Barbour	Pea River at AL Hwy 10, 6 mi. W of Clio	31° 42.85'	85° 42.43'
349	UAIC	Alabama	Barbour	Sikes Creek at Hwy 23, 0.9 mi. NE of Clio	31° 43.09'	85° 33.08'
350	UAIC	Alabama	Pike	Whitewater Creek at Hwy 231, ca. 2 mi. SE of Troy	31° 44.65'	85° 51.70'
351	UAIC	Alabama	Barbour	East Fork Choctawhatchee River at Hwy 131, 3.75 mi. SW of Baker Hill	31° 44.48'	85° 31.26'
352	UAIC	Alabama	Barbour	Hamm Creek, 4.25 mi. SW of Baker Hill	31° 44.66'	85° 23.41'
353	INBS	Alabama	Barbour	Pauls Creek at CR 20, 8.6 mi. S of Clayton	31° 45.73'	85° 29.56'
354	INBS	Alabama	Pike	Dorril Branch between CR 26 and CR 69, 9.8 mi. E of Troy	31° 46.29'	85° 47.83'
355	UAIC	Alabama	Pike	Walnut Creek at Hwy 231, 0.5 mi. SE of Troy	31° 46.40'	85° 55.46'
356	INBS	Alabama	Barbour	Pea Creek at CR 9, 17.6 mi. E of Troy	31° 47.49'	85° 39.20'
357	INBS	Alabama	Barbour	McSwain Creek at McSwain Creek Rd, 7 mi. SE of Clayton	31° 47.61'	85° 22.70'

Table 1 Continued. Localities of all sites sampled in the Choctawhatchee River drainage.

Site No.	Source	State	County	Locality	Lat	Lon
358	UAIC	Alabama	Pike	Richland Creek on US Hwy 29, 2 mi. SW of Monticello (Pea River)	31° 49.05'	85° 48.61'
359	INBS	Alabama	Pike	Richland Creek trib at Hwy 29, 9.6 mi. E of Troy	31° 49.28'	85° 57.09'
360	UAIC	Alabama	Pike	Buckhorn Ck at US Hwy 29, 1.5 mi. NE of Monticello (Pea River)	31° 50.53'	85° 45.53'
361	INBS	Alabama	Pike	Buckhorn Creek at Hwy 29, 11.9 mi. E of Troy	31° 50.57'	85° 45.53'
362	INBS	Alabama	Barbour	Pauls Creek at Hwy 51, 3.8 mi. SW of Clayton	31° 50.51'	85° 29.73'
363	Tulane	Alabama	Pike	Trib. to Buckhorn Creek at Hwy 29, 7.1 mi. S Perote	31° 51.63'	85° 43.58'
364	UAIC	Alabama	Barbour	Pea Creek at Hwy 239, between Williamson and Robertson Mill Ponds at Clayton (Pea River)	31° 52.96'	85° 28.33'
365	INBS	Alabama	Barbour	Hurricane Creek at Hwy 238, 8.6 mi. N of Louisville	31° 54.35'	85° 35.11'
366	INBS	Alabama	Pike	Persimmon branch at TSU Golf Course, 2.7 mi. N of Troy	31° 58.44'	85° 57.09'
367	UAIC	Alabama	Bullock	Little Indian Creek tributary on Smuteye-Ox Level Road, below spillway of Smuteye Lake (Pea River)	32° 00.58'	85° 38.84'
368	UAIC	Alabama	Bullock	Big Sandy Creek, 7 mi. S of Union Springs (Pea River)	32° 01.11'	85° 40.31'
369	UAIC	Alabama	Bullock	Indian Creek on dirt road, 10 mi. SSE of Union Springs (Pea River)	32° 02.95'	85° 28.79'
370	UAIC	Alabama	Bullock	Caney Branch at US Hwy 82, 2.5 mi. W of Midway (Pea River)	32° 04.78'	85° 33.66'
371	UAIC	Alabama	Bullock	Johnson Creek on US 82, 1 mi. W of Midway near Union Springs (Pea River)	32° 04.98'	85° 32.18'
372	UAIC	Alabama	Bullock	Unnamed tributary of Pea River at Co Rd 35, 0.62 mi. SW of Three Notch	32° 05.85'	85° 35.16'
373	UAIC	Alabama	Bullock	Bluff Creek at Hwy 82, at Three Notch, 7.75 mi. E of Union Springs (Pea River)	32° 06.21'	85° 33.66'
374	INBS	Alabama	Bullock	Johnson Creek trib at CR 47, 1.9 mi. N of Midway	32° 06.50'	85° 31.07'

Table 2. Species collected at 374 sites from the Choctawhatchee River drainage, the number of sites each species was present (N), and the percent occurrence at all sites (Percent). Asterisk denotes species present in drainage but no specific site data available.

Species	N	Percent
Petromyzontidae		
<i>Ichthyomyzon gagei</i>	20	5.35
Acipenseridae		
<i>Acipenser oxyrinchus desotoi</i>	1	0.27
Lepisosteidae		
<i>Atractosteus spatula</i>	2	0.53
<i>Lepisosteus oculatus</i>	14	3.74
<i>L. osseus</i>	20	5.35
Amiidae		
<i>Amia calva</i>	11	2.94
Anguillidae		
<i>Anguilla rostrata</i>	31	8.29
Ophichthidae		
<i>Myrophis punctatus</i>	41	10.96
Engraulidae		
<i>Anchoa mitchilli</i>	3	0.80
Clupeidae		
<i>Alosa alabamae</i>	20	5.35
<i>A. chrysochloris</i>	4	1.07
<i>Brevoortia patronus</i>	2	0.53
<i>Dorosoma cepedianum</i>	5	1.34
<i>D. petenense</i>	6	1.60
Cyprinidae		
<i>Ctenopharyngodon idella</i>	*	
<i>Cyprinella</i> n. sp. cf. <i>venusta</i>	114	30.48
<i>Cyprinus carpio</i>	*	
<i>Hybopsis</i> n. sp. cf. <i>winchelli</i>	56	14.97
<i>Lythrurus atrapiculus</i>	50	13.37
<i>Macrhybopsis</i> n. sp. cf. <i>aestivalis</i>	10	2.67
<i>Notemigonus crysoleucus</i>	59	15.78
<i>Notropis amplamala</i>	110	29.41
<i>Notropis chalybaeus</i>	27	7.22
<i>N. cummingsae</i>	1	0.27
<i>N. harperi</i>	46	12.30
<i>N. n. sp. cf. longirostris</i>	86	22.99
<i>N. maculatus</i>	25	6.68
<i>N. petersoni</i>	10	2.67
<i>N. texanus</i>	123	32.89
<i>Opsopoeodus emiliae</i>	22	5.88
<i>Pteronotropis hyselopterus</i>	54	14.44
<i>P. merlini</i>	44	11.76

Table 2 Continued. Species collected at 374 sites from the Choctawhatchee River drainage.

Species	N	Percent
Cyprinidae <i>Cont.</i>		
<i>P. signipinnis</i>	21	5.61
<i>P. welaka</i>	6	1.60
<i>Semotilus thoreauianus</i>	27	7.22
Catostomidae		
<i>Carpionodes</i> n. sp. cf. <i>cyprinus</i>	10	2.67
<i>C.</i> n. sp. cf. <i>velifer</i>	18	4.81
<i>Erimyzon sucetta</i>	63	16.84
<i>Minytrema melanops</i>	48	12.83
<i>Moxostoma poecilurum</i>	67	17.91
Ictaluridae		
<i>Ameiurus catus</i>	2	0.53
<i>A. melas</i>	1	0.27
<i>A. natalis</i>	49	13.10
<i>A. nebulosus</i>	8	2.14
<i>Ictalurus punctatus</i>	11	2.94
<i>Noturus funebris</i>	20	5.35
<i>N. gyrinus</i>	22	5.88
<i>N. leptacanthus</i>	93	24.87
Ariidae		
<i>Ariopsis felis</i>	1	0.27
<i>Bagre marinus</i>	2	0.53
Esocidae		
<i>Esox americanus</i>	125	33.42
<i>E. niger</i>	22	5.88
Aphredoderidae		
<i>Aphredoderus sayanus</i>	110	29.41
Mugilidae		
<i>Mugil cephalus</i>	6	1.60
<i>M. curema</i>	2	0.53
Atherinidae		
<i>Labidesthes sicculus vanhyningi</i>	63	16.84
<i>Menidia beryllina</i>	3	0.80
Belonidae		
<i>Strongylura marina</i>	7	1.87
Fundulidae		
<i>Adenia xenica</i>	1	0.27
<i>Fundulus chrysotus</i>	7	1.87
<i>F. cingulatus</i>	9	2.41
<i>F. confluentus</i>	1	0.27
<i>F. escambiae</i>	57	15.24
<i>F. grandis</i>	5	1.34
<i>F. olivaceus</i>	113	30.21
<i>F. similis</i>	1	0.27

Table 2 Continued. Species collected at 374 sites from the Choctawhatchee River drainage.

