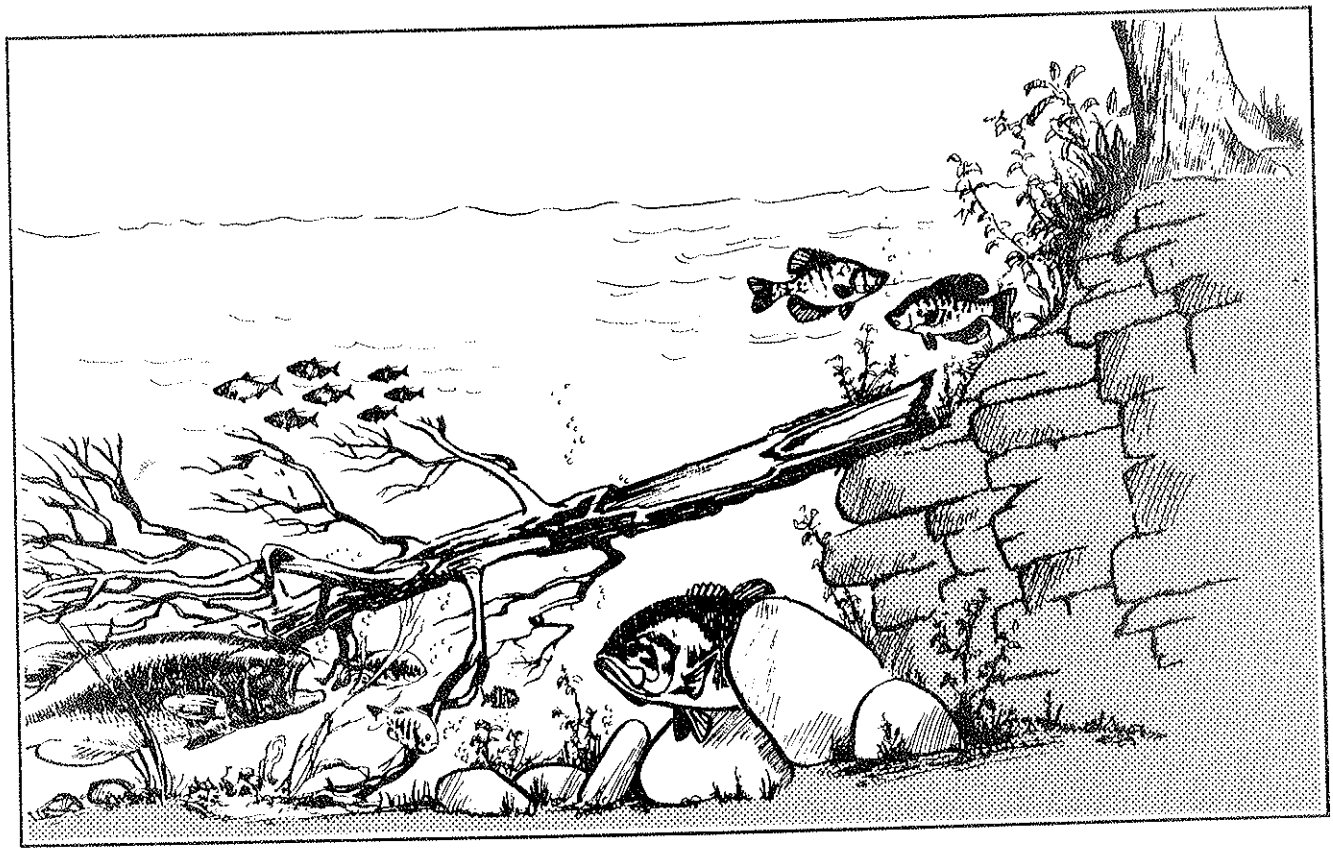
FISHERIES REPORT

1989 REGION IV
STREAM FISHERY DATA COLLECTION REPORT



by Rick D. Bivens • Carl E. Williams

Tennessee Wildlife Resources Agency

REGION IV STREAM FISHERY DATA COLLECTION REPORT

1989

Prepared by

Rick D. Bivens

and

Carl E. Williams

TENNESSEE WILDLIFE RESOURCES AGENCY

April, 1990

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INTRODUCTION

Streams and rivers accross the state of Tennessee are valuable natural resources. The freshwater fish fauna is the most diverse in the United States with approximately 290 species of native fish occurring within the state. This is a number greater than that found in any other state and the majority of these occur in our larger rivers and streams.

As well as offering a variety of recreational opportunities, streams and rivers accross the state are also sources of both commercial and domestic water. The management and protection of this important resource is defined as a strategic goal of the Tennessee Wildlife Resources Agency (TWRA).

This is the third annual report on stream fishery data collection in Region IV. The main purpose of this project has been to collect baseline information on fish and macroinvertebrate populations of streams in the region. This baseline data is necessary to update and expand our Tennessee Aquatic Data Base System (TADS) and to aid in resource management. In addition, we have also cooperated with the Tennessee Valley Authority, U.S. Forest Service, and the National Park Service on various stream fisheries projects.

Region IV has 4,847 miles of streams that total approximately 14,111 acres. There are approximately 800 miles that are classified as coldwater streams (TWRA 1986). Except for a few streams

in Anderson, Campbell, and Claiborne counties that drain into the Cumberland River system, the streams in Region IV are in the upper Tennessee River drainage. The main river systems in the region are the Clinch, Powell, Little Tennessee, mainstream Tennessee River, French Broad, and Holston.

The streams included in this report were sampled for various reasons. Some, to assess trout populations, while others the effects of stream pollution, and still others for general interest or to obtain baseline data on fish populations and species diversity.

The information gathered for this project is of general nature and broad in scope. Therefore, it is presented in this report simply as individual stream accounts. These accounts include a general summary of the survey work that took place along with the data collected and a comment and management recommendations section for each stream. Sample site location maps and field data forms are also included in these accounts.

METHODS

The streams to be surveyed and the methods required are outlined in Field Request No. 89-3. In addition to this list, twenty-nine other streams were sampled and are included in this report. The survey work was conducted from January to December 1989. Fifty-one fish samples and 69 benthos samples from 43 streams were collected.

Qualitative fish data were collected using standard electrofishing techniques, toxicants, and seining. Streams were sampled with backpack shockers, various combinations of shockers and seines, or seines exclusively. In general, small streams were sampled with a single backpack unit while larger streams were sampled with multiple units. Larger rivers were sampled with a boat shocker where deeper water permitted and with a backpack shocker or backpack shocker in combination with a seine on the shallow riffle areas. A few small tributary streams were sampled by using seines only. One river sample involved the use of sodium cyanide followed by electrofishing. In another case, renovation work was conducted with electrofishing followed by rotenone.

Sample lengths ranged from 100 to 1,200 feet. Most were 300 ft. which is generally enough to include both riffle and pool habitats on the smaller and medium size streams.

Fish were identified in the field and released when possible. When field identification was impossible or impractical, they were

preserved in 10% formalin for later determination. Examination and confirmation on identification of problematic specimens was made by Dr. David A. Etnier, University of Tennessee, and by comparisons with identified species in our Region IV Fish Collection. Most of the preserved specimens collected this year will also be catalogued into our fish collection. Some were deposited in The University of Tennessee Research Collection of Fishes. For the most part, common and scientific names of fishes used in this report are after Robins et al. (1980). The recently accepted use of *Oncorhyncus mykiss* as scientific name for the rainbow trout (Smith and Stearly 1989) is followed throughout this report.

Game fish were weighed and measured individually. Nongame fish (suckers, catfish, carp, goldfish, and large shad) and forage fish (minnows, darters, sculpins, and small shad) were weighed as a group by species and a length range was obtained. In some cases, only numbers were determined. All fish data collected were recorded on Fish Field Data Forms and all measurments are reported in English units. The letter "t" is recorded where the weight was represented by only a trace amount (less than 0.01 lb.).

Most qualitative samples are divided into categories of game fish by species, nongame fish, and forage fish. These are summarized as actual numbers and weights for all fish collected and also as percentages of the total for each group. All the field data forms are presented along with each summary in the stream accounts.

Quantitative benthos samples were generally collected from

two square-foot Surber samples from each fish sample site. They consisted of one sample taken from midstream and one taken midway between the middle and an edge, across a riffle area. In cases where three Surber samples were collected, one was taken from midstream and the others along both stream edges. Additional qualitative samples were collected from several of the sample sites. These were taken with an aquatic insect net and at times with a Surber sampler, from as many different habitats as possible.

Large particles and debris were picked from the samples and discarded in the field. The remaining sample was preserved in 50% isopropanol and later sorted in the laboratory. Total number of organisms and a volumetric displacement measurement was made for each Surber sample. Attempts were made to identify specimens to species level when reasonably possible, many were identified to genus, and most, at least, to family. Dr. David A. Etnier, University of Tennessee, examined much of the material and either made or confirmed our attempted identifications. Comparisons with identified specimens in our aquatic invertebrate collection were also useful in making determinations. Steve Ahlstedt, Tennessee Valley Authority, identified most of the mollusks collected. For the most part, nomenclature of aquatic insects used in this report follows Brigham et al. (1982). Names of stoneflies (Plecoptera) are after Stewart and Stark (1988) from which many of the determinations were also made. Benthos results are reported in table form with each stream account.

Water quality data were taken at each site in conjunction with the fishery and benthos samples. Generally, the sample included dissolved oxygen (DO), temperature, pH, and conductivity. Data were taken from midstream and mid-depth at each site. On one stream (Russell Branch), data was collected with a 4041 Hydrolab. In all other cases, a YSI Model 58 DO meter, a YSI Model 33 S-C-T meter, and an Orion Model SA 210 pH meter were used. Stream flows were measured with a Marsh-McBirney Model 201D current meter. Water quality parameters along with habitat data were recorded on Field Physiochemical Data Forms. These forms are included in each stream account.

Sample site locations were delineated on 7.5 minute topographical maps and copies of these have been included in the stream accounts. TADS river reach numbers and quadrangle map coordinates for sample sites are recorded on all data forms.

STREAM ACCOUNTS

Puncheon Camp Creek

One qualitative fishery survey was conducted in July 1989:

Location and Length - Tributary to Clinch River (Norris Reservoir). The sample area was located 0.5 mi. upstream of the intersection of Puncheon Creek Rd. and Cracker Creek Rd. and was sampled on 11 July 1989. It was 600 ft. in length and averaged 28.7 ft. in width. The site was in Grainger County. Dutch Valley Quadrangle.

Gear Type - The site was sampled by making one pass with a single backpack electrofishing unit operating at 350 V. AC.

Water Quality - Data were taken from midstream on 11 July 1989: DO - 9.0 ppm, pH - 8.2, Temperature - 66.7 °F, Conductivity - 305 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples at the site. An additional qualitative sample was also collected. The Surber samples averaged 76 organisms and 0.65 ml. volumetric displacement. All benthos combined represented 46 taxa.

Fish Collected:

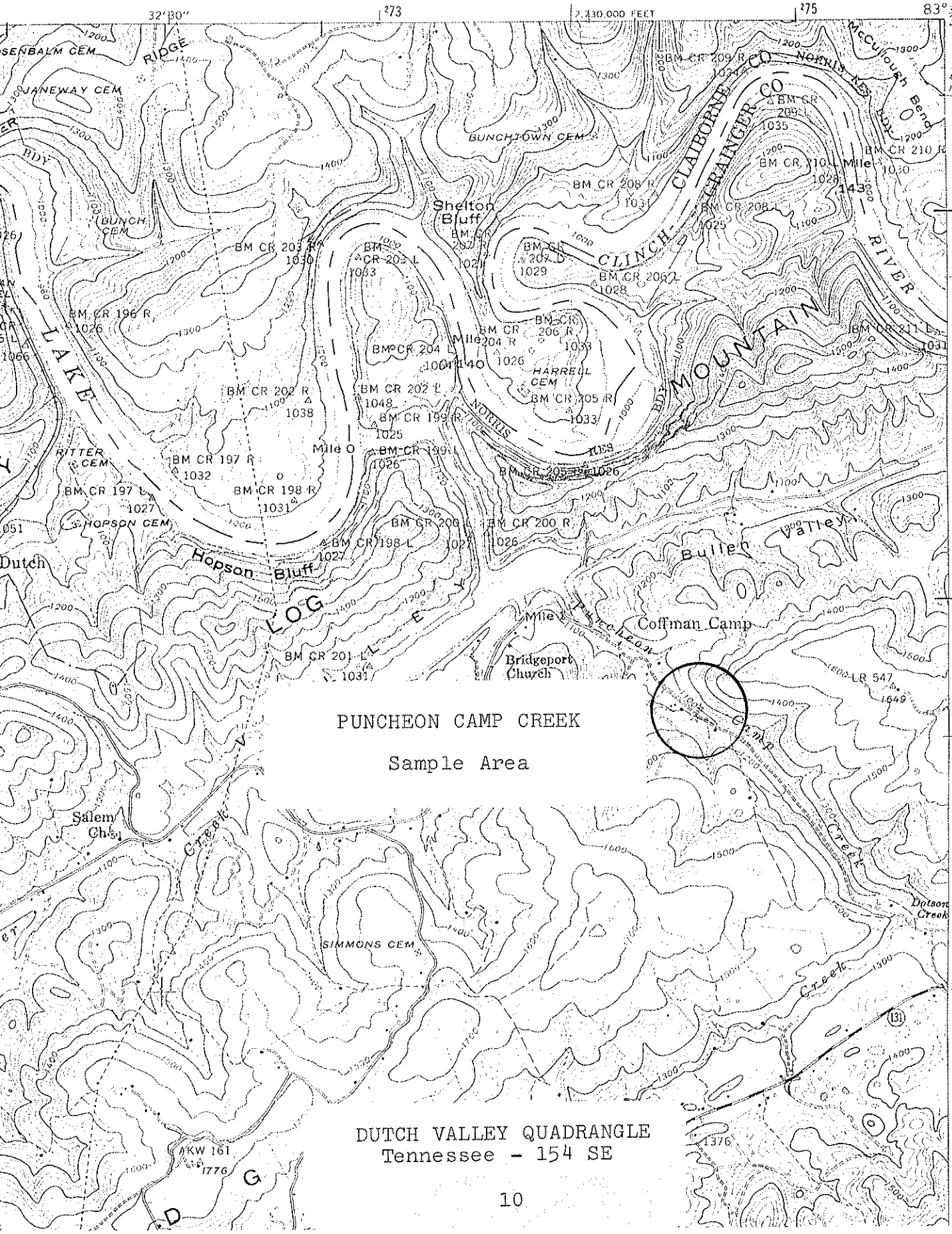
Species	No.	% by No.	Wt.	% by Wt.
Nongame Fish	6	1.0	1.07	10.5
Forage Fish	615	99.0	9.1	89.3
Total	621		10.17	

Comments - This stream was surveyed primarily to develop a fish species diversity list and collect stream information for TADS. No previous studies or fish collections are known from this stream.

We collected a total of 621 fish weighing 10.17 lb. and comprising 7 species from our sample site. None of these were game fish, however, and blacknose dace (*Rhinichthys atratulus*) and stonerollers (*Campostoma anomalum*) accounted for the greater number of all fish collected. Also, no shiners (*Notropis* spp.) were collected either. One interesting occurrence was the stripetail darter (*Etheostoma kennicotti*). This species inhabits small, slab-pool streams and although locally common, is sporatically distributed in the Tennessee

DUTCH VALLEY QUADRANGLE
TENNESSEE
7.5 MINUTE SERIES (TOPOGRAPHIC) 154-SE

4356 IV NW
(Howard Quarter 162-



PUNCHEON CAMP CREEK

Sample Area

DUTCH VALLEY QUADRANGLE
Tennessee - 154 SE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Clinch River Lat-Long 362043N - 833048W

Stream Puncheon Camp Creek Length of Sample 600 ft.

Area or Station See Comments: Reach 06010205-77,0

County Grainger Date/Time 11 July 1989/1000

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 28.7 ft. Average Depth 0.5 ft. Maximum Depth 3.9 ft.
2. Estimated Percent of Stream in Pools is 25 %
3. Estimated Percent Pool Bottom is Mud - % Silt 15 % Sand 15 %
   Clay - % Gravel 10 % Rubble 10 % Boulders 25 %
   Bedrock 25 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 20 %
   Bedrock 10 % Other Rubble 20% Boulders 30% Gravel 10%
5. Abundance of Littoral Aquatic Plants is Numerous Filamentous algae and moss on rocks.
   Average Scarce
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 70 % of Stream.
8. Flow (c.f.s.) 14.9 : Flow compared to Normal: Low ____ Normal ____ High X
9. D.O. 9.0 ppm Temp. 66.7°F % Saturation 95
10. Present Weather Partly cloudy, hot and humid; air temperature - 80°F.
11. Past Weather (last 24 hours) Hot and humid.
12. D.O. 9.0 pH 8.2 Temp. 66.7 Conductivity 305 micromho/cm
13. Comments: Sample area was located 0.5 mi. upstream of the intersection of Puncheon Creek Road and the road near Norris Reservoir. Siltation is fairly heavy, especially in pools, primarily from upstream non-point sources.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Clinch River
Lat-Long 362043N - 833048W
Body of Water Puncheon Camp Creek
Date 11 July 1989
County or River Mile Grainger
Reach 06010205-77,0
Type of Sampling Electrofishing
Pool Elevation 1095 ft.
Gear Type One backpack shocker at 350 v. AC
Time 1400 - 1530

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Hypentelium nigricans	166	6	5-10	1.07			
Campostoma anomalum	25	123	2-5	2.53			
Rhinichthys atratulus	351	274	1-3	2.18			
Semotilus atromaculatus	360	67	2-9	3.17			
Etheostoma kennicotti	98	61	1-2	0.22			
E. simoterum	111	33	1-2	0.12			
Cottus carolinae	40	57	1-4	0.88			

* Label Parameter Listed

Field Notes: 600 ft. sample length. No game fish observed or collected at all.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

Puncheon Camp Creek: Edge Surber sample

11 July 1989 Field # 132

Grainger Co., TN; Approx. 0.5 mi. upstream of the intersection of Puncheon Creek Rd. and the road at Norris Reservoir. Coordinates: 362043N - 833048W. Dutch Valley, Tenn., # 154 SE Quad. Reach # 06010205-77,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	5
COLEOPTERA:	
Elmidae/Stenelmis larva	1
Eubriidae/Ectopria larvae	2
Psephenidae/Psephenus herricki larvae	21
DECAPODA:	
Unid. crayfish	1
DIPTERA:	
Chironomidae	1
Empididae	1
Unid. pupa	1
EPHEMEROPTERA:	
Ephemeridae/Ephemera	3
Heptageniidae/Heptagenia	7
Leptophlebiidae	3
GASTROPODA:	
Pleuroceridae/Goniobasis simplex	26
ISOPODA:	
Asellidae/Lirceus	7
MEGALOPTERA:	
Corydalidae/Nigronia serricornis	4
Sialidae/Sialis	1
TRICHOPTERA:	
Hydropsychidae/Cheumatopsyche	1
Limnephilidae/Goera calcarata	3
Neophylax mitchelli	4
	92

Volumetric Displacement was 1.0 ml.

Puncheon Camp Creek: Middle Surber sample

11 July 1989 Field # 132

Grainger Co., TN; Approx. 0.5 mi. upstream of the intersection of Puncheon Creek Rd. and the road at Norris Reservoir. Coordinates: 362043N - 833048W. Dutch Valley, Tenn., # 154 SE Quad. Reach # 06010205-77,0.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/Stenelmis larvae	2
adults	8
Eubriidae/Ectopria larva	1
Psephenidae/Psephenus herricki larvae	6
DECAPODA:	
Unid. crayfish	2
DIPTERA:	
Chironomidae	3
EPHEMEROPTERA:	
Baetidae	1
Heptageniidae/Epeorus (Iron)	1
Heptagenia	7
Stenonema	1
Leptophlebiidae	1
Oligoneuriidae/Isonychia	1
GASTROPODA:	
Pleuroceridae/Goniobasis simplex	19
MEGALOPTERA:	
Corydalidae/Nigronia serricornis	1
Sialidae/Sialis	1
PLECOPTERA:	
Perlidae/Neoperla clymene	1
TRICHOPTERA:	
Hydropsychidae/Hydropsyche unid. pupa	1
Symphitopsyche bronta	1
Limnephilidae/Goera calcarata	1
	59

Volumetric Displacement was 0.3 ml.

Puncheon Camp Creek: Qualitative sample

11 July 1989 Field # 132

Grainger Co., TN; Approx. 0.5 mi. upstream of the intersection of Puncheon Creek Rd. and the road at Norris Reservoir. Coordinates: 362043N - 833048W. Dutch Valley, Tenn., # 154 SE Quad. Reach # 06010205-77,0.

TAXA	NUMBER
ANNELIDA:	
Branchiobdellida	8
COLEOPTERA:	
Dytiscidae/Hydroporus	1
Elmidae/Dubiraphia larva	1
adults	3
Stenelmis larvae	9
adults	5
Eubriidae/Ectopria larvae	3
Noteridae/Suphisellus puncticollis adult	1
Psephenidae/Psephenus herricki larvae	2
DIPTERA:	
Chironomidae	13
Empididae	1
Simuliidae larva	1
pupa	1
Tipulidae/Hexatoma	1
Pseudolimnophila	1
EPHEMEROPTERA:	
Baetidae/Baetis	7
Heptageniidae/Epeorus (Iron)	1
Heptagenia	2
Stenacron	3
Stenonema	4
Leptophlebiidae/Habrophlebiodes	5
Oligoneuriidae/Isonychia	7
GASTROPODA:	
Pleuroceridae/Goniobasis simplex	4
HEMIPTERA:	
Gerridae/Gerris (Aquarius) remigis adult	1
Trepobates nymphs	
HYDRACARINA:	1

cont.

Puncheon Camp Creek: Qualitative sample cont.

TAXA	NUMBER
ISOPODA:	
Asellidae/*Lirceus*	41
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	4
Sialidae/*Sialis*	1
ODONATA:	
Aeshnidae/*Basiaeschna janata*	1
Boyeria vinosa	5
Coenagrionidae/*Argia*	1
Gomphidae/Gomphus (Genus A *consanguis*) *	7
PELECYPODA:	
Sphaeriidae/*Sphaerium*	6
PLECOPTERA:	
Perlidae/*Neoperla clymene*	3
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	9
Hydropsyche betteni/depravata	1
H. rotosa	22
Symphitopsyche bronta	8
S. sparna	9
Limnephilidae/*Pycnopsyche*	2
Philopotamidae/*Chimarra*	5
Rhyacophilidae/*Rhyacophila carolina* complex	1
R. fuscula larva	1
pupa	1
R. torva larva	1
pupa	1
	218

* (from Louton 1982)

River portion of its range (Page 1980; Page and Smith 1976).

Why no game fish species were encountered is difficult to explain. There are no prior records of what, if any, game species ever occurred. We sampled twice our usual length of stream and covered several good pools and areas that should have held game fish, had they been present. Also, a local resident stated that he had never known of any game fish being caught from the stream.

The presence of an old mill dam about 0.2 mi. upstream of Norris Reservoir limits movement of reservoir fish into the stream. This dam presents a shear rock wall shelf that has at least 15 ft. vertical height and is a formidable barrier. Another small falls was located at the upper end of our sample area and appeared to have at least 6 ft. vertical height. Other such falls may also exist on this lower reach where stream elevation drops rapidly over a short distance.

Apparently non-point-source pollution from agricultural sources upstream impacts the lower reaches and results in fairly heavy siltation. This is especially true in the deeper pools and shallows, however, riffle areas appear to be clean.

Benthic macroinvertebrates from our samples included Baetidae, Ephemeridae, Heptageniidae, Leptophlebiidae, and Oligoneuriidae mayflies, the perlid stonefly *Neoperla clymene*, Hydropsychidae, Limnephilidae, Philopotamidae and Rhyacophilidae caddisflies, and Elmidae, Eubriidae, and Psephenidae beetles. Periwinkle snails (*Goniobasis simplex*) were abundant and fingernail clams (*Sphaerium*) were also present. Of special interest is the collection of 22 specimens of *Hydropsyche rotosa* which till present was known only from its type locality near Tusculum College in Greene County, Tennessee (Etnier and Schuster 1979).

Management Recommendations:

1. Need to conduct more surveys upstream to determine if any game species exist in the watershed.

2. Consider stocking the native longear sunfish (*Lepomis megalotis*) which has been replaced by the exotic redbreast sunfish (*L. auritus*) in much of the upper Tennessee River drainage (Etnier et al. 1983).

3. Consider a put and take trout stocking, maybe a couple of times in the spring, as it would probably create a popular fishery in the area.

Ball Creek

One qualitative fishery survey was conducted in August 1989:

Location and Length - Tributary to Clinch River (Norris Reservoir). The sample area was located approximately 0.12 mi. upstream of the flume at the Old Williams Mill site and was sampled on 2 August 1989. It was 300 ft. in length and averaged 25.2 ft. in width. The site was in Claiborne County. Tazewell Quadrangle.

Gear Type - The area was sampled using a single backpack electrofishing unit operating at 110 V. AC.

Water Quality - Data were taken from midstream on 2 August 1989: DO - 9.7 ppm, pH - 8.0, Temperature - 60.9°F, Conductivity - 285 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples and one qualitative sample at the site. The Surber samples averaged 207 organisms, 0.25 ml. volumetric displacement. All benthos combined represented 18 taxa. Also one qualitative sample was collected from a spring tributary to Ball Creek. (See data sheet for taxa)

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Rainbow trout	3	1.1	0.6	11.6
Spotted bass	1	0.4	0.01	0.2
Black crappie	1	0.4	0.02	0.4
Bluegill	3	1.1	0.82	15.9
Nongame Fish Forage Fish	269	97.1	3.71	71.9
Total	277		5.16	

Comments - This stream was surveyed primarily to document the presence of rainbow trout (*Oncorhynchus mykiss*) and to develop a species diversity list and collect stream information for TADS. No previous studies or fish collection records were available from this locality. However, the Tennessee Valley Authority did plant trout eggs in the stream in 1973 and 1974. Occasional reports by fishermen, of trout being caught,

prompted us to initiate a survey of the stream.

An odd assemblage of game fish collected from Ball Creek included rainbow trout and black crappie (*Pomoxis nigromaculatus*) along with spotted bass (*Micropterus punctulatus*) and bluegill (*Lepomis macrochirus*). However, the number of game species was low and forage fish comprised 97% of the total number of all fish collected. Spotted bass and black crappie were represented by single specimens and the bluegill were small except for one 8 in. fish that weighed 0.75 lb.

A trout population has established from the original egg plants of the early 1970's. However, only three rainbow trout were collected, the largest of which was in the 8 in. class and no young-of-the-year trout were collected or observed. The streambed is composed primarily of bedrock ledges with lots of gravel but not much rubble or very many boulders. It appears to have limited habitat and spawning substrate for trout. Also, according to a local resident, the stream got very low during 1988. These combined conditions may have resulted in us seeing few fish in 1989 or perhaps the stream just normally supports a limited population.

A total of 277 fish weighing 5.16 lb. and comprising 9 species was collected. It is interesting to note the occurrence of the rainbow darter (*Etheostoma caeruleum*) in this stream. The rainbow darter is not very common in east Tennessee, its distribution is sporatic in the Ridge and Valley and above Knoxville is known from only a few localities in the Clinch/Powell and upper Holston river systems (Etnier and Starnes 1980).

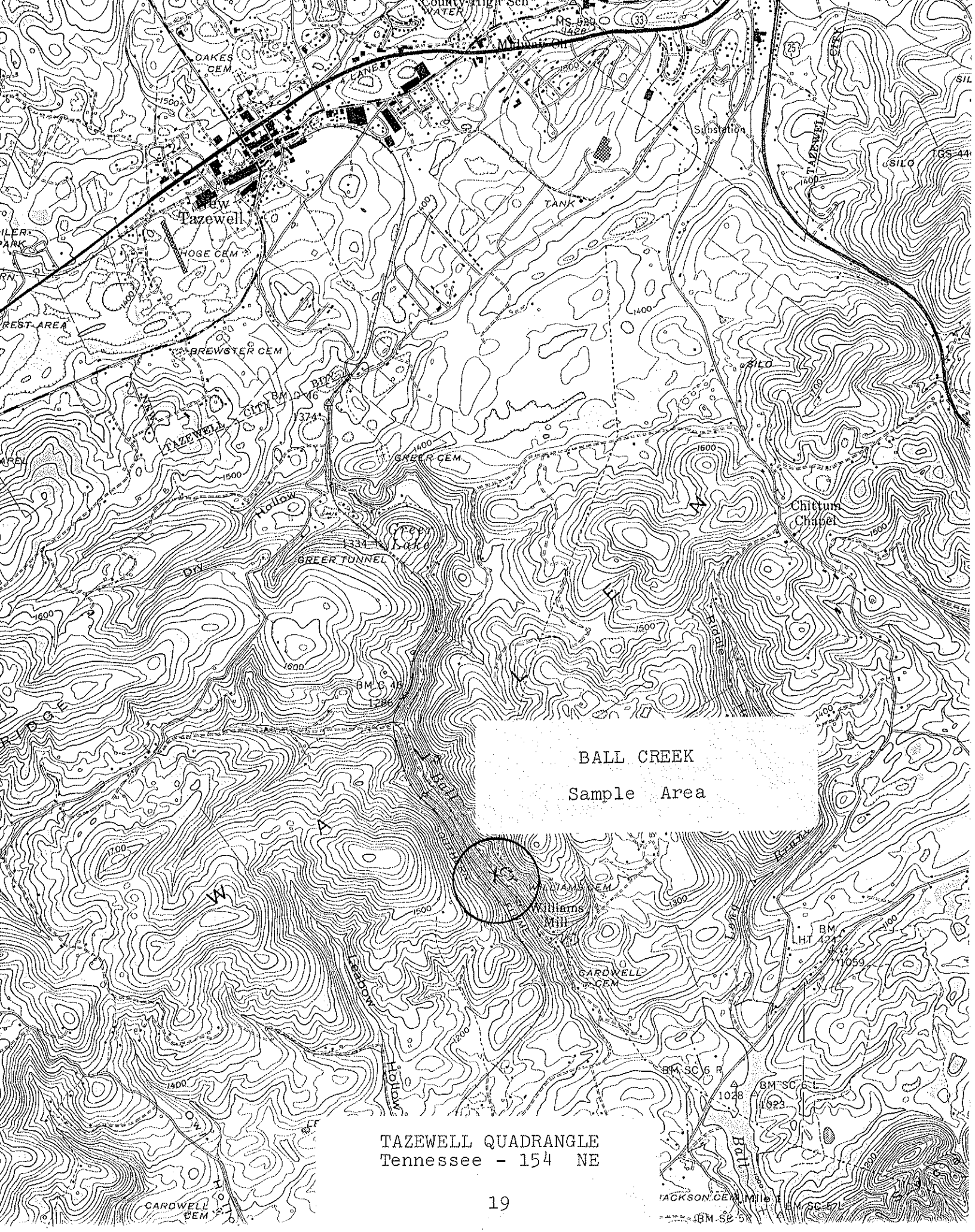
The apparent low number of benthic organisms may also contribute to the low productivity of the stream. Only 18 distinct taxa were found and no mayfly taxa were collected at all. However, *Baetis* were collected from a spring tributary to the stream (see data sheet for other taxa collected from this trib.). Although our Surber samples averaged 123 organisms, 75 to 80% of these were periwinkle snails (*Goniobasis simplex*). Other macroinvertebrates included Elmidae, Eubriidae, and Psephenidae beetles, Peltoperlidae and Perlidae stoneflies, and Hydropsychidae, Odontoceridae, and Psychomyiidae caddisflies.

Management Recommendations:

1. No specific management is suggested. The stream apparently supports a limited trout population and additional hatchery fish would not be beneficial due to existing stream conditions.

2. Greer Lake, on the head of Ball Creek, is the city of Tazewell's water supply and probably affords protection of the watershed.

3. Occasional monitoring of the stream may be interesting. This is a neat little stream that flows through steep, forested terrain that creates a beautiful setting.


BALL CREEK
Sample Area
TAZEWELL QUADRANGLE
Tennessee - 154 NE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Clinch River Lat-Long 362426N - 833504W

Stream Ball Creek Length of Sample 300 ft.

Area or Station (see below) Reach 06010205-106,0

County Claiborne Date/Time 2 August 1989/1030

Data Collected By Rick D. Bivens, Carl E. Williams, and L. Price Wilkins

B. PHYSICAL CHARACTERISTICS

1. Average Width 25.2 ft. Average Depth 0.6 ft. Maximum Depth 1.8 ft.
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 10 %
   Clay - % Gravel 20 % Rubble 10 % Boulders 10 %
   Bedrock 40 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 10 %
   Bedrock 40 % Other Gravel 20% Rubble 10% Boulders 10%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Water cress & moss Scarce
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 80 % of Stream.
8. Flow (c.f.s.) 6.0 : Flow compared to Normal: Low ____ Normal ____ High X
9. D.O. 9.7 ppm Temp. 60.9°F % Saturation 98
10. Present Weather Cloudy, hot and humid; air temperature - 73°F.
11. Past Weather (last 24 hours) Heavy rain, humid.
12. D.O. 9.7 pH 8.0 Temp. 60.9 Conductivity 285 micromho/cm
13. Comments: Sample location at approx. 0.12 mi. upstream of flume at old Williams Mill site. Lot of bedrock ledges, lots of gravel, but not a lot of rubble or boulders. It appears to have limited habitat and spawning substrate for trout. The stream got very low last year according to a local resident.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Clinch River
Body of Water Ball Creek
County or River Mile Claiborne
Type of Sampling Electrofishing
Gear Type One backpack shocker at 110 v. AC.

Lat-Long 362426N - 833504W
Date 300 ft.
Reach 06010205-106,0
Pool Elevation 1100 ft.
Time 1245 - 1330

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Oncorhynchus mykiss	353	1	6	0.15			
" "	"	1	7	0.17			
" "	"	1	8	0.28			
Micropterus punctulatus	219	1	2	0.01			
Pomoxis nigromaculatus	344	1	3	0.02			
Lepomis macrochirus	206	2	3	0.07			
" "	"	1	8	0.75			
Campostoma anomalum	25	109	2-5	2.16			
Pimephales notatus	334	29	2-3	0.19			
Rhinichthys atratulus	351	95	1-3	0.78			
Etheostoma caeruleum	84	6	1-2	0.03			
Cottus carolinae	40	30	1-4	0.55			

* Label Parameter Listed

Field Notes: 300 ft. sample length. Stream was slightly dingy due to rain of previous day.

Name of Collector(s): Rick D. Bivens, Carl E. Williams, and L. Price Wilkins

WR-0525

Ball Creek: Edge Surber sample

2 August 1989 Field # 148

Claiborne Co., TN; Approx. 0.12 mi. upstream of the flume at old Williams Mill. Coordinates: 362426N - 833504W. Tazewell, Tenn., # 154 NE Quad. Reach # 06010205-106,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	5
COLEOPTERA:	
Dytiscidae/Celina	1
Elmidae/Optioservus larvae	12
Eubriidae/Ectopria	27
Psephenidae/Psephenus herricki larva	1
DIPTERA:	
Chironomidae larva	1
pupa	1
GASTROPODA:	
Pleuroceridae/Goniobasis simplex	241
ISOPODA:	
Asellidae/Lirceus	1
MEGALOPTERA:	
Corydalidae/Nigronia serricornis	1
PELECYPODA:	
Sphaeriidae/Sphaerium	2
TRICHOPTERA:	
Odontoceridae/Psilotreta labida	1
Psychomyiidae/Lype diversa	1
	295

Volumetric Displacement was 0.4 ml.

Ball Creek: Midstream Surber sample

2 August 1989 Field # 148

Claiborne Co., TN; Approx. 0.12 mi. upstream of the flume at old Williams Mill. Coordinates: 362426N - 833504W. Tazewell, Tenn., # 154 NE Quad. Reach # 06010205-106,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Elmidae/*Optioservus* larvae	2
Promoresia elegans larva	1
Eubriidae/*Ectopria*	20
Psephenidae/*Psephenus herricki* larva	1
DIPTERA:	
Chironomidae	1
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	89
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	2
	118

Volumetric Displacement was 0.1 ml.

Ball Creek: Qualitative sample

2 August 1989 Field # 148

Claiborne Co., TN; Approx. 0.12 mi. upstream of the flume at old Williams Mill. Coordinates: 362426N - 833504W. Tazewell, Tenn., # 154 NE Quad. Reach # 06010205-106,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Elmidae/*Optioservus* larvae	2
Promoresia elegans larvae	9
adults	2
Eubriidae/*Ectopria*	3
DECAPODA:	
Unid. crayfish	3
DIPTERA:	
Chironomidae	1
Tipulidae/*Tipula* larva	1
pupa	1
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	5
ISOPODA:	
Asellidae/*Lirceus*	1
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	1
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	17
Perlidae/*Paragnetina media*	1
TRICHOPTERA:	
Hydropsychidae/*Diplectrona modesta*	1
Odontoceridae/*Psilotreta labida*	3
	53

Spring trib. to Ball Creek: Qualitative sample

2 August 1989 Field # 149

Claiborne Co., TN; Trib. that enters Ball Cr. from the right side (upstream) at the first road crossing upstream of the flume at old Williams Mill. Coordinates: 362448N - 833519W. Tazewell, Tenn., # 154 NE Quad. Reach # 06010205-.

TAXA	NUMBER
AMPHIPODA:	
Gammaridae/Gammarus minus *	4
COLEOPTERA:	
Elmidae/Optioservus ovalis adult	1
Eubriidae/Ectopria	1
EPHEMEROPTERA:	
Baetidae/Baetis	5
PLECOPTERA:	
Peltoperlidae/Peltoperla	2
TRICHOPTERA:	
Glossosomatidae/Glossosoma pupa	1
Hydropsychidae/Diplectrona modesta	12
Symphitopsyche alhedra **	2
	28

* Questionable determination.

** Most probable species determination.

Brookshire Creek Renovation

Renovation of a headwater segment was conducted in October 1989:

Location and Length - Tributary to Bald River. The treatment area was located between a lower barrier at 3040 ft. elev. and an upper series of falls at about 3160 ft. elev., included a tributary portion, and was renovated on 10 and 11 October 1989. Approximately 0.4 mi. of stream was renovated. The site was in Monroe County. Bald River Falls Quadrangle.

Gear Type - Two electrofishing units were employed on the first day. On day 2, a rotenone drip station was set up above the upper falls with a neutralization station at the lower barrier. Rotenone was applied at a rate of 5 ppm for 3 hours, along with a dye, and neutralized with potassium permanganate.

Water Quality - No data collected.

Benthos Collection - No collection was made.

Fish Collected: (See data sheet)

Comments - We cooperated with the U.S. Forest Service to renovate a headwater segment of this stream through a combination of electrofishing and chemical treatment. An effort that involved removing as many trout as possible by electrofishing and relocating them, followed by treatment with rotenone, was conducted over a two day period in October of 1989.

Prior to 1950, Brookshire Creek was a native brook trout (*Salvelinus fontinalis*) stream, but by the late 1970's only rainbow trout (*Oncorhynchus mykiss*) were collected in surveys of the stream. A renovation project in the fall of 1982 by TWRA and Forest Service personnel using cresol and electrofishing removed rainbows upstream of a natural barrier near the mouth. A population of brook trout was then re-established in the stream by transporting native fish from Ball River and Henderson Branch (Bivens 1984).

We returned to Brookshire Creek in 1988 (Bivens 1989) and found that the earlier renovation had not been successful as both brook and rainbow trout existed in the stream. Immediate rainbow removal efforts, modification of the barrier falls, or renovation of both Brookshire Creek and upper Bald River, were management recommendations advanced at the time.

In its Environmental Assessment (EA) the Forest Service addressed these recommendations along with other alternatives. The Forest Service preferred alternative C of the EA. This provided for temporary control of rainbow trout in a small

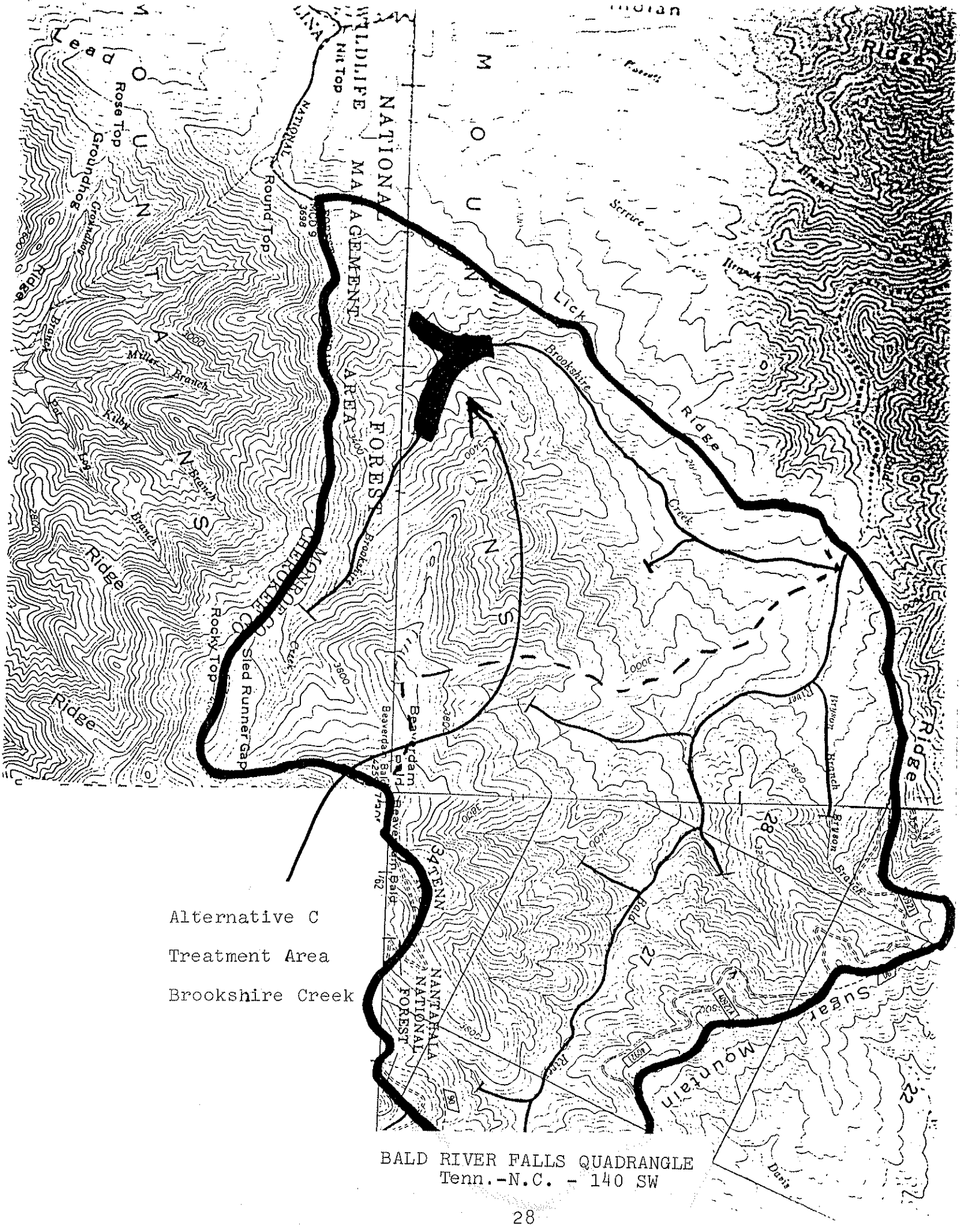
segment and allows for the effectiveness of chemical treatment to be evaluated.

The first day of the 1989 renovation project involved electrofishing between the lower barrier and the upper series of falls where about 220 brook trout and 60 rainbow trout were removed. The rainbows were transported downstream to Bald River below its falls and released. Brook trout were moved upstream of the area to be treated. An area upstream of the upper series of falls was also electrofished, to make sure no rainbows existed upstream of the treatment area.

On the second day of the project, rotenone was applied to the treatment area at a rate of 5 ppm for a three hour period. This included a segment on a tributary just upstream of the lower barrier. A dye block was placed in the stream at the beginning of the rotenone application. This allowed two people to work downstream with backpack sprayers, applying rotenone to eddies where the dye was not observed. Potassium permaganate was applied at the downstream end of the treatment area to neutralize the rotenone.

It was estimated that about 100 trout were killed in the rotenone treatment area. We picked up a total of 31 fish from the lower end of the area. Twenty-five of these were brook trout and 6 were rainbow trout. Length and weight information was obtained from these preserved fish and is summarized in the accompanying data sheet. These specimens were retained and will eventually be catalogued into our fish collection.

The Forest Service plans to evaluate the effectiveness of this rotenone treatment by electrofishing the area no later than August 1990. If the rotenone procedure proves successful, they suggest implementation of alternative E of the EA. This alternative calls for the same combination of electrofishing and chemical treatment to be employed on all of Brookshire Creek along with a portion of Bald River upstream of the 15 ft. falls. This is certainly an ambitious undertaking, but we agree that it is probably the best alternative in the long run.



BALD RIVER FALLS QUADRANGLE
Tenn.-N.C. - 140 SW

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Little Tennessee River
Lat-Long 351508N - 840900W
Body of Water Brookshire Creek
Date 11 October 1989
County or River Mile Monroe
Reach 06010204-
Type of Sampling Toxicant
Pool Elevation 3040 to 3160 ft.
Gear Type Rotenone
Time PM

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salvelinus fontinalis	356	6	3	0.10			
" "	"	6	4	0.18			
" "	"	5	5	0.36			
" "	"	3	6	0.41			
" "	"	5	7	0.89			
Oncorhynchus mykiss	353	1	4	0.04			
" "	"	2	5	0.11			
" "	"	2	6	0.18			
" "	"	1	7	0.20			

* Label Parameter Listed

Field Notes: Dead fish collected after rotenone treatment. This collection represents only a portion of the fish that were killed.

Name of Collector(s): Rick D. Bivens

WR-0525

Russell Branch

One qualitative fishery survey was conducted on 24 January 1989:

Location and Length - Tributary to Little River (Fort Loudoun Reservoir). The sample area was located approximately 0.15 mi. upstream of the backwater of Fort Loudoun Reservoir. It was 300 ft. in length and averaged 8.5 ft. in width. The site was in Blount County. Maryville Quadrangle.

Gear Type - The site was sampled by making one pass with a single backpack electrofishing unit operating at 110 V. AC.

Water Quality - Data were taken from midstream with a 4041 Hydrolab. DO - 10.4 ppm, pH - 7.7, Temperature - 51.6°F, Conductivity - 490 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples at the site. The samples averaged 126 organisms, 1.5 ml. volumetric displacement, and represented 18 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Largemouth bass	10	2.7	0.27	8.0
Redbreast sunfish	93	24.6	0.48	14.3
Warmouth	4	1.0	0.13	3.9
Bluegill	112	29.7	0.82	24.5
Nongame Fish	23	6.0	0.85	25.2
Forage Fish	135	35.6	0.8	23.9
Total	377		3.35	

Comments - Russell Branch was surveyed primarily to establish fishery diversity present prior to any construction of a golf course. The proposed golf course is planned for the lower reach of the stream on the Little River Embayment of Fort Loudoun Reservoir near Rockford.

The stream drains an area adjacent to the Knoxville Airport, Alcoa Aluminum Company's North Plant, trailer parks and houses, and an existing golf course. The stream has been impacted by past and present pollution from these sources.

Non-point-source siltation results in a stream course heavily silted except in areas of swiftest currents and both fish and macroinvertebrate diversities are low.

Game fish from our sample area included largemouth bass (*Micropterus salmoides*), redbreast sunfish (*Lepomis auritus*), warmouth (*L. gulosus*), and bluegill (*L. macrochirus*). All were small size, and bluegill and redbreast sunfish under 4 inches represented about 54% of the total number of all fish collected.

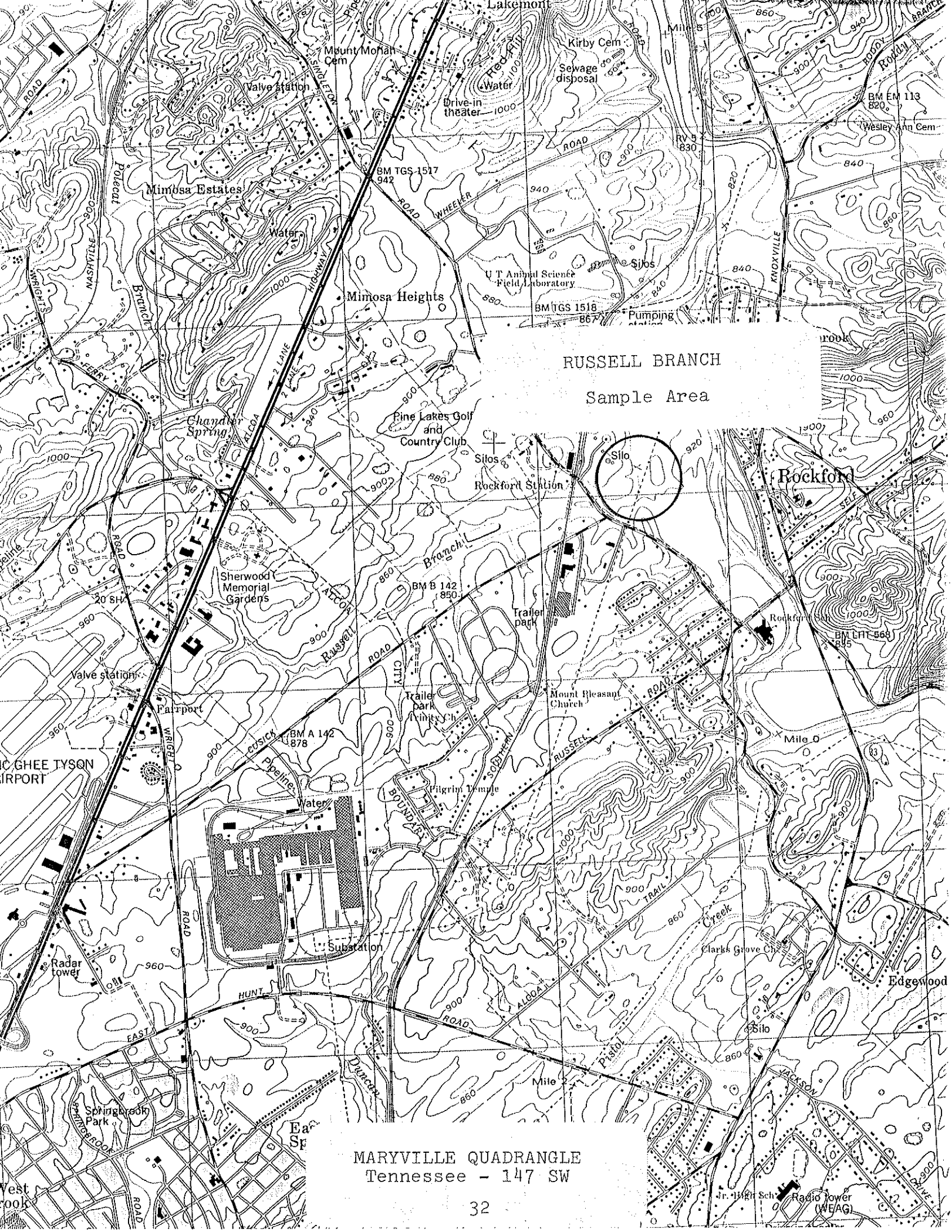
A total of 377 fish weighing 3.35 lb. and comprising 14 species was collected. Very tolerant species dominate the fish fauna and no forms considered intolerant were collected. No rare, threatened, endangered, or species of special concern were found and no darter species were encountered at all.

Benthic macroinvertebrates from our samples represent only 18 taxa. These were also dominated by very tolerant forms and the absence of any sensitive taxa such as stoneflies or mayflies further attest to stream degradation.

Management Recommendations:

1. No specific management is suggested other than protection from any further habitat deterioration.

2. No fish species were found that would halt construction of the proposed golf course and it's construction is currently under way.



MARYVILLE QUADRANGLE
Tennessee - 147 SW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Little River Lat-Long 355001N - 835659W

Stream Russell Branch Length of Sample 300'

Area or Station Near the mouth Reach 06010201-

County Blount Date/Time 24 January 1989/1100

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 8.5' Average Depth 0.65' Maximum Depth 2.0'
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud 10 % Silt 30 % Sand 20 %
   Clay 5 % Gravel 15 % Rubble 15 % Boulders 5 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud 5 % Silt 20 % Sand 10 %
   Bedrock - % Other Gravel 10% Rubble 50% Boulders 5%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average X Mostly *Nasturtium officinale* Scarce
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 30 %
   of stream, Average in 40 %, Poor in 30 %.
7. Shade or Canopy Good over 10 % of Stream.
8. Flow (c.f.s.) 2.2 : Flow compared to Normal: Low ____ Normal X High ____
9. D.O. 10.4 ppm Temp. 51.6 ^{o}F % Saturation 95
10. Present Weather Partly cloudy and cool; cold overnight; air temp. 52 ^{o}F.
11. Past Weather (last 24 hours) Clear to partly cloudy.
12. D.O. 10.4 pH 7.7 Temp. 51.6 Conductivity 490 micromho/cm
13. Comments: Sample location near the mouth; about 500' upstream of concrete bridge just upstream of Ft. Loudoun Reservoir. The stream drains an area around Alcoa Aluminum Co., houses, trailer park, and golf course. Siltation is fairly heavy.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Little River
Body of Water Russell Branch
County or River Mile Blount
Type of Sampling Electrofishing
Gear Type One backpack shocker at 125 v. AC.

