Habitat and Electrofishing Survey Results for Piedmont Streams on the Sumter National Forest, South Carolina, 2001-2002

United States Department of Agriculture Forest Service
Southern Research Station
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Table of Contents

List of Tables 2
Introduction 3
Methods 3
  Habitat 3
  Fish 5
Results 5
  Habitat 5
  Fish 6
Discussion and Recommendations 6
Literature Cited 8
Acknowledgements 9
Survey Area Map 10

Appendix A: Key to habitat features identified during BVET surveys 22
Appendix B: BVET Habitat Survey Results 24
Appendix C: Electrofishing Results 122
  How to interpret tables in Appendix C 123

List of Tables

Table 1. Streams inventoried for habitat and fish in 2001 and 2002 11
Table 2: Survey information and general stream characteristics 12
Table 3. Summary of pool habitat characteristics..... 13
Table 4. Summary of riffle habitat characteristics..... 14
Table 5. Summary of LWD per km 15
Table 6. Number of sites with fish species captured on Enoree Ranger District..... 16
Table 7. Number of sites with fish species captured on Long Cane Ranger District 18
Table 8. Enoree District backpack electrofishing results..... 20
Table 9. Long Cane District backpack electrofishing results 21

Appendix A

Table A1. Description of habitat types 23
Table A2. Size classes used to categorize substrate particles..... 23
Table A3. Size classes used to categorize large woody debris 23

Introduction

Provisions and regulations contained within the National Forest Management Act of 1976 and the Code of Federal Regulations establish a goal to provide habitat for the persistence of vertebrate species on National Forest lands (16 USC 1604(g)(3)(B), 36 CFR 219.19). The standards and guidelines of the Sumter National Forest (SNF) Forest Plan are designed to meet these requirements. Sound National Forest management is contingent on monitoring, evaluation, and adaptive management through Forest Plan amendment, revisions, and project decision making (NFMA 2003). Monitoring, evaluation, and adjustment are also important in meeting the requirements of other Federal environmental laws, such as the National Environmental Policy Act, Clean Water Act, and Endangered Species Act.

Resource managers on the SNF recognize the importance of monitoring and evaluation in the management of aquatic resources. The U. S. Forest Service, Southern Research Station, Center for Aquatic Technology Transfer (CATT) is working with SNF to develop and implement inventory and monitoring strategies for stream habitat and aquatic fauna in Forest streams. The information collected during monitoring may be used for Forest level (designation of desired future conditions, selection of species for assemblage-level assessments) and project level (selection of timber harvest sites, road and trail routing) decision making.

During summer 2001 and 2002 we conducted stream habitat and fish surveys on streams within the Enoree and Long Cane Ranger Districts, SNF, South Carolina, to collect baseline habitat and fish population inventory information. Streams with the highest number of river kilometers flowing through Forest Service managed lands ('reference streams') or proposed projects within their watersheds were selected for survey in 2001 and 2002 (Jeanne Riley, pers. comm.) (Table 1). We surveyed 23 streams: 14 were surveyed for both fish and habitat, 7 streams were surveyed for habitat only, and 2 streams were surveyed for fish only. We used a modified form of the basinwide visual estimation technique (BVET) habitat survey (Dolloff et. al 1993) to inventory stream habitat and multiple-pass depletion electrofishing to assess fish populations.

The purpose of this report is to describe the current condition of Enoree and Long Cane Ranger District streams in a format useful to the District managers and the SNF. The enclosed report is intended to provide baseline information for Forest planning, habitat improvement projects, and land use decisions.

Methods

Habitat

Habitat surveys began at confluences for streams contained within National Forest boundaries and at the downstream USFS boundary for all other streams. Surveys were terminated when we encountered an upstream USFS boundary, or when the wetted channel was less than 1 m average wetted width for a distance of at least 500 m.

Two-stage visual estimation techniques were used to quantify habitat in selected streams (Dolloff et al. 1993). During the first stage habitat was stratified into similar groups based on naturally occurring habitat units including pools and riffles (Armantrout 1998). Glides were identified during the survey but were grouped with pools for data analysis. Runs and cascades were also identified but were grouped with riffles for data analysis.

Habitat in each stream was classified and inventoried by a two-person crew. One crew member identified each habitat unit by type (Table A1), estimated average wetted width, average and maximum depth, riffle crest depth (RCD), and substrate composition for each habitat unit, and determined if pool substrates were embedded. The length (0.1 m) of each habitat unit was measured with a hip chain. Average wetted width was visually estimated. Average and maximum depth of each habitat unit were estimated by taking depth measurements at various places across the channel profile with a graduated staff marked in 5 cm increments. The RCD was estimated by measuring water depth at the deepest point in the hydraulic control between riffles and pools. The RCD was subtracted from average pool depth to obtain an estimate of residual pool depth. Substrates were assigned to one of nine size classes (Table A2). Dominant substrate (covered greatest amount of surface area in habitat unit) and subdominant substrate (covered 2nd greatest amount of surface area in habitat unit) were visually estimated. Substrate was considered to be embedded if sand, silt, or clay filled the interstitial spaces between larger size substrates over greater than 35% of the surface area of the stream bed in a given habitat unit. Embeddedness was estimated only during the 2002 habitat survey.

The second crew member classified and inventoried large woody debris (LWD) within the stream channel and recorded data on a Husky Fex21[1] data logger. LWD was assigned to one of four size classes (Table A3). All woody debris less than 1 m long and less than 10 cm in diameter were omitted from the survey.

The first unit of each habitat type selected for intensive (second stage) sampling (i.e. accurate measurement of wetted width) was determined randomly. Additional units were selected systematically (every 10th habitat unit type for streams >1000 m and every 5th habitat unit type for streams <500 m). The wetted width of each systematically selected habitat unit was measured with a meter tape across at least three transects. In each of the systematically selected (second stage) riffles we also estimated the bankfull stream channel width and riparian widths, and measured channel gradient (2002 survey only). We estimated bankfull channel width by measuring the width of the bankfull channel perpendicular to flow (Rosgen 1996). We estimated riparian width by measuring from the edge of the bankfull channel to the intersection with the nearest landform at an elevation of two-times the maximum bankfull depth. Riparian width was recorded for both left and right banks, however these values were grouped together for data analysis. We added the bankfull channel width to the left and right riparian widths to estimate

flood-prone area (Rosgen 1996). Gradient was estimated by using a clinometer to sight from the downstream to the upstream end of a selected riffle.

We used the ratio of measured to estimated area to develop a calibration ratio, which allowed us to correct visual estimates and estimate stream area with confidence intervals (Hankin and Reeves 1988). BVET calculations were computed with a Microsoft Excel[2] spreadsheet using formulas found in Dolloff et al. (1993). Data were summarized using Excel spreadsheets and SigmaPlot graphics software.

Fish

In 2001, each survey stream was divided into approximately equal length lower, middle, and upper sections on a 1:24,000 quadrangle map and a 100 m electrofishing reach was selected within each section. The furthest downstream reach was named '01', the middle reach '02', and the most upstream reach '03'. Natural low water breaks between pools and riffles were used in place of blocknets to mark the upstream and downstream end of each reach. Electrofishing was performed using one pulsed DC backpack electrofishing unit and two dip-netters. Single-pass electrofishing was used at the majority of sites. On the Long Cane District, only management indicator species (redbreast sunfish, striped jumprock, and redeye bass) or species not captured in the first pass were counted when multiple passes were made. The total number of fish of each species captured on each pass was recorded. Fish were not measured or weighed at any sites in 2001.

In 2002, electrofishing was performed at several of the same sites visited in 2001. Similar equipment was used but three-pass depletion electrofishing was used in place of single-pass electrofishing. Fish from each pass were processed separately. The number of fish of each species captured and the total length of the largest and smallest individual captured in each pass was recorded. All individuals of a given species were pooled to obtain a batch weight for each pass. Where possible, we used formulas found in Kwak (1991) to estimate population sizes for species captured in the 100 m reaches. Population estimates could not be calculated where only one pass was made.

Results

Habitat

BVET habitat surveys were performed on a total of 20 streams between June and August 2001 and 1 stream in June 2002 (Table 1). All streams were less than 10 m average wetted width, less than 7% average gradient (except an unnamed tributary of Tyger Creek; 12%), and ranged between 18 C and 22 C in water temperature (Table 2). Surveyed streams contained between 60 and 92 percent of their total surface area in pools. Most streams had less than 25 percent of their total surface area in riffles and several streams did not contain any wetted riffles (Tables 3 and 4). Pieces of LWD less than 55 cm in diameter (sizes 1 and 3) were the most abundant in the majority of streams (Table 5). However, LWD greater then 5 m long and >55 cm in diameter (size 4) were most abundant in several streams (Camp

Branch and tributary, Rock Creek and tributary, Wilson Branch) on the Long Cane District. Complete habitat survey summaries for each stream can be found in Appendix B.

Fish

Electrofishing was performed at a total of 16 sites on six streams on the Enoree Ranger District in 2001 and at 11 sites on the same six streams in 2002. A total of 17 species were identified in the surveyed reaches (Table 6). Creek chub and bluehead chub were encountered at all 16 sites in 2001 and were found at all but one site each in 2002. Site 02 of an unnamed tributary of Clarks Creek contained the greatest number of species in both 2001 (9) and 2002 (8) (Table 8). Site 02 of McCluney Branch contained the fewest species in 2001 (3) and site 01 of an unnamed tributary to the Tyger River contained the fewest in 2002 (1). Site 03 of Sparks Creek had the highest turnover of fish species between 2001 and 2002, gaining two new species, but also losing five (Table 8).

Electrofishing was performed at a total of 24 sites on ten streams on the Long Cane Ranger District in 2001 and at 15 sites on eight of the same ten streams in 2002. A total of 31 species were identified in the surveyed reaches (Table 7). Three species captured on the Enoree District were not captured on the Long Cane District, however 17 species were unique to the Long Cane District. Creek chub was the most commonly encountered species in 2001 and creek chub, bluehead chub, and yellowfin shiner were most common in 2002. Site 01 of Camp Branch contained the greatest number of species in 2001 (15) and site 03 of Big Curltail Creek contained the most species in 2002 (18) (Table 9). Site 03 of Big Curltail Creek also gained the most new species in 2002 (13). Site 03 of Bold Branch contained the fewest species in 2001 (0) and sites 02 and 03 of Wilson Branch contained the fewest in 2002 (0). Site 03 of Wilson Branch lost the greatest number of species in 2002 (8).

There were no consistent trends in the number or type of species found at upstream versus downstream sites in streams on either district. Complete electrofishing results can be found in Appendix C.

Discussion and Recommendations

BVET habitat surveys were used to identify and inventory stream habitat characteristics in piedmont streams. As more data from these streams are collected in a similar manner resource managers will be able to assess the range of habitat conditions within or among streams and watersheds. Such comparisons could be used to establish desired future conditions for piedmont streams or to prioritize habitat restoration efforts. In addition, repeated surveys on the same stream may reveal changes in habitat conditions over time (Roghair et al. 2002). We recommend that the SNF continue to refine the use of BVET habitat surveys in piedmont streams. Variables can easily be added to or removed from the protocol to help managers address specific issues and maximize effectiveness and efficiency. While variables can be added and removed as needed, the method by which individual variables are collected

must be compatible to allow for comparison with previously collected data. The SNF should document their habitat survey protocols to ensure consistent data collection over time.

The electrofishing data provide information on the distribution and relative abundance of fish in piedmont streams. The use of multiple sites per stream allowed us to describe the composition and distribution of fish populations in surveyed streams more fully than electrofishing only one site per stream. Fish species such as creek chub, bluehead chub, and yellowfin shiner were widely distributed across streams on both districts. Other species, such as blackbanded darter and sandbar shiner were encountered only on one district or during one year.

We recommend that the SNF develop and document a standard electrofishing protocol for piedmont streams and continue its effort to inventory its fish populations. The protocol should include instructions to measure and weigh a random sample of each species captured to provide size and age structure information. Anderson and Neumann (1996) recommend measuring 100 stock-sized fish to provide sufficient data for histogram analysis, but there is no published standard sample size for measuring the entire range of sizes for a species (Vokoun et al. 2001). Measuring hundreds of fish minimizes the effects of variance in data analysis, however it also decreases the number of sites that can be sampled. As a compromise we recommend the following:

For each species captured:

	One year class present or little size variation	Multiple year classes present or large size variation
Less than 30 individuals captured	Measure all individuals	Measure all individuals
30 or more individuals captured	Measure at least 30 individuals	Measure all or 100 individuals, whichever is the smaller number

This should be considered an interim recommendation, open to further analysis, review and adjustment to meet the data requirements of the SNF.

The SNF should also consider designating a standardized reach length proportional to stream size, for example: a sample reach 30 times the average stream width. Such methods ensure that sampling effort is proportional to stream size, that sample reaches include several different habitat unit types, and increases the probability that the majority of species present in the stream are captured (Angermeier and Smogor 1995, Warren et al 2002).

Repeated and consistent application of standard fish and habitat sampling protocols will allow the SNF to develop a dataset that can be analyzed for differences between and among streams and drainages over time. Fish population data could be combined with habitat data in a GIS application to examine for relationships between habitat characteristics and fish community or population structure. Such a product would provide a powerful tool for evaluating and adapting management practices on the SNF.

[1] Husky and fex21 are trademarks of Itronix (UK) Limited*, [2] Excel is a trademark of Microsoft Corporation*
*use of trade name does not imply endorsement

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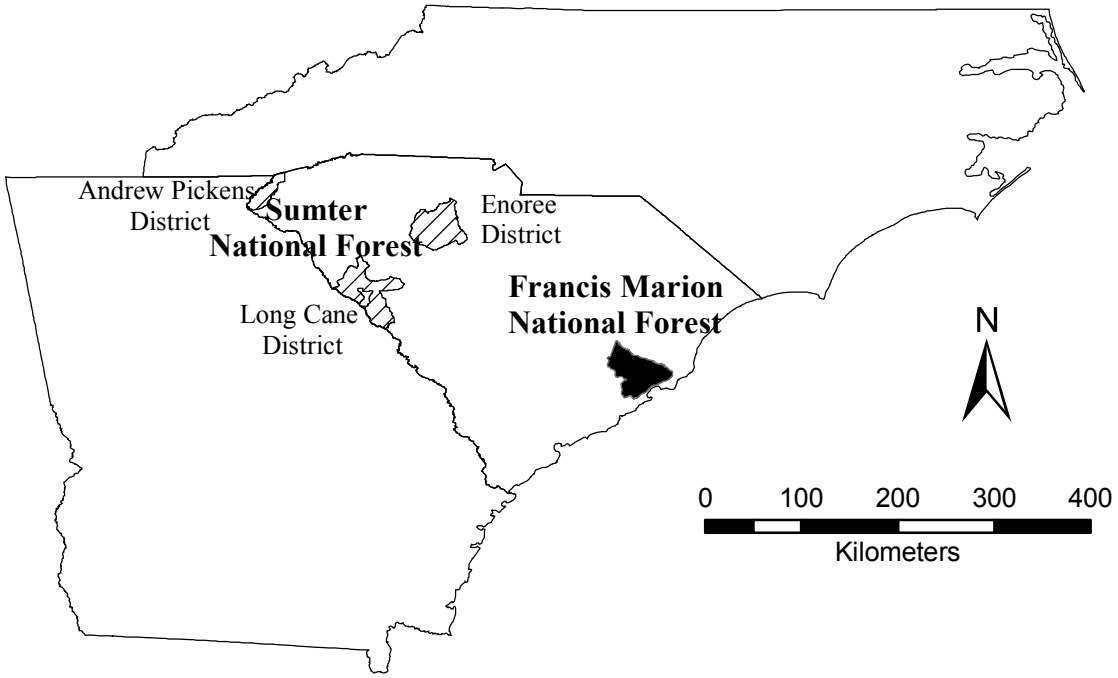
Survey Area Map



Location of the Long Cane and Enoree Ranger Districts on the Sumter National Forest, South Carolina. See habitat survey results (Appendix B) for maps of individual stream surveys.

Table 1. Streams inventoried using BVET habitat surveys and 100 m reach electrofishing in 2001 and 2002. UT = un-named tributary. 'Reason Surveyed' describes proposed activities within a stream's watershed that require assessment of aquatic resources; 'reference' = stream chosen to be surveyed because a relatively high amount of stream kilometers flow through Forest Service managed lands.

	Reason Surveyed	**Habitat Surveys**		**Sites Electrofished**	
		2001	**2002**	**2001**	**2002**
Enoree District					
Hunting Creek	proposed land acquisition	--	x	--	--
McCluney Branch	proposed timber project	x	--	2	1
Pattersons Branch	'reference'	--	--	3	2
Sispring Branch	'reference'	x	--	2	2
Sparks Creek	'reference'	x	--	3	2
UT Clarks Creek	proposed timber project	--	--	3	2
UT Tyger Creek	'reference'	x	--	3	2
Long Cane District					
Big Curltail Creek	'reference'	x	--	3	2
Bold Branch	'reference'	x	--	3	2
Byrd Creek	'reference'	x	--	2	1
Tributary 1		x	--	--	--
Tributary 2		x	--	--	--
Tributary 3		x	--	--	--
Camp Branch	'reference'	x	--	2	2
Tributary 1		x	--	--	--
Tributary 2		x	--	--	--
Candy Branch	proposed gold mine	x	--	3	2
Lick Fork	proposed timber project	x	--	3	2
Miller Branch	proposed timber project	x	--	1	--
Pike Branch	'reference'	x	--	1	--
Rock Creek	proposed timber project	x	--	3	2
Tributary 1		x	--	--	--
Wilson Branch	'reference'	x	--	3	2

Table 2: Survey information and summary of general stream habitat characteristics for streams surveyed using the BVET habitat survey on the Enoree and Long Cane Districts during summer 2002. 'Length' is total survey length, 'Width' is mean bankfull channel width, 'Gradient' is mean channel gradient, and 'Temp' is mean water temperature. '--' indicates data not collected, UT = un-named tributary.

Stream	Quad	Survey Date	Length (km)	Width (m)	Gradient (%)	Temp (^oC)
Enoree District						
Hunting Creek	Whitmire South	06/07/02	3.9	9	2	20
McCluney Branch	Leeds	07/10/01	2.7	2	3	22
Pattersons Branch	Newberry NW	no survey	--	--	--	--
Sispring Branch	Philson Crossroads	07/23/01	6.2	3	1	22
Sparks Creek	Union West	07/02/01	5.7	4	2	22
UT Clarks Creek	Leeds	no survey	--	--	--	--
UT Tyger Creek	Union West	07/02/01	4.2	3	12	21
Long Cane District						
Big Curltail Creek	Abbeville East	07/27/01	6.6	9	1	22
Bold Branch	Calhoun Creek	08/03/01	4.1	3	3	21
Byrd Creek	Parksville	06/22/01	6.4	3	3	20
Tributary 1	Winterseat	06/27/01	2.1	3	--	21
Tributary 2	Winterseat	06/30/01	0.8	--	--	19
Tributary 3	Winterseat	07/26/01	0.8	1	2	--
Camp Branch	Red Hill	06/21/01	4.3	5	3	22
Tributary 1	Red Hill	06/27/01	0.3	3	0	20
Tributary 2	Red Hill	06/27/01	0.2	--	--	--
Candy Branch	Verdery	06/07/01	4.0	3	3	18
Lick Fork	Colliers	06/09/01	3.9	4	4	21
Miller Branch	Colliers	06/20/01	1.9	3	6	20
Pike Branch	Limestone	06/29/01	1.5	--	--	--
Rock Creek	Colliers	06/07/01	3.9	5	2	--
Tributary 1	Colliers	06/18/01	2.6	3	3	21
Wilson Branch	Limestone	06/28/01	1.1	3	1	22

Table 3. Summary of pool habitat characteristics for streams surveyed using the BVET habitat survey on the Enoree and Long Cane Districts during summer 2002. 'Total Area (%)' is percent of total stream surface area in pools (includes glides), 'Total Area (m^2)' is surface area of stream in pools, 'Mean Area' is mean surface area of individual pools, 'Mean Max Depth' is the mean maximum depth of all pools, 'Mean Ave Depth' is mean average depth of all pools, 'Mean Resid Depth' is mean residual depth of all pools, 'Glides' is percent of pool habitat units surveyed as glides. '--' indicates value could not be calculated, UT = un-named tributary.

Stream	Total Area (%)	Total Area (m^2)	Total Count (n)	# per km	Mean Area (m^2)	Mean Max Depth (cm)	Mean Ave Depth (cm)	Mean Resid Depth (cm)	Glides (%)
Enoree District									
Hunting Creek	87	12571±794	118	30	107	41	22	16	8
McCluney Branch	60	2023±407	97	36	21	29	16	--	13
Pattersons Branch	--	--	--	--	--	--	--	--	--
Sispring Branch	81	5872±472	104	17	56	42	21	18	25
Sparks Creek	76	5448±1074	134	23	41	29	15	10	68
UT Clarks Creek	--	--	--	--	--	--	--	--	--
UT Tyger Creek	88	5391±1501	142	34	38	28	14	--	50
Long Cane District									
Big Curltail Creek	86	32934±5027	96	15	343	48	28	3	66
Bold Branch	92	14792±2232	101	25	146	40	19	12	53
Byrd Creek	--	9035±832	107	17	84	41	22	--	15
Tributary 1	--	2192±474	79	37	28	27	13	4	3
Tributary 2	--	2389±1417	46	57	52	29	13	15	28
Tributary 3	--	140± --	8	10	18	22	12	--	25
Camp Branch	77	10847±1099	142	33	76	45	24	19	5
Tributary 1	--	194±28	14	45	14	19	10	11	43
Tributary 2	--	--	3	19	--	13	8	--	33
Candy Branch	82	4386±569	326	81	13	18	10	5	42
Lick Fork	92	11772±4198	204	52	58	36	20	16	34
Miller Branch	80	3110±473	85	46	37	41	25	15	38
Pike Branch	--	794±231	21	14	38	25	14	--	24
Rock Creek	73	9494±641	183	46	52	37	23	17	10
Tributary 1	78	4462±1034	134	52	33	39	23	17	9
Wilson Branch	--	1419±236	49	44	29	31	17	15	8

Table 4. Summary of riffle habitat characteristics for streams surveyed using the BVET habitat survey on the Enoree and Long Cane Districts during summer 2002. 'Total Area (%)' is percent of total stream surface area in riffles (includes runs and cascades), 'Total Area (m^2)' is surface area of stream in riffles, 'Mean Area' is mean surface area of individual riffles, 'Mean Max Depth' is the mean maximum depth of all riffles, 'Mean Ave Depth' is mean average depth of all riffles, 'Runs' is percent of riffle habitat units surveyed as runs, 'Cascades' is percent of riffle habitat units surveyed as cascades. '--' indicates value could not be calculated, UT = un-named tributary.

Stream	Total Area (%)	Total Area (m^2)	Count (n)	# per km	Mean Area (m^2)	Mean Max Depth (cm)	Mean Ave Depth (cm)	Runs (%)	Cascades (%)
Enoree District									
Hunting Creek	13	1859±161	72	19	26	9	5	6	0
McCluney Branch	40	1348±192	12	4	112	4	2	0	0
Pattersons Branch	--	--	--	--	--	--	--	--	--
Sispring Branch	19	1413±321	58	9	24	10	5	0	0
Sparks Creek	24	1715±143	96	17	18	10	6	0	1
UT Clarks Creek	--	--	--	--	--	--	--	--	--
UT Tyger Creek	12	731±305	34	8	21	6	3	6	24
Long Cane District									
Big Curltail Creek	14	5301±3967	39	6	136	27	17	0	0
Bold Branch	8	1307±375	81	20	16	6	4	0	1
Byrd Creek	--	--	0	0	--	--	--	--	--
Tributary 1	--	--	2	1	--	2	1	0	0
Tributary 2	--	--	1	1	--	3	2	0	0
Tributary 3	--	--	0	0	--	--	--	--	--
Camp Branch	23	3228±222	116	27	28	13	6	0	0
Tributary 1	--	--	7	23	--	4	2	0	0
Tributary 2	--	--	0	0	--	--	--	--	--
Candy Branch	18	978±464	114	28	9	6	4	0	0
Lick Fork	8	1072±360	81	21	13	9	6	2	1
Miller Branch	20	802±534	50	27	16	12	6	26	2
Pike Branch	--	--	0	0	--	--	--	--	--
Rock Creek	27	3459±323	140	35	25	13	7	0	9
Tributary 1	22	1282±417	107	42	12	13	6	0	4
Wilson Branch	--	--	13	12	--	8	4	0	0

Table 5. Summary of LWD per km for streams surveyed using the BVET habitat survey on the Enoree and Long Cane Districts during summer 2002. Woody debris < 1 m long or < 10 cm in diameter were not counted. '--' indicates value could not be calculated, UT = un-named tributary.

Length	**< 5 m**		**> 5 m**		
Diameter	**< 55 cm**	**> 55 cm**	**< 55 cm**	**> 55 cm**	**Total**
Size Class	**1**	**2**	**3**	**4**	**1+2+3+4**
Enoree District					
Hunting Creek	59	1	16	3	79
McCluney Branch	50	3	42	1	97
Pattersons Branch	--	--	--	--	--
Sispring Branch	30	3	17	10	60
Sparks Creek	42	0	19	3	63
UT Clarks Creek	--	--	--	--	--
UT Tyger Creek	42	0	14	2	58
Long Cane District					
Big Curltail Creek	49	1	39	10	99
Bold Branch	23	1	14	0	39
Byrd Creek	27	2	19	2	50
Tributary 1	27	0	31	2	60
Tributary 2	17	0	20	0	37
Tributary 3	0	0	0	0	0
Camp Branch	6	7	20	31	64
Tributary 1	0	3	10	19	32
Tributary 2	0	6	6	0	12
Candy Branch	27	2	11	5	44
Lick Fork	23	3	20	5	51
Miller Branch	47	2	16	3	67
Pike Branch	11	0	9	0	20
Rock Creek	3	2	12	27	45
Tributary 1	15	5	21	27	68
Wilson Branch	11	12	13	29	64

Table 6. Number of sites containing fish species sampled by backpack electrofishing on Enoree Ranger District streams. There were a total of 16 sites in 2001 and 11 sites in 2002. 'Gained' is the number of sites at which a species was captured in 2002 but not 2001. 'Lost is the number of sites at which a species was captured in 2001 but not 2002. 'Lost Visit' is the number of sites that were lost because they were not visited in 2002 and 'Dry' is the number of sites lost because the channel was dry. Shaded species were found in Long Cane District streams but not Enoree District streams. See Appendix C for full electrofishing results.

		Total 2001	Total 2002	Gained	Lost Total	Lost Visit	Lost Dry
Aphredoderidae							
Pirate perch	*Aphredoderus sayanus*	0	0	--	--	--	--
Catostomidae							
Creek chubsucker	*Erimyzon oblongus*	5	3	0	2	1	0
Creek chubsucker YOY	*Erimyzon oblongus*	0	0	--	--	--	--
Northern hog sucker	*Hypentelium nigricans*	0	0	--	--	--	--
Striped jumprock	*Moxostoma rupiscartes*	2	0	0	2	1	0
Centrarchidae							
Redbreast sunfish	*Lepomis auritus*	9	10	2	1	1	0
Green sunfish	*Lepomis cyanellus*	3	0	0	3	0	0
Pumpkinseed	*Lepomis gibbosus*	6	0	0	6	0	0
Warmouth	*Lepomis gulosus*	0	0	--	--	--	--
Bluegill	*Lepomis macrochirus*	1	1	1	1	0	0
Redear sunfish	*Lepomis microlophus*	0	0	--	--	--	--
Redeye bass	*Micropterus coosae*	0	0	--	--	--	--
Largemouth bass	*Micropterus salmoides*	0	0	--	--	--	--
Sunfish hybrid		1	0	0	1	0	0
Sunfish YOY		1	0	0	1	0	0
Cyprinidae							
Rosyside dace	*Clinostomus funduloides*	7	3	1	5	3	0
Rosyside dace YOY	*Clinostomus funduloides*	1	0	0	1	0	0
Eastern silvery minnow	*Hybognathus regius*	0	0	--	--	--	--
Highback chub	*Hybopsis hypsinotus*	12	6	0	6	3	0
Rosyface chub	*Hybopsis rubrifrons*	0	0	--	--	--	--
Bluehead chub	*Nocomis leptocephalus*	16	9	0	7	5	0
Golden shiner	*Notemigonus crysoleucas*	0	0	--	--	--	--
Dusky shiner	*Notropis cummingsae*	0	0	--	--	--	--
Spottail shiner	*Notropis hudsonius*	1	0	0	1	1	0
Yellowfin shiner	*Notropis lutipinnis*	12	8	0	4	3	0
Yellowfin shiner YOY	*Notropis lutipinnis*	0	0	--	--	--	--
Sandbar shiner	*Notropis scepticus*	0	0	--	--	--	--
Creek chub	*Semotilus atromaculatus*	16	10	0	6	5	0
Chub Sp. YOY		10	10	4	4	3	0
Shiner sp.		0	0	--	--	--	--
Esocidae							
Redfin pickerel	*Esox americanus.*	2	0	0	2	0	0
Chain pickerel	*Esox niger*	1	1	0	0	--	--
Ictaluridae							
Yellow bullhead	*Ameiurus natalis*	1	1	1	1	0	0
Brown bullhead	*Ameiurus nebulosus*	0	0	--	--	--	--
Flat bullhead	*Ameiurus platycephalus*	0	0	--	--	--	--
Margined madtom	*Noturus insignis*	0	0	--	--	--	--

Table 6. continued…

		Total 2001	Total 2002	Gained	Lost Total	Lost Visit	Lost Dry
Percidae							
Christmas darter	*Etheostoma hopkinsi*	0	0	--	--	--	--
Christmas darter YOY	*Etheostoma hopkinsi*	0	0	--	--	--	--
Tessellated darter	*Etheostoma olmstedi*	4	5	1	0	--	--
Tessellated darter YOY	*Etheostoma olmstedi*	0	1	1	0	--	--
Yellow perch	*Perca flavescens*	0	0	--	--	--	--
Blackbanded darter	*Percina nigrofasciata*	0	0	--	--	--	--
Poeciliidae							
Eastern mosquitofish	*Gambusia holbrooki.*	2	2	0	0	--	--

Table 7. Number of sites containing fish species sampled by backpack electrofishing on Long Cane Ranger District streams. There were a total of 16 sites in 2001 and 11 sites in 2002. 'Gained' is the number of sites at which a species was captured in 2002 but not 2001. 'Lost is the number of sites at which a species was captured in 2001 but not 2002. 'Lost No Visit' is the number of sites that were lost because they were not visited in 2002 and 'Dry' is the number of sites lost because the channel was dry. Shaded species were found in Enoree District streams but not Long Cane District streams. See Appendix C for full electrofishing results.