Species	N	Percent
Fundulidae Cont.		
<i>Leptolucania ommata</i>	9	2.41
<i>Lucania goodei</i>	2	0.53
<i>L. parva</i>	3	0.80
Poeciliidae		
<i>Gambusia holbrooki</i>	164	43.85
<i>Heterandria formosa</i>	3	0.80
<i>Poecilia latipinna</i>	5	1.34
Cyprinodontidae		
<i>Cyprinodon variegatus</i>	3	0.80
Syngnathidae		
<i>Syngnathus louisianae</i>	1	0.27
<i>S. scovelli</i>	3	0.80
Moronidae		
<i>Morone saxatilis</i>	*	
<i>M. saxatilis</i> x <i>M. chrysops</i>	*	
Centrarchidae		
<i>Ambloplites ariommus</i>	25	6.68
<i>Centrarchus macropterus</i>	29	7.75
<i>Enneacanthus gloriosus</i>	15	4.01
<i>E. obesus</i>	10	2.67
<i>Elassoma evergladei</i>	25	6.68
<i>E. gilbert</i>	15	4.01
<i>E. zonatum</i>	63	16.84
<i>Lepomis auritus</i>	9	2.41
<i>L. cyanellus</i>	19	5.08
<i>L. gulosus</i>	75	20.05
<i>L. macrochirus</i>	119	31.82
<i>L. marginatus</i>	62	16.58
<i>L. megalotis</i>	89	23.80
<i>L. microlophus</i>	29	7.75
<i>L. miniatus</i> x <i>L. punctatus</i>	96	25.67
<i>Micropterus punctulatus</i>	34	9.09
<i>M. salmoides</i>	77	20.59
<i>Pomoxis annularis</i>	4	1.07
<i>P. nigromaculatus</i>	15	4.01
Percidae		
<i>Ammocrypta bifascia</i>	27	7.22
<i>Etheostoma colorosum</i>	31	8.29
<i>E. davisoni</i>	61	16.31
<i>E. edwini</i>	72	19.25
<i>E. fusiforme barratti</i>	21	5.61
<i>E. okaloosae</i>	7	1.87

Table 2 Continued. Species collected at 374 sites from the Choctawhatchee River drainage.

Species	N	Percent
Percidae <i>Cont.</i>		
<i>E. parvipinne</i>	7	1.87
<i>E. proeliare</i>	3	0.80
<i>E. swaini</i>	53	14.17
<i>Perca flavescens</i>	*	
<i>Percina austroperca</i>	11	2.94
<i>P. nigrofasciata</i>	130	34.76
Carangidae		
<i>Chloroscombrus chrysurus</i>	1	0.27
Gerreidae		
<i>Eucinostomus harengulus</i>	1	0.27
Sparidae		
<i>Lagodon rhomboides</i>	1	0.27
Sciaenidae		
<i>Cynoscion nebulosus</i>	2	0.53
<i>Leiostomus xanthurus</i>	5	1.34
<i>Micropogonias undulatus</i>	1	0.27
<i>Sciaenops ocellatus</i>	1	0.27
Eleotridae		
<i>Eleotris amblyopsis</i>	5	1.34
Gobiidae		
<i>Gobionellus oceanicus</i>	2	0.53
<i>Gobiosoma bosc</i>	2	0.53
<i>Gobiosoma robustum</i>	1	0.27
<i>Lophogobius cyprinoides</i>	1	0.27
<i>Microgobius gulosus</i>	1	0.27
Paralichthyidae		
<i>Paralichthys albigutta</i>	1	0.27
<i>Paralichthys lethostigma</i>	2	0.53

anthropogenic impact. *Acipenser oxyrinchus desotoi* is federally listed as threatened and *Etheostoma okaloosae* is currently endangered, but proposed to be reclassified as threatened (U.S. Fish and Wildlife Service 2010).

Resurrection of previously synonymized names and species descriptions

Resurrection of three species includes *Semotilus thoreauianus* (formerly *S. atromaculatus*; Johnston and Ramsey 1990), *Gambusia holbrooki* (*G. affinis*; Angus and Howell 1996), and *Lepomis miniatus* (*punctatus*; Warren 1992). Newly described species include *Percina austroperca* (*Percina caprodes*; Thompson 1995), *Notropis amplamala* (*Ericymba buccata*; Pera and Armbruster 2006), *Etheostoma colorosum* (undescribed *Etheostoma* “*Ulocentra*” species; Suttkus and Bailey 1993), a revision of the *Pteronotropis hypselopterus* complex,

which provided a description of *Pteronotropis merlini* (Suttkus and Mettee 2001), and *Elassoma gilberti* (*E. okefenokee*; Snelson et al. 2009).

Historical Choctawhatchee River fish assemblages and range extensions

Smith-Vaniz (1968) reported 50 species from 59 sites in the Choctawhatchee River drainage and suggested that another 21 species were probable based on known distribution and habitat requirements. *Amia calva* has been confirmed from the drainage, while *Pteronotropis hypselopterus* is not known to occur in the watershed; *Lythrurus roseipinnis* and *Notropis telescopus* are considered misidentified and do not occur in the drainage. *Notropis harperi* was reported from the Choctawhatchee drainage by Smith-Vaniz (1968), but was not found by Mettee et al. (1996) so the record was questioned since it is more abundant in the adjacent watershed. We found this species in our 2001 surveys and confirm its presence in highly specialized spring run habitat.

Mettee (1970), Mettee et al. (1996), and Boschung and Mayden (2004) documented 80 species of fish from 40 collections in the drainage. First records for *Alosa chrysochloris*, *Hybopsis* n. sp. cf. *winchelli*, and *Lepomis auritus* are reported in this current study. *Ichthyomyzon gagei*, *Lepisosteus osseus*, *Alosa alabamiae*, *Ameiurus nebulosus*, *Noturus funebris*, *Esox niger*, *Strongylura marina*, *Fundulus escambiae*, *Morone saxatilis*, *Elassoma evergladei*, *Lepomis gulosus*, and *Mugil cephalus* were confirmed by this study from Smith-Vaniz's (1968) hypothetical list. Mettee et al. (1996) did not confirm *Lampetra aepyptera*, *Atractosteus spatula*, *Moxostoma carinatum* (note: *M. carinatum* does not occur in the drainage), *Leptolucania ommata*, *Lucania goodei*, *Elassoma gilberti*, and *Enneacanthus gloriosus*. Our inventories increased the cumulative list of species found in Alabama and Florida portions of the drainage, including brackish waters, by 39 species. Many of the added species are either marine, estuarine transients, or large river species. Introduced species *Ctenopharyngodon idella*, *Cyprinus carpio*, *Ameiurus catus*, and *Morone chrysops* x *M. saxatilis* first appeared in the drainage after 1985.

Fourteen range extensions within the drainage were found based on a more comprehensive sampling effort over the last eight years. Two new localities for *Etheostoma parvipinne* were found in Barbour and Geneva counties, Alabama. *Anguilla rostrata* and *Notropis chalybaeus* were new additions to the Pea River, while range extensions include *Notropis harperi*, *Opsopoeodus emiliae*, *Minytrema melanops*, *Ameiurus melas*, *A. nebulosus*, *Noturus funebris*, *Ambloplites ariommus*, *Centrarchus macropterus*, *Lepomis marginatus*, *L. microlophus*, and *Etheostoma colorosum*.

Mettee et al. (1996) and Boschung and Mayden (2004) reported that *Anguilla rostrata* is limited to the lower portions of the Choctawhatchee and Pea rivers and a few tributaries, including Claybank, Hurricane, and Panther creeks. We extend *A. rostrata* in Panther, Corner, Justice Mill, and Spring creeks (Geneva County), Double Bridges Creek (Coffee County), and the Pea River (Pike County), Alabama, which are many of the headwater streams of the Choctawhatchee River. *Anguilla rostrata* was often collected from undercut bank habitats, where scouring of tree roots caused extensive root wad network exposure.

