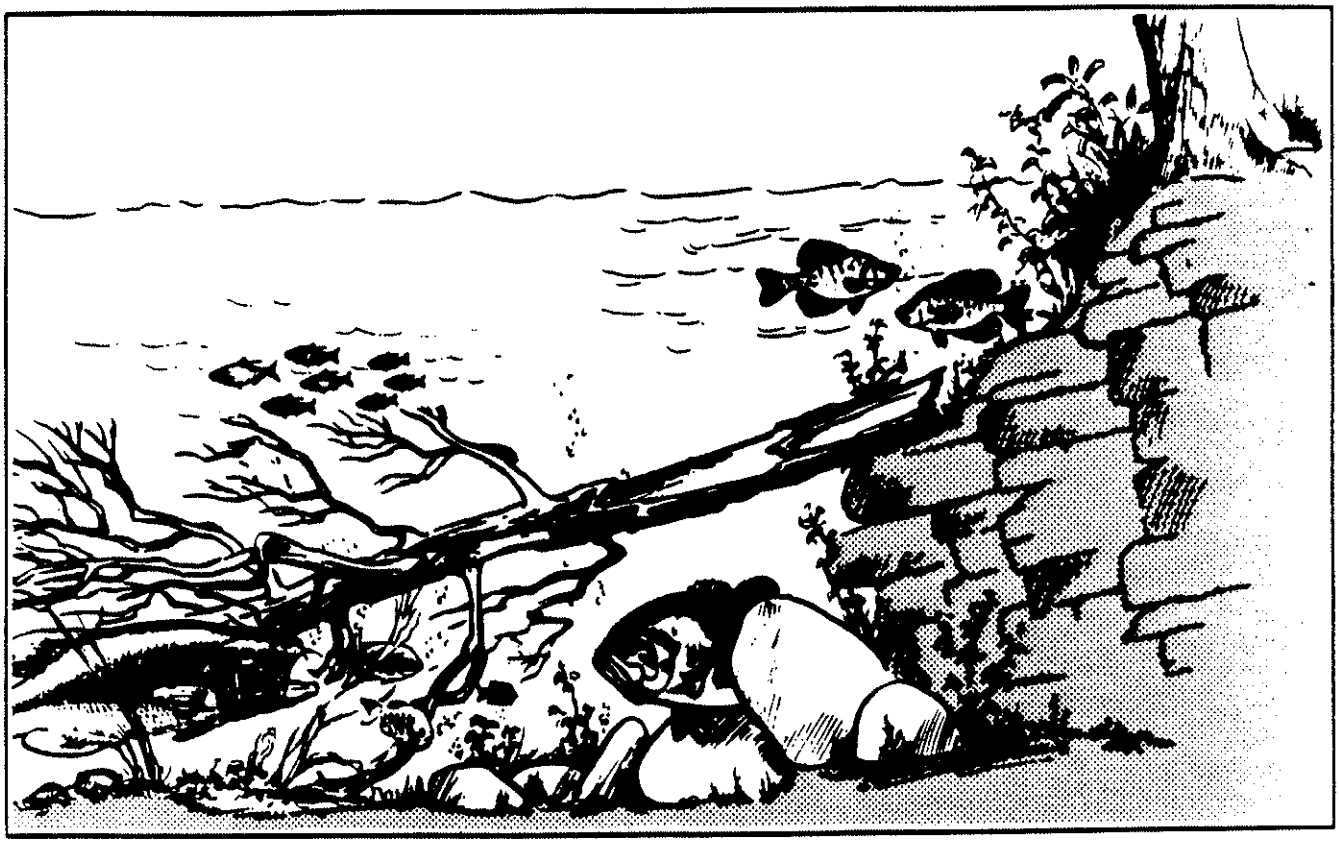
FISHERIES REPORT

93-20

ANNUAL STREAM FISHERY DATA COLLECTION REPORT

REGION IV

1992



Prepared by

Rick D. Bivens
Mark T. Fagg
Carl E. Williams

Tennessee Wildlife Resources Agency

This report contains progress and accomplishments for the following TWRA Projects: "Stream Survey".

Development of this report was financed in part by funds from Federal Aid in Fish and Wildlife Restoration (Public Law 91-503) as documented in Federal Aid Project FW-6 (4321)

INTRODUCTION

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

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

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

Region IV has 4,847 mi of streams that total approximately 14,111 acres. There are approximately 800 mi classified as coldwater streams (TWRA 1990). Except for a few streams in Anderson, Campbell, and Claiborne counties that drain into the Cumberland River system, the streams in Region IV are in the upper Tennessee River drainage. The main river systems in the region are the Clinch, Powell, Little Tennessee, mainstream Tennessee River, French Broad, and Holston.

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

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

METHODS

The streams to be sampled and the methods required are outlined in TWRA Field Request No. 92-4. Two streams on this list were not sampled this year due to scheduling problems. However, seven additional streams were sampled and are included in this report. Field work was conducted from April to October, 1992. Twenty-five fish samples and 11 benthic samples from eighteen streams were collected.

Qualitative fish data were collected using standard electrofishing techniques. Streams were sampled with gasoline-powered backpack electrofishing units capable of producing 120-700 volts AC. They were sampled with backpack shockers, or various combinations of shockers and seines. In general, small streams were sampled with a single backpack unit while larger streams were sampled with multiple units. Two stream samples involved electrofishing followed by the use of Primacord in pools too deep to wade.

Sample length ranged from 100 ft to 600 ft. Most were 400 ft, which is generally enough to include both riffle and pool habitats on the smaller and medium size streams.

Fish were identified in the field and released after being weighed and measured, 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 specimens in our Region IV fish collection. Most of the preserved fish collected this year will also be catalogued into our collection. Others 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. (1991) and Etnier and Starnes (in press).

Game fish were anesthetized with tricaine methanesulfonate (MS-222) and measured to the nearest mm total length and weighed to the nearest g on electronic scales. Non-game fish (suckers, catfish, carp, goldfish, and large shad) and forage fish (minnows, darters, sculpin, and small shad) were enumerated, batch weighed by species, and a length range was obtained. In two cases only species occurrence was noted while in others, only numbers were determined. The length and weight data were later converted to equivalent English units and recorded on Fish Data Forms for the purpose of this report. The letter "t" is recorded where the weight was represented by only a trace amount (less than 0.01 lb).

The fish samples are divided into categories of game fish by species, non-game fish, and forage fish. These are summarized as actual numbers and weights for all fish collected and also as

percentages of the total for each group. All field data are presented along with each summary in the stream accounts.

Qualitative benthic samples were collected from about half of the fish sample sites. These were taken with aquatic insect nets, by rock turning, and by selected pickings from as many different habitats as possible within the sample area. They were, for the most part, timed sampling efforts of 1 h duration and generally made by three collectors, resulting in a total of 3 man-h expended at each site. Taxa richness and relative abundance are the primary considerations of this type of sampling. Taxa richness reflects the health of the aquatic community and biological impairment is reflected in the absence of pollution sensitive taxa such as Ephemeroptera, Plecoptera, and Trichoptera.

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. Organisms were enumerated and attempts were made to identify specimens to species level when possible. Many were identified to genus, and most were identified at least to family. Dr. David A. Etnier, University of Tennessee, examined problematic specimens and either made the determination or confirmed our identifications. Comparisons with identified specimens in our aquatic invertebrate collection were also useful in making determinations. Mark Hughes, Department of Zoology, University of Tennessee, assisted

in identifying the mussel relics we collected. For the most part, nomenclature of aquatic insects used in this report follows Brigham et al. (1982). Names of stoneflies (Plecoptera) are after Stewart and Stark (1988), from which many of the determinations were also made. Benthic results are reported in both table and graphic form with each stream account.

Basic water quality data were taken at most sites in conjunction with the fishery and benthic samples. The sample included dissolved oxygen (DO), temperature, pH, and conductivity. Data were taken from midstream and mid-depth at each site, using a YSI Model 58 DO meter, a YSI model 33 S-C-T meter, and an Orion Model 210 pH meter. Stream velocities were measured with a Marsh-McBirney Model 201D current meter. The Robins-Crawford "rapid crude" technique (as described by Orth 1983) was used to estimate flows. Water quality parameters along with other habitat data were recorded on Field Physiochemical Data Forms and included with each stream account.

Sampling locations were delineated on 7.5 min topographical maps and copies of these have been included in the stream accounts. Tennessee Aquatic Database System (TADS) river reach numbers and quadrangle map coordinates were recorded for all sample sites.

STREAM ACCOUNTS

Indian Creek

One qualitative fishery survey was conducted on Indian Creek in April 1992:

Location and Length - Tributary to the Clinch River (Norris Reservoir). The sample area was located at the first bridge crossing upstream of Norris Reservoir (Dave Jackson Road bridge on county map). It was approximately 200 ft in length and was sampled on 28 April 1992. It was in Grainger County (Howard Quarter Quadrangle).

Sampling Methodology - The site was sampled using one backpack electrofishing unit operating at 120 volts AC.

Water Quality - No data collected.

Benthos Collection - No collection was made.

Fish Collected - (See data sheet for species list)

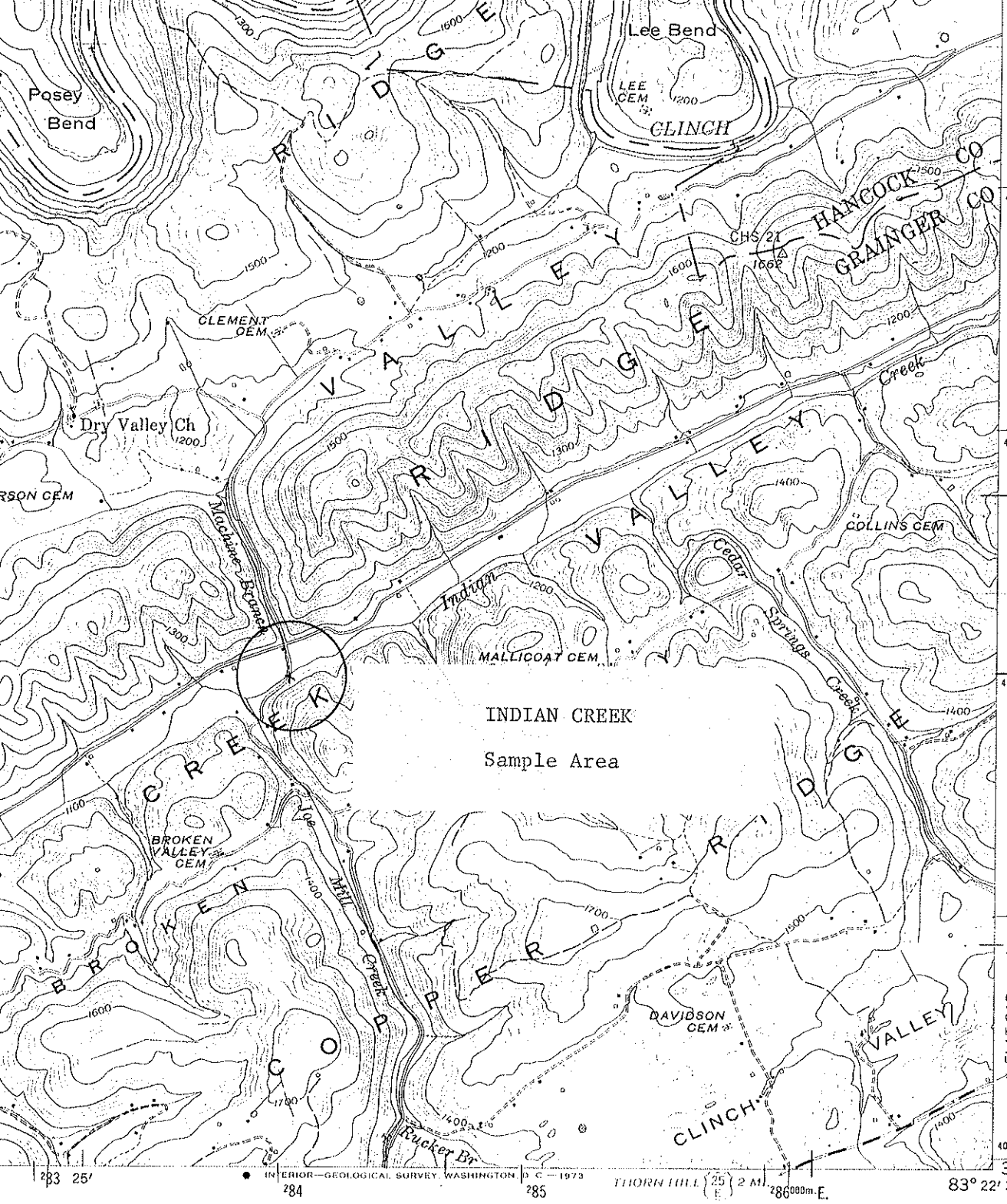
Comments - This stream was sampled primarily to collect fish to use in a Field Day Exhibit to 6th grade students of Grainger, Union, Claiborne, Hancock, and Hawkins counties. While making this collection we took the opportunity to develop a reasonably comprehensive fish species list for TADS. The Agency has made no previous studies or fish collections from this stream.

A total of 20 fish species was collected. Four native game species, smallmouth bass (*Micropterus dolomieu*), rock bass (*Ambloplites rupestris*), bluegill (*Lepomis macrochirus*), and longear sunfish (*L. megalotis*) along with the introduced redbreast sunfish (*L. auritus*) were collected. Two non-game and 13 forage species were also collected here. Of particular interest were fairly intolerant shiner species such as warpaints (*Luxilus coccogenis*) and telescopes (*Notropis telescopus*). Five darter species, the greenside (*Etheostoma blennioides*), rainbow (*E. caeruleum*), fantail (*E. flabellare*), snubnose (*E. simoterum*), and logperch (*Percina caprodes*), were also collected. It is interesting to note the occurrence of the rainbow darter in this stream. The rainbow darter is not very common in east Tennessee, its distribution is sporadic in the Ridge and Valley, and upstream of Knoxville, is known from only a few localities in the Clinch/Powell and upper Holston river systems (Etnier and Starnes in press). Also of interest is the occurrence of the longear sunfish. Longear sunfish are apparently being replaced by the ecologically similar redbreast sunfish in much of the upper Tennessee River drainage (Etnier et al. 1983).

Management Recommendations:

1. Based on fish species occurrence, this stream appears to be a fair to good quality Ridge and Valley stream that should merit extra protection from any source of pollution or habitat destruction.

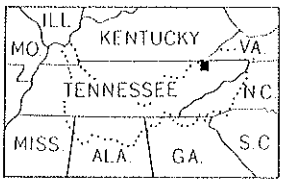
2. Consider conducting a more intensive stream survey that includes both fish and benthic organisms in future work plans.



1 MILE

ROAD CLASSIFICATION

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



QUADRANGLE LOCATION

HOWARD QUARTER, TENN.

N3622.5-W8322.5/7.5

1942

PHOTOREVISED 1971

AMS 4356 IV NW-SERIES V841

FISH DATA

Stream: Indian Creek
Date: 28 April 1992
Watershed: Clinch River
County: Grainger
Area: See comments
Sample Length: 200 ft
Lat-Long: 362335N - 832336W
Reach: 06010205-10,0
Type of Sampling: Electrofishing
Elevation: 1,050 ft
Gear Type: One Backpack Unit
Time: 0745 - 0815

Species	TADS Code	Total Number	Inch Class	Total Weight
Micropterus dolomieu	218	-	-	-
Ambloplites rupestris	13	-	-	-
Lepomis auritus	201	-	-	-
L. macrochirus	206	-	-	-
L. megalotis	208	-	-	-
Hypentelium nigricans	166	-	-	-
Moxostoma duquesnei	229	-	-	-
Campostoma anomalum	25	-	-	-
Hybopsis amblops	155	-	-	-
Luxilus chrysocephalus	249	-	-	-
L. coccogenis	248	-	-	-
Notropis telescopus	272	-	-	-
Pimephales notatus	334	-	-	-
Rhinichthys atratulus	351	-	-	-
Etheostoma blennioides	80	-	-	-
E. caeruleum	84	-	-	-
E. flabellare	92	-	-	-
E. simoterum	111	-	-	-
Percina caprodes	306	-	-	-
Cottus carolinae	40	-	-	-

Site located at the first bridge crossing upstream of Norris Reservoir (Dave Jackson Road on county map). Shocking at 120 volts AC.

Collectors: R.D. Bivens and M.T. Fagg

Swan Creek and Tributary

Two qualitative fishery surveys were conducted on Swan Creek and one sample on one of its tributaries in June and August 1992:

Location and Length - Tributary to the Clinch River. Sample Site 1 was located along Hen Johnson Road, 0.7 mi (by road) upstream of the junction of Hen Johnson Road and Clinch River Road and was sampled on 17 June 1992. It was 400 ft in length and averaged 19.7 ft in width. Site 2 was located upstream of Brewers Gap Road along a private road at about 1,980 ft elevation and was sampled on 11 August 1992. It was 300 ft in length and averaged 11.4 ft in width. Both sites were in Hancock County (Site 1, Swan Island Quadrangle; Site 2, Back Valley Quadrangle). (See accompanying map showing the tributary sample location)

Sampling Methodology - Site 1 was sampled using two backpack electrofishing units operating at 120 volts AC. Site 2 was sampled with one backpack unit operating at 340 volts AC.

Water Quality - Data were collected from midstream at mid-depth at each site. Site 1, 17 June 1992: DO - 9.7 ppm, pH -8.1, Temperature - 66.7 F, Conductivity - 160 micromhos/cm. Site 2, 11 August 1992: DO - 8.9 ppm, pH - 7.7, Temperature - 64.4 F, Conductivity - 40 micromhos/cm.

Benthos Collection - Benthic organisms were collected by conducting a 3 man-h qualitative sample at Site 1 only. The sample contained 490 organisms representing 49 taxa.

Fish Collected:

	Site 1				Site 2
Species	No.	% by No.	Wt.	% by Wt.	No Fish Present
Smallmouth bass	3	0.6	1.23	8.7	
Rock bass	18	3.5	4.31	30.4	
Redbreast sunfish	1	0.2	0.10	0.7	
Bluegill	2	0.4	0.07	0.5	
Non-game Fish	16	3.1	1.97	13.9	
Forage Fish	477	92.2	6.50	45.8	
Total	517		14.18		

Comments - This stream was surveyed primarily to develop a fish species list for TADS and at the request of a local landowner. The Agency has made no previous studies or fish collections from

this stream. The stream heads up on Newman Ridge and flows southeast into the Clinch River near river mi 172.4.

We collected a total of 517 fish weighing 14.18 lb and comprising 22 species from Site 1. Three native game species, smallmouth bass (*Micropterus dolomieu*), rock bass (*Ambloplites rupestris*), and bluegill (*Lepomis macrochirus*) along with the introduced redbreast sunfish (*L. auritus*) were found. Three smallmouth bass, two bluegill, and one redbreast sunfish were collected and only rock bass were found in any numbers at all (Fig. 1). Rock bass made up about 4%, compared to < 1% by smallmouth bass, of the total number of fish collected. Rock bass also contributed about 30% of the total weight as compared to about 9% by smallmouth bass. Two non-game and 16 forage species were also collected here and these comprised about 95% of the total number and 60% of the total weight. Some were represented by few specimens while others were fairly abundant. Of particular interest were the fairly intolerant shiner species such as warpaints (*Luxilus coccogenis*), Tennessee (*Notropis leuciodus*), and telescopes (*N. telescopus*). Telescope shiners were fairly abundant, but only three warpaints and two Tennessee shiners were collected. Six darter species, the greenside (*Etheostoma blennioides*), rainbow (*E. caeruleum*), fantail (*E. flabellare*), redline (*E. rufilineatum*), snubnose (*E. simoterum*), and blueside (*E. stigmaeum jessiae*), were also collected. Central stonerollers (*Campostoma anomalum*), and telescope and striped shiners (*Luxilus chrysocephalus*) were the most abundant forage species present. Fantail and snubnose darters were also fairly abundant here. It is also interesting to note the occurrence of the rainbow darter in this stream. The rainbow darter is not very common in east Tennessee, its distribution is sporadic in the Ridge and Valley, and upstream of Knoxville is known from only a few localities in the Clinch/Powell and upper Holston river systems (Etnier and Starnes in press).

At Site 2, no fish species were present at all. This site was upstream of a series of waterfalls that probably acts as a barrier to fish movement. Upstream of these falls, it is very small with occasional sinks and may have only marginal to no flow conditions especially during periods of drought. This may account for the absence of any fish species.

Based on fish species occurrence, this stream appears to be an excellent quality Ridge and Valley stream. A total of 22 species was collected and as stated above, several were fairly intolerant forms, even though the stream probably receives considerable run-off from agricultural and other activities in the watershed. The occurrence of six darter species further attests to good water quality. The rock bass is the primary game species present and it appears to support a fair fishery in the lower stream reach. Additional sampling in the unnamed tributary failed to produce any additional species for the watershed, however six species were collected here (See accompanying data sheet for species list).

Benthic macroinvertebrates from sample Site 1 included Baetidae, Caenidae, Ephemerellidae, Ephemeridae, Heptageniidae, Oligoneuriidae, and Leptophlebiidae mayflies, *Neoperla* and *Perlesta* stoneflies, Hydropsychidae, Leptoceridae, and Philopotamidae caddisflies, and Dryopidae, Elmidae, Gyrinidae, and Psephenidae beetles. Gastropods included limpets (*Ferrissia*) and *Physa* snails. An unidentified *Cambarus* sp. and *Orconectes erichsonianus* were the only crayfish collected. Trichopterans represented about 46%, ephemeropterans about 19%, coleopterans about 10%, odonates about 8%, and plecopterans about 6% of the total number of organisms collected (Fig. 2). A total of 49 taxa was collected at this site, many of which were intolerant forms.

Management Recommendations:

1. The fish species diversity and taxa richness of benthic macroinvertebrates and the presence of many intolerant forms indicate that this is a fair to good quality Ridge and Valley stream that merits extra protection from any source of pollution or habitat destruction.

UNITED STATES
TENNESSEE VALLEY AUTHORITY
MAPS AND SURVEYS BRANCH

SWAN ISLAND QUADRANGLE
Tenn. - 162 NE

PHYSIOCHEMICAL DATA

A. LOCATION:

Stream: Swan Creek — Date: 17 June 1992

Watershed: Clinch River — County: Hancock

Area: Site # 1 — Sample Length: 400 ft

Lat-Long: 362907N - 831807W — Reach: 06010205-

Data Collected By: Mark T. Fagg, Carl E. Williams, and Willard Perryman

B. PHYSICAL CHARACTERISTICS:

1. Avg. Width 19.7 ft Avg. Depth 0.7 ft Max. Depth 2.1 ft
2. Estimated Percent of Stream in Pools is 25%.
3. Estimated Percent **Pool** Bottom is Silt 15% Sand 10% Gravel 5% Rubble 25% Boulders 15% Bedrock 30%.
4. Estimated Percent **Riffle** Bottom is Silt 10% Sand 5% Gravel 25% Rubble 25% Boulders 35%.
5. Abundance of Littoral Aquatic Plants is Scarce.
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 10% of the Stream, Average in 25%, Poor in 65%.
7. Shade or Canopy Good over 50% of Stream.
8. Flow (CFS) 3.3: Compared to Normal: Normal
9. Present Weather: Overcast, hazy and warm. Air temperature 79 F @ 10:00 am.
10. Weather (last 24 h): Partly cloudy and warm.
11. pH 8.1 Temp. 66.7 F Conductivity 160 micromhos/cm D.O. 9.7 ppm Saturation 106%
12. Comments: Sample area location was along Hen Johnson Road, 0.7 mi (by road) upstream of the junction of Hen Johnson Road and Clinch River Road. Tobacco farming all around, cattle in stream.

FISH DATA

Stream: Swan Creek
Date: 17 June 1992
Watershed: Clinch River
County: Hancock
Area: Site # 1
Sample Length: 400 ft
Lat-Long: 362907N - 831807W
Reach: 06010205-
Type of Sampling: Electrofishing
Elevation: 1,140 ft
Gear Type: 2 Backpack Units
Time: 1315 - 1400

Species	TADS Code	Total Number	Inch Class	Total Weight
Micropterus dolomieu	220	2	9	0.69
" "	"	1	10	0.54
Ambloplites rupestris	13	3	4	0.21
" "	"	1	5	0.09
" "	"	5	6	0.94
" "	"	5	7	1.38
" "	"	3	8	1.15
" "	"	1	9	0.54
Lepomis auritus	201	1	5	0.10
L. macrochirus	206	1	3	0.02
" "	"	1	4	0.05
Hypentelium nigricans	166	14	1-9	1.89
Moxostoma duquesnei	229	2	4	0.08
Campostoma anomalum	25	190	1-5	3.99
Hybopsis amblops	155	6	2-3	0.06
Luxilus chrysocephalus	249	54	2-5	1.05
L. coccogenis	248	3	3	0.05
Nocomis micropogon	234	1	7	0.17
Notropis leuciodus	255	2	2	0.01
N. telescopus	272	82	2-3	0.46
Pimephales notatus	334	3	2-3	0.04
Rhinichthys atratulus	351	14	1-2	0.08

Site located along Hen Johnson Road, 0.7 mi (by road) upstream of the junction of Hen Johnson Road and Clinch River Road. Shocking at 120 volts AC. One lamprey escaped capture.

Collectors: M.T. Fagg, C.E. Williams, and W Perryman

FISH DATA (continued)

Stream: Swan Creek
Date: 17 June 1992
Watershed: Clinch River
County: Hancock
Area: Site # 1
Sample Length: 400 ft
Lat-Long: 362907N - 831807W
Reach: 06010205-
Type of Sampling: Electrofishing
Elevation: 1,140 ft
Gear Type: 2 Backpack Units
Time: 1315 - 1400

Species	TADS Code	Total Number	Inch Class	Total Weight
Etheostoma blennioides	80	2	2	0.02
E. caeruleum	84	9	1	0.03
E. flabellare	92	45	1-2	0.17
E. rufilineatum	108	6	2	0.05
E. simoterum	111	26	1	0.03
E. stigmaeum jessiae	96	4	1-2	0.02
Cottus carolinae	40	30	1-3	0.27

Site located along Hen Johnson Road, 0.7 mi (by road) upstream of the junction of Hen Johnson Road and Clinch River Road. Shocking at 120 volts AC. One lamprey escaped capture.

Collectors: M.T. Fagg, C.E. Williams, and W. Perryman

Swan Creek: Site # 1, Qualitative Benthic Sample

17 June 1992 Field # 359

Hancock Co., TN; Along Hen Johnson Road, 0.7 mi upstream of the Clinch River Road bridge. Coordinates: 362907N - 831807W. Swan Island, Tenn., # 162 NE Quad. Reach # 06010205-.

TAXA	NUMBER
COLEOPTERA:	
Dryopidae/*Helichus* adult	1
Elmidae/*Dubiraphia* adult	1
Dubiraphia larva	1
Macronychus glabratus adult	1
Optioservus larvae	9
Stenelmis larvae	13
Gyrinidae/*Dineutus discolor* males & female	3
Psephenidae/*Psephenus herricki* larvae & adult	21
DECAPODA:	
Cambaridae/*Cambarus* sp. juvenile male	1
Orconectes erichsonianus 2nd form males	4
Orconectes erichsonianus female	1
DIPTERA:	
Athericidae/*Atherix lantha*	1
Chironomidae larvae	17
Simuliidae	6
Tabanidae/*Tabanus*	4
Tipulidae/*Antocha*	1
Hexatoma	6
EPHEMEROPTERA:	
Baetidae/*Baetis*	14
Caenidae/*Caenis*	6
Ephemerellidae/*Eurylophella*	11
Ephemeridae/*Hexagenia*	13
Heptageniidae/*Epeorus rubidus/subpallidus*	2
Stenacron interpunctatum	1
Stenonema early instars	12
Stenonema ithaca	6
S. mediopunctatum	5
Oligoneuriidae/*Isonychia*	19
Leptophlebiidae/*Habrophlebiodes*	3
GASTROPODA:	
Ancylidae/*Ferrissia*	1
Physidae/*Physa*	1

Swan Creek: Site # 1, Qualitative Sample cont.

TAXA	NUMBER
HEMIPTERA:	
Gerridae/*Gerris remigis* female	1
Veliidae/*Microvelia*	5
Rhagovelia obesa female	1
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	8
Nigronia serricornis	3
Sialidae/*Sialis*	1
ODONATA:	
Aeshnidae/Basiaeschna *janata*	1
Boyeria vinosa	2
Calopterygidae/*Calopteryx*	2
Coenagrionidae/*Argia*	6
Cordulegastridae/*Cordulegaster maculata*	4
Gomphidae/*Gomphus* early instars	6
Gomphus lividus	5
Hagenius brevistylus	3
Stylogomphus albistylus	4
PLECOPTERA:	
Perlidae/*Neoperla*	1
Perlesta	26
TRICHOPTERA:	
Hydropsychidae/*Ceratopsyche bronta*	20
C. cheilonis	3
C. sparna	30
Cheumatopsyche	157
Leptoceridae/*Triaenodes* pupa	1
Philopotamidae/*Chimara*	15
	490

ROCK BASS FROM SWAN CREEK
SITE 1
INCH CLASS DISTRIBUTION

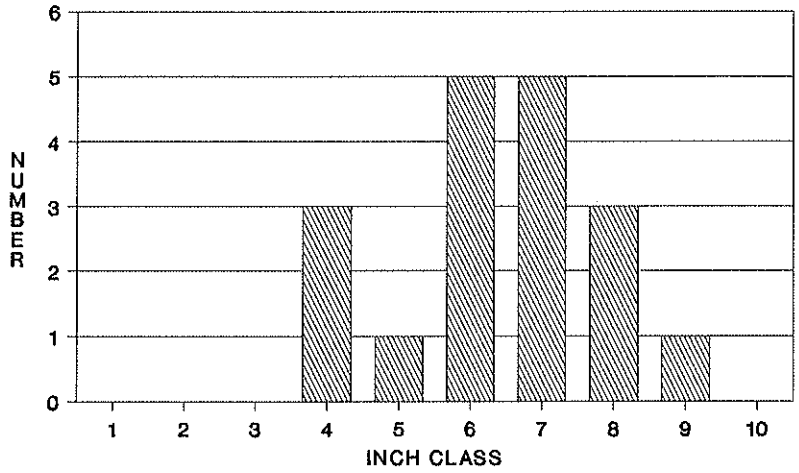
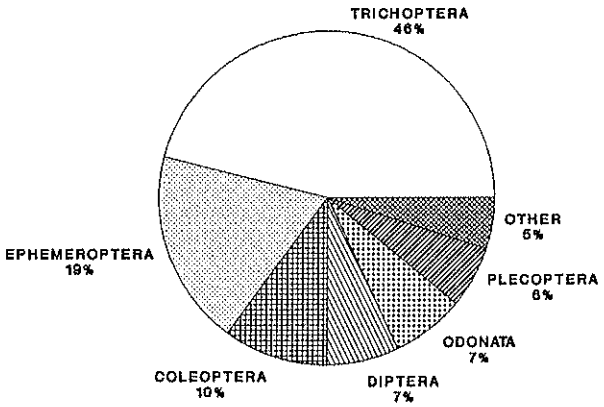


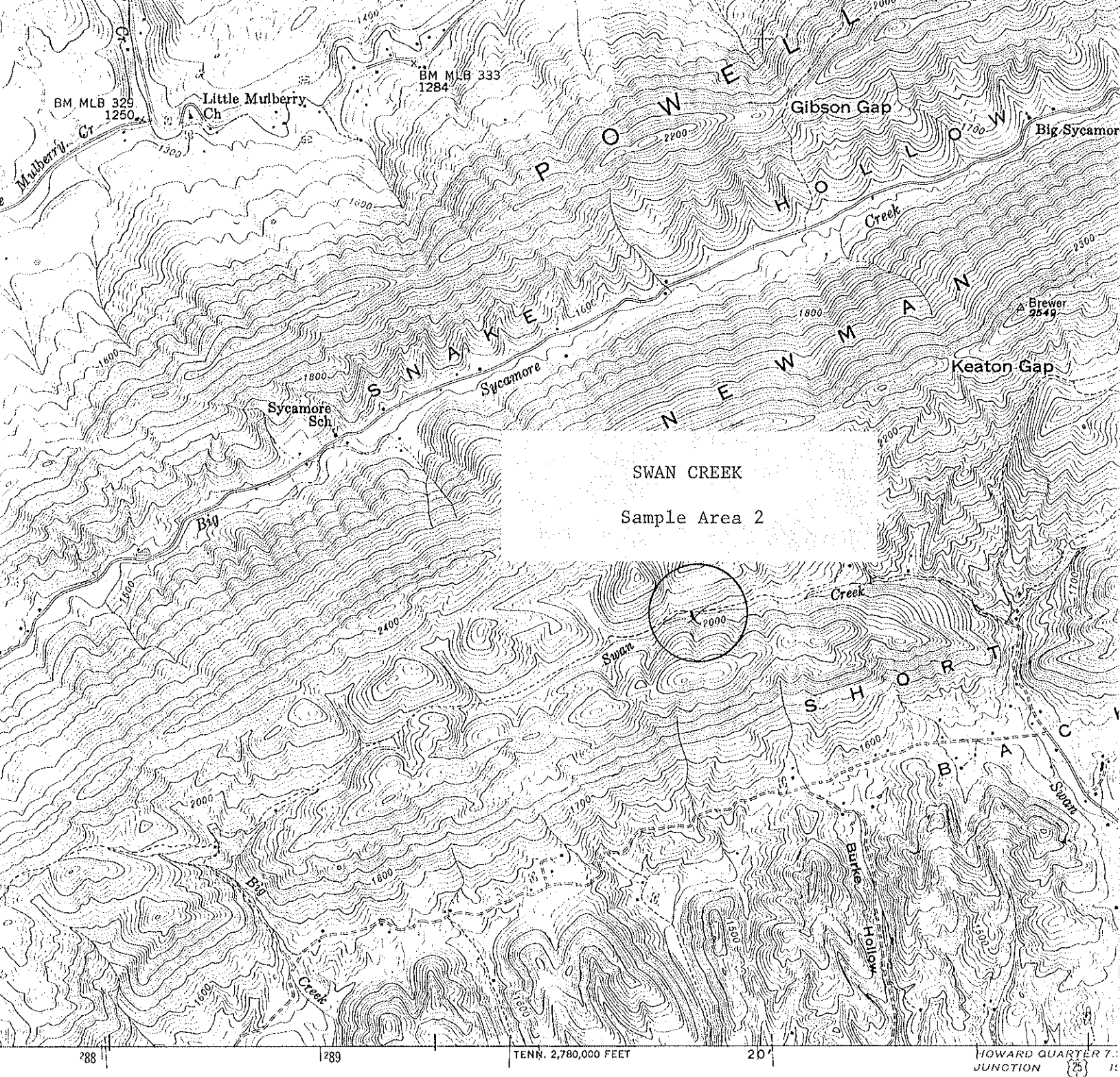
Figure 1.