		Total 2001	Total 2002	Gained	Lost Total	Lost No Visit	Lost Dry
Aphredoderidae							
Pirate perch	*Aphredoderus sayanus*	6	4	1	3	1	0
Catostomidae							
Creek chubsucker	*Erimyzon oblongus*	4	4	2	2	0	0
Creek chubsucker YOY	*Erimyzon oblongus*	0	1	1	0	--	--
Northern hog sucker	*Hypentelium nigricans*	0	4	4	0	--	--
Striped jumprock	*Moxostoma rupiscartes*	9	1	0	8	2	0
Centrarchidae							
Redbreast sunfish	*Lepomis auritus*	12	10	3	5	4	0
Green sunfish	*Lepomis cyanellus*	10	7	2	5	3	0
Pumpkinseed	*Lepomis gibbosus*	15	0	0	15	6	0
Warmouth	*Lepomis gulosus*	3	3	2	2	1	0
Bluegill	*Lepomis macrochirus*	6	4	2	4	1	0
Redear sunfish	*Lepomis microlophus*	0	1	1	0	--	--
Redeye bass	*Micropterus coosae*	3	2	0	1	0	0
Largemouth bass	*Micropterus salmoides*	0	3	3	0	--	--
Sunfish hybrid		1	0	0	1	0	0
Sunfish YOY		0	0	--	--	--	--
Cyprinidae							
Rosyside dace	*Clinostomus funduloides*	11	0	0	11	5	0
Rosyside dace YOY	*Clinostomus funduloides*	0	0	--	--	--	--
Eastern silvery minnow	*Hybognathus regius*	1	0	0	1	0	0
Highback chub	*Hybopsis hypsinotus*	0	0	--	--	--	--
Rosyface chub	*Hybopsis rubrifrons*	1	7	6	0	--	--
Bluehead chub	*Nocomis leptocephalus*	19	12	1	8	6	0
Golden shiner	*Notemigonus crysoleucas*	4	2	1	3	2	0
Dusky shiner	*Notropis cummingsae*	1	2	1	0	--	--
Spottail shiner	*Notropis hudsonius*	8	1	1	8	3	0
Yellowfin shiner	*Notropis lutipinnis*	17	12	0	5	5	0
Yellowfin shiner YOY	*Notropis lutipinnis*	0	1	1	0	--	--
Sandbar shiner	*Notropis scepticus*	4	0	0	4	1	0
Creek chub	*Semotilus atromaculatus*	17	12	1	6	5	0
Chub sp. YOY		4	10	8	2	1	1
Shiner sp.		2	0	0	2	0	0
Esocidae							
Redfin pickerel	*Esox americanus*	0	0			--	--
Chain pickerel	*Esox niger*	0	0	--	--	--	--
Ictaluridae							
Yellow bullhead	*Ameiurus natalis*	11	6	2	7	3	0
Brown bullhead	*Ameiurus nebulosus*	1	0	0	1	0	0
Flat bullhead	*Ameiurus platycephalus*	0	3	3	0	--	--
Margined madtom	*Noturus insignis*	3	3	1	1	0	0

Table 7. continued…

		Total 2001	Total 2002	Gained	Lost Total	Lost No Visit	Lost Dry
Percidae							
Christmas darter	*Etheostoma hopkinsi*	6	8	3	1	0	0
Christmas darter YOY	*Etheostoma hopkinsi*	0	1	1	0		
Tessellated darter	*Etheostoma olmstedi*	1	3	2	0	--	--
Tessellated darter YOY	*Etheostoma olmstedi*	0	0	--	--	--	--
Yellow perch	*Perca flavescens*	1	1	0	0	--	--
Blackbanded darter	*Percina nigrofasciata*	1	3	2	0	--	--
Poeciliidae							
Eastern mosquitofish	*Gambusia holbrooki*	2	3	2	1	1	0

Table 8. Enoree District backpack electrofishing results. Species counts include only positively identified species. 'Sample': 'no' = site not visited in 2002. 'New' is the number of species captured in 2002 that were not captured in 2001. 'Lost' is the number of species captured in 2001 that were not captured in 2002. See Appendix C for full electrofishing results.

Stream	Site	Sample		Passes		Species		New	Lost
		2001	2002	2001	2002	2001	2002		
McCluney Branch	01	yes	yes	3	3	7	6	1	2
	02	yes	no	3	3	3	--	--	--
Pattersons Branch	01	yes	yes	3	3	6	7	1	0
	02	yes	no	3	--	6	--	--	--
	03	yes	yes	3	3	7	5	0	2
Sispring Branch	02	yes	yes	3	3	6	7	1	0
	03	yes	yes	3	3	7	5	0	2
Sparks Creek	01	yes	no	3	--	4	--	--	--
	02	yes	yes	3	3	8	5	1	4
	03	yes	yes	3	3	8	5	2	5
UT Clarks Creek	01	yes	no	3	--	5	--	--	--
	02	yes	yes	3	3	9	8	1	2
	03	yes	yes	3	3	8	7	0	1
UT Tyger River	01	yes	yes	3	3	6	1	0	5
	02	yes	yes	3	3	6	4	1	3
	03	yes	no	3	--	6	--	--	--

Table 9. Long Cane District backpack electrofishing results. Species counts include only positively identified species. 'Sample': 'dry' = not sampled because channel dry, 'beaver' = not sampled because beaver pond present, 'no' = site not visited in 2002. 'New' is the number of species captured in 2002 that were not captured in 2001. 'Lost' is the number of species captured in 2001 that were not captured in 2002. See Appendix C for full electrofishing results.

Stream	Site	Sample		Passes		Species		New	Lost
		2001	2002	2001	2002	2001	2002		
Big Curltail Creek	01	yes	no	1	--	7	--	--	--
	02	yes	yes	1	3	8	11	6	3
	03	yes	yes	1	3	8	18	13	3
Bold Branch	01	yes	yes	3	3	9	6	1	4
	02	yes	yes	3	3	8	9	3	2
	03	yes	dry	3	--	0*	--	--	--
Byrd Creek	01	yes	no	1	--	6	--	--	--
	02	yes	yes	3	3	8	4	1	5
	03	dry	dry	--	--	--	--	--	--
Camp Branch	01	yes	yes	3	3	15	14	3	4
	02	yes	yes	3	3	14	10	2	6
	03	beaver	no	--	--	--	--	--	--
Candy Branch	01	yes	no	1	--	3	--	--	--
	02	yes	yes	1	3	3	4	1	0
	03	yes	yes	1	3	3	3	0	0
Lick Fork	01	yes	yes	3	3	10	12	6	4
	02	yes	yes	3	3	11	11	4	4
	03	yes	no	3	--	7	--	--	--
Miller Branch	01	yes	no	3	--	8	--	--	--
Pike Branch	01	yes	no	1	--	2	--	--	--
Rock Creek	01	yes	no	3	--	14	--	--	--
	02	yes	yes	3	3	10	13	6	3
	03	yes	yes	3	3	8	6	2	4
Wilson Branch	01	yes	no	1	--	5	--	--	--
	02	yes	yes	1	1**	2	0	0	2
	03	yes	yes	3	1**	8	0	0	8

*several unidentified chub species YOY were captured
**stream dry except for a few pools, only made 1 pass

Appendix A: Key to habitat features identified during BVET surveys

Table A1. Description of habitat types used during BVET habitat surveys on the Andrew Pickens Ranger District, summer 2001 and 2002, modified from Armantrout (1998).

Habitat Type	Stream Bed Profile	Gradient (%)	Surface Turbulence	Water Velocity
Pool	concave	<1	none to high	low
Glide	flat	<1	none	low
Run	flat	>1	low to none	high
Riffle	convex	>1	moderate to high	high
Cascade	convex	>12%	very high	very high

Table A2. Size classes used to categorize substrate particles during BVET habitat surveys on the Andrew Pickens Ranger District, summer 2001 and 2002, based on modified Wentworth scale. Size was visually estimated on the intermediate axis (b-axis).

Size Class	Name	Size (mm)	Description
1	Organic	--	Dead organic matter, leaves, detritus, etc.
2	Clay	< 0.00024	Sticky
3	Silt	0.00024-0.0039	Slippery
4	Sand	0.0039-2	Gritty
5	Small Gravel	3-16	Sand to thumbnail
6	Large Gravel	17-64	Thumbnail to fist
7	Cobble	65-256	Fist to head
8	Boulder	>256	Larger than head
9	Bedrock	--	Solid parent material

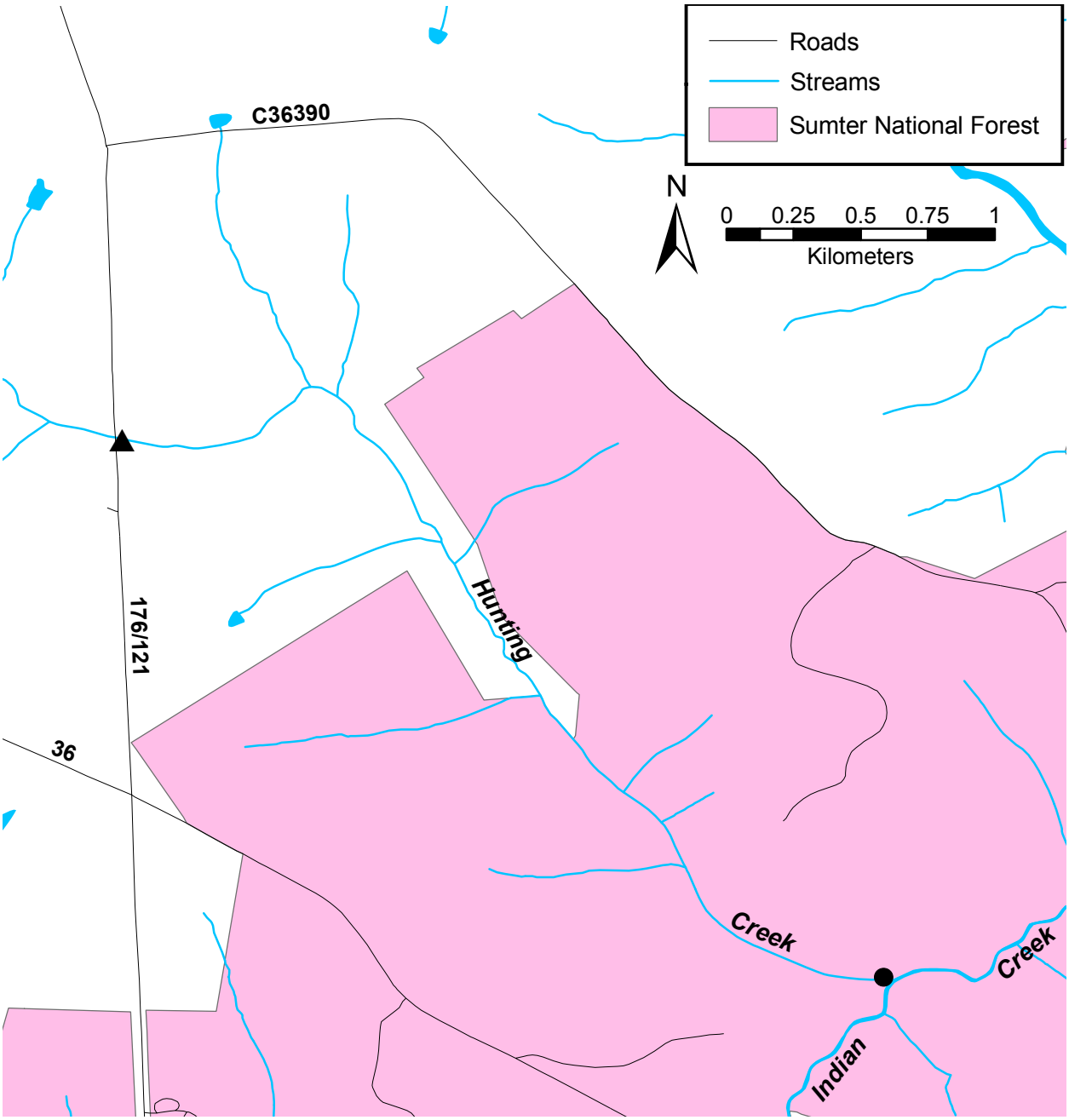
Table A3. Size classes used to categorize large woody debris during BVET habitat surveys on the Andrew Pickens Ranger District, summer 2001 and 2002. Woody debris < 1.0 m in length or < 10 cm in diameter were omitted.

Size Class	Length (m)	Diameter (cm)
1	< 5	10-55
2	< 5	> 55
3	> 5	10-55
4	> 5	> 55

Appendix B: BVET Habitat Survey Results

Enoree District 25
Hunting Creek 25
McCluney Branch 30
Sispring Branch 35
Sparks Creek 40
UT of Tyger River 45

Long Cane District 50
Big Curltail Creek 50
Bold Branch 55
Byrd Creek 60
Tributary 1 - Byrd Creek 65
Tributary 2 - Byrd Creek 69
Tributary 3 - Byrd Creek 73
Camp Branch 77
Tributary 1 - Camp Branch 82
Tributary 2 - Camp Branch 86
Candy Branch 90
Lick Fork 95
Miller Branch 100
Pike Branch 104
Rock Creek 109
Tributary 1 - Rock Creek 113
Wilson Branch 117



Location of habitat survey starting point (closed circle) and ending point (closed triangle) on Hunting Creek, summer 2002.

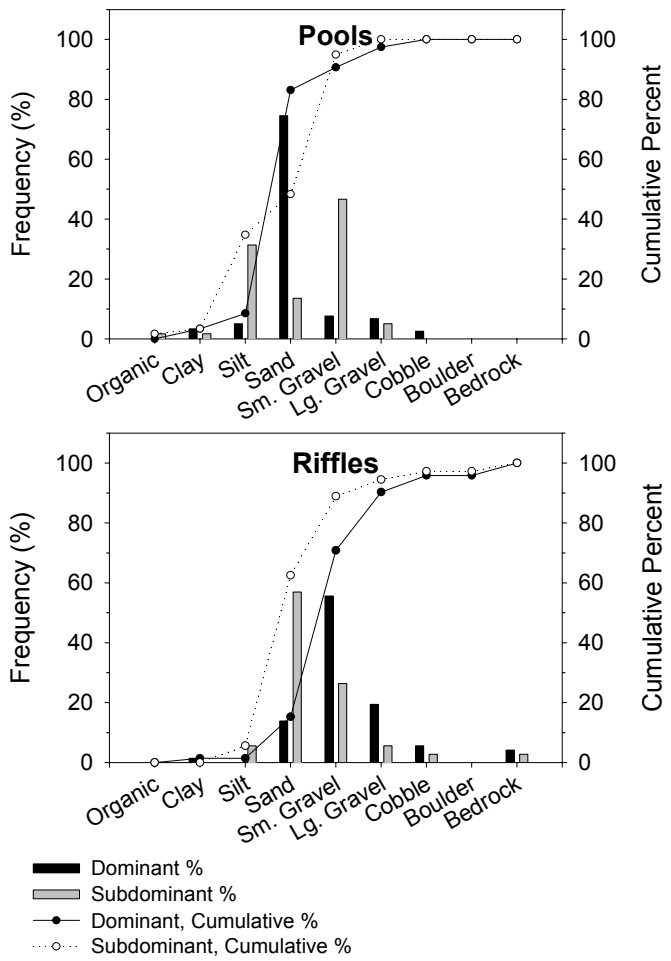
Stream:	**Hunting Creek**
District:	Enoree
USGS Quadrangle:	Whitemire South
Survey Date:	06/07/02
Downstream Starting Point:	Confluence with Indian Creek
Total Distance Surveyed (km):	3.9

	Pools	**Riffles**
Percent of Total Stream Area:	87	13
Total Area (m^2):	12571±794	1859±161
Correction Factor Applied:	0.91	0.94
Number of Paired Samples:	23	14
Total Count:	118	72
Number per km:	30	19
Mean Area (m^2):	107	26
Mean Maximum Depth (cm):	41	9
Mean Average Depth (cm):	22	5
Mean Residual Depth (cm):	16	--
Percent Surveyed as Glides:	8	--
Percent Surveyed as Runs:	--	6
Percent Surveyed as Cascades:	--	0
Percent with Substrate > 35% Embedded:	11	--

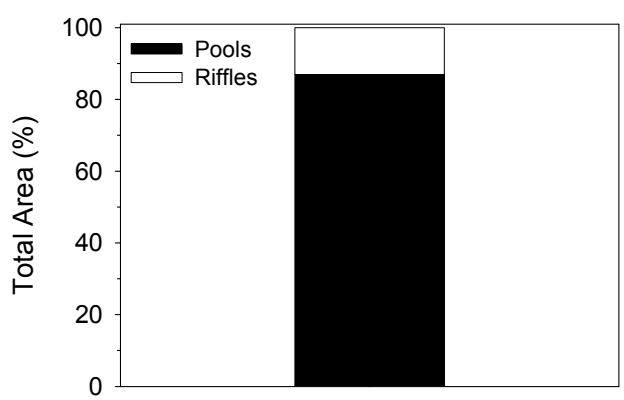
Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	59
< 5 m long, > 55 cm diameter:	1
> 5 m long, 10 cm – 55 cm diameter:	16
> 5 m long, > 55 cm diameter:	3
Total:	79

	Riparian Width* (m)	**Bankfull Width (m)**	**Flood Prone Width** (m)**	**Entrenchment Ratio*****	**Gradient (%)**	**Water Temperature (C)**
Mean	6	9	20	2.2	2	20
Maximum	82	11	133	14.5	5	20
75th Percentile	2	9	12	1.4	3	20
Median	1	8	11	1.3	2	20
25th Percentile	1	8	10	1.2	1	20
Minumum	0	8	9	1.1	1	20
Sample Size	28	14	14	14.0	13	1

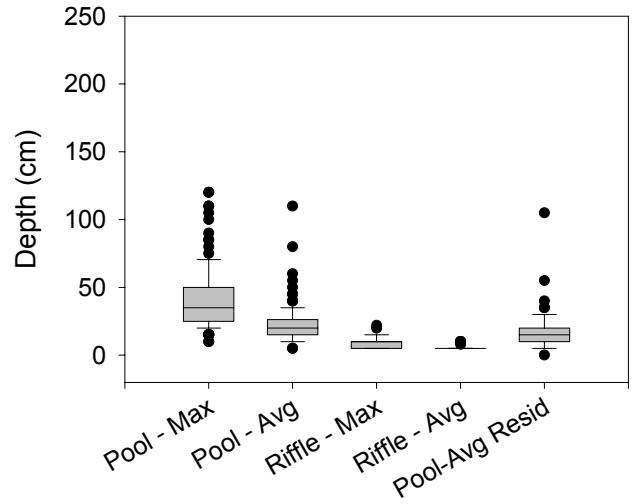
* grouped left and right riparian width together for calculations
** left riparian, right riparian, and bankfull channel widths were added together for calculations
*** calculated as floodprone width divided by bankfull width (Rosgen 1996)



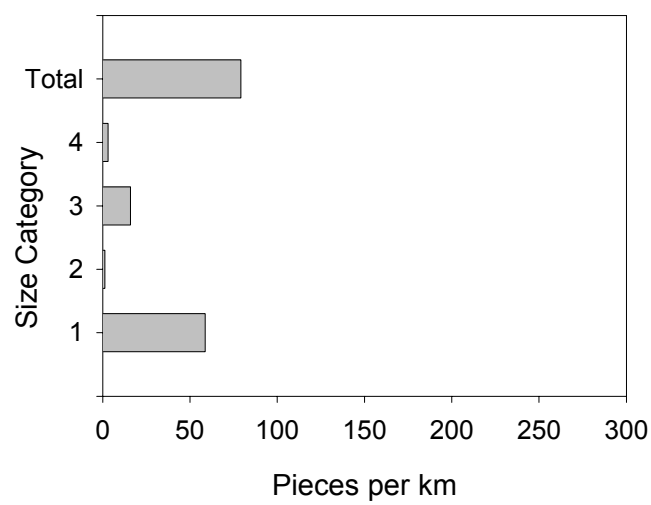
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Hunting Creek, summer 2002.



Estimated area of Hunting Creek in pools and riffles as calculated using BVET techniques, summer 2002.



Maximum and average depths and residual pool depths for pools and riffles in Hunting Creek, summer 2002. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

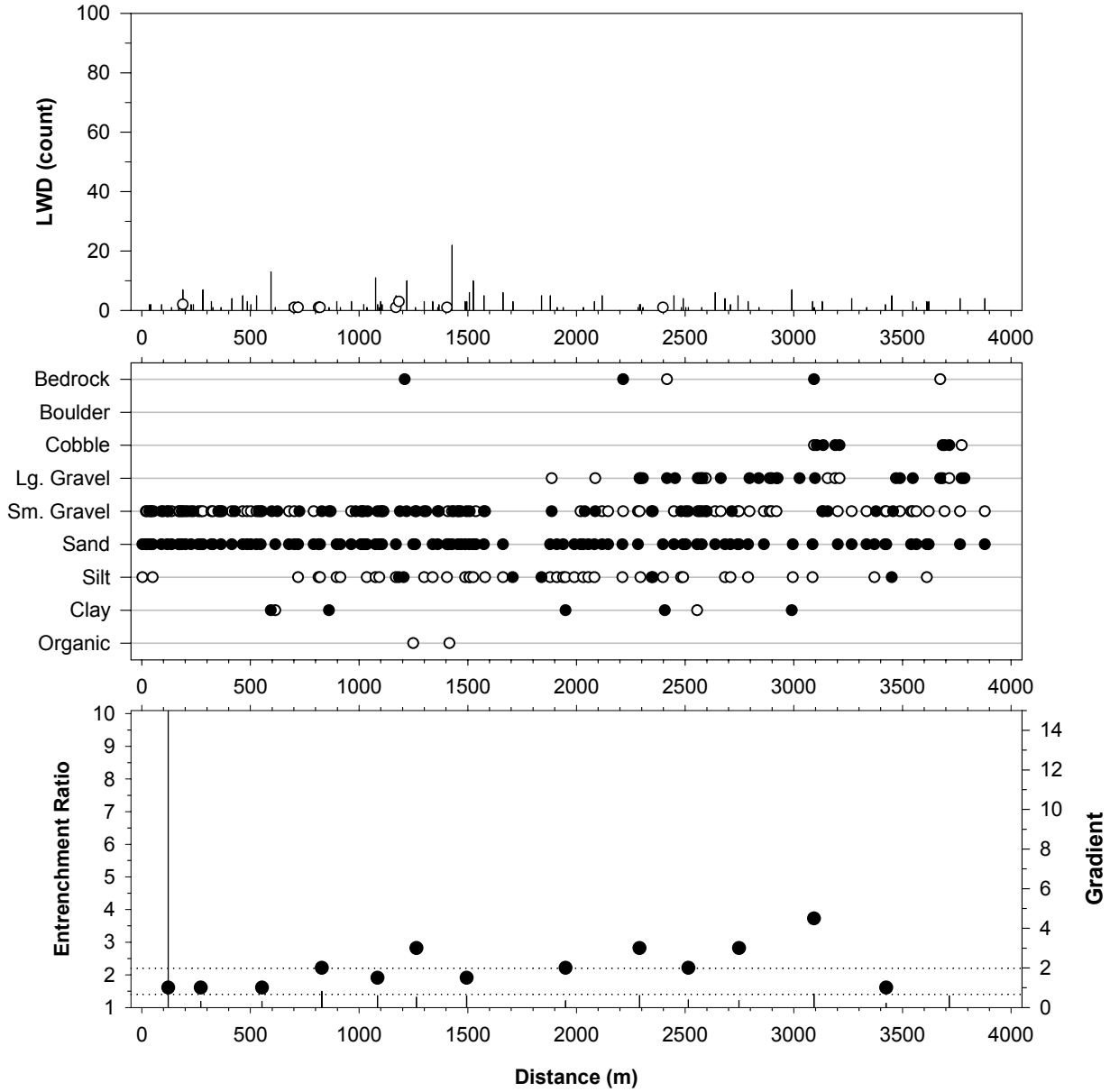


LWD per kilometer in Hunting Creek, summer 2002. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Hunting Creek during BVET habitat survey, summer 2002. Distance is meters from start of survey.

Stream Feature	Distance (m)	Width (m)	Comments
Tributary	219.7		on right, dry, GPS reading saved as point ID Hunti02
Tributary	759.7	1.0	on left, GPS was unable to be taken.
Tributary	1258.5		on right, dry, GPS was unable to be taken.
Tributary	1380.0		on right, dry, GPS was saved as point ID Hunti05; Marks the beginning of the private land on the topo map.
Tributary	1652.0		on left, dry, GPS was unable to be taken.
Beaver Dam	1661.4		
Tributary	2274.5		on right, dry, GPS reading was taken 15m to the left of the tributary in a field and was saved as point ID Hunti06
Side Pool	2576.5	1.5	on left of the main channel
Tributary	3018.4		dry, GPS reading taken to the right of the tributary in a field and saved as point ID Hunti08
Tributary	3142.7	1.0	on right with a cattle barrier of wood and barbed wire, GPS reading taken to the right of the tributary in a field and saved as point ID Hunti09
Tributary	3206.3		on left, dry, GPS reading taken approximately 15 meters upstream from tributary and saved as point ID Hunti10
Tributary	3456.6		on left, dry, GPS reading taken 5 meters downstream from tributary and saved as point ID Hunti11
Tributary	3851.2		on left, dry, GPS unable to be taken.

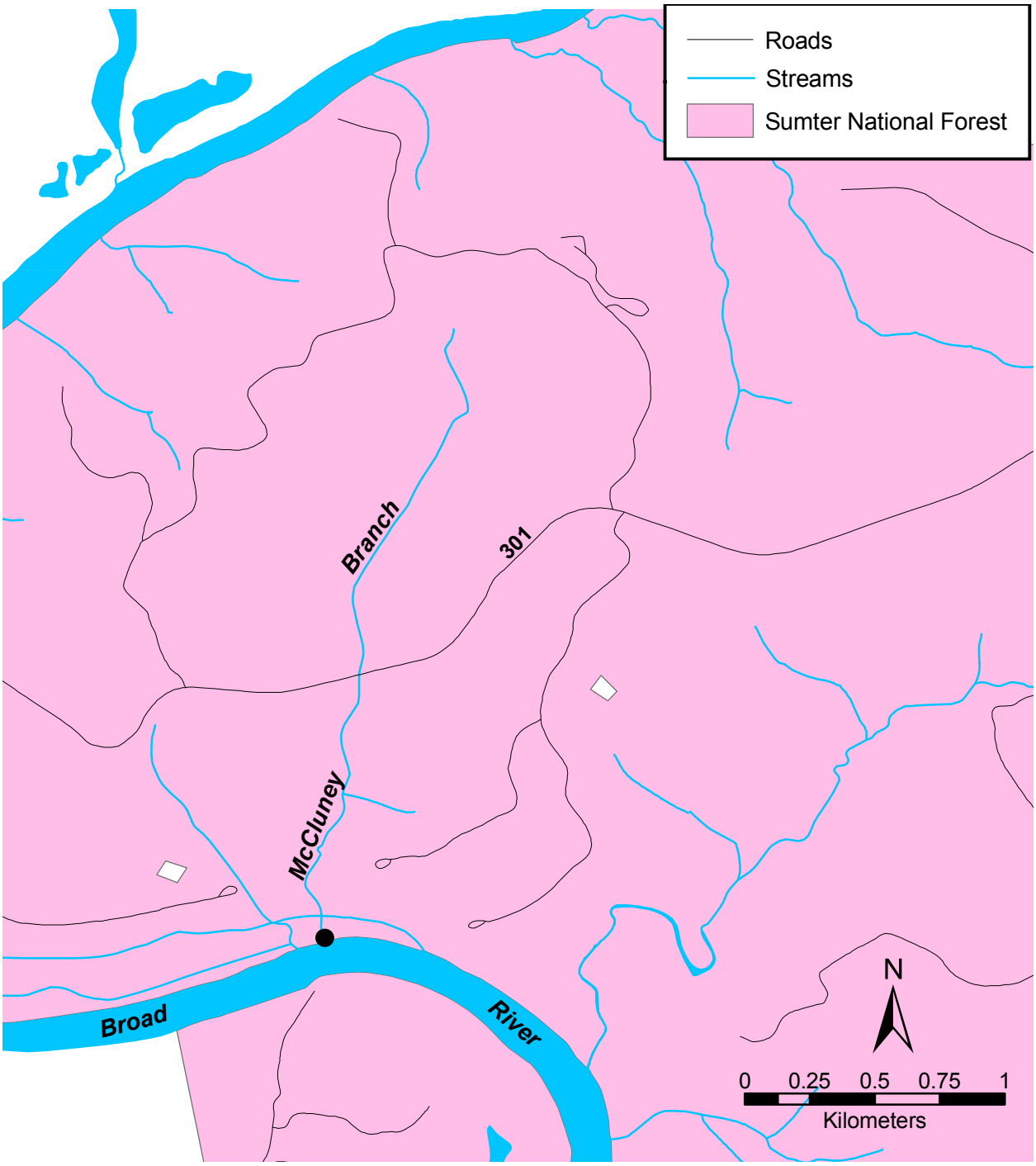


Distribution and abundance of LWD, distribution of substrates, and distribution of Rosgen's channel entrenchment and channel gradient in Hunting Creek, summer 2002. LWD and substrate were recorded for each habitat unit in the stream. Entrenchment measurements were recorded only where calibration measurements (paired samples) were made. X-axis indicates distance upstream from confluence with Indian Creek.