Notropis harperi had previously been recorded from headwater tributary sites in the Choctawhatchee drainage (Smith-Vaniz 1968), while we found the species in lower tributary streams such as Wallace Creek (Barbour County) and Boggy Branch (Geneva County), Alabama. Our Geneva County record is the southern-most for this species in the drainage. *Notropis chalybaeus* was previously known from the upper Choctawhatchee River, while we add records from the Pea River drainage. Our records include Whitewater Creek near Lowry Mill at Coffee County Road 224. *Opsopoeodus emiliae* was previously known from only two sites in the Choctawhatchee drainage (Mettee et al. 1996, Boschung and Mayden 2004), while we found the species at another eight sites in the mainstem Pea River and tributaries. We found the species at two Whitewater creek sites and Clearwater Creek (Coffee County), Wallace and Pages creeks (Barbour County), Panther and Spring creeks (Geneva County), and Pea River (Pike County), Alabama.

We note range extensions for *Minytrema melanops* from the lower mainstem of the Pea and Choctawhatchee rivers, including a tributary of Double Bridges Creek and the Little Choctawhatchee River. Our records from seven additional sites found the species to occur in the Whitewater (two sites) and Clearwater creeks (Coffee County), McSwain Creek (Barbour County), Spring and Corner creeks (Geneva County), and Klondike Creek (Dale County), Alabama.

Four sunfish species, including *Ambloplites ariommus*, *Centrarchus macropterus*, *Lepomis marginatus*, and *Lepomis microlophus* are more widely distributed than previously reported. Mettee et al. (1996) and Boschung and Mayden (2004) reported *Ambloplites ariommus* from the Choctawhatchee and lower Pea River. We report two additional records in Panther Creek (Geneva County) and the Pea River (Pike County), Alabama. Mettee (1970) and Boschung and Mayden (2004) collected *Centrarchus macropterus* from three sites in the drainage, while we also found it in Holmes Creek (Geneva County), Alabama.

The possible transplant introduction of *L. microlophus* has increased this species range, while *L. marginatus* is found throughout the drainage.

Etheostoma colorosum was reported from headwaters of the Pea Creek, Double Bridges Creek, Choctawhatchee River, and Little Choctawhatchee River, Alabama, whereas *E. parvipinne* was reported from Whitewater, Limestone, and Barnes creeks (Mettee et al. 1996). We found *E. colorosum* at additional sites in Pea Creek (Barbour County), Corner Creek (Geneva County), and Whitewater Creek (Coffee County), while *E. parvipinne* was found in Buckhorn Creek (Pike County) and Pauls Creek (Barbour County).

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APPENDIX I

Petromyzontidae

Ichthyomyzon gagei, Southern Brook Lamprey (F).

Sites: 2, 48-49, 56, 62, 66, 67, 71, 80, 104, 105, 122, 126, 137, 244, 256, 275, 295, 316, 356

Sporadic in tributaries of upper Pea River. Occasional in lower Choctawhatchee River.

Acipenseridae

Acipenser oxyrinchus desotoi, Gulf Sturgeon (F/M).

Site: 13

Based on available data this species is rare and found only in Choctawhatchee Bay; however, specific gear is required to collect it. Others have collected Gulf Sturgeon in the Pea River in Coffee and Geneva counties in Alabama and in the mainstem of the Choctawhatchee River in Alabama and Florida (U.S. Fish and Wildlife Service 2003).

Lepisosteidae

Atractosteus spatula, Alligator Gar (F).

Sites: 38, 42

Rare; this species is known in Florida only from the lower Choctawhatchee River, but this species requires specific gear to be collected. The species has also been collected in the Escambia River and Econfina Creek (Gilbert 1992). Due to the size of adult individuals, most observations are based on anecdotal accounts. Individuals are usually seen in the mainstem Choctawhatchee River in Alabama and Florida (C. R. Gilbert, unpublished data).

Lepisosteus oculatus, Spotted Gar (F).

Sites: 8, 12-16, 18, 28, 34, 38, 110, 168, 193, 198, 232, 253, 260, 282

Sporadic in tributaries of lower Pea and Choctawhatchee rivers.

Lepisosteus osseus, Longnose Gar (F).

Sites: 8, 12-17, 20, 29, 32, 36, 43, 120, 156, 162, 198, 230, 232, 240, 260

Sporadic in tributaries of the lower Pea and Choctawhatchee rivers.

Amiidae

Amia calva, Bowfin (F).

Sites: 12, 14, 32, 110, 142, 162, 205, 210, 222, 230, 260

Sporadic in Choctawhatchee Bay, Holmes Creek, and Choctawhatchee River.

Anguillidae

Anguilla rostrata, American Eel (F/M).

Sites: 5, 12, 29, 40, 51-52, 60, 62, 74, 77, 120, 127, 130, 134, 140, 177, 182, 185, 203, 221, 230, 243-244, 253, 256, 263, 271, 274, 324

Occasional in the lower portions of the Choctawhatchee, Whitewater, and Pea river mainstems and a few tributaries, including Claybank, Hurricane, and Panther creeks.

Ophichthidae

Myrophis punctatus, Speckled Worm Eel (M).

Sites: 1, 25, 38, 56-57, 60, 64-66, 68, 71, 74-75, 78-80, 96, 101, 107, 110, 111, 120, 126, 141, 145, 156, 169, 177, 179, 182, 193, 198, 203-204, 216, 226, 229, 321, 340

Sporadic in Choctawhatchee Bay, Walton County, Florida.

Engraulidae

Anchoa mitchilli, Bay Anchovy (F/M).

Sites: 5, 18, 29

Sporadic in tributaries of Choctawhatchee Bay, Walton County, Florida.

Clupeidae

Alosa alabamae, Alabama Shad (F/M).

Sites: 5, 8, 10, 13, 18, 25, 29, 38, 149, 152, 170, 176, 190, 193, 195, 231, 276

Sporadic in Walton and Holmes counties, Florida; occurring in Geneva County, Alabama.

Alosa chrysochloris, Skipjack Herring (F/M).

Sites: 38, 43, 170, 199

Sporadic in Rushing Cutoff Creek and Choctawhatchee River in Florida.

Brevoortia patronus, Gulf Menhaden (M).

Sites: 7, 28

Sporadic in Choctawhatchee and Jolly Bays, Walton County, Florida.

Dorosoma cepedianum, Gizzard Shad (F).

Sites: 28, 36, 114, 152, 260

Sporadic in Jolly Bay, Choctawhatchee, and Dead rivers.

Dorosoma petenense, Threadfin Shad (I, F).

Sites: 12, 14, 18, 29, 140, 230

Sporadic in Jolly Bay and Choctawhatchee River.

Cyprinidae

Ctenopharyngodon idella, Grass Carp (I, F).

Rare; sporadic based on reports of the species from Florida (C.R. Gilbert, unpublished data).

Cyprinella n. sp. cf. *venusta*, Blacktail Shiner (F).

Sites: 5, 11, 14, 38-39, 41, 77, 108, 111, 120, 130-131, 134, 136, 138, 140, 145, 149, 152, 157, 163, 165, 168, 170, 177, 180, 181, 182, 184, 190, 191, 193, 195, 197-203, 212, 217, 223, 228, 230-231, 233, 236, 239, 240, 242-245, 247, 249-251, 253, 256, 262-263, 265, 268-269, 274, 277, 280-281, 283, 285, 291-293, 295-297, 299-300, 302, 303, 305, 307, 312-313, 316, 318-319, 322-328, 330-332, 337-338, 341, 344-345, 364, 369

Generally distributed and common to abundant in tributaries of lower Pea and Choctawhatchee rivers. There are data (primarily genetic) that suggest populations in coastal drainages from the Choctawhatchee west to the Perdido represent an undescribed species (J. Gold, Texas A&M University, unpublished data).

Cyprinus carpio, Common Carp (I, F). Sporadic and known only from Dead River, Geneva County, Alabama.

Hybopsis n. sp. cf. *winchelli*, Coastal Chub (F).

Sites: 11, 37-38, 40, 96, 108, 114, 127, 134, 136, 140, 145, 149, 152, 157, 160, 170, 181, 183-184, 190-191, 193, 195, 198-200, 202, 217, 224, 230-231, 236, 243, 254, 268, 274, 280-281, 305, 307, 312-313, 316, 318, 325, 331, 334, 344, 348, 364

Occasional. This is an undescribed species related to *Hybopsis winchelli* (Clemmer 1971; Mettee et al. 1996; Boschung and Mayden 2004).

Lythrurus atrapiculus, Blacktip Shiner (F).

