

**Table 1. Land use characteristics of subbasins in the Catawba River watershed, as described by the North Carolina Department of Environment and Natural Resources (2003) and the South Carolina Department of Health and Environmental Control (2004). Values represent percents of subbasin area in specified land use categories.**

State	Subbasin	Description	Water %	Cultivated crop %	Pasture %	Urban %	Forest %	Agriculture %	Scrub / shrub %	Barren %	Forested wetland %
NC	30	Includes Lake James	3	1	8	1	87				
NC	31	Includes Rhodhiss	1	1	10	3	85				
NC	32	Includes Hickory, Lookout Shoals, and Norman	9	3	31	3	54				
NC	33	Includes Mountain Island Lake	2	2	25	2	69				
NC	34	Drains to Lake Wylie	2	<1	13	32	52				
NC	35	Drains to Lake Wylie	<1	4	35	3	57				
NC	36	Drains to Lake Wylie	3	2	27	14	54				
NC	37	Drains to Lake Wylie	1	1	20	15	63				
NC	38	Drains to Fishing Creek	1	7	28	4	61				
SC	03050101-180	Includes Lake Wylie	11			3	63	12	9	1	
SC	03050101-190	Drains to Lake Wylie	4			3	59	20	13	1	
SC	03050103-010	Includes Great Falls-Dearborn and Cedar Creek reservoirs	8			11	69	7	5	1	
SC	03050103-020	Drains to Fishing Creek Reservoir	1			5	73	12	7	2	
SC	03050103-030	Drains to Fishing Creek Reservoir	1			<1	72	23	4	<1	
SC	03050103-040	Drains to Fishing Creek Reservoir	1			10	66	19	4	1	
SC	03050103-050	Drains to Great Falls-Dearborn Reservoir	1			6	52	24	15	2	
SC	03050103-060	Drains to Great Falls-Dearborn Reservoir	1			6	61	18	13	1	
SC	03050103-070	Drains to Great Falls-Dearborn Reservoir	1			<1	78	11	10	<1	
SC	03050103-080	Drains to Cedar Creek Reservoir	<1				89	8	3	1	<1
SC	03050103-090	Drains to Cedar Creek Reservoir	<1			2	80	10	8	<1	
SC	03050104-010	Includes Lake Wateree	6			1	86	2	4	<1	1
SC	03050104-020	Drains to Lake Wateree	1			1	87	7	5	<1	

**Table 2. Characteristics of Catawba-Wateree reservoirs (Duke Power 2003). Morphoedaphic index was calculated as mean summer surface specific conductance ( $\mu\text{mho/cm}$ ) (Table 3) divided by mean depth, m.**

Reservoir	Age, years	Surface area, $\text{km}^2$	Volume, $10^6\text{m}^3$	Mean depth, m	Maximum depth, m	Shoreline length, km	Shoreline development ratio	Storage ratio	Retention time, days	Morphoedaphic index
Lake James	85	26.4	356	13.5	43.0	244	13.4	0.589	215.1	4.3
Lake Rhodhiss	79	14.2	90	6.3	14.6	167	12.5	0.057	20.8	12.3
Lake Hickory	76	16.6	157	9.5	26.0	178	12.3	0.087	31.7	6.6
Lookout Shoals Lake	89	5.1	38.5	7.5	24.0	50	6.3	0.020	7.2	8.1
Lake Norman	41	131.6	1,348	10.2	33.5	952	23.4	0.581	212.0	6.1
Mountain Island Lake	81	13.1	71	5.4	17.8	139	10.8	0.030	10.8	11.2
Lake Wylie	100	53.1	372	7.0	28.4	527	20.4	0.102	37.4	17.7
Fishing Creek Reservoir	88	13.6	99	7.3	27.3	108	8.3	0.023	8.3	28.2
Great Falls-Dearborn Reservoir	97	1.8	3	1.4	23.0	26	5.4	0.001	0.2	155.0
Cedar Creek Reservoir	95	3.2	28	8.8	10.7	34	5.3	0.006	2.1	23.0
Lake Wateree	85	55.5	382	6.9	19.5	343	13.0	0.073	26.7	28.1

**Table 3. Water quality characteristics of Catawba-Wateree reservoirs as measured by Duke Power, 1993-2002, in top 5 meters of the water column. Values represent means of data collected mid-channel at water quality sampling locations in the vicinity of electrofishing areas. All parameters were measured in summer (July, August, September) with the exception of winter temperature (January, February). Reporting limits for nutrient concentrations were 0.005 mg P/L for total phosphorus and orthophosphate, 0.050 mg N/L for nitrate+nitrite and ammonia nitrogen, and 0.150 mg N/L for total Kjeldahl nitrogen. Total phosphorus data from 2001 and 2002 were not used due to an increase in reporting limits. TN:TP is the ratio by weight of total phosphorus concentration to total nitrogen concentration based on the mean summer surface concentrations listed here. Lake sections correspond to sites at which spring shoreline electrofishing was carried out.**

Lake	Section	Summer temperature °C	Winter temperature °C	Specific conductance umho/cm	Turbidity NTU	Chlorophyll mg/m <sup>3</sup>	Total phosphorus mg/L	Total nitrogen mg/L	TN:TP	Nitrate + nitrite nitrogen mg/L	Ammonia nitrogen mg/L	Ortho-phosphorus mg/L
James	Upper Catawba	27.3	6.8	82	4.4	15.3	0.020	0.388	19.4	0.053	0.050	0.005
James	Lower Catawba	27.2	6.1	50	1.5	2.8	0.012	0.240	20.0	0.051	0.054	0.005
James	Linville	27.8	7.7	43	0.8	3.2	0.010	0.201	20.1	0.051	0.050	0.006
Rhodhiss	Lakewide	25.9	6.3	78	4.3	15.5	0.035	0.408	11.7	0.099	0.065	0.011
Hickory	Uplake	26.0	6.8	65	7.1	17.8	0.036	0.410	11.4	0.081	0.076	0.015
Hickory	Downlake	27.6	6.6	59	3.7	13.3	0.021	0.350	16.7	0.105	0.073	0.006
Lookout Shoals	Lakewide	27.5	6.6	61	4.8	9.3	0.020	0.387	19.4	0.111	0.064	0.007
Norman	Marshall SS	28.5	9.3	63	3.0	8.7	0.012	0.323	26.9	0.102	0.058	0.006
Norman	Reference	28.2	8.9	62	2.7	7.1	0.009	0.277	30.8	0.080	0.054	0.005
Norman	McGuire NS	30.4	12.5	62	2.3	5.9	0.011	0.332	30.2	0.107	0.055	0.005
Mountain Island	Downlake	30.5	9.1	61	2.7	6.1	0.010	0.293	29.3	0.090	0.064	0.006
Wylie	Plant Allen	33.9	11.1	126	9.1	8.4	0.044	0.496	11.3	0.183	0.076	0.015
Wylie	Buster Boyd Br.	28.9	8.3	127	3.9	19.8	0.046	0.502	10.9	0.062	0.068	0.006
Wylie	Catawba NS	29.0	8.5	118	2.3	13.5	0.021	0.492	23.4	0.068	0.075	0.007
Fishing Creek	Lakewide	29.3	9.2	206	9.3	43.0	0.179	0.826	4.6	0.277	0.108	0.100
Great Falls	Lakewide	29.2	8.4	217	13.4	7.6	0.184	1.051	5.7	0.450	0.168	0.113
Cedar Creek	Lakewide	29.2	9.0	203	10.0	21.4	0.149	0.908	6.1	0.327	0.098	0.087
Wateree	Uplake	29.3	8.4	204	7.7	42.1	0.093	0.682	7.3	0.092	0.065	0.037
Wateree	Downlake	29.6	8.8	184	3.5	22.8	0.053	0.531	10.0	0.076	0.071	0.014

**Table 4. Harvest of fishes from Catawba-Wateree reservoirs, based on creel surveys conducted by the North Carolina Wildlife Resources Commission, the South Carolina Department of Natural Resources, and Duke Power. Data for Lakes James, Rhodhiss, Hickory, Norman, Mountain Island, and Wylie were obtained from Duke Power (2003) and Yow (2005). Data for Fishing Creek and Cedar Creek Reservoirs and Lake Wateree were obtained from Christie and Stroud (2004). Total hours, total numbers of fish harvested, and total weight of fish harvested are taken from references. To facilitate comparisons between reservoirs, these values are normalized for surface area by dividing by full-pond reservoir surface area to obtain fishing pressure in hr/ha/yr, total fish harvested in fish/ha/yr, and total weight harvested in kg/ha/yr.**

Lake	Years	Surface area at full pond, ha	Hours (total)	Numbers harvested (total)	Weight harvested, kg (total)	Pressure, hr/ha/yr	Harvest, numbers, fish/ha/yr	Harvest, biomass, kg/ha/yr
James	1997-1998	2640	231151	49511	(no data)	87.6	18.8	(no data)
Rhodhiss	1996-1997	1420	143728	42367	16130	101.2	29.8	11.4
Hickory	1997-1998	1660	291755	245106	132718	175.8	147.7	80.0
Norman	1994-1995	13160	634794	351098	90867	48.2	26.7	6.9
Mtn Island	1982-1983	1310	78245	53502	10985	59.7	40.8	8.4
Wylie	1993-1994	5310	604572	400867	100053.4	113.9	75.5	18.8
Wylie	1994-1995	5310	518567	408097	100531	97.7	76.9	18.9
Wylie	1995-1996	5310	412241	361356	78354.9	77.6	68.1	14.8
Fishing Creek	2000-2001	1360	103500	89701	28659	76.1	66.0	21.1
Fishing Creek	2001-2002	1360	112347	98652	22228	82.6	72.5	16.3
Cedar Creek	2000-2001	320	61211	56572	16540	191.3	176.8	51.7
Cedar Creek	2001-2002	320	62237	42453	10325	194.5	132.7	32.3
Wateree	2000-2001	5550	724667	735452	225767	130.6	132.5	40.7
Wateree	2001-2002	5550	753036	604518	213094	135.7	108.9	38.4

**Table 5. Composition of sport fish harvest on Catawba-Wateree reservoirs, based on creel surveys conducted by the North Carolina Wildlife Resources Commission, the South Carolina Department of Natural Resources, and Duke Power. Data for Lakes James, Rhodhiss, Hickory, Norman, Mountain Island, and Wylie were obtained from Duke Power (2003) and Yow (2005). Data for Fishing Creek and Cedar Creek Reservoirs and Lake Wateree were obtained from Christie and Stroud (2004).**

Lake	Years	Principal taxa by numbers	Principal taxa by weight
James	1997-1998	Sunfish (41%), crappie (19%), walleye (17%), black basses (15%), white bass (6%)	
Rhodhiss	1996-1997	Crappie (52%)	Striped bass (44%), crappie (17%), carp (12%), largemouth bass (10%)
Hickory	1997-1998	Crappie (30%), catfish (27%), sunfish (22%)	Striped bass (62%), catfish (15%), crappie (13%)
Norman Mountain Island	1994-1995	Crappie (72%), largemouth bass (7%), white bass (7%)	Crappie (49%), largemouth bass (13%), striped bass (13%), blue catfish (12%)
	1982-1983		Crappie (46%), catfish (17%), sunfish (13%), largemouth bass (11%)
Wylie	1993-1994	Black crappie (46%), largemouth bass (17%), bluegill (14%), white bass (10%)	Largemouth bass (41%), black crappie (34%), channel catfish (10%)
Wylie	1994-1995	Black crappie (51%), largemouth bass (12%), bluegill (11%)	Black crappie (36%), largemouth bass (29%), channel catfish (16%)
Wylie	1995-1996	Black crappie (47%), bluegill (15%), largemouth bass (13%)	Largemouth bass (36%), black crappie (30%), channel catfish (14%)
Fishing Creek	2000-2001	Black crappie (62%), bluegill (11%), channel catfish (10%), largemouth bass (8%)	Black crappie (57%), largemouth bass (15%), carp (14%), channel catfish (7%)
Fishing Creek	2001-2002	Black crappie (54%), bluegill (12%), white bass (9%), channel catfish (8%), largemouth bass (7%)	Black crappie (49%), largemouth bass (15%), channel catfish (12%), white bass (10%)
Cedar Creek	2000-2001	Black crappie (69%), bluegill (11%), channel catfish (10%)	Black crappie (77%), largemouth bass (9%), channel catfish (9%)
Cedar Creek	2001-2002	Black crappie (51%), bluegill (22%), channel catfish (13%)	Black crappie (49%), channel catfish (25%), largemouth bass (15%)
Wateree	2000-2001	Black crappie (47%), bluegill (16%), channel catfish (10%), white perch(10%)	Black crappie (47%), striped bass (22%), channel catfish (10%)
Wateree	2001-2002	Black crappie (33%), bluegill (18%), white perch (17%), channel catfish (9%)	Striped bass (32%), black crappie (31%), channel catfish (11%), white perch (7%), white catfish (6%)

**Table 6. Mean zooplankton densities as sampled in spring and summer on Catawba-Wateree reservoirs, 1993-1999. Samples consisted of net tows from a depth of 10 meters to lake surface (bottom to surface in reservoirs less than 10 m deep). Values in table are number of organisms per m<sup>3</sup>. Total Crustacea density is the sum of copepod and cladoceran density.**

Lake	Section	Spring total zooplankton	Spring Rotifera	Spring Copepoda	Spring Cladocera	Spring total Crustacea	Summer total zooplankton	Summer Rotifera	Summer Copepoda	Summer Cladocera	Summer total Crustacea
JAM	Upper Catawba										
JAM	Linville										
JAM	Lower Catawba	47963	22459	18349	7155	25504	42072	22939	13331	5801	19132
RHO	Lakewide	156688	123933	16981	15774	32755	95360	65495	23758	6108	29866
HIC	Uplake										
HIC	Downlake	121056	79538	30798	10719	41517	69177	56191	7615	5371	12986
LOO	Lakewide	49058	18199	18560	12298	30858	103176	74749	19772	8656	28428
NOR	Uplake										
NOR	Midlake	94554	46982	32042	15530	47572	62064	34917	15546	11602	27148
NOR	Downlake	44055	12843	23734	7477	31211	25465	7321	6798	11346	18144
MOU	Downlake	77086	18263	48122	10701	58823	77084	36366	28347	12371	40718
WYL	South Fork										
WYL	Midlake										
WYL	Downlake	130345	49584	65805	14957	80762	177358	124360	43099	9898	52997
FIS	Lakewide	110705	84594	17123	8988	26111	94232	76508	6273	11451	17724
GFL	Lakewide	64820	58668	3955	2197	6152	31634	21825	8174	1635	9809
CED	Lakewide	109797	65469	17890	26437	44327	56473	43362	5784	7327	13111
WAT	Uplake	244083	193173	34133	16777	50910	163735	121739	26884	15113	41997
WAT	Downlake	353413	245172	57309	50932	108241	84909	53742	20343	10824	31167

**Table 7. Description of shoreline habitat on Catawba-Wateree reservoirs, based on observations by Duke Power, July 1998. Values in table represent percent of total shoreline miles consisting of specified type of habitat. Values for Great Falls-Dearborn Reservoir and Cedar Creek Reservoir are combined. Definitions of habitat types are listed below.**

Lake	Percent developed	Percent sand	Percent cobble	Percent woody debris	Percent vegetated	Percent natural	Percent undeveloped (clay)	Total length of shoreline, miles
James	13.8	4.8	2.0	21.8	10.9	1.5	45.2	137.3
Rhodhiss	1.5	2.3	1.3	9.4	21.8	2.6	61.0	97.5
Hickory	51.5	1.3	0.8	2.4	16.5	0.0	27.4	106.2
Lookout Shoals	23.0	8.2	3.6	1.2	20.2	0.9	42.9	33.1
Norman	59.8	2.0	0.4	0.1	12.1	0.4	25.3	569.2
Mountain Island	11.3	4.3	1.3	0.8	33.8	2.5	46.2	79.4
Wylie	45.1	3.3	0.2	1.1	21.0	1.0	28.3	313.9
Fishing Creek	7.3	0.6	0.2	18.5	27.1	0.3	45.9	63.4
Great Falls + Cedar Creek	5.7	1.5	0.0	1.5	12.8	16.0	62.7	40.5
Wateree	40.5	3.6	0.4	0.0	31.0	0.7	23.8	212.5

**Vegetated areas/coves with stream confluence** - These types of shoreline exist where stable, emergent vegetation (minimum width of 5 feet) composes > 50% of the area for a minimum distance of 100 linear feet or where intermittent or permanent streams enter the upper ends of shallow coves (with or lacking vegetation).

**Stable sand, cobble, and woody debris** - These types of shoreline exist where the shallow-water substrate is composed primarily (> 50%) of stable sand or cobble for a distance of 100 linear feet or where woody debris composes a significant part of the shoreline cover. Woody debris is defined as 4 or more felled trees ( $\geq$  10 inches in diameter at chest height) extending from the shoreline into the water per 100 linear feet of shoreline.

**Clay** - These types of shoreline exist where the shallow-water substrate is composed mostly (> 50%) of clay for a distance of 100 linear feet.

**Natural areas** - These types of shoreline exist where the water is  $\leq$  3 feet deep up to a distance of 150 linear feet perpendicular to the shore when the lake is 3 feet below full pool elevation. These shallow flats have little or no vegetation.

**Developed shoreline** - These types of shoreline exist where some type of man-induced intrusion (e.g., pier, seawall, or riprap) has been placed within the project boundary (full pool elevation) of the lake for a minimum distance of 100 linear feet.