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.

Entrenchment figure:.Vertical bars represent entrenchment ratio: see y-axis on left. Dotted reference lines delineate entrenched (1-1.4), moderately entrenched (1.41-2.2), and slightly entrenched (>2.2) channels. Entrenchment was calculated as floodprone width divided by bankfull width (see Rosgen 1996). Closed circles represent channel gradient: see y-axis on right.



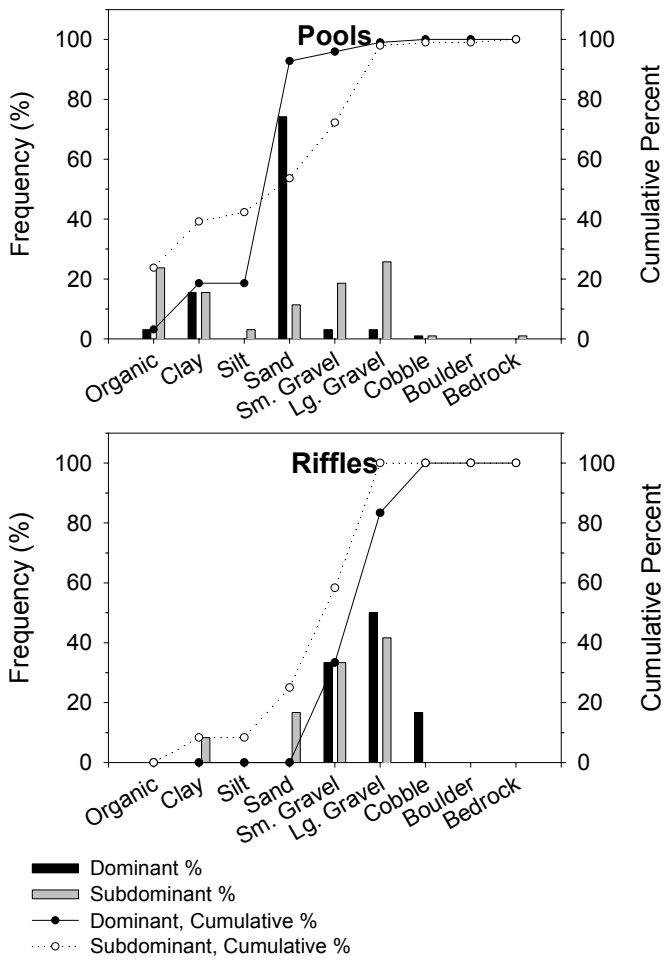
Location of stream habitat survey starting point (closed circle) on McCluney Branch, summer 2001

Stream:	**McCluney Branch**
District:	Enoree
USGS Quadrangle:	Leeds
Survey Date:	07/10/01
Downstream Starting Point:	Confluence with Broad River
Total Distance Surveyed (km):	2.7

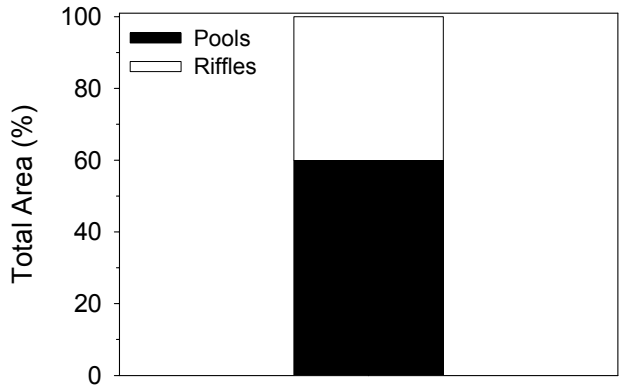
	Pools	**Riffles**
Percent of Total Stream Area:	60	40
Total Area (m^2):	2023±407	1348±192
Correction Factor Applied:	1.39	16.44
Number of Paired Samples:	15	6
Total Count:	97	12
Number per km:	36	4
Mean Area (m^2):	21	112
Mean Maximum Depth (cm):	29	4
Mean Average Depth (cm):	16	2
Mean Residual Depth (cm):	--	--
Percent Surveyed as Glides:	13	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	0
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	50
< 5 m long, > 55 cm diameter:	3
> 5 m long, 10 cm – 55 cm diameter:	42
> 5 m long, > 55 cm diameter:	1
Total:	97

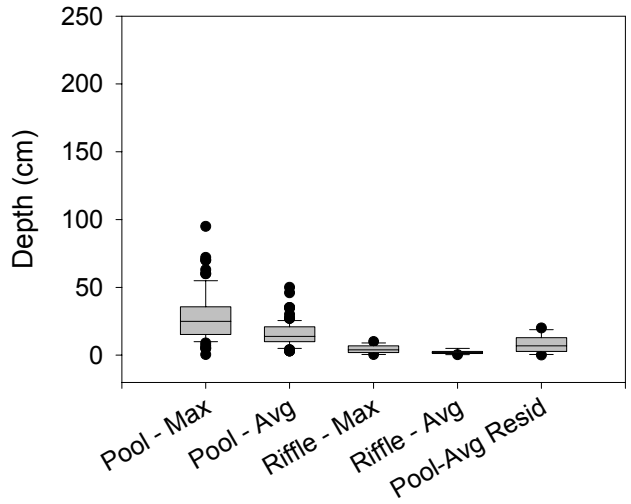
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	2	3	22
Maximum	3	3	23
75th Percentile	2	3	23
Median	2	3	23
25th Percentile	2	3	22
Minumum	1	3	21
Sample Size	16	1	8



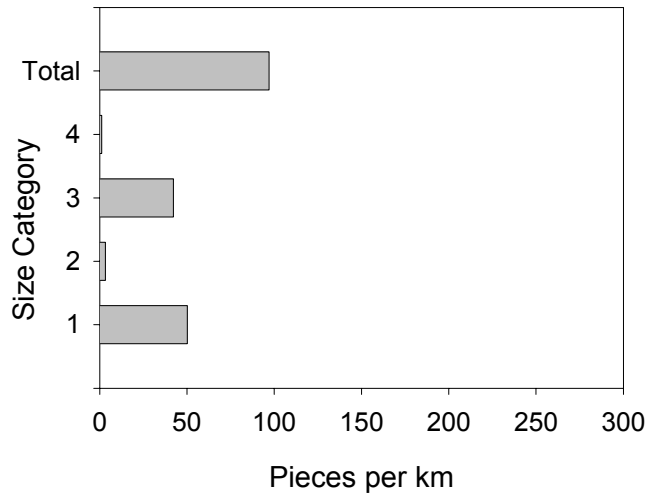
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in McCluney Branch, summer 2001.



Estimated area of McCluney Branch in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in McCluney Branch, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

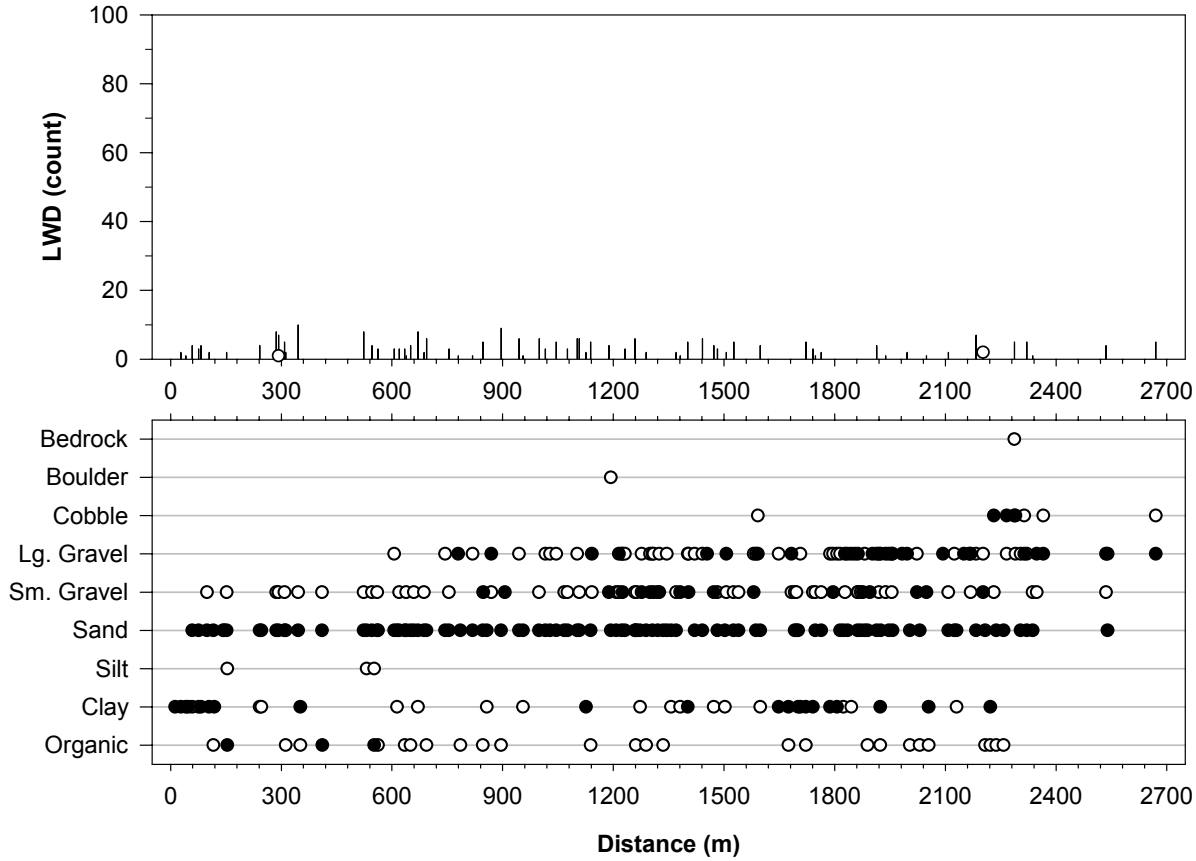


LWD per kilometer in McCluney Branch, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on McCluney Branch during BVET habitat survey, summer 2001. Distance is meters from start of survey.

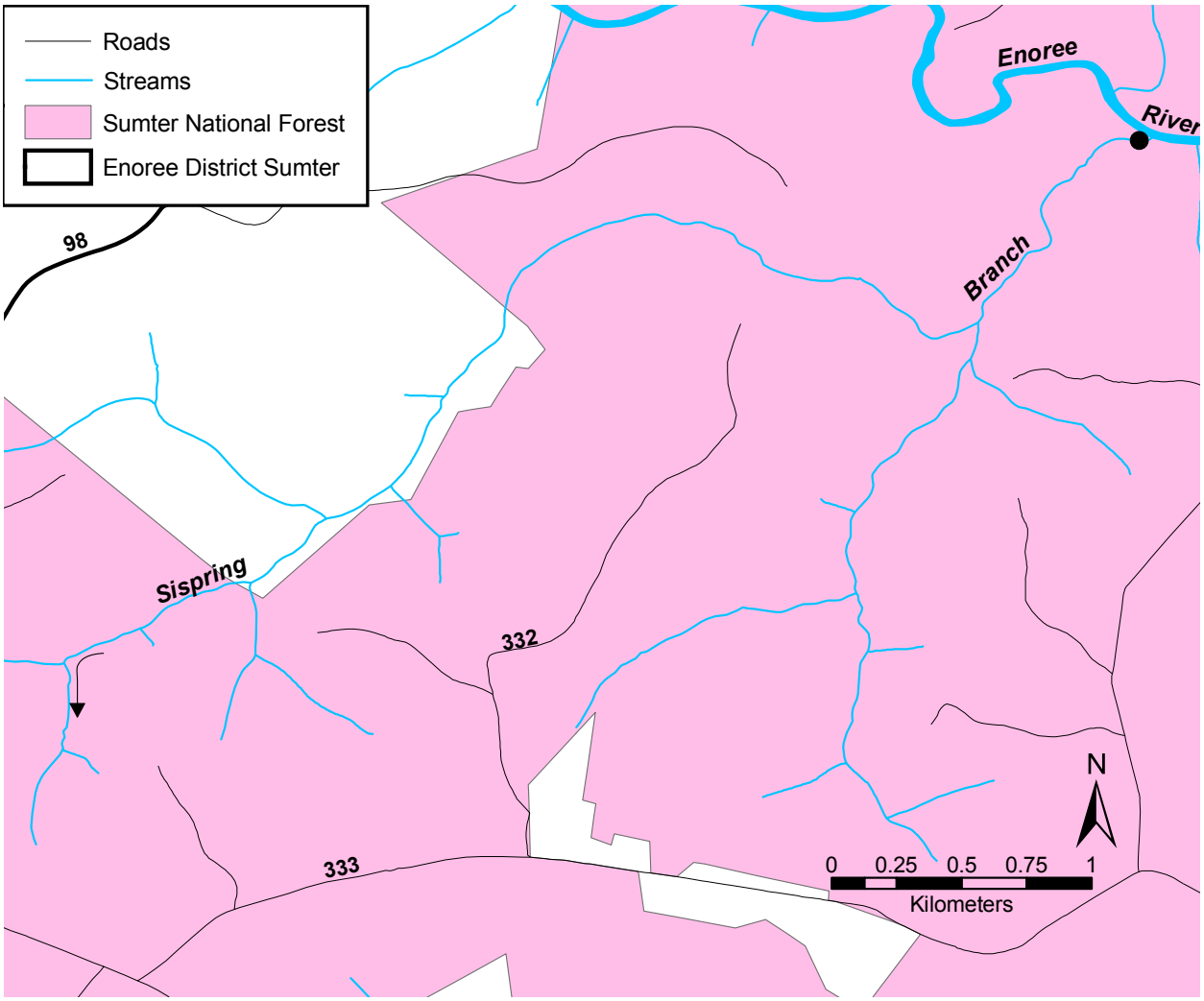
Stream Feature	Distance (m)	Width (m)	Comments
Gully	410.5		on right
Gully	650.1		on right
Gully	1208.0		on left
Gully	1401.5		on right
Gully	1647.9		on left
Gully	1814.6		on left, large
Gully	2107.7		on right
Gully	2150.2		on right, large
Gully	2202.1		on right
Gully	2202.1		on left
Gully	2313.3		on left
Gully	2365.0		on left, large
Gully	2534.9		on right, large
Gully	2669.8		on left, stream channel breaks up into a series of gullies here
Gully	2669.8		on left, large
Gully	2669.8		on right
Gully	2669.8		on right
Gully	2669.8		on right
Gully	2669.8		on right, stream breaking up



Distribution and abundance of LWD and distribution of substrates in McCluney Branch, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from confluence with Broad River.

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.



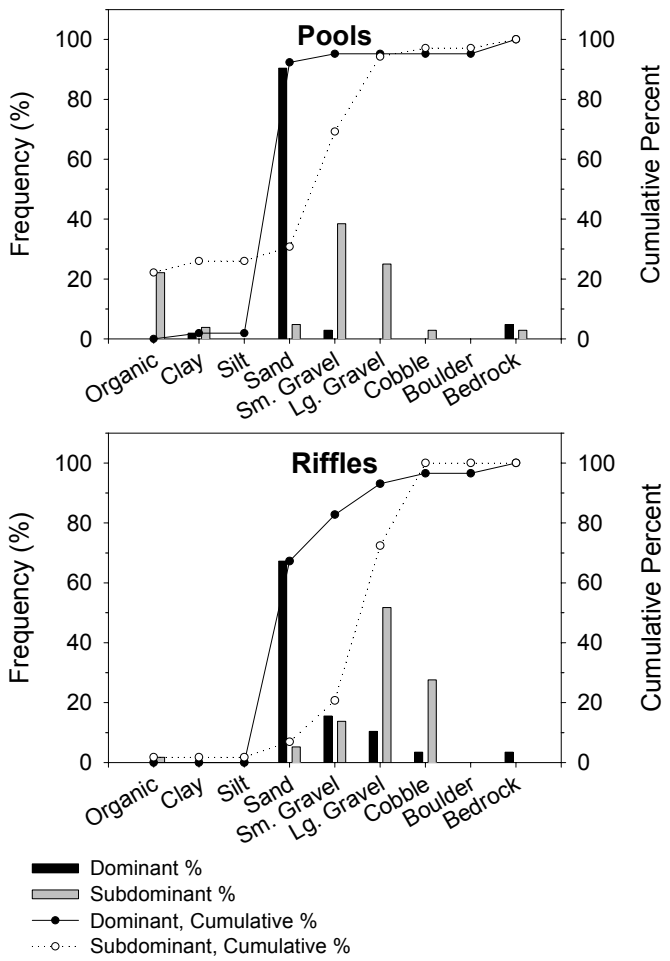
Location of stream habitat survey starting point (closed circle) on Sispring Branch, summer 2001. Survey included areas shown on private lands. Arrow indicates direction of survey at tributary confluence.

Stream:	**Sispring Branch**
District:	Enoree
USGS Quadrangle:	Philson's Crossroads
Survey Date:	07/23/01
Downstream Starting Point:	not recorded
Total Distance Surveyed (km):	6.2

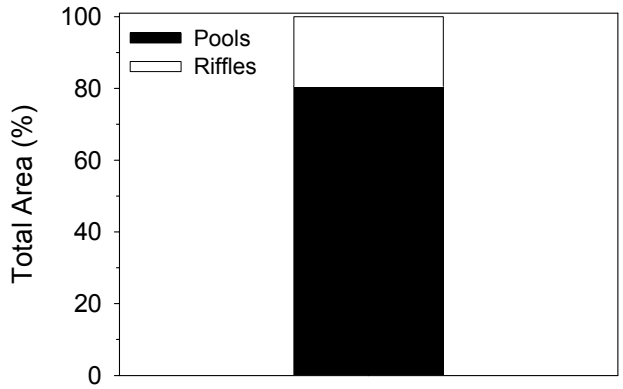
	Pools	**Riffles**
Percent of Total Stream Area:	81	19
Total Area (m^2):	5872±472	1413±321
Correction Factor Applied:	1.12	0.96
Number of Paired Samples:	9	5
Total Count:	104	58
Number per km:	17	9
Mean Area (m^2):	56	24
Mean Maximum Depth (cm):	42	10
Mean Average Depth (cm):	21	5
Mean Residual Depth (cm):	18	--
Percent Surveyed as Glides:	25	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	0
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	30
< 5 m long, > 55 cm diameter:	3
> 5 m long, 10 cm – 55 cm diameter:	17
> 5 m long, > 55 cm diameter:	10
Total:	60

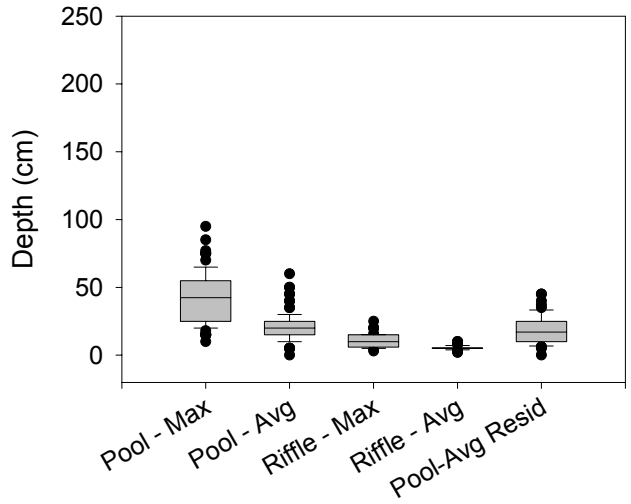
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	3	1	22
Maximum	6	2	25
75th Percentile	4	2	23
Median	3	1	22
25th Percentile	2	1	22
Minumum	1	0	21
Sample Size	16	15	14



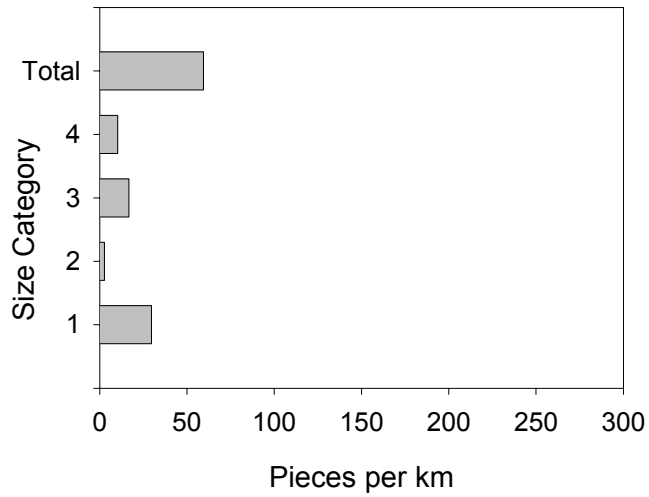
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Sispring Branch, summer 2001.



Estimated area of Sispring Branch in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Sispring Branch, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

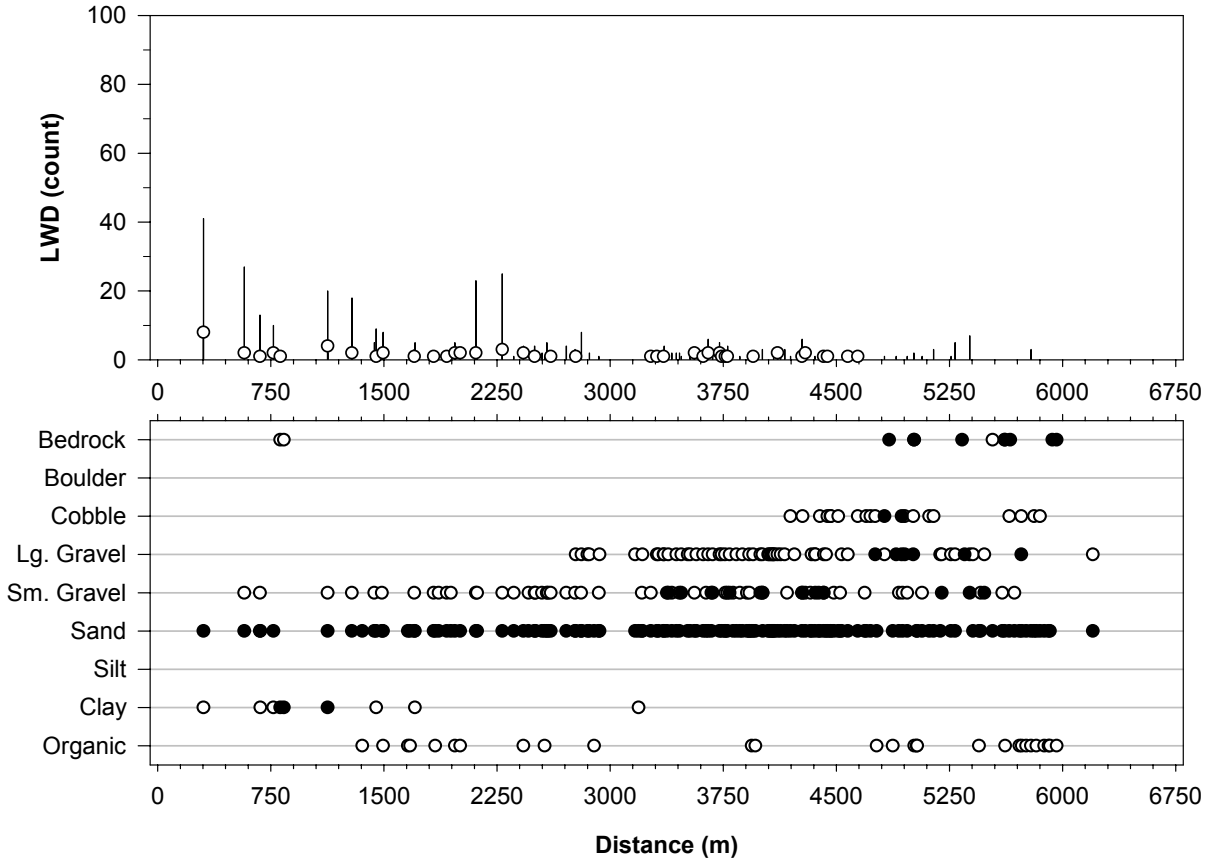


LWD per kilometer in Sispring Branch, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Sispring Branch during BVET habitat survey, summer 2001. Distance is meters from start of survey.

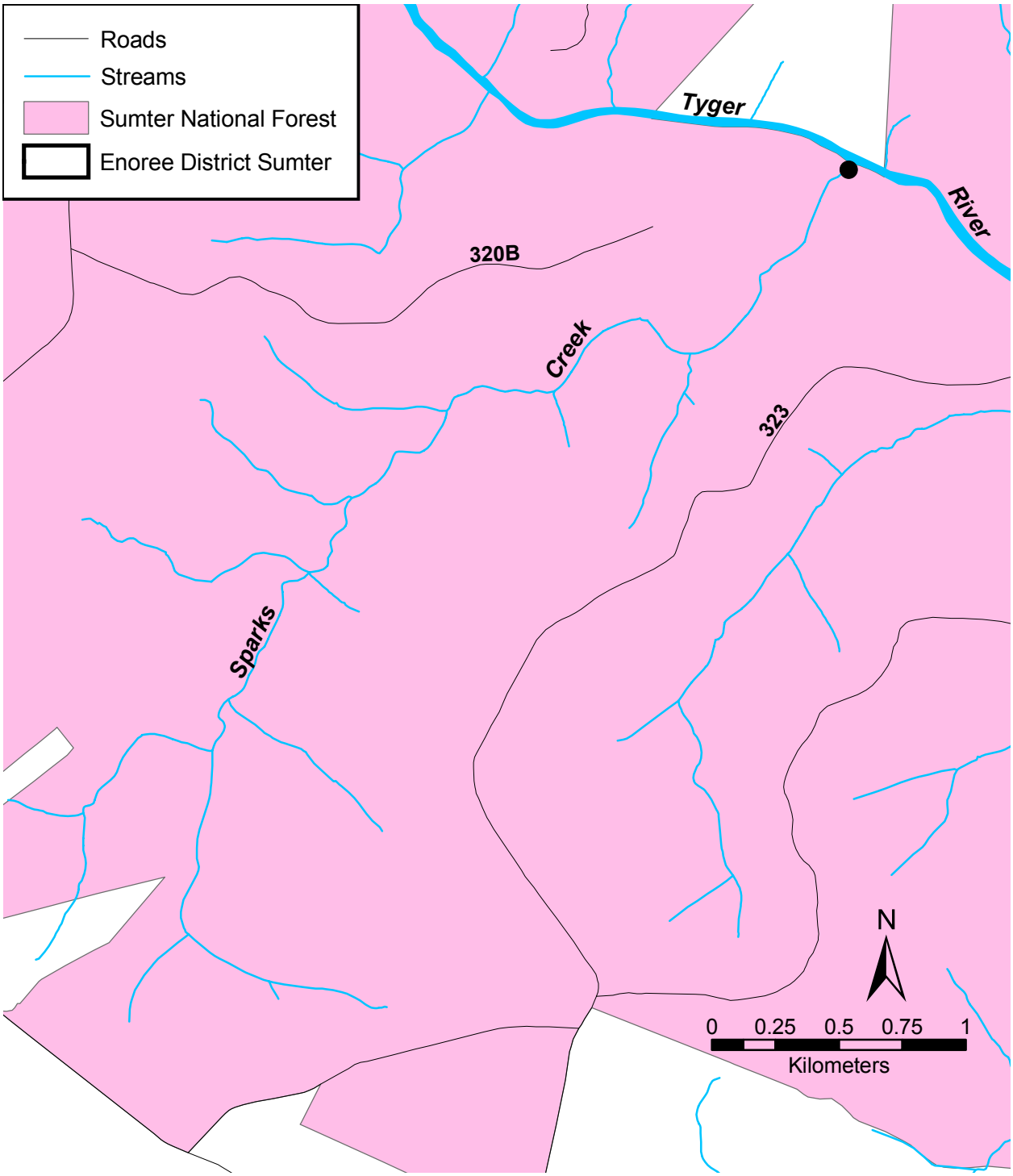
Stream Feature	Distance (m)	Width (m)	Comments
Tributary	464.0		on right
Tributary	977.0		on right
Tributary	1121.0		on right
Tributary	1121.0		on left
Tributary	1177.0		on right
Tributary	1406.0		on left
Tributary	1510.0		on right
Tributary	1672.0		on left
Tributary	1830.0		on right
Tributary	1912.0		on right
Tributary	2587.0		on right
Tributary	2604.0		on right
Tributary	2901.0		on left
Tributary	2924.0		on left
Tributary	2942.0		on left
Tributary	3011.0		on left
Property Boundary	3188.7		
Split	3320.0		
Tributary	3409.0		on left
Tributary	3625.0		on left
Tributary	3649.0		on right - wet
Tributary	4066.0		on left
Property Boundary	4188.0		
Tributary	4414.0		on right - dry
Shock Site	4525.0		end site 3
Trail Crossing	4619.0		
Tributary	4645.0		on left - dry
Gully	4985.0	5.6	on right
Tributary	5025.0		on right
Gully	5302.0	2.0	on left
Gully	5502.0		on left
Gully	5627.0	1.2	on right
Gully	5978.0	1.0	on right



Distribution and abundance of LWD and distribution of substrates in Sispring Branch, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.