Sites: 41, 54, 111, 196, 201, 203, 212, 228, 242, 258, 264, 268, 269-271, 272, 274, 276, 281, 287, 288, 297, 299, 303, 305, 310-313, 315, 316, 319, 323, 325, 327, 330, 333-334, 337, 341, 343-346, 360, 364, 369, 373

Generally distributed and common in tributaries of Pea, Whitewater, and Choctawhatchee rivers. Common in Alabama, but rare in Florida.

Macrhybopsis n. sp. cf. *aestivalis*, Florida chub (F).

Sites: 37, 163, 164, 197, 199, 274, 276, 277, 286, 301

Sporadic in the Choctawhatchee River in Washington and Holmes counties, Florida, and Coffee County, Alabama. This is an undescribed species related to *Macrhybopsis aestivalis* (Warren et al. 2000).

Notemigonus crysoleucas, Golden Shiner (F).

Sites: 5, 8, 14, 25, 33, 93, 95, 96, 107, 110, 111, 128, 132, 150, 156, 170, 174, 179, 186, 192-193, 198, 201-204, 216, 222, 239, 243, 247, 248, 250, 262, 265, 276, 277, 280, 291-292, 295, 305, 309, 329-330, 345-346, 349, 351, 354, 358-360, 367-370, 372-373

Occasional in tributaries of upper Pea and lower Choctawhatchee rivers.

Notropis amplamala, Longjaw Minnow (F).

Sites: 77, 91, 111, 130, 134, 137, 138, 140, 152, 166, 168, 170, 177, 179, 180-182, 184-185, 192-193, 195, 197-200, 202-203, 212, 214, 223-228, 231, 235, 236, 242-244, 247, 249-250, 253-256, 258, 261-263, 265, 271, 275-277, 278, 280, 283,

287-289, 292-293, 295-297, 299-300, 303, 305, 307-310, 312-313, 316, 318-320, 325-328, 330, 335, 337, 343-346, 348-349, 358-359, 361-362, 364, 368-370, 373

Generally distributed and abundant in tributaries of Pea and lower Choctawhatchee rivers. Sporadic in tributaries of upper Choctawhatchee River. Populations on Gulf Coast previously regarded as disjunct southern form of *Ericymba buccata*, but recently described as a new species by Pera and Armbruster (2006). Genus *Ericymba* has been synonymized with *Notropis* by Coburn and Cavender (1992).

Notropis chalybaeus, Ironcolor Shiner (F).

Sites: 14, 18, 23, 107-108, 130, 133, 136, 142, 154-156, 159-160, 174, 176, 186, 192, 195, 198, 202-203, 211, 217, 221, 315, 321

Occasional in tributaries to Choctawhatchee Bay, Holmes Creek, Florida, and Choctawhatchee River, Henry County, Alabama.

Notropis cummingsae, Dusky Shiner (F).

Site: 142

There is a record based on 25 specimens collected on 14 April 1962 from the Choctawhatchee drainage in Washington County, Florida (UF 57944). Since this is the only record of the species from the drainage, the collection site needs to be revisited to confirm this record.

Notropis harperi, Redeye Chub (F).

Sites: 61, 63, 65, 70, 73, 80, 91, 102, 107-108, 111, 127, 130, 134, 136, 151, 163, 179, 181-182, 185-188, 198-199, 207, 209, 215-216, 224-227, 229, 258, 262, 329, 336, 337, 340-341, 351-352

Sporadic in tributaries of Whitewater and upper Choctawhatchee rivers. New drainage extensions were recorded. Our Geneva County site is the southern-most record of this species in the Choctawhatchee drainage. *Notropis harperi* is always limited to spring habitats.

Notropis n. sp. cf. *longirostris*, Longnose Shiner (F).

Sites: 37, 39-40, 48, 120, 152, 157, 163-165, 168, 170, 180-181, 190, 193, 195, 197-203, 206, 212, 214, 224-225, 233, 235, 240, 242-243, 245, 247, 250, 254, 256, 258, 261, 264-265, 271, 274, 276-277, 280, 283, 287, 289, 292-297, 299-304, 307, 310-320, 322-327, 337, 340, 345

Generally distributed and common in tributaries of Pea and Whitewater rivers. Occasional in lower Choctawhatchee river tributaries. This represents an undescribed species related to *Notropis longirostris* (C.R. Gilbert, unpublished data), which is based entirely on genetic evidence, there appear to be no other characters that can distinguish the two forms.

Notropis maculatus, Taillight Shiner (F).

Sites: 11, 12, 14, 18, 33, 107, 132, 144, 149, 155-156, 171, 174, 193, 195, 202, 210, 248, 250, 271, 276, 295, 301, 312, 362

Sporadic in tributaries of upper Pea and lower Choctawhatchee rivers. Occasional in Whitewater River tributaries.

Notropis petersoni, Coastal Shiner (F).

Sites: 18, 33, 44, 62, 65, 74, 75, 96, 105, 198

Sporadic in direct tributaries of Choctawhatchee Bay in Florida.

Notropis texanus, Weed Shiner (F).

Sites: 1, 5, 11, 14, 18-19, 21, 23, 38-39, 41, 47-48, 51, 57, 62, 81, 96, 108, 110-111, 114, 124, 129, 130, 131, 134-136, 138, 140, 142, 145, 149, 152, 157, 163, 165, 168, 170, 177, 179-182, 184, 186-188, 190-193, 195, 199-202, 211-212, 217, 221, 228, 231, 239-240, 242-245, 249, 253, 255-256, 258, 262, 264, 268-271, 274, 280-281, 283, 285, 287, 289, 291-293, 295-297, 299-300, 302, 305, 307, 309, 312-313, 316, 318, 320, 323, 325, 327, 330-332, 337, 341, 346-348, 355, 357, 359, 364

Generally distributed and common in tributaries of Pea, Whitewater, and Choctawhatchee rivers.

Opsopoeodus emiliae, Pugnose Minnow (F).

Sites: 5, 11, 14, 18, 107, 140, 149, 195, 198, 202-203, 242, 245, 263, 276, 293, 312, 324-326, 328, 341

Occasional in tributaries of Pea and lower Choctawhatchee rivers. Previously known from only a few sites in the Choctawhatchee drainage in Alabama (Mettee et al. 1996; Boschung and Mayden 2004). During our survey, we found the species at an additional 15 tributary sites, as well as the mainstem Pea River.

Pteronotropis hypselopterus, Sailfin Shiner (F).

Sites: 23, 32, 48, 52, 54, 61, 63, 69, 77, 85, 91, 100, 113, 121, 127, 130, 134, 136, 138, 160, 180, 184, 186, 187, 201, 202, 212, 217, 219, 221, 223-224, 227, 228, 233-237, 242-243, 254, 262, 264, 274, 278, 280, 285, 287, 305, 364

Generally distributed and common in lower Choctawhatchee River, Holmes Creek, Florida; middle Choctawhatchee River, and tributary to Double Bridges Creek, Alabama.

Pteronotropis merlini, Orangetail Shiner (F).

Sites: 81, 245, 248-249, 255-256, 263, 265, 271, 275, 281, 283, 293, 296, 303-304, 308-309, 311-312, 315-320, 327-330, 334, 342, 345-346, 352, 355-357, 361-362, 370, 373

Generally distributed and common in tributaries of Pea, Whitewater, and lower Choctawhatchee rivers. Almost entirely confined to Alabama.

Pteronotropis signipinnis, Flagfin Shiner (F).

Sites: 46, 57, 68, 72, 77, 81, 83-84, 113, 115, 117, 130, 141, 169, 215, 255, 279, 306, 336

Occasional in Walton, Washington, and Holmes counties, Florida; Geneva, Dale, and Barbour counties, Alabama.

Pteronotropis welaka, Bluenose Shiner (F).

Sites: 12, 14, 160, 210-211

Sporadic in Walton, Holmes, and Jackson counties, Florida.

Semotilus thoreauianus, Dixie Chub (F).

Sites: 96, 98, 111, 136, 166, 177, 242, 256, 259, 262, 273, 275, 278, 280, 283, 292, 295, 296, 297, 299, 308-309, 312, 349, 352, 360

Sporadic in tributaries of Pea River. Occasional in the lower Choctawhatchee River tributaries.

Catostomidae

Carpiodes n. sp. cf. *cyprinus*, Quillback Complex (F).

Sites: 28, 152, 162, 164, 170, 193, 199, 230, 231, 240

Sporadic in lower Choctawhatchee Bay tributaries, Holmes Creek, and Choctawhatchee River. H. Bart (unpublished data) considers Quillbacks a species complex with the Choctawhatchee drainage form as an undescribed species.