Lat-Long 355001N - 835659W
Date 24 January 1989
Reach 06010201-
Pool Elevation 819'
Time 1245 - 1330

SPECIES Name	CODE	NUMBER	LENGTH in.	WT. lb.			
Micropterus salmoides	220	1	2	0.01			
" "	"	3	3	0.05			
" "	"	5	4	0.16			
" "	"	1	5	0.05			
Lepomis auritus	201	64	1	0.20			
" "	"	22	2	0.13			
" "	"	7	3	0.15			
L. gulosus	204	2	1	t			
"	"	2	4	0.13			
L. macrochirus	206	41	1	0.11			
"	"	58	2	0.40			
"	"	12	3	0.26			
"	"	1	4	0.05			
Ictalurus natalis	174	3	2-4	0.10			
Hypentelium nigricans	166	1	3	0.01			
Moxostoma duquesnei	229	11	3-4	0.24			
Campostoma anomalum	25	5	2	0.04			
Cyprinus carpio	47	8	3-5	0.50			
Notropis chrysocephalus	249	3	1-2	0.01			
N. spilopterus	269	119	1-3	0.73			
Semotilus atromaculatus	360	2	2	t			
Rhinichthys atratulus	351	5	1-2	0.02			
Gambusia affinis	147	1	1	t			

* Label Parameter Listed * t is trace amount (less than 0.01 lb.)

Field Notes: 300' sample length.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

Russell Branch: Edge Surber sample

24 January 1989 Field # 127

Blount Co., TN; Approximately 0.15 mi. upstream of Fort Loudoun Reservoir backwater. Coordinates: 355001N - 835659W. Maryville, Tenn., # 147 SW Quad. Reach # 06010201-.

TAXA		NUMBER
COLEOPTERA:		
Elmidae/*Dubiraphia*	larvae	28
	adults	4
Stenelmis	larvae	9
	adult	1
DECAPODA:		1
DIPTERA:		
Ceratopogonidae/*Palpomyia* complex		1
Chironomidae	larvae	54
	pupae	5
Empididae		8
Tipulidae/*Antocha*		5
Tipula		1
Simuliidae		3
GASTROPODA:		
Ancylidae/*Ferrissia*		1
Physidae/*Physa*		2
ODONATA:		
Calopterygidae/*Calopteryx*		1
Coenagrionidae/*Argia*		3
OLIGOCHAETA:		1
PELECYPODA:		
Corbiculidae/*Corbicula fluminea*		18
TRICHOPTERA:		
Hydropsychidae/*Cheumatopsyche*		4
Hydropsyche betteni/depravata	larvae	32
	pupa	1
Unidentified Salamanders:		2
		185

Volumetric Displacement was 1.9 ml.

Russell Branch: Midstream Surber sample

24 January 1989 Field # 127

Blount Co., TN; Approximately 0.15 mi. upstream of Fort Loudoun Reservoir backwater. Coordinates: 355001N - 835659W. Maryville, Tenn., # 147 SW Quad. Reach # 06010201-.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Dubiraphia* adult	1
DIPTERA:	
Chironomidae	22
Empididae	5
Tipulidae/*Antocha*	7
OLIGOCHAETA:	3
TRICHOPTERA:	
Hydropsychidae/*Hydropsyche betteni/depravata*	30
	68

Volumetric Displacement was 1.0 ml.

Groundhog Creek

One qualitative fishery survey was conducted in June 1989:

Location and Length - Tributary to the Pigeon River. The sample site, near the Bluffton Bridge, was located just upstream of the mouth and was sampled on 14 June 1989. It was 300-plus ft. in length. The site was in Cocke County. Hartford Quadrangle.

Gear Type - The site was sampled using a single backpack electrofishing unit operating at 350 V. AC.

Water Quality - No data collected.

Benthos Collection - No collection was made.

Fish Collected - (See data sheet for species list)

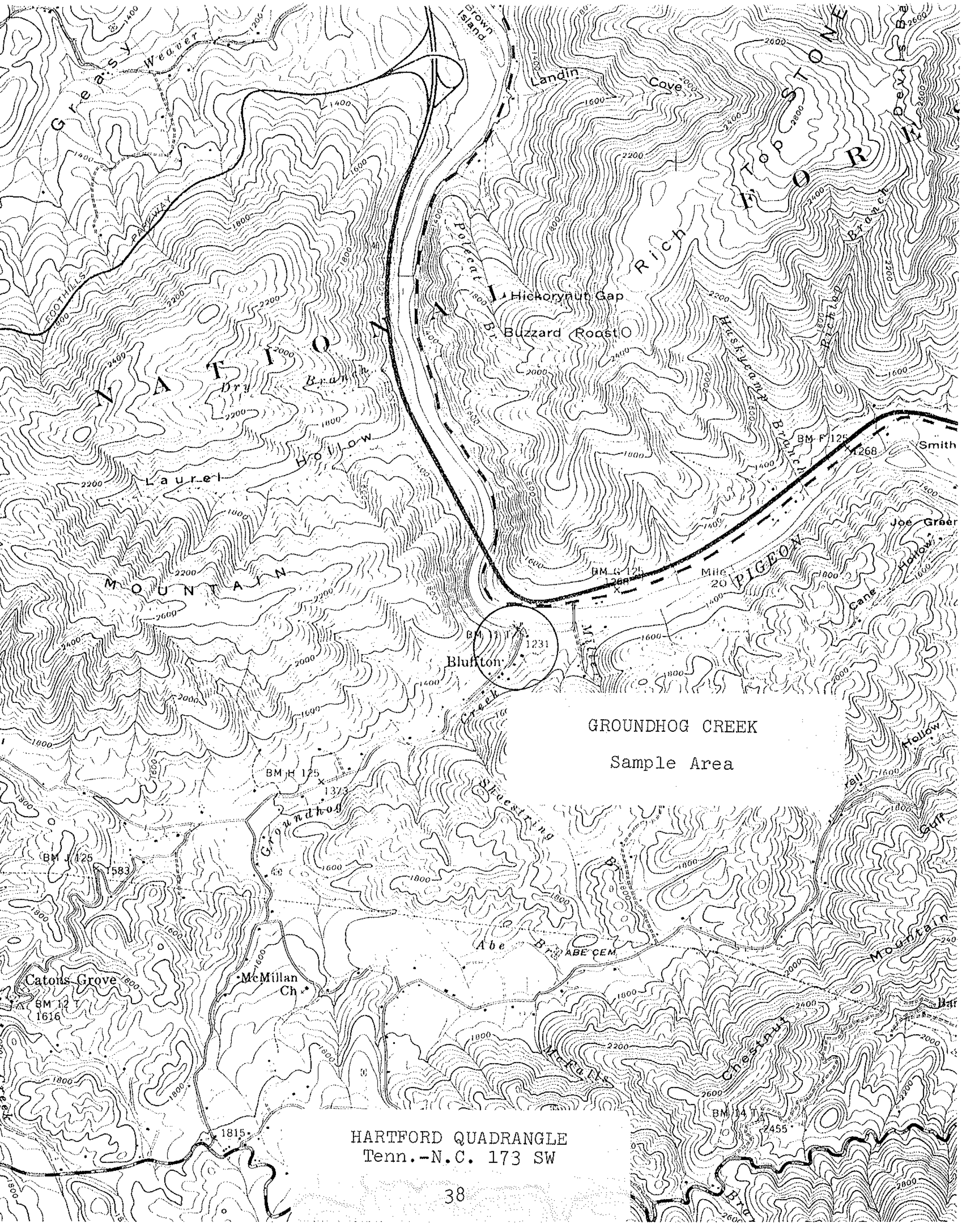
Comments - This stream was sampled primarily to develop a species diversity list for TADS. Only a limited survey was conducted and emphasis was placed on the fish species present.

Game fish collected from Groundhog Creek included largemouth bass (*Micropterus salmoides*), rock bass (*Ambloplites rupestris*), and two rainbow trout (*Oncorhynchus mykiss*). In all, a total of 8 fish species was collected from the site. The two rainbows were in the 12 to 13 inch class and appeared to be stream reared fish.

The stream heads up in the Great Smoky Mountains National Park and flows through mostly forested areas into the Pigeon River. Although small, it may well be a high quality tributary to the Pigeon and a trout stream for most of its length. We checked at only one location near the mouth however.

Management Recommendations:

1. No specific management is suggested other than protection of the watershed. Larval drift of benthic organisms from this tributary would influence recovery of the Pigeon River if pollution is reduced in that stream.



GROUNDHOG CREEK

Sample Area

HARTFORD QUADRANGLE
Tenn.-N.C. 173 SW

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Pigeon River
Body of Water Groundhog Creek
County or River Mile Cocke
Type of Sampling Electrofishing
Gear Type One backpack shocker at 350 v. AC

Lat-Long 354838N - 831031W
Date 14 June 1989
Reach 0601016-
Pool Elevation 1220 ft.
Time 1415 - 1500

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Oncorhynchus mykiss	353	1	13				
" "	"	1	12				
Ambloplites rupestris	13	2	8				
" "	"	4	7				
" "	"	5	6				
" "	"	1	5				
Micropterus salmoides	220	1	9				
" "	"	1	8				
Campostoma anomalum	25	10	-				
Notropis galacturus	253	1	-				
Rhinichthys atratulus	351	15	-				
R. cataractae	352	17	-				
Cottus carolinae	40	37	-				

Field Notes: Sampled 300-plus ft. of stream; just upstream of the mouth. Collected one *Blepharicera* larva and two pupae.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

Bent Creek and Tributaries

Two qualitative fishery surveys were conducted on Bent Creek and eight samples on eight of its tributaries in August and November 1989:

Location and Length - Tributary to the Nolichucky River. Sample area 1 was located just upstream of the bridge on Old Warrensburg Rd. at stream mi. 3.5 and was sampled on 9 August 1989. It was 300 ft. in length and averaged 35.0 ft. in width. Sample area 2 was located just downstream of the bridge on Moore Rd. and was sampled on 10 August 1989. It was 300 ft. in length and averaged 20.0 ft. in width. Both sites were in Hamblen County. Area 1, Springvale Quadrangle. Area 2, Bulls Gap Quadrangle.

Gear Type - Both sites were sampled using two backpack electrofishing units operating at 110 V. AC.

Water Quality - Data were taken from midstream at each site. Area 1, on 9 August 1989: DO - 9.0 ppm, pH - 8.1, Temperature - 61.3°F, Conductivity - 370 micromhos/cm. Area 2, on 10 August 1989: DO - 9.9 ppm, pH - 8.1, Temperature - 63.1°F, Conductivity - 390 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples at each site and one additional qualitative sample was collected at area 1. Area 1 Surber samples averaged 162 organisms, 2.45 ml. volumetric displacement. All benthos combined represented 33 taxa. Area 2 Surber samples averaged 391 organisms, 0.75 ml. volumetric displacement and represented 22 taxa.

Fish Collected:

	Area 1				Area 2			
Species	No.	% by No.	Wt.	% by Wt.	No.	% by No.	Wt.	% by Wt.
Smallmouth bass	1	0.3	0.34	1.3				
Spotted bass	3	0.8	2.11	8.3				
Largemouth bass	1	0.3	0.28	1.1	1	0.2	0.01	0.09
Rock bass	31	8.2	2.9	11.4	45	9.3	3.85	37.3
Redbreast sunfish	23	6.1	1.16	4.6	23	4.8	0.55	5.3
Bluegill	8	2.1	0.1	0.4	14	2.9	0.44	4.3
Nongame Fish	27	7.2	14.41	56.8	2	0.4	0.26	2.5
Forage Fish	282	75.0	4.08	16.1	397	82.4	5.2	50.5
Total	376		25.38		482		10.31	

(See accompanying table for fish species collected from tributaries)

Comments:

Bent Creek is a third order tributary of the Nolichucky River in the east section of Hamblen County. It heads up near Whitesburg and flows southwest through farm and pasture land for most of its 10.2 miles. It is a boulder-rubble, bedrock ledge type stream of low to moderate gradient and is the largest stream in the county. The major impact on this stream is probably nutrient enrichment along with siltation and erosion associated with agricultural activities.

We sampled two sites on Bent Creek proper and 8 sites on its tributaries. It was surveyed primarily to expand and update fishery data for the agency and to collect watershed information for TADS. The last agency survey of the stream was in 1975 (TWRA file data). Fish collections were also reported in biological assessments made by the Tennessee Department of Public Health (1982).

Game fish from the Bent Creek sites included largemouth bass (*Micropterus salmoides*), smallmouth bass (*M. dolomieui*), spotted bass (*M. punctulatus*), rock bass (*Ambloplites rupestris*), redbreast sunfish (*Lepomis auritus*), and bluegill (*L. macrochirus*). Largemouth bass, rock bass, redbreast sunfish, and bluegill were collected from both sites while smallmouth and spotted bass were collected from the downstream area only. A couple of the spotted bass were fair size fish with one being in the 12 in. class and weighing 1.16 lb. However, only 6 bass total were collected from both sites and the others were small fish. Bluegill were fairly well represented by numbers but they were all small (1 to 4 in.).

Based on numbers and weights collected from both sites, rock bass and redbreast sunfish appear to be the primary game species. Therefore, comparison of inch class distributions was made for these only (Figs. 1, 2). Rock bass made up about 8% of the total number of fish collected from the lower site and about 9% at the upstream area while their weight was 11% at site 1 and 37% at site 2. The largest rock bass collected was in the 8 in. class. Redbreast sunfish were collected in similar numbers at both sites, however, the total weight of those collected upstream was about half that of the downstream site. This was due to the large number of 2 in. redbreast collected at site 2 (Fig. 2). The largest redbreast collected was in the 6 in. class.

We collected a total of 27 fish species from the watershed (see accompanying table), most of which are species typical of streams with non-point-source pollution. One interesting occurrence was the stripetail darter (*Etheostoma kennicotti*). This species inhabits small, slab-pool streams and although locally common, is sporatically distributed in the Tennessee River portion of its range (Page 1980, Page and Smith 1976). Stripetail darters were collected from four of Bent Creek's tributaries. Our species list compares well with the fish that were collected in 1975 (TWRA file data), and 1982 (Tennessee Department of Public Health 1982). The

exceptions being, *Etheostoma rufilineatum*, *E. zonale*, *Notropis spilopterus*, and *N. rubellus*. Our lower sample site was located at stream mi. 3.5 and may account for the absence of more riverine species such as *E. zonale* as all previous collections were made near the mouth.

Benthic macroinvertebrates from our samples at site 1 included Baetidae, Heptageniidae, and Oligoneuriidae mayflies, Elmidae and Psephenidae beetles, Hydropsychidae and Limnephilidae caddisflies, and the perlid stonefly *Acroneuria evoluta*. Asian clams (*Corbicula fluminea*) and fingernail clams (*Sphaerium*) along with the pleurocerid snails *Anculosa subglobosa*, *Goniobasis simplex*, and *Pleurocera canaliculatum* were present. Also, a single specimen of *Pleurobema oviforme* and both live and relic *Villosa vanuxemi* and *V. iris* were collected.

Many of the same families were represented in the upper site samples, however, diversity decreased from 33 taxa (site 1) to 22 taxa. Additional taxa included limpets (*Ferrissia*) and Planorbidae and Hydrobiidae snails.

Management Recommendations:

1. No specific management can be suggested at present, other than protection from any further habitat deterioration.

2. Publicize information about the existing fishery in a regional stream fishing brochure.

BENT CREEK

Sample Area 1

SPRINGVALE QUADRANGLE
Tennessee - 172 NW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 361232N - 830801W

Stream Bent Creek Length of Sample 300 ft.

Area or Station Site # 1 Reach 06010108-4,2

County Hamblen Date/Time 9 August 1989/0945

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 35.0 ft. Average Depth 0.7 ft. Maximum Depth 3.25 ft.
2. Estimated Percent of Stream in Pools is 25 %
3. Estimated Percent Pool Bottom is Mud 10 % Silt 30 % Sand 5 %
   Clay 5 % Gravel 10 % Rubble 20 % Boulders 20 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 10 %
   Bedrock 20 % Other Gravel 20% Rubble 30% Boulders 10%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average X Scarce
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 20 %
   of stream, Average in 50 %, Poor in 30 %.
7. Shade or Canopy Good over 80 % of Stream.
8. Flow (c.f.s.) 17.6 : Flow compared to Normal: Low Normal X High
9. D.O. 9.0 ppm Temp. 61.3°F % Saturation 92
10. Present Weather Clear and cool; air temperature - 60°F.
11. Past Weather (last 24 hours) Clear and mild, cool overnight.
12. D.O. 9.0 pH 8.1 Temp. 61.3 Conductivity 370 micromho/cm
13. Comments: Sample location upstream of bridge on Old Warrensburg Road at stream mi. 3.5. Stream siltation is heavy, agricultural use along entire watershed; cattle in stream, etc.

Site #1 - Upstream of bridge at Old Warrensburg Rd.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Lat-Long 361232N - 830801W
Body of Water Bent Creek
Date 9 August 1989
County or River Mile Hamblen
Reach 06010108-4,2
Type of Sampling Electrofishing
Pool Elevation 1058 ft.
Gear Type Two backpack shockers at 110 v. AC
Time 1320 - 1400

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus dolomieui	218	1	8	0.34			
M. punctulatus	219	1	8	0.36			
" "	"	1	10	0.59			
" "	"	1	12	1.16			
M. salmoides	220	1	8	0.28			
Ambloplites rupestris	13	14	3	0.44			
" "	"	5	4	0.29			
" "	"	6	5	0.71			
" "	"	4	6	0.77			
" "	"	1	7	0.29			
" "	"	1	8	0.47			
Lepomis auritus	201	6	2	0.05			
" "	"	6	3	0.16			
" "	"	5	4	0.29			
" "	"	5	5	0.48			
" "	"	1	6	0.18			
L. macrochirus	206	1	1	t			
" "	"	4	2	0.03			
" "	"	3	3	0.07			
Continued on next page							

* Label Parameter Listed

Field Notes: 300 ft. sample length. Several suckers with sores and lesions. Crayfish very abundant.

Name of Collector(s): R.D. Bivens, C.E. Williams, M.T. Fagg, & B. Robins

WR-0525

Site #1 - Upstream of bridge on Old Warrensburg Rd.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Lat-Long 361232N - 830801W
Body of Water Bent Creek
Date 9 August 1989
County or River Mile Hamblen
Reach 06010108-4,2
Type of Sampling Electrofishing
Pool Elevation 1058 ft.
Gear Type Two backpack shockers at 110 v. AC
Time 1320 - 1400

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Catostomus commersoni	32	3	8-11	1.03			
Hypentelium nigricans	166	7	6-10	1.59			
Moxostoma erythrurum	230	16	6-15	10.95			
Campostoma anomalum	25	1	3	0.02			
Cyprinus carpio	47	1	12	0.84			
Hybopsis amblops	155	12	2	0.08			
Notropis chrysocephalus	249	220	1-6	3.53			
N. galacturus	253	17	2-4	0.23			
N. stramineus	271	5	1-2	0.02			
N. volucellus	277	2	2	0.01			
Pimephales notatus	334	2	1-2	0.01			
Rhinichthys atratulus	351	1	1	t			
Etheostoma blennioides	81	4	3-4	0.13			
E. simoterum	111	18	1-4	0.05			

* Label Parameter Listed

Field Notes: 300 ft. sample length.

Name of Collector(s): R.D. Bivens, C.E. Williams, M.T. Fagg, & B. Robins

WR-0525

GAME FISH FROM BENT CREEK
SITE 1
INCH CLASS DISTRIBUTION

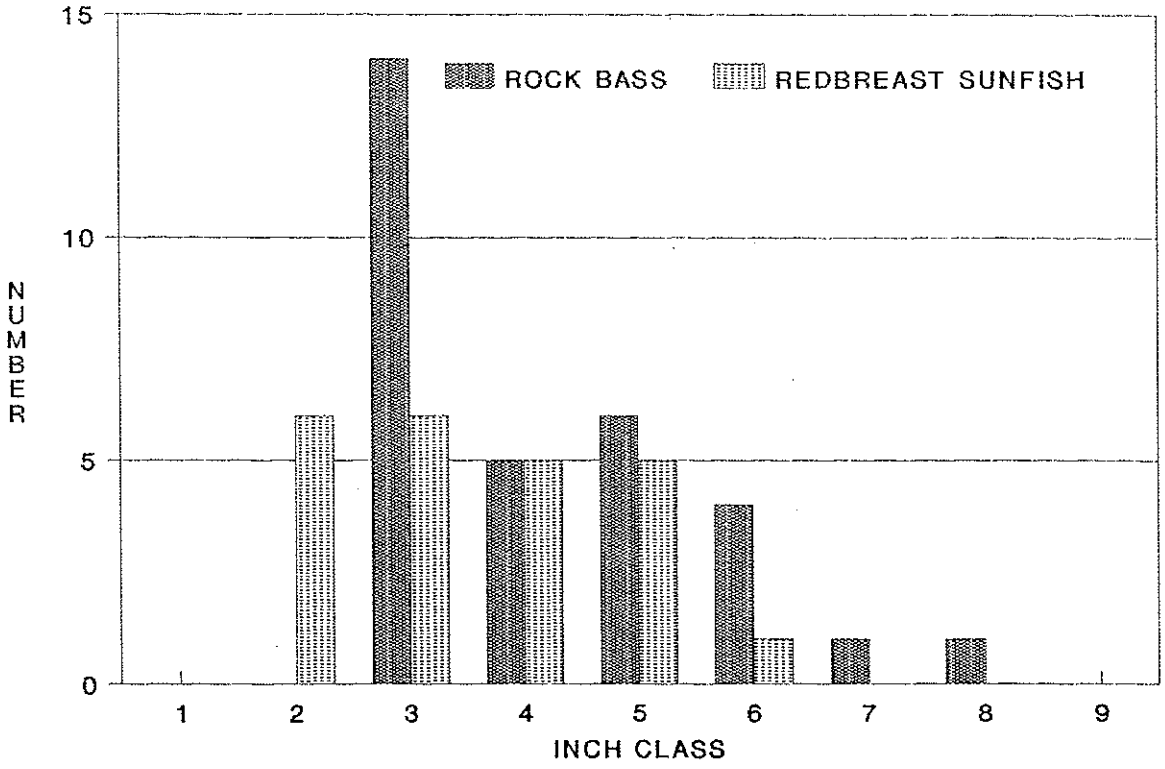


Figure 1.

Bent Creek: Site # 1, Edge Surber sample

9 August 1989 Field # 154

Hamblen Co., TN; Just upstream of bridge on Old Warrensburg Road, stream mi. 3.5. Coordinates: 361232N - 830801W. Springvale, Tenn., # 172 NW Quad. Reach # 06010108-4,2.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	8
COLEOPTERA:	
Elmidae/*Stenelmis* larvae	4
adults	27
COLLEMBOLA:	1
DECAPODA:	
Unid. crayfish	1
DIPTERA:	
Chironomidae	15
Empididae pupa	1
Simuliidae	1
Tipulidae/*Antocha*	2
EPHEMEROPTERA:	
Heptageniidae/*Heptagenia*	9
Stenonema	19
Oligoneuriidae/*Isonychia*	1
GASTROPODA:	
Pleuroceridae/*Anculosa subglobosa*	13
Goniobasis simplex	12
Pleurocera canaliculatum	1
ISOPODA:	
Asellidae/*Lirceus*	8
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	11
Nigronia serricornis	10

cont.

Bent Creek: Site # 1, Edge Surber sample cont.

TAXA	NUMBER
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	4
Sphaeriidae/*Sphaerium*	23
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	26
Hydropsyche betteni/depravata	2
	199

Volumetric Displacement was 1.5 ml.

Bent Creek: Site # 1, Midstream Surber sample

9 August 1989 Field # 154

Hamblen Co., TN; Just upstream of bridge on Old Warrensburg Road, stream mi. 3.5. Coordinates: 361232N - 830801W. Springvale, Tenn., # 172 NW Quad. Reach # 06010108-4,2.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Stenelmis* larvae	9
adults	14
Psephenidae/*Psephenus herricki* larva	1
DECAPODA:	
Unid. crayfish	1
DIPTERA:	
Chironomidae	5
Simuliidae	1
EPHEMEROPTERA:	
Heptageniidae/*Heptagenia*	18
Stenacron	3
Stenonema	37
GASTROPODA:	
Pleuroceridae/*Anculosa subglobosa*	5
ISOPODA:	
Asellidae/*Lirceus*	4
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	5
Nigronia serricornis	4
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	1
Sphaeriidae/*Sphaerium*	7
PLECOPTERA:	
Perlidae/*Acroneuria evoluta*	1
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	8
	124

Volumetric Displacement was 3.4 ml.

Bent Creek: Site # 1, Qualitative sample

9 August 1989 Field # 154

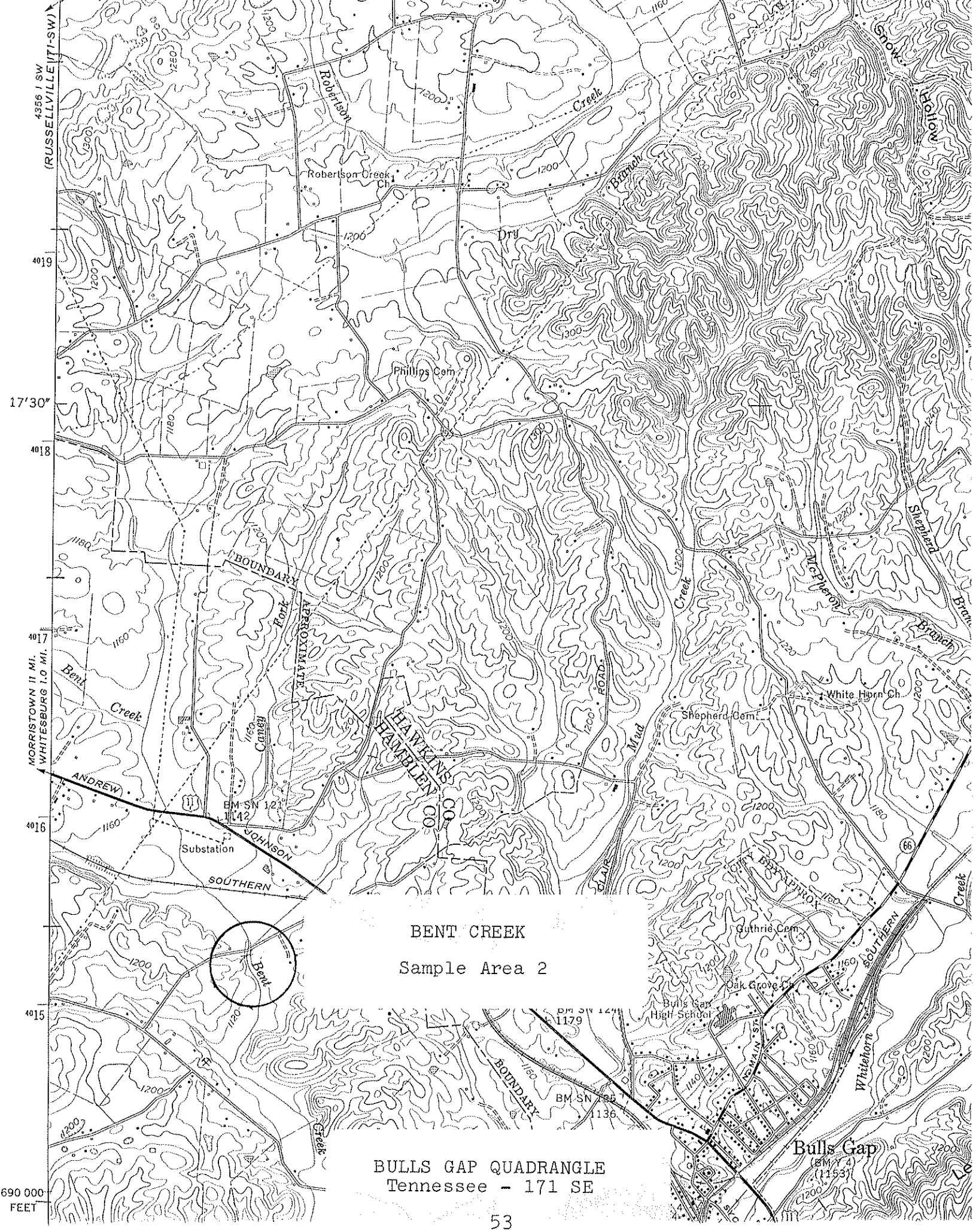
Hamblen Co., TN; Just upstream of bridge on Old Warrensburg Road, stream mi. 3.5. Coordinates: 361232N - 830801W. Springvale, Tenn., # 172 NW Quad. Reach # 06010108-4,2.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Stenelmis* larvae	7
adults	6
Psephenidae/*Psephenus herricki* larvae	2
adults	3
DIPTERA:	
Athericidae/*Atherix lantha*	1
Chironomidae	17
Empididae larvae	4
pupa	1
Simuliidae	19
Tipulidae/*Hexatoma*	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	2
Cloeon	1
Heptageniidae/*Heptagenia*	9
Stenonema	9
Oligoneuriidae/*Isonychia*	4
GASTROPODA:	
Pleuroceridae/*Anculosa subglobosa*	4
ISOPODA:	
Asellidae/*Lirceus*	2
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	4
Nigronia serricornis	1
ODONATA:	
Aeshnidae/*Boyeria vinosa*	2

cont.

Bent Creek: Site # 1, Qualitative sample cont.

TAXA	NUMBER
PELECYPODA:	
Unionidae/*Pleurobema oviforme*	1
Villosa vanuxemi	1
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	23
Hydropsyche betteni/depravata	5
Limnephilidae/*Neophylax mitchelli*	5
Pycnopsyche	1
	135



BENT CREEK

Sample Area 2

BULLS GAP QUADRANGLE
Tennessee - 171 SE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 361555N - 830649W

Stream Bent Creek Length of Sample 300 ft.

Area or Station Site # 2 Reach 06010108-9,6

County Hamblen Date/Time 10 August 1989/1230

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 20.0 ft. Average Depth 0.4 ft. Maximum Depth 1.7 ft.
2. Estimated Percent of Stream in Pools is 20 %
3. Estimated Percent Pool Bottom is Mud 10 % Silt 20 % Sand 10 %
   Clay 5 % Gravel 15 % Rubble 20 % Boulders - %
   Bedrock 20 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 10 %
   Bedrock 20 % Other Gravel 15% Rubble 35% Boulders 10%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average X Scarce
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 20 %
   of stream, Average in 50 %, Poor in 30 %.
7. Shade or Canopy Good over 80 % of Stream.
8. Flow (c.f.s.) 3.8 : Flow compared to Normal: Low Normal X High
9. D.O. 9.9 ppm Temp. 63.1 °F % Saturation 100
10. Present Weather Partly cloudy and warm; air temperature - 70°F
11. Past Weather (last 24 hours) Partly cloudy and warm, cool overnight.
12. D.O. 9.9 pH 8.1 Temp. 63.1 Conductivity 390 micromho/cm
13. Comments: Sample location just downstream of bridge on Moore Road. Siltation is fairly heavy from agricultural practices along watershed; cattle in stream, etc.

Site #2 - Just downstream of bridge on Moore Road

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Body of Water Bent Creek
County or River Mile Hamblen
Type of Sampling Electrofishing
Gear Type Two backpack shockers at 110 v. AC.

Lat-Long 361555N - 830649W
Date 10 August 1989
Reach 06010108-9,6
Pool Elevation 1119 ft.
Time 1425 - 1515

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus salmoides	220	1	1	0.01			
Ambloplites rupestris	13	3	1	0.01			
" "	"	11	2	0.14			
" "	"	8	3	0.26			
" "	"	5	4	0.30			
" "	"	8	5	0.86			
" "	"	6	6	1.14			
" "	"	4	7	1.14			
Lepomis auritus	201	17	2	0.19			
" "	"	3	3	0.06			
" "	"	1	4	0.05			
" "	"	1	5	0.09			
" "	"	1	6	0.16			
L. macrochirus	206	5	2	0.06			
" "	"	6	3	0.18			
" "	"	3	4	0.20			
Catostomus commersoni	32	1	7	0.15			
Hypentelium nigricans	166	1	6	0.11			
Hybopsis amblops	155	49	2-3	0.34			
Notropis chrysocephalus	249	143	2-6	3.73			
N. galacturus	253	4	2-4	0.07			
Continued on next page							

* Label Parameter Listed

Field Notes: 300 ft. sample length. Lost one white sucker after capture. Crayfish were abundant.

Name of Collector(s): Rick D. Bivens, Carl E. Williams, and Mark T. Fagg.

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Site #2 - Just downstream of bridge on Moore Road.

Watershed Nolichucky River
Lat-Long 361555N - 830649W
Body of Water Bent Creek
Date 10 August 1989.
County or River Mile Hamblen
Reach 06010108-9,6
Type of Sampling Electrofishing
Pool Elevation 1119 ft.
Gear Type Two backpack shockers at 110 v. AC.
Time 1425 - 1515

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Pimephales notatus	334	23	1-3	0.14			
Rhinichthys atratulus	351	26	1-3	0.13			
Semotilus atromaculatus	360	1	4	0.04			
Etheostoma simoterum	111	50	1-2	0.17			
E. stigmaeum jessiae	96	9	2	0.05			
Cottus carolinae	40	92	1-4	0.53			

* Label Parameter Listed

Field Notes: 300 ft. sample length.

Name of Collector(s): Rick D. Bivens, Carl E. Williams, and Mark T. Fagg

WR-0525

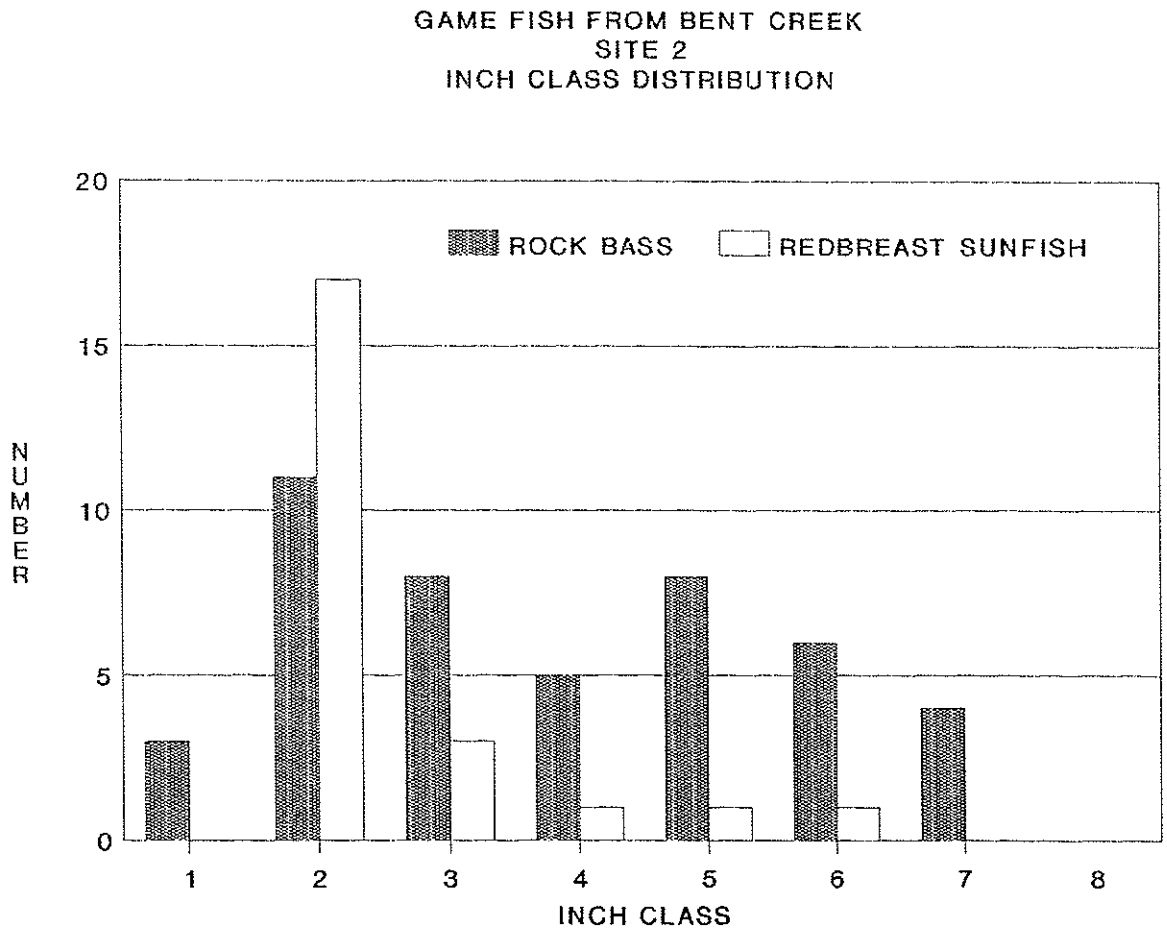

GAME FISH FROM BENT CREEK
SITE 2
INCH CLASS DISTRIBUTION
ROCK BASS
REDBREAST SUNFISH
NUMBER
20
15
10
5
0
1
2
3
4
5
6
7
8
INCH CLASS

Figure 2.

Bent Creek: Site # 2, Edge Surber sample

10 August 1989 Field # 155

Hamblen Co., TN; Just downstream of the bridge on Moore Road. Coordinates: 361555N - 830649W. Bulls Gap, Tenn., # 171 SW Quad. Reach # 06010108-9,6.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	146
COLEOPTERA:	
Elmidae/*Dubiraphia* larva	1
Optioservus larvae	4
O. ovalis adult	1
Stenelmis larvae	5
adults	4
Psephenidae/*Psephenus herricki* larva	1
COLLEMBOLA:	1
DIPTERA:	
Chironomidae	11
Empididae	1
Simuliidae	2
Tipulidae/*Hexatoma*	1
Unid. pupa	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	2
GASTROPODA:	
Ancylidae/*Ferrissia*	2
Planorbidae	1
PELECYPODA:	
Sphaeriidae/*Sphaerium*	502
Unionidae/*Villosa iris*	2
V. vanuxemi	1
TRICHOPTERA:	
Limnephilidae/*Pycnopsyche*	1
	690

Volumetric Displacement was 0.5 ml.

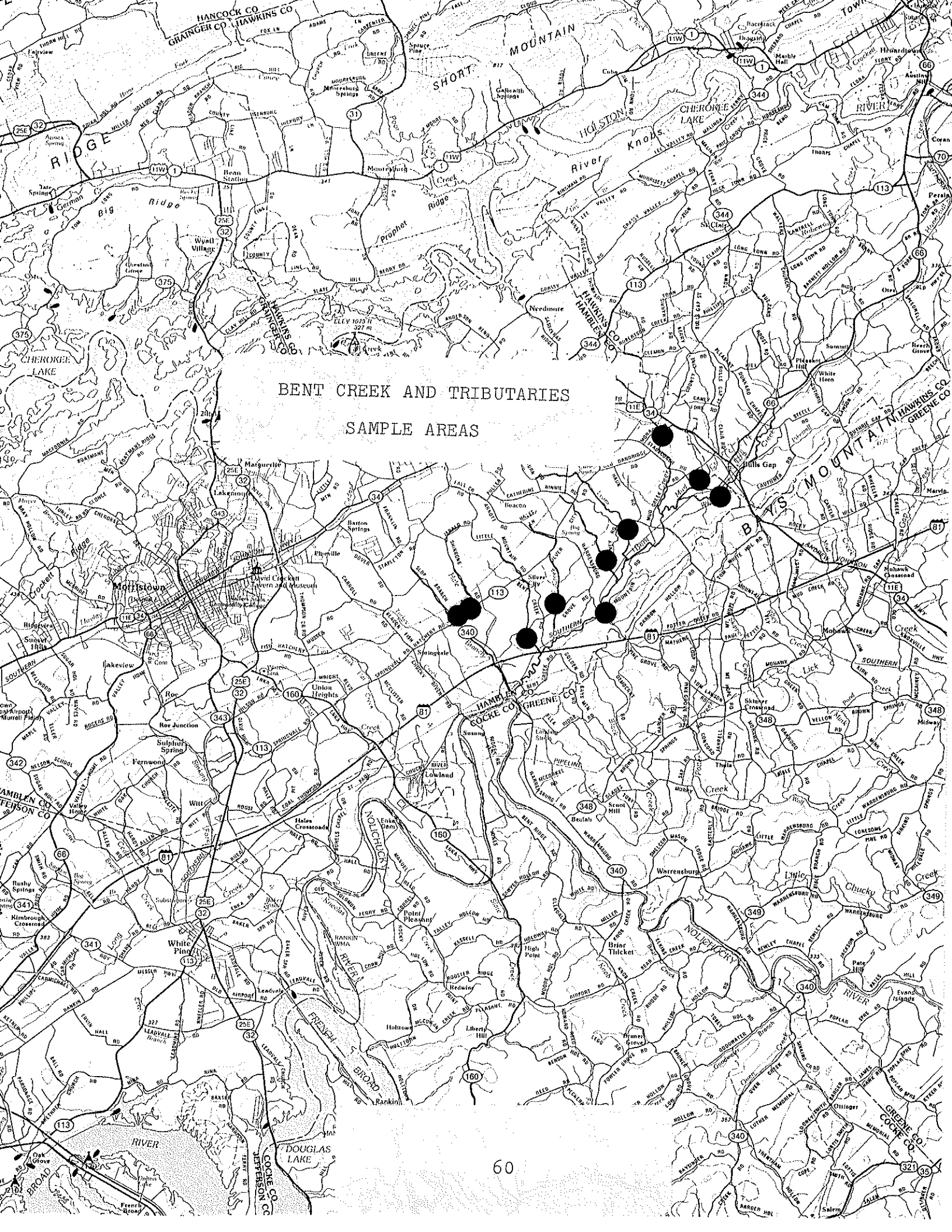
Bent Creek: Site # 2, Midstream Surber sample

10 August 1989 Field # 155

Hamblen Co., TN; Just downstream of the bridge on Moore Road. Coordinates: 361555N - 830649W. Bulls Gap, Tenn., # 171 SW Quad. Reach # 06010108-9,6.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	7
COLEOPTERA:	
Elmidae/*Optioservus* larvae	2
O. ovalis adult	1
Stenelmis larvae	10
adults	8
COLLEMBOLA:	2
DIPTERA:	
Chironomidae	7
Empididae	2
Simuliidae larva	1
pupae	2
Tipulidae/*Hexatoma*	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	3
GASTROPODA:	
Ancylidae/*Ferrissia*	2
Hydrobiidae/*Hydrobia*	1
PELECYPODA:	
Sphaeriidae/*Sphaerium*	10
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	19
Hydropsyche betteni/depravata	3
Unid. pupa	1
Limnephilidae/*Neophylax mitchelli*	5
Pycnopsyche	2
Unid. early instars	2
TURBELLARIA:	1
	92

Volumetric Displacement was 1.0 ml.


BENT CREEK AND TRIBUTARIES
SAMPLE AREAS

Sites where fish species were collected in Bent Creek and its tributaries: 1989.

Species	Bent Creek Site 1	Bent Creek Site 2	Hale Br.	Slop Cr.	Silver City Br.	Marshall Cr.	Big Spring Br.	Lyons Cr.	Mud Cr.	Whitehorn Cr.
Micropterus dolomieui	X	X								
M. punctulatus	X									
M. salmoides	X					X			X	
Ambloplites rupestris	X	X			X			X		X
Lepomis auritus	X	X			X	X		X	X	X
L. macrochirus	X	X			X	X		X	X	X
Ictalurus natalis										X
Catostomus commersoni	X	X						X	X	X
Hypentelium nigricans	X	X								
Moxostoma erythrurum	X									
Campostoma anomalum	X							X	X	X
Cyprinus carpio	X									
Hybopsis amblops	X	X						X		
Nocomis micropogon										X
Notropis chrysocephalus	X	X			X	X		X	X	X
N. galacturus	X	X			X			X		
N. stramineus	X							X	X	X
N. volucellus	X									
Pimephales notatus	X	X							X	X
Rhinichthys atratulus	X	X	X	X	X	X	X	X		X
Semotilus atromaculatus		X	X		X	X	X	X		
Etheostoma blennioides	X				X					
E. kennicotti					X			X	X	X
E. simoterum	X	X			X	X	X	X	X	X
E. stigmaeum jessiae		X							X	
Gambusia affinis						X			X	X
Cottus carolinae		X			X		X			X

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Body of Water Hale Branch
County or River Mile Hamblen
Type of Sampling Seining
Gear Type 10. ft. seine

Lat-Long 361229N - 831112W
Date 15 August 1989
Reach 06010108-
Pool Elevation 1123 ft.
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Rhinichthys atratulus	351	(common)					
Semotilus atromaculatus	360	(common)					
Temperature - 66°F							
Avg. width - 4 ft.							
Bedrock-boulder substrate, fairly silty.							

* Label Parameter Listed

Field Notes: Sample location upstream of bridge on Silver City Road (hwy. 113).

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Body of Water Slop Creek
County or River Mile Hamblen
Type of Sampling Seining
Gear Type 10 ft. seine

Lat-Long 361229N - 831113W
Date 15 August 1989
Reach 06010108-
Pool Elevation 1123 ft.
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Rhinichthys atratulus	351	(few)					
Temperature - 70°F							
Avg. width - 6 to 8 ft.							
Bedrock-boulder-gravel substrate.							
Silty.							

* Label Parameter Listed

Field Notes: Sample location upstream of bridge on Silver City Road (hwy. 113).

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Lat-Long 361212N - 830947W
Body of Water Silver City Branch
Date 15 August 1989.
County or River Mile Hamblen
Reach 06010108-
Type of Sampling Seining
Pool Elevation 1055 ft.
Gear Type 10 ft. seine
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Ambloplites rupestris	13	3 or 4	(small)				
Lepomis auritus	201	(several)					
L. macrochirus	206	1	(actual # collected)				
Notropis chrysocephalus	249	(several)					
N. galacturus	253	1	(actual # collected)				
Rhinichthys atratulus	351	(common)					
Semotilus atromaculatus	360	(common)					
Etheostoma blennioides	81	1	(actual # collected)				
E. kennicotti	98	2	(actual # collected)				
E. simoterum	111	(common)					
Cottus carolinae	40	(several)					
Goniobasis simplex		(abundant)					
Isonychia mayfly		(several)					
Crayfish		(abundant)					
Temperature - 67°F							
Avg. width - 6 to 8 ft.							
Avg. depth - 0.5 ft.							
Bedrock to few boulders with rubble-gravel areas.							
Water cress abundant.							

* Label Parameter Listed

Field Notes: Sample location downstream of bridge on Union Grove Road. Nice, clean, little stream.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Lat-Long 361233N - 830907W
Body of Water Marshall Creek
Date 15 August 1989
County or River Mile Hamblen
Reach 06010108-
Type of Sampling Seining
Pool Elevation 1065 ft.
Gear Type 10 ft. seine
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus salmoides	220	3	(very small ones)				
Lepomis auritus	201	2	(actual # collected)				
L. macrochirus	206	(several)					
Notropis chrysocephalus	249	(few)					
Rhinichthys atratulus	351	(common)					
Semotilus atromaculatus	360	(common)					
Etheostoma simoterum	111	(several)					
Gambusia affinis	147	3	(actual # collected)				
Temperature - 71°F							
Avg. width - 4 to 6 ft.							
Gravel-rubble substrate with some bedrock and boulders.							
Several ponds located on upper reaches of the stream.							

* Label Parameter Listed

Field Notes: Sample location upstream of bridge on Union Grove Road.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River — **Lat-Long** 361324N - 830753W

Body of Water Big Spring Branch — **Date** 13 November 1989

County or River Mile Hamblen — **Reach** 06010108-

Type of Sampling Electrofishing — **Pool Elevation** 1076 ft.

Gear Type One backpack shocker at 110 v. AC — **Time** 0845 - 0915

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Rhinichthys atratulus	351	152					
Semotilus atromaculatus	360	1					
Etheostoma simoterum	111	77					
Cottus carolinae	40	5					
Temperature - 50°F							
pH - 8.7							
Conductivity - 325 micromho/cm							
Avg. width - 2 to 4 ft.							
Avg. depth - 3 in.							
Rubble-gravel to mostly bedrock substrate.							
Very silty; agricultural use; cattle in stream, etc.							
Some water cress present.							

* Label Parameter Listed

Field Notes: Sample location was just upstream of the Courtney Road crossing. Approx. 300 ft. sample length.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River — **Lat-Long** 361400N - 830731W

Body of Water Lyons Creek — **Date** 13 November 1989

County or River Mile Hamblen — **Reach** 06010108-

Type of Sampling Electrofishing — **Pool Elevation** 1095 ft.

Gear Type One backpack shocker at 110 v. AC — **Time** 1000 - 1030

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Ambloplites rupestris	13	5	4				
" "	"	2	5				
" "	"	2	6				
Lepomis auritus	201	3					
L. macrochirus	206	8					
Catostomus commersoni	32	12					
Campostoma anomalum	25	24					
Hybopsis amblops	155	6					
Notropis chrysocephalus	249	93					
N. galacturus	253	10					
N. stramineus	271	1					
Rhinichthys atratulus	351	75					
Semotilus atromaculatus	360	30					
Etheostoma kennicotti	98	2					
E. simoterum	111	49					
Crayfish and salamanders present.							
Temperature - 51°F							
pH - 8.6							
Conductivity - 325 micromho/cm							
Avg. width - 6 to 10 ft.							
Avg. depth - 3 to 4 in.							
Gravel-rubble substrate and fairly silty.							

* Label Parameter Listed

Field Notes: Sample location was just upstream of the bridge on Early Road. Approx. 400 ft. sample length.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River — **Lat-Long** 361455N - 830600W

Body of Water Mud Creek — **Date** 13 November 1989

County or River Mile Hamblen — **Reach** 06010108-95

Type of Sampling Electrofishing — **Pool Elevation** 1108 ft.

Gear Type One backpack shocker at at 110 v. AC — **Time** 1130 - 1200

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Lepomis auritus	201	14					
L. macrochirus	206	1					
Micropterus salmoides	220	2	(small)				
Catostomus commersoni	32	8					
Campostoma anomalum	25	1					
Notropis chrysocephalus	249	53					
N. stramineus	271	2					
Pimephales notatus	334	9					
Etheostoma simoterum	111	14					
E. stigmaeum jessiae	96	2					
E. kennicotti	98	6					
Gambusia affinis	147	9					
Corbicula fluminea and Physa present.							
Few crayfish present.							
Temperature - 54°F							
pH - 8.4							
Conductivity - 480 micromho/cm							
Avg. width - 4 to 6 ft.							
Avg. depth - 5 in.							
Mud-silt bottom with some gravel and rubble. No boulders.							
Mud was ankle deep in places; bad erosion; no trees along this section.							

* Label Parameter Listed

Field Notes: Sample location was just upstream of the Stagecoach Road crossing (culvert). Sample length was approx. 300 ft.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River — **Lat-Long** 361443N - 830531W

Body of Water Whitehorn Creek — **Date** 13 November 1989

County or River Mile Hamblen — **Reach** 06010108-42,1

Type of Sampling Electrofishing — **Pool Elevation** 1110 ft.

Gear Type One backpack shocker at 110 v. AC — **Time** 1330 - 1415

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Ambloplites rupestris	13	1	1				
" "	"	1	7				
Lepomis auritus	201	27					
L. macrochirus	206	12					
* Hybrid sunfish		6					
Ictalurus natalis	174	6					
Catostomus commersoni	32	7					
Campostoma anomalum	25	127					
Nocomis micropogon	234	1					
Notropis chrysocephalus	249	116					
N. stramineus	271	69					
Pimephales notatus	334	74					
Rhinichthys atratulus	351	10					
Etheostoma kennicotti	98	6					
E. simoterum	111	29					
Cottus carolinae	40	2					
Gambusia affinis	147	7					
Temperature - 54°F							
pH - 8.4							
Conductivity - 400 micromho/cm							
Avg. width - 12 to 15 ft.							
Avg. depth - 0.5 ft.							
Gravel-rubble-boulder substrate with lots of bedrock and silted over gravel areas.							

*** Label Parameter Listed** * Bluegill X Redbreast sunfish hybrids

Field Notes: Sample location was at bridge on Whitehorn Creek Road. Sample length was approx. 300 ft.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

Little Chucky Creek

Two qualitative fishery surveys were conducted in July 1989:

Location and Length - Tributary to the Nolichucky River. Sample area 1 was located at the old covered bridge at stream mi. 4.0 and was sampled on 25 July 1989. It was 300 ft. in length and averaged 23.4 ft. in width. Sample area 2 was located at the bridge just upstream of the mouth of Mosheim Branch at stream mi. 15.9, and was sampled on 26 July 1989. It was 300 ft. in length and averaged 20.5 ft. in width. Both sites were in Greene County. Area 1, Parrottsville Quadrangle. Area 2, Mosheim Quadrangle.

Gear Type - Both sites were sampled using backpack electrofishing equipment. Area 1 was sampled using two backpack electrofishing units, one operating at 110 V. AC and the other operating at 170 V. DC, shocking into a 30 ft. seine. Area 2 was sampled using a single backpack electrofishing unit at 110 V. AC.

Water Quality - Data were taken from midstream at each site. Area 1, on 25 July 1989: DO - 8.1 ppm, pH - 8.3, Temperature - 77°F, Conductivity - 575 micromhos/cm. Area 2, on 26 July 1989: DO - 6.7 ppm, pH - 7.9, Temperature - 74.5°F, Conductivity - 700 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples at each site and one additional qualitative sample was collected at site 1. Area 1 Surber samples averaged 249 organisms, 1.2 ml. volumetric displacement. All benthos combined represented 43 taxa. Area 2 Surber samples averaged 155 organisms, 1.1 ml. volumetric displacement and represented 20 taxa.

Fish Collected:

	Area 1				Area 2			
Species	No.	% by No.	Wt.	% by Wt.	No.	% by No.	Wt.	% by Wt.
Spotted bass	3	0.4	0.05	0.2	7	2.0	0.77	5.1
Rock bass	37	4.9	4.82	17.4	22	6.1	2.95	19.4
Redbreast sunfish	23	3.1	1.81	6.5	45	12.6	3.53	23.2
Bluegill	3	0.4	0.10	0.4	5	1.4	0.31	2.0
Nongame Fish	30	4.0	6.92	25.0	8	2.2	1.36	8.9
Forage Fish	658	87.3	14.04	50.6	271	75.7	6.28	41.3
Total	754		27.74		358		15.2	

Comments:

Two sites on this stream were surveyed primarily to develop a fish species diversity list and collect stream information for TADS. To our knowledge, no previous fish studies or collections are known from this stream. However, one biological assessment, based primarily on macroinvertebrates, is available (Tennessee Department of Public Health 1978).