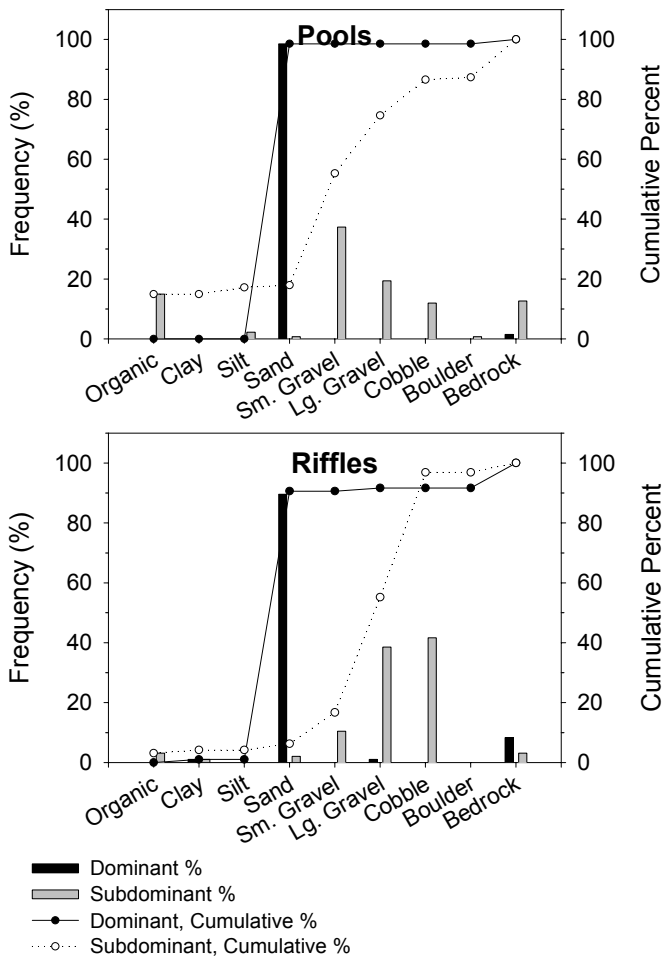
Location of stream habitat survey starting point (closed circle) on Sparks Creek, summer 2001.

Stream:	**Sparks Creek**
District:	Enoree
USGS Quadrangle:	Union West
Survey Date:	07/02/01
Downstream Starting Point:	not recorded
Total Distance Surveyed (km):	5.7

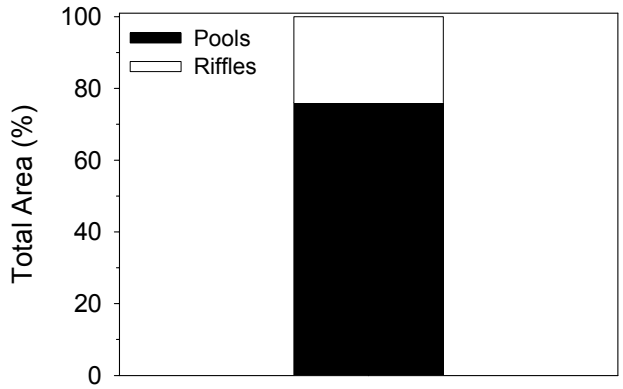
	Pools	**Riffles**
Percent of Total Stream Area:	76	24
Total Area (m^2):	5448±1074	1715±143
Correction Factor Applied:	0.82	1.07
Number of Paired Samples:	15	8
Total Count:	134	96
Number per km:	23	17
Mean Area (m^2):	41	18
Mean Maximum Depth (cm):	29	10
Mean Average Depth (cm):	15	6
Mean Residual Depth (cm):	10	--
Percent Surveyed as Glides:	68	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	1
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	42
< 5 m long, > 55 cm diameter:	0
> 5 m long, 10 cm – 55 cm diameter:	19
> 5 m long, > 55 cm diameter:	3
Total:	63

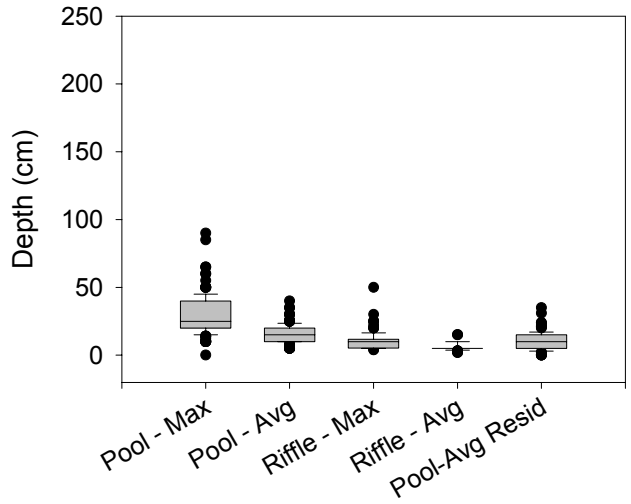
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	4	2	22
Maximum	5	5	24
75th Percentile	4	2	23
Median	4	1	22
25th Percentile	3	1	21
Minumum	2	1	19
Sample Size	21	21	11



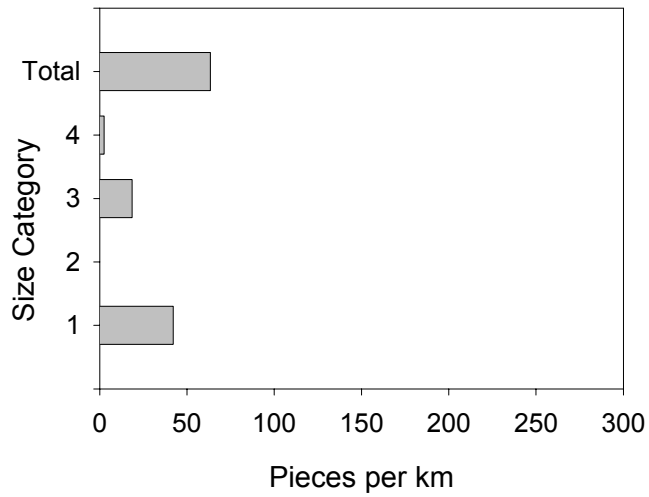
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Sparks Creek, summer 2001.



Estimated area of Sparks Creek in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Sparks Creek, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

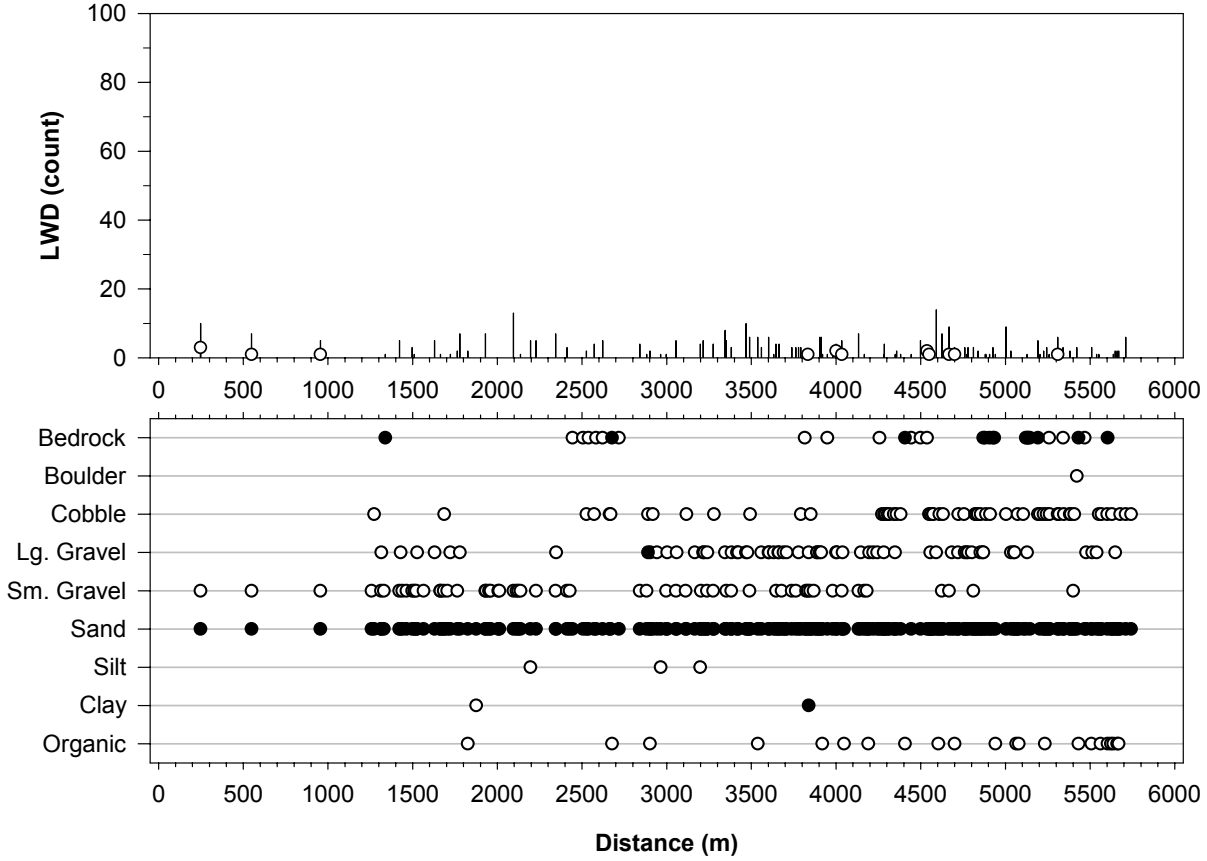


LWD per kilometer in Sparks Creek, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Sparks Creek during BVET habitat survey, summer 2001. Distance is meters from start of survey.

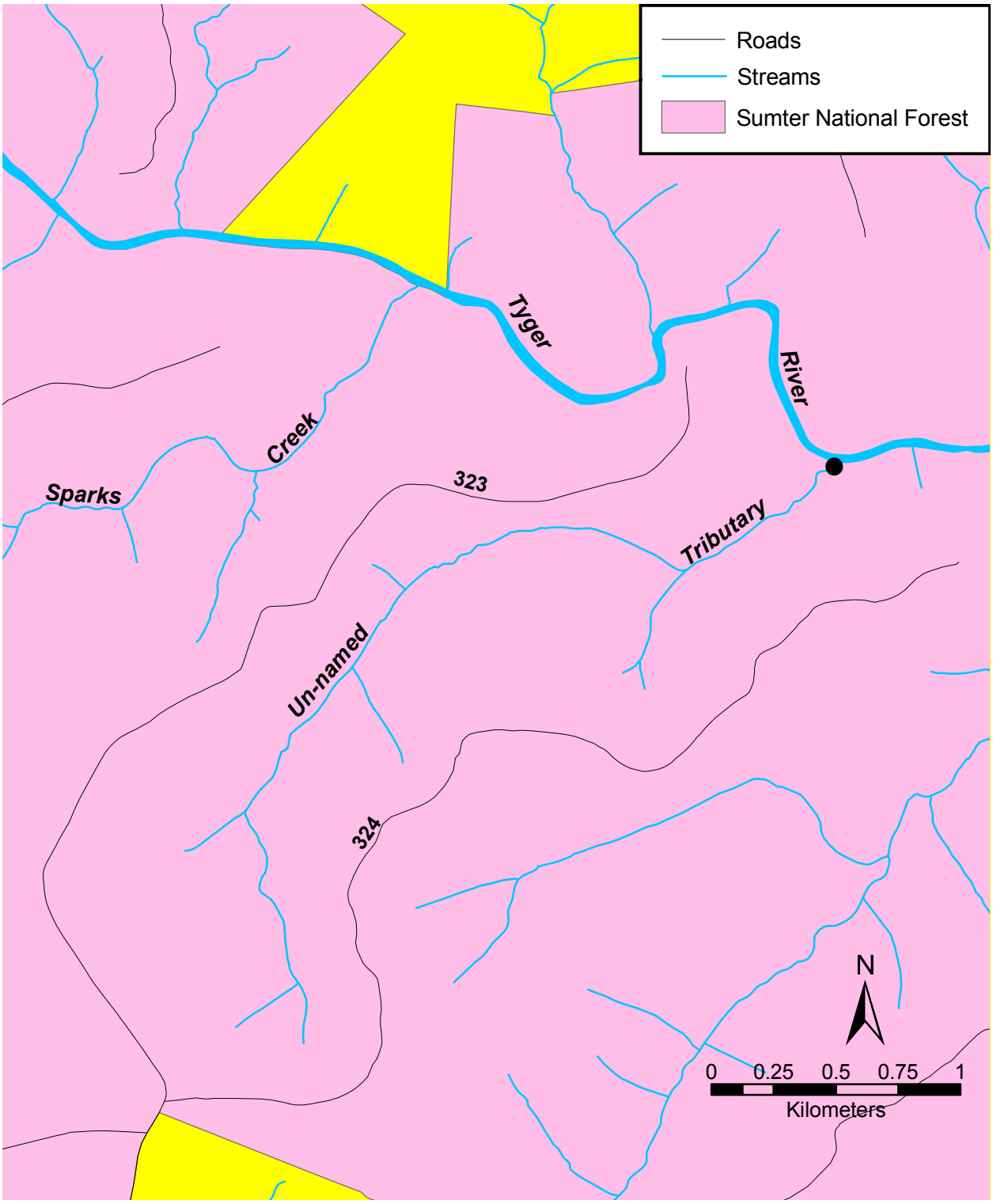
Stream Feature	Distance (m)	Width (m)	Comments
Shock Site	106.0		start site 1
Shock Site	204.0		end site 1
Tributary	1778.0		on left
Tributary	2228.0		on right
Tributary	2718.0		on left, dry
Tributary	2881.0		on right
Tributary	3237.0		on right
Gully	3274.0		on left, dry
Tributary	3423.0		on left, dry
Tributary	3762.0		on left, dry
Tributary	3887.0		on left
Gully	4033.0		on right, dry
Tributary	4190.0		on right
Tributary	4270.0		on left, dry
Shock Site	4292.0		start site 3
Tributary	4357.0		on left, dry
Shock Site	4407.0		end site 3
Tributary	4537.0		on right, dry
Tributary	4667.0		on left, dry
Tributary	4837.0		on left, dry
Tributary	5054.0		on left
Tributary	5380.0		on left, dry
Tributary	5476.0		on right, dry
Tributary	5622.0		on right, dry
Gully	5668.0		on left, dry



Distribution and abundance of LWD and distribution of substrates in Sparks Creek, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.



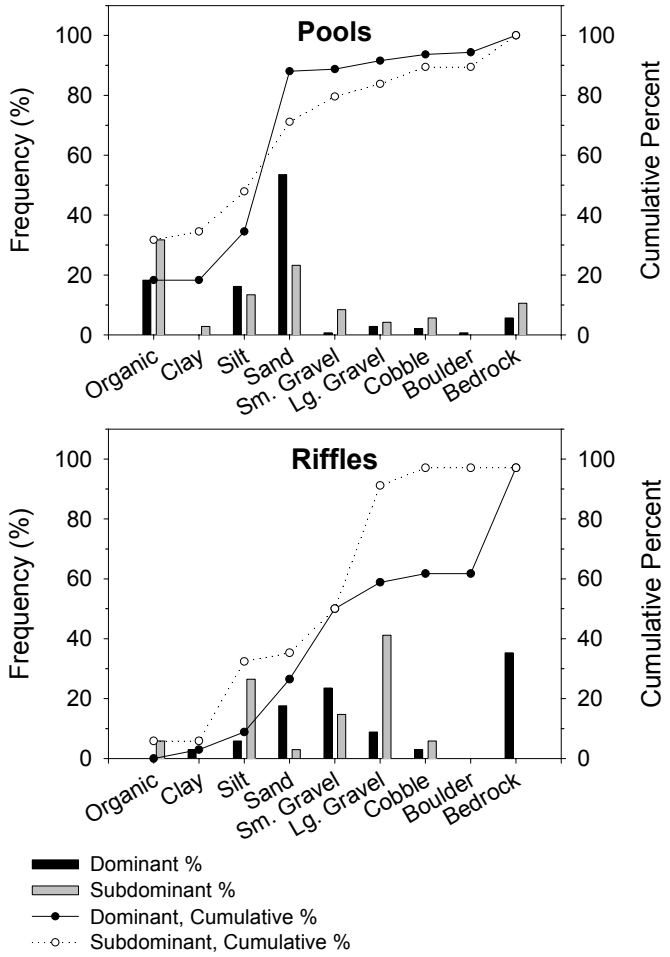
Location of stream habitat survey starting point (closed circle) for an un-named tributary to the Tyger River, summer 2001.

Stream:	**Un-named Tributary of Tyger River**
District:	Enoree
USGS Quadrangle:	Union West
Survey Date:	07/02/01
Downstream Starting Point:	Confluence with Tyger River
Total Distance Surveyed (km):	4.2

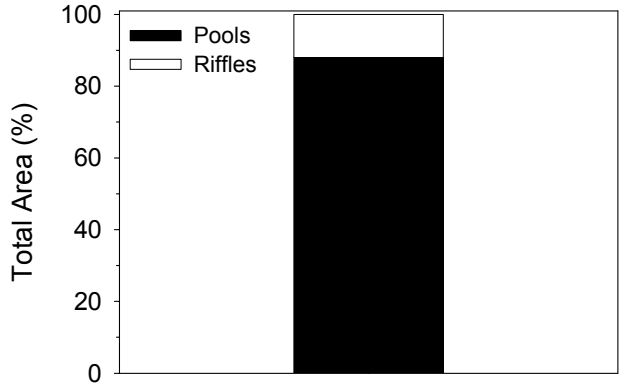
	Pools	**Riffles**
Percent of Total Stream Area:	88	12
Total Area (m^2):	5391±1501	731±305
Correction Factor Applied:	1.25	2.22
Number of Paired Samples:	9	3
Total Count:	142	34
Number per km:	34	8
Mean Area (m^2):	38	21
Mean Maximum Depth (cm):	28	6
Mean Average Depth (cm):	14	3
Mean Residual Depth (cm):	--	--
Percent Surveyed as Glides:	50	--
Percent Surveyed as Runs:	--	6
Percent Surveyed as Cascades:	--	24
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	42
< 5 m long, > 55 cm diameter:	0
> 5 m long, 10 cm – 55 cm diameter:	14
> 5 m long, > 55 cm diameter:	2
Total:	58

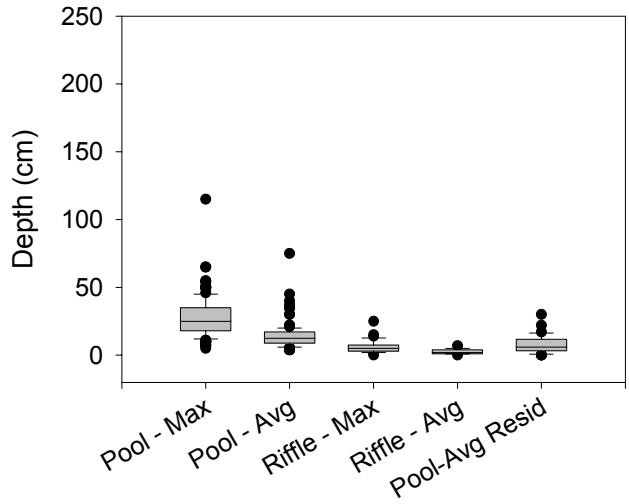
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	3	12	21
Maximum	4	17	23
75th Percentile	4	14	22
Median	3	12	21
25th Percentile	2	9	20
Minumum	1	6	20
Sample Size	4	2	13



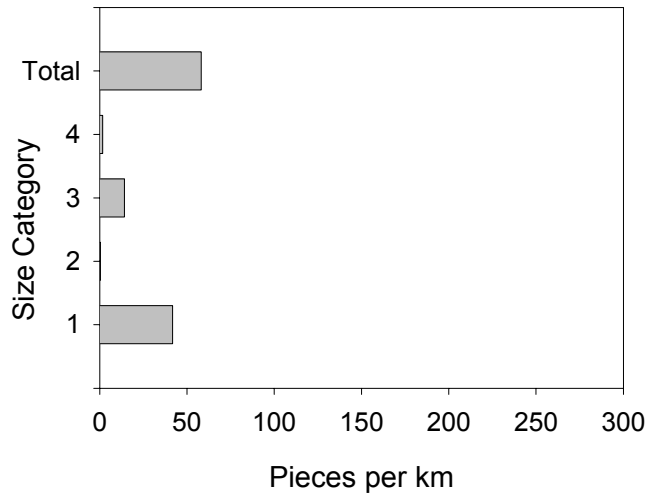
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Un-named Tributary of Tyger River, summer 2001.



Estimated area of Un-named Tributary of Tyger River in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Un-named Tributary of Tyger River, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

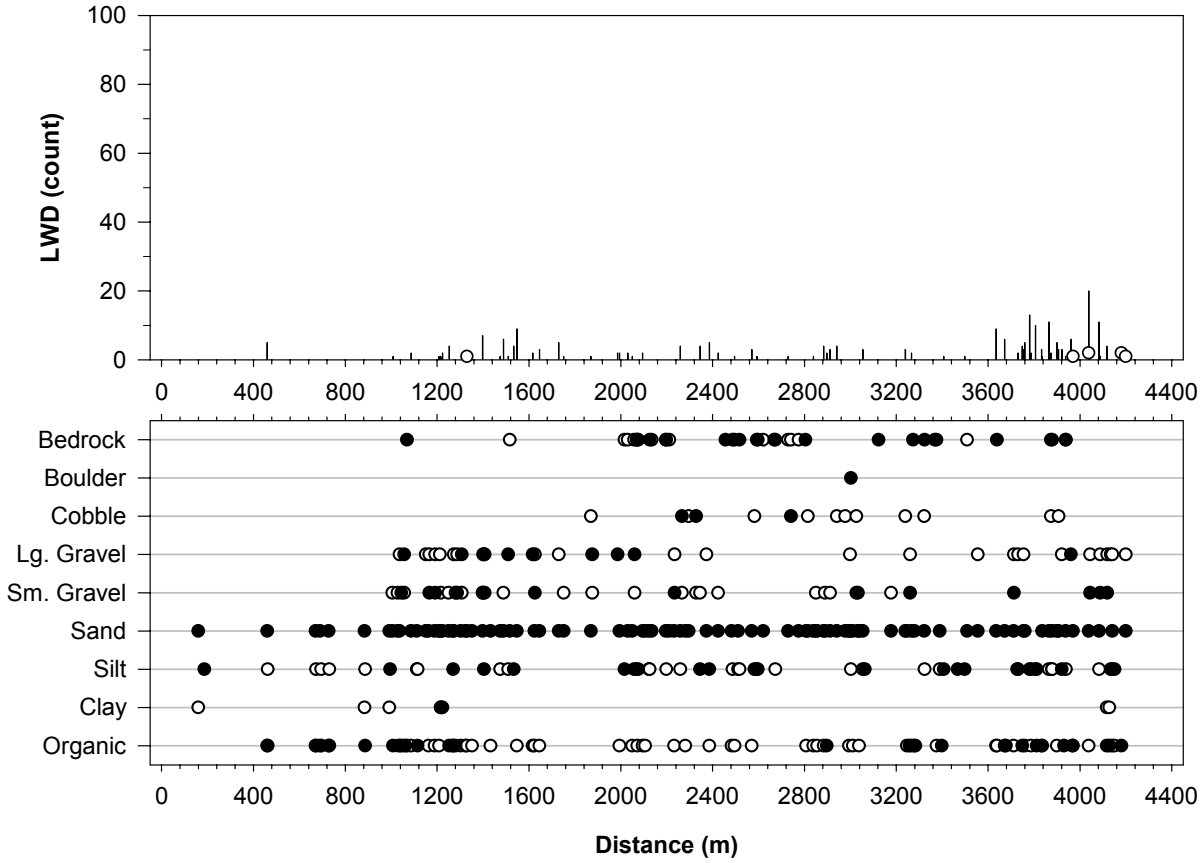


LWD per kilometer in Un-named Tributary of Tyger River, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Un-named Tributary of Tyger River during BVET habitat survey, summer 2001. Distance is meters from start of survey.

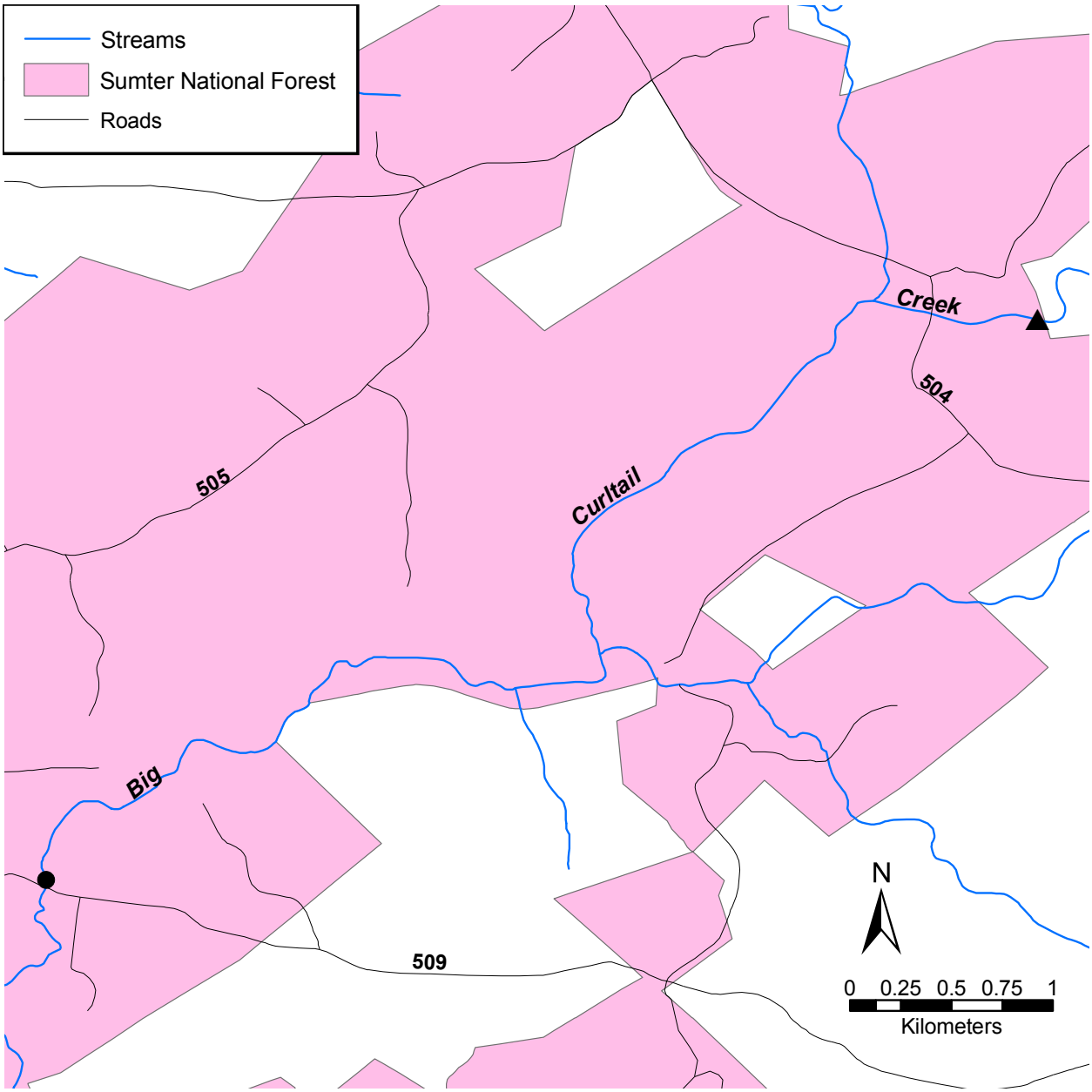
Stream Feature	Distance (m)	Width (m)	Comments
Gully	743.8		on right, actual distance
Tributary	883.1		on left
Shock Site	1008.0		start
Gully	1111.7		on right
Gully	1188.7		on right
Gully	1729.3		on right
Gully	1869.8		on right
Gully	1869.8		on right
Gully	1869.8		on left
Gully	1994.4		on right
Gully	2016.2		on right
Gully	2016.2		on right
Shock Site	2049.6		starts
Gully	2106.0		on left
Gully	2134.4		on left
Shock Site	2146.2		ends
Gully	2373.1		on right
Gully	2424.0		on left
Gully	2582.0		on right
Gully	2883.9		on right
Gully	2940.6		on right
Gully	2977.7		on right
Gully	2977.7		on left
Gully	3238.8		on right
Tributary	3321.7		on right
Gully	3710.5		on right
Shock Site	3730.0		starts
Shock Site	3830.0		ends
Gully	4043.6		on left
Gully	4116.8		on right
Gully	4116.8		on right
Gully	4140.5		on left
Gully	4198.8		on right, wet



Distribution and abundance of LWD and distribution of substrates in Un-named Tributary of Tyger River, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from confluence with Tyger River.