Carpiodes n. sp. cf. *velifer*, Highfin Carpsucker Complex (F).

Sites: 12, 14, 35-36, 38, 152, 164, 167, 170-171, 193, 197, 199-200, 231, 232, 277

Occasional in tributaries of Choctawhatchee Bay and mainstem Choctawhatchee River, Holmes and Walton Counties, Florida, and Geneva County, Alabama. H. Bart (unpublished data) considers Highfin Carpsuckers a species complex with the Choctawhatchee drainage form representing an undescribed species.

Erimyzon sucetta, Lake Chubsucker (F).

Sites: 3, 26, 29, 33-34, 53, 61, 72, 74, 76-77, 83, 96-97, 100-101, 107, 109, 112-113, 121-122, 128, 132-133, 150-151, 155-156, 160, 174-175, 179, 184, 186, 189, 193, 201, 216, 226, 229, 238-239, 247-248, 255, 260, 265, 269, 271, 282, 284, 291, 295-296, 304, 320, 346, 355, 358, 360, 367, 372

Occasional in tributaries of upper Pea, lower Choctawhatchee, and Whitewater rivers.

Minytrema melanops, Spotted Sucker (F).

Sites: 12, 14, 16, 32, 36, 41, 47, 74-75, 85, 96, 105, 107, 134, 159-160, 162, 167, 170, 177, 179, 181, 183-184, 192-193, 195, 198, 201-203, 232, 242-243, 253, 276, 281-282, 300, 305, 312, 325-326, 328, 348, 357

Occasional in tributaries of Pea and Choctawhatchee rivers.

Moxostoma poecilurum, Blacktail Redhorse (F).

Sites: 12, 14, 16, 18, 27, 36, 38, 41, 47, 108, 111, 114, 116, 118, 120, 130, 140, 149, 152, 157, 160, 162, 166-167, 170, 179, 181, 183-184, 190-191, 193, 197-199, 201-203, 230, 231-232, 240, 243-245, 253, 268-269, 274, 276, 280-281, 286, 293, 296, 300, 305, 307, 312-313, 323, 325-326, 343, 346, 348

Occasional in tributaries of Pea and lower Choctawhatchee rivers.

Ictaluridae

Ameiurus catus, White Catfish (I, F).

Sites: 5, 18

Sporadic in tributaries of Choctawhatchee Bay.

Ameiurus melas, Black Bullhead (I, F).

Site: 246

Sporadic in tributaries of upper Choctawhatchee River. This species may be introduced since it has never been recorded from Florida portions of the drainage.

Ameiurus natalis, Yellow Bullhead (F).

Sites: 1, 25-26, 29, 48, 60-61, 63, 65, 72, 74, 76-77, 96-97, 99-100, 112, 115, 117, 133, 141, 161, 192, 216, 221, 239, 248, 263, 267, 271, 283, 291, 293, 296, 304, 324, 326, 330, 336, 342, 345, 355, 357, 368, 370, 372-373

Generally distributed and common in tributaries of Pea, Whitewater, and lower Choctawhatchee rivers.

Ameiurus nebulosus, Brown Bullhead (I, F).

Sites: 146, 156, 174, 252, 260, 300, 366-367

Sporadic in tributaries of upper Pea and lower Choctawhatchee rivers. Although there are numerous scattered records from Gulf Coast drainages west of the Apalachicola River drainage, we believe these are introductions.

Ictalurus punctatus, Channel Catfish (F).

Sites: 5, 37, 145, 193, 198-200, 231, 239, 250, 276

Sporadic in tributaries of lower Choctawhatchee River.

Noturus funebris, Black Madtom (F).

Sites: 52, 63, 65-66, 68, 74, 96-97, 115, 117, 121, 126, 129, 141, 187, 225, 244, 256, 267, 365

Sporadic in tributaries of lower Choctawhatchee River.

Noturus gyrinus, Tadpole Madtom (F).

Sites: 5, 8, 18, 29, 60, 93, 96, 100, 115, 121, 125, 128, 133, 140, 143, 155, 172, 187, 201, 207 220-221

Sporadic in tributaries of lower Choctawhatchee River.

Noturus leptacanthus, Speckled Madtom (F).

Sites: 23, 47-48, 50-53, 56, 60-63, 65, 67-71, 74-75, 77, 79-80, 82, 84-85, 90, 96, 103-105, 110-111, 115, 122, 124, 126, 129-130, 141, 148, 160, 166, 177, 181, 183-184, 186-187, 193, 196-197, 199, 201-203, 206, 214, 216, 218-219, 221, 225, 227-229, 231, 236, 240, 245, 249, 253, 256, 264, 268-269, 271, 273-274, 276, 283, 287, 289-290, 292-293, 296-297, 299, 300, 303, 305, 312, 316, 318-319, 322, 324, 326, 327, 329, 334, 344, 348-349, 352, 355, 357, 364-365, 373

Generally in tributaries of Pea, Whitewater, and Choctawhatchee rivers.

Ariidae*Ariopsis felis*, Hardhead Catfish (M).

Site: 28

Sporadic in Jolly Bay, Walton County, Florida.

Bagre marinus, Gafftopsail Catfish (M).

Sites: 13, 28

Sporadic in Choctawhatchee and Jolly bays, Walton County, Florida.

Esocidae

Esox americanus, Redfin Pickerel (F).

Sites: 47-48, 62, 72-76, 84, 93, 96-97, 100, 106-110, 112, 127-130, 132-133, 140, 142, 144, 146-147, 150-151, 155-156, 161, 164, 173-175, 178-182, 185-186, 189, 192, 195, 201-202, 204-211, 216-218, 221-222, 226-227, 234, 238-239, 243-245, 247-249, 253-256, 270-271, 276-277, 279-280, 283-285, 293, 296, 299, 301, 304, 308-309, 313, 315, 318, 320, 328-330, 333-334, 339, 341-342, 344-346, 351, 353-354, 356, 362, 364, 366, 368, 371-373

Generally distributed in tributaries of Pea, Whitewater, and Choctawhatchee rivers.

Esox niger, Chain Pickerel (F).

Sites: 12, 14, 22, 25, 36, 48, 74, 113, 150, 158, 167, 174, 193, 195, 208, 212, 222, 225, 260, 277, 321, 348

Occasional in tributaries of Choctawhatchee Bay, Choctawhatchee and Pea rivers.

Aphredoderidae

Aphredoderus sayanus, Pirate Perch (F).

Sites: 5, 12, 14, 18, 22, 25-26, 29, 33, 34, 38, 48, 50, 52, 61, 63, 65, 74, 76, 80, 82, 84-85, 87, 91, 93, 96-97, 100, 111, 132-133, 136, 140, 149-151, 159, 161, 174, 181-182, 186, 188-189, 192-193, 195-198, 201, 203-207, 209, 215, 217-222, 224-227, 231, 234-236, 239, 244-245, 248, 253, 256, 258, 263, 265, 267, 270-272, 275, 283, 293, 295, 300-301, 304, 312, 315-316, 320, 328, 330, 336-337, 341, 345-346, 351-352, 355, 357, 361, 373

Generally distributed in tributaries of Pea, Whitewater, and Choctawhatchee rivers.

Mugilidae

Mugil cephalus, Striped Mullet (F/M).

Sites: 7, 14, 16, 29, 43, 240

Sporadic in tributaries of Choctawhatchee Bay, Okaloosa, and Walton counties, Florida.

Mugil curema, White Mullet (M).

Sites: 30, 45

Rare in Choctawhatchee Bay, Walton County, Florida.

Atherinopsidae

Labidesthes sicculus vanhyningi, Gulf Brook Silverside (F).

Sites: 5, 8, 11-12, 14, 18, 29, 33, 36, 38-40, 44, 74, 81, 93, 106-109, 113, 121, 124, 128, 130-133, 138, 140, 144, 149, 150, 154-157, 172, 174, 179-181, 186, 190, 193, 195, 198, 202-203, 208, 210-212, 214, 222, 226, 247, 250, 276, 323, 325, 340, 346.

Occasional in tributaries of the lower Choctawhatchee Bay and upper Pea River. Recent unpublished data suggests that this subspecies warrants elevation to species (Bean and Reid 1930; Bloom et al. 2009).

Menidia beryllina, Inland Silverside (F/M)

Sites: 7, 41, 51

Sporadic in tributaries of Choctawhatchee Bay.

Belonidae

Strongylura marina, Atlantic Needlefish (F/M).