SWAN CREEK
SITE 1
BENTHIC MACROINVERTEBRATES



PERCENT OF TOTAL NUMBER OF ORGANISMS

n = 490
TAXA RICHNESS = 49
Figure 2.



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by USGS, USC&GS, and Tennessee Valley Authority

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na from aerial photographs taken 1969. This informa
checked

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BACK VALLEY QUADRANGLE
Tenn.-Va. - 161 SE

PHYSIOCHEMICAL DATA

A. LOCATION:

Stream: Swan Creek — Date: 11 August 1992

Watershed: Clinch River — County: Hancock

Area: Site # 2 — Sample Length: 300 ft

Lat-Long: 363103N - 832013W — Reach: 06010205-

Data Collected By: Mark T. Fagg, Carl E. Williams, and Doug Scott

B. PHYSICAL CHARACTERISTICS:

1. Avg. Width 11.4 ft Avg. Depth 0.2 ft Max. Depth 1.4 ft
2. Estimated Percent of Stream in Pools is 25%.
3. Estimated Percent Pool Bottom is Silt 15% Sand 15% Gravel 5% Rubble 10% Bedrock 50% Mud 5%.
4. Estimated Percent Riffle Bottom is Silt 10% Sand 20% Gravel 25% Rubble 15% Boulders 30%.
5. Abundance of Littoral Aquatic Plants is Scarce.
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 10% of the Stream, Average in 20%, Poor in 70%.
7. Shade or Canopy Good over 80% of Stream.
8. Flow (CFS) 0.12: Compared to Normal: Normal
9. Present Weather: Partly cloudy.
   Air temperature - 75 F @ 9:50 am.
10. Weather (last 24 h): Partly cloudy.
11. pH 7.7 Temp. 64.4 F Conductivity 40 micromhos/cm
    D.O. 8.9 ppm Saturation 95%
12. Comments: Sample area was located upstream of Brewers Gap Road along a private road at about 1,980 ft elevation. Small headwater stream with scattered pools among bedrock and very silty in places. No fish present at all.

UNITED STATES
TENNESSEE VALLEY AUTHORITY
MAPS AND SURVEYS BRANCH

TRIBUTARY to SWAN CREEK

Sample Area

SWAN ISLAND QUADRANGLE
Tenn. - 162 NE

FISH DATA

Stream: Trib. to Swan Creek
Date: 17 June 1992

Watershed: Clinch River
County: Hancock

Area: See comments
Sample Length: 200 ft

Lat-Long: 362922N - 831933W
Reach: 06010205-

Type of Sampling: Electrofishing
Elevation: 1,190 ft

Gear Type: One Backpack Unit
Time: 1635 - 1700

Species	TADS Code	Total Number	Inch Class	Total Weight
Hypentelium nigricans	166	2	-	-
Campostoma anomalum	25	12	-	-
Luxilus chrysocephalus	249	2	-	-
Rhinichthys atratulus	351	27	-	-
Semotilus atromaculatus	360	8	-	-
Etheostoma flabellare	92	36	-	-
E. simoterum	111	6	-	-
Orconectes erichsonianus		7		

Avg. width - 4 to 5 ft
Avg. depth - 0.3 ft
Boulder - cobble - rubble substrate; silty.
Spotty canopy covering.

Site located on unnamed trib. to Swan Creek at the bridge crossing on Lone Road; just off Hwy. 33. Shocking at 120 volts AC.

Collectors: M.T. Fagg and C.E. Williams

Indian Creek

Two qualitative fishery surveys were conducted on Indian Creek in June 1992:

Location and Length - Tributary to the Powell River. Sample Site 1 was located 0.1 mi downstream of the ford on Greers Chapel Road near stream mi 2.3 and was sampled on 18 June 1992. It was 500 ft in length and averaged 61.2 ft in width. Site 2 was located 1.1 mi upstream of the bridge crossing on Hwy. 63, near stream mi 4.8 and was sampled on 19 June 1992. It was 600 ft in length and averaged 50.3 ft in width. Both sites were in Claiborne County (Wheeler Quadrangle).

Sampling Methodology - Site 1 was sampled using one backpack electrofishing unit operating at 120 volts AC shocking into a 20 ft seine on the riffle areas, while shorelines and pools were electrofished with two backpack units. Site 2 was sampled with one backpack unit operating at 120 volts AC shocking into a 20 ft seine on the riffle areas, while shorelines were electrofished, and the pool area was sampled with Primacord.

Water Quality - Data were collected from midstream at mid-depth at each site. Site 1 on 18 June 1992: DO - 9.6 ppm, pH - 8.3, Temperature - 64 F, Conductivity - 250 micromhos/cm. Site 2 on 19 June 1992: DO - 11.2 ppm, pH - 8.3 Temperature - 64 F, Conductivity - 255 micromhos/cm.

Benthos Collection - Benthic organisms were collected by conducting a 2 man-h qualitative sample at Site 1 and a 3 man-h qualitative sample at Site 2. Site 1 sample contained 211 organisms representing 39 taxa. Site 2 sample contained 453 organisms representing 68 taxa.

Fish Collected:

	Site 1				Site 2			
Species	No.	% by No.	Wt.	% by Wt.	No.	% by No.	Wt.	% by Wt.
Smallmouth bass	2	0.3	0.47	2.8	11	1.1	3.46	7.6
Rock bass	34	4.3	5.32	32.1	63	6.4	12.51	27.3
Bluegill	7	0.9	0.42	2.5	8	0.8	0.51	1.1
Redear sunfish					1	0.1	0.07	0.2
Non-game Fish	13	1.6	2.50	15.1	31	3.2	9.89	21.6
Forage Fish	733	92.9	7.88	47.5	865	88.4	19.33	42.2
Total	789		16.59		979		45.77	

Comments - We sampled two sites on this stream primarily to develop a fish species list and to collect stream data for TADS. The Agency has made no previous studies or fish collections from this stream. However, one site on Indian Creek was included in the 1968 survey of the Powell River drainage basin (Tennessee Valley Authority 1970).

We collected 789 fish weighing 16.59 lb and comprising 24 species from Site 1. Three native game fish species, smallmouth bass (*Micropterus dolomieu*), rock bass (*Ambloplites rupestris*), and bluegill (*Lepomis macrochirus*) were collected. Only two smallmouth bass and 7 small bluegill were collected at this site, therefore, inch class distribution was compiled for rock bass only (Fig. 3). Rock bass made up about 4%, as compared to < 1% by both smallmouth and bluegill, of the total number of fish collected. Rock bass also made up about 32% of the total weight of all fish collected. Two non-game and 19 forage species were also collected and these comprised 95% of the total number and 63% of the total weight. Forage fish made up about 93% of the total number and about 48% of the total weight. Of particular interest is the occurrence of fairly intolerant species such as the Tennessee shiner (*Notropis leuciodus*), telescope shiner (*N. telescopus*), and the stargazing minnow (*Phenacobius uranops*). Both Tennessee and telescope shiners were fairly abundant. Darter species included the greenside (*Etheostoma blennioides*), fantail (*E. flabellare*), redline (*E. rufilineatum*), snubnose (*E. simoterum*), and the logperch (*Percina caprodes*). Another species of interest was the northern studfish (*Fundulus catenatus*). Although it is widely distributed, it is not commonly encountered in east Tennessee streams. Stonerollers (*Campostoma anomalum*) and redline darters were the most abundant forage species present.

At Site 2 we collected a total of 979 fish weighing 45.77 lb and comprising 24 species. Game fish from this site included smallmouth bass, rock bass, bluegill, and a single specimen of redear sunfish (*Lepomis microlophus*). Comparison of inch class distribution was made for smallmouth bass and rock bass at this site (Fig. 4). Rock bass made up about 6%, compared to about 1% by smallmouth bass, of the total number of fish collected. Rock bass also contributed about 27% of the total weight as compared to about 8% by rock bass. Three non-game and 17 forage species were also collected here and these comprised about 92% of the total number and 64% of the total weight. Forage species made up about 88% of the total number and 42% of the total weight. Additional species collected here but not at the downstream site included single specimens each of redear sunfish, longnose gar (*Lepisosteus osseus*), rainbow darter (*Etheostoma caeruleum*), and banded darter (*E. zonale*). Of particular interest, as with Site 1, is the occurrence of fairly intolerant species such as the warpaint shiner (*Luxilus coccogenis*), Tennessee shiner, telescope shiner, and redline darter. All were collected in large numbers. Also of interest, is the occurrence of the rainbow darter at this site. The rainbow darter is not very common in east Tennessee,

its distribution is sporadic in the Ridge and Valley, and upstream of Knoxville, is known from only a few localities in the Clinch/Powell and upper Holston river systems (Etnier and Starnes in press). Stonerollers were the most abundant forage species present at this site.

Based on fish species occurrence, this stream appears to be an excellent quality Ridge and Valley stream. A total of 28 species was collected from the two sample sites combined, and as stated above, several were fairly intolerant forms. The occurrence of seven darter species further attests to good water quality. With the exception of about seven species, our species list compares fairly well with that of the 1968 survey (Tennessee Valley Authority 1970). They collected 21 species from one sample site compared to our 28 from two sites. They collected three species that we did not collect in our samples and we collected nine species that they did not collect. A large part of this difference was accounted for by five darter species collected in our samples. Smallmouth bass and rock bass are the primary game species present and the stream appears to support a good to excellent fishery, especially for rock bass. Although our samples were only qualitative, it was apparent that Site 2 supported a greater abundance of both intolerant forage fishes and game species. Relative abundances of smallmouth bass, rock bass, and warpaint shiners, Tennessee shiners, and telescope shiners, for instance, were nearly double that of Site 1 in some cases. However, total species diversity was similar at both sites. The inherent difficulty in backpack electrofishing large streams with deep pools may account for some of this variation.

Benthic macroinvertebrates from our sample at Site 1 included Baetidae, Ephemerellidae, Heptageniidae, Oligoneuriidae, and Potamanthidae mayflies, the perlid stonefly *Perlesta placida*, Hydropsychidae, Leptoceridae, and Philopotamidae caddisflies, and Elmidae, Eubriidae, and Psephenidae beetles. The Asian clam (*Corbicula fluminea*) and fingernail clams (*Sphaerium*) were present along with pleurocerid snails. A single relic *Villosa vanuxemensis* was collected. *Cambarus bartonii* was the only crayfish species collected. Trichopterans represented about 28%, dipterans and ephemeropterans each about 16%, gastropods about 11%, odonates about 10%, and plecopterans < 1% of the total number of organisms collected (Fig. 5). A total of 39 taxa was collected at this site.

Benthic macroinvertebrates from our sample at Site 2 included Baetidae, Caenidae, Ephemerellidae, Ephemeridae, Heptageniidae, Leptophlebiidae, Oligoneuriidae, and Potamanthidae mayflies, Peltoperla and Perlidae stoneflies, Hydropsychidae, Hydroptilidae, Leptoceridae, Philopotamidae, Polycentropodidae, Rhyacophilidae, and Uenoidae caddisflies, and Dryopidae, Elmidae, and Psephenidae beetles. Fingernail clams were present along with pleurocerid and *Physa* snails. Relics of *Villosa iris*, *V. vanuxemensis*, and *Ptychobranchus subtentum* were also collected. Two crayfish species, *Cambarus bartonii* and *C. longirostris*, were

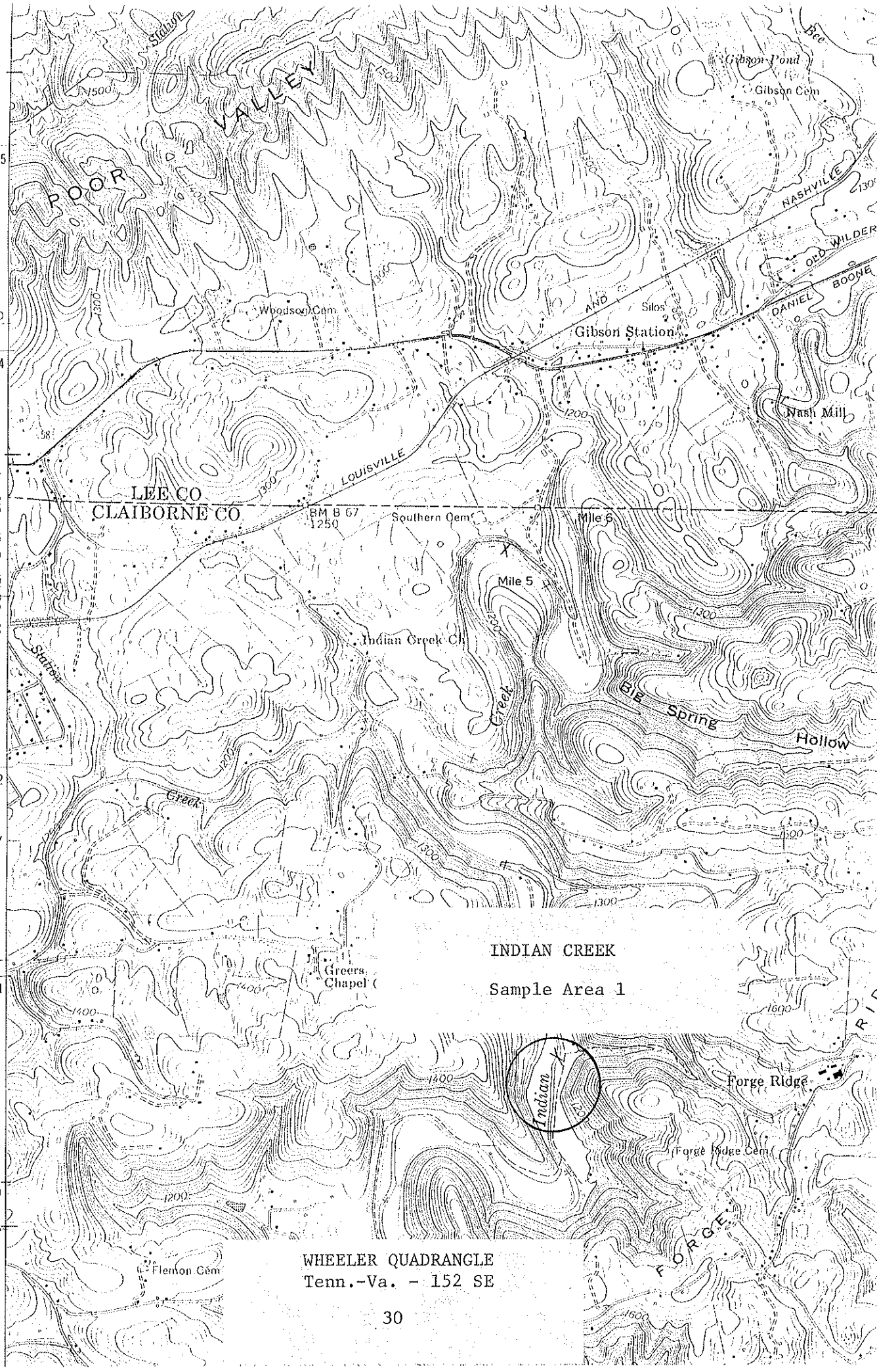
collected at this site. Ephemeropterans represented about 32%, trichopterans about 16%, odonates about 11%, coleopterans and isopods each about 9%, dipterans about 6%, and plecopterans about 5% of the total number of organisms collected (Fig. 6). A total of 68 taxa was collected at this site.

As with the fish, there was an obvious difference in benthic organisms between the two sample sites. Both abundance and total taxa collected at Site 2 was significantly greater when compared to Site 1. More than double the total number of organisms and 29 more taxa were collected at the upstream site. Some of the difference in abundance may be accounted for by the greater sampling effort at Site 2 (3 man-h at Site 2 versus 2 man-h at Site 1), however, the 43% overall increase in total taxa should probably not be attributed to increased sampling effort. It was obvious to the collectors that both abundance and diversity was lower at Site 1.

Management Recommendations:

1. The fish species diversity and taxa richness of benthic macroinvertebrates and the presence of many intolerant forms indicate that this is a good to excellent quality Ridge and Valley stream that merits extra protection from any source of pollution or habitat destruction.

2. Consider conducting more intensive population surveys in future work plans, i.e., quantitative three-pass electro-fishing samples along with age and growth characteristics.



INDIAN CREEK

Sample Area 1

WHEELER QUADRANGLE
Tenn.-Va. - 152 SE

PHYSIOCHEMICAL DATA

A. LOCATION:

Stream: Indian Creek — Date: 18 June 1992

Watershed: Powell River — County: Claiborne

Area: Site # 1 — Sample Length: 500 ft

Lat-Long: 363426N - 833543W — Reach: 06010206-24,0

Data Collected By: Mark T. Fagg, Carl E. Williams, and Chester J. Ellison

B. PHYSICAL CHARACTERISTICS:

1. Avg. Width 61.2 ft Avg. Depth 0.8 ft Max. Depth 3.2 ft
2. Estimated Percent of Stream in Pools is 30%.
3. Estimated Percent **Pool** Bottom is Silt 10% Sand 25% Gravel 35% Rubble 30%.
4. Estimated Percent **Riffle** Bottom is Sand 10% Gravel 30% Rubble 35% Boulders 25%.
5. Abundance of Littoral Aquatic Plants is Average (*Dianthera americana*).
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25% of the Stream, Average in 65%, Poor in 10%.
7. Shade or Canopy Good over 90% of Stream.
8. Flow (CFS) 82.4: Compared to Normal: Slightly High
9. Present Weather: Light rain, overcast.
   Air temperature - 72 F @ 10:30 am.
10. Weather (last 24 h): Partly cloudy, warm and humid.
    Scattered showers.
11. pH 8.3 Temp. 63.7 F Conductivity 250 micromhos/cm
    D.O. 9.6 ppm Saturation 103%
12. Comments: Sample area location was 0.1 mi downstream of the ford on Greers Chapel Road near stream mi 2.3.

FISH DATA

Stream: Indian Creek
Date: 18 June 1992

Watershed: Powell River
County: Claiborne

Area: Site # 1
Sample Length: 500 ft

Lat-Long: 363426N - 833543W
Reach: 06010206-24,0

Type of Sampling: Electrofishing
Elevation: 1,000 ft

Gear Type: 2 Backpack Units & Seine
Time: 1130 - 1400

Species	TADS Code	Total Number	Inch Class	Total Weight
Micropterus dolomieu	218	1	5	0.07
" "	"	1	9	0.40
Ambloplites rupestris	13	1	1	t
" "	"	1	2	0.02
" "	"	2	3	0.08
" "	"	3	4	0.23
" "	"	13	5	1.37
" "	"	7	6	1.36
" "	"	4	7	1.05
" "	"	3	8	1.21
Lepomis macrochirus	206	7	4	0.42
Hypentelium nigricans	166	7	3-11	2.22
Moxostoma duquesnei	229	6	4-5	0.28
Campostoma anomalum	25	169	1-5	2.65
Cyprinella galactura	253	4	1-3	0.02
Erimystax insignis	160	2	3	0.02
Hybopsis amblops	155	4	2	0.02
Luxilus chrysocephalus	249	64	2-6	1.20
L. coccogenis	248	31	2-4	0.32
Nocomis micropogon	234	11	3-8	0.68
Notropis leuciodus	255	85	1-3	0.35
N. telescopus	272	51	2	0.24

Site located 0.1 mi downstream of the ford on Greers Chapel Road near stream mi 2.3. Shocking at 120 volts AC into a 20 ft seine on the riffle areas, and electrofishing the shoreline and pools with two units.

Collectors: M.T. Fagg, C.E. Williams, and C. Ellison

FISH DATA (continued)

Stream: Indian Creek
Date: 18 June 1992

Watershed: Powell River
County: Claiborne

Area: Site # 1
Sample Length: 500 ft

Lat-Long: 363426N - 833543W
Reach: 06010206-24,0

Type of Sampling: Electrofishing
Elevation: 1,000 ft

Gear Type: 2 Backpack Units & Seine
Time: 1130 - 1400

Species	TADS Code	Total Number	Inch Class	Total Weight
Phenacobius uranops	330	2	3	0.02
Pimephales notatus	334	2	1	t
Rhinichthys atratulus	351	3	1-2	0.01
Fundulus catenatus	137	3	3-4	0.08
Etheostoma blennioides	80	33	2-4	0.44
E. flabellare	92	9	1-2	0.03
E. rufilineatum	108	165	1-2	0.80
E. simoterum	111	8	1-2	0.03
Percina caprodes	306	3	3	0.05
Cottus carolinae	40	84	1-3	0.92

Site located 0.1 mi downstream of the ford on Greers Chapel Road near stream mi 2.3. Shocking at 120 volts AC into a 20 ft seine on the riffle areas, and electrofishing the shoreline and pools with two units.

Collectors: M.T. Fagg, C.E. Williams, and C. Ellison

Indian Creek: Site # 1, Qualitative Benthic Sample

18 June 1992 Field # 361

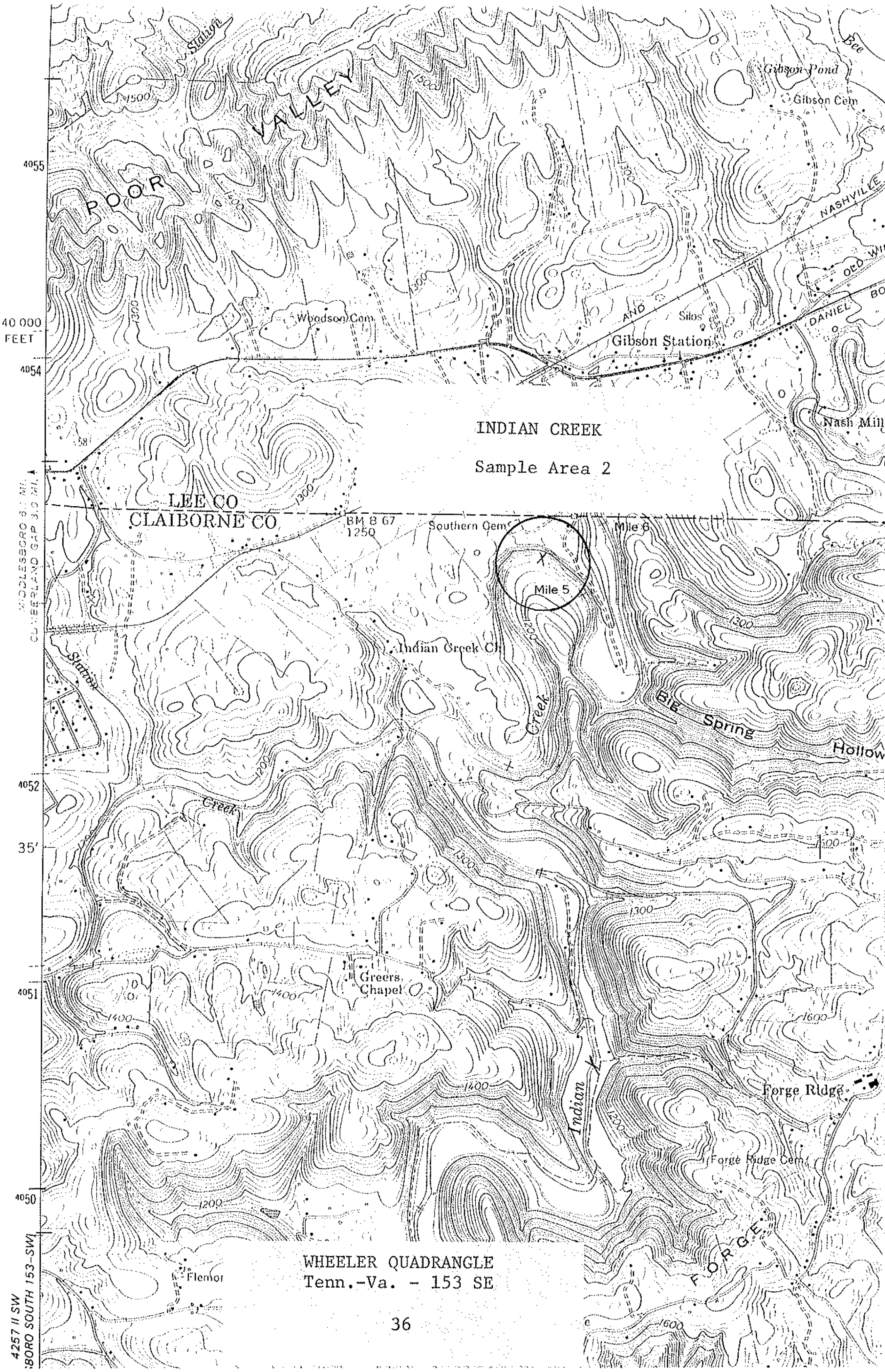
Claiborne Co., TN; 0.1 mi downstream from the ford on Greers Chapel Road; at the junction of the gravel road leading to Forge Ridge. Coordinates 363426N - 833543W. Wheeler, Tenn.-Va., # 153 SE Quad. Reach # 06010206-24,0.

TAXA	NUMBER
ANNELIDA:	
Hirudinea	1
Oligochaeta	1
COLEOPTERA:	
Elmidae/*Optioservus trivittatus* adult	1
Stenelmis larva & adult	2
Eubriidae/*Ectopria*	1
Psephenidae/*Psephenus herricki*	5
DECAPODA:	
Cambaridae/*Cambarus bartonii* 2nd form males	3
Cambarus bartonii female	1
DIPTERA:	
Athericidae/*Atherix lantha*	12
Chironomidae	9
Simuliidae	9
Tipulidae/*Hexatoma*	4
EPHEMEROPTERA:	
Baetidae/*Baetis*	24
Ephemerellidae/*Eurylophella*	2
Heptageniidae/*Stenonema*	6
Oligoneuriidae/*Isonychia*	1
Potamanthidae/*Potamanthus*	1
GASTROPODA:	
Pleuroceridae/*Anculosa subglobosa*	18
Unidentified	5
HEMIPTERA:	
Veliidae/*Rhagovelia obesa* male	1
ISOPODA:	
Asellidae/*Lirceus*	3
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	9
Nigronia serricornis	3

Indian Creek: Site 1, Qualitative Sample cont.

TAXA	NUMBER
ODONATA:	
Aeshnidae/*Boyeria vinosa*	5
Calopterygidae/*Calopteryx*	1
Coenagrionidae/*Argia*	3
Gomphidae/*Gomphus* (Genus A *consanguis*) *	3
Gomphus lividus	5
Hagenius brevistylus	2
Macromiidae/*Macromia*	3
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	3
Sphaeriidae/*Sphaerium*	2
Unionidae/*Villosa vanuxemensis* relic	
PLECOPTERA:	
Perlidae/*Perlesta placida*	2
TRICHOPTERA:	
Hydropsychidae/*Ceratopsyche bronta*	2
C. cheilonis	39
C. sparna	4
Cheumatopsyche	5
Hydropsyche betteni/depravata	7
Leptoceridae/*Triaenodes*	2
Philopotamidae/*Chimara*	1
	211

* (from Louton 1982)



INDIAN CREEK

Sample Area 2

WHEELER QUADRANGLE
Tenn.-Va. - 153 SE

PHYSIOCHEMICAL DATA

A. LOCATION:

Stream: Indian Creek — Date: 19 June 1992

Watershed: Powell River — County: Claiborne

Area: Site # 2 — Sample Length: 600 ft

Lat-Long: 363545N - 833553W — Reach: 06010206-24,0

Data Collected By: Mark T. Fagg, Carl E. Williams, and Chester J. Ellison

B. PHYSICAL CHARACTERISTICS:

1. Avg. Width 50.3 ft Avg. Depth 1.1 ft Max. Depth 2.6 ft
2. Estimated Percent of Stream in Pools is 40%.
3. Estimated Percent **Pool** Bottom is Silt 5% Rubble 20% Boulders 30% Bedrock 45%.
4. Estimated Percent **Riffle** Bottom is Sand 10% Gravel 10% Rubble 20% Boulders 25% Bedrock 35%.
5. Abundance of Littoral Aquatic Plants is Average (*Dianthera americana*).
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 45% of the Stream, Average in 45%, Poor in 10%.
7. Shade or Canopy Good over 80% of Stream.
8. Flow (CFS) 77.8: Compared to Normal: Slightly High
9. Present Weather: Partly cloudy and warm. Air temperature - 76 F @ 10:00 am.
10. Weather (last 24 h): Scattered thunderstorms, warm and humid.
11. pH 8.3 Temp. 64 F Conductivity 255 micromhos/cm D.O. 11.2 ppm Saturation 120%
12. Comments: Sample area location was 1.1 mi upstream of the bridge crossing on Hwy. 63, near stream mi 4.8. Mussel relics collected. Cattle have access to the stream.

FISH DATA

Stream: Indian Creek
Date: 19 June 1992

Watershed: Powell River
County: Claiborne

Area: Site # 2
Sample Length: 600 ft

Lat-Long: 363545N - 833553W
Reach: 06010206-24,0

Type of Sampling: Electrofishing and Primacord
Elevation: 1,140 ft

Gear Type: 2 Backpack Units
Time: 1240 - 1715

Species	TADS Code	Total Number	Inch Class	Total Weight
Micropterus dolomieu	218	3	3	0.07
" "	"	3	8	0.75
" "	"	3	9	1.10
" "	"	1	11	0.60
" "	"	1	12	0.94
Ambloplites rupestris	13	1	3	0.04
" "	"	4	4	0.29
" "	"	17	5	1.88
" "	"	23	6	4.21
" "	"	11	7	3.09
" "	"	7	8	3.00
Lepomis macrochirus	206	3	3	0.04
" "	"	4	4	0.29
" "	"	1	5	0.15
L. microlophus	209	1	4	0.07
Hypentelium nigricans	166	26	3-12	5.16
Moxostoma duquesnei	229	4	4-16	3.13
Lepisosteus osseus	198	1	26	1.60

Site located 1.1 mi upstream of the bridge crossing on Hwy. 63, near stream mi 4.8. Shocking at 120 volts AC into a 20 ft seine on the riffle areas, electrofishing the shorelines, and using Primacord in the pool area.

Collectors: M.T. Fagg, C.E. Williams, C. Ellison, D. Byrd, and R. Ayers

FISH DATA (continued)

Stream: Indian Creek
Date: 19 June 1992
Watershed: Powell River
County: Claiborne
Area: Site # 2
Sample Length: 600 ft
Lat-Long: 363545N - 833553W
Reach: 06010206-24,0
Type of Sampling: Electrofishing and Primacord
Elevation: 1,140 ft
Gear Type: 2 Backpack Units
Time: 1240 - 1715

Species	TADS Code	Total Number	Inch Class	Total Weight
Campostoma anomalum	25	236	2-7	10.40
Cyprinella galactura	253	9	1-5	0.10
Hybopsis amblops	155	20	2-3	0.13
Luxilus coccogenis	248	136	1-4	1.90
L. chrysocephalus	249	45	2-5	1.04
Nocomis micropogon	234	49	3-7	2.94
Notropis leuciodus	255	148	1-3	0.72
N. telescopus	272	57	1-3	0.32
Pimephales notatus	334	1	1	t
Etheostoma blennioides	80	30	2-4	0.61
E. caeruleum	84	1	1	t
E. flabellare	92	1	2	t
E. rufilineatum	108	91	1-3	0.57
E. simoterum	111	12	1-2	0.05
E. zonale	134	1	2	t
P. caprodes	306	9	3-4	0.16
Cottus carolinae	40	19	3	0.39

Site located 1.1 mi upstream of the bridge crossing on Hwy 63, near stream mi 4.8. Shocking at 120 volts AC into a 20 ft seine on the riffle areas, electrofishing the shorelines, and using Primacord in the pool area.

Collectors: M.T. Fagg, C.E. Williams, C. Ellison, D. Byrd, and R. Ayers

Indian Creek: Site # 2, Qualitative Benthic Sample

19 June 1992 Field # 362

Claiborne Co., TN; Located 1.1 mi upstream of the Hwy. 63 bridge crossing. Coordinates: 363545N - 833553W. Wheeler, Tenn.-Va., # 153 SE Quad. Reach # 06010206-24,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Dryopidae/*Helichus* adults	2
Elmidae/*Dubiraphia* adult	1
Microcylloepus pusillus adults	2
Optioservus larva	1
Promoresia larva	1
Stenelmis larvae	8
Stenelmis adults	5
Psephenidae/*Psephenus herricki* larvae	22
DECAPODA:	
Cambaridae/*Cambarus bartonii* 2nd form males	4
Cambarus bartonii females	2
C. longirostris 2nd form male	1
DIPTERA:	
Athericidae/*Atherix lantha*	3
Chironomidae larvae & pupa	7
Simuliidae	13
Tabanidae/*Tabanus*	1
Tipulidae/*Antocha*	1
Hexatoma	2
EPHEMEROPTERA:	
Baetidae/*Baetis*	35
Caenidae/*Brachycerus*	2
Caenis	4
Ephemerellidae/*Ephemerella*	1
Eurylophella	13
Serratella	3
Ephemeridae/*Hexagenia*	7
Heptageniidae/*Epeorus rubidus/subpallidus*	1
Heptagenia	6
Stenacron interpunctatum	12
Stenonema early instars	4
Stenonema mediopunctatum	11
S. modestum	1
S. terminatum	1
Leptophlebiidae/*Habrophlebiodes*	1

Indian Creek: Site # 2, Qualitative Sample cont.

TAXA	NUMBER
EPHEMEROPTERA: (cont.)	
Oligoneuriidae/*Isonychia*	39
Potamanthidae/*Potamanthus*	3
GASTROPODA:	
Physidae/*Physa*	3
Pleuroceridae/*Anculosa subglobosa*	9
Unidentified	9
HEMIPTERA:	
Corixidae	7
Veliidae/*Rhagovelia obesa* nymph	1
Rhagovelia obesa adult females	2
ISOPODA:	
Asellidae/*Lirceus*	41
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	5
Nigronia serricornis	5
ODONATA:	
Aeshnidae/*Boyeria vinosa*	1
Calopterygidae/*Calopyteryx*	7
Coenagrionidae/*Argia*	2
Enallagma	3
Cordulegastridae/*Cordulegaster maculata*	3
Gomphidae/*Dromogomphus spinosus*	3
Gomphus early instars	2
Gomphus (Genus A *consanguis*) *	7
G. lividus	5
Hagenius brevistylus	11
Lanthus vernalis	1
Stylogomphus albistylus	1
Macromiidae/*Macromia*	5
PELECYPODA:	
Sphaeriidae/*Sphaerium*	4
Unionidae/*Villosa iris* and *V. vanuxemensis* relics	
Ptychobranchus subtentum relic	
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	1
Perlidae/*Acroneuria evoluta*	1
Neoperla	6
Paragnetina media	6
Perlesta	8

Indian Creek: Site # 2, Qualitative Sample cont.

