REGION IV STREAM FISHERY DATA COLLECTION REPORT

1988

Prepared by

Rick D. Bivens

TENNESSEE WILDLIFE RESOURCES AGENCY

JULY, 1989

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INTRODUCTION

Streams and rivers across the state of Tennessee are sources of both commercial and domestic water as well as offering a variety of recreational opportunities. These are valuable natural resources, the management and protection of which, is defined as a strategic goal of the Tennessee Wildlife Resources Agency (TWRA).

This is the second annual report on stream fishery data collection in Region IV. The purpose of this project has been to collect baseline data 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. An additional purpose in 1988 has been to follow up on the effects of drought, especially on trout streams in the region.

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, all 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, French Broad, and Holston.

The streams included in this report were sampled for

various reasons. Some were sampled to evaluate trout stocking that has taken place, or as potential candidates for future stocking, the effects of drought, and stream pollution. Others were sampled 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. 88-3. In addition to this list, five other streams were also surveyed and are included in this report. The survey work was conducted from April to October 1988. Twenty-four fish samples and 41 benthos samples from 16 streams were collected.

Qualitative fishery data were collected using standard electrofishing techniques. Almost all streams were sampled this year with backpack equipment exclusively. In general, small streams were sampled with a single backpack unit while larger streams were sampled with multiple units. A boat shocker was not used this year as most streams we sampled were too small and shallow.

The Primacord sampling method was not used and no quantitative fishery data were collected over this sampling period. One site on the Watauga River was sampled with toxicant, however, we failed to employ a block net or determine the sample area, and must therefore consider it a qualitative sample.

Sample lengths ranged from 100 to 1,600 feet. Most samples were 300 feet 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 cata-logued into our fish collection. Some were deposited in The University of Tennessee Research Collection of Fishes. Common and scientific names of fishes used in this report are after Robins et al. (1980).

Game fish were weighed and measured individually. Non-game fish (suckers, catfish, carp, goldfish, and large gizzard shad) and forage fish (minnows, darters, sculpins, and small shad) were weighed as a group by species and a length range was obtained. All fish data collected were recorded on Fish Field Data Forms and all measurements 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.).

Qualitative samples are divided into categories of game fish by species, nongame fish, and forage fish. These are summarized as actual numbers and weight 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.

This year, coefficients of condition were calculated on trout species from most of the trout streams sampled. This condition factor (K) is used as an indicator of the health of a fish population and as an index of well-being. It was assumed that negative effects of drought on the population would be reflected in this index. Average condition factors were calculated on all size fish collected using the formula described by Moyle and Cech (1982):

$$K = \frac{W \times 100}{L^3}$$

where: K = Condition Factor

W = Weight (in grams)

L = Total Length (in centimeters)

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. This year, several additional qualitative samples were also collected. These were taken with an aquatic insect net and at times with a Surber sampler.

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 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 the attempted identifications made by the author. Comparisons with identified specimens in our aquatic invertebrate collection were also useful in making determinations of this year's samples. Steve Ahlstedt, Tennessee Valley Authority, identified most of the mollusks collected. Nomenclature of aquatic insects used in this report follows Brigham et al. (1982). 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 most streams data were collected with a 4041 Hydrolab. In other cases, a YSI Model 58 DO meter, a YSI Model 33 S-C-T meter, and a 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

Wildcat Creek

One qualitative fishery survey was conducted in October 1988:

Location and Length - Tributary to Tellico River. The sample area was located just upstream of the mouth of Dark Ridge Branch and was sampled on 13 October 1988. It was 300 ft. in length and averaged 9.7 ft. in width. The site was in Monroe County. Bald River Falls Quadrangle.

Gear Type - The site was sampled using backpack electrofishing equipment. One shocker unit operating at 350 v. AC was used.

Water Quality - Data were taken from midstream with a 4041 Hydrolab. On 13 October 1988: DO - 11.4 ppm, pH - 6.7, Temperature - 44.0°F, Conductivity - 73 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples. The samples averaged 68 organisms, 0.95 ml. volumetric displacement, and represented 21 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Rock bass	16	8.3	2.18	39.9
Nongame Fish	17	8.9	0.99	18.1
Forage Fish	159	82.8	2.29	41.9
Total	192		5.46	

Comments - This stream was surveyed primarily to develop a fish species diversity list and collect stream information for TADS. A follow up on trout stocking and the effects of drought were also of interest.

This stream is considered marginal trout water and in the past has received stockings of brown trout (*Salmo trutta*). However, no trout were collected or observed in our sample area, and rock bass (*Ambloplites rupestris*) were the only game fish present. They comprised about 40% of the total weight collected and the stream apparently

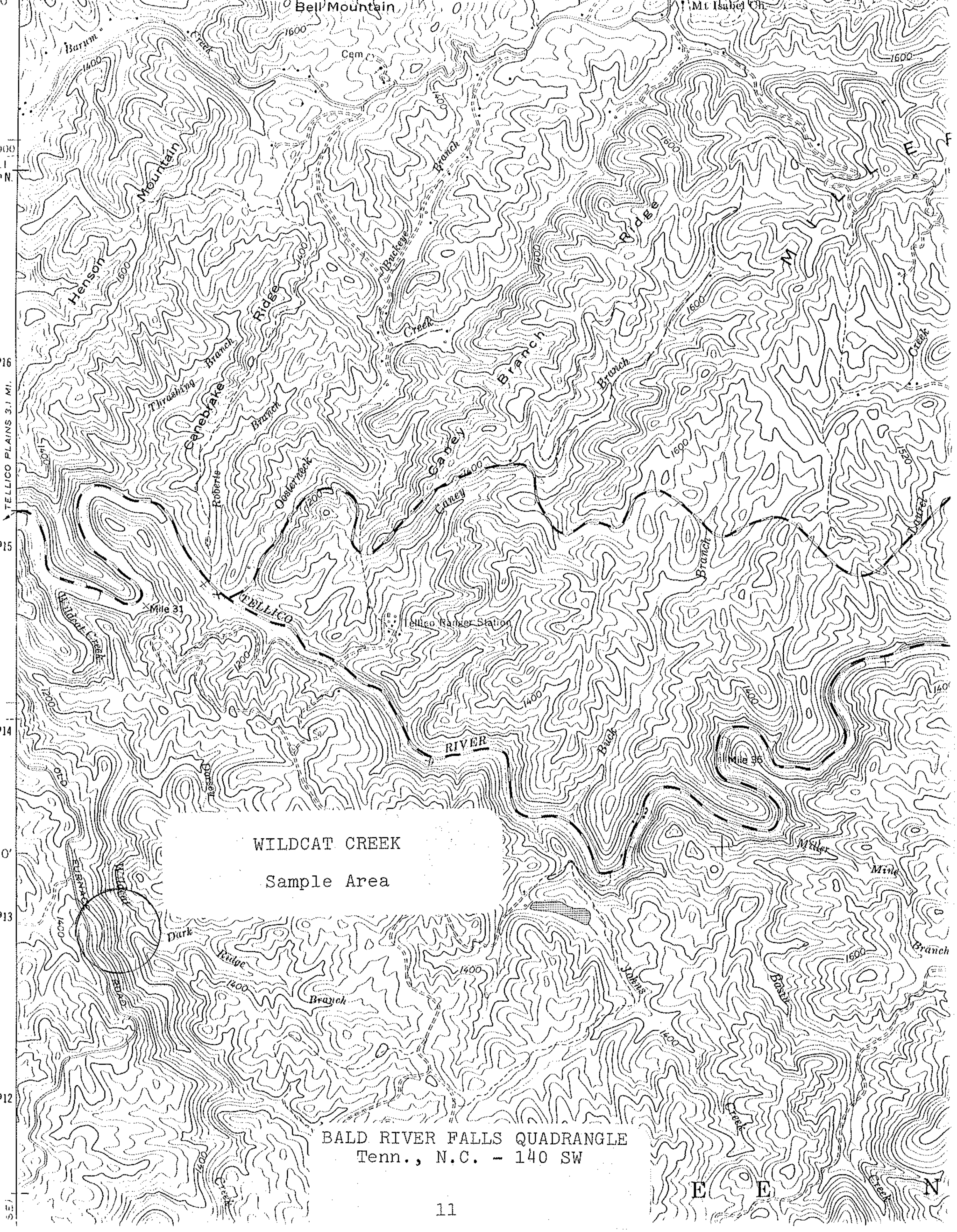
supports a fairly good population (Fig. 1).

The stream is fairly silty, most probably from open and developed areas in the upper reaches. It was also fairly low due to the drought, but it had many large pools that provided somewhat adequate cover for fish. A total of 6 fish species was collected. It is interesting to note that no sculpin (*Cottus* sp.) were collected.

Benthic macroinvertebrates from our samples included Baetidae, Caenidae, Ephemeridae, Heptageniidae, and Oligoneuriidae mayflies, Hydropsychidae, Lepidostomatidae, and Rhyacophilidae caddisflies, Elmidae and Psephenidae beetles, and perlid stoneflies. Gastropods included periwinkle snails (*Goniobasis simplex*) and limpets (*Ferrissia* sp.).

Management Recommendations:

1. Consider restocking with brown trout whenever a more normal rainfall pattern and increased stream flows return.



WILDCAT CREEK

Sample Area

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

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Little Tennessee River Lat-Long 351947N - 841437W

Stream Wildcat Creek " Length of Sample 300'

Area or Station (See below) Reach 06010204-10,0

County Monroe Date/Time 13 October 1988/1500

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

B. PHYSICAL CHARACTERISTICS

1. Average Width 9.7' Average Depth 0.5' Maximum Depth 3.0'
2. Estimated Percent of Stream in Pools is 40 %
3. Estimated Percent Pool Bottom is Mud - % Silt 20 % Sand 10 %
   Clay - % Gravel 20 % Rubble 30 % Boulders 20 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 10 %
   Bedrock 20 % Other Gravel 10% Rubble 20% Boulders 30%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 40 %
   of stream, Average in 30 %, Poor in 30 %.
7. Shade or Canopy Good over 80 % of Stream.
8. Flow (c.f.s.) 4.3 : Flow compared to Normal: Low X Normal High
9. D.O. 11.4 ppm Temp. 44 °F % Saturation 92
10. Present Weather Partly cloudy and cool.
11. Past Weather (last 24 hours) Clear and cold overnight.
12. D.O. 11.4 pH 6.7 Temp. 44 °F Conductivity 73 micromho/cm
13. Comments: Sample location just upstream of the mouth of Dark Ridge Branch. The stream appears to be fairly silty.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Little Tennessee River
Body of Water Wildcat Creek
County or River Mile Monroe
Type of Sampling Electrofishing
Gear Type One backpack shocker at 350 v. AC

Lat-Long 351947N - 841437W
Date 13 October 1988
Reach 06010204-10,0
Pool Elevation 1150'
Time 1350 - 1445

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Ambloplites rupestris	13	1	2	t			
" "	"	1	3	0.02			
" "	"	2	4	0.15			
" "	"	4	5	0.41			
" "	"	6	6	0.99			
" "	"	1	7	0.19			
" "	"	1	8	0.42			
Hypentelium nigricans	166	17	2-9	0.99			
Campostoma anomalum	25	53	1-5	0.60			
Semotilus atromaculatus	360	69	1-6	1.46			
Rhinichthys atratulus	351	30	1-3	0.19			
Etheostoma simoterum	111	7	1-2	0.04			

* Label Parameter Listed

Field Notes: 300' sample length.

Name of Collector(s): R.D. Bivens, C.E. Williams, S.W. Stooksbury, W.H. Nichols, D.D. Akins

WR-0525

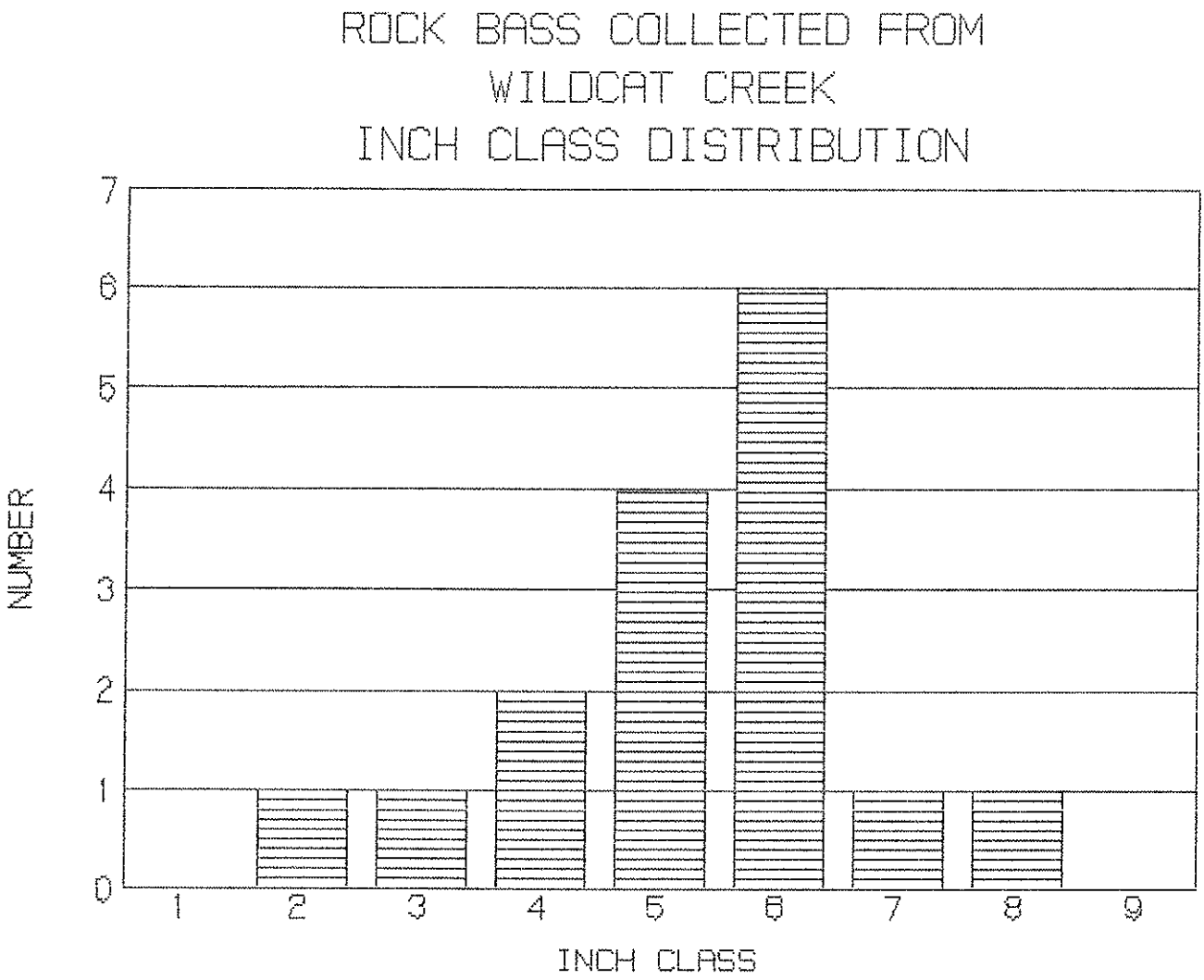

ROCK BASS COLLECTED FROM
WILDCAT CREEK
INCH CLASS DISTRIBUTION
NUMBER
0
1
2
3
4
5
6
7
1
2
3
4
5
6
7
8
9
INCH CLASS

Figure 1.

Wildcat Creek: Edge Surber sample

13 October 1988 Field # 124

Monroe Co., TN; Just upstream of Dark Ridge Branch. Coordinates: 351947N - 841437W. Bald River Falls, Tenn.-N.C., # 140 SW Quad. Reach # 06010204-10,0.

TAXA	NUMBER
COLEOPTERA:	
Psephenidae/*Psephenus herricki*	41
DIPTERA:	
Chironomidae larva	1
adult	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	8
Heptageniidae/*Heptagenia*	2
Stenonema	6
Oligoneuriidae/*Isonychia*	1
GASTROPODA:	
Ancylidae/*Ferrissia*	3
Pleuroceridae/*Goniobasis simplex*	7
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	2
ODONATA:	
Aeshnidae/*Boyeria vinosa*	1
Gomphidae/*Gomphus*	1
Lanthus	3
PLECOPTERA:	
Perlidae/*Acroneuria abnormis*	9
TRICHOPTERA:	
Rhyacophilidae/*Rhyacophila*	1
	87

Volumetric Displacement was 1.2 ml.

Wildcat Creek: Midstream Surber sample

13 October 1988 Field # 124

Monroe Co., TN; Just upstream of Dark Ridge Branch. Coordinates: 351947N - 841437W. Bald River Falls, Tenn.-N.C., # 140 SW Quad. Reach # 06010204-10,0.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/Optioservus larvae	2
Psephenidae/Psephenus herricki	18
DIPTERA:	
Athericidae/Atherix lantha	1
Chironomidae	3
Dixidae/Dixa	1
EPHEMEROPTERA:	
Baetidae/Baetis	3
Caenidae/Caenis	2
Ephemeridae/Ephemera	1
Heptageniidae/Stenonema	6
GASTROPODA:	
Pleuroceridae/Goniobasis simplex	2
ODONATA:	
Gomphidae/Lanthus	2
PLECOPTERA:	
Perlidae/Acroneuria abnormis	4
TRICHOPTERA:	
Hydropsychidae/Cheumatopsyche	2
Lepidostomatidae/Lepidostoma	1
	48

Volumetric Displacemnet was 0.7 ml.

Bald River

One qualitative fishery survey was conducted in October 1988:

Location and Length - Tributary to Tellico River. The sample area was located at the mouth of Kirkland Creek and was sampled on 10 October 1988. It was 300 ft. in length and averaged 28.1 ft. in width. The site was in Monroe County. Bald River Falls Quadrangle.

Gear Type - The site was sampled using backpack electrofishing equipment. Two shocker units, operating side by side at 700 v. AC, were used.

Water Quality - Data were taken from midstream with a 4041 Hydrolab. On 10 October 1988: DO - 9.5 ppm, pH - 6.7, Temperature 50.9°F, Conductivity - 54 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 73 organisms, 0.85 ml. volumetric displacement, and represented 30 taxa. The qualitative sample contained 69 organisms and represented 18 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Rainbow trout	17	16.5	0.87	12.4
Brown trout	13	12.6	4.35	62.1
Nongame Fish	10	9.7	1.22	17.4
Forage Fish	63	61.2	0.57	8.1
Total	103		7.01	

Comments - This stream was surveyed primarily to follow up on the effect of drought on the trout population. Also, to develop a fish species diversity list and collect stream information for TADS.

Bald River was designated in 1970 as a wild trout stream with a minimum 9-inch size limit, a 3-fish daily limit, and fishing limited to artificial flies (Wilkins 1978). It is currently managed under the same regulations

with the modified exception of no closed days or season as was originally in force.

Both rainbow trout (*Salmo gairdneri*) and brown trout (*S. trutta*) were collected (Fig. 2). Rainbow trout comprised 17% and brown trout about 13% of the total number of fish collected. However, brown trout made up 62% by weight while rainbows made up only 12% of the total weight. One brown trout was 16.6 in. long and 2.0 lb.

Coefficient of condition factors were calculated for all size trout in the sample. Brown trout averaged 1.02 and rainbows averaged 0.98, indicating that both were apparently in good condition.

In all a total of 6 fish species was collected, all of which are typical components of upland trout streams. It is interesting to note that no sculpin (*Cottus* sp.) were collected. Sculpin are generally a very common species in almost all streams and rivers throughout east Tennessee and are widely distributed from warmwater streams to cold mountain streams. No sculpin were collected in surveys of North River or Wildcat Creek either. Also, our sampling of the Tellico River in 1987 (Bivens 1988) produced no sculpin at the two sites upstream of Tellico Plains.

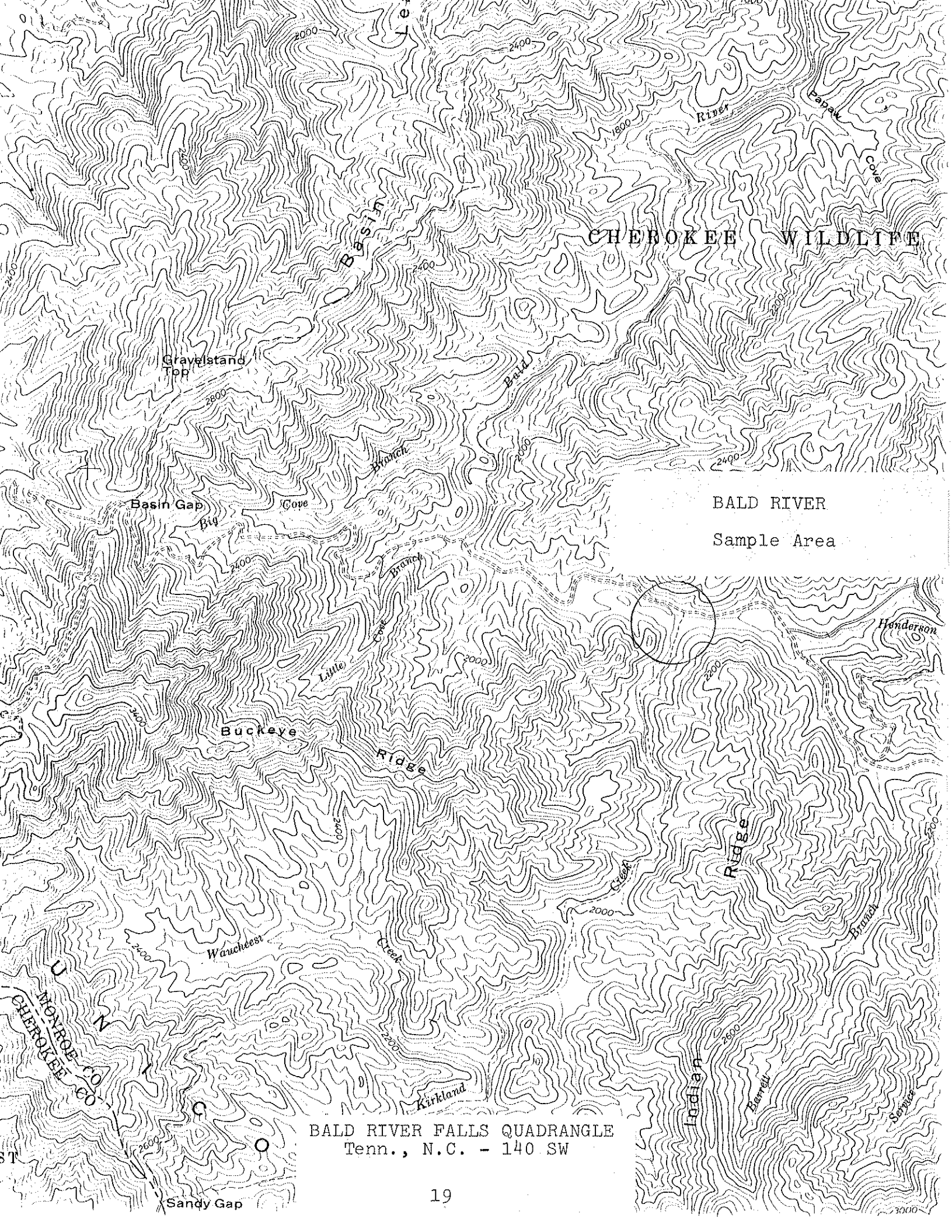
Benthic macroinvertebrates from our samples included Baetidae, Ephemerellidae, Heptageniidae, and Leptophlebiidae mayflies, Peltoperlidae, Perlidae, Perlodidae, Pteronarcyidae, and Taeniopterygidae stoneflies, Glossosomatidae, Hydropsychidae, Lepidostomatidae, Philopotamidae, and Rhyacophilidae caddisflies, and Elmidae, Eubriidae, and Psephenidae beetles. Limpets (*Ferrissia* sp.) were the only gastropod represented in our collections.

Management Recommendations:

1. Maintain the current trout management plan.

2. Protection of the watershed from habitat deterioration.

3. Follow up survey to determine the standing crop of the fish populations.



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

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Little Tennessee River Lat-Long 351704N - 841023W

Stream Bald River Length of Sample 300'

Area or Station (see below) Reach 06010204-12,0

County Monroe Date/Time 10 October 1988/1815

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

B. PHYSICAL CHARACTERISTICS

1. Average Width 28.1' Average Depth 0.4' Maximum Depth 2.2'
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 20 %
   Clay - % Gravel 30 % Rubble 30 % Boulders 10 %
   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 30 %
   of stream, Average in 40 %, Poor in 30 %.
7. Shade or Canopy Good over 90 % of Stream.
8. Flow (c.f.s.) 14.4 : Flow compared to Normal: Low X Normal High
9. D.O. 9.5 ppm Temp. 50.9°F % Saturation 85
10. Present Weather Clear and cool, air temperature - 56°F.
11. Past Weather (last 24 hours) Partly cloudy to clear, cold overnight.
12. D.O. 9.5 pH 6.7 Temp. 50.9 Conductivity 54 micromho/cm
13. Comments: Sample location was at the mouth of Kirkland Creek.

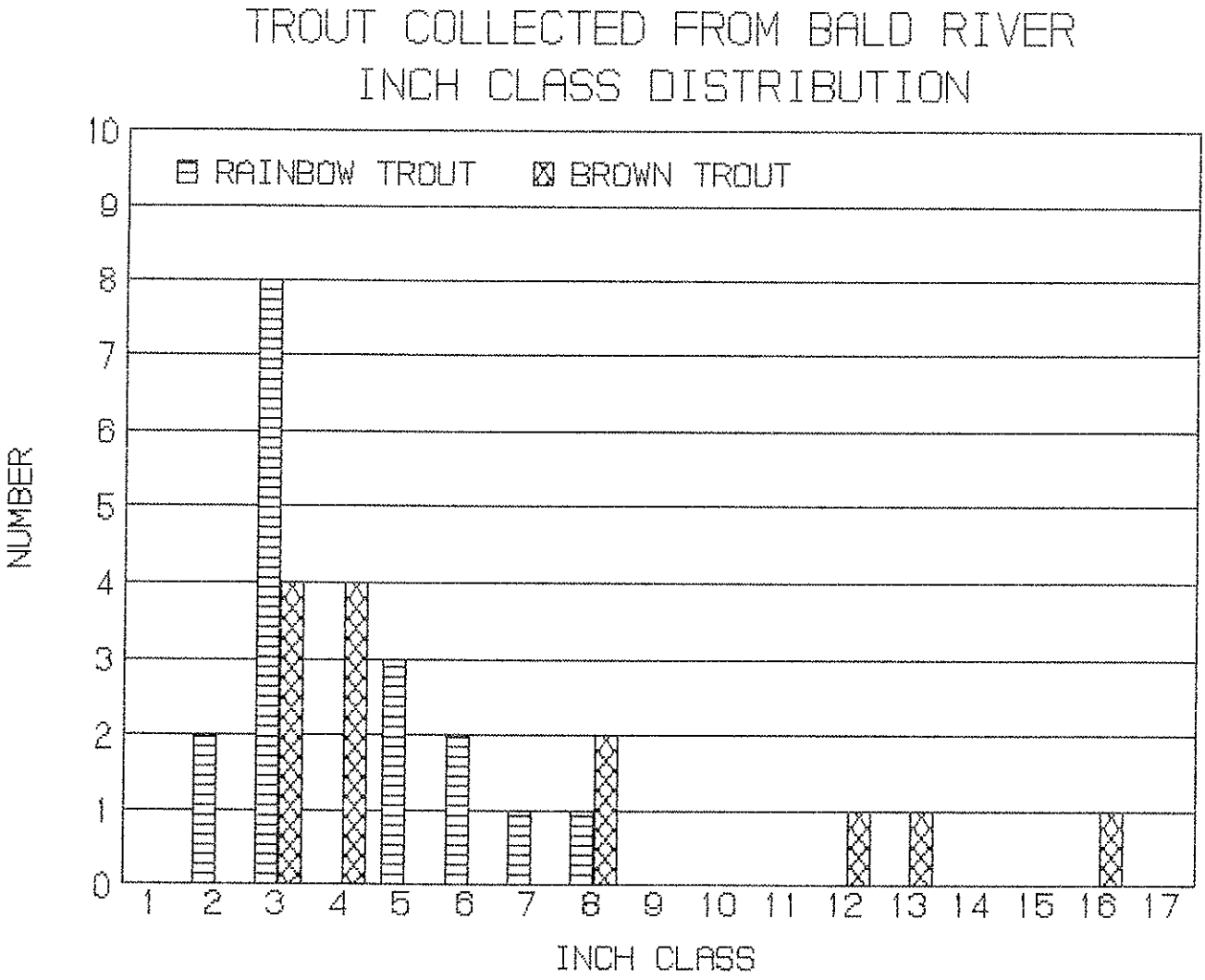

TROUT COLLECTED FROM BALD RIVER
INCH CLASS DISTRIBUTION
RAINBOW TROUT
BROWN TROUT
NUMBER
0
1
2
3
4
5
6
7
8
9
10
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
INCH CLASS

Figure 2.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Little Tennessee River
Body of Water Bald River
County or River Mile Monroe
Type of Sampling Electrofishing
Gear Type Two backpack shockers side by side @ 700 v. AC

Lat-Long 351704N - 841023W
Date 10 October 1988
Reach 06010204-12,0
Pool Elevation 1885'
Time 1700 - 1730

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo gairdneri	353	2	2	0.02			
" "	"	8	3	0.08			
" "	"	3	5	0.19			
" "	"	2	6	0.22			
" "	"	1	7	0.13			
" "	"	1	8	0.23			
Salmo trutta	355	4	3	0.08			
" "	"	4	4	0.10			
" "	"	2	8	0.47			
" "	"	1	12	0.73			
" "	"	1	13	0.97			
" "	"	1	16	2.00			
Semotilus atromaculatus	360	25	1-4	0.33			
Rhinichthys atratulus	351	37	1-3	0.23			
Hypentelium nigricans	166	10	1-11	1.22			
Nocomis micropogon	234	1	3	0.01			

* Label Parameter Listed

Field Notes: 300' sample length.

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

WR-0525

Bald River: Edge Surber sample

10 October 1988 Field # 120

Monroe Co., TN; At the mouth of Kirkland Creek. Coordinates: 351704N - 841023W. Bald River Falls, Tenn.-N.C., # 140 SW Quad. Reach # 06010204-12,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Elmidae/Optioservus larva	1
Stenelmis adult	1
Psephenidae/Psephenus herricki	3
DIPTERA:	
Chironomidae	4
Tipulidae/Antocha	1
Limnophila	1
Simuliidae larvae	4
pupae	2
EPHEMEROPTERA:	
Baetidae/Baetis	2
Pseudocloeon	1
Heptageniidae/Stenonema	2
GASTROPODA:	
Ancylidae/Ferrissia	4
PLECOPTERA:	
Perlidae/Acroneuria	1
Taeniopterygidae/Taeniopteryx	1
TRICHOPTERA:	
Unid. adult	1
Glossosomatidae/Glossosoma	2
Hydropsychidae/Cheumatopsyche	2
Lepidostomatidae/Lepidostoma	4
	39

Volumetric Displacement was 0.5 ml.

Bald River: Middle Surber sample

10 October 1988 Field # 120

Monroe Co., TN; At the mouth of Kirkland Creek. Coordinates: 351704N - 841023W. Bald River Falls, Tenn.-N.C., # 140 SW Quad. Reach # 06010204-12,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	7
COLEOPTERA:	
Elmidae/Optioservus larvae	2
Promoresia elegans	13
Stenelmis adults	5
Eubriidae/Ectopria	1
Psephenidae/Psephenus herricki	14
DIPTERA:	
Chironomidae	12
Tipulidae/Tipula	1
EPHEMEROPTERA:	
Baetidae/Baetis	5
Pseudocloeon	1
Ephemerellidae/Ephemerella	4
Heptageniidae/Epeorus (Iron)	1
Stenonema	6
MEGALOPTERA:	
Corydalidae/Nigronia serricornis	3
PLECOPTERA:	
Peltoperlidae/Peltoperla	2
Perlidae/Acroneuria abnormis	4
Perlodidae	2
Pteronarcyidae/Allonarcys	1
TRICHOPTERA:	
Glossosomatidae/Glossosoma	1
Hydropsychidae/Cheumatopsyche	1
Diplectrona modesta	1
Lepidostomatidae/Lepidostoma	13
Philopotamidae/Dolophilodes distinctus	1
Rhyacophilidae/Rhyacophila	5
R. fuscula	1
	107

Volumetric Displacement was 1.2 ml.

Bald River: Qualitative sample

10 October 1988 Field # 120

Monroe Co., TN; At the mouth of Kirkland Creek. Coordinates: 351704N - 841023W. Bald River Falls, Tenn.-N.C., # 140 SW Quad. Reach # 06010204-12,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Psephenidae/*Psephenus herricki*	4
DIPTERA:	
Chironomidae	1
Simuliidae	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	2
Heptageniidae/*Stenonema*	11
Leptophlebiidae	1
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	1
ODONATA:	
Gomphidae/*Gomphus*	1
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	1
Perlidae/*Acroneuria abnormis*	22
Paragnetina immarginata	2
Pteronarcyidae/*Allonarcys*	2
TRICHOPTERA:	
Glossosomatidae/*Glossosoma* larvae	2
pupae	2
Hydropsychidae/*Cheumatopsyche*	10
Symphitopsyche alhedra	1
Philopotamidae/*Dolophilodes distinctus*	3
Rhyacophilidae/*Rhyacophila fuscula*	1
	69

Brookshire Creek

One qualitative fishery survey was conducted in October 1988:

Location and Length - Tributary to Bald River. The sample area was just upstream of the falls located at the mouth and was sampled on 10 October 1988. It was 300 ft. in length and averaged 13.1 ft. in width. The site was in Monroe County. Bald River Falls Quadrangle.

Gear Type - The site was sampled using backpack electrofishing equipment. One shocker unit operating at 700 v. AC was used.

Water Quality - Data were taken from midstream with a 4041 Hydrolab. On 10 October 1988: DO - 9.6 ppm, pH - 6.9, Temperature - 49.1°F, Conductivity - 54 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 51 organisms, 0.25 ml. volumetric displacement, and represented 23 taxa. The qualitative sample contained 98 organisms and represented 21 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Brook trout	23	57.5	0.65	46.4
Rainbow trout	17	42.5	0.75	53.6
Nongame Fish				
Forage Fish				
Total	40		1.4	

Comments - This stream was surveyed primarily to check the status of its brook trout (*Salvelinus fontinalis*) population. Also, to collect and update stream information for TADS and follow up on the effects of drought.

This stream was known as a brook trout stream in the 1930's, however, in the early 1950's Shields (1951) reported that it was invaded to its head by rainbow trout (*Salmo gairdneri*). And, by the late 1970's only rainbows were collected in U.S. Forest Service surveys of the stream (Barb 1978).

The stream was renovated in the fall of 1982 by TWRA and U.S. Forest Service personnel using cresol and electrofishing. Rainbows were removed from upstream of a natural falls barrier near the mouth. After the removal, 33 brook trout from Bald River and 65 from Henderson Branch were then transplanted in Brookshire Creek (Bivens 1984).

Our recent survey found both brook and rainbow trout in the sample area immediately upstream of the falls at the mouth. This falls, with a vertical height of only about 6 ft. and a flow configuration that may allow trout to overtake it, is apparently not an effective barrier. Brook trout comprised about 58% and rainbows 42% of the total number collected, however, rainbows made up about 54% of the total weight. Rainbows, although fewer in number, also had a size advantage over the brook trout we collected (Fig. 3). Coefficient of condition factors were calculated for all size trout in the sample. Brook trout averaged 1.00 and rainbows averaged 0.99, indicating that both were apparently in good condition. No other fish species were collected.

