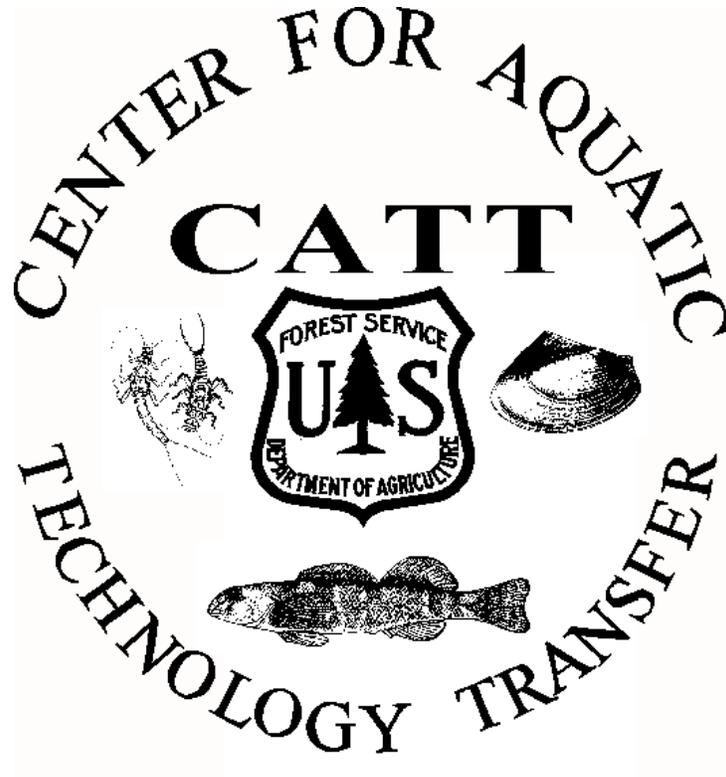


**Fish Inventory Results for Coastal Plain Streams on the Francis Marion
National Forest, South Carolina, 2010**



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Introduction

In 1993, the Francis Marion National Forest (FMNF) formed a cooperative agreement with the Belle W. Baruch Institute for Marine Biology and Coastal Research to perform baseline fish surveys of the Forest's freshwater coastal plain streams. The purpose of the survey was "to develop a snapshot of the forest fishes on the Francis Marion and to estimate species diversity and relative abundance" (Hansbarger and Dean 1994). Between February and July 1993, fish surveys were performed at 53 sites using a combination of backpack electrofishing and light traps. Water chemistry data (dissolved oxygen and pH) and qualitative habitat descriptions were also recorded.

In 2002, 2003, 2004 and 2006 the FMNF and the U. S. Forest Service Southern Research Station Center for Aquatic Technology Transfer (CATT) re-sampled many of the 53 selected sites sampled by Hansbarger and Dean (1994). Two additional sites (#54-55) were added in 2003 bringing the total number of sample sites to 55 (Table 1).

The sites sampled and the total number of sites visited varied from year to year, as did methods employed and attributes collected (Tables 2 - 4). In 1993, sites were sampled using 1-pass electrofishing because the goal was to determine fish species presence. In 2002-2006, more intensive 3-pass electrofishing was used to assess the diversity and relative abundance of fish species. Regular fish sampling was discontinued after the 2006 field season. In 2007 there was a drought that dewatered many of the streams (J. Riley, FMNF Fish Biologist, pers. comm.). In 2010 the FMNF wanted to examine the post drought fish community. To stay within the monitoring budget we adopted a strategy similar to that used in 1993 to describe fish species presence using 1-pass electrofishing (Table 3). This report summarizes the results of the 2010 inventories and presents results from inventories completed from 1993 to 2006. The 1993 to 2006 data are provided for context; however variability in methods among years confounds direct comparison of results.

Methods

Site Selection

All sample sites were located within the coastal plain region of the FMNF (Figure 1 and Table 1). Sites were located near road crossings to remain consistent with Harnsbarger and Dean (1994) and to facilitate access. All site numbers correspond to the site numbers used in Hansbarger and Dean (1994).

Fish Inventory

We performed single-pass electrofishing using a DC backpack electrofishing unit equipped with a net and two dipnetters (Table 3 and Table A1). Two backpack electrofishing units were used when the stream's average wetted width was greater than 4 m. No blocknets were used. Proceeding upstream, we

electrofished a reach length equal to 40-times the average wetted width. To determine this length we found 1-2 representative areas to measure fast and/or slow-water habitat units and determine the average wetted width by making several measurements (perpendicular to flow) and computing the average. If the average wetted width was less than or equal to 3.0 m, then the reach length was 120 m. If the average wetted width is greater than or equal to 7.5 m, then the reach length was 300 m. If the average wetted width was between 3.0 and 7.5 m, then reach length was 40-times the average wetted width; for example, if the average wetted width = 5 m then reach length = $5 \times 40 = 200$ m. Like the 1993-2006 inventories, the beginning of the reach was placed at least 100 m upstream of the road crossing when possible, otherwise the reach was located downstream of the crossing (Table A1). When possible, the reach began at the downstream end of a habitat unit (e.g. pool or riffle). The location of the start and end of each electrofishing reach was recorded with a GPS unit (Table 1). Fish collected within the sample reach were identified to species, counted, and released at the site (fish length and weight were not measured). Water temperature was measured and the presence or absence of crayfish was noted (Table A1).

Results

A total of 47 fish species were captured on the FMNF in the 1993 – 2010 inventories (Table 5). The species richness, or number of fish species captured in 1-pass at a single sample site ranged from zero to 15 (Table 6) with an average of 5.3 species per site ($SD = 3.4$, $n = 138$) among all inventory years. Species richness in 2010 was less than in previous sample years for the majority of sites (Table 6). Fish species captured in all inventory years (1993, 2002, 2003, 2004, 2006, and 2010) included American eel, pirate perch, mud sunfish, golden shiner, redbfin pickerel, eastern mosquitofish, yellow bullhead, and eastern mudminnow (Table 5). Excluding the 2004 inventories when only 4 sites were sampled, additional species captured in 1993, 2002, 2003, 2006, and 2010 are creek chubsucker, flier, warmouth, and banded pygmy sunfish (Table 5). The tadpole madtom was the only species not captured in the 2010 that was captured in the majority of the prior inventories (1993, 2003, 2004, and 2006; Table 5). No new species were found in 2010.

The number of fish (all species) captured per 100m^2 (only first electrofishing pass used in analysis for comparison between years) ranged from zero to 400 fish/ 100m^2 (Table 7) with an average of 17.9 fish/ 100m^2 ($SD = 38.7$, $n = 138$) among all inventory years. The high numbers of fish/ 100m^2 in 2002 at sites 21 and 36 are a result of dry stream with only a few isolated habitat units to sample resulting in a small sample area compared to the number of fish captured. Other high values for number of fish/ 100m^2 , such as at site 4 in 2003 and site 37 in 2010 are due to large numbers of eastern mosquitofish. In 2010, we found the number of fish/ 100m^2 to be lower for nearly all sites compared to previous years (Table 7). The exceptions were sites 37 and 54.