**Table 8. Composition of the littoral fish community by family. Values represent mean percent of total biomass based on electrofishing data, 1993-2002.**

Lake-section	Amiidae	Catostomidae	Centrarchidae	Clupeidae	Cyprinidae	Esocidae	Ictaluridae	Lepisosteidae	Moronidae	Percidae	Poeciliidae	Salmonidae
JAM-UC	0.0	29.4	23.6	5.6	31.5	0.5	2.9	0.0	0.3	6.2	0.0	0.0
JAM-LIN	0.0	1.8	67.9	0.3	21.5	0.0	0.7	0.0	0.0	7.7	0.0	0.0
JAM-LC	0.0	19.5	58.7	2.8	13.0	0.0	1.5	0.0	0.0	4.4	0.0	0.0
RHO	0.0	3.4	53.1	2.3	31.0	0.0	8.1	0.0	0.0	1.9	0.0	0.0
HIC-UL	0.3	0.4	49.8	8.9	23.4	0.0	13.2	0.0	0.2	3.8	0.0	0.0
HIC-DL	0.0	0.0	63.0	6.1	15.4	0.0	14.2	0.0	0.9	0.5	0.0	0.0
LOO	0.0	2.0	63.3	3.5	17.4	0.0	9.3	0.0	0.3	4.2	0.0	0.0
NOR-UL	0.0	1.1	55.2	2.6	36.3	0.0	4.1	0.0	0.6	0.2	0.0	0.0
NOR-ML	0.0	0.7	51.4	6.2	34.6	0.0	6.4	0.3	0.3	0.1	0.0	0.0
NOR-DL	0.3	0.9	59.6	8.0	27.2	0.0	1.5	1.3	1.0	0.3	0.0	0.0
MOU	0.0	0.5	50.7	3.3	40.5	0.0	3.4	0.7	0.1	0.9	0.0	0.0
WYL-SF	0.0	0.4	53.9	5.1	19.4	0.0	20.7	0.1	0.4	0.1	0.0	0.0
WYL-ML	0.0	0.2	63.3	8.0	5.8	0.0	22.3	0.0	0.0	0.3	0.0	0.0
WYL-DL	0.0	1.0	61.9	10.6	1.5	0.0	24.7	0.0	0.0	0.3	0.0	0.0
FIS	0.0	4.3	49.5	4.2	30.5	0.0	10.8	0.0	0.3	0.4	0.0	0.0
GFL	0.0	4.3	31.7	1.7	48.4	0.0	10.2	0.0	3.4	0.4	0.0	0.0
CED	0.1	2.8	57.7	1.3	33.8	0.0	3.5	0.0	0.4	0.3	0.0	0.0
WAT-UL	0.0	0.2	42.3	6.0	44.1	0.0	4.1	0.0	2.8	0.5	0.0	0.0
WAT-DL	0.0	0.0	39.8	10.1	42.0	0.0	6.1	0.0	1.8	0.2	0.0	0.0

**Table 9. Total littoral fish biomass and average percent which major taxa comprised of total biomass, based on spring shoreline electrofishing data for 19 electrofishing areas on 11 Catawba-Wateree reservoirs. Values represent means of all years sampled, 1993-2002. Percents were derived by adding mean percents of total biomass which individual species within the taxonomic group comprised.**

Lake	Area	Total fish biomass kg/km	Centrarchidae				Ictaluridae %	Cyprinidae %	Catostomidae %
			Crappie %	Total black basses %	Largemouth bass %	Sunfish %			
James	Upper Catawba arm	191.1	5.3	13.2	12.5	5.1	2.9	31.5	29.4
James	Lower Catawba arm	46.7	3.6	46.0	33.8	9.2	1.5	13.0	19.5
James	Linville arm	34.4	2.6	53.2	29.6	12.0	0.7	21.5	1.8
Rhodhiss	Lakewide	174.4	2.8	40.3	40.3	10.0	8.1	31.0	3.4
Hickory	Uplake	101.1	4.6	32.8	32.8	12.3	13.2	23.4	0.4
Hickory	Downlake	94.4	3.9	46.1	46.1	13.0	14.2	15.4	0.0
Lookout Shoals	Lakewide	43.1	1.5	45.6	45.6	16.1	9.3	17.4	2.0
Norman	Marshall Steam Station	37.5	1.2	39.0	39.0	15.0	4.1	36.3	1.1
Norman	Reference	31.7	3.8	33.5	33.4	14.1	6.4	34.6	0.7
Norman	McGuire Nuclear Station	20.3	1.0	35.7	34.6	22.9	1.5	27.2	0.9
Mountain Island	Downlake	45.8	0.3	33.1	33.1	17.4	3.4	40.5	0.5
Wylie	Plant Allen	132.0	3.0	38.1	38.1	12.8	20.7	19.4	0.4
Wylie	Buster Boyd Bridge area	122.8	4.7	46.7	46.7	11.9	22.3	5.8	0.2
Wylie	Catawba Nuclear Station	88.6	6.5	41.4	41.4	14.0	24.7	1.5	1.0
Fishing Creek	Lakewide	92.7	2.5	37.1	37.1	10.0	10.8	30.5	4.3
Great Falls	Lakewide	83.3	0.1	18.4	18.4	13.1	10.2	48.4	4.3
Cedar Creek	Lakewide	95.5	2.7	47.8	47.8	7.2	3.5	33.8	2.8
Wateree	Uplake	80.7	1.8	33.4	33.4	7.1	4.1	44.1	0.2
Wateree	Downlake	165.2	2.6	27.8	27.8	9.4	6.1	42.0	0.0
	<b>MEAN</b>	<b>88.5</b>	<b>2.9</b>	<b>37.3</b>	<b>35.3</b>	<b>12.2</b>	<b>8.8</b>	<b>27.2</b>	<b>3.8</b>

**Table 10. Limnetic forage fish densities (number/hectare) on Catawba-Wateree reservoirs as estimated by Duke Power, based on hydroacoustic sampling conducted 1997 through 2003. Lakes James, Norman, and Wylie were sampled in zones; a lakewide estimate is also listed, based on area-weighted means of zonal data. Hydroacoustic sampling was not carried out on Great Falls-Dearborn Reservoir or Cedar Creek Reservoir.**

LAKE	Forage fish density, number/hectare							MEAN
	1997	1998	1999	2000	2001	2002	2003	
<b>JAMES</b>								
Catawba River arm	1,509			7,251				<b>4,380</b>
Linville River arm	345			1,429				<b>887</b>
<b>Lakewide (area-weighted mean)</b>	<b>870</b>			<b>4,178</b>				<b>2,524</b>
<b>RHODHISS</b>								
<b>Lakewide</b>	<b>6,510</b>			<b>41,834</b>				<b>24,172</b>
<b>HICKORY</b>								
<b>Lakewide</b>	<b>30,438</b>			<b>11,173</b>				<b>20,806</b>
<b>LOOKOUT SHOALS</b>								
<b>Lakewide</b>	<b>8,655</b>			<b>5,377</b>				<b>7,016</b>
<b>NORMAN</b>								
Zone 1 (forebay and Ramsey Creek arm)	2,971	6,541	4,090	4,353	4,752	3,289	4,744	<b>4,391</b>
Zone 2 (Davidson Creek arm)	3,520	7,695	4,756	6,376	4,264	3,785	7,666	<b>5,437</b>
Zone 3 (Mountain Creek arm and downstream to Davidson Creek confluence)	5,793	9,815	5,189	5,104	6,241	7,679	4,847	<b>6,381</b>
Zone 4 (upstream of Mountain Creek confluence to Cornelius Creek confluence)	3,105	5,616	6,098	4,176	5,236	3,228	4,791	<b>4,607</b>
Zone 5 (Cornelius Creek confluence upstream to above Balls Creek confluence)	11,139	5,844	11,368	5,068	11,513	9,363	13,158	<b>9,636</b>
Zone 6 (upstream of Balls Creek confluence)	1,102	925	3,547	2,589	3,173		1,800	<b>2,189</b>
<b>Lakewide (area-weighted mean)</b>	<b>5,181</b>	<b>7,229</b>	<b>6,134</b>	<b>5,087</b>	<b>6,345</b>		<b>6,781</b>	<b>6,126</b>
<b>MOUNTAIN ISLAND</b>								
<b>Lakewide</b>	<b>998</b>		<b>4,413</b>	<b>2,530</b>	<b>4,554</b>	<b>3,752</b>	<b>2,366</b>	<b>3,102</b>
<b>WYLIE</b>								
Zone 1 (forebay and Allison Creek arm, upstream to below Crowders Ck confluence)	4,811			12,681				<b>8,746</b>
Zone 2 (main channel below Crowders Ck upstream to above Catawba Ck confluence)	5,069			7,904				<b>6,487</b>
Zone 3 (South Fork Catawba River arm)	1,692			3,112				<b>2,402</b>
Zone 4 (main channel upstream of Catawba Creek confluence)	2,218			5,889				<b>4,054</b>
<b>Lakewide (area-weighted mean)</b>	<b>3,036</b>			<b>6,336</b>				<b>4,686</b>
<b>FISHING CREEK</b>								
<b>Lakewide</b>	<b>3,163</b>			<b>32,606</b>				<b>17,885</b>
<b>WATEREE</b>								
<b>Lakewide</b>	<b>7,402</b>			<b>51,102</b>				<b>29,252</b>

**Table 11. Species composition (%) of forage fish collected by Duke Power using purse seine, late summer - early fall, 1993-2003.**

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Mean
<b>James</b>												
Gizzard shad	0.12%	100.00%	99.70%	100.00%	81.05%			23.35%				67.37%
Threadfin shad	99.88%	0.00%	0.30%	0.00%	18.95%			76.65%				32.63%
<b>Rhodhiss</b>												
Gizzard shad	0.92%	100.00%	64.66%	100.00%	72.24%			0.27%				56.35%
Threadfin shad	99.08%	0.00%	35.34%	0.00%	27.76%			99.73%				43.65%
<b>Hickory</b>												
Gizzard shad	0.07%	100.00%	91.92%	99.70%	1.56%			1.97%				49.20%
Threadfin shad	99.93%	0.00%	8.08%	0.30%	98.44%			98.03%				50.80%
<b>Lookout Shoals</b>												
Gizzard shad	0.01%	100.00%	100.00%	91.13%	0.01%			0.15%				48.55%
Threadfin shad	99.99%	0.00%	0.00%	8.87%	99.99%			99.85%				51.45%
<b>Norman</b>												
Gizzard shad	0.00%	0.06%	0.05%	0.00%	0.01%	0.05%	0.26%	0.22%	0.01%	0.00%	0.14%	0.07%
Threadfin shad	100.00%	99.94%	99.95%	100.00%	99.99%	99.95%	99.26%	87.40%	76.47%	74.96%	82.59%	92.77%
Alewife	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.48%	12.37%	23.52%	25.04%	17.27%	7.15%
<b>Mt. Island</b>												
Gizzard shad	2.27%	0.51%	18.07%	0.43%	0.00%		0.00%	0.00%	0.00%	0.00%	0.00%	2.13%
Threadfin shad	97.73%	99.49%	81.93%	99.57%	100.00%		99.48%	83.28%	89.29%	90.10%	16.92%	85.78%
Alewife	0.00%	0.00%	0.00%	0.00%	0.00%		0.52%	16.72%	10.71%	9.89%	83.09%	12.09%
<b>Wylie</b>												
Gizzard shad	0.01%	0.01%	0.00%	0.23%	0.01%		0.04%	0.00%	0.02%	0.00%	0.22%	0.05%
Threadfin shad	99.99%	99.99%	100.00%	99.77%	99.99%		99.96%	100.00%	99.96%	99.99%	99.10%	99.88%
Alewife	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.02%	0.01%	0.68%	0.07%
<b>Wateree</b>												
Gizzard shad	0.83%	20.00%	1.63%	10.06%	1.69%			0.06%				5.71%
Threadfin shad	99.17%	80.00%	98.37%	89.94%	98.31%			99.94%				94.29%

**Table 12. Standing stock (kg/ha) of fishes from Catawba River reservoirs, based on sampling of coves in summer with rotenone.**

Lake	Years sampled	Gizzard shad	Threadfin shad	Carp	Minnows	Suckers	Catfish	White bass	Sunfish	Largemouth bass	Crappie	Yellow perch	TOTAL
Lake James <sup>1,5</sup>	1983-1987	55.3	1.8	*	*	*	*	1.3	12.6	5.4	5.0	4.5	141.2
Lake Rhodhiss <sup>1</sup>	1983	60.0		16.3	0.8	2.5	28.0	0.2	50.9	14.6	1.9	12.1	187.3
Lake Hickory <sup>1</sup>	1983	46.4		5.4	0.4		16.8	3.7	57.9	22.2	1.2	12.9	166.3
Lookout Shoals Lake <sup>1</sup>	1981	53.2	0.1	53.8	0.02	45.9	59.3	0.4	53.6	14.3	7.5	13.4	301.4
Lake Norman	1982-1984	41.9	11.0	35.1	1.2	1.6	8.2	2.4	20.5	8.1	13.8	6.6	150.4
Mountain Island Lake <sup>1</sup>	1980	15.7	0.2	26.4	0.1	1.8	7.3		22.9	2.3	1.5	3.0	81.2
Lake Wylie <sup>3,4</sup>	1982-1984	140.8	19.0	10.8	0.4	32.4	77.8	2.5	81.1	22.6	0.4	3.9	391.6
Fishing Creek Reservoir	No Data												No Data
Great Falls-Dearbon Reservoir	No Data												No Data
Cedar Creek Reservoir	No Data												No Data
Lake Wateree <sup>2</sup>	1991-92, 2000	173.2	47.2	11.2	11.2	18.2	47.2	5.4	62.1	14.3	2.8	1.9	464.8

<sup>1</sup>Data from NC Wildlife Resources Commission

<sup>2</sup>Data from Christie and Stroud (2001), SC Department of Natural Resources

<sup>3</sup>Data from Nash and Hayes (1984), SC Department of Natural Resources

<sup>4</sup>Baker and McInerny (1985)

<sup>5</sup>Standing stock of walleye in Lake James was 2.8 kg/ha; standing stock of smallmouth bass in Lake James was 2.3 kg/ha.

\*Not reported

**Table 13. Fisheries studies specific to individual reservoirs on the Catawba River**

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**Table 14. North Carolina fish stocking summary by year, 1942-2002 (Besler et al. 2003).**

<b>Reservoir</b>	<b>Species</b>	<b>Year(s) stocked</b>
Lake James	Sunfish	1942, 1944, 1947, 1949, 1951, 1958, 1961, 1972
	Channel catfish	1966, 1972, 1979, 1982, 1992
	Largemouth bass	1941-44, 1946-47, 1949-50, 1952, 1957-58, 1995, 2000
	Redear sunfish	1997
	Smallmouth bass	1942, 1953-57, 1959, 1961-62, 1966, 1969-70, 1977-78, 1981-87
	Threadfin shad	1946, 1963, 1967, 1969, 1975, 1977, 1979, 1983-1987, 1990-92, 1995, 1997
	Steelhead trout	1976-83
	Walleye	1949-50, 1952, 1954, 1977-78, 1981-86, 1989-02
	White bass	1960-61
	Opossum shrimp	1970-71
Lake Rhodhiss	Sunfish	1948, 1952, 1956-58
	Largemouth bass	1949-51, 1953, 1956-58, 1960-63, 1969
	Smallmouth bass	1955, 1959, 1962, 1964
	Striped bass	1959, 1961-63, 1966-68, 1976, 1985, 1987-90, 1992-02
	Tiger muskellunge	1976-82
	Threadfin shad	1946, 1967-68, 1986-88, 1992, 1995, 1997
	White bass	1960-61
	Walleye	1950, 1954-55
Lake Hickory	Sunfish	1951, 1954, 1957, 1972
	Largemouth bass	1951-54, 1958, 1972
	Rainbow trout	1960
	Smallmouth bass	1953-55
	Striped bass	1953-56, 1959, 1975-77, 1981, 1984-90, 1992, 1994-95, 1997-2002
	Threadfin shad	1967-68, 1977, 1985-87, 1988, 1990, 1992, 1995, 1997
	Walleye	1954-55
White bass	1960-61	
Lookout Shoals Lake	Sunfish	1954
	Channel catfish	1981
	Hybrid catfish	1964
	Largemouth bass	1949-54, 1958, 1960-61, 1963-64, 1978
	Smallmouth bass	1950-51, 1956
	Striped bass	1955, 1976-77, 1981-82, 1984-85, 1987-90, 1992-95, 1997-2002
	Threadfin shad	1967-68, 1983-84, 1987-88, 1992, 1995
	Walleye	1954-55
White Bass	1954	
Lake Norman	Blue catfish	1966
	Sunfish	1949, 1963
	Channel catfish	1965-66
	Flathead catfish	1965-66
	Gizzard shad	1999
	Largemouth bass	1941-44, 1946-47, 1949, 1960-61, 1963, 1966, 1978
	Sauger	1962
	Smallmouth bass	1963-65
	Striped bass	1966-69, 1971-72, 1975-79, 1981-2002
	Threadfin shad	1963
Mountain Island Lake	Sunfish	1950-51, 1954, 1957, 1960-61, 1963
	Largemouth bass	1950-58, 1961
	Striped bass	1965, 1975-79, 1981-82, 1984, 1986-90, 1992-95, 1997, 1999-2002
	Walleye	1954
	White bass	1952, 1954, 1963
Lake Wylie	Threadfin shad	1961
	Walleye	1956
	White Bass	1952

**Table 15. North Carolina fish stocking rates (number/year) on Catawba River reservoirs, 1994-2003**

<b>Water body</b>	<b>Species</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Lake James	Largemouth bass		37					52			
	Redear				10,000						
	Threadfin shad		19,000		17,000						
	Walleye	183,603	62,943	71,529	430,043	530,000	30,000	30,000	30,000	41,400	30,000
Lake Rhodhiss	Striped bass	18,620	17,000		17,000	17,000	17,000	17,000	17,000	17,000	
	Threadfin shad		10,000		10,000						
Lake Hickory	Striped bass	23,000	20,500	0	20,500	20,500	20,500	20,500	20,500	20,500	20,500
Lookout Shoals Lake	Striped bass	6,720	6,500	0	9,250	6,500	6,500	6,500	6,500	6,500	6,500
Lake Norman	Striped bass	397,938	163,000	153,472	163,644	180,000	162,500	164,789	162,000	162,500	162,500
Mountain Island Lake	Striped bass	17,820	16,000		16,000	16,000	19,125	16,000	16,000	16,000	16,000

**Table 16. South Carolina fish stocking summary, 1987-2002.**

<b>Water body</b>	<b>Species</b>	<b>Years stocked</b>
Catawba River	Bluegill, redear	1990
	Largemouth bass	1987, 1988, 1991
	Channel catfish	1987
	Striped bass	1990, 1994, 1996, 2000, 2001, 2002
Fishing Creek Reservoir	Bluegill, redear	1993
Lake Wateree	Bluegill, redear	1991, 1992, 1993
	Largemouth bass	1994, 1995, 1997, 1998
	Striped bass	1990, 1992, 1994-1998, 2000-2002
Lake Wylie	Bluegill, redear	1992
	White bass	1998

**Table 17. Fish kill data for the Catawba River watershed in North Carolina (NCDENR 1997, 1998, 1999, 2000, 2001, 2002; personal communication Mark Hale (NCDENR) to Robert Siler)**