TAXA	NUMBER
TRICHOPTERA:	
Hydropsychidae/*Ceratopsyche cheilonis*	17
Cheumatopsyche	2
Hydropsyche betteni/depravata	20
H. frisoni	6
Hydroptilidae/*Hydroptila*	2
Leptoceridae/*Triaenodes*	2
Philopotamidae/*Chimara*	13
Polycentropodidae/*Polycentropus*	1
Rhyacophilidae/*Rhyacophila fuscula*	8
Uenoidae/*Neophylax*	1
	453

* (from Louton 1982)

ROCK BASS FROM INDIAN CREEK
SITE 1
INCH CLASS DISTRIBUTION

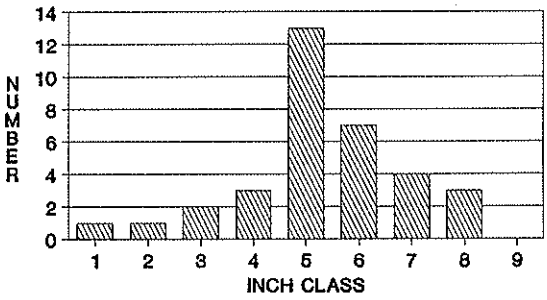


Figure 3.

GAME FISH FROM INDIAN CREEK
SITE 2
INCH CLASS DISTRIBUTION

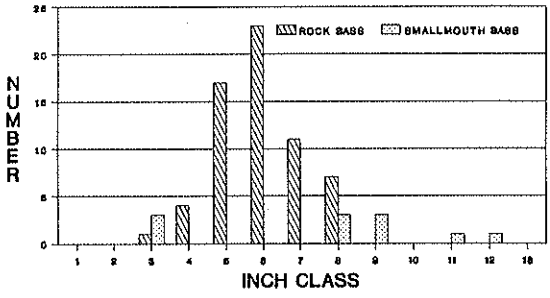
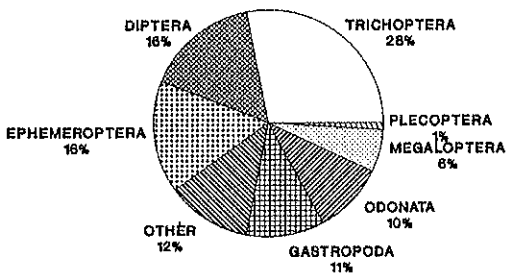


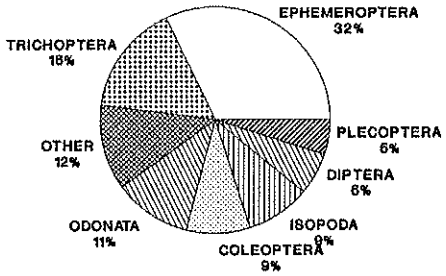
Figure 4.

INDIAN CREEK
SITE 1
BENTHIC MACROINVERTEBRATES



PERCENT OF TOTAL NUMBER OF ORGANISMS
n = 211
TAXA RICHNESS = 39
Figure 5.

INDIAN CREEK
SITE 2
BENTHIC MACROINVERTEBRATES



PERCENT OF TOTAL NUMBER OF ORGANISMS
n = 453
TAXA RICHNESS = 68
Figure 6.

Fork Creek and Tributary

Two qualitative fishery surveys were conducted on Fork Creek and one sample on one of its tributaries in October 1992:

Location and Length - Tributary to the Little Tennessee River (Tellico Reservoir). Sample Site 1 was located approx. 0.5 mi (by road) upstream of the road intersection at Eve Mills and just downstream of Cumberland Stand Church. It was 400 ft in length and averaged 21.4 ft in width. Site 2 was located at the bridge on Randolph Fridley Road, approx. 0.8 mi NE of Howard Spring. It was approx. 400 ft in length and averaged approx. 10.0 ft in width. Both sites (and the tributary) were sampled on 21 October 1992. All were in Monroe County (Site 1, Loudon Quadrangle; Site 2, Sweetwater Quadrangle). (See accompanying map showing the tributary location)

Sampling Methodology - Site 1 was sampled using two backpack electrofishing units operating at 120 volts AC. Site 2 was sampled with a single backpack unit operating at 120 volts AC.

Water Quality - Data were collected from midstream at mid-depth on 21 October 1992. Site 1: DO - 9.0 ppm, pH - 8.1, Temperature - 51 F, Conductivity - 250 micromhos/cm. Site 2: Temperature - 62 F, Conductivity - 265 micromhos/cm.

Benthos Collection - Benthic organisms were collected by conducting a 3 man-h qualitative sample at Site 1 only. The sample contained 389 organisms representing 28 taxa.

Fish Collected:

	Site 1				Site 2	
Species	No.	% by No.	Wt.	% by Wt.	No.	% by No.
Largemouth bass	1	0.5	0.17	4.7	3	1.1
Green sunfish	5	2.5	0.16	4.5	22	8.4
Bluegill	1	0.5	0.21	5.8	35	13.5
Hybrid sunfish					1	0.4
Non-game Fish	12	6.0	0.77	21.4	21	8.1
Forage Fish	182	90.5	2.28	63.5	178	68.5
Total	201		3.59		260	

(See accompanying data sheet for fish species collected from the tributary site)

Comments - We sampled two sites on Fork Creek and one site on its Howard Spring tributary, primarily to develop a fish species list and to collect stream data for TADS. We were also interested in checking the possible occurrence of the flame chub (*Hemitremia flammea*) from the Howard Spring tributary. The Agency has made no previous studies or fish collections from this stream.

We collected a total of 201 fish weighing 3.59 lb and comprising eight species from Site 1. Three native game species, largemouth bass (*Micropterus salmoides*), green sunfish (*Lepomis cyanellus*), and bluegill (*L. macrochirus*) were present. One 7-in largemouth and a single 6-in bluegill along with 5 small green sunfish were collected. Game fish accounted for only about 3% by number and 15% by weight of all fish collected. One non-game and four forage species were collected here and these comprised about 97% of the total number and 85% of the total weight. Forage species made up over 90% of the total number and 63% of the total weight. All were tolerant forms and only one darter species, the snubnose (*Etheostoma simoterum*), was collected. All species were collected in small numbers except for the banded sculpin (*Cottus carolinae*). Banded sculpin were the most abundant species present and accounted for almost 78% of the total number of fish collected.

At Site 2 we collected 260 fish comprising ten species. Game fish were found in greater numbers here than at Site 1 and they accounted for about 23% of the total number of fish collected. Three largemouth bass, one of which was 10-in, and 22 green sunfish and 35 bluegill were collected. One bluegill x green sunfish hybrid was also found. Two non-game and five forage fish were also collected here and with the exception of the northern hog sucker (*Hypentelium nigricans*) and creek chub (*Semotilus atromaculatus*), all were collected at the downstream site. These comprised about 77% of the total number collected at this site. Banded sculpin were again the most abundant forage species present and accounted for almost half of the total number of fish collected.

No flame chubs were found in the tributary sample and no additional species were encountered either. In all, only ten species were collected from the three sample sites. Fork Creek is a low gradient stream that has been heavily impacted by non-point source pollution, mainly agricultural activities, throughout the watershed. The stream has open and eroding banks and is very silty and dingy. The fish species assemblage were typical components of streams with polluted conditions and as stated above, no intolerant forms were collected. The low numbers of tolerant fish species found in our survey indicates a severely impaired system.

Benthic macroinvertebrates from our sample at Site 1 included Baetidae, Heptageniidae, and Oligoneuriidae mayflies, the perlid stonefly (*Paragnetina media*), hydropsychid caddisflies, and elmid beetles. The Asian clam (*Corbicula*

fluminea) was present along with pleurocerid and *Physa* snails and limpets (*Ferrissia*). *Cambarus longirostris* was the only crayfish collected at Site 1 (*C. bartonii* was found at Site 2). Trichopterans represented about 37%, hemipterans about 14%, dipterans about 10%, ephemeropterans about 9%, gastropods about 8%, odonates 5%, and plecopterans about 3% of the total number of organisms collected (Fig. 7). A total of only 28 taxa was collected at this site, most of which were tolerant forms.

Management Recommendations:

1. This stream is being adversely impacted by non-point pollution from agricultural sources and no management other than trying to reduce this pollution can be suggested at this time.

LOUDON QUADRANGLE
Tenn. - 131 NE

PHYSIOCHEMICAL DATA

A. LOCATION:

Stream: Fork Creek — Date: 21 October 1992

Watershed: Little Tennessee River — County: Monroe

Area: Site # 1 — Sample Length: 400 ft

Lat-Long: 353835N - 841912W — Reach: 06010204-2,1

Data Collected By: Rick D. Bivens, Mark T. Fagg, Carl E. Williams, and Paul Stodola

B. PHYSICAL CHARACTERISTICS:

1. Avg. Width 21.4 ft Avg. Depth 0.6 ft Max. Depth 4.0 ft
2. Estimated Percent of Stream in Pools is 40%.
3. Estimated Percent **Pool** Bottom is Mud 10% Silt 30% Sand 20% Gravel 20% Rubble 10% Boulders 10%.
4. Estimated Percent **Riffle** Bottom is Mud 5% Silt 10% Sand 15% Gravel 40% Rubble 20% Boulders 10%.
5. Abundance of Littoral Aquatic Plants is Scarce.
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25% of the Stream, Average in 40%, Poor in 35%.
7. Shade or Canopy Good over 90% of Stream.
8. Flow (CFS): 8.6: Compared to Normal: Normal
9. Present Weather: Partly cloudy and cool. Air temperature - 56 F @ 9:30 am.
10. Weather (last 24 h): Clear and cool.
11. pH 8.1 Temp. 51.3 F Conductivity 250 micromhos/cm D.O. 9.0 ppm Saturation 82%
12. Comments: Sample area location was approx. 0.5 mi (by road) upstream of road junction at Eve Mill and just downstream of Cumberland Stand Church. The stream is very silty, with mud 1 to 2 in deep in pools. Severe stream bank erosion. The stream is impacted by agricultural practices along the entire watershed.

FISH DATA

Stream: Fork Creek
Date: 21 October 1992

Watershed: Little Tennessee River
County: Monroe

Area: Site # 1
Sample Length: 400 ft

Lat-Long: 353835N - 841912W
Reach: 06010204-2,1

Type of Sampling: Electrofishing
Elevation: 875 ft

Gear Type: 2 Backpack Units
Time: 1100 - 1130

Species	TADS Code	Total Number	Inch Class	Total Weight
Micropterus salmoides	220	1	7	0.17
L. cyanellus	202	1	2	0.02
" "	"	3	3	0.08
" "	"	1	4	0.06
L. macrochirus	206	1	6	0.21
Catostomus commersoni	32	12	2-10	0.77
Campostoma anomalum	25	21	1-5	0.30
Rhinichthys atratulus	155	1	2	t
Etheostoma simoterum	111	4	1-2	0.02
Cottus carolinae	40	156	1-5	1.96

Site located approx. 0.5 mi (by road) upstream of the road junction at Eve Mill and just downstream of Cumberland Stand Church. Shocking at 120 volts AC. Siltation was heavy along the stream course.

Collectors: R.D. Bivens, M.T. Fagg, C.E. Williams, and P. Stodola

Fork Creek: Site # 1, Qualitative Benthic Sample

21 October 1992 Field # 402

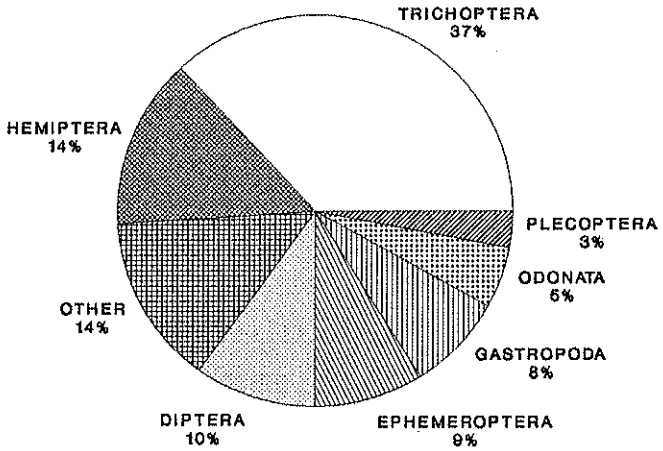
Monroe Co., TN; Approx. 0.5 mi (by road) upstream of the road junction at Eve Mills and just downstream of Cumberland Stand Church. Coordinates: 353835N - 841912W. Loudon, Tenn., # 131 NE Quad. Reach # 06010204-2,1.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	3
COLEOPTERA:	
Elmidae/*Macronychus glabratus* adults	2
Stenelmis larva	1
Stenelmis adult	1
DECAPODA:	
Cambaridae/*Cambarus longirostris* 1st form males	2
DIPTERA:	
Chironomidae	8
Simuliidae	6
Tabanidae/*Chrysops*	1
Tabanus	3
Tipulidae/*Tipula*	21
EPHEMEROPTERA:	
Baetidae/*Baetis*	6
Heptageniidae/*Stenacron*	3
Oligoneuriidae/*Isonychia*	27
GASTROPODA:	
Ancylidae/*Ferrissia*	2
Physidae/*Physa*	1
Pleuroceridae	29
HEMIPTERA:	
Corixidae	5
Gerridae/*Trepobates pictus* males	4
Trepobates pictus female	1
Veliidae/*Rhagovelia obesa* males	7
Rhagovelia obesa females	38
ISOPODA:	
Asellidae/*Asellus*	1
Lirceus	4

Fork Creek: Site # 1, Qualitative Sample cont.

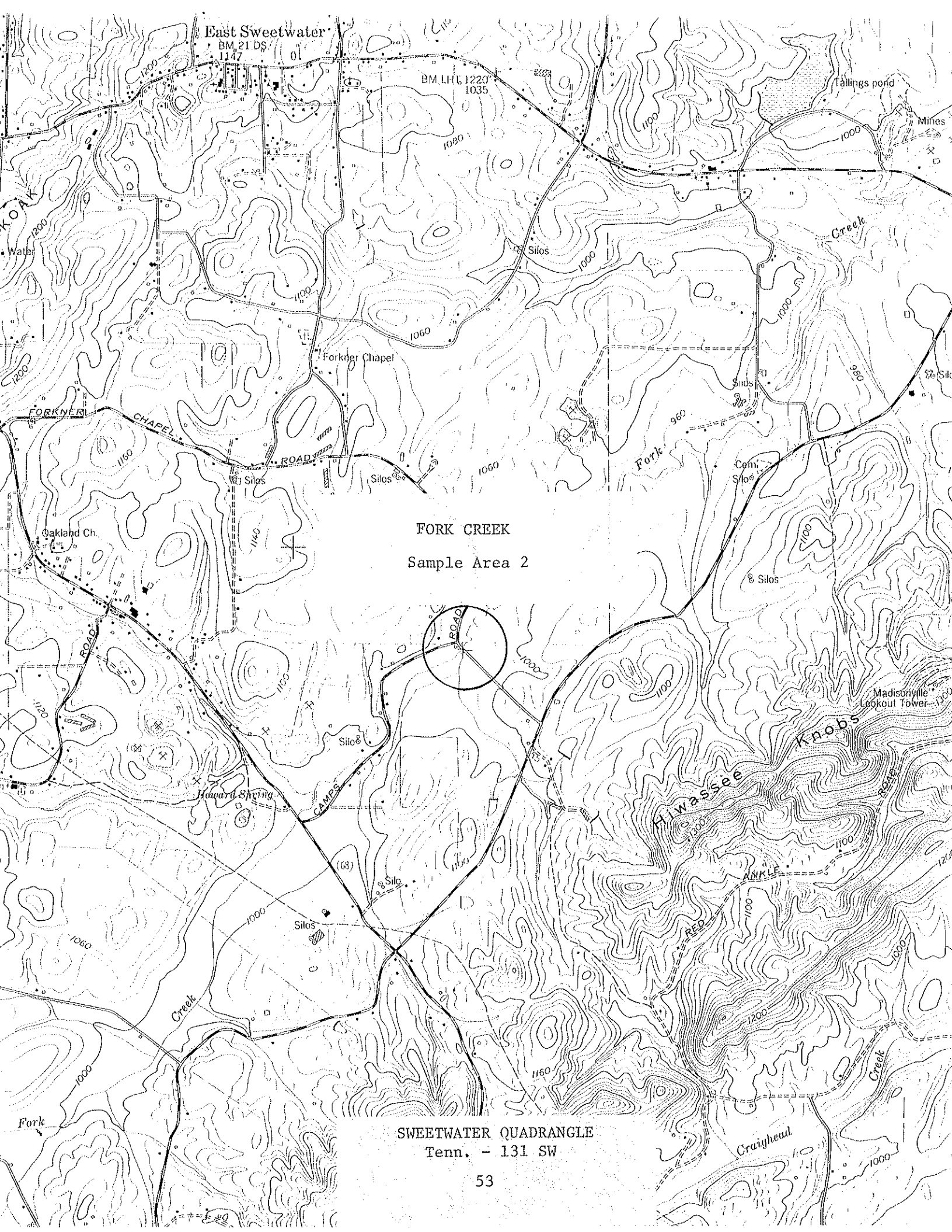
TAXA	NUMBER
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	1
Sialidae/*Sialis*	16
ODONATA:	
Calopterygidae/*Calopteryx*	8
Gomphidae/*Gomphus* early instars	10
Gomphus lividus	3
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	17
PLECOPTERA:	
Perlidae/*Paragnetina media*	13
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	112
Hydropsyche betteni/depravata	33
	389

FORK CREEK
SITE 1
BENTHIC MACROINVERTEBRATES



PERCENT OF TOTAL NUMBER OF ORGANISMS

n = 389
TAXA RICHNESS = 28
Figure 7.



FORK CREEK

Sample Area 2

SWEETWATER QUADRANGLE
Tenn. - 131 SW

FISH DATA

Stream: Fork Creek
Date: 21 October 1992

Watershed: Little Tennessee River
County: Monroe

Area: Site # 2
Sample Length: 400 ft

Lat-Long: 353442N - 842423W
Reach: 06010204-2,1

Type of Sampling: Electrofishing
Elevation: 970 ft

Gear Type: 1 Backpack Unit
Time: 1345 - 1415

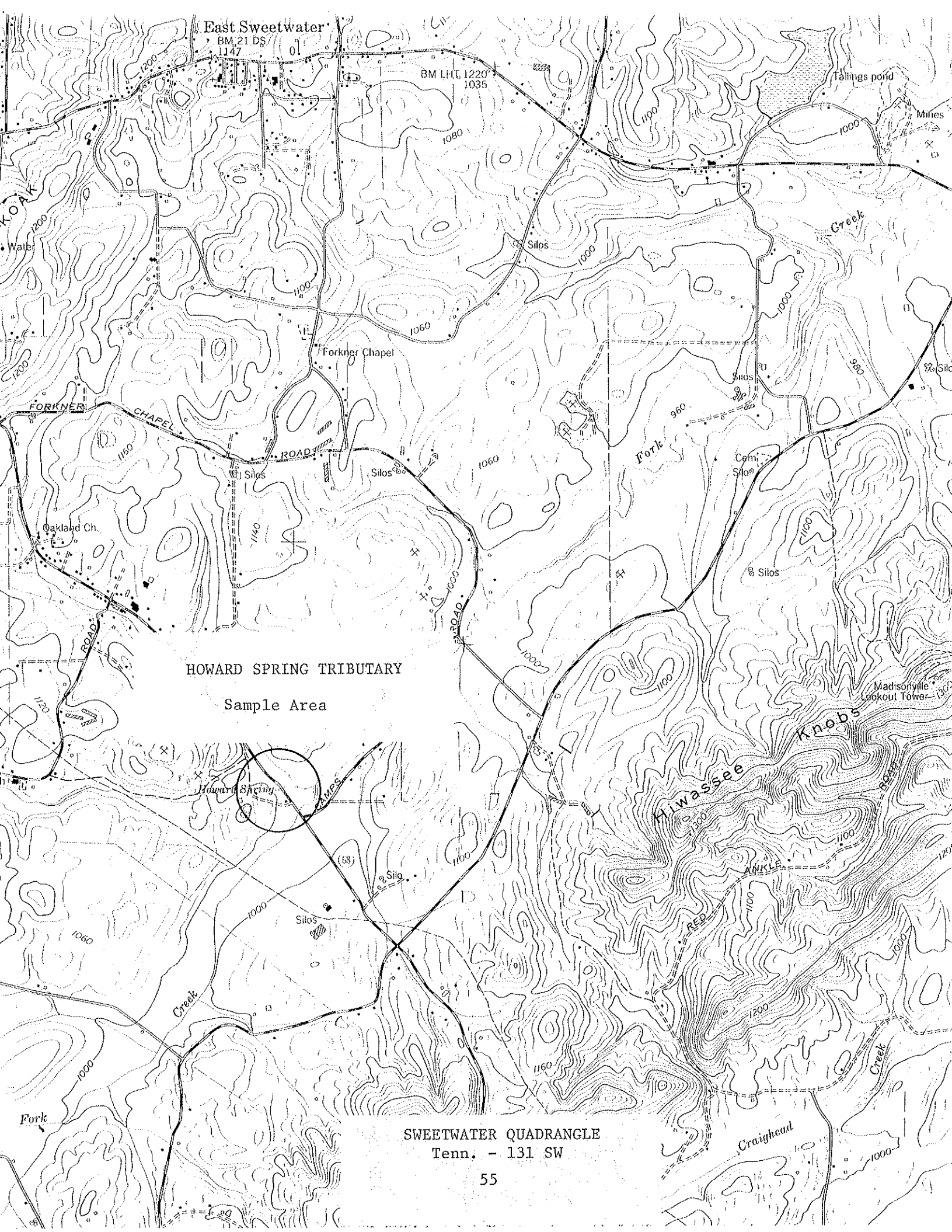
Species	TADS Code	Total Number	Inch Class	Total Weight
Micropterus salmoides	220	1	2	-
" "	"	1	7	-
" "	"	1	10	-
Lepomis cyanellus	202	2	2	-
" "	"	9	3	-
" "	"	8	4	-
" "	"	3	5	-
L. macrochirus	206	6	3	-
" "	"	14	4	-
" "	"	10	5	-
" "	"	5	6	-
L. macrochirus x L. cyanellus	-	1	6	-
Catostomus commersoni	32	18	-	-
Hypentelium nigricans	166	3	-	-
Campostoma anomalum	25	10	-	-
Rhinichthys atratulus	351	20	-	-
Semotilus atromaculatus	360	19	-	-
Etheostoma simoterum	111	5	-	-
Cottus carolinae	40	124	-	-

Cambarus bartonii

Avg. width - 10 ft
Avg. depth - 0.4 ft Max. depth - 2.8 ft
Water temperature - 62 F
Conductivity - 265 micromhos/cm

Site located at the bridge crossing on Randolph Fridley Road, approx. 0.8 mi NE of Howard Spring. Shocking at 120 volts AC. Siltation was heavy along the stream course.

Collectors: R.D. Bivens, M.T. Fagg, C.E. Williams, and P. Stodola



SWEETWATER QUADRANGLE
Tenn. - 131 SW

FISH DATA

Stream: Howard Spring Tributary
Date: 21 October 1992

Watershed: Little Tennessee River
County: Monroe

Area: See comments
Sample Length: 300 ft

Lat-Long: 353417N - 842501W
Reach: 06010104-

Type of Sampling: Electrofishing
Elevation: 990 ft

Gear Type: 1 Backpack Unit
Time: 1530 - 1600

Species	TADS Code	Total Number	Inch Class	Total Weight
Campostoma anomalum	25	82	-	-
Rhinichthys atratulus	351	36	-	-
Etheostoma simoterum	111	1	-	-
Cottus carolinae	40	120	-	-

Site was located at bridge crossing on Old Hwy. 68, 0.15 mi N of the junction of Camps Road and Old Hwy. 68. Shocking at 120 volts AC.

Collectors: R.D. Bivens, M.T. Fagg, C.E. Williams, and P. Stodola

Little Pigeon River (Middle Prong)

One qualitative fishery survey was conducted in August 1992:

Location and Length - Tributary to the French Broad River; generally referred to as the Middle Prong Little Pigeon River. The sample site was located 0.2 mi upstream of the mouth of Turkeypen Branch at the bridge crossing just off Hwy. 416 and was sampled on 27 August 1992. It was 600 ft in length and averaged 66.3 ft in width. It was in Sevier County (Richardson Cove Quadrangle).

Sampling Methodology - The site was sampled using one backpack electrofishing unit operating at 360 volts AC and shocking into a 10 ft seine on the riffle areas, by electrofishing the shorelines, seine hauls in the backwater areas, and using Primacord in the deeper pool area.

Water Quality - Data were collected from midstream at mid-depth on 27 August 1992: DO - 9.8 ppm, pH - 7.2, Temperature - 64 F, Conductivity - 20 micromhos/cm.

Benthos Collection - Benthic organisms were collected by conducting a 3 man-h qualitative sample. The sample contained 286 organisms representing 43 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Smallmouth bass	3	0.7	0.72	5.1
Rock bass	15	3.6	1.53	10.9
Non-game Fish	13	3.1	5.10	36.5
Forage Fish	386	92.6	6.64	47.5
Total	417		13.99	

Comments - This stream was surveyed primarily to develop a fish species list for TADS. The only previous fish collection made by the Agency from this stream was in 1990. However, this was made in conjunction with a Tennessee Valley Authority (TVA) Index of Biotic Integrity (IBI) survey at a downstream site.

We collected a total of 417 fish weighing 13.99 lb and comprising 20 species from our sample site. Only two native game species, smallmouth bass (*Micropterus dolomieu*) and rock bass (*Ambloplites rupestris*) were collected here. Rock bass made up about 4% compared to < 1% by smallmouth bass, of the total number of fish collected. Rock bass also contributed about 11% of the

total weight as compared to about 5% by smallmouth bass. However, both species were found in relatively low numbers. Two non-game and 16 forage species were also collected here and these comprised about 96% of the total number and 84% of the total weight. Of this, forage fish accounted for about 93% of the total number and 48% of the total weight. Of particular interest is the occurrence of fairly intolerant species such as the warpaint shiner (*Luxilus coccogenis*), Tennessee shiner (*Notropis leuciodus*), telescope shiner (*N. telescopus*) all of which were fairly abundant. Six darter species, the greenside (*Etheostoma blennioides*), greenfin (*E. chlorobranchium*), redline darter (*E. rufilineatum*), snubnose (*E. simoterum*), Swannanoa (*E. swannanoa*), and tangerine (*Percina aurantiaca*). Redline darters were the most abundant darter species present and the greenside, snubnose, and tangerine were represented by single specimens only. It is interesting to note the presence of the tangerine darter, a species that is considered of "Special Concern" by TWRA and the Tennessee Heritage Program (Starnes and Etnier 1980). Also of interest, is the occurrence of both mottled sculpin (*Cottus bairdi*) and banded sculpin (*C. carolinae*) from this stream. Stonerollers (*Campostoma anomalum*) and warpaint shiners were the most abundant forage species present.

Based on fish species occurrence, this stream appears to be a good to excellent quality Blue Ridge stream. The occurrence of several intolerant forms and six darter species further attests to good water quality. Smallmouth bass and rock bass were the only game species collected in this reach, but were found in low numbers. This may indicate a transition from coolwater to cold-water habitat. The occurrence of species such as the greenfin darter, longnose dace (*Rhinichthys cataractae*), and mottled sculpin also tends to indicate a transition toward coldwater species. The final score for the TVA IBI survey conducted near river mi 10 in 1990 was 48, indicating an overall integrity class evaluation of "good" (Schacher 1991).

Benthic macroinvertebrates from our sample site included Baetidae, Heptageniidae, Neoephemeridae, and Oligoneuriidae mayflies, Leuctridae, Peltoperlidae, Perlidae, Perlodidae, and Pteronarcyidae stoneflies, Hydropsychidae and Leptoceridae caddisflies, and Dryopidae, Elmidae, and Psephenidae beetles. Limpets (*Ferrissia*) were the only gastropod found and an unidentified *Orconectes* sp. was the only crayfish collected. Ephemeropterans represented about 25%, plecopterans about 20%, dipterans about 17%, trichopterans about 11%, and megalopterans and coleopterans each about 9% of the total number or organisms collected (Fig. 8). A total of 56 taxa was collected at this site.

Management Recommendations:

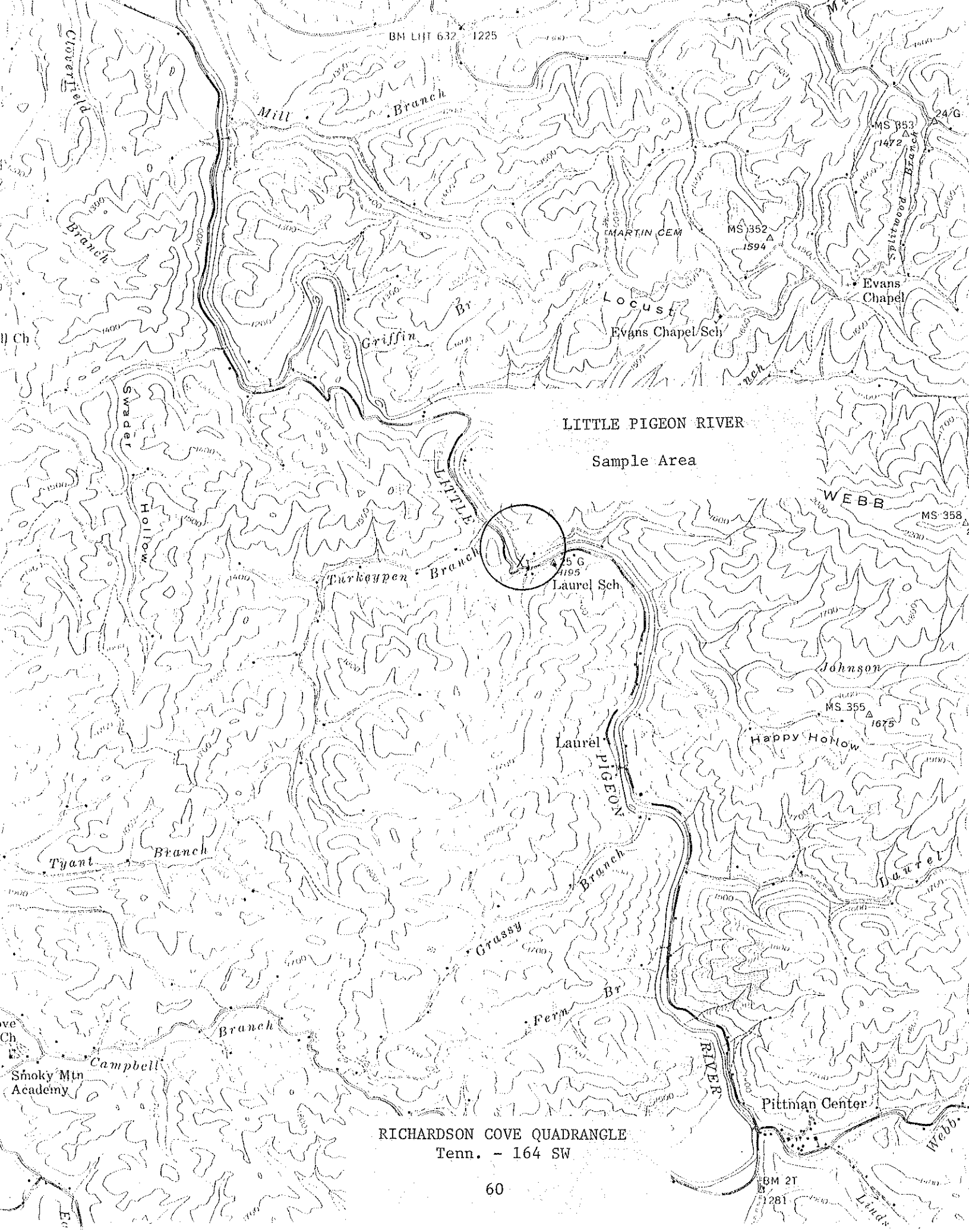
1. Consider additional sampling of this stream in future work plans. This is a large stream system that transitions from a coolwater to coldwater stream within the reach where our

sample site was located.

2. Once defined, this transition zone may be the best place for the Agency to concentrate its put-and-take trout management of the stream.

3. Based on fish and macroinvertebrates species assemblages it appears that this stream probably still has good to excellent water quality that merits extra protection from any source of pollution or habitat destruction.

4. Protection of this watershed should be of high priority as this area is subject to possible accelerated development due to its proximity to Gatlinburg and Pigeon Forge.



RICHARDSON COVE QUADRANGLE
Tenn. - 164 SW

PHYSIOCHEMICAL DATA

A. LOCATION:

Stream: Little Pigeon River — Date: 27 August 1992

Watershed: French Broad River — County: Sevier

Area: See comments — Sample Length: 600 ft

Lat-Long: 354713N - 832443W — Reach: 06010107-20,0

Data Collected By: Mark T. Fagg, Carl E. Williams, and Jim Habera

B. PHYSICAL CHARACTERISTICS:

1. Avg. Width 66.3 ft Avg. Depth 1.4 ft Max. Depth 4.8 ft
2. Estimated Percent of Stream in Pools is 25%.
3. Estimated Percent **Pool** Bottom is Silt 10% Sand 15% Gravel 25% Rubble 40% Boulders 10%.
4. Estimated Percent **Riffle** Bottom is Silt 5% Sand 5% Gravel 10% Rubble 30% Boulders 50%.
5. Abundance of Littoral Aquatic Plants is Scarce.
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 10% of the Stream, Average in 70%, Poor in 20%.
7. Shade or Canopy Good over 35% of Stream.
8. Flow (CFS) 213.4: Compared to Normal: Normal
9. Present Weather: Partly cloudy.
   Air temperature - 78 F @ 10:15 am.
10. Weather (last 24 h): Partly cloudy and hot.
11. pH 7.2 Temp. 63.9 F Conductivity 20 micromhos/cm
    D.O. 9.8 ppm Saturation 104%
12. Comments: Sample area location was 0.2 mi upstream of the mouth of Turkeypen Branch at the bridge crossing, just off Hwy. 416.