In 1993 and 2010 single-pass electrofishing was performed whereas in 2002, 2003, 2004, and 2006 three-pass depletion methods were used (Table 3). For the years that three-pass depletion was used we compared the number of species captured in pass-1 to the number of additional species picked-up in pass-2 and pass-3. We found that completing a 2nd and 3rd electrofishing pass captured an additional zero to 5 species at individual sample sites (Table 8). This resulted in an average gain of 1.3 species (n = 45).

The water temperatures occurring during the 2010 sampling were colder (for minimum, average, and maximum) than during all other sample years (Table 9). The average water temperature in 2010 (9° C) was 6° to 16° C colder than in prior sample years. Other water chemistry parameters (dissolved oxygen, pH, total hardness, and alkalinity) were measured in some sample years, but not in 2010 (Table 10).

Discussion

Species richness and fish abundance (fish/100m²) recorded in 2010 was noticeably less than in previous inventory years (Tables 6 and 7). The most likely cause for the decline is the severe drought that occurred in 2007, which dewatered numerous streams on the FMNF (J. Riley, FMNF Fish Biologist, pers. comm.). During drought conditions fish are forced either downstream or into isolated refuge pools as water recedes. When flow returns, the source of immigrants is typically from downstream, even if refuge pools were present (Adams and Warren 2005). The speed of fish recolonization depends on season and species-specific life histories; recolonization is slow during winter and more rapid in spring and early summer (Adams and Warren 2005). Adams and Warren (2005) found recolonization (in northern Mississippi streams) began with low abundance of primarily adult (at least age-1) fishes of many species (i.e. high richness) followed by reproduction and continued immigration, which increased abundance. Up to a year or more elapsed before fish assemblages returned to predrought compositions. In our inventories, completed nearly three years after the drought, we found that fish species richness and abundance were still less than during predrought sample years.

It is important to recognize that other factors, in addition to the drought, may have affected our electrofishing results. Fish assemblages and catch-per-unit-effort (CPUE) can display high spatial and temporal variability in warmwater streams (Adams et al. 2004, Meador and Matthews 1992). Adams et al. (2004) assert that the greatest change in fish assemblage composition occurs in spring to early summer, and winter can provide a time of relative stability because fish movement and recruitment are low. Bodine and Shoup (2010) and Borkholder and Parsons (2001) also found that CPUE declines when water temperatures go above or fall below certain thresholds. During our sampling in March of 2010, water temperatures were colder than in prior sampling years (Table 9), however given the scope of our sampling

efforts we are not able to discern whether the lower number of fish captured in 2010 is the result of the drought, colder water temperatures, temporal variability, or a combination of these factors.

In 2010, the use of single-pass electrofishing without block nets allowed us to complete sampling at 36 sites in only 7 days (Table 3). The choice of methods allowed us to maximize the sampling area given project time and cost constraints. Though more efficient in terms of number of sites sampled it may have decreased sampling efficiency within sites. Our assessment of the 2002, 2003, 2004, and 2006 three-pass depletion data found that the 2nd and 3rd pass increased species richness by as many as 5 additional species per site (average 1.3 species per site).

The large quantity of sample sites (55 total) makes it challenging to routinely monitor all the sites as well as return to the same sites previously sampled in other years. Many of the sites are very difficult or impossible to sample with a backpack electrofishing unit due to swamp-like habitat with no defined channel, having depths too deep for wading, or being so small that the stream lacks suitable fish habitat or a distinct channel. The locations for some of the 55 sites first sampled in 1993 were imprecisely documented, which has made returning to them difficult. Two of the sites, 41 and 42, we could not locate in 2010 and have not been sampled since 1993 presumably because they could not be found in others years either. At some sites, to the best of our knowledge, we were in the correct location based on the 1993 records. However, the size of the stream or lack of fish habitat we encountered did not match that noted by Hansbarger and Dean (1994), suggesting that either the site has changed over time, was incorrectly noted, or we sampled the wrong location. Coffman et al. (2003) noted that though habitat conditions were similar between 1993 and 2002 the amount of large wood encountered had changed. In 1993 some of the streams had large amounts of wood whereas in 2002 few pieces of large wood were encountered (Hansbarger and Dean, 1994; Coffman et al. 2003). These potential discrepancies in site location as well as sampling difficulties due to stream size, suggest that the selection of sites should be prioritized and sampling methods standardized if routine sampling and comparison between years is desired. The tradeoff between spatial coverage and sampling efficiency is always difficult to reconcile, but should be primarily determined by the FMNF's inventory and monitoring objectives.

Data Availability

The 1993, 2002, 2003, 2004, 2006, and 2010 electrofishing data are in a MS Access database, which is stored at the CATT and a copy has been provided to Jeanne Riley, FMNF Fish Biologist. We will support the migration of this data into the USFS database tool, Natural Resource Information System Aquatic Surveys (NRIS AqS), as needed. In the interim, we are working with the FMNF to develop custom queries and reports for the MS Access database.

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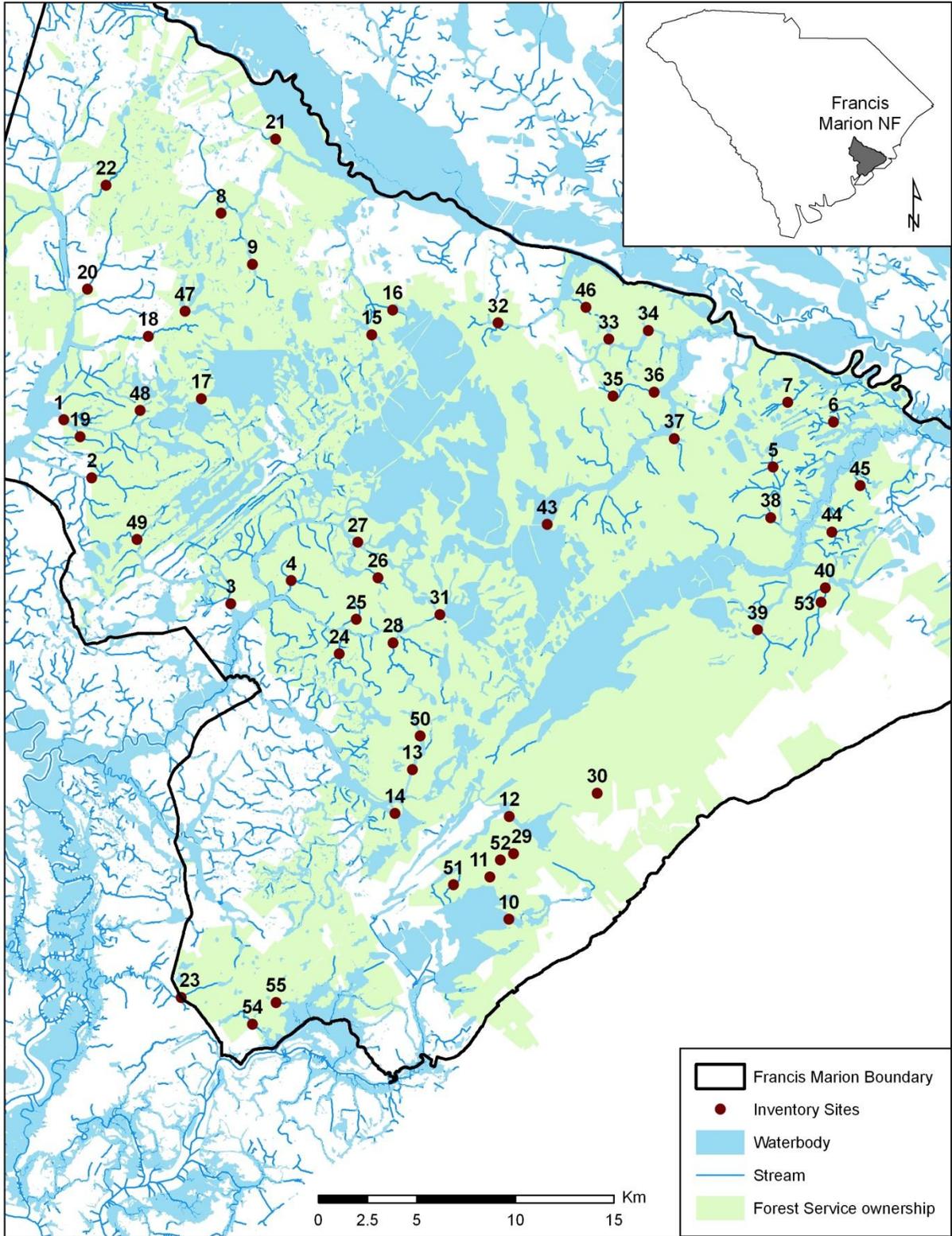