Benthic macroinvertebrates from our samples included Baetidae, Heptageniidae, and Leptophlebiidae mayflies, Peltoperlidae, Perlidae, and Pteronarcyidae stoneflies, Glossosomatidae, Hydropsychidae, Limnephilidae, Philopotamidae, Polycentropodidae, Psychomyiidae, and Rhyacophilidae caddisflies, and elmid (*Optioservus*) riffle beetles. Typical brook trout stream, high elevation hydropsychid caddisflies from Brookshire Creek included *Arctopsyche irrorata, Diplectrona modesta, Parapsyche cardis, Symphitopsyche macleodi,* and *S. ventura.* Other interesting caddisflies included the limnephilid, *Apatania*, and the psychomyiid, *Lype diversa.*

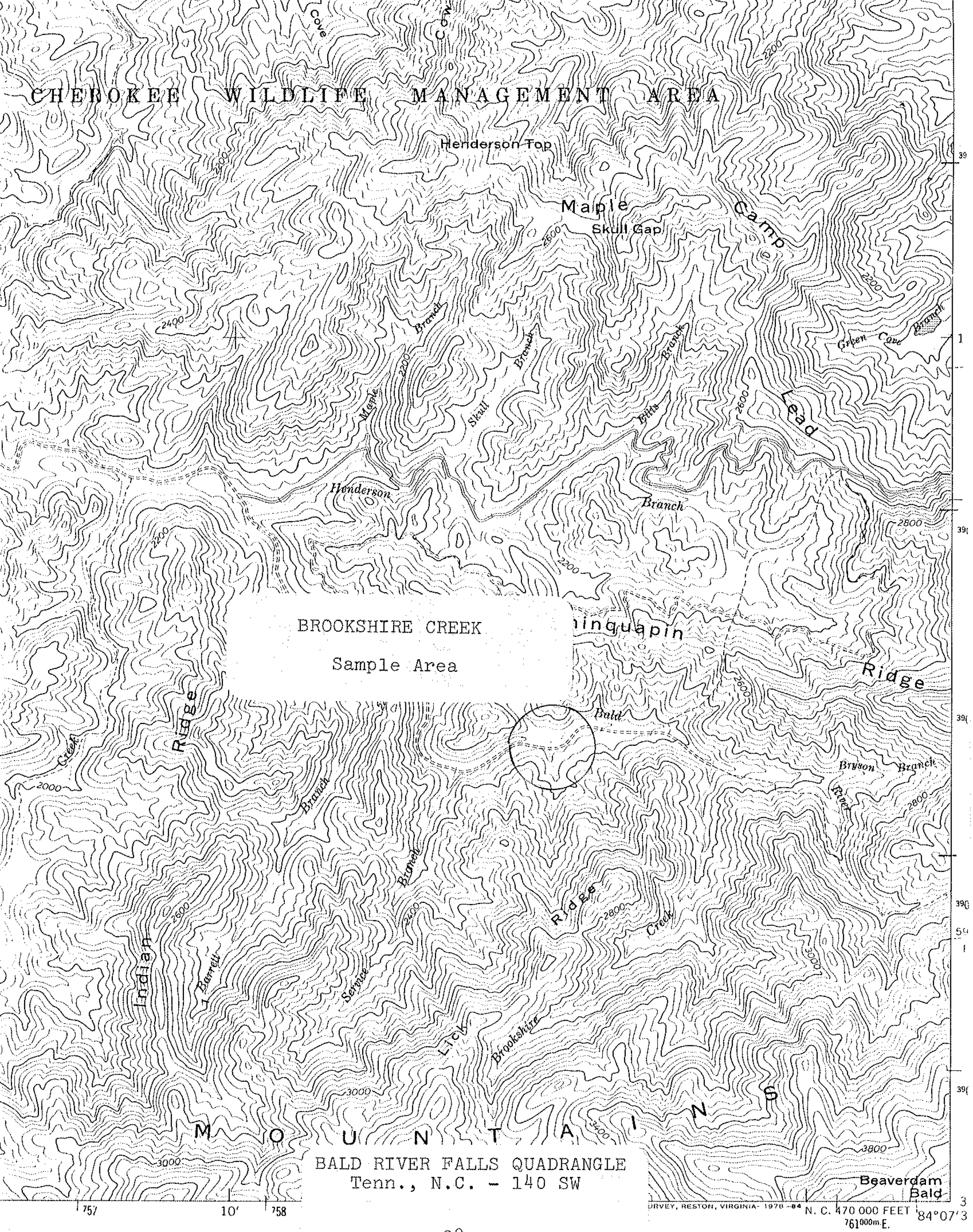
Management Recommendations:

1. Follow up survey to determine the extent of rainbow trout re-invasion of Brookshire Creek.

2. Conduct rainbow trout removal efforts as soon as possible.

3. Modify the existing falls or build an effective barrier at the mouth.

4. Consider a renovation of Bald River trout section between the falls and near the mouth of Brookshire Creek in conjunction with all the above.



BROOKSHIRE CREEK

Sample Area

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

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Little Tennessee River Lat-Long 351615N - 840820W

Stream Brookshire Creek " Length of Sample 300'

Area or Station Falls at the mouth Reach 06010204-

County Monroe Date/Time 10 October 1988/1200

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

B. PHYSICAL CHARACTERISTICS

1. Average Width 13.1' Average Depth 0.3' Maximum Depth 2'
2. Estimated Percent of Stream in Pools is 40 %
3. Estimated Percent Pool Bottom is Mud - % Silt 5 % Sand 10 %
   Clay - % Gravel 10 % Rubble 40 % Boulders 35 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 5 % Sand 10 %
   Bedrock - % Other Gravel 20% Rubble 40% Boulders 25%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 40 %
   of stream, Average in 40 %, Poor in 20 %.
7. Shade or Canopy Good over 100 % of Stream.
8. Flow (c.f.s.) 4.4 : Flow compared to Normal: Low X Normal High
9. D.O. 9.6 ppm Temp. 49.1°F % Saturation 85
10. Present Weather Partly cloudy and cool, air temperature 54°F.
11. Past Weather (last 24 hours) Partly cloudy and cold overnight.
12. D.O. 9.6 pH 6.9 Temp. 49.1 Conductivity 54 micromho/cm
13. Comments: Sample location just upstream of the falls located at the mouth.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Little Tennessee River
Body of Water Brookshire Creek
County or River Mile Monroe
Type of Sampling Electrofishing
Gear Type One backpack shocker at 700 v. AC

Lat-Long 351615N - 840820W
Date 10 October 1988
Reach 06010204-
Pool Elevation 2280'
Time 1330 - 1400

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salvelinus fontinalis	356	2	2	0.02			
" "	"	14	3	0.18			
" "	"	1	4	0.02			
" "	"	4	5	0.21			
" "	"	2	6	0.22			
Salmo gairdneri	353	5	2	0.05			
" "	"	7	3	0.09			
" "	"	1	5	0.06			
" "	"	1	6	0.12			
" "	"	2	7	0.23			
" "	"	1	8	0.20			

* Label Parameter Listed

Field Notes: 300' sample length. One brook trout escaped after capture. Rainbows are apparently able to get over the falls at the mouth.

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

WR-0525

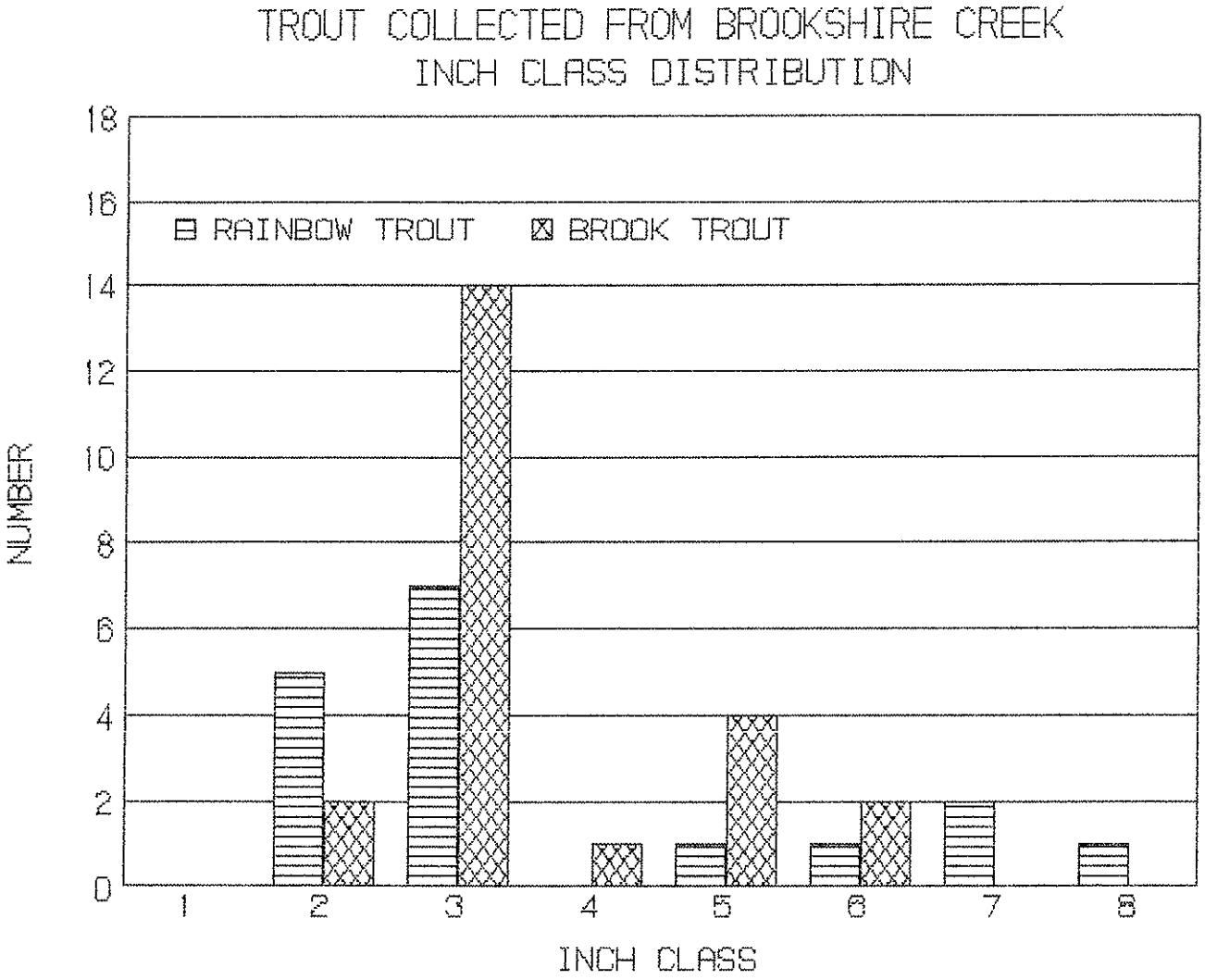

TROUT COLLECTED FROM BROOKSHIRE CREEK
INCH CLASS DISTRIBUTION
RAINBOW TROUT
BROOK TROUT
NUMBER
0
2
4
6
8
10
12
14
16
18
1
2
3
4
5
6
7
8
INCH CLASS

Figure 3.

Brookshire Creek: Edge Surber sample

10 October 1988 Field # 119

Monroe Co., TN; Just upstream of falls near the mouth. Coordinates: 351615N - 840820W. Bald River Falls, Tenn.-N.C., # 140 SW Quad. Reach # 06010204-.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	5
COLEOPTERA:	
Elmidae/*Optioservus* larvae	4
DIPTERA:	
Ceratopogonidae/*Palpomyia* complex	1
Chironomidae	4
Empididae	1
Tipulidae/*Limnophila*	1
Unid. adults	4
EPHEMEROPTERA:	
Heptageniidae/*Stenacron*	3
Stenonema	1
TRICHOPTERA:	
Hydropsychidae/*Diplectrona modesta*	3
	27

Volumetric Displacement was 0.1 ml.

Brookshire Creek: Midstream Surber sample

10 October 1988 Field # 119

Monroe Co., TN; Just upstream of falls near the mouth. Coordinates: 351615N - 840820W. Bald River Falls, Tenn.-N.C., # 140 SW Quad. Reach # 06010204-.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	8
COLEOPTERA:	
Elmidae/*Optioservus* larvae	7
DECAPODA:	
Unid. crayfish	1
DIPTERA:	
Ceratopogonidae/*Palpomyia* complex	1
Chironomidae	13
Unid. adults	4
EPHEMEROPTERA:	
Baetidae/*Pseudocloeon*	2
Heptageniidae/*Epeorus* (*Iron*)	3
Stenonema	3
Leptophlebiidae/*Paraleptobhlebia*	1
ODONATA:	
Gomphidae/*Lanthus*	2
PLECOPTERA:	
Perlidae/*Acroneuria*	4
TRICHOPTERA:	
Glossosomatidae/*Glossosoma* pupa	1
Hydropsychidae/*Diplectrona modesta*	7
Parapsyche cardis	3
Symphitopsyche macleodi	8
Limnephilidae/*Apatania*	2
Neophylax	1
Polycentropodidae/*Polycentropus*	1
Psychomyiidae/*Lype diversa*	1
Rhyacophilidae/*Rhyacophila*	2
	75

Volumetric Displacement was 0.4 ml.

Brookshire Creek: Qualitative sample

10 October 1988 Field # 119

Monroe Co., TN; Just upstream of falls near the mouth. Coordinates: 351615N - 840820W. Bald River Falls, Tenn.-N.C., # 140 SW Quad. Reach # 06010204-.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Optioservus* larvae	2
DIPTERA:	
Athericidae/*Atherix lantha*	1
Chironomidae	4
Simuliidae	2
Tipulidae/*Tipula*	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	2
Heptageniidae/*Epeorus* (*Iron*)	8
Heptagenia	1
Stenonema	3
Leptophlebiidae/*Paraleptophlebia*	1
ODONATA:	
Gomphidae/*Lanthus*	1
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	22
Perlidae/*Acroneuria abnormis*	6
Pteronarcyidae/*Allonarcys*	8
TRICHOPTERA:	
Glossosomatidae/*Glossosoma* larvae	2
pupae	2
Hydropsychidae/*Arctopsyche irrorata*	2
Diplectrona modesta	6
Parapsyche cardis	4
Symphitopsyche macleodi	17
S. ventura	1
Philopotamidae/*Dolophilodes distinctus*	2
	98

North River

One qualitative fishery survey was conducted in October 1988:

Location and Length - Tributary to Tellico River. The sample area was located just downstream of the mouth of Hemlock Creek and was sampled on 13 October 1988. It was 300 ft. in length and averaged 24.9 ft. in width. The site was in Monroe County. Bald River Falls Quadrangle.

Gear Type - The site was sampled using backpack electrofishing equipment. Two shocker units, operating side by side at 700 v. AC, were used.

Water Quality - Data were taken from midstream with a 4041 Hydrolab. On 13 October 1988: DO - 10.9 ppm, pH - 6.6, Temperature - 42.6°F, Conductivity - 63 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 15 organisms, 0.12 ml. volumetric displacement, and represented 17 taxa. The qualitative sample contained 40 organisms and represented 14 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Rainbow trout	16	7.2	1.12	7.9
Brown trout	17	7.7	4.09	28.7
Nongame Fish	43	19.5	4.89	34.3
Forage Fish	145	65.6	4.14	29.1
Total	221		14.24	

Comments - This stream was surveyed primarily to follow up on the effect of drought on the trout population. Also, to develop a fish species diversity list and collect stream information for TADS.

North River was designated in 1970 as a wild trout stream with a minimum 9-inch size limit, a 3-fish daily limit, and fishing limited to artificial flies (Wilkins 1978). It is still managed as a wild trout stream under the same regulations with the modified

exception of no closed days or season as was originally in force.

In the late 1970's, North River and two of its tributaries were adversly impacted by construction of the Tellico-Robinsville Road. Weathering and leaching of an Anakeesta formation uncovered during construction resulted in severe acidic conditions in the watershed. Two tributaries, McNabb Creek and Hemlock Creek, were practically devoid of aquatic life and North River downstream of these tributaries was also also affected. Fish surveys made by the U. S. Forest Service in the fall of 1977 found only 3 trout in North River downstream of Hemlock Creek (file data). Conditions have improved since then and the lower stream again supports a nearly normal wild population of trout. Recently a liming operation, initiated by the Acid Preciptation Mitigation Program, was started on Laurel Branch, a North River tributary. This should create favorable effects on fish populations initially on Laurel Branch and ultimately on lower North River itself.

Both brown trout (*Salmo trutta*) and rainbow trout (*S. gairdneri*) were collected in almost equal numbers from our sample area at the mouth of Hemlock Creek. However, brown trout made up a greater percent by weight (29%) than did rainbow trout (8%). Coefficient of condition factors were calculated for all size trout collected in the sample. Brown trout averaged 1.04 and rainbows averaged 1.11, indicating that both were apparently in good condition. See Figure 4 for inch class distribution of trout collected.

In all a total of 9 species was collected from the site. Of special interest is the occurrence of the rosyside dace (*Clinostomus funduloides*) in our sample. This is an undescribed subspecies of *C. funduloides* of the upland tributaries of the Little Tennessee River. It is common in portions of the Little Tennessee system in North Carolina, but is uncommon and of spotty occurrence in Tennessee (Etnier and Starnes 1980). This was considered as probably the first record of this fish from North River (D.A. Etnier, personal communication). However, this fish was listed (by common name only) in U.S. Forest Service fish surveys of North River upstream of McNabb Creek, made in 1977 (file data). Four of our 8 specimens were deposited in The University of Tennessee Research Collection of Fishes, the others remain in our regional collection.

It is also interesting to note that no sculpin (*Cottus* sp.) were collected. Sculpin are generally a very common species component of almost all streams and rivers throughout east Tennessee and are widely distributed from warmwater streams to cold mountain streams. No sculpin were collected in surveys of Bald River or Wildcat Creek either. Also, our

sampling of the Tellico River in 1987 (Bivens 1988) produced no sculpin at the two sites upstream of Tellico Plains.

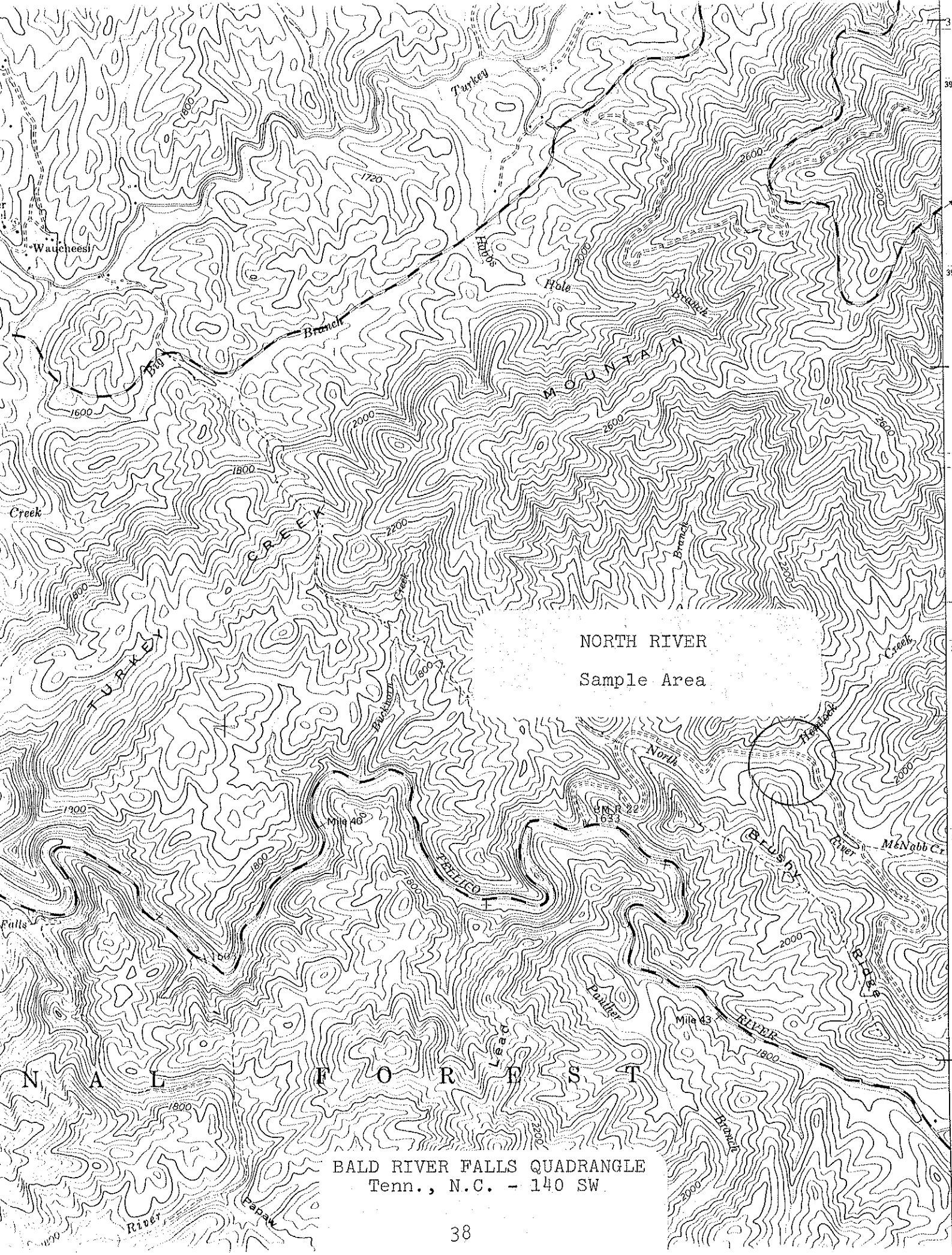
Benthic macroinvertebrates from our samples included Baetidae, Heptageniidae, and Neoephemeridae mayflies, Chloroperlidae, Perlidae, and Pteronarcyidae stoneflies, Hydropsychidae, Lepidostomatidae, Leptoceridae, and Limnephilidae caddisflies, Elmidae, Eubriidae, and Psephenidae beetles, and Aeshnidae (*Boyeria grafiana* and *B. vinosa*), Calopterygidae, and Gomphidae odonates. One limpet (*Ferrissia* sp.) was the only gastropod represented in our collections.

Management Recommendations:

1. Maintain the current trout management plan.

2. Protection of the watershed from further habitat deterioration and conduct periodic monitoring of the trout population.

3. Consider a follow up study on the *Clinostomus funduloides* population.



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

(BIG JUNCTION 140-SE)
4154 I SE PHEASANT FIELD BEARING POOLS 2.7 MI.

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Little Tennessee River Lat-Long 351953N - 840802W

Stream North River Length of Sample 300'

Area or Station Hemlock Creek Reach 06010204-54,0

County Monroe Date/Time 13 October 1988/0930

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

B. PHYSICAL CHARACTERISTICS

1. Average Width 24.9' Average Depth 0.6' Maximum Depth 2.3'
2. Estimated Percent of Stream in Pools is 40 %
3. Estimated Percent Pool Bottom is Mud - % Silt 15 % Sand 10 %
   Clay - % Gravel 10 % Rubble 35 % Boulders 25 %
   Bedrock 5 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 10 %
   Bedrock - % Other Rubble 40% Gravel 10% Boulders 30%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
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 90 % of Stream.
8. Flow (c.f.s.) 16.7 : Flow compared to Normal: Low X Normal High
9. D.O. 10.9 ppm Temp. 42.6°F % Saturation 87
10. Present Weather Clear and cold; air temperature - 36°F.
11. Past Weather (last 24 hours) Clear and cold.
12. D.O. 10.9 pH 6.6 Temp. 42.6 Conductivity 63 micromho/cm
13. Comments: Sample location just downstream of the mouth of Hemlock Creek.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Little Tennessee River — Lat-Long 351953N - 840802W

Body of Water North River — Date 13 October 1988

County or River Mile Monroe — Reach 06010204-54,0

Type of Sampling Electrofishing — Pool Elevation 1750'

Gear Type Two backpack shockers side by side @ 700 v. AC — Time 1000 - 1045

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo gairdneri	353	6	3	0.15			
" "	"	2	5	0.13			
" "	"	6	6	0.56			
" "	"	2	7	0.28			
Salmo trutta	355	2	6	0.23			
" "	"	2	7	0.29			
" "	"	7	8	1.65			
" "	"	5	9	1.55			
" "	"	1	10	0.37			
Hypentelium nigricans	166	43	3-12	4.89			
Semotilus atromaculatus	360	2	1-2	0.01			
Nocomis micropogon	234	16	2-5	0.28			
Campostoma anomalum	25	94	2-7	3.55			
Rhinichthys atratulus	351	12	1-3	0.12			
Notropis rubricroceus	262	13	2-3	0.09			
* *Clinostomus funduloides*	-	8	2-4	0.09			

* Label Parameter Listed

* Undescribed subspecies of *C. funduloides* of the upland tributaries of the Little Tennessee River.

Field Notes: 300' sample length.

Name of Collector(s): R.D. Bivens, C.E. Williams, S.W. Stooksbury, W.H. Nichols, and D.D. Akins

WR-0525

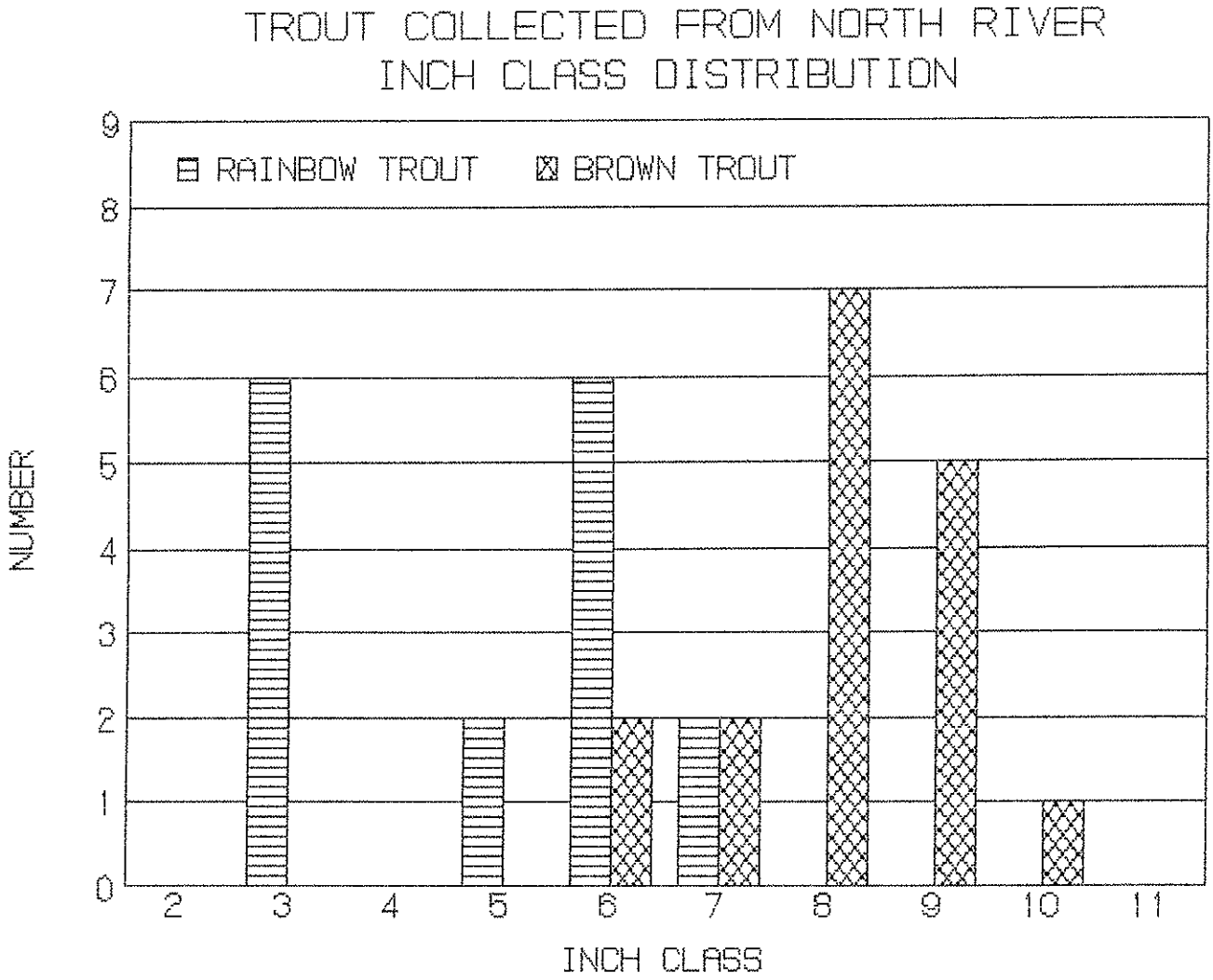

TROUT COLLECTED FROM NORTH RIVER
INCH CLASS DISTRIBUTION
RAINBOW TROUT
BROWN TROUT
NUMBER
0
1
2
3
4
5
6
7
8
9
2
3
4
5
6
7
8
9
10
11
INCH CLASS

Figure 4.

North River: Edge Surber sample

13 October 1988 Field # 123

Monroe Co., TN; Just downstream of the mouth of Hemlock Creek. Coordinates: 351953N - 840802W. Bald River Falls, Tenn.-N.C., # 140 SW Quad. Reach # 06010204-54,0.

TAXA	NUMBER
DIPTERA:	
Athericidae/*Atherix lantha*	1
Tipulidae/*Limnophila*	1
	2

Volumetric Displacement was 0.03 ml.

North River: Midstream Surber sample

13 October 1988 Field # 123

Monroe Co., TN; Just downstream of the mouth of Hemlock Creek. Coordinates: 351953N - 840802W. Bald River Falls, Tenn.-N.C., # 140 SW Quad. Reach # 06010204-54,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Elmidae/*Promoresia elegans*	1
Eubriidae/*Ectopria*	1
Psephenidae/*Psephenus herricki*	7
DIPTERA:	
Chironomidae	2
Unid. pupa	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	3
Heptageniidae/*Stenonema*	1
GASTROPODA:	
Ancylidae/*Ferrissia*	1
PLECOPTERA:	
Chloroperlidae	1
Perlidae/*Paragnetina immarginata*	1
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	1
Lepidostomatidae/*Lepidostoma*	1
Leptoceridae/*Ceraclea*	1
Setodes stehri	1
Limnephilidae/*Goera fuscula*	3
	28

Volumetric Displacement was 0.2 ml.

North River: Qualitative sample

13 October 1988 Field # 123

Monroe Co., TN; Just downstream of the mouth of Hemlock Creek. Coordinates: 351953N - 840802W. Bald River Falls, Tenn.-N.C., # 140 SW Quad. Reach # 06010204-54,0.

TAXA	NUMBER
COLEOPTERA:	
Eubriidae/Ectopria	1
Psephenidae/Psephenus herricki	1
DIPTERA:	
Chironomidae	1
EPHEMEROPTERA:	
Heptageniidae/Stenonema	5
Neoephemeridae/Neoephemera purpurea	2
MEGALOPTERA:	
Corydalidae/Nigronia serricornis	1
ODONATA:	
Aeshnidae/Boyeria grafiana	2
B. vinosa	1
Calopterygidae/Calopteryx	4
Gomphidae/Stylogomphus albistylus	1
PLECOPTERA:	
Perlidae/Acroneuria abnormis	13
Paragnetina immarginata	4
Pteronarcyidae/Allonarcys	2
TRICHOPTERA:	
Hydropsychidae/Symphitopsyche morosa	2
	40

English Creek

One qualitative fishery survey was conducted in April 1988:

Location and Length - Tributary to the Pigeon River. The sample area was located about 0.2 mi. upstream of the mouth and was sampled on 26 April 1988. It was approximately 300 ft. in length and averaged about 20 ft. in width. The site was in Cocke County. Newport Quadrangle.

Gear Type - The site was sampled using backpack electrofishing equipment. One shocker unit operating at 350 v. AC was used.

Water Quality - Data were taken from midstream with a hand held thermometer, Hach Pocket pH meter, and a Cole Parmer Pocket TDS meter. On 26 April 1988: Temperature 62°F, pH - 7.4, TDS - 210 ppm.

Benthos Collection - No collection was made.

Fish Collected: (See data sheet for species list)

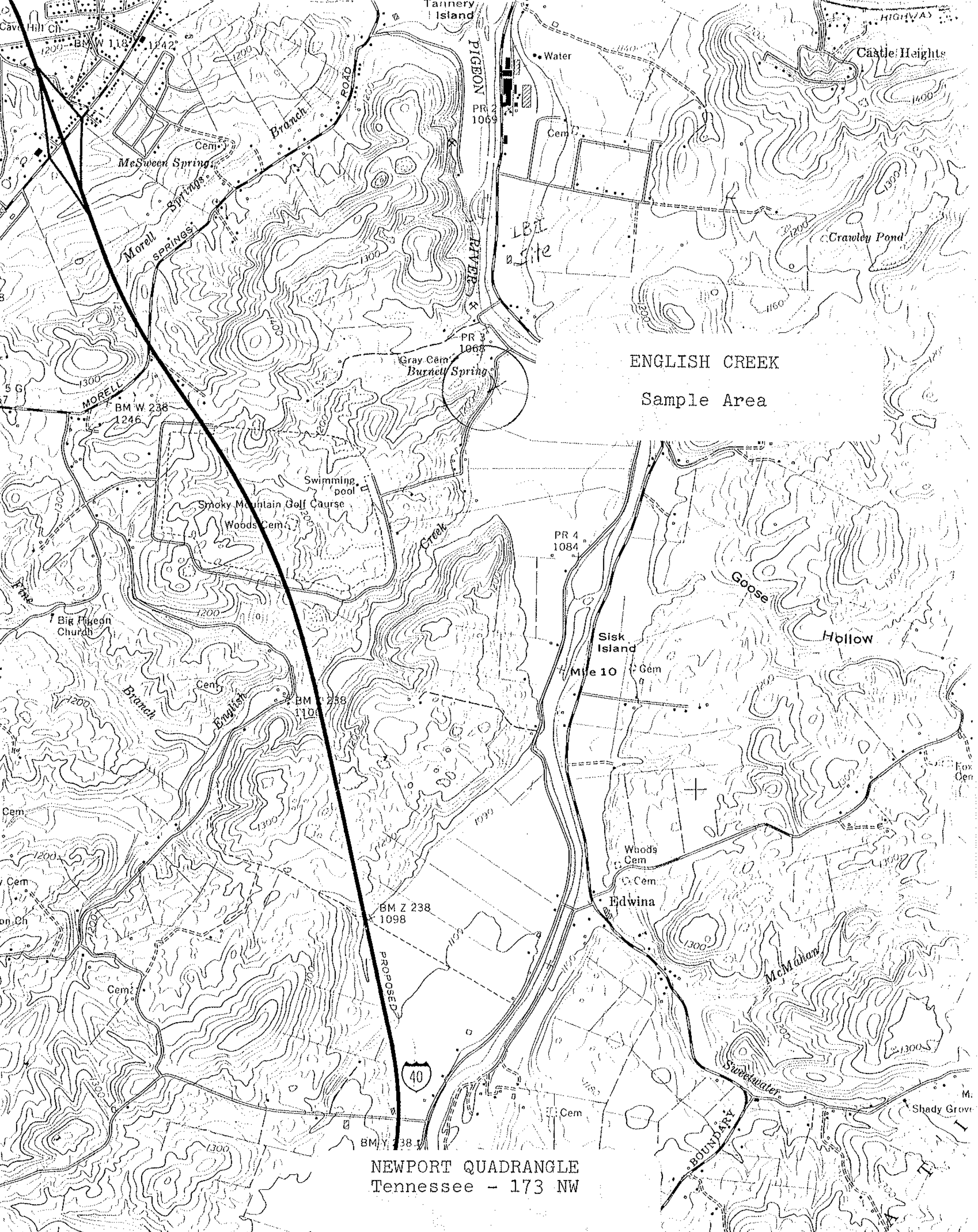
Comments - This stream was sampled primarily to develop a species diversity list for TADS. It was done in conjunction with IBI data collection on the Pigeon River as we were in the area and had time to conduct a limited survey.