Sites: 7, 13, 30, 160, 170, 193, 230

Sporadic in Choctawhatchee Bay, Walton and Holmes counties, Florida, occurring upstream to Geneva County, Alabama.

Fundulidae

Adinia xenica, Diamond Killifish (F/M).

Rare, known from a single bayou of Choctawhatchee Bay, Walton County, Florida.

Fundulus chrysotus, Golden Topminnow (F).

Sites: 34, 74, 107, 125, 144, 154, 156

Sporadic in tributaries of Walton and Washington counties, Florida.

Fundulus cingulatus, Banded Topminnow (F).

Sites: 3, 61, 72, 121, 144, 146, 150, 144, 186

Sporadic in tributaries in Walton, Okaloosa, Washington, and Holmes counties, Florida. Formerly known as *Fundulus auroguttatus*, but this is now considered a junior synonym due to designation of the lectotype of *F. auroguttatus* as neotype of *F. cingulatus* (Lazara and McEachran 2002).

Fundulus confluentus, Marsh Killifish (F/M).

Site: 14

Rare in Choctawhatchee Bay. This listing includes the nominal *Fundulus pulvereus*, which is often recognized as a distinct species. The apparent widespread intermediacy of that form with *F. confluentus* along the western panhandle of Florida suggests that these forms are conspecific (Hardy 1980, Relyea 1983; Boschung and Mayden 2004).

Fundulus escambiae, Russetfin Topminnow (F).

Sites: 23, 26, 34, 53, 59, 62, 64, 72, 74, 76-77, 81, 93, 106-107, 109-110, 112-113, 121, 125, 127-128, 131-133, 142-144, 150-151, 155-156, 158, 160, 166, 169, 172-174, 179-181, 185-187, 189, 195, 198, 203, 207, 208-211, 217, 220, 222, 276, 286, 301.

Occasional in tributaries of Holmes, Walton, and Jackson counties, Florida.

Fundulus grandis, Gulf Killifish (F/M).

Sites: 49

Rare, collected only in Black Creek, Walton County, Florida.

Fundulus olivaceus, Blackspotted Topminnow (F).

Sites: 19, 21, 23, 31, 62, 91, 96, 101, 108, 120, 130-131, 134, 136, 140, 166, 177, 179-181, 184-185, 190-193, 195, 198, 201-203, 206, 212, 216-217, 224, 226-229, 233-236, 242, 244-245, 248, 250, 253, 258, 261, 263, 265, 268, 271-272, 274, 277-281, 285, 288-289, 293-294, 296, 299-300, 303, 307-309, 311-312, 315-316, 318, 322, 324-326, 328-330, 333-334, 337, 340, 341, 343-347, 349, 351, 356-357, 359, 361-362, 364, 368-371, 373.

Generally distributed and common in tributaries of Pea, Whitewater, and Choctawhatchee rivers.

Fundulus similis, Longnose Killifish (M).

Sites: 49

Rare, found only in Black Creek, Walton County, Florida.

Leptolucania ommata, Pygmy Killifish (F).

Sites: 3, 22, 59, 125, 133, 144, 150, 156, 161

Sporadic in tributaries of Choctawhatchee Bay in Washington, Holmes, and Walton counties, Florida.

Lucania goodei, Bluefin Killifish (F).

Sites: 14, 96

Rare, found at a few spring sites adjacent to Choctawhatchee River, Walton County, Florida.

Lucania parva, Rainwater Killifish (F/M).

Sites: 29, 45, 74

Rare found only in Jolly Bay, Walton County, Florida.

Poeciliidae*Gambusia holbrooki*, Eastern Mosquitofish (F/M).

Sites: 1-4, 14, 21, 23, 26, 29-30, 34, 40, 44-45, 48, 50-54, 56-57, 59-63, 65, 69, 72, 73-77, 79-81, 83, 85, 87, 90-91, 93, 95-97, 100, 105-113, 121-122, 124-130, 132-134, 136, 140, 142-144, 147, 150, 156-158, 160, 161, 166, 169-170, 172-173, 179-187, 189, 192, 195, 198, 200-202, 205, 208-211, 217, 220-221, 224, 234-235, 238-240, 245, 247-248, 251, 254-255, 257, 262, 265, 270, 277, 280-281, 283, 287, 291, 293, 296-298, 304-306, 309, 312, 314, 316, 320, 323, 328-329, 333-334, 336, 342, 344, 349, 352, 355-357, 362, 367-370.

Generally distributed in tributaries of Pea, Whitewater, and Choctawhatchee rivers.

Heterandria formosa, Least Killifish (F).

Sites: 14, 34, 60

Sporadic in Choctawhatchee Bay tributaries, Walton County, Florida. There appears to be only a single record from the Choctawhatchee River drainage in Geneva County, Alabama. The species is sporadic in lower parts of the drainage in Walton County, Florida.

Poecilia latipinna, Sailfin Molly (F/M).

Sites: 30, 45, 51, 74, 154

Rare in Choctawhatchee Bay, Walton County, Florida.

Cyprinodontidae

Cyprinodon variegatus, Sheepshead Minnow (F/M).

Sites: 51, 74, 150

Rare in Holmes County, Florida.

Syngnathidae

Syngnathus louisianae, Chain Pipefish (M).

Site: 7

Rare in Choctawhatchee Bay, Okaloosa County, Florida.

Syngnathus scovelli, Gulf Pipefish (F/M).

Sites: 7, 25, 51

Sporadic in Choctawhatchee Bay, Okaloosa and Walton counties, Florida.

Moronidae

Morone saxatilis, Striped Bass (F/M). Sporadic in Choctawhatchee Bay.

Morone saxatilis × *M. chrysops*, Sunshine Bass (Striped Bass hybrid) (I, F).

Hybrids between White Bass (*Morone chrysops*), which is not native to Florida, and Striped Bass (*Morone saxatilis*) are widely propagated and stocked in Florida and elsewhere. Since these are frequently caught by fishermen, we list this hybrid cross.

Centrarchidae

Ambloplites ariommus, Shadow Bass (F).

Sites: 38, 50, 54, 57, 61-63, 65, 69, 74, 77, 103, 120, 138, 141, 166-167, 183, 203, 225, 230-231, 263, 310, 324

Occasional in tributaries of Pea River. Shadow Bass records confirm those from Mettee et al. (1996) and Boschung and Mayden (2004), which were primarily from the Choctawhatchee and the extreme lower portions of the Pea River.

Centrarchus macropterus, Flier (F).

Sites: 78, 87, 96-97, 100-101, 109-110, 112, 132, 141, 146, 150, 156, 174, 192, 201, 203-205, 209, 216, 222, 224, 236, 238, 248, 368, 372

Occasional in tributaries of lower Choctawhatchee River.

Elassoma evergladei, Everglades Pygmy Sunfish (F).

Sites: 3, 22, 59, 61-62, 72, 76, 89, 93, 97, 109, 112, 124-125, 128, 133, 142, 146, 156, 158, 161, 174, 207, 216, 321

Occasional in Washington, Walton, Okaloosa, and Holmes counties, Florida.

Elassoma gilberti, Gulf Coast Pygmy Sunfish (F).

Sites: 34, 53, 57, 74, 93, 121, 128, 132, 134, 139, 174, 207, 209-210, 220

Occasional in Walton, Washington, Holmes, and Jackson counties, Florida. Populations west of the Waccasassa River drainage represent the new species, which is characterized by the consistent presence of 4-4 preopercular pores (3-3 in *E. okefenokee* to the east) (Snelson et al. 2009). Both species occur allopatrically in the Suwannee drainage.

Elassoma zonatum, Banded Pygmy Sunfish (F).

Sites: 3, 8, 26, 29, 34, 48, 59, 62, 72, 87, 91, 93, 96-97, 100, 107, 110-111, 124, 129, 132-134, 140, 144, 151, 154, 156, 173, 182-184, 186-187, 195, 202-205, 207, 209-210, 216, 219-222, 227, 234, 236, 238, 247, 266, 276, 284, 315, 320-321, 336, 340, 353, 355

Occasional in headwater streams in lower Choctawhatchee River and Choctawhatchee Bay. Sporadic in upper Choctawhatchee River.

Enneacanthus gloriosus, Bluespotted Sunfish (F).

Sites: 8, 14, 22, 33-34, 87, 106, 132, 144, 151, 155-156, 159, 164

Sporadic in Walton, Washington, and Holmes counties, Florida.

Enneacanthus obesus, Banded Sunfish (F).