<b>Waterbody</b>	<b>Date</b>	<b>Location</b>	<b>County/State</b>	<b>Fish Species</b>	<b>Mortality</b>	<b>Cause/Comments</b>
Cane Creek	February, 1998	Cane Creek Park	Union, NC	Shad	2000	Winter die-offs
Cricket	August, 1989	Four Mile Creek	Mecklenburg, NC	LMB, sunfish	700	Chemical spill. Dursban applied to nearby shopping center and then washed into lake drainage.
Crowders Creek	July, 1988	Near Gastonia, NC	Gaston, NC	Not specified		Discharge of concentrated solids, i.e. sludge
Cub Creek	August, 1998		Burke, NC	Chubs, shiners, jumprock	500	Cause unknown
Duhart Creek	July, 1988	Near Cramerton, NC	Gaston, NC	Not specified	1500	Sewer line overflow
Freedom Park	May, 1997	Charlotte, NC	Mecklenburg, NC	Catfish, LMB, sunfish	800	MCDEP observed low DO levels in the lake previous to kill, leaking sewer line located nearby
Hickory	July, 2001	Near dam	Catawba, NC	Yellow perch, catfish	250	Cause unknown. Fish kill was limited mainly to yellow perch. No evidence of algal bloom was present at time of investigation.
Irwins Creek	July, 2001	Freedom Drive, Charlotte	Mecklenburg, NC	Sunfish, catfish, shad, shiners	300	Kill was caused by a spill of 500 gal of sodium hypochlorite. Spill site was flushed with 50,000 gallons of water which caused runoff into Irwin Creek.
Irwins Creek	August, 1989	West of I-74	Mecklenburg, NC	Not specified	50	Suspected soap discharge into stream by car wash facility
Little Sugar Creek	April, 2000	Below Sugar Crk. WWTP	Mecklenburg, NC	Sunfish, LMB, minnows	7500	Kill caused by spill of 400 gallons sodium hydroxide from Sugar Creek wastewater treatment plant near Charlotte.
Long Creek	June, 1993	Above Gastonia, NC	Gaston, NC	Sunfish, catfish	500	Cause unknown. Collected pesticides and herbicides.
Long Creek	April, 1997	NW of Charlotte at Hwy 27	Mecklenburg, NC	Sunfish, BKS, catfish, minnows, LMB, white bass	260	Gasoline tanker truck accident off Hwy 27; gasoline reported spilled into creek. NCWRC performed investigation.
Lyle Creek	April, 1997	Near Conover, NC	Catawba, NC	Catfish	170	Kill caused by 70-80 gallon spill of 15% sodium hypochlorite from Conover Northeast WWTP into creek
Mackey Creek	April, 1999	Below NC US-70 Bridge	McDowell, NC	Suckers	125	Fish kill occurred from Hwy 70 Bridge at Metals Industries discharge downstream to confluence with the Catawba River. Investigators suspected toxic event.
McAdenville	April, 1999		Gaston, NC	Catfish, shad	90	Investigators suspected typical spring shad kill

<b>Waterbody</b>	<b>Date</b>	<b>Location</b>	<b>County/State</b>	<b>Fish Species</b>	<b>Mortality</b>	<b>Cause/Comments</b>
						or a result of pond turnover. Heavy rain observed on day before kill.
McAlpine Creek	June, 1988		Mecklenburg, NC	Not specified	50	Sewage overflow from manhole
McAlpine Creek	March, 1991		Mecklenburg, NC	Shad, sunfish, catfish	100	Cause unknown. No signs of stress or disease were noted.
Norman	August, 1990	Marshall Steam Station	Catawba, NC	Striped Bass	150	Low DO near intake structure. Also found low pH readings from ash basin discharge.
North Fork Catawba River	August, 1999	Below Limekiln Creek	McDowell, NC	Shiners, suckers, stonerollers	100	Cause unknown. Discolored water reported below American Coats outfall on Limekiln Creek.
South Fork Catawba River	April, 2000	Near Cramerton, NC	Gaston, NC	Catfish, sunfish	200	Cause unknown. Cramerton WWTP reported sewage overflow upstream of kill site earlier in the week.
Wylie	September, 1989	Near Belmont, NC	Gaston, NC	Not specified		Low DO caused by wastewater treatment plant discharging high suspended solids.
Wylie	October, 1991	Downstream from Hwy 49 bridge	Mecklenburg, NC	Sunfish, catfish	100	Cause unknown. Small to medium catfish affected.

**Table 18. Fish kill data for the Catawba-Wateree watershed in South Carolina (Christie, R.W. 1992-1995, 1993-1994, 1995-1996, 2000-2001).**

Waterbody	Date	Location	County/State	Fish Species	Mortality	Cause/Comments
Beaver Dam Creek	July, 1993-July, 1994		Chester, SC	Not reported	Unknown	Suspected fisherman discarding catch
Cane Creek	July 17-18, 1995	Confluence of Bear Creek	Lancaster, SC	Resident pop.	2,336	Raw sewage leak, kill occurred on approx. 1 mi. segment of river.
Catawba River	Sept. 1973	0.5 mi. N. Fishing Creek Landing	York, Chester, Lancaster, SC	Resident pop.	192,298	Chemical spill
Catawba River	July, 1976-July, 1977		York, SC	Threadfin shad	Extensive	Winter die-offs
Catawba River	July, 1976-July, 1977		York, SC	Gizzard shad	2,000	Suspected toxic substance
Catawba River	July, 1984-July, 1985		York, SC	Catfish, sunfish	10-50	Unknown
Catawba River	July, 1984-July, 1985			Unknown	Unknown	Suspected wastewater discharge which exceeded permitted levels, remote area.
Catawba River	May 27-29, 1987	Rock Hill, SC	Lancaster, Chester, SC	Resident pop.	336,965	Unlawful release of sewage, kill occurred on approx. 23 mi. segment of river
Crowders Creek	July, 1977-July 1978		York, SC	None observed	Unknown	Unknown
Crowders Creek	July, 1988	NC/SC border	York	Resident pop.	28,792	Untreated wastewater, kill occurred on approx. 9.3 mi. segment of creek
Crowders Creek	July, 1988	Brandon Rd. Vicinity	York	Resident pop.	1,696	Untreated wastewater, kill occurred on approx. 3.9 mi. segment of creek
Fishing Creek	July, 1977-July, 1978		Chester, SC	None observed	Unknown	Unknown
Little Dutchman Creek	June 28-29, 1999	Rock Hill, SC	York, SC	Resident pop.	1,210	Raw sewage leak, kill occurred on approx. 1.5 mi. segment of river
Rocky Creek	May, 1994	Below SC Hwy 9 to Dearborn	Chester, SC	Resident pop.	4,326	Release of untreated wastewater from a City of Chester treatment plant
Steele Creek	June 15-16, 2001	Subdivison	York, SC	Resident pop.	1,209	Broken sewer line
Sugar Creek	July, 1977-July, 1978		York, SC	Catfish		Unknown
Unnamed Creek	July, 1987-July, 1988		York, SC	Sunfish	38	Turpentine spill
Wateree	July, 1976-July, 1977		Fairfield, SC	Threadfin, gizzard shad	Extensive	Winter die-offs
Wateree	July, 1978-July, 1979		Fairfield, SC	Threadfin shad	Extensive	Winter die-offs
Wateree	July, 1978-July, 1979		Fairfield, SC	Catfish	100	Possibly discarded fish catch
Wateree	July, 1979-July, 1980		Kershaw, SC	Sunfish, catfish, shad, crappie, LMB	252,500	Unknown
Wateree	July, 1980-July, 1981			Threadfin shad	Moderate	Winter die-offs
Wateree	July, 1980-July, 1981			Threadfin shad	110	Unknown
Wateree	January, 1982			Threadfin shad	Minor	Winter die-offs
Wateree	Oct-Nov, 1982	Wateree Dam	Kershaw, SC	Striped bass	500	Unknown causes, most significant mortality investigation during the year.
Wateree	July, 1984-July, 1985		SC	Threadfin shad	Not reported	Winter die-offs
Wateree	July, 1984-July, 1985		Kershaw, SC	Threadfin shad	>1,000	Winter die-offs
Wateree	Dec. 1994		SC	Catfish	Unknown	Unattended commercial fishermen's traps

<b>Waterbody</b>	<b>Date</b>	<b>Location</b>	<b>County/State</b>	<b>Fish Species</b>	<b>Mortality</b>	<b>Cause/Comments</b>
Wateree River	July, 1977-July 1978		Kershaw, SC	Threadfin, gizzard shad	Extensive	Winter die-offs
Wateree River	July, 1985-July, 1986		Kershaw, SC	Striped bass	200	Unknown
Wylie	July, 1975-July, 1976		York, SC	Threadfin shad	5,000	Winter die-offs
Wylie	July, 1976-July, 1977		York, SC	LMB	60-70	Handling at bass tournament
Wylie	July, 1976-July, 1977		York, SC	Threadfin shad	Extensive	Winter die-offs
Wylie	July, 1982-July, 1983	Big Allison Creek	York, SC	White catfish, Channel catfish	200	Unknown causes
Wylie	July, 1984-July, 1985		SC	Threadfin shad	Not reported	Winter die-offs
Wylie	July, 1984-July, 1985		York, SC	Threadfin shad	>1,000	Winter die-offs
Wylie	July, 1993-July, 1994		York, SC	Not reported	Not Reported	Suspected commercial fishing incident

**Table 19. Fish species observed in spring shoreline electrofishing studies carried out by Duke Power on Catawba-Wateree reservoirs, 1993-2002.**

Family	Scientific name	Common name
<b>Lepisosteidae</b>		
	<i>Lepisosteus osseus</i>	Longnose gar
<b>Amiidae</b>		
	<i>Amia calva</i>	Bowfin
<b>Clupeidae</b>		
	<i>Alosa pseudoharengus</i>	Alewife
	<i>Dorosoma cepedianum</i>	Gizzard shad
	<i>Dorosoma petenense</i>	Threadfin shad
<b>Salmonidae</b>		
	<i>Oncorhynchus mykiss</i>	Rainbow trout
<b>Esocidae</b>		
	<i>Esox masquinongy</i>	Muskellunge
<b>Cyprinidae</b>		
	<i>Carassius auratus</i>	Goldfish
	<i>Ctenopharyngodon idella</i>	Grass carp
	<i>Cyprinella chloristia</i>	Greenfin shiner
	<i>Cyprinella nivea</i>	Whitefin shiner
	<i>Cyprinus carpio</i>	Common carp
	<i>Hybognathus regius</i>	Eastern silvery minnow
	<i>Luxilus coccogenis</i>	Warpaint shiner
	<i>Notemigonus crysoleucas</i>	Golden shiner
	<i>Notropis hudsonius</i>	Spottail shiner
	<i>Notropis procne</i>	Swallowtail shiner
	<i>Pimephales promelas</i>	Fathead minnow
<b>Catostomidae</b>		
	<i>Carpiodes cyprinus</i>	Quillback
	<i>Catostomus commersoni</i>	White sucker
	<i>Erimyzon oblongus</i>	Creek chubsucker
	<i>Hypentelium nigricans</i>	Northern hog sucker
	<i>Ictiobus bubalus</i>	Smallmouth buffalo
	<i>Moxostoma macrolepidotum</i>	Shorthead redhorse
	<i>Moxostoma collapsum</i>	Notchlip redhorse
	<i>Scartomyzon rupiscartes</i>	Striped jumprock
	<i>Scartomyzon sp.</i>	Brassy jumprock
<b>Ictaluridae</b>		
	<i>Ameiurus brunneus</i>	Snail bullhead
	<i>Ameiurus catus</i>	White catfish
	<i>Ameiurus nebulosus</i>	Brown bullhead
	<i>Ameiurus platycephalus</i>	Flat bullhead
	<i>Ictalurus furcatus</i>	Blue catfish
	<i>Ictalurus punctatus</i>	Channel catfish
	<i>Pylodictis olivaris</i>	Flathead catfish
<b>Poeciliidae</b>		
	<i>Gambusia holbrooki</i>	Eastern mosquitofish
<b>Moronidae</b>		
	<i>Morone americana</i>	White perch
	<i>Morone chrysops</i>	White bass
	<i>Morone saxatilis</i>	Striped bass

**Table 19, page 2 of 2.**

<b>Family</b>	<b>Scientific name</b>	<b>Common name</b>
<b>Centrarchidae</b>		
	<i>Ambloplites rupestris</i>	Rock bass
	<i>Lepomis auritus</i>	Redbreast sunfish
	<i>Lepomis cyanellus</i>	Green sunfish
	<i>Lepomis gibbosus</i>	Pumpkinseed
	<i>Lepomis gulosus</i>	Warmouth
	<i>Lepomis macrochirus</i>	Bluegill
	<i>Lepomis microlophus</i>	Redear sunfish
	<i>Lepomis hybrid</i>	Hybrid sunfish
	<i>Micropterus dolomieu</i>	Smallmouth bass
	<i>Micropterus punctulatus</i>	Spotted bass
	<i>Micropterus salmoides</i>	Largemouth bass
	<i>Pomoxis annularis</i>	White crappie
	<i>Pomoxis nigromaculatus</i>	Black crappie
<b>Percidae</b>		
	<i>Etheostoma flabellare</i>	Fantail darter
	<i>Etheostoma fusiforme</i>	Swamp darter
	<i>Etheostoma olmstedi</i>	Tessellated darter
	<i>Perca flavescens</i>	Yellow perch
	<i>Percina crassa</i>	Piedmont darter
	<i>Sander vitreus</i>	Walleye

**Table 20. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake James, upper Catawba River arm, 1994-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % of total density	Mean biomass, kg/km	Mean % of total biomass
<b>Clupeidae</b>		<b>118.54</b>	<b>14.00</b>	<b>10.4992</b>	<b>5.55</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	66.88	9.38	10.2872	5.44
<i>Dorosoma petenense</i>	Threadfin shad	51.66	4.62	0.2120	0.11
<b>Esocidae</b>		<b>0.18</b>	<b>0.03</b>	<b>0.8326</b>	<b>0.46</b>
<i>Esox masquinongy</i>	Muskellunge	0.18	0.03	0.8326	0.46
<b>Cyprinidae</b>		<b>35.20</b>	<b>6.38</b>	<b>59.3948</b>	<b>31.52</b>
<i>Carassius auratus</i>	Goldfish	0.94	0.17	0.9630	0.51
<i>Cyprinella chloristia</i>	Greenfin shiner	1.14	0.15	0.0042	0.00
<i>Cyprinella nivea</i>	Whitefin shiner	0.40	0.07	0.4152	0.19
<i>Cyprinus carpio</i>	Common carp	18.34	3.40	57.6294	30.62
<i>Hybognathus regius</i>	Eastern silvery minnow	0.00	0.00	0.0000	0.00
<i>Luxilus coccogenis</i>	Warpaint shiner	0.06	0.01	0.0006	0.00
<i>Notemigonus crysoleucas</i>	Golden shiner	14.06	2.53	0.3816	0.20
<i>Notropis hudsonius</i>	Spottail shiner	0.20	0.04	0.0006	0.00
<i>Pimephales promelas</i>	Fathead minnow	0.06	0.01	0.0002	0.00
<b>Catostomidae</b>		<b>69.78</b>	<b>10.69</b>	<b>57.3856</b>	<b>29.43</b>
<i>Carpiodes cyprinus</i>	Quillback	0.60	0.12	0.7538	0.41
<i>Catostomus commersoni</i>	White sucker	0.14	0.03	0.0452	0.02
<i>Hypentelium nigricans</i>	Northern hog sucker	1.12	0.17	0.1060	0.06
<i>Moxostoma collapsum</i>	Notchlip redhorse	67.86	10.36	56.4796	28.94
<i>Scartomyzon sp.</i>	Brassy jumprock	0.06	0.01	0.0010	0.00
<b>Ictaluridae</b>		<b>4.26</b>	<b>0.77</b>	<b>5.6458</b>	<b>2.94</b>
<i>Ameiurus catus</i>	White catfish	2.14	0.41	1.7944	0.94
<i>Ameiurus nebulosus</i>	Brown bullhead	0.06	0.01	0.0092	0.01
<i>Ictalurus punctatus</i>	Channel catfish	1.86	0.31	3.7964	1.97
<i>Pylodictis olivaris</i>	Flathead catfish	0.20	0.04	0.0458	0.02
<b>Moronidae</b>		<b>1.32</b>	<b>0.22</b>	<b>0.5758</b>	<b>0.30</b>
<i>Morone chrysops</i>	White bass	1.32	0.22	0.5758	0.30
<b>Centrarchidae</b>		<b>374.72</b>	<b>57.09</b>	<b>44.9056</b>	<b>23.59</b>
<i>Lepomis auritus</i>	Redbreast sunfish	74.82	11.60	2.1056	1.09
<i>Lepomis gibbosus</i>	Pumpkinseed	28.14	4.32	1.2896	0.68
<i>Lepomis gulosus</i>	Warmouth	6.20	1.07	0.4564	0.24
<i>Lepomis macrochirus</i>	Bluegill	149.66	22.53	5.7496	2.99
<i>Lepomis microlophus</i>	Redear sunfish	5.28	0.66	0.2410	0.12
<i>Lepomis hybrid</i>	Hybrid sunfish	0.62	0.10	0.0262	0.01
<i>Micropterus dolomieu</i>	Smallmouth bass	5.48	0.94	1.3288	0.70
<i>Micropterus salmoides</i>	Largemouth bass	60.66	9.33	23.6642	12.47
<i>Pomoxis annularis</i>	White crappie	16.60	2.54	3.4196	1.79
<i>Pomoxis nigromaculatus</i>	Black crappie	27.26	4.00	6.6246	3.50
<b>Percidae</b>		<b>62.98</b>	<b>10.84</b>	<b>11.8300</b>	<b>6.18</b>
<i>Etheostoma olmstedi</i>	Tessellated darter	0.06	0.01	0.0000	0.00
<i>Perca flavescens</i>	Yellow perch	48.12	8.30	0.8400	0.44
<i>Sander vitreus</i>	Walleye	14.80	2.53	10.9900	5.74
	<b>TOTAL</b>	<b>666.98</b>	<b>100</b>	<b>191.0694</b>	<b>100</b>