Game fish collected from English Creek included largemouth bass (*Micropterus salmoides*), rock bass (*Ambloplites rupestris*), redbreast sunfish (*Lepomis auritus*), and bluegill (*L. macrochirus*). In all, a total of 13 fish species was collected from the site. No *Notropis* species were collected or observed during the sampling. *Isonychia* mayflies were extremely abundant.

In general, the stream flows through an area of fairly high agricultural use which results in the stream being fairly silty. Also, the stream probably receives runoff from Smoky Mountain Golf Course. The associated non-point-source pollution results in a fish fauna dominated by tolerant forms.

Management Recommendations:

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



ENGLISH CREEK

Sample Area

NEWPORT QUADRANGLE
Tennessee - 173 NW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Pigeon River Lat-Long 355611N - 831043W

Stream English Creek Length of Sample Approx. 300'

Area or Station Approx. 0.2 mi. upstream of mouth Reach 06010106-30.0

County Cocke Date/Time 26 April 1988/1430

Data Collected By Rick D. Bivens

B. PHYSICAL CHARACTERISTICS

1. Average Width 20' Average Depth 0.5' Maximum Depth 2.0'
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud 10 % Silt 40 % Sand 10 %

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

   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud 10 % Silt 10 % Sand 20 %

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

   Average X 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 50 % of Stream.
8. Flow (c.f.s.) - : Flow compared to Normal: Low X Normal High
9. D.O. - Temp. 62° F % Saturation -
10. Present Weather Partly cloudy, sunny and warm
11. Past Weather (last 24 hours) Same - cool overnight
12. D.O. - pH 7.4 Temp. 62°F Conductivity - TDS 210 ppm
13. Comments: This stream flows through an area of fairly high agricultural use which results in the stream being fairly silty and the typical associated non-point-source pollution. It probably receives runoff from Smoky Mtn. Golf Course also.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Pigeon River
Body of Water English Creek
County or River Mile Cocke
Type of Sampling Electrofishing
Gear Type One backpack shocker @ 350 V. AC

Lat-Long 355611N - 831043W
Date 26 April 1988
Reach 06010106-30.0
Pool Elevation 1063'
Time 1315-1415

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Ambloplites rupestris	13	10	(actual # collected)				
Lepomis auritus	201	5	(actual # collected)				
L. macrochirus	206		(common)				
Micropterus salmoides	220	15	(actual # collected)				
Catostomus commersoni	32		(common)				
Hypentelium nigricans	166		(common)				
Moxostoma duquesnei	229	2	(actual # collected)				
Campostoma anomalum	25		(common)				
Dorosoma cepedianum	48	7	(actual # collected)				
Cottus carolinae	40		(abundant)				
Rhinichthys atratulus	351	3	(actual # collected)				
Etheostoma rufilineatum	108	3	(actual # collected)				
E. simoterum	111		(abundant)				
Isonychia mayflies were extremely abundant.							
No *Notropis* observed or collected!							

* Label Parameter Listed

Field Notes: Approx. 300' sample length. Above numbers of fish represent only the ones that were picked up, many were observed but not collected.

Name of Collector(s): Rick D. Bivens & Chet Ellison

WR-0525

Cosby Creek

Two qualitative fishery surveys were conducted in April and October 1988:

Location and Length - Tributary to the Pigeon River. The lower sample area was located at the mouth and was sampled on 11 October 1988. It was approximately 0.3 mi. in length and averaged about 20 ft. in width. The upstream area was located just downstream of the bridge at the junction of highways 321 and 73. It was about 200 ft. in length and was sampled on 25 April 1988. Both sites were in Cocke County. Lower site Newport Quadrangle. Upstream site Hartford Quadrangle.

Gear Type - The sites were sampled using backpack electrofishing equipment. Two units were used at the lower site. At the upstream site, one unit was used in conjunction with a 30 ft. seine.

Water Quality - No data collected.

Benthos Collection - No collection was made.

Fish Collected: (See data sheets for species list)

Comments - The lower reach of Cosby Creek was sampled primarily to develop a fish species diversity list for TADS. In April, the upstream area was sampled specifically for fish species occurrence. While in October, a species diversity list was developed during collection of fish at the mouth, in conjunction with an EPA Pigeon River study.

Game fish from lower Cosby Creek included largemouth bass (*Micropterus salmoides*), smallmouth bass (*M. dolomieui*), rock bass (*Ambloplites rupestris*), redbreast sunfish (*Lepomis auritus*), and bluegill (*L. macrochirus*). Rock bass and redbreast sunfish were the predominant gamefish present and we collected a total of 21 fish species from both sites combined.

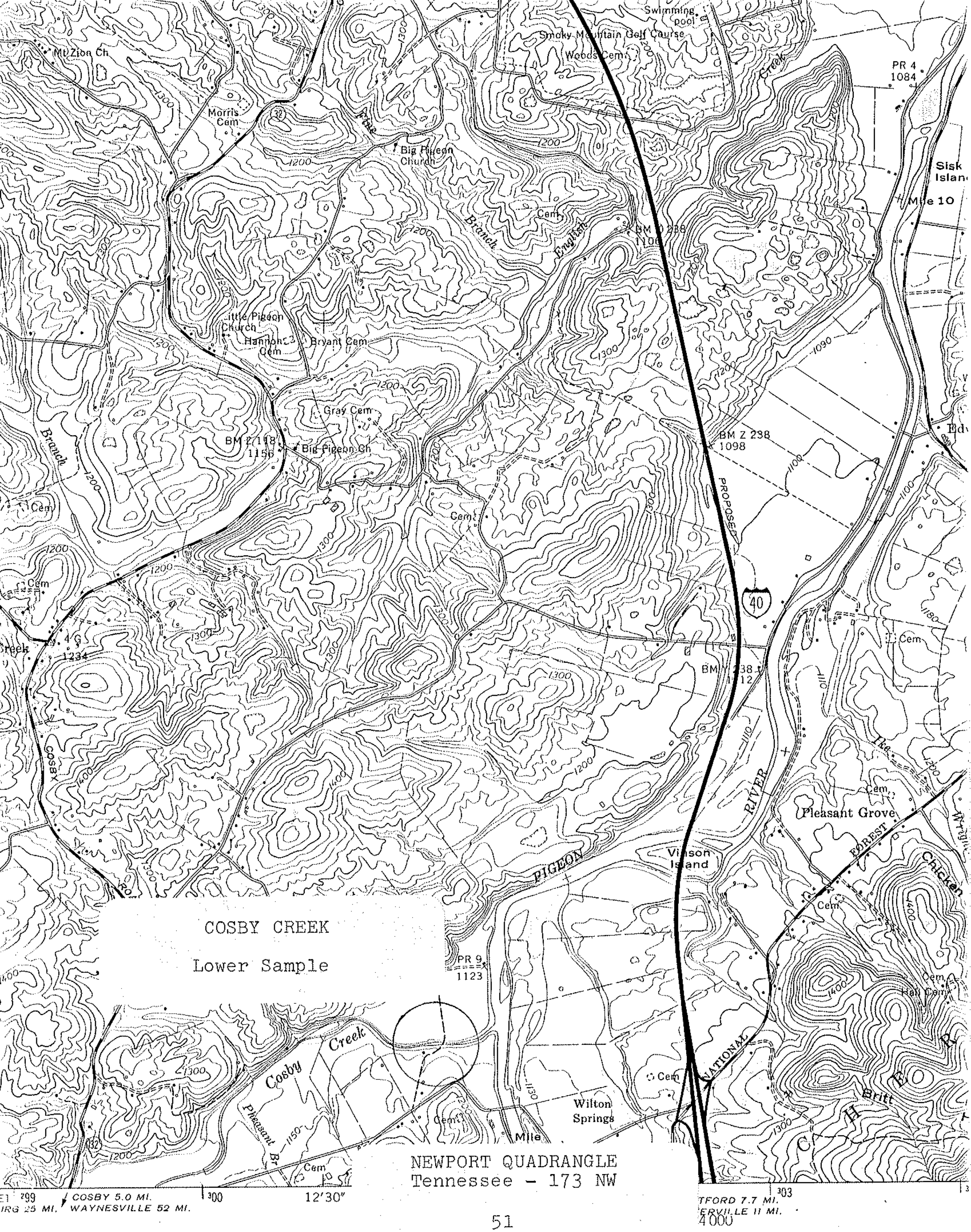
In general, stream conditions appear good and the occurrence of the Tennessee shiner (*Notropis leuciodus*), the telescope shiner (*N. telescopus*), and five darter species further indicate fairly good water quality. Upstream, Cosby Creek is also managed as a trout stream and receives periodic stocking by TWRA.

Management Recommendations:

1. Maintain the current trout management plan.

2. Conduct an additional benthos and fish survey as larval drift of benthic organisms (as well as fish) from Cosby Creek would influence recovery of the Pigeon River if pollution is reduced in that stream.

3. Maintain efforts to protect the watershed from any type of habitat deterioration.



COSBY CREEK

Lower Sample

NEWPORT QUADRANGLE
Tennessee - 173 NW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Pigeon River Lat-Long 355255N - 831200W

Stream Cosby Creek Length of Sample Approx. 0.3 mi.

Area or Station Mouth Reach 06010106-4,0

County Cocke Date/Time 11 October 1988

Data Collected By Rick D. Bivens

B. PHYSICAL CHARACTERISTICS

1. Average Width 20' est. Average Depth 1' est. Maximum Depth 4' est.
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 20 %
   Bedrock 10 % Other Rubble 40% Gravel 10% Boulders 10%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average X 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 80 % of Stream.
8. Flow (c.f.s.) - : Flow compared to Normal: Low Normal High
9. D.O. - Temp. - % Saturation -
10. Present Weather Clear and cool.
11. Past Weather (last 24 hours) Clear and cool, cold overnight.
12. D.O. - pH - Temp. - Conductivity -
13. Comments: Limited data collected in conjunction with fish collection for EPA use.

Lower sample - mouth

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Pigeon River
Body of Water Cosby Creek
County or River Mile Cocke
Type of Sampling Electrofishing
Gear Type Two backpack shockers

Lat-Long 355255N - 831200W
Date 11 October 1988
Reach 06010106-4.0
Pool Elevation 1115'
Time Approx. 1.5 hr. shocking time

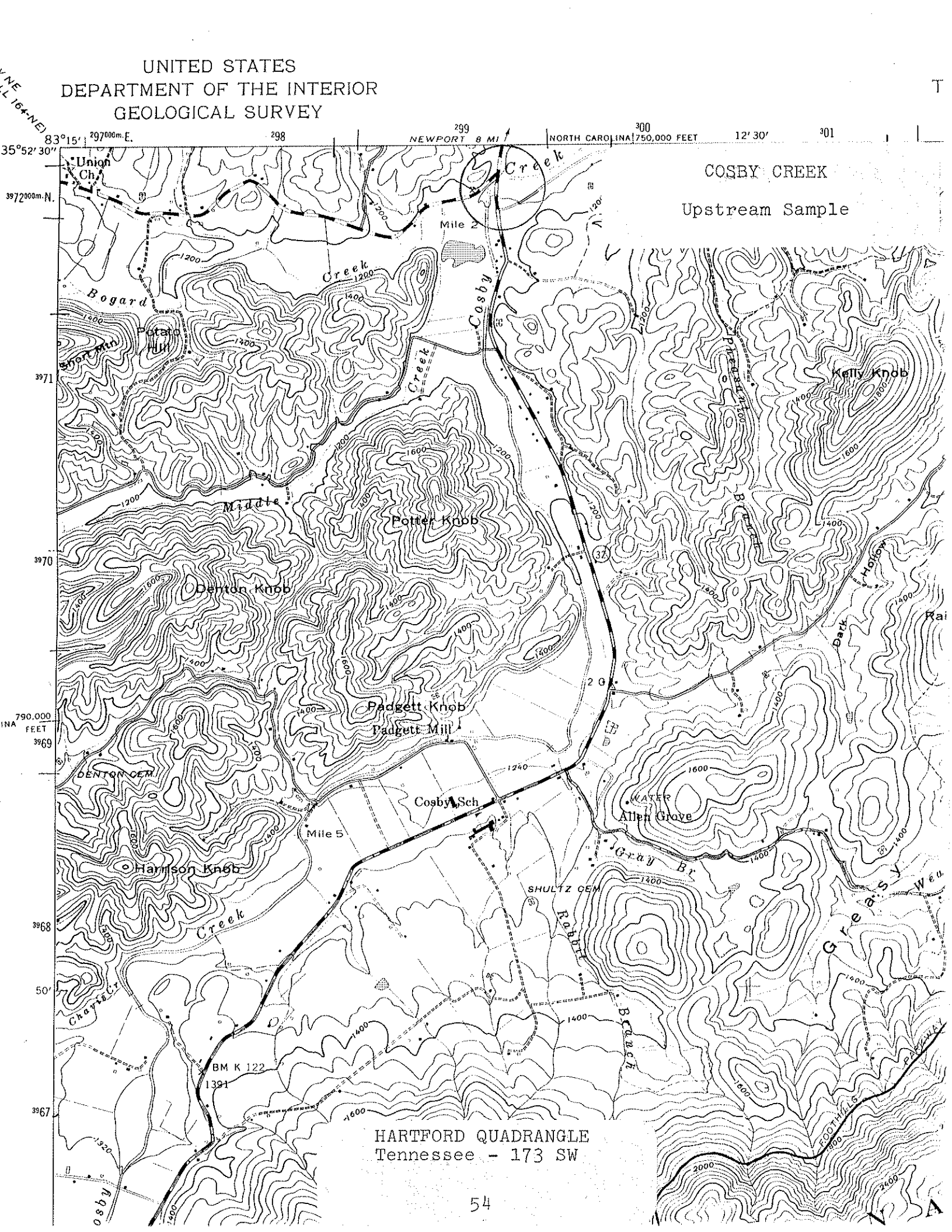
SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus dolomieui	218	1	(actual # collected)				
M. salmoides	220	3 or 4	(actual # collected)				
Ambloplites rupestris	13		(several)				
Lepomis auritus	201		(several)				
L. macrochirus	206	2 or 3	(actual # collected)				
Hypentelium nigricans	166		(common)				
Campostoma anomalum	25		(common)				
Moxostoma anisurum	226	1	(actual # collected)				
M. macrolepidotum	231	1	(actual # collected)				
Notropis galacturus	253		(common)				
N. leuciodus	255	3	(actual # collected)				
N. rubellus	260	1	(actual # collected)				
Hybopsis amblops	155	4	(actual # collected)				
Percina caprodes	306	5	(actual # collected)				
Etheostoma rufilineatum	108	5	(actual # collected)				
E. simoterum	111	12	(actual # collected)				
E. blennioides	79	1	(actual # collected)				
Notropis telescopus	272	2	(actual # collected)				
Cottus carolinae	40	15	(actual # collected)				

* Label Parameter Listed

Field Notes: Species diversity list developed during collection of game fish for EPA Pigeon River pollution study.

Name of Collector(s): R.D. Bivens, C.E. Williams, D.L. Dycus, D. McKinney, W. Schacher, and J. Stober

WR-0525


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COSBY CREEK
Upstream Sample
HARTFORD QUADRANGLE
Tennessee - 173 SW
Union Ch.
Mile 2
Bogard
Potato Hill
Short Mtn
Cosby Creek
Middle Prong
Potter Knob
Denton Knob
Padgett Knob
Padgett Mill
DENTON CEM
Cosby Sch
Mile 5
Harrison Knob
Allen Grove
Gray Br
SHULTZ CEM
Rabbit Branch
Greasy
Kelly Knob
Dark Hollow
BM K 122
1391
FOOTHILLS PARKWAY
NEWPORT 8 MI
NORTH CAROLINA 750,000 FEET
83°15'
35°52'30"
397000m.E.
3972000m.N.
12'30'
54

Upstream sample - bridge at junction of highways 321 and 73

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Pigeon River
Body of Water Cosby Creek
County or River Mile Cocke
Type of Sampling Electrofishing
Gear Type Backpack shocking into 30' seine.

Lat-Long 355224N - 831323W
Date 25 April 1988
Reach 06010106-4,0
Pool Elevation 1157'
Time -

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Fundulus catenatus	137		(several)				
Etheostoma simoterum	111		(few)				
E. rufilineatum	108		(abundant)				
E. swannanoa	129		(common)				
Campostoma anomalum	25		(abundant)				
Cottus carolinae	40		(common)				
Hybopsis amblops	155	2	(actual # collected)				
Hypentelium nigricans	166	1	(actual # collected)				
Notropis galacturus	253		(common)				
N. leuciodus	255	7 or 8	(actual # collected)				

* Label Parameter Listed

Field Notes: Backpack shocked into 30' seine downstream of the bridge at the junction of highways 321 and 73.

Name of Collector(s): Rick D. Bivens, Chester J. Ellison, & Charles F. Saylor

WR-0525

Gulf Fork Big Creek

One qualitative fishery survey was conducted in September 1988:

Location and Length - Tributary to the French Broad River. The sample site was located in the Click Mill area at the mouth of Morgan Branch and was sampled on 20 September 1988. It was 300 ft. in length and averaged 46.3 ft. in width. The site was in Cocke County. Neddy Mountain Quadrangle.

Gear Type - The site was sampled using backpack electrofishing equipment. Two shocker units, operating side by side at 350 v. AC, were used.

Water Quality - Data were taken from midstream with a 4041 Hydrolab. On 20 September 1988: DO - 9.1 ppm, pH - 7.5, Temperature - 67.3°F, Conductivity - 115 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 34 organisms, 0.45 ml. volumetric displacement, and represented 19 taxa. The qualitative sample contained 196 organisms and represented 30 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Smallmouth bass	45	3.8	1.93	6.3
Rock bass	40	3.4	2.88	9.3
Nongame Fish	39	3.3	10.92	35.4
Forage Fish	1057	89.5	15.15	49.0
Total	1181		30.88	

Comments - This stream was sampled primarily as a preimpoundment survey for a recreational project proposed by a private landowner. The project includes a dam and small reservoir on the stream. A species diversity list and other stream information was also collected for TADS.

The sample site was upstream of the proposed contruction area but downstream enough to be out of the trout section. Smallmouth bass (*Micropterus dolomieui*) and

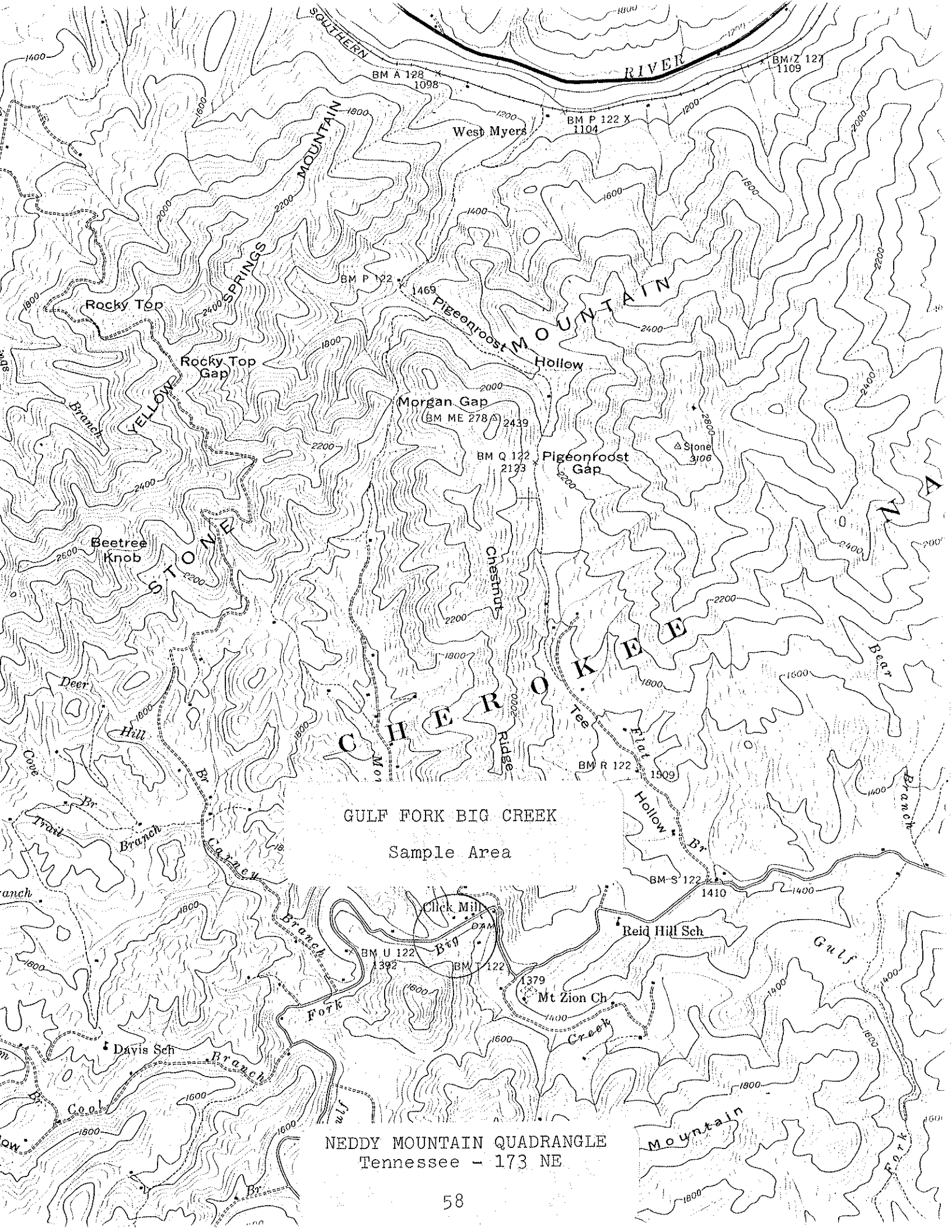
rock bass (*Ambloplites rupestris*) were the only game fish collected. Both were collected in similar numbers, however, rock bass made up 9% compared to 6% by smallmouth, of the total weight of all fish. This was due to a disproportion of 2-inch smallmouths, while rock bass were more evenly distributed over their size range (Fig. 5). This section of stream appears to be a good to excellent smallmouth and rock bass stream. The occurrence of fair numbers of rather intolerant cyprinids such as the Tennessee shiner (*Notropis leuciodus*) and telescope shiner (*N. telescopus*) further attest to the water quality. Stonerollers (*Campostoma anomalum*) were abundant and comprised about 40% of the total number of all fish collected. This number is probably much higher, as many stonerollers escaped capture. A total of 15 fish species was collected.

Benthic macroinvertebrates from our samples included Baetidae, Caenidae, Heptageniidae, and Oligoneuriidae mayflies, perlid stoneflies, Hydropsychidae and Polycentropodidae caddisflies, and Elmidae and Psephenidae beetles. Limpets (*Ferrissia* sp.) were the only gastropod represented in our collections.

Management Recommendations:

1. Concerning the proposed recreation project, no fish species were encountered in our collections that would stop any construction work. The current status of that project is unknown however.

2. Prior to any construction, we should consider the effect of an increase in water temperature in mid and late summer downstream of the proposed dam and reservoir.


GULF FORK BIG CREEK
Sample Area
NEDDY MOUNTAIN QUADRANGLE
Tennessee - 173 NE
SOUTHERN
RIVER
BM A 128
1098
BM Z 127
1109
BM P 122 X
1104
West Myers
MOUNTAIN
SPRINGS
Rocky Top
Rocky Top Gap
YELLOW
Branch
BM P 122
1469
Pigeonroost
MOUNTAIN
Hollow
Morgan Gap
(BM ME 278 A)
2439
BM Q 122
2123
Pigeonroost Gap
Stone
3106
Beetree Knob
STONE
Chestnut
Ridge
CHEROKEE
Deer
Hill
Br
Cove
Br
Trail
Branch
Carney
Branch
Tee
Flat
BM R 122
1909
Hollow
Br
Bear
Branch
BM S 122
1410
Click Mill
Dam
Brg
BM U 122
1392
BM T 122
1379
Reid Hill Sch
Mt Zion Ch
Gulf
Creek
Fork
Davis Sch
Branch
Cool
Br
Gulf
Mountain
Fork

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed French Broad River Lat-Long 355414N - 830516W

Stream Gulf Fork Big Creek " Length of Sample 300'

Area or Station Click Mill Area Reach 06010105-4,0

County Cocke Date/Time 20 September 1988/1545

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

B. PHYSICAL CHARACTERISTICS

1. Average Width 46.3' Average Depth 0.7' Maximum Depth 2.9'
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 30 %
   Clay - % Gravel 10 % Rubble 20 % Boulders 30 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 20 %
   Bedrock 20 % Other Boulders 20% Rubble 20% Gravel 10%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
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 50 % of Stream.
8. Flow (c.f.s.) 25.2 : Flow compared to Normal: Low X Normal High
9. D.O. 9.1 ppm Temp. 67.3 °F % Saturation 98
10. Present Weather Partly cloudy, warm and humid.
11. Past Weather (last 24 hours) Partly cloudy, warm and humid.
12. D.O. 9.1 pH 7.5 Temp. 67.3 Conductivity 115 micromho/cm
13. Comments: Sample location begins at the mouth of Morgan Branch. Siltation is evident but not a great problem. The stream appears to be a good to excellent smallmouth and rock bass stream.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed French Broad River
Body of Water Gulf Fork Big Creek
County or River Mile Cocke
Type of Sampling Electrofishing
Gear Type Two backpack shockers side by side @350 v. AC

Lat-Long 355414N - 830516W
Date 20 September 1988
Reach 06010105-4,0
Pool Elevation 1370'
Time 1230 - 1330

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus dolomieui	218	35	2	0.33			
" "	"	2	3	0.04			
" "	"	3	5	0.20			
" "	"	1	7	0.17			
" "	"	2	8	0.49			
" "	"	2	9	0.70			
Ambloplites rupestris	13	7	1	0.03			
" "	"	3	2	0.04			
" "	"	7	3	0.14			
" "	"	6	4	0.34			
" "	"	10	5	0.95			
" "	"	6	6	1.11			
" "	"	1	7	0.27			
Moxostoma macrolepidotum	231	10	3-15	5.20			
Hypentelium nigricans	166	29	2-11	5.70			
Nocomis micropogon	234	99	1-5	1.6			
Campostoma anomalum	25	485	1-7	10.68			
Hybopsis amblops	155	17	1-2	0.04			
Notropis coccogenis	248	170	1-5	1.19			
N. galacturus	253	44	1-4	0.29			
N. leuciodus	255	161	1-2	0.52			
N. telescopus	272	40	1-3	0.17			
Continued on next page							

* Label Parameter Listed

Field Notes: 300' sample length. Many fish escaped capture. Collected and released one *Cryptobranchus a. alleganiensis*.

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

WR-0525

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed French Broad River
Body of Water Gulf Fork Big Creek
County or River Mile Cocke
Type of Sampling Electrofishing
Gear Type Two backpack shockers side by side @ 350 v. AC

Lat-Long 355414N - 830516W
Date 20 September 1988
Reach 06010105-4,0
Pool Elevation 1370'
Time 1230 - 1330

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Etheostoma blennioides	79	3	2-4	0.05			
E. rufilineatum	108	3	1-2	0.01			
E. simoterum	111	20	1-2	0.06			
Cottus carolinae	40	15	1-4	0.54			

* Label Parameter Listed

Field Notes: 300' sample length.

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

WR-0525

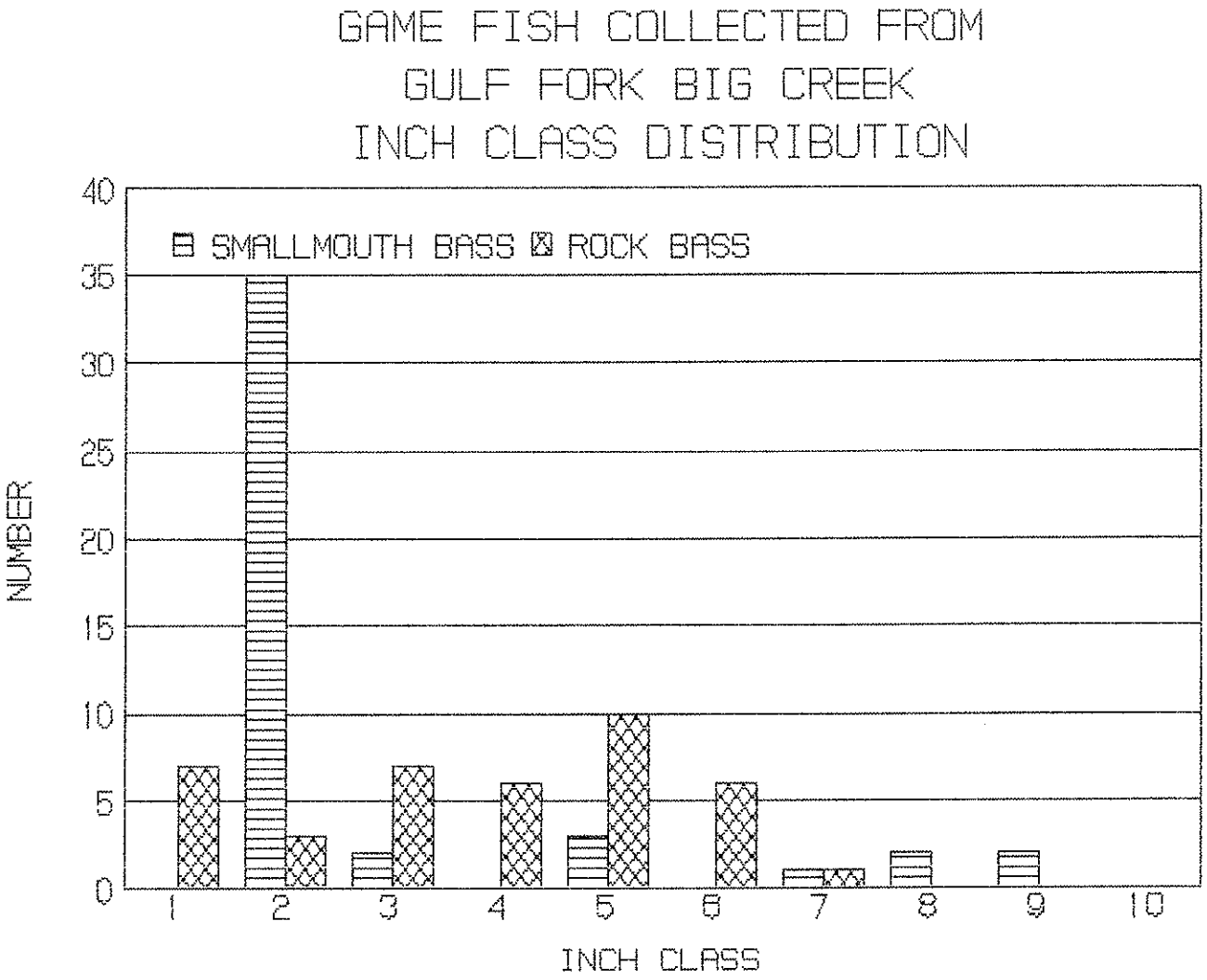

GAME FISH COLLECTED FROM
GULF FORK BIG CREEK
INCH CLASS DISTRIBUTION
SMALLMOUTH BASS
ROCK BASS
NUMBER
0
5
10
15
20
25
30
35
40
1
2
3
4
5
6
7
8
9
10
INCH CLASS

Figure 5.

Gulf Fork Big Creek: Edge Surber sample

20 September 1988 Field # 113

Cocke Co., TN; Mouth of Morgan Branch in the Click Mill area. Coordinates: 355414N - 830516W. Neddy Mountain, Tenn., # 173 NE Quad. Reach # 06010105-4,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Psephenidae/*Psephenus herricki*	3
DIPTERA:	
Athericidae/*Atherix lantha*	1
Chironomidae	2
Simuliidae	8
Unid. pupa	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	5
Heptageniidae/*Epeorus* (*Iron*)	1
Stenonema	1
Oligoneuriidae/*Isonychia*	1
GASTROPODA:	
Ancylidae/*Ferrissia*	2
HETEROPTERA:	
Veliidae/*Rhagovelia obesa*	1
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	3
Nigronia serricornis	1
NEMATOMORPHA:	1
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	3
Symphitopsyche morosa	1
	36

Volumetric Displacement was 0.8 ml.

Gulf Fork Big Creek: Midstream Surber sample

20 September 1988 Field # 113

Cocke Co., TN; Mouth of Morgan Branch in the Click Mill area. Coordinates: 355414N - 830516W. Neddy Mountain, Tenn., # 173 NE Quad. Reach # 06010105-4,0.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Promoresia tardella*	1
Psephenidae/*Psephenus herricki*	2
DIPTERA:	
Chironomidae larvae	3
pupa	1
Empididae	1
EPHEMEROPTERA:	
Caenidae/*Caenis*	1
GASTROPODA:	
Ancylidae/*Ferrissia*	22
	31

Volumetric Displacement was 0.1 ml.

Gulf Fork Big Creek: Qualitative sample

20 September 1988 Field # 113

Cocke Co., TN; Mouth of Morgan Branch in the Click Mill area. Coordinates: 355414N - 830516W. Neddy Mountain, Tenn., # 173 NE Quad. Reach # 06010105-4,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Elmidae/Stenelmis larva	1
Psephenidae/Psephenus herricki	4
DIPTERA:	
Athericidae/Atherix lantha	2
Chironomidae	4
Simuliidae	4
Tipulidae/Antocha	1
Tipula	17
EPHEMEROPTERA:	
Baetidae/Baetis	8
Pseudocloeon	2
Caenidae/Caenis	2
Heptageniidae/Epeorus (Iron)	1
Heptagenia	6
Stenacron	16
Stenonema	34
Oligoneuriidae/Isonychia	10
HYDRACARINA:	1
MEGALOPTERA:	
Corydalidae/Corydalus cornutus	14
Nigronia serricornis	4
ODONATA:	
Aeshnidae/Boyeria vinosa	1
Coenagrionidae/Argia	2
Gomphidae/Gomphus	1
Ophiogomphus mainensis	1

cont.

Gulf Fork Big Creek: Qualitative sample cont.

TAXA	NUMBER
PLECOPTERA:	
Perlidae/*Acroneuria abnormis*	5
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	16
Hydropsyche unid. pupa	2
H. frisoni	3
Symphitopsyche morosa	29
Polycentropodidae/*Nyctiophylax*	2
Polycentropus	2
	196

Wolf Creek

Two qualitative fishery surveys were conducted in October 1988:

Location and Length - Tributary to the French Broad River. Sample area 1 was located near the mouth. The sample area was 300 ft. in length and averaged 14.1 ft. in width. Sample area 2 was located just upstream of the mouth of Bear Branch. It was 300 ft. in length and averaged 14.7 ft. in width. Both sites were sampled on 7 October 1988 and were in Cocke County. Paint Rock Quadrangle.

