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INTERIM REPORT

SURVEYING AND MONITORING OF THE TAR RIVER SPINY MUSSEL (ELLIPTIO (CANTHYRIA) STEINSTANSANA) IN NORTH CAROLINA

BY

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NORTH CAROLINA WILDLIFE RESOURCES COMMISSION

FOR

U.S. FISH & WILDLIFE SERVICE

FEBRUARY 1, 1991

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INTERIM REPORT

State: North Carolina Project Number: ES-3 (Segment 8)

Project Title: North Carolina Endangered Species

SECTION I (RESEARCH AND SURVEY)

Subsection: North Carolina Mussels

Study Objective: (# IC-2) to monitor the two known Tar River spiny mussel populations and continue survey for the species in appropriate habitats

A. Activity

Job ES6-1: Field Investigations

Introduction

Elliptio steinstansana probably once existed throughout the larger freshwater streams in the Pamlico Drainage Basin: Swift Creek, Fishing Creek, and the Tar River in Granville County to the lower Tar River in Pitt County. During the 1970s through the early 1980s, *E. steinstansana* was found in the main channel of the Tar River from Louisburg in Franklin County to an area near the Edgecombe / Pitt county line (Stansbery pers. comm., Clarke 1983). Stansbery's Ohio State University collection includes specimens from the following locations: Franklin County at the SR 1609 bridge in 1981, Franklin County at the Louisburg US 401 bridge in 1970, Edgecombe County at the NC 42 bridge (no date), Nash County at the NC 58 bridge (no date), Nash County at the US 64 bridge (no date), and Pitt County two miles north of Bruce (no date).

From our recent surveys, it must be concluded that only isolated adults remain in the main channel of the Tar River above and below the Rocky Mount Reservoir. In 1989, one freshly dead adult was found on a sand bar near Tarboro in Edgecombe County, and during the summer of 1990 one adult shell was found in the Tar River in Nash County above the Rocky Mount Reservoir.

Elliptio steinstansana records do not exist for Fishing Creek, a large creek with its Tar River confluence in Edgecombe County; however, based upon its size and habitat characteristics, it probably once supported a healthy population of this species.

The only healthy population of *E. steinstansana* exists in Swift Creek. This population was discovered in 1987

(Alderman 1989). Most of this report describes the status of this one remaining viable population.

Techniques

Monitoring and surveying of E. steinstansana populations in the Pamlico Drainage Basin continue to be completed by N.C. Wildlife Resources Commission personnel. Standard techniques used require scuba, snorkeling gear, waterscopes, visual and tactile examination, and collection of shells.

Results and Discussion

Appendix A includes all survey data collected from September, 1986 through October, 1990. From this data, it is clear that E. steinstansana probably does not presently exist in North Carolina drainages other than the Pamlico Drainage basin.

Live E. steinstansana individuals are difficult to find even under the best conditions of low flow and low turbidity. As seen in Table One, only twelve living E. steinstansana have been seen since 1987. Only live adults were seen in the Tar River near Tarboro in 1987 and live adults and juveniles were found in Swift Creek during the period 1988 - 1990. Such information is of limited use because the relative health of the population cannot be determined.

Swift Creek Mussel Community

One of the best ways to determine the health of a mussel community is to monitor muskrat activity (if present). A very healthy muskrat population exists in Swift Creek; therefore, mussel shells are abundant in muskrat middens. Theoretically, muskrats take all mussel individuals within a certain size range as they are discovered. In Swift Creek, mussels between approximately 20 mm and 90 mm are harvested by muskrats. Apparently mussels less than about 20 mm are of limited food value for muskrats, or they are not available because they are deep within the substrate. During 1989 and 1990 all mussel shells found in Swift Creek (Nash County) fresh muskrat middens between SR 1310 and approximately NC 48 were collected and length measurements were taken. Length corresponds approximately with age in freshwater mussels; therefore, a rough determination of relative population (and community) health can be determined.

Swift Creek's E. steinstansana population appears to be healthy (Fig. 1 and 2, Table 2 and 3). Theoretically, if the distributions seen in Figures One and Two were skewed to the right, significant reproduction occurred. If the

distributions were skewed to the left, significant reproduction had not occurred. Too few shells of this species are available to determine whether significant reproduction is occurring in this creek. However, we do know that all age classes with lengths between approximately 20 mm and 45 mm are represented. This indicates that successful reproduction probably occurs each year.

Two adjacent creek reaches contain most of the Swift Creek E. steinstansana population. One reach is from SR 1310 to SR 1003, and the next reach is from SR 1003 to NC 48. The healthiest parts of most mussel species' populations, including E. steinstansana, are found in this second reach. Distributions for Villosa constricta and Elliptio complanata lengths are significantly more skewed to the right in the SR 1003 to NC 48 Swift Creek reach compared with the SR 1310 to SR 1003 reach (Fig. 3 - 6). Therefore, significant reproduction is probably occurring in the SR 1003 to NC 48 reach for these two species. For Elliptio lanceolata, the species is much more abundant in the SR 1003 to NC 48 reach; however, the distribution of lengths in this reach is skewed to the left (Fig. 8). This indicates that this species may decline in this reach in the future. Too few individual shells were available from the SR 1310 to SR 1003 reach to determine whether significant reproduction is possibly occurring (Fig. 7). Sufficient numbers of Fusconaia masoni shells are not available to determine if significant reproduction is occurring in the two creek reaches (Fig. 9 and 10). However, for each species listed above - Villosa constricta, Elliptio complanata, Elliptio lanceolata, and Fusconaia masoni - every age class appears to be represented (even in the SR 1310 to SR 1003 reach); therefore, successful reproduction probably occurs each year in each species.

As indicated above Elliptio lanceolata may be declining in Swift Creek. This is of particular concern since this species was once an abundant species associate of Elliptio steinstansana in the Tar River at Tarboro in 1966 (Clarke 1978). By 1977 - 1982, Clarke did not find any Elliptio lanceolata in the Tar River associated with Elliptio steinstansana. Therefore, a decline in the Swift Creek Elliptio lanceolata population may indicate the potential for a following decline in the Elliptio steinstansana population in the same area.

Swift Creek Mussel Die-off

On August 3, 1990, a major mussel die-off in Swift Creek was discovered in the vicinity of the SR 1003 bridge, Nash County. The die-off was a short lived event with most of the mortality occurring during the first day (Tables 4 - 6, Fig. 11 - 15). All mussel species in the area were

affected. On August 3, 1990, all mussel meats were fresh, but by August 6, 1990, many of the remaining shells with meats had a very rancid odor. For all species affected except Elliptio complanata, there was a very significant decline in mortality from August 3 to August 6. The creek's discharge rate, turbidity, temperature, DO, and pH were well within normal values. Although there is no laboratory evidence that a toxic spill occurred in the area, there is a high probability that such an "accident" did occur a few hundred meters above the SR 1003 bridge crossing. The introduction of a highly toxic substance into the creek which was washed out of the area rapidly yet killed mussels (possibly on contact) could explain the observed die-off which extended at least down to an area near I 95 in Nash County.

Because different mussel age classes are possibly more sensitive to a particular toxic substance than other age classes, it would be inappropriate to infer the relative population health of each mussel species present in the die-off area from the data acquired from this event.

Forestry Operations Along Swift Creek

In 1988, a very healthy community of mussels existed in Swift Creek below the SR 1310 bridge, Nash County. An extensive 100 meter long gravel reach covering most of the creek width was found in this area. Some time between fall, 1988 and spring, 1989, the forest was high-graded above and below the SR 1310 bridge along Swift Creek. Sediment loading increased and by July, 1990, over 75% of the original gravel reach was covered with thick sediment composed mostly of silt. There was an associated dramatic decline in the freshwater mussel community from 1988 through 1990 (Table Seven). Deforestation along Swift Creek is increasing dramatically in Nash County. Therefore, there is a high probability that the entire mussel community may incur significant losses.

B. Target Dates for Achievement and Accomplishments

All activities are being accomplished on schedule.

C. Significant Deviations

There are no significant deviations.

D. Remarks: None

E. Recommendations

1. Old rusting metal drums are found in different areas of Swift Creek. We need to know the contents of these drums, and if necessary they should be removed from the creek.

2. Various wastewater treatment plants are not complying with their NPDES permit limits. There is a high probability that these plants are a major cause of the decline in the *E. steinstansana* local populations in the Tar River. Both the federal and state governments need to ensure compliance by these plants.

3. Local landowners along Swift Creek need to be encouraged to use Best Management Practices to ensure the continued survival of the Swift Creek aquatic ecosystem. Federal financial support to help develop a "How to Protect Swift Creek Drainage Basin" manual for local landowners and local government officials is needed.

4. The North Carolina Wildlife Resources Commission is in the process of requesting High Quality Waters status for Swift Creek from the N.C. Environmental Management Commission. U.S. Fish & Wildlife Service support for this proposal is needed.

5. Protective local zoning is needed to ensure the continued viability of the Swift Creek aquatic ecosystem.

6. Because of the numerous problems present in the Swift Creek Drainage Basin, there is a great need to monitor its mussel community each year.

7. If possible, an experimental population of *E. steinstansana* should be established in a relatively clean reach of Fishing Creek.

F. Cost: $12,861

Acknowledgements

Significant contributions were provided by Bill Adams, Eric Alderman, Gloria Alderman, Joseph Alderman, Richard Biggins, Jack Donnelly, Samuel Fuller, Richard Hoffman, Christopher McGrath, Ray Pope, Debbie Scruggs, Jim Spangler, Richard Tankersley, Jim Widlak, Randy Wilson, and students from Duke University. The Virginia Museum of Natural History has graciously accepted the shells and mussels collected in North Carolina for proper curation.

LITERATURE CITED

Alderman, J.M. 1989. Status survey of the Tar River spiny mussel. in: North Carolina Wildlife Resources Commission. 1989. Population status, distribution,

and biology of the Tar River spiny mussel, Elliptio (Canthyria) steinstansana (Johnson and Clarke), in North Carolina. Final report to the U.S. Fish & Wildlife Service.

Clarke, A.H. 1983. Status survey of the Tar River spiny mussel. Final Report to U.S. Fish & Wildlife Service with Supplement. 63 pp.

Clarke, A.H. 1978. Canthyria morrisoni (new species) (Unionidae) and other mollusks of a unique ecosystem: the Tar River, North Carolina (unpublished manuscript). Report to the U.S. Fish & Wildlife Service.

TABLE ONE

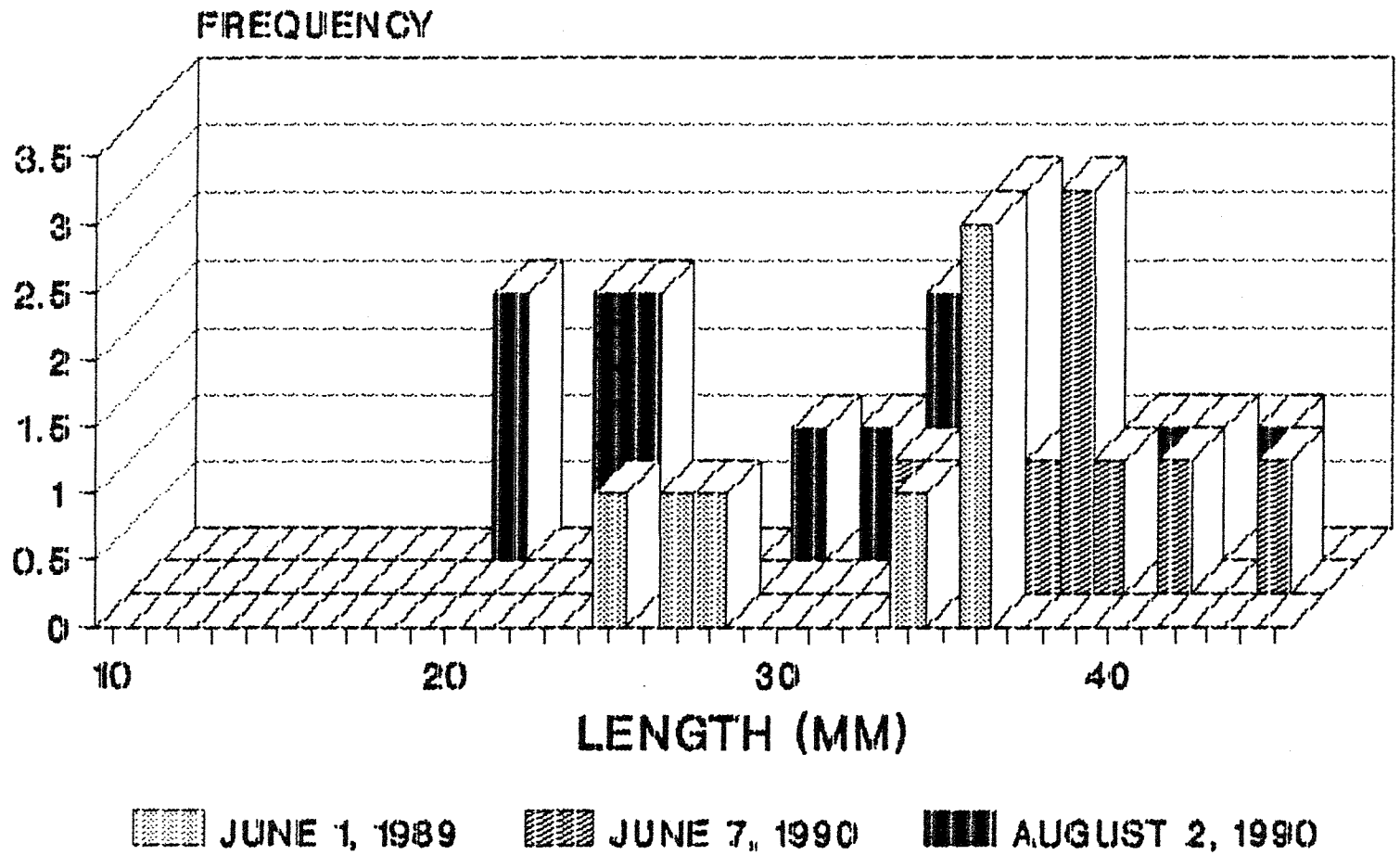
TAR RIVER SPINY MUSSEL MEASUREMENTS (1987 - 1990)

LIVE

STATION	LENGTH (MM)	HEIGHT (MM)	WIDTH (MM)	SPINES # RIGHT VALVE	SPINES # LEFT VALVE	TOTAL SPINES
880706.1	21.75	14.6	13.05	3	2	5
890523.1	27.1	18	10.4	3	3	6
890523.1	28.15	18.35	10.75	3	2	5
890523.1	31.65	23.4	15.2	0	1	1
900731.1	32.2	20.25	13.25	2	2	4
870708.1	33	20	12	1	1	2
890523.1	35.7	23.45	14.4	1	1	2
880601.4	38.2	24.45	14.1	5	3	8
870708.1	38.9	24.6	16.7	1	0	1
880706.1	41	16.6	26.65	1	1	2
870709.1	43.7	27	17.5	1	0	1
870709.1	43.7	27	18.3	1	0	1
NUMBER	12					
MAXIMUM	43.7	27	26.65	5	3	8
MINIMUM	21.75	14.6	10.4	0	0	1

ELLIPTIO STEINSTANSANA SHELLS

TAKEN FROM SWIFT CR. MUSKRAT MIDDENS

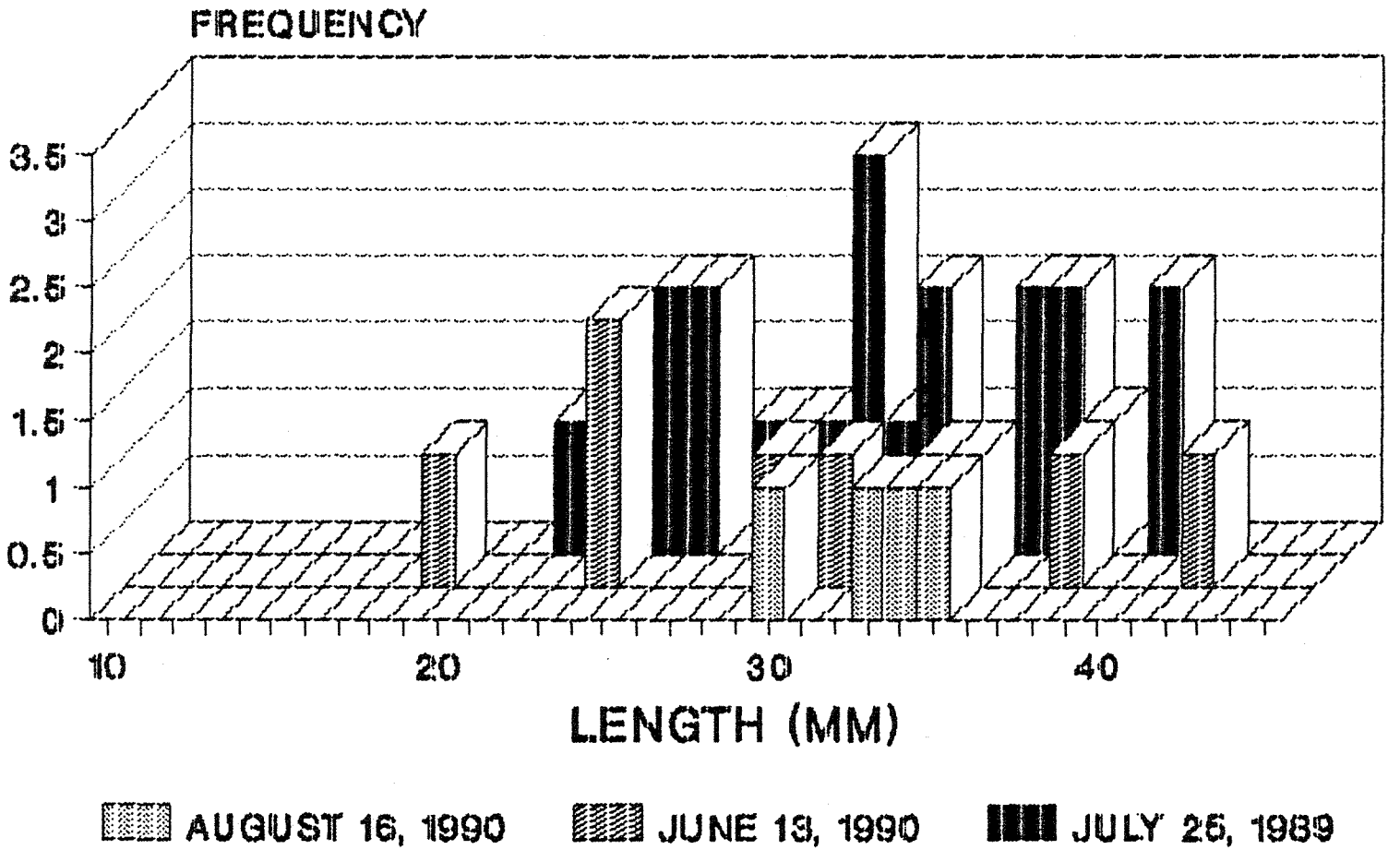


FROM SR 1310 TO SR 1003, NASH CO., N.C.

FIGURE ONE

ELLIPTIO STEINSTANSANA SHELLS

TAKEN FROM SWIFT CR. MUSKRAT MIDDENS



FROM SR 1003 TO NC 48, NASH CO., N.C.