**Table 21. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake James, lower Catawba River arm, 1994-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % of total density	Mean biomass, kg/km	Mean % of total biomass
<b>Clupeidae</b>		<b>7.14</b>	<b>3.18</b>	<b>1.5342</b>	<b>2.81</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	7.14	3.18	1.5342	2.81
<b>Salmonidae</b>		<b>0.06</b>	<b>0.03</b>	<b>0.0114</b>	<b>0.03</b>
<i>Oncorhynchus mykiss</i>	Rainbow trout	0.06	0.03	0.0114	0.03
<b>Cyprinidae</b>		<b>7.74</b>	<b>2.73</b>	<b>6.1064</b>	<b>13.04</b>
<i>Carassius auratus</i>	Goldfish	0.06	0.03	0.0116	0.02
<i>Cyprinella chloristia</i>	Greenfin shiner	4.94	1.57	0.0126	0.03
<i>Cyprinella nivea</i>	Whitefin shiner	0.20	0.11	0.0008	0.00
<i>Cyprinus carpio</i>	Common carp	1.34	0.55	6.0622	12.95
<i>Notemigonus crysoleucas</i>	Golden shiner	0.66	0.34	0.0184	0.04
<i>Notropis hudsonius</i>	Spottail shiner	0.54	0.13	0.0008	0.00
<b>Catostomidae</b>		<b>7.30</b>	<b>3.06</b>	<b>9.3956</b>	<b>19.51</b>
<i>Carpiodes cyprinus</i>	Quillback	0.32	0.15	0.4450	0.75
<i>Hypentelium nigricans</i>	Northern hog sucker	0.12	0.03	0.0262	0.06
<i>Moxostoma collapsum</i>	Notchlip redhorse	6.86	2.88	8.9244	18.70
<b>Ictaluridae</b>		<b>0.46</b>	<b>0.22</b>	<b>0.7408</b>	<b>1.49</b>
<i>Ameiurus catus</i>	White catfish	0.46	0.22	0.7408	1.49
<b>Centrarchidae</b>		<b>219.66</b>	<b>84.26</b>	<b>26.8218</b>	<b>58.71</b>
<i>Lepomis auritus</i>	Redbreast sunfish	82.28	29.68	1.8222	4.10
<i>Lepomis cyanellus</i>	Green sunfish	0.06	0.02	0.0014	0.00
<i>Lepomis gulosus</i>	Warmouth	2.74	1.18	0.0818	0.18
<i>Lepomis macrochirus</i>	Bluegill	70.06	25.79	2.2654	4.84
<i>Lepomis microlophus</i>	Redear sunfish	0.12	0.04	0.0138	0.03
<i>Lepomis hybrid</i>	Hybrid sunfish	0.06	0.03	0.0004	0.00
<i>Micropterus dolomieu</i>	Smallmouth bass	22.00	8.95	5.5170	12.24
<i>Micropterus salmoides</i>	Largemouth bass	36.94	16.23	15.5336	33.77
<i>Pomoxis annularis</i>	White crappie	0.06	0.01	0.0006	0.00
<i>Pomoxis nigromaculatus</i>	Black crappie	5.34	2.33	1.5856	3.55
<b>Percidae</b>		<b>17.78</b>	<b>6.49</b>	<b>2.1204</b>	<b>4.41</b>
<i>Perca flavescens</i>	Yellow perch	14.92	5.35	0.2254	0.52
<i>Sander vitreus</i>	Walleye	2.86	1.14	1.8950	3.89
	<b>TOTAL</b>	<b>260.14</b>	<b>100</b>	<b>46.7306</b>	<b>100</b>

**Table 22. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake James, Linville River arm, 1994-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % of total density	Mean biomass, kg/km	Mean % of total biomass
<b>Clupeidae</b>		<b>0.66</b>	<b>0.48</b>	<b>0.1822</b>	<b>0.34</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	0.66	0.48	0.1822	0.34
<b>Cyprinidae</b>		<b>7.50</b>	<b>3.39</b>	<b>10.4436</b>	<b>21.51</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	2.86	1.03	0.0082	0.05
<i>Cyprinus carpio</i>	Common carp	1.92	1.46	10.4324	21.45
<i>Notemigonus crysoleucas</i>	Golden shiner	0.12	0.06	0.0012	0.00
<i>Notropis hudsonius</i>	Spottail shiner	2.60	0.84	0.0018	0.01
<b>Catostomidae</b>		<b>0.80</b>	<b>0.52</b>	<b>0.7588</b>	<b>1.80</b>
<i>Carpionodes cyprinus</i>	Quillback	0.28	0.25	0.4630	0.94
<i>Hypentelium nigricans</i>	Northern hog sucker	0.26	0.18	0.0392	0.19
<i>Moxostoma collapsum</i>	Notchlip redhorse	0.20	0.07	0.2564	0.67
<i>Scartomyzon sp.</i>	Brassy jumprock	0.06	0.02	0.0002	0.00
<b>Ictaluridae</b>		<b>0.38</b>	<b>0.20</b>	<b>0.2894</b>	<b>0.73</b>
<i>Ameiurus catus</i>	White catfish	0.26	0.12	0.2842	0.70
<i>Ameiurus platycephalus</i>	Flat bullhead	0.12	0.08	0.0052	0.03
<b>Centrarchidae</b>		<b>163.60</b>	<b>89.15</b>	<b>20.3102</b>	<b>67.90</b>
<i>Ambloplites rupestris</i>	Rock bass	0.06	0.06	0.0166	0.10
<i>Lepomis auritus</i>	Redbreast sunfish	79.32	35.39	1.8788	7.71
<i>Lepomis gulosus</i>	Warmouth	3.54	2.05	0.2570	0.90
<i>Lepomis macrochirus</i>	Bluegill	33.12	19.49	0.9550	3.36
<i>Micropterus dolomieu</i>	Smallmouth bass	27.98	17.77	6.5158	23.64
<i>Micropterus salmoides</i>	Largemouth bass	16.92	12.17	9.6394	29.57
<i>Pomoxis annularis</i>	White crappie	0.14	0.15	0.0490	0.11
<i>Pomoxis nigromaculatus</i>	Black crappie	2.52	2.07	0.9986	2.51
<b>Percidae</b>		<b>10.76</b>	<b>6.25</b>	<b>2.4446</b>	<b>7.72</b>
<i>Perca flavescens</i>	Yellow perch	8.04	4.33	0.1544	0.45
<i>Sander vitreus</i>	Walleye	2.72	1.92	2.2902	7.27
	<b>TOTAL</b>	<b>183.70</b>	<b>100</b>	<b>34.4288</b>	<b>100</b>

**Table 23. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake Rhodhiss, 1994-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % of total density	Mean biomass, kg/km	Mean % of total biomass
<b>Clupeidae</b>		<b>29.08</b>	<b>3.15</b>	<b>4.1250</b>	<b>2.33</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	29.08	3.15	4.1250	2.33
<b>Salmonidae</b>		<b>0.06</b>	<b>0.01</b>	<b>0.0006</b>	<b>0.00</b>
<i>Oncorhynchus mykiss</i>	Rainbow trout	0.06	0.01	0.0006	0.00
<b>Cyprinidae</b>		<b>27.32</b>	<b>3.17</b>	<b>56.8748</b>	<b>31.03</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	5.94	0.73	0.0110	0.01
<i>Cyprinella nivea</i>	Whitefin shiner	1.26	0.14	0.0030	0.00
<i>Cyprinus carpio</i>	Common carp	13.12	1.44	56.7746	30.97
<i>Hybognathus regius</i>	Eastern silvery minnow	0.46	0.05	0.0008	0.00
<i>Notemigonus crysoleucas</i>	Golden shiner	1.14	0.13	0.0770	0.05
<i>Notropis hudsonius</i>	Spottail shiner	5.40	0.68	0.0084	0.00
<b>Catostomidae</b>		<b>5.58</b>	<b>0.64</b>	<b>5.9516</b>	<b>3.44</b>
<i>Carpiodes cyprinus</i>	Quillback	0.06	0.01	0.1214	0.06
<i>Catostomus commersoni</i>	White sucker	5.46	0.62	5.8294	3.38
<i>Scartomyzon sp.</i>	Brassy jumprock	0.06	0.01	0.0008	0.00
<b>Ictaluridae</b>		<b>26.90</b>	<b>2.92</b>	<b>14.1030</b>	<b>8.13</b>
<i>Ameiurus brunneus</i>	Snail bullhead	0.06	0.01	0.0002	0.00
<i>Ameiurus catus</i>	White catfish	24.86	2.67	13.7236	7.90
<i>Ameiurus nebulosus</i>	Brown bullhead	0.18	0.02	0.0388	0.03
<i>Ameiurus platycephalus</i>	Flat bullhead	1.74	0.21	0.1514	0.08
<i>Ictalurus punctatus</i>	Channel catfish	0.06	0.01	0.1890	0.12
<b>Moronidae</b>		<b>0.20</b>	<b>0.02</b>	<b>0.0350</b>	<b>0.02</b>
<i>Morone chrysops</i>	White bass	0.20	0.02	0.0350	0.02
<b>Centrarchidae</b>		<b>726.88</b>	<b>80.07</b>	<b>90.1494</b>	<b>53.14</b>
<i>Lepomis auritus</i>	Redbreast sunfish	198.00	21.27	5.1962	2.99
<i>Lepomis cyanellus</i>	Green sunfish	0.20	0.02	0.0002	0.00
<i>Lepomis gibbosus</i>	Pumpkinseed	9.86	1.07	0.3692	0.24
<i>Lepomis gulosus</i>	Warmouth	7.54	0.84	0.4158	0.25
<i>Lepomis macrochirus</i>	Bluegill	348.06	38.49	10.6902	6.12
<i>Lepomis microlophus</i>	Redear sunfish	4.60	0.54	0.6730	0.39
<i>Lepomis hybrid</i>	Hybrid sunfish	1.14	0.12	0.0564	0.03
<i>Micropterus salmoides</i>	Largemouth bass	139.18	15.72	68.2464	40.29
<i>Pomoxis annularis</i>	White crappie	9.44	1.05	1.9970	1.35
<i>Pomoxis nigromaculatus</i>	Black crappie	8.86	0.95	2.5050	1.48
<b>Percidae</b>		<b>87.38</b>	<b>10.05</b>	<b>3.1530</b>	<b>1.92</b>
<i>Etheostoma olmstedi</i>	Tessellated darter	0.06	0.01	0.0002	0.00
<i>Perca flavescens</i>	Yellow perch	87.32	10.04	3.1528	1.92
<b>TOTAL</b>		<b>903.40</b>	<b>100</b>	<b>174.3924</b>	<b>100</b>

**Table 24. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake Hickory, upper lake, 1994-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % of total density	Mean biomass, kg/km	Mean % of total biomass
<b>Amiidae</b>					
<i>Amia calva</i>	Bowfin	0.14	0.02	0.2608	0.25
<b>Clupeidae</b>					
<i>Dorosoma cepedianum</i>	Gizzard shad	59.02	11	9.1826	8.94
<b>Cyprinidae</b>					
<i>Cyprinella chloristia</i>	Greenfin shiner	1.2	0.25	0.0026	0
<i>Cyprinella nivea</i>	Whitefin shiner	0.26	0.07	0.0002	0
<i>Cyprinus carpio</i>	Common carp	3.6	0.7	25.7008	23.4
<i>Notemigonus crysoleucas</i>	Golden shiner	0.52	0.13	0.0396	0.04
<b>Catostomidae</b>					
<i>Carpionodes cyprinus</i>	Quillback	0.06	0.01	0.1026	0.07
<i>Catostomus commersoni</i>	White sucker	0.12	0.02	0.234	0.31
<i>Scartomyzon rupiscartes</i>	Striped jumprock	0.06	0.01	0.0008	0
<b>Ictaluridae</b>					
<i>Ameiurus brunneus</i>	Snail bullhead	3.34	0.59	0.3256	0.37
<i>Ameiurus catus</i>	White catfish	27.04	4.21	12.0924	11.02
<i>Ameiurus nebulosus</i>	Brown bullhead	1.06	0.18	0.2736	0.29
<i>Ameiurus platycephalus</i>	Flat bullhead	1.4	0.23	0.175	0.2
<i>Ictalurus punctatus</i>	Channel catfish	0.92	0.13	1.451	1.31
<b>Moronidae</b>					
<i>Morone chrysops</i>	White bass	0.32	0.07	0.1568	0.15
<i>Morone saxatilis</i>	Striped bass	0.06	0.02	0.0594	0.07
<b>Centrarchidae</b>					
<i>Ambloplites rupestris</i>	Rock bass	0	0	0	0
<i>Lepomis auritus</i>	Redbreast sunfish	108.06	18.79	3.3682	3.47
<i>Lepomis cyanellus</i>	Green sunfish	0.06	0.01	0.003	0
<i>Lepomis gibbosus</i>	Pumpkinseed	9.94	1.86	0.3564	0.34
<i>Lepomis gulosus</i>	Warmouth	4.4	0.81	0.223	0.22
<i>Lepomis macrochirus</i>	Bluegill	180.6	31.29	6.8614	7.53
<i>Lepomis microlophus</i>	Redear sunfish	3	0.62	0.5278	0.7
<i>Lepomis hybrid</i>	Hybrid sunfish	0.94	0.16	0.0624	0.06
<i>Micropterus salmoides</i>	Largemouth bass	63.24	11.97	31.4178	32.82
<i>Pomoxis annularis</i>	White crappie	1.68	0.33	0.504	0.7
<i>Pomoxis nigromaculatus</i>	Black crappie	13.94	2.66	3.826	3.91
<b>Percidae</b>					
<i>Etheostoma olmstedi</i>	Tessellated darter	0.14	0.03	0.0004	0
<i>Perca flavescens</i>	Yellow perch	79.28	13.82	3.8016	3.78
<i>Sander vitreus</i>	Walleye	0.06	0.01	0.0626	0.06
<b>TOTAL</b>		<b>564.46</b>	<b>100</b>	<b>101.0724</b>	<b>100</b>

**Table 25. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake Hickory, lower lake, 1994-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % of total density	Mean biomass, kg/km	Mean % of total biomass
<b>Clupeidae</b>		<b>26.34</b>	<b>4.69</b>	<b>6.0914</b>	<b>6.11</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	26.34	4.69	6.0914	6.11
<b>Cyprinidae</b>		<b>2.78</b>	<b>0.56</b>	<b>16.1182</b>	<b>15.35</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	1.12	0.21	0.0034	0.00
<i>Cyprinus carpio</i>	Common carp	1.54	0.32	16.1148	15.35
<i>Notemigonus crysoleucas</i>	Golden shiner	0.12	0.03	0.0000	0.00
<b>Ictaluridae</b>		<b>27.44</b>	<b>4.89</b>	<b>12.5832</b>	<b>14.18</b>
<i>Ameiurus brunneus</i>	Snail bullhead	6.18	1.13	0.5392	0.67
<i>Ameiurus catus</i>	White catfish	20.06	3.55	11.8820	13.29
<i>Ameiurus nebulosus</i>	Brown bullhead	0.20	0.04	0.1034	0.15
<i>Ameiurus platycephalus</i>	Flat bullhead	1.00	0.17	0.0586	0.07
<b>Moronidae</b>		<b>0.18</b>	<b>0.03</b>	<b>0.8840</b>	<b>0.87</b>
<i>Morone chrysops</i>	White bass	0.12	0.02	0.0524	0.08
<i>Morone saxatilis</i>	Striped bass	0.06	0.01	0.8316	0.79
<b>Centrarchidae</b>		<b>490.84</b>	<b>88.37</b>	<b>58.2754</b>	<b>63.02</b>
<i>Lepomis auritus</i>	Redbreast sunfish	182.00	32.57	5.2428	5.72
<i>Lepomis gibbosus</i>	Pumpkinseed	8.12	1.32	0.2582	0.23
<i>Lepomis gulosus</i>	Warmouth	7.66	1.39	0.2956	0.34
<i>Lepomis macrochirus</i>	Bluegill	185.26	33.83	5.6532	6.29
<i>Lepomis microlophus</i>	Redear sunfish	1.04	0.19	0.1986	0.30
<i>Lepomis hybrid</i>	Hybrid sunfish	2.78	0.49	0.1314	0.15
<i>Micropterus salmoides</i>	Largemouth bass	93.32	16.74	42.5532	46.05
<i>Pomoxis annularis</i>	White crappie	0.32	0.06	0.0900	0.08
<i>Pomoxis nigromaculatus</i>	Black crappie	10.34	1.78	3.8524	3.86
<b>Percidae</b>		<b>8.00</b>	<b>1.46</b>	<b>0.4712</b>	<b>0.46</b>
<i>Etheostoma olmstedi</i>	Tessellated darter	0.12	0.02	0.0004	0.00
<i>Perca flavescens</i>	Yellow perch	7.88	1.44	0.4708	0.46
	<b>TOTAL</b>	<b>555.58</b>	<b>100</b>	<b>94.4234</b>	<b>100</b>

**Table 26. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lookout Shoals Lake, 1994-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % of total density	Mean biomass, kg/km	Mean % of total biomass
<b>Clupeidae</b>		<b>4.02</b>	<b>1.08</b>	<b>1.7282</b>	<b>3.50</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	4.02	1.08	1.7282	3.50
<b>Cyprinidae</b>		<b>2.20</b>	<b>0.74</b>	<b>8.6602</b>	<b>17.41</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	0.06	0.03	0.0002	0.00
<i>Cyprinus carpio</i>	Common carp	1.22	0.36	8.6370	17.35
<i>Notemigonus crysoleucas</i>	Golden shiner	0.46	0.19	0.0210	0.06
<i>Notropis hudsonius</i>	Spottail shiner	0.46	0.16	0.0020	0.00
<b>Catostomidae</b>		<b>0.66</b>	<b>0.21</b>	<b>0.9968</b>	<b>2.04</b>
<i>Carpionodes cyprinus</i>	Quillback	0.14	0.03	0.2194	0.31
<i>Moxostoma collapsum</i>	Notchlip redhorse	0.40	0.14	0.7758	1.73
<i>Scartomyzon rupiscartes</i>	Striped jumprock	0.06	0.02	0.0008	0.00
<i>Scartomyzon sp.</i>	Brassy jumprock	0.06	0.02	0.0008	0.00
<b>Ictaluridae</b>		<b>12.30</b>	<b>3.68</b>	<b>4.2130</b>	<b>9.28</b>
<i>Ameiurus catus</i>	White catfish	11.26	3.36	4.1010	9.08
<i>Ameiurus nebulosus</i>	Brown bullhead	0.26	0.06	0.0820	0.13
<i>Ameiurus platycephalus</i>	Flat bullhead	0.78	0.26	0.0300	0.07
<b>Moronidae</b>		<b>0.12</b>	<b>0.05</b>	<b>0.1004</b>	<b>0.30</b>
<i>Morone chrysops</i>	White bass	0.06	0.03	0.0474	0.19
<i>Morone saxatilis</i>	Striped bass	0.06	0.02	0.0530	0.11
<b>Centrarchidae</b>		<b>245.08</b>	<b>77.21</b>	<b>25.6452</b>	<b>63.27</b>
<i>Lepomis auritus</i>	Redbreast sunfish	46.20	13.86	1.0744	2.62
<i>Lepomis cyanellus</i>	Green sunfish	0.94	0.37	0.0408	0.13
<i>Lepomis gibbosus</i>	Pumpkinseed	4.34	1.26	0.1528	0.28
<i>Lepomis gulosus</i>	Warmouth	6.94	2.17	0.3686	0.83
<i>Lepomis macrochirus</i>	Bluegill	131.14	41.25	3.0898	7.65
<i>Lepomis microlophus</i>	Redear sunfish	6.80	2.33	1.7662	4.55
<i>Lepomis hybrid</i>	Hybrid sunfish	0.38	0.12	0.0210	0.05
<i>Micropterus salmoides</i>	Largemouth bass	45.74	14.87	18.5472	45.62
<i>Pomoxis annularis</i>	White crappie	0.40	0.10	0.0766	0.11
<i>Pomoxis nigromaculatus</i>	Black crappie	2.20	0.88	0.5078	1.43
<b>Percidae</b>		<b>49.86</b>	<b>17.04</b>	<b>1.7144</b>	<b>4.18</b>
<i>Etheostoma flabellare</i>	Fantail darter	0.06	0.01	0.0002	0.00
<i>Etheostoma olmstedi</i>	Tessellated darter	0.54	0.26	0.0012	0.00
<i>Perca flavescens</i>	Yellow perch	49.20	16.76	1.7128	4.18
<i>Percina crassa</i>	Piedmont darter	0.06	0.01	0.0002	0.00
	<b>TOTAL</b>	<b>314.24</b>	<b>100</b>	<b>43.0582</b>	<b>100</b>