FISH DATA

Stream: Little Pigeon River
Date: 27 August 1992
Watershed: French Broad River
County: Sevier
Area: See comments
Sample Length: 600 ft
Lat-Long: 354713N - 832443W
Reach: 06010107-20,0
Type of Sampling: Electrofishing and Primacord
Elevation: 1,160 ft
Gear Type: 1 Backpack Unit w/Seine
Time: 1320 - 1645

Species	TADS Code	Total Number	Inch Class	Total Weight
Micropterus dolomieu	218	2	6	0.23
" "	"	1	10	0.49
Ambloplites rupestris	13	3	3	0.09
" "	"	5	4	0.25
" "	"	2	5	0.25
" "	"	4	6	0.68
" "	"	1	7	0.26
Hypentelium nigricans	166	6	2-10	1.08
Moxostoma duquesnei	229	7	1-16	4.02
Campostoma anomalum	25	80	1-7	3.77
Cyprinella galactura	253	10	3-4	0.17
Hybopsis amblops	155	3	1	t
Luxilus coccogenis	248	75	1-4	0.42
Nocomis micropogon	234	18	1-6	0.56
Notropis leuciodus	255	51	1-2	0.18
N. telescopus	272	58	1-3	0.20
Rhinichthys cataractae	352	2	1	t
Etheostoma blennioides	80	1	4	0.04
E. chlorobranchium	86	10	2-3	0.16
E. rufilineatum	108	27	1-3	0.22
E. simoterum	111	1	2	t
E. swannanoa	129	17	1-3	0.20
Percina aurantiaca	304	1	6	0.09
Cottus bairdi	39	17	1-4	0.24
C. carolinae	40	15	1-4	0.39

Site was located 0.2 mi upstream of the mouth of Turkeypen Branch at the bridge crossing, just off Hwy. 416. Shocking at 360 volts AC into a 10 ft seine, seining, electrofishing shorelines, and Primacord in the pool area.

Collectors: M.T. Fagg, C.E. Williams, and J. Habera

Little Pigeon River: Qualitative Benthic Sample

27 August 1992 Field # 380

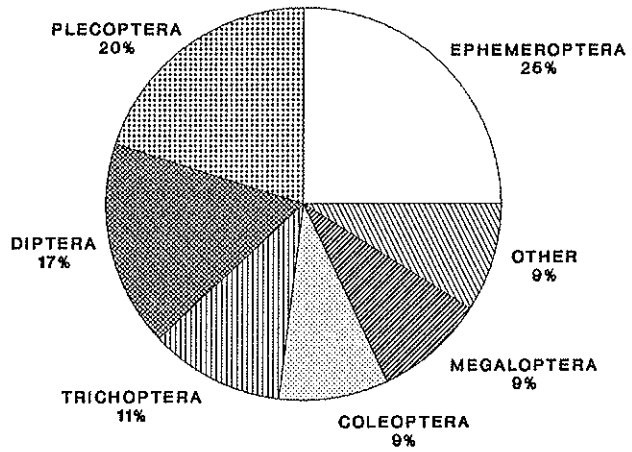
Sevier Co., TN; 0.2 mi upstream of the mouth of Turkeypen Branch at the bridge crossing just off Hwy. 416. Coordinates: 354713N - 832443W. Richardson Cove, Tenn., # 164 SW Quad. Reach # 06010107-20,0.

TAXA	NUMBER
COLEOPTERA:	
Dryopidae/*Helichus* adults	2
Elmidae/*Macronychus glabratus* larva & adult	2
Optioservus larvae	2
Stenelmis larvae & adult	4
Psephenidae/*Psephenus herricki* larvae	16
DECAPODA:	
Cambaridae/*Orconectes* sp. adult female	1
Orconectes sp. juveniles	2
DIPTERA:	
Athericidae/*Atherix lantha*	18
Blephariceridae/*Blepharicera*	1
Chironomidae	16
Empididae	1
Simuliidae larvae & pupa	5
Tipulidae/*Antocha*	1
Dicranota	1
Hexatoma	4
Tipula	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	10
Heptageniidae/*Epeorus rubidus/subpallidus*	14
Rhithrogena	1
Stenonema	21
Neoephemeridae/*Neoephemera purpurea*	2
Oligoneuriidae/*Isonychia*	24
GASTROPODA:	
Ancylidae/*Ferrissia*	5
HEMIPTERA:	
Veliidae/*Rhagovelia obesa* nymphs	5
LEPIDOPTERA:	
Unidentified	1

Little Pigeon River: Qualitative Sample cont.

TAXA	NUMBER
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	9
Nigronia serricornis	14
Sialidae/*Sialis*	1
ODONATA:	
Aeshnidae/*Boyeria vinosa*	7
Calopterygidae/*Calopteryx*	1
Cordulegastridae/*Cordulegaster erronea*	1
Gomphidae/*Lanthus vernalis*	1
Stylogomphus albistylus	1
PLECOPTERA:	
Leuctridae/*Leuctra*	11
Peltoperlidae/*Peltoperla*	7
Perlidae/*Acroneuria abnormis*	28
A. carolinensis	2
Paragnetina immarginata	6
Perlodidae/*Isogenoides* early instars	3
Pteronarcyidae/*Pteronarcys*	1
TRICHOPTERA:	
Hydropsychidae/Ceratopsyche *morosa*	3
C. sparna	21
Cheumatopsyche	6
Leptoceridae/Unidentified pupae	2
	286

LITTLE PIGEON RIVER
BENTHIC MACROINVERTEBRATES



PERCENT OF TOTAL NUMBER OF ORGANISMS

n = 286
TAXA RICHNESS = 43
Figure 8.

Dudley Creek

One qualitative fishery survey was conducted in August 1992:

Location and Length - Tributary to West Prong Little Pigeon River. The sample site was located just upstream of the bridge on Dudley Creek Road, stream mi 0.35, near the electrical power sub-station and was sampled on 12 August 1992. It was 400 ft in length and averaged around 15 ft in width. It was in Sevier County (Gatlinburg Quadrangle).

Sampling Methodology - The site was sampled using two backpack electrofishing units operating at 120 volts AC.

Water Quality - No data collected.

Benthos Collection - No collection was made.

Fish Collected - (See data sheet for species list)

Comments - This stream was sampled primarily to develop a fish species diversity list in order to obtain information necessary to address a sewer line construction project. Only a limited survey was conducted near the mouth of this stream and emphasis was placed on the fish species present and their relative abundance. The Agency has made no previous studies or fish collections from this stream.

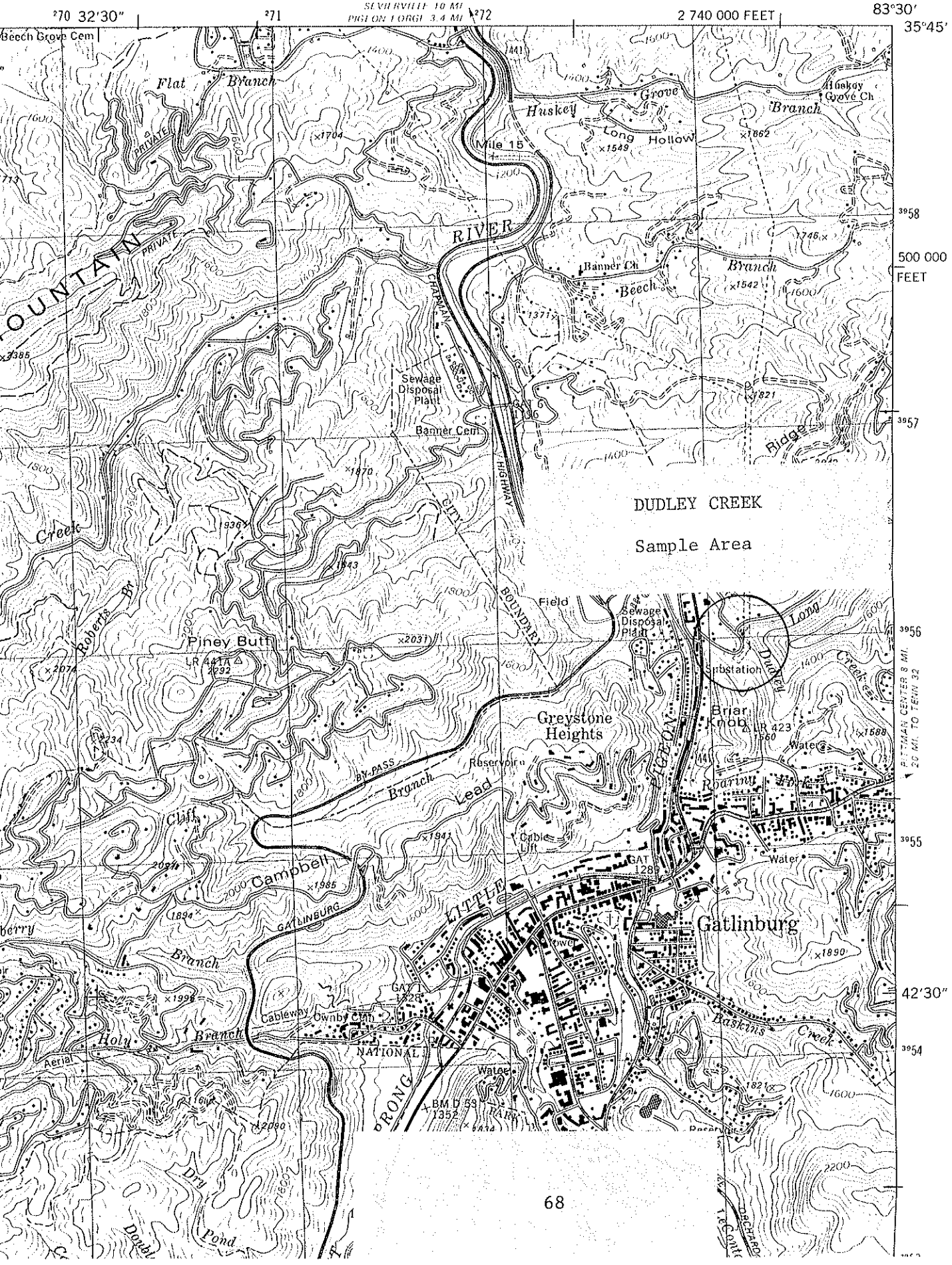
A total of 271 fish comprising 16 species was collected. Three stocked rainbow trout (*Oncorhynchus mykiss*) and one YOY rainbow trout were collected. The primary game fish present were smallmouth bass (*Micropterus dolomieu*) and rock bass (*Ambloplites rupestris*). Two non-game and 11 forage species were also collected. Of particular interest is the occurrence of fairly intolerant species such as the warpaint shiner (*Luxilus coccogenis*) and saffron shiner (*Notropis rubricroceus*). Darter species included the fantail (*Etheostoma flabellare*), snubnose (*E. simoterum*), and Swannanoa (*E. swannanoa*). Stonerollers (*Campostoma anomalum*), saffron shiners, and mottled sculpin (*Cottus bairdi*) were the most abundant species present. The total number of fish collected does not adequately represent what was actually present. For example, only about 1/4 of the stonerollers observed were collected and counted, and the same is true for several other species.

This is a medium to small size stream with gravel-cobble, boulder-bedrock substrate that appears to have fairly good water quality based on the fish species assemblage and abundance that we observed. The occurrence of trout along with a couple of fairly intolerant forms and three darter species further attest to its water quality, especially when considering its setting within the Gatlinburg city limits.

Management Recommendations:

1. This stream appears to have fairly good water quality and no specific management is suggested other than protection of the watershed.

GATLINBURG QUADRANGLE
TENNESSEE-SEVIER COUNTY
7.5 MINUTE SERIES (TOPOGRAPHIC) 157-NE



FISH DATA

Stream: Dudley Creek
Date: 12 August 1992

Watershed: Little Pigeon River
County: Sevier

Area: See comments
Sample Length: 400 ft

Lat-Long: 354325N - 833028W
Reach: 06010107-16.0

Type of Sampling: Electrofishing
Elevation: 1,270 ft

Gear Type: 2 Backpack Units
Time: 1730 - 1800

Species	TADS Code	Total Number	Inch Class	Total Weight
Oncorhynchus mykiss	353	3	Stocked	-
" "	"	1	YOY	-
Micropterus dolomieu	218	1	12	-
" "	"	2	8	-
Ambloplites rupestris	13	8	4-8	-
Catostomus commersoni	32	1	-	-
Hypentelium nigricans	166	22	-	-
Campostoma anomalum	25	96 *	-	-
Luxilus coccogenis	248	19	-	-
Nocomis micropogon	234	4	-	-
Notropis rubricroceus	262	44	-	-
Rhinichthys atratulus	351	8	-	-
R. cataractae	352	2	-	-
Semotilus atromaculatus	360	7	-	-
Etheostoma flabellare	92	3	-	-
E. simoterum	111	6	-	-
E. swannanoa	129	1	-	-
Cottus bairdi	39	43	-	-

Unidentified *Cambarus* sp. and *Orconectes* sp. collected.

Avg. width - approx. 15 ft
Avg. depth - approx. 0.5 ft
Water temperature - 72 F @ 1800
Gravel - cobble - boulder - bedrock substrate.

* This number is probably about 1/4 of the total number of stonerollers observed.

Site was located at bridge on Dudley Creek Road, at the electrical power sub-station. Shocking at 120 volts AC.

Collectors: R.D. Bivens, M.T. Fagg, C.E. Williams, J. Habera, and S. Fraley

Cove Creek

One qualitative fishery survey was conducted in July 1992:

Location and Length - Tributary to the Nolichucky River. The sample site was located just across from the Solomon Lutheran Church near Cove Creek stream mi 3.6 and was sampled on 23 July 1992. It was 500 ft in length and averaged 21.6 ft in width. The site was in Greene County (Davy Crockett Lake Quadrangle).

Sampling Methodology - The site was sampled using two backpack electrofishing units operating at 120 volts AC.

Water Quality - Data were collected from midstream at mid-depth on 23 July 1992: DO - 8.2 ppm, pH - 8.2, Temperature - 67 F, Conductivity - 295 micromhos/cm.

Benthos Collection - Benthic organisms were collected by conducting a 2 man-h qualitative sample. The sample contained 136 organisms representing 34 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Smallmouth bass	1	0.6	0.34	1.8
Rock bass	19	12.0	4.19	21.8
Redbreast sunfish	7	4.4	0.85	4.4
Bluegill	7	4.4	1.41	7.4
Hybrid sunfish	1	0.6	0.23	1.2
Non-game Fish	29	18.4	10.04	52.3
Forage Fish	94	59.5	2.12	11.1
Total	158		19.18	

Comments - This stream was sampled primarily to develop a fish species diversity list for TADS. The Agency has made no previous studies or fish collections from this stream.

A total of 158 fish weighing 19.18 lb comprising 13 species was collected. Three native game species, smallmouth bass (*Micropterus dolomieu*), rock bass (*Ambloplites rupestris*), and bluegill (*Lepomis macrochirus*) along with the introduced redbreast sunfish (*L. auritus*) were found. One 9-in smallmouth bass was present and all seven of the bluegill collected were in the 6-in class, therefore, comparison of inch class distribution was made for rock bass and redbreast sunfish only (Fig. 9). Rock bass made up about 12%, compared to about 4% by redbreast sunfish of the total number, of fish collected. Rock bass also

contributed about 22% of the total weight as compared to about 4% by redbreast sunfish. One hybrid redbreast sunfish x bluegill was also found. Three non-game and six forage species were also collected here and these comprised about 78% of the total number and 63% of the total weight. White suckers (*Catostomus commersoni*) alone accounted for 35% of the total weight collected. Another introduced species fish collected at this site was the goldfish (*Carassius auratus*). Two fairly intolerant species, the warpaint shiner (*Luxilus coccogenis*) and redline darter (*Etheostoma rufilineatum*) were present, but in very low numbers (5 and 2 respectively). A single specimen of the snubnose darter (*E. simoterum*) was also collected. Banded sculpin (*Cottus carolinae*) and stonerollers (*Campostoma anomalum*) were the most abundant species present. However, these were also found in relatively low numbers.

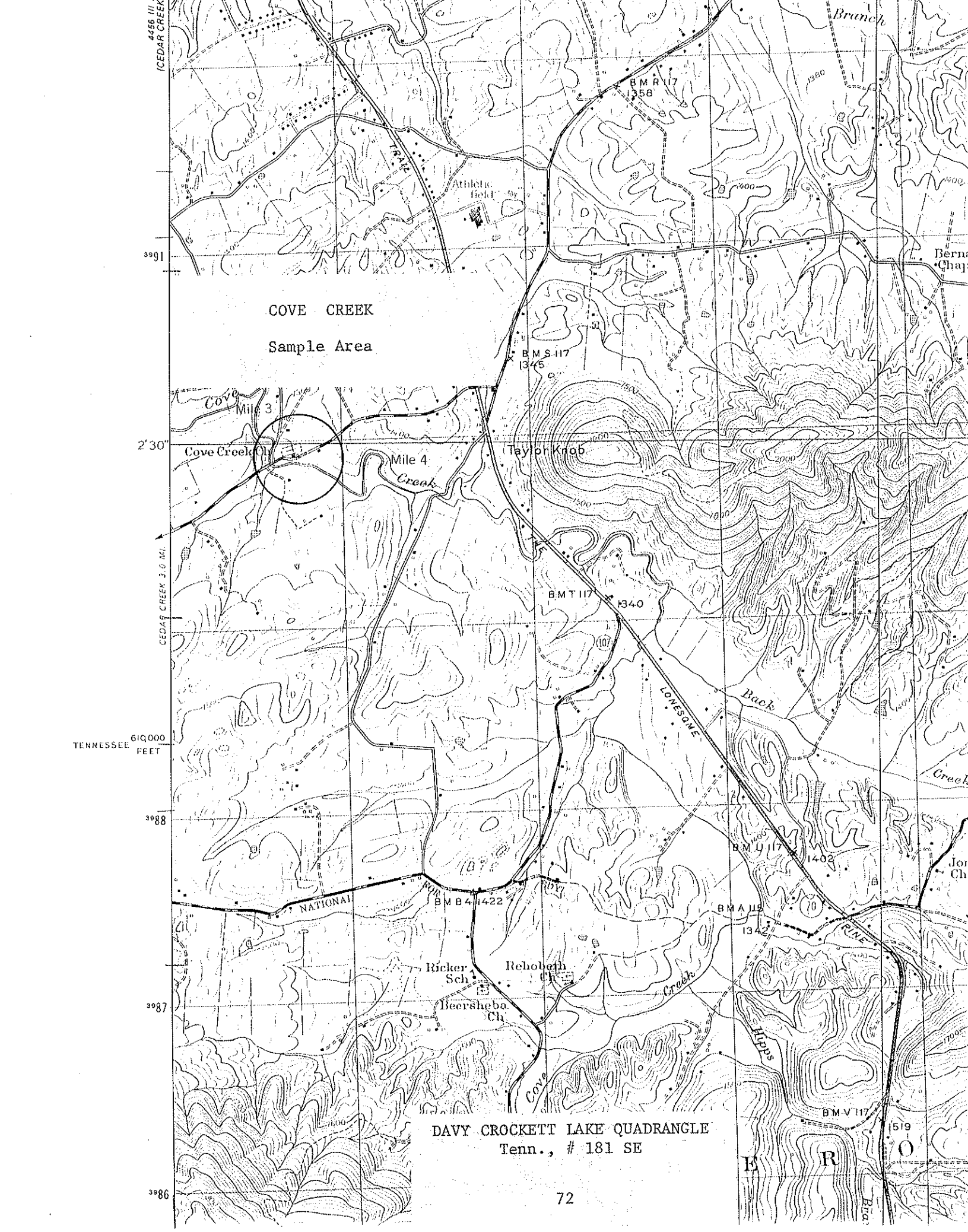
Based on the fish species occurrence, this stream is apparently being adversely impacted by some form of pollution, most likely non-point source siltation. It appears that we looked at the stream during a time of change in which some of the intolerant fish species are on their way out. Some are probably already gone. A stream of this size at this elevation in the Blue Ridge should typically have around 20 or so species with at least a few intolerant shiners and darters. We collected only 13 species of which all but the warpaint shiner and redline darter were mostly tolerant forms. Warpaint shiners and redline darters were collected in very low numbers and overall, most species were found in low total numbers. The fish species assemblage of Cove Creek is beginning to resemble that, typical of streams with polluted conditions.

Benthic macroinvertebrates from our sample included Ephemeridae, Heptageniidae, and Oligoneuriidae mayflies, hydropsychid caddisflies, Elmidae, Hydrophilidae, and Psephenidae beetles, and no stoneflies. The Asian clam (*Corbicula fluminea*) was present along with a few pleurocerid snails. Two crayfish species, *Cambarus longirostris* and *Orconectes erichsonianus*, were collected. Trichopterans represented about 31%, odonates about 22%, ephemeropterans about 14%, coleopterans about 11%, and megalopterans about 8% of the total number of organisms collected (Fig. 10). A total of 34 taxa was collected at this site, most of which were tolerant forms.

Management Recommendations:

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

2. Additional stream surveys upstream and in tributaries would be worthwhile.



DAVY CROCKETT LAKE QUADRANGLE
Tenn., # 181 SE

PHYSIOCHEMICAL DATA

A. LOCATION:

Stream: Cove Creek — Date: 23 July 1992

Watershed: Nolichucky River — County: Greene

Area: See comments — Sample Length: 500 ft

Lat-Long: 360226N - 825200W — Reach: 06010108-9.0

Data Collected By: Mark T. Fagg, Carl E. Williams, and Marvin Reeves

B. PHYSICAL CHARACTERISTICS:

1. Avg. Width 21.6 ft Avg. Depth 0.7 ft Max. Depth 3.6 ft
2. Estimated Percent of Stream in Pools is 45%.
3. Estimated Percent **Pool** Bottom is Silt 15% Sand 35% Gravel 10% Rubble 5% Boulders 10% Bedrock 25%.
4. Estimated Percent **Riffle** Bottom is Silt 5% Sand 30% Gravel 25% Rubble 35% Boulders 5%.
5. Abundance of Littoral Aquatic Plants is Scarce.
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 30% of the Stream, Average in 60%, Poor in 10%.
7. Shade or Canopy Good over 90% of Stream.
8. Flow (CFS) 13.8: Compared to Normal: Normal
9. Present Weather: Overcast and humid.
   Air temperature - 78 F @ 9:30 am.
10. Weather (last 24 h): Overcast with scattered showers.
11. pH 8.2 Temp. 66.6 F Conductivity 295 micromhos/cm
    D.O. 8.2 ppm Saturation 90%
12. Comments: Sample area location was across from Solomon Lutheran Church near Cove Creek stream mi 3.6.

FISH DATA

Stream: Cove Creek
Date: 23 July 1992
Watershed: Nolichucky River
County: Greene
Area: See comments
Sample Length: 500 ft
Lat-Long: 360226N - 825200W
Reach: 06010108-9,0
Type of Sampling: Electrofishing
Elevation: 1,280 ft
Gear Type: 2 Backpack Units
Time: 1230 - 1315

Species	TADS Code	Total Number	Inch Class	Total Weight
Micropterus dolomieu	218	1	9	0.34
Ambloplites rupestris	13	1	4	0.07
" "	"	2	5	0.26
" "	"	11	6	2.20
" "	"	4	7	1.29
" "	"	1	8	0.37
Lepomis auritus	201	1	3	0.03
" "	"	1	4	0.07
" "	"	3	5	0.31
" "	"	1	6	0.18
" "	"	1	7	0.26
L. macrochirus	206	7	6	1.41
L. auritus x *L. macrochirus*	-	1	6	0.23
Catostomus commersoni	32	8	12-13	6.64
Hypentelium nigricans	166	20	3-10	2.90
Carassius auratus	26	1	94	0.50
Campostoma anomalum	25	25	1-4	0.49
Luxilus chrysocephalus	249	16	3-5	0.47
L. coccogenis	248	5	3-4	0.10
Etheostoma rufilineatum	108	2	1-2	0.01
E. simoterum	111	1	1	t
Cottus carolinae	40	45	1-4	1.05

Site was located across from Solomon Lutheran Church near Cove Creek stream mi 3.6. Shocking at 120 volts AC.

Collectors: M.T. Fagg, C.E. Williams, and M. Reeves

Cove Creek: Qualitative Benthic Sample

23 July 1992 Field # 370

Greene Co., TN; Along Cedar Creek Road, just across from Solomon Lutheran Church. Coordinates: 360226N - 825200W. Davy Crockett Lake, Tenn., # 181 SE Quad. Reach # 06010108-9,0.

TAXA	NUMBER
COLEOPTERA:	
Elmidae/*Macronychus glabratus* adults	3
Optioservus larvae	2
Stenelmis larva & adults	8
Hydrophilidae/*Sperchopsis tessellatus* adult	1
Psephenidae/*Psephenus herricki*	1
DECAPODA:	
Cambaridae/*Cambarus longirostris* female	1
Orconectes erichsonianus 2nd form male	1
Orconectes erichsonianus females	2
DIPTERA:	
Athericidae/*Atherix lantha*	1
Chironomidae	4
Tipulidae/*Antocha*	1
EPHEMEROPTERA:	
Ephemeridae/*Ephemera*	1
Heptageniidae/*Epeorus rubidus/subpallidus*	1
Stenonema early instars	4
Stenonema mediopunctatum	1
Oligoneuriidae/*Isonychia*	12
GASTROPODA:	
Ancylidae/*Ferrissia* relic	
HEMIPTERA:	
Veliidae/*Rhagovelia obesa* nymphs	2
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	5
Nigronia serricornis	4
Sialidae/*Sialis*	2

Cove Creek: Qualitative Sample cont.

TAXA	NUMBER
ODONATA:	
Aeshnidae/*Boyeria vinosa*	4
Calopterygidae/*Calopteryx*	1
Coenagrionidae/*Argia*	5
Enallagma	1
Cordulegastridae/*Cordulegaster maculata*	1
Gomphidae/*Gomphus* early instars	3
Gomphus (Genus A *consanguis*) *	1
Gomphus lividus	3
Hagenius brevistylus	4
Lanthus vernalis	1
Stylogomphus albistylus	2
Macromiidae/*Macromia*	4
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	5
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	13
Hydropsyche betteni/depravata	29
	136

* (from Louton 1982)

GAME FISH FROM COVE CREEK
INCH CLASS DISTRIBUTION

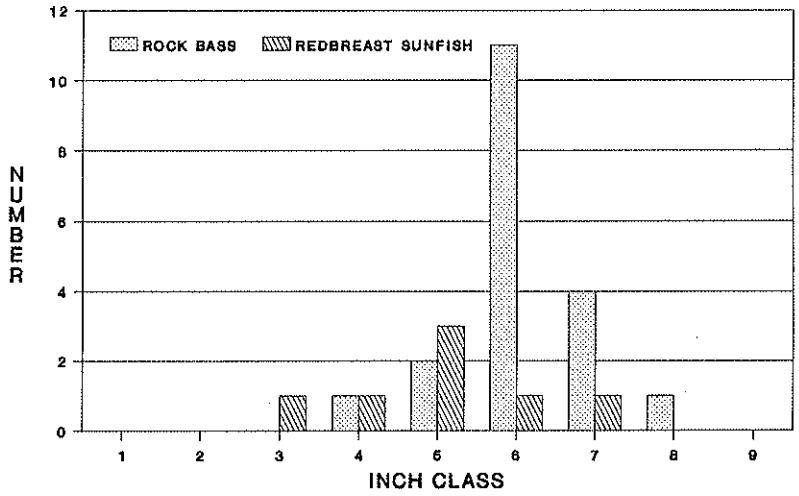
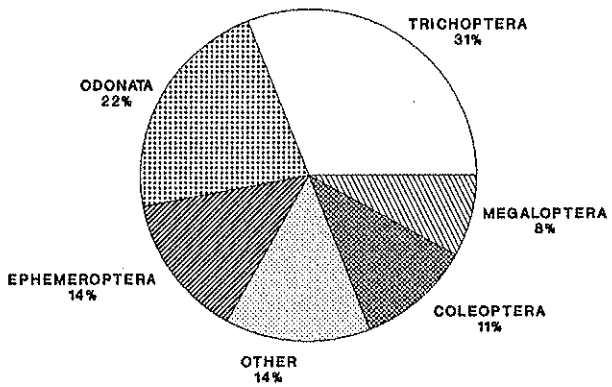


Figure 9.

COVE CREEK
BENTHIC MACROINVERTEBRATES



PERCENT OF TOTAL NUMBER OF ORGANISMS

n = 136
TAXA RICHNESS = 34
Figure 10.

Robertson Creek

Two qualitative fishery surveys were conducted in June 1992:

Location and Length - Tributary to the Holston River (Cherokee Reservoir). Sample Site 1 was located just downstream of the bridge crossing on Hwy. 113, near stream mi 3.0. It was 400 ft in length and averaged 23.0 ft in width. Sample Site 2 was located just downstream of the bridge crossing on the St. Clair/Bulls Gap Road. It was 100 ft in length and averaged 6 to 8 ft in width. Both sites were sampled on 11 June 1992, and were in Hawkins County (Bulls Gap Quadrangle).

Sampling Methodology - Both sites were sampled using backpack electrofishing units operating at 120 volts AC. Site 1, two backpack units; Site 2, one backpack unit.

Water Quality - Data were collected from midstream at mid-depth at each site on 11 June 1992. Site 1: DO - 7.6 ppm, pH - 7.9, Temperature - 66 F, Conductivity - 370 micromhos/cm. Site 2: Temperature - 70 F, Conductivity - 412 micromhos/cm.

Benthos Collection - Benthic organisms were collected by conducting a 3 man-h qualitative sample at Site 1 only. The sample contained 618 organisms representing 42 taxa.

Fish Collected:

	Site 1				Site 2	
Species	No.	% by No.	Wt.	% by Wt.	No.	% by No.
Largemouth bass	4	0.8	0.18	0.8		
Rock bass	35	6.7	5.87	24.5	1	1.9
Redbreast sunfish	82	15.8	5.84	24.4	1	1.9
Green sunfish	28	5.4	0.77	3.2		
Bluegill	12	2.3	0.53	2.2		
Non-game Fish	12	2.3	4.40	18.4		
Forage Fish	347	66.7	6.37	22.6	50	96.2
Total	520		23.96		52	

Comments - This stream was surveyed primarily to develop a fish species diversity list and collect stream information for TADS. The Agency has made no previous studies or fish collections from this stream.

We collected a total of 520 fish weighing 23.96 lb and comprising 16 species from Site 1. Four native game species, largemouth bass (*Micropterus salmoides*), rock bass (*Ambloplites rupestris*), green sunfish (*Lepomis cyanellus*), and bluegill (*L. macrochirus*) along with the introduced redbreast sunfish (*L. auritus*) were collected. Largemouth bass were represented by only four individuals with the largest being in the 5-in class. Green sunfish and bluegill were also small, therefore, comparison of inch class distribution was made for rock bass and redbreast sunfish only (Fig. 11). Rock bass made up about 8%, compared to about 16% by redbreast sunfish, of the total number of fish collected. However, each contributed about the same (around 24%) to the total weight collected. Two non-game and nine forage species were also collected here and these comprised about 69% of the total number and 45% of the total weight of all fish collected. All of these were fairly tolerant species and the fantail darter (*Etheostoma flabellare*) and the snubnose darter (*E. simoterum*) were the only darter species collected. Stonerollers (*Campostoma anomalum*) and striped shiners (*Luxilus chrysocephalus*) were the most abundant forage species collected.

At Site 2 we collected only 52 fish comprising 7 species, and with the exception of the mosquitofish (*Gambusia affinis*), the same species were collected at the downstream site. Rock bass and redbreast sunfish were represented by single specimens each, and the banded sculpin (*Cottus carolinae*) was the most abundant species present. At this site, the stream is very small and appears to be heavily impacted by non-point source pollution, especially siltation from agricultural activities in the watershed. Our sampling effort at this site was also reduced due to a thunderstorm with heavy rainfall and lightning.

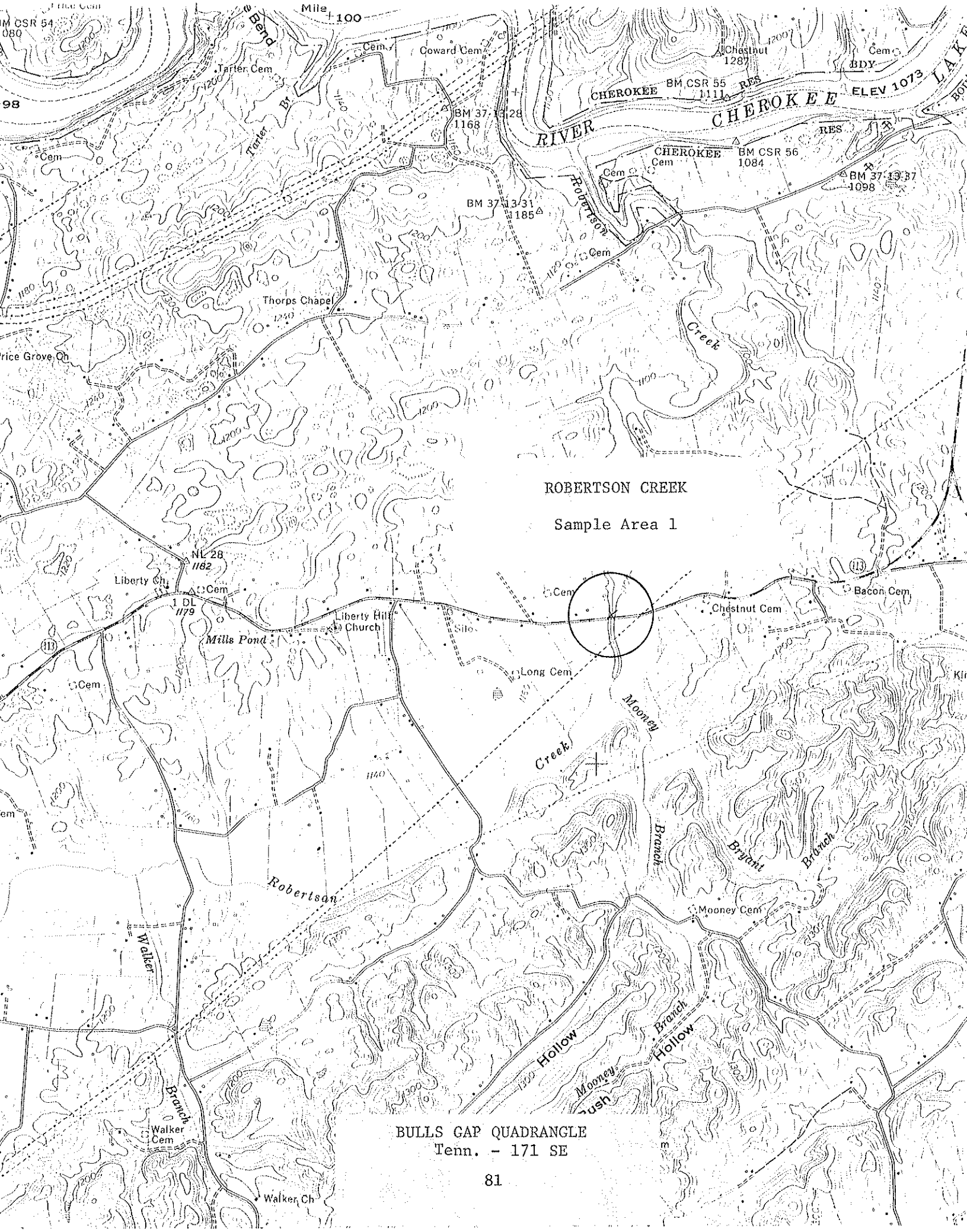
Robertson Creek is a low gradient stream that is heavily silted from non-point sources along the watershed and the fish species assemblage is typical for streams with this type of pollution. However, the lower stream reach appears to support a fairly good rock bass and redbreast sunfish fishery.