FIGURE TWO

TABLE TWO

SHELLS TAKEN FROM MIDDENS - FROM SR 1319 BRIDGE TO BELOW US 301, NASH AND EDGECOMBE COUNTIES, 1989

STATION	LENGTH (MM)	HEIGHT (MM)	WIDTH (MM)	SPINES # RIGHT VALVE	SPINES # LEFT VALVE	TOTAL SPINES
890725.1	22.15	14.55	8.05	3	5	8
890916	23.2	15.65	8.65	4	2	6
890725.1	24.9	16.4	9.3	6	6	12
890725.1	25.2	16.25	9.85	2	2	4
890916	25.45	16.9	10.3	4	4	8
890601.1	25.5	17.4	9.4	4	4	8
890725.1	25.7	16.7	10.65	3	1	4
890725.1	26.15	17.05	10.15	2	3	5
890601.2	27.45	18.2	11.15	2	2	4
890601.3	28.1	17.7	11.15	2	1	3
890725.1	28.1	17.85	10.65	3	3	6
890916	29.7	19.3	11.85	1	3	4
890725.1	28.75	18.4	11.75	2	2	4
890725.1	29.9	19.45	12.05	2	2	4
890725.1	30.5	20.15	11.15	3	4	7
890725.1	30.95	18.75	11.2	3	3	6
890916	31.05	20.15	11.9	1	1	2
890725.1	31.05	19.15	11.85	2	2	4
890916	31.5	19.7	12.45	2	2	4
890725.1	31.7	19.35	11.55	1	1	2
890725.1	32.65	20.15	12.15	1	1	2
890725.1	33.4	20.75	13.85	1	1	2
890601.3+	33.9	21.05	14.4	1	1	2
890916	34.6	22	13.25	2	3	5
890601.3+	35.55	22	13.5	2	3	5
890601.1	35.55	23.3	15.1	2	1	3
890725.1	35.8	22.8	14.1	1	1	2
890725.1	36.2	22.65	15	2	1	3
890601.2	36.3	23.05	15.7	2	2	4
890916	36.6	23.05	15.25	1	1	2
890725.1	36.9	22.75	14.4	1	1	2
890725.1	37.25	24.75	15.5	2	2	4
890725.1	37.85	23.3	13.05	2	2	4
890725.1	39.75	23.9	14.8	5	3	8
890725.1	39.9	24.8	15.25	2	2	4
890916	43.5	26.85	17.1	0	0	0
NUMBER	36					
MAXIMUM	43.5	26.85	17.1	6	6	12
MINIMUM	22.15	14.55	8.05	0	0	0
MEAN	31.74	20.17	12.43	2.19	2.17	4.36
S. DEV.	5.22	2.98	2.24	1.24	1.30	2.38

TABLE THREE

SHELLS TAKEN FROM MIDDENS - SWIFT CREEK, SR 1310 TO NC 48
NASH COUNTY, N.C. - 1990

STATION	LENGTH (MM)	HEIGHT (MM)	WIDTH (MM)	SPINES # RIGHT VALVE	SPINES # LEFT VALVE	TOTAL SPINES
900613.1	19	12.15	7.4	2	2	4
900802.1	19.8	12.8	12.75	3	3	6
900802.1	19.95	12.95	7.45	4	5	9
900806.2	21.2	14.6	7.4	3	4	7
900802.1	22.8	15.5	8	4	4	8
900802.1	23.05	15.1	8.55	2	2	4
900802.1	24.1	15.65	9.25	3	2	5
900802.1	24.15	15.2	9.3	2	2	4
900613.1	24.2	16.15	8.75	3	3	6
900613.1	24.25	16.15	10.15	4	4	8
900806.2	25.4	17.6	10.1	1	2	3
900806.2	25.7	17.15	10.2	3	2	5
900806.2	25.8	17.1	9.85	2	3	5
900806.2	27.8	17.65	10.5	2	3	5
900613.1	28.75	19	11.65	3	3	6
900806.2	28.85	18.85	10.2	4	1	5
900802.1	29.35	19.2	11.35	3	1	4
900806.2	29.6	18.75	10.8	2	3	5
900816.1	30.15	19.3	12.25	5	4	9
900806.2	30.65	19.85	12.3	5	3	8
900802.1	30.7	18.95	12.35	3	3	6
900613.1	30.8	19.65	11.25	2	1	3
900802.1	33.35	20.05	13.55	3	3	6
900816.1	33.35	20.8	13.15	1	1	2
900802.1	33.45	19.7	12.95	3	3	6
900607.1	33.45	21.15	13.7	1	1	2
900816.1	34.05	21.35	13.85	1	2	3
900613.1	34.3	20.95	13.5	3	3	6
900613.1	34.7	21.9	14.6	1	2	3
900806.2	35.35	22.6	13.7	3	3	6
900816.1	35.4	23.15	13.4	1	1	2
900607.1	35.55	23.35	14.3	2	1	3
900802.1	35.65	21.5	14.1	0	0	0
900607.1	36.15	22.35	14.25	1	1	2
900607.1	36.3	21.6	15.05	0	1	1
900802.1	36.55	24.6	15.75	2	2	4
900607.1	36.85	23.55	13.6	2	1	3

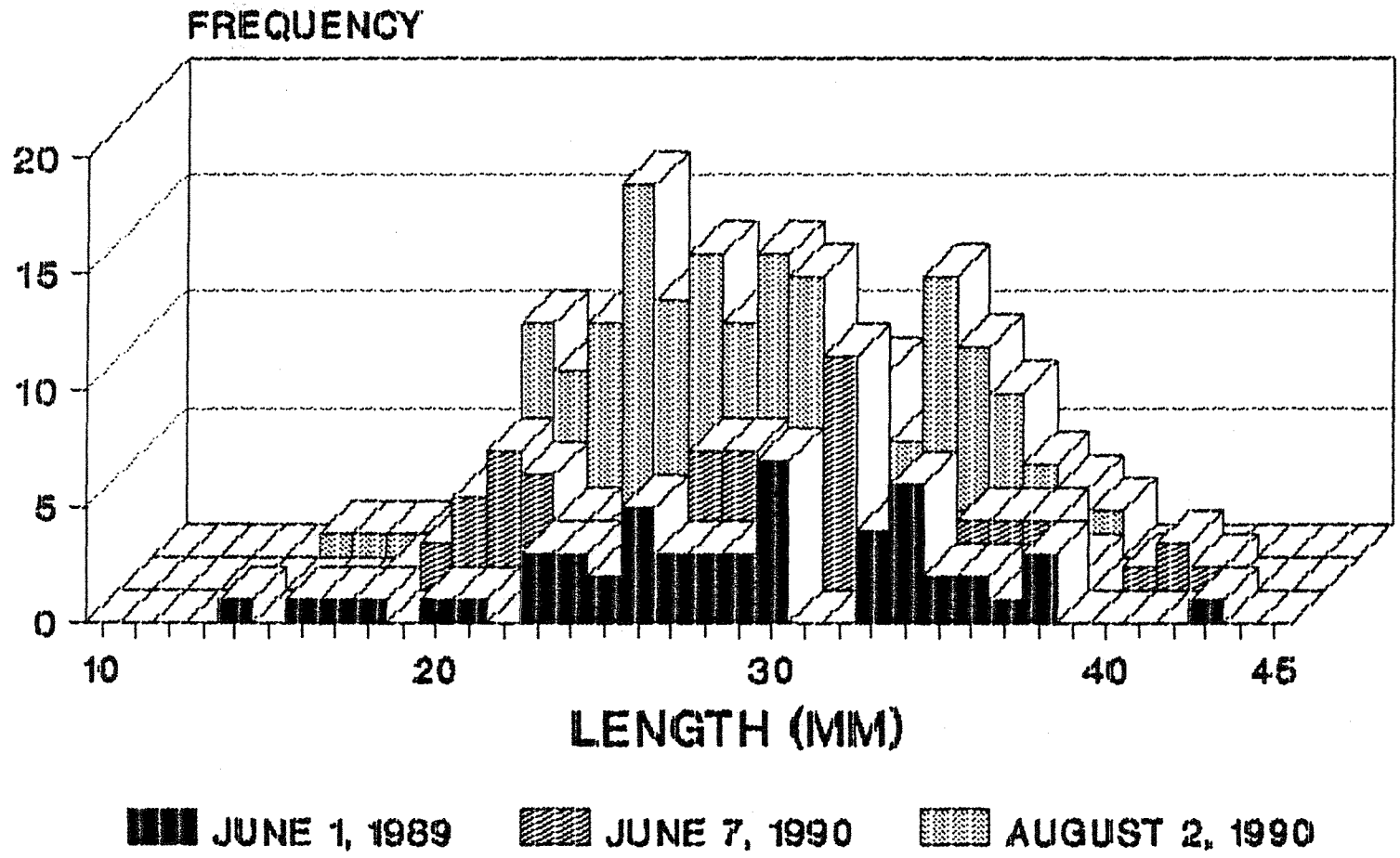
TABLE THREE

SHELLS TAKEN FROM MIDDENS - SWIFT CREEK, SR 1510 TO NC 48
NASH COUNTY, N.C. - 1990

STATION	LENGTH (MM)	HEIGHT (MM)	WIDTH (MM)	SPINES # RIGHT VALVE	SPINES # LEFT VALVE	TOTAL SPINES
900608.1	37.2	23.95	15.35	1	1	2
900607.1	37.95	24	14.95	1	1	2
900607.1	38.05	22.3	14.05	2	1	3
900613.1	38.2	24.4	14.95	0	0	0
900607.1	38.25	23.8	15	2	1	3
900607.1	38.6	24.55	14.55	0	0	0
900806.2	38.65	22.3	15.65	1	2	3
900802.1	38.85	25.2	15.25	1	0	1
900802.1	39.55	24.1	15.95	1	2	3
900607.1	40.5	26.65	19.75	3	2	5
900802.1	41.5	25.5	16.8	1	1	2
900806.2	41.65	25.4	16.7	2	4	6
900613.1	41.8	24.65	14.95	1	1	2
900802.1	42.95	26.35	16.95	1	2	3
900607.1	44.05	26.1	16.75	1	1	2
900806.2	44.25	26.5	17.9	2	1	3
NUMBER	53					
MAXIMUM	44.25	26.65	19.75	5	5	9
MINIMUM	19	12.15	7.4	0	0	0
MEAN	32.69	20.63	12.96	2.06	1.98	4.04
S. DEV.	6.84	3.89	2.91	1.23	1.20	2.25

VILLOSA CONSTRICTA SHELLS

TAKEN FROM SWIFT CR. MUSKRAT MIDDENS

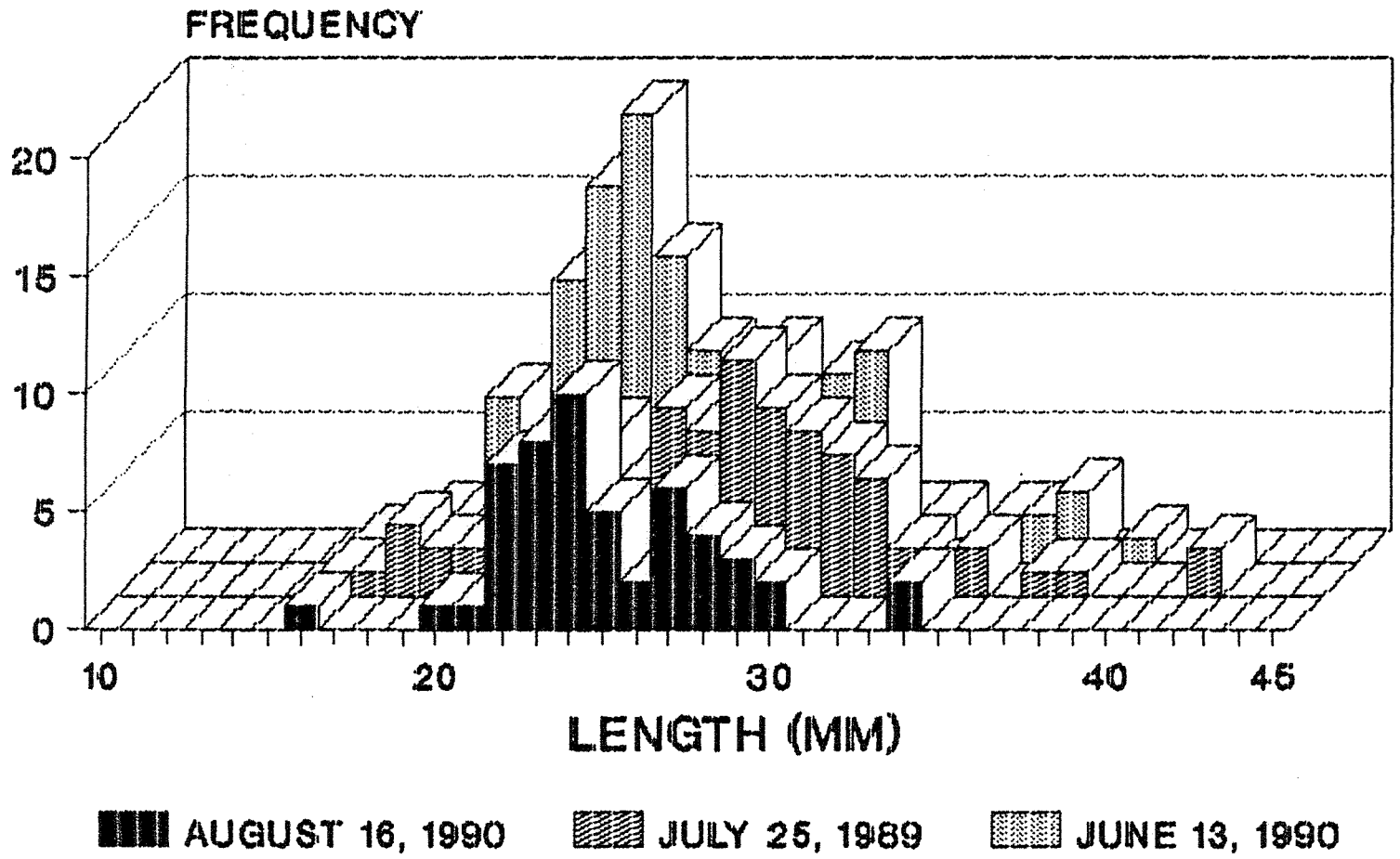


FROM SR 1310 TO SR 1003, NASH CO., N.C.

FIGURE THREE

VILLOSA CONSTRICTA SHELLS

TAKEN FROM SWIFT CR. MUSKRAT MIDDENS

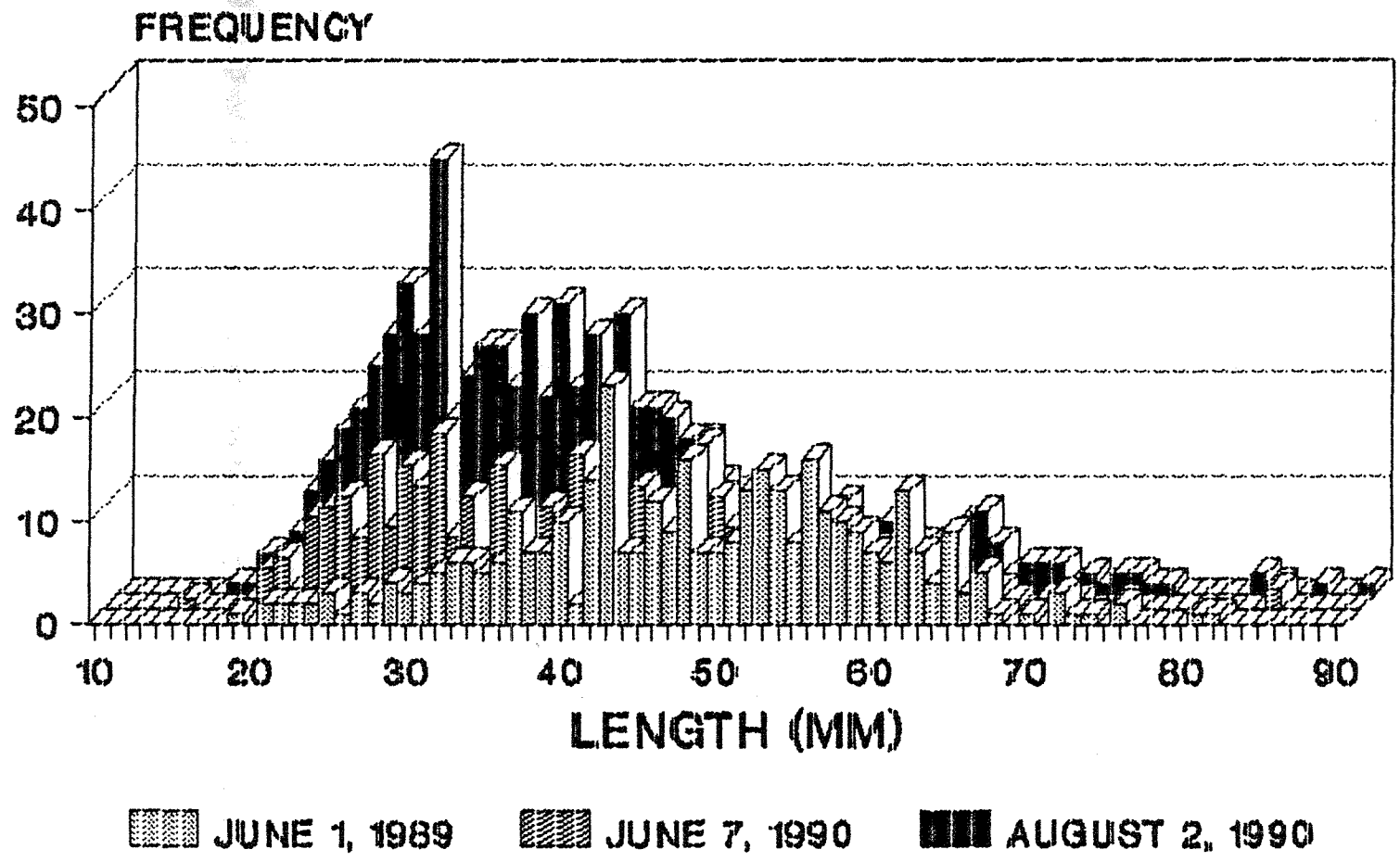


FROM SR 1003 TO NC 48, NASH CO., N.C.

FIGURE FOUR

ELLIPTIO COMPLANATA SHELLS

TAKEN FROM SWIFT CR. MUSKRAT MIDDENS

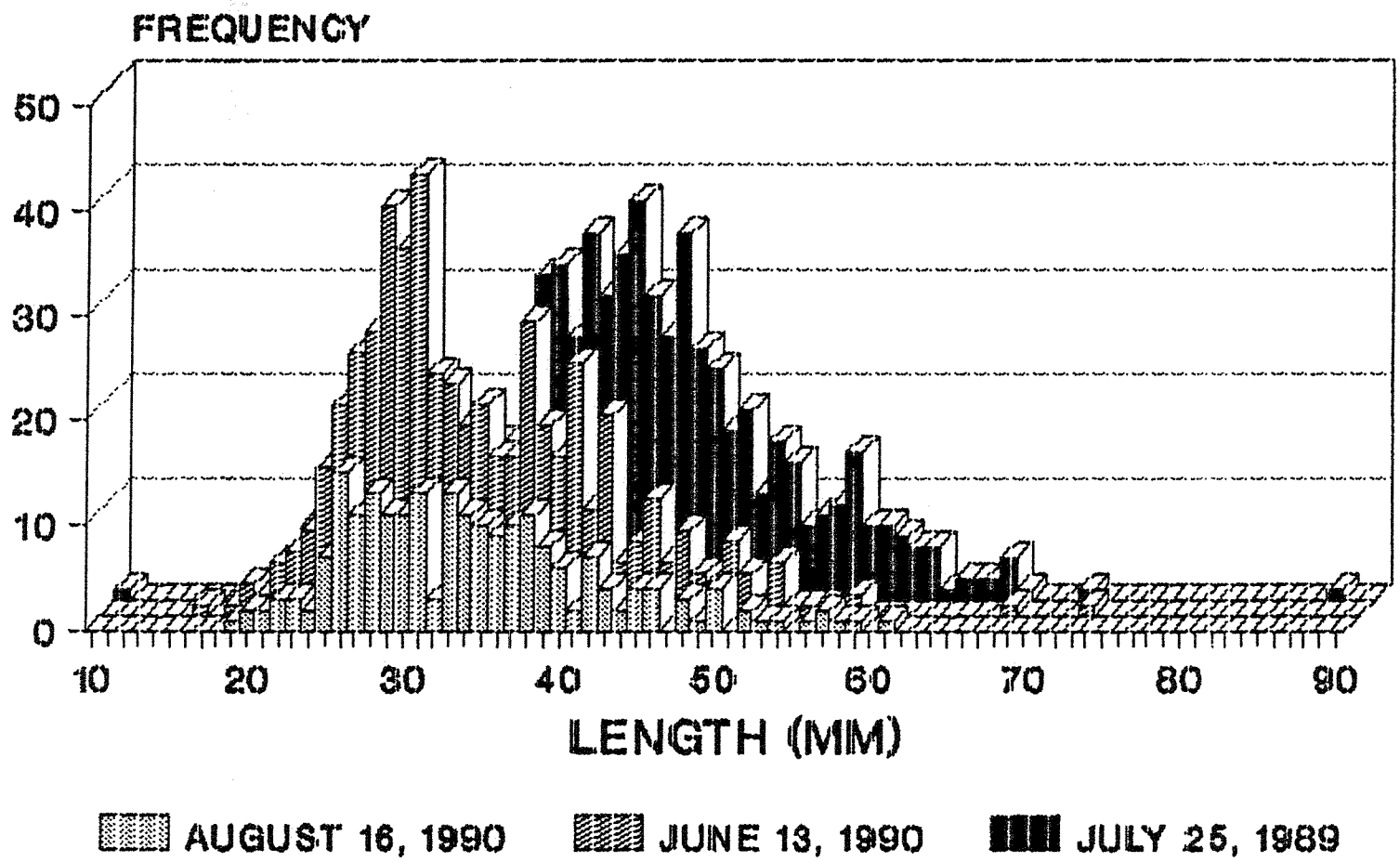


FROM SR 1310 TO SR 1003, NASH CO., N.C.