**Table 27. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake Norman in the vicinity of Marshall Steam Station, 1993-1997 and 1999-2002. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % total density	Mean biomass, kg/km	Mean % total biomass
<b>Clupeidae</b>		<b>40.91</b>	<b>9.22</b>	<b>1.0192</b>	<b>2.60</b>
<i>Alosa pseudoharengus</i>	Alewife	0.11	0.03	0.0010	0.00
<i>Dorosoma cepedianum</i>	Gizzard shad	3.38	0.73	0.8103	2.08
<i>Dorosoma petenense</i>	Threadfin shad	37.42	8.46	0.2079	0.52
<b>Salmonidae</b>		<b>0.07</b>	<b>0.01</b>	<b>0.0013</b>	<b>0.00</b>
<i>Oncorhynchus mykiss</i>	Rainbow trout	0.07	0.01	0.0013	0.00
<b>Cyprinidae</b>		<b>112.26</b>	<b>19.75</b>	<b>13.8053</b>	<b>36.27</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	1.56	0.26	0.0046	0.01
<i>Cyprinella nivea</i>	Whitefin shiner	70.41	12.78	0.3240	0.95
<i>Cyprinus carpio</i>	Common carp	7.62	1.59	13.3090	34.86
<i>Notemigonus crysoleucas</i>	Golden shiner	0.30	0.06	0.0019	0.00
<i>Notropis hudsonius</i>	Spottail shiner	32.23	5.03	0.1648	0.45
<i>Notropis procne</i>	Swallowtail shiner	0.14	0.03	0.0010	0.00
<b>Catostomidae</b>		<b>0.45</b>	<b>0.09</b>	<b>0.3830</b>	<b>1.07</b>
<i>Carpiodes cyprinus</i>	Quillback	0.26	0.05	0.3258	0.90
<i>Moxostoma macrolepidotum</i>	Shorthead redhorse	0.19	0.04	0.0572	0.17
<b>Ictaluridae</b>		<b>1.92</b>	<b>0.37</b>	<b>1.6675</b>	<b>4.06</b>
<i>Ictalurus furcatus</i>	Blue catfish	0.03	0.00	0.1214	0.43
<i>Ictalurus punctatus</i>	Channel catfish	1.30	0.27	0.6403	1.66
<i>Pylodictis olivaris</i>	Flathead catfish	0.59	0.10	0.9058	1.97
<b>Moronidae</b>		<b>0.84</b>	<b>0.19</b>	<b>0.2345</b>	<b>0.60</b>
<i>Morone americana</i>	White perch	0.37	0.08	0.0223	0.07
<i>Morone chrysops</i>	White bass	0.21	0.04	0.0510	0.13
<i>Morone saxatilis</i>	Striped bass	0.26	0.07	0.1612	0.40
<b>Centrarchidae</b>		<b>359.25</b>	<b>68.33</b>	<b>20.2842</b>	<b>55.17</b>
<i>Lepomis auritus</i>	Redbreast sunfish	74.33	13.70	1.3713	3.74
<i>Lepomis gibbosus</i>	Pumpkinseed	0.14	0.04	0.0052	0.02
<i>Lepomis gulosus</i>	Warmouth	4.99	0.89	0.0580	0.17
<i>Lepomis macrochirus</i>	Bluegill	185.11	34.52	2.8499	7.82
<i>Lepomis microlophus</i>	Redear sunfish	14.81	2.58	0.6956	2.03
<i>Lepomis hybrid</i>	Hybrid sunfish	12.56	2.43	0.4573	1.22
<i>Micropterus salmoides</i>	Largemouth bass	65.29	13.74	14.3601	39.02
<i>Pomoxis annularis</i>	White crappie	0.11	0.02	0.0309	0.09
<i>Pomoxis nigromaculatus</i>	Black crappie	1.91	0.41	0.4559	1.06
<b>Percidae</b>		<b>9.76</b>	<b>2.03</b>	<b>0.0814</b>	<b>0.22</b>
<i>Etheostoma fusiforme</i>	Swamp darter	0.03	0.00	0.0000	0.00
<i>Etheostoma olmstedi</i>	Tessellated darter	0.07	0.01	0.0000	0.00
<i>Perca flavescens</i>	Yellow perch	9.66	2.02	0.0814	0.22
	<b>TOTAL</b>	<b>525.46</b>	<b>100</b>	<b>37.4764</b>	<b>100</b>

**Table 28. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake Norman in a reference area between Marshall Steam Station and McGuire Nuclear Station, 1993-1997 and 1999-2002. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % total density	Mean biomass, kg/km	Mean % total biomass
<b>Lepisosteidae</b>		<b>0.10</b>	<b>0.03</b>	<b>0.1010</b>	<b>0.29</b>
<i>Lepisosteus osseus</i>	Longnose gar	0.10	0.03	0.1010	0.29
<b>Clupeidae</b>		<b>62.81</b>	<b>9.82</b>	<b>1.9195</b>	<b>6.22</b>
<i>Alosa pseudoharengus</i>	Alewife	1.67	0.28	0.0150	0.04
<i>Dorosoma cepedianum</i>	Gizzard shad	4.70	1.10	1.8127	5.89
<i>Dorosoma petenense</i>	Threadfin shad	56.44	8.44	0.0918	0.29
<b>Cyprinidae</b>		<b>95.90</b>	<b>18.91</b>	<b>11.2667</b>	<b>34.63</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	4.27	0.75	0.0103	0.03
<i>Cyprinella nivea</i>	Whitefin shiner	67.78	13.11	0.1974	0.66
<i>Cyprinus carpio</i>	Common carp	7.46	2.16	10.9859	33.69
<i>Notemigonus crysoleucas</i>	Golden shiner	0.18	0.06	0.0007	0.00
<i>Notropis hudsonius</i>	Spottail shiner	16.14	2.81	0.0723	0.25
<i>Notropis procne</i>	Swallowtail shiner	0.07	0.02	0.0001	0.00
<b>Catostomidae</b>		<b>0.26</b>	<b>0.11</b>	<b>0.2700</b>	<b>0.74</b>
<i>Carpionodes cyprinus</i>	Quillback	0.26	0.11	0.2700	0.74
<b>Ictaluridae</b>		<b>1.96</b>	<b>0.44</b>	<b>1.9878</b>	<b>6.36</b>
<i>Ictalurus furcatus</i>	Blue catfish	0.26	0.06	0.4046	1.36
<i>Ictalurus punctatus</i>	Channel catfish	1.33	0.32	0.5908	2.03
<i>Pylodictis olivaris</i>	Flathead catfish	0.37	0.06	0.9924	2.97
<b>Moronidae</b>		<b>0.24</b>	<b>0.07</b>	<b>0.0719</b>	<b>0.25</b>
<i>Morone americana</i>	White perch	0.03	0.01	0.0082	0.02
<i>Morone chrysops</i>	White bass	0.21	0.06	0.0637	0.23
<b>Centrarchidae</b>		<b>280.99</b>	<b>69.83</b>	<b>16.0273</b>	<b>51.35</b>
<i>Lepomis auritus</i>	Redbreast sunfish	60.34	14.47	1.5023	4.83
<i>Lepomis gulosus</i>	Warmouth	5.79	1.44	0.1008	0.34
<i>Lepomis macrochirus</i>	Bluegill	137.92	32.35	1.5201	4.83
<i>Lepomis microlophus</i>	Redear sunfish	15.93	3.77	0.8424	2.81
<i>Lepomis hybrid</i>	Hybrid sunfish	11.29	3.00	0.4157	1.33
<i>Micropterus punctulatus</i>	Spotted bass	0.11	0.02	0.0243	0.07
<i>Micropterus salmoides</i>	Largemouth bass	44.64	13.27	10.4037	33.39
<i>Pomoxis nigromaculatus</i>	Black crappie	4.97	1.51	1.2180	3.75
<b>Percidae</b>		<b>3.11</b>	<b>0.79</b>	<b>0.0509</b>	<b>0.13</b>
<i>Etheostoma olmstedi</i>	Tessellated darter	0.11	0.02	0.0001	0.00
<i>Perca flavescens</i>	Yellow perch	3.00	0.77	0.0508	0.13
	<b>TOTAL</b>	<b>445.37</b>	<b>100</b>	<b>31.6951</b>	<b>100</b>

**Table 29. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake Norman in the vicinity of McGuire Nuclear Station, 1993-1997 and 1999-2002. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % total density	Mean biomass, kg/km	Mean % total biomass
<b>Lepisosteidae</b>		<b>0.13</b>	<b>0.03</b>	<b>0.27</b>	<b>1.28</b>
<i>Lepisosteus osseus</i>	Longnose gar	0.13	0.03	0.2669	1.28
<b>Amiidae</b>		<b>0.03</b>	<b>0.01</b>	<b>0.06</b>	<b>0.30</b>
<i>Amia calva</i>	Bowfin	0.03	0.01	0.0629	0.30
<b>Clupeidae</b>		<b>44.54</b>	<b>9.43</b>	<b>1.55</b>	<b>7.99</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	3.86	0.82	1.3614	7.05
<i>Dorosoma petenense</i>	Threadfin shad	40.68	8.61	0.1924	0.94
<b>Cyprinidae</b>		<b>96.28</b>	<b>20.60</b>	<b>5.73</b>	<b>27.15</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	2.94	0.70	0.0074	0.04
<i>Cyprinella nivea</i>	Whitefin shiner	78.81	16.49	0.2801	1.48
<i>Cyprinus carpio</i>	Common carp	3.57	0.85	5.3877	25.32
<i>Hybognathus regius</i>	Eastern silvery minnow	0.37	0.10	0.0007	0.00
<i>Notemigonus crysoleucas</i>	Golden shiner	0.07	0.01	0.0003	0.00
<i>Notropis hudsonius</i>	Spottail shiner	10.52	2.45	0.0572	0.31
<b>Catostomidae</b>		<b>0.18</b>	<b>0.04</b>	<b>0.20</b>	<b>0.85</b>
<i>Carpionodes cyprinus</i>	Quillback	0.18	0.04	0.1982	0.85
<b>Ictaluridae</b>		<b>0.88</b>	<b>0.20</b>	<b>0.27</b>	<b>1.54</b>
<i>Ictalurus punctatus</i>	Channel catfish	0.59	0.15	0.2063	1.05
<i>Pylodictis olivaris</i>	Flathead catfish	0.29	0.05	0.0647	0.49
<b>Moronidae</b>		<b>0.44</b>	<b>0.10</b>	<b>0.19</b>	<b>1.03</b>
<i>Morone chrysops</i>	White bass	0.22	0.06	0.0636	0.32
<i>Morone saxatilis</i>	Striped bass	0.22	0.04	0.1228	0.71
<b>Centrarchidae</b>		<b>336.91</b>	<b>69.34</b>	<b>11.93</b>	<b>59.55</b>
<i>Lepomis auritus</i>	Redbreast sunfish	73.27	14.97	1.2118	6.25
<i>Lepomis cyanellus</i>	Green sunfish	0.59	0.13	0.0012	0.01
<i>Lepomis gulosus</i>	Warmouth	4.03	0.79	0.0394	0.23
<i>Lepomis macrochirus</i>	Bluegill	167.81	34.10	1.4620	7.65
<i>Lepomis microlophus</i>	Redear sunfish	33.27	7.07	1.3112	6.52
<i>Lepomis hybrid</i>	Hybrid sunfish	16.31	3.33	0.4287	2.23
<i>Micropterus punctulatus</i>	Spotted bass	1.00	0.24	0.2036	1.07
<i>Micropterus salmoides</i>	Largemouth bass	39.67	8.52	7.0446	34.60
<i>Pomoxis nigromaculatus</i>	Black crappie	0.96	0.19	0.2260	0.99
<b>Percidae</b>		<b>1.20</b>	<b>0.27</b>	<b>0.07</b>	<b>0.32</b>
<i>Etheostoma olmstedi</i>	Tessellated darter	0.03	0.01	0.0000	0.00
<i>Perca flavescens</i>	Yellow perch	1.14	0.25	0.0160	0.08
<i>Sander vitreus</i>	Walleye	0.03	0.01	0.0492	0.24
	<b>TOTAL</b>	<b>480.59</b>	<b>100</b>	<b>20.2663</b>	<b>100</b>

**Table 30. Numbers and biomass of fishes collected during spring shoreline electrofishing on Mountain Island Lake, 1993-1997 and 1999-2002. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % total density	Mean biomass, kg/km	Mean % total biomass
<b>Lepisosteidae</b>		<b>0.19</b>	<b>0.03</b>	<b>0.2260</b>	<b>0.68</b>
<i>Lepisosteus osseus</i>	Longnose gar	0.19	0.03	0.2260	0.68
<b>Clupeidae</b>		<b>4.76</b>	<b>1.44</b>	<b>1.4759</b>	<b>3.28</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	4.73	1.43	1.4757	3.28
<i>Dorosoma petenense</i>	Threadfin shad	0.03	0.01	0.0002	0.00
<b>Cyprinidae</b>		<b>26.46</b>	<b>6.60</b>	<b>21.2369</b>	<b>40.51</b>
<i>Ctenopharyngodon idella</i>	Grass carp	0.08	0.01	0.0201	0.07
<i>Cyprinella chloristia</i>	Greenfin shiner	1.37	0.33	0.0027	0.01
<i>Cyprinella nivea</i>	Whitefin shiner	17.66	3.93	0.0540	0.13
<i>Cyprinus carpio</i>	Common carp	4.52	1.47	21.1543	40.29
<i>Notemigonus crysoleucas</i>	Golden shiner	0.19	0.05	0.0006	0.00
<i>Notropis hudsonius</i>	Spottail shiner	1.16	0.28	0.0024	0.01
<i>Notropis procne</i>	Swallowtail shiner	1.48	0.53	0.0028	0.00
<b>Catostomidae</b>		<b>0.19</b>	<b>0.05</b>	<b>0.2281</b>	<b>0.48</b>
<i>Carpiodes cyprinus</i>	Quillback	0.11	0.02	0.1281	0.30
<i>Moxostoma collapsum</i>	Notchlip redhorse	0.08	0.03	0.1000	0.18
<b>Ictaluridae</b>		<b>1.29</b>	<b>0.33</b>	<b>1.4824</b>	<b>3.43</b>
<i>Ameiurus brunneus</i>	Snail bullhead	0.03	0.01	0.0042	0.01
<i>Ameiurus catus</i>	White catfish	0.26	0.09	0.1171	0.19
<i>Ictalurus punctatus</i>	Channel catfish	1.00	0.23	1.3611	3.23
<b>Poeciliidae</b>		<b>0.11</b>	<b>0.01</b>	<b>0.0000</b>	<b>0.00</b>
<i>Gambusia holbrooki</i>	Eastern mosquitofish	0.11	0.01	0.0000	0.00
<b>Moronidae</b>		<b>0.10</b>	<b>0.02</b>	<b>0.0241</b>	<b>0.05</b>
<i>Morone americana</i>	White perch	0.03	0.00	0.0018	0.01
<i>Morone chrysops</i>	White bass	0.07	0.02	0.0223	0.04
<b>Centrarchidae</b>		<b>488.97</b>	<b>89.76</b>	<b>20.7179</b>	<b>50.72</b>
<i>Lepomis auritus</i>	Redbreast sunfish	215.09	41.13	4.1734	9.99
<i>Lepomis gibbosus</i>	Pumpkinseed	0.27	0.08	0.0082	0.02
<i>Lepomis gulosus</i>	Warmouth	4.37	0.82	0.1748	0.44
<i>Lepomis macrochirus</i>	Bluegill	158.59	22.09	1.3650	3.72
<i>Lepomis microlophus</i>	Redear sunfish	28.21	4.15	1.3191	3.09
<i>Lepomis hybrid</i>	Hybrid sunfish	1.47	0.36	0.0524	0.12
<i>Micropterus salmoides</i>	Largemouth bass	80.38	21.04	13.5327	33.08
<i>Pomoxis nigromaculatus</i>	Black crappie	0.59	0.09	0.0923	0.26
<b>Percidae</b>		<b>6.37</b>	<b>1.73</b>	<b>0.4024</b>	<b>0.87</b>
<i>Etheostoma fusiforme</i>	Swamp darter	0.03	0.01	0.0000	0.00
<i>Etheostoma olmstedi</i>	Tessellated darter	0.10	0.02	0.0001	0.00
<i>Perca flavescens</i>	Yellow perch	6.24	1.70	0.4023	0.87
	<b>TOTAL</b>	<b>528.44</b>	<b>100</b>	<b>45.7937</b>	<b>100</b>