Game fish from both sites included spotted bass (*Micropterus punctulatus*), rock bass (*Ambloplites rupestris*), redbreast sunfish (*Lepomis auritus*), and bluegill (*L. macrochirus*). Spotted bass and bluegill made up small percentages by numbers and weights at both sites and rock bass and redbreast sunfish appeared to be the primary game species. Comparisons of inch class distribution was made for these species only (Figs. 3, 4).

Rock bass made up about 5% by numbers and 17% by weight of all fish collected at site 1 and 6% by numbers and about 19% by weight at site 2.

Several rock bass were in the 6 in. class and the largest one collected was about 8 in. Small rock bass, 2 to 3 in. class, were either absent at the downstream site or we just failed to collect any.

The actual number and weight of redbreast sunfish at the upper area was about double that of the downstream site. There were also about twice as many redbreast sunfish collected as rock bass at the upper area. The actual weight of redbreast sunfish was only slightly higher than the rock bass though.

According to the Tennessee Department of Public Health (1978) biological assessment, the major impact on this stream is nutrient enrichment and siltation related to agricultural activities. We collected a total of 20 fish species from both sites combined, most of which are species typical of streams with this non-point-source type pollution.

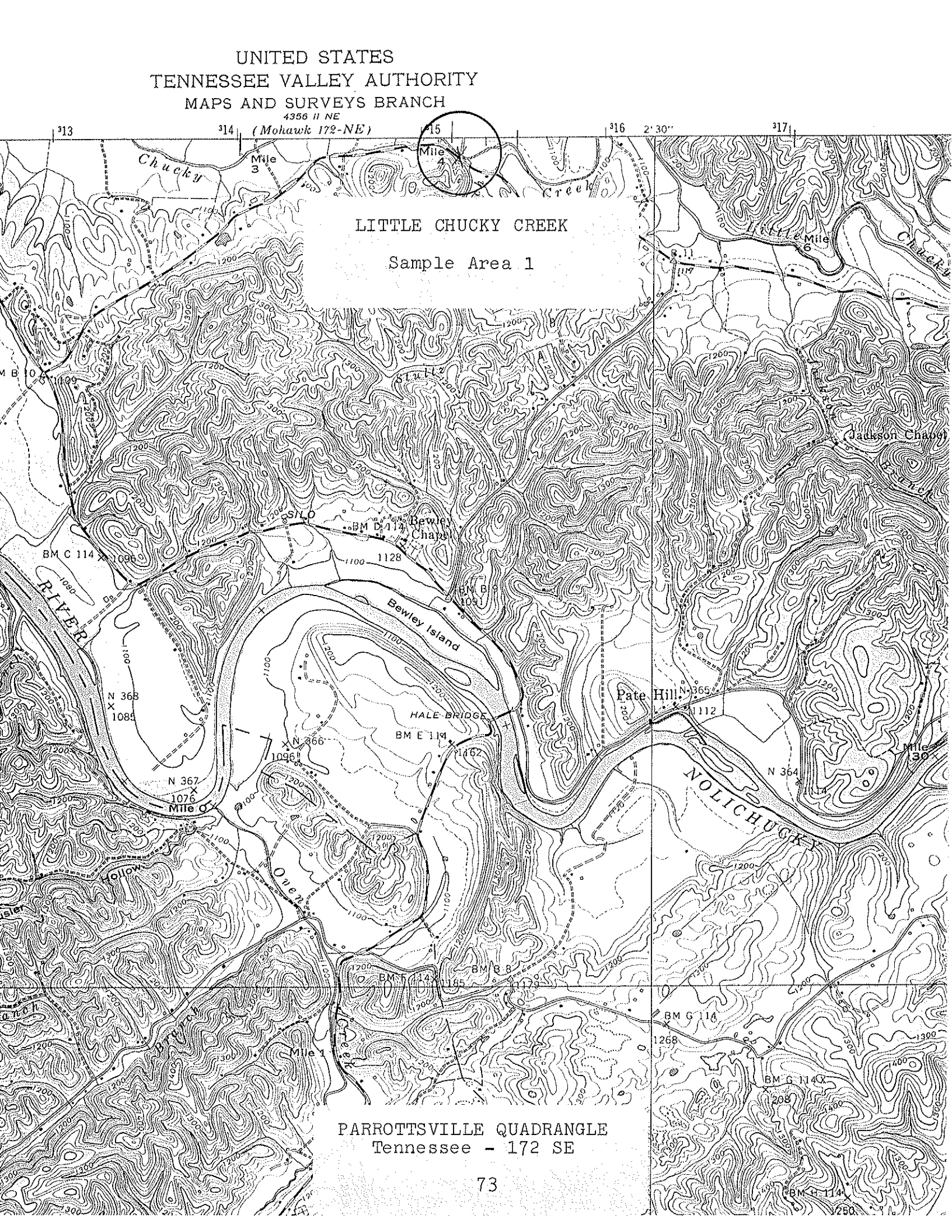
Benthic macroinvertebrates from our samples at site 1 included Baetidae, Caenidae, Heptageniidae, and Oligoneuriidae mayflies, perlid stoneflies, Hydropsychidae, Limnephilidae, and Philopotamidae caddisflies, and Dytiscidae, Elmidae, and Psephenidae beetles. Limpets (*Ferrissia*), asian clams (*Corbicula fluminea*), fingernail clams (*Sphaerium*), and Physidae, Planorbidae, and the pleurocerid snail, *Pleurocera canaliculatum*, were also present. Several of the same families were also represented in the upper site samples, however, diversity decreased from 43 taxa (site 1) to only 20 taxa. Most probably, this decrease can be partially attributed to the lack of qualitative sampling at the upstream site.

One interesting note, we collected the eastern spiney softshell turtle (*Trionyx spiniferus spiniferus*) at both sites.

Management Recommendations:

1. No specific management can be suggested at present, other than protection from any further habitat deterioration.

2. Publicize information about the existing fishery in a regional stream fishing brochure.


UNITED STATES
TENNESSEE VALLEY AUTHORITY
MAPS AND SURVEYS BRANCH
4956 II NE
(Mohawk 172-NE)
LITTLE CHUCKY CREEK
Sample Area 1
Chucky
Creek
Mile 3
Mile 4
Little Chucky Creek
Mile 6
Jackson Chapel
Bewley Chapel
BM B 114
BM C 114
1096
1128
RIVER
Bewley Island
BM B 9
1091
N 368
1089
HALE BRIDGE
BM E 114
1162
N 366
1096
N 367
1076
Mile 0
Pate Hill
N 365
1112
N 364
1114
Mile 30
NOLICHUCKY
Hollow
Creek
BM B 8
1179
BM G 114
1268
BM G 114 X
208
BM H 114
1250
PARROTTSVILLE QUADRANGLE
Tennessee - 172 SE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 360727N - 830312W

Stream Little Chucky Creek" Length of Sample 300 ft.

Area or Station Site # 1 Reach 06010108-

County Greene Date/Time 25 July 1989/1400

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 23.4 ft. Average Depth 0.6 ft. Maximum Depth 3.0 ft.
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud 10 % Silt 25 % Sand 20 %
   Clay - % Gravel 10 % Rubble 25 % Boulders - %
   Bedrock 10 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 20 % Sand 20 %
   Bedrock 20 % Other Gravel 10% Rubble 20% Boulders 10%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Water willow Scarce
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 25 % of Stream.
8. Flow (c.f.s.) 24.7 : Flow compared to Normal: Low ____ Normal X High ____
9. D.O. 8.1 ppm Temp. 77°F % Saturation 98
10. Present Weather Partly cloudy and hot; air temperature - 90°F.
11. Past Weather (last 24 hours) Partly cloudy and hot.
12. D.O. 8.1 pH 8.3 Temp. 77°F Conductivity 575 micromho/cm
13. Comments: Sample location at old covered bridge at stream mile 4. Water was dingy, receives fairly heavy siltation and other non-point-source pollution mainly from agricultural sources.

Site #1 - At old covered bridge, stream mi. 4.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River — Lat-Long 360727N - 830312W

Body of Water Little Chucky Creek — Date 25 July 1989

County or River Mile Greene — Reach 06010108-

Type of Sampling Electrofishing — Pool Elevation 1083 ft.

Gear Type Two backpack shockers - one at 110 v. AC, one at 170 v. DC. — Time 0940 - 1145

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus punctulatus	219	1	1	t			
" "	"	1	3	0.02			
" "	"	1	4	0.03			
Ambloplites rupestris	13	4	2	0.06			
" "	"	6	3	0.17			
" "	"	4	4	0.27			
" "	"	8	5	1.00			
" "	"	12	6	2.37			
" "	"	3	7	0.90			
Lepomis auritus	201	4	2	0.05			
" "	"	7	3	0.23			
" "	"	6	4	0.35			
" "	"	3	5	0.39			
" "	"	2	6	0.46			
" "	"	1	7	0.33			
L. macrochirus	206	3	3	0.10			
Hypentelium nigricans	166	16	3-9	1.85			
Moxostoma erythrurum	230	13	5-11	4.75			
Ictalurus natalis	174	1	8	0.32			
Campostoma anomalum	25	250	1-6	7.74			
Hybopsis amblops	155	4	2	0.01			
Continued on next page							

* Label Parameter Listed

Field Notes: 300 ft. sample length. Water was dingy, fish recovery was poor. Shocked into seine also.

Name of Collector(s): Rick D. Bivens, Carl E. Williams, & Chris R. Seay

WR-0525

Site #1 - At old covered bridge, stream mi. 4.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Lat-Long 360727N - 830312W
Body of Water Little Chucky Creek
Date 25 July 1989
County or River Mile Greene
Reach 06010108-
Type of Sampling Electrofishing
Pool Elevation 1083 ft.
Gear Type Two backpack shockers - one at 110 v. AC, one at 170 v. DC.
Time 0940 - 1145

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Notropis chrysocephalus	249	261	1-6	5.53			
N. galacturus	253	1	3	0.02			
N. spilopterus	269	9	2-3	0.10			
N. stramineus	271	1	2	t			
Pimephales notatus	334	12	2	0.07			
Etheostoma blennioides	81	10	2-4	0.17			
E. rufilineatum	108	67	1-2	0.23			
E. simoterum	111	36	1-2	0.09			
E. stigmaeum jessiae	96	5	2	0.02			
Cottus carolinae	40	2	3	0.06			

* Label Parameter Listed

Field Notes: 300 ft. sample length. One softshell turtle (*Trionyx spiniferus spiniferus*) collected at this site.

Name of Collector(s): Rick D. Bivens, Carl E. Williams, & Chris R. Seay

WR-0525

GAME FISH FROM LITTLE CHUCKY CREEK
SITE 1
INCH CLASS DISTRIBUTION

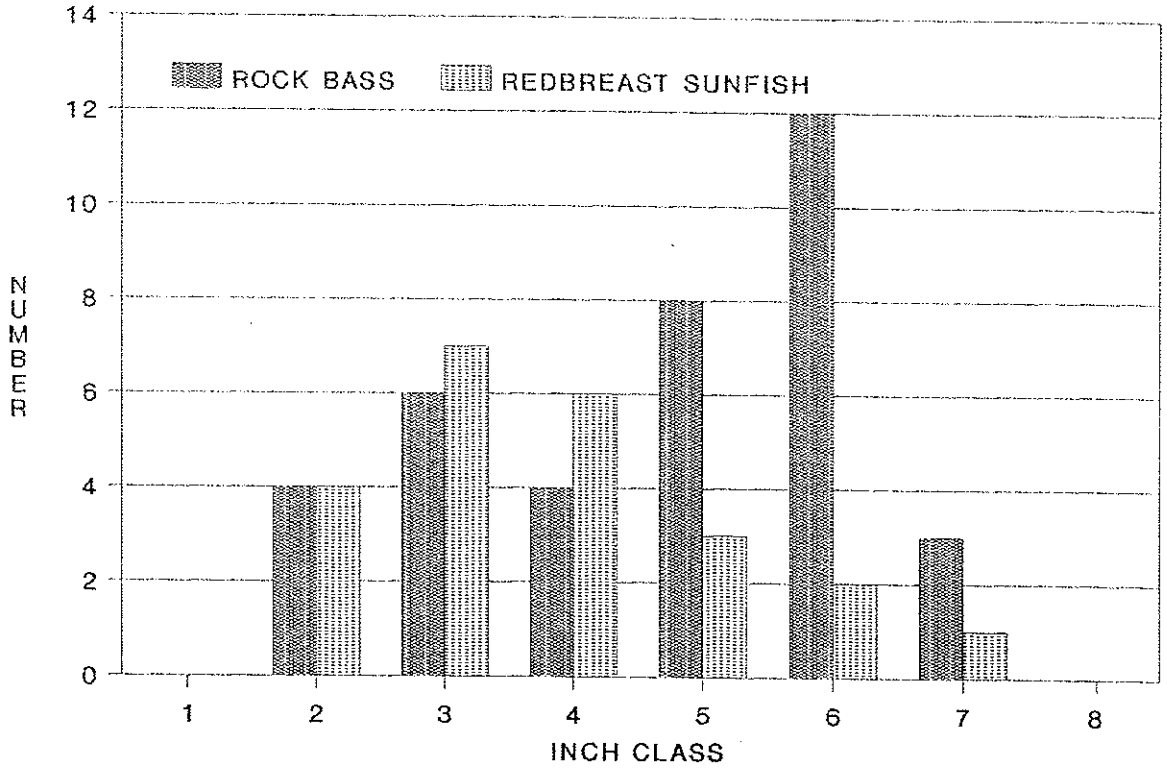


Figure 3.

Little Chucky Creek: Site # 1, Edge Surber sample

25 July 1989 Field # 145

Greene Co., TN; At the old covered bridge, stream mi. 4.0. Coordinates: 360727N - 830312W. Parrottsville, Tenn., # 172 SE Quad. Reach # 06010108-.

TAXA	NUMBER
AMPHIPODA:	
Gammaridae	1
ANNELIDA:	
Oligochaeta	9
COLEOPTERA:	
Dytiscidae/Hydroporus adult	1
Elmidae/Stenelmis larvae	43
adults	40
DECAPODA:	
Unid. crayfish	1
DIPTERA:	
Chironomidae	37
Empididae	5
Simuliidae	8
Tipulidae/Antocha	2
EPHEMEROPTERA:	
Baetidae/Baetis	4
Caenidae/Caenis	5
Heptageniidae/Heptagenia	4
Stenacron	5
Stenonema	29
Oligoneuriidae/Isonychia	3
GASTROPODA:	
Ancylidae/Ferrissia	1
Pleuroceridae/Pleurocera canaliculatum	2
ISOPODA:	
Asellidae/Lirceus	18

cont.

Little Chucky Creek: Site # 1, Edge Surber sample cont.

TAXA	NUMBER
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	5
Sialidae/*Sialis*	1
PLECOPTERA:	
Perlidae/*Acroneuria evoluta*	5
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	24
Hydropsyche betteni/depravata	10
Unid. pupa	1
Limnephilidae/*Pycnopsyche*	1
	265

Volumetric Displacement was 1.2 ml.

Little Chucky Creek: Site # 1, Midstream Surber sample

25 July 1989 Field # 145

Greene Co., TN; At the old covered bridge, stream mi. 4.0. Coordinates: 360727N - 830312W. Parrottsville, Tenn., # 172 SE Quad. Reach # 06010108-.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	7
COLEOPTERA:	
Elmidae/*Microcylloepus pusillus* larvae	2
adult	1
Stenelmis larvae	18
adults	26
Psephenidae/*Psephenus herricki* larva	1
DIPTERA:	
Chironomidae	47
Empididae	15
Simuliidae larvae	14
pupa	1
Tabanidae/*Chrysops*	1
Tipulidae/*Hexatoma*	2
EPHEMEROPTERA:	
Baetidae/*Baetis*	3
Caenidae/*Caenis*	8
Heptageniidae/*Heptagenia*	1
Stenonema	18
GASTROPODA:	
Ancylidae/*Ferrissia*	5
Physidae/*Physa*	1
Planorbidae	1
Pleuroceridae/*Pleurocera canaliculatum*	3
ISOPODA:	
Asellidae/*Lirceus*	6

cont.

Little Chucky Creek: Site # 1, Midstream Surber sample cont.

TAXA	NUMBER
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	12
Sphaeriidae/*Sphaerium*	4
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	21
Hydropsyche betteni/depravata	8
Limnephilidae/*Pycnopsyche*	5
Philopotamidae/*Chimarra*	1
	232

Volumetric Displacement was 1.2 ml.

Little Chucky Creek: Site # 1, Qualitative sample

25 July 1989 Field # 145

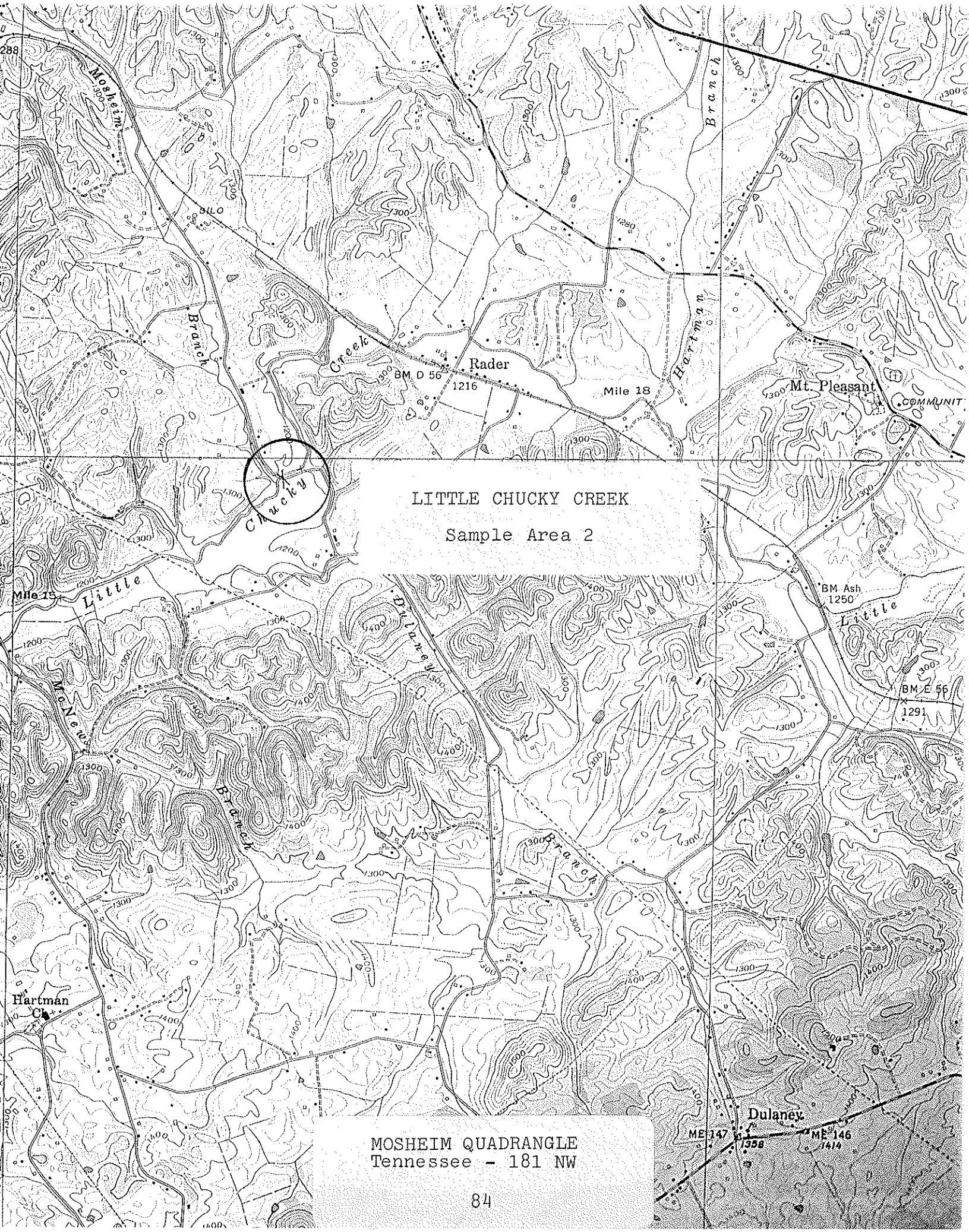
Greene Co., TN; At the old covered bridge, stream mi. 4.0. Coordinates: 360727N - 830312W. Parrottsville, Tenn., # 172 SE Quad. Reach # 06010108-.

TAXA	NUMBER
AMPHIPODA:	
Gammaridae	1
Talitridae/*Hyalella aztecha*	1
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Dytiscidae/*Hydroporus* adult	1
Elmidae/*Ancyronyx variegatus* adult	1
Dubiraphia adults	18
Microcylloepus pusillus adults	2
Stenelmis larvae	7
adults	18
Hydrophilidae adults	2
Psephenidae/*Psephenus herricki* larva	1
adults	2
DIPTERA:	
Ceratopogonidae/*Palpomyia* complex	1
Chironomidae	21
Simuliidae	16
Tabanidae/*Chrysops*	1
Tipulidae/*Hexatoma*	2
EPHEMEROPTERA:	
Baetidae/*Baetis*	6
Ephemerellidae/*Serratella*	3
Heptageniidae/*Heptagenia*	3
Stenonema	18
Oligoneuriidae/*Isonychia*	11
GASTROPODA:	
Physidae/*Physa*	1
Planorbidae	1
Pleuroceridae/*Pleurocera canaliculatum*	25

cont.

Little Chucky Creek: Site # 1, Qualitative sample cont.

TAXA	NUMBER
ISOPODA:	
Asellidae/*Lirceus*	2
ODONATA:	
Aeshnidae/*Boyeria vinosa*	11
Calopterygidae/*Hetaerina americana*	4
Coenagrionidae/*Argia*	3
Enallagma exsulans	1
Macromiidae/*Didymops transversa*	1
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	1
Sphaeriidae/*Sphaerium*	10
PLECOPTERA:	
Perlidae/*Acroneuria evoluta*	6
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	11
Hydropsyche betteni/depravata	23
Limnephilidae/*Pycnopsyche*	3
	241


LITTLE CHUCKY CREEK
Sample Area 2
Rader
BM D 56
1216
Mile 18
Mt. Pleasant
COMMUNIT
Mosheim
Branch
Creek
Chucky
Hartman
Branch
Mile 15
Little
Dulaney
McNew
Branch
BM Ash
1250
Little
BM E 56
1291
Hartman
Ch
Dulaney
ME 147
1358
ME 146
1414
MOSHEIM QUADRANGLE
Tennessee - 181 NW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 360957N - 825634W

Stream Little Chucky Creek" Length of Sample 300 ft.

Area or Station Site # 2 Reach 06010108-

County Greene Date/Time 26 July 1989/1000

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 20.5 ft. Average Depth 0.65 ft. Maximum Depth 2.75 ft.
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud 5 % Silt 25 % Sand 10 %
   Clay - % Gravel 20 % Rubble 20 % Boulders 10 %
   Bedrock 10 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 25 % Sand 10 %
   Bedrock 30 % Other Gravel 10% Boulders 5% Rubble 20%
5. Abundance of Littoral Aquatic Plants is Numerous Water willow
   Average _____ Scarce _____
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 75 % of Stream.
8. Flow (c.f.s.) 9.6 : Flow compared to Normal: Low ____ Normal X High ____
9. D.O. 6.7 ppm Temp. 74.5°F % Saturation 79
10. Present Weather Clear to partly cloudy, hot and humid; air temp.- 78°F.
11. Past Weather (last 24 hours) Clear to partly cloudy, hot and humid.
12. D.O. 6.7 pH 7.9 Temp. 74.5 Conductivity 700 micromho/cm
13. Comments: Sample location at bridge just upstream of the mouth of Mosheim Branch, stream mi. 15.9. Stream fairly silty and dingy. Lots of agricultural use along the entire watershed.

Site #2 - At bridge just upstream of mouth of Mosheim Branch.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Body of Water Little Chucky Creek
County or River Mile Greene
Type of Sampling Electrofishing
Gear Type One backpack shocker at 110 v. AC.

Lat-Long 360957N - 825634W
Date 26 July 1989
Reach 06010108-
Pool Elevation 1191 ft.
Time 1245 - 1430

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus punctulatus	219	2	2	0.01			
" "	"	1	3	0.01			
" "	"	1	4	0.03			
" "	"	1	7	0.19			
" "	"	2	8	0.53			
Ambloplites rupestris	13	7	4	0.45			
" "	"	7	5	0.64			
" "	"	6	6	1.21			
" "	"	1	7	0.26			
" "	"	1	8	0.39			
Lepomis auritus	201	6	2	0.06			
" "	"	10	3	0.28			
" "	"	12	4	0.76			
" "	"	11	5	1.17			
" "	"	4	6	0.73			
" "	"	2	7	0.53			
L. macrochirus	206	1	2	t			
" "	"	3	3	0.09			
" "	"	1	6	0.22			
Hypentelium nigricans	166	6	4-11	1.27			
Ictalurus natalis	174	2	3-5	0.09			
Gambusia affinis	147	2	1	t			
Continued on next page							

* Label Parameter Listed

Field Notes: 300 ft. sample length. Two softshell turtles (*Trionyx spiniferus spiniferus*) collected at this site.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

Site #2 - At bridge just upstream of mouth of Mosheim Branch.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Lat-Long 360957N - 825634W
Body of Water Little Chucky Creek
Date 26 July 1989
County or River Mile Greene
Reach 06010108-
Type of Sampling Electrofishing
Pool Elevation 1191 ft.
Gear Type One backpack shocker at 110 v. AC.
Time 1245 1430

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Campostoma anomalum	25	111	1-5	2.69			
Hybopsis amblops	155	15	2-3	0.10			
Notropis chrysocephalus	249	98	2-5	3.27			
Pimephales notatus	334	2	2	0.02			
Etheostoma blennioides	81	1	4	0.04			
E. rufilineatum	108	4	1-2	0.02			
E. simoterum	111	35	1-2	0.13			
E. stigmaeum jessiae	96	2	2	0.01			
Cottus carolinae	40	1	1	t			

* Label Parameter Listed

Field Notes: 300 ft. sample length.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

GAME FISH FROM LITTLE CHUCKY CREEK
SITE 2
INCH CLASS DISTRIBUTION

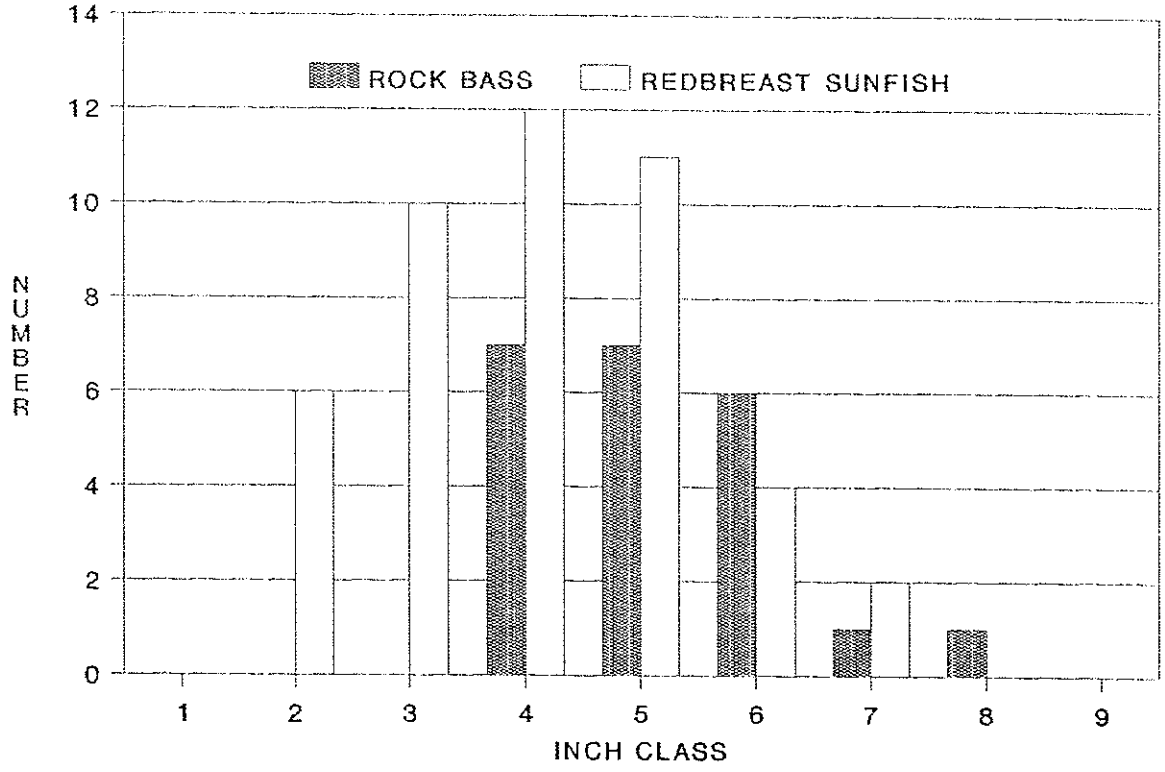


Figure 4.

Little Chucky Creek: Site # 2, Edge Surber sample

26 July 1989 Field # 146

Greene Co., TN; Upstream of the mouth of Mosheim Branch at stream mi. 15.9. Coordinates: 360957N - 825634W. Mosheim, Tenn., # 181 NW Quad. Reach # 06010108-.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Dubiraphia* adults	2
DIPTERA:	
Ceratopogonidae/*Palpomyia* complex	1
Chironomidae	14
Empididae	1
Unid. pupa	1
EPHEMEROPTERA:	
Heptageniidae/*Stenacron*	4
Stenonema (*Stenonema*) *femoratum*	4
HYDRACARINA:	1
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	1
	29

Volumetric Displacement was 0.1 ml.

Little Chucky Creek: Site # 2, Midstream Surber sample

26 July 1989 Field # 146

Greene Co., TN; Upstream of the mouth of Mosheim Branch at stream mi. 15.9. Coordinates: 360957N - 825634W. Mosheim, Tenn., # 181 NW Quad. Reach # 06010108-.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Dytiscidae/*Laccophilus fasciatus rufus*	1
Elmidae/*Stenelmis* larvae	70
adults	30
COLLEMBOLA:	3
DIPTERA:	
Chironomidae	19
Empididae larvae	11
pupae	2
Simuliidae larvae	2
pupa	1
Unid. pupae	2
EPHEMEROPTERA:	
Baetidae/*Baetis*	42
GASTROPODA:	
Physidae/*Physa*	1
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	1
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	10
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	14
Hydropsyche betteni/depravata	67
H. frisoni	2
Hydroptilidae	2
	281

Volumetric Displacement was 2.1 ml.

Squibb Creek

One qualitative fishery survey was conducted in August 1989:

Location and Length - Tributary to Horse Creek (Nolichucky River trib.). The sample area was located at the mouth of the branch at Turkeypen Cove and was sampled on 8 August 1989. It was 300 ft. in length and averaged 11.6 ft. in width. The site was in Greene County. Greystone Quadrangle.

Gear Type - The site was sampled using a single backpack electrofishing unit operating at 850 V. DC and making two passes.

Water Quality - Data were taken from midstream on 8 August 1989: DO - 9.1 ppm, pH - 6.8, Temperature - 59.9°F, Conductivity - 15 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples and one qualitative sample at the site. The Surber samples averaged 27 organisms, 0.3 ml. volumetric displacement. All benthos combined represented 16 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Brook trout	4	4.0	0.14	10.5
Rainbow trout	20	19.8	0.74	55.6
Nongame Fish Forage Fish	77	76.2	0.45	33.8
Total	101		1.33	

Comments - This stream was surveyed primarily to assess its trout population. In the mid to late 1970's it was known only as a rainbow trout (*Oncorhynchus mykiss*) stream. However, Tatum (1968) listed it as one of the few remaining native brook trout (*Salvelinus fontinalis*) streams in upper east Tennessee. The Forest Service has worked long and hard to try to reestablish brook trout through egg plants, stocking fingerlings, rainbow trout removal, and building barriers. In 1987 the stream was closed to all fishing. The last rainbow trout removal was conducted in 1988 and 171 rainbows were removed at that time. Since 1980, 1,103 rainbow trout

have been removed from the stream.

We collected a total of 101 fish weighing 1.33 lb. from our sample in 1989. Of these, about 20% of the total numbers and 56% of the total weight was made up by rainbow trout. Brook trout comprised only 4% by numbers and 11% by weight. Rainbow trout also exhibited a size advantage over brook trout (Fig. 5). Blacknose dace (*Rhinichthys atratulus*) was the only other fish species present.

Benthic macroinvertebrates from our samples included Heptageniidae mayflies, Leutridae, Peltoperlidae, Perlidae, and Perlodidae stoneflies, and Glossosomatidae, Hydropsychidae, Limnephilidae, and Polycentropodidae caddisflies. A total of only 16 taxa was collected and the overall number of organisms was low.

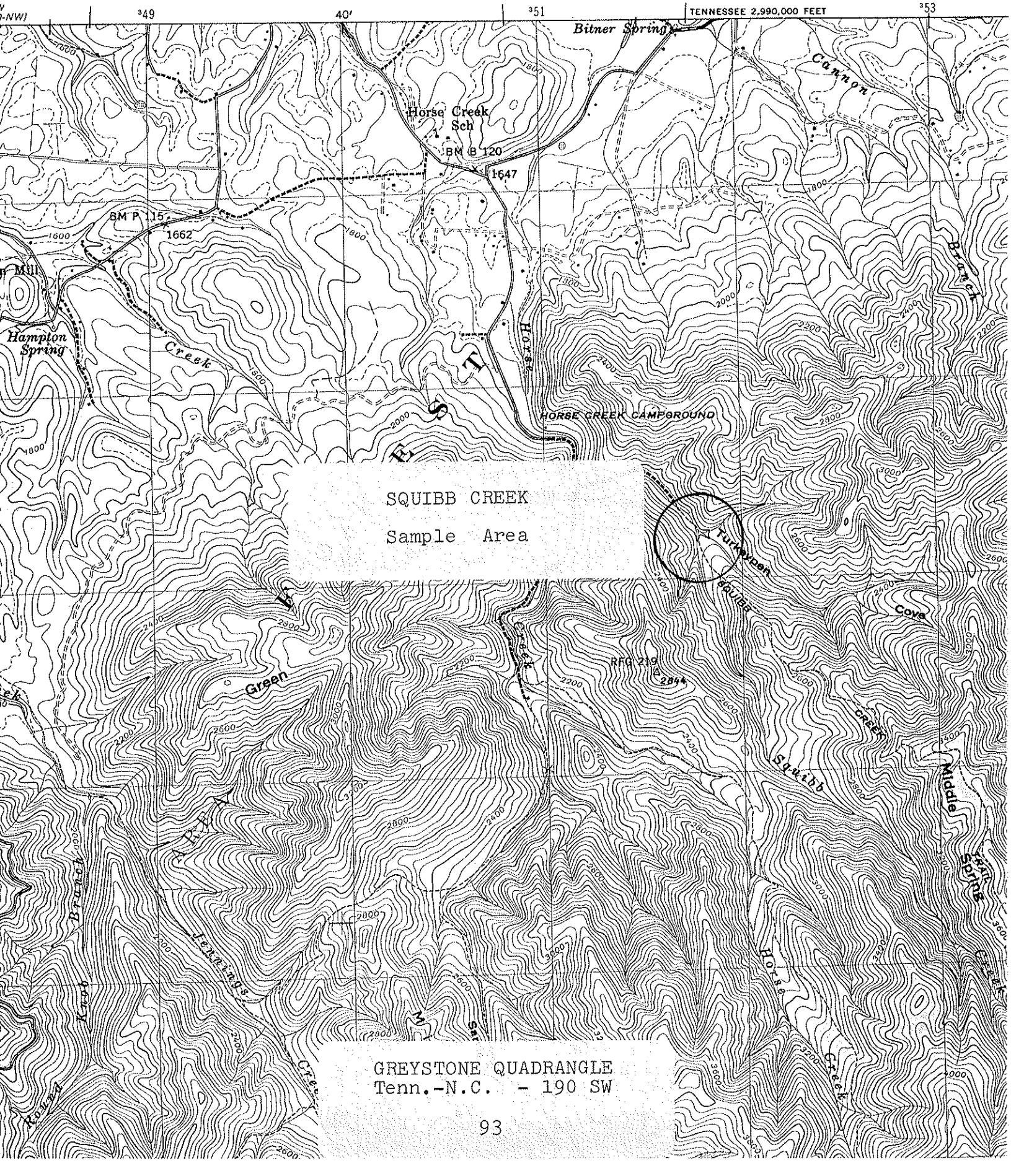
Management Recommendations:

1. Remove the no fishing restriction from this stream.

2. Continue to remove rainbows and supplement the brook trout by stocking wild fish from other streams.

TATES
EY AUTHORITY
ES BRANCH

GREYSTONE QUADRANGL
TENNESSEE-NORTH CAROLIN
7.5 MINUTE SERIES (TOPOGRAPHIC)



GREYSTONE QUADRANGLE
Tenn.-N.C. - 190 SW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 360606N - 823848W

Stream Squibb Creek Length of Sample 300 ft.

Area or Station (see below) Reach 06010108-

County Greene Date/Time 8 August 1989/1030

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 11.6 ft. Average Depth 0.5 ft. Maximum Depth 3.3 ft.
2. Estimated Percent of Stream in Pools is 25 %
3. Estimated Percent Pool Bottom is Mud - % Silt 5 % Sand 10 %
   Clay - % Gravel 25 % Rubble 40 % Boulders 20 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 5 % Sand 5 %
   Bedrock - % Other Gravel 20% Rubble 50% Boulders 20%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 20 %
   of stream, Average in 50 %, Poor in 30 %.
7. Shade or Canopy Good over 95 % of Stream.
8. Flow (c.f.s.) 3.7 : Flow compared to Normal: Low Normal X High
9. D.O. 9.1 ppm Temp. 59.9°F % Saturation 90
10. Present Weather Partly cloudy, cool and mild; air temperature 59°F
11. Past Weather (last 24 hours) Partly cloudy, cool and mild.
12. D.O. 9.1 pH 6.8 Temp. 59.9 Conductivity 15 micromho/cm
13. Comments: Sample location at the mouth of Turkeypen Cove. This is is a small, very clean stream, however, good cover for fish may be somewhat limiting. Recent fire in watershed.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River — Lat-Long 360606N - 823848W

Body of Water Squibb Creek — Date 8 August 1989.

County or River Mile Greene — Reach 06010108-

Type of Sampling Electrofishing — Pool Elevation 1980 ft.

Gear Type One backpack shocker at 850 v. DC and 500 pps. — Time 1500 - 1710

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salvelinus fontinalis	356	3	3	0.05			
" "	"	1	6	0.09			
Oncorhynchus mykiss	353	8	2	0.07			
" "	"	6	3	0.06			
" "	"	1	5	0.07			
" "	"	4	6	0.39			
" "	"	1	7	0.15			
Rhinichthys atratulus	351	77	1-3	0.45			

* Label Parameter Listed

Field Notes: 300 ft. sample length and 2 passes. One large rainbow (approx. 10-12 in.) escaped capture at a large pool.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

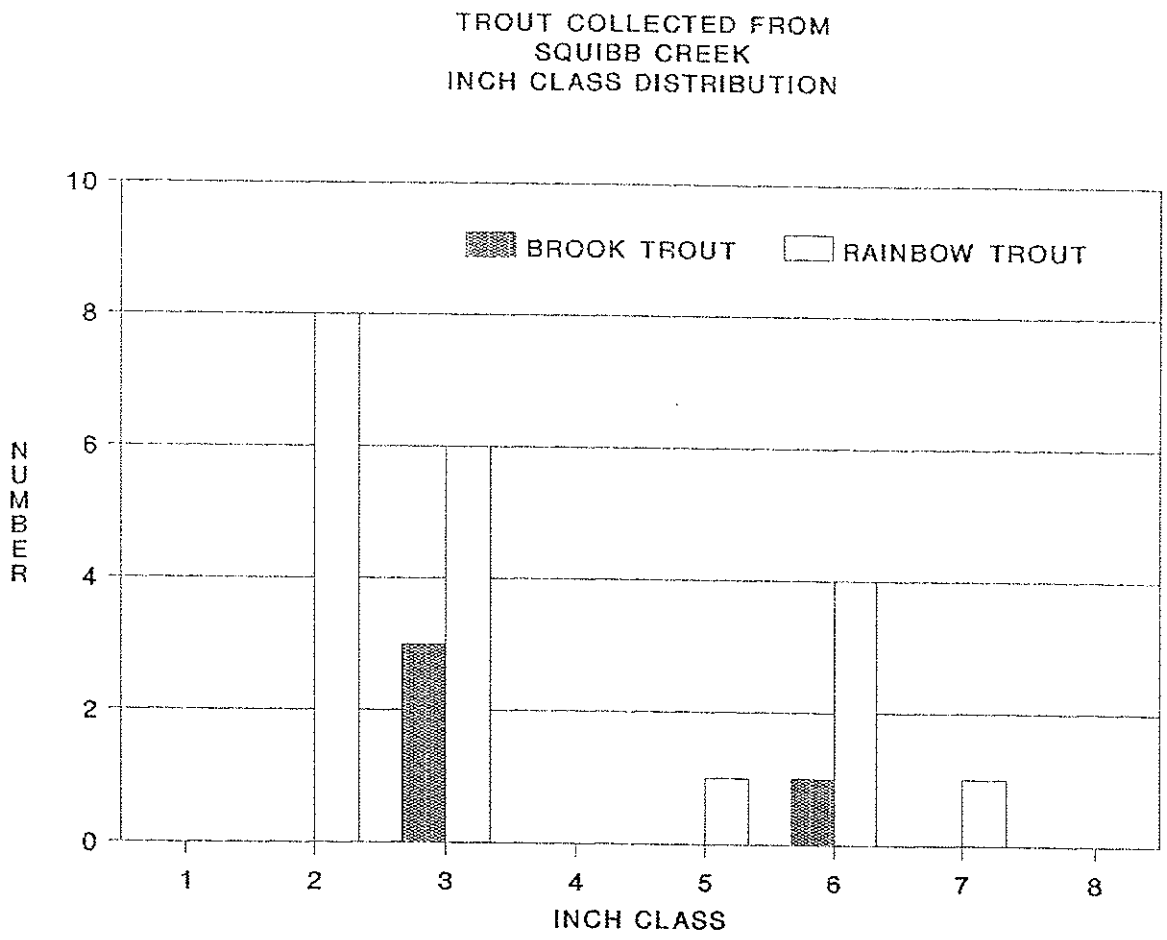

TROUT COLLECTED FROM
SQUIBB CREEK
INCH CLASS DISTRIBUTION
BROOK TROUT
RAINBOW TROUT
NUMBER
0
2
4
6
8
10
1
2
3
4
5
6
7
8
INCH CLASS

Figure 5.

Squibb Creek: Edge Surber sample

8 August 1989 Field # 152

Greene Co., TN; At the mouth of Turkeypen Cove branch. Coordinates: 360606N - 823848W. Greystone, Tenn.-N.C., # 190 SW Quad. Reach # 06010108-.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLLEMBOLA:	1
DIPTERA:	
Chironomidae	6
Unid. pupa	1
PLECOPTERA:	
Leuctridae/*Leuctra*	4
Peltoperlidae/*Peltoperla*	1
Perlidae/*Acroneuria abnormis*	1
TRICHOPTERA:	
Glossosomatidae/*Glossosoma*	3
Hydropsychidae/*Symphitopsyche macleodi*	1
Limnephilidae/*Pycnopsyche*	1
Polycentropodidae/*Polycentropus*	3
Unid. early instar	1
	24

Volumetric Displacement was 0.4 ml.

Squibb Creek: Middle Surber sample

8 August 1989 Field # 152

Greene Co., TN; At the mouth of Turkeypen Cove branch. Coordinates: 360606N - 823848W. Greystone, Tenn.-N.C., # 190 SW Quad. Reach # 06010108-.

TAXA	NUMBER
DIPTERA:	
Blephariceridae/*Blepharicera*	1
Chironomidae	5
EPHEMEROPTERA:	
Heptageniidae/*Epeorus* (*Iron*)	3
Stenonema	2
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	1
Perlidae/*Acroneuria abnormis*	1
Perlodidae	3
TRICHOPTERA:	
Glossosomatidae/*Glossosoma* larvae	3
pupae	5
Hydropsychidae/*Symphitopsyche macleodi*	3
Limnephilidae/*Neophylax mitchelli*	2
Neophylax pupa	1
	30

Volumetric Displacement was 0.2 ml.

Squibb Creek: Qualitative sample

8 August 1989 Field # 152

Greene Co., TN; At the mouth of Turkeypen Cove branch. Coordinates: 360606N - 823848W. Greystone, Tenn.-N.C., # 190 SW Quad. Reach # 06010108-.

TAXA	NUMBER
ODONATA:	
Aeshnidae/*Boyeria grafiana*	1
Cordulegastridae/*Cordulegaster erronea*	1
PELCOPTERA:	
Perlidae/*Acroneuria abnormis*	1
Perlesta	1
	4

Sarvis Cove Creek

One qualitative fishery survey was conducted in August 1989:

Location and Length - Tributary to Horse Creek (Nolichucky River trib.). The sample area was located approximately 0.4 mi upstream of the mouth, at the road crossing, and was sampled on 1 August 1989. It was 300 ft. in length and averaged 14.8 ft. in width. The site was in Greene County. Greystone Quadrangle.

Gear Type - The site was sampled using a single backpack electrofishing unit operating at 850 V. DC and making three passes.

Water Quality - Data were taken from midstream on 1 August 1989: DO - 9.1 ppm, pH - 6.8, Temperature - 60.8°F, Conductivity - 11 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples and one qualitative sample at the site. The Surber samples averaged 87 organisms, 0.6 ml. volumetric displacement. All benthos combined represented 39 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Brook trout	15	14.9	0.38	12.3
Rainbow trout	49	48.5	2.42	78.1
Nongame Fish Forage Fish	37	36.6	0.30	9.7
Total	101		3.10	

Comments - This stream was surveyed primarily to assess its trout population. Prior to 1980, this stream was known only as a wild rainbow trout (*Oncorhynchus mykiss*) stream (Bivens 1984). The Forest Service has worked long and hard to try to establish brook trout (*Salvelinus fontinalis*) through egg plants, stocking fingerlings, rainbow trout removal, and building barriers. In 1987 the stream was closed to all fishing. Also, the last rainbow trout removal was conducted in 1987. At that time 24 rainbows were removed.

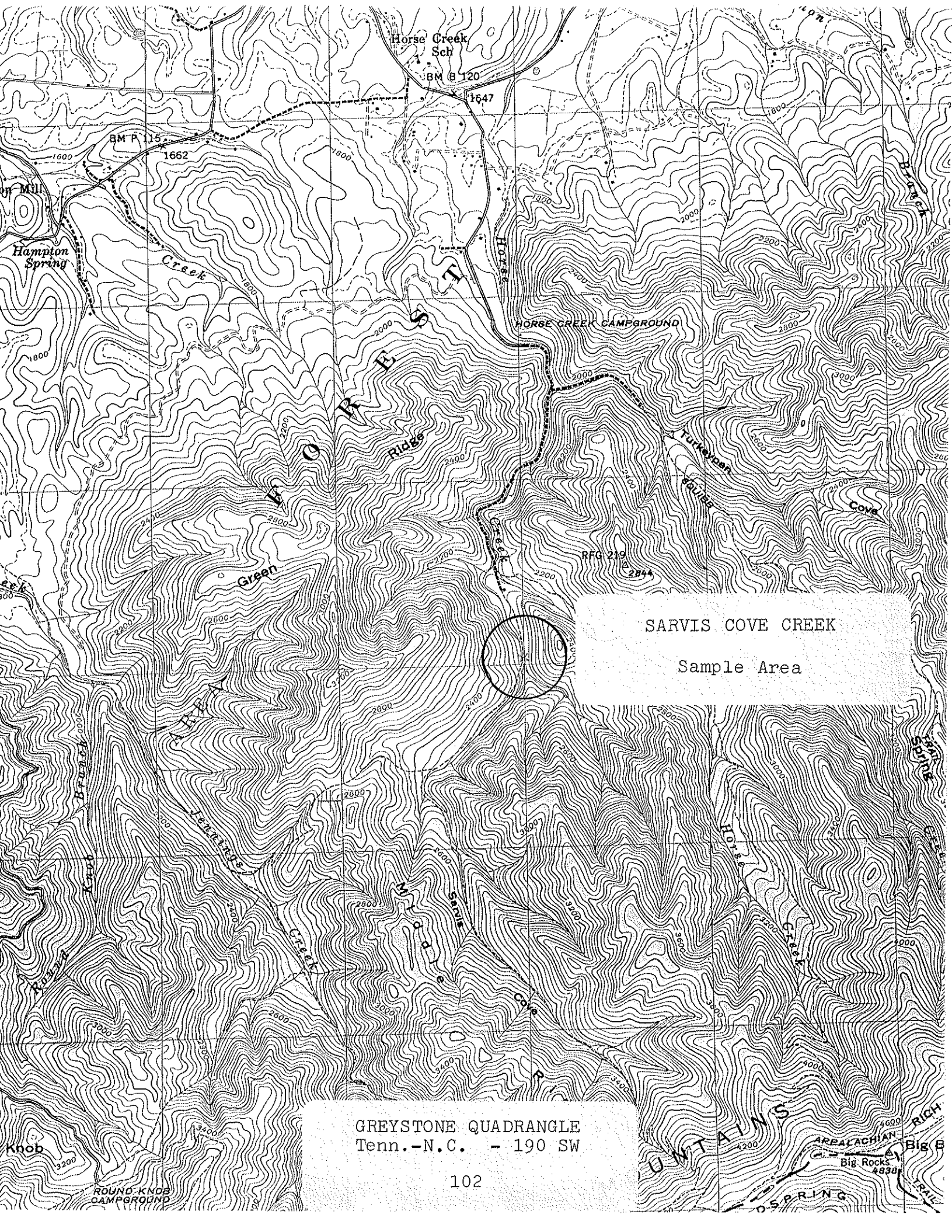
We collected a total of 101 fish weighing 3.1 lb. from a 300 ft. sample area that included the man-made barrier at its lower end. Of these, about 49% of the total numbers and 78% of the total weight was made up by rainbow trout. Brook trout comprised about 15% by numbers and 12% by weight. Rainbow trout also exhibited a size advantage over brook trout (Fig. 6). Blacknose dace (*Rhinichthys atratulus*) was the only other fish species present.

Benthic macroinvertebrates from our samples included Baetidae, Leptophlebiidae, and Heptageniidae mayflies, Chloroperlidae, Leuctridae, Peltoperlidae, Perlidae, and Perlodidae stoneflies, Brachycentridae, Glossosomatidae, Hydropsychidae, Lepidostomatidae, Limnephilidae, Odontoceridae, Philopotamidae, and Rhyacophilidae caddisflies, and Elmidae and Eubriidae beetles. A total of no less than 39 taxa was collected at this site.

Management Recommendations:

1. Remove the no fishing restriction from this stream.

2. Continue to remove rainbows and supplement the brook trout by stocking wild fish from other streams.



GREYSTONE QUADRANGLE
Tenn.-N.C. - 190 SW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 360525N - 823918W

Stream Sarvis Cove Creek " Length of Sample 300 ft.

Area or Station (see below) Reach 06010108-

County Greene Date/Time 1 August 1989/1030

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 14.8 ft. Average Depth 0.6 ft. Maximum Depth 2.0 ft.
2. Estimated Percent of Stream in Pools is 40 %
3. Estimated Percent Pool Bottom is Mud - % Silt 5 % Sand 10 %
   Clay - % Gravel 20 % Rubble 30 % Boulders 30 %
   Bedrock 5 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 5 % Sand 10 %
   Bedrock 5 % Other Gravel 20% Rubble 40% Boulders 20%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 95 % of Stream.
8. Flow (c.f.s.) 9.9 : Flow compared to Normal: Low Normal High X
9. D.O. 9.1 ppm Temp. 60.8°F % Saturation 93
10. Present Weather Cloudy, warm, & humid; air temperature - 74°F.
11. Past Weather (last 24 hours) Partly cloudy with thunderstorms.
12. D.O. 9.1 pH 6.8 Temp. 60.8 Conductivity 11 micromho/cm
13. Comments: Sample location approx. 0.4 mi. upstream of the mouth, at road crossing. Sample area included man-made barrier to fish movement.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Body of Water Sarvis Cove Creek
County or River Mile Greene
Type of Sampling Electrofishing
Gear Type One backpack shocker at 850 v. DC and 500 pps.