Figure 1. Location of sample sites on the Francis Marion National Forest, South Carolina.

Table 1. Location information for the 55 fish inventory sites.

Site #	Stream	Quad	Road	Coordinates (UTM NAD83)		
				Road Crossing	Efish Start (2010)	Efish End (2010)
1	Cane Gully	Cordsville	State road 97	17 S 601277 3676103	17 S 601307 3676061	17 S 601444 3675979
2	Bullhead Run	Cordsville	FS road 134	17 S 602701 3673171	17 S 602782 3673229	17 S 602890 3673260
3	Gough Creek	Bethera	Highway 402	17 S 609736 3666780	17 S 609726 3666887	17 S 609610 3666997
4	UT Fox Gully Branch	Bethera	FS road 159	17 S 612802 3667956	17 S 612817 3667805	17 S 612836 3667895
5	Cane Branch	Honey Hill	FS road 212	17 S 637255 3673712	17 S 637350 3673444	17 S 637299 3673528
6	Big Morgan Branch	Santee	FS road 212	17 S 640308 3675993	17 S 640250 3675949	17 S 640183 3675901
7	Red Bluff Creek	Honey Hill	FS road 204	17 S 637988 3676990	17 S 638135 3677084	17 S 638038 3677050
8	UT Meeting House	Bonneau SE	FS road 110-2	17 S 609245 3686575	17 S 609219 3686478	17 S 609160 3686362
9	Wedboo Swamp	Bonneau SE	US Highway 17A	17 S 610851 3683990	NA	NA
10	Wando River (swamp)	Sewee Bay	FS road 228	17 S 623845 3650786	NA	NA
11	Wando River (swamp)	Ocean Bay	FS road 228	17 S 622884 3652932	17 S 622679 3652711	17 S 622820 3652859
12	Cooter Creek	Ocean Bay	FS road 202	17 S 623866 3655994	17 S 623788 3656034	17 S 623760 3656133
13	Charleston Dam Creek	Ocean Bay	FS road 173	17 S 618956 3658380	17 S 619016 3658431	17 S 619071 3658615
14	Northampton Creek	Ocean Bay	FS road 170	17 S 618071 3656160	17 S 618139 3656091	17 S 618219 3656059
15	Persimmons Branch	Jamestown	FS road 119	17 S 616893 3680418	17 S 616901 3680313	17 S 616900 3680302
16	Savannah Creek	Jamestown	FS road 119	17 S 617956 3681674	NA	NA
17	Cane Gully Branch	Bethera	State highway 48	17 S 608250 3677172	17 S 608133 3677068	17 S 608207 3677136
18	Whiskinboo Creek	Bonneau SE	State highway 48	17 S 605551 3680344	NA	NA
19	UT Cane Gully	Cordsville	FS road 133	17 S 602108 3675253	NA	NA
20	Stewart Creek	Bonneau SW	State highway 40	17 S 602478 3682725	NA	NA
21	Beauford Branch	Alvin	FS road 152	17 S 612022 3690340	17 S 611981 3690406	17 S 611899 3690381
22	UT Wadboo Creek	Bonneau SW	State highway 40	17 S 603424 3687998	17 S 603503 3688013	17 S 603526 3688106
23	Pepper Gully	Cainhoy	State highway 98	17 S 607234 3646823	17 S 607331 3646866	17 S 607414 3646896
24	Muddy Creek	Huger	State highway 599	17 S 615235 3664237	17 S 615257 3664133	17 S 615255 3664031
25	UT Turkey Creek	Huger	FS road 166	17 S 616107 3665987	NA	NA
26	Kutz Creek	Bethera	FS road 167	17 S 617206 3668103	NA	NA
27	Nicholson Creek	Bethera	FS road 159	17 S 616183 3669894	17 S 616171 3669886	17 S 616213 3669839
28	Huitt Branch	Ocean Bay	FS road 174	17 S 617967 3664797	NA	NA

Table 1 continued. Location information for the 55 fish inventory sites.

Site #	Stream	Quad	Road	Road Crossing	Coordinates (UTM NAD83)	
					Efish Start (2010)	Efish End (2010)
29	UT Bell Creek	Ocean Bay	FS road 230A	17 S 624085 3654118	17 S 624164 3654188	17 S 624284 3654250
30	Steed Creek	Ocean Bay	FS road 217	17 S 628320 3657176	NA	NA
31	Turkey Creek	Shullerville	FS road 161	17 S 620353 3666233	17 S 620466 3666242	17 S 620547 3666355
32	Dutart Creek	Jamestown	FS road 271	17 S 623306 3681015	17 S 623241 3681046	17 S 623116 3681042
33	Gravel Run	Cedar Creek	FS road 269	17 S 628915 3680192	17 S 628952 3680107	17 S 628933 3680203
34	Gal Branch	Cedar Creek	FS road 151	17 S 630913 3680628	17 S 630874 3680609	17 S 630775 3680571
35	UT Echaw Creek	Honey Hill	FS road 151	17 S 629129 3677301	NA	NA
36	UT Echaw Creek	Honey Hill	FS road 153	17 S 631211 3677509	17 S 630924 3677548	17 S 630864 3677598
37	UT Echaw Creek	Honey Hill	FS road 204	17 S 632241 3675157	NA	NA
38	UT Cane Creek	Honey Hill	FS road 212	17 S 637124 3671139	17 S 637093 3671264	17 S 637074 3671384
39	Mechaw Creek	Awendaw	State highway 1335	17 S 636453 3665454	NA	NA
40	UT Mill Branch	Honey Hill	FS road 211E	17 S 639897 3667578	17 S 639902 3667588	17 S 639876 3667506
41	UT Huger Creek	Bethera	State highway 599	NA	NA	NA
42	UT Huitt Creek	Huger	State highway 599	NA	NA	NA
43	Echaw Creek	Shullerville	FS road 159	17 S 625789 3670800	17 S 625761 3670691	17 S 625658 3670581
44	UT Wambaw Creek	Santee	FS road 211	17 S 640236 3670420	17 S 640306 3670394	17 S 640395 3670403
45	UT Wambaw Creek	Santee	FS road 211	17 S 641667 3672765	17 S 641803 3672726	17 S 641891 3672675
46	Gravel Run	Jamestown	FS road 150	17 S 627760 3681817	NA	NA
47	Whiskinboo Creek	Bonneau SE	FS road 121	17 S 607428 3681602	NA	NA
48	UT Cane Gully	Bethera	FS road 136	17 S 605157 3676574	NA	17 S 605190 3676698
49	Alligator Creek	Bethera	FS road 130	17 S 604994 3670033	17 S 605058 3670007	17 S 604997 3670011
50	Charleston Dam Creek	Ocean Bay	State highway 133	17 S 619357 3660074	NA	NA
51	UT Wando Swamp	Ocean Bay	FS road 202A	17 S 621038 3652529	NA	NA
52	UT Bell Creek	Ocean Bay	FS road 230A	17 S 623410 3653788	17 S 623637 3653897	17 S 623533 3653844
53	UT Mill Branch	Honey Hill	State highway 45	17 S 639688 3666854	17 S 639678 3666973	17 S 639763 3667039
54	Fogarty Creek	Cainhoy	State highway 100	17 S 610844 3645468	17 S 610870 3645550	17 S 610915 3645623
55	Old House Creek	Cainhoy	State highway 100	17 S 612040 3646567	17 S 612004 3646675	17 S 611973 3646746