Gear Type - Both sites were sampled using backpack electrofishing equipment. Area 1 was sampled using two shocker units operating side by side at 350 v. AC. Area 2 was sampled with one shocker unit operating at 700 v. AC.

Water Quality - Data were taken from midstream with a 4041 Hydrolab on 7 October 1988. Area 1: DO - 10.1 ppm, pH - 7.9, Temperature - 50.0°F, Conductivity - 32 micromhos/cm. Area 2: DO - 9.7 ppm, pH - 7.2, Temperature - 48.2°F, Conductivity - 68 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples at site 1 and only one qualitative sample was taken at site 2. Surber samples from area 1 averaged 114 organisms, 1.1 ml. volumetric displacement, and represented 20 taxa. The qualitative sample from area 2 contained 162 organisms and represented 28 taxa.

Fish Collected:

	Area 1				Area 2			
Species	No.	% by No.	Wt.	% by Wt.	No.	% by No.	Wt.	% by Wt.
Smallmouth bass	10	1.3	1.86	15.6				
Spotted bass	1	0.1	0.27	2.3				
Rock bass	13	1.7	1.94	16.3				
Redbreast sunfish	24	3.2	1.01	8.5				
Rainbow trout	1	0.1	0.01		10	6.5	0.84	20.1
Nongame Fish	20	2.7	0.82	6.9	4	2.6	0.15	3.6
Forage Fish	676	90.7	6.01	50.4	139	90.8	3.18	76.3
Total	745		11.92		153		4.17	

Comments:

This stream was surveyed primarily to check the status of its trout population. Also, to collect and update stream information for TADS, and follow up on the effects of drought.

Our survey consisted of two samples, one near the mouth in the section dominated by warmwater species, and the other upstream in the trout portion. Game fish collected from the lower area included smallmouth bass (*Micropterus dolomieui*), spotted bass (*M. punctatus*), rock bass (*Ambloplites rupestris*), redbreast sunfish (*Lepomis auritus*), and one rainbow trout (*Salmo gairdneri*). Redbreast sunfish comprised the greater number of game fish collected, however, smallmouth and rock bass made up more by weight and in about equal amounts. See Figure 6 for the inch class distribution of game fish. A total of 20 fish species was collected.

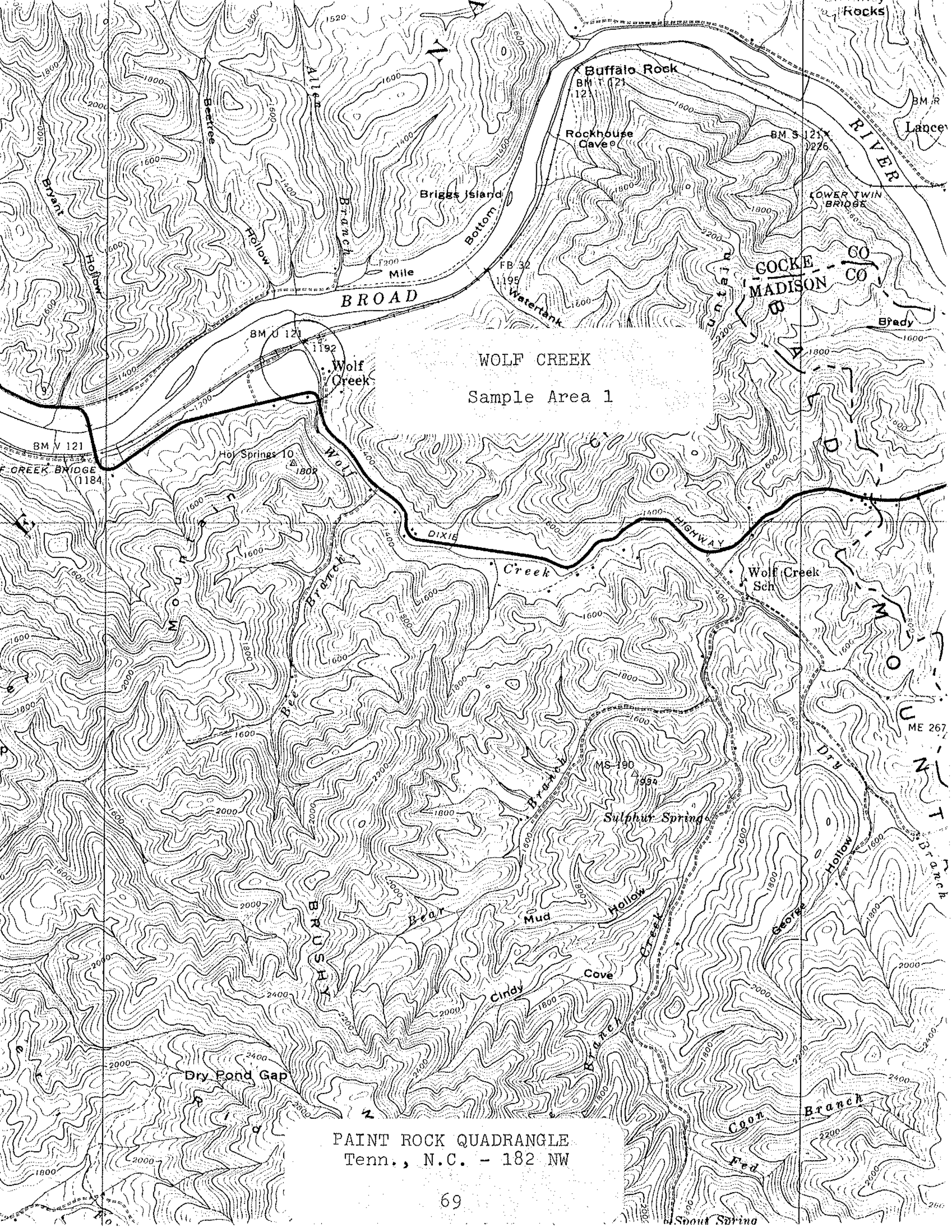
Rainbow trout were the only game fish collected from the upper area. They comprised about 7% by number and 20% by weight of all fish collected. Coefficient of condition factors were calculated for all size trout in the sample. The 10 rainbows collected averaged 1.13, indicating that they were apparently in good condition. See Figure 7 for the inch class distribution. Eight fish species were collected from this site. A total of 22 species was collected from both sites combined.

Benthic macroinvertebrates from our samples included Baetidae, Caenidae, Heptageniidae, and Oligoneuriidae mayflies, Peltoperlidae, Perlidae, and Pteronarcyidae stoneflies, Glossosomatidae, Hydropsychidae, Limnephilidae, Philopotamidae, and Rhyacophilidae caddisflies, and Elmidae, Eubriidae, Psephenidae, and Ptilodactylidae beetles. Periwinkle snails (*Goniobasis simplex*) were the only gastropod collected.

Management Recommendations:

1. Since the stream is not currently under any stocking program, consider the possibility of occasionally stocking fingerling rainbow trout based on the availability of supply. This stream should be a better trout producer than what it currently is.

2. Conduct another survey of the trout section further upstream from this sample and determine the standing crop.



WOLF CREEK

Sample Area 1

PAINT ROCK QUADRANGLE
Tenn., N.C. - 182 NW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed French Broad River Lat-Long 355534N - 825647W

Stream Wolf Creek Length of Sample 300'

Area or Station Site # 1 Reach 06010105-7.0

County Cocke Date/Time 7 October 1988/0930

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

B. PHYSICAL CHARACTERISTICS

1. Average Width 14.1' Average Depth 0.5' Maximum Depth 3.7'
2. Estimated Percent of Stream in Pools is 30 %
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 10 %
   Bedrock - % Other Gravel 20% Rubble 40% 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 70 % of Stream.
8. Flow (c.f.s.) 2.8 : Flow compared to Normal: Low X Normal High
9. D.O. 10.1 ppm Temp. 50°F % Saturation 90
10. Present Weather Cool and overcast; air temperature - 46°F.
11. Past Weather (last 24 hours) Partly cloudy and cold overnight.
12. D.O. 10.1 pH 7.9 Temp. 50°F Conductivity 32 micromho/cm
13. Comments: Sample area location near the mouth at the railroad bridge. The stream is fairly small and silty here; pools and cover for fish is somewhat lacking.

Site #1 - Near the mouth at railroad bridge

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed French Broad River
Body of Water Wolf Creek
County or River Mile Cocke
Type of Sampling Electrofishing
Gear Type Two backpack shockers side by side @ 350 v. AC

Lat-Long 355534N - 825647W
Date 7 October 1988
Reach 06010105-7,0
Pool Elevation 1170'
Time 1120 - 1330

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo gairdneri	353	1	3	0.01			
Micropterus dolomieui	218	7	2	0.07			
" "	"	1	9	0.33			
" "	"	1	10	0.57			
" "	"	1	12	0.89			
M. punctulatus	219	1	8	0.27			
Ambloplites rupestris	13	2	1	t			
" "	"	1	2	0.01			
" "	"	1	3	0.03			
" "	"	1	4	0.07			
" "	"	1	5	0.08			
" "	"	4	6	0.60			
" "	"	2	8	0.64			
" "	"	1	9	0.51			
Lepomis auritus	201	2	1	t			
" "	"	7	2	0.08			
" "	"	3	3	0.10			
" "	"	7	4	0.41			
" "	"	5	5	0.42			
Hypentelium nigricans	166	20	2-10	0.82			
Campostoma anomalum	25	175	1-5	1.31			
Hybopsis amblops	155	3	2	0.02			
Nocomis micropogon	234	58	1-7	1.14			
Cottus carolinae	40	28	1-4	0.49			
Continued on next page							

* Label Parameter Listed

Field Notes: 300' sample length.

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

WR-0525

Site #1 - Near the mouth at railroad bridge

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed French Broad River
Lat-Long 355534N - 825647W
Body of Water Wolf Creek
Date 7 October 1988
County or River Mile Cocke
Reach 06010105-7.0
Type of Sampling Electrofishing
Pool Elevation 1170'
Gear Type Two backpack shockers side by side @ 350 v. AC
Time 1120 - 1330

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Notropis coccogenis	248	39	1-4	0.38			
N. galacturus	253	151	1-5	1.37			
N. leuciodus	255	1	2	t			
N. rubellus	260	5	2	0.02			
N. rubricroceus	262	8	1-2	0.02			
N. spilopterus	269	151	1-3	0.83			
N. telescopus	272	16	1	0.02			
Semotilus atromaculatus	360	9	1-8	0.27			
Etheostoma rufilineatum	108	17	1-2	0.09			
E. simoterum	111	15	1-2	0.05			

* Label Parameter Listed

Field Notes: 300' sample length.

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

WR-0525

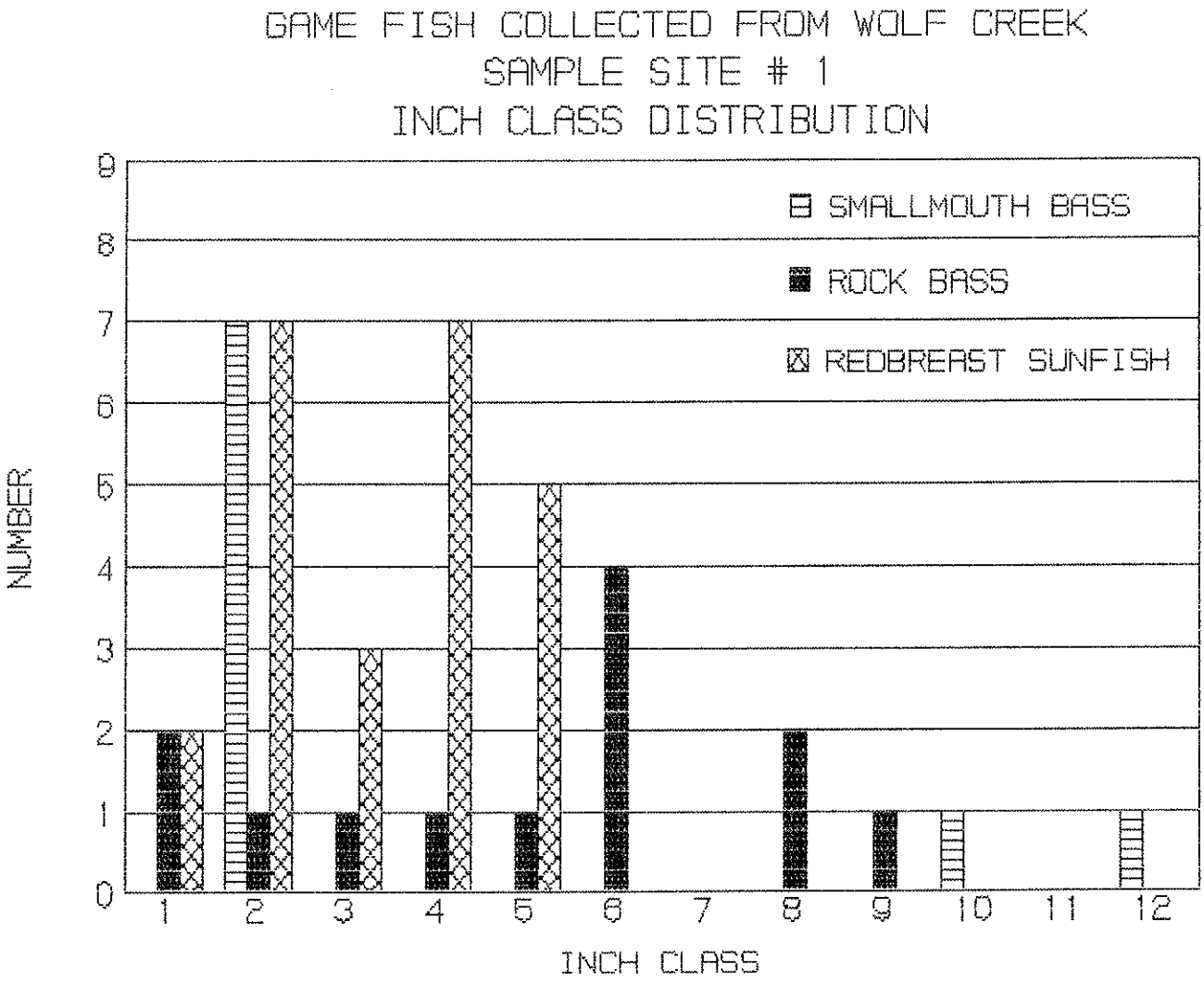

GAME FISH COLLECTED FROM WOLF CREEK
SAMPLE SITE # 1
INCH CLASS DISTRIBUTION
SMALLMOUTH BASS
ROCK BASS
REDBREAST SUNFISH
NUMBER
0
1
2
3
4
5
6
7
8
9
1
2
3
4
5
6
7
8
9
10
11
12
INCH CLASS

Figure 6.

Wolf Creek: Site # 1, Edge Surber sample

7 October 1988 Field # 117

Cocke Co., TN; At the railroad bridge near the mouth. Coordinates: 355534N - 825647W. Paint Rock, Tenn.-N.C., # 182 NW Quad. Reach # 06010105-7,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	4
COLEOPTERA:	
Elmidae/Optioservus larvae	14
Psephenidae/Psephenus herricki	21
DIPTERA:	
Chironomidae larvae	6
pupa	1
EPHEMEROPTERA:	
Baetidae/Baetis	2
Pseudocloeon	1
Caenidae/Caenis	1
Heptageniidae/Stenonema	15
Oligoneuriidae/Isonychia	5
GASTROPODA:	
Pleuroceridae/Goniobasis simplex	1
PLECOPTERA:	
Perlidae/Neoperla clymene	1
TRICHOPTERA:	
Glossosomatidae/Glossosoma	1
Hydropsychidae/Hydropsyche	1
Symphitopsyche morosa	4
Limnephilidae/Goera calcarata	3
Philopotamidae/Chimarra	2
	83

Volumetric Displacement was 1.0 ml.

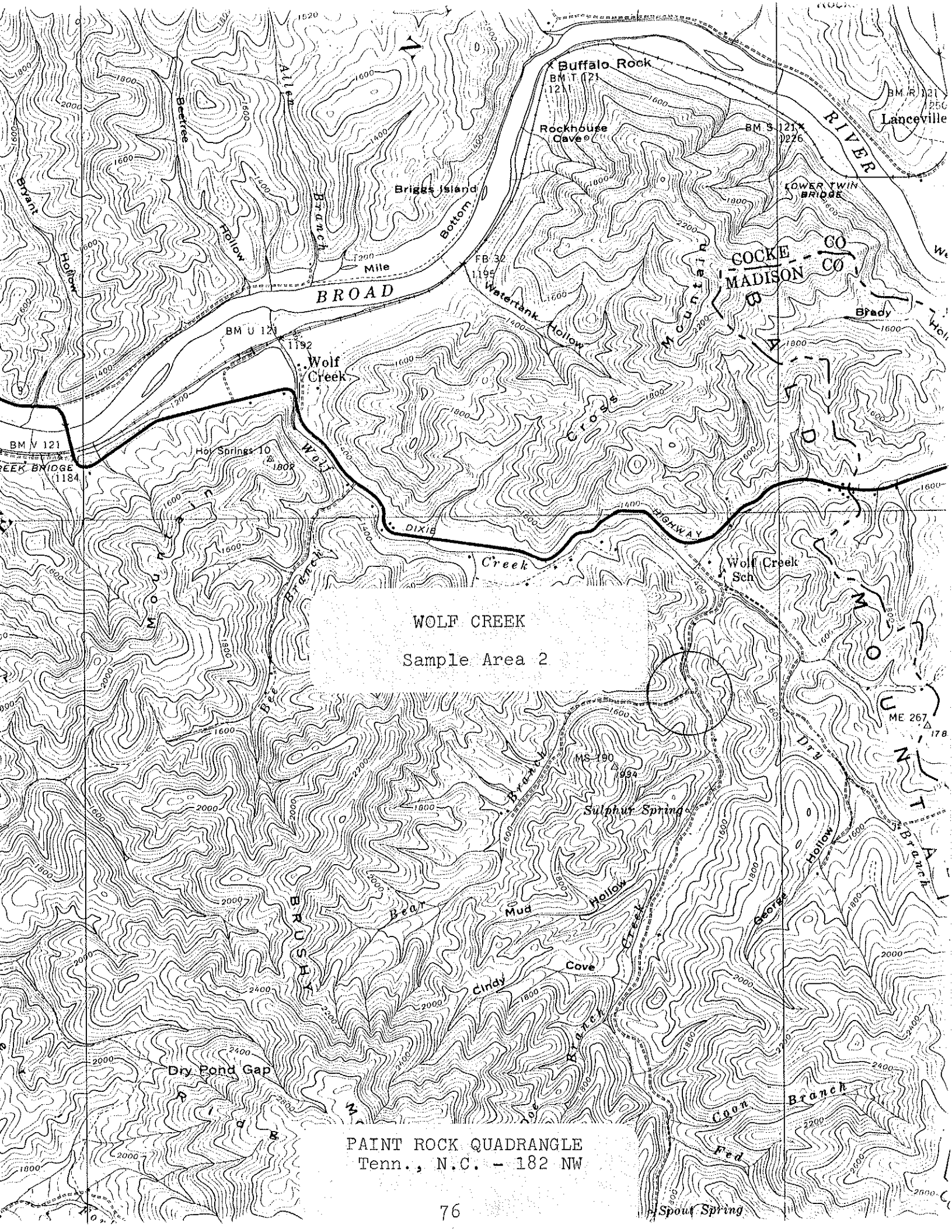
Wolf Creek: Site # 1, Midstream Surber sample

7 October 1988 Field # 117

Cocke Co., TN; At the railroad bridge near the mouth. Coordinates: 355534N - 825647W. Paint Rock, Tenn.-N.C., # 182 NW Quad. Reach # 06010105-7,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	3
COLEOPTERA:	
Elmidae/*Optioservus* larvae	18
adults	4
Psephenidae/*Psephenus herricki*	40
DIPTERA:	
Chironomidae larvae	5
pupa	1
Tipulidae/*Antocha* larvae	3
pupa	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	5
Pseudocloeon	1
Heptageniidae/*Stenonema*	21
Oligoneuriidae/*Isonychia*	6
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	2
PLECOPTERA:	
Perlidae/*Acroneuria abnormis*	1
TRICHOPTERA:	
Glossosomatidae/*Glossosoma*	22
Hydropsychidae/*Cheumatopsyche*	1
Symphitopsyche morosa	4
Limnephilidae/*Goera calcarata*	1
Philopotamidae/*Chimarra*	5
	144

Volumetric Displacement was 1.2 ml.



WOLF CREEK

Sample Area 2

PAINT ROCK QUADRANGLE
Tenn., N.C. - 182 NW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed French Broad River Lat-Long 355428N - 825519W

Stream Wolf Creek Length of Sample 300'

Area or Station Site # 2 Reach 06010105-7.0

County Cocke Date/Time 7 October 1988/1830

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

B. PHYSICAL CHARACTERISTICS

1. Average Width 14.7' Average Depth 0.3' Maximum Depth 2.3'
2. Estimated Percent of Stream in Pools is 40 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 10 %
   Clay - % Gravel 20 % Rubble 50 % Boulders 10 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 10 %
   Bedrock - % 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 30 %
   of stream, Average in 40 %, Poor in 30 %.
7. Shade or Canopy Good over 90 % of Stream.
8. Flow (c.f.s.) 2.1 : Flow compared to Normal: Low X Normal High
9. D.O. 9.7 ppm Temp. 48.2°F % Saturation 85
10. Present Weather Partly cloudy and cool; air temperature 52°F.
11. Past Weather (last 24 hours) Partly cloudy to clear and cold overnight.
12. D.O. 9.7 pH 7.2 Temp. 48.2 Conductivity 68 micromho/cm
13. Comments: Sample area location just upstream of the mouth of Bear Branch at low water bridge.

Site #2 - Just upstream of mouth of Bear Branch.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed French Broad River
Body of Water Wolf Creek
County or River Mile Cocke
Type of Sampling Electrofishing
Gear Type One backpack shocker at 700 v. AC

Lat-Long 355428N - 825519W
Date 7 October 1988
Reach 06010105-7,0
Pool Elevation 1410'
Time 1630 - 1715

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo gairdneri	353	6	3	0.09			
" "	"	1	6	0.11			
" "	"	1	7	0.13			
" "	"	1	8	0.18			
" "	"	1	9	0.33			
Hypentelium nigricans	166	4	1-6	0.15			
Notropis rubricroceus	262	26	1-2	0.09			
Campostoma anomalum	25	8	3-6	0.22			
Rhinichthys atratulus	351	18	1-3	0.11			
R. cataractae	352	10	2-5	0.24			
Semotilus atromaculatus	360	41	1-8	1.53			
Cottus carolinae	40	36	1-6	0.99			

* Label Parameter Listed

Field Notes: 300' sample length.

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

WR-0525

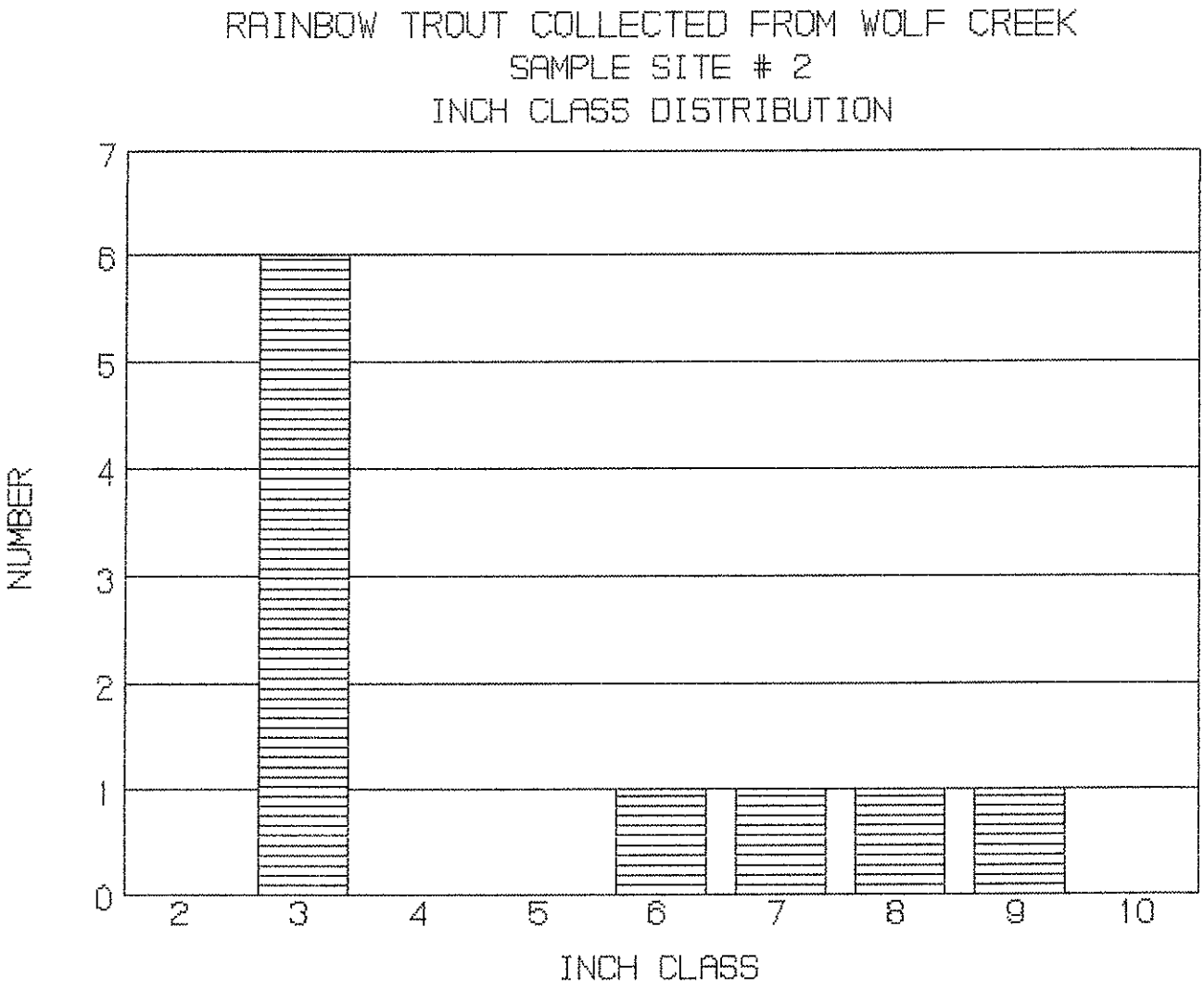

RAINBOW TROUT COLLECTED FROM WOLF CREEK
SAMPLE SITE # 2
INCH CLASS DISTRIBUTION
NUMBER
0
1
2
3
4
5
6
7
2
3
4
5
6
7
8
9
10
INCH CLASS

Figure 7.

Wolf Creek: Site # 2, Qualitative sample

7 October 1988 Field # 118

Cocke Co., TN; At low-water bridge just upstream of Bear Branch. Coordinates: 355428N - 825519W. Paint Rock, Tenn.-N.C., # 182 NW Quad. Reach # 06010105-7,0.

TAXA	NUMBER
ANNELIDA:	
Branchiobdellida	1
Oligochaeta	6
COLEOPTERA:	
Elmidae/*Optioservus* larvae	6
Oulimnius latiusculus adult	1
Eubriidae/*Ectopria*	1
Psephenidae/*Psephenus herricki*	2
Ptilodactylidae/*Anchytarsus bicolor* larva	1
DIPTERA:	
Athericidae/*Atherix lantha*	1
Chironomidae	4
Tipulidae/*Tipula*	5
EPHEMEROPTERA:	
Baetidae/*Pseudocloeon*	3
Ephemerellidae/*Drunella*	1
Serratella	6
Heptageniidae/*Epeorus* (*Iron*)	2
Stenonema	13
Oligoneuriidae/*Isonychia*	11
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	14
ODONATA:	
Gomphidae	3
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	4
Perlidae/*Acroneuria abnormis*	20
Pteronarcyidae/*Allonarcys*	1

cont.

Wolf Creek: Site # 2, Qualitative sample cont.

TAXA	NUMBER
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	18
Diplectrona modesta	8
Symphitopsyche slossonae	6
Limnephilidae/*Goera fuscula*	1
Pycnopsyche	1
Philopotamidae/*Dolophilodes distinctus*	18
Rhyacophilidae/*Rhyacophila*	4
	162

Camp Creek

One qualitative fishery survey was conducted in October 1988:

Location and Length - Tributary to the Nolichucky River. The sample area was located along Camp Creek Road approximately 0.4 mi. downstream from Caney Branch and was sampled on 5 October 1988. It was 300 ft. in length and averaged 15 ft. in width. The site was in Greene County. Davy Crockett Lake Quadrangle.

Gear Type - The site was sampled using backpack electrofishing equipment. Two shocker units, operating side by side at 350 v. AC, were used.

Water Quality - Data were taken from midstream with a 4041 Hydrolab. On 5 October 1988: DO - 9.8 ppm, pH - 7.3, Temperature 54.7°F, Conductivity - 200 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, 0.53 ml. volumetric displacement, and represented 22 taxa. The qualitative sample contained 39 organisms and represented 14 taxa.

Fish Collected:

Species:	No.	% by No.	Wt.	% by Wt.
Rainbow trout	4	2.1	0.17	12.1
Bluegill	2	1.0	0.06	4.3
Nongame Fish	11	5.6	0.46	32.6
Forage Fish	178	91.3	0.72	51.0
Total	195		1.41	

Comments - One section of upper Camp Creek was surveyed to assess its fish population, with trout being of primary interest. Also, to update and collect other stream information for TADS.

Camp Creek is considered a high quality trout stream and the agency maintains an ongoing management program. It carries fish well and creates an excellent put and

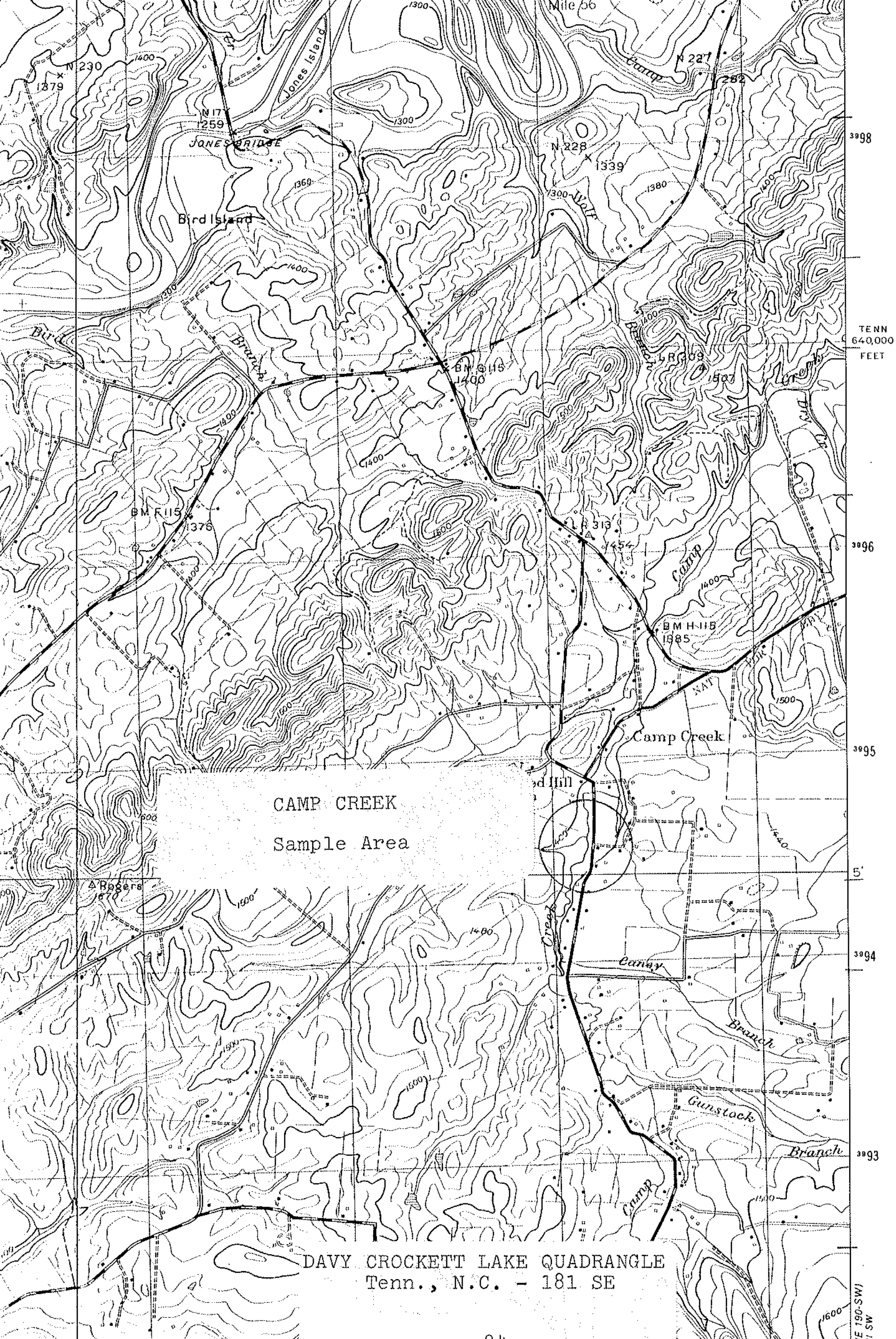
take trout fishery. However, the silty, sandy substrate with little to no gravel limits trout reproduction. Water quality problems currently stem from non-point-source agricultural pollution and in the past from the operation of Nolichucky Sand Company on the Dry Creek tributary (Melgaard and McKinney 1979).

Game fish collected from our sample area included only 4 rainbow trout (*Salmo gairdneri*) and 2 small bluegill (*Lepomis macrochirus*). In all, 195 fish weighing 1.41 lb. and comprising only 8 species were collected. As in the case for most of the watershed, the substrate in the sample area was composed primarily of sand. The sandy bottom with few rocks, boulders, and gravel limits the habitat suitable for game fish and spawning area for trout.

Benthic macroinvertebrates from our samples included Caenidae, Heptageniidae, and Leptophlebiidae mayflies, Leuctridae, Peltoperlidae, Perlodidae, and Pteronarcyidae stoneflies, Brachycentridae, Hydropsychidae, Limnephilidae, and Polycentropodidae caddisflies, and elmid riffle beetles. Only one specimen of the physid snail (*Physa*) was collected but periwinkle snails (*Goniobasis simplex*) were abundant. The Asian clam (*Corbicula fluminea*) was also present.

Management Recommendations:

1. In spite of the conditions described above, this stream still carries trout well and creates a quality trout stream, especially further downstream. Therefore, maintaing the current trout stocking program is suggested.