FIGURE FIVE

ELLIPTIO COMPLANATA SHELLS

TAKEN FROM SWIFT CR. MUSKRAT MIDDENS

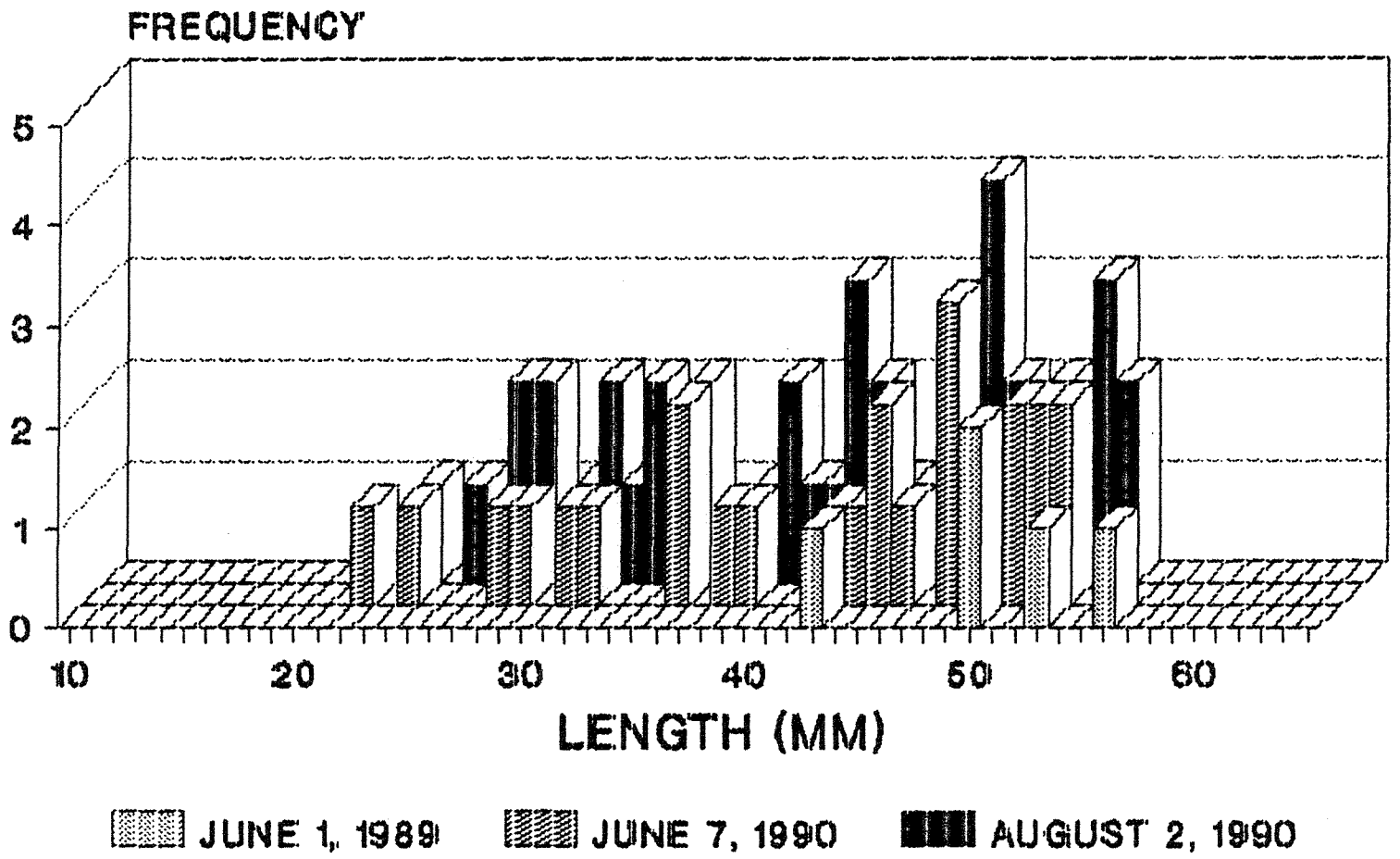


FROM SR 1003 TO NC 48, NASH CO. N.C.

FIGURE SIX

ELLIPTIO LANCEOLATA SHELLS

TAKEN FROM SWIFT CR. MUSKRAT MIDDENS

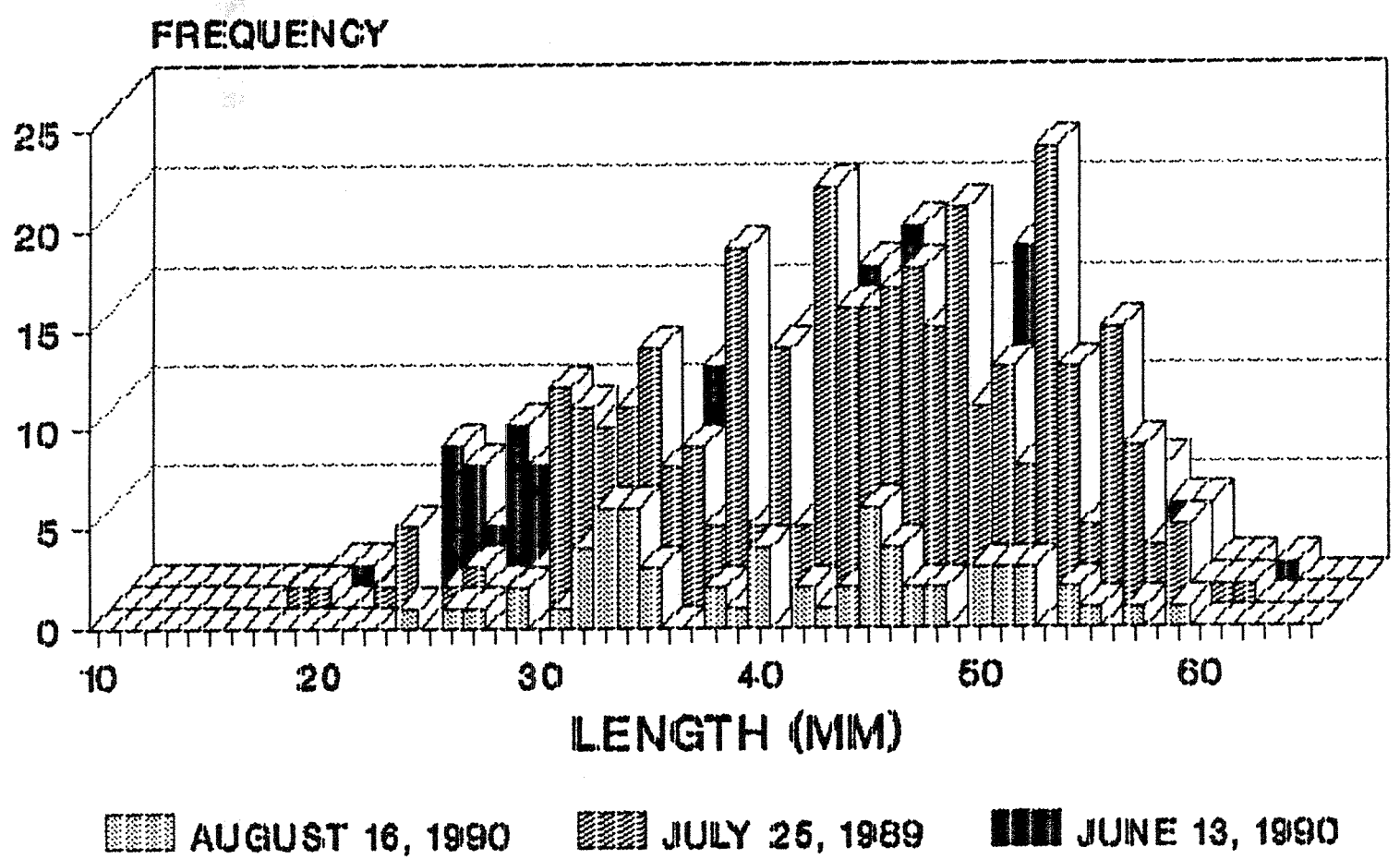


FROM SR 1310 TO SR 1003, NASH CO., N.C.

FIGURE SEVEN

ELLIPTIO LANCEOLATA SHELLS

TAKEN FROM SWIFT CR. MUSKRAT MIDDENS

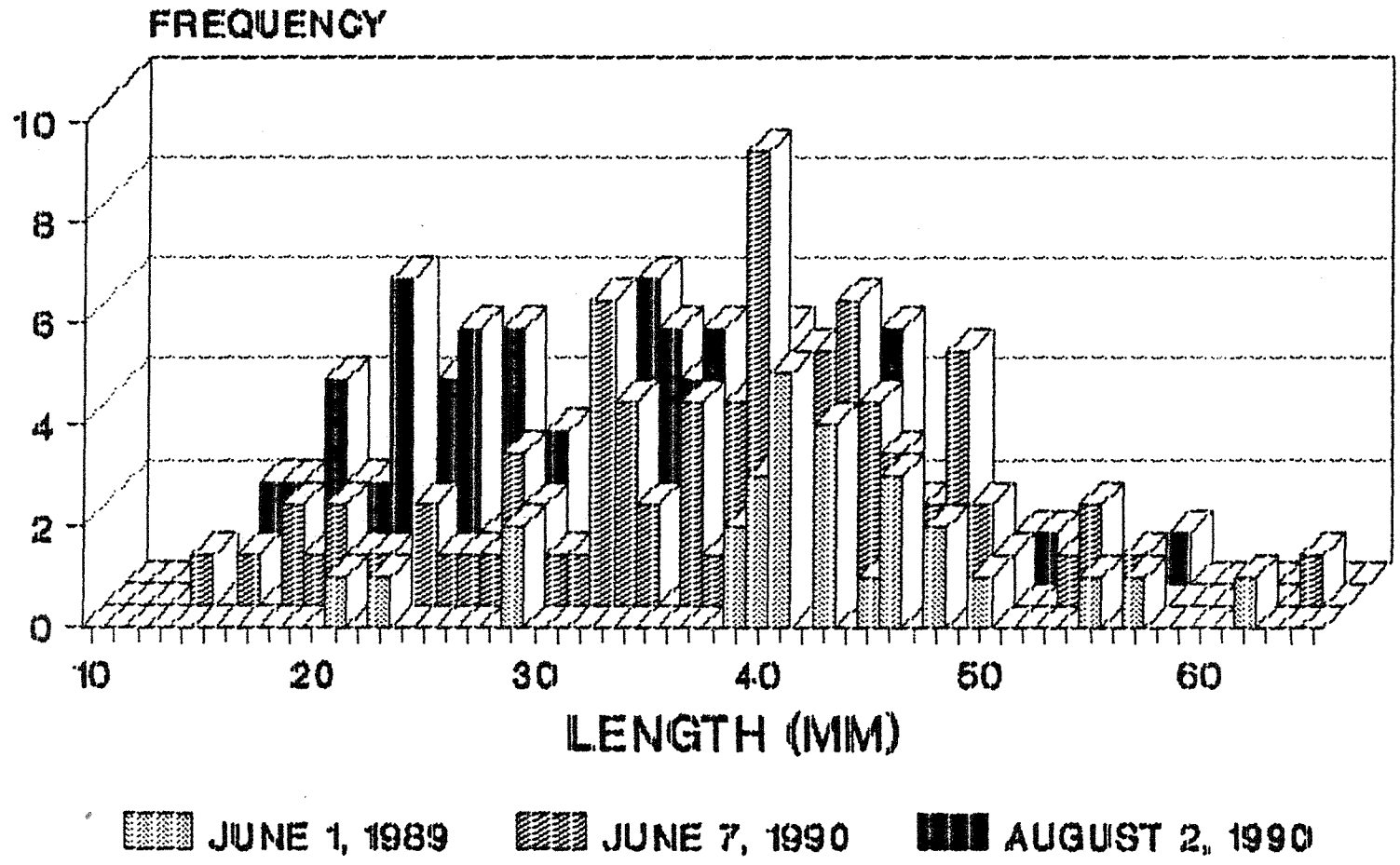


FROM SR 1003 TO NC 48, NASH CO., N.C.

FIGURE EIGHT

FUSCONAIA MASONI SHELLS

TAKEN FROM SWIFT CR. MUSKRAT MIDDENS

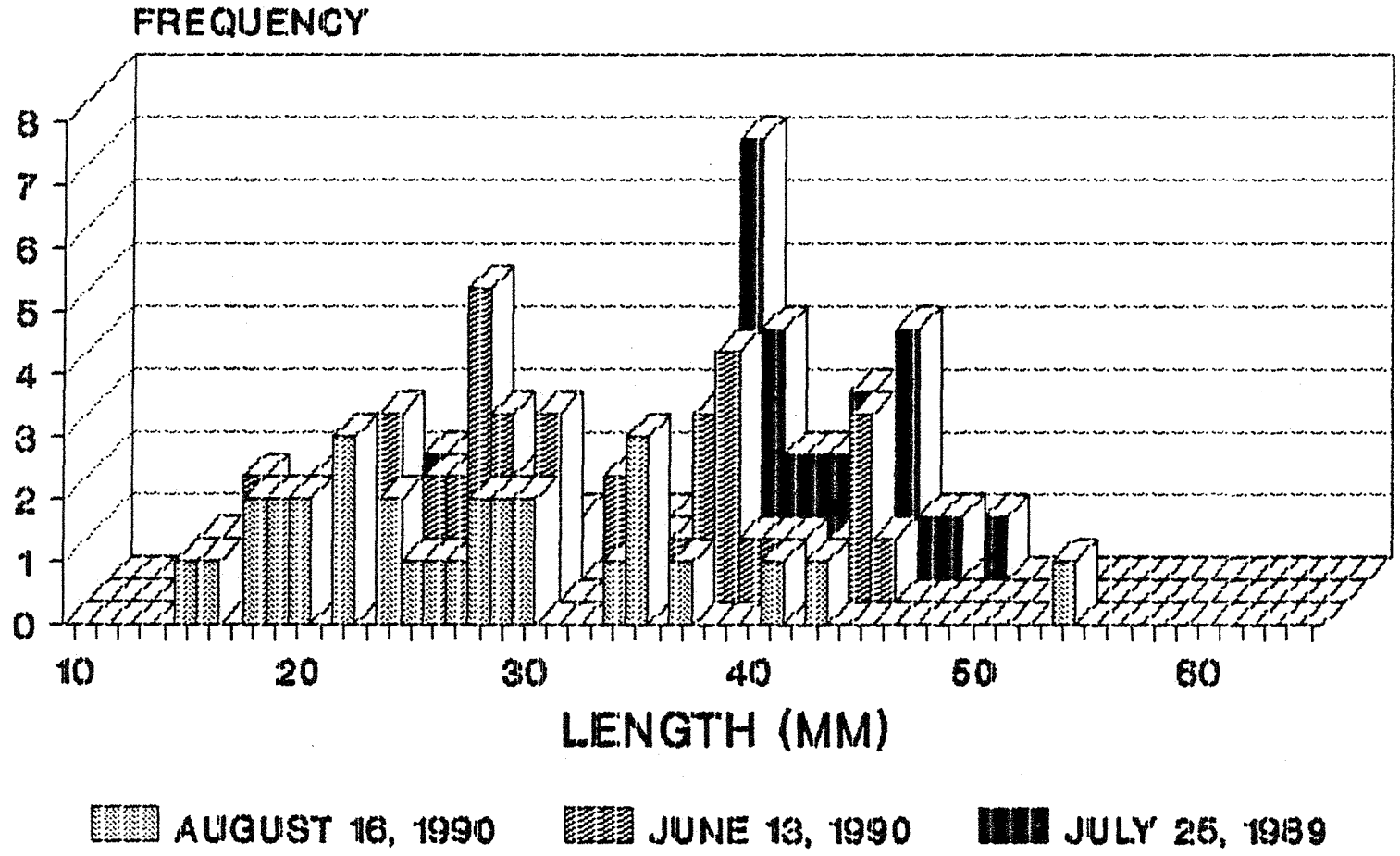


FROM SR 1310 TO SR 1003, NASH CO., N.C.

FIGURE NINE

FUSCONAIA MASONI SHELLS

TAKEN FROM SWIFT CR. MUSKRAT MIDDENS



FROM SR 1003 TO NC 48, NASH CO., N.C.

FIGURE TEN

SWIFT CREEK MUSSEL DIE-OFF

NUMBER DEAD EACH DAY BY SPECIES

SPECIES	AUGUST 3, 1990	AUGUST 6, 1990
ELLIPTIO COMPLANATA	178	149
E. STEINSTANSANA	89	11
E. LANCEOLATA	180	33
VILLOSA CONSTRICTA	17	1
FUSCONAIA MASONI	8	0
STROPHITUS UNDULATUS	51	15
ALASMIDONTA UNDULATA	44	13
LAMPSILIA CARIOSA	84	14
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TOTAL	651	236

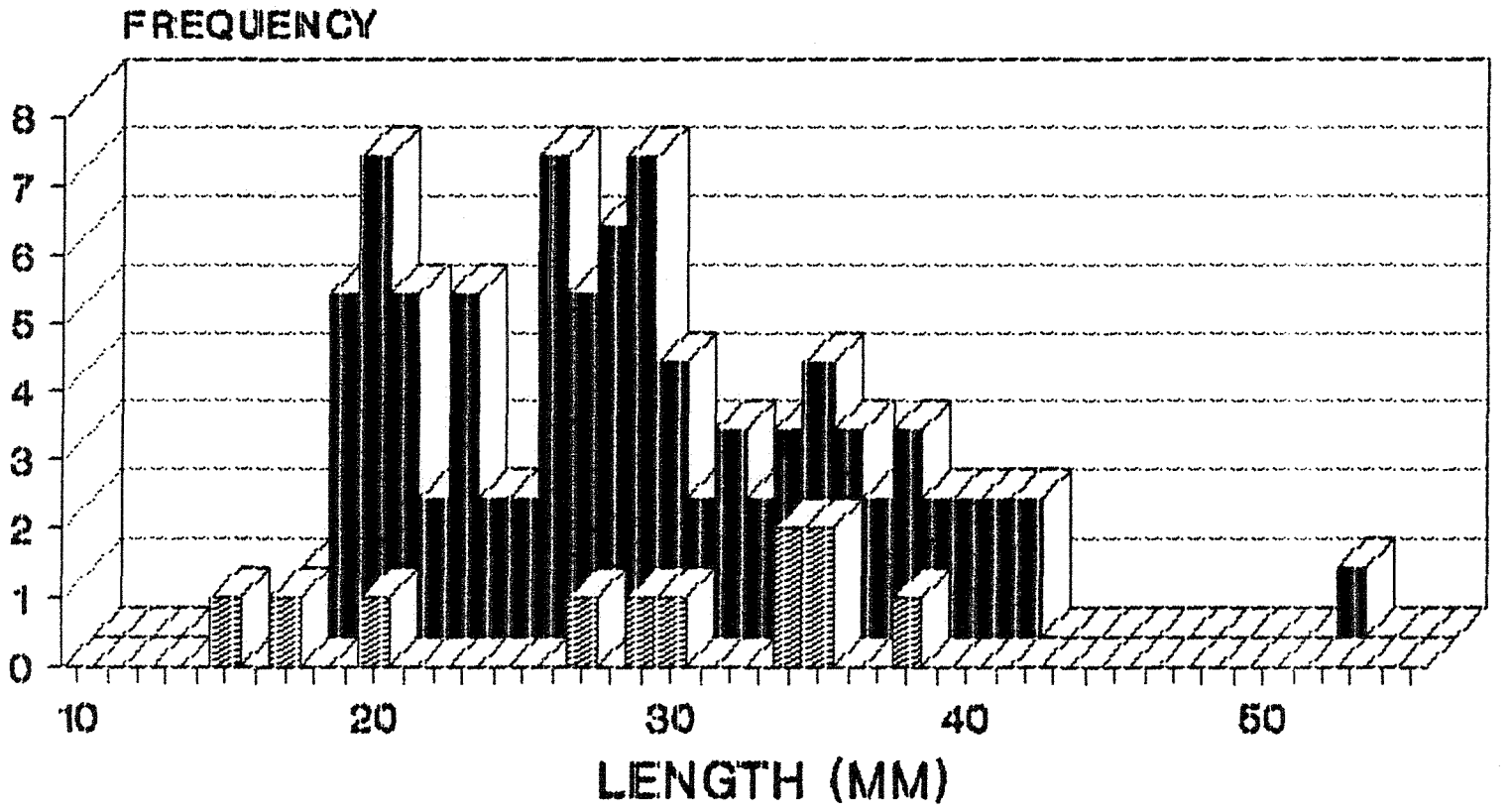
SAME 1000 M OF CREEK
THOROUGHLY SEARCHED

SR 1003 BRIDGE, NASH CO., N.C.

TABLE FOUR

ELLIPTIO STEINSTANSANA SHELLS

TAKEN FROM MUSSEL DIE-OFF AREA



AUGUST 6, 1990 (N = 89)

AUGUST 3, 1990 (N = 11)

SR 1003 BRIDGE, NASH CO., N.C.