Table 2. Years that fish inventory sites were sampled (✓) or visited but not sampled (✕).

Site #	Stream	1993	2002	2003	2004	2006	2010
1	Cane Gully	✓	✕ ¹				✓
2	Bullhead Run	✓	✕ ¹	✓		✓	✓
3	Gough Creek	✓					✓
4	UT Fox Gully Branch	✓	✕ ¹	✓		✓	✓
5	Cane Branch	✓					✓
6	Big Morgan Branch	✓				✓	✓
7	Red Bluff Creek	✓		✓		✓	✓
8	UT Meeting House Branch	✓	✕ ¹			✓	✓
9	Wedboo Swamp	✓	✓				✕ ²
10	Wando River (swamp)	✓	✕ ²				✕ ²
11	Wando River (swamp)	✓	✓				✕ ³
12	Cooter Creek	✓	✓			✓	✓
13	Charleston Dam Creek	✓					✓
14	Northampton Creek	✓	✓	✓	✓	✓	✓
15	Persimmons Branch	✓	✕ ¹				✓
16	Savannah Creek	✓	✕ ¹				✕ ²
17	Cane Gully Branch	✓	✕ ¹				✓
18	Whiskinboo Creek	✓					✕ ²
19	UT Cane Gully	✓					✕ ⁴
20	Stewart Creek	✓					✕ ³
21	Beauford Branch	✓	✓	✓		✓	✓
22	UT Wadboo Creek	✓	✕ ¹	✓		✓	✓
23	Pepper Gully	✓				✓	✓
24	Muddy Creek	✓	✓			✓	✓
25	UT Turkey Creek	✓					✕ ⁴
26	Kutz Creek	✓	✕ ¹				✕ ²
27	Nicholson Creek	✓	✕ ¹				✓
28	Huitt Branch	✓	✕ ¹				✕ ²

¹ Stream dry

² Swamp

³ Stream too large/deep

⁴ Stream too small/no defined channel

⁵ Active prescribed fire

⁶ Unable to locate

Table 2 continued. Years that fish inventory sites were sampled (✓) or visited but not sampled (✗).

Site #	Stream	1993	2002	2003	2004	2006	2010
29	UT Bell Creek	✓					✓
30	Steed Creek	✓	✓		✓		✗ ³
31	Turkey Creek	✓	✗ ¹				✓
32	Dutart Creek	✓		✓		✓	✓
33	Gravel Run	✓					✓
34	Gal Branch	✓	✓	✓			✓
35	UT Echaw Creek	✓					✗ ⁴
36	UT Echaw Creek	✓	✓	✓		✓	✓
37	UT Echaw Creek	✓					✓
38	Ut Cane Creek	✓				✓	✓
39	Mechaw Creek	✓					✗ ⁵
40	UT Mill Branch	✓	✓	✓			✓
41	UT Huger Creek	✓					✗ ⁶
42	UT Huitt Creek	✓					✗ ⁶
43	Echaw Creek	✓					✓
44	UT Wambaw Creek	✓	✓	✓		✓	✓
45	UT Wambaw Creek	✓					✓
46	Gravel Run	✓		✓			✗ ⁴
47	Whiskinboo Creek	✓					✗ ²
48	UT Cane Gully	✓	✗ ¹			✓	✓
49	Alligator Creek	✓	✗ ¹				✓
50	Harleston Dam Creek	✓	✓	✓			✗ ²
51	UT Wando Swamp	✓	✗ ¹				✗ ⁴
52	UT Bell Creek	✓	✗ ¹				✓
53	UT Mill Branch	✓					✓
54	Fogarty Creek			✓	✓	✓	✓
55	Old House Creek			✓	✓	✓	✓

¹ Stream dry

² Swamp

³ Stream too large/deep

⁴ Stream too small/no defined channel

⁵ Active prescribed fire

⁶ Unable to locate

Table 3. Fish inventory dates, methods, number of sites, and fish species sampled.

Year	Date	# Sites Efish'd	# Species Captured	Sample Method	Sample Length	Block-nets
1993	2/23 - 6/21	53	35	1-pass	91.4 m (100 yards)	Yes
2002	6/27 - 7/14	12	20	3-pass	100 m ¹	Yes
2003	4/15 - 7/15	15	22	3-pass	100 m	Yes
2004	6/28 - 6/29	4	10	3-pass	100 m	Yes
2006	2/15 - 3/28	18	28	3-pass	100 m	Yes
2010	3/3 - 3/9	36	25	1-pass	40 times avg. wetted width ²	No

¹ Distance was less than 100 m at some dry streams that only had isolated habitat units to sample.

² 120 - 300 m sample length limits.

Table 4. Years that water chemistry parameters were collected.

Year	Water Temperature	Dissolved Oxygen	Total Hardness	pH	Alkalinity
1993	✓	✓		✓	
2002	✓			✓	
2003	✓			✓	
2004	✓	✓	✓	✓	✓
2006	✓	✓	✓	✓	✓
2010	✓				

Table 5. Fish species captured on the Francis Marion National Forest.