Benthic macroinvertebrates from our sample at Site 1 included Baetidae, Ephemeridae, Heptageniidae, and Leptophlebiidae mayflies, *Perlesta* stoneflies, Hydropsychidae, Philopotamidae, Psychomyiidae, Odontoceridae, and Uenoidae caddisflies, and Dytiscidae, Elmidae, and Psephenidae beetles. The Asian clam (*Corbicula fluminea*) was present and fingernail clams (*Sphaerium*) and pleurocerid snails were abundant. Relic *Fusconaia barnesiana*, *Villosa iris*, and *V. vanuxemensis* were also found. *Cambarus longirostris* and the rusty crayfish (*Orconectes rusticus*) were the only crayfish collected at Site 1. *Orconectes rusticus* is an introduced species that is becoming established in both the Holston River and Nolichucky River drainages and is expanding its range in east Tennessee. The rusty crayfish may be replacing some of our native crayfish species due to its adaptive capability. The Appalachian brook crayfish (*Cambarus bartonii*) was present at the upstream locality along with *C. longirostris*

and *O. rusticus*. Coleopterans represented about 23%, trichopterans about 19%, pelecypods about 13%, dipterans about 10%, and ephemeropterans, gastropods, and plecopterans each about 7% of the total number of organisms collected (Fig. 12). A total of 618 organisms representing 42 taxa was collected at this site.

Management Recommendations:

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



BULLS GAP QUADRANGLE
Tenn. - 171 SE

PHYSIOCHEMICAL DATA

A. LOCATION:

Stream: Robertson Creek — Date: 11 June 1992

Watershed: Holston River — County: Hawkins

Area: Site # 1 — Sample Length: 400 ft

Lat-Long: 362025N - 830227W — Reach: 06010104-41,0

Data Collected By: Rick D. Bivens, Mark T. Fagg, and Carl E. Williams

B. PHYSICAL CHARACTERISTICS:

1. Avg. Width 23.0 ft Avg. Depth 0.6 ft Max. Depth 2.2 ft
2. Estimated Percent of Stream in Pools is 30%.
3. Estimated Percent **Pool** Bottom is Silt 15% Sand 10% Gravel 10% Rubble 5% Boulders 5% Bedrock 55%.
4. Estimated Percent **Riffle** Bottom is Silt 10% Sand 5% Gravel 10% Rubble 10% Boulders 5% Bedrock 60%.
5. Abundance of Littoral Aquatic Plants is Average (*Dianthera americana*).
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 20% of the Stream, Average in 50%, Poor in 30%.
7. Shade or Canopy Good over 90% of Stream.
8. Flow (CFS) 10.2: Compared to Normal: Slightly High
9. Present Weather: Partly cloudy to overcast.
   Air temperature - 70 F @ 9:00 am.
10. Weather (last 24 h): Partly cloudy and overcast.
11. pH 7.96 Temp. 65.8 F Conductivity 370 micromhos/cm
    D.O. 7.6 ppm Saturation 81%
12. Comments: Sample area location was just downstream of the bridge on Hwy. 113, near stream mi 3.0. The stream was slightly high and dingy from recent rains. Medium to heavy siltation. Mostly wide, shallow, bedrock type habitat.

FISH DATA

Stream: Robertson Creek
Date: 11 June 1992
Watershed: Holston River
County: Hawkins
Area: Site # 1
Sample Length: 400 ft
Lat-Long: 362025N - 830227W
Reach: 06010104-41,0
Type of Sampling: Electrofishing
Elevation: 1,100 ft
Gear Type: 2 Backpack Units
Time: 1230 - 1345

Species	TADS Code	Total Number	Inch Class	Total Weight
Micropterus salmoides	220	3	4	0.11
" "	"	1	5	0.07
Ambloplites rupestris	13	1	1	t
" "	"	2	2	0.02
" "	"	8	3	0.24
" "	"	2	4	0.11
" "	"	1	5	0.12
" "	"	14	6	2.90
" "	"	4	7	1.07
" "	"	3	8	1.41
Lepomis auritus	201	1	1	t
" "	"	3	2	0.03
" "	"	39	3	1.21
" "	"	17	4	0.98
" "	"	11	5	1.34
" "	"	10	6	1.97
" "	"	1	7	0.31
L. cyanellus	202	9	2	0.12
" "	"	15	3	0.41
" "	"	4	4	0.24
L. macrochirus	206	5	3	0.12
" "	"	7	4	0.41

Sample location was just downstream of the bridge on Hwy. 113, near stream mi 3.0. Shocking at 120 volts AC. The stream was slightly high and dingy from recent rains at the time we sampled it.

Collectors: R.D. Bivens, M.T. Fagg, and C.E. Williams

FISH DATA (continued)

Stream: Robertson Creek
Date: 11 June 1992
Watershed: Holston River
County: Hawkins
Area: Site # 1
Sample Length: 400 ft
Lat-Long: 362025N - 830227W
Reach: 06010104-41,0
Type of Sampling: Electrofishing
Elevation: 1,100 ft
Gear Type: 2 Backpack Units
Time: 1230 - 1345

Species	TADS Code	Total Number	Inch Class	Total Weight
Catostomus commersoni	32	11	4-14	4.29
Hypentelium nigricans	166	1	6	0.11
Campostoma anomalum	25	127	1-7	3.33
Hybopsis amblops	155	7	2	0.04
Luxilus chrysocephalus	249	58	2-6	1.84
Notropis stramineus	271	3	1-2	0.01
Pimephales notatus	334	79	1-3	0.82
Rhinichthys atratulus	351	4	2	0.04
Etheostoma flabellare	92	10	2	0.06
E. simoterum	111	34	1-2	0.12
Cottus carolinae	40	25	1-4	0.11

Sample location was just downstream of the bridge on Hwy. 113, near stream mi 3.0. Shocking at 120 volts AC. The stream was slightly high and dingy from recent rains at the time we sampled it.

Collectors: R.D. Bivens, M.T. Fagg, and C.E. Williams

Robertson Creek: Site # 1, Qualitative Benthic Sample

11 June 1992 Field # 357

Hawkins Co., TN; At the bridge crossing on Hwy. 113. Coordinates: 362025N - 830227W. Bulls Gap, Tenn., # 171 SE Quad. Reach # 06010104-41,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Dytiscidae/*Hydroporus* adults	2
Elmidae/*Dubiraphia* adults	3
Macronychus glabratus larva & adults	6
Stenelmis larvae	20
Stenelmis adults	51
Helodidae/Unidentified larva	1
Psephenidae/*Psephenus herricki* larvae	48
Psephenus herricki adults	10
DECAPODA:	
Cambaridae/*Cambarus longirostris* 2nd form male	1
Orconectes rusticus 1st form male	1
Orconectes rusticus 2nd form males	6
Orconectes rusticus females	2
DIPTERA:	
Chironomidae	28
Psychodidae/*Telematoscopus*	1
Simuliidae	14
Tipulidae/*Hexatoma*	17
EPHEMEROPTERA:	
Baetidae/*Baetis*	13
Ephemeridae/*Hexagenia*	3
Heptageniidae/*Heptagenia*	8
Stenacron interpunctatum	12
Stenonema	3
Leptophlebiidae/*Habrophlebiodes*	3
GASTROPODA:	
Pleuroceridae	42
HEMIPTERA:	
Corixidae	4
Veliidae/*Rhagovelia obesa* male	1
Rhagovelia obesa females	3

Robertson Creek: Site # 1, Qualitative Sample cont.

TAXA	NUMBER
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	7
Nigronia serricornis	10
Sialidae/*Sialis*	5
ODONATA:	
Aeshnidae/*Boyeria vinosa*	5
Calopterygidae/*Calopteryx*	3
Coenagrionidae/*Argia*	2
Enallagma	1
Cordulegastridae/*Cordulegaster obliqua obliqua*	1
Gomphidae/*Gomphus* (Genus A *consanguis*) *	10
Hagenius brevistylus	1
PELECYPODA:	
Corbiculidae/*Corbicula fluminea*	2
Sphaeriidae/*Sphaerium*	77
Unionidae/*Fusconaia barnesiana* relic	
Villosa iris relics	
V. vanuxemensis relics	
PLECOPTERA:	
Perlidae/*Perlesta*	41
TRICHOPTERA:	
Hydropsychidae/*Cheumatopsyche*	42
Hydropsyche betteni/depravata	52
Philopotamidae/*Chimara*	8
Psychomyiidae/*Psychomyia flavida*	2
Odontioceridae/*Psilotreta labida*	10
Uenoidae/*Neophylax*	4
	618

* (from Louton 1982)

GAME FISH FROM ROBERTSON CREEK
SITE 1
INCH CLASS DISTRIBUTION

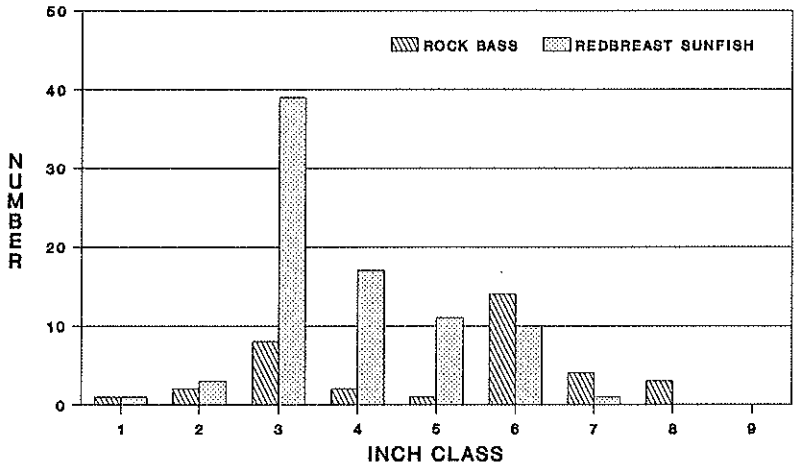
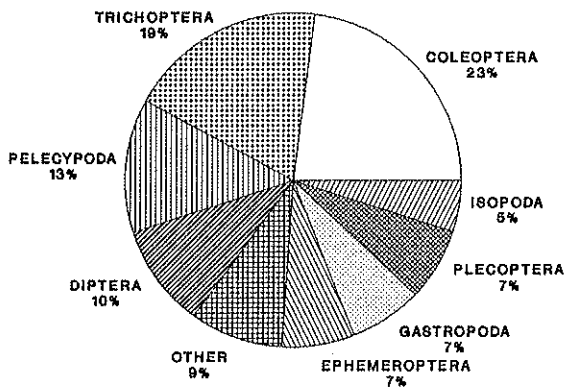


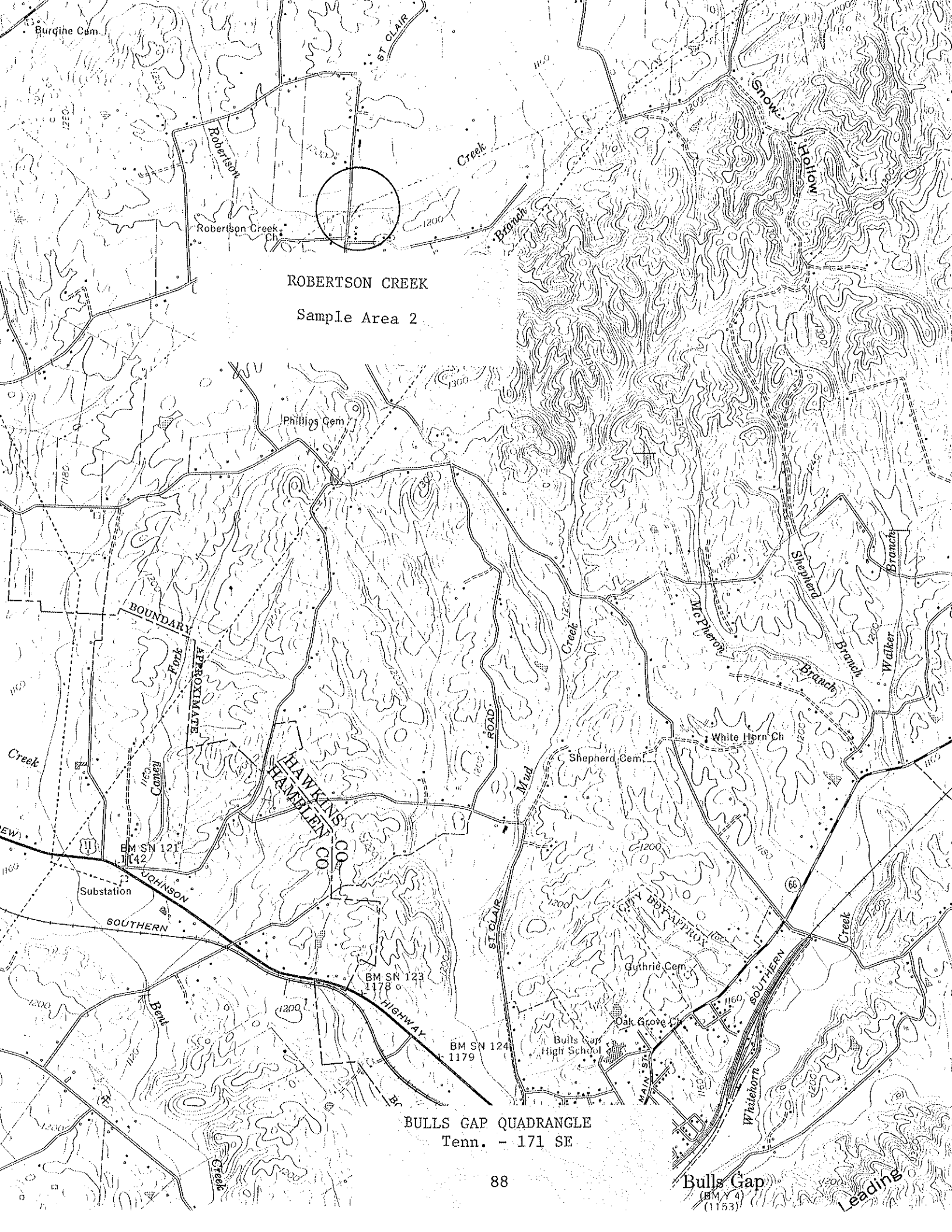
Figure 11.

ROBERTSON CREEK
SITE 1
BENTHIC MACROINVERTEBRATES



PERCENT OF TOTAL NUMBER OF ORGANISMS

n = 618
TAXA RICHNESS = 42
Figure 12.



BULLS GAP QUADRANGLE
Tenn. - 171 SE

FISH DATA

Stream: Robertson Creek
Date: 11 June 1992

Watershed: Holston River
County: Hawkins

Area: Site # 2
Sample Length: 100 ft

Lat-Long: 361812N - 830603W
Reach: 06010104-41,0

Type of Sampling: Electrofishing
Elevation: 1,160 ft

Gear Type: 1 Backpack Unit
Time: 1630 - 1645

Species	TADS Code	Total Number	Inch Class	Total Weight
Ambloplites rupestris	13	1	-	-
Lepomis auritus	201	1	-	-
Pimephales notatus	334	6	-	-
Rhinichthys atratulus	351	12	-	-
Gambusia affinis	147	1	-	-
Etheostoma simoterum	111	12	-	-
Cottus carolinae	40	19	-	-
Cambarus bartonii		2		
C. longirostris		9		
Orconectes rusticus		2		

Avg. width - 6 to 8 ft
Avg. depth - 4 to 6 in
Water temperature - 70 F
Conductivity - 412 micromhos/cm
Very silty stream at this site.

Site was located just downstream of the bridge crossing on St. Clair/Bulls Gap Road. Shocking at 120 volts AC.

Collectors: R.D. Bivens, M.T. Fagg, and C.E. Williams

Stony Point Creek

Two qualitative fishery surveys were conducted in June 1992:

Location and Length - Tributary to the Holston River. Sample Site 1 was located just downstream of Hwy. 346 at the bridge crossing on the off-road, near stream mi 1.6. It was 400 ft in length and averaged 11.8 ft in width. Sample Site 2 was located just off Cold Spring Road, 0.3 mi upstream of Carter Valley Road. It was 200 ft in length and averaged 4 to 5 ft in width. Both sites were sampled on 9 June 1992, and were in Hawkins County (Site 1, Stony Point Quadrangle; Site 2, Plum Grove Quadrangle).

Sampling Methodology - Site 1 was sampled using two backpack electrofishing units operating at 120 volts AC. Site 2 was sampled using one backpack electrofishing unit operating at 120 volts AC.

Water Quality - Data were collected from midstream at mid-depth at Site 1 only. On 9 June 1992: DO - 9.5 ppm, pH - 8.4, Temperature - 63 F, Conductivity - 345 micromhos/cm.

Benthos Collection - Benthic organisms were collected by conducting a 3 man-h qualitative sample at Site 1 only. The sample contained 738 organisms representing 54 taxa.

Fish Collected:

	Site 1				Site 2			
Species	No.	% by No.	Wt.	% by Wt.	No.	% by No.	Wt.	% by Wt.
Rock bass	18	3.0	1.38	14.2				
Bluegill					1	0.4	0.02	1.2
Non-game Fish	2	0.3	0.19	2.0				
Forage Fish	587	96.7	8.13	83.8	251	99.6	1.59	98.8
Total	607		9.70		252		1.61	

Comments - This stream was surveyed primarily to develop a fish species diversity list and collect stream information for TADS. The Agency has made no previous studies or fish collections from this stream.

We collected a total of 607 fish weighing 9.70 lb and comprising 12 species from Site 1. Only one game species, the rock bass (*Ambloplites rupestris*), was collected. A total of only 18 rock bass were collected and they ranged from 1 to 8-in (Fig. 13). They made up about 3% of the total number and about

14% of the total weight collected. Two non-game and nine forage species were also collected here and these comprised about 97% of the total number and 86% of the total weight. Non-game fish were represented by single specimens each of the northern hog sucker (*Hypentelium nigricans*) and the yellow bullhead (*Ameiurus natalis*). Stonerollers (*Campostoma anomalum*) and blacknose dace (*Rhinichthys atratulus*) were the most abundant forage species present. The warpaint shiner (*Luxilus coccogenis*) was the only fairly intolerant species present. However, the greenside darter (*Etheostoma blennioides*) and snubnose darter (*E. simoterum*) were also collected.

At Site 2, the stream was very small and only a limited survey was conducted with emphasis placed on the fish species present and their relative abundance. We collected a total of 252 fish weighing 1.61 lb and comprising five species. A single bluegill (*Lepomis macrochirus*) was the only game species present. The blacknose dace was the most abundant species present at this site and it alone accounted for about 93% of the total number of fish collected. Stonerollers, banded sculpin, and creek chubs (*Semotilus atromaculatus*) were the other species present. The bluegill was the only species collected here, but not at the downstream site.

Stony Point Creek is a fairly low gradient stream that is apparently being impacted by non-point source pollution, mainly siltation. This was especially evident at the upstream site. In all, only 13 species were collected from the two sample sites and for the most part, the species assemblage was typical for streams with polluted conditions. However, siltation at the downstream site was considered average for Ridge and Valley streams and the species components may actually reflect small stream size more than any extreme level of impairment.

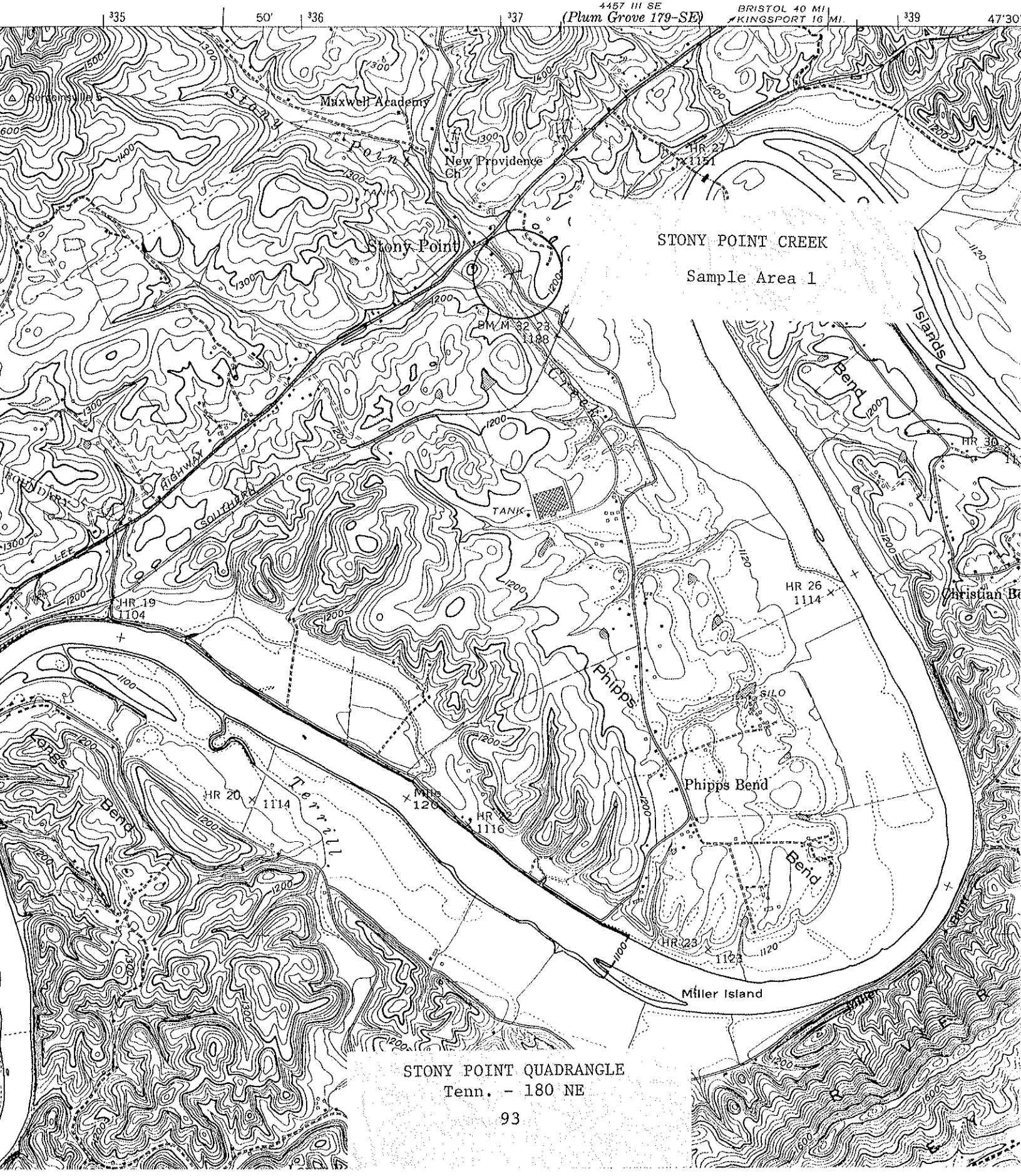
Benthic macroinvertebrates from our sample at Site 1 included Baetidae, Caenidae, Ephemerellidae, Ephemeridae, Heptageniidae, Leptophlebiidae, and Oligoneuriidae mayflies, Peltoperlidae and Perlidae stoneflies, Hydropsychidae, Hydroptilidae, Leptoceridae, Limnephilidae, Philopotamidae, Rhyacophilidae, and Uenoidae caddisflies, and Elmidae and Psephenidae beetles. Gastropods included Lymnaeidae and *Physa* snails. Two crayfish species, *Cambarus longirostris* and *Orconectes rusticus* were collected. *O. rusticus* is an introduced species that is becoming established in both the Holston River and Nolichucky River drainages and is expanding its range in east Tennessee. The rusty crayfish may be replacing some of our native crayfish species due to its adaptive capability. Ephemeropterans represented about 30%, coleopterans about 24%, trichopterans about 17%, dipterans about 8%, and odonates and plecopterans each, about 6% of the total number of organisms collected (Fig. 14). A total of 54 taxa was collected at this site. Many of which were good water quality indicators.

Of special interest is the collection of 4 specimens of *Hydropsyche rotosa* at this site. This makes the second stream in the Holston system where we have collected this species. Prior to our collecting *H. rotosa* in Puncheon Camp Creek in Grainger County in 1989 (Bivens and Williams 1990), it was known only from its type locality near Tusculum College in Greene County, Tennessee (Etnier and Schuster 1979). This makes five streams in three different river systems from which we have taken *H. rotosa* (Bivens and Williams 1990; 1991).

Management Recommendations:

1. No specific management can be suggested at present. However, anything to abate pollution would be beneficial.

UNITED STATES
TENNESSEE VALLEY AUTHORITY
MAPS AND SURVEYS BRANCH



STONY POINT QUADRANGLE
Tenn. - 180 NE

PHYSIOCHEMICAL DATA

A. LOCATION:

Stream: Stony Point Creek — Date: 9 June 1992

Watershed: Holston River — County: Hawkins

Area: Site # 1 — Sample Length: 400 ft

Lat-Long: 362918N - 824909W — Reach: 06010104-

Data Collected By: Rick D. Bivens, Mark T. Fagg, and Carl E. Williams

B. PHYSICAL CHARACTERISTICS:

1. Avg. Width 11.8 ft Avg. Depth 0.6 ft Max. Depth 1.8 ft
2. Estimated Percent of Stream in Pools is 25%.
3. Estimated Percent **Pool** Bottom is Silt 10% Sand 15% Gravel 30% Rubble 25% Boulders 10% Bedrock 10%.
4. Estimated Percent **Riffle** Bottom is Silt 10% Sand 10% Gravel 20% Rubble 30% Boulders 10% Bedrock 20%.
5. Abundance of Littoral Aquatic Plants is Average (*Dianthera americana*).
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 20% of the Stream, Average in 40%, Poor in 40%.
7. Shade or Canopy Good over 80% of Stream.
8. Flow (CFS) 3.6: Compared to Normal: Slightly High
9. Present Weather: Overcast with drizzle and light rain. Air temperature - 75 F @ 12:15 pm.
10. Weather (last 24 h): Cloudy and rain.
11. pH 8.4 Temp. 63.1 F Conductivity 345 micromhos/cm D.O. 9.5 ppm Saturation 99%
12. Comments: Sample area location was just downstream of Hwy. 346 at the off-road bridge crossing, near stream mi 1.6. Stream was slightly high and slightly dingy from overnight and morning rain. Siltation appeared about average for Ridge and Valley stream - non-point pollution.

FISH DATA

Stream: Stony Point Creek
Date: 9 June 1992

Watershed: Holston River
County: Hawkins

Area: Site # 1
Sample Length: 400 ft

Lat-Long: 362918N - 824909W
Reach: 06010104-

Type of Sampling: Electrofishing
Elevation: 1,140 ft

Gear Type: 2 Backpack Units
Time: 1500 - 1600

Species	TADS Code	Total Number	Inch Class	Total Weight
Ambloplites rupestris	13	2	1	0.01
" "	"	1	2	0.02
" "	"	3	3	0.11
" "	"	9	4	0.58
" "	"	2	5	0.22
" "	"	1	8	0.44
Ameiurus natalis	174	1	6	0.17
Hypentelium nigricans	166	1	3	0.02
Campostoma anomalum	25	226	1-5	4.62
Luxilus chrysocephalus	249	56	2-5	0.68
L. coccogenis	248	10	3	0.16
Pimephales promelas	335	1	2	0.01
Rhinichthys atratulus	351	186	1-3	1.38
Semotilus atromaculatus	360	2	2-3	0.02
Etheostoma blennioides	80	11	2-4	0.19
E. simoterum	111	65	1-2	0.26
Cottus carolinae	40	30	1-4	0.81

Site was located just downstream of Hwy. 346 at the off-road bridge crossing, near stream mi 1.6. Shocking at 120 volts AC.

Collectors: R.D. Bivens, M.T. Fagg, and C.E. Williams

Stony Point Creek: Site # 1, Qualitative Benthic Sample

9 June 1992 Field # 355

Hawkins Co., TN; Just downstream of Hwy. 346, at the off-road bridge crossing. Coordinates: 362918N - 824909W. Stony Point, Tenn., # 180 NE Quad. Reach # 06010104-.

TAXA	NUMBER
AMPHIPODA:	
Gammaridae	1
ANNELIDA:	
Hirudinea	1
Oligochaeta	3
COLEOPTERA:	
Elmidae/*Dubiraphia* larva & adults	47
Macronychus glabratus adults	3
Optioservus larvae	16
Optioservus ovalis adults	8
Promoresia elegans larvae	10
Promoresia elegans adults	9
Stenelmis larvae and adults	41
Psephenidae/*Psephenus herricki* larvae	40
Psephenus herricki adults	6
DECAPODA:	
Cambaridae/*Cambarus longirostris* juveniles	4
Orconectes rusticus 2nd form males	4
Orconectes rusticus females	3
DIPTERA:	
Chironomidae larvae and pupa	28
Dixidae/*Dixa*	9
Simuliidae	10
Tipulidae/*Antocha*	1
Hexatoma	11
Tipula	3
EPHEMEROPTERA:	
Baetidae/*Baetis*	49
Caenidae/*Caenis*	1
Ephemerellidae/*Serratella deficiens*	20
Ephemeridae/*Ephemera*	21
Heptageniidae/*Heptagenia*	11
Stenacron interpunctatum	1
Stenonema early instars	35
Stenonema ithaca	8
S. mediopunctatum	19

Stony Point Creek: Site # 1, Qualitative Sample cont.