FIGURE ELEVEN

TABLE FIVE

SHELLS TAKEN FROM DIE-OFF AREA, SR 1003 BRIDGE,
NASH COUNTY, N.C. - 1990

STATION	LENGTH (MM)	HEIGHT (MM)	WIDTH (MM)	SPINES # RIGHT VALVE	SPINES # LEFT VALVE	TOTAL SPINES
900803	17.1	10.65	6.05	3	2	5
900803	17.55	11.75	6.75	2	2	4
900803	17.8	13	6.75	2	2	4
900803	18.15	11.8	7	3	2	5
900803	18.2	12.1	6.75	4	4	8
900803	18.3	12.35	6.4	4	4	8
900803	18.5	12.15	7.35	3	4	7
900803	18.65	12.45	7.45	2	3	5
900803	18.9	12.55	6.4	1	1	2
900803	19	12.4	7.15	2	3	5
900803	19.4	12.2	7.15	4	4	8
900803	19.45	13.35	7.1	3	4	7
900803	19.45	12.4	7.55	3	2	5
900803	19.6	12.85	7.2	4	3	7
900803	19.75	13.4	7.55	2	2	4
900803	19.85	12.95	7.1	5	4	9
900803	19.95	13.2	7.6	2	3	5
900803	20.25	12.6	6.8	5	4	9
900803	21	13.6	8.2	4	4	8
900803	21.1	13.95	7.8	1	2	3
900803	21.5	14.2	8.4	4	5	9
900803	21.6	16.4	7.5	2	2	4
900803	21.7	14.1	8.75	4	4	8
900803	21.85	14.25	7.8	2	3	5
900803	22.3	14.65	7.85	2	2	4
900803	23.05	15.55	9.7	4	4	8
900803	23.5	15.85	8.8	4	3	7
900803	24.25	14.9	8.8	4	3	7
900803	24.25	15.2	8.15	5	4	9
900803	24.7	16.35	9.4	1	2	3
900803	24.85	16.4	9.5	1	1	2
900803	25	16.95	10.4	3	4	7
900803	25.1	15.25	8.8	4	4	8
900803	25.3	16.05	9.8	4	5	9
900803	25.35	17.05	9.85	2	2	4
900803	25.55	16.25	8.95	2	2	4
900803	25.6	16.8	9.45	3	4	7
900803	25.65	16.1	9.15	4	5	9
900803	25.75	16.35	16.55	4	5	9
900803	26.2	16.75	10.3	2	3	5
900803	26.45	12	10.25	6	2	8
900803	26.6	16.9	10	3	4	7

TABLE FIVE

SHELLS TAKEN FROM DIE-OFF AREA, SR 1003 BRIDGE,
NASH COUNTY, N.C. - 1990

STATION	LENGTH (MM)	HEIGHT (MM)	WIDTH (MM)	SPINES # RIGHT VALVE	SPINES # LEFT VALVE	TOTAL SPINES
900803	26.8	17.4	10.3	4	3	7
900803	26.9	17.7	9.35	2	0	2
900803	27.3	18.6	10.2	3	2	5
900803	27.4	17.65	11.4	3	2	5
900803	27.45	17.8	11.4	1	1	2
900803	27.85	18.15	10.95	3	3	6
900803	27.9	17.75	10.25	2	1	3
900803	27.95	18.3	11.3	2	2	4
900803	27.95	18.4	10.05	4	3	7
900803	27.95	18.4	11.1	2	2	4
900803	28.05	18.5	10.15	2	2	4
900803	28.15	17.8	10.25	2	2	4
900803	28.75	18	11.65	2	1	3
900803	29.1	20	12.35	1	2	3
900803	29.25	18.8	11.25	2	2	4
900803	29.3	18.95	11.15	1	1	2
900803	29.8	18.75	11	2	1	3
900803	30.15	19.15	11.7	1	1	2
900803	30.75	19.85	11.75	2	2	4
900803	31.05	19.45	11.65	2	2	4
900803	31.25	20.6	12.8	2	1	3
900803	31.85	19.55	12.35	3	1	4
900803	32.1	20.75	12.65	1	1	2
900803	32.7	19.8	12.7	2	3	5
900803	32.75	21.5	12.6	3	4	7
900803	32.8	20.15	12.85	2	2	4
900803	33.6	21.55	13.1	2	3	5
900803	33.65	22.85	12.05	0	0	0
900803	33.7	22.15	12.9	1	1	2
900803	34.15	21.3	13.55	1	1	2
900803	35.2	23.2	14	1	2	3
900803	35.4	21.95	13.9	1	0	1
900803	35.8	22.25	14.5	1	2	3
900803	35.9	23.4	13.85	1	0	1
900803	36.1	22.55	13.55	2	2	4
900803	36.2	22.35	14.4	1	1	2
900803	37.1	22.75	15.25	0	1	1
900803	37.2	23	14.2	1	2	3
900803	37.45	23.65	15.2	1	1	2
900803	38.25	24.45	15.5	1	1	2
900803	38.35	23.7	15.95	1	0	1
900803	38.85	24.6	13.85	2	1	3

TABLE FIVE

SHELLS TAKEN FROM DIE-OFF AREA, SR 1003 BRIDGE,
NASH COUNTY, N.C. - 1990

STATION	LENGTH (MM)	HEIGHT (MM)	WIDTH (MM)	SPINES # RIGHT VALVE	SPINES # LEFT VALVE	TOTAL SPINES
900803	38.95	23.75	15.55	1	1	2
900803	39.5	23.6	15.8	1	1	2
900803	39.9	24.15	15.15	1	3	4
900803	41.15	25.25	16.15	0	0	0
900803	41.2	25.7	13.95	1	2	3
900803	41.55	24.7	16.25	0	0	0
900803	51.55	32.15	20.45	0	0	0
NUMBER	91					
MAXIMUM	51.55	32.15	20.45	6	5	9
MINIMUM	17.1	10.65	6.05	0	0	0
MEAN	28.04	17.94	10.82	2.26	2.24	4.51
S. DEV.	7.20	4.28	3.05	1.32	1.34	2.50

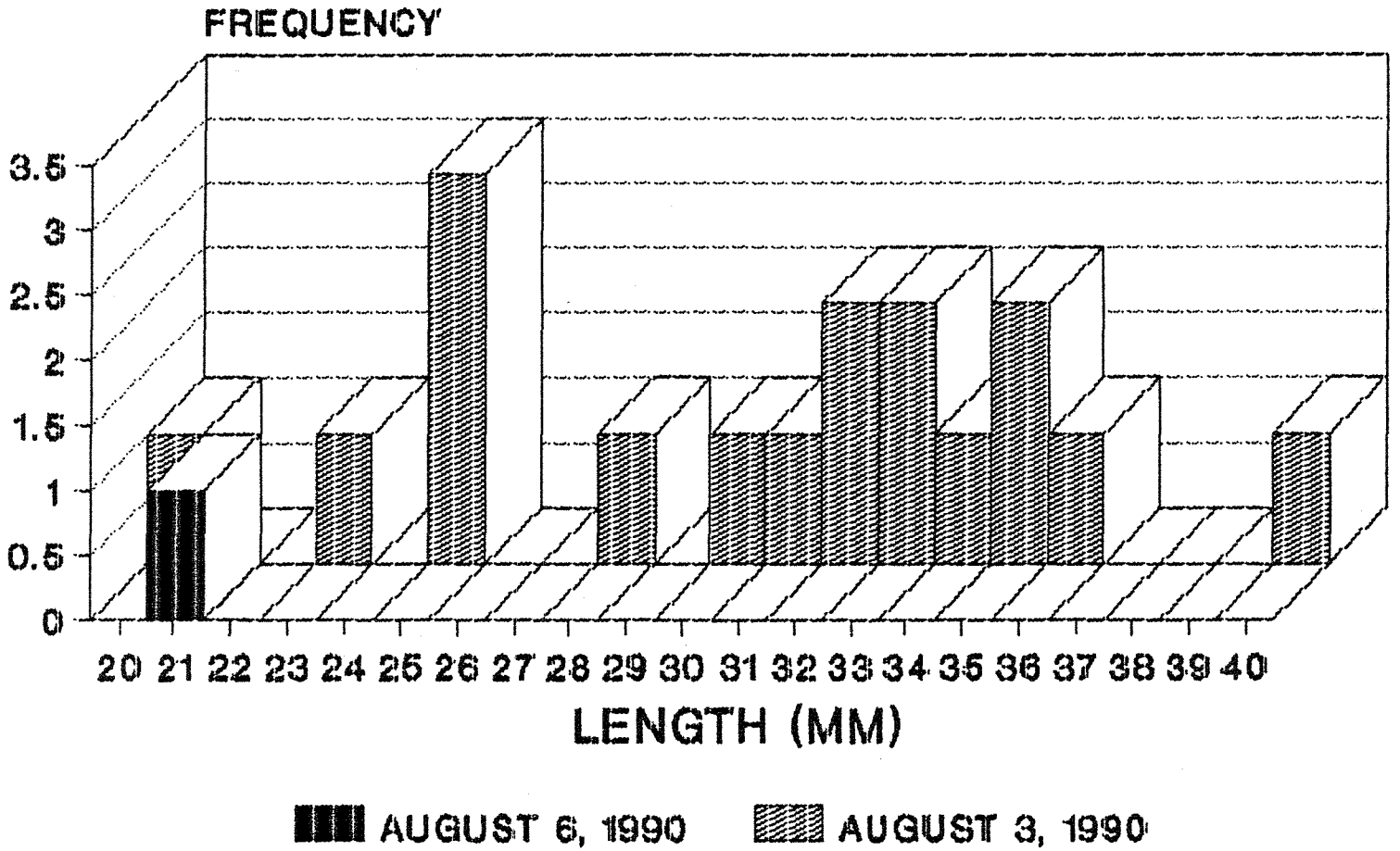
TABLE SIX

SHELLS TAKEN FROM DIE-OFF AREA, SR 1003 BRIDGE,
NASH COUNTY, N.C. - 1990

STATION	LENGTH (MM)	HEIGHT (MM)	WIDTH (MM)	SPINES # RIGHT VALVE	SPINES # LEFT VALVE	TOTAL SPINES
900806.1	15	10.35	5.8	2	3	5
900806.1	16.85	11.2	6.65	4	3	7
900806.1	19.6	14.1	7.45	4	4	8
900806.1	26.8	16.4	9.9	3	4	7
900806.1	29.3	18.15	11.4	2	1	3
900806.1	30.15	19.45	12.25	2	2	4
900806.1	33.85	21.55	12.9	2	2	4
900806.1	34.4	21.85	14.3	2	1	3
900806.1	34.5	22.3	13.75	1	1	2
900806.1	34.6	21.55	12.7	1	1	2
900806.1	37.95	23.65	14.25	0	1	1
NUMBER	11					
MAXIMUM	37.95	23.65	14.3	4	4	8
MINIMUM	15	10.35	5.8	0	1	1
MEAN	28.45	18.23	11.03	2.09	2.09	4.18
S. DEV.	7.93	4.63	3.11	1.22	1.22	2.32

VILLOSA CONSTRICTA SHELLS

TAKEN FROM MUSSEL DIE-OFF AREA

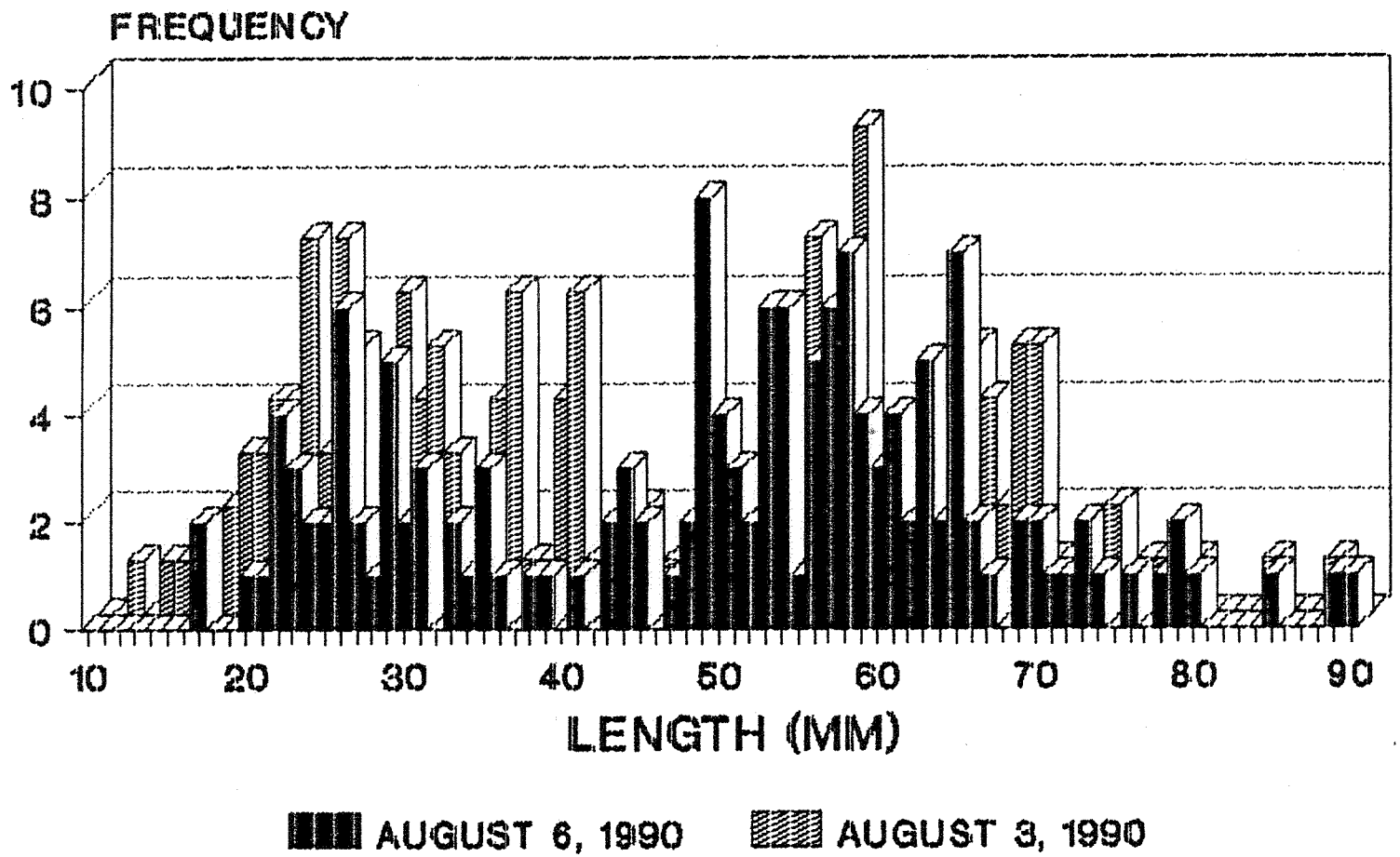


SR 1003 BRIDGE, NASH CO., N.C.

FIGURE TWELVE

ELLIPTIO COMPLANATA SHELLS

TAKEN FROM MUSSEL DIE-OFF AREA

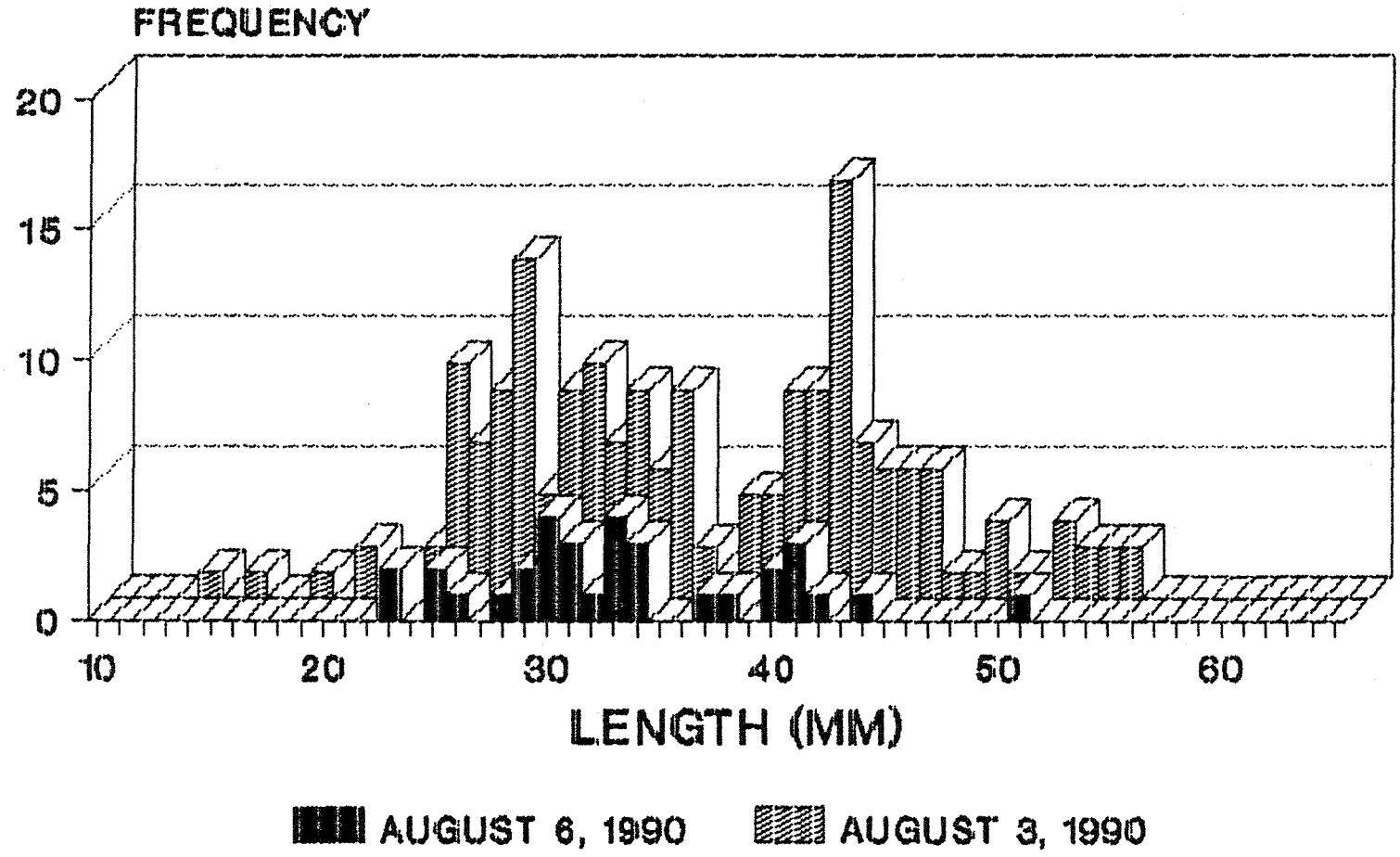


SR 1003 BRIDGE, NASH CO., N.C.

FIGURE THIRTEEN

ELLIPTIO LANCEOLATA SHELLS

TAKEN FROM MUSSEL DIE-OFF AREA

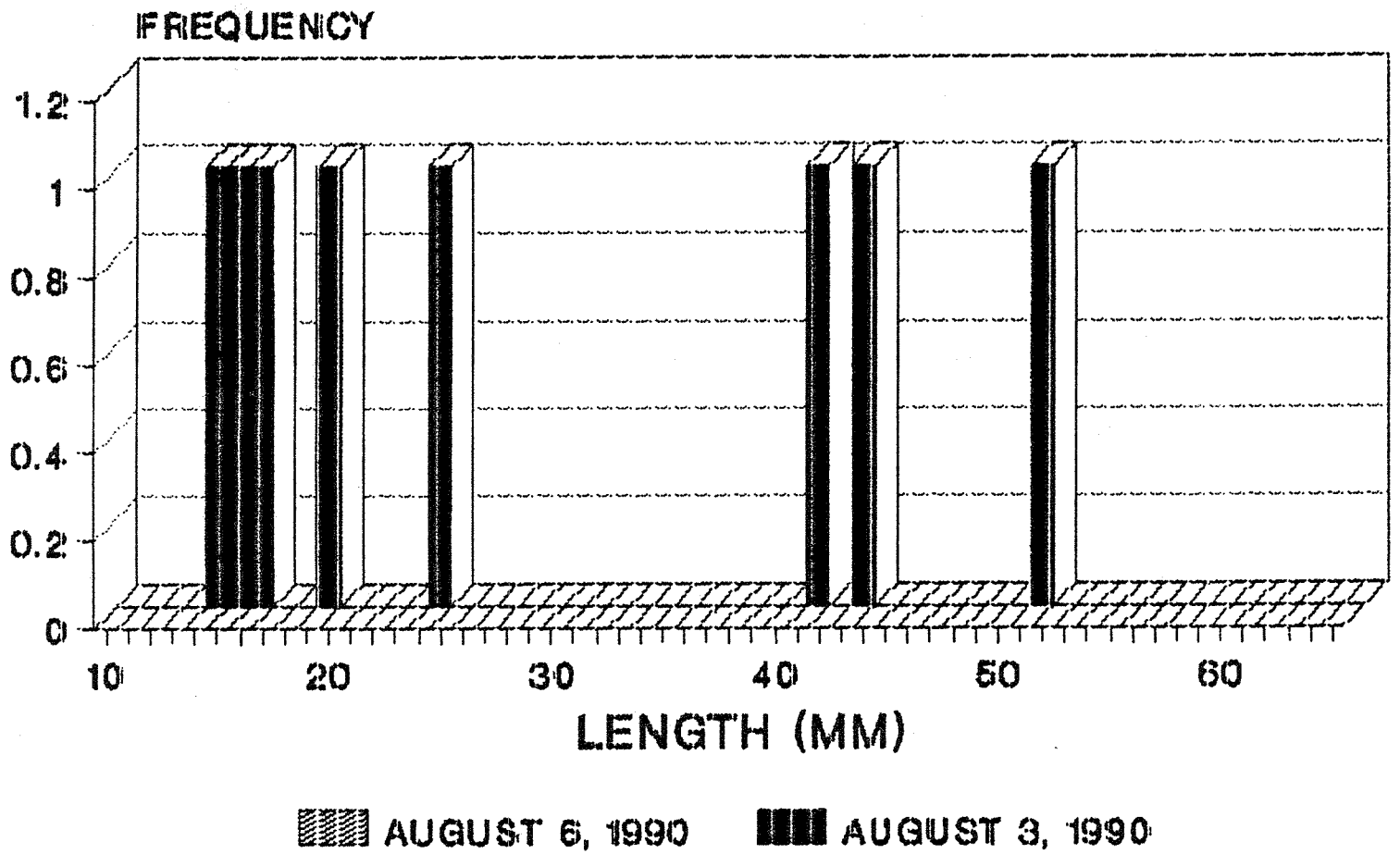


SR 1003 BRIDGE, NASH CO., N.C.

FIGURE FOURTEEN

FUSCONAIA MASONI SHELLS

TAKEN FROM MUSSEL DIE-OFF AREA



SR 1003 BRIDGE, NASH CO., N.C.

FIGURE FIFTEEN

CHANGE IN FRESHWATER MUSSEL COMMUNITY

SWIFT CR., NASH CO., N.C. - BELOW SR 1310 BRIDGE

SPECIES	7/6/88	5/23/89	7/31/90
F. MASONI	12	3	5
A. UNDULATA	4	0	0
E. COMPLANATA	249	44	6
E. STEINSTANSANA	2	4	1
S. UNDULATUS	2	2	0
V. CONSTRICTA	1	2	0
L. CARIOSA	2	1	1
TOTAL	272	56	13
NUMBER / MAN-HOUR	85	17	6.5
PERCENT DECLINE IN ABUNDANCE COMPARED WITH 1988 DATA	--	80	92

TECHNIQUE: RAKING SUBSTRATE

TABLE SEVEN

APPENDIX A

North Carolina Nongame & Endangered Wildlife Program
North Carolina Freshwater Mussel Survey Results
September, 1986 through October, 1990

SPECIES:

AH = Alasmidonta heterodon
AR = Alasmidonta raveneliana
AVIR= Alasmidonta viridis
AI = Anodonta imbecilis
EC = Elliptio complanata
ED = Elliptio dilatata
EI = Elliptio icterina
ECS = Elliptio (Canthyria) steinstansana
EF = Elliptio folliculata
EP = Elliptio producta
ESP = Elliptio species (E. complanata? and/or other Elliptio sp.)
EW = Elliptio waccamawensis
FM = Fusconaia masoni
LCON= Lampsilis conspicua
LF = Lampsilis fullerkati
LSP = Lampsilis splendida
LS = Lasmigona subviridis
LN = Ligumia nasuta
SU = Strophitus undulatus
VC = Villosa constricta
VN = Villosa nebulosa

AU = Alasmidonta undulata
AV = Alasmidonta varicosa
AC = Anodonta cataracta
ECON= Elliptio congaraea
ER = Elliptio roanokensis
EL = Elliptio lanceolata
FB = Fusconaia barnesiana
LC = Lampsilis cariosa
LFAS= Lampsilis fasciola
LR = Lampsilis radiata
LH = Lasmigona holstonia
LO = Leptodea ochracea
PF = Pegias fabula
TP = Toxolasma pullus
VD = Villosa delumbis
VV = Villosa vibex

Station: year, month, day, station number for day

Notes: At some stations, measurements were not taken.
At these stations, presence is indicated under Live / Shells.
WTP = Tarboro water treatment plant, RFP = Tarboro River Front Park
Time in hours = total man-hours for 1-3 individuals.
+ or - indicates a significant distance downstream (+) or upstream (-)
Until genetics work can be completed in NC, it is uncertain
whether Elliptio angustata and Elliptio fisheriana esist in this state.