Species		1993	2002	2003	2004	2006	2010
Amblyopsidae							
	<i>Chologaster cornuta</i>		✓			✓	✓
Amiidae							
	<i>Amia calva</i>	✓		✓			✓
Anguillidae							
	<i>Anguilla rostrata</i>	✓	✓	✓	✓	✓	✓
Aphredoderidae							
	<i>Aphredoderus sayanus</i>	✓	✓	✓	✓	✓	✓
Atherinidae							
	<i>Labidesthes sicculus</i>	✓					
Catostomidae							
	<i>Erimyzon oblongus</i>	✓	✓	✓		✓	✓
	<i>Erimyzon sucetta</i>	✓				✓	
	<i>Minytrema melanops</i>	✓					
Centrarchidae							
	<i>Acantharchus pomotis</i>	✓	✓	✓	✓	✓	✓
	<i>Centrarchus macropterus</i>	✓	✓	✓		✓	✓
	<i>Enneacanthus chaetodon</i>	✓					
	<i>Enneacanthus gloriosus</i>	✓	✓	✓			
	<i>Enneacanthus obesus</i>	✓		✓		✓	✓
	<i>Lepomis auritus</i>	✓				✓	✓
	<i>Lepomis gibbosus</i>			✓		✓	
	<i>Lepomis gulosus</i>	✓	✓	✓		✓	✓
	<i>Lepomis macrochirus</i>	✓	✓	✓			
	<i>Lepomis marginatus</i>	✓	✓	✓			✓
	<i>Lepomis microlophus</i>	✓					
	<i>Lepomis punctatus</i>	✓		✓		✓	✓
	<i>Micropterus salmoides</i>	✓				✓	✓
Clupeidae							
	<i>Dorosoma cepedianum</i>	✓					
Cyprinidae							
	<i>Hybognathus regius</i>					✓	
	<i>Luxilus cornutus</i>	✓					
	<i>Notemigonus crysoleucas</i>	✓	✓	✓	✓	✓	✓
	<i>Notropis chalybaeus</i>	✓					
	<i>Notropis cummingsae</i>	✓					
	<i>Notropis maculatus</i>					✓	
	<i>Notropis petersoni</i>	✓	✓			✓	✓

Table 5 continued. Fish species captured on the Francis Marion National Forest.

Species		1993	2002	2003	2004	2006	2010
Elassomatidae							
	<i>Elassoma boehlkei</i>					✓	
	<i>Elassoma evergladei</i>					✓	✓
	<i>Elassoma zonatum</i>	✓	✓	✓		✓	✓
Esocidae							
	<i>Esox niger</i>	✓				✓	✓
	<i>Esox americanus</i>	✓	✓	✓	✓	✓	✓
Fundulidae							
	<i>Fundulus chrysotus</i>			✓	✓		
	<i>Fundulus diaphanus</i>					✓	
	<i>Fundulus heteroclitus</i>						✓
	<i>Fundulus lineolatus</i>	✓					
Ictaluridae							
	<i>Ameiurus nebulosus</i>	✓		✓			
	<i>Ameiurus natalis</i>	✓	✓	✓	✓	✓	✓
	<i>Noturus gyrinus</i>	✓		✓	✓	✓	
Percidae							
	<i>Etheostoma fusiforme</i>	✓	✓				
	<i>Etheostoma serrifer</i>					✓	✓
Poeciliidae							
	<i>Gambusia holbrooki</i>	✓	✓	✓	✓	✓	✓
	<i>Heterandria formosa</i>		✓				✓
Soleidae							
	<i>Trinectes maculatus</i>		✓				
Umbridae							
	<i>Umbra pygmaea</i>	✓	✓	✓	✓	✓	✓

Table 6. Number of fish species captured at the 55 inventory sites on the Francis Marion National Forest. Only the first electrofishing pass was used in analysis for comparison between years where 1 versus 3-pass methods were used. Blanks indicated a site was not sampled.

Site #	Stream	# of Fish Species Captured					2010
		1993	2002	2003	2004	2006	
1	Cane Gully	7					12
2	Bullhead Run	14		2		7	1
3	Gough Creek	9					5
4	UT Fox Gully Branch	10		3		3	1
5	Cane Branch	4					4
6	Big Morgan Branch	6				8	2
7	Red Bluff Creek	7		9		8	7
8	UT Meeting House Branch	9				5	6
9	Wedboo Swamp	6	7				
10	Wando River (swamp)	5					
11	Wando River (swamp)	10	0				
12	Cooter Creek	3	10			8	4
13	Charleston Dam Creek	10					6
14	Northampton Creek	10	3	6	8	9	1
15	Persimmons Branch	15					1
16	Savannah Creek	13					
17	Cane Gully Branch	7					1
18	Whiskinboo Creek	8					
19	UT Cane Gully	8					
20	Stewart Creek	7					
21	Beauford Branch	9	8	5		9	4
22	UT Wadboo Creek	6		4		4	3
23	Pepper Gully	7				7	6
24	Muddy Creek	7	1			6	1
25	UT Turkey Creek	9					
26	Kutz Creek	8					
27	Nicholson Creek	3					5
28	Huitt Branch	7					

Table 6 continued. Number of fish species captured at the 55 inventory sites on the Francis Marion National Forest. Only the first electrofishing pass was used in analysis for comparison between years where 1 versus 3-pass methods were used. Blanks indicated a site was not sampled.

Site #	Stream	# of Fish Species Captured					
		1993	2002	2003	2004	2006	2010
29	UT Bell Creek	11					2
30	Steed Creek	9	6		4		
31	Turkey Creek	4					5
32	Dutart Creek	3		1		8	0
33	Gravel Run	3					0
34	Gal Branch	9	0	5			2
35	UT Echaw Creek	8					
36	UT Echaw Creek	11	4	11		10	2
37	UT Echaw Creek	5					9
38	Ut Cane Creek	7				8	3
39	Mechaw Creek	13					
40	UT Mill Branch	8	4	3			2
41	UT Huger Creek	7					
42	UT Huitt Creek	5					
43	Echaw Creek	8					2
44	UT Wambaw Creek	7	2	5		12	0
45	UT Wambaw Creek	7					0
46	Gravel Run	8		2			
47	Whiskinboo Creek	5					
48	UT Cane Gully	2				1	0
49	Alligator Creek	4					0
50	Harleston Dam Creek	3	0	3			
51	UT Wando Swamp	3					
52	UT Bell Creek	2					1
53	UT Mill Branch	7					6
54	Fogarty Creek			3	1	5	1
55	Old House Creek			3	5	4	0
	Min	2	0	1	1	1	0
	Average	7.2	3.8	4.3	4.5	6.8	2.9
1-55	Max	15	10	11	8	12	12
	SD	3.0	3.4	2.7	2.9	2.7	2.9
	N	53	12	15	4	18	36

Table 7. Number of fish (all species) captured per 100m² at the 55 inventory sites by year on the Francis Marion National Forest. Only the first electrofishing pass was used in analysis for comparison between years where 1 versus 3-pass methods were used. Blanks indicated a site was not sampled.

Site #	Stream	# Fish per 100m ²					
		1993	2002	2003	2004	2006	2010
1	Cane Gully	9.3					3.8
2	Bullhead Run	21.3		8.6		5.3	0.2
3	Gough Creek	7.6					1.0
4	UT Fox Gully Branch	16.3		115.4		3.8	0.3
5	Cane Branch	6.6					2.6
6	Big Morgan Branch	42.8				23.0	1.3
7	Red Bluff Creek	28.7		11.8		21.1	6.2
8	UT Meeting House Branch	6.6				5.7	2.1
9	Wedboo Swamp	9.5	9.0				
10	Wando River (swamp)	8.8					
11	Wando River (swamp)	11.4	0.0				
12	Cooter Creek	4.6	15.9			64.4	0.9
13	Charleston Dam Creek	13.1					1.6
14	Northampton Creek	15.5	5.9	40.1	69.0	29.4	0.5
15	Persimmons Branch	12.8					0.2
16	Savannah Creek	13.3					
17	Cane Gully Branch	12.4					0.9
18	Whiskinboo Creek	10.3					
19	UT Cane Gully	14.7					
20	Stewart Creek	9.8					
21	Beauford Branch	19.0	400.0*	14.6		61.9	1.8
22	UT Wadboo Creek	10.4		4.6		4.3	1.1
23	Pepper Gully	12.2				26.5	9.5
24	Muddy Creek	18.1	40.0			19.0	1.1
25	UT Turkey Creek	19.0					
26	Kutz Creek	19.9					
27	Nicholson Creek	10.6					3.4
28	Huitt Branch	20.5					

*Dry stream with a few isolated habitat units (small area) to electrofish.