Sites: 112, 125, 128, 132-133, 158, 161, 174-175, 186

Rare, found at two sites in Choctawhatchee Bay tributaries, Washington and Holmes counties, Florida.

Lepomis auritus, Redbreast Sunfish (I, F).

Sites: 36, 107, 108, 120, 138, 230, 240, 372-373

Sporadic in Choctawhatchee River, Holmes Creek, Florida, and upper Pea River, Alabama.

Lepomis cyanellus, Green Sunfish (I, F).

Sites: 248, 253, 263, 270-271, 291, 295, 304, 313-314, 323, 345, 354, 360, 362, 364, 366, 368, 373

Occasional in tributaries of Pea and lower Choctawhatchee rivers.

Lepomis gulosus, Warmouth (F).

Sites: 5, 12, 14, 18, 26, 29, 33-34, 38, 50, 62, 64, 72, 75, 87, 97, 106-107, 109-110, 121, 128, 132, 140, 150, 155-156, 159, 167, 169, 174, 192-193, 198, 209, 216, 218, 226-227, 239, 244, 247, 248, 249, 253, 260, 265, 271, 282-284, 291, 293, 296, 303, 309, 322, 325, 328-330, 332, 333, 341-342, 344, 346, 356, 358, 360-362, 367-368, 372

Generally distributed and occasional in tributaries of Pea, Whitewater, and Choctawhatchee rivers.

Lepomis macrochirus, Bluegill (F).

Sites: 5, 12, 14, 18, 28-29, 33-34, 36, 38, 41, 47, 50, 74, 96, 107-108, 110, 120, 124, 127-128, 130, 132, 134, 136, 138, 142-144, 147, 150, 154-155, 157, 160, 162, 167, 169, 172-174, 177, 179-182, 186, 192-193, 195, 198, 200-204, 209, 216-217, 222, 224, 227, 230-231, 239-240, 248-251, 253, 256, 258, 260,

265, 271, 277, 282, 287, 291, 293, 295-296, 300, 304, 312-314, 316, 318, 322, 324-331, 340-346, 349, 351, 353, 356, 359-360, 362, 367-369

Generally distributed and abundant in tributaries of the Pea, Whitewater, and Choctawhatchee rivers.

Lepomis marginatus, Dollar Sunfish (F).

Sites: 1, 4, 26, 34, 47, 50, 63, 65, 72, 76, 87, 93, 96, 100, 106-107, 109-113, 125, 128, 130, 132-134, 145, 149, 151, 154, 156, 158, 169, 173, 174, 180, 186-187, 189, 193, 195, 198, 200-202, 207, 216-218, 242-244, 248, 255, 258, 276, 287, 299, 303, 319, 324, 348

Sporadic in tributaries of Pea and Whitewater rivers. Occasional in tributaries of the lower Choctawhatchee River.

Lepomis megalotis, Longear Sunfish (F).

Sites: 12, 36, 38, 40-41, 107-108, 120, 130, 134, 136, 152, 157, 179-181, 184, 192-193, 195, 197-199, 201-203, 206, 209, 217, 221, 225, 229-231, 239, 242, 244-245, 248-250, 253, 258, 263, 268, 270-271, 276, 280-282, 287, 291, 293, 295-296, 300-301, 305, 307, 309-310, 312-313, 316, 318-319, 321-326, 328, 334, 341, 343, 345-347, 353, 356-357, 359-361, 364, 370

Generally distributed and common in tributaries of Pea, Whitewater, and Choctawhatchee rivers. This species comprises several distinct and geographically allopatric morphotypes, which presumably represent different species or subspecies (Page and Burr 1991). The proper name for the Gulf Coast population in Florida and southeastern Alabama has yet to be determined.

Lepomis microlophus, Redear Sunfish (F).

Sites: 5, 12, 14, 18, 29, 33-34, 36, 144, 155-156, 179, 181, 193, 195, 198-199, 225, 230, 239, 250, 253, 260, 287, 305, 314, 318, 325, 346

Occasional in tributaries of lower Pea and lower Choctawhatchee rivers. Species historically divided into two distinct and probably allopatric forms, which were separable by complete or nearly complete breaks in three meristic features including: lateral line scale counts (40-47 in eastern form, 34-39 in western form); cheek scale rows (5 or 6 in Eastern form; 3 or 4 in western form); and caudal peduncle scale rows (19-22 in eastern form, 16-19 in western form). These data were from a relatively limited sampled (N = 79 from eastern form; only N = 24 from western form) from Bailey's (1938) unpublished doctoral dissertation. The name *microlophus* applies to the eastern form, while no name is available for the western form. The original geographic break between the two forms is uncertain. Bailey placed the break between the Mobile Bay basin and drainages to the west; however, more likely the break is between the Apalachicola basin and drainages to the west. Although numerous introductions have probably clouded the issue, it is possible that the populations originally came together and interacted in the same way as *Lepomis punctatus* and *L. miniatus*. Based on these uncertainties, the form and status of the Choctawhatchee population is not clear.

Lepomis miniatus × *L. punctatus*, Redspotted × Spotted Sunfish (F).

Sites: 12, 14, 18, 30, 33-34, 48, 50, 52, 54, 61-63, 69, 72, 77, 83, 100, 108, 127, 130, 134, 136, 147, 150, 155, 157, 159-160, 166, 180, 186, 192, 195, 201, 208-210, 221, 230, 236, 239, 244-245, 247-251, 255-256, 258, 263, 265, 268, 271, 281-282, 291-293, 295-296, 303-305, 309, 313, 319, 322, 324-326, 328, 330, 332, 334, 341, 344-345, 349, 351, 353, 355-361, 363-364, 366, 372

Generally distributed in tributaries of Pea, Whitewater, and Choctawhatchee rivers. Occasional in Florida tributaries in Walton, Okaloosa, Washington, and Holmes counties, and Geneva, Henry, Dale, and Pike counties Alabama. Populations of Spotted Sunfish west of the Apalachicola River are intermediate between *Lepomis punctatus* and *Lepomis miniatus*. Current practice is to consider these populations as hybrids (Warren 1992). Others consider *L. miniatus* to be a subspecies of *L. punctatus*, with populations in the Florida panhandle populations to be secondary intergrades (Gilbert 1992). Warren (1992) considers populations from the study area to be a part of a broad hybrid zone.

Micropterus punctulatus, Spotted Bass (F).

Sites: 36, 38, 114, 120, 134, 136, 138, 140, 150, 166, 179, 181, 193, 197-200, 206, 231-232, 236, 239, 250, 254, 271, 276, 285, 296, 301, 310, 312, 323, 341, 348

Sporadic or occasional in tributaries of Choctawhatchee and Whitewater rivers. It is uncertain whether populations in coastal drainages between the Apalachicola River and Mobile Bay basin are introduced or native (Swift et al. 1986) or if they represent an undescribed species (e.g., Choctaw Bass). If native, it would have entered the Choctawhatchee drainage from stream transfer with the Mobile Basin and should be referable as *M. henshalli*. Based on Baker et al.'s (2008) reported meristic data for populations included in the original analysis from the Choctawhatchee and Escambia drainages, they recognized that the species in the Choctawhatchee drainage is *M. punctulatus*; thus, without further DNA analysis evidence points toward introduction.

Micropterus salmoides, Largemouth Bass (F).

Sites: 5, 12, 14, 18, 25, 29, 30, 33, 34, 36, 41, 47-48, 50, 53, 58, 60, 62-63, 74-75, 82, 96, 107, 110, 112, 114, 120, 124, 129, 132, 134, 147, 151-152, 156-158, 160, 165, 168, 181, 186, 192-193, 195, 198, 203, 209, 215-216, 222, 230, 244, 260, 270, 276, 281-282, 284-285, 287, 291, 295, 296, 299, 310, 314, 325-326, 328, 343-345, 360-361

Occasional in tributaries of Pea and lower Choctawhatchee rivers. There is recently published genetic evidence to suggest that the peninsular Florida population of Largemouth Bass (currently *Micropterus salmoides floridanus*) should be considered a distinct species (Kassler et al. 2002). The population in the Florida panhandle intergrades between the Florida Bass and the Largemouth Bass. The situation is complicated by the numerous introductions of *M. s. floridanus* into areas populated by *Micropterus s. salmoides*.

Pomoxis annularis, White Crappie (I, F).

Sites: 150, 167, 231, 260

Sporadic in Choctawhatchee River, Holmes County, Florida and Dead River, Geneva County, Alabama.

Pomoxis nigromaculatus, Black Crappie (F).

