

FISHERIES INVESTIGATIONS IN LAKES AND STREAMS

DISTRICT IV

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1998

ANNUAL PROGRESS REPORT

F-63

July 1, 1997 through June 30, 1998

S.C. Department of Natural Resources  
Division of Wildlife and Freshwater Fisheries  
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the Fraser-Lee method as developed by Morrow (1990).

[Sport fish creel survey]

A roving creel survey was conducted on Lake Monticello from June, 1997 through May, 1998. A seasonal temporal stratification and four daily time periods were used. Each of the four daily time periods was assigned a non-uniform probability (Table 1).

Five weekdays and four weekend days were sampled during the summer (June-August) for 3.5 hours each. During fall (September-November) seven weekdays and six weekend days were sampled and the first and last time periods (one and four) were adjusted as needed to accommodate daylight hours for creel clerk safety. In winter (December-February) four weekdays and four weekend days were sampled for 2.5 hours each. For spring (March-May) five weekdays and five weekend days were sampled for 3.5 hours each.

Sampling days for each month within a given season were selected randomly as were the time periods to be sampled within each day. At the start of each sample day, a coin toss was made to determine if the instantaneous counts or interviews would be conducted at the beginning or the end of the sample period. A coin toss was also used to determine if the counting or interview circuit would be made to the right or left as the clerk faced upstream. The creel clerk was able to make an entire circuit around the lake and complete an instantaneous count in about one hour. During late fall and winter, the instantaneous count and interviews were simultaneously conducted as the clerk proceeded around the lake. Estimates of seasonal effort, catch-per-unit effort (CPUE), harvest, species specific length frequencies and other system specific information were completed as in Malvestuto *et al.* (1978). Data were analyzed using a SAS program written by Malvestuto.

Table 1. Lake Monticello creel survey sampling design.

Season	Season Starts	Sample Days		Time Period		Probabilities
		Weekday	Weekend	From	To	
Summer	6-1-1997	5	4	1. 6:00 am	9:30 am	.20
				2. 9:30 am	1:00 pm	.25
				3. 1:00 pm	4:30 pm	.25
				4. 4:30 pm	8:00 pm	.30
Fall	9-1-1997	7	6	* 1. 6:30 am	9:30 pm	.20
				**2. 9:30 am	1:00 pm	.25
				3. 1:00 pm	4:30 pm	.25
				4. 4:30 pm	8:00 pm	.30
Winter	12-1-1997	4	4	1. 7:00 am	9:30 am	.20
				2. 9:30 am	12:00 noon	.25
				3. 12:00 noon	2:30 pm	.25
				4. 2:30 pm	5:00 pm	.30
Spring	3-1-1998	5	5	1. 6:00 am	9:30 am	.20
				2. 9:30 am	1:00 pm	.25
				3. 1:00 pm	4:30 pm	.25
				4. 4:30 pm	8:00 pm	.30

\*One half hour deleted as necessary mid September-October for time period 1 and 4

\*\*One hour deleted as necessary in November for time period for time period 1 and 4

[Sport fish creel survey]

From June, 1997, through May, 1998, fishermen expended an estimated 117,520 hours (17.8 hours/acre) of fishing effort on Lake Monticello. Relative standard error over the study period was 12.7. Bank fishermen expended an estimated 30,068 hours (25.6%), dock fishermen expended 7,130 hours (6.1%), and boat fishermen expended 80,321 hours (68.3%) of the total effort. Fishing pressure was highest in spring, 1998, when fishermen expended a total of 43,259 hours of effort (6.4 hours/acre) and lowest during winter when only 12,102 hours of effort (1.8 hours/acre) were expended (Table 2).

Forty-four percent of all fishing effort was directed at catfish species. Of this total, 5% was directed toward channel catfish and 5% was directed toward blue catfish. Black crappie and largemouth bass received 19% and 11% of the total effort, respectively (Table 3).

Fishing success (harvest + catch and release) was .66 fish/hour during the study period. Fishermen caught and released .21 fish/hour during the period and harvested .45 fish weighing .29 pounds/hour. Fishing success varied seasonally throughout the study period, ranging from a high of 3 fish/hour in summer to .7 fish/hour caught in fall (Table 4).

Estimates of harvest indicated that 154,681 fish (22.7 fish/acre) were harvested weighing 73,642 pounds (10.8 pounds/acre). A total of 225,398 fish were caught during the year. Harvest was dominated numerically by blue catfish, channel catfish, and white perch (Table 5).

Over the study period, an estimated 60,434 blue catfish; 52,673 channel catfish; 14,409 white perch and 11,410 bluegill were harvested from Lake Monticello. Only 1,244 largemouth bass were harvested over the study period. Fishermen harvested more catfish during the spring and summer while largemouth bass, white bass, and white perch harvest was best during winter. Harvest by weight was dominated by blue catfish, channel catfish, and white bass (Table 6).

Table 2. Fishing effort from Lake Monticello, by season, expressed on a per angler-hour and on a per surface area basis. Relative standard errors (RSE) are included for angler-hour efforts.