Lat-Long 360525N - 823918W
Date 1 August 1989
Reach 06010108-
Pool Elevation 2100 ft.
Time 1230 - 1640

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salvelinus fontinalis	356	12	3	0.16			
" "	"	2	5	0.14			
" "	"	1	6	0.08			
Oncorhynchus mykiss	353	14	2	0.11			
" "	"	15	3	0.16			
" "	"	9	5	0.50			
" "	"	5	6	0.51			
" "	"	4	7	0.60			
" "	"	1	8	0.21			
" "	"	1	9	0.33			
Rhinichthys atratulus	351	37	1-3	0.30			

* Label Parameter Listed

Field Notes: 300 ft. sample length. Made three separate passes lasting approx. 30 min. each.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

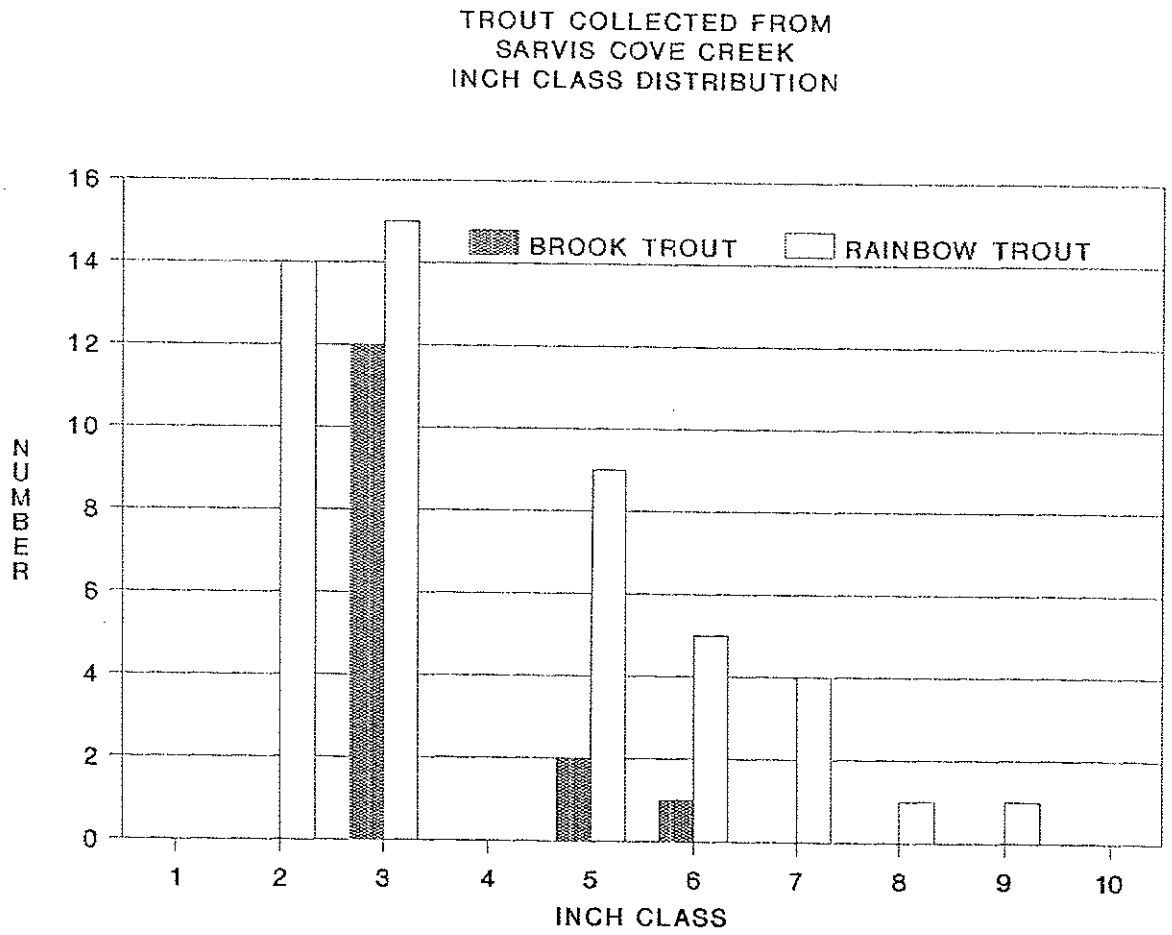

TROUT COLLECTED FROM
SARVIS COVE CREEK
INCH CLASS DISTRIBUTION
BROOK TROUT
RAINBOW TROUT
NUMBER
INCH CLASS
0
2
4
6
8
10
12
14
16
1
2
3
4
5
6
7
8
9
10

Figure 6.

Sarvis Cove Creek: Edge Surber sample

1 August 1989 Field # 147

Greene Co., TN; Approx. 0.4 mi. upstream from the mouth. Coordinates: 360525N - 823918W. Greystone, Tenn., # 190 SW Quad. Reach # 06010108-.

TAXA	NUMBER
DIPTERA:	
Chironomidae	2
EPHEMEROPTERA:	
Heptageniidae/*Heptagenia*	1
PLECOPTERA:	
Chloroperlidae	1
TRICHOPTERA:	
Glossosomatidae/*Glossosoma*	2
Rhyacophilidae/*Rhyacophila*	1
R. fuscula	1
	8

Volumetric Displacement was 0.2 ml.

Sarvis Cove Creek: Midstream Surber sample

1 August 1989 Field # 147

Greene Co., TN; Approx. 0.4 mi. upstream from the mouth. Coordinates: 360525N - 823918W. Greystone, Tenn., # 190 SW Quad. Reach # 06010108-.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	11
COLLEMBOLA:	2
COLEOPTERA:	
Elmidae/Optioservus ovalis adult	1
Oulimnius latiusculus larva	1
Eubriidae/Ectopria larvae	2
DIPTERA:	
Ceratopogonidae/Palpomyia complex	3
Chironomidae	78
Simuliidae	2
Tipulidae/Dicranota	2
Hexatoma	1
Pseudolimnophila	1
Unid. pupae	2
HYDRACARINA:	1
PLECOPTERA:	
Chloroperlidae	2
Leuctridae/Leuctra	7
Perlidae/Acroneuria abnormis	2
Unid. early instar	1
TRICHOPTERA:	
Brachycentridae/Micrasema	1
Glossosomatidae/Glossosoma larvae	12
pupae	5
Hydropsychidae/Parapsyche cardis	1
Symphitopsyche macleodi	16
S. sparna	2
Unid. pupa	1
Limnephilidae/Pycnopsyche	1
Philopotamidae/Dolophilodes distinctus	3
Rhyacophilidae/Rhyacophila nigrita	4
	165

Volumetric Displacement was 1.0 ml.

Sarvis Cove Creek: Qualitative sample

1 August 1989 Field # 147

Greene Co., TN; Approx. 0.4 mi. upstream from the mouth. Coordinates: 360525N - 823918W. Greystone, Tenn., # 190 SW Quad. Reach # 06010108-.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/Oulimnius latiusculus adults	2
Eubriidae/Ectopria larva	1
DIPTERA:	
Chironomidae	4
Tipulidae/Dicranota	1
Hexatoma	3
Tipula	1
EPHEMEROPTERA:	
Baetidae/Baetis	4
Leptophlebiidae	1
Heptageniidae/Epeorus (Iron)	2
Heptagenia	2
Stenonema	2
HEMIPTERA:	
Gerridae/Gerris (Aquarius) remigis	3
ODONATA:	
Cordulegastridae/Cordulegaster erronea	1
Gomphidae/Lanthus vernalis	12
PLECOPTERA:	
Leuctridae/Leuctra	3
Peltoperlidae/Peltoperla	9
Perlidae/Acroneuria abnormis	8
Perlesta	1
Perlodidae	3
TRICHOPTERA:	
Glossosomatidae/Glossosoma	1
Hydropsychidae/Diplectrona modesta	1
Symphitopsyche macleodi	24
Lepidostomatidae/Lepidostoma	1
Limnephilidae/Pycnopsyche larvae	6
pupa	1
Odontoceridae/Psilotreta frontalis	1
Philopotamidae/Dolophilodes distinctus	3
Rhyacophilidae/Rhyacophila nigrita	3
	104

Big Limestone Creek and Tributaries

One qualitative fishery survey was conducted on Big Limestone Creek and two samples on two of its tributaries in October 1989:

Location and Length - Tributary to the Nolichucky River. The sample area was located at the bridge on Keebler Rd., stream mi. 0.6 and was sampled on 9 October 1989. It was 300 ft. in length and averaged 96.2 ft. in width. The site was in Washington and Greene Counties. Chuckey Quadrangle.

Gear Type - The site was sampled using two backpack electrofishing units operating at 110 V. AC and shocking into a 30 ft. seine in the riffle areas.

Water Quality - Data were taken from midstream on 9 October 1989: DO - 10.5 ppm, pH - 8.2, Temperature - 53.8 °F, Conductivity - 350 micromhos/cm.

Benthos Collection - Benthic organisms were collected from three square-foot Surber samples and one qualitative sample at the site. The Surber samples averaged 123 organisms, 0.73 ml. volumetric displacement. All benthos combined represented 36 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Smallmouth bass	9	2.0	3.25	5.4
Largemouth bass	3	0.7	0.1	0.2
Rock bass	10	2.2	2.1	3.5
Redbreast sunfish	21	4.7	1.34	2.2
Bluegill	6	1.3	0.16	0.3
Green sunfish	1	0.2	0.18	0.3
Nongame Fish	86	19.3	40.61	67.2
Forage Fish	310	69.5	12.74	21.1
Total	446		60.48	

(See data sheets for tributary species list)

Comments:

This stream was surveyed primarily to develop a species diversity list and collect stream information for TADS. No previous studies or fish collections were available from this locality.

We sampled one site in the lower reach of the stream and two sites on it's tributaries. We were unable to return and sample an upstream site as previously planned.

A total of 446 fish weighing 60.48 lb. and comprising 23 species was collected. The stream at this point averages about 96 ft. and sampling was difficult. Game fish included smallmouth bass (*Micropterus dolomieui*), largemouth bass (*M. salmoides*), rock bass (*Ambloplites rupestris*), redbreast sunfish (*Lepomis auritus*), green sunfish (*L. cyanellus*), and bluegill (*L. macrochirus*). Based on numbers and size, smallmouth bass, rock bass, and redbreast sunfish were the primary game species present (Fig. 7). Both largemouth bass and bluegill were small and green sunfish were represented by a single specimen.

Smallmouth bass comprised 5.4%, rock bass 3.5%, and redbreast sunfish 2.2% of the total weight of all fish collected. Nongame fish, primarily black redhorse (*Moxostoma duquesnei*) and hog suckers (*Hypentelium nigricans*), made up about 67% of the total weight. Fairly tolerant species dominate the fish fauna with the exception of telescope shiners (*Notropis telescopus*) and rosyface shiners (*N. rubellus micropteryx*). However, these may occur because of sample site proximity to the Nolichucky River instead of an indication of water quality. White suckers (*Catostomus commersoni*), creek chubs (*Semotilus atromaculatus*), mosquitofish (*Gambusia affinis*), and banded sculpin (*Cottus carolinae*) were collected from tributary sites only. The addition of these to the list made a total of 27 species collected from the watershed.

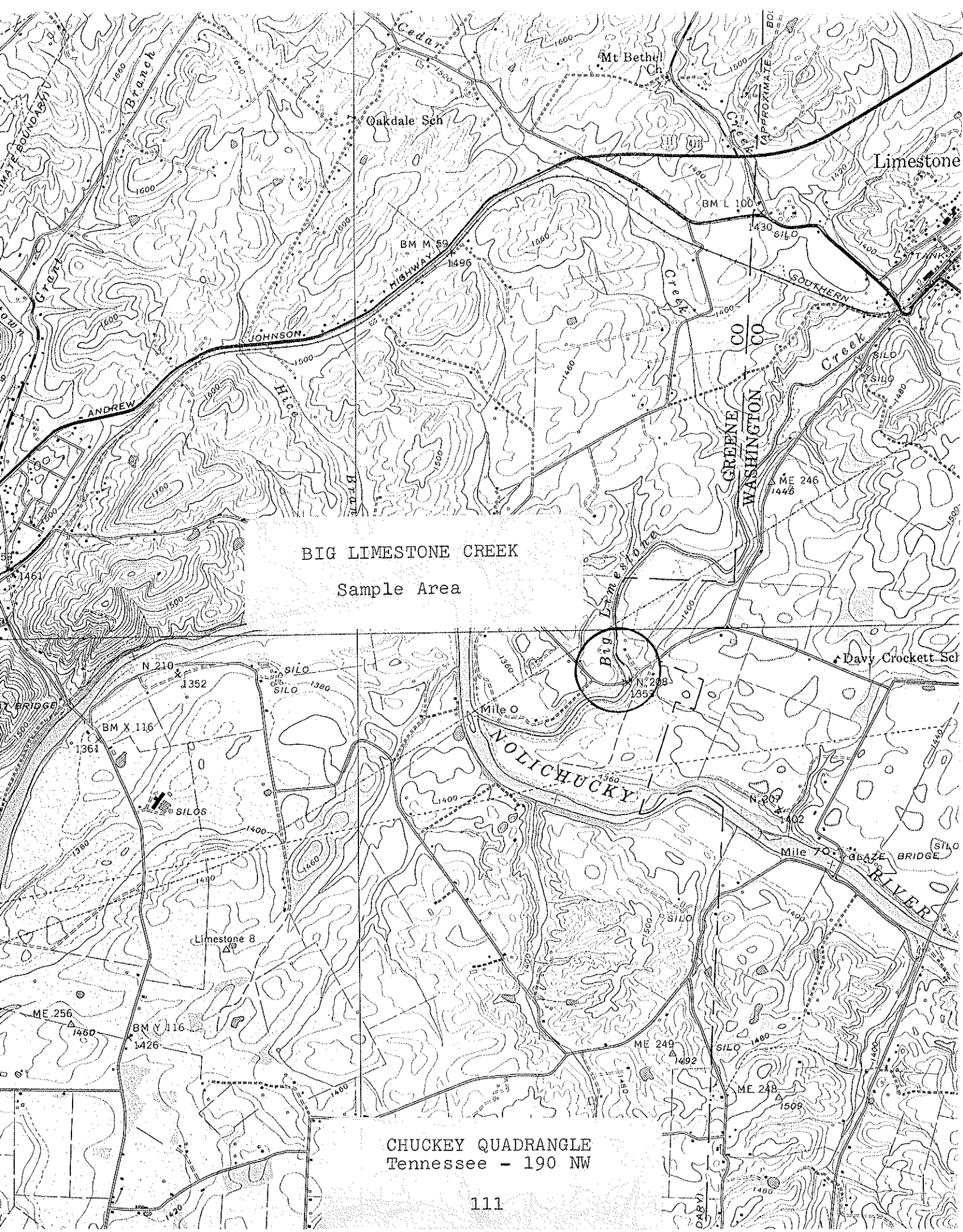
Benthic macroinvertebrates from our samples included Baetidae, Ephemeridae, Heptageniidae, and Oligoneuriidae mayflies, Hydropsychidae, Polycentropodidae, and Psychomyiidae caddisflies, and Elmidae and Eubriidae beetles. Asian clams (*Corbicula fluminea*), fingernail clams (*Sphaerium*), limpets (*Ferrissia*), and periwinkle snails (*Goniobasis simplex*) were also present.

Management Recommendations:

1. No specific management is suggested other than protection of the watershed from further deterioration.

2. Conduct additional sampling on the stream and it's tributaties.

3. Publicize information on this stream in a regional stream fishing brochure.



CHUCKEY QUADRANGLE
Tennessee - 190 NW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 361221N - 823902W

Stream Big Limestone Creek" Length of Sample 300 ft.

Area or Station (see below) Reach 06010108-30,0

County Washington and Greene Date/Time 9 October 1989/ 1530

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 96.2 ft. Average Depth 0.5 ft. Maximum Depth 3.0 ft.
2. Estimated Percent of Stream in Pools is 25 %
3. Estimated Percent Pool Bottom is Mud 5 % Silt 20 % Sand 10 %
   Clay - % Gravel 10 % Rubble 30 % Boulders 20 %
   Bedrock 5 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 20 % Sand 10 %
   Bedrock 20 % Other Gravel 10% Rubble 30% Boulders 10%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average X Scarce
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 25 % of Stream.
8. Flow (c.f.s.) 57.7 : Flow compared to Normal: Low Normal X High
9. D.O. 10.9 ppm Temp. 53.8°F % Saturation 98
10. Present Weather Clear and cool; air temperature - 56°F.
11. Past Weather (last 24 hours) Clear, cold overnight.
12. D.O. 10.5 pH 8.2 Temp. 53.8 Conductivity 350 micromho/cm
13. Comments: Sample location at bridge on Keebler Road, stream mi. 0.6. Siltation is fairly heavy. Bedrock ledges and boulders provide fairly good cover for fish.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Body of Water Big Limestone Creek
County or River Mile Washington & Greene
Type of Sampling Electrofishing
Gear Type Two backpack shockers at 110 v. AC.

Lat-Long 361221N - 823902W
Date 9 October 1989
Reach 06010108-30,0
Pool Elevation 1342 ft.
Time 1030 - 1100 and 1300 - 1400

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus dolomieui	218	1	5	0.06			
" "	"	1	6	0.10			
" "	"	2	8	0.63			
" "	"	3	9	1.25			
" "	"	1	10	0.51			
" "	"	1	11	0.70			
M. salmoides	220	1	3	0.02			
" "	"	2	4	0.08			
Ambloplites rupestris	13	2	3	0.05			
" "	"	1	5	0.13			
" "	"	2	6	0.38			
" "	"	5	7	1.54			
Lepomis auritus	201	12	3	0.44			
" "	"	2	4	0.15			
" "	"	6	5	0.58			
" "	"	1	6	0.17			
L. macrochirus	206	1	2	0.01			
" "	"	4	3	0.10			
" "	"	1	4	0.05			
L. cyanellus	202	1	6	0.18			
Continued on next page.							

* Label Parameter Listed

Field Notes: 300 ft. sample length. Used shockers with 30 ft. seine on the downstream side of the bridge.

Name of Collector(s): R.D. Bivens, C.E. Williams, D.E. Lane, S.K. Lambert, and W.H. Schacher

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Lat-Long 361221N - 823902W
Body of Water Big Limestone Creek
Date 9 October 1989
County or River Mile Washington & Greene
Reach 06010108-30,0
Type of Sampling Electrofishing
Pool Elevation 1342 ft.
Gear Type Two backpack shockers at 110 v. AC.
Time 1030 - 1100 and 1300 - 1400

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Moxostoma duquesnei	229	38	3-17	21.64			
M. erythrurum	230	2	15	2.64			
Hypentelium nigricans	166	45	3-12	15.76			
Ictalurus natalis	174	1	10	0.57			
Campostoma anomalum	25	144	2-7	8.25			
Nocomis micropogon	234	27	1-8	3.41			
Notropis coccogenis	248	8	1-5	0.18			
N. chrysocephalus	249	6	3	0.13			
N. galacturus	253	5	3-4	0.10			
N. rubellus micropteryx	260	37	1-2	0.12			
N. spilopterus	269	25	2-3	0.15			
N. telescopus	272	23	1-3	0.07			
N. volucellus	277	14	1-2	0.04			
Pimephales notatus	334	3	1-3	0.04			
Rhinichthys atratulus	351	3	1-2	0.01			
Etheostoma blennioides	81	7	2-5	0.20			
E. simoterum	111	8	1-2	0.04			

* Label Parameter Listed

Field Notes: 300 ft. sample length.

Name of Collector(s): R.D. Bivens, C.E. Williams, D.E. Lane, S.K. Lambert, and W.H. Schacner

WR-0525

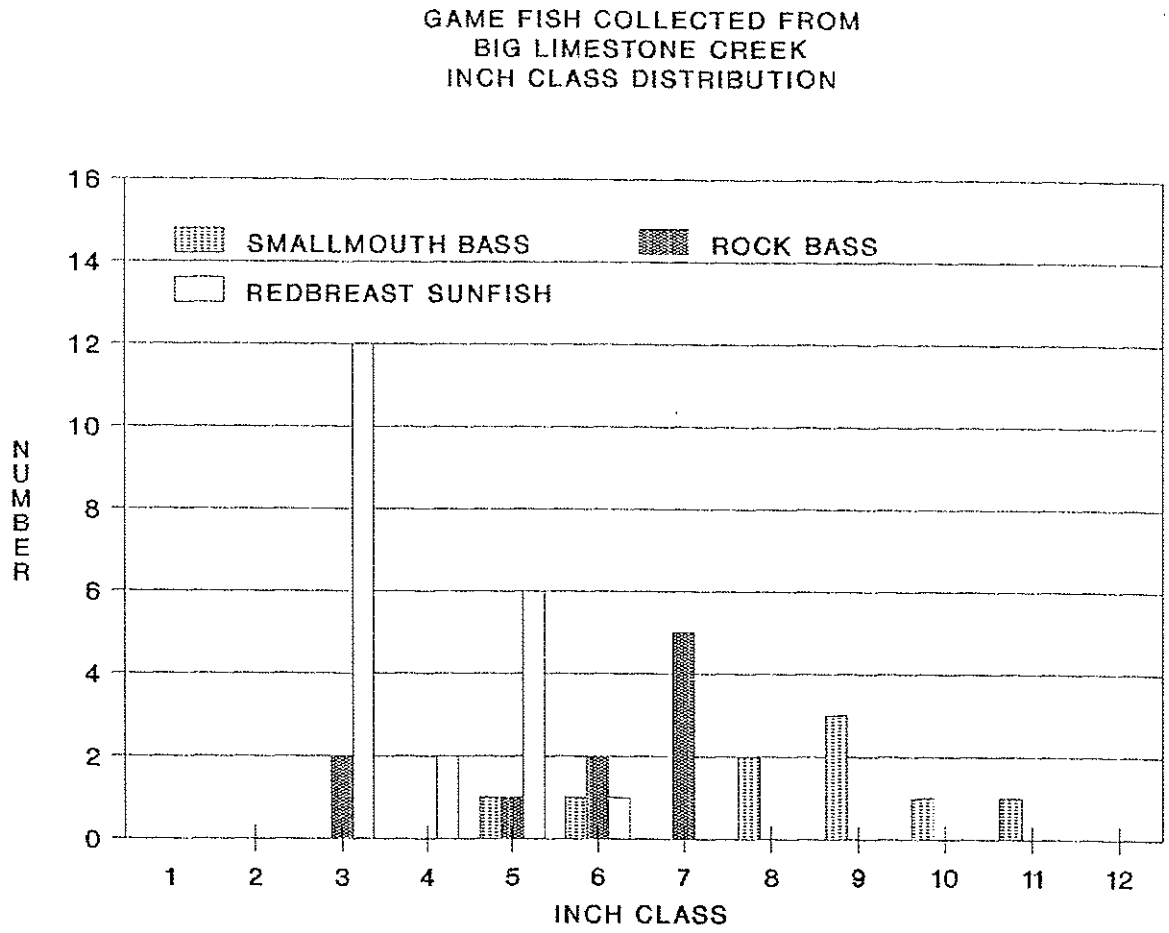

GAME FISH COLLECTED FROM
BIG LIMESTONE CREEK
INCH CLASS DISTRIBUTION
SMALLMOUTH BASS
ROCK BASS
REDBREAST SUNFISH
NUMBER
0
2
4
6
8
10
12
14
16
1
2
3
4
5
6
7
8
9
10
11
12
INCH CLASS

Figure 7.

Big Limestone Creek: Right Edge Surber sample

9 October 1989 Field # 166

Greene & Washington Cos., TN; At the bridge on Keebler Road, approx. 0.6 mi. upstream of mouth. Coordinates: 361221N - 823902W. Chuckey, Tenn., # 190 NW Quad. Reach # 06010108-30,0.

TAXA		NUMBER
ANNELIDA:		
Hirudinea		1
Oligochaeta		2
COLEOPTERA:		
Elmidae/*Stenelmis*	larva	1
	adult	1
DECAPODA:		
Unid. crayfish		1
DIPTERA:		
Chironomidae		6
Tipulidae/*Antocha*	larvae	9
	pupa	1
Unid. pupa		1
EPHEMEROPTERA:		
Baetidae/*Baetis*		13
Heptageniidae/*Stenacron*		30
Stenonema		18
ISOPODA:		
Asellidae/*Lirceus*		15
MEGALOPTERA:		
Corydalidae/*Corydalus cornutus*		1
ODONATA:		
Coenagrionidae/*Argia*		3
PELECYPODA:		
Sphariidae/*Sphaerium*		1
TRICHOPTERA:		
Hydropsychidae/*Cheumatopsyche*		7
Hydropsyche betteni/depravata		1
H. frisoni		2
Psychomyiidae/*Psychomyia flavida*		9
		123

Volumetric Displacement was 0.8 ml.

Big Limestone Creek: Left Edge Surber sample

9 October 1989 Field # 166

Greene & Washington Cos., TN; At the bridge on Keebler Road, approx. 0.6 mi. upstream of mouth. Coordinates: 361221N - 823902W. Chuckey, Tenn., # 190 NW Quad. Reach # 06010108-30,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	4
COLEOPTERA:	
Elmidae/*Stenelmis* larvae	3
adults	3
Eubriidae/*Ectopria*	1
DIPTERA:	
Tipulidae/*Antocha*	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	10
Heptageniidae/*Heptagenia*	1
Stenacron	2
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	2
ISOPODA:	
Asellidae/*Asellus*	1
LEPIDOPTERA:	
Pyralidae/*Petrophila*	1
PELECYPODA:	
Sphaeriidae/*Sphaerium*	5
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	1
Hydropsyche betteni/depravata	1
Polycentropodidae/*Polycentropus*	1
	37

Volumetric Displacement was 0.2 ml.

Big Limestone Creek: Midstream Surber sample

9 October 1989 Field # 166

Greene & Washington Cos., TN; At the bridge on Keebler Road, approx. 0.6 mi. upstream of mouth. Coordinates: 361221N - 823902W. Chuckey, Tenn., # 190 NW Quad. Reach # 06010108-30,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Elmidae/*Stenelmis* larvae	8
adults	17
Eubriidae/*Ectopria*	7
DECAPODA:	
Unid. crayfish	1
DIPTERA:	
Chironomidae	8
Empididae	1
Tipulidae/*Antocha*	4
Unid. pupa	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	35
Heptageniidae/*Stenacron*	8
Stenonema	15
Oligoneuriidae/*Isonychia*	7
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	1
ISOPODA:	
Asellidae/*Asellus*	1
Lirceus	69
LEPIDOPTERA:	
Pyralidae/*Petrophila*	2
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	1
Sialidae/*Sialis*	1

cont.

Big Limestone Creek: Midstream Surber sample cont.

TAXA	NUMBER
ODONATA:	
Coenagrionidae/*Argia*	1
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	1
Sphaeriidae/*Sphaerium*	1
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	12
Hydropsyche betteni/depravata	2
Psychomyiidae/*Psychomyia flavida*	5
	210

Volumetric Displacement was 1.2 ml.

Big Limestone Creek: Qualitative sample

9 October 1989 Field # 166

Greene & Washington Cos., TN; At the bridge on Keebler Road, approx. 0.6 mi. upstream of mouth. Coordinates: 361221N - 823902W. Chuckey, Tenn., # 190 NW Quad. Reach # 06010108-30,0.

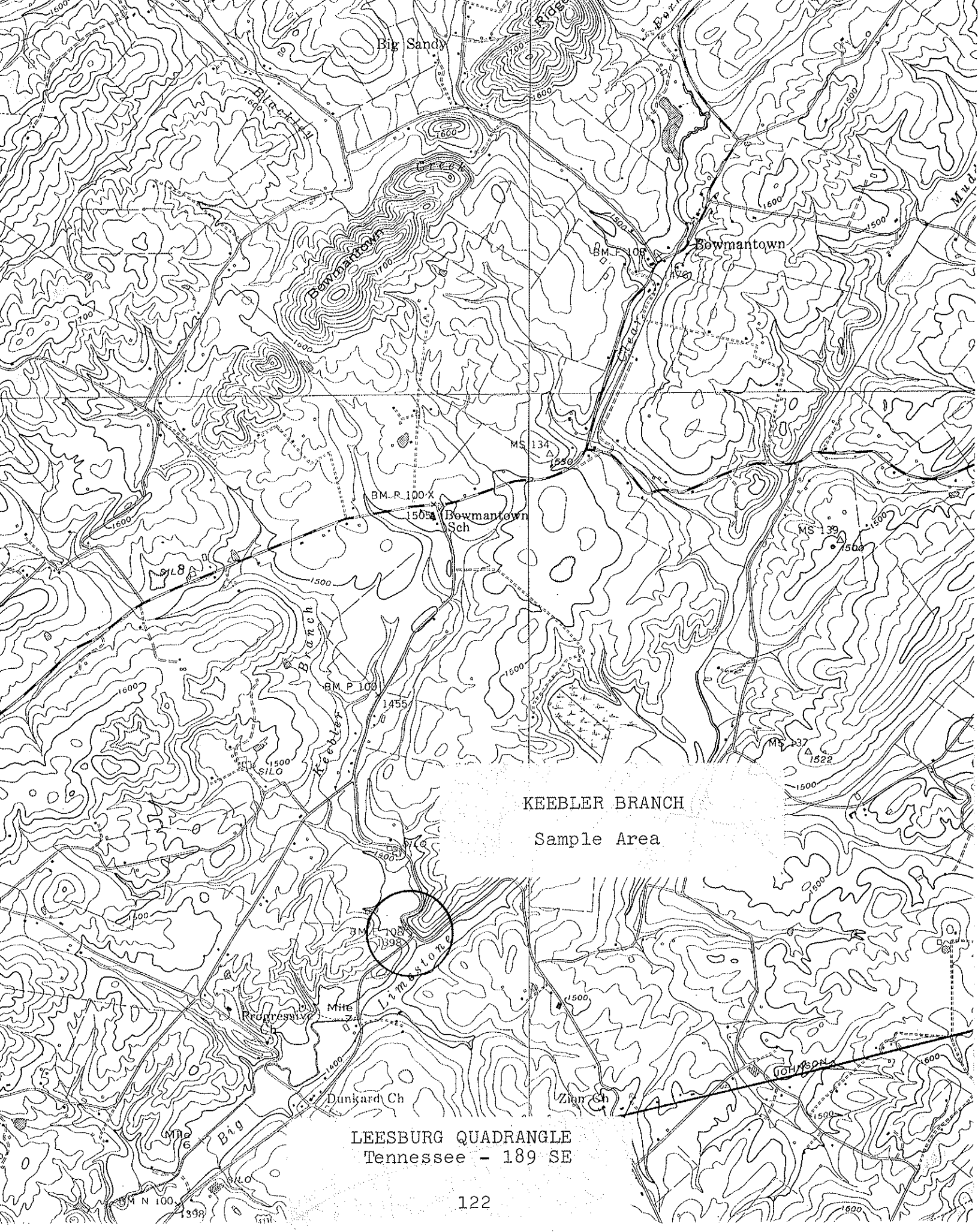
TAXA	NUMBER
ANNELIDA:	
Oligochaeta	3
COLEOPTERA:	
Elmidae/Dubiraphia adult	1
Stenelmis larvae	8
adults	3
Eubriidae/Ectopria	1
Hydrophilidae/Cymbiodyta vindicata *	1
DIPTERA:	
Tipulidae/Tipula	4
EPHEMEROPTERA:	
Baetidae/Baetis	27
Ephemeridae/Hexagenia limbata	1
Heptageniidae/Stenacron	3
Stenonema	8
Oligoneuriidae/Isonychia	9
GASTROPODA:	
Ancylidae/Ferrissia	1
Pleuroceridae/Goniobasis simplex	5
HEMIPTERA:	
Veliidae/Rhagovelia obesa	2
ISOPODA:	
Asellidae/Asellus	2
Lirceus	11
MEGALOPTERA:	
Corydalidae/Corydalus cornutus	3
Nigronia serricornis	2
Sialidae/Sialis	1

cont.

* Questionable determination.

Big Limestone Creek: Qualitative sample cont.

TAXA	NUMBER
ODONATA:	
Calopterygidae/*Calopteryx dimidiata*	1
Hetaerina americana adult male	1
Coenagrionidae/*Argia*	1
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	1
Sphaeriidae/*Sphaerium*	8
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	6
Hydropsyche betteni/depravata	13
H. frisoni	2
Unid. adult	1
	130



KEEBLER BRANCH

Sample Area

LEESBURG QUADRANGLE
Tennessee - 189 SE

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Lat-Long 361558N - 823527W
Body of Water Keebler Branch
Date 16 August 1989
County or River Mile Washington
Reach 06010108-
Type of Sampling Electrofishing
Pool Elevation 1394 ft.
Gear Type One backpack at 110 v. AC.
Time PM sampling

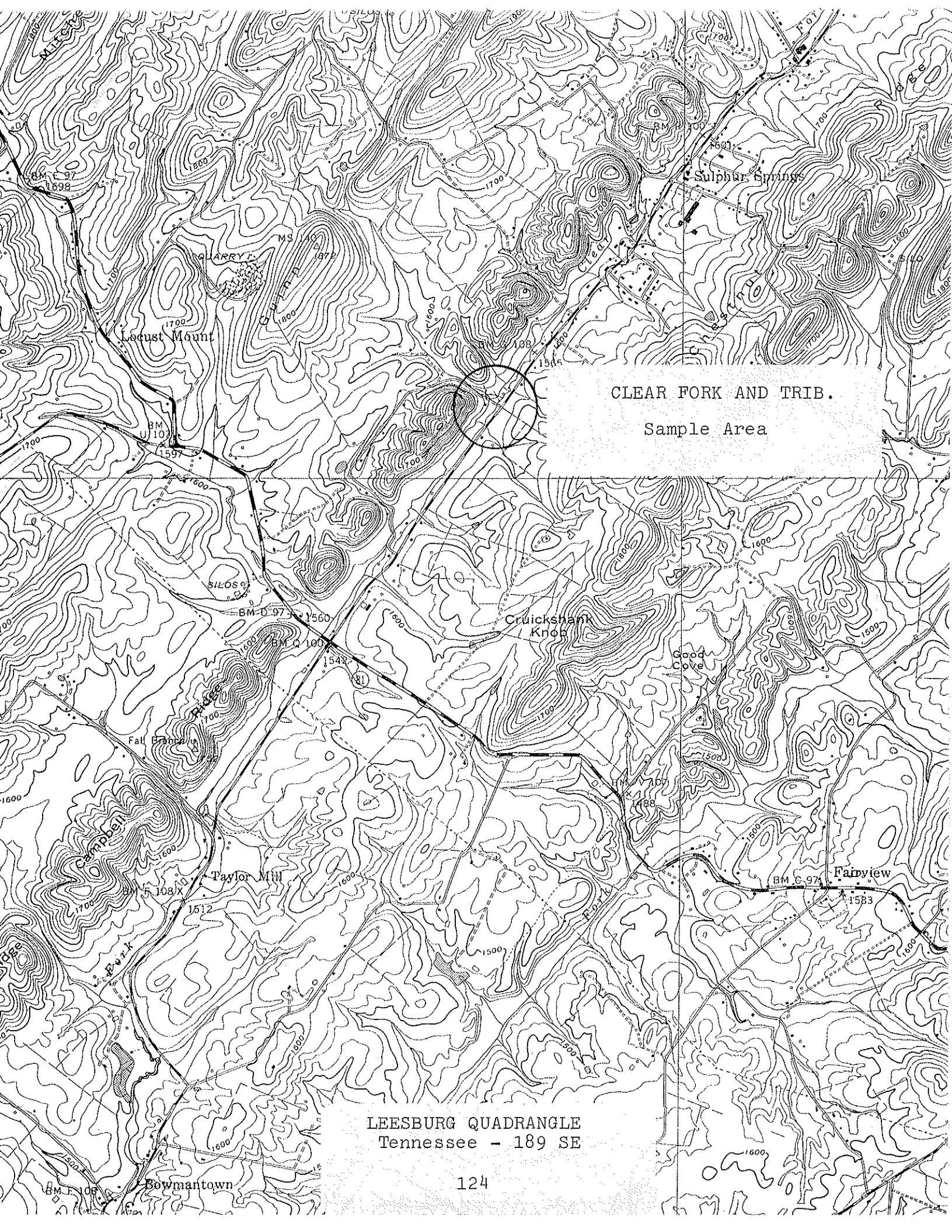
SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Lepomis auritus	201	(several)					
Catostomus commersoni	32	(common)					
Campostoma anomalum	25	(few)					
Pimephales notatus	334	1	(actual # collected)				
Rhinichthys atratulus	351	(few)					
Semotilus atromaculatus	360	2	(actual # collected)				
Etheostoma blennioides	81	1	(actual # collected)				
E. simoterum	111	(common)					
Gambusia affinis	147	1	(actual # collected)				
Cottus carolinae	40	(few)					
Goniobasis simplex		(abundant)					
Temperature - 66°F							
Avg. width - 4 to 6 ft.							
Gravel to small rubble in riffle areas with soft substrate in other areas and fairly silty.							

* Label Parameter Listed

Field Notes: Sample location upstream of bridge on McInturff Road.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525


CLEAR FORK AND TRIB.
Sample Area
Sulphur Springs
Locust Mount
Cruickshank Knob
Good Cove
Fairview
Taylor Mill
Bowmantown
Campbell
Fall Branch
LEESBURG QUADRANGLE
Tennessee - 189 SE

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Body of Water Clear Fork
County or River Mile Washington
Type of Sampling Seining
Gear Type 10 ft. seine

Lat-Long 362014N - 823311W
Date 16 August 1989
Reach 06010108-79,0
Pool Elevation 1553 ft.
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus salmoides	220	1	(small)				
Ambloplites rupestris	13	(few)					
Lepomis macrochirus	206	(several)					
Catostomus commersoni	32	(few)					
Hypentelium nigricans	166	(few)					
Campostoma anomalum	25	(few)					
Notropis chrysocephalus	249	(common)					
Pimephales notatus	334	(abundant)					
Rhinichthys atratulus	351	(several)					
Semotilus atromaculatus	360	1	(actual # collected)				
Etheostoma simoterum	111	(common)					
Gambusia affinis	147	2	(actual # collected)				
Cottus carolinae	40	(several)					
Goniobasis simplex		(abundant)					
Temperature - 68°F							
Avg. width - 4 to 6 ft.							
Gravel to mud substrate with some rubble and boulders.							
Fairly silty. Cattle observed in stream all along watershed.							

* Label Parameter Listed

Field Notes: Sample location at upper bridge crossing on Chalybeate Spring Road (two bridges on this road); upstream of bridge.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Body of Water Trib. to Clear Fork
County or River Mile Washington
Type of Sampling Seining
Gear Type 10 ft. seine

Lat-Long 362015N - 823313W
Date 16 August 1989.
Reach 06010108-
Pool Elevation 1552 ft.
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Rhinichthys atratulus	351	(few)					
Etheostoma simoterum	111	(few)					
Goniobasis simplex		(abundant)					
Avg. width about 2 ft.							

* Label Parameter Listed

Field Notes: Sample location at upper bridge crossing on Chalybeate Spring Road (two bridges on this road); trib. to left on upstream side of bridge.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

South Indian Creek

Two qualitative fishery surveys were conducted on South Indian Creek in October 1989:

Location and Length - Tributary to the Nolichucky River. Sample area 1 was located north of Flag Pond along hwy. 23 approximately 0.55 mi. upstream of the mouth of Carter Branch. It was 300 ft. in length and averaged 18.6 ft. in width. Sample area 2 was located north of Flag Pond along hwy. 23 approximately 0.4 mi. downstream of the confluence of Rice Creek and Sams Creek. It was 300 ft. in length and averaged 21.8 ft. in width. Both sites were sampled on 16 October 1989 and were in Unicoi County. Flag Pond Quadrangle.

Gear Type - Both sites were sampled using a single backpack electrofishing unit operating at 350 V. AC.

Water Quality - Data were taken from midstream at each site on 16 October 1989: Area 1, DO - 9.6 ppm, pH - 7.9, Temperature - 63.7°F, Conductivity - 65 micromhos/cm. Area 2, DO - 9.7 ppm, pH - 7.9, Temperature - 63.7°F, Conductivity - 60 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples and one qualitative sample at each site. Area 1 Surber samples averaged 19 organisms, 0.2 ml. volumetric displacement. All benthos combined represented 32 taxa. Area 2 Surber samples averaged 10 organisms, 0.07 ml. volumetric displacement. All benthos combined represented 27 taxa.

Fish Collected:

	Area 1				Area 2			
Species	No.	% by No.	Wt.	% by Wt.	No.	% by No.	Wt.	% by Wt.
Rainbow trout	10	7.8	1.86	31.4	27	19.1	2.3	43.1
Redbreast sunfish	1	0.8	0.03	0.5				
Nongame Fish	1	0.8	1.24	20.9	15	10.6	2.15	40.3
Forage Fish	116	90.7	2.8	47.2	99	70.2	0.89	16.7
Total	128		5.93		141		5.34	

Comments:

Two sites on this stream were surveyed shortly after a fishkill occurred. On 12 October 1989, a truck overturned near Flag Pond and spilled 42,000 lb. of ammonium nitrate causing the kill. Four days later we sampled one area about 0.15 mi. downstream of the spill and another site 0.1 mi. upstream of the spill. A previous spill of the same chemical occurred in August of 1987 in Sams Creek, just upstream of Flag Pond.

The fishkill was significant, but did not completely kill off fish or all aquatic organisms. From the downstream site we collected a total of 128 fish weighing 5.93 lb. and comprising 7 species. Ten resident rainbow trout (*Oncorhynchus mykiss*) along with a single redbreast sunfish (*Lepomis auritus*) were collected. The rainbow trout ranged from 5 to 9 in. (Fig. 8). Other species represented by single specimens was the black redhorse (*Moxostoma duquesnei*) and the river chub (*Nocomis micropogon*) while the most abundant species was the mottled sculpin (*Cottus bairdi*).

At the upstream site we collected a total of 141 fish weighing 5.34 lb. and comprising 6 species. Twenty-seven rainbow trout ranging from 3 to 9 in. were collected (Fig. 9). Species collected here, but not at the other site, were hog suckers (*Hypentelium nigricans*) and longnose dace (*Rhynichthys cataractae*). Mottled sculpin was the most abundant species at this site also.

Benthic macroinvertebrates from our samples at site 1 included Baetidae, Ephemeridae, Heptageniidae, and Oligoneuriidae mayflies, Capniidae, Chloroperlidae, Peltoperlidae, Perlidae, Perlodidae, and Pteronarcyidae stoneflies, and Hydropsychidae and Rhyacophilidae caddisflies. A total of 32 taxa was collected at site 1.

Many of the same families were represented at site 2, however, only 27 taxa were collected. Periwinkle snails (*Goniobasis simplex*) were collected at both sites.

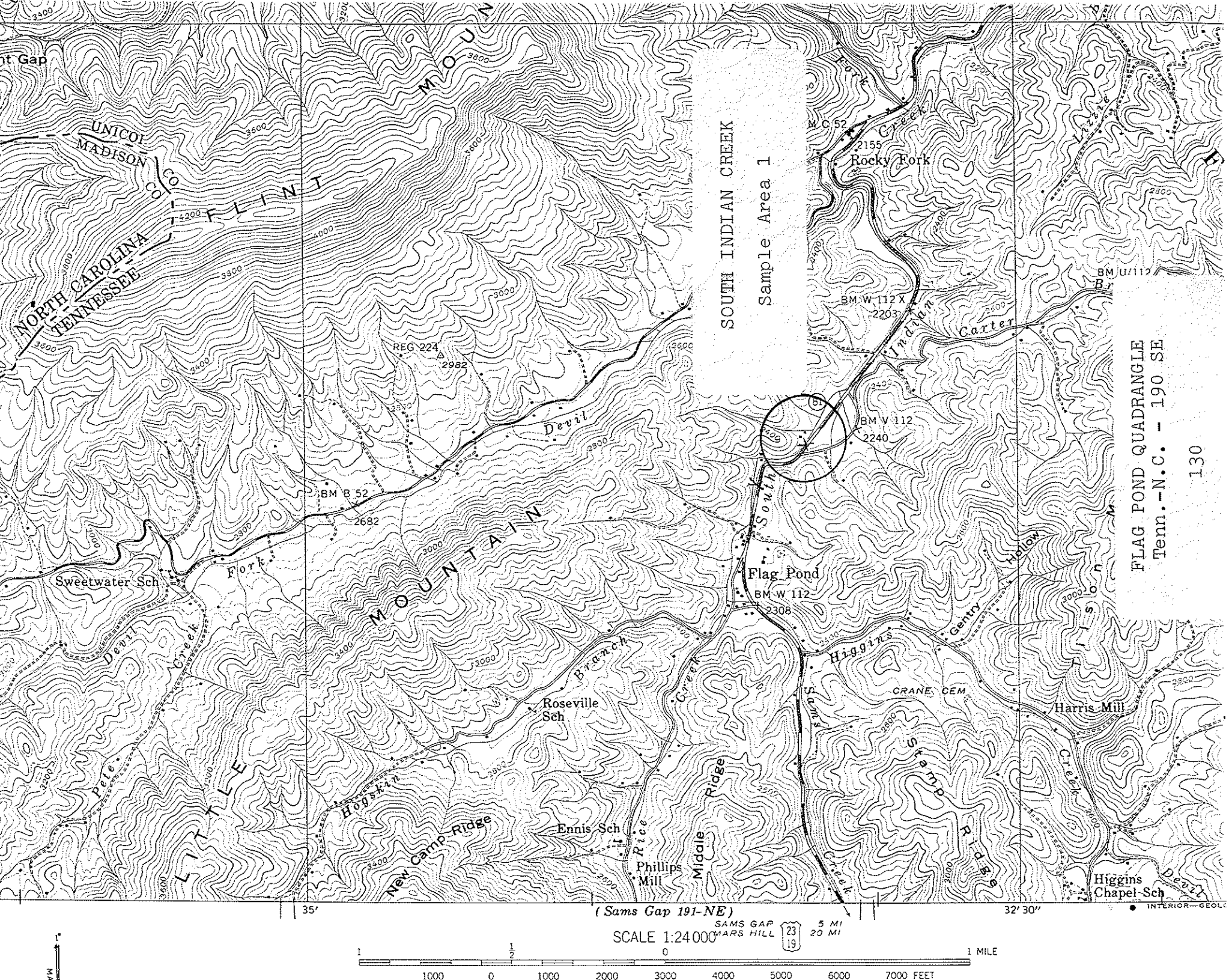
This section of stream has been hit hard in the past. The 1987 kill estimated at 4,880 fish while this kill was only 257 fish. It is most probable that several fish species are missing from this area. These would possibly include 3 to 4 *Notropis* and 4 to 5 *Etheostoma* species.

This last kill apparently was not as bad as the one in 1987. The total number and weight of fish we collected was very similar at both areas. More trout were collected upstream of the spill, but this area had better trout habitat. Also, the benthic fauna was more diverse at site 1, but the average number of organisms collected was low at both sites. Greater stream flow in 1989, compared to the lower flow of 1987, may help to explain why the last kill was not as extensive.

Management Recommendations:

1. No specific management is suggested other than protection of this watershed from further deterioration. This is a high quality stream that is capable of being a significant trout fishery in the area and a valuable resource.

2. Maintain the current trout management plan.


SOUTH INDIAN CREEK
Sample Area 1
FLAG POND QUADRANGLE
Tenn.-N.C. - 190 SE
130
UNICOI
MADISON
CO
CO
NORTH CAROLINA
TENNESSEE
FLINT
MOUNTAIN
LITTLE
MOUNTAIN
Rocky Fork
Flag Pond
Sweetwater Sch
Roseville Sch
Ennis Sch
Phillips Mill
Harris Mill
Higgins Chapel Sch
CRANE CEM
REG 224
2982
BM W 112 X
2203
BM V 112
2240
BM W 112
2308
BM B 52
2682
M C 52
2155
Devil
Fork
Creek
Indian
Carter
South
Fork
Hollow
Higgins
Gentry
Sams
Creek
Branch
Hogskin
New Camp-Ridge
Rice
Ridge
Middle
Creek
Stamp
Ridge
Creek
Pete
Devil
Creek
Little
Doe
Creek
(Sams Gap 191-NE)
35'
32° 30"
SAMS GAP 5 MI
MARS HILL 20 MI
SCALE 1:24 000
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 360117N - 823315W

Stream South Indian Creek Length of Sample 300 ft.

Area or Station Site # 1 Reach 06010108-13,2

County Unicoi Date/Time 16 October 1989/1700

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 18.6 ft. Average Depth 0.6 ft. Maximum Depth 2.0 ft.
2. Estimated Percent of Stream in Pools is 10 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 20 %
   Clay - % Gravel 10 % Rubble 30 % Boulders 30 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 20 %
   Bedrock - % Other Gravel 10% Rubble 40% Boulders 20%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 5 % of Stream.
8. Flow (c.f.s.) 14.3 : Flow compared to Normal: Low Normal X High
9. D.O. 9.6 ppm Temp. 63.7°F % Saturation 100
10. Present Weather Partly cloudy and mild; air temperature - 72°F.
11. Past Weather (last 24 hours) Partly cloudy and mild.
12. D.O. 9.6 pH 7.9 Temp. 63.7 Conductivity 65 micromho/cm
13. Comments: Sample location north of Flag Pond along hwy. 23 approx. 0.55 mi. upstream of mouth of Carter Branch. This site was 0.15 mi. downstream of ammonia nitrate spill that occurred on 10-12-89.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Lat-Long 360117N - 823315W
Body of Water South Indian Creek
Date 16 October 1989
County or River Mile Unicoi
Reach 06010108-13,2
Type of Sampling Electrofishing
Pool Elevation 2235 ft.
Gear Type One backpack shocker at 350 v. AC
Time 1100 - 1130

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Oncorhynchus mykiss	353	1	5	0.06			
" "	"	1	6	0.09			
" "	"	4	7	0.59			
" "	"	2	8	0.49			
" "	"	2	9	0.63			
Lepomis auritus	201	1	3	0.03			
Moxostoma duquesnei	229	1	15	1.24			
Campostoma anomalum	25	14	3-8	1.55			
Nocomis micropogon	234	1	5	0.08			
Rhinichthys atratulus	351	5	1-3	0.06			
Cottus bairdi	39	96	1-3	1.11			

Field Notes: 300 ft. sample length. Observed 20 to 25 crayfish and a few salamanders.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

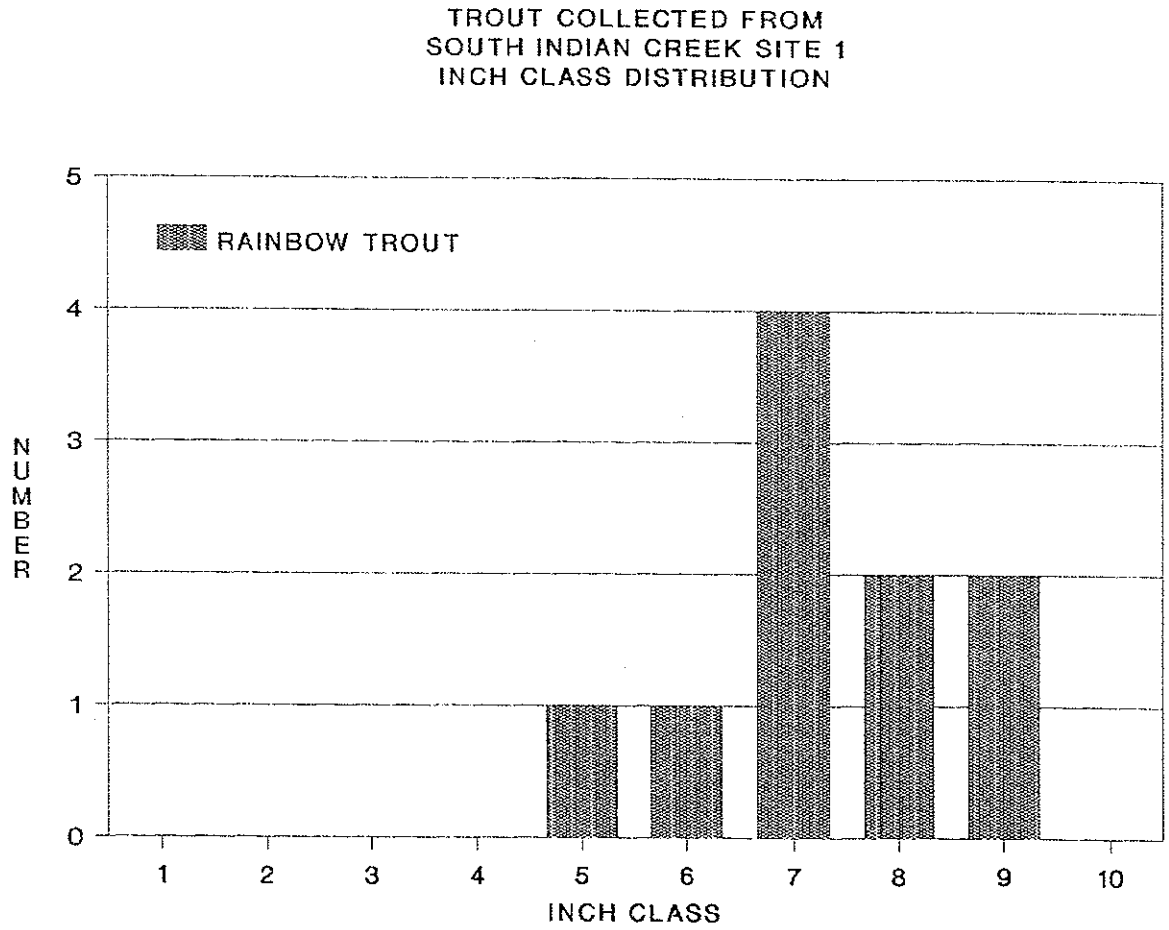

TROUT COLLECTED FROM
SOUTH INDIAN CREEK SITE 1
INCH CLASS DISTRIBUTION
RAINBOW TROUT
NUMBER
0
1
2
3
4
5
1
2
3
4
5
6
7
8
9
10
INCH CLASS

Figure 8.

South Indian Creek: Site # 1, Edge Surber sample

16 October 1989 Field # 169

Unicoi Co., TN; North of Flag Pond along hwy. 23, approx. 0.55 mi. upstream of Carter Br. Coordinates: 360117N - 823315W. Flag Pond, Tenn.-N.C., # 190 SE Quad. Reach # 06010108-13,2.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Optioservus* larva	1
O. ovalis adult	1
Psephenidae/*Psephenus herricki* larva	1
DIPTERA:	
Chironomidae	1
Simuliidae	2
EPHEMEROPTERA:	
Baetidae/*Pseudocloeon*	1
Heptageniidae/*Stenonema*	5
Oligoneuriidae/*Isonychia*	1
GASTROPODA:	
Ancylidae/*Ferrissia*	1
Pleuroceridae/*Goniobasis simplex*	2
PLECOPTERA:	
Chloroperlidae	1
Pteronarcyidae/*Pteronarcys*	1
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	3
Symphitopsyche bronta	7
	28

Volumetric Displacement was 0.3 ml.

South Indian Creek: Site # 1, Midstream Surber sample

16 October 1989 Field # 169

Unicoi Co., TN; North of Flag Pond along hwy. 23, approx. 0.55 mi. upstream of Carter Br. Coordinates: 360117N - 823315W. Flag Pond, Tenn.-N.C., # 190 SE Quad. Reach # 06010108-13,2.

TAXA	NUMBER
EPHEMEROPTERA:	
Baetidae/*Pseudocloeon*	2
Heptageniidae/*Stenonema*	2
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	2
Symphitopsyche bronta	2
Unid. early instar	1
	9

Volumetric Displacement was 0.1 ml.