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.



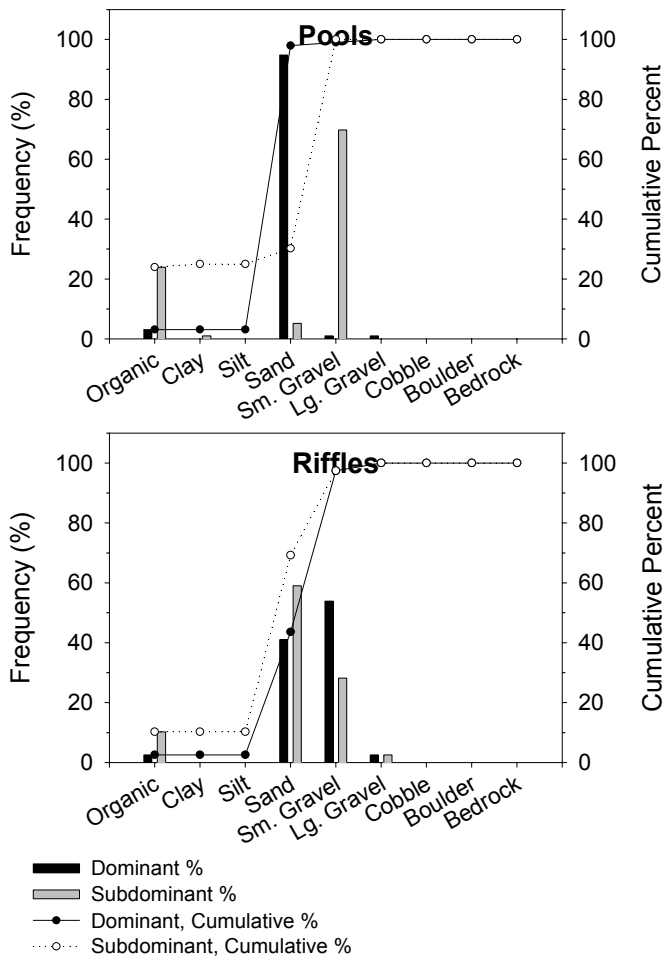
Location of stream habitat survey starting point (closed circle) and ending point (closed triangle) on Big Curltail Creek, summer 2001.

Stream:	**Big Curltail Creek**
District:	Long Cane
USGS Quadrangle:	Abbeville East
Survey Date:	07/27/01
Downstream Starting Point:	at highway509 bridge
Total Distance Surveyed (km):	6.6

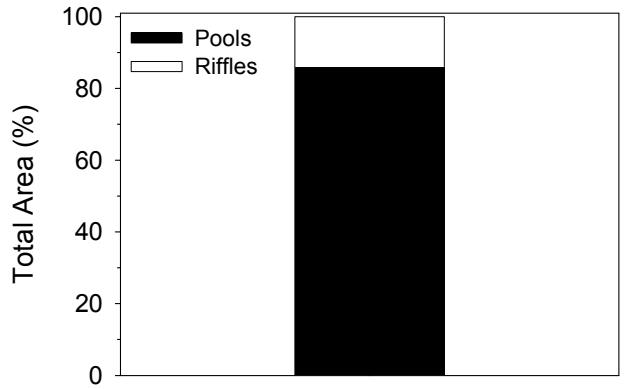
	Pools	**Riffles**
Percent of Total Stream Area:	86	14
Total Area (m^2):	32934±5027	5301±3967
Correction Factor Applied:	1.14	1.34
Number of Paired Samples:	9	2
Total Count:	96	39
Number per km:	15	6
Mean Area (m^2):	343	136
Mean Maximum Depth (cm):	48	27
Mean Average Depth (cm):	28	17
Mean Residual Depth (cm):	3	--
Percent Surveyed as Glides:	66	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	0
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	49
< 5 m long, > 55 cm diameter:	1
> 5 m long, 10 cm – 55 cm diameter:	39
> 5 m long, > 55 cm diameter:	10
Total:	99

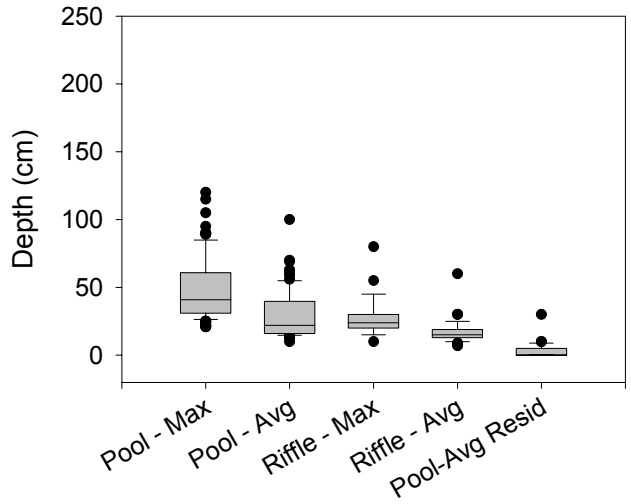
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	9	1	22
Maximum	13	2	24
75th Percentile	10	1	23
Median	9	1	22
25th Percentile	7	1	22
Minumum	5	1	21
Sample Size	11	11	8



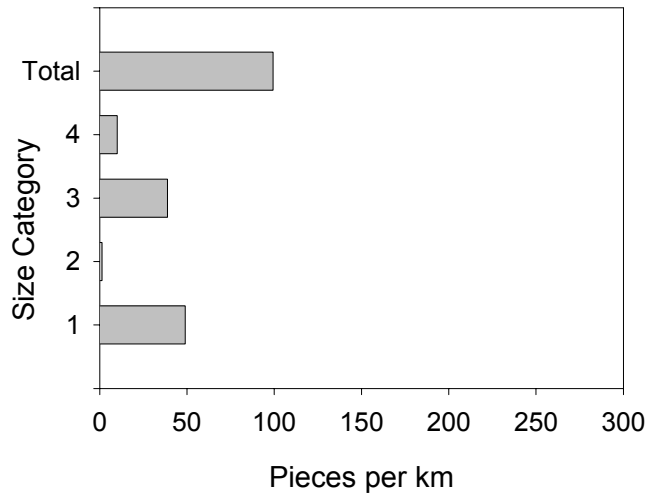
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Big Curltail Creek, summer 2001.



Estimated area of Big Curltail Creek in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Big Curltail Creek, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

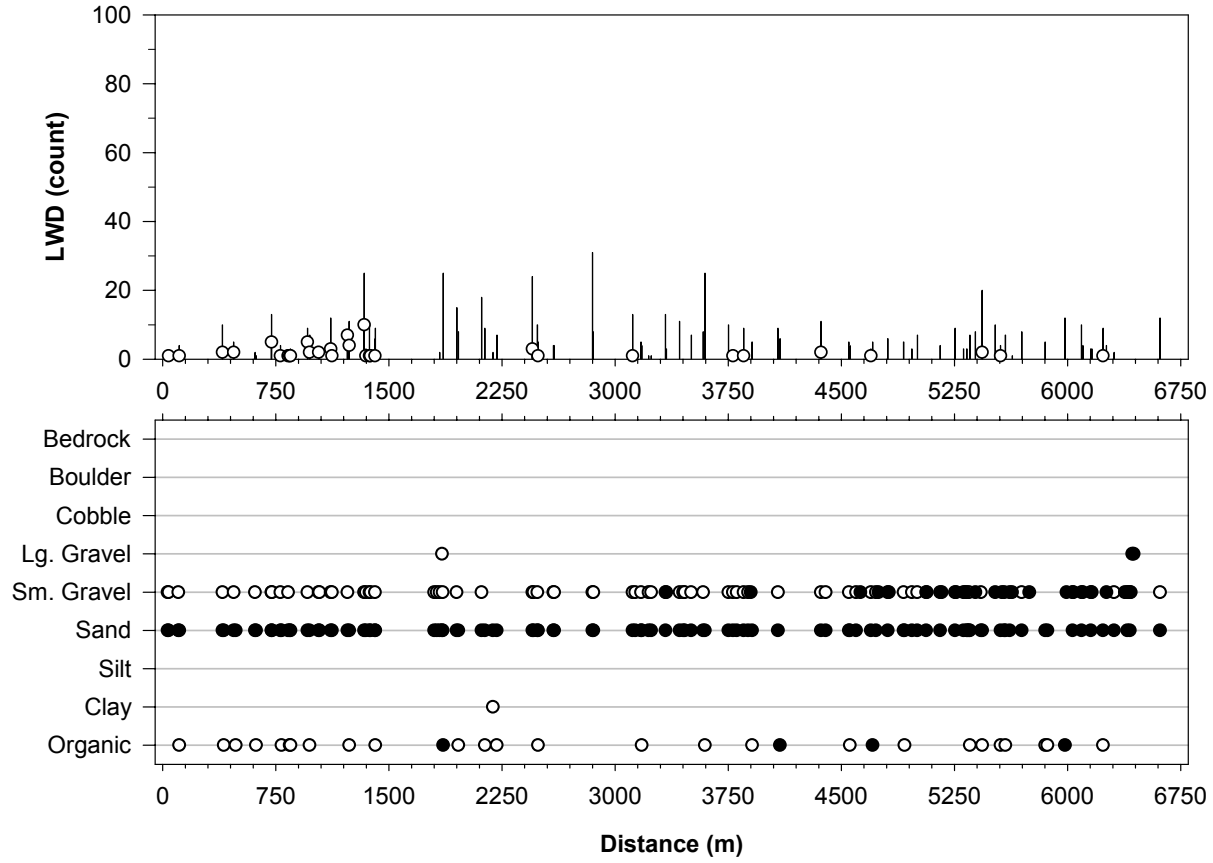


LWD per kilometer in Big Curltail Creek, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Big Curltail Creek during BVET habitat survey, summer 2001. Distance is meters from start of survey.

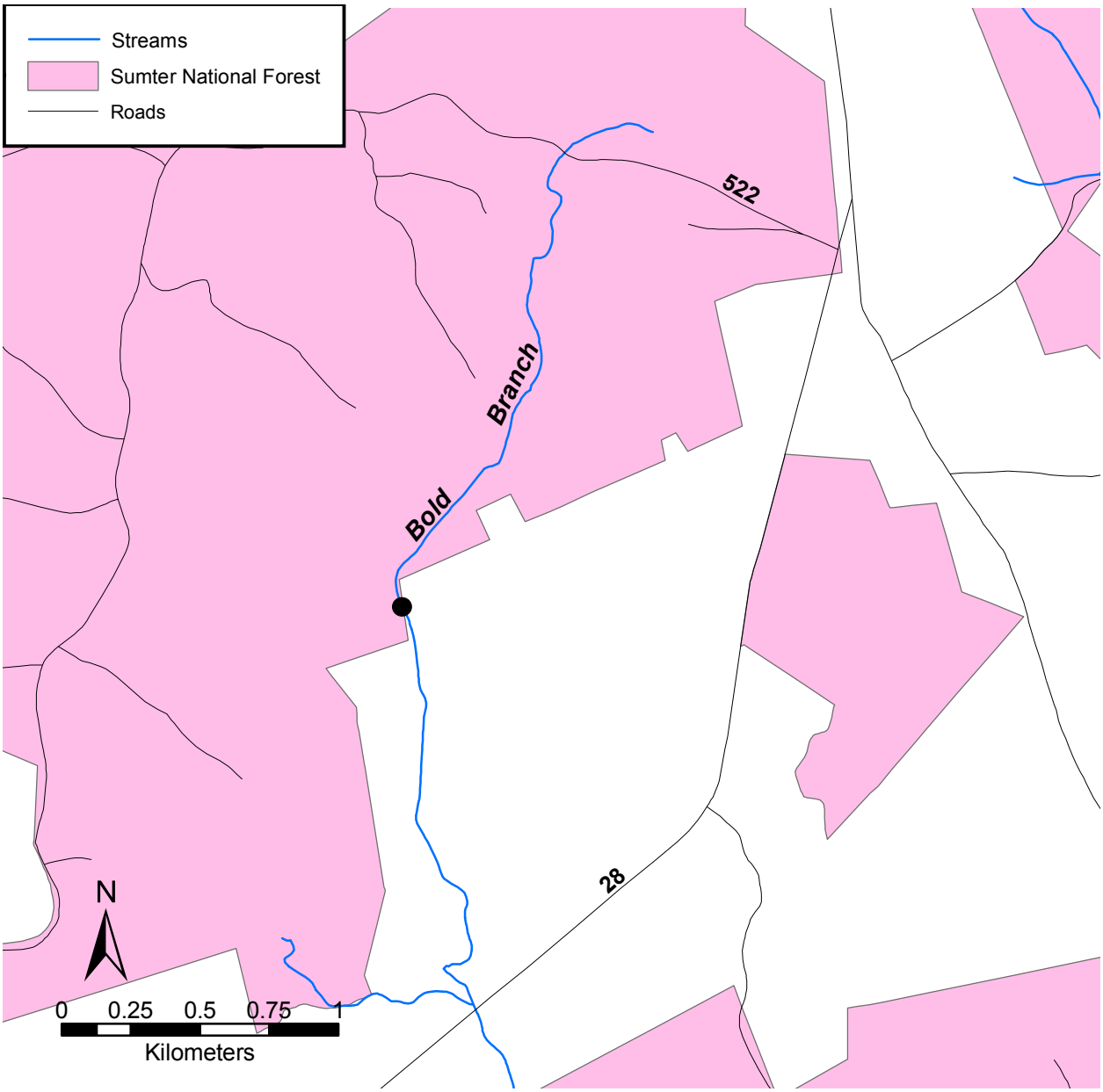
Stream Feature	Distance (m)	Width (m)	Comments
Shock Site	127.0		start
Shock Site	231.0		end
Tributary	448.0	0.5	on left
Bridge	1856.0	18.0	Railroad Crossing, Height = 7m
Gully	2053.0	0.7	on right, dry
Gully	2219.0	0.2	on left, dry
Tributary	2895.0	1.2	on right
Tributary	3394.0	5.0	on right
Tributary	3609.0	1.5	on left, dry
Tributary	4106.0	1.0	on right
Tributary	4275.0	1.5	on left
Gully	5399.0	0.6	on right
Gully	5713.0	1.0	on left
Tributary	5729.0	1.5	on right
Tributary	5827.0	4.0	width expands from 4 to 20m
Bridge	6119.0	6.0	height = 4.5m, length = 10m, Under the bridge is a torn apart truck, along the creek there have been about 12 tires
Shock Site	6434.0		start site 3
Shock Site	6528.0		end site 3



Distribution and abundance of LWD and distribution of substrates in Big Curltail Creek, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from at 905 bridge.

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.



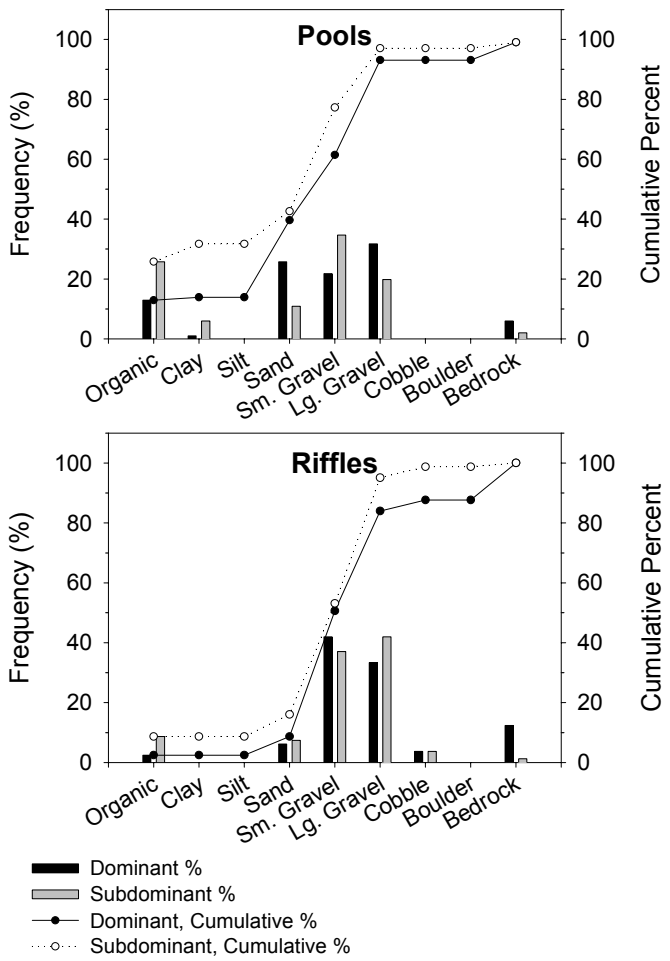
Location of stream habitat survey starting point (closed circle) on Bold Branch, summer 2001.

Stream:	**Bold Branch**
District:	Long Cane
USGS Quadrangle:	Calhoun Creek
Survey Date:	08/03/01
Downstream Starting Point:	Forest Service boundary approximately 1.7 km north of highway 28 crossing
Total Distance Surveyed (km):	4.1

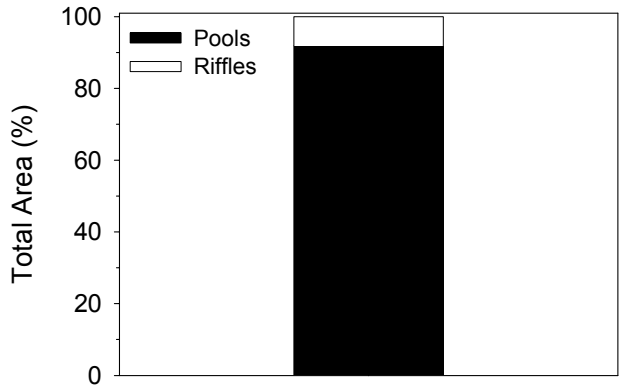
	Pools	**Riffles**
Percent of Total Stream Area:	92	8
Total Area (m^2):	14792±2232	1307±375
Correction Factor Applied:	1.22	1.57
Number of Paired Samples:	10	9
Total Count:	101	81
Number per km:	25	20
Mean Area (m^2):	146	16
Mean Maximum Depth (cm):	40	6
Mean Average Depth (cm):	19	4
Mean Residual Depth (cm):	12	--
Percent Surveyed as Glides:	53	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	1
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	23
< 5 m long, > 55 cm diameter:	1
> 5 m long, 10 cm – 55 cm diameter:	14
> 5 m long, > 55 cm diameter:	0
Total:	39

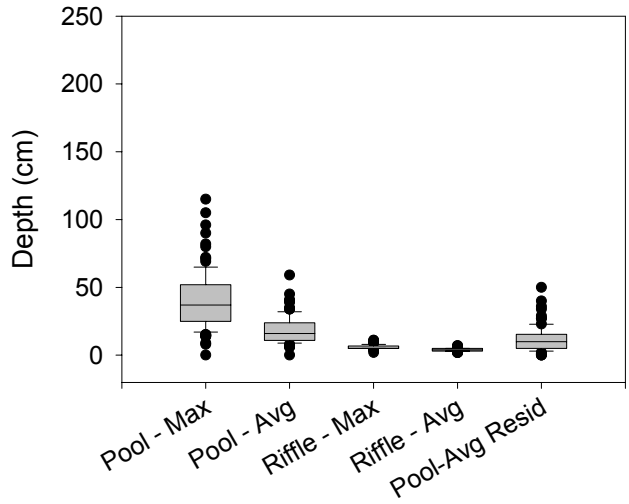
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	3	3	21
Maximum	5	5	23
75th Percentile	4	3	22
Median	3	2	21
25th Percentile	2	2	20
Minumum	2	1	19
Sample Size	18	16	6



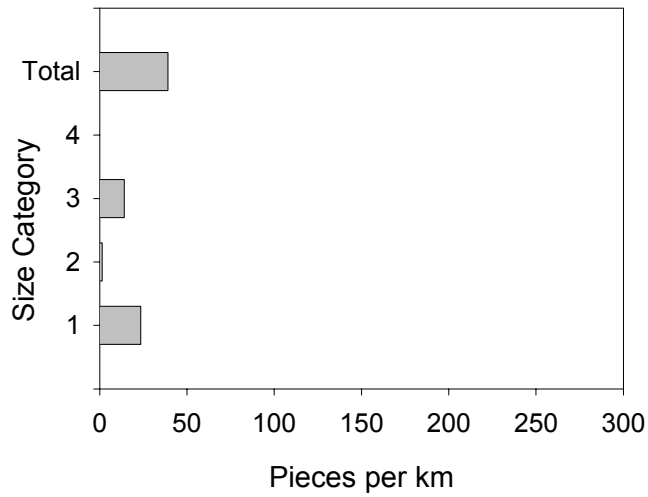
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Bold Branch, summer 2001.



Estimated area of Bold Branch in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Bold Branch, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

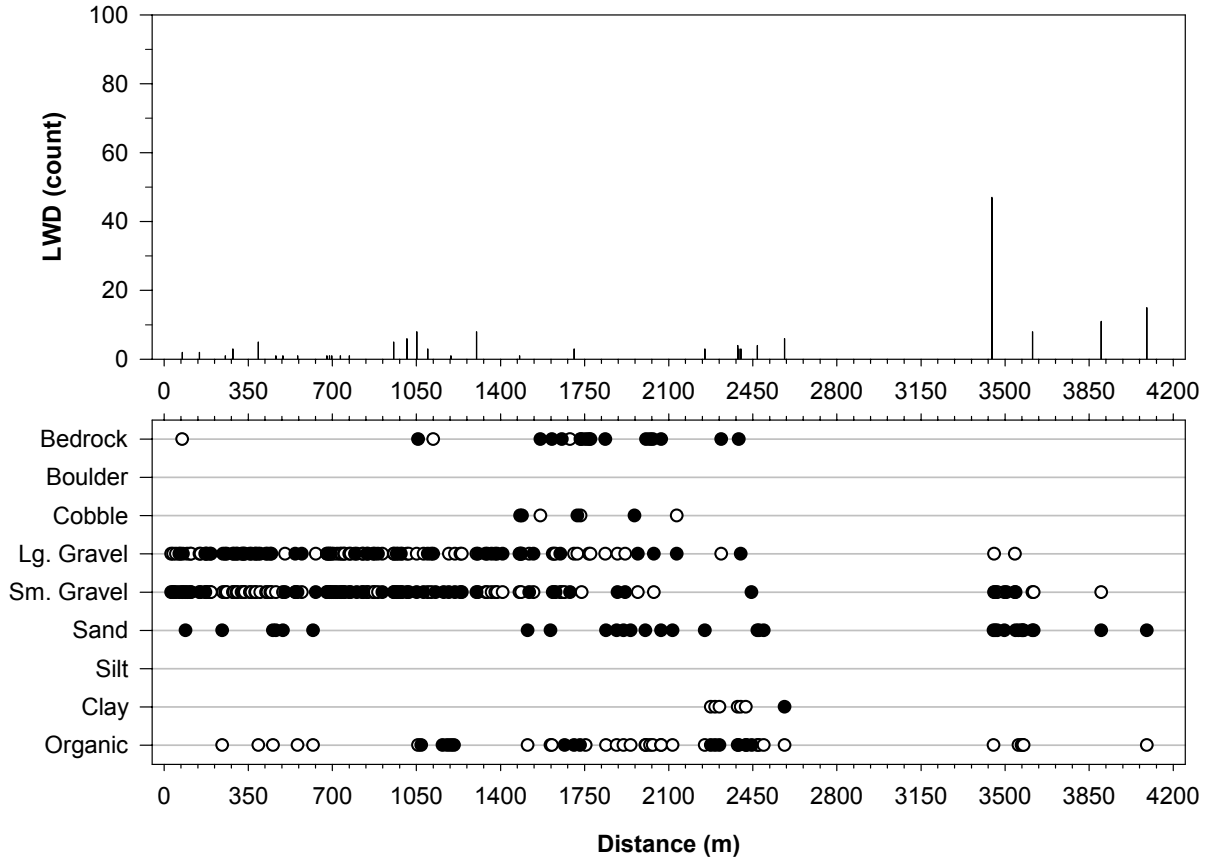


LWD per kilometer in Bold Branch, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Bold Branch during BVET habitat survey, summer 2001. Distance is meters from start of survey.

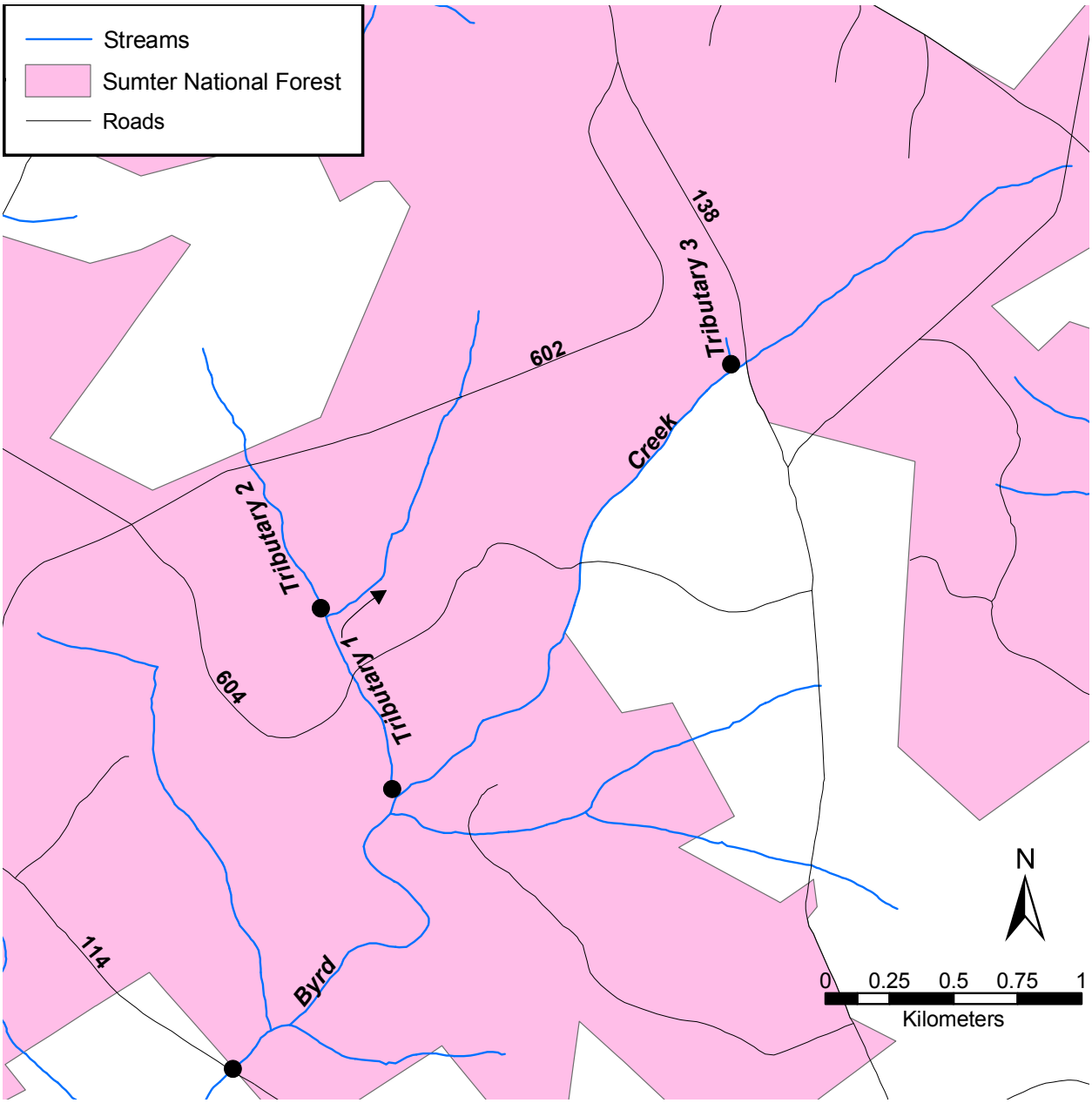
Stream Feature	Distance (m)	Width (m)	Comments
Tributary	417.0	0.5	on left
Gully	570.0	0.5	on right
Tributary	955.0	0.5	on right
Tributary	985.0	1.0	on right
Gully	1005.0	0.3	
Tributary	1049.0		on left / Dry / Channel Width = 0.4m
Gully	1023.0	0.7	on right
Tributary	1472.0	1.5	on left
Tributary	1610.0	0.5	on right
Shock Site	1689.0		start site 2, pH - 7.33 / Cond. - 1.6 US / DO - 4.55 mg/L / Temp - 21.9*C
Shock Site	1779.0		end site 2
Tributary	1971.0	1.3	on left
Tributary	2167.0	1.3	on right - Dry
Beaver Dam	2198.0		Leaky
Beaver Dam	2215.0	3.0	Solid / 60cm high / 1.5m long
Tributary	2420.0	0.7	on right
Tributary	2441.0	0.7	on right
Beaver Dam		3.0	Height = 115cm / Length - 1.5m / Fish Barrier
Tributary	2518.0	0.5	on left
Beaver Dam		4.5	Height - 1.5m / Length - 1.5m / Fish barrier
Beaver Pond		8.0	Splits into many 8 m wide paths and ponds.
Shock Site	3556.0		start site 3
Underground	1280.0		ends at 1283m
Shock Site	1331.0		end site 3
Gully	3770.0	0.3	on right
Gully	3867.0	0.2	
Tributary	4061.0	0.2	on right



Distribution and abundance of LWD and distribution of substrates in Bold Branch, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from Forest Service boundary.