Station	Spec.	Live / Shells	Count	Maximum Length (mm)	Minimum Length (mm)	Mean Len.	Standard Dev.	Co.	Road	Stream	Hours
860915.1	ESP		40	83	26	54.68	11.83	EDGE	RFP	TAR R.	4
860916.1	ESP		103	155	35	83.46	26.94	EDGE	W1P	TAR R.	7
860917.1	ESP		63	108	40	74.17	12.91	NASH	64A	TAR R.	0.5
860917.1	LC		4	76	55	67.25	9.39	NASH	64A	TAR R.	0.5
860917.1	EL		5	62	45	53.60	6.43	NASH	64A	TAR R.	0.5
860917.2	ESP		12	80	40	66.58	12.56	NASH	1145	TAR R.	1
860917.2	EL		1	40	40	40.00	---	NASH	1145	TAR R.	1
860917.2	LC		3	72	35	58.00	20.07	NASH	1145	TAR R.	1
860917.2	VC	6 L		---	---	--	---	NASH	1145	TAR R.	1
860917.3	ESP		9	90	58	72.89	10.47	NASH	581	TAR R.	0.7
860917.3	LC		1	73	73	73.00	---	NASH	581	TAR R.	0.7
860917.3	EL		1	31	31	31.00	---	NASH	581	TAR R.	0.7
860917.4	NONE			---	---	--	---	NASH	1001	TAR R.	
860918.1	NONE			---	---	--	---	FRAN	1611	TAR R.	
860918.2	NONE			---	---	--	---	FRAN	1612	TAR R.	
860918.3	ESP		14	107	45	78.64	17.99	FRAN	1609	TAR R.	1.5
860918.3	EL		1	59	59	59.00	---	FRAN	1609	TAR R.	1.5
860918.4	ESP		20	122	61	82.80	13.25	FRAN	1001	TAR R.	1
860918.4	EL		1	48	48	48.00	---	FRAN	1001	TAR R.	1
860918.4	FM	S	1	27	27	27.00	---	FRAN	1001	TAR R.	1
860918.5	NONE			---	---	--	---	FRAN	401	CEDAR CR.	0.3
860918.6	ESP		15	111	53	85.33	18.13	FRAN	1003	TAR R.	1.5
860918.6	EL		13	67	23	43.85	13.01	FRAN	1003	TAR R.	1.5
860918.6	LC		4	72	61	67.25	5.62	FRAN	1003	TAR R.	1.5
860922.1	ESP		24	110	45	78.75	18.42	GRAN	158	TAR R.	1
860922.1	SU		2	71	69	70.00	1.41	GRAN	158	TAR R.	1
860922.2	ESP		33	125	63	89.55	15.29	GRAN	1145	TAR R.	0.7
860922.3	ESP		22	110	63	82.68	10.73	PITT	1567	TAR R.	1
860922.3	LC		4	78	52	66.50	12.58	PITT	1567	TAR R.	1
860922.3	VD		1	56	56	56.00	---	PITT	1567	TAR R.	1
860923.1	ESP		61	106	51	79.87	14.48	GRAN	1138	TAR R.	0.5

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
860923.1	SU		1	45	45	45.00	---	GRAN	1138	TAR R.	0.5
860923.1	LC		1	45	45	45.00	---	GRAN	1138	TAR R.	0.5
860923.2	ESP		17	130	50	98.94	21.25	GRAN	1004	TAR R.	1
860923.2	LC		2	87	56	71.50	21.92	GRAN	1004	TAR R.	1
860923.2	AC	2S		---	---	--	---	GRAN	1004	TAR R.	1
860923.2	AU	1S		---	---	--	---	GRAN	1004	TAR R.	1
860923.2	LS	8S		---	---	--	---	GRAN	1004	TAR R.	1
860923.3	ESP		17	94	39	79.76	15.80	GRAN	15	TAR R.	0.5
860923.3	LC		1	45	45	45.00	---	GRAN	15	TAR R.	0.5
860923.4	ESP		64	110	54	90.50	11.91	GRAN	96	TAR R.	1
860923.4	EL		1	45	45	45.00	---	GRAN	96	TAR R.	1
860923.4	LC		4	80	52	60.25	13.23	GRAN	96	TAR R.	1
860923.5	ESP		20	111	57	82.20	11.99	GRAN	1622	TAR R.	1.5
860923.5	LS	1S		---	---	--	---	GRAN	1622	TAR R.	1.5
860923.5	SU	2S		---	---	--	---	GRAN	1622	TAR R.	1.5
860923.5	LC	33S		---	---	--	---	GRAN	1622	TAR R.	1.5
860923.5	EL	4S		---	---	--	---	GRAN	1622	TAR R.	1.5
860923.5	AU	2S		---	---	--	---	GRAN	1622	TAR R.	1.5
860923.5	FM	1S		---	---	--	---	GRAN	1622	TAR R.	1.5
860924.1	ESP		11	151	44	81.73	37.30	EDGE	42	TAR R.	1
860924.2	LC		1	58	58	58.00	---	VANC	1101	TAR R.	0.5
860924.2	EL		1	57	57	57.00	---	VANC	1101	TAR R.	0.5
860924.3	NONE			---	---	--	---	VANC	1	TAR R.	0
860924.4	NONE			---	---	--	---	GRAN	1622+	TAR R.	2
860925.1	ESP		67	116	35	81.45	18.17	GRAN	1141	TAR R.	0.7
860925.1	SU	2L		---	---	--	---	GRAN	1141	TAR R.	0.7
860925.1	VC		1	36	36	36.00	---	GRAN	1141	TAR R.	0.7
860925.1	AH		2	29	27	28.00	1.41	GRAN	1141	TAR R.	0.7
860925.2	ESP		27	104	60	86.67	11.81	GRAN	1150	TAR R.	0.7
860925.3	NONE			---	---	--	---	GRAN	1151	N. FORK TAR R.	0.5

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
860925.4	NONE			---	---	--	---	GRAN	1133	TAR R.	0.5
861029.1	ESP		139	156	38	85.18	30.06	EDGE	WTP+2	TAR R.	0.7
861029.1	LC		1	73	73	73.00	---	EDGE	WTP+2	TAR R.	0.7
861029.2	ESP		3	95	63	81.00	16.37	EDGE	RFP-2	TAR R.	0.7
861030.1	LR		1	73	73	73.00	---	EDGE	RFP+6	TAR R.	0.7
861030.1	AU		1	52	52	52.00	---	EDGE	RFP+6	TAR R.	0.7
861030.1	LC		1	77	77	77.00	---	EDGE	RFP+6	TAR R.	0.7
861030.1	ESP		34	71	37	49.56	9.50	EDGE	RFP+6	TAR R.	0.7
861030.2	ESP		92	148	37	76.78	30.47	EDGE	RFP+9	TAR R.	0.7
861030.3	ESP		100	136	35	61.13	18.46	EDGE	42-20	TAR R.	0.7
870512.1	ESP		35	101	42	73.03	19.01	FRAN	1003	TAR R.	3
870512.1	LC		2	77	53	65.00	16.97	FRAN	1003	TAR R.	3
870512.1	EL		28	61	30	45.89	8.23	FRAN	1003	TAR R.	3
870512.1	FM		2	36	24	30.00	8.49	FRAN	1003	TAR R.	3
870512.2	ESP		9	74	23	44.56	20.30	EDGE	RFP	TAR R.	3
870526.1	ESP		77	144	38	68.44	21.17	EDGE	RFP	TAR R.	1
870526.2	ESP		69	152	50	88.52	28.94	EDGE	RFP	TAR R.	1
870527.1	ESP		71	145	37	72.83	26.50	EDGE	WTP	TAR R.	1.3
870528.1	NONE			---	---	--	---	EDGE	42	TAR R.	0.5
870528.2	NONE			---	---	--	---	EDGE	44	TAR R.	0.5
870528.3	ESP			---	---	--	---	EDGE	1253	SWIFT CR.	1
870528.4	NONE	L		---	---	--	---	EDGE	1500	FISHING CR.	0.3
870528.5	NONE			---	---	--	---	EDGE	1429	FISHING CR.	0.3
870528.6	NONE			---	---	--	---	EDGE	301	FISHING CR.	0.2
870528.7	NONE			---	---	--	---	EDGE	1428	WHITE OAK SW. CR.	0.2
870528.8	NONE			---	---	--	---	EDGE	97	SWIFT CR.	0.5
870604.1	NONE			---	---	--	---	FRAN	56	MIDDLE CR.	0.2
870604.2	NONE			---	---	--	---	FRAN	1203	MIDDLE CR.	0.2
870604.3	ESP	MANY		---	---	--	---	FRAN	401	SANDY CR.	1
870604.4	ESP	S		---	---	--	---	VANC	1523	SANDY CR.	0.5

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
870604.4	AC	S		---	---	--	---	VANC	1523	SANDY CR.	0.5
870604.4	VC	S		---	---	--	---	VANC	1523	SANDY CR.	0.5
870604.5	NONE			---	---	--	---	VANC	1526	SANDY CR.	0.2
870605.1	ESP	MANY		---	---	--	---	FRAN	1412+	SANDY CR.	12
870624.1	ESP		5	73	50	58.20	9.12	FRAN	1433	SANDY CR.	0.5
870624.1	VC	6S		---	---	--	---	FRAN	1433	SANDY CR.	0.5
870624.2	VC	S		---	---	--	---	WARR	58	SHOCCO CR.	0.7
870624.2	ESP		14	94	44	64.14	10.61	WARR	58	SHOCCO CR.	0.7
870624.3	NONE			---	---	--	---	WARR	1620	SHOCCO CR.	0.1
870624.4	ESP		37	91	46	74.73	9.42	WARR	401	SHOCCO CR.	0.7
870624.5	NONE			---	---	--	---	WARR		FISHING CR.	
870624.6	NONE			---	---	--	---	WARR	1100	FISHING CR.	0.5
870624.7	NONE			---	---	--	---	FRAN	58	SANDY CR.	0.3
870625.1	NONE			---	---	--	---	NASH	1403	SWIFT CR.	0.5
870625.2	ESP	S		---	---	--	---	NASH	1310	SWIFT CR.	0.5
870625.2	FM	3S		---	---	--	---	NASH	1310	SWIFT CR.	0.5
870625.3	ESP	S		---	---	--	---	NASH	1003	SWIFT CR.	0.7
870625.4	NONE			---	---	--	---	NASH	301	SWIFT CR.	0
870625.5	ESP	MANY L		---	---	--	---	EDGE	1253	SWIFT CR.	4
870626.1	LS	S		---	---	--	---	NASH	1544	TAR R.	0.7
870701.1	LO	S		---	---	--	---	PITT	33+	TAR R.	0.5
870701.2	ESP		2	60	47	53.50	9.19	PITT	222	TAR R.	2
870701.3	ESP		40	71	30	46.80	9.16	EDGE	RFP	TAR R.	2
870701.3	LC		1	63	63	63.00	---	EDGE	RFP	TAR R.	2
870701.3	LR		1	80	80	80.00	---	EDGE	RFP	TAR R.	2
870707.1	ESP		144	90	35	50.94	9.87	EDGE	RFP	TAR R.	3
870708.1	ECS		2	39	33	35.95	4.17	EDGE	WTP+1	TAR R.	1
870708.1	EL	1L		---	---	--	---	EDGE	WTP+1	TAR R.	1
870708.1	LC	1L		---	---	--	---	EDGE	WTP+1	TAR R.	1
870708.1	ESP	MANY L		---	---	--	---	EDGE	WTP+1	TAR R.	1

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
870709.1	ECS		2	44	44	43.70	0.00	EDGE	WTP+1	TAR R.	8
870709.1	EL	1L		---	---	--	---	EDGE	WTP+1	TAR R.	8
870709.1	LC	1L		---	---	--	---	EDGE	WTP+1	TAR R.	8
870709.1	AU	1L		---	---	--	---	EDGE	WTP+1	TAR R.	8
870709.1	ESP	L		---	---	--	---	EDGE	WTP+1	TAR R.	8
870804.1	LC	S		---	---	--	---	EDGE	WTP-	TAR R.	3
870804.1	ESP	MANY L		---	---	--	---	EDGE	WTP-	TAR R.	3
870804.2	ECS	S	1	40	40	40.00	---	NASH	1310	SWIFT CR.	3
870804.2	ESP	L/S		---	---	--	---	NASH	1310	SWIFT CR.	3
870804.2	VC	S		---	---	--	---	NASH	1310	SWIFT CR.	3
870804.2	FM	3L/S		---	---	--	---	NASH	1310	SWIFT CR.	3
870805.1	LC	S		---	---	--	---	NASH	1145	TAR R.	1
870805.1	ESP	L/S		---	---	--	---	NASH	1145	TAR R.	1
870805.1	VC	S		---	---	--	---	NASH	1145	TAR R.	1
870805.1	EL	S		---	---	--	---	NASH	1145	TAR R.	1
870805.1	FM	S		---	---	--	---	NASH	1145	TAR R.	1
870805.1	AC	S		---	---	--	---	NASH	1145	TAR R.	1
870812.1	ESP		85	87	28	59.41	9.92	NASH	1310	SWIFT CR.	2
870812.1	VC		2	42	20	31.13	15.66	NASH	1310	SWIFT CR.	2
870812.1	AU		1	49	49	49.05	---	NASH	1310	SWIFT CR.	2
870812.1	FM		1	43	43	43.35	---	NASH	1310	SWIFT CR.	2
870812.1	C	S		---	---	--	---	NASH	1310	SWIFT CR.	2
870813.1	ESP		82	95	22	66.94	16.91	FRAN	401	SANDY CR.	2
870922.1	ESP	S		---	---	--	---	NASH	1310	SWIFT CR.	2
870922.1	FM	S		---	---	--	---	NASH	1310	SWIFT CR.	2
870922.1	SU	S		---	---	--	---	NASH	1310	SWIFT CR.	2
870922.1	VC	S		---	---	--	---	NASH	1310	SWIFT CR.	2
871008.1	ECS	S	1	44	44	44.35	---	NASH	1310	SWIFT CR.	5
871008.1	ESP	L/S		---	---	--	---	NASH	1310	SWIFT CR.	5
871008.1	VC	S		---	---	--	---	NASH	1310	SWIFT CR.	5

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
871008.1	FM	S		---	---	--	---	NASH	1310	SWIFT CR.	5
871008.2	LC	S		---	---	--	---	NASH	1405	SWIFT CR.	
871008.2	VC	S		---	---	--	---	NASH	1405	SWIFT CR.	
871008.2	SU	S		---	---	--	---	NASH	1405	SWIFT CR.	
871008.2	ESP	S		---	---	--	---	NASH	1405	SWIFT CR.	
880523.1	ESP	L		---	---	--	---	EDGE	1409	SWIFT CR.	1
880523.2	ESP	100+ L		---	---	--	---	EDGE	1253	SWIFT CR.	1
880523.2	EL	L		---	---	--	---	EDGE	1253	SWIFT CR.	1
880523.2	FM	L		---	---	--	---	EDGE	1253	SWIFT CR.	1
880523.2	AU	L		---	---	--	---	EDGE	1253	SWIFT CR.	1
880523.3	ESP	100+ L		---	---	--	---	EDGE	1500	FISHING CR.	1
880523.3	FM	1L		---	---	--	---	EDGE	1500	FISHING CR.	1
880524.1	ESP	L		---	---	--	---	GRAN	158+	TAR R. TO SR 1141	8
880524.1	AH	40+ L		---	---	--	---	GRAN	158+	TAR R. TO SR 1141	8
880525.1	ESP	100+ L		---	---	--	---	FRAN	98	CROOKED CR.	1
880525.1	EL	1 L		---	---	--	---	FRAN	98	CROOKED CR.	1
880525.2	ESP	100+ L		---	---	--	---	FRAN	1001	CROOKED CR.	1
880525.2	AH	L		---	---	--	---	FRAN	1001	CROOKED CR.	1
880525.3	ESP	75+ L		---	---	--	---	FRAN	1103	CROOKED CR.	1
880525.4	ESP	100+ L		---	---	--	---	FRAN	1613	CYPRESS CR.	1
880525.5	ESP	L		---	---	--	---	VANC	1523	SANDY CR.	1
880525.5	VC	L		---	---	--	---	VANC	1523	SANDY CR.	1
880525.5	AT	L		---	---	--	---	VANC	1523	SANDY CR.	1
880526.1	FM	L		---	---	--	---	NASH	1403+	SWIFT CR. TO 1310	24
880526.1	AU	L		---	---	--	---	NASH	1403+	SWIFT CR. TO 1310	24
880526.1	EL	L		---	---	--	---	NASH	1403+	SWIFT CR. TO 1310	24
880526.1	ESP	L		---	---	--	---	NASH	1403+	SWIFT CR. TO 1310	24
880526.1	SU	L		---	---	--	---	NASH	1403+	SWIFT CR. TO 1310	24
880526.1	VC	L		---	---	--	---	NASH	1403+	SWIFT CR. TO 1310	24
880526.1	ECS	1S		---	---	--	---	NASH	1403+	SWIFT CR. TO 1310	24

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
880526.1	LC	1L		---	---	--	---	NASH	1403+	SWIFT CR. TO 1310	24
880526.2	ESP	16+ L		---	---	--	---	NASH	1400	FISHING CR.	1
880526.3	ESP	15+ L		---	---	--	---	NASH	1405	SANDY CR.	1
880527.1	NONE			---	---	--	---	EDGE	64	CONETOE CR.	0.7
880531.1	FM	L / S		---	---	--	---	FRAN	1449	SWIFT CR.	1.3
880531.1	ESP		94	101	27	60.17	13.91	FRAN	1449	SWIFT CR.	1.3
880531.1	VC		1	36	36	36.45	---	FRAN	1449	SWIFT CR.	1.3
880531.1	SU	L		---	---	--	---	FRAN	1449	SWIFT CR.	1.3
880531.1	AU	L		---	---	--	---	FRAN	1449	SWIFT CR.	1.3
880601.1	FM		6	62	42	47.68	7.69	FRAN	58+	SANDY CR. TO 1449	3.5
880601.1	VC		9	39	28	33.11	3.72	FRAN	58+	SANDY CR. TO 1449	3.5
880601.1	LC		1	58	58	57.95	---	FRAN	58+	SANDY CR. TO 1449	3.5
880601.1	LR		1	81	81	81.15	---	FRAN	58+	SANDY CR. TO 1449	3.5
880601.1	EL		3	49	43	45.90	3.15	FRAN	58+	SANDY CR. TO 1449	3.5
880601.1	SU		8	72	46	60.59	7.52	FRAN	58+	SANDY CR. TO 1449	3.5
880601.1	AU		9	55	49	51.72	1.71	FRAN	58+	SANDY CR. TO 1449	3.5
880601.1	LR		1	81	81	81.15	---	FRAN	58+	SANDY CR. TO 1449	3.5
880601.1	ESP		182	93	32	67.42	10.75	FRAN	58+	SANDY CR. TO 1449	3.5
880601.2	ESP	101 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	0.7
880601.2	LC	1 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	0.7
880601.2	FM	4 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	0.7
880601.2	EL	2 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	0.7
880601.2	VC	4 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	0.7
880601.2	AU	4 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	0.7
880601.2	SU	1 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	0.7
880601.3	FM	1 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	0.2
880601.3	VC	2 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	0.2
880601.3	LC	1L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	0.2
880601.3	ESP	13 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	0.2
880601.4	AU	1 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	3