**Table 31. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake Wylie in the vicinity of Plant Allen, 1993-1997 and 1999-2002. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % total density	Mean biomass, kg/km	Mean % total biomass
<b>Lepisosteidae</b>		<b>0.07</b>	<b>0.01</b>	<b>0.0829</b>	<b>0.06</b>
<i>Lepisosteus osseus</i>	Longnose gar	0.07	0.01	0.0829	0.06
<b>Clupeidae</b>		<b>114.28</b>	<b>10.61</b>	<b>7.0062</b>	<b>5.12</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	46.81	4.96	6.5621	4.82
<i>Dorosoma petenense</i>	Threadfin shad	67.47	5.65	0.4441	0.30
<b>Cyprinidae</b>		<b>15.91</b>	<b>1.43</b>	<b>27.2977</b>	<b>19.41</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	0.22	0.03	0.0010	0.00
<i>Cyprinella nivea</i>	Whitefin shiner	7.10	0.48	0.0384	0.03
<i>Cyprinus carpio</i>	Common carp	6.78	0.71	27.1912	19.33
<i>Notemigonus crysoleucas</i>	Golden shiner	1.74	0.20	0.0667	0.05
<i>Notropis hudsonius</i>	Spottail shiner	0.07	0.01	0.0004	0.00
<b>Catostomidae</b>		<b>0.56</b>	<b>0.05</b>	<b>0.4280</b>	<b>0.35</b>
<i>Carpionodes cyprinus</i>	Quillback	0.21	0.02	0.2236	0.17
<i>Erimyzon oblongus</i>	Creek chubsucker	0.18	0.02	0.0604	0.04
<i>Ictiobus bubalus</i>	Smallmouth buffalo	0.03	0.00	0.0976	0.08
<i>Moxostoma macrolepidotum</i>	Shorthead redhorse	0.03	0.00	0.0186	0.02
<i>Moxostoma collapsum</i>	Notchlip redhorse	0.08	0.01	0.0274	0.04
<i>Scartomyzon sp.</i>	Brassy jumprock	0.03	0.00	0.0004	0.00
<b>Ictaluridae</b>		<b>71.51</b>	<b>8.18</b>	<b>27.6764</b>	<b>20.67</b>
<i>Ameiurus catus</i>	White catfish	64.56	7.61	21.5418	15.98
<i>Ameiurus nebulosus</i>	Brown bullhead	0.18	0.02	0.0901	0.06
<i>Ameiurus platycephalus</i>	Flat bullhead	0.10	0.01	0.0471	0.03
<i>Ictalurus punctatus</i>	Channel catfish	6.67	0.54	5.9974	4.60
<b>Poeciliidae</b>		<b>0.07</b>	<b>0.00</b>	<b>0.0000</b>	<b>0.00</b>
<i>Gambusia holbrooki</i>	Eastern mosquitofish	0.07	0.00	0.0000	0.00
<b>Moronidae</b>		<b>1.50</b>	<b>0.15</b>	<b>0.5390</b>	<b>0.40</b>
<i>Morone americana</i>	White perch	0.07	0.00	0.0102	0.01
<i>Morone chrysops</i>	White bass	1.40	0.15	0.5144	0.38
<i>Morone saxatilis</i>	Striped bass	0.03	0.00	0.0144	0.01
<b>Centrarchidae</b>		<b>922.92</b>	<b>78.92</b>	<b>68.8697</b>	<b>53.89</b>
<i>Lepomis auritus</i>	Redbreast sunfish	18.94	1.94	0.5066	0.37
<i>Lepomis cyanellus</i>	Green sunfish	0.07	0.00	0.0003	0.00
<i>Lepomis gibbosus</i>	Pumpkinseed	17.92	1.75	0.3592	0.30
<i>Lepomis gulosus</i>	Warmouth	12.06	0.99	0.3051	0.25
<i>Lepomis macrochirus</i>	Bluegill	694.18	55.89	9.9594	8.17
<i>Lepomis microlophus</i>	Redear sunfish	46.92	4.49	4.4576	3.63
<i>Lepomis hybrid</i>	Hybrid sunfish	1.92	0.17	0.0932	0.08
<i>Micropterus salmoides</i>	Largemouth bass	117.19	12.36	49.4034	38.14
<i>Pomoxis nigromaculatus</i>	Black crappie	13.72	1.33	3.7849	2.95
<b>Percidae</b>		<b>5.40</b>	<b>0.62</b>	<b>0.0990</b>	<b>0.10</b>
<i>Perca flavescens</i>	Yellow perch	5.40	0.62	0.0990	0.10
	<b>TOTAL</b>	<b>1132.22</b>	<b>100</b>	<b>131.9989</b>	<b>100</b>

**Table 32. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake Wylie in the vicinity of Buster Boyd Bridge, 1993-1997 and 1999-2002. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % total density	Mean biomass, kg/km	Mean % total biomass
<b>Clupeidae</b>		<b>75.81</b>	<b>8.73</b>	<b>10.1093</b>	<b>8.01</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	59.43	7.74	10.0332	7.95
<i>Dorosoma petenense</i>	Threadfin shad	16.38	0.99	0.0761	0.06
<b>Cyprinidae</b>		<b>16.60</b>	<b>1.85</b>	<b>7.1858</b>	<b>5.78</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	1.82	0.18	0.0049	0.00
<i>Cyprinella nivea</i>	Whitefin shiner	13.31	1.46	0.0527	0.04
<i>Cyprinus carpio</i>	Common carp	1.33	0.19	7.1277	5.74
<i>Hybognathus regius</i>	Eastern silvery minnow	0.03	0.01	0.0002	0.00
<i>Notemigonus crysoleucas</i>	Golden shiner	0.08	0.01	0.0003	0.00
<i>Pimephales promelas</i>	Fathead minnow	0.03	0.00	0.0000	0.00
<b>Catostomidae</b>		<b>0.22</b>	<b>0.03</b>	<b>0.2787</b>	<b>0.22</b>
<i>Carpiodes cyprinus</i>	Quillback	0.19	0.03	0.2387	0.19
<i>Catostomus commersoni</i>	White sucker	0.03	0.00	0.0400	0.03
<b>Ictaluridae</b>		<b>50.40</b>	<b>6.21</b>	<b>27.3174</b>	<b>22.33</b>
<i>Ameiurus catus</i>	White catfish	47.81	5.95	24.2124	19.80
<i>Ictalurus punctatus</i>	Channel catfish	2.59	0.26	3.1050	2.53
<b>Poeciliidae</b>		<b>0.03</b>	<b>0.00</b>	<b>0.0000</b>	<b>0.00</b>
<i>Gambusia holbrooki</i>	Eastern mosquitofish	0.03	0.00	0.0000	0.00
<b>Moronidae</b>		<b>0.14</b>	<b>0.02</b>	<b>0.0436</b>	<b>0.04</b>
<i>Morone chrysops</i>	White bass	0.14	0.02	0.0436	0.04
<b>Centrarchidae</b>		<b>713.69</b>	<b>80.29</b>	<b>77.4578</b>	<b>63.27</b>
<i>Lepomis auritus</i>	Redbreast sunfish	24.44	2.86	0.8239	0.67
<i>Lepomis cyanellus</i>	Green sunfish	0.11	0.02	0.0006	0.00
<i>Lepomis gibbosus</i>	Pumpkinseed	5.09	0.59	0.0942	0.08
<i>Lepomis gulosus</i>	Warmouth	20.57	2.22	0.4990	0.41
<i>Lepomis macrochirus</i>	Bluegill	517.37	55.82	10.5388	8.67
<i>Lepomis microlophus</i>	Redear sunfish	17.48	2.20	2.4316	1.98
<i>Lepomis hybrid</i>	Hybrid sunfish	0.78	0.09	0.0480	0.04
<i>Micropterus salmoides</i>	Largemouth bass	107.93	13.82	57.3279	46.74
<i>Pomoxis annularis</i>	White crappie	0.03	0.00	0.0124	0.01
<i>Pomoxis nigromaculatus</i>	Black crappie	19.89	2.67	5.6814	4.67
<b>Percidae</b>		<b>21.13</b>	<b>2.85</b>	<b>0.4130</b>	<b>0.33</b>
<i>Etheostoma olmstedii</i>	Tessellated darter	0.21	0.02	0.0004	0.00
<i>Perca flavescens</i>	Yellow perch	20.92	2.83	0.4126	0.33
	<b>TOTAL</b>	<b>878.02</b>	<b>100</b>	<b>122.8056</b>	<b>100</b>

**Table 33. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake Wylie in the vicinity of Catawba Nuclear Station, 1993-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % total density	Mean biomass, kg/km	Mean % total biomass
<b>Clupeidae</b>		<b>56.55</b>	<b>7.57</b>	<b>9.5602</b>	<b>10.59</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	56.33	7.54	9.5580	10.59
<i>Dorosoma petenense</i>	Threadfin shad	0.22	0.03	0.0022	0.00
<b>Cyprinidae</b>		<b>38.67</b>	<b>5.37</b>	<b>1.3537</b>	<b>1.47</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	1.72	0.23	0.0045	0.01
<i>Cyprinella nivea</i>	Whitefin shiner	35.40	4.95	0.1403	0.17
<i>Cyprinus carpio</i>	Common carp	0.23	0.03	1.2055	1.29
<i>Notemigonus crysoleucas</i>	Golden shiner	0.27	0.04	0.0007	0.00
<i>Notropis hudsonius</i>	Spottail shiner	0.05	0.01	0.0002	0.00
<i>Notropis procne</i>	Swallowtail shiner	1.00	0.11	0.0025	0.00
<b>Catostomidae</b>		<b>0.15</b>	<b>0.02</b>	<b>0.8981</b>	<b>0.95</b>
<i>Ictiobus bubalus</i>	Smallmouth buffalo	0.05	0.01	0.8888	0.94
<i>Scartomyzon sp.</i>	Brassy jumprock	0.10	0.01	0.0093	0.01
<b>Ictaluridae</b>		<b>37.11</b>	<b>4.97</b>	<b>21.3888</b>	<b>24.71</b>
<i>Ameiurus catus</i>	White catfish	35.77	4.79	19.6063	22.55
<i>Ameiurus platycephalus</i>	Flat bullhead	0.17	0.02	0.0698	0.08
<i>Ictalurus punctatus</i>	Channel catfish	1.17	0.16	1.7127	2.08
<b>Poeciliidae</b>		<b>0.05</b>	<b>0.01</b>	<b>0.0000</b>	<b>0.00</b>
<i>Gambusia holbrooki</i>	Eastern mosquitofish	0.05	0.01	0.0000	0.00
<b>Moronidae</b>		<b>0.10</b>	<b>0.01</b>	<b>0.0227</b>	<b>0.03</b>
<i>Morone chrysops</i>	White bass	0.10	0.01	0.0227	0.03
<b>Centrarchidae</b>		<b>601.13</b>	<b>79.43</b>	<b>55.0964</b>	<b>61.90</b>
<i>Lepomis auritus</i>	Redbreast sunfish	29.95	3.97	0.9392	1.12
<i>Lepomis cyanellus</i>	Green sunfish	0.12	0.01	0.0025	0.00
<i>Lepomis gibbosus</i>	Pumpkinseed	2.50	0.31	0.0532	0.06
<i>Lepomis gulosus</i>	Warmouth	8.88	1.19	0.2768	0.33
<i>Lepomis macrochirus</i>	Bluegill	445.33	58.32	9.2522	10.60
<i>Lepomis microlophus</i>	Redear sunfish	10.20	1.36	1.5462	1.79
<i>Lepomis hybrid</i>	Hybrid sunfish	0.88	0.11	0.0418	0.05
<i>Micropterus salmoides</i>	Largemouth bass	82.17	11.22	36.9833	41.44
<i>Pomoxis nigromaculatus</i>	Black crappie	21.10	2.94	6.0012	6.51
<b>Percidae</b>		<b>19.08</b>	<b>2.65</b>	<b>0.3276</b>	<b>0.34</b>
<i>Etheostoma fusiforme</i>	Swamp darter	0.05	0.01	0.0000	0.00
<i>Etheostoma olmstedi</i>	Tessellated darter	0.10	0.02	0.0003	0.00
<i>Perca flavescens</i>	Yellow perch	18.93	2.62	0.3273	0.34
	<b>TOTAL</b>	<b>752.84</b>	<b>100</b>	<b>88.6475</b>	<b>100</b>

**Table 34. Numbers and biomass of fishes collected during spring shoreline electrofishing on Fishing Creek Reservoir, 1993-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % total density	Mean biomass, kg/km	Mean % total biomass
<b>Clupeidae</b>		<b>65.55</b>	<b>14.65</b>	<b>3.6984</b>	<b>4.17</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	52.88	12.02	3.6017	4.07
<i>Dorosoma petenense</i>	Threadfin shad	12.67	2.63	0.0967	0.10
<b>Cyprinidae</b>		<b>33.80</b>	<b>7.14</b>	<b>28.5836</b>	<b>30.45</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	0.05	0.01	0.0002	0.00
<i>Cyprinella nivea</i>	Whitefin shiner	3.83	0.81	0.0083	0.01
<i>Cyprinus carpio</i>	Common carp	12.43	2.63	28.3193	30.16
<i>Hybognathus regius</i>	Eastern silvery minnow	2.12	0.44	0.0147	0.02
<i>Notemigonus crysoleucas</i>	Golden shiner	12.12	2.57	0.2222	0.24
<i>Notropis hudsonius</i>	Spottail shiner	3.15	0.66	0.0187	0.02
<i>Notropis procne</i>	Swallowtail shiner	0.05	0.01	0.0000	0.00
<i>Pimephales promelas</i>	Fathead minnow	0.05	0.01	0.0002	0.00
<b>Catostomidae</b>		<b>2.53</b>	<b>0.52</b>	<b>4.0501</b>	<b>4.32</b>
<i>Carpiodes cyprinus</i>	Quillback	1.10	0.23	1.1763	1.30
<i>Ictiobus bubalus</i>	Smallmouth buffalo	1.33	0.27	2.8705	3.02
<i>Moxostoma macrolepidotum</i>	Shorthead redhorse	0.05	0.01	0.0020	0.00
<i>Scartomyzon sp.</i>	Brassy jumrock	0.05	0.01	0.0013	0.00
<b>Ictaluridae</b>		<b>20.20</b>	<b>4.24</b>	<b>9.6917</b>	<b>10.83</b>
<i>Ameiurus brunneus</i>	Snail bullhead	0.05	0.01	0.0003	0.00
<i>Ameiurus catus</i>	White catfish	15.93	3.33	6.0958	6.96
<i>Ameiurus nebulosus</i>	Brown bullhead	1.17	0.26	0.3513	0.46
<i>Ameiurus platycephalus</i>	Flat bullhead	0.05	0.01	0.0050	0.00
<i>Ictalurus punctatus</i>	Channel catfish	3.00	0.63	3.2393	3.41
<b>Moronidae</b>		<b>0.55</b>	<b>0.10</b>	<b>0.3393</b>	<b>0.33</b>
<i>Morone chrysops</i>	White bass	0.50	0.09	0.1715	0.17
<i>Morone saxatilis</i>	Striped bass	0.05	0.01	0.1678	0.16
<b>Centrarchidae</b>		<b>334.74</b>	<b>69.82</b>	<b>45.9416</b>	<b>49.48</b>
<i>Lepomis auritus</i>	Redbreast sunfish	12.62	2.60	0.3318	0.36
<i>Lepomis cyanellus</i>	Green sunfish	1.83	0.36	0.0302	0.03
<i>Lepomis gibbosus</i>	Pumpkinseed	18.28	3.61	0.2868	0.33
<i>Lepomis gulosus</i>	Warmouth	8.67	1.76	0.4742	0.57
<i>Lepomis macrochirus</i>	Bluegill	196.88	40.94	5.9997	6.59
<i>Lepomis microlophus</i>	Redear sunfish	17.40	3.66	1.7413	2.05
<i>Lepomis hybrid</i>	Hybrid sunfish	0.77	0.15	0.0320	0.04
<i>Micropterus salmoides</i>	Largemouth bass	72.17	15.48	34.7218	37.06
<i>Pomoxis annularis</i>	White crappie	0.17	0.03	0.0003	0.00
<i>Pomoxis nigromaculatus</i>	Black crappie	5.95	1.23	2.3235	2.45
<b>Percidae</b>		<b>17.21</b>	<b>3.53</b>	<b>0.3995</b>	<b>0.43</b>
<i>Etheostoma olmstedi</i>	Tessellated darter	0.38	0.08	0.0008	0.00
<i>Perca flavescens</i>	Yellow perch	16.83	3.45	0.3987	0.43
	<b>TOTAL</b>	<b>474.58</b>	<b>100</b>	<b>92.7042</b>	<b>100</b>

**Table 35. Numbers and biomass of fishes collected during spring shoreline electrofishing on Great Falls-Dearborn Reservoir, 1994-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % total density	Mean biomass, kg/km	Mean % total biomass
<b>Clupeidae</b>		<b>39.86</b>	<b>13.27</b>	<b>1.1634</b>	<b>1.67</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	31.86	11.03	1.1362	1.65
<i>Dorosoma petenense</i>	Threadfin shad	8.00	2.24	0.0272	0.02
<b>Cyprinidae</b>		<b>13.98</b>	<b>5.24</b>	<b>37.7536</b>	<b>48.43</b>
<i>Cyprinella nivea</i>	Whitefin shiner	0.66	0.30	0.0018	0.00
<i>Cyprinus carpio</i>	Common carp	6.78	2.69	37.6980	48.35
<i>Hybognathus regius</i>	Eastern silvery minnow	0.40	0.11	0.0006	0.00
<i>Notemigonus crysoleucas</i>	Golden shiner	3.08	1.26	0.0388	0.06
<i>Notropis hudsonius</i>	Spottail shiner	3.06	0.88	0.0144	0.02
<b>Catostomidae</b>		<b>6.42</b>	<b>2.17</b>	<b>4.9230</b>	<b>4.27</b>
<i>Carpiodes cyprinus</i>	Quillback	0.54	0.16	0.3694	0.46
<i>Erimyzon oblongus</i>	Creek chubsucker	0.14	0.04	0.0022	0.00
<i>Moxostoma macrolepidotum</i>	Shorthead redhorse	0.14	0.04	0.0680	0.06
<i>Moxostoma collapsum</i>	Notchlip redhorse	5.60	1.93	4.4834	3.75
<b>Ictaluridae</b>		<b>16.40</b>	<b>6.29</b>	<b>10.5690</b>	<b>10.20</b>
<i>Ameiurus catus</i>	White catfish	10.28	4.19	5.8634	5.82
<i>Ameiurus platycephalus</i>	Flat bullhead	0.14	0.05	0.0174	0.03
<i>Ictalurus punctatus</i>	Channel catfish	5.98	2.05	4.6882	4.35
<b>Moronidae</b>		<b>1.48</b>	<b>0.47</b>	<b>3.4332</b>	<b>3.41</b>
<i>Morone chrysops</i>	White bass	0.94	0.28	0.1012	0.16
<i>Morone saxatilis</i>	Striped bass	0.54	0.19	3.3320	3.25
<b>Centrarchidae</b>		<b>179.20</b>	<b>68.88</b>	<b>25.2186</b>	<b>31.67</b>
<i>Lepomis auritus</i>	Redbreast sunfish	22.00	9.23	1.0042	1.50
<i>Lepomis cyanellus</i>	Green sunfish	0.14	0.05	0.0018	0.00
<i>Lepomis gibbosus</i>	Pumpkinseed	26.80	9.41	0.5122	0.70
<i>Lepomis gulosus</i>	Warmouth	4.14	1.30	0.2784	0.33
<i>Lepomis macrochirus</i>	Bluegill	54.38	20.55	2.4714	3.41
<i>Lepomis microlophus</i>	Redear sunfish	36.66	13.95	5.7626	7.17
<i>Lepomis hybrid</i>	Hybrid sunfish	0.28	0.11	0.0264	0.03
<i>Micropterus salmoides</i>	Largemouth bass	34.40	14.14	15.0878	18.44
<i>Pomoxis nigromaculatus</i>	Black crappie	0.40	0.14	0.0738	0.09
<b>Percidae</b>		<b>9.72</b>	<b>3.69</b>	<b>0.2680</b>	<b>0.36</b>
<i>Perca flavescens</i>	Yellow perch	9.72	3.69	0.2680	0.36
<b>TOTAL</b>		<b>267.06</b>	<b>100</b>	<b>83.3288</b>	<b>100</b>