CAMP CREEK

Sample Area

DAVY CROCKETT LAKE QUADRANGLE
Tenn., N.C. - 181 SE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 360506N - 824550W

Stream Camp Creek Length of Sample 300'

Area or Station (see below) Reach 06010108-50

County Greene Date/Time 5 October 1988/1100

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

B. PHYSICAL CHARACTERISTICS

1. Average Width 15' Average Depth 0.8' Maximum Depth 2.6'
2. Estimated Percent of Stream in Pools is 30 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 70 %
   Clay - % Gravel 5 % Rubble 5 % Boulders 10 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 70 %
   Bedrock - % Other Gravel 5% Rubble 5% Boulders 10%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average X Parrot Feather Milfoil & Water Cress 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 80 % of Stream.
8. Flow (c.f.s.) 11.8 : Flow compared to Normal: Low X Normal High
9. D.O. 9.8 ppm Temp. 54.7 °F % Saturation 92
10. Present Weather Clear and cool, air temperature - 58°F.
11. Past Weather (last 24 hours) Partly cloudy and cool overnight.
12. D.O. 9.8 pH 7.3 Temp. 54.7 Conductivity 200 micromho/cm
13. Comments: Sample location along Camp Creek Road approx. 0.4 mi. downstream from Caney Branch. Streambed composed primarily of sand. The sandy bottom with very few rocks or boulders may limit the habitat suitable for trout and other game fish.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Body of Water Camp Creek
County or River Mile Greene
Type of Sampling Electrofishing
Gear Type Two backpack shockers side side @ 350 v. AC

Lat-Long 360506N - 824550W
Date 5 October 1988.
Reach 06010108-50
Pool Elevation 1390'
Time 1315 - 1400

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo gairdneri	353	2	3	0.05			
" "	"	2	5	0.12			
Lepomis macrochirus	206	1	2	0.01			
" "	"	1	4	0.05			
Rhinichthys atratulus	351	89	1-3	0.32			
Moxostoma macrolepidotum	231	1	6	0.11			
Catostomus commersoni	32	2	2-8	0.24			
Cottus carolinae	40	69	1-3	0.35			
Etheostoma simoterum	111	19	1-2	0.05			
* *Lampetra appendix*	192	8	3-6	0.11			

* Label Parameter Listed * 4 adults and 4 ammocoetes

Field Notes: 300' sample length. Rainbow trout appear to be stream reared fish or stocked fingerlings.

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

WR-0525

Camp Creek: Edge Surber sample

5 October 1988 Field # 116

Greene Co., TN; Approx. 0.4 mi. downstream of Caney Branch. Coordinates: 360506N - 824550W. Davy Crockett Lake, Tenn.-N.C., # 181 SE Quad. Reach # 06010108-50.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	5
COLEOPTERA:	
Elmidae/*Optioservus* larvae	3
DECAPODA:	
Unid. Crayfish	6
DIPTERA:	
Chironomidae	9
Tabanidae/*Chrysops*	1
Tipulidae/*Limnophila*	2
Tipula	1
Unid. pupa	1
EPHEMEROPTERA:	
Caenidae/*Caenis*	1
Leptophlebiidae/*Paraleptophlebia*	1
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	24
ISOPODA:	
Asellidae/*Lirceus*	1
PLECOPTERA:	
Pteronarcyidae/*Allonarcys*	1
	56

Volumetric Displacement was 0.3 ml.

Camp Creek: Midstream Surber sample

5 October 1988 Field # 116

Greene Co., TN; Approx. 0.4 mi. downstream of Caney Branch. Coordinates: 360506N - 824550W. Davy Crockett Lake, Tenn.-N.C., # 181 SE Quad. Reach # 06010108-50.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	6
COLEOPTERA:	
Elmidae/*Dubiraphia* larva	1
Optioservus larvae	3
DECAPODA:	
Unid. Crayfish	1
DIPTERA:	
Chironomidae	22
Empididae pupa	1
Tabanidae/*Chrysops*	1
Tipulidae/*Antocha*	1
Limnophila	2
Tipula	1
Unid. pupae	3
EPHEMEROPTERA:	
Heptageniidae/*Stenonema*	1
Leptophlebiidae/*Paraleptophlebia*	1
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	18
HYDRACARINA:	3
ISOPODA:	
Asellidae/*Lirceus*	6
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	6

cont.

Camp Creek: Midstream Surber sample cont.

TAXA	NUMBER
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	7
Pteronarcyidae/*Allonarcys*	1
TRICHOPTERA:	
Brachycentridae/*Brachycentrus*	1
Hydropsychidae/*Cheumatopsyche*	5
Polycentropodidae/*Nyctiophylax*	2
	93

Volumetric Displacement was 0.75 ml.

Camp Creek: Qualitative sample

5 October 1988 Field # 116

Greene Co., TN; Approx. 0.4 mi. downstream of Caney Branch. Coordinates: 360506N - 824550W. Davy Crockett Lake, Tenn.-N.C., # 181 SE Quad. Reach # 06010108-50.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Optioservus* larvae	2
COLLEMBOLA:	
Isotomidae/*Isotomurus palustris*	1
DIPTERA:	
Chironomidae	1
Tabanidae/*Chrysops*	1
EPHEMEROPTERA:	
Leptophlebiidae/*Paraleptophlebia*	3
GASTROPODA:	
Physidae/*Physa*	1
Pleuroceridae/*Goniobasis simplex*	12
ODONATA:	
Aeshnidae/*Boyeria vinosa*	2
Calopterygidae/*Calopteryx maculata*	1
PLECOPTERA:	
Leuctridae/*Leuctra*	1
Peltoperlidae/*Peltoperla*	9
Perlodidae/*Isoperla*	2
TRICHOPTERA:	
Limnephilidae/*Goera calcarata*	2
URODELA:	
Unid. Salamander	1
	39

Sill Branch

One qualitative fishery survey was conducted in August 1988:

Location and Length - Tributary to Clark Creek (Nolichucky River trib.). The sample area was located 0.25 mi. upstream from Clark Creek Road and was sampled on 16 August 1988. It was 500 ft. in length and averaged 8.0 ft. in width. The site was in Unicoi County. Telford Quadrangle.

Gear Type - The site was sampled using backpack electrofishing equipment. One shocker unit operating at 700 v. AC was used.

Water Quality - Data were taken from midstream with a YSI Model 58 DO meter, a YSI Model 33 S-C-T meter, and a Orion Model SA 210 pH meter. On 16 August 1988: DO - 11.5 ppm, pH - 7.2, Temperature 68.9°F, Conductivity - 38 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 21 organisms, 0.15 ml. volumetric displacement, and represented 15 taxa. The qualitative sample contained 73 organisms and represented 24 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Rainbow trout	84	47.7	2.09	82.0
Nongame Fish Forage Fish	92	52.3	0.46	18.0
Total	176		2.55	

Comments - This stream was surveyed primarily to check the status of its trout population, to collect and update stream information for TADS, and follow up on the effect of drought. Also, prior to considering the possibility of stocking the North and South Fork with native brook trout (*Salvelinus fontinalis*) as suggested by Bivens (1984), it was necessary to determine the current status of fish populations in Sill Branch and its tributaries.

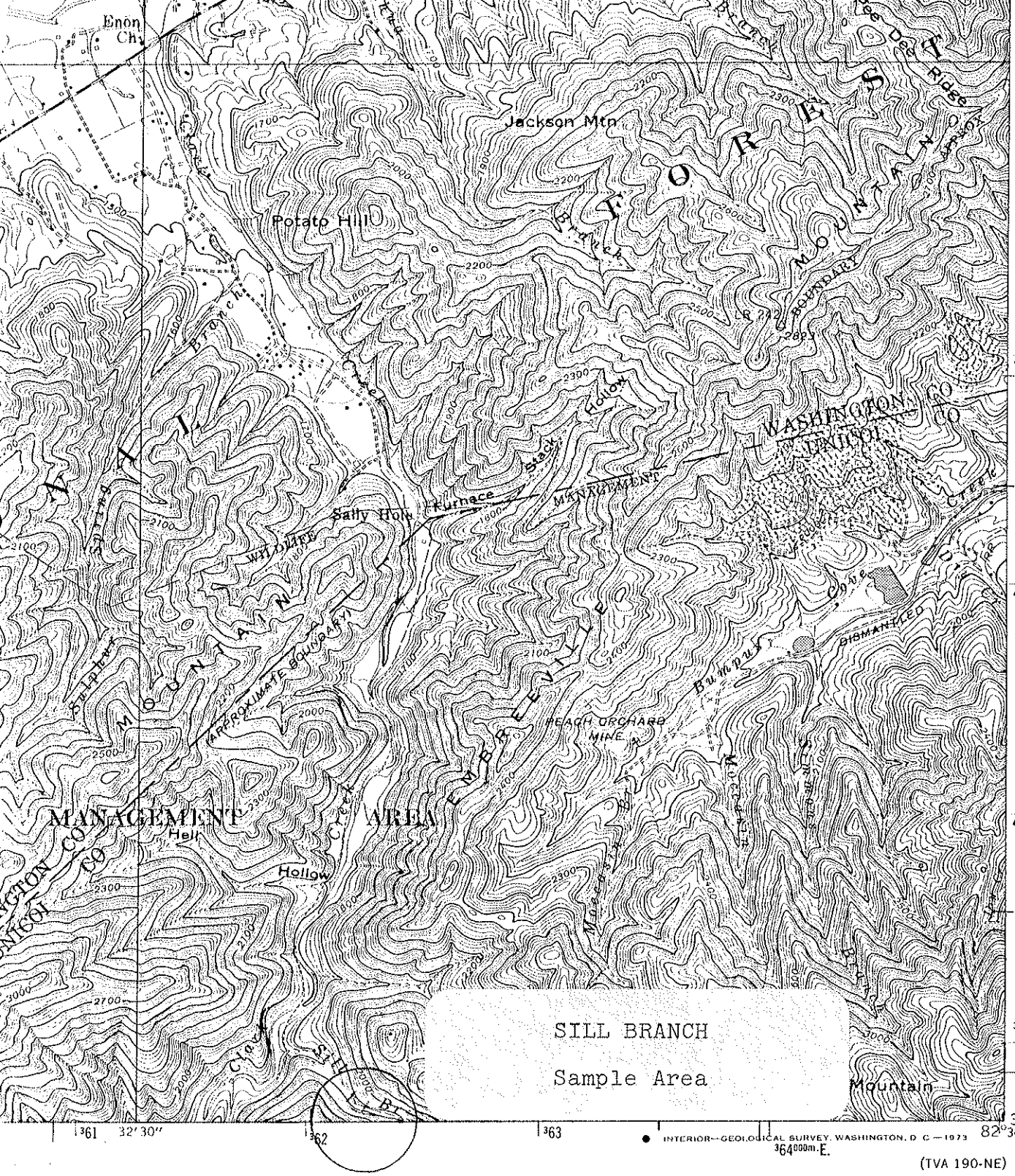
This stream was the worst affected by drought of all streams we surveyed this year. At the area we sampled, flow was down to about 0.05 CFS and temperature was approaching the upper limit for trout. All the rainbow trout (*Salmo gairdneri*) we collected were confined to the remaining pools and flow from the North and South Fork was almost non-existent. A total of 84 rainbows were collected, 90% of which were under 6 in. (Fig 8) and only a few larger trout were found in the deeper pools. Blacknose dace (*Rhinichthys atratulus*) and mottled sculpin (*Cottus bairdi*) were the only other fish species present.

Benthic macroinvertebrates from our samples included Baetidae, Ephemerellidae, Ephemeridae, Heptageniidae, and Leptophlebiidae mayflies, Capniidae, Leuctridae, Peltoperlidae, Perlidae, and Perlodidae stoneflies, Glossosomatidae, Hydropsychidae, Limnephilidae, Lepidostomatidae, and Philopotamidae caddisflies, and Eubriidae and Psephenidae beetles. Periwinkle snails (*Goniobasis simplex*) were also present. Although diversity was good, the quantitative samples were low in volume and total numbers.

Management Recommendations:

1. Postpone any brook trout work on the North and South Fork tributaries till more normal rainfall and stream flows return.

2. Consider a follow up on Sill Branch trout population recovery from drought condition.



INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1973

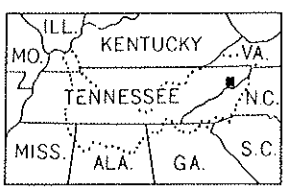
(TVA 190-NE)

1 MILE

FEET

ROAD CLASSIFICATION

Heavy-duty	Poor motor road
Medium-duty	Wagon and jeep track
Light-duty	Foot trail
U. S. Route	State Route



QUADRANGLE LOCATION

TELFORD, TENN.

N3607.5-W8230/7.5

1939

PHOTOREVISED 1971

AMS 4456 II NE-SERIES V841

(Cheslod 199-4556 III SW)

NN. 37902.

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 360733N - 823152W

Stream Sill Branch Length of Sample 500'

Area or Station (See below) Reach 06010108-

County Unicoi Date/Time 16 August 1988/0945

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

B. PHYSICAL CHARACTERISTICS

1. Average Width 8.0' Average Depth 0.9' Maximum Depth 2.7'
2. Estimated Percent of Stream in Pools is 40 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 10 %
   Clay - % Gravel 40 % Rubble 20 % Boulders 20 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 10 %
   Bedrock 30 % Other Boulders 25% Rubble 25%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
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 95 % of Stream.
8. Flow (c.f.s.) 0.05 : Flow compared to Normal: Low X Normal High
9. D.O. 11.5 ppm Temp. 68.9°F % Saturation 125
10. Present Weather Partly cloudy, humid and hot.
11. Past Weather (last 24 hours) Partly cloudy, humid and hot.
12. D.O. 11.5 pH 7.2 Temp. 68.9 Conductivity 38 micromho/cm
13. Comments: Sample location was 0.25 mi. upstream from Clarks Creek Road. The stream was extremely low due to drought conditions. DO reading is questionable.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Body of Water Sill Branch
County or River Mile Unicoi
Type of Sampling Electrofishing
Gear Type One backpack shocker at 700 v. AC

Lat-Long 360733N - 823152W
Date 16 August 1988.
Reach 06010108-
Pool Elevation 1860'
Time 1430 - 1515

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo gairdneri	353	20	1	0.01			
" "	"	56	2	0.17			
" "	"	3	6	0.30			
" "	"	2	8	0.50			
" "	"	1	9	0.26			
" "	"	1	10	0.38			
" "	"	1	11	0.47			
Rhinichthys atratulus	351	77	1-3	0.27			
Cottus bairdi	39	15	1-3	0.19			

* Label Parameter Listed

Field Notes: 500' sample length.

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

WR-0525


RAINBOW TROUT COLLECTED FROM SILL BRANCH
INCH CLASS DISTRIBUTION
NUMBER
0
5
10
15
20
25
30
35
40
45
50
55
60
1
2
3
4
5
6
7
8
9
10
11
INCH CLASS

Figure 8.

Sill Branch: Surber sample # 1

16 August 1988 Field # 111

Unicoi Co., TN; Approx. 0.25 mi. upstream from Clark Creek road. Coordinates: 360733N - 823152W. Telford, Tenn., # 190 NE Quad. Reach # 06010108-.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Psephenidae/*Psephenus herricki*	1
DECAPODA:	
Unid. crayfish	2
DIPTERA:	
Ceratopogonidae/*Palpomyia* complex	1
Chironomidae	3
EPHEMEROPTERA:	
Baetidae/*Baetis*	1
Heptageniidae/*Heptagenia*	1
Stenacron	1
Leptophlebiidae/*Habrophlebiodes*	1
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	12
PLECOPTERA:	
Capniidae/*Allocapnia*	1
URODELA:	
Unid. salamander	1
	26

Volumetric Displacement was 0.1 ml.

Sill Branch: Surber sample # 2

16 August 1988 Field # 111

Unicoi Co., TN; Approx. 0.25 mi. upstream from Clark Creek road. Coordinates: 360733N - 823152W. Telford, Tenn., # 190 NE Quad. Reach # 06010108-.

TAXA	NUMBER
COLEOPTERA:	
Eubriidae/Ectopria	1
Psephenidae/Psephenus herricki	2
DIPTERA:	
Chironomidae	2
EPHEMEROPTERA:	
Ephemerellidae/Eurylophella	1
Ephemeridae/Ephemera	1
Heptageniidae/Heptagenia	2
Stenacron	4
Leptophlebiidae/Habrophlebiodes	1
URODELA:	
Unid. salamander	1
	15

Volumetric Displacement was 0.2 ml.

Sill Branch: Qualitative sample

16 August 1988 Field # 111

Unicoi Co., TN; Approx. 0.25 mi. upstream from Clark Creek road. Coordinates: 360733N - 823152W. Telford, Tenn., # 190 NE Quad. Reach # 06010108-.

TAXA	NUMBER
COLEOPTERA:	
Eubriidae/Ectopria	1
Psephenidae/Psephenus herricki	4
DIPTERA:	
Chironomidae	7
Dixidae/Dixa	2
Tipulidae/Dicranota	1
EPHEMEROPTERA:	
Baetidae/Baetis	1
Ephemerellidae/Eurylophella	1
Heptageniidae/Epeorus (Iron)	1
Stenacron	2
Stenonema	5
GASTROPODA:	
Pleuroceridae/Goniobasis simplex	4
PLECOPTERA:	
Leuctridae/Leuctra	1
Peltoperlidae/Peltoperla	6
Perlidae/Acroneuria abnormis	7
Perlodidae	1
TRICHOPTERA:	
Glossosomatidae/Glossosoma larvae	5
pupa	1
Hydropsychidae/Cheumatopsyche pupae	3
Parapsyche cardis	1
Symphitopsyche macleodi	3
Limnephilidae/Goera pupa	1
Neophylax	5
Pycnopsyche pupae	4
Lepidostomatidae/Lepidostoma larva	1
pupa	1
Philopotamidae/Dolophilodes distinctus	4
	73

Rocky Fork

Two qualitative fishery surveys were conducted in September 1988:

Location and Length - Tributary to South Indian Creek (Nolichucky River trib.). Sample area 1 was located approximately 0.5 mi. upstream of the mouth of Blockstand Creek. The sample area was 400 ft. in length and averaged approximately 20.0 ft. in width. Sample area 2 was located at the mouth of Fort Davie Creek. It was 300 ft. in length and averaged 13.1 ft. in width. Both sites were sampled on 27 September 1988. Site 1 was in Unicoi County, site 2 in Greene County. Flag Pond Quadrangle.

Gear Type - Both sites were sampled using backpack electrofishing equipment. Each area was sampled using a single shocker unit operating at 700 v. AC.

Water Quality - Data were taken from midstream with a 4041 Hydrolab on 27 September 1988 at sample area 2 only: DO - 10.2 ppm, pH - 6.5, Temperature - 57.2°F, Conductivity - 10 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples at site 2 only. An additional qualitative sample was also collected. The Surber samples averaged 37 organisms, 0.3 ml. volumetric displacement, and represented 20 taxa. The qualitative sample contained 39 organisms and represented 16 taxa.

Fish Collected:

	Area 1				Area 2			
Species	No.	% by No.	Wt.	% by Wt.	No.	% by No.	Wt.	% by Wt.
Rainbow trout	65	73.0	3.85	90.0	9	17.6	0.71	37.4
Brook trout	5	5.6	0.14	3.3	42	82.4	1.19	62.6
Nongame Fish Forage Fish	19	21.3	0.29	6.7				
Total	89		4.28		51		1.9	

Comments:

This stream was surveyed primarily to check the status of its brook trout (*Salvelinus fontinalis*) population. Also, to collect and update stream information for TADS and follow up on the effects of drought.

In the early 1950's, brook trout were reported in the extreme headwaters of Rocky Fork and its tributaries, Fort Davie and Blockstand Creeks. At that time rainbow trout (*Salmo gairdneri*) were also present at least up to Fort Davie Creek (Shields 1950). Stream surveys in the late 1970's recorded a sympatric brook/rainbow trout population all the way to the upper reaches of Rocky Fork (Whitworth and Strange 1979, Bivens 1984).

Our recent survey consisted of two samples, one in the dominant rainbow segment, and the other upstream in the primarily brook trout area. Rainbow trout from area 1 comprised 73% by number and 90% by weight, while brook trout comprised about 6% by number and only 3% by weight of all fish collected. Blacknose dace (*Rhinichthys atratulus*) were the only other fish collected from area 1. From area 2, brook trout comprised 82% by number and 63% by weight, while rainbows comprised 18% by number and 37% by weight. No other fish species were collected from area 2. As in other sympatric brook/rainbow populations in Tennessee streams, rainbows collected from both of our sample areas exhibited a size advantage over brook trout (Figs. 9, 10).

Coefficient of condition factors were calculated for all size trout from both sample areas. From area 1, rainbows averaged 0.95 and brook trout averaged 0.87, indicating that brook trout from this section were in less condition than rainbows. However, calculations were made for only five small brook trout as compared to that of 65 rainbows of varying sizes. From sample area 2, brook trout averaged 1.01 and rainbows averaged 1.03, indicating that both were apparently in good condition.

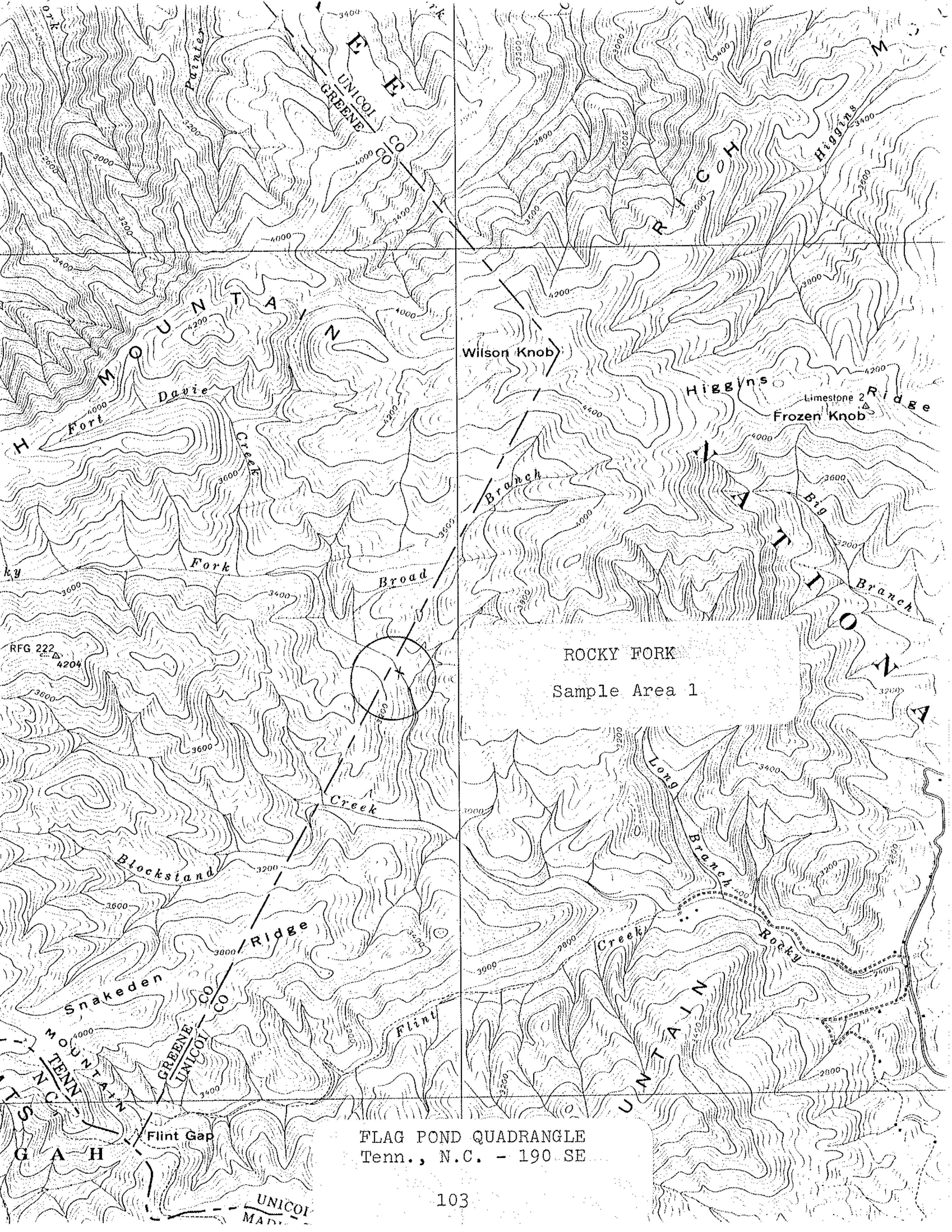
Benthic macroinvertebrates from our samples at area 2 included Baetidae, Ephemerellidae, and Heptageniidae mayflies, Chloroperlidae, Peltoperlidae, and Perlodidae stoneflies, Glossosomatidae, Hydropsychidae, Lepidostomatidae, Limnephilidae, Philopotamidae, and Rhyacophilidae caddisflies, and elmid riffle beetles. Typical brook trout stream, high elevation hydropsychid caddislfies from Rocky Fork included *Diplectrona modesta, Parapsyche cardis,* and *Symphitopsyche macleodi.*

Management Recommendations:

1. Follow up survey to determine population densities and standing crop (especially for brook trout)

2. Consider an experimental minimum size limit (possibly 8 in.) on both brook and rainbow trout to address the situation described by Nagel and Deaton (1989) where streams under current wild trout stream regulations essentially protect rainbows from harvest but not brook trout.

3. Or, consider an intensive rainbow trout removal effort on Rocky Fork and its tributaries upstream of the 12 ft. barrier falls located at about 2,720 ft. elevation. Recent removal experiments on Great Smoky Mountains National Park streams reveal that even moderate efforts on streams with physical characteristics exhibited by Rocky Fork resulted in significant reductions in mean rainbow trout density and standing crop with a concurrent increase in both density and standing crop of brook trout populations (Habera 1987).



ROCKY FORK

Sample Area 1

FLAG POND QUADRANGLE
Tenn., N.C. - 190 SE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 360341N - 823510W

Stream Rocky Fork " Length of Sample 400'

Area or Station Site # 1 Reach 06010108-

County Unicoi Date/Time 27 September 1988/1100

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

B. PHYSICAL CHARACTERISTICS

1. Average Width 20' est. Average Depth 0.7' est Maximum Depth 2' est.
2. Estimated Percent of Stream in Pools is 40 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 20 %
   Clay - % Gravel 20 % Rubble 20 % Boulders 30 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 20
   Bedrock - % Other Rubble 30% Gravel 10% Boulders 30%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 40 %
   of stream, Average in 40 %, Poor in 20 %.
7. Shade or Canopy Good over 100 % of Stream.
8. Flow (c.f.s.) - : Flow compared to Normal: Low Normal High
9. D.O. - Temp. - % Saturation -
10. Present Weather Clear and mild.
11. Past Weather (last 24 hours) Clear and mild.
12. D.O. - pH - Temp. - Conductivity -
13. Comments: Sample location approximately 0.5 mi. upstream of the mouth of Blockstand Creek.

Site # 1 - Approx. 0.5 mi. upstream of mouth of Blockstand Creek

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Body of Water Rocky Fork
County or River Mile Unicoi
Type of Sampling Electrofishing
Gear Type Two backpack shockers side by side @ 700 v. AC

Lat-Long 360341N - 823510W
Date 27 September 1988
Reach 06010108-
Pool Elevation 3000'
Time 1120 - 1200

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo gairdneri	353	19	2	0.15			
" "	"	10	3	0.13			
" "	"	2	4	0.06			
" "	"	11	5	0.6			
" "	"	9	6	0.74			
" "	"	9	7	1.13			
" "	"	3	8	0.55			
" "	"	2	9	0.49			
Salvelinus fontinalis	356	1	2	0.01			
" "	"	2	3	0.02			
" "	"	1	4	0.03			
" "	"	1	6	0.08			
Rhinichthys atratulus	351	19	1-4	0.29			

* Label Parameter Listed

Field Notes: Sample length 400'.

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

WR-0525

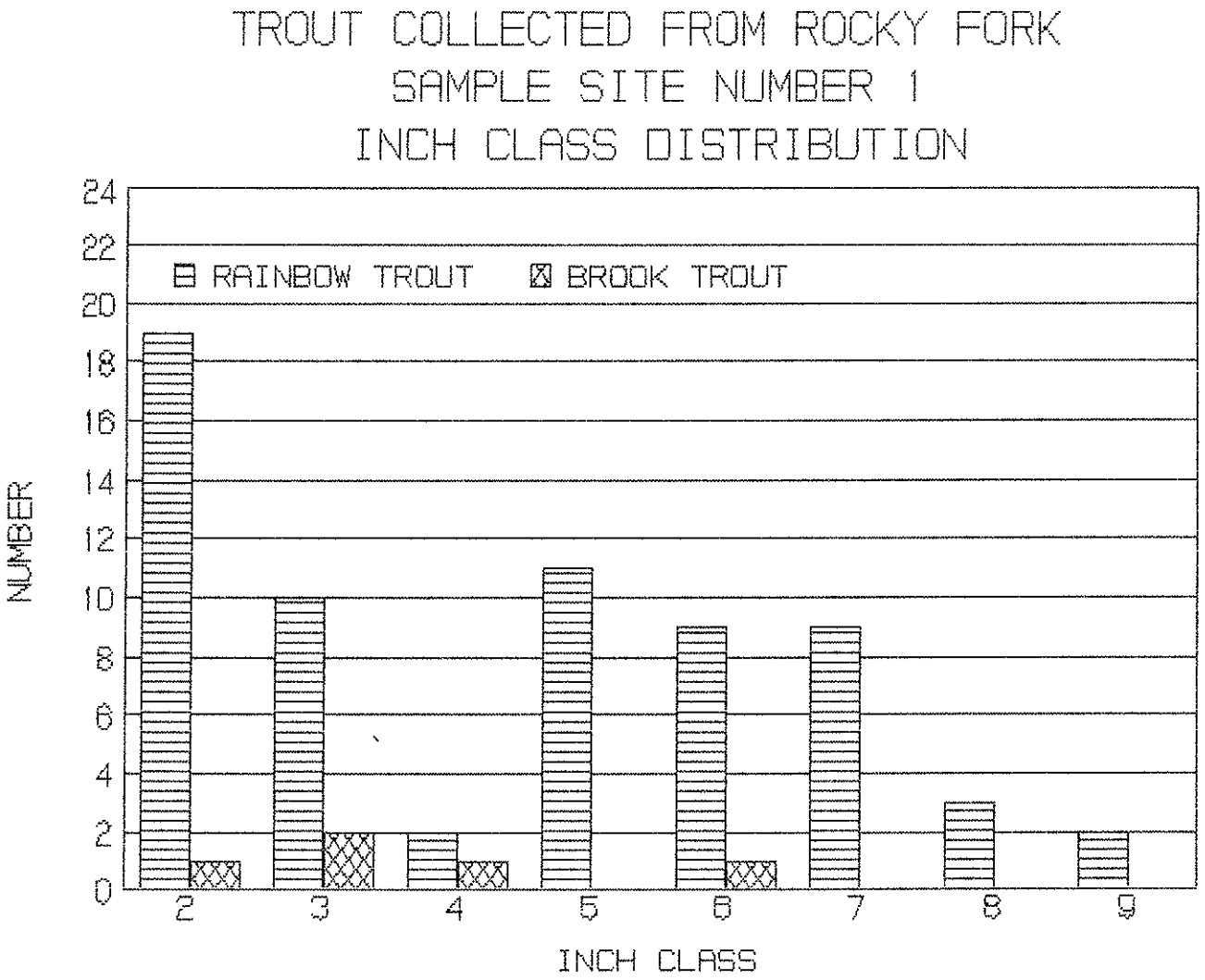
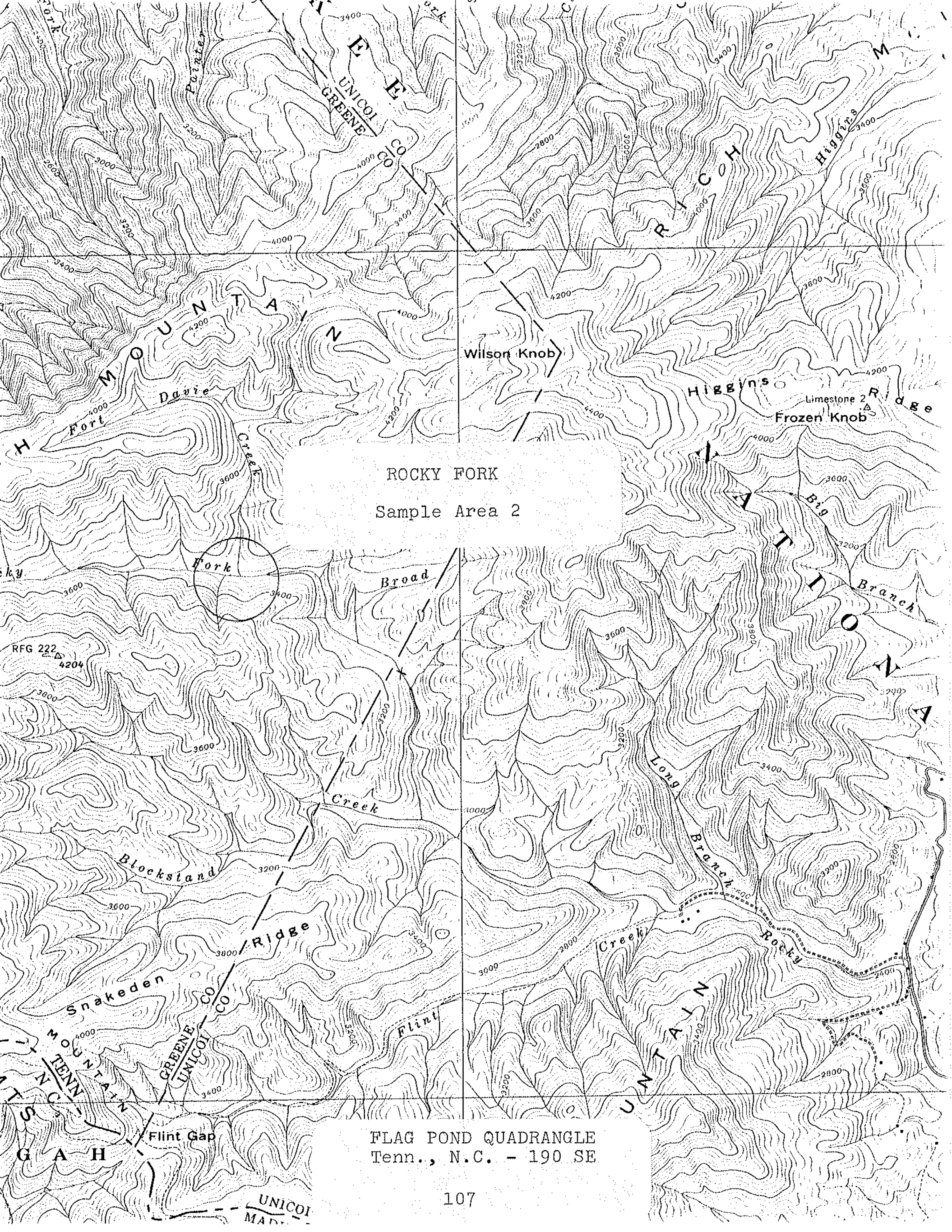

TROUT COLLECTED FROM ROCKY FORK
SAMPLE SITE NUMBER 1
INCH CLASS DISTRIBUTION
RAINBOW TROUT
BROOK TROUT
NUMBER
0
2
4
6
8
10
12
14
16
18
20
22
24
2
3
4
5
6
7
8
9
INCH CLASS

Figure 9.