TAXA	NUMBER
EPHEMEROPTERA: (cont.)	
Leptophlebiidae/*Habrophlebiodes*	44
Paraleptophlebia	1
Oligoneuriidae/*Isonychia*	12
GASTROPODA:	
Lymnaeidae	1
Physidae/*Physa*	3
HEMIPTERA:	
Corixidae	1
Gerridae/*Gerris remigis* nymphs & adults	5
Veliidae/*Rhagovelia obesa* females	4
HYDRACARINA:	1
ISOPODA:	
Asellidae/*Lirceus*	22
MEGALOPTERA:	
Corydalidae/*Nigronia serricornis*	5
Sialidae/*Sialis*	1
ODONATA:	
Aeshnidae/*Boyeria vinosa*	8
Calopterygidae/*Calopteryx*	23
Coenagrionidae/*Argia*	1
Gomphidae/*Gomphus* (Genus A *consanguis*) *	8
Gomphus lividus	1
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	23
Perlidae/Perlesta	24
TRICHOPTERA:	
Hydropsychidae/*Ceratopsyche bronta*	2
Cheumatopsyche	34
Hydropsyche betteni/depravata	44
Hydropsyche rotosa	4
Hydroptilidae/*Hydroptila*	3
Leptoceridae/*Oecetis*	1
Limnephilidae/*Goera calcarata*	2
Philopotamidae/*Chimara*	26
Rhyacophilidae/*Rhyacophila fuscula*	2
Uenoidae/*Neophylax*	6
	738

* (from Louton 1982)

ROCK BASS FROM STONY POINT CREEK
SITE 1
INCH CLASS DISTRIBUTION

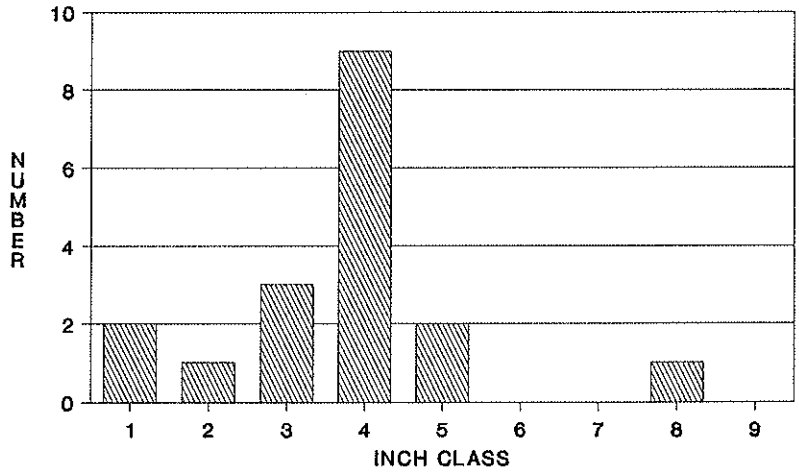
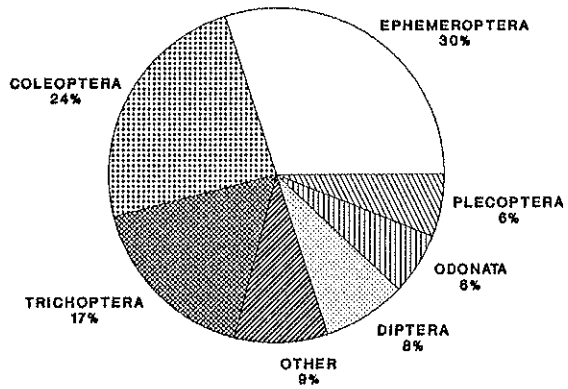


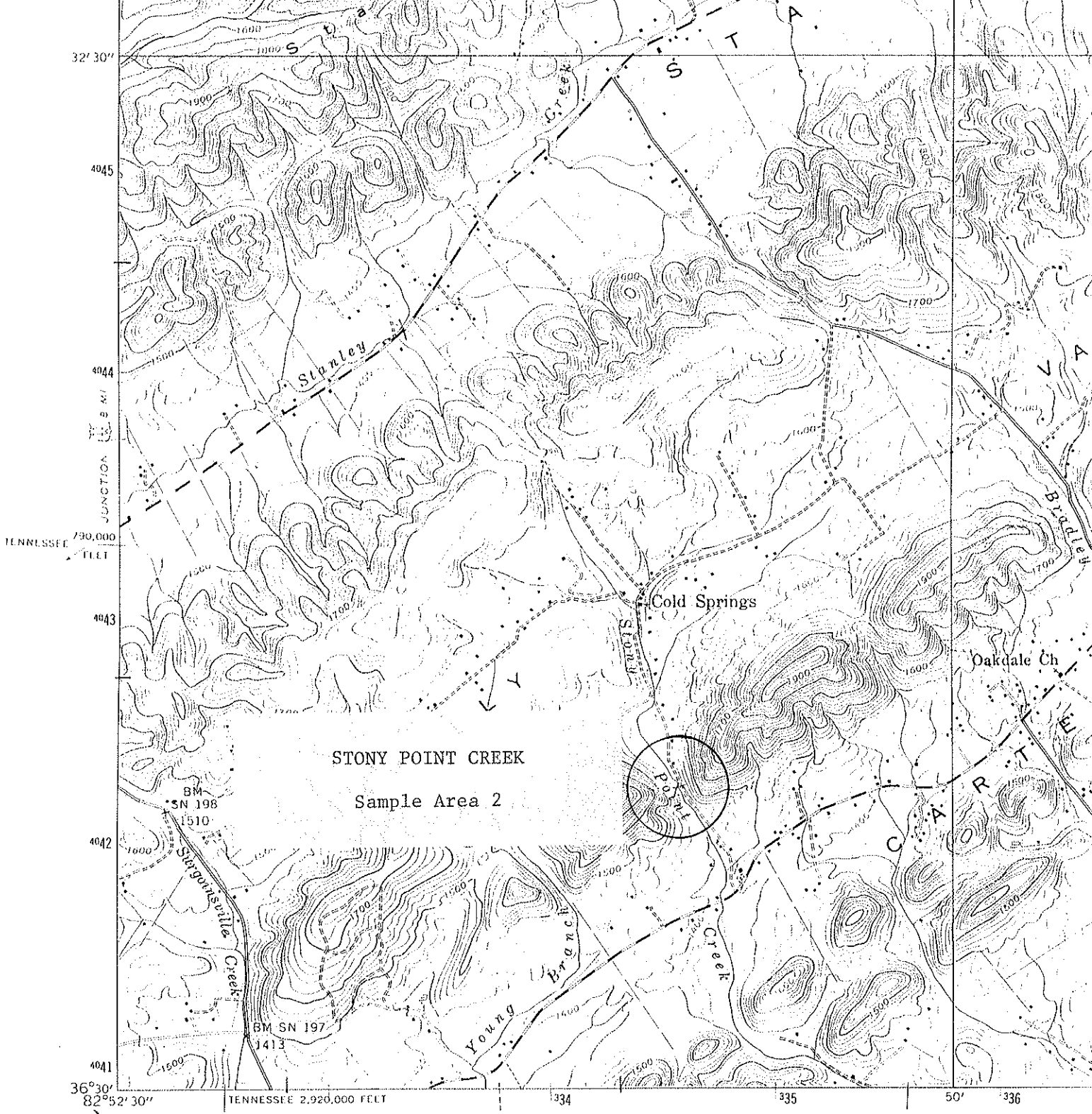
Figure 13.

STONY POINT CREEK
SITE 1
BENTHIC MACROINVERTEBRATES



PERCENT OF TOTAL NUMBER OF ORGANISMS

n = 738
TAXA RICHNESS = 54
Figure 14.



(Burem 180-NW)
4456 IV NW

Mapped, edited, and published by Geological Survey

Control by NOS/NOAA, USGS, and TVA

Topography by USGS by photogrammetric methods.
Map field checked by TVA, 1939

Polyconic projection. 1927 North American datum
10,000 foot grid based on Tennessee and
Virginia (South) rectangular coordinate systems
1000 meter Universal Transverse Mercator Grid ticks,
Zone 17, shown in blue

Revisions shown in purple and recompilation of woodland areas
compiled by the Geological Survey in c
of Virginia from aerial photographs tal
Tennessee Valley Authority from aeria
This information not field checked M

MN
GN
2½°
44 MILS
1°05'
19 MILS

UTM GRID AND 1978 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

1

PLUM GROVE QUADRANGLE
Tenn.-Va. - 179 SE

VI
U.S. TENNE

FISH DATA

Stream: Stony Point Creek
Date: 9 June 1992

Watershed: Holston River
County: Hawkins

Area: Site # 2
Sample Length: 200 ft

Lat-Long: 363044N - 825048W
Reach: 06010104-

Type of Sampling: Electrofishing
Elevation: 1,410 ft

Gear Type: 1 Backpack Unit
Time: 1800 - 1830

Species	TADS Code	Total Number	Inch Class	Total Weight
Lepomis macrochirus	206	1	3	0.02
Campostoma anomalum	25	5	2	0.04
Rhinichthys atratulus	351	234	1-3	1.52
Semotilus atromaculatus	360	1	2	0.01
Cottus carolinae	40	119	2-3	0.02

Cambarus bartonii females	2
C. longirostris juvenile female	1

Avg. width - 4 to 5 ft
Avg. depth - 3 to 4 in
Spring-fed stream (water cress)
Some gravel - rubble substrate in places; very silty.

Site was located just off Cold Spring Road, 0.3 mi upstream of Carter Valley Road. Shocking at 120 volts AC.

Collectors: R.D. Bivens, M.T. Fagg, and C.E. Williams

Boones Creek

One qualitative fishery survey was conducted in May 1992:

Location and Length - Tributary to Watauga River (Boone Res.). The sample area was located at the bridge crossing on Hwy. 36. It was approximately 200 ft in length and was sampled on 15 May 1992. The site was in Washington County (Boone Dam Quadrangle).

Sampling Methodology - The site was sampled with a single back-pack electrofishing unit operating at 120 volts AC.

Water Quality - No data collected.

Benthos Collection - No collection was made.

Fish Collected - (See data sheet for species list)

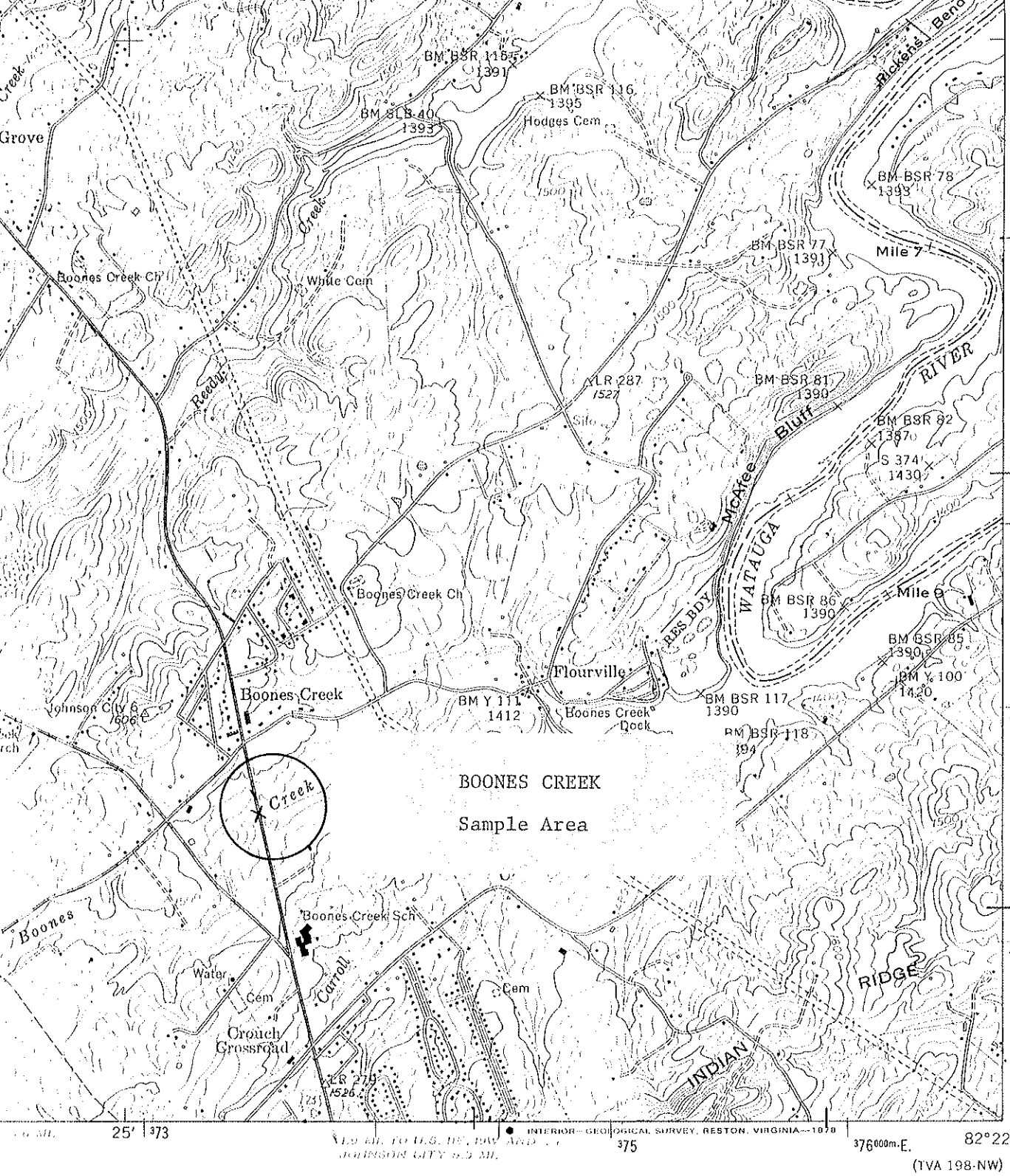
Comments - This stream was sampled primarily to collect fish to use in an exhibit for Johnson City school children at the Winged Deer Park in Washington County. While making this collection we took the opportunity to develop a reasonably comprehensive fish species diversity list for TADS. Only a limited survey was conducted and emphasis was placed on the fish species present. The Agency has made no previous studies or fish collections from this stream.

A total of eight fish species was collected. Two native game species, rock bass (*Ambloplites rupestris*) and bluegill (*Lepomis macrochirus*), along with the introduced redbreast sunfish (*L. auritus*) were present. One non-game and four forage species were also collected here. These included northern hog suckers (*Hypentelium nigricans*), stonerollers (*Campostoma anomalum*), blacknose dace (*Rhinichthys atratulus*), fantail darters (*Etheostoma flabellare*) and snubnose darters (*E. simoterum*).

The stream, at the area sampled, is fairly small and has a gravel-rubble-bedrock substrate with some boulders and has fairly heavily siltation. It flows through both agricultural and urban areas and based on the fish species occurrence in our cursory sample it appears to be significantly impacted. We would expect a good quality stream of this size at this elevation in the Ridge and Valley to typically have at least 5 to 8 additional species of fish present. No benthic sample was made but we did collected one crayfish species, *Cambarus longirostris*.

Management Recommendations:

1. No specific management can be suggested at present, however anything to abate the pollution would be beneficial.



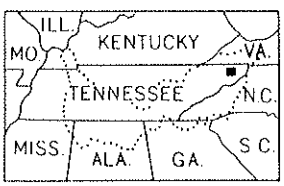
INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1970

ROAD CLASSIFICATION

Heavy-duty	Poor motor road
Medium-duty	Wagon and jeep track
Light-duty	Foot trail

( ) U. S. Route ( ) State Route

In developed areas, only through roads are classified



QUADRANGLE LOCATION

BOONE DAM, TENN.

N3622.5-W8222.5/7.5

1959

PHOTOREVISED 1968

AMS 4556 IV NW-SERIES V841

FISH DATA

Stream: Boones Creek

Date: 15 May 1992

Watershed: Watauga River

County: Washington

Area: See comments

Sample Length: 200 ft

Lat-Long: 362313N - 822437W

Reach: 06010103-6,0

Type of Sampling: Electrofishing

Elevation: 1,450 ft

Gear Type: 1 Backpack Unit

Time: 0800 -0830

Species	TADS Code	Total Number	Inch Class	Total Weight
Ambloplites rupestris	13	-	-	-
Lepomis auritus	201	-	-	-
L. macrochirus	206	-	-	-
Hypentelium nigricans	166	-	-	-
Campostoma anomalum	25	-	-	-
Rhinichthys atratulus	351	-	-	-
Etheostoma flabellare	92	-	-	-
E. simoterum	111	-	-	-

Cambarus longirostris

Site was located at the bridge crossing on Hwy. 36. Shocking at 120 volts AC.

Collectors: R.D. Bivens, and C.E. Williams

Roan Creek

Two qualitative fishery surveys were conducted on Roan Creek in July 1992:

Location and Length - Tributary to Watauga River (Watauga Reservoir). Sample Site 1 was located at the bridge crossing at the junction of Reese Hill Road and Slimp Branch Road and was sampled on 1 July 1992. It was 300 ft in length and averaged 41.1 ft in width. Site 2 was located just downstream of the bridge crossing on Don Wallace Road and was sampled on 2 July 1992. Both sites were in Johnson County (Mountain City Quadrangle).

Sampling Methodology - Site 1 was sampled with two backpack electrofishing units operating at 120 volts AC, and shocking into a 20 ft seine. Site 2 was sampled with two backpack units operating at 240 volts AC.

Water Quality - Data were collected from midstream at mid-depth at each site. Site 1 on 1 July 1992: DO - 10.1 ppm, pH - 8.5, Temperature - 68 F, Conductivity - 90 micromhos/cm. Site 2 on 2 July 1992: DO - 10.9 ppm, pH - 7.9, Temperature - 61 F, Conductivity - 70 micromhos/cm.

Benthos Collection - Benthic organisms were collected by conducting a 3 man-h qualitative sample at each site. Site 1 sample contained 431 organisms representing 48 taxa. Site 2 sample contained 294 organisms representing 36 taxa.

Fish Collected:

	Site 1				Site 2			
Species	No.	% by No.	Wt.	% by Wt.	No.	% by No.	Wt.	% by Wt.
Rainbow trout	3	0.7	0.64	4.5	3	6.0	0.38	7.8
Smallmouth bass	1	0.2	0.30	2.1				
Rock bass	9	2.1	1.19	8.3				
Bluegill	7	1.7	0.26	1.8				
Non-game Fish	10	2.4	3.50	24.4	10	20.0	3.70	75.7
Forage Fish	392	92.9	8.48	59.0	37	74.0	0.81	16.6
Total	422		14.37		50		4.89	

Comments - This stream was surveyed primarily to develop a fish species diversity list and collect stream information for TADS. No previous Agency studies or fish collection data were available from this stream.

We collected a total of 422 fish weighing 14.34 lb and comprising 22 species from Site 1. Three native game species, smallmouth bass (*Micropterus dolomieu*), rock bass (*Ambloplites rupestris*), and bluegill (*Lepomis macrochirus*) along with three rainbow trout (*Oncorhynchus mykiss*) were collected. Only one 8-in smallmouth bass, 7 small bluegill, and 9 rock bass were collected at this site. Rock bass made up about 2% of the total number and about 8% of the total weight of all fish collected. The rainbow trout appeared to be stream-reared fish and ranged from 4 to 10-in. These possibly came from coldwater tributaries or migrated from the upstream where the Agency manages upper Roan Creek by stocking rainbow trout. Three non-game and 15 forage species were also collected and these comprised 95% of the total number and 83% of the total weight. Forage fish made up about 93% of the total number and about 59% of the total weight. Of particular interest is the occurrence of fairly intolerant species such as the warpaint shiner (*Luxilus coccogenis*), Tennessee shiner (*Notropis leuciodus*), telescope shiner (*N. telescopus*), and the fatlips minnow (*Phenacobius crassilabrum*). However, these were represented by very few specimens each. Darter species included the greenside (*Etheostoma blennioides*), redline (*E. rufilineatum*), and snubnose (*E. simoterum*) and were also represented by few specimens. Stonerollers (*Campostoma anomalum*) and mottled sculpin (*Cottus bairdi*) were the most abundant species present and together they accounted for almost 59% of the total number of fish collected.

At Site 2 we collected a total of 50 fish weighing 4.89 lb and comprising five species. Rainbow trout were the only game species present at this site, but only three were collected. These ranged from 3 to 8-in and appeared to be stream-reared fish. The Agency manages this section of stream by stocking fingerling and catchable size rainbow trout. One non-game species and three forage species were also collected here and these comprised 94% of the total number and 92% of the total weight of all fish collected. Forage species made up about 74% of the total number and about 17% of the total weight. However, all fish were collected in much lower numbers than expected Additional species collected here but not at the downstream site included only the creek chub (*Semotilus atromaculatus*).

Based on the fish species occurrence, this stream appears to be a fair to good quality Blue Ridge stream. A total of 23 species was collected from the two sample sites combined, a few of which were intolerant forms. Most of these were collected at the downstream site, however the apparent paucity of fish at both sites was somewhat puzzling. At the lower site, this may indicate a transition from coolwater to coldwater habitat as suggested by the occurrence of trout and mottled sculpin or it may have been due in part to inefficiency in our sampling effort. The stream was large and wide with several deep pool areas that were difficult to sample with our limited crew. Also, a local landowner informed us that recently sewage had been released in the stream from Mountain City and we noted several fish at this

site with sores and fungus infections. It is probable that we were observing some level of impairment at this site. At the upstream site, the stream had definitely changed to coldwater, but very few fish were collected here. This may reflect the habitat type at this site to some extent as the stream was shallow and wide with lots of sand and bedrock substrate. This is not optimal for trout reproduction. However, approximately 5,000 fingerling trout were stocked in this reach of stream in September of 1991. Apparently there was not very good survival of this group of fish. The stream is fairly silty with lots of domestic rubbish along the stream course. This indicates an additional perturbation from domestic sources upstream. It is also interesting to note that no sculpin were collected at all at this site. Sculpin are generally a common species component of Blue Ridge trout streams at this elevation.

Benthic macroinvertebrates from our sample at Site 1 included Baetidae, Ephemerellidae, Ephemeridae, Heptageniidae, Leptophlebiidae, and Oligoneuriidae mayflies, Leuctridae, Perlidae, and Perlodidae stoneflies, hydropsychid caddisflies, and Dryopidae, Elmidae, and Psephenidae beetles. *Physa* and pleurocerid snails were present and two crayfish species, *Cambarus longirostris* and *Orconectes erichsonianus* were collected. Trichopterans represented about 29%, ephemeropterans about 25%, dipterans about 17%, odonates about 8% each, coleopterans about 7%, and plecopterans about 2% of the total number of organisms collected (Fig. 15). A total of 48 taxa was collected at this site indicating a fairly diverse community. However, many of the more abundant groups were fairly tolerant forms.

Benthic macroinvertebrates from our sample at Site 2 included Baetidae, Ephemerellidae, Ephemeridae, Heptageniidae, and Leptophlebiidae mayflies, Peltoperlidae, Perlidae, Perlodidae, and Pteronarcyidae stoneflies, Glossosomatidae, Hydropsychidae, Limnephilidae, Philopotamidae, Polycentropodidae, and Uenoidae caddisflies, and Elmidae and Psephenidae beetles. *Cambarus longirostris* was the only crayfish species collected at this site. Pleurocerid snails were also present. Ephemeropterans represented about 39%, plecopterans about 25%, trichopterans and dipterans each about 12%, and coleopterans about 7% of the total number of organisms collected (Fig. 16). A total of 36 taxa was collected at this site indicating a fairly diverse community also. Some of these were "high quality" organisms such as the perlid stonefly *Paragnetina immarginata*, that alone accounted for about 18% of the total number of all organisms collected.

Management Recommendations:

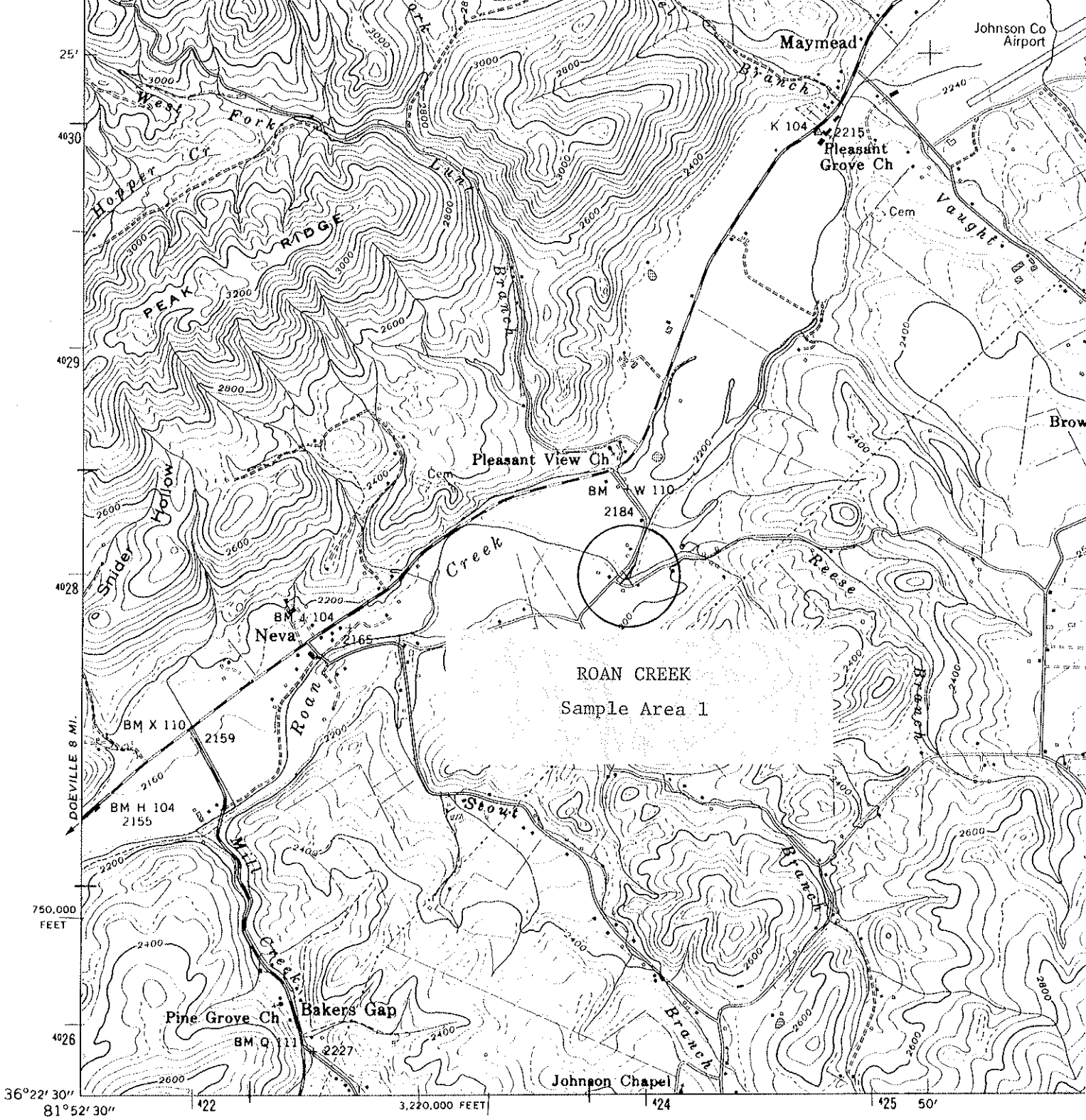
1. The fish species diversity and taxa richness of benthic macroinvertebrates and the presence of several intolerant forms indicate that this is still a good quality Blue Ridge stream that merits extra protection from pollution and

habitat destruction.

2. It appears that we looked at the stream during a time of change in which some of the intolerant fish species may be on their way out. The Agency needs to follow up on pollution problems, especially in the lower reach.

3. Continue to manage the upper stream by stocking catchable size rainbow trout as habitat and stream conditions do not seem to favor natural reproduction of trout. We may need to evaluate the merits of stocking fingerling trout in this stream as apparently there was little survival of those stocked in the fall of 1991.

4. Fish habitat appears somewhat lacking in the upstream area. Habitat improvements and structures may be beneficial in some reaches.



(Elk Mills 214 SW)
4666 IV SW

Mapped by Tennessee Valley Authority
Edited and published by the Geological Survey

Control by NOS/NOAA, USGS, and TVA

Topography by photogrammetric methods. Map field checked by TVA, 1938.

Polyconic projection. 1927 North American datum
10,000-foot grid based on Tennessee rectangular coordinate system
1000 meter Universal Transverse Mercator Grid ticks, Zone 17, shown in blue

There may be private inholdings with the National or State reservations sh

Revisions shown in purple and woodla the Tennessee Valley Authority from a taken 1978 and other source data. Th not field checked. Map edited 1978

MN
GN
3½°
62 MILS
0°29'
9 MILS

UTM GRID AND 1978 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

MOUNTAIN CITY QUADRANGLE
Tenn. - 214 NE

selected fence and field
s. This information is unchecked

U.S. TENNESS
A FC

PHYSIOCHEMICAL DATA

A. LOCATION:

Stream: Roan Creek — Date: 1 July 1992

Watershed: Watauga River — County: Johnson

Area: Site # 1 — Sample Length: 300 ft

Lat-Long: 362345N - 815053W — Reach: 06010103-34,1

Data Collected By: Rick D. Bivens, Mark T. Fagg, Chris Seay, and Dwain E. Bivens

B. PHYSICAL CHARACTERISTICS:

1. Avg. Width 41.1 ft Avg. Depth 1.2 ft Max Depth 5.0 ft
2. Estimated Percent of Stream in Pools is 30%.
3. Estimated Percent **Pool** Bottom is Silt 20% Sand 30% Gravel 20% Rubble 15% Boulders 15%.
4. Estimated Percent **Riffle** Bottom is Silt 5% Sand 5% Gravel 25% Rubble 30% Boulders 35%.
5. Abundance of Littoral Aquatic Plants is Average (River weed).
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 20% of the Stream, Average in 50%, Poor in 30%.
7. Shade or Canopy Good over 25% of Stream.
8. Flow (CFS) 88.0: Compared to Normal: Normal
9. Present Weather: Partly cloudy and hot.
   Air temperature - 83 F @ 1:30 pm.
10. Weather (last 24 h): Scattered showers and warm.
11. pH 8.5 Temp. 67.8 F Conductivity 90 micromhos/cm
    D.O. 10.1 ppm Saturation 110%
12. Comments: Sample area location was at the bridge crossing on Slimp Branch Road at the junction of Reese Hill Road. Several fish noted with sores and fungus. Local landowner stated that Mountain City dumps sewage into the stream.

FISH DATA

Stream: Roan Creek
Date: 1 July 1992

Watershed: Watauga River
County: Johnson

Area: Site # 1
Sample Length: 300 ft

Lat-Long: 362345N - 815053W
Reach: 06010103-34,1

Type of Sampling: Electrofishing
Elevation: 2,200 ft

Gear Type: 2 Backpack Units & Seine
Time: 1530 - 1800

Species	TADS Code	Total Number	Inch Class	Total Weight
Oncorhynchus mykiss	353	1	4	0.04
" "	"	1	8	0.21
" "	"	1	10	0.39
Micropterus dolomieu	218	1	8	0.30
Ambloplites rupestris	13	3	3	0.11
" "	"	1	4	0.05
" "	"	2	5	0.26
" "	"	1	6	0.20
" "	"	2	7	0.57
L. macrochirus	206	2	1	t
" "	"	1	2	0.01
" "	"	1	3	0.02
" "	"	2	4	0.09
" "	"	1	6	0.14
Hypentelium nigricans	166	7	2-11	2.54
Moxostoma duquesnei	229	2	3-14	0.94
Ichthyomyzon sp.	-	1	6	0.02

Site was located at the bridge crossing on Slimp Branch Road at the junction of Reese Hill Road. Shocking at 120 volts AC and shocking into a 20 ft seine.

Collectors: R.D. Bivens, M.T. Fagg, C. Seay, and D.E. Bivens

FISH DATA (continued)

Stream: Roan Creek
Date: 1 July 1992

Watershed: Watauga River
County: Johnson

Area: Site # 1
Sample Length: 300 ft

Lat-Long: 362345N - 815053W
Reach: 06010103-34,1

Type of Sampling: Electrofishing
Elevation: 2,200 ft

Gear Type: 2 Backpack Units & Seine
Time: 1530 -1800

Species	TADS Code	Total Number	Inch Class	Total Weight
Campostoma anomalum	25	198	2-6	4.97
Cyprinella galactura	253	19	1-4	0.29
Hybopsis amblops	155	7	1-2	0.03
Luxilus chrysocephalus	249	5	2-6	0.23
L. coccogenis	248	11	1-4	0.31
Nocomis micropogon	234	45	2-6	1.00
Notropis leuciodus	255	3	1-2	0.01
N. rubricroceus	262	32	2-3	0.22
N. telescopus	272	2	3	0.02
Phenacobius crassilabrum	328	1	3	0.01
Rhinichthys atratulus	351	6	2	0.04
Etheostoma blennioides	80	3	3-4	0.07
E. rufilineatum	108	8	1-2	0.06
E. simoterum	111	3	1-2	0.02
Cottus bairdi	39	49	1-3	1.20

Site was located at the bridge crossing on Slimp Branch Road at the junction of Reese Hill Road. Shocking at 120 volts AC and shocking into a 20 ft seine.

Collectors: R.D. Bivens, M.T. Fagg, C. Seay, and D.E. Bivens

Roan Creek: Site # 1, Qualitative Benthic Sample

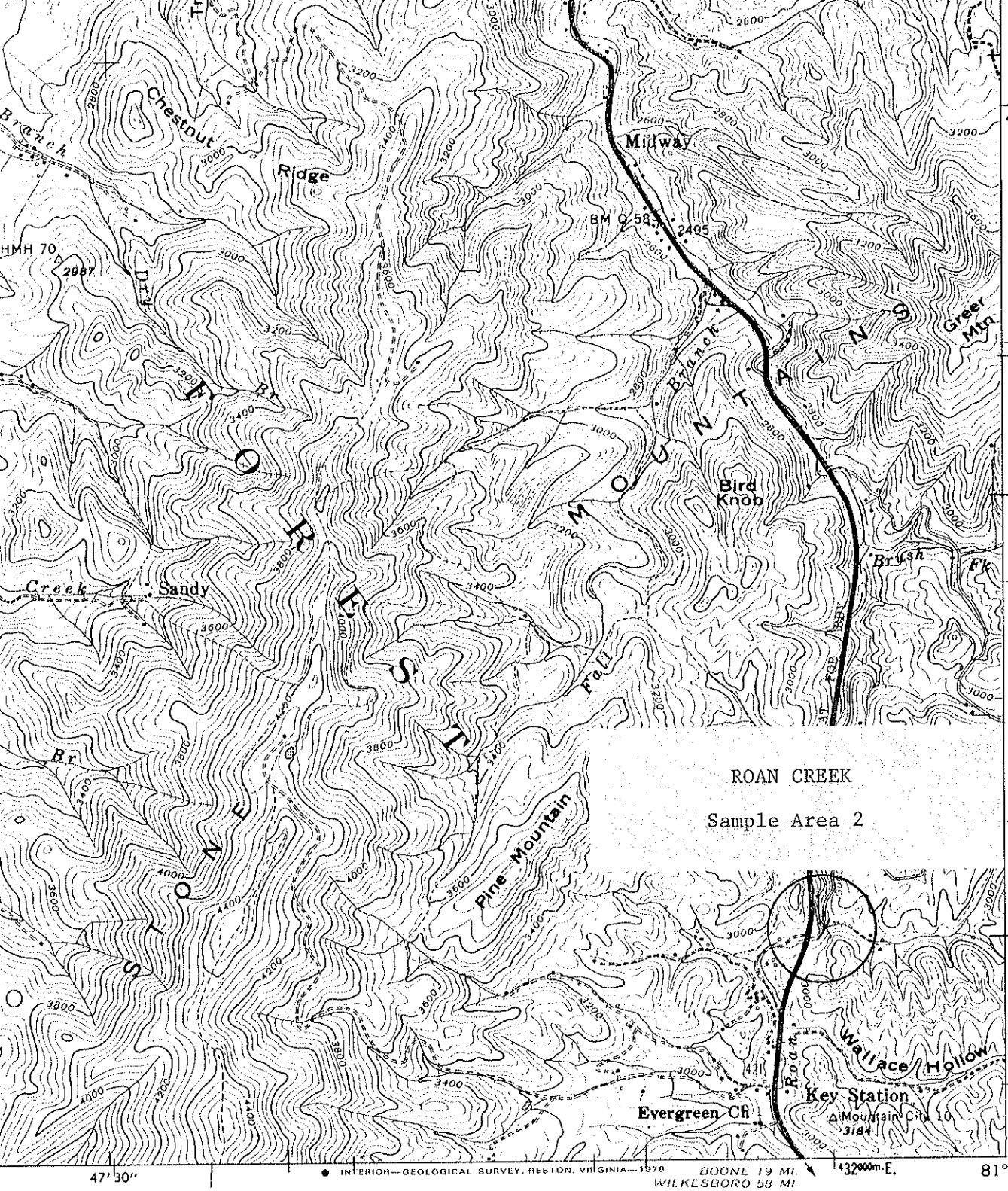
1 July 1992 Field # 363

Johnson Co., TN; At the bridge on Slimp Branch Road. Coordinates: 362345N - 815053W. Mountain City, Tenn., # 214 NE Quad. Reach # 06010103-34,1.