South Indian Creek: Site # 1, Qualitative sample

16 October 1989 Field # 169

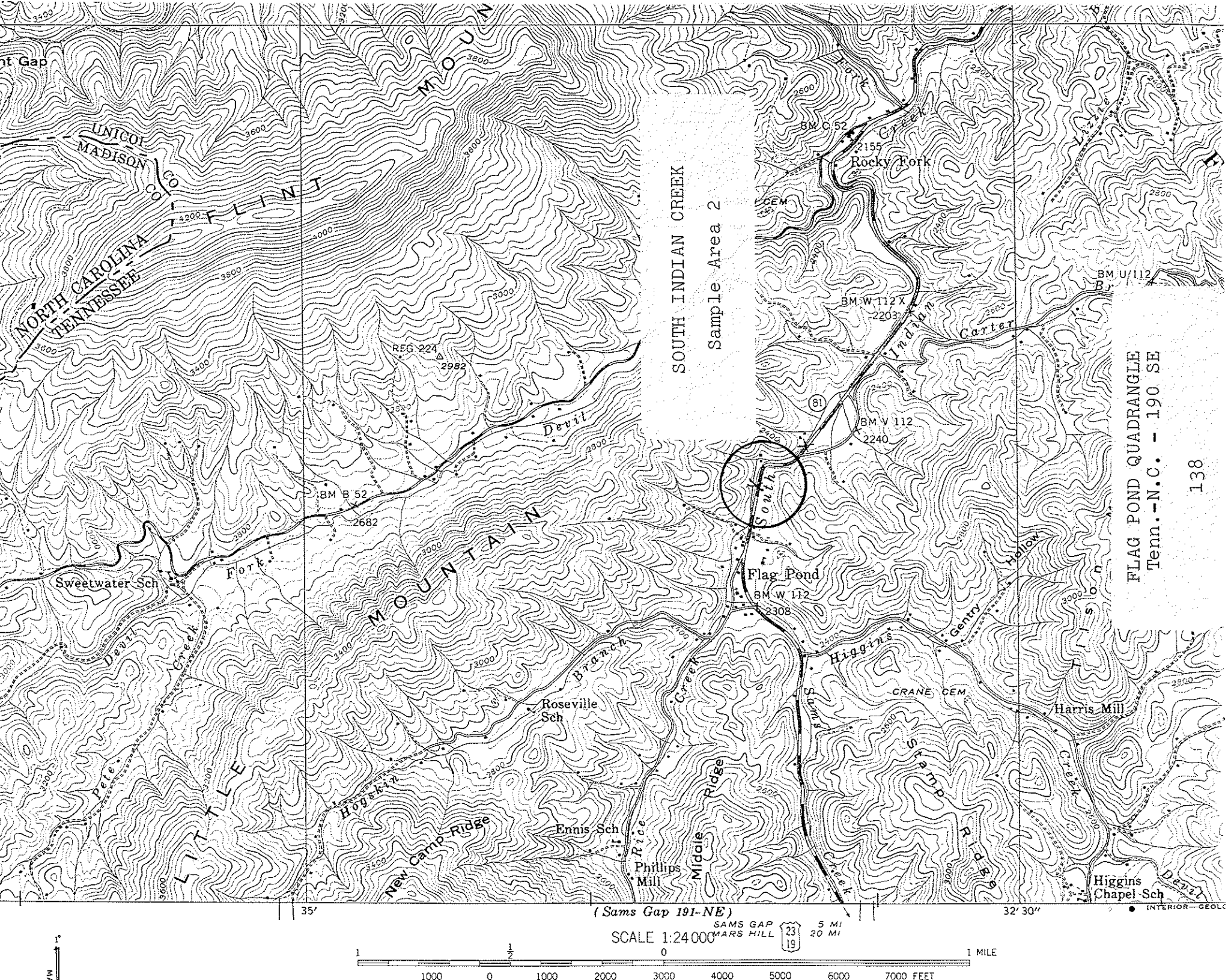
Unicoi Co., TN; North of Flag Pond along hwy. 23, approx. 0.55 mi. upstream of Carter Br. Coordinates: 360117N - 823315W. Flag Pond, Tenn.-N.C., # 190 SE Quad. Reach # 06010108-13,2.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Dryopidae/*Helichus* adult	1
Elmidae/*Optioservus* larvae	4
Promoresia elegans larva	1
Psephenidae/*Psephenus herricki* larvae	7
DECAPODA:	
Unid. crayfish	8
DIPTERA:	
Athericidae/*Atherix lantha*	1
Chironomidae	2
Dolichopodidae	1
Simuliidae pupa	1
Tipulidae/*Tipula*	10
EPHEMEROPTERA:	
Baetidae/*Baetis*	2
Ephemeridae/*Ephemera*	6
Heptageniidae/*Stenonema*	4
Oligoneuriidae/*Isonychia*	5
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	1
ODONATA:	
Aeshnidae/*Boyeria vinosa*	1
PLECOPTERA:	
Capniidae	1
Chloroperlidae	1
Peltoperlidae/*Peltoperla*	17
Perlidae/*Paragnetina immarginata*	1
Perlodidae/*Isoperla*	8
Yugus bulbosus	2
Unid. adult	1

cont.

South Indian Creek: Site # 1, Qualitative sample cont.

TAXA	NUMBER
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	11
Diplectrona modesta	2
Symphitopsyche bronta	10
S. sparna	4
Rhyacophilidae/*Rhyacophila fuscula*	1
URODELA:	
Unid. salamander	1
	116


SOUTH INDIAN CREEK
Sample Area 2
FLAG POND QUADRANGLE
Tenn.-N.C. - 190 SE
138
UNICOI
MADISON CO
NORTH CAROLINA
TENNESSEE
FLINT MOUN
LITTLE MOUNTAIN
Rocky Fork
Creek
BM C 52
2155
CEM
BM W 112 X
2203
Indian
Carter
BM V 112
2240
BM U 112
REG 224
2982
Devil
BM B 52
2682
Fork
Sweetwater Sch
Devil Creek
Flag Pond
BM W 112
2308
South
Hollow
Gentry
Higgins
Branch
Roseville Sch
Creek
Sandy
CRANE CEM
Harris Mill
Stamp Ridge
Creek
Pete
Hogskin
New Camp Ridge
Ennis Sch
Rice
Ridge
Middle
Phillips Mill
Higgins Chapel Sch
Devil
35'
32' 30"
(Sams Gap 191-NE)
SAMS GAP
MARS HILL
5 MI
20 MI
SCALE 1:24000
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 360111N - 823325W

Stream South Indian Creek " Length of Sample 300 ft.

Area or Station Site # 2 Reach 06010108-13,2

County Unicoi Date/Time 16 October 1989/1600

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 21.8 ft. Average Depth 0.6 ft. Maximum Depth 2.0 ft.
2. Estimated Percent of Stream in Pools is 25 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 20 %
   Clay - % Gravel 10 % Rubble 30 % Boulders 25 %
   Bedrock 5 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 20 %
   Bedrock - % Other Gravel 10% Rubble 40% Boulders 20%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 80 % of Stream.
8. Flow (c.f.s.) - : Flow compared to Normal: Low Normal X High
9. D.O. 9.7 ppm Temp. 63.7°F % Saturation 102
10. Present Weather Partly cloudy and mild; air temperature - 70°F
11. Past Weather (last 24 hours) Partly cloudy and mild.
12. D.O. 9.7 pH 7.9 Temp. 63.7 Conductivity 60 micromho/cm
13. Comments: Sample location north of Flag Pond along hwy. 23 approx. 0.4 mi. downstream of confluence of Rice Creek and Sams Creek. This site was 0.1 mi. upstream of ammonia nitrate spill that occurred on 10-12-89.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Lat-Long 360111N - 823325W
Body of Water South Indian Creek
Date 16 October 1989
County or River Mile Unicoi
Reach 06010108-13,2
Type of Sampling Electrofishing
Pool Elevation 2255 ft.
Gear Type One backpack shocker at 350 v. AC
Time 1420 - 1450

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Oncorhynchus mykiss	353	5	3	0.09			
" "	"	10	4	0.32			
" "	"	2	5	0.09			
" "	"	2	6	0.27			
" "	"	5	7	0.80			
" "	"	2	8	0.44			
" "	"	1	9	0.29			
Hypentelium nigricans	166	15	2-12	2.15			
Campostoma anomalum	25	1	5	0.07			
Rhinichthys atratulus	351	18	1-3	0.18			
R. cataractae	352	1	2	t			
Cottus bairdi	39	79	1-3	0.64			

Field Notes: 300 ft. sample length.

Name of Collector(s): Rick D. Bivens, Carl E. Williams, and Wayne H. Schacher

WR-0525

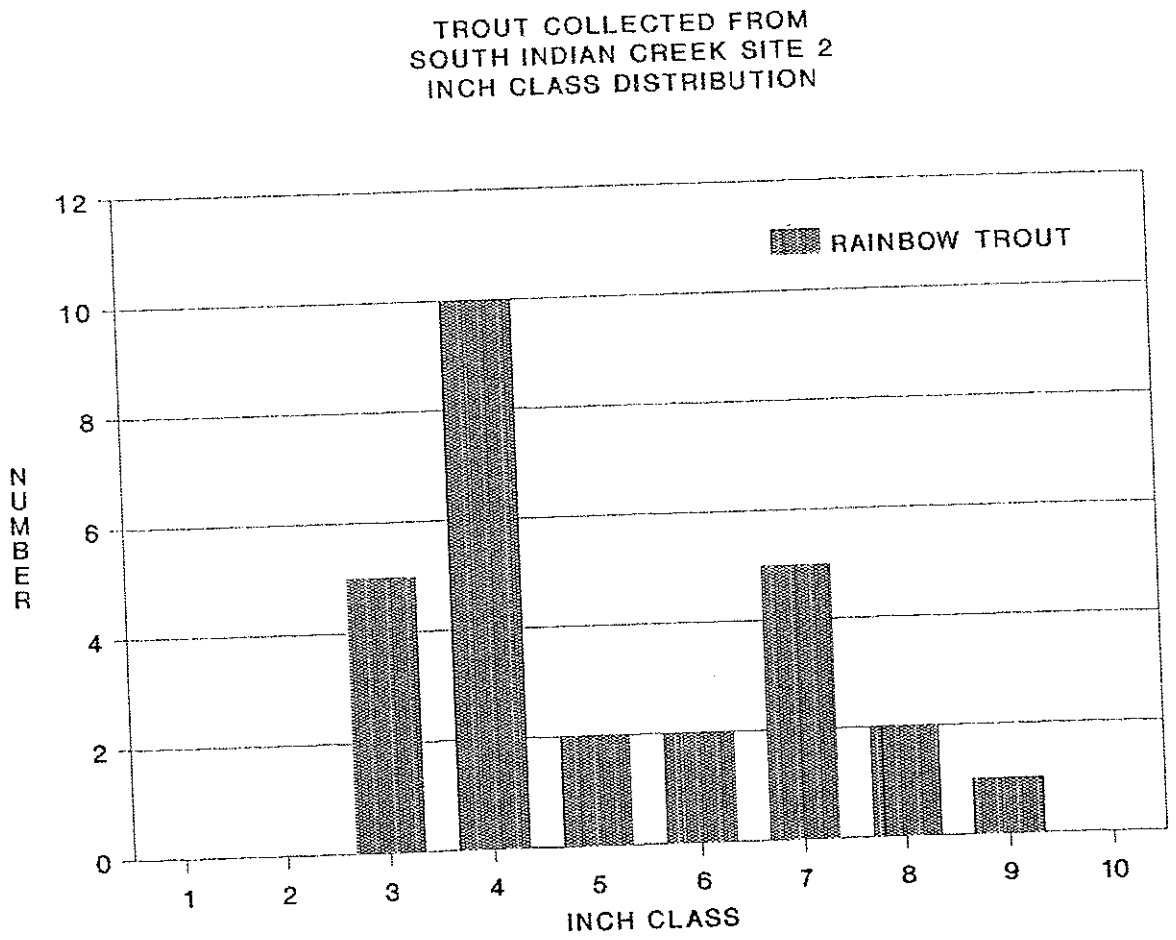

TROUT COLLECTED FROM
SOUTH INDIAN CREEK SITE 2
INCH CLASS DISTRIBUTION
RAINBOW TROUT
NUMBER
0
2
4
6
8
10
12
1
2
3
4
5
6
7
8
9
10
INCH CLASS

Figure 9.

South Indian Creek: Site # 2, Edge Surber sample

16 October 1989 Field # 170

Unicoi Co., TN; Approx. 0.4 mi. downstream of the confluence of Rice and Sams Creeks. Coordinates: 360111N - 823325W. Flag Pond, Tenn.-N.C., # 190 SE Quad. Reach # 06010108-13,2.

TAXA	NUMBER
COLEOPTERA:	
Psephenidae/Psephenus herricki larvae	3
EPHEMEROPTERA:	
Heptageniidae/Epeorus (Iron)	1
	4

Volumetric Displacement was 0.03 ml.

South Indian Creek: Site # 2, Midstream Surber sample

16 October 1989 Field # 170

Unicoi Co., TN; Approx. 0.4 mi. downstream of the confluence of Rice and Sams Creeks. Coordinates: 360111N - 823325W. Flag Pond, Tenn.-N.C., # 190 SE Quad. Reach # 06010108-13,2.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Optioservus ovalis* adult	1
DIPTERA:	
Unid. pupa	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	2
Heptageniidae/*Stenonema*	3
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	2
Symphitopsyche bronta	4
S. sparna	1
Parapsyche cardis	1
	15

Volumetric Displacement was 0.1 ml.

South Indian Creek: Site # 2, Qualitative sample

16 October 1989 Field # 170

Unicoi Co., TN; Approx. 0.4 mi. downstream of the confluence of Rice and Sams Creeks. Coordinates: 360111N - 823325W. Flag Pond, Tenn.-N.C., # 190 SE Quad. Reach # 06010108-13,2.

TAXA	NUMBER
ANNELIDA:	
Branchiobdellida	1
Oligochaeta	1
COLEOPTERA:	
Elmidae/Optioservus larva	1
Psephenidae/Psephenus herricki larvae	12
DECAPODA:	
Unid. crayfish	1
DIPTERA:	
Chironomidae	1
Tipulidae/Hexatoma	1
Tipula	2
EPHEMEROPTERA:	
Baetidae/Baetis	1
Pseudocloeon	1
Ephemerellidae	1
Ephemeridae/Ephemera	1
Heptageniidae/Epeorus (Iron)	2
Stenacron	1
Stenonema	10
Oligoneuriidae/Isonychia	4
GASTROPODA:	
Pleuroceridae/Goniobasis simplex	4
ODONATA:	
Gomphidae	1
PLECOPTERA:	
Peltoperlidae/Peltoperla	15
Perlidae/Acroneuria abnormis	1
Paragnetina immarginata	1
Pteronarcyidae/Pteronarcys	1

cont.

South Indian Creek: Site # 2, Qualitative sample cont.

TAXA	NUMBER
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	12
Symphitopsyche bronta	10
Parapsyche cardis	2
Rhyacophilidae/*Rhyacophila fuscula*	2
	90

Rocky Fork

One qualitative fishery survey was conducted in October 1989:

Location and Length - Tributary to South Indian Creek (Nolichucky River trib.). The sample area was located at the mouth of Fort Davie Creek and was sampled on 6 October 1989. It was 300 ft. in length and averaged 13.7 ft. in width. The site was in Greene County. Flag Pond Quadrangle.

Gear Type - The site was sampled using a single backpack electrofishing unit operating at 700 V. AC and making three passes.

Water Quality - Data were taken from midstream on 6 October 1989: DO - 9.5 ppm, pH - 6.9, Temperature - 53.8°F, Conductivity - 9 micromhos/cm.

Benthos Collection - Benthic organisms were collected from three square-foot Surber samples and one qualitative sample at the site. The Surber samples averaged 19 organisms, 0.23 ml. volumetric displacement. All benthos combined represented 20 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Rainbow trout	10	17.2	0.87	35.1
Brook trout	48	82.8	1.61	64.9
Nongame Fish				
Forage Fish				
Total	58		2.48	

Comments - We returned to this stream in 1989 to do a follow up survey to determine population densities and standing crop of trout. However, prior to our sampling, the stream was hit hard by flooding and the after effects of Hurricane Hugo. Therefore, we felt the data collected this year would not give an indication of normal conditions and did not calculate densities or standing crop.

Two sites were sampled in 1988 (Bivens 1989), but only the upper site was sampled in 1989. Almost identical numbers and weights of fish were collected in 1989 at this site. However, it took three passes this past year compared to only

one pass in 1988, to collect similar numbers.

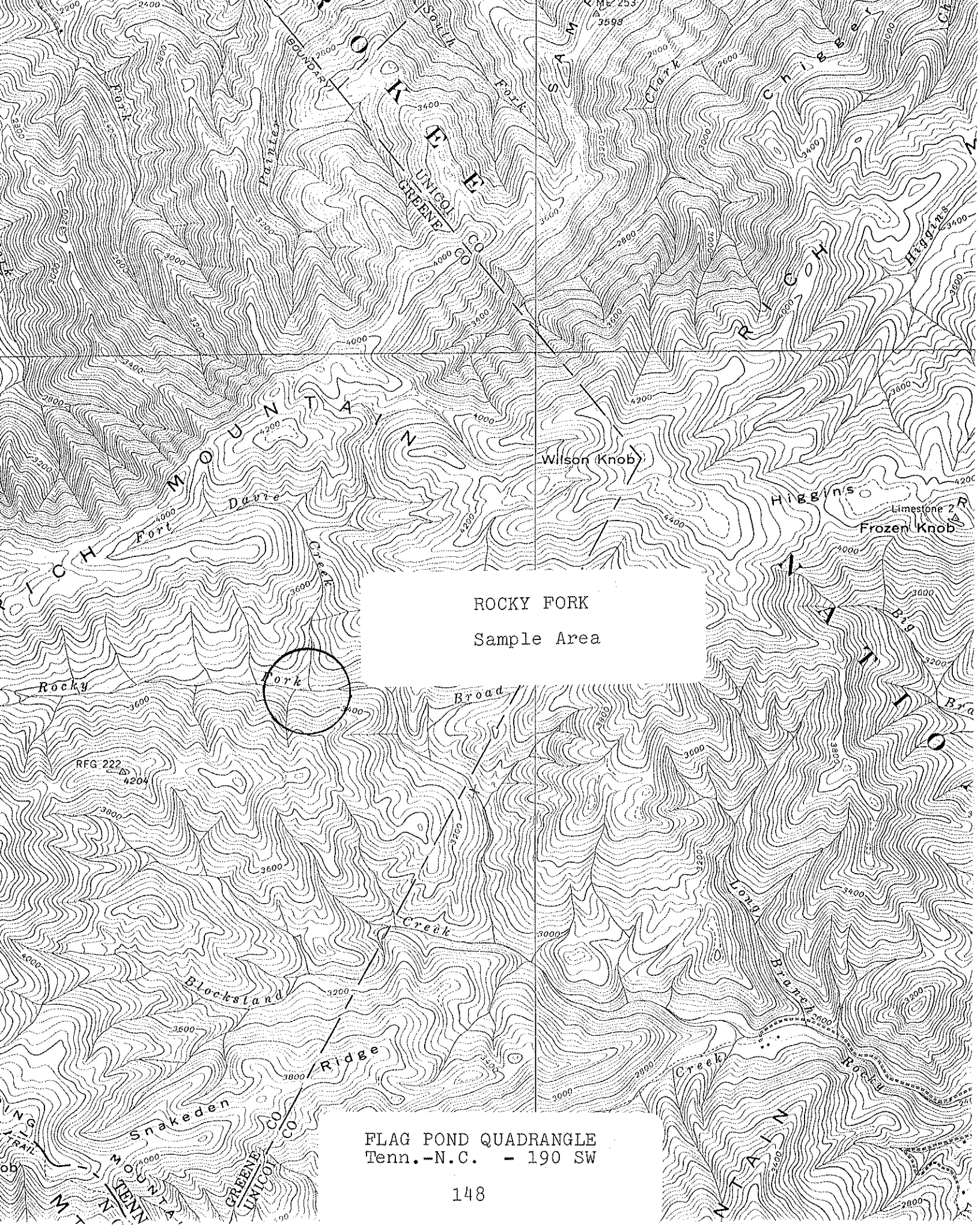
A total of 58 fish weighing 2.48 lb. was collected from the site. Brook trout (*Salvelinus fontinalis*) comprised about 83% by number and 65% by weight, while rainbow trout (*Oncorhynchus mykiss*) comprised 17% by number and 35% by weight. Although fewer rainbows were collected, they still exhibited a size advantage over the brook trout (Fig. 10). No other fish species were collected.

Benthic macroinvertebrates from our samples included Ephemerellidae and Heptageniidae mayflies, Chloroperlidae, Nemouridae, Peltoperlidae, Perlidae, and Perlodidae stoneflies, Brachycentridae, Hydropsychidae, and Rhyacophilidae caddisflies, and elmid riffle beetles. A total of 20 taxa was collected, the same number as the previous year, and many of the same families were represented. However, the numbers of organisms appeared to be lower, probably due to the scouring of the streambed by the recent flood.

Management Recommendations:

1. Consider placing the same minimum size limit on both brook and rainbow trout in this stream.

2. Consider renovation of upper Rocky Fork and tributaries for brook trout by electrofishing and rotenone treatment.



FLAG POND QUADRANGLE
Tenn.-N.C. - 190 SW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 360403N - 823545W

Stream Rocky Fork Length of Sample 300 ft.

Area or Station (see below) Reach 06010108-

County Greene Date/Time 6 October 1989/1115

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 13.7 ft. Average Depth 0.5 ft. Maximum Depth 2.8 ft.
2. Estimated Percent of Stream in Pools is 35 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 10 %
   Clay - % Gravel 10 % Rubble 40 % Boulders 30 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 5 % Sand 10 %
   Bedrock 5 % Other Gravel 20% Rubble 30% Boulders 30%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 95 % of Stream.
8. Flow (c.f.s.) 11.5 : Flow compared to Normal: Low Normal High X
9. D.O. 9.5 ppm Temp. 53.8°F % Saturation 89
10. Present Weather Clear and cool; air temperature - 64°F.
11. Past Weather (last 24 hours) Clear and cool.
12. D.O. 9.5 pH 6.9 Temp. 53.8 Conductivity 9 micromho/cm
13. Comments: Sample location at the mouth of Fort Davie Creek. After heavy rains and flood; high flows have scoured and rearranged the stream substrate. This site corresponds with Whitworth's study areas # 054 to # 057.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Lat-Long 360403N - 823545W
Body of Water Rocky Fork
Date 6 October 1989
County or River Mile Greene
Reach 06010108-
Type of Sampling Electrofishing
Pool Elevation 3230 ft.
Gear Type One backpack shocker at 700 v. AC
Time 1430 - 1650

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salvelinus fontinalis	356	4	2	0.04			
" "	"	18	3	0.26			
" "	"	12	4	0.39			
" "	"	8	5	0.40			
" "	"	6	6	0.52			
Oncorhynchus mykiss	353	4	3	0.05			
" "	"	1	4	0.04			
" "	"	1	5	0.07			
" "	"	1	6	0.09			
" "	"	1	7	0.14			
" "	"	2	8	0.48			

* Label Parameter Listed

Field Notes: 300 ft. sample. The above fish were collected about two weeks after exceptionally heavy rainfall and flooding.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

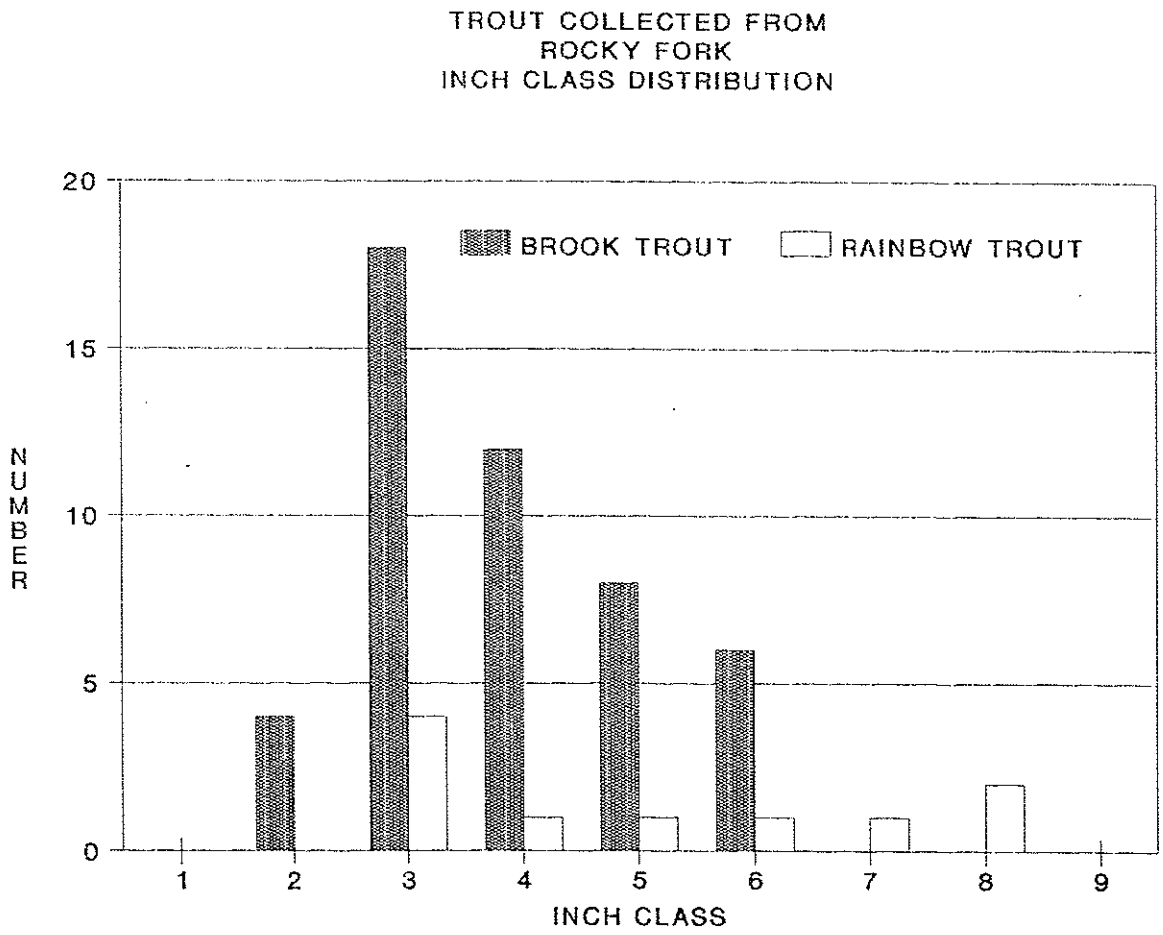

TROUT COLLECTED FROM
ROCKY FORK
INCH CLASS DISTRIBUTION
BROOK TROUT
RAINBOW TROUT
NUMBER
20
15
10
5
0
1
2
3
4
5
6
7
8
9
INCH CLASS

Figure 10.

Rocky Fork: Right Edge Surber sample

6 October 1989 Field # 165

Greene Co., TN; At the mouth of Fort Davie Creek. Coordinates: 360403N - 823545W. Flag Pond, Tenn.-N.C., # 190 SE Quad. Reach # 06010108-.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Optioservus* larvae	4
O. ovalis adult	1
DIPTERA:	
Chironomidae	1
Tipulidae/*Hexatoma*	2
EPHEMEROPTERA:	
Heptageniidae/*Heptagenia*	1
HEMIPTERA:	
Saldidae/*Micracanthia humilis*	1
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	3
Perlidae	1
Perlodidae/*Malirekus hastatus*	1
TRICHOPTERA:	
Brachycentridae/*Micrasema*	1
Hydropsychidae/*Parapsyche cardis*	8
Unid. early instar	1
	25

Volumetric Displacement was 0.3 ml.

Rocky Fork: Left Edge Surber sample

6 October 1989 Field # 165

Greene Co., TN; At the mouth of Fort Davie Creek. Coordinates: 360403N - 823545W. Flag Pond, Tenn.-N.C., # 190 SE Quad. Reach # 06010108-.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Optioservus* larvae	2
O. ovalis adult	1
Oulimnius latiusculus adult	1
COLLEMBOLA:	
Isotomidae/*Isotomurus palustris*	1
DIPTERA:	
Chironomidae	1
Tipulidae/*Hexatoma*	3
Unid. pupa	1
ODONATA:	
Gomphidae/Unid. early instar	1
PLECOPTERA:	
Chloroperlidae/Unid. early instar	1
Peltoperlidae/*Peltoperla*	2
TRICHOPTERA:	
Hydropsychidae/*Symphitopsyche macleodi*	5
	19

Volumetric Displacement was 0.2 ml.

Rocky Fork: Midstream Surber sample

6 October 1989 Field # 165

Greene Co., TN; At the mouth of Fort Davie Creek.
Coordinates: 360403N - 823545W. Flag Pond, Tenn.-N.C.,
190 SE Quad. Reach # 06010108-.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Optioservus* larva	1
EPHEMEROPTERA:	
Heptageniidae/*Heptagenia*	1
ODONATA:	
Gomphidae/Unid. early instar	1
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	7
Perlodidae/*Malirekus hastatus*	2
TRICHOPTERA:	
Unid. early instar	1
	13

Volumetric Displacement was 0.2 ml.

Rocky Fork: Qualitative sample

6 October 1989 Field # 165

Greene Co., TN; At the mouth of Fort Davie Creek. Coordinates: 360403N - 823545W. Flag Pond, Tenn.-N.C., # 190 SE Quad. Reach # 06010108-.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Optioservus* larvae	2
DIPTERA:	
Chironomidae	2
Tipulidae/*Hexatoma*	2
EPHEMEROPTERA:	
Ephemerellidae	1
HEMIPTERA:	
Gerridae/Unid. nymph	1
ODONATA:	
Gomphidae/*Lanthus vernalis*	3
PLECOPTERA:	
Chloroperlidae	1
Nemouridae/*Amphinemura*	1
Peltoperlidae/*Peltoperla*	20
Perlidae/*Eccoptura xanthenes*	1
Perlodidae/*Malirekus hastatus*	4
TRICHOPTERA:	
Hydropsychidae/*Diplectrona modesta*	2
Parapsyche cardis	14
Symphitopsyche macleodi	12
Rhyacophilidae/*Rhyacophila nigrita*	2
	68

Richland Creek and Tributaries

Two qualitative fishery surveys were conducted on Richland Creek and thirteen samples on eleven of it's tributaries in July and November 1989:

Location and Length - Tributary to the Holston River. Sample area 1 was located at the bridge on Fennel Rd. and was sampled on 17 July 1989. It was 400 ft. in length and averaged 26.2 ft. in width. Sample area 2 was located at the culvert on Avondale Rd. and was sampled on 18 July 1989. It was 300 ft. in length and averaged 11.7 ft. in width. Both sites were in Grainger County. Area 1, Luttrell Quadrangle. Area 2, Avondale Quadrangle. The tributaries were sampled in July and November 1989. (See accompanying map showing tributary sample locations)

Gear Type - Both sites were sampled using backpack electrofishing equipment. Area 1 was sampled using a single backpack electrofishing unit operating at 110 V. AC and shocking into a 30 ft. seine. Area 2 was sampled using a single backpack electrofishing unit operating at 170 V. DC.

Water Quality - Data were taken from midstream at each site. Area 1, on 17 July 1989: DO - 7.4 ppm, pH - 7.8, Temperature - 68.5°F, Conductivity - 260 micromhos/cm. Area 2, on 18 July 1989: DO - 8.7 ppm, pH - 7.8, Temperature - 67.1°F, Conductivity - 223 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples and one qualitative sample from each site. Area 1 Surber samples averaged 92 organisms but the volumetric displacement of the edge sample was not recorded. The volumetric displacement of the midstream Surber was 0.3 ml. All benthos samples combined represented 25 taxa. Area 2 Surber samples averaged 95 organisms and 1.55 ml. volumetric displacement. All benthos samples combined represented 40 taxa. Also, one qualitative benthos sample was collected from the Rocky Branch tributary (see data sheet for taxa).

our sampling was limited, and that we experienced great difficulty at the downstream site in collecting fish. Here the water was dingy and sampling was accomplished by shocking into a 30 ft. seine. It was difficult to see the fish, especially in the pools, and probably many rock bass escaped capture. This along with the probable poor choice of a sample location may have caused us to miss many other fish also.

Redbreast sunfish were collected from both sites in about equal numbers and weights. Most of these were in the 1 to 4 in. range but there were also several 5 and 6 in. fish.

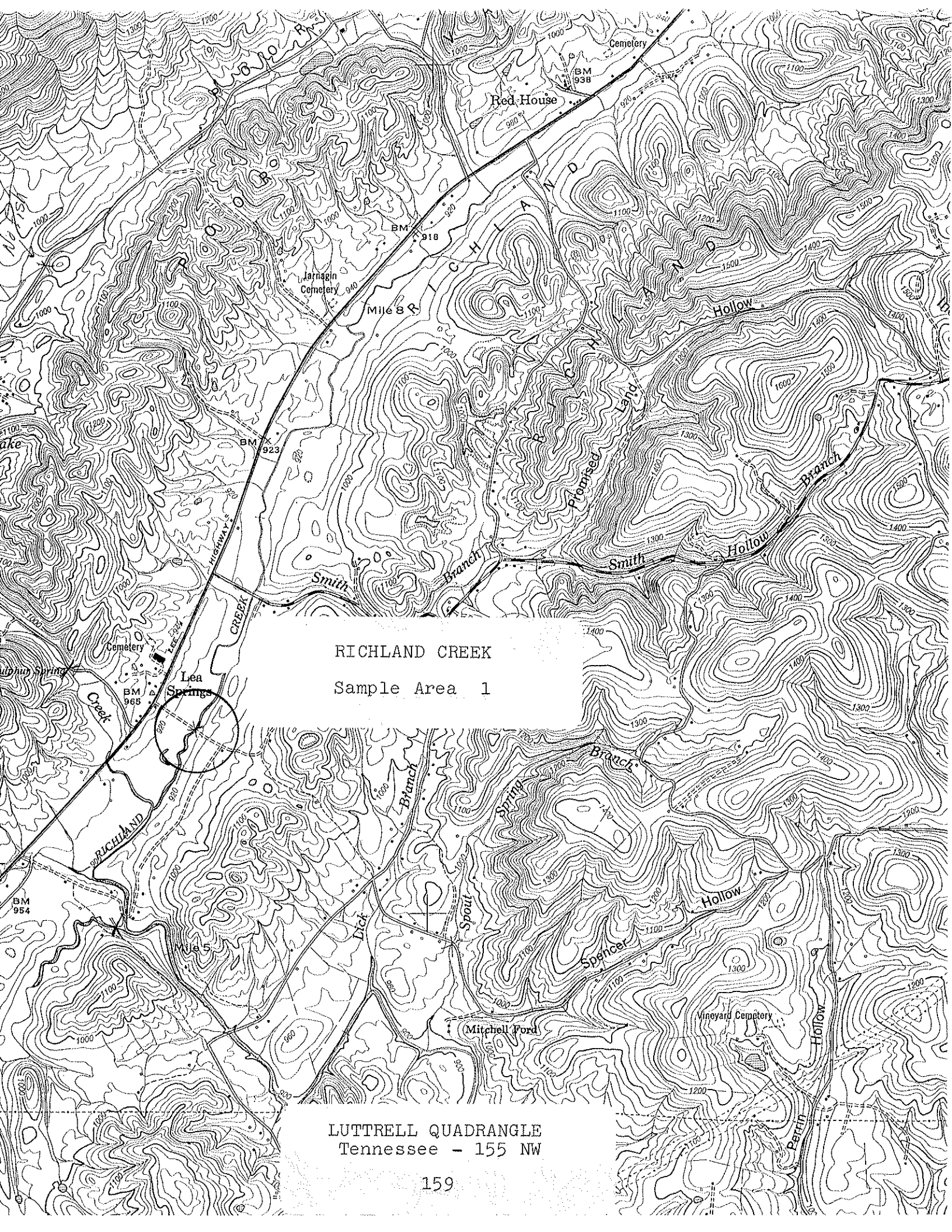
The same game fish occurred in some of the larger tributaries also. One exception was a single warmouth (*Lepomis gulosus*) collected from Buffalo Hide Creek. Other species occurring as a single specimen was the warpaint shiner (*Notropis coccogenis*) from Richland Creek at the mouth of Frost Branch, and a single blueside darter (*Etheostoma stigmaeum jessiae*) from an unnamed tributary (Trib. No. 3). This tributary (Trib. No. 3) also held several good rock bass, a couple of which were in the 9 in. class. We collected a total of 26 fish species from the watershed (see accompanying table), most of which are tolerant forms.

Benthic macroinvertebrates from our samples at site 1 included Baetidae, Caenidae, Heptageniidae, and Oligoneuriidae mayflies, elmid (*Stenelmis*) beetles, and Hydropsychidae and Philopotamidae caddisflies. Limpets (*Ferrissia*), asian clams (*Corbicula fluminea*) and periwinkle snails (*Goniobasis simplex*) were also present. Many of the same families were represented in the upper site samples, however, diversity increased from 25 taxa (site 1) to 40 taxa. One qualitative benthos sample was also collected from Rocky Branch, a spring-fed, upper reach tributary (see data sheets). Upstream of Rutledge, the stream is apparently less impacted.

Management Recommendations:

1. No specific management can be suggested at present. Obviously, anything to abate the non-point-source pollution would be beneficial.

2. Publicize information on the existing fishery in a regional stream fishing brochure.


RICHLAND CREEK
Sample Area 1
LUTTRELL QUADRANGLE
Tennessee - 155 NW
159
Red House
Cemetery
BM 938
BM 918
Jarnagin Cemetery
Mile 8
BM 923
Promised Land
Hollow
Branch
Smith
Creek
Cemetery
Lea Springs
BM 965
Sulphur Spring
Richland
BM 954
Mile 5
Dick
Spout
Spring
Spencer
Mitchell Ford
Vineyard Cemetery
Perrin

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Holston River Lat-Long 361032N - 834021W

Stream Richland Creek Length of Sample 400 ft.

Area or Station Site # 1 Reach 06010104-18,0

County Grainger Date/Time 17 July 1989/1000

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 26.2 ft. Average Depth 0.8 ft. Maximum Depth 4.5 ft.
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud 10 % Silt 20 % Sand 10 %

   Clay 10 % Gravel 20 % Rubble 20 % Boulders 10 %

   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 30 % Sand 10 %

   Bedrock - % Other Rubble 30% Boulders 10% Gravel 20%
5. Abundance of Littoral Aquatic Plants is Numerous

   Average X Scarce
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %

   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 40 % of Stream.
8. Flow (c.f.s.) 23.5 : Flow compared to Normal: Low ____ Normal ____ High X
9. D.O. 7.4 ppm Temp. 68.5 ^{o}F % Saturation 81.8
10. Present Weather Clear and warm, air temperature 78 ^{o}F.
11. Past Weather (last 24 hours) Partly cloudy with thunder storms.
12. D.O. 7.4 pH 7.8 Temp. 68.5 Conductivity 260 micromho/cm
13. Comments: Sample location was at the bridge on Fennell Road. The stream is low gradient, receives heavy siltation, and is normally dingy. Lots of agricultural use along the entire watershed.

Site #1 - Bridge on Fennell Road

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Richland Creek
County or River Mile Grainger
Type of Sampling Electrofishing
Gear Type One backpack shocker with seine at 110 v. AC

Lat-Long 361032N - 834021W
Date 17 July 1989
Reach 06010104-18,0
Pool Elevation 897 ft.
Time 1300 - 1500

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus salmoides	220	1	1	t			
M. punctulatus	219	1	3	0.02			
" "	"	1	4	0.03			
" "	"	1	9	0.38			
Ambloplites rupestris	13	1	2	0.02			
" "	"	2	5	0.23			
" "	"	1	6	0.21			
" "	"	3	7	0.72			
" "	"	3	8	1.21			
Lepomis auritus	201	2	1	0.01			
" "	"	14	2	0.18			
" "	"	12	3	0.39			
" "	"	9	4	0.55			
" "	"	4	5	0.42			
" "	"	4	6	0.77			
L. macrochirus	206	10	1	0.03			
" "	"	4	2	0.03			
Hypentelium nigricans	166	37	1-10	3.37			
Moxostoma duquesnei	229	2	4-5	0.11			
M. erythrurum	230	1	4	0.03			
Ictalurus natalis	174	1	8	0.24			
Cottus carolinae	40	72	1-3	0.30			
Continued on next page							

Field Notes: 400 ft. sample area. Stream dingy, fish were hard to collect.

Name of Collector(s): R.D. Bivens, C.E. Williams, A.D. Oyer, & R.L. Bean

WR-0525

Site #1 - Bridge on Fennell Road

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Richland Creek
County or River Mile Grainger
Type of Sampling Electrofishing
Gear Type One backpack shocker with seine at 110 v. AC

Lat-Long 361032N - 834021W
Date 17 July 1989
Reach 06010104-18,0
Pool Elevation 897 ft.
Time 1300 - 1500

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Campostoma anomalum	25	212	1-5	3.00			
Notropis spilopterus	269	52	1-3	0.44			
N. chrysocephalus	249	48	2-6	1.45			
Semotilus atromaculatus	360	2	1	t			
Etheostoma blennioides	81	28	2-4	0.43			
E. simoterum	111	7	1-2	0.03			
Percina caprodes	306	3	4	0.08			
Gambusia affinis	147	4	1	0.01			

Field Notes: 400 ft. sample area. Stream dingy, fish were hard to collect.

Name of Collector(s): R.D. Bivens, C.E. Williams, A.D. Oyer, & R.L. Bean

WR-0525

GAME FISH COLLECTED FROM RICHLAND CREEK
SITE 1
INCH CLASS DISTRIBUTION

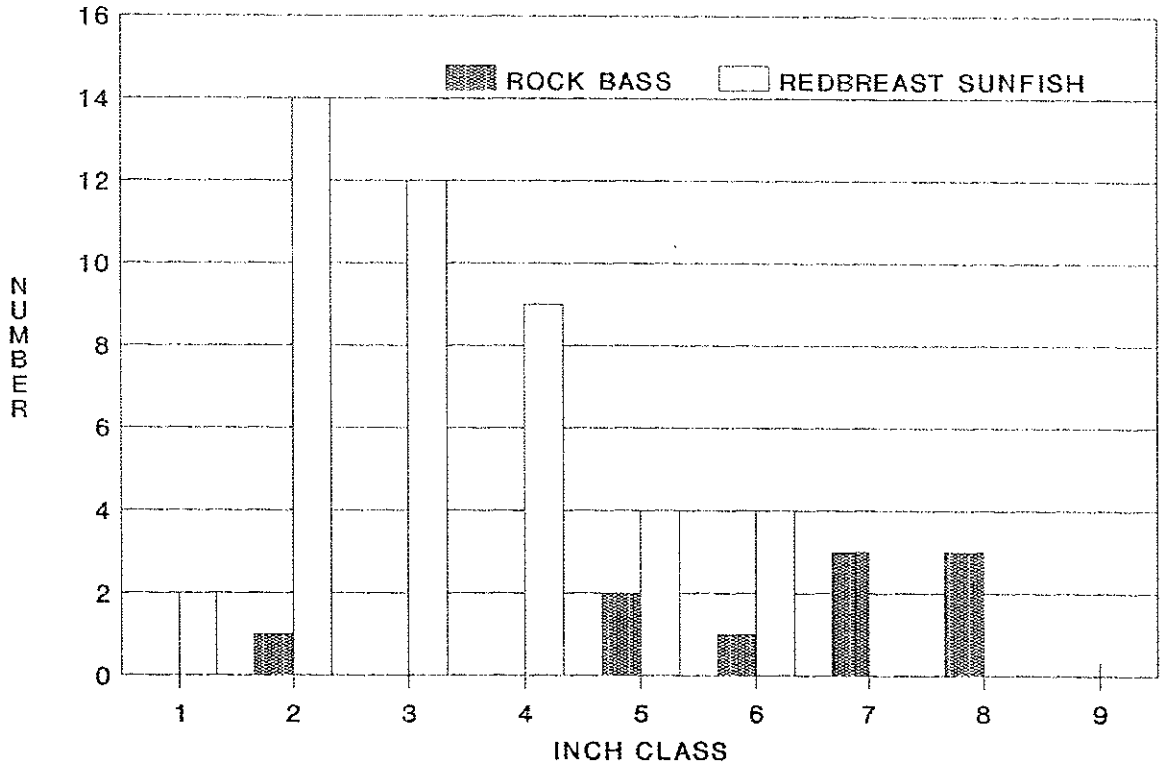


Figure 11.

Richland Creek: Site # 1, Edge Surber sample

17 July 1989 Field # 133

Grainger Co., TN; At the bridge on Fennell Road. Coordinates: 361032N - 834021W. Luttrell, Tenn., # 155 NW Quad. Reach # 06010104-18,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Elmidae/*Stenelmis* larvae	6
adult	1
DIPTERA:	
Chironomidae	5
Empididae	1
Tipulidae/*Antocha*	1
EPHEMEROPTERA:	
Caenidae/*Caenis*	1
Heptageniidae/*Stenonema*	36
GASTROPODA:	
Ancylidae/*Ferrissia*	2
Pleuroceridae/*Goniobasis simplex*	1
ISOPODA:	
Asellidae/*Lirceus*	3
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	18
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	9
Hydropsyche betteni/depravata	3
	89

No Volumetric Displacement recorded.

Richland Creek: Site # 1, Midstream Surber sample

17 July 1989 Field # 133

Grainger Co., TN; At the bridge on Fennell Road. Coordinates: 361032N - 834021W. Luttrell, Tenn., # 155 NW Quad. Reach # 06010104-18,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	6
COLEOPTERA:	
Elmidae/*Stenelmis* larvae	4
adult	1
DECAPODA:	
Unid. crayfish	1
DIPTERA:	
Chironomidae	24
Empididae	1
Simuliidae	1
Tipulidae/*Hexatoma*	2
Unid. pupa	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	9
Heptageniidae/*Stenonema*	25
Oligoneuriidae/*Isonychia*	4
ISOPODA:	
Asellidae/*Lirceus*	10
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	3
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	3
	95

Volumetric Displacement was 0.3 ml.

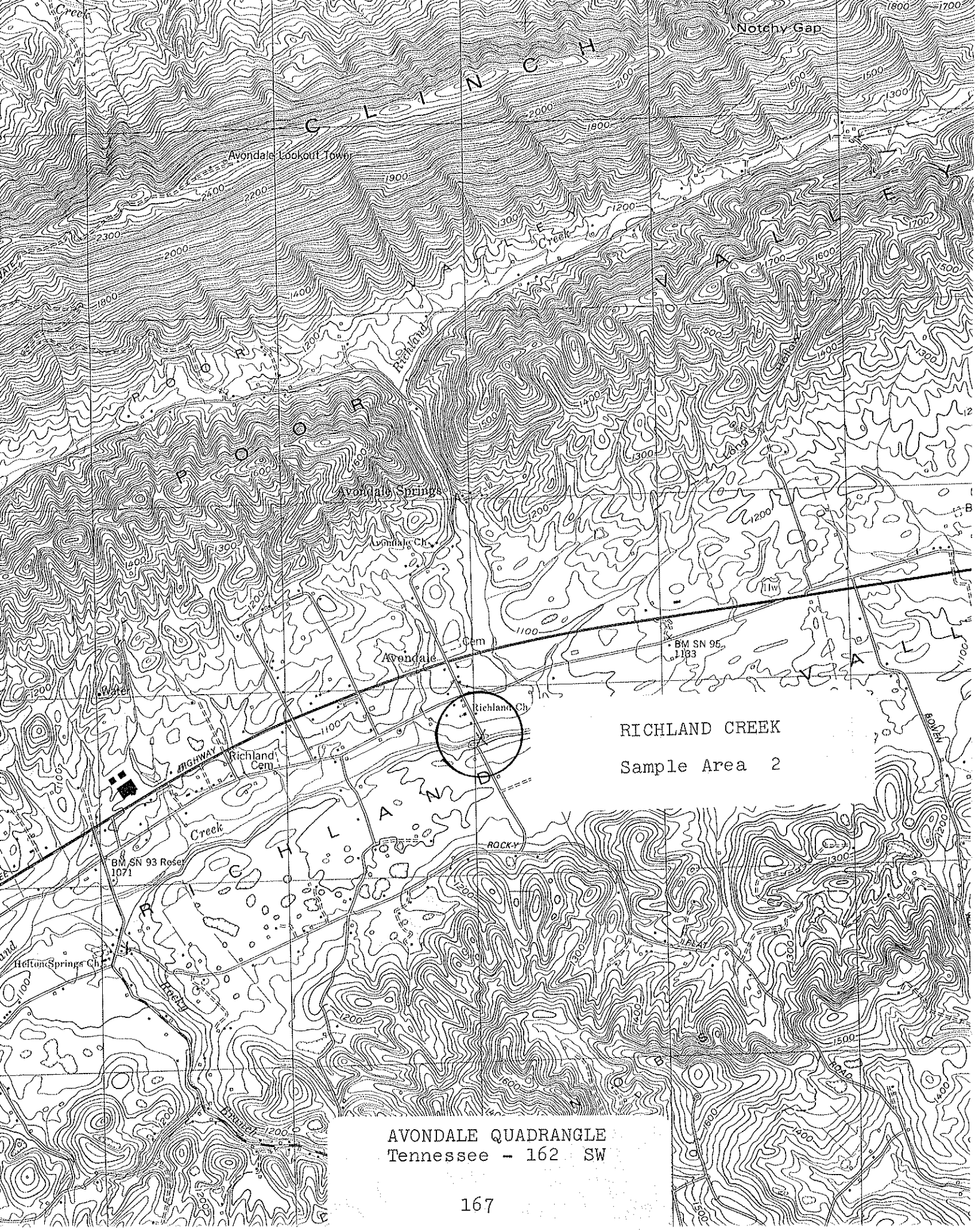
Richland Creek: Site # 1, Qualitative sample

17 July 1989 Field # 133

Grainger Co., TN; At the bridge on Fennell Road. Coordinates: 361032N - 834021W. Luttrell, Tenn., # 155 NW Quad. Reach # 06010104-18,0.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Stenelmis* larva	1
adults	2
Hydraenidae larva *	1
DIPTERA:	
Athericidae/*Atherix lantha*	1
Chironomidae	5
Empididae larvae	2
pupa	1
Simuliidae larvae	14
pupa	1
Tipulidae/*Hexatoma*	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	18
Heptageniidae/*Stenonema*	33
Oligoneuriidae/*Isonychia*	17
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	2
HEMIPTERA:	
Veliidae/*Rhagovelia* nymph	1
R. (possibly *distincta*) adult female	1
ISOPODA:	
Asellidae/*Lirceus*	2
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	1
Nigronia serricornis	2
ODONATA:	
Aeshnidae/*Boyeria vinosa*	2
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	33
Hydropsyche betteni/depravata	16
Philopotamidae/*Chimarra*	1
	158

* Questionable determination.



AVONDALE QUADRANGLE
Tennessee - 162 SW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Holston River Lat-Long 361757N - 832739W

Stream Richland Creek Length of Sample 300 ft.

Area or Station Site # 2 Reach 06010104-18.0

County Grainger Date/Time 18 July 1989/1015

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 11.7 ft. Average Depth 0.6 ft. Maximum Depth 2.25 ft.
2. Estimated Percent of Stream in Pools is 40 %
3. Estimated Percent Pool Bottom is Mud - % Silt 20 % Sand 20 %
   Clay - % Gravel 30 % Rubble 20 % Boulders 10 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 20 %
   Bedrock - % Other Rubble 30% Boulders 10% Gravel 30%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average X Scarce
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 35 % of Stream.
8. Flow (c.f.s.) 4.2 : Flow compared to Normal: Low Normal High X
9. D.O. 8.7 ppm Temp. 67.1°F % Saturation 95
10. Present Weather Partly cloudy and warm; air temperature - 73°F.
11. Past Weather (last 24 hours) Clear to partly coudy and warm.
12. D.O. 8.7 pH 7.8 Temp. 67.1 Conductivity 223 micromho/cm
13. Comments: Sample location was at the culvert on road near the Head of Richland Church. Stream is fairly silty. Lots of agricultural use along the entire watershed.