ROCKY FORK

Sample Area 2

FLAG POND QUADRANGLE
Tenn., N.C. - 190 SE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Nolichucky River Lat-Long 360403N - 823545W

Stream Rocky Fork Length of Sample 300'

Area or Station Site # 2 Reach 06010108-

County Greene Date/Time 27 September 1988/1630

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

B. PHYSICAL CHARACTERISTICS

1. Average Width 13.1' Average Depth 0.4' Maximum Depth 1.6'
2. Estimated Percent of Stream in Pools is 40 %
3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 20 %
   Clay - % Gravel 20 % Rubble 20 % Boulders 30 %
   Bedrock - % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 10 % Sand 20 %
   Bedrock - % Other Rubble 30% Gravel 10% Boulders 30%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average Scarce X
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 40 %
   of stream, Average in 30 %, Poor in 30 %.
7. Shade or Canopy Good over 100 % of Stream.
8. Flow (c.f.s.) 3.4 : Flow compared to Normal: Low X Normal High
9. D.O. 10.2 ppm Temp. 57.2°F % Saturation 98
10. Present Weather Clear and mild.
11. Past Weather (last 24 hours) Clear and mild.
12. D.O. 10.2 pH 6.5 Temp. 57.2F Conductivity 10 micromho/cm
13. Comments: Sample location at the mouth of Fort Davie Creek. This site corresponds with Whitworth's study areas # 054 to # 057.

Site #2 - Mouth of Fort Davie Creek

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Nolichucky River
Body of Water Rocky Fork
County or River Mile Greene
Type of Sampling Electrofishing
Gear Type One backpack shocker at 700 v. AC

Lat-Long 360403N - 823545W
Date 27 September 1988
Reach 06010108-
Pool Elevation 3230'
Time 1450 - 1530

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salvelinus fontinalis	356	16	2	0.12			
" "	"	11	3	0.16			
" "	"	4	4	0.15			
" "	"	6	5	0.32			
" "	"	5	6	0.44			
Salmo gairdneri	353	2	2	0.01			
" "	"	2	3	0.02			
" "	"	2	6	0.21			
" "	"	3	7	0.47			

* Label Parameter Listed

Field Notes: No species other than trout collected. Sample area was 300' downstream from the mouth of Fort Davie Creek.

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

WR-0525

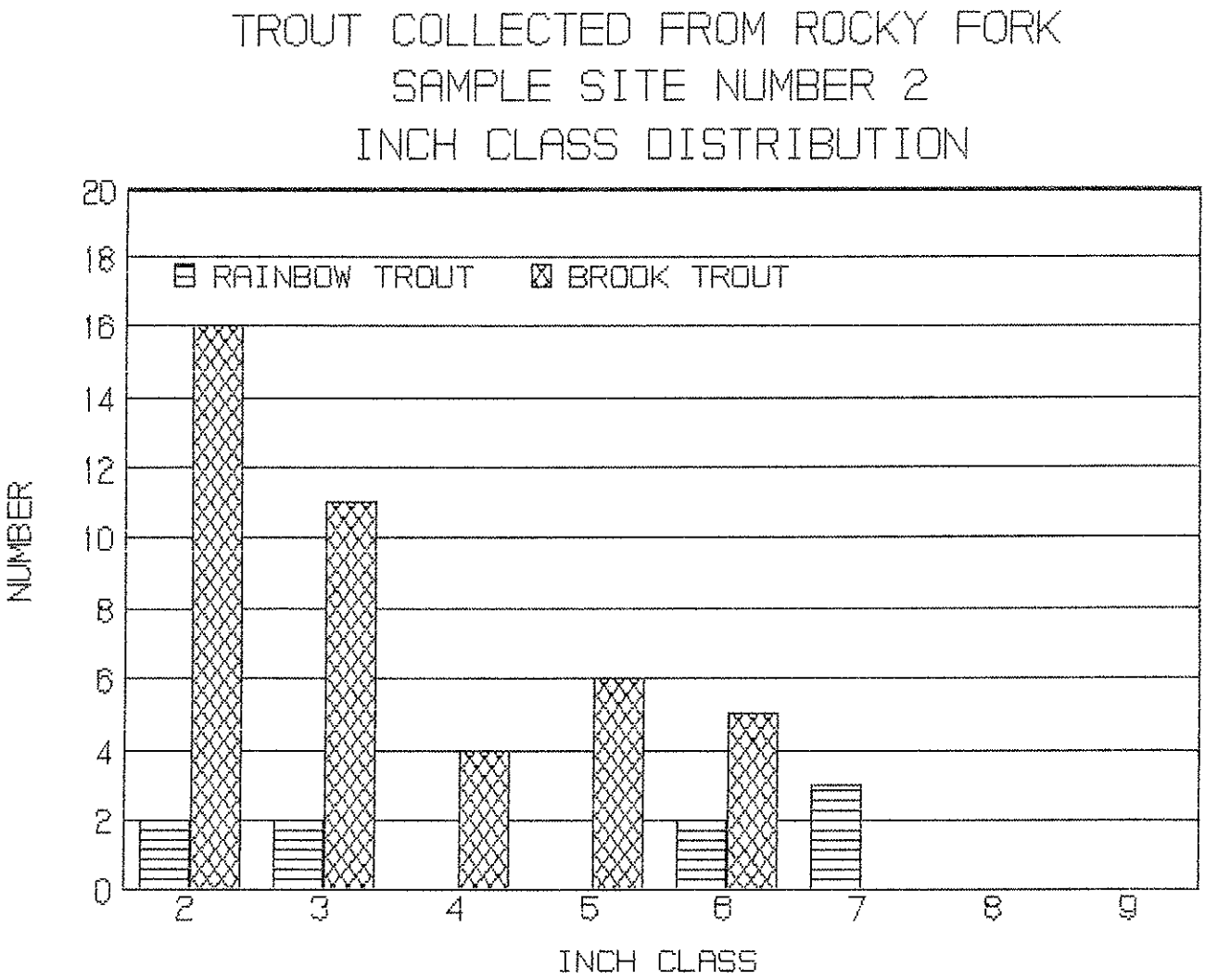

TROUT COLLECTED FROM ROCKY FORK
SAMPLE SITE NUMBER 2
INCH CLASS DISTRIBUTION
RAINBOW TROUT
BROOK TROUT
NUMBER
0
2
4
6
8
10
12
14
16
18
20
2
3
4
5
6
7
8
9
INCH CLASS

Figure 10.

Rocky Fork: Site # 2, Edge Surber sample

27 September 1988 Field # 114

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
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Elmidae/*Optioservus* larva	1
DIPTERA:	
Chironomidae	1
Simuliidae	1
Tipulidae/*Limnophila*	1
EPHEMEROPTERA:	
Heptageniidae/*Heptagenia*	1
PLECOPTERA:	
Chloroperlidae	1
TRICHOPTERA:	
Lepidostomatidae/*Lepidostoma*	1
Rhyacophilidae/*Rhyacophila nigrita*	1
	9

Volumetric Displacement was 0.1 ml.

Rocky Fork: Site # 2, Midstream Surber sample

27 September 1988 Field # 114

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
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Elmidae/Optioservus larvae	5
Promoresia elegans larva	1
Stenelmis adults	2
DIPTERA:	
Chironomidae	6
EPHEMEROPTERA:	
Baetidae/Baetis	1
Ephemerellidae/Drunella	1
Heptageniidae/Epeorus (Iron)	2
Heptagenia	1
Stenonema	1
PLECOPTERA:	
Perlodidae/Yugus bulbosus	3
TRICHOPTERA:	
Glossosomatidae/Glossosoma larva	1
pupa	1
Hydropsychidae/Diplectrona modesta	1
Parapsyche cardis	6
Symphitopsyche macleodi	17
Lepidostomatidae/Lepidostoma	13
Rhyacophilidae/Rhyacophila nigrita	1
	64

Volumetric Displacement was 0.5 ml.

Rocky Fork: Site # 2, Qualitative sample

27 September 1988 Field # 114

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
DIPTERA:	
Tipulidae/*Pseudolimniphila*	1
Tipula	1
EPHEMEROPTERA:	
Heptageniidae/*Epeorus* (*Iron*)	5
Heptagenia	1
Stenonema	1
HYDRACARINA:	2
ODONATA:	
Gomphidae/*Lanthus*	2
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	9
Perlodidae/*Yugus bulbosus*	3
TRICHOPTERA:	
Glossosomatidae/*Glossosoma* larvae	2
pupae	2
Hydropsychidae/*Diplectrona modesta*	1
Parapsyche cardis	1
Symphitopsyche macleodi	3
Limnephilidae/*Goera* pupa	1
Philopotamidae/*Dolophilodes distinctus*	3
Rhyacophilidae/*Rhyacophila nigrita*	1
	39

Stanley Creek

One qualitative fishery survey was conducted in September 1988:

Location and Length - Tributary to Big Creek (Holston River trib.). The sample area was located along Stanley Valley Road approximately 0.9 mi. downstream of Looneys Gap Road and was sampled on 28 September 1988. It was 400 ft. in lenght and averaged 9.9 ft. in width. The site was in Hawkins County. Plum Grove Quadrangle.

Gear Type - The site was sampled using backpack electrofishing equipment. One shocker unit operating at 110 v. AC was used.

Water Quality - Data were taken from midstream with a 4041 Hydrolab. On 28 September 1988: DO - 8.6 ppm, pH - 8.2, Temperature - 68.9°F, Conductivity - 310 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 275 organisms, 4.15 ml. volumetric displacement, and represented 29 taxa. The qualitative sample contained 49 organisms and represented 20 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Smallmouth bass	5	0.7	0.11	1.0
Rock bass	46	6.6	3.09	27.4
Redbreast sunfish	42	6.1	1.49	13.2
Bleugill	2	0.3	0.03	0.3
Nongame Fish	7	1.0	0.77	6.8
Forage Fish	592	85.3	5.77	51.2
Total	694		11.26	

Comments - This stream was surveyed primarily to follow up on trout survival and reproduction. Also, to develop a fish species diversity list and collect stream information for TADS.

Stanley Creek is a spring fed stream that has been stocked with adult trout in the past. It is small, fairly silty, and flows through mostly open agricultural land. It probably receives considerable non-point-source runoff and when surveyed in late September 1988 was low, with water temperature approaching the maximum limit for trout.

Game fish from our sample area included smallmouth bass (*Micropterus dolomieui*), redbreast sunfish (*Lepomis auritus*), bluegill (*L. macrochirus*), and rock bass (*Ambloplites rupestris*). No trout were collected or observed. Redbreast sunfish and rock bass were collected in about equal numbers, but rock bass comprised 27% of the total weight of all fish collected as compared to 13% by redbreast. Only five small smallmouth bass and two small bluegills were collected, and rock bass exhibited a more normal inch class distribution (Fig. 11).

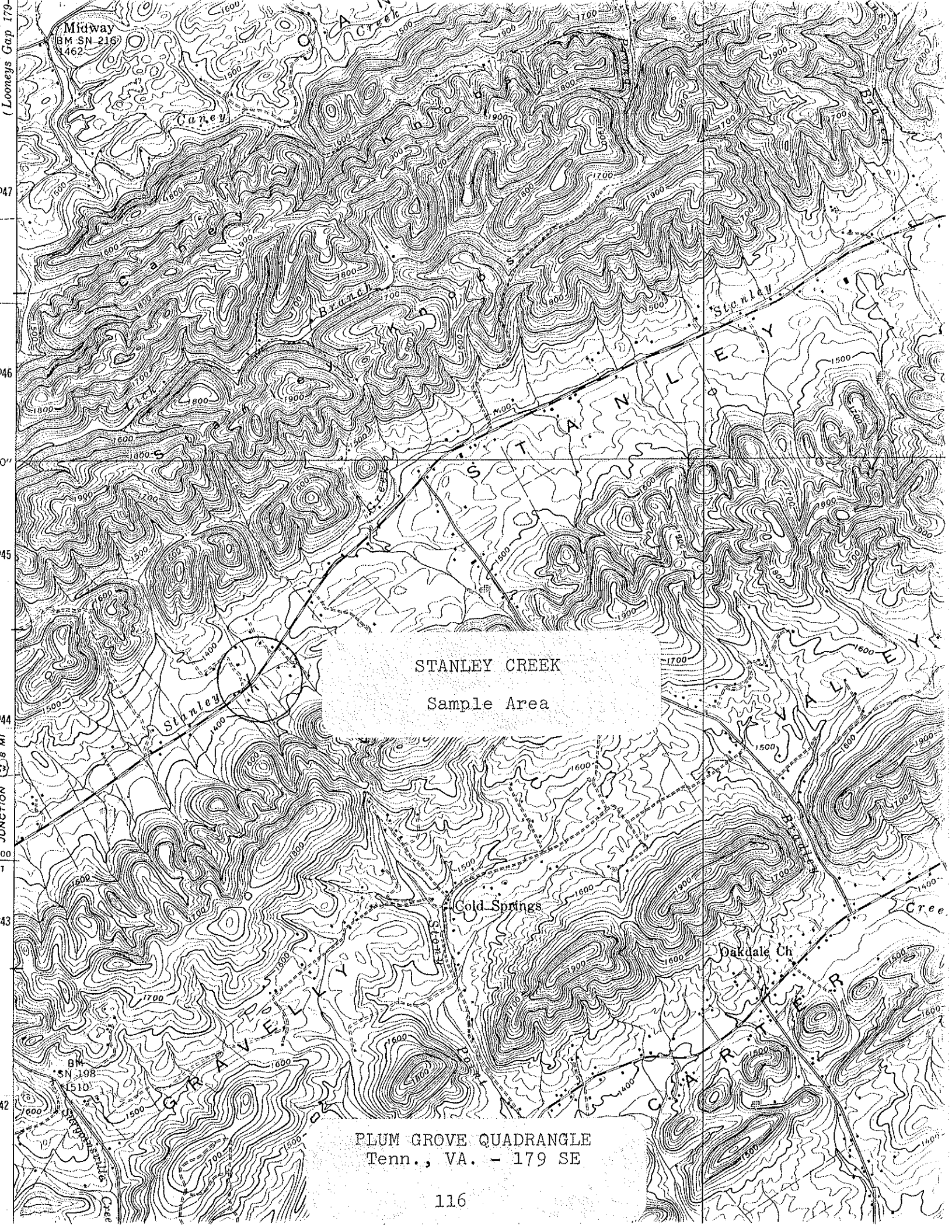
A total of 19 fish species was collected from our sample site, all of which are typical components of Ridge and Valley streams that exhibit medium to fairly heavy non-point-source siltation. However, the presence of the Tennessee shiner (*Notropis leuciodus*) and the telescope shiner (*N. telescopus*) indicates fairly good water quality.

Benthic macroinvertebrates from our samples included Ephemerellidae and Heptageniidae mayflies, Helicopsychidae, Hydropsychidae, Leptoceridae, Odontoceridae, and Philopotamidae caddisflies, Aeshnidae, Coenagrionidae, Gomphidae, and Macromiidae odonates, Elmidae, Eubriidae, and Psephenidae beetles, and the hellgrammite *Corydalus cornutus*. 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).

Gastropods included Physidae, Planorbidae, and the pleurocerid snails *Goniobasis simplex* and *Pleurocera unciale*. The fingernail clam (*Sphaerium*) was collected in fair numbers and one live specimen of *Villosa vanuxemi* and relic *V. iris* were also collected.

Management Recommendations:

1. This stream is probably best suited for management of warmwater species, therefore, further trout stocking is not recommended. The stream is small and would not support much of a fishery anyway.



PLUM GROVE QUADRANGLE
Tenn., VA. - 179 SE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Holston River Lat-Long 36315N - 825109W

Stream Stanley Creek Length of Sample 400'

Area or Station (see below) Reach 06010104-15,2

County Hawkins Date/Time 28 September 1988/1000

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

B. PHYSICAL CHARACTERISTICS

1. Average Width 9.9' Average Depth 0.4' Maximum Depth 1.3'

2. Estimated Percent of Stream in Pools is 30 %

3. Estimated Percent Pool Bottom is Mud 10 % Silt 30 % Sand 20 %

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

Bedrock - % Other - %

4. Estimated Percent Riffle Bottom is Mud 10 % Silt 30 % Sand 20 %

Bedrock - % Other Gravel 10% Rubble 20% Boulders 10%

5. Abundance of Littoral Aquatic Plants is Numerous

Average X Water willow and Water cress 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 20 % of Stream.

8. Flow (c.f.s.) 1.6 : Flow compared to Normal: Low X Normal High

9. D.O. 8.6 ppm Temp. 68.9°F % Saturation 96

10. Present Weather Clear and mild, air temperature - 66°F.

11. Past Weather (last 24 hours) Clear and mild, cool overnight.

12. D.O. 8.6 pH 8.2 Temp. 68.9 Conductivity 310 micromho/cm

13. Comments: Sample location along Stanley Valley Road, approx. 0.9 mi. downstream of Looney's Gap Road. Small, fairly silty stream. Mostly open agricultural land in watershed. Lots of houses along stream course with probable sewage drainage & runoff from barns.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Holston River
Lat-Long 363151N - 825109W
Body of Water Stanley Creek
Date 28 September 1988
County or River Mile Hawkins
Reach 06010104-15,2
Type of Sampling Electrofishing
Pool Elevation 1350'
Gear Type One backpack shocker at 110 v. AC
Time 1330 - 1500

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Micropterus dolomieui	218	2	1	0.01			
" "	"	1	2	t			
" "	"	1	4	0.04			
" "	"	1	5	0.06			
Lepomis auritus	201	15	1	0.06			
" "	"	2	2	0.02			
" "	"	14	3	0.33			
" "	"	10	4	0.45			
" "	"	2	5	0.13			
" "	"	3	6	0.50			
L. macrochirus	206	1	2	0.01			
"	"	1	3	0.02			
Ambloplites rupestris	13	4	1	0.01			
" "	"	7	2	0.09			
" "	"	7	3	0.23			
" "	"	10	4	0.54			
" "	"	7	5	0.73			
" "	"	4	6	0.68			
" "	"	2	7	0.53			
" "	"	1	8	0.28			
Continued on next page							

* Label Parameter Listed

Field Notes: 400' sample length.

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 Stanley Creek
County or River Mile Hawkins
Type of Sampling Electrofishing
Gear Type One backpack shocker at 110 v. AC

Lat-Long 363151N - 825109W
Date 28 September 1988
Reach 06010104-15,2
Pool Elevation 1350'
Time 1330 - 1500

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Hypentelium nigricans	166	3	3-8	0.33			
Catostomus commersoni	32	1	5	0.06			
Campostoma anomalum	25	61	2-5	1.20			
Hybopsis amblops	155	10	1-3	0.07			
Nocomis micropogon	234	10	2-6	0.32			
Notropis coccogenis	248	72	1-4	0.57			
N. chrysocephalus	249	303	1-5	3.08			
N. galacturus	253	1	2	t			
N. leuciodus	255	4	2	0.01			
N. telescopus	272	65	1-2	0.23			
Semotilus atromaculatus	360	1	4	0.04			
Etheostoma rufilineatum	108	2	1-2	0.01			
E. simoterum	111	51	1-2	0.15			
Cottus carolinae	40	12	1-3	0.09			
Ictalurus natalis	174	3	4-7	0.38			

* Label Parameter Listed

Field Notes: 400' sample length.

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

WR-0525

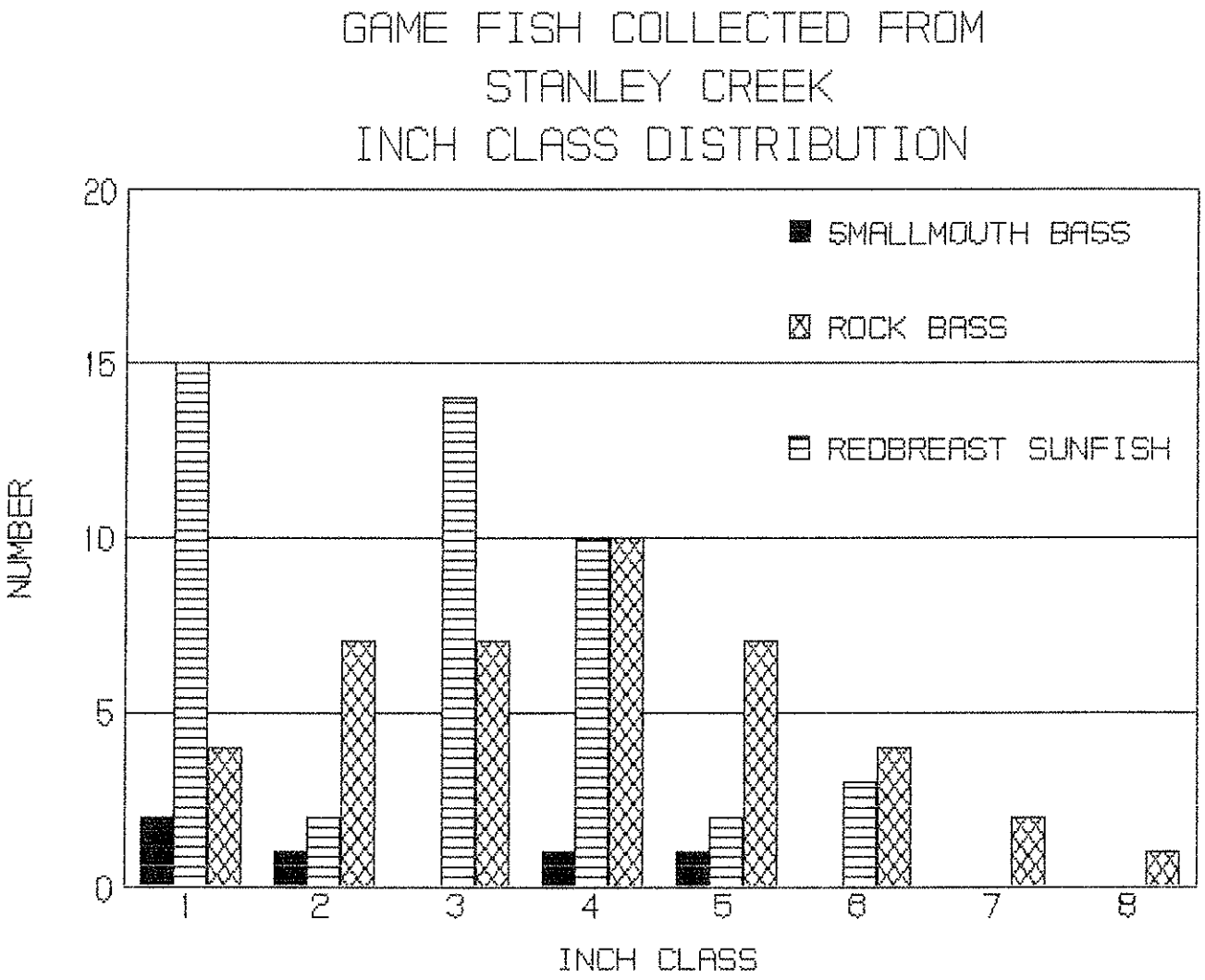

GAME FISH COLLECTED FROM
STANLEY CREEK
INCH CLASS DISTRIBUTION
SMALLMOUTH BASS
ROCK BASS
REDBREAST SUNFISH
NUMBER
0
5
10
15
20
1
2
3
4
5
6
7
8
INCH CLASS

Figure 11.

Stanley Creek: Midstream Surber sample # 1

28 September 1988 Field # 115

Hawkins Co., TN; Approx. 0.9 mi. downstream of Looneys Gap Road. Coordinates: 363151N - 825109W. Plum Grove, Tenn.-VA., # 179 NE Quad. Reach # 06010104-15,2.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Elmidae/*Optioservus* larvae	4
Stenelmis larvae	18
adults	12
Psephenidae/*Psephenus herricki*	59
DIPTERA:	
Chironomidae	13
Simuliidae	1
Tabanidae	1
EPHEMEROPTERA:	
Heptageniidae/*Stenacron*	2
Stenonema	7
GASTROPODA:	
Physidae/*Physa*	3
Planorbidae	1
Pleuroceridae/*Goniobasis simplex*	7
Pleurocera unciale	2
LEPIDOPTERA:	
Pyralidae/*Petrophila*	1
MEGALOPTERA:	
Sialidae/*Sialis*	1
ODONATA:	
Coenagrionidae/*Argia*	2
PELECYPODA:	
Sphaeriidae/*Sphaerium*	59
TRICHOPTERA:	
Helicopsychidae/*Helicopsyche borealis*	13
Hydropsychidae/*Cheumatopsyche*	1
Odontoceridae/*Psilotreta*	4
Volumetric Displacement was 0.5 ml.	213

Stanley Creek: Midstream Surber sample # 2

28 September 1988 Field # 115

Hawkins Co., TN; Approx. 0.9. mi. downstream of Looneys Gap Road. Coordinates: 363151N - 825109W. Plum Grove, Tenn.-VA., # 179 NE Quad. Reach # 06010104-15,2.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Elmidae/*Stenelmis* larvae	47
adults	64
Eubriidae/*Ectopria*	1
Psephenidae/*Psephenus herricki*	6
DIPTERA:	
Chironomidae	9
Tipulidae/*Limnophila*	2
Tipula	1
EPHEMEROPTERA:	
Ephemerellidae/*Ephemerella*	1
Heptageniidae/*Stenonema*	37
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	18
Pleurocera unciale	6
ISOPODA:	
Asellidae/*Lirceus*	2
LEPIDOPTERA:	
Pyralidae/*Petrophila*	4
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	27
Nigronia serricornis	1
Sialidae/*Sialis*	1
ODONATA:	
Coenagrionidae/*Argia*	11

cont.

Stanley Creek: Midstream Surber sample # 2 cont.

TAXA	NUMBER
PELECYPODA:	
Sphaeriidae/*Sphaerium*	42
TRICHOPTERA:	
Helicopsychidae/*Helicopsyche borealis*	3
Hydropsychidae/*Cheumatopsyche*	32
Symphitopsyche sparna	7
Leptoceridae/*Oecetis*	1
Odontoceridae/*Psilotreta*	2
Philopotamidae/*Chimarra*	9
	336

Volumetric Displacement was 7.8 ml.

Stanley Creek: Qualitative sample

28 September 1988 Field # 115

Hawkins Co., TN; Approx. 0.9 mi. downstream of Looneys Gap Road. Coordinates: 363151N - 825109W. Plum Grove, Tenn.-VA., # 179 NE Quad. Reach # 06010104-15,2.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	1
COLEOPTERA:	
Psephenidae/*Psephenus herricki*	3
DIPTERA:	
Chironomidae	3
EPHEMEROPTERA:	
Heptageniidae/*Stenacron*	3
Stenonema	9
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	2
HEMIPTERA:	
Nepidae/*Ranatra nigra*	1
MEGALOPTERA:	
Sialidae/*Sialis*	1
ODONATA:	
Aeshnidae/*Basiaeschna janata*	2
Boyeria vinosa	3
Gomphidae/*Dromogomphus*	1
Gomphus	2
Hagenius brevistylus	3
Macromiidae/*Macromia*	1
PELECYPODA:	
Sphaeriidae/*Sphaerium*	7
Unionidae/*Villosa vanuxemi**	1
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	1
Symphitopsyche sparna	1
Philopotamidae/*Chimarra*	3
Odontoceridae/*Psilotreta*	1
	49

* Relic *Villosa iris* were also collected.

Watauga River

Five qualitative fishery surveys were conducted in June 1988:

Location and Length - Sample area 1 was located on the lefthand side of an island, approximately 1.1 mi. downstream of Smalling Bridge at Watauga River mi. 19.4 and was sampled on 7 June 1988. It was approximately 600 ft. in length and averaged about 50 ft. in width. Sample area 2 was located about 0.1 mi. upstream of sample area 1 at Watauga River mi. 19.5. It was about 100 ft. in length and was sampled on 7 June 1988. Sample area 3 was located just downstream of Smalling Bridge at Watauga River mi. 20.05. It was about 100 ft. in length and was sampled on 7 June 1988. Sample area 4 was located at the pipeline crossing upstream of Smalling Bridge at Watauga River mi. 20.8. It was about 100 ft. in length, averaged approximately 150 ft. in width, and was also sampled on 7 June 1988. Sample area 5 was located upstream of Elizabethton at the head of Wagner Island, Watauga River mi. 31.1. It was about 300 ft. in length and was sampled on 8 June 1988. All sample sites were in Carter County. Site 1-4 Johnson City Quadrangle. Site 5 Elizabethton Quadrangle.

Gear Type - Site 1 was sampled with toxicant while sites 2 through 5 were sampled using backpack electrofishing equipment. Sodium cyanide was used at site 1 and one shocker unit, operating at 350 v. AC, was used at each of the remaining areas.

Water Quality - Data were taken from midstream with a 4041 Hydrolab at sample site 5 only. Temperature only was taken at sites 1 and 4. Area 1, on 7 June 1988: Temperature - 60°F. Area 4, on 7 June 1988: Temperature - 54°F. Area 5, on 8 June 1988: DO - 10.8 ppm, pH - 7.8, Temperature - 49.6°F, Conductivity - 102 micromhos/cm.

Benthos Collection - No Surber samples were collected at sites 1, 3, and 5, however, qualitative benthos collections were made at various intervals from site 1 to site 4 (Watauga River mi. 19.3 to 20.8). Two square-foot Surber samples were taken at site 2 while only one Surber sample was collected from site 4. An additional benthic sampling was made upstream of Elizabethton (Watauga River mi. 29.5) but downstream of sample site 5, and two Surber samples and one qualitative sample were collected.

The qualitative sample (Watauga River mi. 19.3 to

20.8) contained 34 organisms and represented 12 taxa. Area 2 averaged 279 organisms, 0.8 ml. volumetric displacement, and represented 17 taxa. The single Surber sample from area 4 contained 142 organisms, had 0.25 ml. volumetric displacement, and represented 9 taxa. The Surber samples from river mi. 29.5 averaged 100 organisms, 0.75 ml. volumetric displacement, and represented 19 taxa. The qualitative sample contained 46 organisms and represented 15 taxa.

Fish Collected: (See accompanying tables)

Comments:

With the exception of one minor fish kill last year, the Watauga River downstream of Elizabethton continues to recover from pollution. The history of this pollution was described in last year's report (Bivens 1988). Trout stocking efforts are also continuing in this section.

We returned to the Watauga River in 1988 to follow up on the recovery of the river, to gather preliminary information on a proposal for a trophy trout section, and to identify access areas for stocking and recreational use. The additional information will also be used to update TADS.

This year fish were collected from four areas downstream of Elizabethton and from one area upstream. The downstream samples were at different locations from last year, and were taken in areas generally inaccessible by vehicle. This was accomplished by using a boat to float from an upstream access point and conducting electrofishing samples at various locations downstream. This meant that sampling equipment was limited, and only a single backpack unit was used. Therefore, fish collection was also limited and only riffle and other wadeable areas were sampled, the exception being one deep pool that was treated with sodium cyanide. Only numbers and size classes were recorded for the electrofishing samples while all the fish from the toxicant sample area were preserved and returned to the laboratory, where both lengths and weights were later determined.

At the cyanide sample area (site # 1), a total of 56 fish weighing 7.13 lb. was collected, 27 (48%) of which were rainbow trout (*Salmo gairdneri*). A single 10 in. brown trout (*S. trutta*) was also collected and trout comprised about 90% of the total weight at this site.

The other electrofishing sites produced a total of 14 trout, 3 of which were brown trout. Bluegill (*Lepomis macrochirus*) were the only other game fish present and only four were collected from 2 sites. One specimen each of the greenside darter (*Etheostoma blennioides*) and the fatlips minnow (*Phenacobius*

crassilabrum) was also collected. These are new additions to the species list from this section of the Watauga and were not collected in the intensive Index of Biotic Integrity (IBI) sampling conducted by TVA in the spring of 1988. We collected only 11 fish species from our sample areas, however, the IBI sample produced a total of 24 species (see accompanying list) from the sample downstream of Elizabethton (TVA unpublished data). Trout collected from all our sites ranged from 6 to 10 inches except for one 4 in. rainbow from area 4.

One electrofishing sample was conducted upstream of Elizabethton at Watauga River mi. 31.2. Brown trout, mottled sculpin (*Cottus bairdi*), and stonerollers (*Campostoma anomalum*) were the only species collected. Brown trout comprised about 26% by number and 70% by weight of all fish collected. They ranged from 7 to 11 inches and two small ones, approximately 2 in., were observed but not captured. Upstream spawning areas have recently been identified and brown trout eggs have been collected to hatch and rear for wild brood stock at TWRA's Erwin Hatchery.

A couple of access areas for stocking were identified in the lower reach and arrangements were made with landowners to use these. Access for anglers, however, still remains somewhat of a problem along this reach. In the fall of 1988, the 2.3 mi. reach from Smalling Bridge downstream to the bridge at the town of Watauga was proposed as a trophy trout fishing section. The Tennessee Wildlife Resources Commission recently approved this designation and set special regulations for a 2-fish per day creel limit with a 14-inch minimum, and artificial lures only.

Benthic macroinvertebrates from our samples downstream of Elizabethton included Baetidae, Ephemerellidae, Heptageniidae, and Oligoneuriidae mayflies, perlid stoneflies, Glossosomatidae, Hydropsychidae, and Rhyacophilidae caddisflies, and elmid (*Optioservus*) riffle beetles. The only gastropod collected were physid (*Physa*) snails from sample area 2.

From the samples collected upstream of Elizabethton, the same mayfly, stonefly, and caddisfly families were represented. Additional ones included Brachycentridae, Limnephilidae, Polycentropodidae, and Philopotamidae caddisflies, and Chloroperlidae and Pteronarcyidae stoneflies. Periwinkle snails (*Goniobasis simplex*) were also present.

Management Recommendations:

1. Continue the current trout stocking effort.

2. Continue to monitor the recovery of the downstream reach and the trophy section.

3. The need for recreational access areas still exist. Establishment of such areas needs to be pursued.

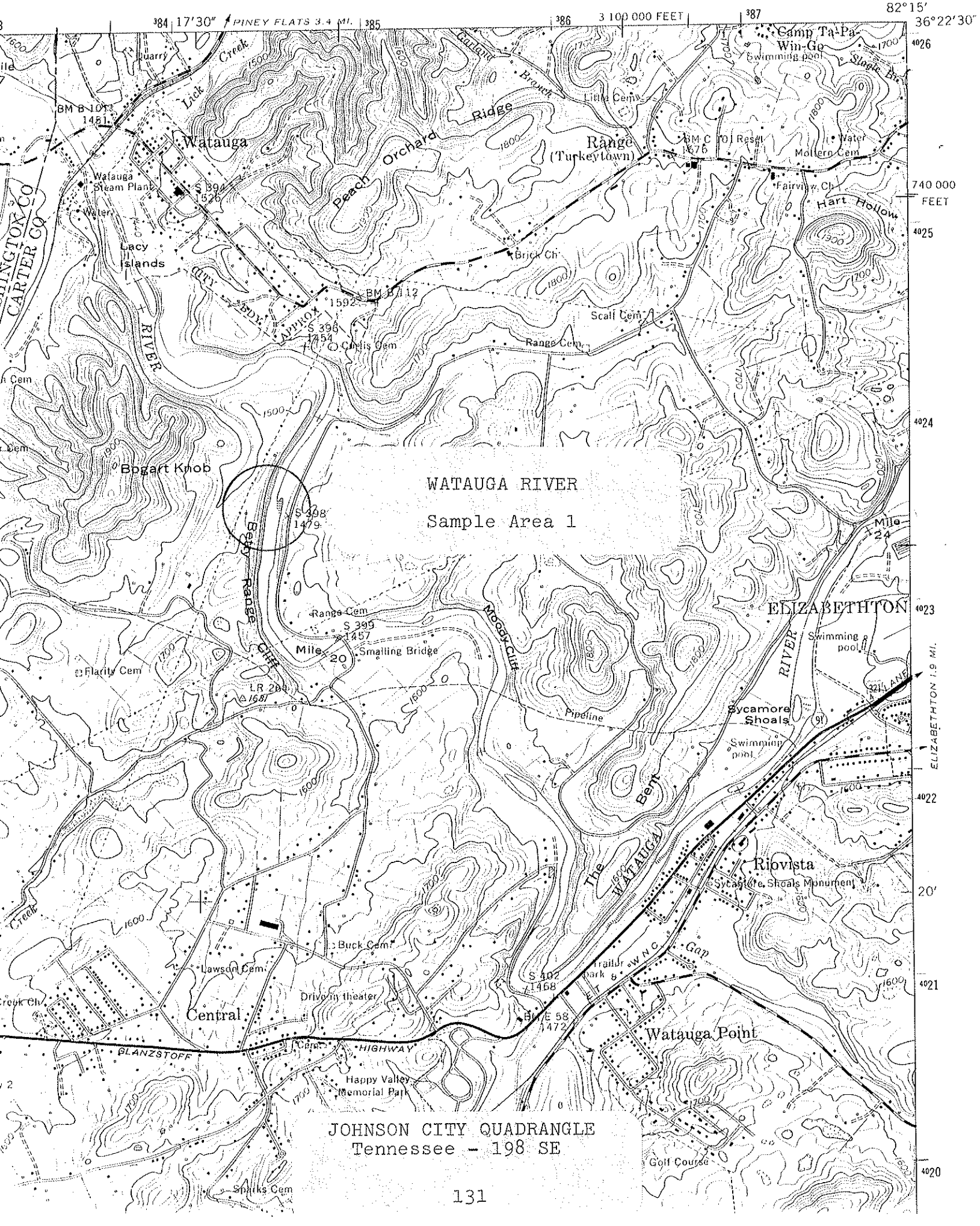
List of fish species collected in the TVA 1988 IBI survey of the Watauga River from mile 21.3 to 21.7 (TVA data).