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.



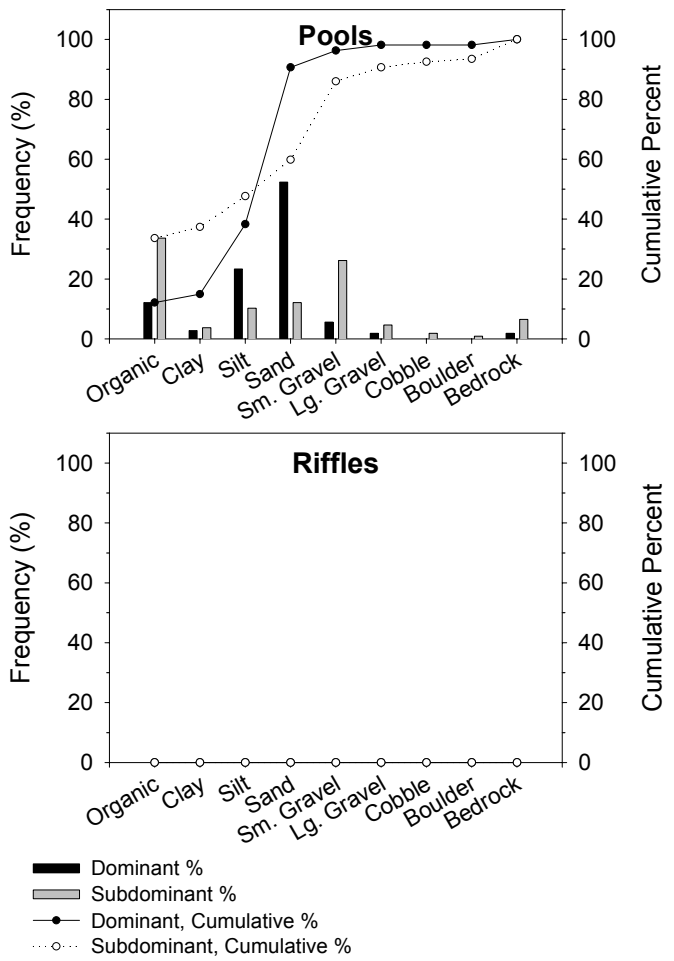
Location of stream habitat survey starting points (closed circles) on Byrd Creek and three tributaries, summer 2001. Arrow indicates direction of tributary 1 survey at confluence with tributary 2.

Stream:	**Byrd Creek**
District:	Long Cane
USGS Quadrangle:	Parksville/Winterseat
Survey Date:	06/22/01
Downstream Starting Point:	Road crossing for state highway 114
Total Distance Surveyed (km):	6.4

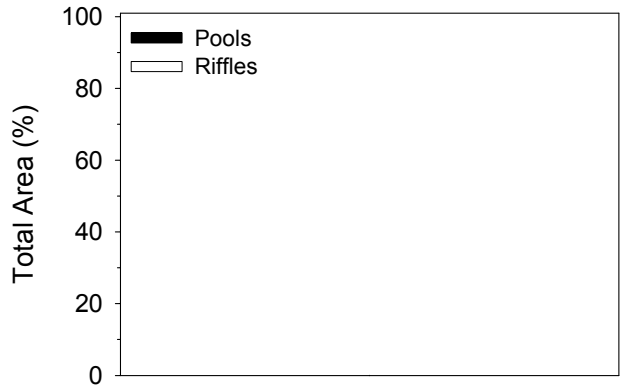
	Pools	**Riffles**
Percent of Total Stream Area:	--	--
Total Area (m^2):	9035±832	-- ± --
Correction Factor Applied:	1.06	--
Number of Paired Samples:	12	0
Total Count:	107	0
Number per km:	17	0
Mean Area (m^2):	84	--
Mean Maximum Depth (cm):	41	--
Mean Average Depth (cm):	22	--
Mean Residual Depth (cm):	--	--
Percent Surveyed as Glides:	15	--
Percent Surveyed as Runs:	--	--
Percent Surveyed as Cascades:	--	--
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	27
< 5 m long, > 55 cm diameter:	2
> 5 m long, 10 cm – 55 cm diameter:	19
> 5 m long, > 55 cm diameter:	2
Total:	50

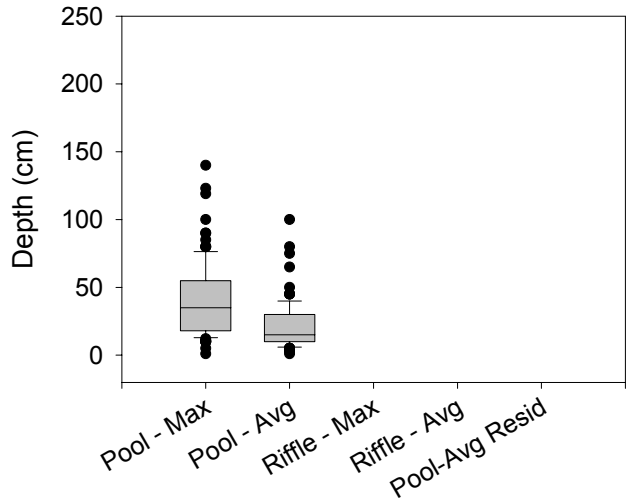
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	3	3	20
Maximum	4	3	23
75th Percentile	4	3	20
Median	3	3	19
25th Percentile	3	2	19
Minumum	2	2	18
Sample Size	7	2	6



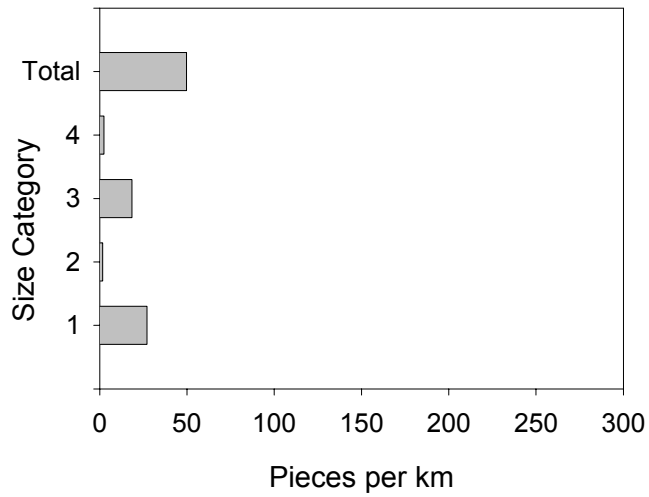
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Byrd Creek, summer 2001.



Estimated area of Byrd Creek in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Byrd Creek, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

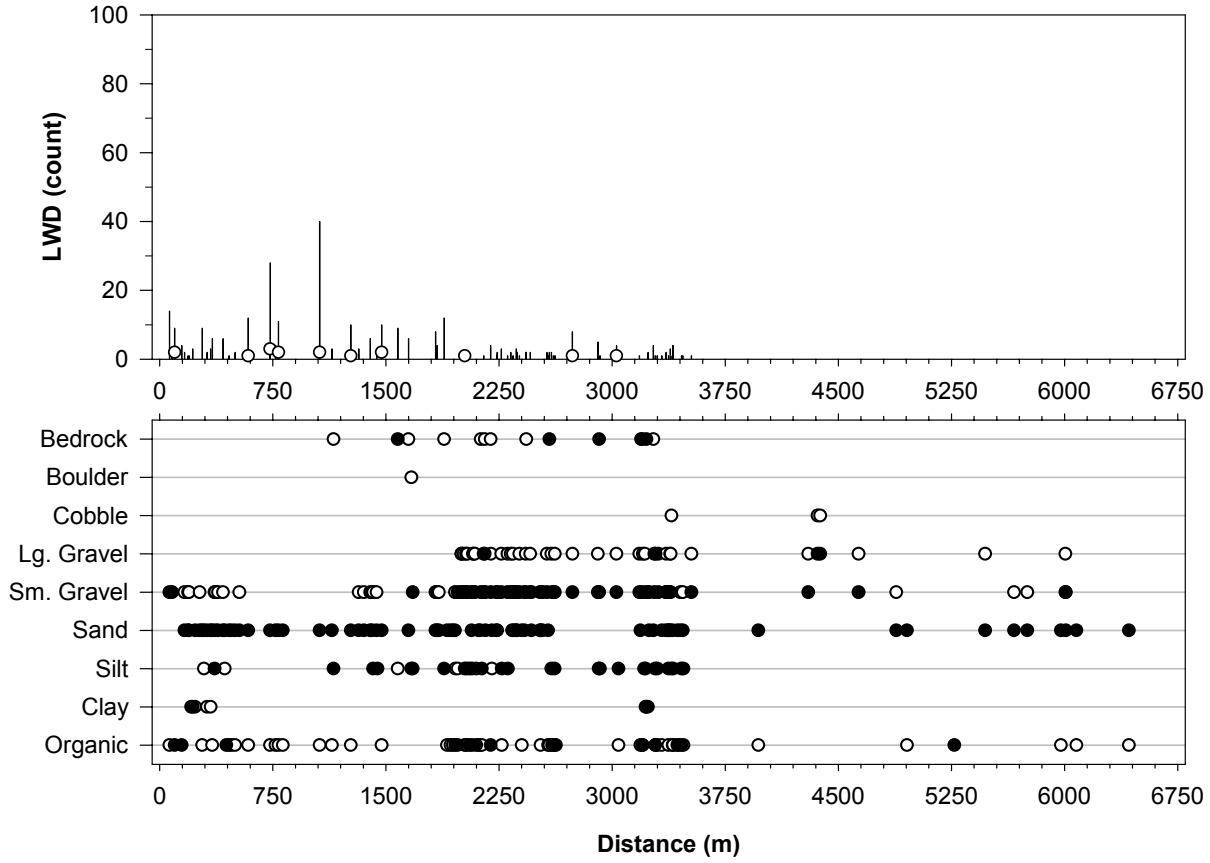


LWD per kilometer in Byrd Creek, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Byrd Creek during BVET habitat survey, summer 2001. Distance is meters from start of survey.

Stream Feature	Distance (m)	Width (m)	Comments
Gully	0.0-64.7		on right
Gully	163.9-187.5		on left
Shock Site	313.6		
Gully	368.7-386.5		on right
Gully	528.0-586.9		on left
Gully	1266.5-1319.3		on right
Gully	1353.3-1395.4		on right
Shock Site	1678.0		start
Shock Site	1799.0		end
Gully	1828.6-1839.0		on left
Tributary	1905.5-1907.5		on left
Gully	2264.2-2268.6		on right
Gully	2430.1-2456.9		on left
Gully	2882.6		on left
Gully	3062.6		on right
Gully	3212.2-3216.9		on left
Gully	3404.1-3432.9		on right
Gully	3694.5	1.5	on left
Tributary	3961.2	1.0	on left
Gully	3970.6	1.1	on right
Gully	4149.3	0.6	on right
Gully	4150.6	0.8	on right
Gully	4227.2	0.6	on right
Gully	4428.0	1.4	on right
Gully	4596.4	1.5	on left
Culvert	4633.0	1.3	
Gully	4692.3	0.6	on right
Gully	4910.0	1.2	on right
Island	5072.7		
Gully	5262.9	1.0	on right
Gully	5301.1	0.6	on left
Gully	5428.9	0.7	on right
Gully	5434.8	0.4	on right
Gully	5567.9	0.4	on right
Gully	5664.5	0.9	on left
Gully	5961.4	0.5	on left
Gully	6292.4	0.4	on right



Distribution and abundance of LWD and distribution of substrates in Byrd Creek, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

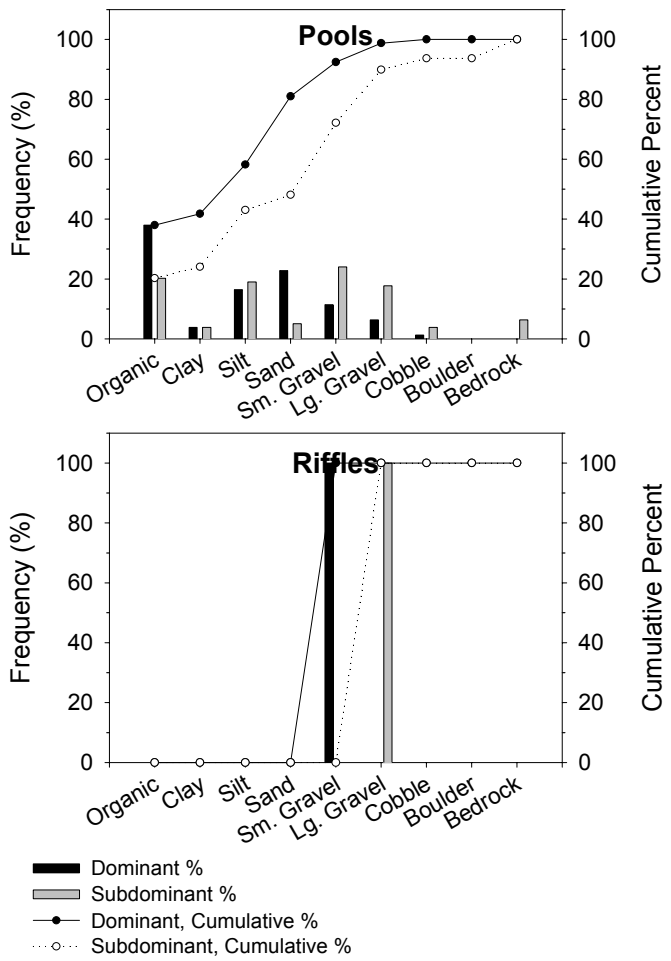
Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.

Stream:	**Tributary 1 - Byrd Creek**
District:	Long Cane
USGS Quadrangle:	Winterseat
Survey Date:	06/27/01
Downstream Starting Point:	Left fork off mainstem that crosses Forest road 604, forks to the right (east) where stream becomes intermittent on USGS quadrangle map
Total Distance Surveyed (km):	2.1

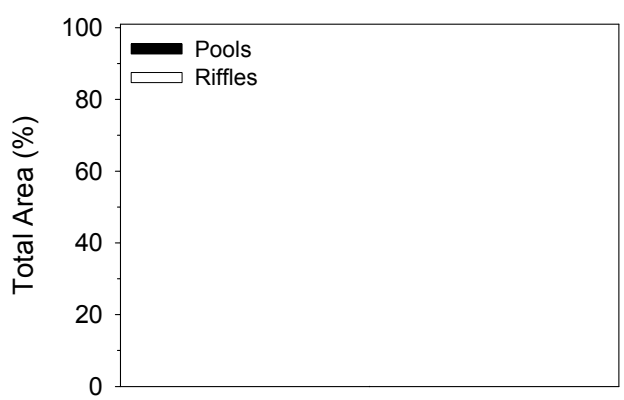
	Pools	**Riffles**
Percent of Total Stream Area:	--	--
Total Area (m^2):	2192±474	-- ± --
Correction Factor Applied:	1.05	--
Number of Paired Samples:	7	0
Total Count:	79	2
Number per km:	37	1
Mean Area (m^2):	28	--
Mean Maximum Depth (cm):	27	2
Mean Average Depth (cm):	13	1
Mean Residual Depth (cm):	4	--
Percent Surveyed as Glides:	3	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	0
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	27
< 5 m long, > 55 cm diameter:	0
> 5 m long, 10 cm – 55 cm diameter:	31
> 5 m long, > 55 cm diameter:	2
Total:	60

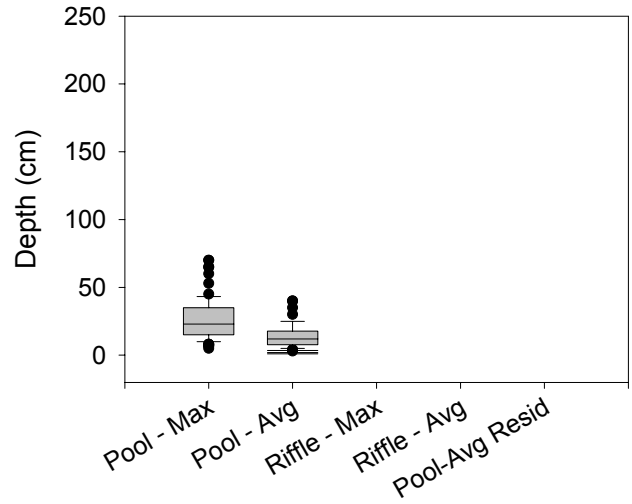
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	3	--	21
Maximum	5	0	22
75th Percentile	3	--	21
Median	2	--	21
25th Percentile	2	--	20
Minumum	2	0	19
Sample Size	3	0	4



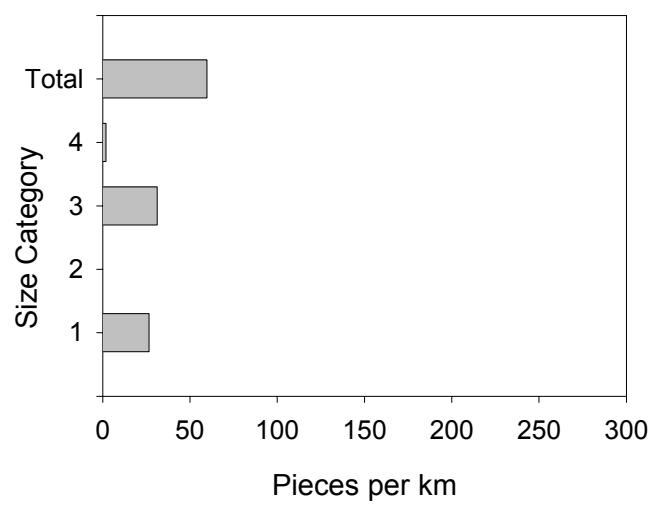
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Tributary 1 of Byrd Creek, summer 2001.



Estimated area of Tributary 1 of Byrd Creek in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Tributary 1 of Byrd Creek, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

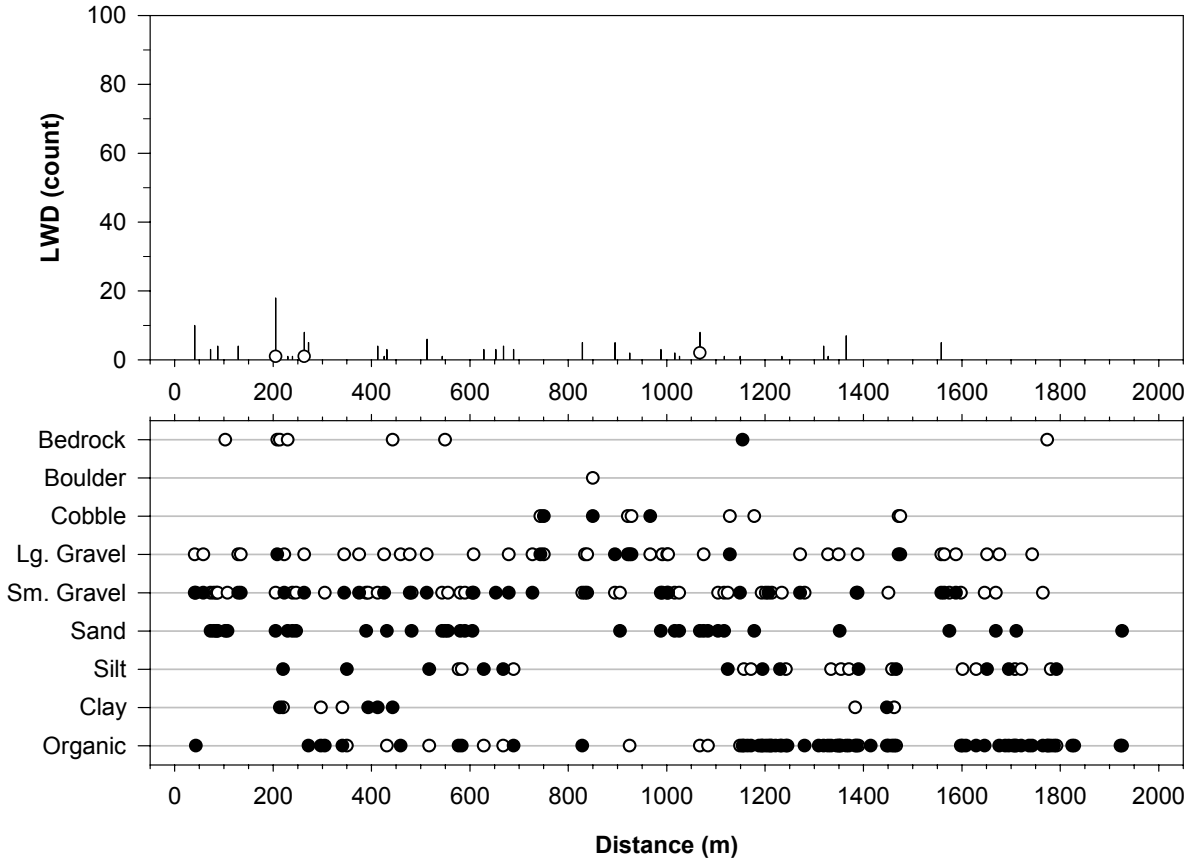


LWD per kilometer in Tributary 1 of Byrd Creek, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Tributary 1 of Byrd Creek during BVET habitat survey, summer 2001. Distance is meters from start of survey.

Stream Feature	Distance (m)	Width (m)	Comments
Gully	296.9		on left
Gully	340.6		on left
Gully	477.6		on right
Gully	590.1		on left
Gully	1242.3		on right
Gully	1383.0		2 on right
Gully	1558.0		on left
Gully	1574.5		on left
Gully	1598.1		on right
Gully	1736.6		2 on right
Island	2090.1		starts - large island
Island	2113.1		ends



Distribution and abundance of LWD and distribution of substrates in Tributary 1 of Byrd Creek, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

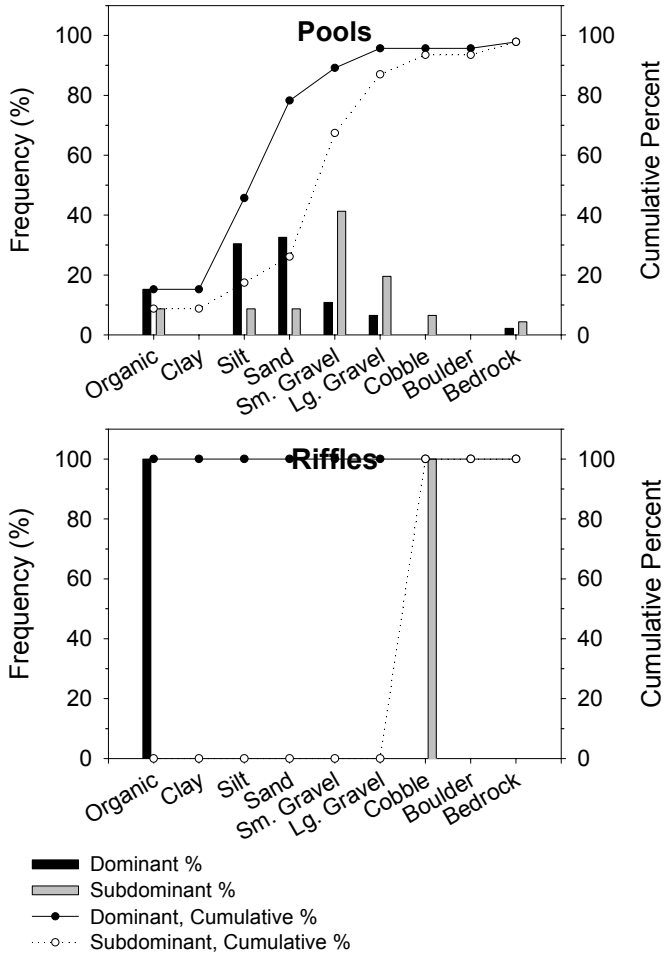
Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.

Stream:	**Tributary 2 - Byrd Creek**
District:	Long Cane
USGS Quadrangle:	Winterseat
Survey Date:	06/30/01
Downstream Starting Point:	Shown as intermittent stream on USGS quadrangle map, looks like continuation of tributary 1 on map but tributary 2 is the western fork that enters private land – survey ended at private land boundary
Total Distance Surveyed (km):	0.8

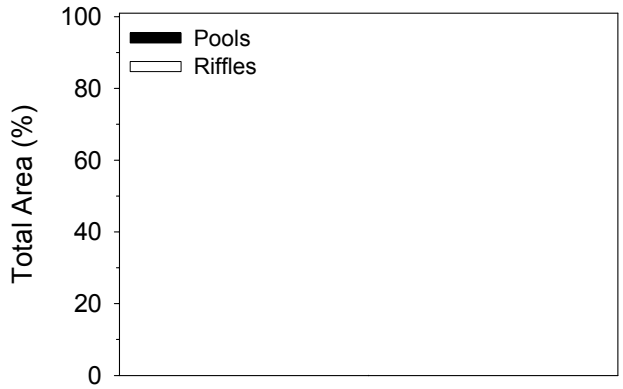
	Pools	**Riffles**
Percent of Total Stream Area:	--	--
Total Area (m^2):	2389±1417	--±--
Correction Factor Applied:	1.58	--
Number of Paired Samples:	5	0
Total Count:	46	1
Number per km:	57	1
Mean Area (m^2):	52	--
Mean Maximum Depth (cm):	29	3
Mean Average Depth (cm):	13	2
Mean Residual Depth (cm):	15	--
Percent Surveyed as Glides:	28	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	0
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	17
< 5 m long, > 55 cm diameter:	0
> 5 m long, 10 cm – 55 cm diameter:	20
> 5 m long, > 55 cm diameter:	0
Total:	37

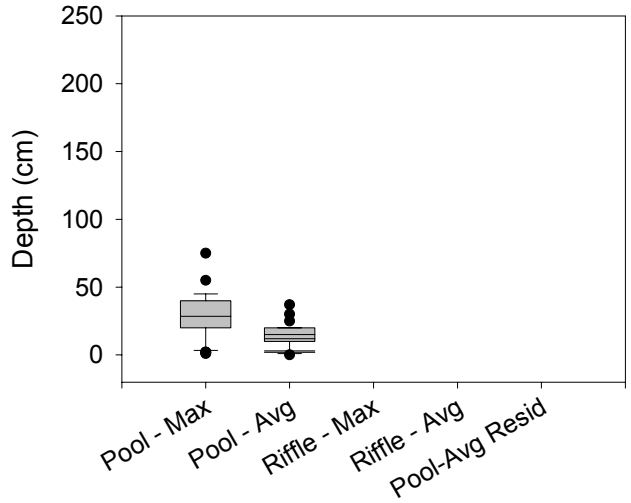
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean			19
Maximum			19
75th Percentile			19
Median			19
25th Percentile			19
Minumum			19
Sample Size	0	0	1



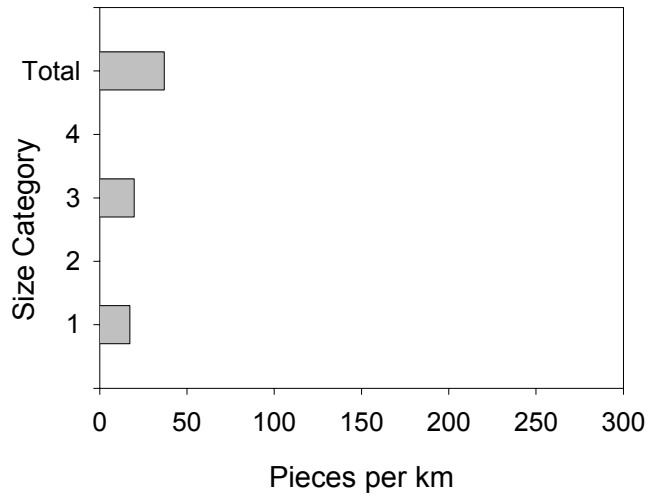
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Tributary 2 of Byrd Creek, summer 2001.