Table 7 continued. Number of fish (all species) captured per 100m² at the 55 inventory sites by year on the Francis Marion National Forest. Only the first electrofishing pass was used in analysis for comparison between years where 1 versus 3-pass methods were used. Blanks indicated a site was not sampled.

Site #	Stream	# Fish per 100m ²						
		1993	2002	2003	2004	2006	2010	
29	UT Bell Creek	18.1					1.2	
30	Steed Creek	17.3	6.6		10.7			
31	Turkey Creek	21.4					3.9	
32	Dutart Creek	11.4		1.3		12.0	0.0	
33	Gravel Run	16.0					0.0	
34	Gal Branch	18.4	0.0	39.2			0.5	
35	UT Echaw Creek	18.6						
36	UT Echaw Creek	21.6	75.3*	40.0		42.0	3.1	
37	UT Echaw Creek	9.2					151.5	
38	Ut Cane Creek	15.8				45.9	2.5	
39	Mechaw Creek	22.1						
40	UT Mill Branch	20.7	4.4	11.7			1.6	
41	UT Huger Creek	14.4						
42	UT Huitt Creek	7.8						
43	Echaw Creek	9.8					0.4	
44	UT Wambaw Creek	13.0	8.0	5.8		22.0	0.0	
45	UT Wambaw Creek	16.4					0.0	
46	Gravel Run	20.7		2.2				
47	Whiskinboo Creek	12.7						
48	UT Cane Gully	10.9				2.5	0.0	
49	Alligator Creek	11.5					0.0	
50	Harleston Dam Creek	10.0	0.0	11.7				
51	UT Wando Swamp	11.9						
52	UT Bell Creek	15.7					2.1	
53	UT Mill Branch	13.8					4.0	
54	Fogarty Creek			7.7	0.8	24.1	1.4	
55	Old House Creek			12.1	62.5	25.0	0.0	
		Min	4.6	0.0	1.3	0.8	2.5	0.0
		Average	14.8	47.1	21.8	35.8	24.3	5.9
1-55		Max	42.8	400.0	115.4	69.0	64.4	151.5
		SD	6.3	113.3	29.2	35.0	18.8	25.1
		N	53	12	15	4	18	36

*Dry stream with a few isolated habitat units (small area) to electrofish.

Table 8. Number of fish species captured in electrofishing pass-1, number captured in pass-2 but not pass-1, and number captured in pass-3 but not pass-1 or 2 at sites where 3-pass electrofishing methods were used. Blanks indicated a site was not sampled.

Site #	Stream	# Species Captured in Pass 1 and Additional Species in Subsequent Passes												
		2002			2003			2004			2006			
		Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass		
		1	2	3	1	2	3	1	2	3	1	2	3	
2	Bullhead Run				2	0	0					7	0	0
4	UT Fox Gully Branch				3	1	0					3	0	0
6	Big Morgan Branch											8	1	0
7	Red Bluff Creek				9	1	0					8	0	0
8	UT Meeting House Branch											5	2	0
9	Wedboo Swamp	7	1	3										
12	Cooter Creek	10	0	0								8	2	1
14	Northampton Creek	3	0	1	6	0	1	8	0	0		9	0	0
21	Beauford Branch	8	0	0	5	2	1					9	0	2
22	UT Wadboo Creek				4	0	0					4	0	1
23	Pepper Gully											7	2	0
24	Muddy Creek	1	0	0								6	0	1
30	Steed Creek	6	3	2										
32	Dutart Creek				1	1	0					8	0	0
34	Gal Branch				5	1	0							
36	UT Echaw Creek	4	0	0	11	2	0					10	2	0
38	Ut Cane Creek											8	1	2
40	UT Mill Branch	4	4	1	3	1	0							
44	UT Wambaw Creek	2	0	1	5	1	0					12	1	2
46	Gravel Run				2	1	1							
48	UT Cane Gully											1	0	0
50	Harleston Dam Creek				3	2	2							
54	Fogarty Creek				3	0	0	1	0	2		5	0	0
55	Old House Creek				3	0	0	5	0	0		4	1	0

Table 9. Water temperature (°C) during fish inventory.

Site #	Stream	Water Temperature (°C)					
		1993	2002	2003	2004	2006	2010
1	Cane Gully	13					9
2	Bullhead Run	13		16		13.5	6
3	Gough Creek	13.5					8
4	UT Fox Gully Branch	13		18		15	9
5	Cane Branch	12					5
6	Big Morgan Branch	12				18	6
7	Red Bluff Creek	12		16		11	8
8	UT Meeting House Branch	13				15	7
9	Wedboo Swamp	15	26				
10	Wando River (swamp)	16					
11	Wando River (swamp)	16	25				
12	Cooter Creek	16	26			18	12
13	Charleston Dam Creek	16					11
14	Northampton Creek	15	24	23	22	15	7
15	Persimmons Branch	15					10
16	Savannah Creek	16					
17	Cane Gully Branch	17					11
18	Whiskinboo Creek	17					
19	UT Cane Gully	16					
20	Stewart Creek	14					
21	Beauford Branch	15		18		15	7
22	UT Wadboo Creek	16		19		13	6
23	Pepper Gully	16				15	8
24	Muddy Creek	18				19	9
25	UT Turkey Creek	17					
26	Kutz Creek	16					
27	Nicholson Creek	17					10
28	Huitt Branch	17					

Table 9 continued. Water temperature (°C) during fish inventory.

Site #	Stream	Water Temperature (°C)					
		1993	2002	2003	2004	2006	2010
29	UT Bell Creek	18					11
30	Steed Creek	21	26		25		
31	Turkey Creek	19					11
32	Dutart Creek	18		19		13.5	10
33	Gravel Run	18					13
34	Gal Branch	19		18			10
35	UT Echaw Creek	20					
36	UT Echaw Creek	19		24		17	9
37	UT Echaw Creek	19					18
38	Ut Cane Creek	18				21.5	5
39	Mechaw Creek	20					
40	UT Mill Branch	21		20			7
41	UT Huger Creek	22					
42	UT Huitt Creek	22					
43	Echaw Creek	23					5
44	UT Wambaw Creek	21		16		12	9
45	UT Wambaw Creek	23					9
46	Gravel Run	23		19			
47	Whiskinboo Creek	23					
48	UT Cane Gully	24				13	6
49	Alligator Creek	24					8
50	Harleston Dam Creek	20		19			
51	UT Wando Swamp	23					
52	UT Bell Creek	24					16
53	UT Mill Branch	25					7
54	Fogarty Creek			16	23	9	6
55	Old House Creek			16	22.5	14	6
	Min	12	24	16	22	11	5
1-55	Average	18	25	18	23	15	9
	Max	25	26	24	25	22	18
	N	53	5	15	4	18	36

Table 10. Water chemistry parameters (dissolved oxygen, pH, total hardness, and alkalinity) collected during fish inventory.