Scientific Name	Common Name	Number
Ambloplites rupestris	Rock bass	1
Campostoma anomalum	Central stoneroller	25
Catostomus commersoni	White sucker	62
Cottus bairdi	Mottled sculpin	39
Cottus carolinae	Banded sculpin	3
Cyprinus carpio	Common carp	80
Dorosoma cepedianum	Gizzard shad	285
Dorosoma petenense	Threadfin shad	136
Etheostoma simoterum	Tennessee snubnose darter	1
Hypentelium nigricans	Northern hog sucker	4
Ictalurus punctatus	Channel catfish	47
Lampetra appendix	American brook lamprey	6
Lepisosteus osseus	Longnose gar	2
Lepomis cyanellus	Green sunfish	4
Lepomis macrochirus	Bluegill	152
Micropterus dolomieui	Smallmouth bass	1
Micropterus salmoides	Largemouth bass	8
Moxostoma macrolepidotum	Shorthead redhorse	2
Moxostoma duquesnei	Black redhorse	1
Notropis photogenis	Silver shiner	1
Pimephales notatus	Bluntnose minnow	9
Pomoxis nigromaculatus	Black crappie	7
Salmo gairdneri	Rainbow trout	12
Salmo trutta	Brown trout	23

Fish Collected in five samples of the Watauga River.

Species	Area 1				Area 2[a]		Area 3[a]		Area 4[a]		Area 5			
	No.	% by No.	Wt.	% by Wt.	No.	% by No.	No.	% by No.	No.	% by No.	No.	% by No.	Wt.	% by Wt.
Rainbow trout	27	48.2	5.86	82.2	2	40.0	2	7.4	7	26.9				
Brown trout	1	1.8	0.52	7.3					3	11.5	10	26.3	2.91	69.5
Bluegill					2	40.0	2	7.4						
Nongame Fish	5	8.9	0.08	1.1			1	3.7						
Forage Fish	23	41.1	0.67	9.4	1	20.0	22	81.5	16	61.5	28	73.7	1.28	30.5
Total	56		7.13		5		27		26		38		4.19	

[a]No weight recorded.



JOHNSON CITY QUADRANGLE
Tennessee - 198 SE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Watauga River Lat-Long 362105N - 821715W

Stream Watauga River Length of Sample Approx. 600'

Area or Station Site # 1 Reach 06010103-10,0

County Carter Date/Time 7 June 1988/1645

Data Collected By Rick D. Bivens

B. PHYSICAL CHARACTERISTICS

1. Average Width 50' est. Average Depth Riffles - 1' Pool - 3' Maximum Depth 8' est.

2. Estimated Percent of Stream in Pools is 30 %

3. Estimated Percent Pool Bottom is Mud - % Silt 10 % Sand 30 %

Clay - % Gravel 15 % Rubble 30 % Boulders 15 %

Bedrock - % Other - %

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

Bedrock - % Other Rubble 40% Boulders 10% Gravel 10%

5. Abundance of Littoral Aquatic Plants is Numerous

Average X Parrot Feather Milfoil, River Weed, and Curlyleaf Pondweed 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 80 % of Stream.

8. Flow (c.f.s.) - : Flow compared to Normal: Low Normal High

9. D.O. - Temp. 60°F % Saturation -

10. Present Weather Clear and hot.

11. Past Weather (last 24 hours) Clear and hot.

12. D.O. - pH - Temp. 60 Conductivity -

13. Comments: Sample location approx. 0.5 mi. downstream of powerline that is downstream of Smalling Bridge, around the left side of a small island, at Watauga River mi. 19.4.

Site #1 - Watauga River
mi. 19.4

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Watauga River
Body of Water Watauga River
County or River Mile Carter
Type of Sampling Toxicant
Gear Type Sodium Cyanide

Lat-Long 362105N - 821715W
Date 7 June 1988
Reach 06010103-10.0
Pool Elevation 1425'
Time 1530 - 1630

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo gairdneri	353	2	6	0.28			
" "	"	15	7	2.85			
" "	"	9	8	2.40			
" "	"	1	9	0.33			
Salmo trutta	355	1	10	0.52			
Campostoma anomalum	25	11	2-4	0.32			
Hypentelium nigricans	166	5	1-4	0.08			
Rhinichthys atratulus	351	3	1-3	0.02			
Cottus carolinae	40	9	3-4	0.33			

* Label Parameter Listed

Field Notes: Preserved all the above fish. Sample length approx. 600'.

Name of Collector(s): L. Price Wilkins, Rick D. Bivens, and Chester J. Ellison

WR-0525

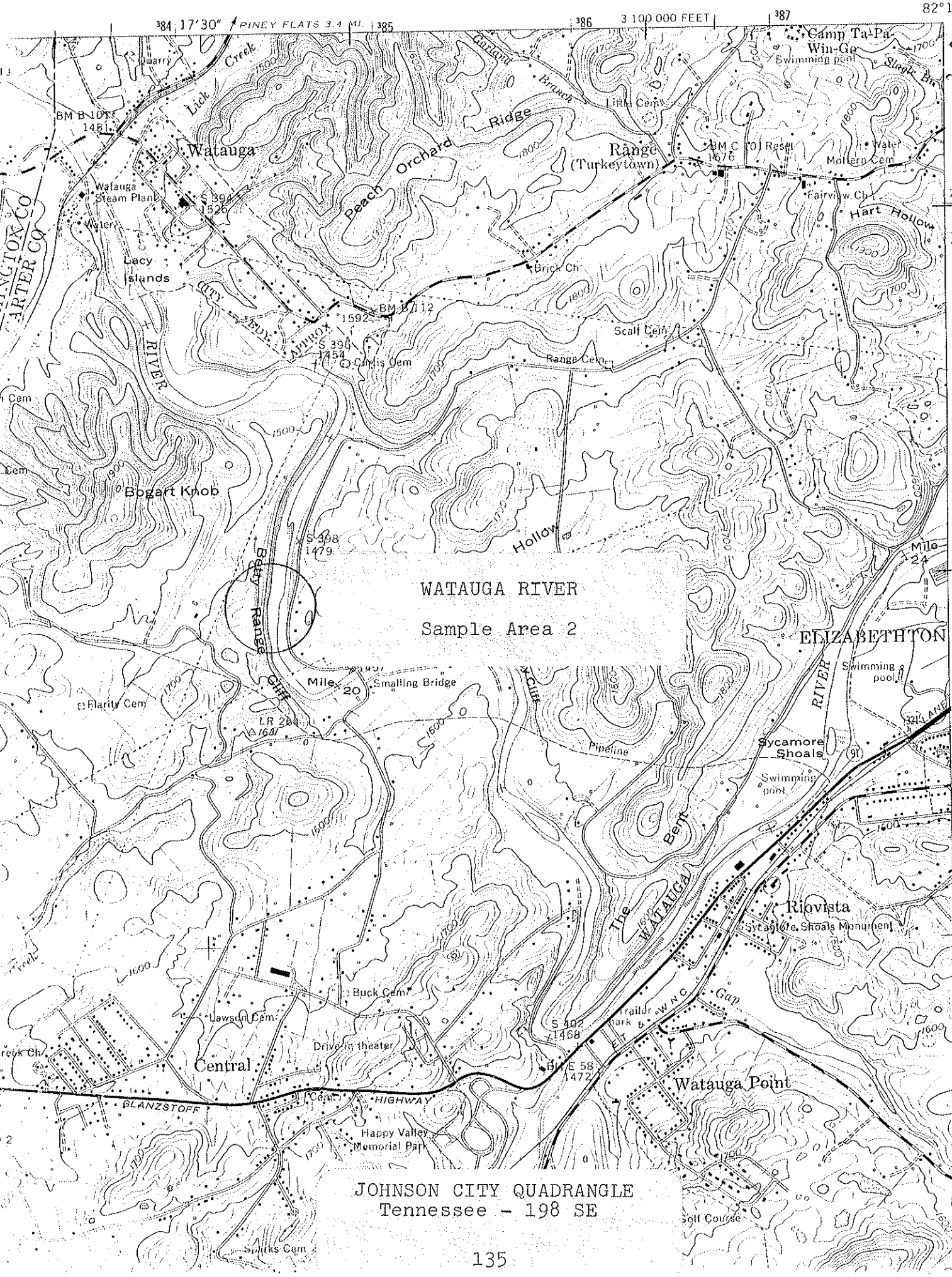
Watauga River: Qualitative sample

7 June 1988 Field # 101

Carter Co., TN; Watauga River mi. 19.3 to 20.8. Coordinates: 362118N - 821713W to 362037N - 821627W. Johnson City, Tenn., # 198 SE Quad. Reach # 06010103-10,0.

TAXA	NUMBER
AMPHIPODA:	
Gammaridae	2
DIPTERA:	
Chironomidae	6
Empididae	1
EPHEMEROPTERA:	
Baetidae/Baetis	2
Ephemerellidae/Ephemerella dorothea	1
Heptageniidae/Stenonema	6
Oligoneuriidae/Isonychia	3
ISOPODA:	
Asellidae/Asellus	2
MEGALOPTERA:	
Corydalidae/Nigronia serricornis	3
PLECOPTERA:	
Perlidae/Acroneuria abnormis	1
Unid. early instar	1
TRICHOPTERA:	
Hydropsychidae/Symphitopsyche bronta	1
Rhyacophilidae/Rhyacophila fuscula larvae	3
pupae	2
	34

TENNESSEE
7.5 MINUTE SERIES (TOPOGRAPHIC) 198-SE



JOHNSON CITY QUADRANGLE
Tennessee - 198 SE

Site #2 - Watauga River
mi. 19.5

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Watauga River
Body of Water Watauga River
County or River Mile Carter
Type of Sampling Electrofishing
Gear Type One backpack shocker @ 350 v. AC

Lat-Long 362058N - 821715W
Date 7 June 1988
Reach 06010103-10,0
Pool Elevation 1427'
Time 1445 - 1500

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo gairdneri	353	1	8	-			
" "	"	1	9	-			
Lepomis macrochirus	206	1	5	-			
" "	"	1	6	-			
Cottus carolinae	40	1	1	-			

* Label Parameter Listed

Saw two trout escape.

Field Notes: Sample length approx. 100'. Sample location at Watauga River mi. 19.5. Two Surber samples from this site. All fish released.

Name of Collector(s): L. Price Wilkins, Rick D. Bivens, and Chester J. Ellison

WR-0525

Watauga River; Site # 2, Edge Surber sample

7 June 1988 Field # 104

Carter Co., TN; At Watauga River mi. 19.5. Coordinates: 362058N - 821715W. Johnson City, Tenn., # 198 SE Quad. Reach # 06010103-10,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	3
COLEOPTERA:	
Elmidae/*Optioservus* larvae	3
DECAPODA:	
Unid. crayfish	1
DIPTERA:	
Chironomidae larvae	24
pupae	10
Tipulidae/*Antocha* larvae	2
pupae	4
EPHEMEROPTERA:	
Baetidae/*Baetis*	2
Ephemerellidae/*Ephemerella dorothea*	1
Heptageniidae/*Stenonema*	2
GASTROPODA:	
Physidae/*Physa*	3
HYDRACARINA:	4
ISOPODA:	
Asellidae/*Asellus*	6
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	1
	66

Volumetric Displacement was 0.08 ml.

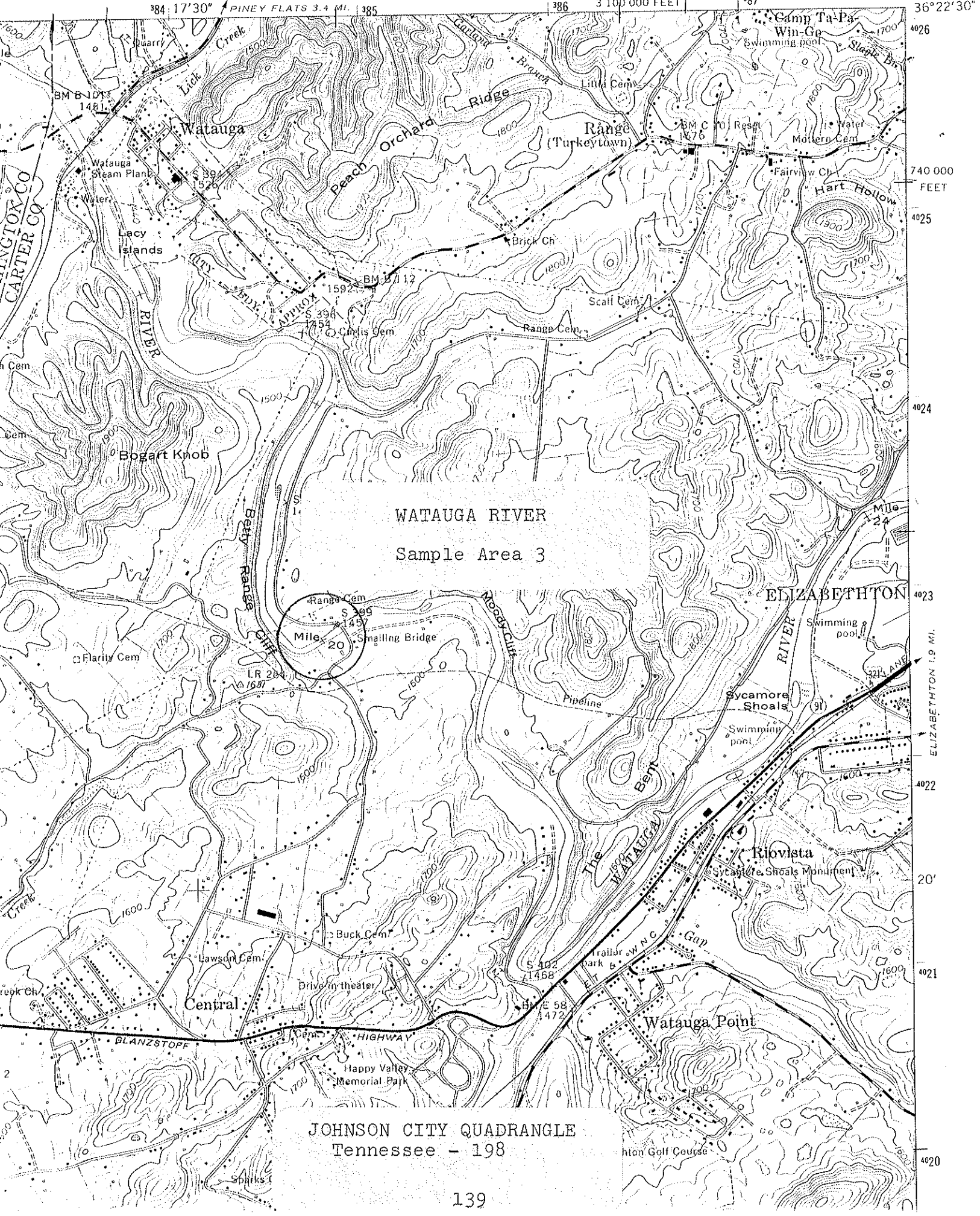
Watauga River: Site # 2, Midstream Surber sample

7 June 1988 Field # 104

Carter Co., TN; At Watauga River mi. 19.5. Coordinates: 362058N - 821715W. Johnson City, Tenn., # 198 SE Quad. Reach # 06010103-10,0.

TAXA	NUMBER
AMPHIPODA:	
Gammaridae	2
ANNELIDA:	
Oligochaeta	81
COLEOPTERA:	
Elmidae/*Optioservus* larvae	2
DIPTERA:	
Chironomidae larvae	215
pupae	12
Simuliidae	11
Tipulidae/*Antocha* larvae	2
pupae	3
EPHEMEROPTERA:	
Baetidae/*Baetis*	3
Ephemerellidae/*Ephemerella dorothea*	16
Serratella	3
HYDRACARINA:	9
ISOPODA:	
Asellidae/*Asellus*	104
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	1
TRICHOPTERA:	
Glossosomatidae/*Glossosoma*	1
Hydropsychidae/*Cheumatopsyche* larvae	4
pupa	1
Unid. early instar	1
	471

Volumetric Displacement was 1.5 ml.



JOHNSON CITY QUADRANGLE
Tennessee - 198

Site #3 - Watauga River
mi. 20.05

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Watauga River
Body of Water Watauga River
County or River Mile Carter
Type of Sampling Electrofishing
Gear Type One backpack shocker @ 350 v. AC

Lat-Long 362045N - 821700W
Date 7 June 1988
Reach 06010103-12,0
Pool Elevation 1430'
Time 1340 - 1400

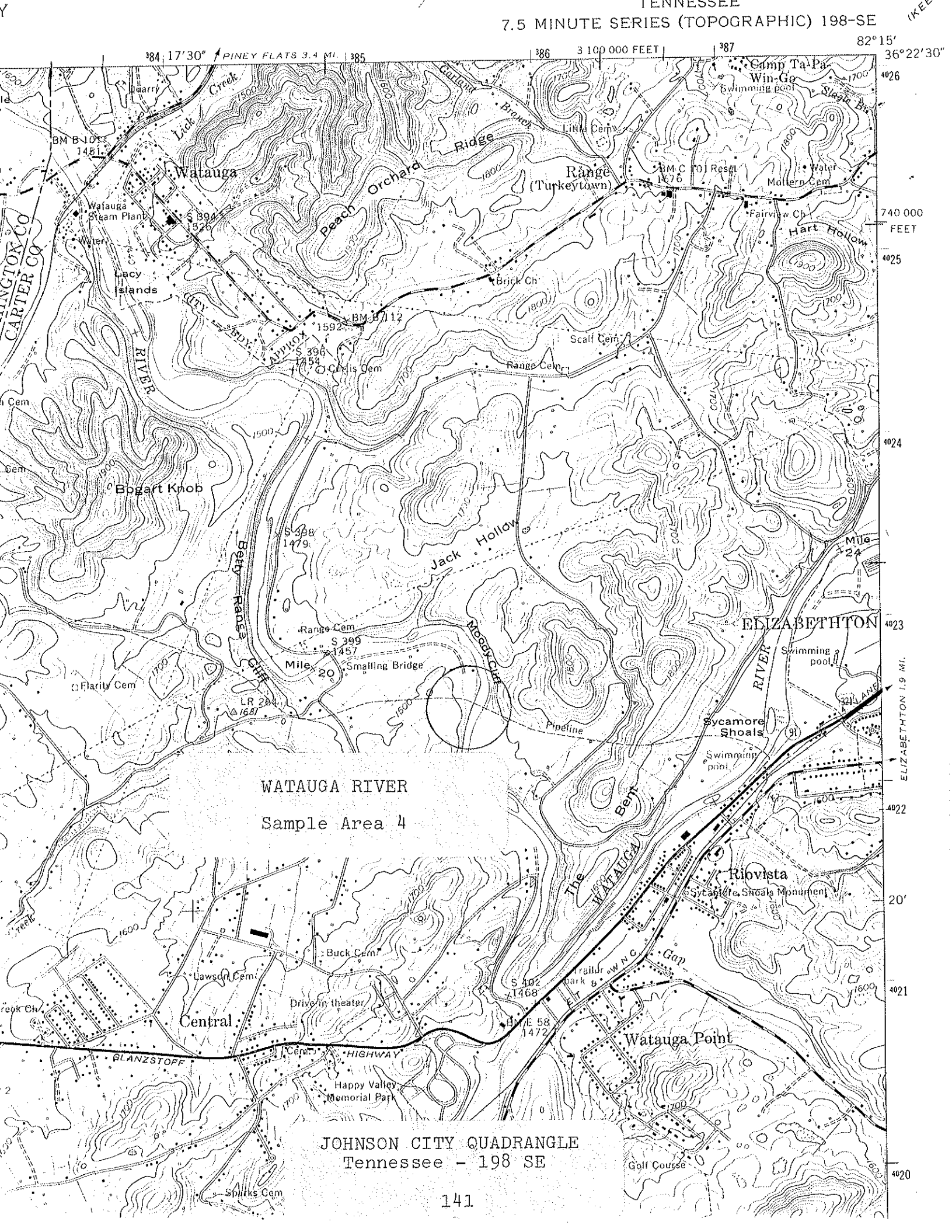
SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo gairdneri	353	2	7	-			
Lepomis macrochirus	206	2	4	-			
Catostomus commersoni	32	1	8	-			
Cottus carolinae	40	21	-	-			
Phenacobius crassilabrum	328	1	2	-			

* Label Parameter Listed *P. crassilabrum* preserved.

Field Notes: Approx. 100' sample length. Location just downstream of Smalling Bridge at Watauga River mi. 20.05.

Name of Collector(s): L. Price Wilkins, Rick D. Bivens, and Chester J. Ellison

WR-0525



JOHNSON CITY QUADRANGLE
Tennessee - 198 SE

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Watauga River Lat-Long 362037N - 821627W

Stream Watauga River Length of Sample Approx. 100'

Area or Station Site # 4 Reach 06010103-12,0

County Carter Date/Time 7 June 1988/1245

Data Collected By Rick D. Bivens

B. PHYSICAL CHARACTERISTICS

1. Average Width 150' est. Average Depth Riffles - 1' Pool - 2.5' Maximum Depth 4' est.

2. Estimated Percent of Stream in Pools is 40 %

3. Estimated Percent Pool Bottom is Mud 5 % Silt 5 % Sand 30 %

Clay - % Gravel 5 % Rubble 30 % Boulders 20 %

Bedrock 5 % Other - %

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

Bedrock 10 % Other Rubble 40% Boulders 30%

5. Abundance of Littoral Aquatic Plants is Numerous

Average X Parrot Feather Milfoil, River Weed, and Curlyleaf Pondweed 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 20 % of Stream.

8. Flow (c.f.s.) - : Flow compared to Normal: Low Normal High

9. D.O. - Temp. 54°F % Saturation -

10. Present Weather Clear and hot.

11. Past Weather (last 24 hours) Clear and hot.

12. D.O. - pH - Temp. 54 Conductivity -

13. Comments: Sample site location at pipeline crossing upstream of Smalling Bridge at Watauga River mi. 20.8.

Site #4 - Watauga River
mi. 20.8

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Watauga River
Body of Water Watauga River
County or River Mile Carter
Type of Sampling Electrofishing
Gear Type One backpack shocker @ 350 v. AC.

Lat-Long 362037N - 821627W
Date 7 June 1988
Reach 06010103-12,0
Pool Elevation 1433'
Time 1200 - 1300

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo gairdneri	353	1	4	-			
" "	"	3	8	-			
" "	"	3	9	-			
S. trutta	355	2	8	-			
"	"	1	9	-			
Campostoma anomalum	25	1	1	-			
Cottus carolinae	40	10	2-3	0.17			
C. bairdi	39	4	3	0.07			
Etheostoma blennioides	79	1	3	0.02			

* Label Parameter Listed

Field Notes: Sample length approx. 100'. One midstream Surber sample taken here. 13 sculpin, stoneroller, and greenside darter preserved.

Name of Collector(s): L. Price Wilkins, Rick D. Bivens, and Chester J. Ellison

WR-0525

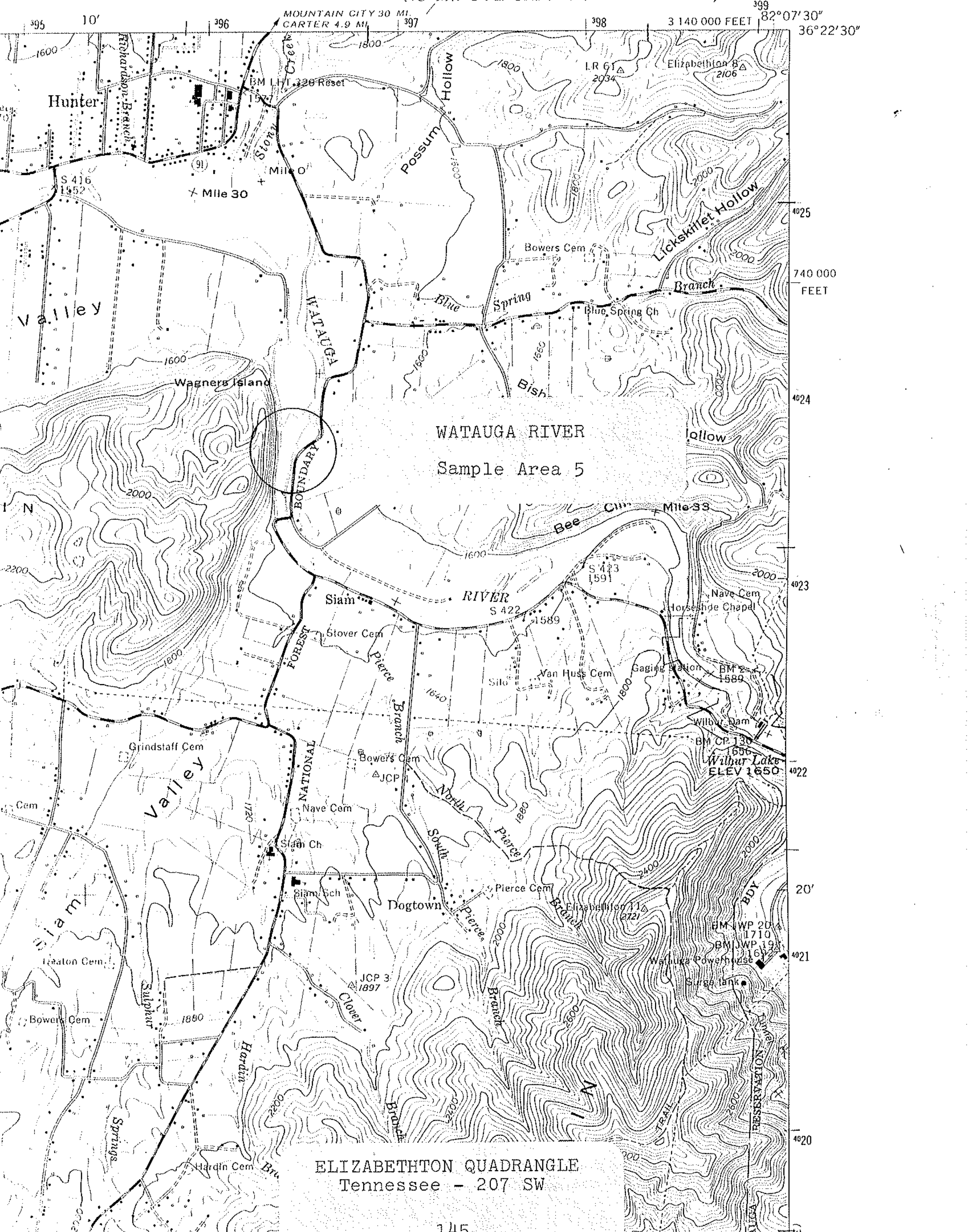
Watauga River: Site # 4, Midstream Surber sample

7 June 1988 Field # 102

Carter Co., TN; At Watauga River mi. 20.8. Coordinates: 362037N - 821627W. Johnson City, Tenn., # 198 SE Quad. Reach # 06010103-10,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	62
COLEOPTERA:	
Elmidae/*Optioservus* larvae	5
DIPTERA:	
Chironomidae	52
Simuliidae	8
Tipulidae/*Antocha* larva	1
pupae	3
Unid. adults	3
EPHEMEROPTERA:	
Baetidae/*Baetis*	1
TRICHOPTERA:	
Glossosomatidae/*Glossosoma* larvae	2
pupae	3
Hydropsychidae/*Symphitopsyche morosa*	1
Rhyacophilidae/*Rhyacophila fuscula*	1
	142

Volumetric Displacement was 0.25 ml.


WATAUGA RIVER
Sample Area 5
ELIZABETHTON QUADRANGLE
Tennessee - 207 SW
MOUNTAIN CITY 30 MI.
CARTER 4.9 MI.
82°07'30"
36°22'30"
Hunter
Watauga
Wagners Island
Siam
Dogtown
Siam Valley
Blue Spring Branch
Lickskillet Hollow
Possum Hollow
Wilbur Dam
Wilbur Lake
ELEV 1650
Watauga Powerhouse
Bee Cliff
Siam Ch
Siam Sch
Bowers Cem
Nave Cem
Stover Cem
Pierce Cem
Grindstaff Cem
Hardin Cem
Van Huss Cem
Horseshoe Chapel
Gaging Station
Blue Spring Ch
Pierce Branch
North Pierce
South Pierce
Clover
Sulphur
Hardin
Springs

Site #5 - Watauga River
mi. 31.2

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Watauga River
Body of Water Watauga River
County or River Mile Carter
Type of Sampling Electrofishing
Gear Type One backpack shocker @ 350 v. AC

Lat-Long 362205N - 821006W
Date 8 June 1988
Reach 06010103-19,0
Pool Elevation 1550'
Time 1000 - 1100

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo trutta	355	3	7	0.57			
" "	"	4	8	0.95			
" "	"	1	9	0.34			
" "	"	1	10	0.41			
" "	"	1	11	0.64			
(two brown trout, approx. 2 in. fish, escaped)							
Cottus bairdi	39	14	3-5	0.55			
Campostoma anomalum	25	14	3-5	0.73			
Hydrolab Readings:	pH	7.8					
	DO	10.8					
	Temp.	49.6°F					
	Cond.	102 micromho/cm					

* Label Parameter Listed Several sculpin and stonerollers escaped capture.

Field Notes: Sample length approx. 300'. Sample location at head of Wagner Island, 0.4 mi. downstream of Siam Bridge at Watauga River mi. 31.2.

Name of Collector(s): L. Price Wilkins, Rick D. Bivens, and Chester J. Ellison

WR-0525

Watauga River: Edge Surber sample

8 June 1988 Field # 106

Carter Co., TN; Hunter Bridge, at Watauga River mi. 29.5. Coordinates: 352206N - 821006W. Elizabethton, Tenn., # 207 SW Quad. Reach # 06010103-18,0.

TAXA	NUMBER
AMPHIPODA:	1
ANNELIDA:	
Oligochaeta	2
DIPTERA:	
Chironomidae	9
Tipulidae/*Antocha* larvae	7
pupa	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	4
Ephemerellidae/*Drunella cornuta*	1
Ephemerella	5
Oligoneuriidae/*Isonychia*	1
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	55
TRICHOPTERA:	
Glossosomatidae/*Glossosoma* pupae	2
Hydropsychidae/*Symphitopsyche bronta*	1
S. morosa	1
Limnephilidae/*Neophylax*	1
TURBELLARIA:	3
	94

Volumetric Displacement was 0.5 ml.

Watauga River: Midstream Surber sample

8 June 1988 Field # 106

Carter Co., TN; Hunter Bridge, at Watauga River mi. 29.5. Coordinates: 362206N - 821006W. Elizabethton, Tenn., # 207 SW Quad. Reach # 06010103-18,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	11
DIPTERA:	
Chironomidae	22
Simuliidae	8
Tanyderidae/*Protoplasa fitchii*	1
Unid. adults	7
EPHEMEROPTERA:	
Baetidae/*Baetis*	7
Ephemerellidae/*Drunella cornuta*	2
Ephemerella	22
Heptageniidae/*Epeorus (Iron)*	1
Oligoneuriidae/*Isonychia*	2
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	18
TRICHOPTERA:	
Brachycentridae/*Micrasema*	1
Hydropsychidae/*Symphitopsyche bronta*	2
S. morosa	1
Unid. pupa	1
Polycentropodidae/*Polycentropus*	1
	107

Volumetric Displacement was 1.0 ml.

Watauga River: Qualitative sample

8 June 1988 Field # 106

Carter Co., TN; Hunter Bridge, at Watauga River mi. 29.5. Coordinates: 362206N - 821006W. Elizabethton, Tenn., # 207 SW Quad. Reach # 06010103-18,0.

TAXA	NUMBER
DIPTERA:	
Simuliidae	2
Unid pupa	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	8
Emphemerellidae/*Drunella cornuta*	4
Ephemerella	10
Heptageniidae/*Stenonema*	1
Oligoneuriidae/*Isonychia*	8
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	1
PLECOPTERA:	
Chloroperlidae/*Alloperla*	1
Perlidae/*Acroneuria carolinensis*	1
Paragnetina kansensis	1
Pteronarcyidae/*Allonarcys*	1
TRICHOPTERA:	
Brachycentridae/*Micrasema*	1
Hydropsychidae/*Symphitopsyche bronta*	3
Philopotamidae/*Dolophilodes distinctus*	2
Rhyacophilidae/*Rhyacophila fuscula*	1
	46

Hampton Creek and Left Prong

Three qualitative fishery surveys were conducted in May 1988, two on Hampton Creek and one on Left Prong:

Location and Length - Tributary to the Doe River. The lower Hampton Creek site was located just upstream of the culvert on Hampton Creek Road at Elm Hollow Road. It was about 220 ft. in length. The upper site was located approximately 1.6 mi. upstream of Elm Hollow Road at about 3,760 ft. elevation and was approximately 250 ft. in length. Both sites were sampled on 19 May 1988. The Left Prong sample area was located approximately 1.4 mi. upstream of the confluence with Hampton Creek at about 3,560 ft. elevation. It was approximately 275 ft. in length and was also sampled on 19 May 1988. All three sites were in Carter County. White Rocks Mountain Quadrangle.

Gear Type - The sites were sampled using backpack electrofishing equipment. One shocker unit operating at 350 v. AC was used at each site.

Water Quality - No data collected except for temperature at the lower Hampton Creek site. It was 56°F on 19 May 1988.

Benthos Collection - A limited qualitative collection was made at each sample site. The sample from the lower Hampton Creek site contained 8 organisms and represented 5 taxa. The upper area sample contained 21 organisms and represented 3 taxa. The Left Prong sample contained 26 organisms and represented 11 taxa.

Fish Collected: (See data sheets for species list)

Comments - Hampton Creek and its tributary, Left Prong, were surveyed in order to provide information for the Tennessee Department of Conservation (TDC). The TDC recently acquired the land through which the Left Prong tributary flows and asked TWRA for assistence in identifying the fish species present in the watershed. The information collected will also be incorporated into TADS.

Rainbow trout (*Salmo gairdneri*) were the only game fish we collected in the samples. At the lower site on Hampton Creek, blacknose dace (*Rhinichthys atratulus*), stonerollers (*Campostoma anomalum*), northern hog suckers, (*Hypentelium nigricans*), and fantail darters (*Etheostoma flabellare*) were also collected.