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
880601.4	VC	4 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	3
880601.4	ESP	19 L		---	---	--	---	FRAN	58+	SANDY CR. TO 1449	3
880601.4	ECS		1	38	38	38.20	---	FRAN	58+	SANDY CR. TO 1449	3
880602.1	ESP	100+ L		---	---	--	---	EDGE	WTP	TAR R.	2
880602.1	LR	1 L		---	---	--	---	EDGE	WTP	TAR R.	2
880602.1	AU	1 L		---	---	--	---	EDGE	WTP	TAR R.	2
880602.1	LC	1 L		---	---	--	---	EDGE	WTP	TAR R.	2
880602.2	ESP	30+ L		---	---	--	---	EDGE	RFP	TAR R.	1.5
880607.1	EL		18	59	24	39.25	9.96	FRAN	1451	-SANDY CR.	4.7
880607.1	VC		3	27	25	26.03	1.00	FRAN	1451	-SANDY CR.	4.7
880607.1	ESP		72	97	42	75.30	11.29	FRAN	1451	-SANDY CR.	4.7
880607.1	FM	1 L		---	---	--	---	FRAN	1451	-SANDY CR.	4.7
880608.1	FM		1	53	53	52.70	---	FRAN	58+	SANDY CR.	4
880608.1	ESP		115	115	32	58.06	12.69	FRAN	58+	SANDY CR.	4
880608.1	VC		2	36	25	30.43	7.95	FRAN	58+	SANDY CR.	4
880608.2	ESP	S		---	---	--	---	HALI	1322	FISHING CR.	1
880608.2	EP	S		---	---	--	---	HALI	1322	FISHING CR.	1
880608.3	ESP	89+ L		---	---	--	---	HALI	561	BEAR CR.	2
880608.3	EP	1 L		---	---	--	---	HALI	561	BEAR CR.	2
880608.3	VC	1 L		---	---	--	---	HALI	561	BEAR CR.	2
880609.1	ESP	178 L		---	---	--	---	WARR	1510	L. FISHING CR.	2
880609.1	EP	28 L		---	---	--	---	WARR	1510	L. FISHING CR.	2
880609.1	VC	1 L		---	---	--	---	WARR	1510	L. FISHING CR.	2
880613.1	ESP		58	102	48	74.87	13.37	WARR	1509	L. FISHING CR.	1.7
880613.1	VC		3	44	37	40.50	3.61	WARR	1509	L. FISHING CR.	1.7
880613.1	EP		5	64	56	59.54	3.39	WARR	1509	L. FISHING CR.	1.7
880613.2	ESP		14	101	63	81.81	12.81	WARR	1509	BENS CR.	0.7
880614.1	ESP		6	92	50	68.02	14.71	WARR	1507	WALKERS CR.	0.5
880614.4	ESP		4	91	65	79.15	12.27	WARR	1634	FISHING CR. TRIB.	0.5
880614.5	ESP		12	86	54	68.46	10.19	WARR	1634	FISHING CR. TRIB.	0.7

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
880614.6	ESP		115	101	35	68.24	17.25	WARR	1640	FISHING CR.	1.7
880614.6	EP		7	85	41	52.63	15.03	WARR	1640	FISHING CR.	1.7
880614.6	AU		2	40	24	32.15	11.10	WARR	1640	FISHING CR.	1.7
880615.1	ESP		38	95	46	67.58	13.65	HALI	1312	BEAR SWAMP	1
880615.2	ESP		10	91	61	73.30	8.73	HALI	1310	BUTTERWOOD CR.	0.3
880615.3	ESP		24	73	39	58.08	7.00	HALI	1315	L. FISHING CR.	1.1
880615.3	VC		1	26	26	25.80	---	HALI	1315	L. FISHING CR.	1.1
880615.3	FM		2	42	40	41.00	1.84	HALI	1315	L. FISHING CR.	1.1
880615.4	ESP		13	88	49	66.46	10.54	HALI	1315	L. FISH. CR. TRIB.	0.3
880615.5	ESP		11	82	47	62.52	10.72	HALI	1304	BEAR SW. CR.	0.5
880615.6	ESP		65	106	46	81.08	11.39	HALI	1306	BEAR SW. CR. TRIB.	1.5
880621.1	ESP		59	92	39	68.45	11.66	FRAN	401	CEDAR CR.	2.5
880621.1	AH		1	36	36	35.55	---	FRAN	401	CEDAR CR.	2.5
880622.1	ESP		75	154	49	89.67	27.60	EDGE	42	TAR R.	0.7
880622.1	LC		1	72	72	71.70	---	EDGE	42	TAR R.	0.7
880622.1	LR		1	96	96	96.20	---	EDGE	42	TAR R.	0.7
880622.2	ESP	2 L		---	---	--	---	EDGE	258	DEEP CR.	0.3
880622.2	EP	1 L		---	---	--	---	EDGE	258	DEEP CR.	0.3
880622.2	AI	2 L		---	---	--	---	EDGE	258	DEEP CR.	0.3
880622.3	ESP		73	100	48	75.30	10.25	EDGE	1505	DEEP CR.	1
880622.3	EP		3	80	42	66.58	21.05	EDGE	1505	DEEP CR.	1
880627.1	ESP		81	118	61	90.61	15.46	GRAN	1145-	TAR R.	1.7
880627.1	VD		1	55	55	55.10	---	GRAN	1145-	TAR R.	1.7
880628.1	ESP		5	91	66	80.07	9.77	PITT	1425	GRINDLE CR.	0.5
880628.1	EP		2	50	49	49.38	0.81	PITT	1425	GRINDLE CR.	0.5
880628.2	ESP		73	89	46	66.81	11.86	PITT	1538	GRINDLE CR.	1
880629.1	ESP		7	100	60	85.19	13.57	FRAN	1003	TAR R.	1.7
880629.1	FM	1 S		---	---	--	---	FRAN	1003	TAR R.	1.7
880629.1	EL		31	61	40	54.27	4.48	FRAN	1003	TAR R.	1.7
880629.2	ESP		168	104	42	75.16	11.71	GRAN	1622	TAR R.	1.7

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
880629.2	EL		1	44	44	43.85	---	GRAN	1622	TAR R.	1.7
880629.2	FM		1	40	40	40.25	---	GRAN	1622	TAR R.	1.7
880629.2	LC		5	66	49	56.68	6.19	GRAN	1622	TAR R.	1.7
880701.1	FM		11	60	31	47.80	9.21	FRAN	1449+	SANDY CR.	1.5
880701.1	SU		1	37	37	36.60	---	FRAN	1405+	SANDY CR.	1.5
880701.1	VC		1	39	39	39.10	---	FRAN	1405+	SANDY CR.	1.5
880701.1	LC		1	42	42	42.25	---	FRAN	1405+	SANDY CR.	1.5
880701.1	ESP		253	96	11	59.40	8.23	FRAN	1405+	SANDY CR.	1.5
880705.1	ESP	+ 166 L	140	91	23	57.32	9.76	WARR	1640	FISHING CR.	2.7
880705.1	FM		2	43	36	39.45	4.31	WARR	1640	FISHING CR.	2.7
880705.1	VC		10	44	31	36.86	4.19	WARR	1640	FISHING CR.	2.7
880705.1	LR		2	80	73	76.60	5.09	WARR	1640	FISHING CR.	2.7
880705.1	EP		1	41	41	40.95	---	WARR	1640	FISHING CR.	2.7
880706.1	FM		12	51	35	41.63	5.11	NASH	1310	SWIFT CR.	3
880706.1	AU		4	51	28	43.13	10.38	NASH	1310	SWIFT CR.	3
880706.1	ECS		2	41	22	31.38	13.61	NASH	1310	SWIFT CR.	3
880706.1	SU		2	55	41	47.93	9.93	NASH	1310	SWIFT CR.	3
880706.1	VC		1	18	18	17.50	---	NASH	1310	SWIFT CR.	3
880706.1	ESP	+147 L	62	85	29	49.40	11.10	NASH	1310	SWIFT CR.	3
880706.1	LC		2	70	59	64.25	8.06	NASH	1310	SWIFT CR.	3
880707.1	ESP	69 L		---	---	--	---	EDGE	1523	SWIFT CR.	1.3
880707.2	ESP	791 L		---	---	--	---	EDGE	WTP	TAR R.	1.5
880707.2	LC	1 L		---	---	--	---	EDGE	WTP	TAR R.	1.5
880707.2	AU	2 L		---	---	--	---	EDGE	WTP	TAR R.	1.5
880707.2	FM	1 L		---	---	--	---	EDGE	WTP	TAR R.	1.5
880707.2	ECS	1 S		---	---	--	---	EDGE	WTP	TAR R.	1.5
880707.3	ESP	297 L		---	---	--	---	FRAN	58+	SANDY CR.	0.7
880707.3	VC	2 L		---	---	--	---	FRAN	58+		0.7
880707.3	FM	1 L		---	---	--	---	FRAN	58+		0.7
880707.3	SU	1 L		---	---	--	---	FRAN	58+		0.7

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
880712.1	ESP	L		---	---	--	---	GRAN	158+	TAR R.	1.5
880712.1	AH		18	44	24	31.62	5.30	GRAN	158+	TAR R.	1.5
880712.2	ESP	L		---	---	--	---	FRAN	1001	CROOKED CR.	1.5
880712.2	AH		5	42	12	30.93	11.64	FRAN	1001	CROOKED CR.	1.5
880713.1	ESP		146	105	36	62.77	9.79	NASH	1310	SWIFT CR.	1
880713.1	AU		2	45	30	37.40	10.47	NASH	1310	SWIFT CR.	1
880713.1	LC		1	60	60	59.60	---	NASH	1310	SWIFT CR.	1
880713.1	VC		3	34	21	27.87	6.46	NASH	1310	SWIFT CR.	1
880713.1	SU		5	56	36	47.20	7.47	NASH	1310	SWIFT CR.	1
880713.1	FM		6	61	28	42.95	11.23	NASH	1310	SWIFT CR.	1
880713.2	ESP		75	98	12	62.49	17.25	HALI	1002	FISHING CR.	1.3
880713.2	VC		4	37	30	33.44	3.70	HALI	1002	FISHING CR.	1.3
880713.2	SU		2	54	49	51.63	3.50	HALI	1002	FISHING CR.	1.3
880713.2	EP		9	53	38	44.48	4.08	HALI	1002	FISHING CR.	1.3
880801.1	EC	66 L		---	---	--	---	STOK	1416	DAN R.	1.5
880921.1	VC	9L/3S		---	---	--	---	PERS	1125	S. FLAT R. TO 501	4
880921.1	LC	2L/6.5S		---	---	--	---	PERS	1125	S. FLAT R. TO 501	4
880921.1	AI	12 L		---	---	--	---	PERS	1125	S. FLAT R. TO 501	4
880921.1	AC	3L/3S		---	---	--	---	PERS	1125	S. FLAT R. TO 501	4
880921.1	LS	4L/5S		---	---	--	---	PERS	1125	S. FLAT R. TO 501	4
880921.1	SU	10L/8S		---	---	--	---	PERS	1125	S. FLAT R. TO 501	4
880921.1	VD	2 S		---	---	--	---	PERS	1125	S. FLAT R. TO 501	4
880921.1	FM	1L/6S		---	---	--	---	PERS	1125	S. FLAT R. TO 501	4
880921.1	ESP	500+ S		---	---	--	---	PERS	1125	S. FLAT R. TO 501	4
880922.1	NONE			---	---	--	---	PERS	1144-	N. FLAT R.	0.5
880922.2	NONE			---	---	--	---	PERS	501	N. FLAT R.	0.3
880922.4	LS	1 S		---	---	--	---	PERS	1547	MAYO CR.	1
880922.4	EC	1 L		---	---	--	---	PERS	1547	MAYO CR.	1
880922.4	SU	1 S		---	---	--	---	PERS	1547	MAYO CR.	1
880922.5	NONE			---	---	--	---	PERS	1520+	MILL CR.	0.5

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
880922.6	EC	26 L		---	---	--	---	GRAN	96-	GRASSY CR.	1
880923.1	NONE			---	---	--	---	PERS	1125-S.	FLAT R.	1
880923.2	SU	2 L		---	---	--	---	DURH	1471+	FLAT R.	0.5
880923.2	LS	2 L		---	---	--	---	DURH	1471+	FLAT R.	0.5
880923.2	VC	1 L		---	---	--	---	DURH	1471+	FLAT R.	0.5
880923.2	LC	3 L		---	---	--	---	DURH	1471+	FLAT R.	0.5
880923.2	LCON	3 L		---	---	--	---	DURH	1471+	FLAT R.	0.5
880923.2	ESP	25 L		---	---	--	---	DURH	1471+	FLAT R.	0.5
880923.3	ESP	64 L		---	---	--	---	DURH	1614+	FLAT R.	0.5
880923.3	LS	3 L		---	---	--	---	DURH	1614+	FLAT R.	0.5
880923.3	LCON	2 L		---	---	--	---	DURH	1614+	FLAT R.	0.5
890500.1	EI	LENAT SAMPLE, UNION CO., SR 1957, LANES CR.						UNIO	1957	LANES CR.	
890500.1	AC	LENAT SAMPLE, UNION CO., SR 1957, LANES CR.						UNIO	1957	LANES CR.	
890522.1	NONE			---	---	--	---	FRAN	1106	LITTLE R.	
890522.2	NONE			---	---	--	---	FRAN	98	LITTLE R.	
890522.3	NONE			---	---	--	---	FRAN	401	LITTLE R.	
890522.4	EC	12 L		---	---	--	---	WAKE	2224	LITTLE R.	
890522.5	EC	35 L		---	---	--	---	WAKE	2300	FOWLERS MILL CR.	
890522.6	NONE			---	---	--	---	WAKE	2308	LITTLE R.	
890522.7	EC	3 S		---	---	--	---	WAKE	2333	LITTLE R.	
890522.7	EP	1 S		---	---	--	---	WAKE	2333	LITTLE R.	
890522.8	EC	1 S		---	---	--	---	WAKE	2320	LITTLE R.	
890522.9	EC	10 L		---	---	--	---	FRAN	1003	TAR R.	
890522.9	EL	7L/2S		---	---	--	---	FRAN	1003	TAR R.	
890522.9	FM	1 L		---	---	--	---	FRAN	1003	TAR R.	
890522.9	LC	1L/1S		---	---	--	---	FRAN	1003	TAR R.	
890523.1	ECS		4	36	27	30.75	4.11	NASH	1310+	SWIFT CR.	3.3
890523.1	FM		3	46	26	33.00	11.27	NASH	1310+	SWIFT CR.	3.3
890523.1	VC		2	33	22	27.50	7.78	NASH	1310+	SWIFT CR.	3.3

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
890523.1	SU		2	57	47	52.00	7.07	NASH	1310+SWIFT CR.		3.3
890523.1	ESP		44	69	27	52.07	9.86	NASH	1310+SWIFT CR.		3.3
890523.1	LC		1	65	65	65.00	---	NASH	1310+SWIFT CR.		3.3
890525.1	VD	1 S		---	---	--	---	CABA	1002 COLD WATER CR.		0.5
890525.2	NONE			---	---	--	---	CABA	2408 L. COLD WATER CR.		0.5
890525.3	NONE			---	---	--	---	CABA	2453 L. BEAR CR.		0.5
890525.4	NONE			---	---	--	---	STAN	1228 BIG BEAR CR.		0.5
890525.5	VD	1L/S		---	---	--	---	STAN	1225+BIG BEAR CR.		2
890525.5	EC	1L/S		---	---	--	---	STAN	1225+BIG BEAR CR.		2
890525.5	EI	L		---	---	--	---	STAN	1225+BIG BEAR CR.		2
890525.5	EP	1 S		---	---	--	---	STAN	1225+BIG BEAR CR.		2
890525.6	VD	S		---	---	--	---	STAN	1979 BEAR CR.		1
890525.6	EC	S		---	---	--	---	STAN	1979 BEAR CR.		1
890525.6	EP	S		---	---	--	---	STAN	1979 BEAR CR.		1
890526.1	ESP	100+L		---	---	--	---	CHAT	1004 ROCKY R.		1
890526.1	VD	1 L		---	---	--	---	CHAT	1004 ROCKY R.		1
890526.1	AC	10+S		---	---	--	---	CHAT	1004 ROCKY R.		1
890526.2	NONE			---	---	--	---	CHAT	1355 ROCKY R.		0.5
890526.3	ESP	3+L		---	---	--	---	CHAT	1300 ROCKY R.		0.5
890526.4	ESP	34 L		---	---	--	---	CHAT	1305-ROCKY R.		0.3
890530.1	ESP	85 L		---	---	--	---	EDGE	WTP TAR R.		0.7
890530.2	ECS	1 S		---	---	--	---	EDGE	WTP+ TAR R.		0.3
890531.1	ESP	10 L		---	---	--	---	EDGE	RFP+ TAR R. TO HW 42		
890531.1	LC	1 L		---	---	--	---	EDGE	RFP+ TAR R. TO HW 42		
890531.1	LR	1 S		---	---	--	---	EDGE	RFP+ TAR R. TO HW 42		
890601.1	LC	10 S		---	---	--	---	NASH	1310+SWIFT CR. TO SR 1003		
890601.1	EL	10 S		---	---	--	---	NASH	1310+SWIFT CR. TO SR 1003		
890601.1	SU	26 S		---	---	--	---	NASH	1310+SWIFT CR. TO SR 1003		
890601.1	VC	104 S		---	---	--	---	NASH	1310+SWIFT CR. TO SR 1003		
890601.1	FM	54 S		---	---	--	---	NASH	1310+SWIFT CR. TO SR 1003		

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
890601.1	AU	30 S		---	---	--	---	NASH	1310+	SWIFT CR. TO SR 1003	
890601.1	ESP	686 S		---	---	--	---	NASH	1310+	SWIFT CR. TO SR 1003	
890601.1	ECS	7 S		---	---	--	---	NASH	1310+	SWIFT CR. TO SR 1003	
890606.1	NONE			---	---	--	---	SURR	104-	ARARAT R.	0.5
890606.2	EC	3L/3S		---	---	--	---	SURR	1315	MITCHELL R.	1.5
890606.3	NONE			---	---	--	---	WILK	1993	ROARRING R.	1
890606.4	NONE			---	---	--	---	WILK	268	MULBERRY CR.	1
890606.5	NONE			---	---	--	---	WILK	1546	REDDIES R.	0.3
890606.6	NONE			---	---	--	---	WILK	1136	YADKIN R.	0.5
890607.1	LH	15+L		---	---	--	---	WATA	1121	WATAUGA R.	2
890607.2	NONE			---	---	--	---	WATA	1200	WATAUGA R.	0.5
890607.3	EI	L		---	---	--	---	BURK	1438+	JOHN'S R.	2
890607.3	CC		8	106	59	90.00	14.67	BURK	1438+	JOHN'S R.	2
890607.3	AV		5	61	39	55.40	9.29	BURK	1438+	JOHN'S R.	2
890607.4	AV		3	54	47	49.67	3.79	BURK	1439-	STEEL'S CR.	0.7
890607.4	VD		2	36	34	35.00	1.41	BURK	1439-	STEEL'S CR.	0.7
890607.4	EI	10+L		---	---	--	---	BURK	1439-	STEEL'S CR.	0.7
890607.5	AV	100+S		---	---	--	---	BURK	126	LINVILLE R.	1
890613.1	NONE			---	---	--	---	HARN	2021	UPPER L. RIVER	0.5
890613.2	ESP	1 S		---	---	--	---	HARN	217+	LITTLE R.	0.5
890615.1	EC	6 S		---	---	--	---	HARN	1229	UPPER L. RIVER	1
890619.1	NONE			---	---	--	---	MART	1415	CONOHO CR.	0.5
890619.2	NONE			---	---	--	---	BERT	1516	CASHIE R.	0.5
890619.3	NONE			---	---	--	---	BERT	1257	CASHIE R.	0.5
890620.1	EC	200+S		---	---	--	---	EDGE	301+	FISHING CR. TO SR 1418	
890620.1	LC	1 S		---	---	--	---	EDGE	301+	FISHING CR. TO SR 1418	
890628.1	EI	L		---	---	--	---	RAND	1119	LITTLE R.	5
890628.1	EC	130 L		---	---	--	---	RAND	1119	LITTLE R.	5
890628.1	VC	13 L		---	---	--	---	RAND	1119	LITTLE R.	5
890628.1	VD	9 L		---	---	--	---	RAND	1119	LITTLE R.	5

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
890628.1	FM	1 L		---	---	--	---	RAND	1119	LITTLE R.	5
890628.2	VD	1L/S		---	---	--	---	MONT	1340-	LITTLE R.	1
890628.2	ESP	7L/S		---	---	--	---	MONT	1340-	LITTLE R.	1
890628.2	VC	5+S		---	---	--	---	MONT	1340-	LITTLE R.	1
890628.2	FM	3 S		---	---	--	---	MONT	1340-	LITTLE R.	1
890629.1	VD	5 S		---	---	--	---	CHAT	2156	BEAR CR.	4
890629.1	SU	1L/S		---	---	--	---	CHAT	2156	BEAR CR.	4
890629.1	VC	4 L		---	---	--	---	CHAT	2156	BEAR CR.	4
890629.1	EI	L		---	---	--	---	CHAT	2156	BEAR CR.	4
890629.1	EC	156 L		---	---	--	---	CHAT	2156	BEAR CR.	4
890705.1	AH		16	44	20	33.00	5.33	GRAN	158	TAR R. DOWN>300M	1
890705.1	EC	50+L		---	---	--	---	GRAN	158	TAR R. DOWN>300M	1
890710.1	EI	L		---	---	--	---	SAMP	1214	GR. COHARIE CR.	1
890710.1	EC		72	82	35	60.00	11.44	SAMP	1214	GR. COHARIE CR.	1
890711.1	EW	L		---	---	--	---	COLU	130	WACCAMAW R.	8
890711.1	EF	L		---	---	--	---	COLU	130	WACCAMAW R.	8
890712.2	EF	L		---	---	--	---	COLU	L.	WACCAMAW AT ST. PARK	6
890712.2	LF	L		---	---	--	---	COLU	L.	WACCAMAW AT ST. PARK	6
890712.2	EW	L		---	---	--	---	COLU	L.	WACCAMAW AT ST. PARK	6
890712.2	LD	L		---	---	--	---	COLU	L.	WACCAMAW AT ST. PARK	6
890713.1	NONE			---	---	--	---	SAMP	1200+	SOUTH R.	0.3
890713.2	ESP	6L/S		---	---	--	---	DUPL	1702+	LIMESTONE CR.	0.5
890713.2	VD	1 S		---	---	--	---	DUPL	1702+	LIMESTONE CR.	0.5
890713.3	EF	L		---	---	--	---	DUPL	24-	N.E. CAPE FEAR	1
890713.3	ECON	L		---	---	--	---	DUPL	24-	N.E. CAPE FEAR	1
890713.3	EI	200+ L		---	---	--	---	DUPL	24-	N.E. CAPE FEAR	1
890713.4	ESP	15 L/S		---	---	--	---	DUPL	1519-	N.E. CAPE FEAR	0.5
890724.1	EC	118 L/S		---	---	--	---	JOHN	39+	LITTLE R. TO 2123	0.7
890724.1	EI	L		---	---	--	---	JOHN	39+	LITTLE R. TO 2123	0.7
890724.1	SU	4L/S		---	---	--	---	JOHN	39+	LITTLE R. TO 2123	0.7