**Table 36. Numbers and biomass of fishes collected during spring shoreline electrofishing on Cedar Creek Reservoir, 1994-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % of total density	Mean biomass, kg/km	Mean % of total biomass
<b>Amiidae</b>		<b>0.06</b>	<b>0.02</b>	<b>0.0840</b>	<b>0.11</b>
<i>Amia calva</i>	Bowfin	0.06	0.02	0.0840	0.11
<b>Clupeidae</b>		<b>39.00</b>	<b>9.18</b>	<b>1.2886</b>	<b>1.31</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	22.94	5.68	1.1742	1.19
<i>Dorosoma petenense</i>	Threadfin shad	16.06	3.50	0.1144	0.12
<b>Cyprinidae</b>		<b>14.88</b>	<b>3.90</b>	<b>31.7668</b>	<b>33.77</b>
<i>Cyprinus carpio</i>	Common carp	6.80	2.00	31.5780	33.57
<i>Notemigonus crysoleucas</i>	Golden shiner	7.94	1.87	0.1884	0.20
<i>Notropis hudsonius</i>	Spottail shiner	0.14	0.03	0.0004	0.00
<b>Catostomidae</b>		<b>4.76</b>	<b>1.32</b>	<b>2.6080</b>	<b>2.84</b>
<i>Carpionodes cyprinus</i>	Quillback	0.46	0.10	0.3802	0.38
<i>Erimyzon oblongus</i>	Creek chubsucker	0.06	0.01	0.0082	0.01
<i>Ictiobus bubalus</i>	Smallmouth buffalo	0.06	0.02	0.0800	0.10
<i>Moxostoma macrolepidotum</i>	Shorthead redhorse	0.20	0.05	0.0634	0.06
<i>Moxostoma collapsum</i>	Notchlip redhorse	2.58	0.76	1.7962	2.03
<i>Scartomyzon rupiscartes</i>	Striped jumprock	0.40	0.09	0.0254	0.02
<i>Scartomyzon sp.</i>	Brassy jumprock	1.00	0.29	0.2546	0.24
<b>Ictaluridae</b>		<b>8.82</b>	<b>2.07</b>	<b>3.4172</b>	<b>3.51</b>
<i>Ameiurus brunneus</i>	Snail bullhead	0.20	0.09	0.0164	0.02
<i>Ameiurus catus</i>	White catfish	4.86	1.07	1.5214	1.55
<i>Ameiurus platycephalus</i>	Flat bullhead	1.40	0.28	0.1032	0.10
<i>Ictalurus punctatus</i>	Channel catfish	2.36	0.63	1.7762	1.84
<b>Moronidae</b>		<b>0.50</b>	<b>0.13</b>	<b>0.4316</b>	<b>0.42</b>
<i>Morone chrysops</i>	White bass	0.44	0.11	0.1010	0.11
<i>Morone saxatilis</i>	Striped bass	0.06	0.02	0.3306	0.31
<b>Centrarchidae</b>		<b>319.88</b>	<b>79.02</b>	<b>55.6374</b>	<b>57.74</b>
<i>Lepomis auritus</i>	Redbreast sunfish	27.52	7.86	0.5666	0.60
<i>Lepomis cyanellus</i>	Green sunfish	7.06	1.93	0.1210	0.12
<i>Lepomis gibbosus</i>	Pumpkinseed	38.28	7.35	0.7724	0.76
<i>Lepomis gulosus</i>	Warmouth	7.72	2.11	0.2132	0.22
<i>Lepomis macrochirus</i>	Bluegill	147.66	35.77	3.7846	3.89
<i>Lepomis microlophus</i>	Redear sunfish	17.06	4.44	1.5026	1.58
<i>Lepomis hybrid</i>	Hybrid sunfish	0.54	0.15	0.0228	0.02
<i>Micropterus salmoides</i>	Largemouth bass	68.08	17.93	45.9602	47.83
<i>Pomoxis nigromaculatus</i>	Black crappie	5.96	1.48	2.6940	2.72
<b>Percidae</b>		<b>19.20</b>	<b>4.39</b>	<b>0.2954</b>	<b>0.30</b>
<i>Perca flavescens</i>	Yellow perch	19.20	4.39	0.2954	0.30
	<b>TOTAL</b>	<b>407.10</b>	<b>100</b>	<b>95.5290</b>	<b>100</b>

**Table 37. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake Wateree, upper lake, 1994-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % total density	Mean biomass, kg/km	Mean % total biomass
<b>Clupeidae</b>		<b>176.46</b>	<b>28.28</b>	<b>4.9758</b>	<b>5.96</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	131.52	22.30	4.7844	5.75
<i>Dorosoma petenense</i>	Threadfin shad	44.94	5.98	0.1914	0.21
<b>Cyprinidae</b>		<b>67.86</b>	<b>11.06</b>	<b>36.0236</b>	<b>44.10</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	10.46	1.56	0.0196	0.02
<i>Cyprinella nivea</i>	Whitefin shiner	21.74	3.50	0.0594	0.07
<i>Cyprinus carpio</i>	Common carp	10.86	1.90	35.4784	43.42
<i>Hybognathus regius</i>	Eastern silvery minnow	8.40	1.23	0.0626	0.07
<i>Notemigonus crysoleucas</i>	Golden shiner	13.06	2.38	0.3842	0.50
<i>Notropis hudsonius</i>	Spottail shiner	3.34	0.49	0.0194	0.02
<b>Catostomidae</b>		<b>0.12</b>	<b>0.03</b>	<b>0.1368</b>	<b>0.19</b>
<i>Carpiodes cyprinus</i>	Quillback	0.12	0.03	0.1368	0.19
<b>Ictaluridae</b>		<b>9.90</b>	<b>1.77</b>	<b>3.3450</b>	<b>4.13</b>
<i>Ameiurus catus</i>	White catfish	7.40	1.33	2.0406	2.46
<i>Ameiurus nebulosus</i>	Brown bullhead	0.06	0.01	0.0204	0.02
<i>Ameiurus platycephalus</i>	Flat bullhead	0.12	0.02	0.0124	0.01
<i>Ictalurus punctatus</i>	Channel catfish	2.32	0.41	1.2716	1.64
<b>Poeciliidae</b>		<b>0.06</b>	<b>0.01</b>	<b>0.0000</b>	<b>0.00</b>
<i>Gambusia holbrooki</i>	Eastern mosquitofish	0.06	0.01	0.0000	0.00
<b>Moronidae</b>		<b>47.18</b>	<b>8.58</b>	<b>2.1022</b>	<b>2.83</b>
<i>Morone americana</i>	White perch	46.58	8.49	1.8962	2.60
<i>Morone chrysops</i>	White bass	0.60	0.09	0.2060	0.23
<b>Centrarchidae</b>		<b>261.00</b>	<b>46.30</b>	<b>33.7852</b>	<b>42.31</b>
<i>Lepomis auritus</i>	Redbreast sunfish	11.42	1.97	0.3070	0.39
<i>Lepomis cyanellus</i>	Green sunfish	3.46	0.60	0.0680	0.09
<i>Lepomis gibbosus</i>	Pumpkinseed	46.66	8.11	0.6470	0.86
<i>Lepomis gulosus</i>	Warmouth	2.16	0.36	0.0970	0.12
<i>Lepomis macrochirus</i>	Bluegill	129.14	23.01	3.3388	4.18
<i>Lepomis microlophus</i>	Redear sunfish	15.16	2.63	1.1088	1.45
<i>Lepomis hybrid</i>	Hybrid sunfish	0.46	0.08	0.0208	0.03
<i>Micropterus salmoides</i>	Largemouth bass	48.94	8.88	26.6434	33.36
<i>Pomoxis annularis</i>	White crappie	0.00	0.00	0.0000	0.00
<i>Pomoxis nigromaculatus</i>	Black crappie	3.60	0.66	1.5544	1.83
<b>Percidae</b>		<b>21.18</b>	<b>3.96</b>	<b>0.3434</b>	<b>0.47</b>
<i>Etheostoma olmstedi</i>	Tessellated darter	0.38	0.07	0.0014	0.00
<i>Perca flavescens</i>	Yellow perch	20.80	3.89	0.3420	0.47
	<b>TOTAL</b>	<b>583.76</b>	<b>100</b>	<b>80.7120</b>	<b>100</b>

**Table 38. Numbers and biomass of fishes collected during spring shoreline electrofishing on Lake Wateree, lower lake, 1994-1997 and 2000. Mean percents were calculated as the average of annual percents. Family totals represent sums of species means. Data are from Duke Power.**

Family/species	Common name	Mean density, no/km	Mean % total density	Mean biomass, kg/km	Mean % total biomass
<b>Clupeidae</b>		<b>728.22</b>	<b>42.22</b>	<b>16.0846</b>	<b>10.12</b>
<i>Dorosoma cepedianum</i>	Gizzard shad	386.94	25.21	14.7540	9.20
<i>Dorosoma petenense</i>	Threadfin shad	341.28	17.01	1.3306	0.92
<b>Cyprinidae</b>		<b>85.56</b>	<b>6.40</b>	<b>70.8596</b>	<b>41.99</b>
<i>Cyprinella chloristia</i>	Greenfin shiner	5.86	0.48	0.0162	0.01
<i>Cyprinella nivea</i>	Whitefin shiner	25.60	2.09	0.0978	0.06
<i>Cyprinus carpio</i>	Common carp	18.42	1.50	70.0992	41.51
<i>Hybognathus regius</i>	Eastern silvery minnow	4.26	0.29	0.0388	0.03
<i>Notemigonus crysoleucas</i>	Golden shiner	26.54	1.72	0.5776	0.36
<i>Notropis hudsonius</i>	Spottail shiner	4.74	0.31	0.0300	0.02
<i>Notropis procne</i>	Swallowtail shiner	0.14	0.01	0.0000	0.00
<b>Catostomidae</b>		<b>0.18</b>	<b>0.00</b>	<b>0.0526</b>	<b>0.03</b>
<i>Carpionodes cyprinus</i>	Quillback	0.06	0.00	0.0454	0.03
<i>Moxostoma collapsum</i>	Notchlip redhorse	0.06	0.00	0.0044	0.00
<i>Scartomyzon sp.</i>	Brassy jumprock	0.06	0.00	0.0028	0.00
<b>Ictaluridae</b>		<b>28.70</b>	<b>2.25</b>	<b>10.3198</b>	<b>6.12</b>
<i>Ameiurus catus</i>	White catfish	26.92	2.11	8.7612	5.18
<i>Ameiurus platycephalus</i>	Flat bullhead	0.26	0.02	0.0394	0.02
<i>Ictalurus punctatus</i>	Channel catfish	1.52	0.12	1.5192	0.92
<b>Moronidae</b>		<b>48.56</b>	<b>3.95</b>	<b>2.9230</b>	<b>1.75</b>
<i>Morone americana</i>	White perch	46.30	3.80	2.1962	1.30
<i>Morone chrysops</i>	White bass	2.26	0.15	0.7268	0.45
<b>Centrarchidae</b>		<b>582.32</b>	<b>44.05</b>	<b>64.5998</b>	<b>39.78</b>
<i>Lepomis auritus</i>	Redbreast sunfish	43.74	3.27	1.2682	0.79
<i>Lepomis cyanellus</i>	Green sunfish	35.04	2.52	0.7106	0.45
<i>Lepomis gibbosus</i>	Pumpkinseed	58.14	4.25	1.1298	0.70
<i>Lepomis gulosus</i>	Warmouth	3.16	0.23	0.0978	0.06
<i>Lepomis macrochirus</i>	Bluegill	347.88	26.75	11.3190	6.90
<i>Lepomis microlophus</i>	Redear sunfish	6.94	0.56	0.6326	0.39
<i>Lepomis hybrid</i>	Hybrid sunfish	2.46	0.19	0.1164	0.07
<i>Micropterus salmoides</i>	Largemouth bass	74.16	5.35	44.7246	27.82
<i>Pomoxis nigromaculatus</i>	Black crappie	10.80	0.93	4.6008	2.60
<b>Percidae</b>		<b>14.32</b>	<b>1.12</b>	<b>0.3408</b>	<b>0.20</b>
<i>Etheostoma olmstedi</i>	Tessellated darter	0.32	0.03	0.0014	0.00
<i>Perca flavescens</i>	Yellow perch	14.00	1.09	0.3394	0.20
<b>TOTAL</b>		<b>1487.86</b>	<b>100</b>	<b>165.1802</b>	<b>100</b>

**Table 39. Results of correlation analyses relating littoral fish biomass based on electrofishing data to chlorophyll expressed as µg/L, seston ash-free dry weight (volatile solids) expressed as mg/L, and specific conductance expressed as µmho/cm. Data subjected to correlation represent means of data collected at 19 electrofishing sites on 11 Catawba-Wateree reservoirs, 1993-2002. Chlorophyll samples were collected at mid-channel. All variables have been log<sub>10</sub>-transformed to attain a normal distribution. All biomass data is expressed as kg/km. Values in cells are r (correlation coefficient), prob > |r|, and N.**

	<b>Total fish</b>	<b>Centrar-chidae</b>	<b>Crappie</b>	<b>Black basses</b>	<b>Large-mouth bass</b>	<b>Sunfish</b>	<b>Ictaluridae</b>	<b>Cyprinidae</b>
<b>Mean spring chlorophyll</b>	0.54 0.0211 18	0.55 0.0183 18	0.36 0.1401 18	0.54 0.0206 18	0.66 0.0028 18	0.54 0.0206 18	0.62 0.0065 18	0.35 0.1552 18
<b>Mean summer chlorophyll</b>	0.63 0.0041 19	0.60 0.0066 19	0.48 0.0379 19	0.59 0.0082 19	0.67 0.0017 19	0.53 0.0202 19	0.61 0.0055 19	0.42 0.0727 19
<b>Mean spring SAFDW</b>	0.67 0.0023 18	0.53 0.0223 18	0.24 0.3449 18	0.52 0.0262 18	0.57 0.0129 18	0.48 0.0425 18	0.51 0.0295 18	0.62 0.0061 18
<b>Mean summer SAFDW</b>	0.65 0.0036 18	0.58 0.0110 18	0.35 0.1518 18	0.58 0.0110 18	0.65 0.0037 18	0.48 0.0430 18	0.59 0.0102 18	0.56 0.0153 18
<b>Mean spring specific conductance</b>	0.44 0.0660 18	0.38 0.1221 18	0.08 0.7383 18	0.38 0.1229 18	0.44 0.0656 18	0.37 0.1335 18	0.46 0.0565 18	0.34 0.1694 18
<b>Mean summer specific conductance</b>	0.54 0.0173 19	0.45 0.0520 19	0.17 0.4775 19	0.44 0.0596 19	0.50 0.0278 19	0.44 0.0574 19	0.53 0.0206 19	0.38 0.1041 19
<b>Mean spring chlorophyll*</b>	0.56 0.0227 16	0.60 0.0141 16	0.40 0.1285 16	0.56 0.0237 16	0.69 0.0029 16	0.68 0.0036 16	0.67 0.0043 16	0.28 0.2978 16
<b>Mean summer chlorophyll*</b>	0.73 0.0009 17	0.73 0.0009 17	0.59 0.0132 17	0.67 0.0030 17	0.77 0.0003 17	0.76 0.0004 17	0.74 0.0007 17	0.37 0.1413 17

\* Without FIS and WAT-UL

**Table 40. Results of correlation analyses relating littoral fish biomass based on electrofishing data to nutrients expressed as mg/L. Data subjected to correlation represent means of data collected at 19 electrofishing sites on 11 Catawba-Wateree reservoirs, 1993-2002. Nutrient data were collected at mid-channel. All variables have been log<sub>10</sub>-transformed to attain a normal distribution. All biomass data is expressed as kg/km. Values in cells are r (correlation coefficient), prob > |r|, and N.**