Site #2 - Culvert on road near Head of Richland Church

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Richland Creek
County or River Mile Grainger
Type of Sampling Electrofishing
Gear Type One backpack shocker at 170 v. DC

Lat-Long 361757N - 832739W
Date 18 July 1989
Reach 06010104-18,0
Pool Elevation 1060 ft.
Time 1430 - 1530

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Ambloplites rupestris	13	3	2	0.03			
" "	"	1	3	0.03			
" "	"	5	4	0.28			
" "	"	9	5	1.00			
" "	"	4	6	0.69			
" "	"	2	7	0.48			
" "	"	3	8	1.04			
Lepomis auritus	201	2	1	0.01			
" "	"	13	2	0.11			
" "	"	23	3	0.63			
" "	"	2	4	0.09			
" "	"	6	5	0.50			
" "	"	1	6	0.22			
L. macrochirus	206	1	1	t			
" "	"	2	2	0.01			
" "	"	4	3	0.06			
Hypentelium nigricans	166	4	1-10	0.93			
Cottus carolinae	40	21	2	0.14			
Campostoma anomalum	25	34	1-5	0.54			
Notropis chrysocephalus	249	52	2-6	1.23			
Pimephales notatus	334	1	3	0.01			
Rhinichthys atratulus	351	1	1	t			
Etheostoma blennioides	81	1	3	0.03			
E. simoterum	111	20	1-2	0.08			

Field Notes: 300 ft. sample length.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

GAME FISH COLLECTED FROM RICHLAND CREEK
SITE 2
INCH CLASS DISTRUBUTION

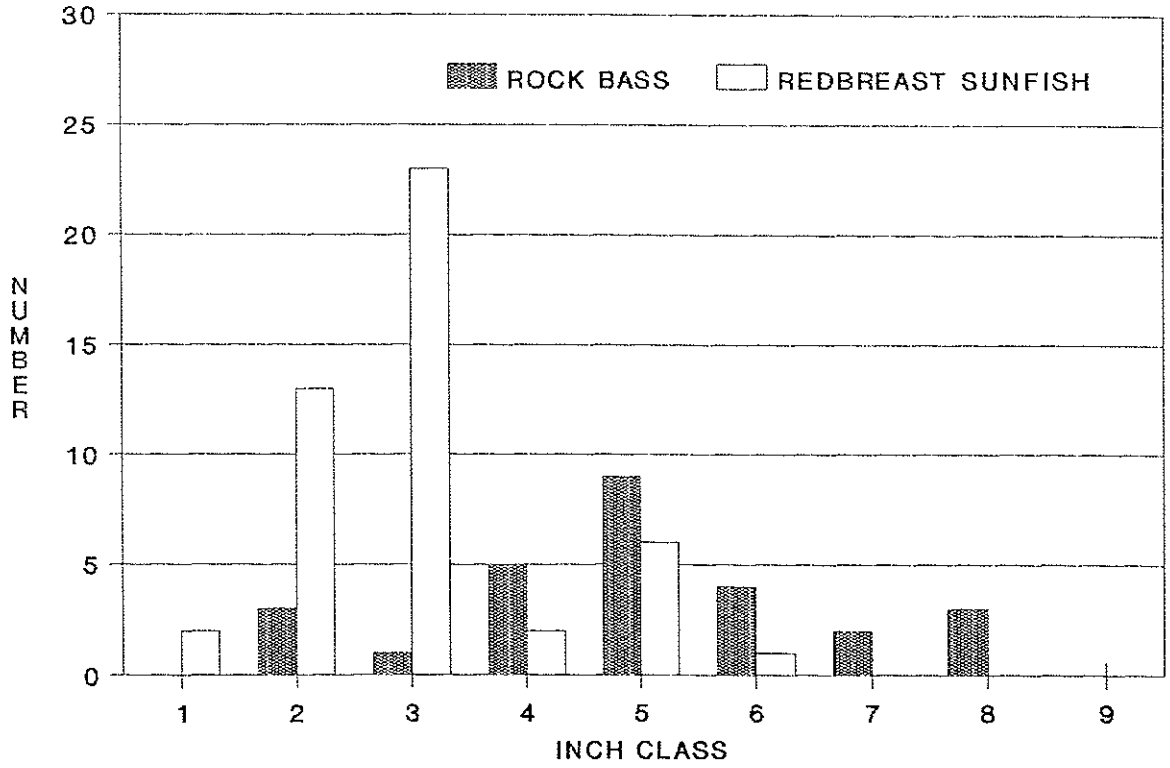


Figure 12.

Richland Creek: Site # 2, Edge Surber sample

18 July 1989 Field # 134

Grainger Co., TN; Just downstream of culvert on road near the Head of Richland Church. Coordinates: 361757N - 832739W. Reach # 06010104-18,0.

TAXA	NUMBER
COLEOPTERA:	
Psephenidae/*Psephenus herricki* larvae	10
COLLEMBOLA:	
Isotomidae/*Isotomurus palustris* *	1
DIPTERA:	
Chironomidae	3
Empididae pupa	1
Unid. pupa	1
EPHEMEROPTERA:	
Heptageniidae/*Stenonema*	4
Leptophlebiidae/*Choroterpes hubbelli*	3
Unid. adult	1
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	5
ODONATA:	
Aeshnidae/*Boyeria vinosa*	1
TRICHOPTERA:	
Hydropsychidae/*Hydropsyche betteni/depravata*	2
Odontoceridae/*Psilotreta labida*	1
Philopotamidae/*Chimarra*	2
	35

Volumetric Displacement was 0.2 ml.
* Questionable determination.

Richland Creek: Site # 2, Middle Surber sample

18 July 1989 Field # 134

Grainger Co., TN; Just downstream of culvert on road near the Head of Richland Church. Coordinates: 361757N - 832739W. Reach # 06010104-18,0.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Stenelmis* larvae	7
adult	1
Psephenidae/*Psephenus herricki* larva	1
COLLEMBOLA:	
Isotomidae/*Isotomurus palustris* *	4
DIPTERA:	
Chironomidae	18
Empididae larva	1
pupae	2
Simuliidae larvae	6
pupa	1
Unid. pupa	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	11
Heptageniidae/*Stenonema*	18
Oligoneuriidae/*Isonychia*	3
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	5
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	2
Nigronia serricornis	2
NEMATOMORPHA:	2
PLECOPTERA:	
Perlidae/*Perlesta*	1
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	11
Hydropsyche betteni/depravata	35
Philopotamidae/*Chimarra* larvae	19
pupae	3
Polycentropodidae/*Polycentropus*	1
	155

Volumetric Displacement was 2.9 ml.
* Questionable determination.

Richland Creek: Site # 2, Qualitative sample

18 July 1989 Field # 134

Grainger Co., TN; Just downstream of culvert on road near the Head of Richland Church. Coordinates: 361757N - 832739W. Reach # 06010104-18,0.

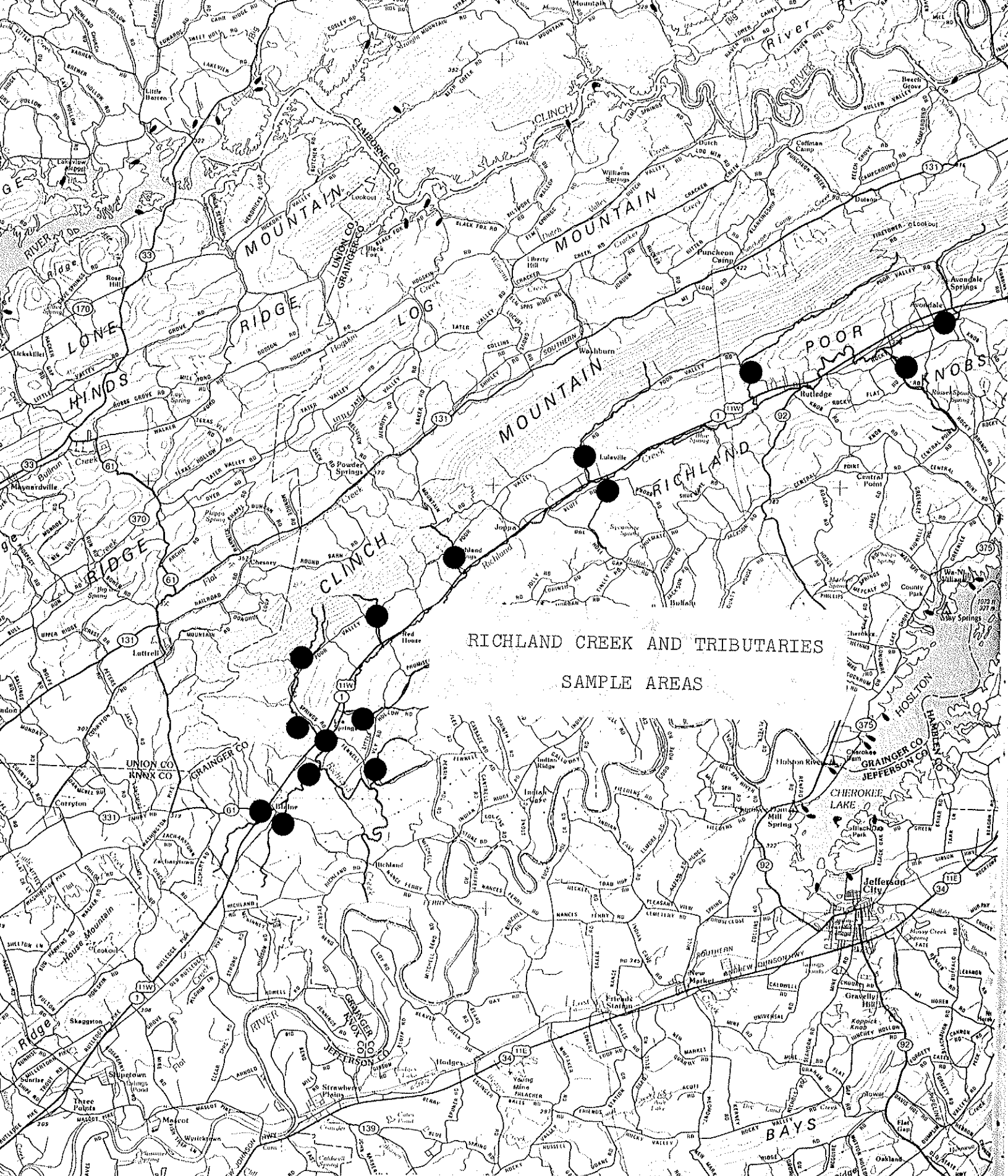
TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Elmidae/*Ancyronyx variegatus* adult	1
Dubiraphia larva	1
adults	2
Macronychus glabratus adult	1
Stenelmis adults	3
Hydraenidae larva *	1
Psephenidae/*Psephenus herricki* larvae	4
adults	5
COLLEMBOLA:	2
DIPTERA:	
Ceratopogonidae/*Palopomyia* complex	2
Chironomidae	28
Empididae pupa	1
Simuliidae	7
Tipulidae/*Hexatoma*	2
EPHEMEROPTERA:	
Baetidae/*Baetis*	13
Heptageniidae/*Heptagenia*	2
Stenacron	1
Stenonema	12
Oligoneuriidae/*Isonychia*	11
GASTROPODA:	
Physidae/*Physa*	4
Pleuroceridae/*Goniobasis simplex*	3
HEMIPTERA:	
Veliidae/*Rhagovelia obesa* nymphs	3
adult	1

cont.

* Questionable determination.

Richland Creek: Qualitative sample cont.

TAXA		NUMBER
ISOPODA:		
Asellidae/*Lirceus*		2
MEGALOPTERA:		
Corydalidae/*Nigronia serricornis*		1
Sialidae/*Sialis*		1
ODONATA:		
Aeshnidae/*Boyeria vinosa*		21
Coenagrionidae/*Argia*		6
Enallagma exsulans		1
PELECYPODA:		
Corbiculidae/*Corbicula fluminea*		7
PELCOPTERA:		
Perlidae/*Perlesta*		3
TRICHOPTERA:		
Hydropsychidae/*Cheumatopsyche*		3
Hydropsyche betteni/depravata	larvae	10
	pupa	1
Limnephilidae/*Pycnopsyche*		1
Philopotamidae/*Chimarra*		10
Polycentropodidae/*Polycentropus*		1
Psychomyiidae/*Lype diversa*		1
URODELA:		
Unid. salamanders		2
		182


RICHLAND CREEK AND TRIBUTARIES
SAMPLE AREAS

Sites where fish species were collected in Richland Creek and its tributaries: 1989.

Species	Richland Cr. Site 1	Richland Cr. Site 2	Frost Br. Site 1	Frost Br. Site 2	Frost Br. Trib.	Lea Cr.	Smith Br.	Trib. No. 1	Highland Springs Br.	Buffalo Hide Cr.	Trib. No. 2	Trib. No. 3	Rocky Br.
Micropterus salmoides	X									X		X	
M. punctulatus	X		X										
Ambloplites rupestris	X	X	X				X					X	
Lepomis auritus	X	X	X			X				X	X	X	X
L. gulosus										X			
L. macrochirus	X	X	X			X				X	X	X	
Catostomus commersoni			X	X						X	X	X	
Hypentelium nigricans	X	X	X			X				X		X	
Moxostoma duquesnei	X												
M. erythrurum	X												
Ictalurus natalis	X					X							
Campostoma anomalum	X	X	X	X	X	X				X	X	X	
Hybopsis amblops			X										
Notropis chrysocephalus	X	X	X	X	X	X	X			X	X	X	X
N. coccogenis			X										
N. spilopterus	X		X							X		X	
Pimephales notatus		X										X	
Rhinichthys atratulus		X	X	X	X		X		X	X	X	X	X
Semotilus atromaculatus	X		X	X	X		X	X	X	X		X	
Etheostoma blennioides	X	X	X	X			X						
E. stigmaeum jessiae												X	
E. simoterum	X	X	X	X	X		X			X	X	X	X
Percina caprodes	X												
Gambusia affinis	X					X				X		X	
Cottus carolinae	X	X	X	X	X		X	X	X	X	X	X	X
Lampetra appendix										X		X	

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Spout Spring Branch
County or River Mile Grainger
Type of Sampling Seining
Gear Type 10 ft. seine

Lat-Long 360954N - 833955W
Date 21 July 1989
Reach 06010104-
Pool Elevation 935 ft.
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
No fish collected at	all.						
Crayfish present.							
Temperature - 71°F							
Avg. width - 1 ft.							

* Label Parameter Listed

Field Notes: Sample location at Fennell Road crossing. Sampled both upstream and downstream. Small branch, only about 1 ft. wide at best.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

Site #1 - At the mouth.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Frost Branch
County or River Mile Grainger
Type of Sampling Seining
Gear Type 10 ft. seine

Lat-Long 360956N - 834107W
Date 21 July 1989
Reach 06010104-
Pool Elevation 895 ft.
Time AM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus punctulatus	219	1	(actual # collected)				
Ambloplites rupestris	13	4-5	(actual # collected)				
Lepomis auritus	201	(several)					
L. macrochirus	206	(few)					
Catostomus commersoni	32	(few)					
Hypentelium nigricans	166	(few)					
Campostoma anomalum	25	(few)					
Hybopsis amblops	155	2	(actual # collected)				
Notropis chrysocephalus	249	(several)					
N. spilopterus	269	(few)					
Rhinichthys atratulus	351	(few)					
Semotilus atromaculatus	360	(few)					
Etheostoma blennioides	81	2	(actual # collected)				
E. simoterum	111	(several)					
Cottus carolinae	40	(few)					
Temperature - 65°F							
pH - 8.0							
Avg. width - 10 to 12 ft.							
Heavy siltation. Mud-gravel-bedrock-boulder substrate.							
Lots of agricultural use along stream course.							
One specimen of *Notropis coccogenis* was collected from Richland Creek proper at the mouth of Frost Branch.							

* Label Parameter Listed

Field Notes: Sample location was at the mouth of the stream. Sampled approx. 500 ft. of stream.

Name of Collector(s): Rick D. Givens and Carl E. Williams

WR-0525

Site #2 - At bridge on Indian Ridge Road.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Frost Branch
County or River Mile Grainger
Type of Sampling Seining
Gear Type 10 ft. seine

Lat-Long 360913N - 834206W
Date 21 July 1989
Reach 06010104-
Pool Elevation 935 ft.
Time AM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Catostomus commersoni	32	2	(actual # collected)				
Campostoma anomalum	25	(few)					
Rhinichthys atratulus	351	(abundant)					
Semotilus atromaculatus	360	(common)					
Etheostoma blennioides	81	1	(actual # collected)				
E. simoterum	111	(common)					
Cottus carolinae	40	(few)					
Goniobasis simplex		(present)					
Temperature - 63°F							
pH - 8.0							
Avg. width - 8 to 10 ft.							
Avg. depth - 0.5 ft.							
Silt-sand-gravel with few boulders type substrate.							

* Label Parameter Listed

Field Notes: Sample location at the bridge on Indian Ridge Road near Blaine. Sampled both upstream and downstream of the bridge.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Trib. to Frost Branch
County or River Mile Grainger
Type of Sampling Seining
Gear Type 10 ft. seine

Lat-Long 360907N - 834152W
Date 21 July 1989
Reach 06010104-
Pool Elevation 935 ft.
Time AM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Campostoma anomalum	25	(few)					
Notropis chrysocephalus	249	(common)					
Rhinichthys atratulus	351	(common)					
Semotilus atromaculatus	360	(few)					
Etheostoma simoterum	111	(few)					
Cottus carolinae	40	(few)					
Goniobasis simplex		(abundant)					
Temperature - 62°F							
pH - 7.9							
Avg. width - 5 to 7 ft.							
Lots of silt in stream, cattle observed in stream.							
Silt-gravel-rubble to small boulder substrate.							

* Label Parameter Listed

Field Notes: Sample location at culvert on Indian Ridge Road near Blaine. Sampled both upstream and downstream of road crossing.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

Site #1 - At Sulphur Springs.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Lea Creek
County or River Mile Grainger
Type of Sampling Seining
Gear Type 10 ft. seine

Lat-Long 361043N - 835018W
Date 21 July 1989
Reach 06010104-
Pool Elevation 915 ft.
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Lepomis auritus	201	1	(actual # collected)				
L. macrochirus	206	(several)					
Ictalurus natalis	174	2	(actual # collected)				
Hpentelium nigricans	166	(few)					
Gambusia affinis	147	1	(actual # collected)				
Notropis chrysocephalus	249	(several)					
Campostoma anomalum	25	(several)					
pH - 7.5							
Avg. width - 10 to 15 ft.							
Silty-sandy substrate.							

* Label Parameter Listed

Field Notes: Sample location near Sulphur Springs.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

Site #2 - Along road approx. 0.5 mi. upstream of Lea Lake

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Lea Creek
County or River Mile Grainger
Type of Sampling Seining
Gear Type 10 ft. seine

Lat-Long 361154N - 835025W
Date 21 July 1989
Reach 06010104-
Pool Elevation 973 ft.
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
No fish collected at all.							

* Label Parameter Listed

Field Notes: Sample location along Poor Valley Road approx. 0.5 mi. upstream of Lea Lake.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Smith Branch
County or River Mile Grainger
Type of Sampling Seining
Gear Type 10 ft. seine

Lat-Long 361050N - 834008W
Date 21 July 1989
Reach 06010104-
Pool Elevation 945 ft.
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.
* *Oncorhynchus mykiss*	353	4	2-3	
Ambloplites rupestris	13	1	(actual # collected)	
Notropis chrysocephalus	249	1	(actual # collected)	
Rhinichthys atratulus	351	(common)		
Semotilus atromaculatus	360	(several)		
Etheostoma blennioides	79	1	(actual # collected)	
E. simoterum	111	(few)		
Cottus carolinae	40	(few)		
Goniobasis simplex		(abundant)		
Crayfish		(several)		
Temperature - 70°F				
pH - 8.0				
Silty-sandy-gravel-rubble with boulder to bedrock substrate.				
Couple of small falls were located within the sample area.				
* The rainbow trout were stocked from Buffalo Springs Trout Hatchery				
at the request of a local landowner.				

* Label Parameter Listed

Field Notes: Sample location was along Smith Hollow Road, about 0.5 mi. upstream of the mouth. Sampled approx. 500 ft. of stream.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Lat-Long 361242N - 833958W
Body of Water Trib. to Richland Cr.
Date 21 July 1989
County or River Mile Grainger
Reach 06010104-
Type of Sampling Seining
Pool Elevation 956 ft.
Gear Type 10 ft. seine
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Semotilus atromaculatus	360	(few)					
Cottus carolinae	40	4 or 5	(actual	# collected)			
Temperature - 72°F							
pH - 7.3							
Avg. width - 1 to 2	ft.						
Rubble-gravel substrate.							

* Label Parameter Listed

Field Notes: Sample location on trib. along Poor Valley Road, near Highland Springs Church.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Lat-Long 361348N - 831549W
Body of Water Highland Springs Br.
Date 21 July 1989
County or River Mile Grainger
Reach 06010104-
Type of Sampling Seining
Pool Elevation 955 ft.
Gear Type 10 ft. seine
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Rhinichthys atratulus	351	(several)					
Semotilus atromaculatus	360	(several)					
Cottus carolinae	40	2	(actual # collected)				
Temperature - 70°F							
pH - 7.8							
Avg. width - 1 to 3 ft.							
Silt-sand-gravel-rubble substrate.							
Small shallow stream.							

* Label Parameter Listed

Field Notes: Sample location along a small gravel road approx. 0.3 mi. NW of hwy. 11W.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Lat-Long 361536N - 833537W
Body of Water Buffalo Hide Creek
Date 9 November 1989
County or River Mile Grainger
Reach 06010104-
Type of Sampling Electrofishing
Pool Elevation 950 ft.
Gear Type One backpack shocker at 350 v. AC
Time 1030 - 1115

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus salmoides	220	1	small				
Lepomis auritus	201	3					
L. gulosus	204	1					
L. macrochirus	206	25					
Catostomus commersoni	32	1					
Hypentelium nigricans	166	3					
Campostoma anomalum	25	10					
Notropis chrysocephalus	249	97					
N. spilopterus	269	5					
Rhinichthys atratulus	351	5					
Semotilus atromaculatus	360	9					
Gambusia affinis	147	3					
Cottus carolinae	40	10					
Etheostoma simoterum	111	26					
Lampetra appendix	192	2					
Goniobasis simplex		(common)					
Temperature - 53.6°F							
pH - 7.5							
Conductivity - 75 micromho/cm							
Avg. width - 4 to 6 ft.							
Avg. depth - 3 to 4 in.							
Sand-gravel-rubble substrate with a few boulders.							
Fairly silty in places, riffle areas clean.							

* **Label Parameter Listed** No length or weight obtained, only numbers recorded.

Field Notes: Sample location was at road crossing at the remains of the old Corbin Lake dam. Approx. 300 ft. sample area.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Trib. to Richland Cr.
County or River Mile Grainger
Type of Sampling Electrofishing
Gear Type One backpack shocker at 110 v. AC

Lat-Long 361503N - 833500W
Date 9 November 1989
Reach 06010104-
Pool Elevation 945 ft.
Time 0900 - 0945

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Lepomis auritus	201	4					
L. macrochirus	206	11					
Catostomus commersoni	32	1					
Notropis chrysocephalus	249	39					
Campostoma anomalum	25	2					
Rhinichthys atratulus	351	45					
Etheostoma simoterum	111	16					
Cottus carolinae	40	50					
Goniobasis simplex		(abundant)					
Temperature - 56°F							
pH - 7.0							
Conductivity - 330 micromho/cm							
Avg. width - 4 ft.							
Avg. depth - 2 to 3 in.							
Silt-sand- gravel substrate with a few boulders.							
Water cress present.							

* **Label Parameter Listed** No lengths or weight obtained, only numbers recorded.

Field Notes: Sample location was at gravel road crossing just upstream of the mouth of stream that originates from spring at Owl Hole Gap. 300 ft. sample.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Trib. to Richland Cr.
County or River Mile Grainger
Type of Sampling Electrofishing
Gear Type One backpack shocker at 350 v. AC

Lat-Long 361657N - 833200W
Date 9 November 1989
Reach 06010104-
Pool Elevation 950 ft.
Time 1300 - 1330

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus salmoides	220	1	(small)				
Lepomis auritus	201	22					
L. macrochirus	206	1					
Catostomus commersoni	32	8					
Hypentelium nigricans	166	6					
Campostoma anomalum	25	6					
Notropis chrysocephalus	249	47					
N. spilopterus	269	4					
Pimephales notatus	334	16					
Rhinichthys atratulus	351	10		Temperature - 57°F			
Semotilus atromaculatus	360	4		pH - 7.4			
Etheostoma simoterum	111	22		Conductivity - 75 micromho/cm			
E. stigmaeum jessiae	96	1		Avg. width - 10 ft.			
Gambusia affinis	147	2		Avg. depth - 5 in.			
Cottus carolinae	40	4		Sandy-gravel-rubble substrate			
Lampetra appendix	192	4		with a few boulders. Fairly			
Ambloplites rupestris	13	1	1	silty. Lot of trash dumped			
" "	"	5	3	in and along stream course.			
" "	"	2	4				
" "	"	3	5				
" "	"	2	6				
" "	"	2	7				
" "	"	2	8				
" "	"	2	9				

* **Label Parameter Listed** Rock bass were inch classed.

Field Notes: Sample location at bridge on county road approx. 0.5 mi. N of hwy. 11W. Stream begins on Pine Mountain and flows near Rutledge.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River — **Lat-Long** 361720N - 832854W

Body of Water Rocky Branch — **Date** 9 November 1989

County or River Mile Grainger — **Reach** 06010104-

Type of Sampling Electrofishing — **Pool Elevation** 1045 ft.

Gear Type One backpack shocker at 110 v. AC — **Time** 1530 - 1600

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Lepomis auritus	201	2					
Notropis chrysocephalus	249	13					
Rhinichthys atratulus	351	20					
Etheostoma simoterum	111	14					
Cottus carolinae	40	23					
Goniobasis simplex		(abundant)					
Crayfish and salamanders present.							
Temperature - 57°F							
pH - 7.5							
Conductivity - 370 micromho/cm							
Avg. width - 4 to 6 ft.							
Avg. depth - 3 to 5 in.							
Rubble-gravel substrate with several boulders.							
Fairly silty stream. A large spring is located upstream according to a local resident. Water cress present in the stream.							

* **Label Parameter Listed** No lengths or weight obtained, only numbers recorded.

Field Notes: Sample location at culvert on Rocky Flat Road near Helton Springs Church. Approx. 300 ft. sample.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

Rocky Branch: Qualitative sample

9 November 1989 Field # 182

Grainger Co., TN; At the culvert on Rocky Flat Road near Helton Springs Church. Coordinates: 361720N - 832854W. Avondale, Tenn., # 162 SW Quad. Reach # 06010104-.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	3
COLEOPTERA:	
Elmidae/*Stenelmis*	1
DIPTERA:	
Chironomidae	2
Tipulidae/*Tipula*	7
EPHEMEROPTERA:	
Baetidae	3
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	6
ISOPODA:	
Asellidae/*Lirceus*	7
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	2
ODONATA:	
Aeshnidae/*Boyeria vinosa*	1
Calopterygidae/*Calopteryx dimidiata*	2
PLECOPTERA:	
Perlodidae/*Clioperla clio*	3
TRICHOPTERA:	
Glossosomatidae/*Glossosoma* larvae	9
pupa	1
Hydropsychidae/*Cheumatopsyche*	7
Diplectrona modesta	3
Hydropsyche betteni/depravata	6
Limnephilidae/*Pycnopsyche*	7
Philopotamidae/*Chimarra*	12
Polycentropodidae/*Polycentropus*	2
	84

Surgoinsville Creek

One qualitative fishery survey was conducted in December 1989:

Location and Length - Tributary to the Holston River. The sample area was located approximately 0.2 mi. upstream of the mouth of Young Branch and was sampled on 5 December 1989. It was approximately 300 ft. in length and averaged about 6 ft. in width. The site was in Hawkins County. Stony Point Quadrangle.

Gear Type - The site was sampled using a single backpack electrofishing unit operating at 110 V. AC.

Water Quality - No data collected.

Benthos Collection - No collection was made.

Fish Collected: (See data sheet for species list)

Comments - We sampled this stream primarily to collect specimens of the recently described Tennessee dace (*Phoxinus tennesseensis*). This species had previously been considered a subspecies of the mountain redbelly dace (*P. oreas*). Starnes and Jenkins (1988) distinguished it as a taxon separate from *P. oreas* and described it as a new species endemic to the upper Tennessee River drainage of Tennessee and Virginia.

Paratype specimens were collected from Surgoinsville Creek on 30 November 1975. From this collection, 18 specimens are deposited in the University of Michigan Museum of Zoology (UMMZ Cat. No. 198977) and 15 specimens in the National Museum of Natural History, Smithsonian Institution (USNM Cat. No. 216212).

We wanted to check the status of the species from this site as Starnes and Jenkins (1988) speculated that several of the formerly known populations may now be extirpated. With aid of quadrangle map coordinates furnished by the TVA Regional Natural Heritage Project, we were able to pinpoint the exact site of the earlier collection (hwy. 11W, used in locality data, has been moved since 1975).

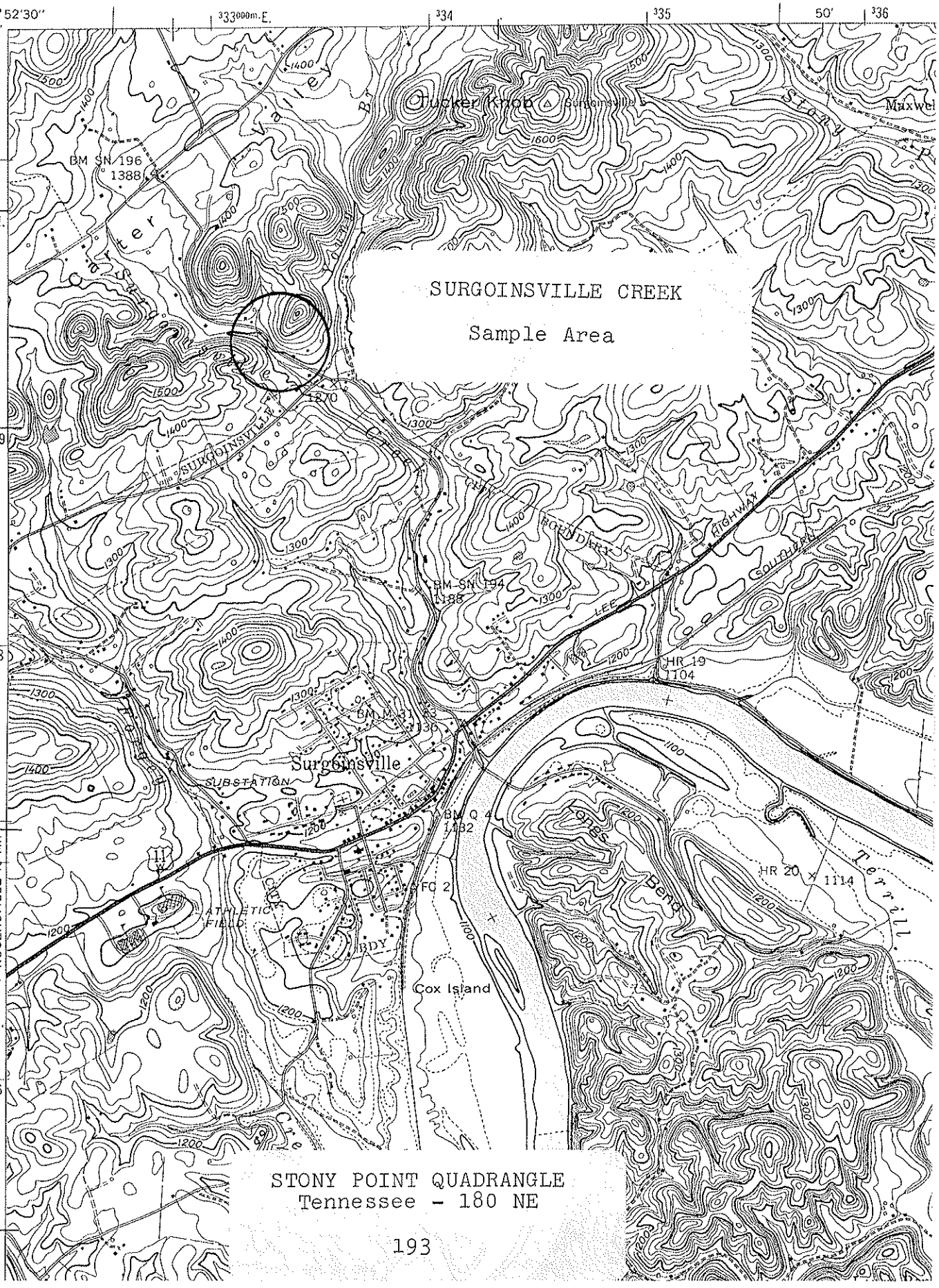
Our recent sampling produced 7 specimens of the Tennessee dace from this same locality, indicating that apparently no severe habitat alteration or other human impact has occurred. Other species collected at this site included *Campostoma anomalum*, *Rhinichthys atratulus*, *Semotilus atromaculatus*, *Cottus carolinae*, *Etheostoma simoterum*, and a single redbreast sunfish (*Lepomis auritus*).

Management Recommendations:

1. Protection of this habitat as the Tennessee dace has been listed as a species Deemed in Need of Management by the State of Tennessee, and of Special Concern by the Tennessee Heritage Program (Starnes and Etnier 1980).

(Looneys Gap 179-SW) 4457 III SW

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



STONY POINT QUADRANGLE
Tennessee - 180 NE

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Body of Water Surgoinsville Creek
County or River Mile Hawkins
Type of Sampling Electrofishing
Gear Type One backpack @ 110 v. AC

Lat-Long 362911N - 825142W
Date 5 December 1989
Reach 06010104-
Pool Elevation 1290 ft.
Time PM sampling

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Campostoma anomalum	25	11	2-4	0.30			
Phoxinus tennesseensis	333	7	1-2	0.02			
Rhinichthys atratulus	351	112	1-3	0.69			
Semotilus atromaculatus	360	18	1-4	0.23			
Cottus carolinae	40	33	1-3	0.35			
Etheostoma simoterum	111	11	1-2	0.04			
Lepomis auritus	201	1	4	0.10			
Goniobasis simplex		47					
Baetis		1					
Stenonema		1					
Isonychia		2					
Pycnopsyche		1					
Avg. width - 4 to 6 ft.							

* Label Parameter Listed

Field Notes: Sample location was approx. 0.2 mi. upstream of mouth of Young Br. along Surgoinsville Cr. Rd. Sampled approx. 300 ft. of stream.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

North Fork Holston River

One qualitative fishery survey was conducted on North Fork Holston River in November 1989:

Location and Length - Tributary to the Holston River. The sample area was located at Cloud Ford Bridge, North Fork Holston River mi. 4.7 and was sampled on 21 November 1989. It was 1200 ft. in length and averaged 188.8 ft. in width. The site was in Hawkins and Sullivan Counties. Kingsport Quadrangle.

Gear Type - The site was sampled using both boat and backpack electrofishing equipment. Two shocker boats were used where deeper water permitted and the riffle areas were sampled using a backpack electrofishing unit, operating at 340 V. DC, shocking into a 30 ft. seine. The shoreline was sampled by making additional seine hauls.

Water Quality - Data were taken from midstream on 5 December 1989: DO - 15.6 ppm, pH - 8.8, Temperature - 35.9°F, Conductivity - 260 micromhos/cm.

Benthos Collection - Benthic organisms were collected from three square-foot Surber samples and one qualitative sample at the site. The Surber samples averaged 157 organisms, 1.07 ml. volumetric displacement. All benthos combined represented 40 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Smallmouth bass	10	1.6	5.35	4.8
Rock bass	8	1.3	1.14	1.0
Redbreast sunfish	51	8.4	8.82	8.0
Bluegill	3	0.5	0.06	0.05
Longear sunfish	1	0.2	0.08	0.07
Nongame Fish	64	10.5	86.63	78.4
Forage Fish	471	77.5	8.45	7.6
Total	608		110.53	

Comments - The North Fork Holston River has had a long history of degradation. A variety of inorganic pollutants were discharged

from a chemical plant near Saltville, Virginia that began operations in 1894. Even though the Olin Chlor-Alkali Plant ceased operations in 1972, seepage of pollutants from its waste sludge ponds still occurred (Hill et al. 1975: Feeman 1980). Chief among these inorganics, in terms of fish management and human health, is mercury. The current (1990) Tennessee fishing regulations still prohibit keeping of any fish from the stream.

We surveyed this stream primarily to update fishery data for the agency and collect stream information for TADS. The last fish collections from this section were made upstream of the Tennessee-Virginia state line in the early 1970's.

Game fish from our collections included smallmouth bass (*Micropterus dolomieui*), rock bass (*Ambloplites rupestris*), redbreast sunfish (*Lepomis auritus*), bluegill (*L. macrochirus*), and longear sunfish (*L. megalotis*). Smallmouth bass, rock bass, and redbreast sunfish were the primary game species present. Redbreast sunfish comprised the highest percentages by number and weight of all game fish collected, however, smallmouth bass were collected up to 14 inches long (Fig. 13).

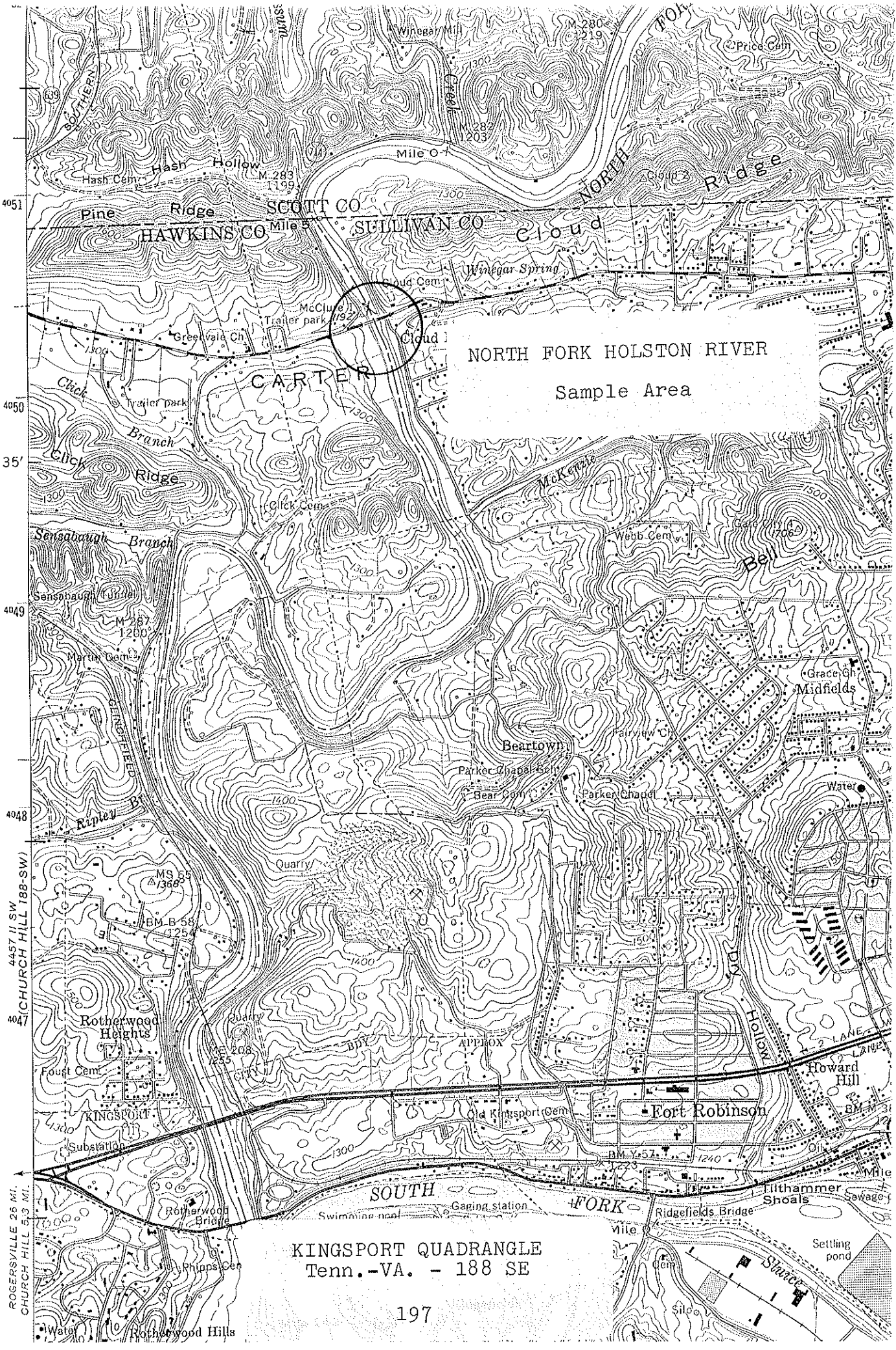
A total of 608 fish weighing 110.53 lb. and comprising 32 species was collected. Of this, about 78% of the total weight was nongame fish, primarily catostomids. Our species list compares well with those species collected from river mi. 6.3 by TVA in 1973 (Feeman 1980).

The North Fork Holston River is one of the few localities in Tennessee where the spotfin chub (*Hybopsis monacha*) is found and is designated critical habitat for the species (U.S. Fish and Wildlife Service 1983). We were able to document that the spotfin chub is still present in this section of the river.

Benthic macroinvertebrates from our samples included Heptageniidae, Leptophlebiidae, Oligoneuriidae, and Potomanthidae mayflies, Capniidae, Perlidae, and Taeniopterygidae stoneflies, and Brachycentridae, Glossosomatidae, Heliocopsychidae, Hydropsychidae, Limnephilidae, Odontoceridae, Philopotamidae, and Psychomyiidae caddisflies. Of special interest is the collection of the only eastern helicopsychid caddisfly species, *Helicopsyche borealis*. This species is widespread in middle Tennessee but is found only in a few localities in east Tennessee (Etnier and Schuster 1979). Asian clams (*Corbicula fluminea*) and the fingernail clam (*Sphaerium*) were present and the pleurocerid snail, *Anculosa subglobosa*, was abundant. A total of at least 40 distinct taxa was collected from the site.

Management Recommendations:

1. No specific management is suggested other than protection from any further degradation.


NORTH FORK HOLSTON RIVER
Sample Area
KINGSPORT QUADRANGLE
Tenn.-VA. - 188 SE
197
SCOTT CO
SULLIVAN CO
HAWKINS CO
CARTER
Cloud
Ridge
Pine Ridge
Hash Hollow
Click Ridge
Click Branch
Sensabaugh Branch
Ripley Br
Bell
Holloway
Beartown
Midfields
Rotherwood Heights
Fort Robinson
Howard Hill
Tilthammer Shoals
SOUTH FORK
KINGSPORT
Rotherwood Bridge
Ridgefields Bridge
Gaging station
Swimming pool
Old Kingsport Cem
Parker Chapel
Bear Cem
Webb Cem
Click Cem
Martin Cem
Foust Cem
Rhipps Cem
Greenvale Ch
Fairview Ch
Grace Ch
Price Cem
Wineger Mill
Wineger Spring
Cloud Cem
McClure Trailer park
Trailer park
Sensabaugh Tunnel
Quarry
Substation
Settling pond
Sluice
Silos
Water
Rotherwood Hills
ROGERSVILLE 26 MI.
CHURCH HILL 5.3 MI.
4457 II SW
(CHURCH HILL 188-SW)

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Holston River Lat-Long 363522N - 823622W

Stream North Fork Holston River Length of Sample 1200 ft.

Area or Station Cloud Ford Bridge Reach 06010101-1,0

County Hawkins and Sullivan Date/Time 5 December 1989/1300

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 188.8 ft. Average Depth 1.7 ft. Maximum Depth 3.5 ft.
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 20 %
   Clay - % Gravel 20 % Rubble 30 % Boulders 10 %
   Bedrock 10 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 10 %
   Bedrock 10 % Other Gravel 20% Rubble 30% Boulders 20%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average X Scarce
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 20 %
   of stream, Average in 50 %, Poor in 30 %.
7. Shade or Canopy Good over 10 % of Stream.
8. Flow (c.f.s.) 572.8 : Flow compared to Normal: Low Normal X High
9. D.O. 15.6 ppm Temp. 35.9°F % Saturation 115
10. Present Weather Clear to p. cloudy and cool; air temp. - 41°F.
11. Past Weather (last 24 hours) Clear to p. cloudy and cold overnight.
12. D.O. 15.6 pH 8.8 Temp. 35.9 Conductivity 260 micromho/cm
13. Comments: Sample location at Cloud Ford Bridge (hwy. # 346), river mi. 4.7. Approx. 800 ft. downstream of bridge and about 400 ft. upstream of bridge to the riffle area.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River **Lat-Long** 363522N - 823622W

Body of Water N. Fork Holston River **Date** 21 November 1989

County or River Mile Hawkins-Sullivan **Reach** 06010101-1,0

Type of Sampling Electrofishing **Pool Elevation** 1178 ft.

Gear Type Boat-backpack-seine & back-pack **Time** 1030 - 1600

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus dolomieui	218	1	3	0.02			
" "	"	1	4	0.05			
" "	"	1	5	0.07			
" "	"	1	7	0.15			
" "	"	1	10	0.45			
" "	"	1	11	0.56			
" "	"	2	12	1.72			
" "	"	1	13	0.93			
" "	"	1	14	1.40			
Ambloplites rupestris	13	1	3	0.04			
" "	"	1	4	0.06			
" "	"	2	5	0.25			
" "	"	3	6	0.46			
" "	"	1	8	0.33			
Lepomis auritus	201	1	2	0.01			
" "	"	3	3	0.10			
" "	"	2	4	0.12			
" "	"	14	5	1.63			
" "	"	16	6	2.73			
" "	"	11	7	3.08			
" "	"	4	8	1.15			
L. macrochirus	206	3	3	0.06			
L. megalotis	208	1	4	0.08			
Continued on next page							

Field Notes: 1200 ft. sample length. Six passes (80 min. shocking time) with two boats. Twenty-one combination backpack shocker-seine hauls.

Name of Collector(s): R.D. Bivens, C.E. Williams, C.F. Saylor, and R. Clayton

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River **Lat-Long** 363522N - 823622W

Body of Water N. Fork Holston River **Date** 21 November 1989

County or River Mile Hawkins-Sullivan **Reach** 06010101-1,0

Type of Sampling Electrofishing **Pool Elevation** 1178 ft.

Gear Type Boat-backpack-seine & back-pack **Time** 1030 - 1600

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Ictalurus punctatus	176	1	2	t			
Noturus eleutherus	283	7	1-2	0.03			
Hypentelium nigricans	166	17	7-15	11.93			
Moxostoma duquesnei	229	37	8-18	51.97			
M. erythrurum	230	7	12-17	12.03			
Campostoma anomalum	25	14	2-6	1.20			
Cyprinus carpio	47	2	16-25	10.70			
Hybopsis amblops	155	16	1-3	0.08			
H. dissimilis	157	6	4-5	0.24			
H. monacha	163	4	1*	-			
Nocomis micropogon	234	7	2-7	0.36			
Notropis ariommus	238	2	2	0.01			
N. coccogenis	248	47	1-5	0.77			
N. chrysocephalus	249	43	2-7	3.92			
N. galacturus	253	28	1-4	0.20			
N. leuciodus	255	13	1-2	0.04			
N. photogenis	259	21	3-5	0.58			
N. rubellus micropteryx	260	27	1-2	0.07			
Notropis sp. cf. *N. spectrunculus*	266	16	1-2	0.04			
N. spilopterus	269	3	1-2	0.01			
N. telescopus	272	50	2-3	0.19			
Rhinichthys atratulus	351	1	3	0.02			
Continued on	next	page					

* Estimated length; no weight obtained.

Field Notes: 1200 ft. sample length. Six passes (80 min. shocking time) with two boats. Twenty-one combination backpack shocker-seine hauls.

Name of Collector(s): R.D. Bivens, C.E. Williams, C.F. Saylor, and R. Clayton

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Lat-Long 363522N - 823622W
Body of Water N. Fork Holston River
Date 21 November 1989
County or River Mile Hawkins-Sullivan
Reach 06010101-1,0
Type of Sampling Electrofishing
Pool Elevation 1178 ft.
Gear Type Boat-backpack-seine & back-pack
Time 1030 - 1600

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Etheostoma blennioides	81	10	2-4	0.18			
E. camurum	85	12	1-2	0.07			
E. rufilineatum	108	136	1-2	0.40			
E. zonale	134	4	2	0.02			
Percina evides	310	4	1-2	0.02			

Field Notes: 1200 ft. sample length. Six passes (80 min. shocking time) with two boats. Twenty-one combination backpack shocker-seine hauls.

Name of Collector(s): R.D. Bivens, C.E. Williams, C.F. Saylor, and R. Clayton

WR-0525

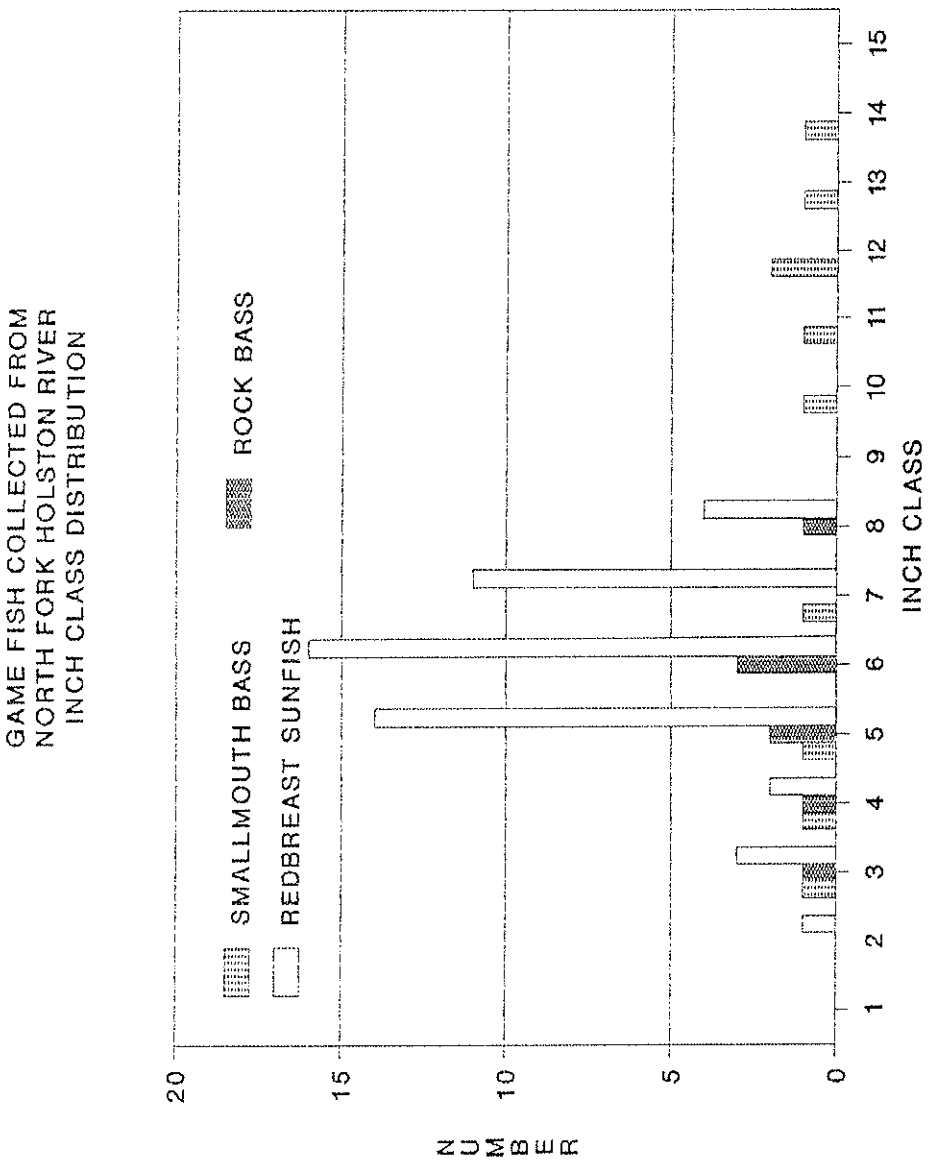

GAME FISH COLLECTED FROM
NORTH FORK HOLSTON RIVER
INCH CLASS DISTRIBUTION
SMALLMOUTH BASS
ROCK BASS
REDBREAST SUNFISH
NUMBER
0
5
10
15
20
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
INCH CLASS

Figure 13.

North Fork Holston River: Edge Surber sample # 1

5 December 1989 Field # 189

Hawkins and Sullivan Cos., TN; Riffle area upstream of Cloud Ford Bridge, river mi. 4.7. Coordinates: 363522N - 823622W. Kingsport, Tenn.-VA., # 188 SE Quad. Reach # 06010101-1,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Elmidae/*Optioservus* larvae	18
Stenelmis larvae	4
Psephenidae/*Psephenus herricki* larvae	5
DIPTERA:	
Chironomidae	28
Empididae	2
Unid. pupa	1
EPHEMEROPTERA:	
Potamanthidae/*Potamanthus*	1
GASTROPODA:	
Pleuroceridae/*Anculosa subglobosa*	48
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	7
PLECOPTERA:	
Nemouridae	1
Taeniopterygidae/*Taenionema atlanticum*	2
Taeniopteryx	9
TRICHOPTERA:	
Brachycentridae/*Brachycentrus*	3
Hydropsychidae/*Hydropsyche frisoni*	2
H. venularis	3
Limnephilidae/*Neophylax*	3
	138

Volumetric Displacement was 1.0 ml.

North Fork Holston River: Edge Surber sample # 2

5 December 1989 Field # 189

Hawkins and Sullivan Cos., TN; Riffle area upstream of Cloud Ford Bridge, river mi. 4.7. Coordinates: 363522N - 823622W. Kingsport, Tenn.-VA., # 188 SE Quad. Reach # 06010101-1,0.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Optioservus* larvae	2
Stenelmis larva	1
adults	9
Psephenidae/*Psephenus herricki* larvae	3
DIPTERA:	
Chironomidae	11
Unid. pupae	2
GASTROPODA:	
Pleuroceridae/*Anculosa subglobosa*	21
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	1
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	2
PLECOPTERA:	
Capniidae	3
Nemouridae	1
Taeniopterygidae/*Taenionema atlanticum*	1
Taeniopteryx	9
TRICHOPTERA:	
Brachycentridae/*Brachycentrus*	5
Micrasema	1
Hydropsychidae/*Cheumatopsyche*	2
Hydropsyche frisoni	2
H. venularis	1
Symphitopsyche cheilonis	1
Philopotamidae/*Chimarra*	2
	80

Volumetric Displacement was 0.9 ml.

North Fork Holston River: Midstream Surber sample

5 December 1989 Field # 189

Hawkins and Sullivan Cos., TN; Riffle area upstream of Cloud Ford Bridge, river mi. 4.7. Coordinates: 363522N - 823622W. Kingsport, Tenn.-VA., # 188 SE Quad. Reach # 06010101-1,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	3
COLEOPTERA:	
Elmidae/*Optioservus* larvae	2
Stenelmis larva	1
adults	4
Psephenidae/*Psephenus herricki* larva	1
DIPTERA:	
Chironomidae	21
Simuliidae pupa	1
Tipulidae/*Antocha*	1
Unid. pupae	11
EPHEMEROPTERA:	
Heptageniidae/*Stenonema*	3
S. (*Maccaffertium*) *modestum*	1
Oligoneuriidae/*Isonychia*	3
GASTROPODA:	
Pleuroceridae/*Anculosa subglobosa*	119
HYDRACARINA:	1
LEPIDOPTERA:	
Pyralidae/*Petrophila*	1
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	2
Sphaeriidae/*Sphaerium*	1
PLECOPTERA:	
Capniidae	1
Perlidae/*Agnetina capitata*	1
Taeniopterygidae/*Taenionema atlanticum*	9
Taeniopteryx	42

cont.