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
890724.1	AU	4L/S		---	---	--	---	JOHN	39+	LITTLE R. TO 2123	0.7
890724.1	FM	AL/3S		---	---	--	---	JOHN	39+	LITTLE R. TO 2123	0.7
890725.1	SU	30 S		---	---	--	---	NASH	1003+	SWIFT CR. TO NC 48	
890725.1	LC	4 S		---	---	--	---	NASH	1003+	SWIFT CR. TO NC 48	
890725.1	AU	22 S		---	---	--	---	NASH	1003+	SWIFT CR. TO NC 48	
890725.1	VC	180 S		---	---	--	---	NASH	1003+	SWIFT CR. TO NC 48	
890725.1	FM	102 S		---	---	--	---	NASH	1003+	SWIFT CR. TO NC 48	
890725.1	EL	342 S		---	---	--	---	NASH	1003+	SWIFT CR. TO NC 48	
890725.1	ESP	129 S		---	---	--	---	NASH	1003+	SWIFT CR. TO NC 48	
890725.1	ECS	21 S		---	---	--	---	NASH	1003+	SWIFT CR. TO NC 48	
890726.1	NONE			---	---	--	---	PITT	1777	CHICOD CR.	1
890726.2	EC	1 S		---	---	--	---	BERT	1500	CASHIE R.	1
890726.2	LO	2 L		---	---	--	---	BERT	1500	CASHIE R.	1
890726.3	EC	9 L		---	---	--	---	CHOW	1210	CHOWAN R.	1
890726.3	LO	1 L		---	---	--	---	CHOW	1210	CHOWAN R.	1
890726.3	LR	3 L		---	---	--	---	CHOW	1210	CHOWAN R.	1
890726.4	EC	1 L		---	---	--	---	CHOW	17	CHOWAN R.	0.5
890727.1	ESP	119 L		---	---	--	---	WARR	1509	L. FISHING CR.	1.5
890727.1	EP	1 L		---	---	--	---	WARR	1509	L. FISHING CR.	1.5
890802.1	EF	2 S		---	---	--	---	CUMB	CARVERS CR. NEAR CAPE F		1.5
890805.1	SU	2 L		---	---	--	---	ORAN	1538	N. FORK L. RIVER	
890805.1	ESP	100+ L		---	---	--	---	ORAN	1538	N. FORK L. RIVER	
890805.2	NONE			---	---	--	---	ORAN	1520	N. FORK L. RIVER	
890805.3	SU	2 S		---	---	--	---	ORAN	1540	S. FORK L. RIVER	
890805.3	ESP	10+ S		---	---	--	---	ORAN	1540	S. FORK L. RIVER	
890807.1	LC	3 L		---	---	--	---	DURH	1461	LITTLE R.	4
890807.1	ESP	116 L		---	---	--	---	DURH	1461	LITTLE R.	4
890807.2	NONE			---	---	--	---	DURH	1616	L. MICHIE	0.5
890808.1	ESP			---	---	--	---	DURH	1614	FLAT R.	4.5
890808.1	LCON			---	---	--	---	DURH	1614	FLAT R.	4.5

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
890808.1	LS			---	---	--	---	DURH	1614	FLAT R.	4.5
890808.1	AC			---	---	--	---	DURH	1614	FLAT R.	4.5
890808.2	ESP	82 L		---	---	--	---	PERS	1734	DEEP CR.	2
890808.2	SU	13 L		---	---	--	---	PERS	1734	DEEP CR.	2
890808.2	VC	9 L		---	---	--	---	PERS	1734	DEEP CR.	2
890810.1	AC	L/S		---	---	--	---	PERS	1120	S. FLAT R.	1
890810.1	ESP	L		---	---	--	---	PERS	1120	S. FLAT R.	1
890810.1	SU	2 L		---	---	--	---	PERS	1120	S. FLAT R.	1
890810.2	ESP			---	---	--	---	PERS	1715	N. FLAT R.	2
890810.2	AC			---	---	--	---	PERS	1715	N. FLAT R.	2
890810.2	VD			---	---	--	---	PERS	1715	N. FLAT R.	2
890810.2	SU			---	---	--	---	PERS	1715	N. FLAT R.	2
890810.3	NONE			---	---	--	---	PERS	1715	CHAPPELS CR.	1
890811.1	ESP	S		---	---	--	---	GRAN	1622	TAR R. BELOW BRIDGE	
890811.1	CL & EP	S		---	---	--	---	GRAN	1622	TAR R. BELOW BRIDGE	
890811.1	SU	S		---	---	--	---	GRAN	1622	TAR R. BELOW BRIDGE	
890811.1	LC	S		---	---	--	---	GRAN	1622	TAR R. BELOW BRIDGE	
890811.1	VC	S		---	---	--	---	GRAN	1622	TAR R. BELOW BRIDGE	
890811.1	FM	S		---	---	--	---	GRAN	1622	TAR R. BELOW BRIDGE	
890811.1	AU	S		---	---	--	---	GRAN	1622	TAR R. BELOW BRIDGE	
890908.1	EC		86	85	50	68.70	7.80	WILS	581	CONTENTNEA CR.	1
890908.1	EI	L		---	---	--	---	WILS	581	CONTENTNEA CR.	1
890908.1	AI	1 S		---	---	--	---	WILS	581	CONTENTNEA CR.	1
890908.1	EP	7 S	1	72	72	72.00	---	WILS	581	CONTENTNEA CR.	1
890908.1	VC	1 S		---	---	--	---	WILS	581	CONTENTNEA CR.	1
890908.1	AU	1 S		---	---	--	---	WILS	581	CONTENTNEA CR.	1
890908.1	SU		3	78	66	70.33	6.66	WILS	581	CONTENTNEA CR.	1
890908.2	AH	1 S		---	---	--	---	JOHN	42	LITTLE R. @ BRIDGE	1
890908.2	AC	50+L		---	---	--	---	JOHN	42	LITTLE R. @ BRIDGE	1
890908.2	AI	50+L		---	---	--	---	JOHN	42	LITTLE R. @ BRIDGE	1

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
890908.2	VC	1 L		---	---	--	---	JOHN	42	LITTLE R. @ BRIDGE	1
890908.2	EP	50+L		---	---	--	---	JOHN	42	LITTLE R. @ BRIDGE	1
890908.2	LC	1 L		---	---	--	---	JOHN	42	LITTLE R. @ BRIDGE	1
890908.2	AU	1 L		---	---	--	---	JOHN	42	LITTLE R. @ BRIDGE	1
890908.2	ESP	100+ L		---	---	--	---	JOHN	42	LITTLE R. @ BRIDGE	1
890908.2	SU	20+ L		---	---	--	---	JOHN	42	LITTLE R. @ BRIDGE	1
890911.1	NONE			---	---	--	---	MACO	1631	L. TENNESSEE R.	0.3
890916.1	FM	62 S		---	---	--	---	NASH	1310	+SWIFT CREEK	
890916.1	SU	9 S		---	---	--	---	NASH	1310	+SWIFT CREEK	
890916.1	AU	18 S		---	---	--	---	NASH	1310	+SWIFT CREEK	
890916.1	VC	89 S		---	---	--	---	NASH	1310	+SWIFT CREEK	
890916.1	EL	324 S		---	---	--	---	NASH	1310	+SWIFT CREEK	
890916.1	LC	3 S		---	---	--	---	NASH	1310	+SWIFT CREEK	
890916.1	ESP	588 S		---	---	--	---	NASH	1310	+SWIFT CREEK	
890916.1	ECS	8 S		---	---	--	---	NASH	1310	+SWIFT CREEK	
891000.1	EC	LENAT SAMPLE						SAMP	1214	L. COHARIE CR.	
891000.1	EI	LENAT SAMPLE						SAMP	1214	L. COHARIE CR.	
891000.1	VD	LENAT SAMPLE						SAMP	1214	L. COHARIE CR.	
900406.1	NONE			---	---	--	---	MCDO	221	SECOND BROAD RIVER	
900517.1	ESP		40	93	39	81.90	10.52	PERS	1125	S. FLAT R.	0.7
900517.1	FM		1	55	55	55.00	---	PERS	1125	S. FLAT R.	0.7
900517.1	AC		3	84	69	75.33	7.77	PERS	1125	S. FLAT R.	0.7
900517.1	SU		1	74	74	74.00	---	PERS	1125	S. FLAT R.	0.7
900517.1	VC		1	20	20	20.00	---	PERS	1125	S. FLAT R.	0.7
900517.2	LCON	23 L		---	---	--	---	DURH	1471	FLAT R.	2.7
900517.2	LC	1 L		---	---	--	---	DURH	1471	FLAT R.	2.7
900517.2	ESP	100+ L		---	---	--	---	DURH	1471	FLAT R.	2.7
900517.2	AU	1 L		---	---	--	---	DURH	1471	FLAT R.	2.7
900529.1	ESP	182 L		---	---	--	---	CHOW	13/158	CHOWAN R.	4
900529.1	AU	3 L		---	---	--	---	CHOW	13/158	CHOWAN R.	4

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
900529.1	LN	3 L		---	---	--	---	CHOW	13/158	CHOWAN R.	4
900529.1	LO	14 L		---	---	--	---	CHOW	13/158	CHOWAN R.	4
900529.1	LR	6 L		---	---	--	---	CHOW	13/158	CHOWAN R.	4
900529.1	EP	2 S		---	---	--	---	CHOW	13/158	CHOWAN R.	4
900529.1	AI	1 S		---	---	--	---	CHOW	13/158	CHOWAN R.	4
900530.1	ESP	28 L		---	---	--	---	GATES	13/158	CHOWAN R.	2
900530.1	LR	4 L		---	---	--	---	GATES	13/158	CHOWAN R.	2
900530.1	LO	14 L		---	---	--	---	GATES	13/158	CHOWAN R.	2
900530.1	LN	1 L		---	---	--	---	GATES	13/158	CHOWAN R.	2
900530.1	EP	1 L		---	---	--	---	GATES	13/158	CHOWAN R.	2
900605.1	EL &	EP 100L		---	---	--	---	FRAN	1003+TAR R.	TO LOUISBURG	
900605.1	FM	12 L		---	---	--	---	FRAN	1003+TAR R.	TO LOUISBURG	
900605.1	ESP	100+ L		---	---	--	---	FRAN	1003+TAR R.	TO LOUISBURG	
900605.1	EI	L		---	---	--	---	FRAN	1003+TAR R.	TO LOUISBURG	
900606.1	ECS	1 S		---	---	--	---	NASH	1331+WIBB'S MILL	TAR R.	TO NC 581
900606.1	LC	7L/30S		---	---	--	---	NASH	1331+WIBB'S MILL	TAR R.	TO NC 581
900606.1	VC	3 S		---	---	--	---	NASH	1331+WIBB'S MILL	TAR R.	TO NC 581
900606.1	FM	1 S		---	---	--	---	NASH	1331+WIBB'S MILL	TAR R.	TO NC 581
900606.1	EL	2L/5S		---	---	--	---	NASH	1331+WIBB'S MILL	TAR R.	TO NC 581
900607.1	ESP	364 S		---	---	--	---	NASH	1310+SWIFT CR.	TO SR 1003	
900607.1	FM	95 S		---	---	--	---	NASH	1310+SWIFT CR.	TO SR 1003	
900607.1	AU	14 S		---	---	--	---	NASH	1310+SWIFT CR.	TO SR 1003	
900607.1	SU	16 S		---	---	--	---	NASH	1310+SWIFT CR.	TO SR 1003	
900607.1	LC	3 S		---	---	--	---	NASH	1310+SWIFT CR.	TO SR 1003	
900607.1	EL	26 S		---	---	--	---	NASH	1310+SWIFT CR.	TO SR 1003	
900607.1	VC	75 S		---	---	--	---	NASH	1310+SWIFT CR.	TO SR 1003	
900607.1	ECS	11 S		---	---	--	---	NASH	1310+SWIFT CR.	TO SR 1003	
900611.1	LS	10+L		---	---	--	---	WAKE	2224+L. RIVER	TO SR 2308	
900611.1	ESP	100+ L		---	---	--	---	WAKE	2224+L. RIVER	TO SR 2308	
900611.1	EP	3 L		---	---	--	---	WAKE	2224+L. RIVER	TO SR 2308	

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
900611.1	FM	1 S		---	---	--	---	WAKE	2224+L.	RIVER TO SR 2308	
900612.1	AC	1 L		---	---	--	---	GRAN	15+	TAR R. TO NC 96	
900612.1	ESP	100+ L		---	---	--	---	GRAN	15+	TAR R. TO NC 96	
900612.1	EL	40+ L		---	---	--	---	GRAN	15+	TAR R. TO NC 96	
900612.1	FM	2L/4S		---	---	--	---	GRAN	15+	TAR R. TO NC 96	
900612.1	AU	2S		---	---	--	---	GRAN	15+	TAR R. TO NC 96	
900612.1	SU	2S		---	---	--	---	GRAN	15+	TAR R. TO NC 96	
900612.1	LC	4L/6S		---	---	--	---	GRAN	15+	TAR R. TO NC 96	
900612.1	LS	2S		---	---	--	---	GRAN	15+	TAR R. TO NC 96	
900613.1	ECS	3 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.1	EL	61 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.1	VC	13 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.1	FM	8 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.1	ESP	67 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.1	AU	1 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.1	LC	1 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.2	ESP	138 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.2	VC	42 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.2	EL	33 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.2	FM	7 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.2	SU	2 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.2	LC	1 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.2	ECS	2 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.3	EL	157 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.3	SU	10 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.3	AU	7 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.3	FM	31 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.3	VC	79 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.3	ESP	318 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	
900613.3	ECS	6 S		---	---	--	---	NASH	1003+	SWIFT CR. TO I 95	

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
900614.1	ESP	20+ L		---	---	--	---	EDGE	1505	-DEEP CR.	0.3
900614.2	ESP	40 L		---	---	--	---	EDGE	1253	SWIFT CR.	0.7
900614.2	FM	1 S		---	---	--	---	EDGE	1253	SWIFT CR.	0.7
900614.2	AU	1 L		---	---	--	---	EDGE	1253	SWIFT CR.	0.7
900614.3	ESP	105 L		---	---	--	---	EDGE	97+	BEECH BR.	1
900614.3	EP	5L/2S		---	---	--	---	EDGE	97+	BEECH BR.	1
900614.4	ESP	50+ L		---	---	--	---	EDGE	1406	-BEECH BR.	0.5
900614.4	EP	4+ S		---	---	--	---	EDGE	1406	-BEECH BR.	0.5
900619.1	ESP	286 S		---	---	--	---	NASH	48+	SWIFT CR. TO US 301	
900619.1	EL	121 S		---	---	--	---	NASH	48+	SWIFT CR. TO US 301	
900619.1	VC	12 S		---	---	--	---	NASH	48+	SWIFT CR. TO US 301	
900619.1	FM	7 S		---	---	--	---	NASH	48+	SWIFT CR. TO US 301	
900620.1	AH		20	40	21	33.55	4.07	GRAN	158+	TAR R. DOWN>300M	0.5
900620.2	ESP	100+ L		---	---	--	---	PERS	1734	-DEEP CR.	2.3
900620.2	VC		17	47	20	35.35	8.17	PERS	1734	-DEEP CR.	2.3
900620.2	SU		11	67	43	57.64	6.92	PERS	1734	-DEEP CR.	2.3
900620.2	AC		2	76	69	72.50	4.95	PERS	1734	-DEEP CR.	2.3
900620.2	VD		1	63	63	63.00	---	PERS	1734	-DEEP CR.	2.3
900620.2	FM		1	33	33	33.00	---	PERS	1734	-DEEP CR.	2.3
900620.2	AU		2	48	38	43.00	7.07	PERS	1734	-DEEP CR.	2.3
900621.1	ESP	150+ L		---	---	--	---	FRAN	1001	+TAR R. TO 1609	
900621.1	EL	20L/30S		---	---	--	---	FRAN	1001	+TAR R. TO 1609	
900621.1	VC	30S		---	---	--	---	FRAN	1001	+TAR R. TO 1609	
900621.1	FM	1L/3S		---	---	--	---	FRAN	1001	+TAR R. TO 1609	
900621.1	LC	3L/8S		---	---	--	---	FRAN	1001	+TAR R. TO 1609	
900625.1	NONE			---	---	--	---	HARN	421	- BLACK R. LOW PH	0.5
900625.2	NONE			---	---	--	---	HARN	217	LITTLE R.	0.3
900625.3	ESP	2L/S		---	---	--	---	HARN	217	CAPE FEAR R.	3
900625.3	EF	1L/S		---	---	--	---	HARN	217	CAPE FEAR R.	3
900626.1	ECON	41L/S		---	---	--	---	HARN	210+	C.F. RIVER BELOW LILLINGTON	

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
900626.1	ER	1L/S		---	---	--	---	HARN	210+	C.F. RIVER BELOW LILLINGTON	
900626.1	ESP	24L/S		---	---	--	---	HARN	210+	C.F. RIVER BELOW LILLINGTON	
900626.1	EF	11L/S		---	---	--	---	HARN	210+	C.F. RIVER BELOW LILLINGTON	
900626.1	LC	2S		---	---	--	---	HARN	210+	C.F. RIVER BELOW LILLINGTON	
900626.1	AU	S		---	---	--	---	HARN	210+	C.F. RIVER BELOW LILLINGTON	
900626.1	FM	3S		---	---	--	---	HARN	210+	C.F. RIVER BELOW LILLINGTON	
900626.1	SU	S		---	---	--	---	HARN	210+	C.F. RIVER BELOW LILLINGTON	
900626.1	VC	S		---	---	--	---	HARN	210+	C.F. RIVER BELOW LILLINGTON	
900626.1	EI	1/2 S		---	---	--	---	HARN	210+	C.F. RIVER BELOW LILLINGTON	
900627.1	EF		11	81	55	72.00	8.61	CUMB	C.F. RIVER ABOVE CARVERS CREEK		
900627.1	ER		18	122	54	97.39	20.27	CUMB	C.F. RIVER ABOVE CARVERS CREEK		
900627.1	ESP		117	109	49	80.59	11.28	CUMB	C.F. RIVER ABOVE CARVERS CREEK		
900627.1	ECON	L		---	---	--	---	CUMB	C.F. RIVER ABOVE CARVERS CREEK		
900627.1	EI		4	53	49	51.00	1.63	CUMB	C.F. RIVER ABOVE CARVERS CREEK		
900628.1	ESP	40+ L		---	---	--	---	CHAT	42+- BUCKHORN CR.		0.5
900628.1	SU	1 L		---	---	--	---	CHAT	42+- BUCKHORN CR.		0.5
900628.1	AI	1 L		---	---	--	---	CHAT	42+- BUCKHORN CR.		0.5
900705.1	EF		4	81	60	70.75	8.92	CUMB	C.F. RIVER E. OF FALCON		0.8
900705.1	ESP		8	97	51	64.75	15.99	CUMB	C.F. RIVER E. OF FALCON		0.8
900705.1	EI		1	49	49	49.00	---	CUMB	C.F. RIVER E. OF FALCON		0.8
900705.1	ER		7	108	50	80.14	24.89	CUMB	C.F. RIVER E. OF FALCON		0.8
900705.1	ECON	L		---	---	--	---	CUMB	C.F. RIVER E. OF FALCON		0.8
900705.2	LC		2	73	64	68.50	6.36	CUMB	BELOW LAST STATION		1.5
900705.2	ESP		14	76	52	62.50	7.54	CUMB	BELOW LAST STATION		1.5
900705.2	ECON	L		---	---	--	---	CUMB	BELOW LAST STATION		1.5
900705.2	ER		3	89	58	74.33	15.57	CUMB	BELOW LAST STATION		1.5
900705.2	EF		2	67	62	64.50	3.54	CUMB	BELOW LAST STATION		1.5
900705.2	VD	1 L		---	---	--	---	CUMB	BELOW LAST STATION		1.5
900705.3	ESP		84	100	55	77.52	9.72	CUMB	BELOW LAST STATION		0.8
900705.3	ECON	L		---	---	--	---	CUMB	BELOW LAST STATION		0.8