Estimated area of Tributary 2 of Byrd Creek in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Tributary 2 of Byrd Creek, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

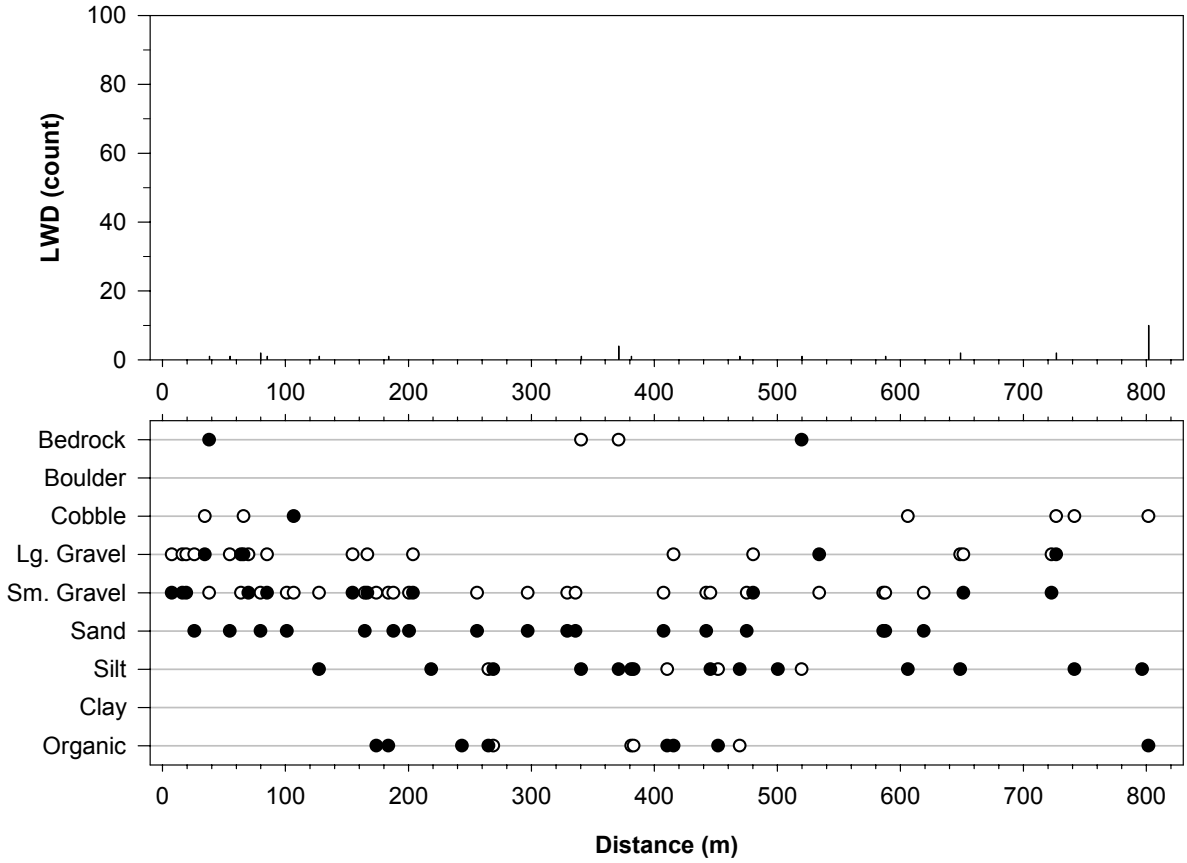


LWD per kilometer in Tributary 2 of Byrd Creek, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Tributary 2 of Byrd Creek during BVET habitat survey, summer 2001. Distance is meters from start of survey.

Stream Feature	Distance (m)	Width (m)	Comments
Gully	218.6		on left



Distribution and abundance of LWD and distribution of substrates in Tributary 2 of Byrd Creek, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

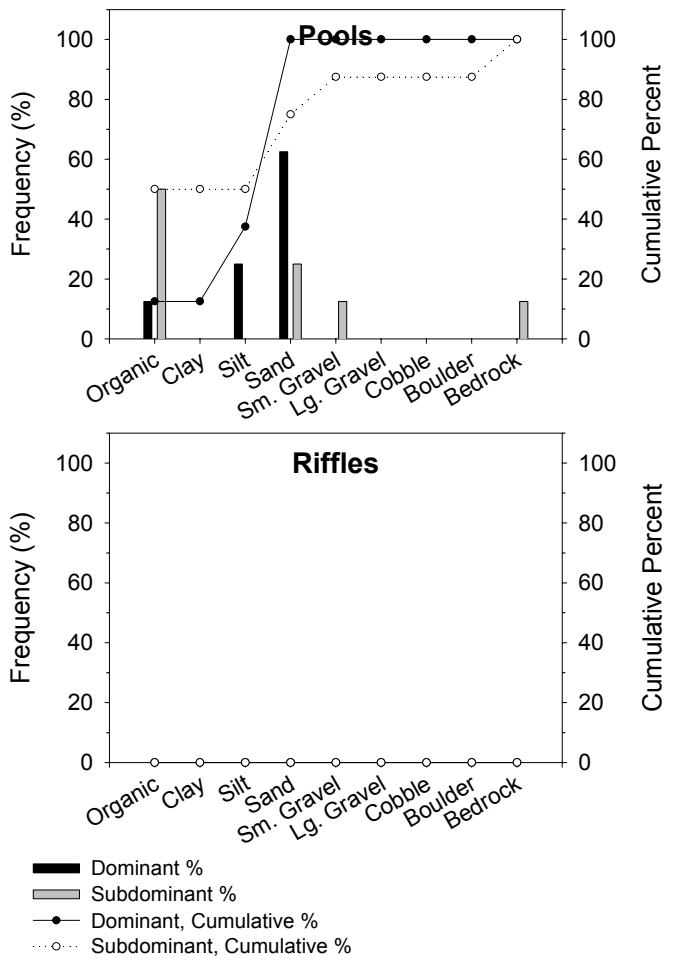
Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.

Stream:	**Tributary 3 - Byrd Creek**
District:	Long Cane
USGS Quadrangle:	Winterseat
Survey Date:	07/26/01
Downstream Starting Point:	Shown as intermittent tributary on left on USGS quadrangle map, flows north between roads 138 and 602
Total Distance Surveyed (km):	0.8

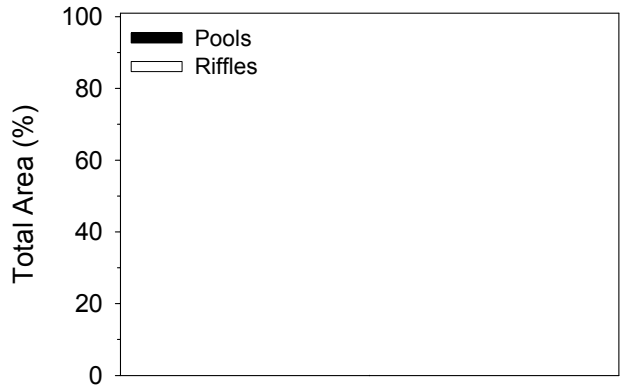
	Pools	**Riffles**
Percent of Total Stream Area:	--	--
Total Area (m^2):	140± --	-- ± --
Correction Factor Applied:	1.50	--
Number of Paired Samples:	1	0
Total Count:	8	0
Number per km:	10	0
Mean Area (m^2):	18	--
Mean Maximum Depth (cm):	22	--
Mean Average Depth (cm):	12	--
Mean Residual Depth (cm):	--	--
Percent Surveyed as Glides:	25	--
Percent Surveyed as Runs:	--	--
Percent Surveyed as Cascades:	--	--
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	0
< 5 m long, > 55 cm diameter:	0
> 5 m long, 10 cm – 55 cm diameter:	0
> 5 m long, > 55 cm diameter:	0
Total:	0

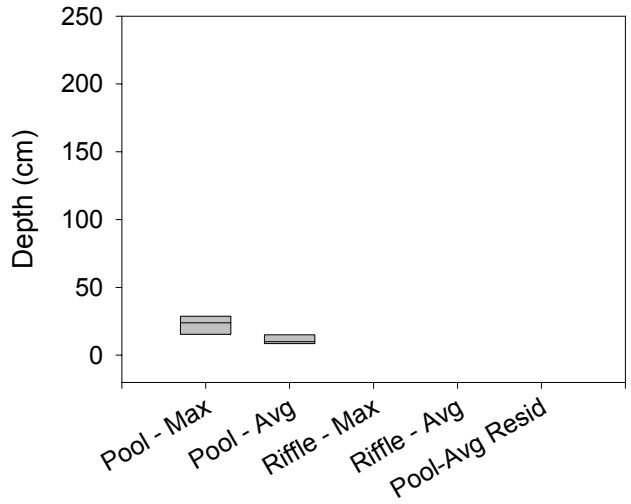
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	1	2	
Maximum	1	2	
75th Percentile	1	2	
Median	1	2	
25th Percentile	1	2	
Minumum	1	2	
Sample Size	1	1	0



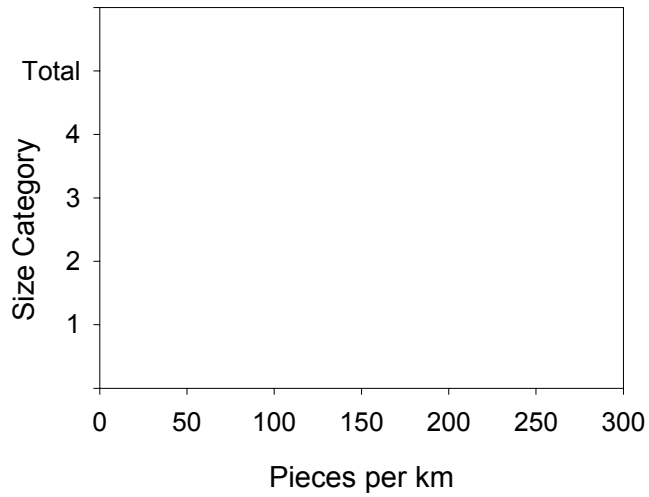
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Tributary 3 of Byrd Creek, summer 2001.



Estimated area of Tributary 3 of Byrd Creek in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Tributary 3 of Byrd Creek, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

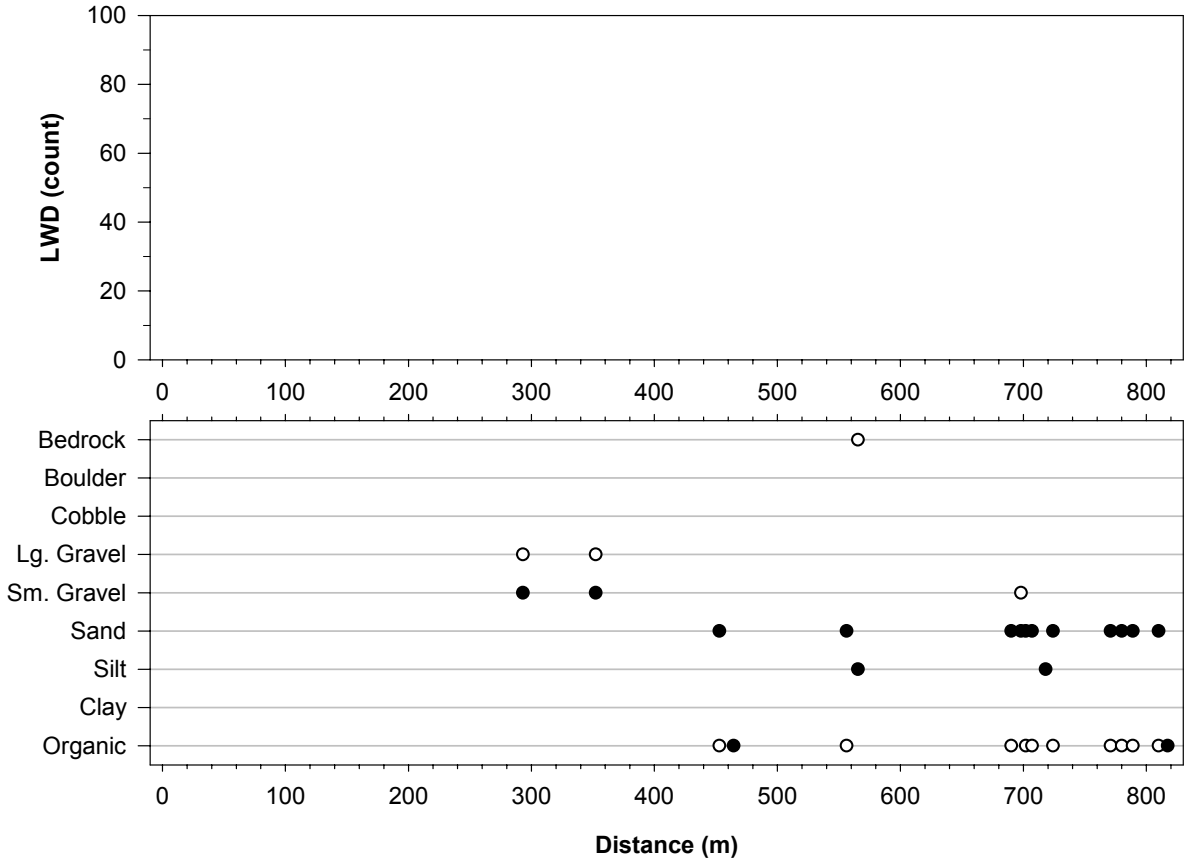


LWD per kilometer in Tributary 3 of Byrd Creek, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Tributary 3 of Byrd Creek during BVET habitat survey, summer 2001. Distance is meters from start of survey.

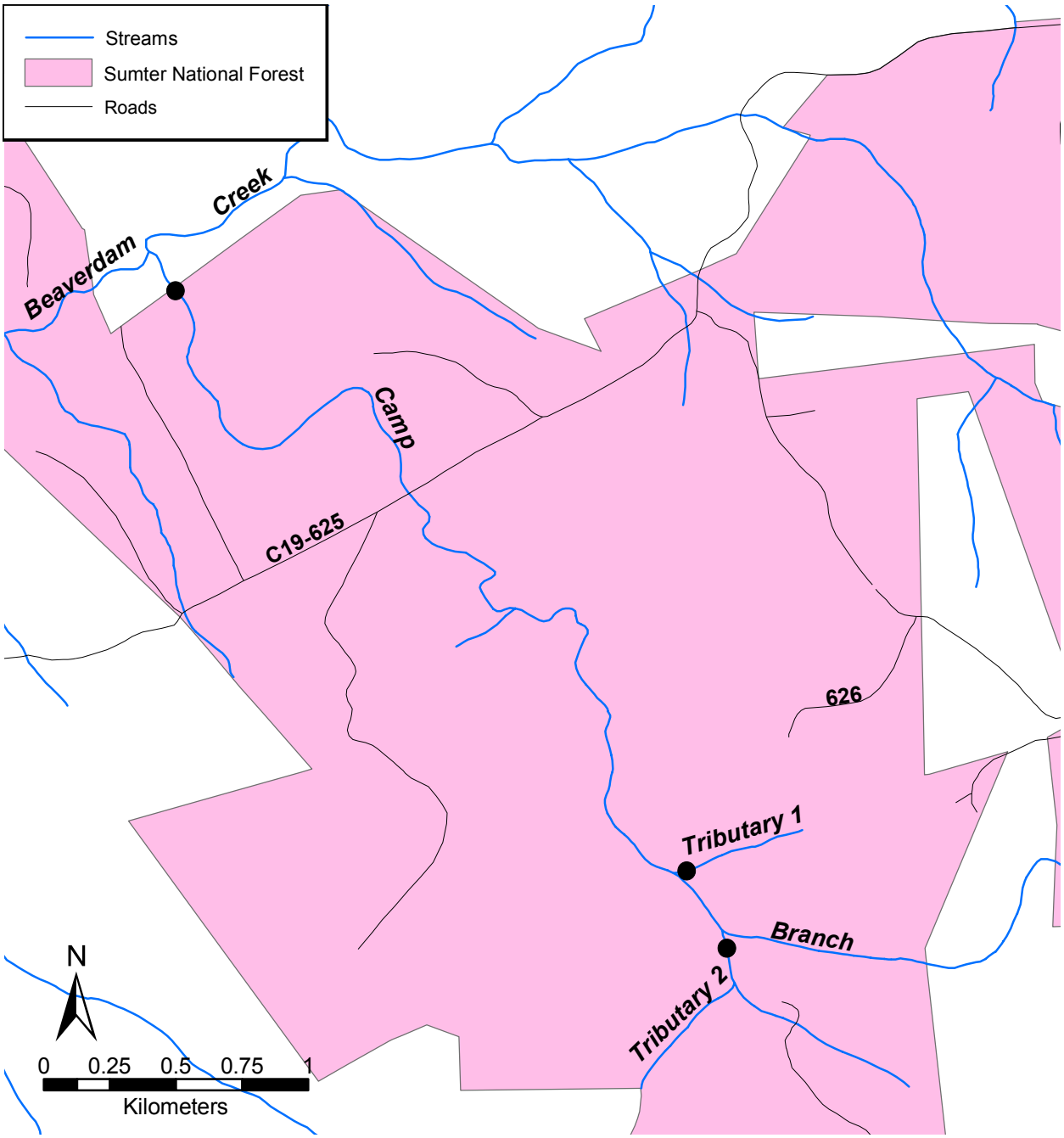
Stream Feature	Distance (m)	Width (m)	Comments
Gully	115.0	0.8	on left
Gully	291.5	0.5	on right
Gully	304.6	1.0	on right
Gully	582.9	0.4	on right
Braided	631.5		starts
Forks	809.0		



Distribution and abundance of LWD and distribution of substrates in Tributary 3 of Byrd Creek, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.



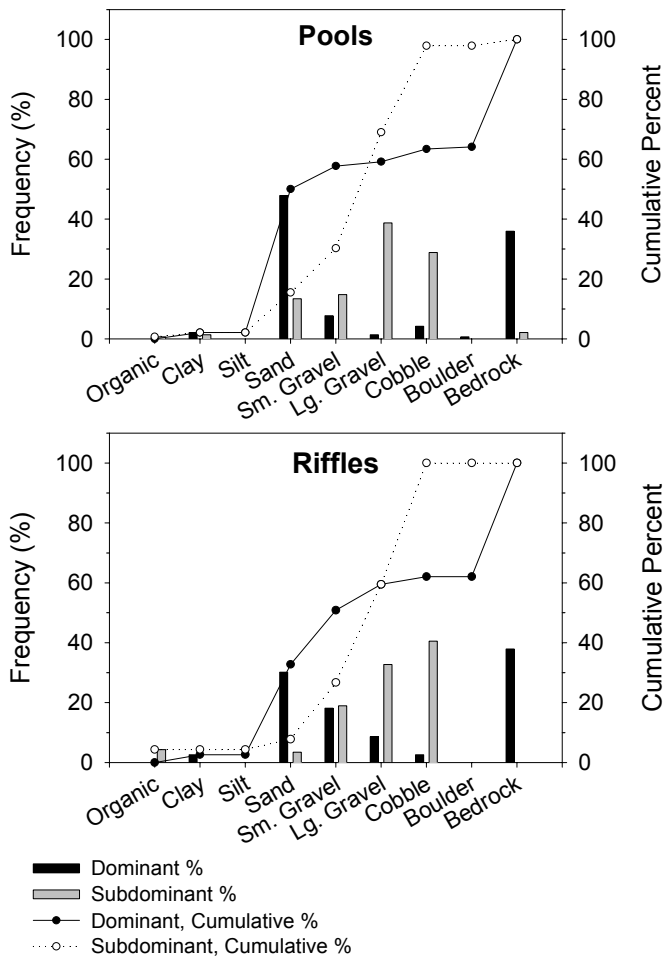
Location of stream habitat survey starting points (closed circles) for Camp Branch and two tributaries, summer 2001.

Stream:	**Camp Branch**
District:	Long Cane
USGS Quadrangle:	Red Hill
Survey Date:	06/21/01
Downstream Starting Point:	Forest boundary northwest of C19-625 crossing on USGS quadrangle map, just southeast of confluence with Beaverdam Creek
Total Distance Surveyed (km):	4.3

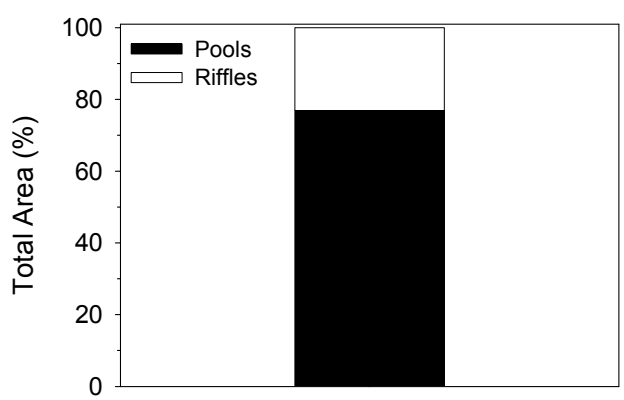
	Pools	**Riffles**
Percent of Total Stream Area:	77	23
Total Area (m^2):	10847±1099	3228±222
Correction Factor Applied:	1.00	1.12
Number of Paired Samples:	10	11
Total Count:	142	116
Number per km:	33	27
Mean Area (m^2):	76	28
Mean Maximum Depth (cm):	45	13
Mean Average Depth (cm):	24	6
Mean Residual Depth (cm):	19	--
Percent Surveyed as Glides:	5	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	0
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	6
< 5 m long, > 55 cm diameter:	7
> 5 m long, 10 cm – 55 cm diameter:	20
> 5 m long, > 55 cm diameter:	31
Total:	64

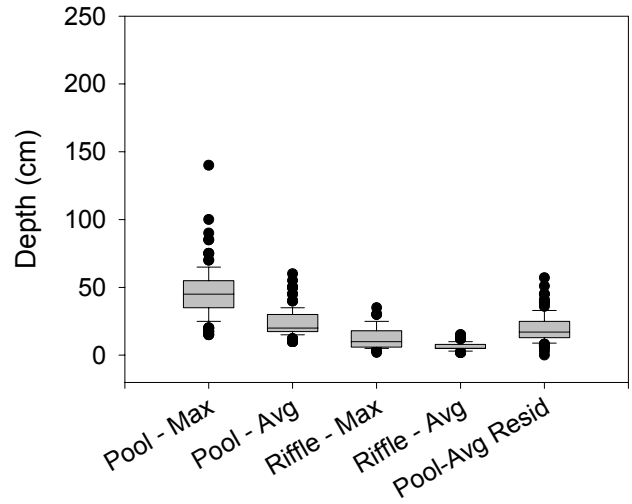
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	5	3	22
Maximum	7	8	24
75th Percentile	5	4	22
Median	5	2	22
25th Percentile	4	1	21
Minumum	3	1	20
Sample Size	21	21	10



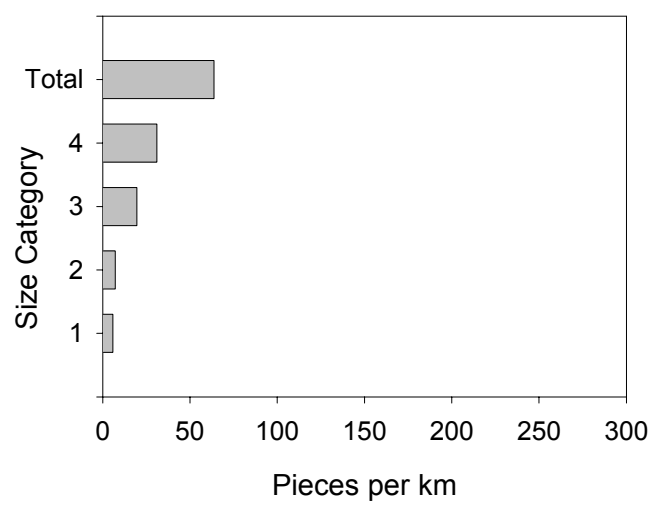
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Camp Branch, summer 2001.



Estimated area of Camp Branch in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Camp Branch, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

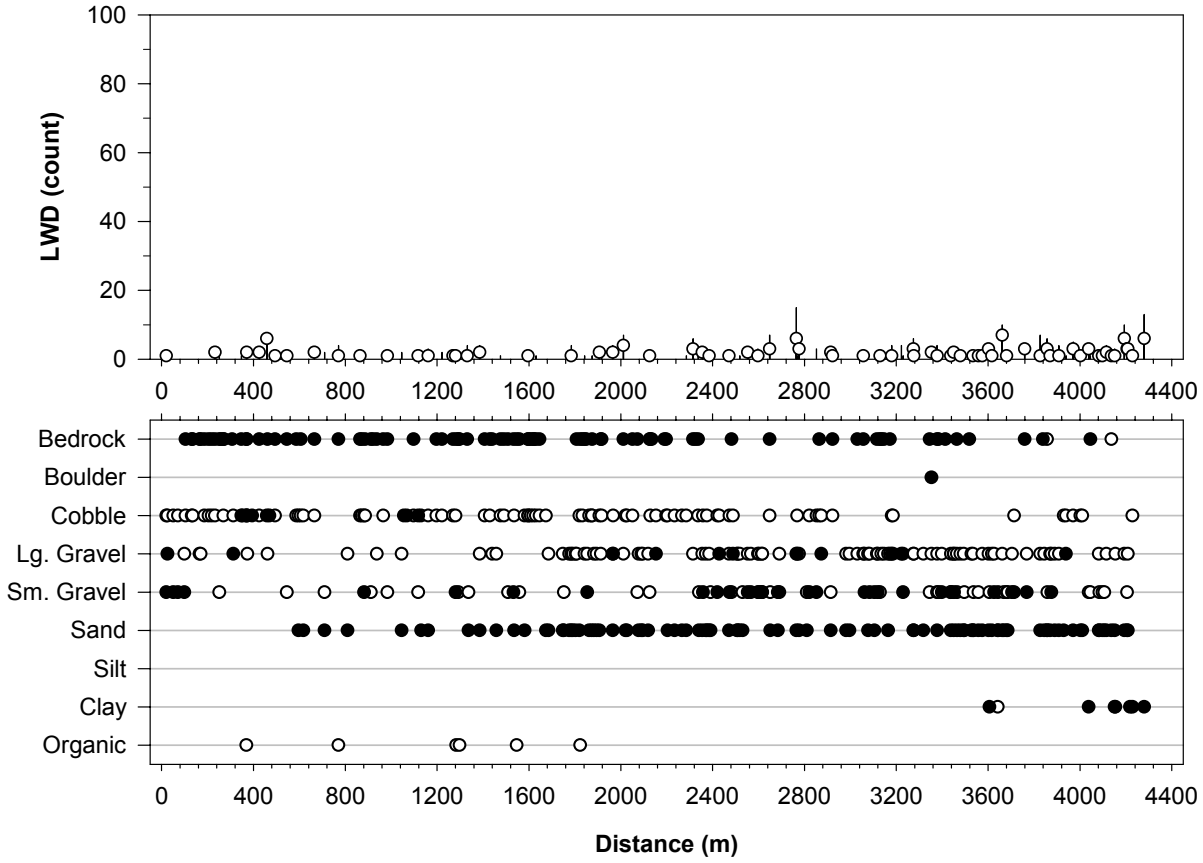


LWD per kilometer in Camp Branch, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Camp Branch during BVET habitat survey, summer 2001. Distance is meters from start of survey.