North Fork Holston River: Midstream Surber sample cont.

TAXA	NUMBER
TRICHOPTERA:	
Glossosomatidae/*Glossosoma*	2
Helicopsychidae/*Helicopsyche borealis*	4
Hydropsychidae/*Cheumatopsyche*	12
Hydropsyche frisoni	1
H. venularis	5
Psychomyiidae/*Psychomyia flavida*	1
	254

Volumetric Displacement was 1.3 ml.

North Fork Holston River: Qualitative sample

5 December 1989 Field # 189

Hawkins and Sullivan Cos., TN; Riffle area upstream of Cloud Ford Bridge, river mi. 4.7. Coordinates: 363522N - 823622W. Kingsport, Tenn.-VA., # 188 SE Quad. Reach # 06010101-1,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	3
COLEOPTERA:	
Elmidae/*Optioservus* larvae	2
DECAPODA:	
Unid. crayfish	2
DIPTERA:	
Chironomidae	1
EPHEMEROPTERA:	
Heptageniidae/*Stenonema*	7
Leptophlebiidae/*Leptophlebia*	1
Oligoneuriidae/*Isonychia*	10
Potomanthidae/*Potomanthus*	2
GASTROPODA:	
Pleuroceridae/*Anculosa subglobosa*	3
ODONATA:	
Aeshnidae/*Basiaeschna janata*	1
Boyeria vinosa	1
Coenagrionidae/*Argia*	1
Gomphidae/*Erpetogomphus designatus*	1
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	3
PLECOPTERA:	
Capniidae	6
Perlidae/*Acroneuria evoluta*	1
Agnetina capitata	2
Taeniopterygidae/*Taenionema atlanticum*	6
Taeniopteryx	27

cont.

North Fork Holston River: Qualitative sample cont.

TAXA	NUMBER
TRICHOPTERA:	
Brachycentridae/*Brachycentrus*	2
Hydropsychidae/*Cheumatopsyche*	10
Hydropsyche venularis	1
Symphitopsyche cheilonis	1
Odontoceridae/*Psilotreta labida*	1
	95

Laurel Fork (Headwaters)

Two qualitative fishery surveys were conducted on Laurel Fork in October 1989:

Location and Length - Tributary to the Doe River. Sample area 1 was located at the mouth of Little Laurel Fork. It was 300 ft. in length and averaged 25.5 ft. in width. Sample area 2 was located at the mouth of Camp Ten Branch. It was 400 ft. in length and averaged 19.3 ft. in width. Both sites were sampled on 26 October 1989 and were in Carter County. White Rocks Mountain Quadrangle.

Gear Type - Both sites were sampled using a single backpack electrofishing unit operating at 700 V. AC.

Water Quality - Data were taken from midstream at each site on 26 October 1989: Area 1, DO - 10.8 ppm, pH - 6.9, Temperature - 42.9°F, Conductivity - 15 micromhos/cm. Area 2, DO - 10.3 ppm, pH - 7.2, Temperature - 48.9°F, Conductivity - 60 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples and one qualitative sample at each site. Area 1 Surber samples averaged 186 organisms and 0.65 ml. volumetric displacement. All benthos combined represented 54 taxa. Area 2 Surber samples averaged 28 organisms and 0.2 ml. volumetric displacement. All benthos combined represented 33 taxa.

Fish Collected:

	Area 1				Area 2			
Species	No.	% by No.	Wt.	% by Wt.	No.	% by No.	Wt.	% by Wt.
Brown trout	15	19.5	2.25	56.8	13	18.3	0.68	50.0
Brook trout					3	4.2	0.12	8.8
Nongame Fish	5	6.5	1.25	31.6				
Forage Fish	57	74.1	0.46	11.6	55	77.5	0.56	41.2
Total	77		3.96		71		1.36	

Comments:

This stream was surveyed primarily to reassess the trout population, three years after it's reclassification as a wild trout stream. We returned to Laurel Fork in the fall of 1989 and surveyed the same area that was sampled in 1986 (Bivens 1988). In addition, we conducted another sample upstream, at a location where the U.S. Forest Service recently created pools in bedrock areas.

We collected only brown trout (*Salmo trutta*) at site 1 last year. In 1986, a single hatchery rainbow trout (*Oncorhynchus mykiss*) was collected at this site. Also, only 15 brown trout were collected compared to 29 in 1986, but the total weights were similar. Brown trout ranged from 3 to 11 in. (Fig. 14) with several 3 and 4 in. fish, and at least three legal size trout (9 in. min.). A total of 77 fish weighing 3.96 lb. and comprising 5 species was collected from site 1.

About the same number of trout were collected at the upper site as were at the lower site. Three were brook trout (*Salvelinus fontinalis*) and 13 were brown. No rainbows were collected here either. Most of the brown trout collected were 2 and 3 in. fish and the largest brown trout was 8 in. (Fig. 15). The Forest Service created some nice pools in this area but we collected few fish from them. A total of 71 fish weighing 1.36 lb. and comprising 4 species was collected from site 2.

Benthic macroinvertebrates from our samples at site 1 included Baetidae, Ephemerellidae, Ephemeridae, Heptageniidae, Leptophlebiidae, and Oligoneuriidae mayflies, Brachycentridae, Glossosomatidae, Hydropsychidae, Lepidostomatidae, Limnephilidae, Philopotamidae, Polycentropodidae, and Rhyacophilidae caddisflies, and Chloroperlidae, Leuctridae, Peltoperlidae, Perlidae, Perlodidae, and Pteronarcyidae stoneflies. A total of 54 taxa was collected at site 1.

Several of the same families were represented at site 2 but only 33 distinct taxa were collected. Periwinkle snails (*Goniobasis simplex*) were collected from both sites and limpets (*Ferrissia*) were collected at site 2. The benthic fauna looked much better at the downstream site. Not only was it more diverse, but also more abundant as the Surbers averaged 186 organisms compared to 28 at the upstream site.

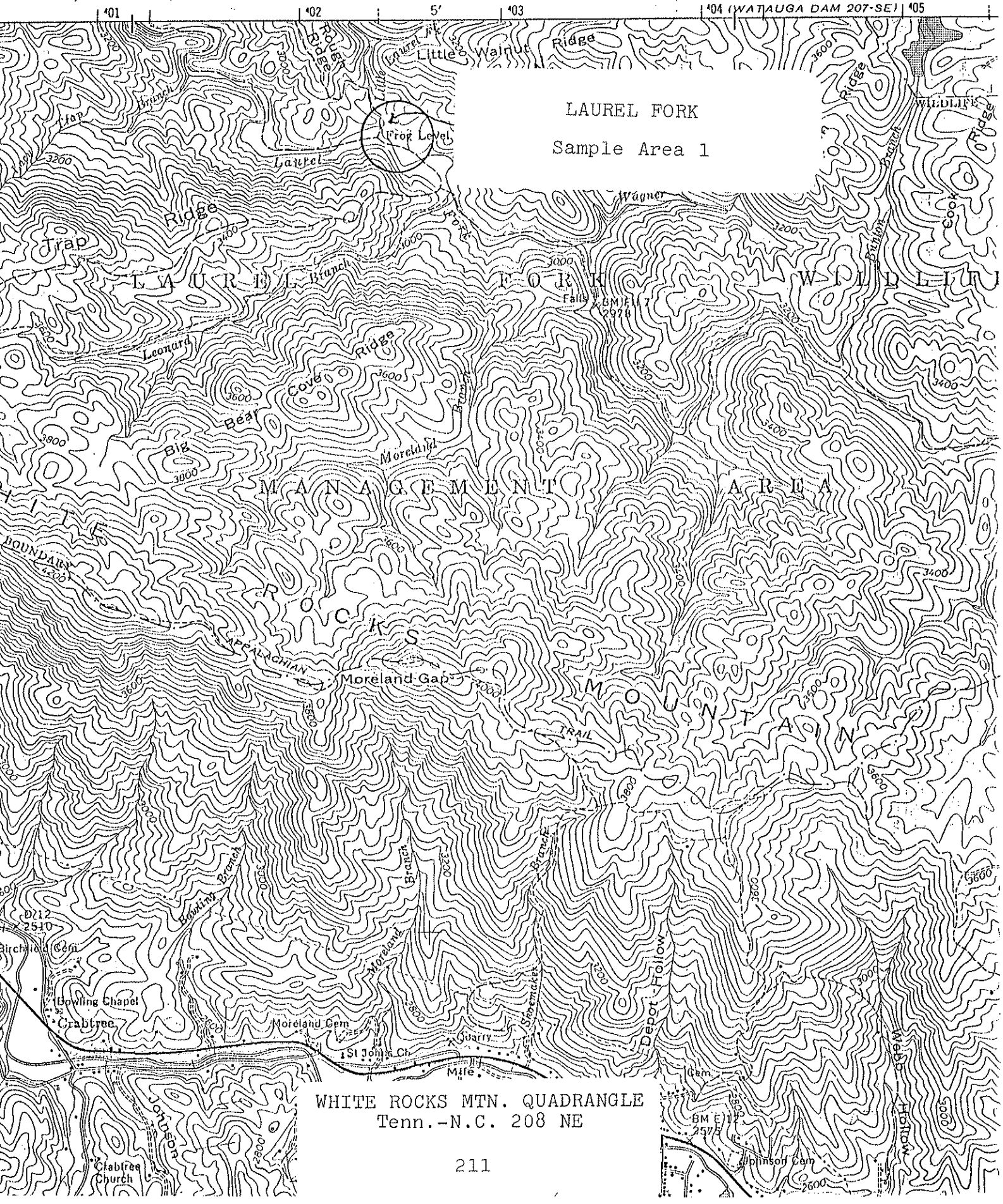
Management Recommendations:

1. Continue the current trout stocking plan. That is, stock catchable size rainbow trout every other week during the spring. Although it is listed as a wild trout stream, it no longer has a stream reared rainbow trout population on the Forest Service section of the stream. It does appear to support a healthy brown trout population though.

2. Continue to monitor this stream and it's trout population.

OR

UNITED STATES
TENNESSEE VALLEY AUTHORITY
MAPS AND SURVEYS BRANCH
4556 I SE



TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Watauga River Lat-Long 361443N - 820512W

Stream Laurel Fork Length of Sample 300 ft.

Area or Station Site # 1 Reach 06010103-17,0

County Carter Date/Time 26 October 1989/0830

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 25.5 ft. Average Depth 0.6 ft. Maximum Depth 3.4 ft.
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 30 %
   Clay - % Gravel 10 % Rubble 30 % Boulders 20 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 20 %
   Bedrock - % Other Gravel - 20% Rubble - 30% Boulders - 20%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 80 % of Stream.
8. Flow (c.f.s.) 17.6 : Flow compared to Normal: Low Normal X High
9. D.O. 10.8 ppm Temp. 42.9°F % Saturation 88
10. Present Weather Clear and cold; air temperature - 38°F
11. Past Weather (last 24 hours) Mild afternoon with cold night.
12. D.O. 10.8 pH 6.9 Temp. 42.9 Conductivity 15 micromho/cm
13. Comments: Sample location at the mouth of Little Laurel Fork.

Site #1 - At the mouth of Little Laurel Fork

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Watauga River
Body of Water Laurel Fork
County or River Mile Carter
Type of Sampling Electrofishing
Gear Type One backpack shocker at 700 v. AC

Lat-Long 36144N - 820512W
Date 26 October 1989
Reach 06010103-17,0
Pool Elevation 2850 ft.
Time 1030 - 1120

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo trutta	355	4	3	0.05			
" "	"	3	4	0.07			
" "	"	2	6	0.20			
" "	"	2	7	0.27			
" "	"	1	8	0.20			
" "	"	1	10	0.31			
" "	"	2	11	1.15			
Catostomus commersoni	32	5	4-11	1.25			
Campostoma anomalum	25	2	3-4	0.05			
Rhinichthys atratulus	351	46	1-3	0.21			
Semotilus atromaculatus	360	9	1-5	0.20			

Field Notes: 300 ft. sample length.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

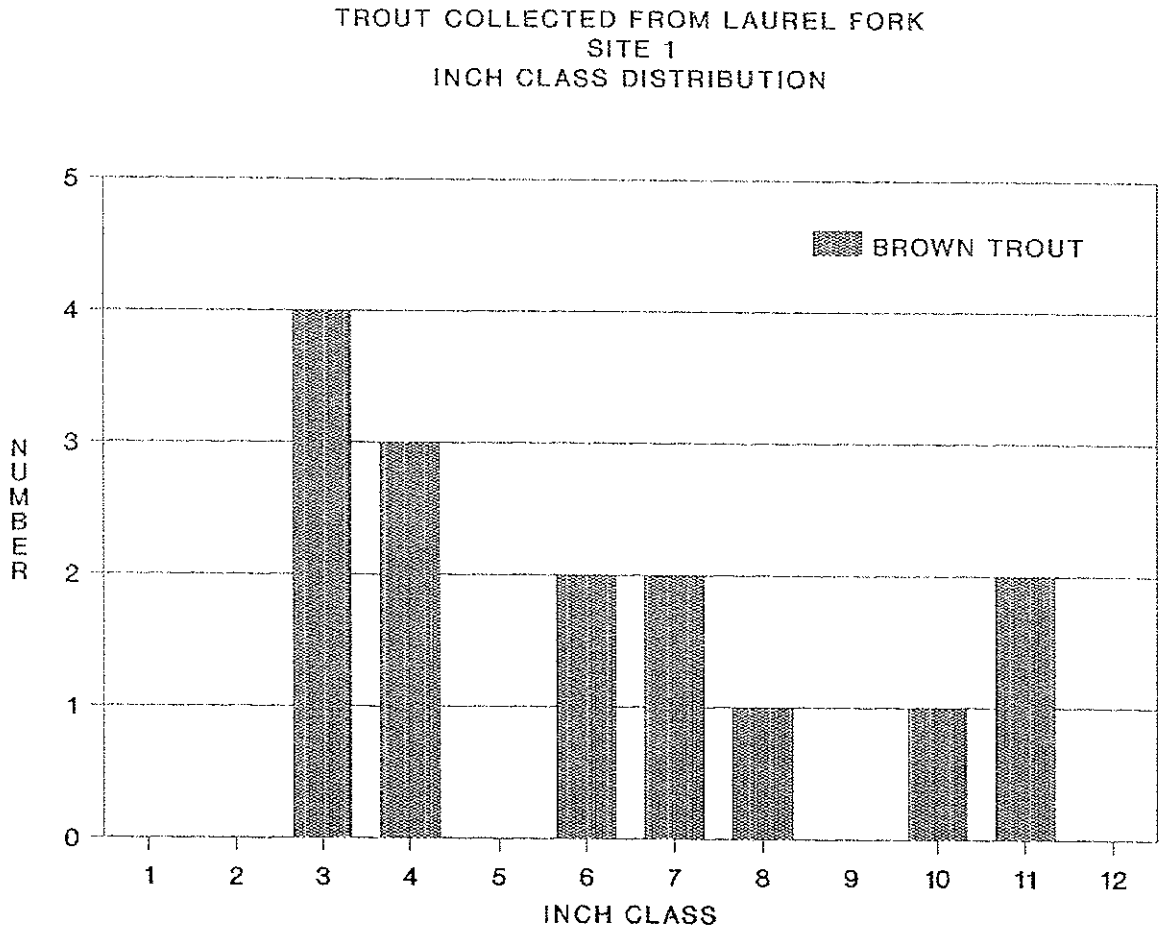

TROUT COLLECTED FROM LAUREL FORK
SITE 1
INCH CLASS DISTRIBUTION
BROWN TROUT
NUMBER
0
1
2
3
4
5
1
2
3
4
5
6
7
8
9
10
11
12
INCH CLASS

Figure 14.

Laurel Fork: Site # 1, Edge Surber sample

26 October 1989 Field # 177

Carter Co., TN; Road crossing at the mouth of Little Laurel Fork. Coordinates: 361443N - 820512W. White Rocks Mtn., Tenn.-N.C., # 208 NE Quad. Reach # 06010103-17,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Elmidae/*Oulimnius latiusculus* larvae	8
Promoresia elegans larva	1
adult	1
Eubriidae/*Ectopria* larvae	7
Psephenidae/*Psephenus herricki* larva	1
DIPTERA:	
Ceratopogonidae/*Palpomyia* complex	3
Chironomidae	156
Empididae	2
Simuliidae	3
Unid. pupa	1
EPHEMEROPTERA:	
Ephemerellidae/*Eurylophella*	1
Ephemeridae/*Ephemera*	1
Heptageniidae/*Heptagenia*	7
Stenonema	14
Leptophlebiidae/*Paraleptophlebia*	12
Oligoneuriidae/*Isonychia*	2
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	16
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	3
ODONATA:	
Gomphidae/*Lanthus vernalis*	2
PLECOPTERA:	
Chloroperlidae/*Utaperla gaspesiana*	1
Leuctridae	2
Peltoperlidae/*Peltoperla*	6
Perlidae/*Acroneuria abnormis*	4

cont.

Laurel Fork: Site # 1, Edge Surber sample cont.

TAXA	NUMBER
TRICHOPTERA:	
Brachycentridae/*Brachycentrus*	1
Micrasema	1
Glossosomatidae/*Agapetus*	11
Hydropsychidae/*Cheumatopsyche*	14
Diplectrona modesta	18
Parapsyche cardis	1
Symphitopsyche macleodi	8
S. sparna	3
Lepidostomatidae/*Lepidostoma*	5
Limnephilidae/*Apatania*	2
Pycnopsyche	2
Philopotamidae/*Dolophilodes distinctus*	2
Polycentropodidae/*Nictophylax*	6
Polycentropus	1
Rhyacophilidae/*Rhyacophila*	1
	332

Volumetric Displacement was 1.0 ml.

Laurel Fork: Site # 1, Midstream Surber sample

26 October 1989 Field # 177

Carter Co., TN; Road crossing at the mouth of Little Laurel Fork. Coordinates: 361443N - 820512W. White Rocks Mtn., Tenn.-N.C., # 208 NE Quad. Reach # 06010103-17,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	3
COLEOPTERA:	
Elmidae/*Optioservus* larvae	3
DIPTERA:	
Chironomidae	2
Simuliidae	1
Tipulidae/*Hexatoma*	1
EPHEMEROPTERA:	
Ephemerellidae/*Ephemerella*	2
Heptageniidae/*Epeorus* (*Iron*)	5
Heptagenia	1
Stenonema	1
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	4
PLECOPTERA:	
Perlidae/*Acroneuria carolinensis*	1
Perlodidae/*Malirekus hastatus*	1
TRICHOPTERA:	
Glossosomatidae/*Agapetus*	7
Glossosoma	3
Hydropsychidae/*Cheumatopsyche*	2
Symphitopsyche macleodi	1
S. sparna	1
Limnephilidae/*Pycnopsyche*	1
	40

Volumetric Displacement was 0.3 ml.

Laurel Fork: Site # 1, Qualitative sample

26 October 1989 Field # 177

Carter Co., TN; Road crossing at the mouth of Little Laurel Fork. Coordinates: 361443N - 820512W. White Rocks Mtn., Tenn.-N.C., # 208 NE Quad. Reach # 06010103-17,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Elmidae/*Optioservus* larvae	6
DIPTERA:	
Chironomidae	18
Simuliidae	2
Tipulidae/*Dicranota*	2
Hexatoma	4
EPHEMEROPTERA:	
Baetidae/*Baetis*	1
Ephemerellidae/*Ephemerella*	6
Ephemeridae/*Ephemera guttulata*	1
E. varia	1
Heptageniidae/*Epeorus* (*Iron*)	2
Heptagenia	2
Stenonema	14
Leptophlebiidae/*Paraleptophlebia*	16
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	17
HEMIPTERA:	
Gerridae/*Gerris* (*Aquarius*) *remigis*	2
Notonectidae/*Notonecta* (*Notonecta*) *irrorata*	1
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	1
ODONATA:	
Aeshnidae/*Boyeria vinosa*	1
Calopterygidae/*Calopteryx maculata*	1
Gomphidae/*Lanthus vernalis*	3

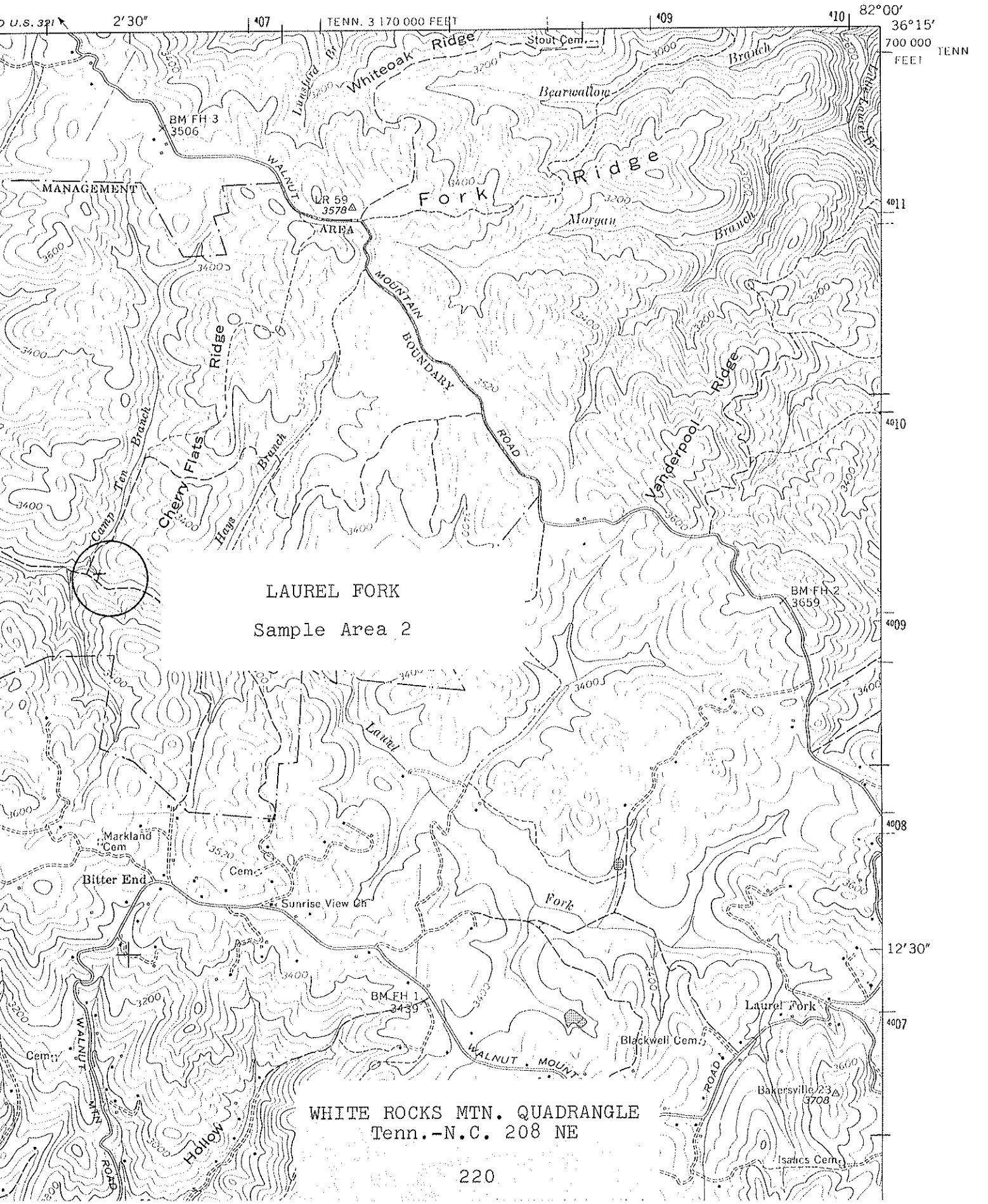
cont.

Laurel Fork: Site # 1, Qualitative sample cont.

TAXA	NUMBER
PLECOPTERA:	
Chloroperlidae/*Utaperla gaspesiana*	2
Peltoperlidae/*Peltoperla*	12
Perlidae/*Acroneuria internata*	2
Agnetina capitata	2
Perlodidae/*Malirekus hastatus*	15
Pteronarcyidae/*Pteronarcys*	1
TRICHOPTERA:	
Glossosomatidae/*Agapetus*	1
Hydropsychidae/*Cheumatopsyche*	1
Diplectrona modesta	3
Symphitopsyche macleodi	1
S. sparna	2
Lepidostomatidae/*Lepidostoma*	1
Philopotamidae/*Dolophilodes distinctus*	2
Rhyacophilidae/*Rhyacophila fuscula*	1
	149

4656 IV SW
(ELK MILLS 214-SW)

WHITE ROCKS MOUNTAIN QUADRANGLE
TENNESSEE-NORTH CAROLINA
7.5 MINUTE SERIES (TOPOGRAPHIC) 208-NE



WHITE ROCKS MTN. QUADRANGLE
Tenn.-N.C. 208 NE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Watauga River Lat-Long 361333N - 820236W

Stream Laurel Fork Length of Sample 400 ft.

Area or Station Site # 2 Reach 06010103-17,0

County Carter Date/Time 26 October 1989/1630

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 19.3 ft. Average Depth 0.4 ft. Maximum Depth 2.5 ft.
2. Estimated Percent of Stream in Pools is 25 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 50 %
   Clay - % Gravel 10 % Rubble 15 % Boulders 10 %
   Bedrock 5 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 30 %
   Bedrock - % Other Gravel 15% Rubble 35% Boulders 10%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 15 %
   of stream, Average in 45 %, Poor in 40 %.
7. Shade or Canopy Good over 95 % of Stream.
8. Flow (c.f.s.) 4.6 : Flow compared to Normal: Low Normal X High
9. D.O. 10.3 ppm Temp. 48.9°F % Saturation 91
10. Present Weather Clear and mild; air temperature - 53°F
11. Past Weather (last 24 hours) Clear and cold overnight.
12. D.O. 10.3 pH 7.2 Temp. 48.9 Conductivity 60 micromho/cm
13. Comments: Sample location at the mouth of Camp Ten Branch. The sample area included area of stream improvements made by the U.S. Forest Service.

Site #2 - Mouth of Camp Ten Branch.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Watauga River
Body of Water Laurel Fork
County or River Mile Carter
Type of Sampling Electrofishing
Gear Type One backpack shocker at 700 v. AC

Lat-Long 361333N - 820236W
Date 26 October 1989
Reach 06010103-17,0
Pool Elevation 3200 ft.
Time 1520 - 1600

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo trutta	355	3	2	0.03			
" "	"	6	3	0.08			
" "	"	1	5	0.07			
" "	"	1	6	0.11			
" "	"	1	7	0.15			
" "	"	1	8	0.24			
Salvelinus fontinalis	356	1	2	0.01			
" "	"	1	5	0.04			
" "	"	1	6	0.07			
Rhinichthys atratulus	351	32	1-3	0.30			
Semotilus atromaculatus	360	23	1-5	0.26			

Field Notes: 400 ft. sample length. Sample area included 5 stream habitat improvement structures.

Name of Collector(s): Rick D. Bivens, Carl E. Williams, and Bill A. Smith

WR-0525

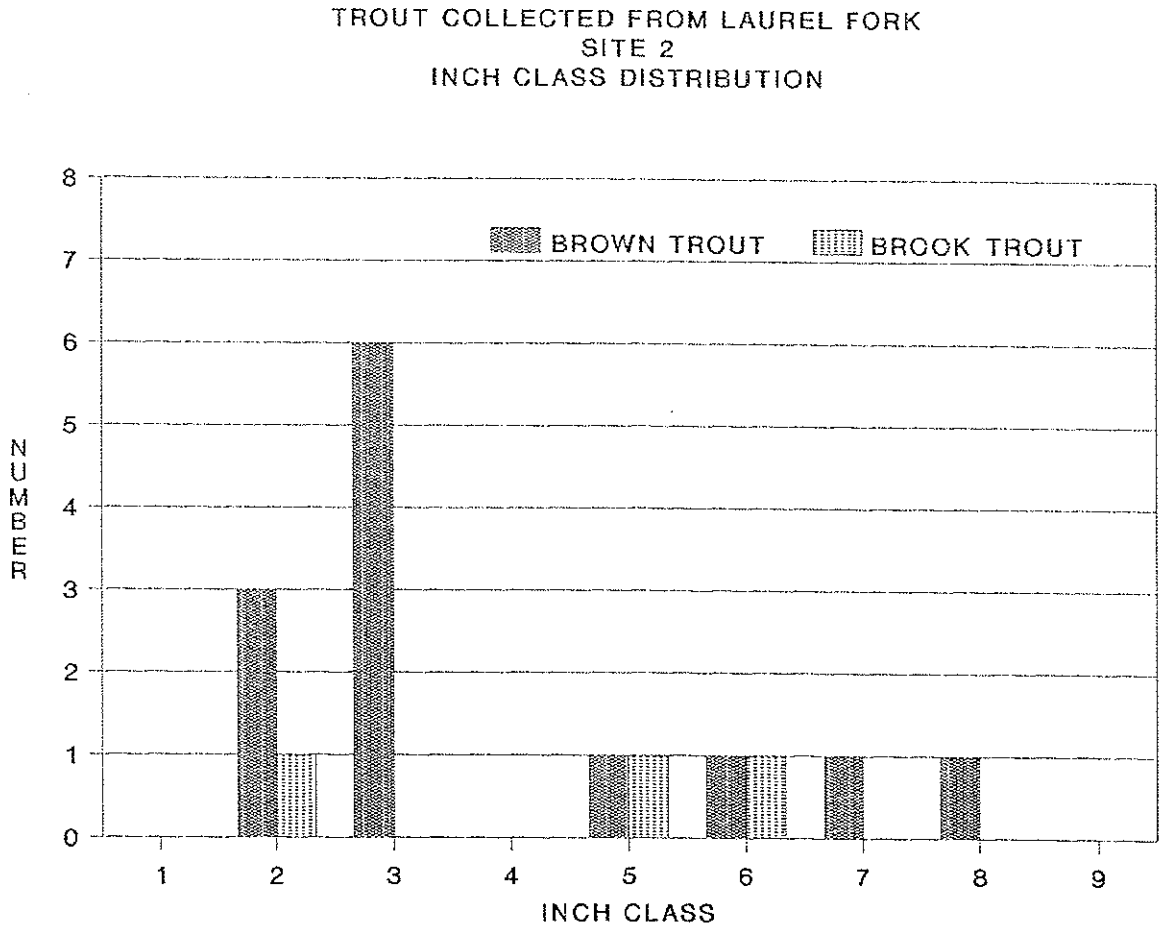

TROUT COLLECTED FROM LAUREL FORK
SITE 2
INCH CLASS DISTRIBUTION
BROWN TROUT
BROOK TROUT
NUMBER
0
1
2
3
4
5
6
7
8
1
2
3
4
5
6
7
8
9
INCH CLASS

Figure 15.

Laurel Fork: Site # 2, Edge Surber sample

26 October 1989 Field # 178

Carter Co., TN; Just upstream of the mouth of Camp Ten Br. Coordinates: 361333N - 820236W. White Rocks Mtn., Tenn.-N.C., # 208 NE Quad. Reach # 06010103-17,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	11
COLEOPTERA:	
Elmidae/*Optioservus* larvae	2
O. ovalis adult	1
Oulimnius latiusculus larvae	4
adult	1
DIPTERA:	
Chironomidae	2
EPHEMEROPTERA:	
Baetidae/*Baetis*	1
Heptageniidae/*Epeorus* (*Iron*)	2
Rhithrogena	2
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	5
HEMIPTERA:	
Veliidae/*Microvelia*	1
MEGALOPTERA:	
Sialidae/*Sialis*	1
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	1
Perlodidae/*Malirekus hastatus*	2
Taeniopterygidae/*Taeniopteryx*	1
TRICHOPTERA:	
Glossosomatidae/*Agapetus*	1
Limnephilidae/*Goera calcarata*	1
Pycnopsyche	1
	40

Volumetric Displacement was 0.2 ml.

Laurel Fork: Site # 2, Midstream Surber sample

26 October 1989 Field # 178

Carter Co., TN; Just upstream of the mouth of Camp Ten Br. Coordinates: 361333N - 820236W. White Rocks Mtn., Tenn.-N.C., # 208 NE Quad. Reach # 06010103-17,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Elmidae/Optioservus ovalis adult	1
Oulimnius latiusculus larvae	3
EPHEMEROPTERA:	
Heptageniidae/Epeorus (Iron)	2
Stenonema	2
GASTROPODA:	
Ancylidae/Ferrissia	2
Pleuroceridae/Goniobasis simplex	2
TRICHOPTERA:	
Glossosomatidae/Glossosoma	1
Hydropsychidae/Symphitopsyche macleodi	1
Limnephilidae/Neophylax	1
	16

Volumetric Displacement was 0.2 ml.

Laurel Fork: Site # 2, Qualitative sample

26 October 1989 Field # 178

Carter Co., TN; Just upstream of the mouth of Camp Ten Br. Coordinates: 361333N - 820236W. White Rocks Mtn., Tenn.-N.C., # 208 NE Quad. Reach # 06010103-17,0.

TAXA	NUMBER
COLEOPTERA:	
Psephenidae/*Psephenus herricki* larvae	2
DIPTERA:	
Chironomidae	1
Tipulidae/*Tipula*	3
EPHEMEROPTERA:	
Ephemeridae/*Ephemera varia*	5
Heptageniidae/*Heptagenia*	1
Stenacron	2
Stenonema	11
Leptophlebiidae/*Paraleptophlebia*	2
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	9
ODONATA:	
Gomphidae/*Lanthus vernalis*	3
PLECOPTERA:	
Chloroperlidae/*Utaperla gaspesiana*	2
Nemouridae/*Amphinemura*	1
Peltoperlidae/*Peltoperla*	7
Pteronarcyidae/*Pteronarcys*	2
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	2
Diplectrona modesta	1
Limnephilidae/*Neophylax*	1
Pycnopsyche	2
	57

Beaverdam Creek

Two qualitative fishery surveys were conducted on Beaverdam Creek in October 1989:

Location and Length - Tributary to the South Fork Holston River. Sample area 1 was located just upstream of the bridge at Backbone Rock and was sampled on 24 October 1989. It was 300 ft. in length and averaged 41.0 ft. in width. Sample area 2 was located just upstream of Arnold Branch and was sampled on 25 October 1989. It was 300 ft. in length and averaged 40.9 ft. in width. Both sites were in Johnson County. Laurel Bloomery Quadrangle.

Gear Type - Both sites were sampled using backpack electrofishing equipment. Area 1 was sampled using two backpack electrofishing units operating at 350 V. AC. Area 2 was sampled using a single backpack electrofishing unit operating at 350 V. AC.

Water Quality - Data were taken from midstream at each site. Area 1, on 24 October 1989: DO - 11.4 ppm, pH - 7.5, Temperature - 50.2°F, Conductivity - 30 micromhos/cm. Area 2, on 25 October 1989: DO - 10.4 ppm, pH - 7.5, Temperature - 46.8°F, Conductivity - 30 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples at each site and one additional qualitative sample was collected at site 2. Area 1 Surber samples averaged 46 organisms, 0.5 ml. volumetric displacement and represented 20 taxa. Area 2 Surber samples averaged 62 organisms, 0.7 ml. volumetric displacement and all samples combined represented 40 taxa.

Fish Collected:

	Area 1				Area 2			
Species	No.	% by No.	Wt.	% by Wt.	No.	% by No.	Wt.	% by Wt.
Rainbow trout	29	6.9	3.04	22.5	15	2.5	1.96	10.3
Brown trout	1	0.2	0.02	0.1	14	2.3	7.1	37.5
Brook trout	1	0.2	0.02	0.1				
Smallmouth bass	1	0.2	0.27	2.0				
Nongame Fish	11	2.6	1.96	14.5	3	0.5	2.2	11.6
Forage Fish	376	89.8	8.23	60.8	569	94.7	7.68	40.6
Total	419		13.54		601		18.94	

Comments:

This stream was surveyed primarily to reassess the trout population, three years after it's reclassification as a wild trout stream. Stocking of hatchery trout was also discontinued a couple of years ago.

We returned to Beaverdam Creek in the fall of 1989 and sampled the same areas that were sampled in 1986 (Bivens 1988). Trout were collected, for the most part, in similar numbers and weights. The one exception being brown trout (*Salmo trutta*) from site 1. Only one brown trout was collected this year as compared to 14 in 1986. However, we encountered great difficulty in collecting fish at site 1, due to increased stream flow this year. Very many other fish as well as trout were observed escaping capture.

Rainbow trout (*Oncorhynchus mykiss*) from site 1 comprised about 7% by numbers and 23% by weight of all fish collected. They ranged from 2 to 10 in. and several 3 in. fish were collected (Fig. 16). A single brook trout (*Salvelinus fontinalis*) and one 8 in. smallmouth bass (*Micropterus dolomieui*) were also collected from site 1. These species were not collected in the 1986 survey. A total of 419 fish weighing 13.54 lb. and comprising 14 species was collected from site 1.

Almost equal numbers of brown and rainbow trout were collected at site 2 this year. However, brown trout made up about 38% and rainbows only 10% of the total weight of all fish collected. A total of 7 legal size trout (9 in. min.), 3 rainbows and 4 brown, were collected from this site (Fig. 17). Several 3 in. fish, both browns and rainbows were also collected. One trophy brown trout was in the 19 in. class and weighed 2.85 lb. A total of 601 fish weighing 18.94 lb. and comprising 15 species was collected from site 2.

We collected a total of 17 species from both sites combined, similar to the species collected in 1986 and those reported by Etnier et al. (1983). It is interesting to note, that even though we collected higher total numbers of fish this year compared to 1986, the total weights were very similar for each respective sample site.

Previous collections of sculpin from Beaverdam Creek (Bivens 1988) have been identified as *Cottus baileyi* - like forms. However, Etnier and Starnes (1980) question the validity of *baileyi* in Tennessee due to the inconsistency of characters of sculpin in the region. We, therefore, take the more conservative view, and list sculpin collected this year in the *C. bairdi* group.

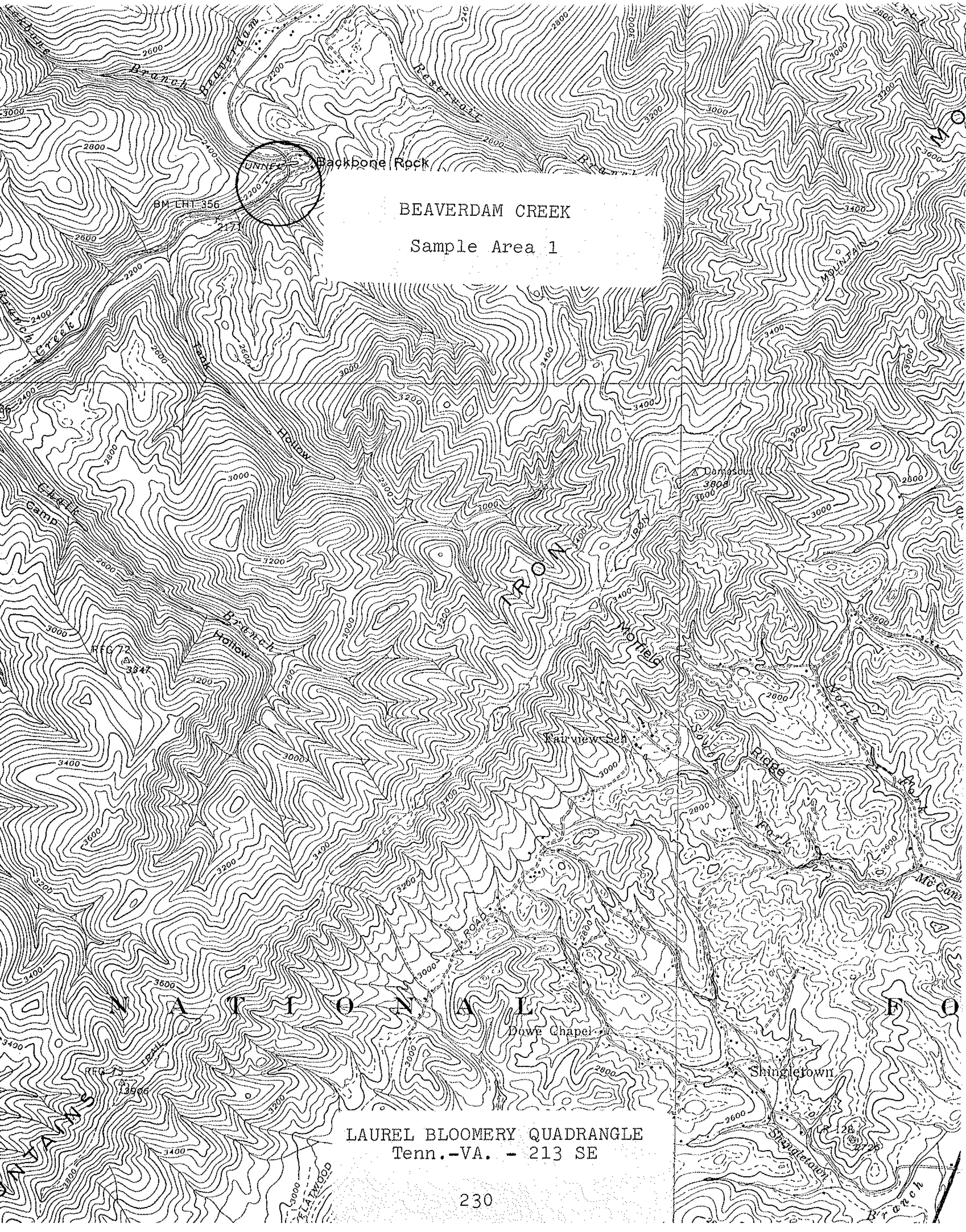
Benthic macroinvertebrates from our samples at site 1 included Ephemeridae and Heptageniidae mayflies, Brachycentridae, Glossosomatidae, Hydropsychidae, Limnephilidae, and Polycentropodidae caddisflies, Elmidae and Psephenidae beetles, and Taeniopterygidae stoneflies. A total of 20 taxa was collected at site 1.

Many of the same families were collected at site 2. In addition to these were Baetidae, Ephemerellidae, Leptophlebiidae, Neoephemeridae, and Oligoneuriidae mayflies, Peltoperlidae, Perlidae, Perlodidae, and Pteronarcyidae stoneflies, and Philopotamidae and Rhyacophilidae caddisflies. At least 40 distinct taxa were collected from site 2. This is double that of site 1, however, a qualitative sample was not collected at the downstream area. Periwinkle snails (*Goniobasis simplex*) and limpets (*Ferrissia*) were collected from both sites.

Management Recommendations:

1. The stream appears to support a healthy population of stream reared trout and additional hatchery fish are unnecessary. Etnier et al. (1983) describe Beaverdam as an excellent quality Blue Ridge stream and we agree.

2. Continue to monitor the trout population every three years or so.



BEAVERDAM CREEK

Sample Area 1

LAUREL BLOOMERY QUADRANGLE
Tenn.-VA. - 213 SE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed S. Fork Holston River Lat-Long 363536N - 814856W

Stream Beaverdam Creek Length of Sample 300 ft.

Area or Station Site # 1 Reach 06010102-23,0

County Johnson Date/Time 24 October 1989/1100

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 41.0 ft. Average Depth 1.0 ft. Maximum Depth 3.4 ft.
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 10 %
   Clay - % Gravel 10 % Rubble 30 % Boulders 10 %
   Bedrock 30 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 10 %
   Bedrock 40 % Other Gravel 10% Rubble 20% Boulders 10%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 75 % of Stream.
8. Flow (c.f.s.) 44.2 : Flow compared to Normal: Low Normal X High
9. D.O. 11.4 ppm Temp. 50.2°F % Saturation 101
10. Present Weather Partly cloudy and cool; air temp.- 56°F.
11. Past Weather (last 24 hours) Partly cloudy and cool.
12. D.O. 11.4 pH 7.5 Temp. 50.2 Conductivity 30 micromho/cm
13. Comments: Sample location just upstream of bridge at Backbone Rock.

Site #1 - Bridge at Backbone Rock

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed South Fork Holston River
Body of Water Beaverdam Creek
County or River Mile Johnson
Type of Sampling Electrofishing
Gear Type Two backpack shockers at 350 v. AC

Lat-Long 363536N - 814856W
Date 24 October 1989
Reach 06010102-23.0
Pool Elevation 2220 ft.
Time 1340 - 1620

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Oncorhynchus mykiss	353	1	2	0.01			
" "	"	11	3	0.16			
" "	"	1	4	0.02			
" "	"	1	5	0.07			
" "	"	3	6	0.31			
" "	"	5	7	0.68			
" "	"	4	8	0.83			
" "	"	2	9	0.59			
" "	"	1	10	0.37			
Salmo trutta	355	1	3	0.02			
Salvelinus fontinalis	356	1	3	0.02			
Micropterus dolomieui	218	1	8	0.27			
Catostomus commersoni	32	2	3-11	0.53			
Hypentelium nigricans	166	9	3-11	1.43			
Campostoma anomalum	25	140	1-7	5.27			
Nocomis micropogon	234	53	1-9	1.85			
Notropis coccogenis	248	39	1-4	0.47			
N. rubricroceus	262	95	1-3	0.31			
Etheostoma flabellare	92	7	1-2	0.03			
E. simoterum	111	19	1-2	0.06			
E. swannanoa	129	1	2	0.02			
* *Cottus bairdi*	39	22	1-3	0.22			

* Previous collections from this site were identified by Dr. Robert Jenkins as *Cottus baileyi*-like.

Field Notes: 300 ft. sample length. Observed many trout and other fish escape capture. Collected two *Cryptobranchus a. alleganiensis*, preserved one.

Name of Collector(s): Rick D. Bivens, Carl E. Williams, and Robert D. Ripley

WR-0525

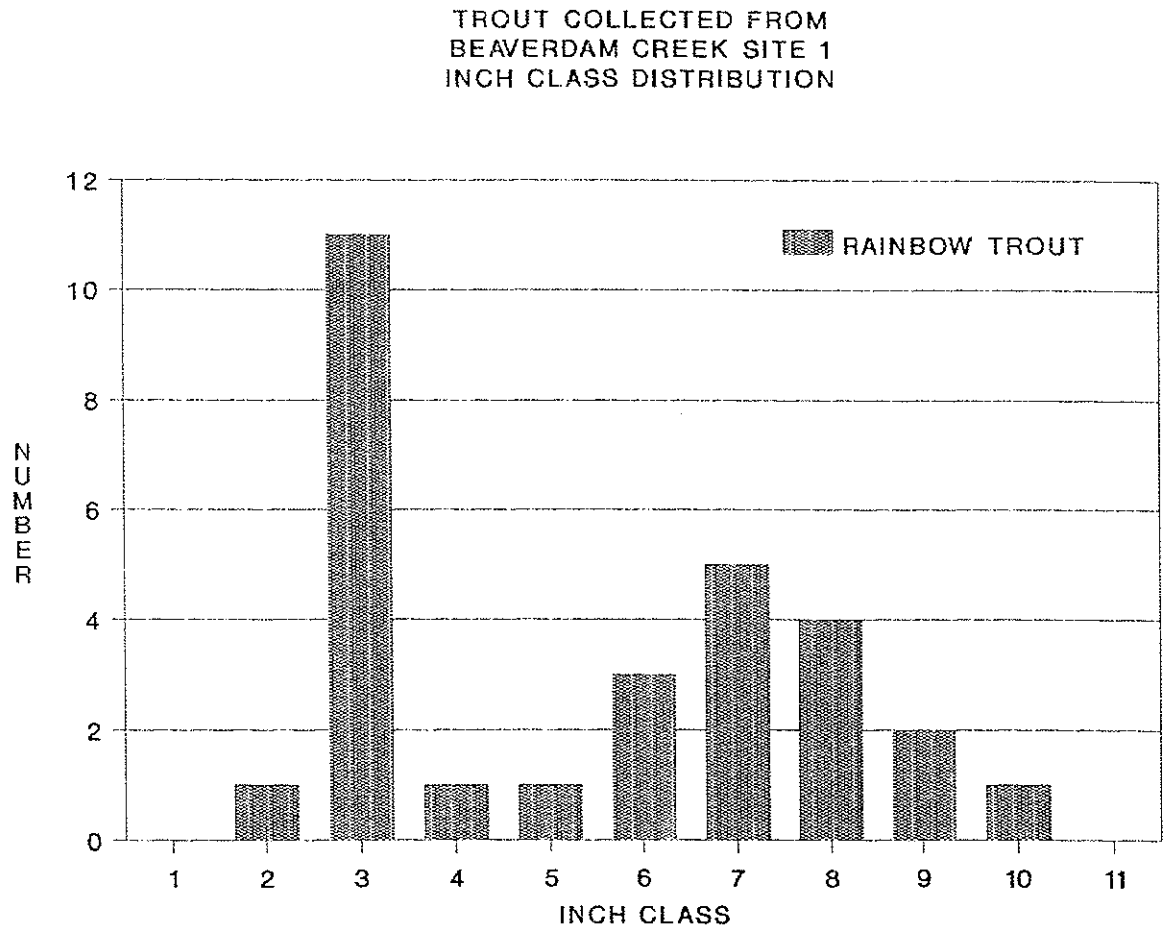

TROUT COLLECTED FROM
BEAVERDAM CREEK SITE 1
INCH CLASS DISTRIBUTION
RAINBOW TROUT
NUMBER
0
2
4
6
8
10
12
1
2
3
4
5
6
7
8
9
10
11
INCH CLASS

Figure 16.

Beaverdam Creek: Site # 1, Edge Surber sample

24 October 1989 Field # 174

Johnson Co., TN; Upstream of upper bridge at Backbone Rock. Coordinates: 363536N - 814856W. Laurel Bloomery, Tenn.-VA., # 213 SE Quad. Reach # 06010102-23,0.

TAXA	NUMBER
COLEOPTERA:	
Psephenidae/*Psephenus herricki* larvae	11
DIPTERA:	
Chironomidae	13
Tipulidae/*Antocha*	5
Hexatoma	1
EPHEMEROPTERA:	
Ephemeridae/*Ephemera*	8
Heptageniidae/*Heptagenia*	2
Stenacron	3
Stenonema	21
GASTROPODA:	
Ancylidae/*Ferrissia*	2
Pleuroceridae/*Goniobasis simplex*	1
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	2
PLECOPTERA:	
Taeniopterygidae/*Taeniopteryx*	1
TRICHOPTERA:	
Brachycentridae/*Brachycentrus*	1
Glossosomatidae/*Glossosoma*	1
Hydropsychidae/*Cheumatopsyche*	1
Symphitopsyche sparna	1
Polycentropodidae/*Polycentropus*	1
	75

Volumetric Displacement was 0.7 ml.

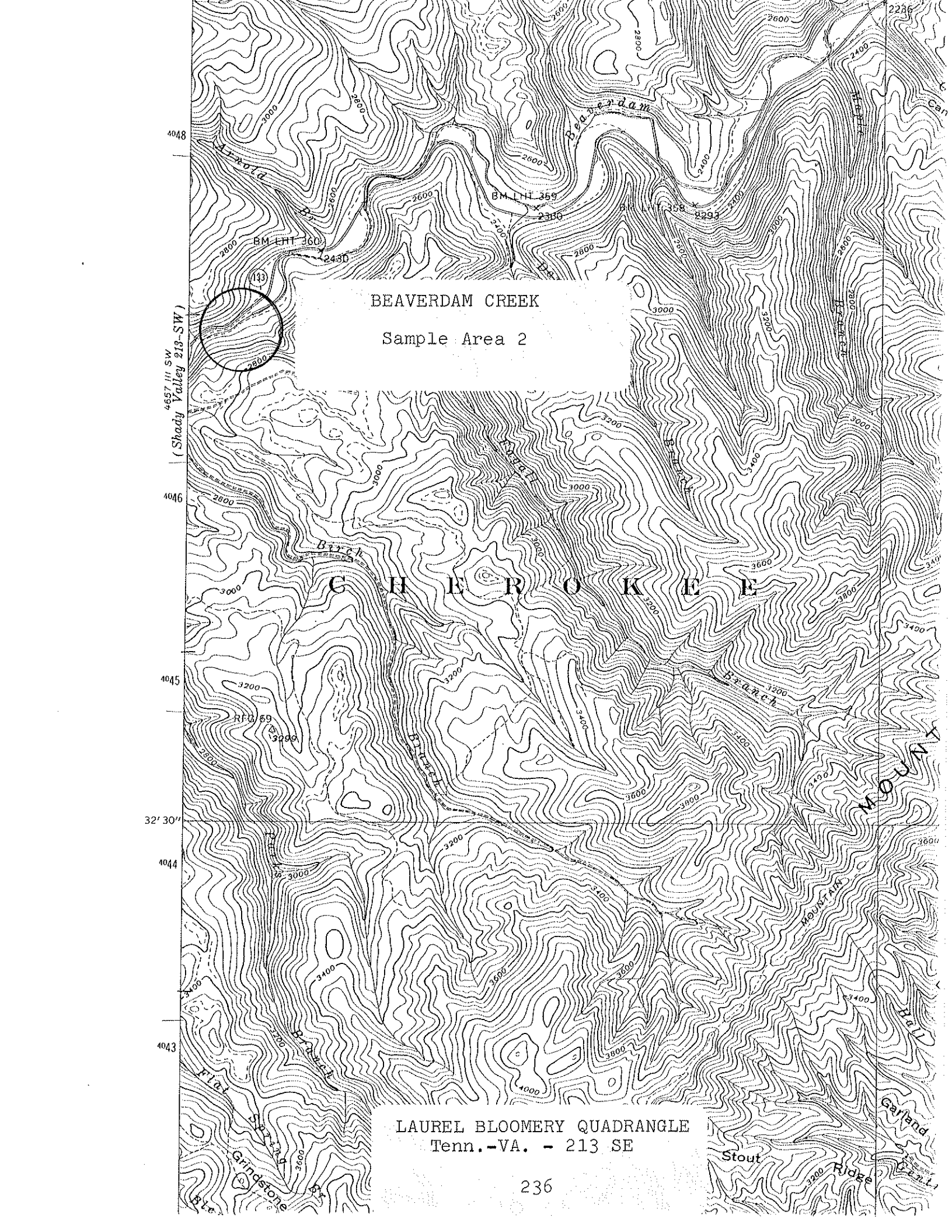
Beaverdam Creek: Site # 1, Midstream Surber sample

24 October 1989 Field # 174

Johnson Co., TN; Upstream of upper bridge at Backbone Rock. Coordinates: 363536N - 814856W. Laurel Bloomery, Tenn.-VA., # 213 SE Quad. Reach # 06010102-23,0.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Optioservus* larva	1
DIPTERA:	
Chironomidae	9
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	2
PLECOPTERA:	
Unid. early instar	1
TRICHOPTERA:	
Hydropsychidae/*Symphitopsyche bronta*	1
Limnephilidae/*Goera calcarata*	2
	16

Volumetric Displacement was 0.3 ml.