Sites: 5, 18, 29, 33, 34, 114, 157, 193, 198, 203, 230, 232, 305, 331, 372

Generally distributed but rare throughout the drainage; consequently, few specimens have been collected.

Percidae

Ammocrypta bifascia, Florida Sand Darter (F).

Sites: 37, 135, 152, 170, 179, 181, 193-195, 197-200, 203, 212, 233, 240, 246, 261, 274, 276-277, 301-302, 307, 310, 312, 340

Occasional in the mainstem Choctawhatchee River, Holmes County, Florida and Geneva, Houston, and Dale counties, Alabama (Williams 1975).

Etheostoma colorosum, Coastal Darter (F).

Sites: 134, 136, 140, 142, 180-181, 183-185, 198, 203, 218, 226-227, 229, 233, 236, 242-243, 253-254, 268, 316, 325, 329, 337, 340, 351-352, 355-356

Sporadic in tributaries of the Pea River. Reported from the headwaters of the Pea, Double Bridges Creek, Choctawhatchee, and Little Choctawhatchee Rivers (Suttkus and Bailey 1993).

Etheostoma davisoni, Choctawhatchee Darter (F).

Sites: 11, 18, 23, 38, 41, 91, 111, 136, 149, 157, 160, 170, 183-184, 193, 195, 197-199, 202-203, 218, 222, 224-225, 227, 229, 233, 235, 237, 250, 268-270, 272, 276, 280, 289, 293, 297, 309-310, 312, 316, 320, 329-331, 334, 337, 340, 342-344, 349, 345-347, 359, 364

Occasional in upper Pea River tributaries. Sporadic in tributaries of lower Pea and Choctawhatchee rivers.

Etheostoma edwini, Brown Darter (F).

Sites: 1, 5, 23, 52-53, 56, 62, 64, 66, 70, 72, 77, 80, 84, 103, 110-111, 127, 134, 136, 140, 160, 179-184, 186-187, 192, 198, 201-203, 207-210, 216-219, 221-222, 224, 226-228, 235, 237, 241, 243, 255, 268, 270, 278, 280, 293, 301, 308, 310, 329, 336, 340, 349, 351-352, 355, 357, 361

Occasional in tributaries of upper Pea and Choctawhatchee rivers.

Etheostoma fusiforme barratti, Scalyhead Darter (F).

Sites: 8, 18, 29, 33-34, 62, 96, 110, 112, 123-124, 143-144, 146, 150-151, 155, 158, 160, 172, 220

Sporadic in tributaries of Choctawhatchee Bay, Walton, Jackson, and Holmes counties, Florida. Southern populations now referred to the subspecies *barratti* warrant reevaluation using DNA data.

Etheostoma okaloosae, Okaloosa Darter (F).

Sites: 61, 63, 65, 69, 74, 79, 85

Sporadic in tributaries of Choctawhatchee Bay, Okaloosa County, Florida. Limited to independent creek tributaries to Choctawhatchee Bay in Florida. Does not occur in the Choctawhatchee River drainage proper.

Etheostoma parvipinne, Goldstripe Darter (F).

Sites: 96, 225, 259, 266, 314, 360, 363

Sporadic in tributaries of Upper Pea River. Reported from Whitewater, Limestone, and Barnes creeks (Mettee et al. 1996).

Etheostoma proeliare, Cypress Darter (F).

Sites: 40, 107, 195

Sporadic in Choctawhatchee River, Walton and Holmes counties, Florida. All records from the Choctawhatchee drainage are from Florida where the species is extremely rare.

Etheostoma swaini, Gulf Darter (F).

Sites: 37, 40, 91, 103, 136, 145, 154, 160, 163-164, 170, 181, 184, 186-187, 193, 195, 197-198, 202-203, 210, 215-216, 220-221, 224, 233, 245, 253, 263, 276, 301, 312, 314, 322, 324, 328, 331, 336-337, 340, 345-346, 349, 351-352, 355-357, 361, 364

Occasional in tributaries of upper and lower Pea River and in tributaries of upper Choctawhatchee River.

Perca flavescens, Yellow Perch (I, F).

Since *Perca flavescens* is native to the Apalachicola River drainage and also to the Mobile Bay basin, the species was possibly native to intervening drainages; however, since there is only one record throughout these drainages (the Choctawhatchee drainage in Alabama), this raises the question of whether this one collection was based on an introduction or is a natural relict population (Swift et al. 1986).

Percina austroperca, Southern Logperch (F).

Sites: 18, 25, 41, 114, 149, 163, 170, 181, 195, 198-199

Sporadic in Choctawhatchee River, Walton, Washington, and Holmes counties, Florida.

Percina nigrofasciata, Blackbanded Darter (F).

Sites: 1, 2, 11, 21, 23, 38, 47-48, 50, 52, 56-57, 60-63, 65-67, 70-71, 74-75, 79, 84-86, 88, 90, 92, 104-105, 108, 111, 113, 115, 121-122, 124, 126-127, 129-130, 134, 136, 138, 140-141, 145, 149, 163, 169, 171, 177, 179-181, 183-187, 190, 192-193, 195, 198-200, 202, 212, 223-224, 227-228, 235, 239, 242-245, 249, 253-256, 258, 261-265, 268, 274, 277-278, 280-281, 285, 287, 289, 292-293, 296-297, 299, 305, 307, 309, 312-313, 318-320, 322, 326-331, 337, 345-346, 351, 355, 359, 364, 366

Generally distributed in tributaries of Pea, Whitewater, and lower Choctawhatchee rivers.

Carangidae

Chloroscombrus chrysurus, Atlantic Bumper (M).

Site: 55

Rare, known only from the Freeport channel marker, Walton County, Florida.

Gerreidae

Eucinostomus harengulus, Tidewater Mojarra (F/M).

Site: 11

Rare, found only in the Choctawhatchee River at the bunker, Walton County, Florida.

Sparidae

Lagodon rhomboides, Pinfish (M).

Site: 51

Rare, known only from Mullet Creek, Walton County, Florida.

Sciaenidae

Cynoscion nebulosus, Spotted Seatrout (M).

Sites: 43, 156

Rare at Rushing Cutoff, Walton County, Florida.

Leiostomus xanthurus, Spot (M).

Sites: 7, 28, 30, 49, 51

Sporadic in Choctawhatchee Bay, Okaloosa and Walton counties, Florida.

Micropogonias undulatus, Atlantic Croaker (M).

Site: 20

Rare in Choctawhatchee Bay, Walton County, Florida.

Sciaenops ocellatus, Red Drum (M).

Site: 20

Rare to occasionally found in Choctawhatchee Bay and Bear Creek, Walton County, Florida.

Eleotridae

Eleotris amblyopsis, Largescaled Spinycheek Sleeper (F/M).

Sites: 49, 51-52, 74-75

Rare, occurring in a tributary of Choctawhatchee Bay, Okaloosa County, Florida. We follow the nomenclature of Pezold and Cage (2002) for this species *Eleotris pisonis* and *E. abacurus* are names formerly applied to *E. amblyopsis*, but *E. pisonis* is now known to be confined to South America and *E. abacurus* is a junior synonym of *E. amblyopsis* (Pezold and Cage 2002).

Gobiidae

Gobionellus oceanicus, Highfin Goby (M).

Sites: 7, 47

Rare in Choctawhatchee Bay, Okaloosa County, Florida.

Gobiosoma bosc, Naked Goby (F/M).

Sites: 7, 47

Sporadic in Choctawhatchee Bay, Walton County, Florida.

Gobiosoma robustum, Code Goby (M).

Site: 7

Rare in Choctawhatchee Bay, known from Black Creek, Walton County, Florida.

Lophogobius cyprinoides, Crested Goby (F/M).

Site: 7

Rare in Choctawhatchee Bay, Florida.

Microgobius gulosus, Clown Goby (F/M).

Site: 7

Rare to Sporadic in Choctawhatchee Bay, Florida.

Paralichthyidae

Paralichthys albigutta, Gulf Flounder (M).

Site: 7

Sporadic in Choctawhatchee Bay, Okaloosa County, Florida.

Paralichthys lethostigma, Southern Flounder (F/M).

Sites: 14, 24

Sporadic in Choctawhatchee Bay, Walton County, Florida.

Achiridae

Trinectes maculatus, Hogchoker (F/M).

Sites: 18, 25, 29, 37, 40-41, 152, 157, 195, 199-200, 231, 250

Occasional in Choctawhatchee River mainstem sites from Walton, Washington, Holmes counties, Florida, to Geneva County, Alabama. Only juveniles enter fresh water, while adults spawn in marine habitats.