Site #	Stream	1993		2002	2003	2004				2006			
		DO	pH	pH	pH	DO	pH	Hard- ness	Alka- linity	DO	pH	Hard- ness	Alka- linity
1	Cane Gully	6.1	6.2										
2	Bullhead Run	5.4	6.4		6.8					9	5.9	60	20
3	Gough Creek	6.4	6.3										
4	UT Fox Gully Branch	6.8	6.5		6.5					8	6.2	100	40
5	Cane Branch	7.1	6.1										
6	Big Morgan Branch	6.1	6.3							6	7.0	80	5
7	Red Bluff Creek	5.3	6.4		4.9					9	5.1	40	
8	UT Meeting House Branch	5.3	6.2							8	6.7	40	80
9	Wedboo Swamp	5.8	6.3	5.8									
10	Wando River (swamp)	6.9	6.3										
11	Wando River (swamp)	7.0	6.3	7.1									
12	Cooter Creek	7.1	6.1	6.9						7	6.7	100	100
13	Charleston Dam Creek	6.3	6.1										
14	Northampton Creek	6.2	6.3	7.6	6.9	3.0	7.9	180	220	8	6.3	100	25
15	Persimmons Branch	5.2	6.5										
16	Savannah Creek	5.4	6.2										
17	Cane Gully Branch	6.2	6.2										
18	Whiskinboo Creek	5.9	6.2										
19	UT Cane Gully	5.6	6.1										
20	Stewart Creek	5.3	6.2										
21	Beauford Branch	5.9	6.5		6.8					6	6.4	80	30
22	UT Wadboo Creek	6.0	6.3		6.8					7	6.6	120	40
23	Pepper Gully	6.1	6.2							6	7.0	120	30
24	Muddy Creek	5.6	6.4							7	5.9	40	10
25	UT Turkey Creek	5.5	6.4										
26	Kutz Creek	5.4	6.3										
27	Nicholson Creek	5.9	6.1										
28	Huitt Branch	5.8	6.1										

Table 10 continued. Water chemistry parameters (dissolved oxygen, pH, total hardness, and alkalinity) collected during fish inventory.

Site #	Stream	1993		2002	2003	2004				2006				
		DO	pH	pH	pH	DO	pH	Hard-ness	Alka-linity	DO	pH	Hard-ness	Alka-linity	
29	UT Bell Creek	6.0	6.6											
30	Steed Creek	5.7	6.2	7.9		2.0	7.5		160					
31	Turkey Creek	5.5	6.4											
32	Dutart Creek	5.3	6.2		6.2					10	5.7		40	
33	Gravel Run	5.3	6.4											
34	Gal Branch	5.6	6.3		7.0									
35	UT Echaw Creek	7.1	6.3											
36	UT Echaw Creek	5.7	6.3		7.8					8	6.9	40	60	
37	UT Echaw Creek	5.4	5.9											
38	Ut Cane Creek	5.8	6.2							7	7.0	120	100	
39	Mechaw Creek	5.1	6.4											
40	UT Mill Branch	5.3	6.2		5.9									
41	UT Huger Creek	5.0	6.2											
42	UT Huitt Creek	6.3	6.0											
43	Echaw Creek	5.6	6.1											
44	UT Wambaw Creek	5.9	6.0		6.5					8	6.1	40	20	
45	UT Wambaw Creek	5.4	6.1											
46	Gravel Run	5.9	6.3		6.4									
47	Whiskinboo Creek	5.8	6.1											
48	UT Cane Gully	5.2	6.3							5	6.3	20	80	
49	Alligator Creek	5.5	6.1											
50	Harleston Dam Creek	5.1	6.0		6.6									
51	UT Wando Swamp	5.5	6.1											
52	UT Bell Creek	5.8	6.3											
53	UT Mill Branch	5.1	6.2											
54	Fogarty Creek				7.2	6.0	7.0	160	120	10	7.5	120	45	
55	Old House Creek				6.3	3.0	8.0	140	120	11	6.1	30	10	
		Min	5	6	6	5	2	7	140	120	5	5	20	5
		Average	6	6	7	7	4	8	160	155	8	6	74	43
1-55		Max	7	7	8	8	6	8	180	220	11	8	120	100
		N	53	53	5	15	4	4	3	4	18	18	17	17

Appendix

Methods Summary for Previous Fish Inventories

1993 Inventory - Sampling methods used during the 1993 surveys are described in detail in Hansbarger and Dean (1994). The 1993 surveys consisted of a single-pass with an AC backpack electrofishing unit through a 100-yard reach. One electrode on the shocker was equipped with a net and a second individual also captured fish with a dipnet. Blocknets were placed at the upstream and downstream ends of the sample reach. At some sites the electrofishing was supplemented with light traps, although these did not catch any additional species of fish. Captured fish were counted, measured, and weighed. Habitat characteristics were described and dissolved oxygen and pH readings were recorded.

2002, 2003, 2004, and 2006 Inventories - In our inventories we returned as closely as possible to the locations sampled in 1993 based on location information presented in Hansbarger and Dean (1994). The selection and quantity of sites sampled varied between years (Table 2 and 3). The majority of sites were located at least 100 m upstream of road crossings. Occasionally this was not possible due to lack of water, swamp, or property boundaries. If possible, the end of the sample reach was instead placed 100 m downstream of the road crossing. In 2002, 2003, 2004, and 2006, three-pass depletion electrofishing was performed on a 100 m reach of stream using a pulsed DC backpack electrofishing unit equipped with a net and two dipnetters (Table 3). Block nets were placed at the upstream and downstream ends of the sampled reach. Fish from each pass were processed separately. The total length of the largest and smallest individual captured in each pass was recorded. The total number of each species captured was recorded and all individuals of a given species were pooled to obtain a batch weight for each pass. Water temperature and pH were measured in 2002 and 2003, as well as dissolved oxygen, total hardness, and alkalinity in 2004 and 2006 (Table 4).

Table A1. Summary of 2010 fish inventory parameters.