TAXA	NUMBER
ANNELIDA:	
Hirudinea	1
Oligochaeta	10
COLEOPTERA:	
Dryopidae/*Helichus* adult	1
Elmidae/*Dubiraphia* adults	2
Optioservus larva	1
Promoresia elegans	3
Hydrophilidae/*Sperchopsis tessellatus* larva	1
Psephenidae/*Psephenus herricki* larvae	13
Psephenus herricki adults	9
DECAPODA:	
Cambaridae/*Cambarus longirostris* female	1
Orconectes erichsonianus 2nd from males	8
DIPTERA:	
Athericidae/*Atherix lantha*	2
Chironomidae larvae	38
Chironomidae pupae	6
Empididae	1
Simuliidae larvae & pupa	16
Tipulidae/*Antocha* larvae & pupa	9
EPHEMEROPTERA:	
Baetidae/*Baetis*	35
Centroptilum	1
Ephemerellidae/*Dannella lita*	3
Drunella cornuta	3
Ephemerella	15
Eurylophella	9
Serratella	12
Serratella deficiens	18
Ephemeridae/*Ephemera*	1
Heptageniidae/*Heptagenia*	1
Stenacron interpunctatum	1
Stenonema	4
Leptophlebiidae/*Paraleptophlebia*	2
Oligoneuriidae/*Isonychia*	4

Roan Creek: Site # 1, Qualitative Sample cont.

TAXA	NUMBER
GASTROPODA:	
Physidae/*Physa*	5
Pleuroceridae/Unidentified sp.	9
Unidentified sp.	1
HEMIPTERA:	
Veliidae/*Rhagovelia obesa* nymphs	14
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	6
Sialidae/*Sialis*	1
ODONATA:	
Calopterygidae/*Calopteryx*	4
Coenagrionidae/*Argia*	7
Enallagma	5
Gomphidae/*Gomphus* early instars	3
Gomphus lividus	16
Hagenius brevistylus	2
Stylogomphus albistylus	1
Stylurus scudderi	4
PLECOPTERA:	
Leuctridae	2
Perlidae/*Paragnetina immarginata*	2
Perlesta	2
Perlodidae/*Isoperla holochlora*	2
TRICHOPTERA:	
Hydropsychidae/*Ceratopsyche cheilonis*	3
C. morosa	4
C. sparna	70
Cheumatopsyche	46
	431



MOUNTAIN CITY, TENN.

N3622.5-8145/7.5

1938

PHOTOREVISED 1978

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37902

PHYSIOCHEMICAL DATA

A. LOCATION:

Stream: Roan Creek — Date: 2 July 1992

Watershed: Watauga River — County: Johnson

Station: Site # 2 — Sample Length: 374 ft

Lat-Long: 362303N - 814530W — Reach: 06010103-31,0

Data Collected By: Rick D. Bivens, Mark T. Fagg, Chris Seay, Jim Habera, Steve Fraley, and Dwain E. Bivens

B. PHYSICAL CHARACTERISTICS:

1. Avg. Width 19.4 ft Avg. Depth 1.0 ft Max. Depth 2.5 ft
2. Estimated Percent of Stream in Pools is 40%.
3. Estimated Percent **Pool** Bottom is Silt 10% Sand 20% Gravel 20% Rubble 20% Boulders 20% Bedrock 10%.
4. Estimated Percent **Riffle** Bottom is Silt 5% Sand 20% Gravel 10% Rubble 20% Boulders 25% Bedrock 20%.
5. Abundance of Littoral Aquatic Plants is Scarce.
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25% of the Stream, Average in 55%, Poor in 20%.
7. Shade or Canopy Good over 90% of Stream.
8. Flow (CFS) 17.4: Compared to Normal: Slightly High
9. Present Weather: Partly cloudy.
   Air temperature - 75 F @ 10:15 am.
10. Weather (last 24 h): Overcast, warm, scattered showers.
11. pH 7.9 Temp. 61.3 F Conductivity 70 micromhos/cm
    D.O. 10.9 ppm Saturation 110%
12. Comments: Sample area location was downstream of the bridge crossing on Don Wallace Road. Lots of sand and bedrock substrate here; not good habitat. Lots of domestic rubbish along the stream course.

FISH DATA

Stream: Roan Creek
Date: 2 July 1992

Watershed: Watauga River
County: Johnson

Area: Site # 2
Sample Length: 374 ft

Lat-Long: 362303N - 814530W
Reach: 06010103-31,0

Type of Sampling: Electrofishing
Elevation: 2,860 ft

Gear Type: 2 Backpack Units
Time: 1300 - 1330

Species	TADS Code	Total Number	Inch Class	Total Weight
Oncorhynchus mykiss	353	1	3	0.02
" "	"	2	8	0.36
Hypentelium nigricans	166	10	5-12	3.70
Campostoma anomalum	25	19	2-6	0.59
Rhinichthys atratulus	351	14	2-4	0.19
Semotilus atromaculatus	360	4	2-3	0.03

Site was located downstream of the bridge crossing on Don Wallace Road. Shocking at 240 volts AC.

Collectors: R.D. Bivens, M.T. Fagg, and C. Seay, J. Habera, S. Fraley, and D.E. Bivens

Roan Creek: Site # 2, Qualitative Benthic Sample

2 July 1992 Field # 364

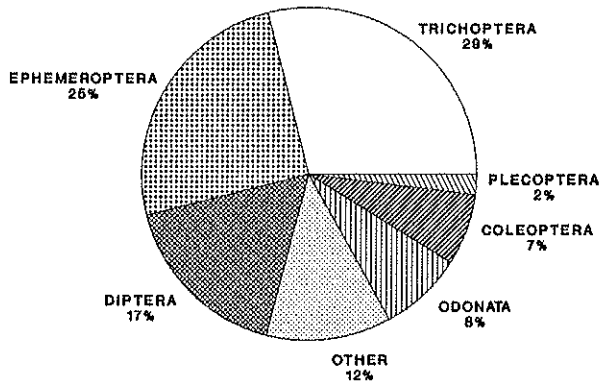
Johnson Co., TN; About 300 ft downstream of the bridge on Don Wallace Road. Coordinates: 362303N - 814530W. Mountain City, Tenn., # 214 NE Quad. Reach # 06010103-34,1.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	4
COLEOPTERA:	
Elmidae/*Optioservus* larva	1
Optioservus ovalis adult	1
Stenelmis adult	1
Psephenidae/*Psephenus herricki*	16
DECAPODA:	
Cambaridae/*Cambarus longirostris* female	1
Cambarus longirostris juveniles	2
DIPTERA:	
Chironomidae	3
Simuliidae	26
Tipulidae/*Hexatoma*	4
Limnophila	1
Tipula	1
EPHEMEROPTERA:	
Baetidae/*Baetis*	46
Ephemerellidae/*Drunella cornuta*	3
Serratella deficiens	8
Ephemeridae/*Ephemera*	1
Heptageniidae/*Epeorus dispar*	3
E. rubidus/subpallidus	18
Heptagenia	11
Rhithrogena	2
Stenacron	15
Stenonema pudicum	3
Leptophlebiidae/*Habrophlebiodes*	1
GASTROPODA:	
Pleuroceridae	10
HEMIPTERA:	
Gerridae nymph	1

Roan Creek: Site # 2, Qualitative Sample cont.

TAXA	NUMBER
PLECOPTERA:	
Peltoperlidae/*Peltoperla*	2
Perlidae/*Paragnetina immarginata*	53
Perlesta	4
Perlodidae/*Isoperla holochlora*	9
Pteronarcyidae/*Pteronarcys*	5
TRICHOPTERA:	
Glossosomatidae/*Glossosoma* larvae & pupa	4
Hydropsychidae/*Ceratopsyche sparna*	8
Cheumatopsyche	9
Limnephilidae/*Goera* pupa	1
Philopotamidae/*Dolophilodes distinctus*	7
Polycentropodidae/*Polycentropus*	4
Uenoidae/*Neophylax*	1
	294

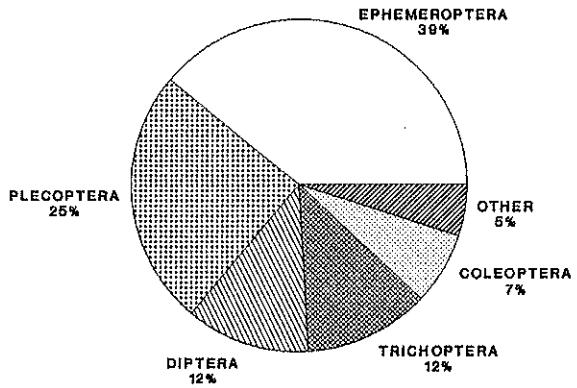
ROAN CREEK
SITE 1
BENTHIC MACROINVERTEBRATES



PERCENT OF TOTAL NUMBER OF ORGANISMS

n = 431
TAXA RICHNESS = 48
Figure 15.

ROAN CREEK
SITE 2
BENTHIC MACROINVERTEBRATES



PERCENT OF TOTAL NUMBER OF ORGANISMS

n = 294
TAXA RICHNESS = 36
Figure 16.

Possum Creek

One qualitative fishery survey was conducted in April 1992:

Location and Length - Tributary to South Fork Holston River (South Holston Tailwaters). The sample site was located just downstream of the bridge at the entrance to Holston Point School and was sampled on 9 April 1992. It was approximately 300 ft in length and averaged around 15 ft in width. The site was in Sullivan County (Keenburg Quadrangle).

Sampling Methodology - The site was sampled using a single back-pack electrofishing unit operating at 240 volts AC.

Water Quality - Data were collected from midstream at mid-depth on 9 April 1992: pH - 7.7, Temperature - 60.8 F, Conductivity - 45 micromhos/cm.

Benthos Collection - No collection was made.

Fish Collected - (See data sheet for species list)

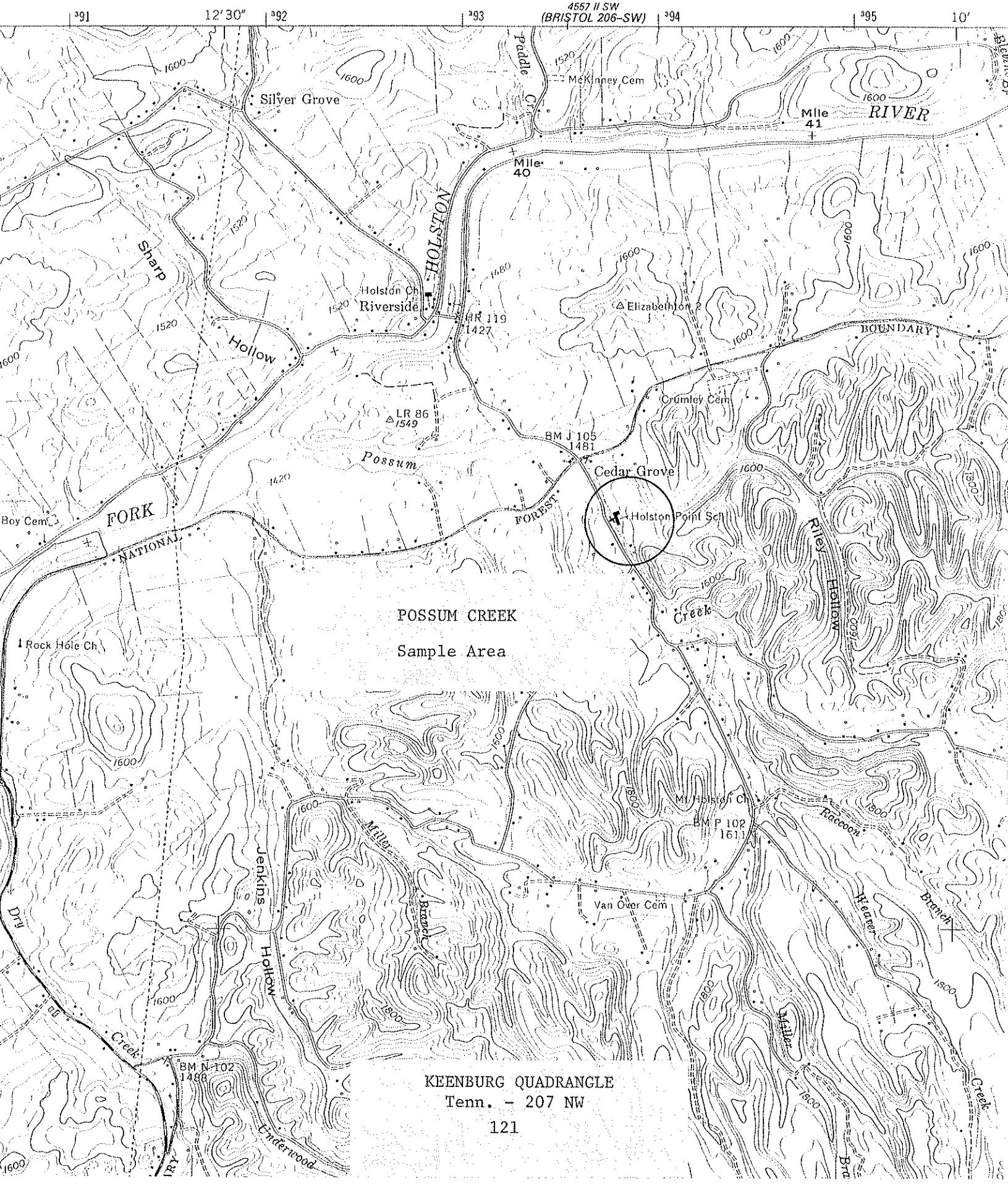
Comments - This stream was sampled primarily to develop a fish species diversity list for TADS. Only a limited survey was conducted and emphasis was placed on the fish species present. The Agency has made no previous studies or fish collections from this stream.

A total of 16 fish species was collected from this site. Three native game species, smallmouth bass (*Micropterus dolomieu*), rock bass (*Ambloplites rupestris*), and bluegill (*Lepomis macrochirus*), along with the introduced redbreast sunfish (*L. auritus*) and a single 13-in rainbow trout (*Oncorhynchus mykiss*) were collected. Smallmouth bass and rock bass were the primary game species present and the stream appears to support a good to excellent rock bass population. We easily collected 55 rock bass that ranged from 3 to 9-in (Fig. 17) within a 300 ft section of stream. The rainbow trout most probably migrated upstream from the South Holston tailwaters. Three non-game and eight forage species were also collected here. Of special interest is the occurrence of the fairly intolerant telescope shiner (*Notropis telescopus*) along with fantail darters (*Etheostoma flabellare*), redline darters (*E. rufilineatum*), and snubnose darters (*E. simoterum*). Stonerollers (*Campostoma anomalum*) were the most abundant forage species present in our limited sampling effort.

Management Recommendations:

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

UNITED STATES
TENNESSEE VALLEY AUTHORITY
MAPS AND SURVEYS BRANCH



KEENBURG QUADRANGLE
Tenn. - 207 NW

FISH DATA

Stream: Possum Creek
Date: 9 April 1992

Watershed: South Fork Holston River
County: Sullivan

Area: See comments
Sample Length: 300 ft

Lat-Long: 362837N - 821115W
Reach: 06010102-

Type of Sampling: Electrofishing
Elevation: 1,480 ft

Gear Type: 1 Backpack Unit
Time: 1530 - 1600

Species	TADS Code	Total Number	Inch Class	Total Weight
Oncorhynchus mykiss	353	1	13	-
Micropterus dolomieu	218	8	3-9	-
Ambloplites rupestris	13	55	3-9	-
Lepomis auritus	201	1	6	-
L. macrochirus	206	6	5-6	-
Catostomus commersoni	32	2	-	-
Hypentelium nigricans	166	8	-	-
Moxostoma duquesnei	229	3	-	-
Campostoma anomalum	25	25	-	-
Luxilus chrysocephalus	249	5	-	-
Notropis telescopus	272	6	-	-
Rhinichthys atratulus	351	3	-	-
Etheostoma flabellare	92	4	-	-
E. rufilineatum	108	5	-	-
E. simoterum	111	6	-	-
Cottus carolinae	40	3	-	-
Cambarus longirostris		2		

Avg. width - approx. 15 ft
Avg. depth - 8 to 10 in
Water temperature - 60.8 F
pH - 7.7
Conductivity - 45 micromhos/cm
Bedrock-cobble-gravel substrate with some boulders.
Medium siltation - domestic rubbish in the stream.

No fish measurements taken except for lengths on game fish.

Site was located just downstream of the bridge at the entrance to Holston Point School. Shocking at 240 volts AC.

Collectors: Rick D. Bivens, Mark T. Fagg, and Carl E. Williams

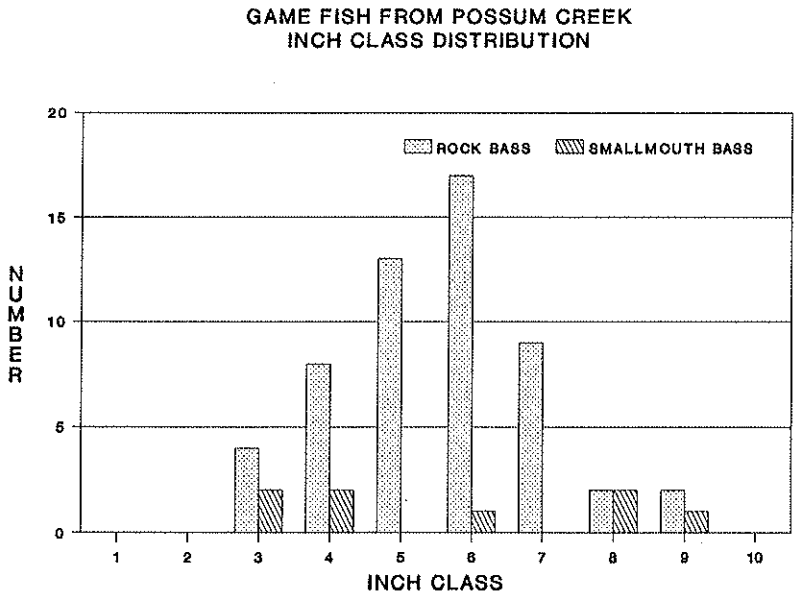

GAME FISH FROM POSSUM CREEK
INCH CLASS DISTRIBUTION
ROCK BASS
SMALLMOUTH BASS
NUMBER
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
INCH CLASS

Figure 17.

Hatcher Creek and Tributary

Two qualitative fishery surveys were conducted on Hatcher Creek and one sample on its Right Prong tributary in April 1992:

Location and Length - Tributary to the South Fork Holston River (Tailwater trib.). Sample Site 1 was located downstream of Hwy. 44 (Hickory Tree Road) between the bridges on Big Springs Road. It was 300 ft in length and averaged 8 to 10 ft in width. Site 2 was located upstream of the Hickory Tree community along White Road at about 1,640 ft elevation. It was 200 ft in length and averaged 6 to 8 ft in width. The Right Prong Hatcher Creek site was located along Ryder Church Road at about 1,560 ft elevation. It was 200 ft in length and averaged 8 to 10 ft in width. All sites were sampled on 9 April 1992 and all were in Sullivan County (Keenburg Quadrangle).

Sampling Methodology - Site 1 and 2 were sampled using one backpack electrofishing unit operating at 240 volts AC. The Right Prong tributary was sampled using one backpack unit operating at 360 volts AC.

Water Quality - Data were collected from midstream at mid-depth at each site on 9 April 1992. Site 1: pH - 7.6, Temperature - 45.5 F, Conductivity - 40 micromhos/cm. Site 2: pH - 8.2, Temperature - 59 F, Conductivity - 60 micromhos/cm. Right Prong site: pH - 7.4, Temperature - 50 F, Conductivity - 30 micromhos/cm.

Benthos Collection - No collection was made.

Fish Collected:

	Site 1		Site 2		Right Prong	
Species	No.	% by No.	No.	% by No.	No.	% by No.
Rainbow trout	11	7.3			11	6.1
Non-game Fish	8	5.3			4	2.2
Forage Fish	131	87.3	163	100.0	166	91.7
Total	150		163		181	

Comments - We sampled two sites on Hatcher Creek and one site on its Right Prong tributary primarily to see if trout from the South Holston Tailwater used the stream. We were also interested in developing a fish species list and collecting stream data for TADS. The Agency has made no previous studies or fish collections from this stream.

We collected a total of 150 fish comprising eight species from Site 1. Rainbow trout (*Oncorhynchus mykiss*) were the only game species present. Eleven trout ranging from 4 to 12-in were collected, two of which had tags from a recent tagging study by TVA. Two non-game and five forage species were collected here and these comprised about 93% of the total number of fish collected. Forage species made up about 87% of the total number. The fantail darter (*Etheostoma flabellare*) was the only darter species collected here and the stoneroller (*Campostoma anomalum*) was the most abundant species present.

At Site 2 we collected 163 fish comprising four forage species. No game or non-game fish were collected here. All four species were collected at the downstream site and the blacknose dace (*Rhinichthys atratulus*) was the most abundant species present. Fantail darters were also collected here and were fairly abundant. The low species diversity at this site probably reflects the overall small stream size rather than any impairment.

From the Right Prong tributary we collected a total of 181 fish comprising 10 species. Rainbow trout were again the only game species found and we collected eleven that ranged from 3 to 12-in. This sample also produced three additional species not collected in the mainstream samples. These were the saffron shiner (*Notropis rubricroceus*), Tennessee dace (*Phoxinus tennesseensis*), and the snubnose darter (*Etheostoma simoterum*). The presence of the Tennessee dace is of special interest. This species, until recently, had been considered a subspecies of the mountain redbelly dace (*P. oreas*). Starnes and Jenkins (1988) distinguished it as a taxon separate from *P. oreas* and described it as a new species endemic to the upper Tennessee River drainage of Tennessee and Virginia. We collected three Tennessee dace at this site, all of which were preserved as voucher specimens and deposited in the University of Tennessee Research Collection of Fishes (UT Cat. No. 44.5820).

Hatcher Creek and its Right Prong tributary are generally small streams with cobble-rubble-gravel substrates and light to medium siltation. In all, a total of 11 species was collected from the three sites combined, which is fairly typical for Blue Ridge streams of this size at this elevation. Rainbow trout was the only game species present and its occurrence further attests to good water quality as some natural reproduction of trout may occur. Its small size limits any significant fishery potential however, a few 10 to 12-in rainbow trout were found. At this point, it can only be assumed that trout from the South Holston tailwater use the stream to spawn. However, the collection of two tagged fish from the tailwater indicates that rainbow trout do move into the stream. Two crayfish species, the Appalachian brook crayfish (*Cambarus bartonii*) and *Cambarus longirostris* were present.

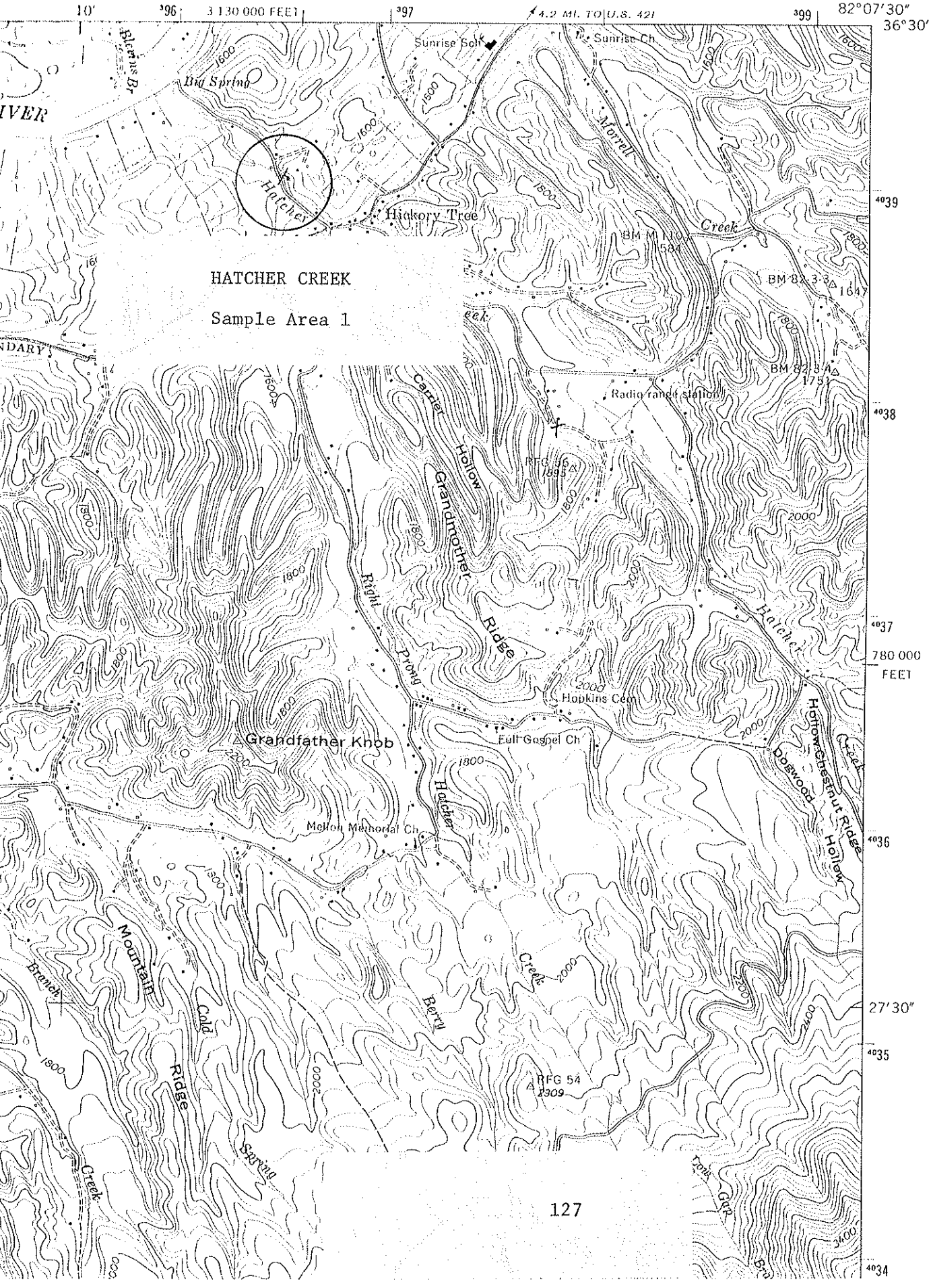
Management Recommendations:

1. This stream appears to have fairly good water quality and no specific management is suggested other than protection of the watershed.

2. The occurrence of *Phoxinus tennesseensis* in the Right Prong tributary warrants and additional measure of protection as this species has been listed as a species Deemed in Need of Management and of Special Concern (Starnes and Etnier 1980).

KEENBURG QUADRANGLE
TENNESSEE
7.5 MINUTE SERIES (TOPOGRAPHIC) 207-NW

4557 II SE
(HOLSTON VALLEY
206-SE)



FISH DATA

Stream: Hatcher Creek
Date: 9 April 1992

Watershed: South Fork Holston River
County: Sullivan

Area: Site # 1
Sample Length: 300 ft

Lat-Long: 362935N - 820920W
Reach: 06010102-

Type of Sampling: Electrofishing
Elevation: 1,440 ft

Gear Type: 1 Backpack Unit
Time: 1000 - 1030

Species	TADS Code	Total Number	Inch Class	Total Weight
Oncorhynchus mykiss	353	1	4 *	-
" "	"	4	5 *	-
" "	"	1	6	-
" "	"	1	7	-
" "	"	1	10	-
" "	"	2	11	-
" "	"	1	12	-
Catostomus commersoni	32	7	-	-
Hypentelium nigricans	166	1	-	-
Campostoma anomalum	25	46	-	-
Rhinichthys atratulus	351	32	-	-
Semotilus atromaculatus	360	18	-	-
Etheostoma flabellare	92	2	-	-
Cottus carolinae	40	33	-	-

Water temperature - 45 F
pH - 7.6
Conductivity - 40 micromhos/cm
Avg. width - 8 to 10 ft
Avg. depth - 4 to 5 in
Max. depth - 2.5 ft
Rubble - cobble - boulder substrate.
Slight to moderate siltation.
Domestic rubbish in stream.

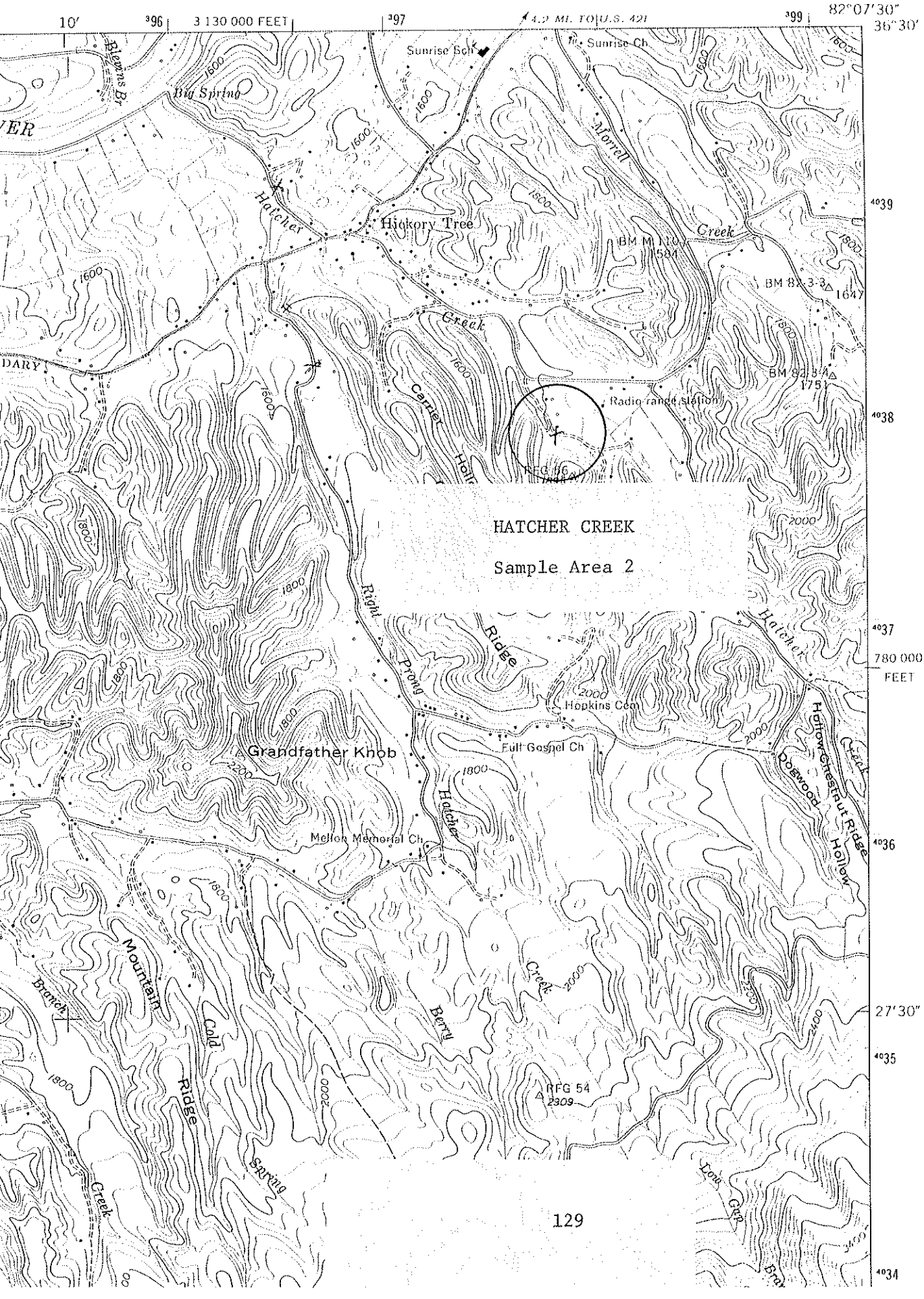
* Two trout had TVA tags - # 362 and # 504.

Site location was just upstream of the mouth between the bridges on Big Spring Road, just downstream of Hickory Tree Road (Hwy. 44); at about 1,440 ft elevation. Shocking at 240 volts AC.

Collectors: R.D. Bivens, M.T. Fagg, and C.E. Williams

KEENBURG QUADRANGLE
TENNESSEE
7.5 MINUTE SERIES (TOPOGRAPHIC) 207-NW

4557 II SE
(HOLSTON VALLEY
206-SE)



FISH DATA

Stream: Hatcher Creek
Date: 9 April 1992

Watershed: South Fork Holston River
County: Sullivan

Area: Site # 2
Sample Length: 200 ft

Lat-Long: 362858N - 820826W
Reach: 06010102-

Type of Sampling: Electrofishing
Elevation: 1,640 ft

Gear Type: 1 Backpack Unit
Time: 1345 - 1415

Species	TADS Code	Total Number	Inch Class	Total Weight
Campostoma anomalum	25	22	-	-
Rhinichthys atratulus	351	76	-	-
Semotilus atromaculatus	360	21	-	-
Etheostoma flabellare	92	44	-	-
Cambarus bartonii		2		
C. longirostris		2		
Desmognathus quadramaculatus				
Eurycea bislineata				

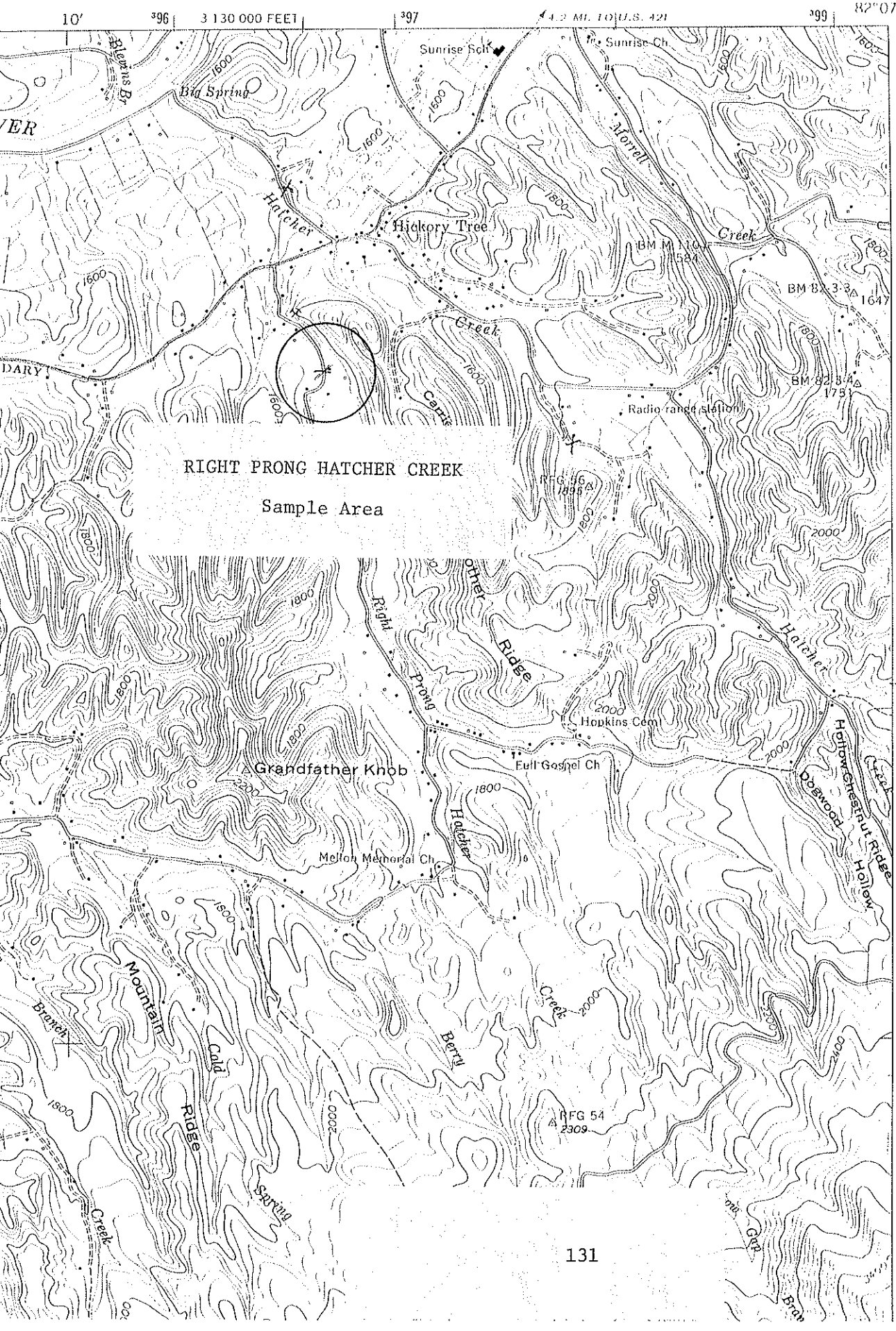
Water temperature - 59 F
pH - 8.2
Conductivity - 60 micromhos/cm
Avg. width - 6 to 8 ft
Avg. depth - 4 to 5 in
Bedrock - cobble - gravel substrate.