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
900705.3	EF		8	88	58	73.38	9.20	CUMB	BELOW LAST STATION		0.8
900705.3	ER		2	120	75	97.50	31.82	CUMB	BELOW LAST STATION		0.8
900705.4	ESP	20 L		---	---	--	---	CUMB	BELOW LAST STATION		1.5
900705.4	EF	1 L		---	---	--	---	CUMB	BELOW LAST STATION		1.5
900705.4	ER	1 L		---	---	--	---	CUMB	BELOW LAST STATION		1.5
900705.5	ESP		132	115	49	82.30	12.45	CUMB	BELOW LAST STATION		2.3
900705.5	EF		6	76	59	69.00	6.39	CUMB	BELOW LAST STATION		2.3
900705.5	ECON	L		---	---	--	---	CUMB	BELOW LAST STATION		2.3
900705.5	ER		39	134	56	107.59	13.81	CUMB	BELOW LAST STATION		2.3
900705.5	EI		3	56	44	50.33	6.03	CUMB	BELOW LAST STATION		2.3
900709.1	ESP		8	91	69	77.25	7.67	BLAD	1316 CAPE FEAR R.		0.7
900709.1	VD		1	56	56	56.00	---	BLAD	1316 CAPE FEAR R.		0.7
900709.3	ESP		7	89	74	80.29	5.65	BLAD	1355 CAPE FEAR R.		1.3
900709.3	AI		2	66	59	62.50	4.95	BLAD	1355 CAPE FEAR R.		1.3
900709.3	VD		1	66	66	66.00	---	BLAD	1355 CAPE FEAR R.		1.3
900709.3	ER	10 S		---	---	--	---	BLAD	1355 CAPE FEAR R.		1.3
900709.3	LC	1 S		---	---	--	---	BLAD	1355 CAPE FEAR R.		1.3
900710.1	NONE			---	---	--	---	CUMB	87- GRAY'S CR.		0.3
900710.2	NONE			---	---	--	---	CUMB	2367 C.F. RIVER V.	POOR	0.5
900710.3	NONE			---	---	--	---	BLAD	53 COLLY CR.		0.1
900710.4	EI	100 L		---	---	--	---	BLAD	11/53 UP BLACK R.		10
900710.4	EF	20+ L		---	---	--	---	BLAD	11/53 UP BLACK R.		10
900710.4	EC	30 L		---	---	--	---	BLAD	11/53 UP BLACK R.		10
900710.4	LSP	4 L		---	---	--	---	BLAD	11/53 UP BLACK R.		10
900710.4	ECON	30+ L		---	---	--	---	BLAD	11/53 UP BLACK R.		10
900711.1	EI	L		---	---	--	---	SAMP	1207-L. COHARIE CR.		0.5
900711.1	EF	L		---	---	--	---	SAMP	1207-L. COHARIE CR.		0.5
900711.2	LR	1 L		---	---	--	---	SAMP	1003+SIX RUNS CR.		1.5
900711.2	VD	1 L		---	---	--	---	SAMP	1003+SIX RUNS CR.		1.5
900711.2	EI	L		---	---	--	---	SAMP	1003+SIX RUNS CR.		1.5

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
900711.2	EC	L		---	---	--	---	SAMP	1003+SIX RUNS CR.		1.5
900711.3	ESP	237 L		---	---	--	---	SAMP	1134-GR. COHARIE CR.		1
900711.3	VD	1 L		---	---	--	---	SAMP	1134-GR. COHARIE CR.		1
900711.4	ESP	7 S		---	---	--	---	PEND	210- N.E. CAPE FEAR R.		0.5
900712.1	FM	3 L		---	---	--	---	BLAD	1550+BLACK R. TO NC 53		
900712.1	LC	2 L		---	---	--	---	BLAD	1550+BLACK R. TO NC 53		
900712.1	EP	20 + L		---	---	--	---	BLAD	1550+BLACK R. TO NC 53		
900712.1	LSP	20 + L		---	---	--	---	BLAD	1550+BLACK R. TO NC 53		
900712.1	ECON	40 + L		---	---	--	---	BLAD	1550+BLACK R. TO NC 53		
900712.1	EF	15 + L		---	---	--	---	BLAD	1550+BLACK R. TO NC 53		
900712.1	EI	100 + L		---	---	--	---	BLAD	1550+BLACK R. TO NC 53		
900716.1	EC	178 L		---	---	--	---	RAND	1456+DEEP R. TO 1456 IN MOORE CO.		
900716.1	LCF	9 L		---	---	--	---	RAND	1456+DEEP R. TO 1456 IN MOORE CO.		
900717.1	NONE			---	---	--	---	CHAT	1011+HAW R. TO C.F.R. @ NC 42		
900717.2	ER		3	133	110	123.33	11.93	HARN	RAVEN ROCK STATE PARK, C.F. RIVER		
900717.2	EF		22	86	67	75.50	5.37	HARN	RAVEN ROCK STATE PARK, C.F. RIVER		
900717.2	ECON		9	96	84	90.22	3.46	HARN	RAVEN ROCK STATE PARK, C.F. RIVER		
900717.2	EC		113	90	59	70.88	5.73	HARN	RAVEN ROCK STATE PARK, C.F. RIVER		
900717.2	EI	1/2 S		---	---	--	---	HARN	RAVEN ROCK STATE PARK, C.F. RIVER		
900718.1	EC		18	95	62	78.72	8.47	CHAT	64+- HAW R.		0.5
900718.1	LC		1	118	118	118.00	---	CHAT	64+- HAW R.		0.5
900718.2	NONE			---	---	--	---	CHAT	1713 HAW R.		0.5
900719.1	EC		44	100	40	78.95	12.60	ORAN	1958 CANE CR. BELOW RES		1
900719.1	VC	2 L		---	---	--	---	ORAN	1958 CANE CR. BELOW RES		1
900719.1	AC	2L		---	---	--	---	ORAN	1958 CANE CR. BELOW RES		1
900719.1	SU	2 L		---	---	--	---	ORAN	1958 CANE CR. BELOW RES		1
900719.2	AC	L		---	---	--	---	CHAT	421- BEAR CR. TO 2333		1
900719.2	EI	L		---	---	--	---	CHAT	421- BEAR CR. TO 2333		1
900719.2	EC	L		---	---	--	---	CHAT	421- BEAR CR. TO 2333		1
900719.2	VC	L		---	---	--	---	CHAT	421- BEAR CR. TO 2333		1

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
900719.2	VD	L		---	---	--	---	CHAT	421-	BEAR CR. TO 2333	1
900719.3	AC	7 L		---	---	--	---	ALAM	87	CANE CR.	0.7
900719.3	VC	1 L		---	---	--	---	ALAM	87	CANE CR.	0.7
900719.3	EI	L		---	---	--	---	ALAM	87	CANE CR.	0.7
900719.3	EC		44	88	40	68.32	11.10	ALAM	87	CANE CR.	0.7
900720.1	NONE			---	---	--	---	ALAM	1910	QUAKER CR.	
900720.2	NONE			---	---	--	---	ALAM	1936	BACK CR.	TURBID
900720.3	NONE			---	---	--	---	ALAM	1754-	DEEP CR.	0.1
900720.4	NONE			---	---	--	---	ALAM	1001	NEEDS WK BUTTERMILK CR.	
900720.5	NONE			---	---	--	---	ALAM	1587	NEEDS WK BUTTERMILK CR.	
900720.6	EC	1 S		---	---	--	---	ALAM	1504	TICKLE CR.	0.1
900720.7	EC		17	75	39	63.47	8.97	ALAM	87	MARY'S CR.	0.3
900720.7	AC	4 L		---	---	--	---	ALAM	87	MARY'S CR.	0.3
900720.7	VD	L		---	---	--	---	ALAM	87	MARY'S CR.	0.3
900720.8	EC		67	96	58	81.00	7.85	ORAN	MORGAN CR. BELOW U. LAK		0.5
900724.1	EC		36	88	29	70.92	14.80	ALAM	49	STINKING QUAR. CR.	1
900724.1	VC	10 L		---	---	--	---	ALAM	49	STINKING QUAR. CR.	1
900724.1	VD	L		---	---	--	---	ALAM	49	STINKING QUAR. CR.	1
900724.1	SU	L		---	---	--	---	ALAM	49	STINKING QUAR. CR.	1
900724.2	EC	25 L		---	---	--	---	ALAM	1130	ROCK CR.	0.3
900725.1	NONE			---	---	--	---	ALAM	119	STAGG CR.	0.3
900725.2	NONE			---	---	--	---	ALAM	1910-	QUAKER CR.	0.3
900725.3	EC	101 L		---	---	--	---	ALAM	1940-	BACK CR.	0.5
900725.3	VD	L		---	---	--	---	ALAM	1940-	BACK CR.	0.5
900725.4	NONE			---	---	--	---	ALAM	1737	BOYDS CR.	0.3
900725.5	EC	11 L		---	---	--	---	ALAM	1504	TICKLE CR.	0.5
900725.5	AC	L		---	---	--	---	ALAM	1504	TICKLE CR.	0.5
900725.6	EC		46	60	23	48.39	6.09	ROCK	150	HAW R. TURBID	0.7
900725.6	VD		2	53	36	44.50	12.02	ROCK	150	HAW R. TURBID	0.7
900726.1	NONE			---	---	--	---	CHAT	1525	FERRELL'S CR.	0.3

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
900726.2	EC		16	90	65	75.19	7.37	CHAT	1520	DRY CR.	0.5
900726.2	AC	3 L		---	---	--	---	CHAT	1520	DRY CR.	0.5
900730.1	EC		114	101	34	57.47	12.47	NASH	BATTL @ ROCKY MT.	TAR R	1.5
900730.1	ECON		1	77	77	77.00	---	NASH	BATTL @ ROCKY MT.	TAR R	1.5
900730.1	ER		4	138	122	129.25	6.60	NASH	BATTL @ ROCKY MT.	TAR R	1.5
900730.1	LR		4	107	67	91.00	16.99	NASH	BATTL @ ROCKY MT.	TAR R	1.5
900730.1	SU		1	52	52	52.00	---	NASH	BATTL @ ROCKY MT.	TAR R	1.5
900730.2	EC		119	113	42	62.96	12.12	EDGE	WTP	TAR R.	1.5
900730.2	ER		37	150	90	118.59	15.10	EDGE	WTP	TAR R.	1.5
900730.2	EI		5	83	58	67.40	9.50	EDGE	WTP	TAR R.	1.5
900730.2	ECON		15	115	67	98.00	11.64	EDGE	WTP	TAR R.	1.5
900730.3	ER		66	157	83	121.92	13.12	EDGE	44-	TAR R.	1.5
900730.3	EI		3	76	64	70.67	6.11	EDGE	44-	TAR R.	1.5
900730.3	ECON		21	112	71	92.00	11.10	EDGE	44-	TAR R.	1.5
900730.3	EC		83	116	26	65.76	11.68	EDGE	44-	TAR R.	1.5
900730.4	EC		36	79	34	61.28	9.34	EDGE	1252-	TAR R.	0.7
900730.4	ER		1	82	82	82.00	---	EDGE	1252-	TAR R.	0.7
900730.4	ECON		2	90	78	84.00	8.49	EDGE	1252-	TAR R.	0.7
900731.1	ECS		1	32	32	32.00	---	NASH	1310+SWIFT	CR.	2
900731.1	FM		5	44	14	30.20	14.91	NASH	1310+SWIFT	CR.	2
900731.1	EC		6	58	28	45.50	12.31	NASH	1310+SWIFT	CR.	2
900731.1	LC		1	56	56	56.00	---	NASH	1310+SWIFT	CR.	2
900801.1	EC	325 L		---	---	--	---	ORAN	70	END R.	0.3
900801.2	VC	3 L		---	---	--	---	ORAN	1336-	END R.	0.5
900801.2	SU	2L		---	---	--	---	ORAN	1336-	END R.	0.5
900801.2	EI	L		---	---	--	---	ORAN	1336-	END R.	0.5
900801.2	EC	93 L		---	---	--	---	ORAN	1336-	END R.	0.5
900801.3	VC		1	30	30	30.00	---	ORAN	1538	S. FORK L. RIVER	0.7
900801.3	SU		3	66	23	47.00	21.93	ORAN	1538	S. FORK L. RIVER	0.7
900801.3	EC		7	84	39	63.29	15.96	ORAN	1538	S. FORK L. RIVER	0.7

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
900801.3	EI		17	93	59	72.47	9.35	ORAN	1538	S. FORK L. RIVER	0.7
900801.4	VC		4	48	28	37.25	8.22	ORAN	1538	N. FORK L. RIVER	0.7
900801.4	FM		1	42	42	42.00	---	ORAN	1538	N. FORK L. RIVER	0.7
900801.4	EC		36	90	44	71.94	11.35	ORAN	1538	N. FORK L. RIVER	0.7
900801.4	AC	L		---	---	--	---	ORAN	1538	N. FORK L. RIVER	0.7
900801.4	EI	L		---	---	--	---	ORAN	1538	N. FORK L. RIVER	0.7
900802.1	EC	701 S		---	---	--	---	NASH	1310	+SWIFT CR. TO 1003	20
900802.1	VC	167 S		---	---	--	---	NASH	1310	+SWIFT CR. TO 1003	20
900802.1	FM	96 S		---	---	--	---	NASH	1310	+SWIFT CR. TO 1003	20
900802.1	EL	46 S		---	---	--	---	NASH	1310	+SWIFT CR. TO 1003	20
900802.1	LC	6 S		---	---	--	---	NASH	1310	+SWIFT CR. TO 1003	20
900802.1	SU	21 S		---	---	--	---	NASH	1310	+SWIFT CR. TO 1003	20
900802.1	AU	12 S		---	---	--	---	NASH	1310	+SWIFT CR. TO 1003	20
900802.1	ECS	16 S		---	---	--	---	NASH	1310	+SWIFT CR. TO 1003	20
900803.1	LC	84 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900803.1	VC	17 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900803.1	EL	180 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900803.1	FM	8 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900803.1	SU	51 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900803.1	AU	44 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900803.1	EC	178 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900803.1	ECS	91 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900806.1	VC	1 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900806.1	LC	14 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900806.1	EL	33 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900806.1	SU	15 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900806.1	AU	13 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900806.1	EC	149 S		---	---	--	---	NASH	1003	+SWIFT CR.	
900806.1	ECS	12 S?		---	---	--	---	NASH	1003	+SWIFT CR.	
900806.2	ECS	12 S		---	---	--	---	NASH	1310	+SWIFT CR. TO 1003 JUST TASM	

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
900813.1	VC		5	44	26	35.40	6.73	FRAN	401+-	SANDY CR.	0.5
900813.1	FM		5	37	26	29.80	4.44	FRAN	401+-	SANDY CR.	0.5
900813.1	EC		29	89	16	64.03	14.63	FRAN	401+-	SANDY CR.	0.5
900813.1	AC		3	66	63	64.33	1.53	FRAN	401+-	SANDY CR.	0.5
900813.1	SU		1	80	80	80.00	---	FRAN	401+-	SANDY CR.	0.5
900814.1	EC	L		---	---	--	---	FRAN	1412+	SANDY CR.	1
900814.2	LC	1 S		---	---	--	---	NASH	1405	SANDY CR.	2
900814.2	AU	1 S		---	---	--	---	NASH	1405	SANDY CR.	2
900814.2	FM	3 S		---	---	--	---	NASH	1405	SANDY CR.	2
900814.2	EC	4 S		---	---	--	---	NASH	1405	SANDY CR.	2
900814.2	VC	12 S		---	---	--	---	NASH	1405	SANDY CR.	2
900816.1	SCS	4 S		---	---	--	---	NASH	48-	SWIFT CR. TO 1003	
900816.1	AU	5 S		---	---	--	---	NASH	48-	SWIFT CR. TO 1003	
900816.1	FM	30 S		---	---	--	---	NASH	48-	SWIFT CR. TO 1003	
900816.1	VC	51 S		---	---	--	---	NASH	48-	SWIFT CR. TO 1003	
900816.1	EL	64 S		---	---	--	---	NASH	48-	SWIFT CR. TO 1003	
900816.1	EC	214 S		---	---	--	---	NASH	48-	SWIFT CR. TO 1003	
900918	LC	17 L		---	---	--	---	MOOR	1456-	DEEP R.	2
900918	EC	100+ L		---	---	--	---	MOOR	1456-	DEEP R.	2
900918	SU	1 L		---	---	--	---	MOOR	1456-	DEEP R.	2
900906.1	EI	L		---	---	--	---	BRUN	17+-	TOWN CR.	1.5
900906.1	VD	L		---	---	--	---	BRUN	17+-	TOWN CR.	1.5
900906.1	EF	L		---	---	--	---	BRUN	17+-	TOWN CR.	1.5
900906.1	VV	L		---	---	--	---	BRUN	17+-	TOWN CR.	1.5
900906.1	EP	L		---	---	--	---	BRUN	17+-	TOWN CR.	1.5
900906.1	EC	L		---	---	--	---	BRUN	17+-	TOWN CR.	1.5
900906.2	EC	L		---	---	--	---	BRUN	211+-	ROYAL OAK CR.	1
900906.3	AC	L		---	---	--	---	BRUN	1521-	RICES CR.	1
900906.3	EP	L		---	---	--	---	BRUN	1521-	RICES CR.	1
900906.3	EC	L		---	---	--	---	BRUN	1521-	RICES CR.	1

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
900906.3	LN	L		---	---	--	---	BRUN	1521-	RICES CR.	1
900906.3	EI	L		---	---	--	---	BRUN	1521-	RICES CR.	1
900906.3	VD	L		---	---	--	---	BRUN	1521-	RICES CR.	1
900907.1	LSP	L		---	---	--	---	BLAD	53-	BLACK R.	4
900907.1	EF	L		---	---	--	---	BLAD	53-	BLACK R.	4
900907.1	EI	L		---	---	--	---	BLAD	53-	BLACK R.	4
900907.1	FM	L		---	---	--	---	BLAD	53-	BLACK R.	4
900907.1	ECON	L		---	---	--	---	BLAD	53-	BLACK R.	4
900910.1	AC	10+ L		---	---	--	---	ORAN	U.	LANEAR OFFICE	1
900910.1	AI	10+ L		---	---	--	---	ORAN	U.	LANEAR OFFICE	1
900910.1	EC	1 S		---	---	--	---	ORAN	U.	LANEAR OFFICE	1
900910.1	TP	6 L		---	---	--	---	ORAN	U.	LANEAR OFFICE	1
900917	LCON		77	136	63	112.25	14.86	DURH	1471+	FLAT R. W/ DUKE STUDENTS	
900917	AU	1 S		---	---	--	---	DURH	1471+	FLAT R. W/ DUKE STUDENTS	
900917	AC		1	62	62	62.00	---	DURH	1471+	FLAT R. W/ DUKE STUDENTS	
900917	SU		2	67	65	66.00	1.41	DURH	1471+	FLAT R. W/ DUKE STUDENTS	
900917	FM		2	43	40	41.50	2.12	DURH	1471+	FLAT R. W/ DUKE STUDENTS	
900917	LS		1	40	40	40.00	---	DURH	1471+	FLAT R. W/ DUKE STUDENTS	
900917	VC		2	41	37	39.00	2.83	DURH	1471+	FLAT R. W/ DUKE STUDENTS	
900917	LC		4	60	51	56.75	4.27	DURH	1471+	FLAT R. W/ DUKE STUDENTS	
900917	EC		212	103	38	73.65	10.95	DURH	1471+	FLAT R. W/ DUKE STUDENTS	
900921.1	EC		81	78	49	65.10	5.68	CHAT	501+	ROCKY R.	0.7
900921.1	AV		1	42	42	42.00	---	CHAT	501+	ROCKY R.	0.7
900921.2	EC		13	81	49	61.85	10.11	CHAT	1010-	ROCKY R.	0.7
900921.3	EC		7	68	60	64.29	2.98	CHAT	902-	ROCKY R.	0.7
900921.4	EC		94	105	48	79.15	8.44	CHAT	64-	ROCKY R.	0.7
900921.4	EI		2	76	53	64.50	16.26	CHAT	64-	ROCKY R.	0.7
900921.4	VD		1	67	67	67.00	---	CHAT	64-	ROCKY R.	0.7
900921.4	AC		10	125	67	100.80	19.01	CHAT	64-	ROCKY R.	0.7
900921.5	NONE			---	---	--	---	CHAT	2170	ROCKY R.	0.7

STATION	SPEC.	L/S	COUNT	MAXLEN	MINLEN	MEAN	STD	CO.	ROAD	STREAM	HOURS
900924.1	NONE			---	---	--	---	CHAT	2170-	TICK CR.	0.3
900924.2	EC	10+ L		---	---	--	---	CHAT	1004-	ROCKY R. DEWATERED	
900925.1	EI	L		---	---	--	---	WAYN	1224	NEUSE R.	0.3
900925.1	EC	40+ L		---	---	--	---	WAYN	1224	NEUSE R.	0.3
900925.1	EP	1 L		---	---	--	---	WAYN	1224	NEUSE R.	0.3
900925.2	EC	30+ L		---	---	--	---	JOHN	42-	LITTLE R.	1
900925.2	EI	30+ L		---	---	--	---	JOHN	42-	LITTLE R.	1
900925.2	EP	10 L		---	---	--	---	JOHN	42-	LITTLE R.	1
900925.2	SU	10 L		---	---	--	---	JOHN	42-	LITTLE R.	1
900925.2	FM	1 L		---	---	--	---	JOHN	42-	LITTLE R.	1
900925.2	AI	1 L		---	---	--	---	JOHN	42-	LITTLE R.	1
900925.2	AC	5 L		---	---	--	---	JOHN	42-	LITTLE R.	1
900928	NONE			---	---	--	---	RAND	& GUIL	SEVERAL CROSSINGS	
901010	FB	S		---	---	--	---	SWAI	LAST 10 MI.	ABOVE FONTANA	
901010	AR	L		---	---	--	---	SWAI	LAST 10 MI.	ABOVE FONTANA	
901010	AVIR	L		---	---	--	---	SWAI	LAST 10 MI.	ABOVE FONTANA	
901010	ED	L		---	---	--	---	SWAI	LAST 10 MI.	ABOVE FONTANA	
901010	PF	1S		---	---	--	---	SWAI	LAST 10 MI.	ABOVE FONTANA	
901010	LFAS	L		---	---	--	---	SWAI	LAST 10 MI.	ABOVE FONTANA	
901010	VN	S		---	---	--	---	SWAI	LAST 10 MI.	ABOVE FONTANA	
901015	ER		36	146	88	121.50	13.49	EDGE	WTP	TAR R.	1
901015	ECON		11	117	54	91.64	23.54	EDGE	WTP	TAR R.	1
901015	ESP		133	116	30	68.25	14.88	EDGE	WTP	TAR R.	1
901015	EI	L		---	---	--	---	EDGE	WTP	TAR R.	1