Site #	Stream	Efished	No. Fish Species Captured	No. Fish Captured	Crayfish Observed	Water Temp (°C)	No. Shockers	Efish Voltage	Sampled Up/Downstream from Xing	Sample Start Distance (m) from Xing	Avg. Wetted Width (m)	Sample Distance (m)	Sample Duration (sec)	Reason Not Sampled
1	Cane Gully	Yes	12	48	Yes	9	2	250v dc	Up	100	5.6	224	1,687	
2	Bullhead Run	Yes	1	1	Yes	6	1	300v dc	Up	100	3.9	156	849	
3	Gough Creek	Yes	5	11	Yes	8	2	300v dc	Up	100	5.2	207	2,316	
4	UT Fox Gully Branch	Yes	1	1		9	1	200v dc	Down	220	2.6	120	636	
5	Cane Branch	Yes	4	8		5	1	300v dc	Down	244	2.5	120	896	
6	Big Morgan Branch	Yes	2	3	Yes	6	1	350v dc	Up	100	1.9	120	1,195	
7	Red Bluff Creek	Yes	7	17		8	1	400v dc	Down	220	2.3	120	820	
8	UT Meeting House	Yes	6	26	Yes	7	2	300v dc	Up	100	5.5	221	1,816	
9	Wedboo Swamp	No												Swamp
10	Wando River (swamp)	No												Swamp
11	Wando River (swamp)	No									5.2			Too deep
12	Cooter Creek	Yes	4	7	Yes	12	2	250v dc	Up	100	4.5	180	2,296	
13	Charleston Dam Creek	Yes	6	24	Yes	11	2	300v dc	Up	100	6.0	241	1,366	
14	Northampton Creek	Yes	1	1	Yes	7	1	300v dc	Up	100	1.6	120	1,047	
15	Persimmons Branch	Yes	1	1	Yes	10	1	300v dc	Up	0	5.4	100	746	
16	Savannah Creek	No												Swamp
17	Cane Gully Branch	Yes	1	3	Yes	11	1	300v dc	Down	160	2.9	120	664	
18	Whiskinboo Creek	No												Swamp, Private
19	UT Cane Gully	No												Small, no defined channel
20	Stewart Creek	No												Too large & deep
21	Beauford Branch	Yes	4	8		7	1	250v dc	Up	100	3.3	132	1,432	
22	UT Wadboo Creek	Yes	3	5	Yes	6	1	250v dc	Up	100	3.4	137	1,304	
23	Pepper Gully	Yes	6	22	Yes	8	1	300v dc	Up	100	1.9	120	1,984	
24	Muddy Creek	Yes	1	3	Yes	9	1	250v dc	Up	100	2.2	120	711	
25	UT Turkey Creek	No												Small, no defined channel
26	Kutz Creek	No												Swamp
27	Nicholson Creek	Yes	5	29	Yes	10	2	300v dc	Up	0	7.1	120	734	
28	Huitt Branch	No												Swamp

Table A1 continued. Summary of 2010 fish inventory parameters.

Site #	Stream	Efished	No. Fish Species Captured	No. Fish Captured	Crayfish Observed	Water Temp (°C)	No. Shockers	Efish Voltage	Sampled Up/Downstream from Xing	Sample Start Distance (m) from Xing	Avg. Wetted Width (m)	Sample Distance (m)	Sample Duration (sec)	Reason Not Sampled
29	UT Bell Creek	Yes	2	6	Yes	11	1	400v dc	Up	100	3.7	137	624	
30	Steed Creek	No									5.5			Too large & deep
31	Turkey Creek	Yes	5	30	Yes	11	2	350v dc	Up	150	4.4	176	2,145	
32	Dutart Creek	Yes	0	0	Yes	10	1	300v dc	Up	100	3.9	156	1,102	
33	Gravel Run	Yes	0	0	No	13	1	250v dc	NA	NA	2.3	120	415	
34	Gal Branch	Yes	2	2	Yes	10	1	200v dc	Up	100	3.3	131	516	
35	UT Echaw Creek	No												Small, no defined channel
36	UT Echaw Creek	Yes	2	11		9	1	300v dc	Up	400	3.0	120	835	
37	UT Echaw Creek	Yes	9	298	Yes	18	1	150v dc	Up	0	2.0	100	674	
38	UT Cane Creek	Yes	3	6	Yes	5	1	250v dc	Up	100	2.0	120	595	
39	Mechaw Creek	No												Active prescribed fire
40	UT Mill Branch	Yes	2	4	Yes	7	1	250v dc	NA	NA	2.0	120	490	
41	UT Huger Creek	No												Could not locate
42	UT Huitt Creek	No												Could not locate
43	Echaw Creek	Yes	2	3	Yes	5	2	300v dc	Up	130	4.8	162	1,221	
44	UT Wambaw Creek	Yes	0	0	No	9	1	250v dc	Up	100	3.1	124	577	
45	UT Wambaw Creek	Yes	0	0	Yes	9	1	350v dc	Up	160	2.2	120	376	
46	Gravel Run	No									1.3			Small, no defined channel
47	Whiskinboo Creek	No												Swamp
48	UT Cane Gully	Yes	0	0	Yes	6	1	300v dc	Up	53	1.8	120	329	
49	Alligator Creek	Yes	0	0	No	8	1	300v dc	Down	70	1.6	70	203	
50	Charleston Dam Creek	No												Swamp
51	UT Wando Swamp	No												Small, no defined channel
52	UT Bell Creek	Yes	1	5	Yes	16	1	200v dc	Up	100	2.0	120	435	
53	UT Mill Branch	Yes	6	12	Yes	7	1	300v dc	Down	100	2.5	120	900	
54	Fogarty Creek	Yes	1	3		6	1	250v dc	Up	100	1.8	120	671	
55	Old House Creek	Yes	0	0	Yes	6	1	250v dc	Up	100	2.1	120	791	

Table A2. Number of fish captured at sites sampled in 2010 on the Francis Marion National Forest.

Stream	Cane Gully	Bullhead Run	Gough Creek	UT Fox Gully Branch	Cane Branch	Big Morgan Branch	Red Bluff Creek	UT Meeting House	Cooter Creek	Charleston Dam Creek	Northampton Creek	Persimmon's Branch	Cane Gully Branch	Beauford Branch	UT Wadboo Creek	Pepper Gully	Muddy Creek	Nicholson Creek	UT Bell Creek	Turkey Creek	Dutart Creek	Gravel Run	Gal Branch	UT Echaw Creek	UT Echaw Creek	UT Cane Creek	UT Mill Branch	Echaw Creek	UT Wambaw Creek	UT Wambaw Creek	UT Cane Gully	Alligator Creek	UT Bell Creek	UT Mill Branch	Fogarty Creek	Old House Creek	Total	Count of Sites		
Site #	1	2	3	4	5	6	7	8	12	13	14	15	17	21	22	23	24	27	29	31	32	33	34	36	37	38	40	43	44	45	48	49	52	53	54	55	Total	Count of Sites		
American eel	2		5						2			1	1		3	1								3	4													22	9	
Banded pygmy sunfish																									11														11	1
Banded sunfish	1									1															5									6				13	4	
Bowfin							1		3																													4	2	
Chain pickerel	3																																					3	1	
Coastal shiner																																	1					1	1	
Creek chubsucker	7						2	2									2									1								2				16	6	
Dollar sunfish																									4													4	1	
Eastern mosquitofish			2					1											2							237						5						247	5	
Eastern mudminnow					1																																	1	1	
Everglades pygmy sunfish										1										1																		2	2	
Flier	3	2		1		4	16	3						3	2		6		19								3											62	11	
Golden shiner	1							4							1	5		12																					23	5
Largemouth bass	1						1																																2	2
Least killifish																									24														24	1
Mud sunfish					1	3										3																		1				8	4	
Mummichog																																			3			3	1	
Pirate perch	5				3		2		1	3				3		2			4	2			1	3										1				30	12	
Redbreast sunfish	1		1													1																						3	3	
Redfin pickerel	12	1		1			2	2		9	1		3	1	2	8	3	8		5			1	8		1	1	2						1				72	20	
Sawcheek darter																									2														2	1
Spotted sunfish	6		1																						10														17	3
Swampfish						2																																	2	1
Wormouth																									2														2	1
Yellow bullhead	6				3		3		1	7										3																		24	7	
Total	48	1	11	1	8	3	17	26	7	24	1	1	3	8	5	22	3	29	6	30	0	0	2	11	298	6	4	3	0	0	0	0	0	5	12	3	0	598		