Site location was upstream of the road crossing at Hickory Tree (Hwy 44) along White Road at about 1,640 ft elevation. Shocking at 240 volts AC. Heavy siltation present.

Collectors: R.D. Bivens, M.T. Fagg, and C.E. Williams

KEENBURG QUADRANGLE
TENNESSEE
7.5 MINUTE SERIES (TOPOGRAPHIC) 207-NW

4557 II SE
(HOLSTON VALLEY
206-SE)



FISH DATA

Stream: Right Prong Hatcher Creek
Date: 9 April 1992
Watershed: South Fork Holston River
County: Sullivan
Area: See comments
Sample Length: 200 ft
Lat-Long: 362908N - 820913W
Reach: 06010102-
Type of Sampling: Electrofishing
Elevation: 1,560 ft
Gear Type: 1 Backpack Unit
Time: 1125 - 1155

Species	TADS Code	Total Number	Inch Class	Total Weight
Oncorhynchus mykiss	353	1	3	-
" "	"	2	4	-
" "	"	5	5	-
" "	"	1	6	-
" "	"	1	11	-
" "	"	1	12	-
Hypentelium nigricans	166	4	-	-
Campostoma anomalum	25	26	-	-
Notropis rubricroceus	262	3	-	-
Phoxinus tennesseensis *	333	3	-	-
Rhinichthys atratulus	351	59	-	-
Semotilus atromaculatus	360	48	-	-
Etheostoma flabellare	92	19	-	-
E. simoterum	111	5	-	-
Cottus carolinae	40	3	-	-
Cambarus bartonii		1		
C. longirostris		2		

Water Temperature - 50 F
pH - 7.4
Conductivity - 30 micromhos/cm
Avg. Width - 8 to 10 ft
Avg. Depth - 4 to 5 in
Cobble - rubble - gravel substrate; slight silt.

* Specimens went to University of Tennessee Research Collection of Fishes (UT Cat. No. 44.5820).

Site location was upstream of Hickory Tree along Ryder Church Road, at 1,560 ft elevation. Shocking at 360 volts AC.

Collectors: R.D. Bivens, M.T. Fagg, and C.E. Williams

Clear Fork Cumberland River

One qualitative fishery survey was conducted in June 1992:

Location and Length - Tributary to the Cumberland River. The sample site location was at the mouth of Valley Creek. It was approximately 500 to 600 ft in length and was sampled on 2 June 1992. It was in Claiborne County (Eagan Quadrangle).

Sampling Methodology - The site was sampled using one backpack electrofishing unit operating at 120 volts AC.

Water Quality - No data collected.

Benthos Collection - No collection was made.

Fish Collected - (See data sheet for species list)

Comments - We sampled this stream at this locality primarily to look for specimens of *Ericymba buccata*. The silverjaw minnow occurs only in the upper Cumberland drainage and has been collected only three times in Tennessee. The third collection of this species was in May of 1991 and it came from the Clear Fork near the mouth of Valley Creek (Etnier 1991). Prior fish surveys by the Agency include one site on Clear Fork proper and fish collections on seven of its tributaries in 1990 (Bivens and Williams 1991).

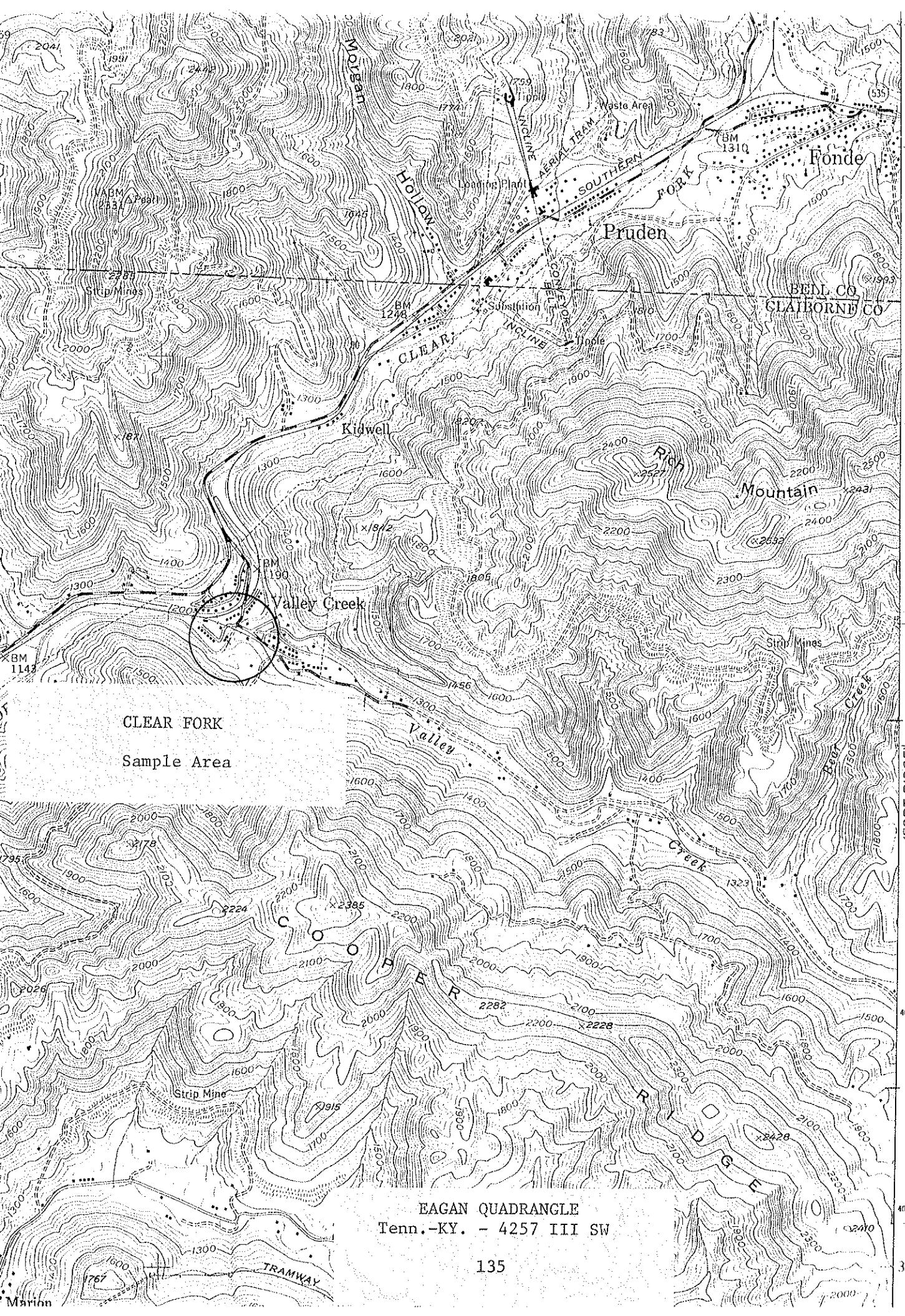
The Clear Fork of the Cumberland River and most of its tributaries in Tennessee have suffered degradation from sedimentation and acid mine drainage associated with surface and deep coal mined areas in the watershed. It has been one of the most heavily mined watersheds in the state and has suffered decades of degradation. Currently though, the recent decline of coal mining in the area along with more stringent environmental controls have resulted in some recovery of the system as indicated by the collection of 29 fish species in 1990, three of which were protected species, (Bivens and Williams 1991).

With the exception of the silverjaw minnow and the white sucker (*Catostomus commersoni*) our list compares quite well with that collected by Etnier (1991). We were unable to collect any silverjaw minnows at this site in 1992, possibly due to limited sampling effort and/or collecting techniques. We did however collect an addition species, the stripetail darter (*Etheostoma kennicotti*), that was not on Etnier's list for either Valley Creek or Clear Fork. We also had one specimen of the stripetail darter from Valley Creek in 1990 (Bivens and Williams 1991).

Management Recommendations:

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

2. The occurrence of protected fish species from this stream should warrant an extra measure of protection.



EAGAN QUADRANGLE
Tenn.-KY. - 4257 III SW

FISH DATA

Stream: Clear Fork Cumberland River

Date: 2 June 1992

Watershed: Cumberland River

County: Claiborne

Area: See comments

Sample Length: 600 ft

Lat-Long: 363412N - 835447W

Reach: 05130101-25,0

Type of Sampling: Electrofishing

Elevation: 1,170 ft

Gear Type: 1 Backpack Unit

Time: 1930 - 2030

Species	TADS Code	Total Number	Inch Class	Total Weight
Lepomis cyanellus	202	1	2	0.02
" "	"	2	4	0.13
Hypentelium nigricans	166	6	4-5	0.30
Campostoma anomalum	25	11	2-4	0.16
Luxilus chrysocephalus	249	1	5	0.07
Notropis rubellus rubellus	261	1	2	t
Pimephales notatus	334	33	1-3	0.23
Rhinichthys atratulus	351	45	1-3	0.21
Semotilus atromaculatus	360	9	2-4	0.17
Etheostoma baileyi	117	5	1-2	0.01
E. kennicotti	98	1	1	t
E. sagitta	110	2	1-2	0.01
Orconectes putanmi		2		

*** All the above are preserved fish and do not represent the total number or all fish species encountered. ***

Site was located from the mouth of Valley Creek up to approx. 100 ft upstream of the bridge crossing the Clear Fork; approx. 500 to 600 ft sample length. Shocking at 120 volts AC.

Collectors: R.D. Bivens, M.T. Fagg, and C.E. Williams

Tackett Creek

One qualitative fishery survey was conducted in June 1992:

Location and Length - Tributary to the Clear Fork Cumberland River. The sample site was located 1.2 mi (by road) downstream of the mouth of Meadow Branch, at the unnamed tributary that comes out of Altizer Hollow, and was sampled on 2 June 1992. It was 500 ft in length and averaged 28.7 ft in width. The site was in Claiborne County (Well Spring Quadrangle).

Sampling Methodology - The site was sampled using two backpack electrofishing units operating at 110 volts AC.

Water Quality - Data were collected from midstream at mid-depth on 2 June 1992: DO - 10.1 ppm, pH - 7.9, Temperature - 55 F, Conductivity - 170 micromhos/cm.

Benthos Collection - Benthic organisms were collected by conducting a 3 man-h qualitative sample. The sample contained 269 organisms representing 50 taxa.

Fish Collected:

Species	No.	% by No.	Wt.	% by Wt.
Smallmouth bass	1	0.9	0.01	0.2
Rock bass	19	16.4	1.94	43.1
Green sunfish	10	8.6	0.63	14.0
Bluegill	8	6.9	0.60	13.3
Longear sunfish	1	0.9	0.06	1.3
Hybrid sunfish	1	0.9	0.10	2.2
Non-game Fish	2	1.7	0.70	15.6
Forage Fish	74	63.8	0.46	10.2
Total	116		4.50	

Comments - This stream was surveyed primarily to address the Agency's almost total lack of fish or benthic data from the upper Clear Fork drainage in Claiborne County. The Agency has made only two prior fish collections from this stream, one in 1976 TWRA file data) and one in 1990 (Bivens and Williams 1991).

Many streams in the Clear Fork drainage have suffered degradation from sedimentation and acid mine drainage associated with surface and deep coal mined areas. This mining started in the early 1900's, peaked in the middle 1940's, and has continued to the present although it has declined in recent years. In

Tennessee, stream siltation is the major pollution problem associated with surface mining. Acid mine drainage has the most damaging effects on aquatic ecosystems but is generally associated with deep mines and the incidence of occurrence of acid mine drainage decreases toward the southwest section of the Appalachian region. The contour or strip mine is the type of surface mine most often used in the Cumberland Mountains of Tennessee (Talak 1977) and there is an estimated 1,870 mi of streams that are impacted by mining in the state. The Clear Fork drainage basin in Campbell and Claiborne Counties, has been reported as severely polluted and significantly degraded by mine drainage (Appalachian Regional Commission 1969).

We collected a total of 116 fish weighing 4.5 lb and comprising 15 species from our sample site. Five native game species, smallmouth bass (*Micropterus dolomieu*), rock bass (*Ambloplites rupestris*), green sunfish (*Lepomis cyanellus*), bluegill (*L. macrochirus*), and longear sunfish (*L. megalotis*) were collected. Only one smallmouth bass and one longear sunfish were collected, therefore, comparison of inch class distribution was made for rock bass, green sunfish, and longear sunfish (Fig. 18). Rock bass made up about 16%, compared to about 9% by green sunfish, and 7% by bluegill, of the total number of fish collected. Rock bass also contributed about 43%, as compared to 14% by green sunfish, and 13% by longear sunfish, to the total weight collected. One hybrid sunfish was also collected. Two non-game and eight forage fish were also collected here and these comprised about 65% of the total number and 26% of the total weight. Forage fish made up about 64% of all fish collected. The only species collected here, but not at the downstream site in 1990 (Bivens and Williams 1991) was the rosefin shiner (*Lythrus ardens*). We also collected 2 specimens of the arrow darter (*Etheostoma sagitta*). The arrow darter is an upper Cumberland River species confined to streams in Campbell, Claiborne, and Scott counties in Tennessee and is listed in need of management (Starnes and Etnier 1980). The stripetail darter (*E. kennicotti*) was the only other darter species collected. Whitetail shiners (*Cyprinella galactura*) and bluntnose minnows (*Pimephales notatus*) were the most abundant species present. Most of the species collected at this site were fairly tolerant forms. Only seven species, two game and five forage, were collected in the 1976 survey (TWRA file data). All of these, with the exception of the greenside darter (listed by common name only), were collected in our recent surveys.

Tackett Creek, like most of the streams in the Clear Fork drainage in Claiborne County, has suffered decades of pollution and degradation mainly from coal mining activities. The recent decline of coal mining in the area along with more stringent environmental controls has resulted in some recovery of the stream, although it is far from complete. Siltation is apparent but not extremely heavy and cover and habitat for fish looks good. All fish species seemed low in numbers, especially non-

game and forage fish. A fair rock bass fishery may exist and green sunfish were well represented.

Benthic macroinvertebrates form our sample included Ephemerellidae, Heptageniidae, and Oligoneuriidae mayflies, Leuctridae, Nemouridae, Peltoperlidae, Perlidae, and Perlodidae stoneflies, Glossosomatidae, Hydropsychidae, Limnephilidae, Philopotamidae, Rhyacophilidae, and Uenoidae caddisflies, and Dryopidae, Dytiscidae, Elmidae, and Hydrophilidae beetles. Planorbid snails were the only gastropod found and *Orconectes putnami* and an unidentified *Cambarus* sp. were the only crayfish species collected. Ephemeropterans represented about 24%, odonates about 15%, hemipterans about 12%, dipterans, plecopterans, and trichopterans each about 10%, megalopterans about 6%, and coleopterans about 6% of the total number of organisms collected (Fig. 19). A total of 50 taxa was collected at this site.

Management Recommendations:

1. No specific management can be suggested at present. However, if this stream was allowed to fully recover, it has potential to become an excellent smallmouth bass and rock bass fishery.

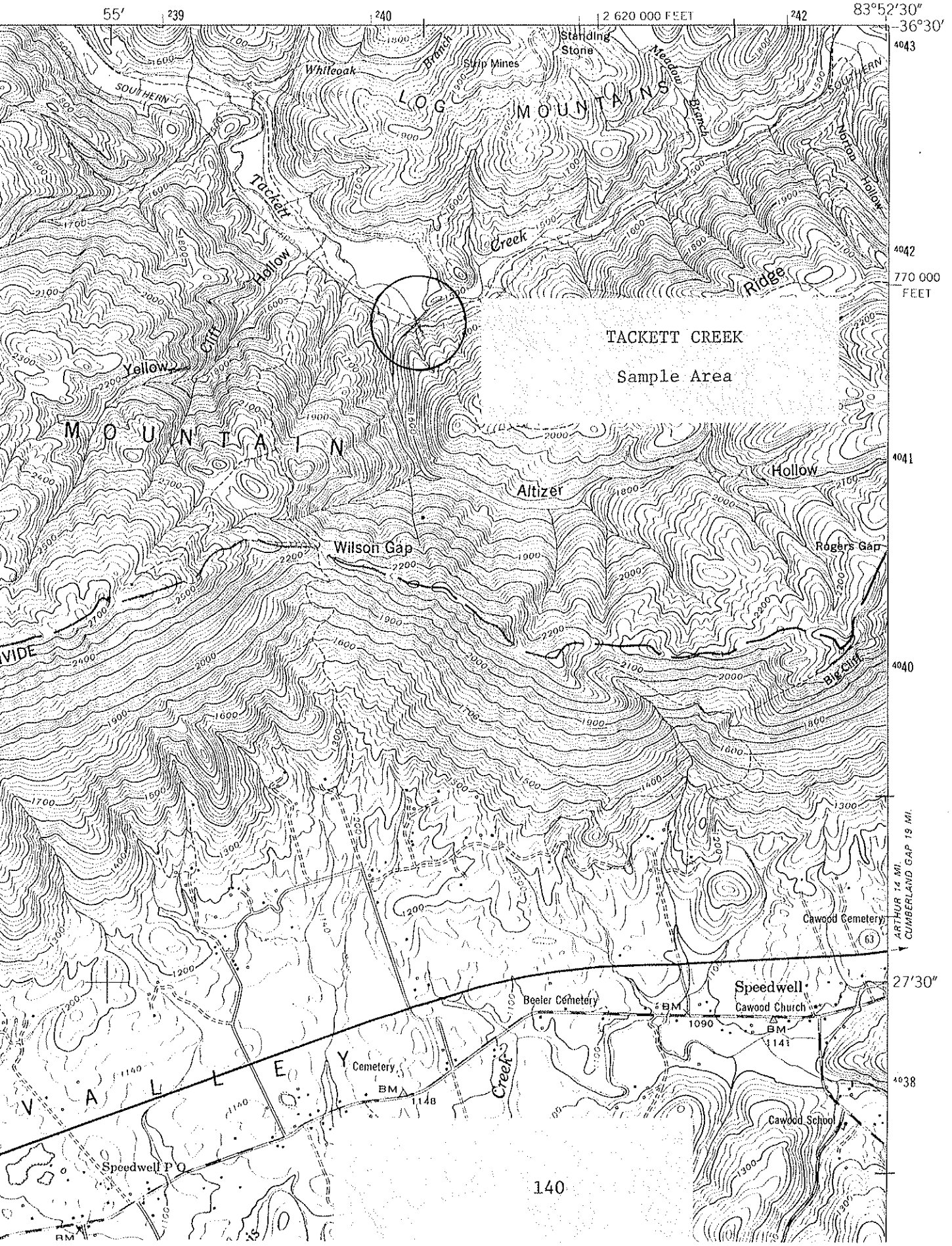
2. The occurrence of protected fish species from this stream should warrant an extra measure of protection.

3. Consider surveys of tributary streams in future work plans.

4. The purchase of the Tackett Creek watershed by the Agency as a Wildlife Management Area should be considered.

WELL SPRING QUADRANGLE
TENNESSEE
7.5 MINUTE SERIES (TOPOGRAPHIC) 145-NW

4052 III SE
(FORK RIDGE 144 SE)



PHYSIOCHEMICAL DATA

A. LOCATION:

Stream: Tackett Creek — Date: 2 June 1992

Watershed: Clear Fork Cumberland River — County: Claiborne

Area: See comments — Sample Length: 500 ft

Lat-Long: 362912N - 835402W — Reach: 05130101-24.0

Data Collected By: Rick D. Bivens, Mark T. Fagg, and Carl E. Williams

B. PHYSICAL CHARACTERISTICS:

1. Avg. Width 28.7 ft Avg. Depth 1.0 ft Max. Depth 3.5 ft
2. Estimated Percent of Stream in Pools is 60%.
3. Estimated Percent **Pool** Bottom is Silt 15% Sand 35% Gravel 25% Rubble 15% Boulders 10%.
4. Estimated Percent **Riffle** Bottom is Silt 15% Sand 20% Gravel 20% Rubble 25% Boulders 20%.
5. Abundance of Littoral Aquatic Plants is Average (*Potomogeton* and eel grass).
6. Cover Abundance (overhanging banks, logs, roots, etc.) is Good in 25% of the Stream, Average in 50%, Poor in 25%.
7. Shade or Canopy Good over 85% of Stream.
8. Flow (CFS) 16.5: Compared to Normal: Normal
9. Present Weather: Partly cloudy and warm. Air temperature - 68 F @ 11:00 am.
10. Weather (last 24 h): Clear and cool.
11. pH 7.9 Temp. 55.0 F Conductivity 170 micromhos/cm D.O. 10.1 ppm Saturation 96%
12. Comments: Sample area location was 1.2 mi (by road) downstream of the mouth of Meadow Branch, at the mouth of an unnamed tributary draining Altizer Hollow.

FISH DATA

Stream: Tackett Creek
Date: 2 June 1992

Watershed: Clear Fork Cumberland River
County: Claiborne

Area: See comments
Sample Length: 500 ft

Lat-Long: 362912N - 835402W
Reach: 05130101-24,0

Type of Sampling: Electrofishing
Elevation: 1,445 ft

Gear Type: 2 Backpack Units
Time: 1420 - 1520

Species	TADS Code	Total Number	Inch Class	Total Weight
Micropterus dolomieu	218	1	2	0.01
Ambloplites rupestris	13	2	2	0.02
" "	"	2	3	0.06
" "	"	4	4	0.24
" "	"	6	5	0.67
" "	"	4	6	0.71
" "	"	1	7	0.24
L. cyanellus	202	2	2	0.02
" "	"	7	4	0.44
" "	"	1	6	0.17
L. macrochirus	206	3	2	0.04
" "	"	1	3	0.04
" "	"	1	4	0.06
" "	"	1	5	0.10
" "	"	2	6	0.36
L. megalotis	208	1	4	0.06
Hybrid sunfish	-	1	5	0.10
Catostomus commersoni	32	1	11	0.63
Hypentelium nigricans	166	1	5	0.07
Campostoma anomalum	25	5	2-4	0.10
Cyprinella galactura	253	24	1-4	0.09
Luxilus chrysocephalus	249	2	3-4	0.06
Notropis ardens	237	3	1	t
Pimephales notatus	334	19	1-2	0.04
Semotilus atromaculatus	360	4	2-5	0.11
Etheostoma kennicotti	98	15	1-2	0.04
E. sagitta	110	2	2-3	0.02

Site was located 1.2 mi (by road) downstream of the mouth of Meadow Branch, at the mouth of an unnamed tributary draining Altizer Hollow. Shocking at 120 volts AC.

Collectors: R.D. Bivens, M.T. Fagg, and C.E. Williams

Tackett Creek: Qualitative Benthic Sample

2 June 1992 Field # 353

Claiborne Co., TN; At the mouth of an unnamed tributary that comes out of Altizer Hollow, approx. 1.2 mi downstream of the mouth of Meadow Branch. Coordinates: 362912N - 835402W. Well Spring, Tenn., # 145 NW Quad. Reach # 05130101-24,0.

TAXA	NUMBER
ANNELIDA:	
Oligochaeta	2
COLEOPTERA:	
Dryopidae/*Helichus* adults	11
Dytiscidae/*Laccophilus maculosus maculosus* adult	1
Elmidae/*Dubiraphia* adult	1
Optioservus larva	1
Hydrophilidae/*Sperchopsis tessellatus* larva	1
DECAPODA:	
Cambaridae/*Cambarus* sp. 1st form male	1
Orconectes putnami juveniles	2
DIPTERA:	
Athericidae/*Atherix lantha*	5
Chironomidae larvae & pupa	9
Simuliidae	11
Tipulidae/*Hexatoma*	1
Tipula	2
EPHEMEROPTERA:	
Ephemerellidae/*Eurylophella*	11
Heptageniidae/*Stenonema* sp.	2
Stenonema vicarium	34
Oligoneuriidae/*Isonychia*	18
GASTROPODA:	
Planorbidae	11
HEMIPTERA:	
Gerridae/*Gerris remigis* male	1
G. conformis females	5
Veliidae/*Rhagovelia obesa* nymphs	27
MEGALOPTERA:	
Corydalidae/*Corydalus cornutus*	11
Nigronia serricornis larvae	4
Nigronia serricornis adults	2

Tackett Creek: Qualitative Sample cont.

TAXA	NUMBER
ODONATA:	
Aeshnidae/*Basiaeschna janata*	2
Boyeria vinosa	10
Calopterygidae/*Calopteryx*	3
Enallagma	5
Cordulegastridae/*Cordulegaster maculata*	8
Gomphidae/*Gomphus lividus*	2
Hagenius brevistylus	1
Lanthus vernalis/parvulus	5
Stylurus early instar	1
Macromiidae/*Didymops transversa*	3
Macromia	1
PLECOPTERA:	
Leuctridae/*Leuctra*	1
Nemouridae/*Amphinemura*	2
Peltoperlidae/*Peltoperla*	8
Perlidae/*Acroneuria abnormis*	2
Eccoptura xanthenes	7
Perlesta placida	5
Perlodidae/*Isoperla holochlora*	1
TRICHOPTERA:	
Glossosomatidae/*Glossosoma*	2
Hydropsychidae/*Ceratopsyche sparna*	1
Cheumatopsyche	2
Diplectrona modesta	17
Limnephilidae/*Pycnopsyche*	1
Philopotamidae/*Chimara* pupa	1
Dolophilodes distinctus	2
Rhyacophilidae/*Rhyacophila fuscula*	1
Uenoidae/*Neophylax*	1
	269

GAME FISH FROM TACKETT CREEK
INCH CLASS DISTRIBUTION

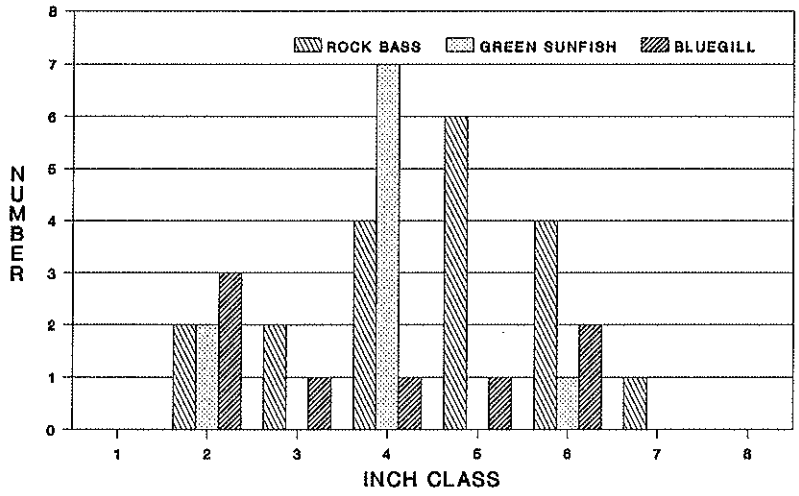
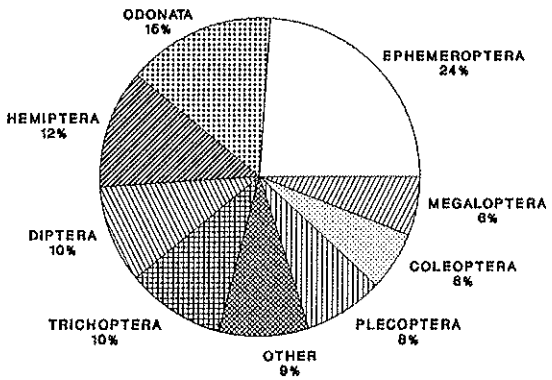


Figure 18

TACKETT CREEK
BENTHIC MACORINVERTEBRATES



PERCENT OF TOTAL NUMBER OF ORGANISMS

n = 269
TAXA RICHNESS = 50
Figure 19

REFERENCES

REFERENCES

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APPENDIX A

Distribution of Fishes Collected During 1992 Stream Surveys

		Clinch River System				Powell River System		Little Tennessee River System			French Broad River System			Holston River System											Cumberld.	River Sys.
		Indian Creek	Swan Creek #1	Swan Creek #2	Swan Creek trib.	Indian Creek #1	Indian Creek #2	Fork Creek #1	Fork Creek #2	Howard Spring	Little Pigeon Ri.	Dudley Creek	Cove Creek	Robertson Ck. #1	Robertson Ck. #2	Stony Pt. Ck. #1	Stony Pt. Ck. #2	Boones Creek	Roan Creek #1	Roan Creek #2	Possum Creek	Hatcher Ck. #1	Hatcher Ck. #2	R. P. Hatcher Ck.	Clear Fork (CR)	Tackett Creek
Catostomidae:	*Catostomus commersoni*							X	X			X	X	X							X	X				X
	Hypentelium nigricans	X	X		X	X	X		X		X	X	X	X		X		X	X	X	X	X		X	X	X
	Moxostoma duquesnei	X	X			X	X				X								X		X					
Centrarchidae:	*Ambloplites rupestris*	X	X			X	X				X	X	X	X	X	X			X		X					X
	Lepomis auritus	X	X										X	X	X						X					
	L. cyanellus							X	X					X											X	X
	L. macrochirus	X	X			X	X	X	X				X	X			X		X		X					X
	L. megalotis	X																								X
	L. microlophus						X																			
	Micropterus dolomieu	X	X			X	X				X	X	X						X		X					X
	M. salmoides							X	X					X												
Cottidae:	*Cottus bairdi*										X	X							X							
	C. carolinae	X	X			X	X	X	X	X	X		X	X	X	X	X				X	X		X			
Cyprinidae:	*Campostoma anomalum*	X	X		X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X
	Carassius auratus												X													
	Cyprinella galactura					X	X				X								X							X
	Erimystax insignis					X																				
	Luxilus chrysocephalus	X	X		X	X	X						X	X		X			X		X				X	X
	L. coccogenis	X	X			X	X				X	X	X			X			X							
	Lythrurus ardens																									X
	Nocomis micropogon		X			X	X				X	X							X							
	[1]*Notropis amblops*	X	X			X	X				X			X					X							
	N. leuciodus		X			X	X				X								X							
	N. rubellus rubellus																								X	
	N. rubricroceus											X							X					X		
	N. stramineus													X												
	N. telescopus	X	X			X	X				X								X		X					
	Phenacobius crassilabrum																		X							
	P. uranops					X																				
	Phoxinus tennesseensis																							X		
	Pimephales notatus	X	X			X	X							X	X										X	X
	P. promelas															X										
	Rhinichthys atratulus	X	X		X	X		X	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	
	R. cataractae										X	X														
	Semotilus atromaculatus				X				X			X				X	X			X		X	X	X	X	X
Cyprinodontidae:	*Fundulus catenatus*					X																				
Ictaluridae:	*Amelurus natalis*															X										
Lepisosteidae:	*Lepisosteus osseus*						X																			
Percidae:	*Etheostoma baileyi*																								X	
	E. blennioides	X	X			X	X									X			X							
	E. caeruleum	X	X				X																			
	E. chlorobranchium										X															
	E. flabellare	X	X		X	X	X					X		X				X			X	X	X	X		
	E. kennicotti																								X	X
	E. rufilineatum		X			X	X				X		X						X		X					
	E. sagitta																								X	X
	E. simoterum	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X		X			X		
	E. stigmaeum jessiae		X																							
	E. swannanoa										X	X														
	E. zonale						X																			
	Percina aurantiaca										X															
	P. caprodes	X				X	X																			
Petromyzontidae:	*Ichthyomyzon sp.*																		X							
Poeciliidae:	*Gambusia affinis*														X											
Salmonidae:	*Oncorhynchus mykiss*											X							X	X	X	X		X		

[1]*Notropis amblops = Hybopsis amblops*

APPENDIX B

1992 Summary of Stream Strategic Plan Activities

1992 SUMMARY OF STREAM STRATEGIC PLAN ACTIVITIES

	Completed (Yes No)	Number
Coordinate enforcement of pollution laws	Yes	4
Estimate monitoring system for compliance monitoring	No	
Provide environmental in-service	No	
Draft legislation to change TCA 70-4-206	No	
Draft legislation for tax incentives	No	
Draft legislation for silviculture and agriculture	No	
Determine criteria and list streams for scenic river	No	
Write magazine article	No	
Assimilate slide show	Yes	1
Wrote program to enhance landowner-user relations	Contacts	7
Conducted compliance inspections	No	
I & E stream demonstrations	Yes	5
Participated in Tennessee Restoration Project	Yes	2
Completed stream surveys	Yes	25
Developed method to quantify siltation	No	
Obtained access sites	Yes	2
Improved access sites	No	
Developed DOT agreement to build access sites	No	
Developed stream information for brochure	No	
Wrote news release	No	
Coordinated C.E.N.T.S. program in schools	No	
Developed aquatic education curriculum	No	