A survey of Hampton Creek in 1978 (Whitworth and Strange 1979) reported no trout at all in the upper Hampton Creek section. However, our samples from both upper Hampton and the Left Prong produced rainbow trout. Conversations with a couple of local residents revealed that they had stocked rainbow trout in the watershed over the past few years and the trout we collected were probably a result of their efforts.

In general, the overall stream conditions appear good. This is further supported by the presence of an apparent stream reproducing population of rainbow trout. However, the presence of livestock is impacting the watershed by increasing runoff, natural erosion, and contributing to the silt load.

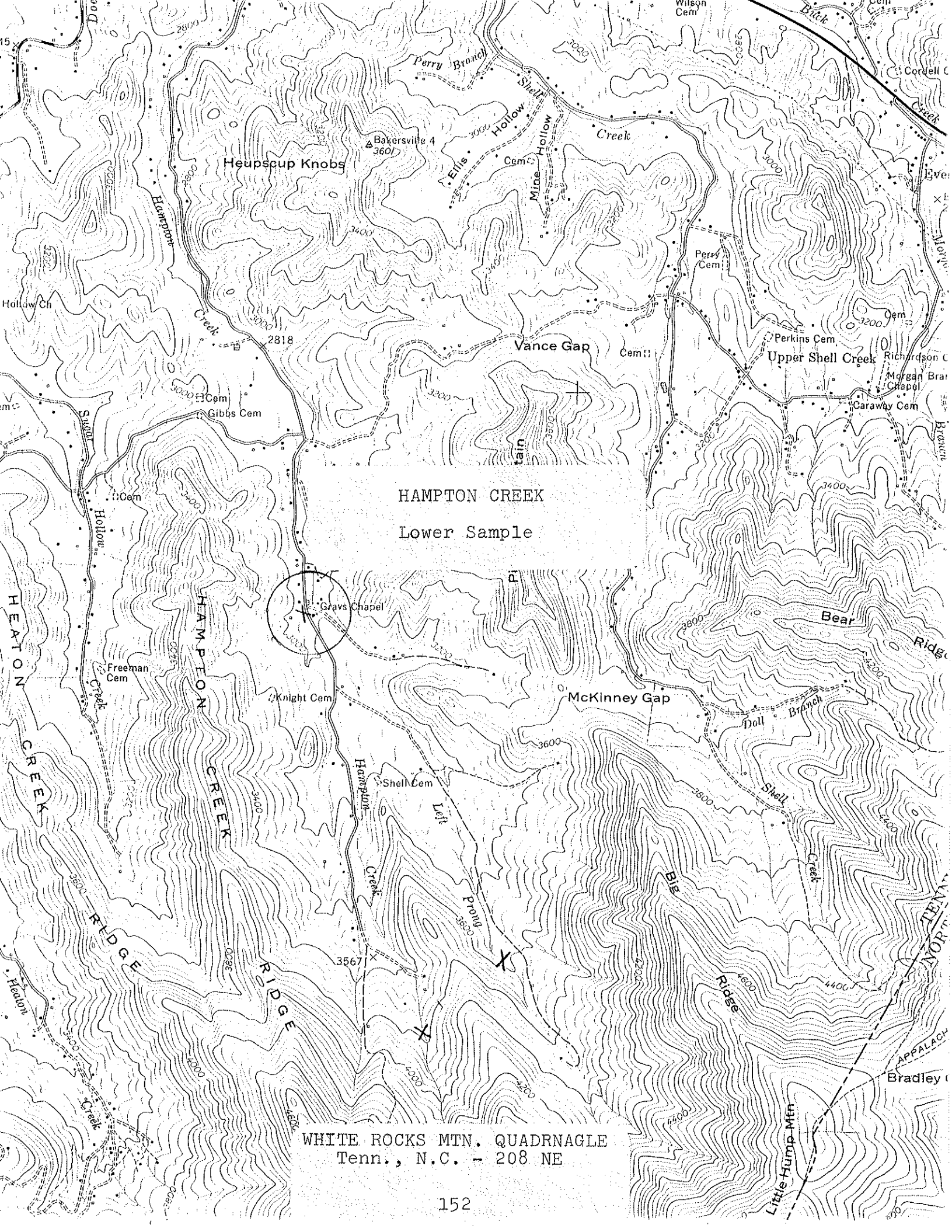
Benthic macroinvertebrates from our limited qualitative sampling included representatives of Baetidae, Baetiscidae, Ephemerellidae, Ephemeridae, Heptageniidae, and Oligoneuriidae mayflies, Peltoperlidae and Perlodidae stoneflies, and Lepidostomatidae and Limnephilidae caddisflies. Periwinkle snails (*Goniobasis simplex*) were also present.

Management Recommendations:

1. Follow up survey of the extreme upper reaches of Hampton Creek and Left Prong for the possible occurrence of brook trout.

2. Consider management of Left Prong for brook trout through renovation and relocation of native brook trout from other populations in the Doe River watershed.

3. Protect the watershed and encourage better land use practices, especially concerning livestock.



WHITE ROCKS MTN. QUADRNAGLE
Tenn., N.C. - 208 NE

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Lower site @ old Gravs Chaple @ Elm Hollow Road.

Watershed Doe River
Body of Water Hampton Creek
County or River Mile Carter
Type of Sampling Electrofishing
Gear Type Backpack shocking @ 350 v. AC

Lat-Long 360921N - 820329W
Date 19 May 1988
Reach 06010103-
Pool Elevation 2970'
Time 1900-1945

SPECIES Name	CODE	NUMBER	LENGTH	WT.	*	*	*
Salmo gairdneri	353	7	5.0-11.6	-			
Rhinichthys atratulus	351	100	-	-			
Campostoma anomalum	25	23	-	-			
Hypentelium nigricans	166	5	-	-			
Etheostoma flabellare	92	22	-	-			

Salamanders - several collected, only 2 preserved.
Crayfish - several collected, none preserved.
Mayflies - *Baetisca*, *Epeorus*, *Ephemera*, and *Isonychia*.
Dipterans - Chironomids and simuliids.

* Label Parameter Listed

Field Notes: Sample length was 222'. Water Temperature - 56°F. No length & weights except for length on trout (largest & smallest).

Name of Collector(s): Rick D. Bivens, Charles F. Saylor (TVA), and Bill A. Smith

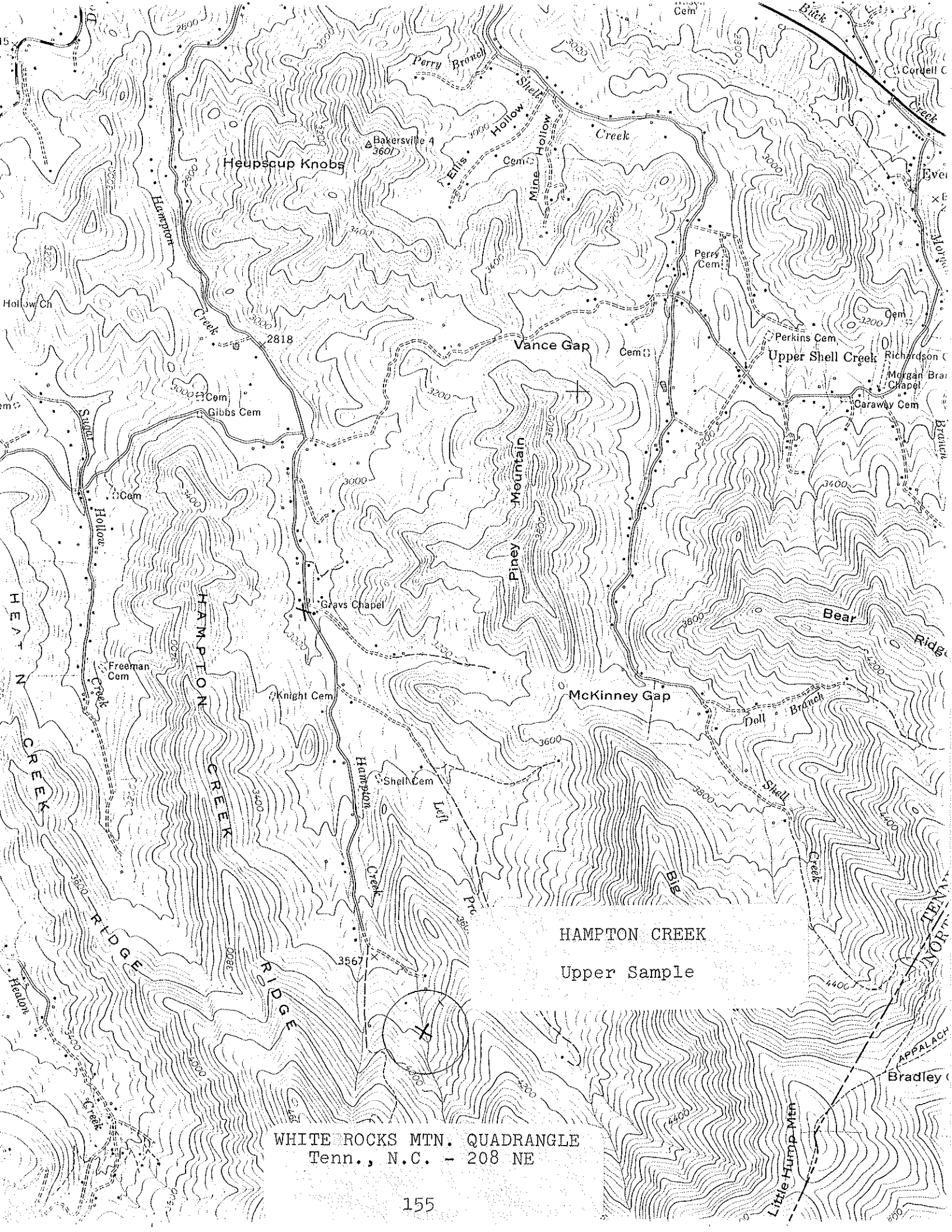
WR-C525

Hampton Creek: Lower site, Qualitative sample

19 May 1988 Field # 094

Carter Co., TN; Upstream of culvert on Hampton Cr. road. at the old Gravs Chapel. Coordinates: 360921N - 820329W. White Rocks Mountain, Tenn.-N.C., # 208 NE Quad. Reach # 06010103- .

TAXA	NUMBER
DIPTERA:	
Chironomidae	3
EPHEMEROPTERA:	
Baetiscidae/*Baetisca carolina*	1
Ephemeridae/*Ephemera simulans*	2
Heptageniidae/*Stenonema*	1
Oligoneuriidae/*Isonychia*	1
	8


HAMPTON CREEK
Upper Sample
WHITE ROCKS MTN. QUADRANGLE
Tenn., N.C. - 208 NE
Heupscup Knobs
Bakersville 4
3601
Perry Branch
Shell Hollow
Creek
Ellis Cem
Mine Hollow
Hampton Creek
2818
Vance Gap
Cem
Perry Cem
Upper Shell Creek
Perkins Cem
Caraway Cem
Gibbs Cem
Piney Mountain
Gravs Chapel
Freeman Cem
Knight Cem
McKinney Gap
Bear Ridge
Doll Branch
Shell Cem
Left Hampton Creek
Big Shell Creek
HEAT N CREEK
HAMPTON CREEK
RIDGE
RIDGE
3567
Little Hump Mtn
Bradley
APPALACH
TENN
NORTH

Upper site - approx. 1.6 mi. upstream of Elm Hollow Road

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Doe River
Body of Water Hampton Creek
County or River Mile Carter
Type of Sampling Electrofishing
Gear Type Backpack shocking @ 350 v. AC.

Lat-Long 360807N - 820302W
Date 19 May 1988
Reach 06010103-
Pool Elevation 3760'
Time 1830-1845

SPECIES Name	CODE	NUMBER	LENGTH	WT.	*	*	*
Salmo gairdneri	353	8	Largest was 7.8 in.				
Salamanders - 20 preserved.							
Crayfish - 2 preserved.							
Mayflies - *Epeorus* and Ephemerellidae.							
Stonefly - *Peltoperla*							

* Label Parameter Listed

Field Notes: *Sample length approximately 250'. No length and weight.*

Name of Collector(s): Rick D. Bivens, Charles F. Saylor (TVA), and Bill A. Smith

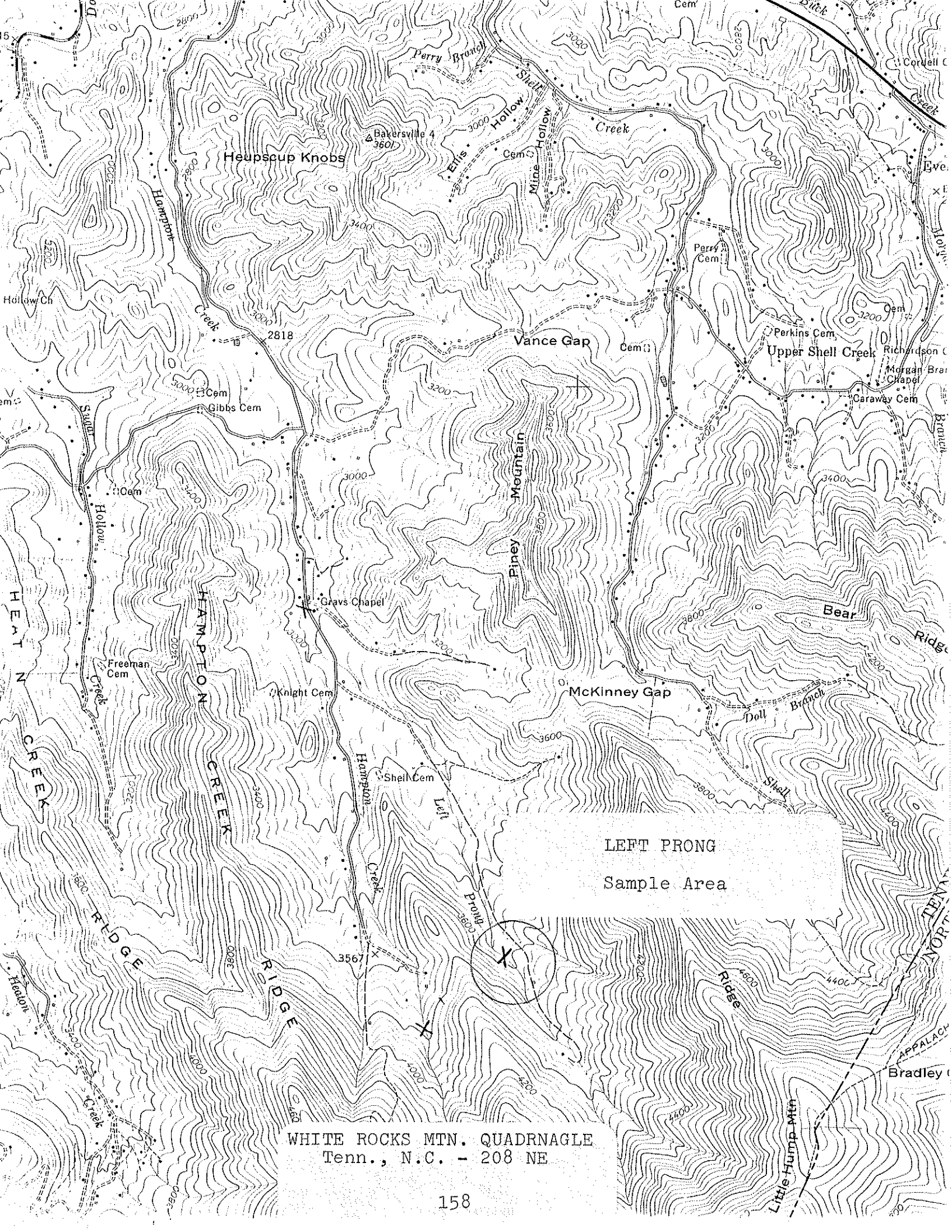
WR-G525

Hampton Creek: Upper site, Qualitative sample

19 May 1988 Field # 093

Carter Co., TN; Approx. 1.6 mi. upstream of Elm Hollow Rd., at about 3760 ft. elev. Coordinates: 360807N - 820302W. White Rocks Mountain, Tenn.-N.C., # 208 NE Quad.
Reach # 06010103- .

TAXA	NUMBER
EPHEMEROPTERA:	
Ephemerellidae/Ephemerella	1
Heptageniidae/Epeorus (Iron)	19
PLECOPTERA:	
Peltoperlidae/Peltoperla	1
	21



WHITE ROCKS MTN. QUADRNAGLE
Tenn., N.C. - 208 NE

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Doe River
Body of Water Left Prong
County or River Mile Carter
Type of Sampling Electrofishing
Gear Type Backpack shocking @ 350 v. AC.

Lat-Long 360820N - 820245W
Date 19 May 1988
Reach 06010103-
Pool Elevation 3560'
Time 1700-1715

SPECIES Name	CODE	NUMBER	LENGTH	WT.	*	*	*
Salmo gairdneri	353	28	Largest was 8.7 in.				
Salamanders - 15 preserved.							
Crayfish - 4 preserved.							
Mayflies - *Baetis*, *Epeorus*, and Ephemerellidae.							
Stonefly - Perlodidae.							
Caddisfly - *Pycnopsyche*.							
Leeches (Hirudinea)							
Periwinkle snails (*Goniobasis simplex*)							

* Label Parameter Listed

Field Notes: Sample length approximately 275'. No length and weight.

Name of Collector(s): Rick D. Bivens, Charles F. Saylor (TVA), and Bill A. Smith

WR-G525

Left Prong (Hampton Creek): Qualitative sample

19 May 1988 Field # 092

Carter Co., TN; Approx. 1.4 mi. upstream of confluence with Hampton Creek. Coordinates: 360820N - 820245W. White Rocks Mountain, Tenn.-N.C., # 208 NE Quad. Reach # 06010103- .

TAXA	NUMBER
ANNELIDA:	
Branchiobdellida	1
Hirudinea	5
DECAPODA:	
Unidentified	3
DIPTERA:	
Chironomidae	1
EPHEMEROPTERA:	
Baetidae/Baetis	1
Ephemerellidae/Ephemerella	3
Heptageniidae/Epeorus (Iron)	6
GASTROPODA:	
Pleuroceridae/Goniobasis simplex	2
PLECOPTERA:	
Perlodidae/Yugus bulbosus	1
TRICHOPTERA:	
Lepidostomatidae/Lepidostoma	1
Limnephilidae/Pycnopsyche	2
	26

Doe Creek

One qualitative fishery survey was conducted in August 1988:

Location and Length - Tributary to Watauga River (Watauga Reservoir). The sample area was located just upstream of the old raceway at George Lowe's property and was sampled on 23 August 1988. It was 200 ft. in length and averaged 23.4 ft. in width. The site was in Johnson County. Doe Quadrangle.

Gear Type - The site was sampled using backpack electrofishing equipment. Two shocker units, operating side by side, at 350 v. AC, were used.

Water Quality - Data were taken from midstream with a 4041 Hydrolab. On 23 August 1988: DO - 8.8 ppm, pH - 8.1, Temperature - 65.7°F, Conductivity - 78 micromhos/cm.

Benthos Collection - Benthic organisms were collected from two square-foot Surber samples at the site. The samples averaged 104 organisms, 0.75 ml. volumetric displacement, and represented 19 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Rainbow trout	99	9.4	8.77	40.9
Nongame Fish	24	2.3	2.37	11.1
Forage Fish	934	88.4	10.29	48.0
Total	1057		21.43	

Comments - Doe Creek, a spring fed stream flowing through Doe Valley into Watauga Reservoir, supported a very unique rainbow trout (*Salmo gairdneri*) fishery from the mid-1950's to the late 1960's. More than 5,000 trophy fish, averaging 2.9 lb. were recorded from Doe Creek during this period. Also, a 12 lb. 14 oz. rainbow trout taken from Doe Creek in 1957 held the state record for over a decade.

Large migrant rainbow trout from Watauga Reservoir

returned to Doe Creek each fall to spawn. This spawning run was believed to have originated from a shipment of 10,000 eyed rainbow trout eggs from a fall spawning strain that was buried in Vibert boxes at the mouth of Doe Creek in January, 1954. By the fall of 1956, a few survivors of this planting returned from Watauga Reservoir to begin a spawning migration. The catch of trophy rainbows increased over the following years to a high of 762 taken during the 1960-61 season. Based on marking experiments the Doe Creek spawning run was found to be a distinct population that maintained itself independently of the thousands of hatchery origin trout that were released in Watauga Reservoir. The fishery began declining drastically during the late 1960's and by the early 1970's was all but gone. A rapid increase in the Watauga Reservoir walleye (*Stizostedion v. vitreum*) population and a succession of years of low rainfall during the peak spawning time were considered the primary causes of this decline (Wilkins 1970). Various stream improvement structures, a trap weir, and a spawning channel were constructed in Doe Creek to help increase reproductive success. However, efforts to save the Doe Creek strain failed, and by 1972, it was considered that the strain had died out.

We returned to Doe Creek in August of 1988 to document the current trout population and collect stream information for TADS. The stream still appears to maintain an excellent population of wild rainbow trout supplemented by occasional stocking of adult trout. In only a 200 ft. sample area, 99 rainbows were collected, weighing a total of 8.77 lb. and comprising about 41% of the total weight of all fish collected. Out of these 99 rainbows, 14 were over 7 in., and 5 were over 10 in. with one in the 14 in. class (Fig. 12). Brown trout (*Salmo trutta*) are also known to be in Doe Creek, however, we did not collect any from our sample area.

A total of 8 fish species was collected from the sample area. Stonerollers (*Campostoma anomalum*), a much sought after species unique to anglers in upper east Tennessee, were abundant in Doe Creek. In our sample we collected 439 stonerollers, weighing 7.15 lb. (33% of all fish collected) and ranging up to 6 in. total length. Many more were observed to escape capture during sampling. Doe Creek fish were used in a two-report series on the life history of the stoneroller in 5 upper east Tennessee counties (Beets 1978, Burkhead 1980).

Doe Creek is still a unique trout stream. The number and size of rainbows collected in such a small sample area was impressive. Also, being spring fed, it did not appear to have been extremely affected by the drought. Calculated condition factors of all size rainbows in our sample revealed an average factor of 1.15 indicating that the fish were in good condition. The stream is fairly silty in areas, however, riffles and spawning areas were clean.

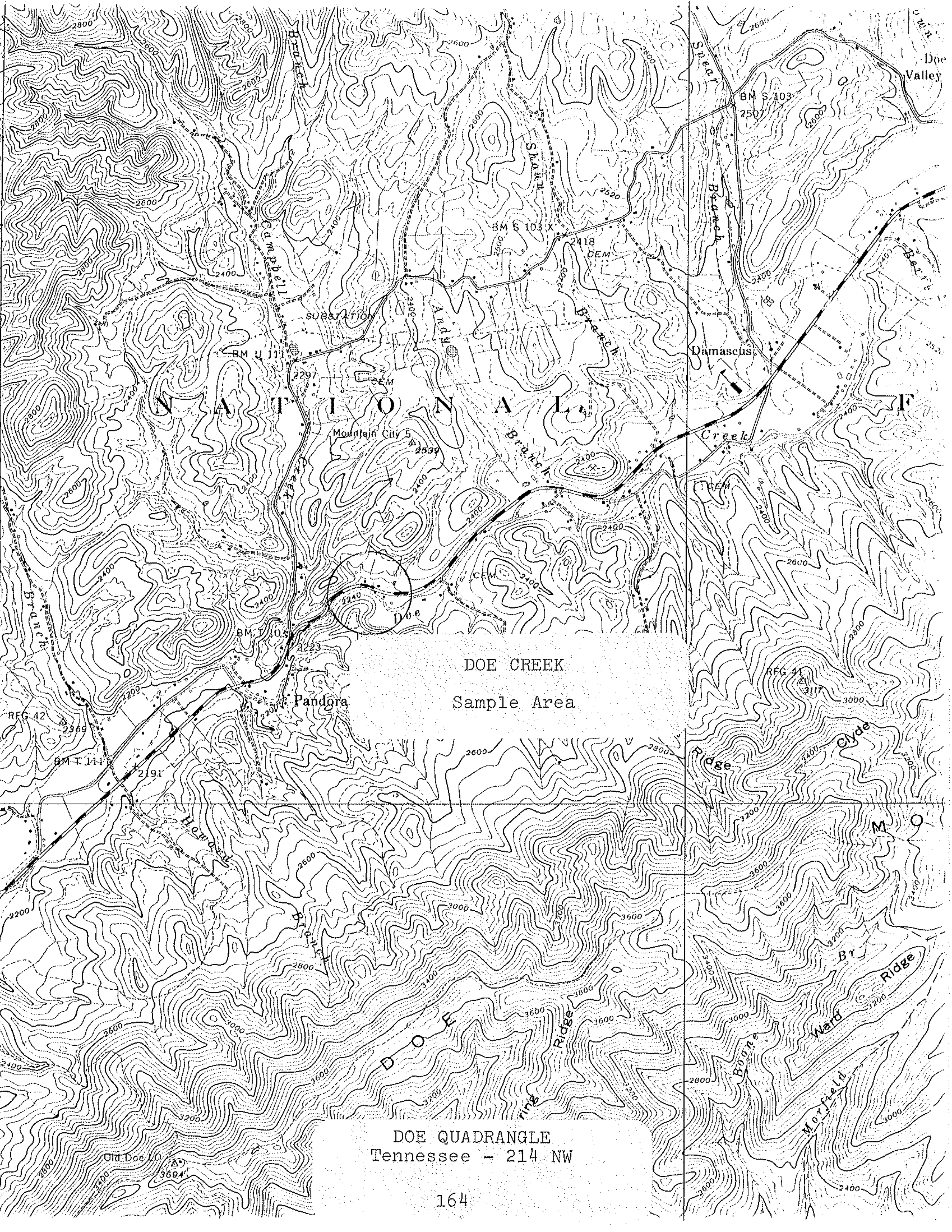
Benthic macroinvertebrates from our samples included Caenidae, Heptageniidae, and Leptophlebiidae mayflies, Hydropsychidae and Limnephilidae caddisflies, Elmidae and Psephenidae beetles, and Perlodidae stoneflies. Periwinkle snails (*Goniobasis simplex*) were abundant.

Management Recommendations:

1. Maintain the current trout management plan (i.e. stocking with adult fish about twice a year).

2. Protection of the Doe Creek watershed from habitat deterioration and conduct periodic monitoring of the trout population.

3. Planting McConaughy strain rainbow trout eggs in the lower end, in an effort to restore a Watauga Reservoir-Doe Creek spawning run.



DOE CREEK

Sample Area

DOE QUADRANGLE
Tennessee - 214 NW

TENNESSEE WILDLIFE RESOURCES AGENCY

PHYSIOCHEMICAL STREAM SURVEY FORM

A. LOCATION

Watershed Watauga River Lat-Long 362533N - 815607W

Stream Doe Creek Length of Sample 200'

Area or Station (see below) Reach 06010103-37,0

County Johnson Date/Time 23 August 1988/1900

Data Collected By Rick D. Bivens

B. PHYSICAL CHARACTERISTICS

1. Average Width 23.4' Average Depth 0.7' Maximum Depth 1.8'
2. Estimated Percent of Stream in Pools is 40 %
3. Estimated Percent Pool Bottom is Mud 10 % Silt 30 % Sand 20 %
   Clay - % Gravel 10 % Rubble 10 % Boulders 10 %
   Bedrock 10 % Other - %
4. Estimated Percent Riffle Bottom is Mud - % Silt 20 % Sand 20 %
   Bedrock 10 % Other Rubble 40% Boulders 10%
5. Abundance of Littoral Aquatic Plants is Numerous
   Average X 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 50 % of Stream.
8. Flow (c.f.s.) 15.7 : Flow compared to Normal: Low X Normal High
9. D.O. 8.8 ppm Temp. 65.7°F % Saturation 95
10. Present Weather Cloudy with rain.
11. Past Weather (last 24 hours) Partly cloudy, hot, and humid.
12. D.O. 8.8 pH 8.1 Temp. 65.7 Conductivity 78 micromho/cm
13. Comments: Sample location upstream of old raceway at George Lowe's property. The stream is fairly silty in areas, however, riffle areas are clean. Excellent trout population.

FISH FIELD DATA FORM

TENNESSEE WILDLIFE RESOURCES AGENCY

Watershed Watauga River
Body of Water Doe Creek
County or River Mile Johnson
Type of Sampling Electrofishing
Gear Type Two backpack shockers side by side @ 350 v. AC

Lat-Long 362533N - 815607W
Date 23 August 1988
Reach 06010103-37,0
Pool Elevation 2216'
Time 1700 - 1745

SPECIES Name	CODE	NUMBER	LENGTH	WT.			
Salmo gairdneri	353	16	2	0.14			
" "	"	35	3	0.68			
" "	"	21	4	0.79			
" "	"	6	5	0.33			
" "	"	5	7	0.75			
" "	"	7	8	1.62			
" "	"	4	9	1.27			
" "	"	3	11	1.63			
" "	"	1	13	0.64			
" "	"	1	14	0.92			
Catostomus commersoni	32	12	1-9	1.16			
Hypentelium nigricans	166	12	2-9	1.21			
Campostoma anomalum	25	439	1-6	7.15			
Rhinichthys atratulus	351	460	1-3	2.59			
Semotilus atromaculatus	360	2	2	0.01			
Etheostoma flabellare	92	2	2	0.01			
Cottus bairdi	39	31	1-3	0.53			

* Label Parameter Listed

Field Notes: 200' sample length. Large number of minnows and small fish escaped capture.

Name of Collector(s): R.D. Bivens, D.E. Lane, D.C. Pollard, L.P. Wilkins, and S.K. Lambert

WR-0525

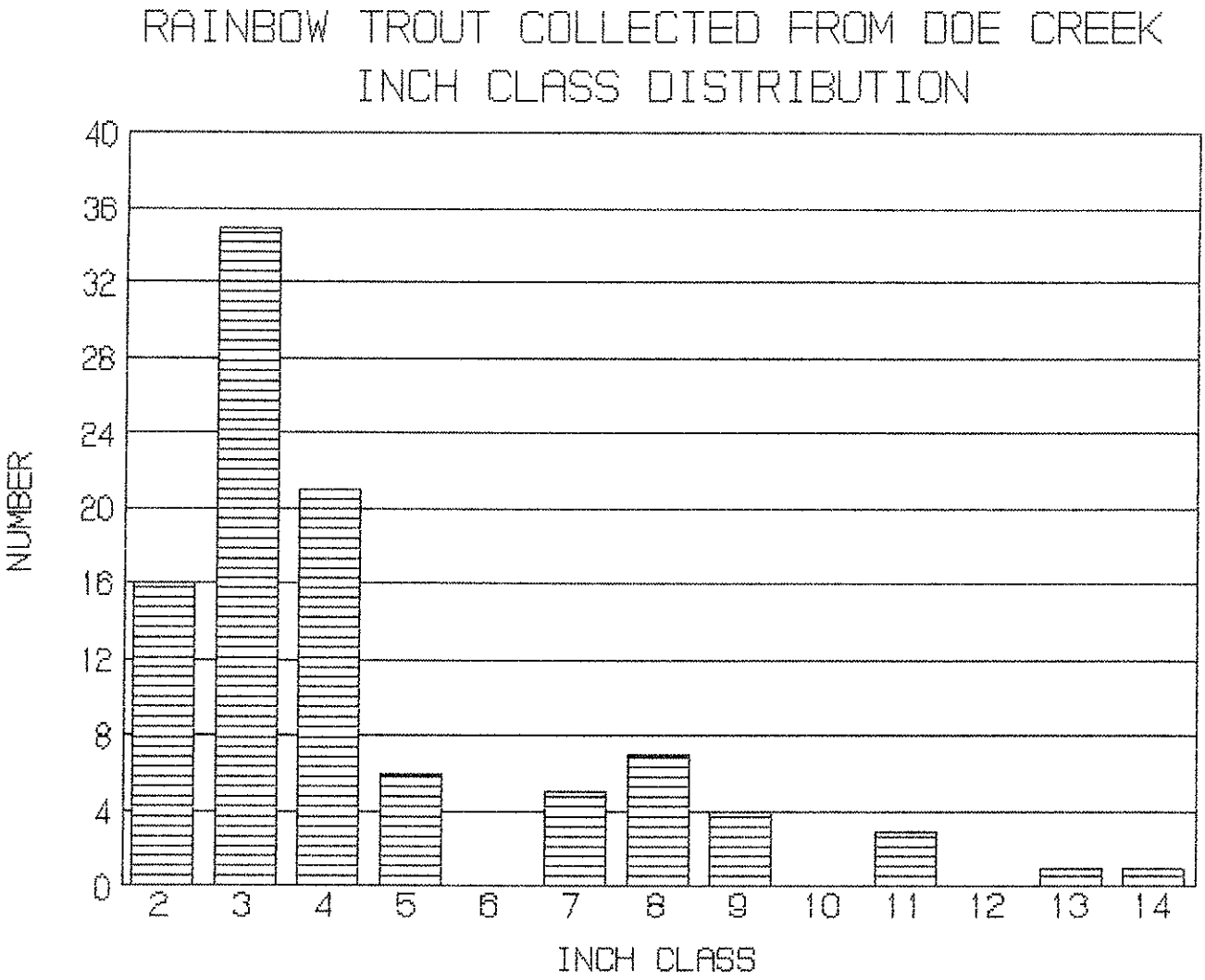

RAINBOW TROUT COLLECTED FROM DOE CREEK
INCH CLASS DISTRIBUTION
NUMBER
0
4
8
12
16
20
24
28
32
36
40
2
3
4
5
6
7
8
9
10
11
12
13
14
INCH CLASS

Figure 12.

Doe Creek: Edge Surber sample

23 August 1988 Field # 112

Johnson Co., TN; At old raceway on George Lowe's property. Coordinates: 362533N - 815607W. Doe, Tenn., # 214 NW Quad. Reach # 06010103-37,0.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Optioservus* larvae	5
adults	6
Psephenidae/*Psephenus herricki*	3
DECAPODA:	
Unid.	1
DIPTERA:	
Chironomidae	4
Tipulidae/*Antocha* larvae	17
pupa	1
EPHEMEROPTERA:	
Caenidae/*Caenis*	2
Heptageniidae/*Stenonema*	2
GASTROPODA:	
Physidae/*Physa*	1
Pleuroceridae/*Goniobasis simplex*	12
PLECOPTERA:	
Perlodidae	2
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	1
Limnephilidae/*Goera* larvae	2
pupa	1
	60

Volumetric Displacement was 0.3 ml.

Doe Creek: Midstream Surber sample

23 August 1988 Field # 112

Johnson Co., TN; At old raceway on George Lowe's property. Coordinates: 362533N - 815607W. Doe, Tenn., # 214 NW Quad. Reach # 06010103-37,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	3
COLEOPTERA:	
Elmidae/*Optioservus* larvae	13
adult	1
Psephenidae/*Psephenus herricki*	2
DECAPODA:	
Unid.	1
DIPTERA:	
Chironomidae larvae	40
pupae	3
Empididae pupa	1
Tipulidae/*Antocha*	2
Hexatoma	4
EPHEMEROPTERA:	
Heptageniidae/*Heptagenia*	4
Stenacron	3
Stenonema	2
Leptophlebiidae/*Paraleptophlebia*	1
GASTROPODA:	
Pleuroceridae/*Goniobasis simplex*	63
PLECOPTERA:	
Perlodidae	4
	147

Volumetric Displacement was 1.2 ml.

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