Season	Year	Bank		Dock		Boat		Total		Effort/acre	
		Hours	RSE	Hours	RSE	Hours	RSE	Hours	RSE		
Summer	1997	10418	27.5	2139	61.3	26983	27.4	39540	24.2	5.8	
Fall	1997	4898	29.8	1979	29.2	15741	23.8	22618	21.1	3.3	
Winter	1997-98		1750	37.4	535	43.5	9817	28.4	12102	27.8	1.8
Spring	1998	13002	14.9	2478	64.9	27779	28.6	43259	23.1	6.4	

Table 3.

Annual estimates of fishing effort by target species on Lake Monticello, June, 1997-May, 1998. Estimates are expressed in angler-hours and percent contribution to total effort for the entire lake.

Species Fish For	Hours	Percent
Any	19447	18
Blue Catfish	5557	5
Black crappie	20604	19
Bluegill	4443	4
Catfish	38133	34
Channel catfish	5494	5
Carp	223	0
Largemouth bass	12111	11
White bass	3707	3
White perch	669	1

Table 4. Fishing success in numbers of fish caught per hour by all fishermen on Lake Monticello, Summer 1997-Spring 1998.

Season	Year	Success (No./hour)
Summer	1997	3
Fall	1997	0.7
Winter	1997-98	3
Spring	1998	1.3

Table 5. Number of fish harvested, by species, from Lake Monticello, Summer 1997-Spring 1998.

	Season				Total
	Summer	Fall	Winter	Spring	
Blue catfish	49258	2390	-	8786	60434
Black crappie	-	1707	415	-	2122
Bluegill	11010	-	-	399	11410
Channel catfish	15647	683	-	36344	52673
Largemouth bass	-	-	1244	-	1244
Redear sunfish	580	-	-	799	1378
White catfish	5216	-	-	399	5614
White bass	-	-	3317	-	3317
White crappie	-	341	-	-	341
White perch	580	5121	8708	-	14409
Yellow bullhead	1738	-	-	-	1738

Table 6. Number of fish harvested, by weight (pounds), from Lake Monticello, Summer 1997-Spring 1998.

	Season				Total
	Summer	Fall	Winter	Spring	
Blue catfish	25138	5906	—	2202	33246
Black crappie	—	124	224	—	348
Bluegill	816	—	—	37	853
Channel catfish	5939	249	—	24003	30191
Largemouth bass	—	—	1286	—	1286
Redear sunfish	92	—	—	433	525
White catfish	903	—	—	219	1122
White bass	—	—	2925	—	2925
White crappie	—	17	—	—	17
White perch	47	199	1798	—	2044
Yellow bullhead	1086	—	—	—	1086

Monetary expenditures by fishermen on Lake Monticello totaled \$369,768.00 over the study period (Table 7). Most money was spent on gasoline, followed by food, lodging, and bait. Fishermen were willing to spend an additional \$251,000 to fish Lake Monticello.

Initial results of a planned two year roving creel survey on Lake Monticello reveal a substantial increase in fishing effort over a previous access point survey conducted in the late 1980s (Table 8).

Table 7. Total annual angler expenditures for Lake Monticello for gas, bait, food, lodging and the total of these categories. Also given is the total willingness to pay.

Gas	Bait	Food	Lodging	Total	Willing
190978	80597	84029	1840	369768	251343

Table 8. Comparison of total fishing effort and effort per acre for a previous creel survey conducted on Lake Monticello from Winter 1987-Summer 1989 and the present survey Summer 1997-Spring 1998.

	1987-1988		1988-1989		1997-1998	
	Total Effort	Effort/acre	Total Effort	Effort/acre	Total Effort	Effort/acre
Summer	8049	1.2	17043	2.5	39540	5.8
Fall	*				22618	3.3
Winter		*		1920 .3		12102 1.8
Spring	11196	1.6	10609	1.6	43259	6.4

\*no interviews were conducted for Winter 1987-1988 and Fall 1988.

## Recommendations

1. Continue using the survey techniques described in this report to evaluate fish populations.
2. Continue annual management of lakes Long, Oliphant, Cherokee, Thicketty, Jonesville Reservoir, Mt. Lakes and the Lake Monticello Sub-impoundment.
3. Apply appropriate and acceptable management strategies necessary to maintain optimal sport fishing opportunities in each impoundment.

## JOB PROGRESS REPORT

STATE: South Carolina

PROJECT No.: F-63

GRANT TITLE: Fisheries Investigations in Lakes and Streams

SECTION: Reservoir and Stream Survey and Inventory - Fisheries District IV

JOB NO.: 3 Data Analysis and Report Writing

PERIOD COVERED: July 1, 1997 through June 30, 1998

### Summary:

All reporting for work conducted under this section was completed as needed and is reflected in this report except where noted.

### Materials and Methods

All report writing and data analysis was conducted at the Fisheries District IV office located in Rock Hill, South Carolina. Data analysis was conducted using personal computers.

### Results

All reporting and data analysis of work conducted under this section was conducted as needed and is reflected in this report except where noted.

### References

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