	<b>Total fish</b>	<b>Centrarchid</b>	<b>Crappie</b>	<b>Black basses</b>	<b>Largemouth bass</b>	<b>Sunfish</b>	<b>Ictaluridae</b>	<b>Cyprinidae</b>
<b>Mean spring TP</b>	0.52 0.0338 17	0.46 0.0645 178	0.09 0.7196 17	0.46 0.0620 17	0.53 0.0275 17	0.43 0.0860 17	0.56 0.0192 17	0.50 0.0420 17
<b>Mean spring TN</b>	0.24 0.3473 18	0.24 0.3423 18	-0.12 0.6419 18	0.25 0.3190 18	0.34 0.1708 18	0.30 0.2261 18	0.43 0.0740 18	0.23 0.3568 18
<b>Mean summer TP</b>	0.57 0.0105 19	0.51 0.0269 19	0.18 0.4720 19	0.51 0.0254 19	0.55 0.0140 19	0.45 0.0529 19	0.55 0.0154 19	0.49 0.0325 19
<b>Mean summer TN</b>	0.51 0.0254 19	0.43 0.0679 19	0.09 0.7045 19	0.41 0.0844 19	0.49 0.0329 19	0.47 0.0446 19	0.56 0.0120 19	0.38 0.1070 19
<b>Mean spring TP*</b>	0.73 0.0048 13	0.76 0.0027 13	0.54 0.0584 13	0.72 0.0053 13	0.81 0.0007 13	0.86 0.0001 13	0.83 0.0004 13	0.44 0.1344 13
<b>Mean spring TN*</b>	0.16 0.5774 14	0.31 0.2883 14	0.06 0.8388 14	0.30 0.3052 14	0.40 0.1522 14	0.50 0.0703 14	0.52 0.0582 14	-0.10 0.7217 14
<b>Mean summer TP*</b>	0.84 <0.0001 15	0.89 <0.0001 15	0.70 0.0038 15	0.87 <0.0001 15	0.90 <0.0001 15	0.90 <0.0001 15	0.85 <0.0001 15	0.40 0.1413 15
<b>Mean summer TN*</b>	0.71 0.0031 15	0.73 0.0018 15	0.55 0.0324 15	0.67 0.0059 15	0.78 0.0007 15	0.89 <0.0001 15	0.85 <0.0001 15	0.18 0.5145 15

\* Without FIS, CED, GFL, WAT-UL (see text)

**Table 41. Results of correlation analyses relating littoral fish biomass based on electrofishing data to zooplankton densities expressed as number/m<sup>3</sup>. Data subjected to correlation represent means of data collected at 13 sites on 11 Catawba-Wateree reservoirs, 1993-2002. All variables have been log<sub>10</sub>-transformed to attain a normal distribution. All biomass data is expressed as kg/km. Values in cells are r (correlation coefficient), prob > |r|, and N.**

	<b>Total fish</b>	<b>Centrar-chidae</b>	<b>Crappie</b>	<b>Black basses</b>	<b>Largemouth bass</b>	<b>Sunfish</b>	<b>Ictaluridae</b>	<b>Cyprinidae</b>
<b>Spring rotifers</b>	0.85 0.0002 13	0.74 0.0036 13	0.63 0.0213 13	0.74 0.0041 13	0.76 0.0026 13	0.62 0.0243 13	0.66 0.0141 13	0.63 0.0202 13
<b>Spring copepods</b>	0.01 0.9681 13	0.16 0.6116 13	0.37 0.2147 13	0.16 0.6027 13	0.17 0.5777 13	0.08 0.7993 13	-0.02 0.9586 13	-0.29 0.3444 13
<b>Spring cladocera</b>	0.39 0.1879 13	0.50 0.0795 13	0.60 0.0302 13	0.53 0.0601 13	0.55 0.0514 13	0.26 0.3838 13	0.17 0.5893 13	0.21 0.4932 13
<b>Spring crustacea</b>	0.16 0.5984 13	0.31 0.3075 13	0.48 0.0950 13	0.32 0.2852 13	0.34 0.2631 13	0.16 0.6042 13	0.05 0.8666 13	-0.12 0.6909 13
<b>Summer rotifers</b>	0.62 0.0249 13	0.67 0.0125 13	0.59 0.0350 13	0.69 0.0093 13	0.71 0.0063 13	0.46 0.1107 13	0.72 0.0055 13	0.09 0.7813 13
<b>Summer copepods</b>	0.16 0.6074 13	0.15 0.6190 13	0.12 0.6863 13	0.13 0.6624 13	0.14 0.6521 13	0.22 0.4647 13	0.22 0.4788 13	-0.21 0.5006 13
<b>Summer cladocera</b>	-0.22 0.4698 13	-0.09 0.7648 13	0.16 0.5927 13	-0.04 0.8872 13	-0.02 0.9413 13	-0.26 0.3872 13	-0.29 0.3311 13	-0.15 0.6214 13
<b>Summer crustacea</b>	0.04 0.9079 13	0.08 0.7897 13	0.16 0.5930 13	0.08 0.7904 13	0.10 0.7523 13	0.09 0.7805 13	0.07 0.8311 13	-0.24 0.4212 13

**Table 42. Results of correlation analyses relating littoral fish biomass based on electrofishing data to parameters related to reservoir habitat type and morphometry/hydrology. The morphoedaphic index (MEI) was calculated as summer specific conductance ( $\mu\text{mho/cm}$ ) divided by mean depth (m). Electrofishing data subjected to correlation analysis represent lakewide means of data collected on 11 Catawba-Wateree reservoirs, 1993-2002. All variables have been  $\log_{10}$ -transformed to attain a normal distribution. All biomass data is expressed as kg/km. Values in cells are r (correlation coefficient), prob > |r|, and N.**

	<b>Total fish</b>	<b>Centrar-chidae</b>	<b>Crappie</b>	<b>Black basses</b>	<b>Largemouth bass</b>	<b>Sunfish</b>	<b>Ictaluridae</b>	<b>Cyprinidae</b>
<b>% Developed</b>	-0.42 0.2324 10	-0.36 0.3028 10	-0.05 0.8933 9	-0.39 0.2700 10	-0.37 0.2940 10	-0.32 0.3660 10	-0.14 0.7034 10	-0.60 0.0674 10
<b>% Sand</b>	-0.26 0.4679 10	-0.30 0.3943 10	-0.32 0.4032 9	-0.32 0.3657 10	-0.35 0.3231 10	-0.25 0.4918 10	-0.35 0.3163 10	-0.32 0.3711 10
<b>% Cobble</b>	-0.20 0.6117 9	-0.25 0.5093 9	-0.30 0.4392 9	-0.26 0.5054 9	-0.30 0.4407 9	-0.25 0.5185 9	-0.38 0.3158 9	-0.08 0.8283 9
<b>% Woody debris</b>	0.43 0.2176 10	0.39 0.2670 10	0.35 0.3505 9	0.39 0.2621 10	0.32 0.3611 10	0.23 0.5170 10	0.30 0.3992 10	0.21 0.5581 10
<b>% vegetated</b>	0.18 0.6207 10	0.22 0.5344 10	-0.29 0.4417 9	0.22 0.5362 10	0.28 0.4292 10	0.40 0.2575 10	0.21 0.5692 10	0.26 0.4655 10
<b>% Natural</b>	0.25 0.5118 9	0.18 0.6403 9	-0.09 0.8313 8	0.19 0.6288 9	0.18 0.6489 9	0.20 0.6006 9	0.08 0.8352 9	0.36 0.3375 9
<b>% Undeveloped (clay)</b>	0.18 0.6156 10	0.13 0.7210 10	-0.14 0.7181 9	0.16 0.6629 10	0.13 0.7104 10	0.07 0.8373 10	-0.01 0.9748 10	0.34 0.3345 10
<b>Shoreline development ratio</b>	-0.06 0.8716 11	0.02 0.9625 11	0.35 0.2904 11	-0.01 0.9829 11	-0.03 0.9375 11	0.07 0.8474 11	-0.03 0.9273 11	-0.27 0.4295 11
<b>Mean depth* (m)</b>	-0.13 0.7141 10	-0.23 0.5240 10	0.37 0.2968 10	-0.23 0.5302 10	-0.31 0.3902 10	-0.50 0.1379 10	-0.29 0.4225 10	-0.20 0.5758 10
<b>Hydraulic retention time, days</b>	-0.12 0.7179 11	-0.02 0.9446 11	0.48 0.1320 11	-0.01 0.9773 11	-0.06 0.8521 11	-0.21 0.5328 11	-0.27 0.4205 11	-0.31 0.3480 11
<b>MEI</b>	0.29 0.1800 11	0.11 0.7438 11	-0.31 0.3462 11	0.08 0.8256 11	0.12 0.7169 11	0.35 0.2915 11	0.42 0.2021 11	0.47 0.1420 11

\*Does not include Great Falls-Dearbon due to non-normal distribution of log-transformed data

**Table 43. Results of regression analyses relating total littoral fish biomass based on spring shoreline electrofishing to summer surface concentrations of chlorophyll, nitrogen, and phosphorus, based on data collected 1993-2002 at 19 electrofishing sites on 11 Catawba-Wateree reservoirs. BIO=total fish biomass, kg/km; CHL=chlorophyll, ug/L; TP=total phosphorus, mg P/L; TN=total nitrogen, mg N/L.**

Dependent variable	Independent variable	r <sup>2</sup>	P	Regression equation	Sites included
Fish biomass, kg/km	Chlorophyll, µg/L	0.39	0.0041	log BIO = 1.3012 + 0.5354×log CHL	All
Fish biomass, kg/km	Chlorophyll, µg/L	0.53	0.0009	log BIO = 1.0782 + 0.7872×log CHL	All except FIS, WAT-UL
Chlorophyll, µg/L	Total phosphorus, mg P/L	0.49	0.0009	log CHL = 1.8522 + 0.5206×log TP	All
Chlorophyll, µg/L	Total phosphorus, mg P/L	0.72	<0.0001	log CHL = 2.1570 + 0.6950×log TP	All except GFL
Chlorophyll, µg/L	Total nitrogen, mg N/L	0.49	0.0009	log CHL = 1.4873 + 1.1706×log TN	All
Chlorophyll, µg/L	Total nitrogen, mg N/L	0.77	<0.00001	log CHL = 1.7119 + 1.6641×log TN	All except GFL
Fish biomass, kg/km	Total phosphorus, mg P/L	0.33	0.0105	log BIO = 2.4232 + 0.3647×log TP	All
Fish biomass, kg/km	Total phosphorus, mg P/L	0.70	<0.0001	log BIO = 3.4972 + 0.9697×log TP	All except CED, FIS, GFL, WAT-UL
Fish biomass, kg/km	Total nitrogen, mg N/L	0.26	0.0254	log BIO = 2.1362 + 0.7334×log TN	All
Fish biomass, kg/km	Total nitrogen, mg N/L	0.50	0.0031	log BIO = 2.6375 + 1.7828×log TN	All except CED, FIS, GFL, WAT-UL

**Table 44. Results of correlation analyses among summer surface concentrations of chlorophyll ( $\mu\text{g/L}$ ), total phosphorus ( $\text{mg P/L}$ ), and total nitrogen ( $\text{mg N/L}$ ). Data subjected to correlation analysis represent means of data collected in the vicinity of 19 electrofishing sites on 11 Catawba-Wateree reservoirs, 1993-2002. Chlorophyll and nutrient samples were collected at mid-channel. All variables have been  $\log_{10}$ -transformed to attain a normal distribution. Values in cells are r (correlation coefficient),  $\text{prob} > |r|$ , and N.**

	Summer chlorophyll	Summer total phosphorus	Summer total nitrogen
Summer chlorophyll	-	0.70 0.0009 19	0.70 0.0009 19
Summer total phosphorus		-	0.95 <0.0001 19
Summer total nitrogen			-

**Table 45. Correlations among major taxonomic components of biomass in spring shoreline electrofishing data collected at 19 sites on Catawba-Wateree reservoirs, 1993-2002. All biomass values were log10-transformed for correlation. Values in cells are r (correlation coefficient), prob > |r|, and N.**

	<b>Total fish</b>	<b>Centrar-chidae</b>	<b>Crappie</b>	<b>Black basses</b>	<b>Largemouth bass</b>	<b>Sunfish</b>	<b>Ictaluridae</b>	<b>Cyprinidae</b>
<b>Total fish</b>	-	0.91 <0.0001 19	0.72 0.0005 19	0.86 <0.0001 19	0.87 <0.0001 19	0.86 <0.0001 19	0.81 <0.0001 19	0.55 0.0142 19
<b>Centrar-chidae</b>		-	0.79 <0.0001 19	0.99 <0.0001 19	0.98 <0.0001 19	0.85 <0.0001 19	0.83 <0.0001 19	0.31 0.1892 19
<b>Crappie</b>			-	0.77 0.0001 19	0.73 0.0004 19	0.53 0.0183 19	0.56 0.0120 19	0.11 0.6563 19
<b>Black basses</b>				-	0.98 <0.0001 19	0.78 <0.0001 19	0.77 0.0001 19	0.29 0.2339 19
<b>Largemouth bass</b>					-	0.84 <0.0001 19	0.84 <0.0001 19	0.31 0.1906 19
<b>Sunfish</b>						-	0.92 <0.0001 19	0.34 0.1576 19
<b>Ictaluridae</b>							-	0.23 0.3383 19
<b>Cyprinidae</b>								-

**Table 46. Results of correlation analyses relating mean limnetic forage fish density (number/ha) measured with hydroacoustics, 1997-2003, to mean chlorophyll ( $\mu\text{g/L}$ ) and nutrient parameters ( $\text{mg/L}$ ) measured in the top 5 meters of the water column, 1997-2002 (total phosphorus data from 2001 and 2002 were not used due to an increase in reporting limit). Forage fish density was measured in 6 zones on Lake Norman, 4 zones on Lake Wylie, 2 zones on Lake James, and lakewide on all other reservoirs with the exception of Great Falls-Dearborn and Cedar Creek Reservoirs, which were not sampled. All variables have been  $\log_{10}$ -transformed to attain a normal distribution. Values in cells are r (correlation coefficient), prob > |r|, and N.**

	<b>r</b>	<b>P</b>	<b>N</b>
Spring chlorophyll	0.80	<0.0001	18
Summer chlorophyll	0.67	0.0022	18
Spring total phosphorus	0.35	0.1682	17
Summer total phosphorus	0.29	0.2609	17
Spring total nitrogen	0.13	0.6102	18
Summer total nitrogen	0.40	0.1024	18

**Table 47. Results of correlation analyses relating limnetic forage fish density (number/ha) measured with hydroacoustics to zooplankton densities in the top 10 meters of the water column (number/ $\text{m}^3$ ). Zooplankton data were not available for Lake Norman Zones 2, 3, 4 and 6, and Lake Wylie Zones 2 and 3. Total crustacean density represents the sum of copepod plus cladoceran density. All variables have been  $\log_{10}$ -transformed to attain a normal distribution. Values in cells are r (correlation coefficient), prob > |r|, and N.**

	<b>r</b>	<b>P</b>	<b>N</b>
Spring rotifer density	0.77	0.0031	12
Spring copepod density	-0.12	0.7174	12
Spring cladoceran density	0.27	0.4005	12
Spring total crustacean density	-0.02	0.9554	12
Summer rotifer density	0.47	0.1191	12
Summer copepod density	0.10	0.7670	12
Summer cladoceran density	0.23	0.4691	12
Summer total crustacean density	0.18	0.5730	12

**Table 48. Results of correlation analyses relating limnetic forage fish density (number/ha) based on hydroacoustics data to reservoir habitat type and morphometry/hydrology. The morphoedaphic index (MEI) was calculated as lakewide mean specific conductance ( $\mu\text{mho/cm}$ ) based on data collected 1997-2002, divided by mean depth (m). Hydroacoustics data subjected to correlation analysis represent area-weighted means of data collected on 9 Catawba-Wateree reservoirs, 1997-2003. All variables have been  $\log_{10}$ -transformed to attain a normal distribution. Values in cells are r (correlation coefficient), prob > |r|, and N.**

	<b>r</b>	<b>P</b>	<b>N</b>
% Developed	-0.17	0.6608	9
% Sand	-0.52	0.1507	9
% Cobble	-0.30	0.4317	9
% Woody debris	-0.08	0.8457	9
% vegetated	0.35	0.3556	9
% Natural	-0.26	0.5286	8
% Undeveloped (clay)	-0.13	0.7327	9
Shoreline development ratio	-0.19	0.6230	9
Mean depth (m)	-0.27	0.4793	9
Hydraulic retention time, days	-0.35	0.3530	9
MEI	0.50	0.1739	9

**Table 49. Correlations of sport fish harvest (fish/ha/yr and kg/ha/yr) (Table 3) with environmental parameters. Harvest values were derived by dividing total number of fish harvested and total weight of fish harvested by full-pond surface area of reservoir. All variables were log<sub>10</sub>-transformed to attain normal distribution.**

	Harvest numbers, fish/ha/yr			Harvest by weight, kg/ha/yr		
	r	P	N	r	P	N
Fishing pressure, hr/ha/yr	0.77	0.0152	9	0.92	0.0014	8
Spring chlorophyll, ug/L	0.55	0.1231	9	0.39	0.3457	8
Summer chlorophyll, ug/L	0.66	0.0530	9	0.57	0.1371	8
Spring total phosphorus, mg/L	0.68	0.0439	9	0.52	0.1853	8
Summer total phosphorus, mg/L	0.67	0.0501	9	0.54	0.1658	8
Spring total nitrogen, mg/L	0.70	0.0352	9	0.36	0.3765	8
Summer total nitrogen, mg/L	0.70	0.0358	9	0.49	0.2196	8
Summer ash-free dry weight, mg/L	0.75	0.0204	9	0.66	0.0726	8
Summer specific conductance, umho/cm	0.63	0.0681	9	0.39	0.3400	8
Mean depth, m	-0.22	0.5711	9	0.35	0.3925	8
Retention time, days	-0.64	0.0626	9	-0.36	0.3869	8
Shoreline development ratio	-0.47	0.2046	9	-0.43	0.2932	8
Morphoedaphic index	0.60	0.0870	9	0.24	0.5749	8
Shoreline, % developed	0.42	0.2948	8	0.35	0.4444	7
Shoreline, % sand	-0.35	0.3927	8	-0.25	0.5924	7
Shoreline, % cobble	-0.50	0.2091	8	-0.1	0.8229	7
Shoreline, % woody debris	-0.25	0.5514	8	0.09	0.8552	7
Shoreline, % vegetated	0.48	0.2267	8	0.05	0.9167	7
Shoreline, % natural	-0.34	0.4541	7	-0.21	0.6841	6
Shoreline, % undeveloped	-0.54	0.1669	8	-0.42	0.3511	7
Spring rotifer density, no/m3	0.57	0.1091	9	0.57	0.1379	8
Spring crustacean density, no/m3	0.46	0.2139	9	0.13	0.7651	8
Spring copepod density, no/m3	0.23	0.5520	9	-0.04	0.9183	8
Spring cladoceran density, no/m3	0.60	0.0889	9	0.39	0.3444	8
Summer rotifer density, no/m3	0.57	0.1073	9	0.39	0.338	8
Summer crustacean density, no/m3	-0.24	0.5329	9	-0.51	0.1951	8
Summer copepod density, no/m3	-0.29	0.4511	9	-0.41	0.3076	8
Summer cladoceran density, no/m3	0.05	0.9022	9	-0.47	0.2398	8