BEAVERDAM CREEK
Sample Area 2
LAUREL BLOOMERY QUADRANGLE
Tenn.-VA. - 213 SE
C H E R O K E E
MOUNTAIN
Beaverdam
Arnold
Branch
Ridge
Stout
Garland
Hall
Flat Spring
Grindstone
BM LHT 360
BM LHT 359
BM LHT 358
2430
2380
2293
RFD 69
3299
4048
4046
4045
4044
4043
32' 30"
4657 III SW
(Shady Valley 213-SW)

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed S. Fork Holston River Lat-Long 363413N - 815210W

Stream Beaverdam Creek Length of Sample 300 ft.

Area or Station Site # 2 Reach 06010102-23.0

County Johnson Date/Time 25 October 1989/0915

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 40.9 ft. Average Depth 0.9 ft. Maximum Depth 3.6 ft.
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 10 %
   Clay - % Gravel 15 % Rubble 40 % Boulders 20 %
   Bedrock 5 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 10 %
   Bedrock 5 % Other Gravel 15% Rubble 40% Boulders 20%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 75 % of Stream.
8. Flow (c.f.s.) 42.7 : Flow compared to Normal: Low Normal X High
9. D.O. 10.4 ppm Temp. 46.8°F % Saturation 88
10. Present Weather Clear and cool; air temperature - 40°F.
11. Past Weather (last 24 hours) Partly cloudy and cold overnight.
12. D.O. 10.4 pH 7.5 Temp. 46.8 Conductivity 30 micromho/cm
13. Comments: Sample location upstream of the mouth of Arnold Branch, at highway mile marker 5.

Site #2 - Upstream from the mouth of Arnold Branch

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed South Fork Holston River
Body of Water Beaverdam Creek
County or River Mile Johnson
Type of Sampling Electrofishing
Gear Type One backpack shocker at 350 v. AC

Lat-Long 363413N - 815210W
Date 25 October 1989
Reach 06010102-23.0
Pool Elevation 2450 ft.
Time 1315 - 1515

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Oncorhynchus mykiss	353	6	3	0.12			
" "	"	2	6	0.18			
" "	"	1	7	0.13			
" "	"	3	8	0.66			
" "	"	3	9	0.87			
Salmo trutta	355	5	3	0.10			
" "	"	2	4	0.06			
" "	"	3	8	0.63			
" "	"	1	9	0.27			
" "	"	1	10	0.43			
" "	"	1	12	0.80			
" "	"	1	19	2.85			
Catostomus commersoni	32	1	12	0.70			
Hypentelium nigricans	166	2	11-12	1.50			
Campostoma anomalum	25	134	1-6	3.34			
Nocomis micropogon	234	73	1-7	1.53			
Notropis coccogenis	248	16	1-4	0.20			
N. rubricroceus	262	114	1-3	0.49			
Rhinichthys atratulus	351	16	2-3	0.13			
R. cataractae	352	4	3-4	0.09			
Etheostoma flabellare	92	11	1-2	0.05			
E. chlorobranchium	86	4	2-3	0.07			
E. simoterum	111	8	1-2	0.02			
E. swannanoa	129	4	2-3	0.04			
* *Cottus bairdi*	39	185	1-3	1.72			

* Previous collections from this site were identified by Dr. Robert Jenkins as *Cottus baileyi*-like.

Field Notes: 300 ft. sample length. Observed several trout escape capture.

Name of Collector(s): Rick D. Bivens and Carl E. Williams

WR-0525

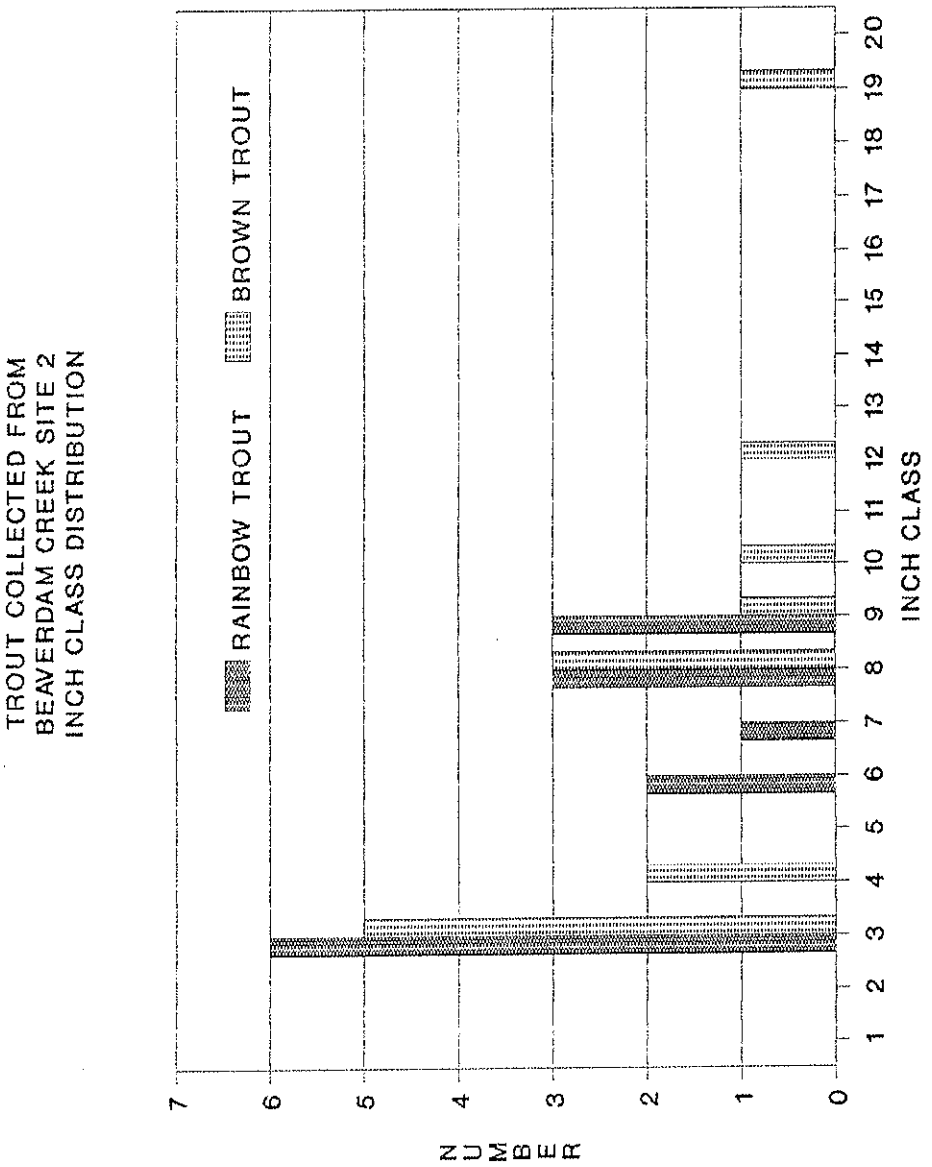

TROUT COLLECTED FROM
BEAVERDAM CREEK SITE 2
INCH CLASS DISTRIBUTION
RAINBOW TROUT
BROWN TROUT
NUMBER
0
1
2
3
4
5
6
7
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
INCH CLASS

Figure 17.

Beaverdam Creek: Site # 2, Edge Surber sample

25 October 1989 Field # 175

Johnson Co., TN; Upstream from the mouth of Arnold Branch. Coordinates: 363413N - 815210W. Laurel Bloomery, Tenn.-VA., # 213 SE Quad. Reach # 06010102-23,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Psephenidae/Psephenus herricki larvae	13
DIPTERA:	
Chironomidae	8
Simuliidae	1
EPHEMEROPTERA:	
Baetidae/Pseudocloeon	3
Ephemerellidae	1
Heptageniidae/Epeorus (Iron)	4
Stenacron	2
Stenonema	23
Leptophlebiidae/Paraleptophlebia	2
Oligoneuriidae/Isonychia	2
GASTROPODA:	
Ancylidae/Ferrissia	2
Pleuroceridae/Goniobasis simplex	2
PLECOPTERA:	
Perlidae/Acroneuria abnormis	1
Taeniopterygidae/Taeniopteryx	1
Unid. early instars	5
TRICHOPTERA:	
Brachycentridae/Brachycentrus	9
Hydropsychidae/Cheumatopsyche	1
Limnephilidae	1
Philopotamidae/Dolophilodes distinctus	1
	83

Volumetric Displacement was 1.0 ml.

Beaverdam Creek: Site # 2, Midstream Surber sample

25 October 1989 Field # 175

Johnson Co., TN; Upstream from the mouth of Arnold Branch. Coordinates: 363413N - 815210W. Laurel Bloomery, Tenn.-VA., # 213 SE Quad. Reach # 06010102-23,0.

TAXA	NUMBER
COLEOPTERA:	
Psephenidae/*Psephenus herricki* larvae	6
DIPTERA:	
Chironomidae	1
Simuliidae larva	1
pupa	1
Tipulidae/*Antocha*	1
Unid. adult	1
EPHEMEROPTERA:	
Baetidae/*Pseudocloeon*	4
Heptageniidae/*Epeorus* (*Iron*)	2
Stenonema	9
Leptophlebiidae/*Paraleptophlebia*	1
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	1
PLECOPTERA:	
Perlodidae/*Isoperla*	1
TRICHOPTERA:	
Brachycentridae/*Brachycentrus*	3
Hydropsychidae/*Cheumatopsyche*	2
Symphitopsyche sparna	2
Philopotamidae/*Dolophilodes distinctus*	3
Rhyacophilidae/*Rhyacophila fuscula*	1
	40

Volumetric Displacement was 0.4 ml.

Beaverdam Creek: Site # 2, Qualitative sample

25 October 1989 Field # 175

Johnson Co., TN; Upstream from the mouth of Arnold Branch. Coordinates: 363413N - 815210W. Laurel Bloomery, Tenn.-VA., # 213 SE Quad. Reach # 06010102-23,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Psephenidae/*Psephenus herricki* larvae	4
DIPTERA:	
Athericidae/*Atherix lantha*	8
Chironomidae	12
Simuliidae	9
Tipulidae/*Hexatoma*	3
Tipula	2
EPHEMEROPTERA:	
Baetidae/*Baetis*	3
Pseudocloeon	4
Ephemerellidae/*Ephemerella*	12
Ephemeridae/*Ephemera guttulata*	3
Heptageniidae/*Epeorus* (*Iron*)	6
Stenacron	1
Stenonema	39
Leptophlebiidae/*Paraleptophlebia*	21
Neoephemeridae/*Neoephemera purpurea*	3
Oligoneuriidae/*Isonychia*	68
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	3
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	5
ODONATA:	
Aeshnidae/*Boyeria vinosa*	1
Gomphidae/*Lanthus vernalis*	1

cont.

Beaverdam Creek: Site # 2, Qualitative sample cont.

TAXA	NUMBER
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	10
Perlidae/*Acroneuria carolinensis*	3
A. internata	3
Paragnetina immarginata	4
P. media	11
Perlodidae/*Isoperla bilineata*	4
Pteronarcyidae/*Pteronarcys*	4
Taeniopterygidae/*Taeniopteryx*	26
TRICHOPTERA:	
Brachycentridae/*Brachycentrus*	2
Hydropsychidae/*Cheumatopsyche*	1
Diplectrona modesta	2
Symphitopsyche bronta	2
S. sparna	5
Philopotamidae/*Dolophilodes distinctus*	15
Rhyacophilidae/*Rhyacophila fuscula*	8
	309

Laurel Creek

One qualitative fishery survey was conducted on Laurel Creek in October 1989:

Location and Length - Tributary to South Fork Holston River. The sample area was located just upstream of the state line and was sampled on 19 October 1989. It was 300 ft. in length and averaged 43.8 ft. in width. The site was in Johnson County. Laurel Bloomery Quadrangle.

Gear Type - The site was sampled using two backpack electrofishing units operating at 350 V. AC.

Water Quality - Data were taken from midstream on 19 October 1989: DO - 9.5 ppm, pH - 7.8, Temperature - 52.8°F, Conductivity - 70 micromhos/cm.

Benthos Collection - Benthic organisms were collected from three square-foot Surber samples and one qualitative sample at the site. The Surber samples averaged 33 organisms, 0.28 ml. volumetric displacement. All benthos combined represented 35 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Rainbow trout	23	8.1	1.76	15.2
Brown trout	15	5.3	2.61	22.5
Nongame Fish	22	7.8	3.01	25.9
Forage Fish	223	78.8	4.23	36.5
Total	283		11.61	

Comments - This stream was surveyed primarily to assess it's trout population. Also, to develop a species diversity list and collect stream information for TADS. Shields (1950) gave a general description of the trout fishery and Robins (1961) reported the black sculpin (*Cottus baileyi*) from Laurel Creek. However, no other collection records were available.

We collected a total of 283 fish weighing 11.61 lb. and comprising 12 species. In our collections, trout were the only game fish present and the stream appears to have a healthy stream reproducing population of both rainbow trout

(*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*). The stream receives catchable size hatchery rainbow trout 7 to 8 times per year and is open to general fishing regulations. It appears to have a good trout population and recruitment by natural reproduction seems adequate as indicated by numbers of small trout collected (Fig. 18). Four rainbows and five brown trout were over 7 in. and one brown trout was in the 14 in. class. The stream occasionally produces trophy brown trout in the 3 to 5 lb. range.

The sculpin we collected generally fit the description of *Cottus baileyi* in lacking palatine teeth. However, Robins (1961) considered sculpin from Laurel Creek as unusual variants of *baileyi* and Etnier and Starnes (1980) question the validity of *C. baileyi* in Tennessee due to the inconsistency of characters of sculpin in the region. We, therefore, take the more conservative view, and list the sculpin from Laurel Creek in the *C. bairdi* group.

Benthic macroinvertebrates from our samples included Baetidae, Ephemerellidae, Ephemeridae, Leptophlebiidae, Heptageniidae, and Oligoneuriidae mayflies, Chloroperlidae, Perlidae, Perlodidae, and Taeniopterygidae stoneflies, and Brachycentridae, Hydropsychidae, Limnephilidae, Philopotamidae, and Rhyacophilidae caddisflies. Periwinkle snails (*Goniobasis simplex*) were also present.

Management Recommendations:

1. Our sampling indicates that the trout population appears able to hold its own with just occasional stocking of catchable size fish.

2. Protection of the watershed from any further deterioration as increased siltation would be detrimental to the trout population.

3. Continue to monitor the stream and its trout population.

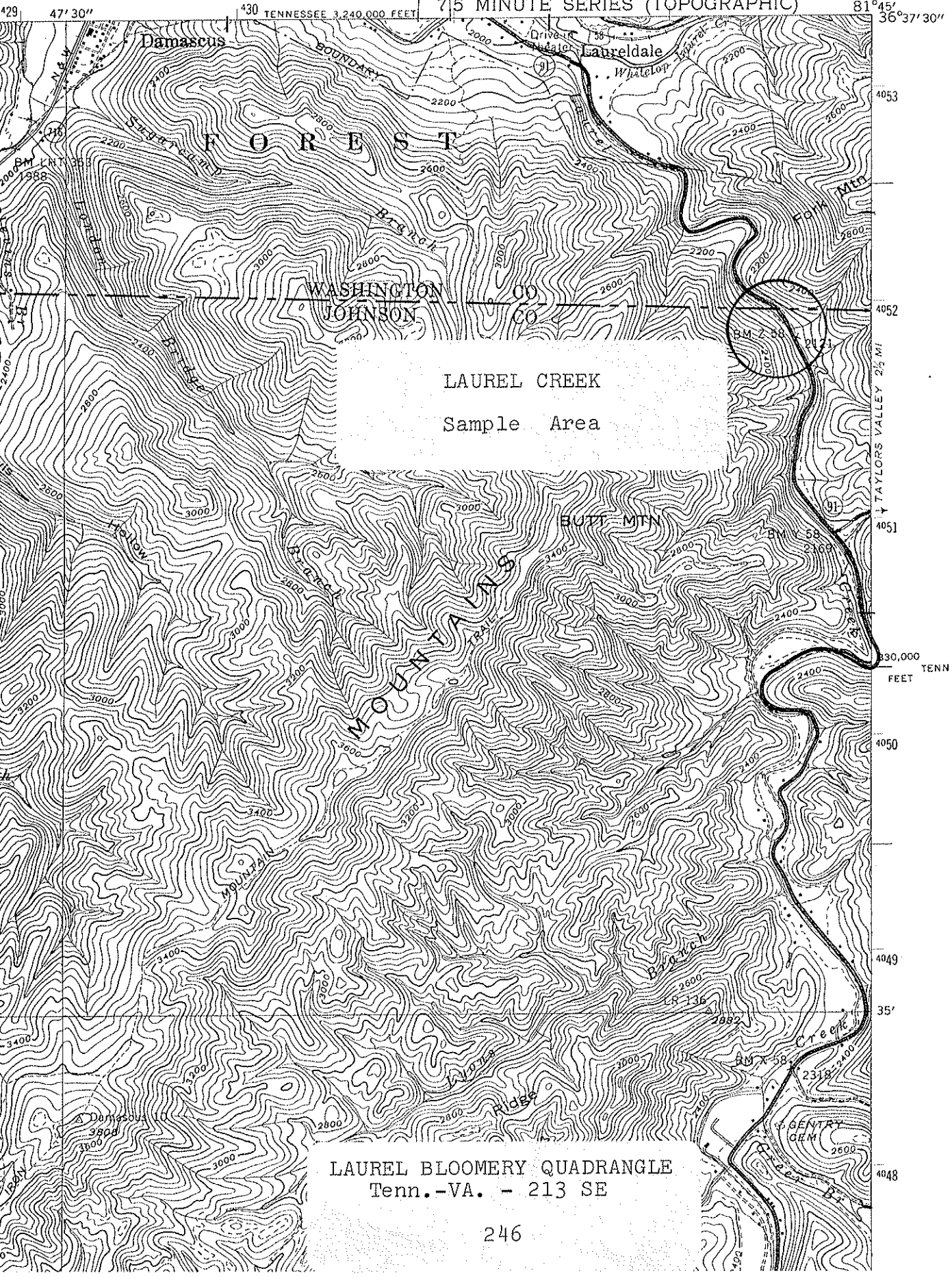
4. Publicize Laurel Creek as a good rainbow and brown trout stream in a regional stream fishing brochure.

TENNESSEE-VIRGINIA

LAUREL BLOOMERY QUADRANGLE

213-SE

7.5 MINUTE SERIES (TOPOGRAPHIC)



LAUREL BLOOMERY QUADRANGLE
Tenn.-VA. - 213 SE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed S. Fork Holston River Lat-Long 363645N - 814517W

Stream Laurel Creek " Length of Sample 300 ft.

Area or Station Near state line. Reach 06010102-25,0

County Johnson Date/Time 19 October 1989/1100

Data Collected By Rick D. Bivens, Carl E. Williams, and David E. Lane

B. PHYSICAL CHARACTERISTICS

1. Average Width 43.8 ft. Average Depth 0.8 ft. Maximum Depth 2.7 ft.
2. Estimated Percent of Stream in Pools is 25 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 20 %
   Clay - % Gravel 15 % Rubble 30 % Boulders 20 %
   Bedrock 5 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 20 %
   Bedrock 5 % Other Gravel 15% Rubble 30% Boulders 20%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25 %
   of stream, Average in 50 %, Poor in 25 %.
7. Shade or Canopy Good over 80 % of Stream.
8. Flow (c.f.s.) 50.8 : Flow compared to Normal: Low Normal High X
9. D.O. 9.5 ppm Temp. 52.8°F % Saturation 88
10. Present Weather Cloudy, overcast, with drizzle; air temp. - 52°F.
11. Past Weather (last 24 hours) Cold with rain overnight.
12. D.O. 9.5 pH 7.8 Temp. 52.8 Conductivity 70 micromho/cm
13. Comments: Sample location was just upstream of state line. The stream was dingy due to overnight rains.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed South Fork Holston River
Lat-Long 363645N - 814517W
Body of Water Laurel Creek
Date 19 October 1989
County or River Mile Johnson
Reach 06010102-25,0
Type of Sampling Electrofishing
Pool Elevation 2100 ft.
Gear Type Two backpack shockers at 350 v. AC
Time 1330 - 1430

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Oncorhynchus mykiss	351	2	2	0.02			
" "	"	7	3	0.15			
" "	"	1	4	0.03			
" "	"	4	5	0.25			
" "	"	5	6	0.54			
" "	"	2	7	0.29			
" "	"	2	8	0.48			
Salmo trutta	355	4	3	0.07			
" "	"	5	4	0.14			
" "	"	1	6	0.11			
" "	"	2	7	0.30			
" "	"	1	9	0.43			
" "	"	1	11	0.55			
" "	"	1	14	1.01			
Catostomus commersoni	32	8	3-8	0.62			
Hypentelium nigricans	166	14	4-11	2.39			
Campostoma anomalum	25	13	2-5	0.35			
Nocomis micropogon	234	69	1-8	2.67			
Notropis coccogenis	248	12	1-4	0.16			
N. rubricroceus	262	69	1-3	0.49			
Rhinichthys atratulus	351	7	2-3	0.06			
Etheostoma flabellare	92	10	1-2	0.05			
E. simoterum	111	2	1-2	0.02			
Cottus bairdi *	39	41	1-3	0.43			

* Sculpin from Laurel Creek have been described as unusual variants of *C. baileyi*.

Field Notes: 300 ft. sample length. Stream was slightly high and dingy when sampled.

Name of Collector(s): Rick D. Bivens, Carl E. Williams, and David E. Lane

WR-0525

TROUT COLLECTED FROM
LAUREL CREEK
INCH CLASS DISTRIBUTION

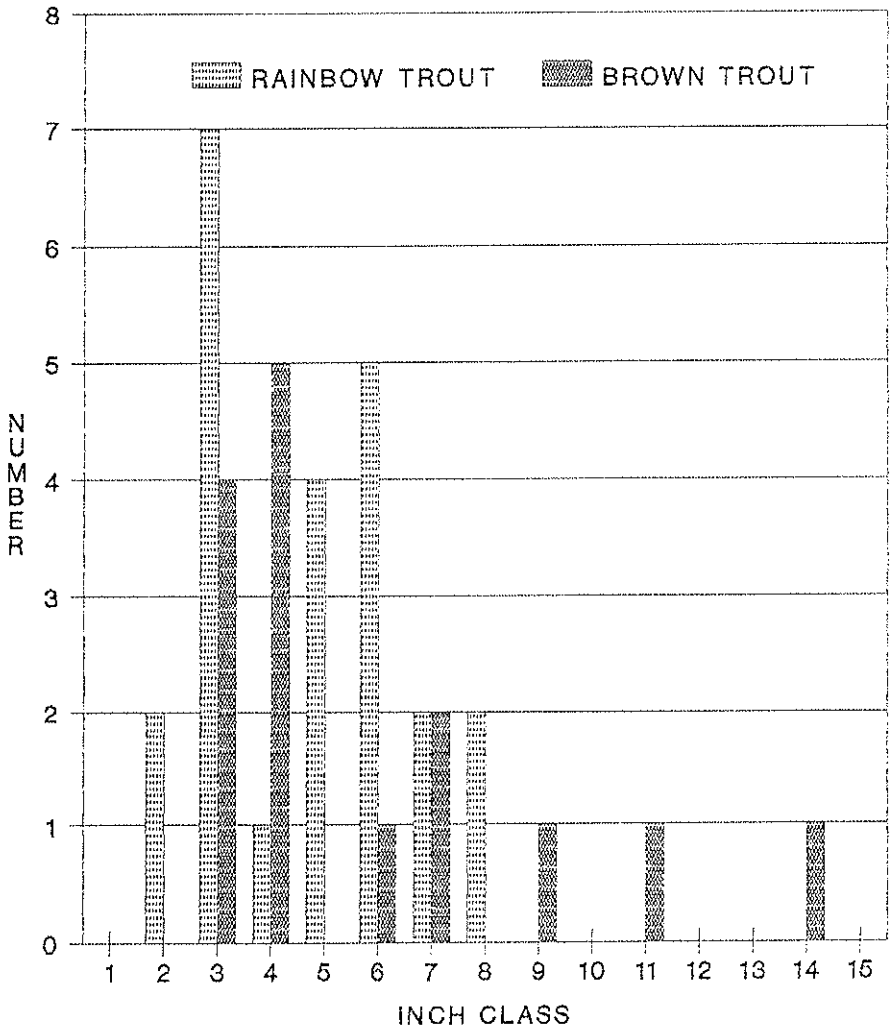


Figure 18.

Laurel Creek: Left Edge Surber sample

19 October 1989 Field # 173

Johnson Co., TN; Along hwy. 91 near the state line. Coordinates: 363645N - 814517W. Laurel Bloomery, Tenn.-VA., # 213 SE Quad. Reach # 06010102-25,0.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/Optioservus larva	1
Eubriidae/Ectopria larva	1
Psephenidae/Psephenus herricki larvae	14
DIPTERA:	
Chironomidae	5
Tipulidae/Hexatoma	2
EPHEMEROPTERA:	
Ephemeridae/Ephemera	1
Heptageniidae/Stenacron	2
Stenonema	6
Oligoneuriidae/Isonychia	1
TRICHOPTERA:	
Hydropsychidae/Cheumatopsyche	2
Hydropsyche betteni/depravata	3
	38

Volumetric Displacement was 0.2 ml.

Laurel Creek: Right Edge Surber sample

19 October 1989 Field # 173

Johnson Co., TN; Along hwy. 91 near the state line. Coordinates: 363645N - 814517W. Laurel Bloomery, Tenn.-VA., # 213 SE Quad. Reach # 06010102-25,0.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/Optioservus larva	1
Psephenidae/Psephenus herricki larvae	13
EPHEMEROPTERA:	
Ephemerellidae	1
Ephemeridae/Ephemera	1
Heptageniidae/Stenonema	11
Oligoneuriidae/Isonychia	3
GASTROPODA:	
Pleuroceridae/Goniobasis simplex	1
MEGALOPTERA:	
Corydalidae/Nigronia serricornis	1
PLECOPTERA:	
Taeniopterygidae/Taeniopteryx	1
Unid. early instar	1
	34

Volumetric Displacement was 0.5 ml.

Laurel Creek: Midstream Surber sample

19 October 1989 Field # 173

Johnson Co., TN; Along hwy. 91 near the state line. Coordinates: 363645N - 814517W. Laurel Bloomery, Tenn.-VA., # 213 SE Quad. Reach # 06010102-25,0.

TAXA	NUMBER
ANNELIDA:	
Branchiobdellida	1
COLEOPTERA:	
Elmidae/*Optioservus* larvae	4
Psephenidae/*Psephenus herricki* larvae	3
DECAPODA:	
Unid. crayfish	1
DIPTERA:	
Chironomidae	2
Simuliidae	2
EPHEMEROPTERA:	
Baetidae/*Baetis*	1
Heptageniidae/*Stenonema*	4
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	3
PLECOPTERA:	
Chloroperlidae	1
TRICHOPTERA:	
Brachycentridae/*Brachycentrus*	1
Limnephilidae/*Goera*	3
Philopotamidae/*Dolophilodes distinctus*	1
	27

Volumetric Displacement was 0.15 ml.

Laurel Creek: Qualitative sample

19 October 1989 Field # 173

Johnson Co., TN; Along hwy. 91 near the state line. Coordinates: 363645N - 814517W. Laurel Bloomery, Tenn.-VA., # 213 SE Quad. Reach # 06010102-25,0.

TAXA	NUMBER
ANNELIDA:	
Branchiobdellida	5
COLEOPTERA:	
Elmidae/*Optioservus* larvae	3
Psephenidae/*Psephenus herricki* larvae	4
DECAPODA:	
Unid. crayfish	2
DIPTERA:	
Chironomidae	2
Simuliidae larvae	9
pupa	1
Tipulidae/*Hexatoma*	2
Tipula	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	2
Pseudocloeon	2
Ephemeridae/*Ephemera*	1
Leptophlebiidae/*Paraleptophlebia*	1
Heptageniidae/*Epeorus* (*Iron*)	2
Stenacron	1
Stenonema	17
Oligoneuriidae/*Isonychia*	27
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	14
HEMIPTERA:	
Veliidae/*Rhagovelia obesa*	1
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	1
ODONATA:	
Gomphidae/*Stylogomphus albistylus*	1

cont.

Laurel Creek: Qualitative sample cont.

TAXA	NUMBER
PLECOPTERA:	
Perlidae/*Acroneuria abnormis*	1
Paragnetina media	3
Perlodidae/*Isoperla bilineata*	4
TRICHOPTERA:	
Brachycentridae/*Brachycentrus*	2
Hydropsychidae/*Cheumatopsyche*	1
Diplectrona modesta	2
Hydropsyche betteni/depravata	7
Symphitopsyche sparna	6
Philopotamidae/*Dolophilodes distinctus*	4
Rhyacophilidae/*Rhyacophila*	1
	130

New River and Tributaries

One qualitative fishery survey was conducted on New River and two samples on two of its tributaries in October and December 1989:

Location and Length - Tributary to Big South Fork Cumberland River. The sample area was located approximately 300 ft. upstream of the mouth of Ligias Fork and was sampled on 4 December 1989. It was 400 ft. in length and averaged 49.7 ft. in width. The site was in Anderson County. Duncan Flats Quadrangle.

Gear Type - The site was sampled using a fish toxicant. A block net was employed at the downstream end of the sample area and sodium cyanide was applied to the upper end.

Water Quality - Data were taken from midstream on 4 December 1989: DO - 13.6 ppm, pH - 7.6, Temperature - 34°F, Conductivity - 185 micromhos/cm.

Benthos Collection - Benthic organisms were collected from three square-foot Surber samples and one qualitative sample at the site. The Surber samples averaged 9 organisms, 0.09 ml. volumetric displacement. All benthos combined represented 15 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Smallmouth bass	1	0.2	t	
Rock bass	2	0.4	0.07	1.4
Longear sunfish	1	0.2	0.07	1.4
Nongame Fish	14	3.1	2.26	45.3
Forage Fish	434	96.1	2.59	51.9
Total	452		4.99	

Comments - New River and most of its tributaries have suffered degradation from sedimentation and acid mine drainage associated with surface and deep coal mined areas in the watershed (Winger et al. 1977). This mining started in the early 1940's and has continued to the present.

Few fish studies are available on the New River system. Comiskey and Etnier (1972) reported on species occurring in the Big South Fork of the Cumberland River and its tributaries.

More recently, Winger et al. (1977) provided information on both benthic and fish populations of New River and its tributaries and the Clear Fork River. To our knowledge, TWRA has never conducted any fish surveys in the system.

We initiated a survey of New River in the fall of 1989 primarily to develop a fish species diversity list and collect stream information for TADS. Originally, we planned to survey at least two sites on the river itself and collect fish samples from most of its tributaries, however, heavy rainfalls and cold weather limited our effort. Only one river survey and two tributary samples were conducted.

The river site was treated with sodium cyanide, followed by electrofishing of deeper pool areas and one untreated side channel. Our two tributary samples were made when the streams were high and muddy, by electrofishing into a seine along the edges.

We collected a total of 452 fish weighing 4.99 lb. and comprising 14 species from the river sample. One smallmouth bass (*Micropterus dolomieui*), two rock bass (*Ambloplites rupestris*), and a single longear sunfish (*Lepomis megalotis*) were the only game fish collected. None of these were over 4 inches long.

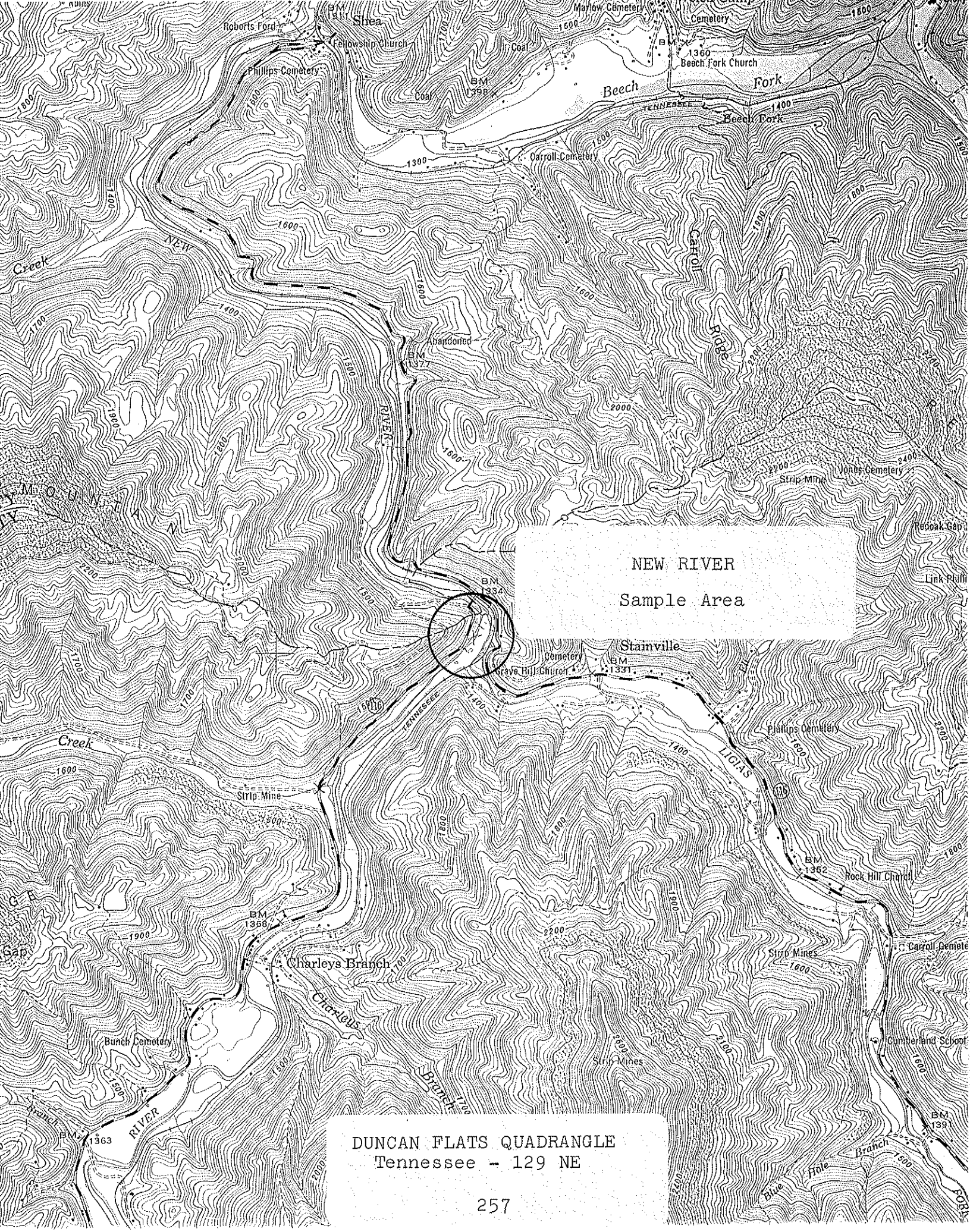
Our species list compares well with the 17 species collected by Winger et al. (1977) from two sites in the same vicinity of our sample. They also collected few game fish from this same area. Additional species collected from our tributary samples, but not in the river, were the striped shiner (*Notropis chrysocephalus*) and the creek chub (*Semotilus atromaculatus*). This makes a total of 16 species from our samples. Of special interest, to us, was the collection of the blackside darter (*Percina maculata*). Etnier and Starnes (1980) state that this species is uncommon to rare in Tennessee except in the Big South Fork and upper Cumberland drainage and it is apparently tolerant of considerable siltation.

Benthic macroinvertebrates from our samples included Baetidae and Heptageniidae mayflies, Capniidae, Chloroperlidae, Leutridae, Perlidae, and Taeniopterygidae stoneflies, and the hydropsychid caddisfly *Symphitopsyche sparna*. The overall numbers of organisms was very low even though we collected at least 15 distinct taxa. One Surber sample contained no organisms at all. Based on analysis of benthic communities, Talak (1977) concluded that siltation from surface coal mining was the major pollution problem in the watershed.

Management Recommendations:

1. No specific management is suggested, obviously any pollution abatement in this system would be beneficial.

2. Consider more fish and benthic sampling of this watershed in future work plans.


NEW RIVER
Sample Area
DUNCAN FLATS QUADRANGLE
Tennessee - 129 NE
Roberts Ford
Fellowship Church
Phillips Cemetery
Shea
Marlow Cemetery
Cemetery
Beech Fork Church
Beech Fork
TENNESSEE
Carroll Cemetery
Coal
Abandoned
Carroll Ridge
Jones Cemetery
Strip Mine
Redoak Gap
Stainville
Cemetery
Grave Hill Church
Phillips Cemetery
LIGAS
Rock Hill Church
Strip Mines
Cumberland School
Charleys Branch
Bunch Cemetery
Blue Hole Branch
Creek
RIVER
Gap
BM 1377
BM 1334
BM 1331
BM 1362
BM 1368
BM 1363
BM 1391

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Big South Fork Cumberland River Lat-Long 361203N - 841918W

Stream New River Length of Sample 400 ft.

Area or Station (see below) Reach 05130104-43,2

County Anderson Date/Time 4 December 1989/1130

Data Collected By Rick D. Bivens and Carl E. Williams

B. PHYSICAL CHARACTERISTICS

1. Average Width 49.7 ft. Average Depth 0.6 ft. Maximum Depth 3.3 ft.
2. Estimated Percent of Stream in Pools is 20 %
3. Estimated Percent Pool Bottom is Mud - % Silt 20 % Sand 30 %
   Clay - % Gravel 25 % Rubble 20 % Boulders 5 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 20 % Sand 20 %
   Bedrock - % Other Gravel 20% Rubble 30% Boulders 10%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 10 %
   of stream, Average in 40 %, Poor in 50 %.
7. Shade or Canopy Good over 60 % of Stream.
8. Flow (c.f.s.) 63.4 : Flow compared to Normal: Low Normal X High
9. D.O. 13.6 ppm Temp. 34°F % Saturation 97
10. Present Weather Clear and cold; air temperature - 31°F.
11. Past Weather (last 24 hours) Clear and cold.
12. D.O. 13.6 pH 7.6 Temp. 34 Conductivity 185 micromho/cm
13. Comments: Sample location was approx. 300 ft. upstream of the mouth of Ligias Fork. Siltation completely covers all the substrate. Coal fines present.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Big South Fork Cumberland River
Body of Water New River
County or River Mile Anderson
Type of Sampling Toxicant
Gear Type Sodium Cyanide

Lat-Long 361203N - 841918W
Date 4 December 1989
Reach 05130104-43,2
Pool Elevation 1303 ft.
Time 1330 - 1500

	SPECIES Name	CODE	NUMBER	LENGTH	WT.			
	Micropterus dolomieui	218	1	2	t			
	Ambloplites rupestris	13	1	2	0.01			
	" "	"	1	4	0.06			
*	*Lepomis megalotis*	208	1	4	0.07			
	Hypentelium nigricans	166	14	3-10	2.26			
	Campostoma anomalum	25	114	1-4	1.48			
	Notropis ardens	237	8	1-2	0.03			
	N. galacturus	253	12	1-4	0.13			
	N. rubellus micropteryx	260	27	1-2	0.12			
	N. stramineus	271	11	1-2	0.05			
	Rhinichthys atratulus	351	2	1	t			
	Etheostoma blennioides	81	29	1-3	0.17			
	E. caeruleum	84	183	1-2	0.43			
	E. camurum	85	45	1-2	0.16			
	Percina maculata	312	3	1-2	0.02			

* *L. megalotis* was collected from side channel with backpack shocker.

Field Notes: 400 ft. sample length. No crayfish collected or observed. Most of the *E. caeruleum* were covered with black grub.

Name of Collector(s): R.D. Bivens, C.E. Williams, W.H. Schacher, E.L. Poore, and B. Yearman

WR-0525

New River: Right Edge Surber sample

4 December 1989 Field # 188

Anderson Co., TN; Approx. 300 ft. upstream of the mouth of Ligias Fork. Coordinates: 361203N - 841918W. Duncan Flats, Tenn., # 129 NE Quad. Reach # 05130104-43,2.

TAXA	NUMBER

No organisms collected in this Surber sample.

New River: Left Edge Surber sample

4 December 1989 Field # 188

Anderson Co., TN; Approx. 300 ft. upstream of the mouth of Ligias Fork. Coordinates: 361203N - 841918W. Duncan Flats, Tenn., # 129 NE Quad. Reach # 05130104-43,2.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Elmidae/*Psephenus herricki* larva	1
DIPTERA:	
Chironomidae	6
EPHEMEROPTERA:	
Baetidae/*Pseudocloeon*	1
Heptageniidae/*Stenonema*	1
PLECOPTERA:	
Leuctridae/*Leuctra*	1
Taeniopterygidae/*Taeniopteryx*	5
TRICHOPTERA:	
Hydropsychidae/*Symphitopsyche sparna*	3
	19

Volumetric Displacement was 0.2 ml.

New River: Midstream Surber sample

4 December 1989 Field # 188

Anderson Co., TN; Approx. 300 ft. upstream of the mouth of Ligias Fork. Coordinates: 361203N - 841918W. Duncan Flats, Tenn., # 129 NE Quad. Reach # 05130104-43,2.

TAXA	NUMBER
EPHEMEROPTERA:	
Heptageniidae/*Stenonema*	2
PLECOPTERA:	
Taeniopterygidae/Taeniopteryx	4
TRICHOPTERA:	
Hydropsychidae/*Symphitopsyche sparna*	2
	8

Volumetric Displacement was 0.08 ml.

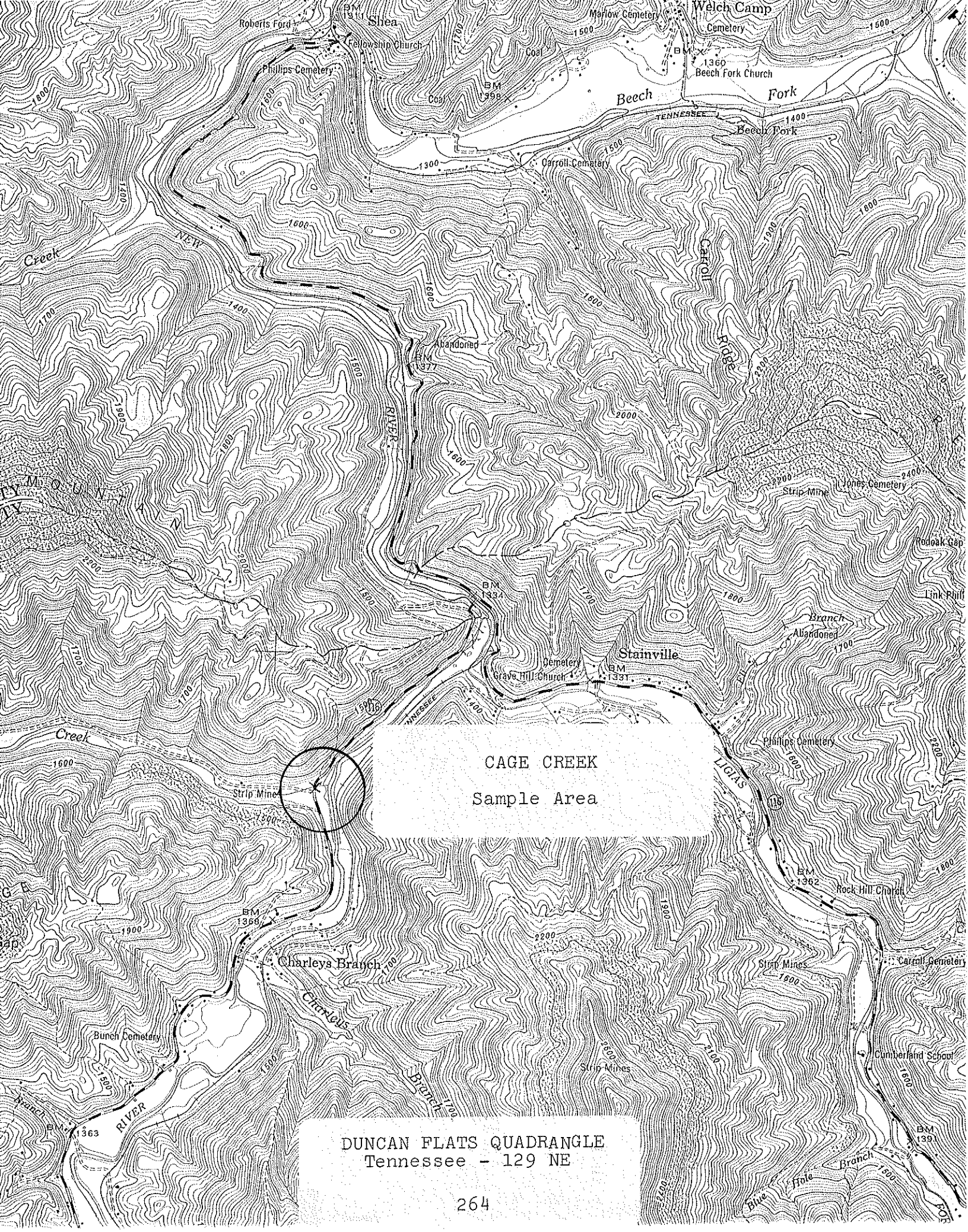
New River: Qualitative sample

4 December 1989 Field # 188

Anderson Co., TN; Approx. 300 ft. upstream of the mouth of Ligias Fork. Coordinates: 361203N - 841918W. Duncan Flats, Tenn., # 129 NE Quad. Reach # 05130104-43,2.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
DIPTERA:	
Athericidae/*Atherix lantha*	1
Chironomidae	3
Tipulidae/*Tipula*	6
EPHEMEROPTERA:	
Baetidae/*Pseudocloeon*	1
Heptageniidae/*Stenonema vicarium*	1
ODONATA:	
Calopterygidae/*Calopteryx*	1
Gomphidae/*Stylogomphus albistylus*	1
PLECOPTERA:	
Capniidae/*Paracapnia angulata* *	3
Chloroperlidae/*Utaperla gaspesiana*	2
Perlidae/*Acroneuria carolinensis*	1
Taeniopterygidae/*Taeniopteryx*	5
TRICHOPTERA:	
Hydropsychidae/*Symphitopsyche sparna*	3
	29

* Questionable Determination.


CAGE CREEK
Sample Area
DUNCAN FLATS QUADRANGLE
Tennessee - 129 NE
264
Welch Camp
Cemetery
Marlow Cemetery
Roberts Ford
Shea
Fellowship Church
Phillips Cemetery
Coal
BM 1398
1,360
Beech Fork Church
Beech Fork
TENNESSEE
Carroll Cemetery
NEW
Creek
Carroll Ridge
Abandoned
BM 1377
RIVER
Strip Mine
Jones Cemetery
Redoak Gap
BM 1334
Link Phill
Branch
Abandoned
Stainville
Cemetery
Grave Hill Church
BM 1331
Phillips Cemetery
LIGIAS
BM 1362
Rock Hill Church
Strip Mine
BM 1366
Charleys Branch
Strip Mines
Carroll Cemetery
Bunch Cemetery
Cumberland School
Strip Mines
BM 1363
RIVER
Branch
Blue Hole
Branch
BM 139

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed New River
Body of Water Cage Creek
County or River Mile Anderson
Type of Sampling Electrofishing
Gear Type Backpack shocking into a 10 ft. seine

Lat-Long 361208N - 841951W
Date 17 October 1989
Reach 05130104-
Pool Elevation 1322 ft.
Time 1130 - 1200

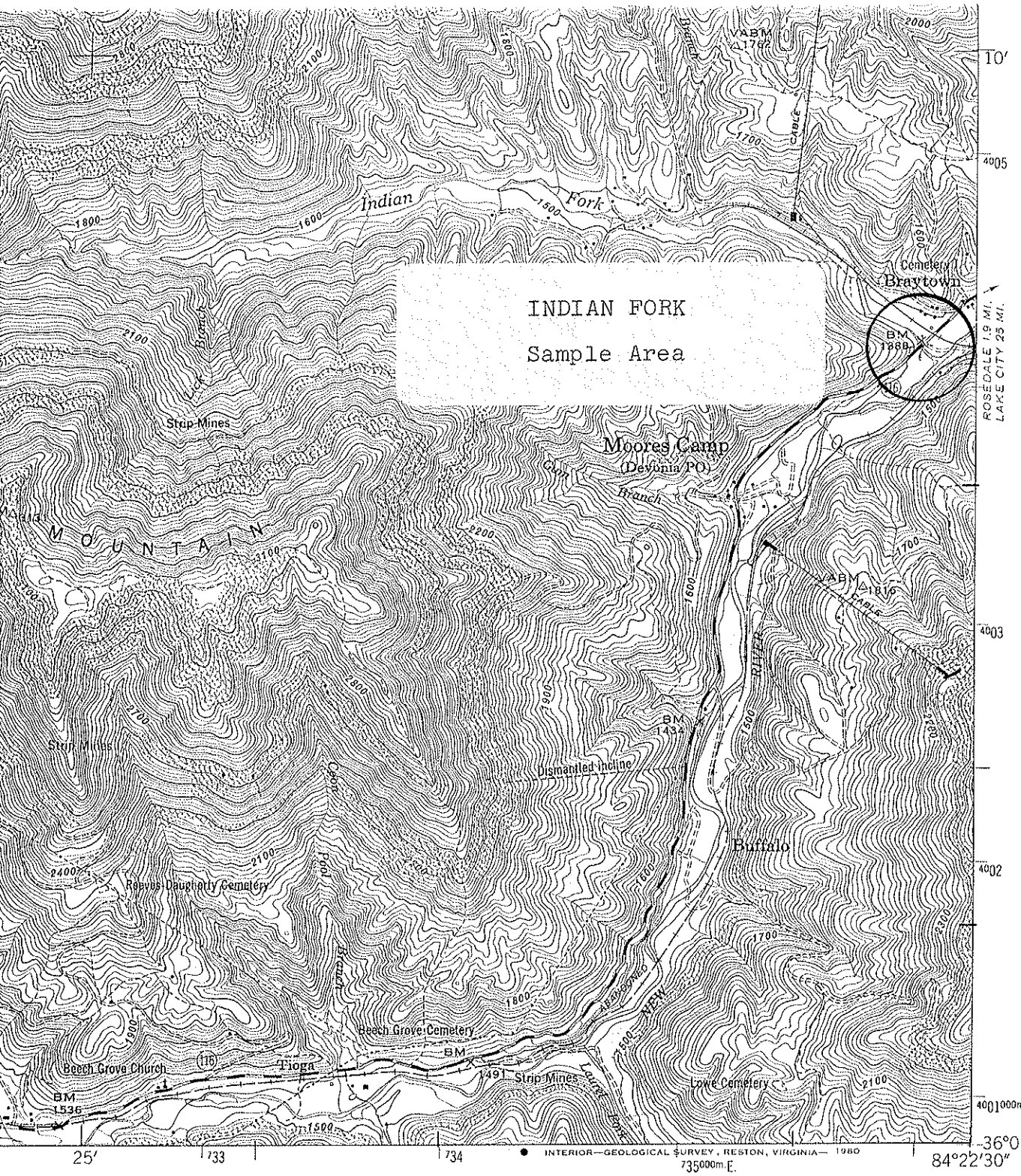
SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Hypentelium nigricans	166	1					
Campostoma anomalum	25	44					
Notropis ardens	237	1					
N. galacturus	253	1					
N. rubellus micropteryx	260	1					
N. stramineus	271	2					
Rhinichthys atratulus	351	3					
Semotilus atromaculatus	360	8					
Etheostoma caeruleum	84	28					

No length or weight obtained, only numbers.

Field Notes: Sample location was at bridge on hwy. 116. Approx. 300 ft. sample. Stream was high and muddy; shocked into seine along the edges.

Name of Collector(s): R.D. Bivens, C.E. Williams, W.H. Schacher, & E.L. Poore

WR-0525



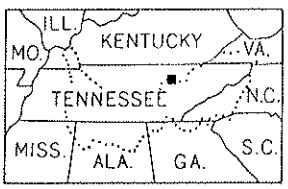
(TVA 129-NW)

(WINDROCK 129-SE)
4156 III SE

1 MILE

ROAD CLASSIFICATION

Heavy-duty		Poor motor road	
Medium-duty		Wagon and jeep track	
Light-duty		Foot trail	
U. S. Route		State Route	



QUADRANGLE LOCATION

FORK MOUNTAIN, TENN.

N3607.5-W8422.5/7.5

1952

PHOTOREVISED 1979

AMS 4156 III NW-SERIES V841

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed New River
Body of Water Indian Fork
County or River Mile Anderson
Type of Sampling Electrofishing
Gear Type One backpack shocker at 110 v. AC and 10 ft. seine

Lat-Long 360919N - 842239W
Date 17 October 1989
Reach 05130104-
Pool Elevation 1384 ft.
Time 1345 - 1420

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Hypentelium nigricans	166	1					
Campostoma anomalum	25	32					
Notropis ardens	237	2					
N. chrysocepahlus	249	3					
N. rubellus micropteryx	260	2					
N. stramineus	271	9					
Semotilus atromaculatus	360	16					
Etheostoma caeruleum	84	7					

No length or weight was obtained, only numbers.

Field Notes: Sample location was at bridge on hwy. 116. Approx. 300 ft. sample. Stream was high and muddy; shocked into seine along the edges.

Name of Collector(s): R.D. Bivens, C.E. Williams, W.H. Schacher, & E.L. Poore

WR-0525

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