Stream Feature	Distance (m)	Width (m)	Comments
Beaver Dam	4279.0		The width of the dam was 3.5 - 5.0 & the height of the dam was 1.5
Tributary	4376.0	4.0	on right
Beaver Dam	4417.0	3.5	height = 0.5
Beaver Dam	4435.0	3.5	height = 1.0
Beaver Dam	4450.0		height = 1.0



Distribution and abundance of LWD and distribution of substrates in Camp Branch, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

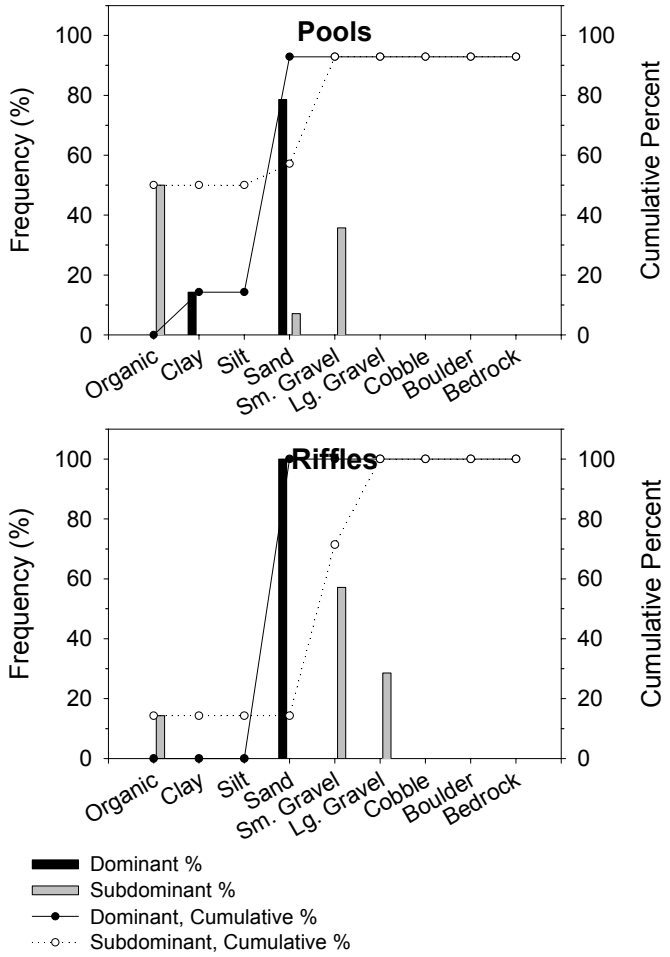
Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.

Stream:	**Tributary 1 - Camp Branch**
District:	Long Cane
USGS Quadrangle:	Red Hill
Survey Date:	06/27/01
Downstream Starting Point:	Forks to left, shown as intermittent tributary on USGS quadrangle map, south of road 626
Total Distance Surveyed (km):	0.3

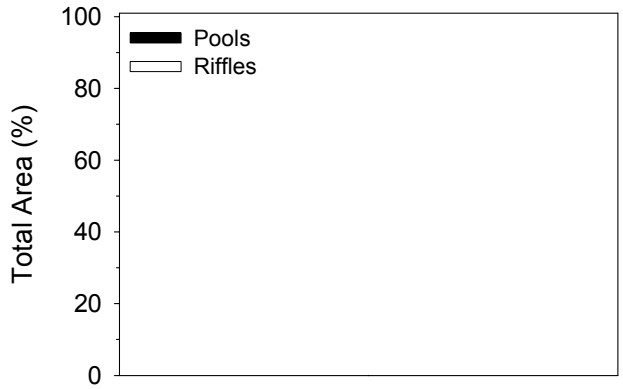
	Pools	**Riffles**
Percent of Total Stream Area:	--	--
Total Area (m^2):	194±28	--±--
Correction Factor Applied:	0.86	--
Number of Paired Samples:	2	0
Total Count:	14	7
Number per km:	45	23
Mean Area (m^2):	14	--
Mean Maximum Depth (cm):	19	4
Mean Average Depth (cm):	10	2
Mean Residual Depth (cm):	11	--
Percent Surveyed as Glides:	43	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	0
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	0
< 5 m long, > 55 cm diameter:	3
> 5 m long, 10 cm – 55 cm diameter:	10
> 5 m long, > 55 cm diameter:	19
Total:	32

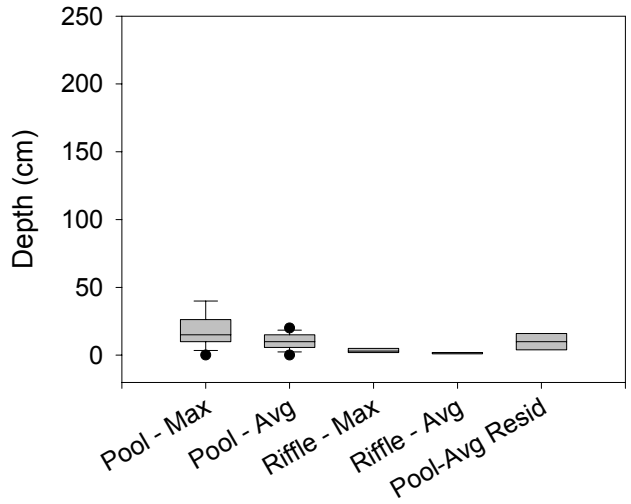
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	3	0	20
Maximum	3	0	21
75th Percentile	3	0	21
Median	3	0	20
25th Percentile	2	0	20
Minumum	2	0	19
Sample Size	2	2	2



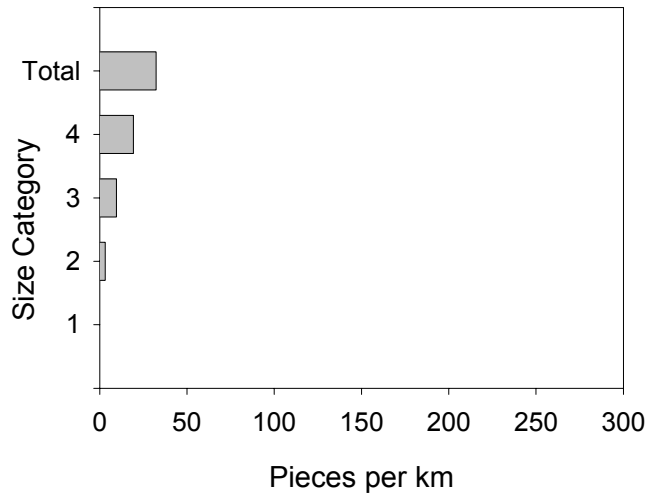
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Tributary 1 of Camp Branch, summer 2001.



Estimated area of Tributary 1 of Camp Branch in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Tributary 1 of Camp Branch, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

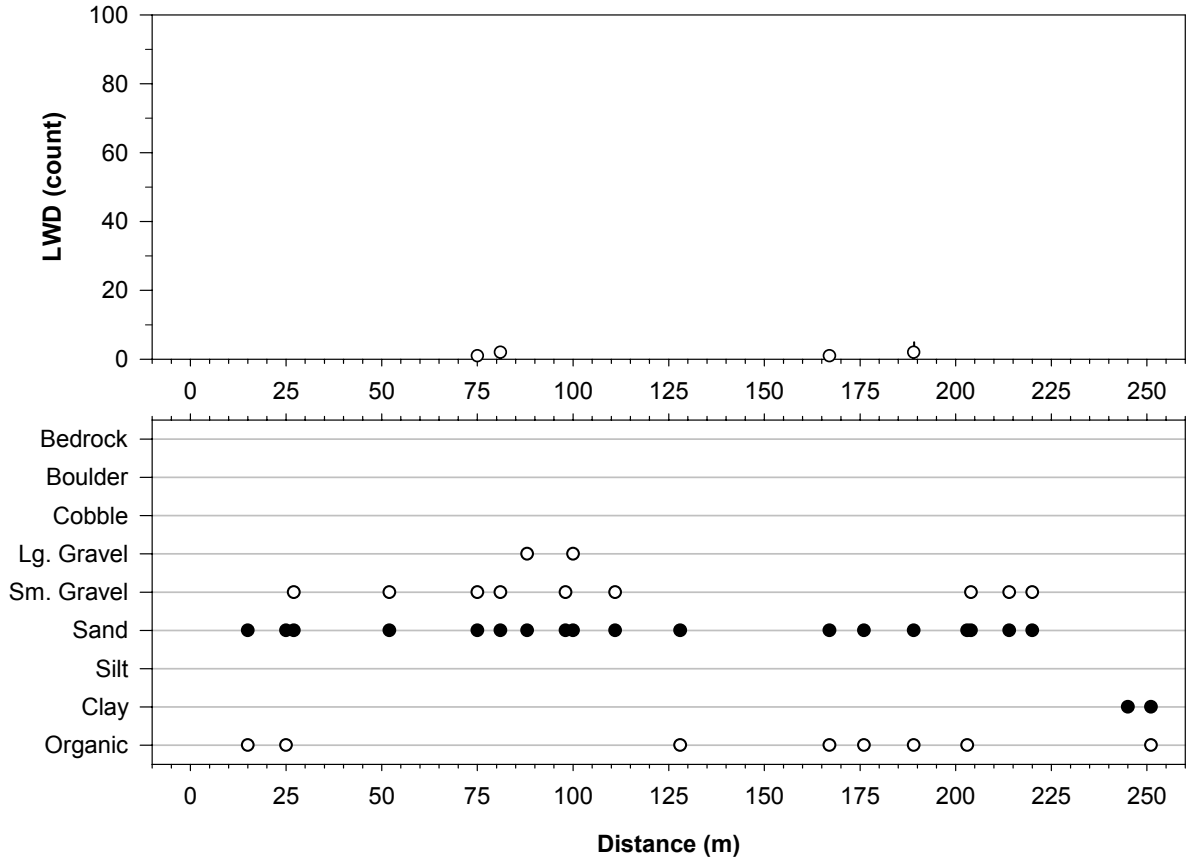


LWD per kilometer in Tributary 1 of Camp Branch, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Tributary 1 of Camp Branch during BVET habitat survey, summer 2001. Distance is meters from start of survey.

Stream Feature	Distance (m)	Width (m)	Comments
Tributary	220.0		on left



Distribution and abundance of LWD and distribution of substrates in Tributary 1 of Camp Branch, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

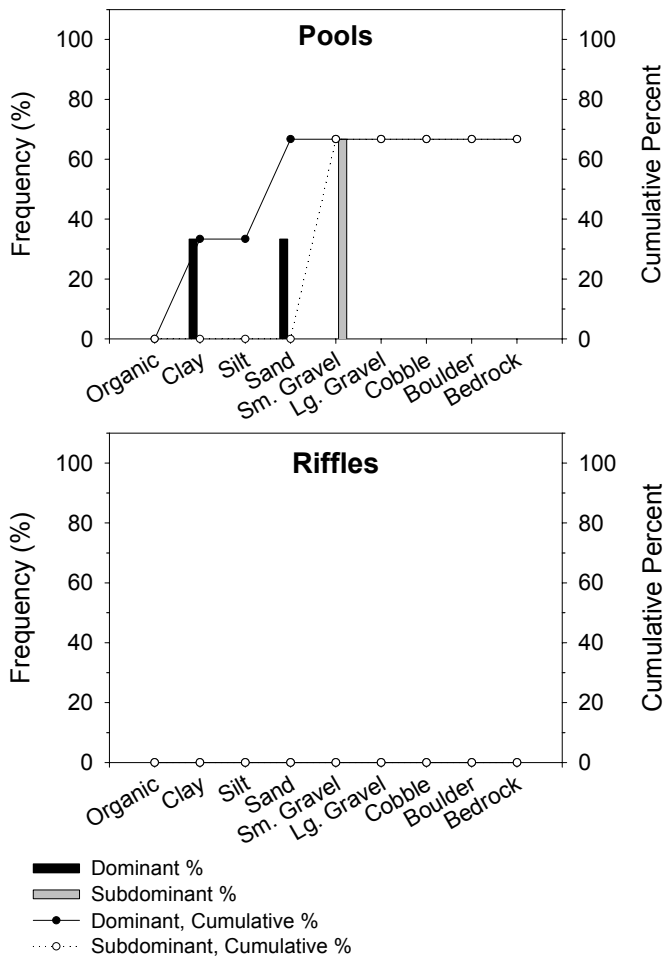
Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.

Stream:	**Tributary 2 - Camp Branch**
District:	Long Cane
USGS Quadrangle:	Red Hill
Survey Date:	06/27/01
Downstream Starting Point:	Shown as intermittent headwater portion of stream that forks right off of mainstem, forks to right again at confluence with another intermittent tributary
Total Distance Surveyed (km):	0.2

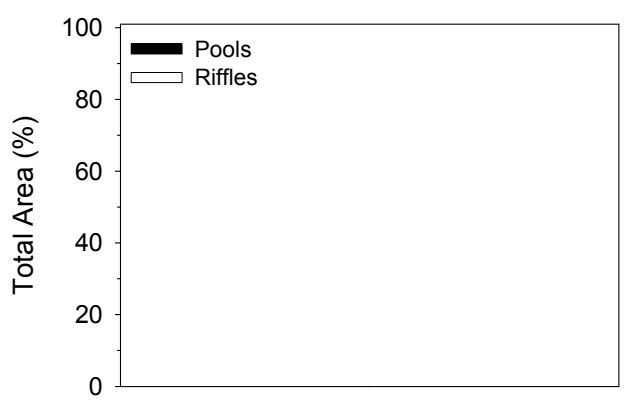
	Pools	**Riffles**
Percent of Total Stream Area:	--	--
Total Area (m^2):	±	-- ± --
Correction Factor Applied:	--	--
Number of Paired Samples:	0	0
Total Count:	3	0
Number per km:	19	0
Mean Area (m^2):	--	--
Mean Maximum Depth (cm):	13	--
Mean Average Depth (cm):	8	--
Mean Residual Depth (cm):	--	--
Percent Surveyed as Glides:	33	--
Percent Surveyed as Runs:	--	--
Percent Surveyed as Cascades:	--	--
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	0
< 5 m long, > 55 cm diameter:	6
> 5 m long, 10 cm – 55 cm diameter:	6
> 5 m long, > 55 cm diameter:	0
Total:	12

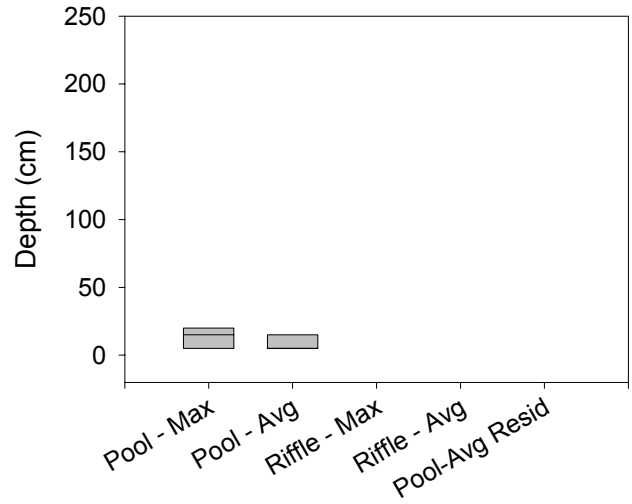
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean			
Maximum			
75th Percentile			
Median			
25th Percentile			
Minumum			
Sample Size	0	0	0



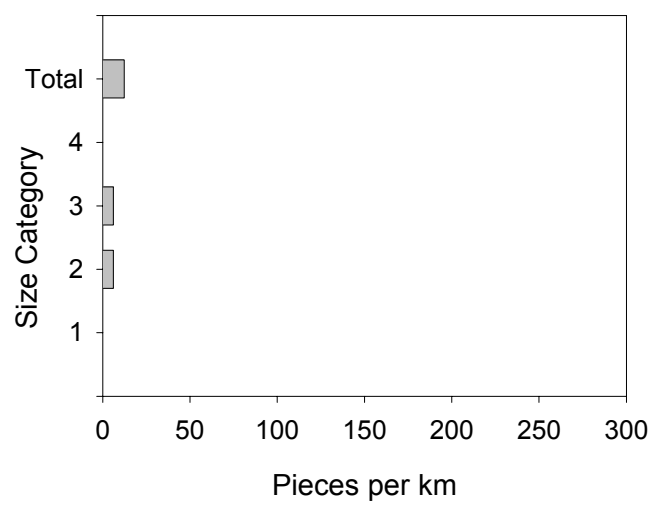
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Tributary 2 of Camp Branch, summer 2001.



Estimated area of Tributary 2 of Camp Branch in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Tributary 2 of Camp Branch, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

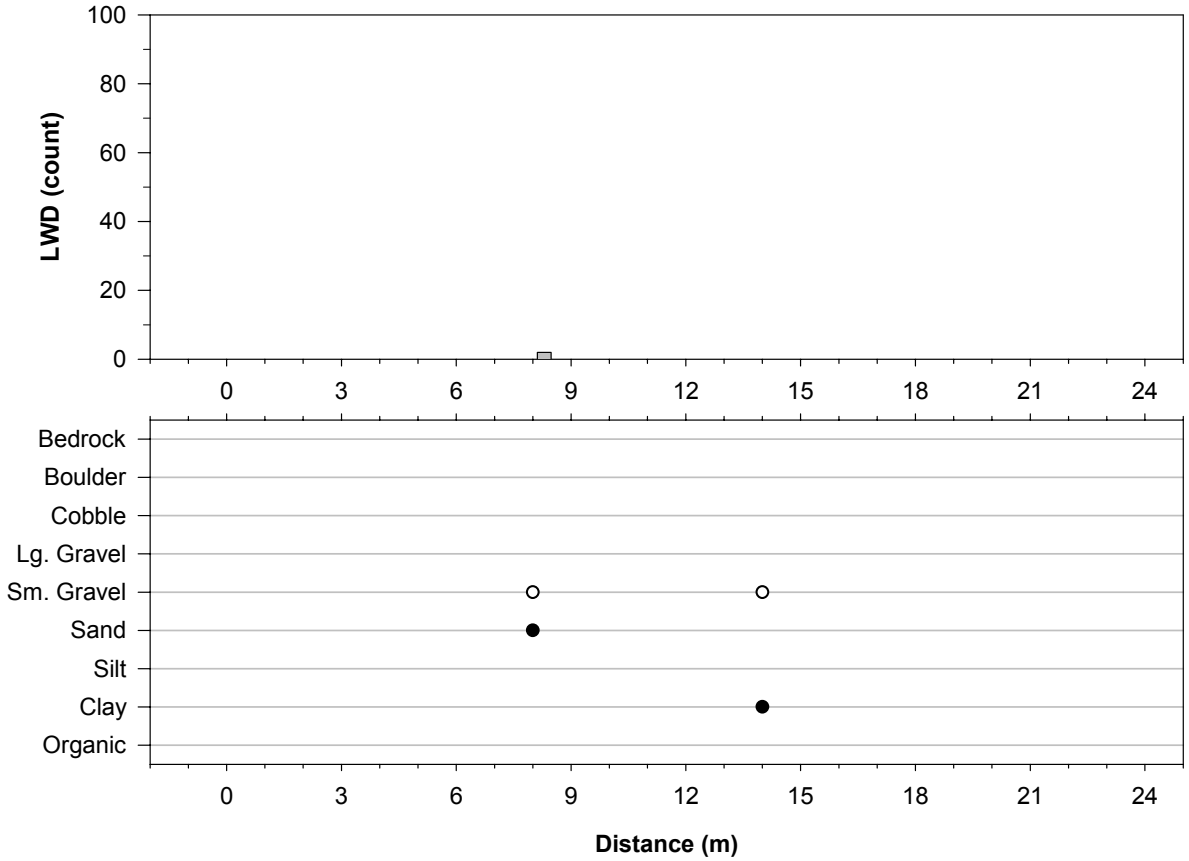


LWD per kilometer in Tributary 2 of Camp Branch, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Tributary 2 of Camp Branch during BVET habitat survey, summer 2001. Distance is meters from start of survey.

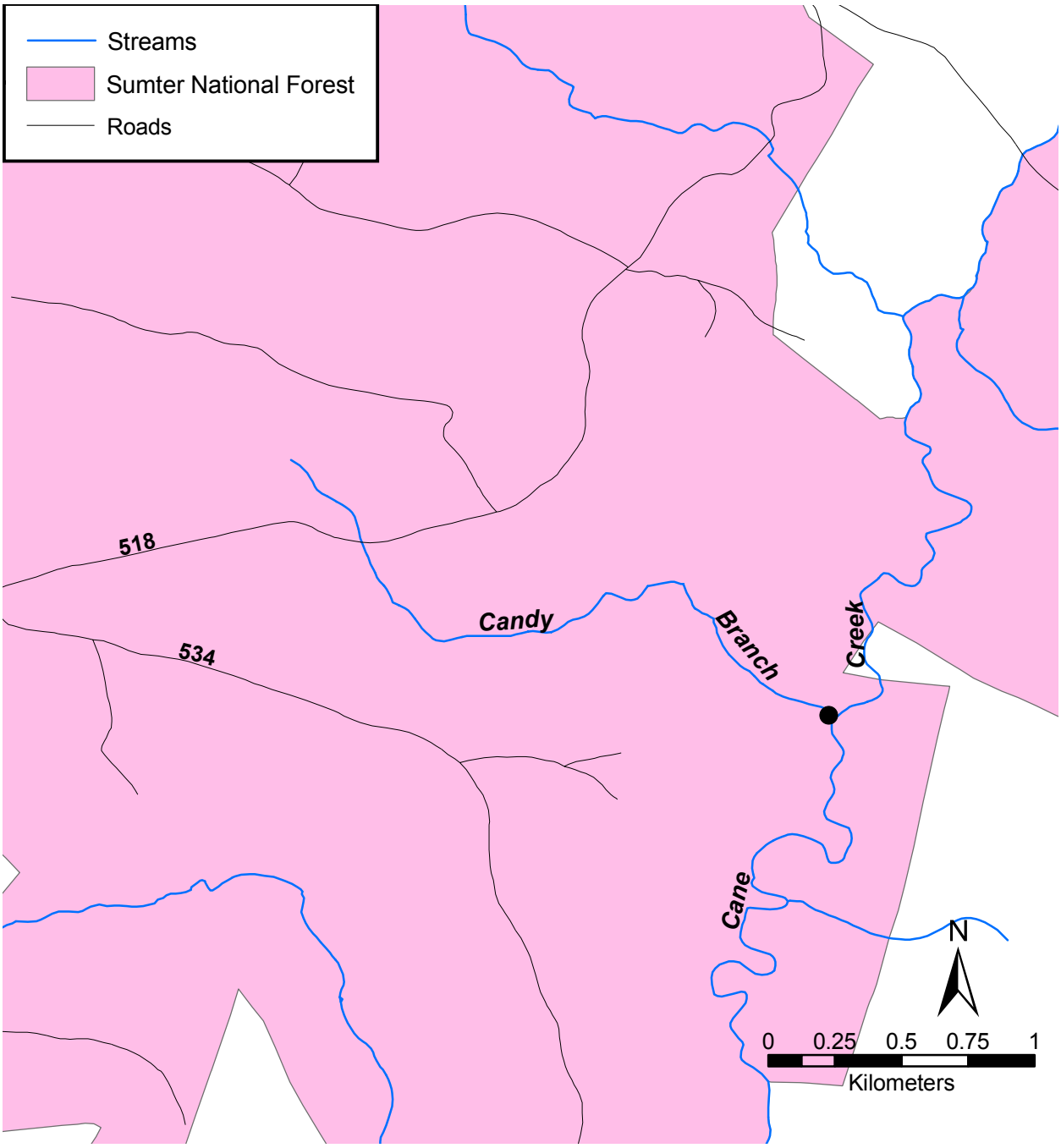
Stream Feature	Distance (m)	Width (m)	Comments
No features recorded			



Distribution and abundance of LWD distribution of substrates in Tributary 2 of Camp Branch, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.



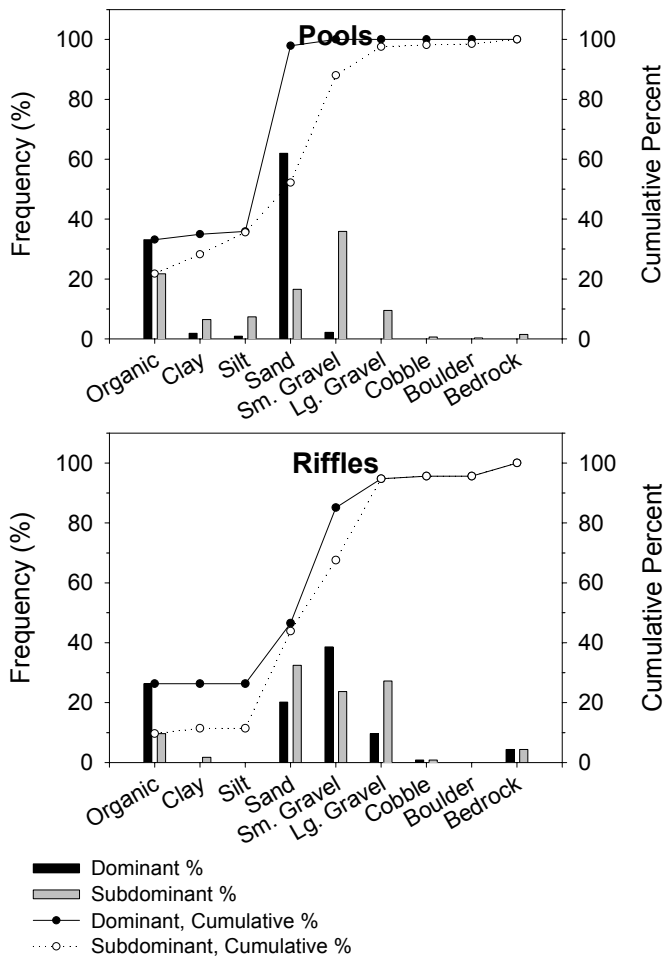
Location of stream habitat survey starting point (closed circle) on Candy Branch, summer 2001.

Stream:	**Candy Branch**
District:	Long Cane
USGS Quadrangle:	Verdery
Survey Date:	06/07/01
Downstream Starting Point:	0.25 miles upstream from confluence with Long Cane
Total Distance Surveyed (km):	4.0

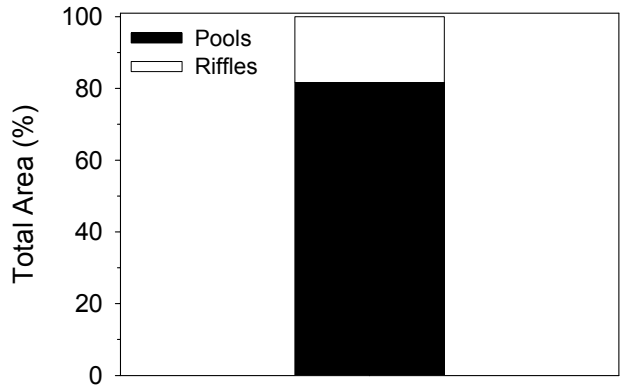
	Pools	**Riffles**
Percent of Total Stream Area:	82	18
Total Area (m^2):	4386±569	978±464
Correction Factor Applied:	0.92	1.09
Number of Paired Samples:	30	10
Total Count:	326	114
Number per km:	81	28
Mean Area (m^2):	13	9
Mean Maximum Depth (cm):	18	6
Mean Average Depth (cm):	10	4
Mean Residual Depth (cm):	5	--
Percent Surveyed as Glides:	42	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	0
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	27
< 5 m long, > 55 cm diameter:	2
> 5 m long, 10 cm – 55 cm diameter:	11
> 5 m long, > 55 cm diameter:	5
Total:	44

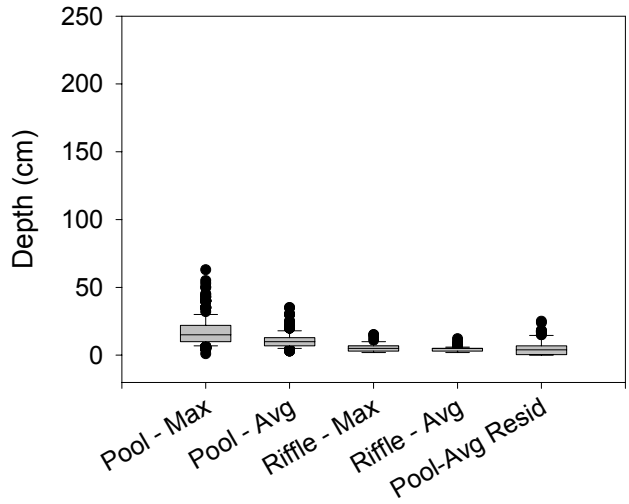
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	3	3	18
Maximum	4	19	19
75th Percentile	3	3	19
Median	2	2	18
25th Percentile	2	1	18
Minumum	2	0	18
Sample Size	9	10	7



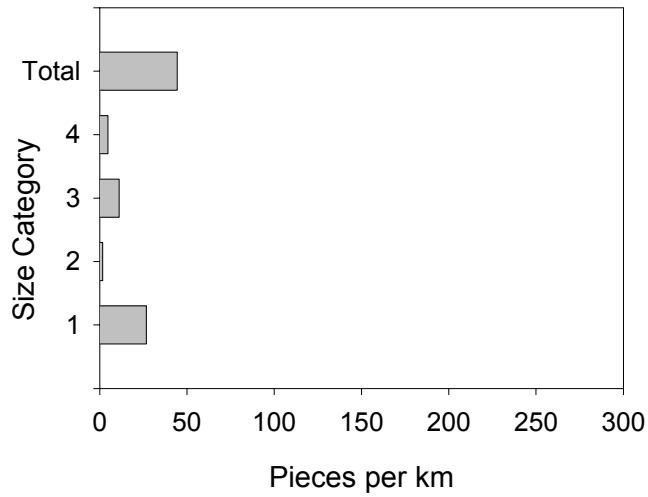
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Candy Branch, summer 2001.



Estimated area of Candy Branch in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Candy Branch, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

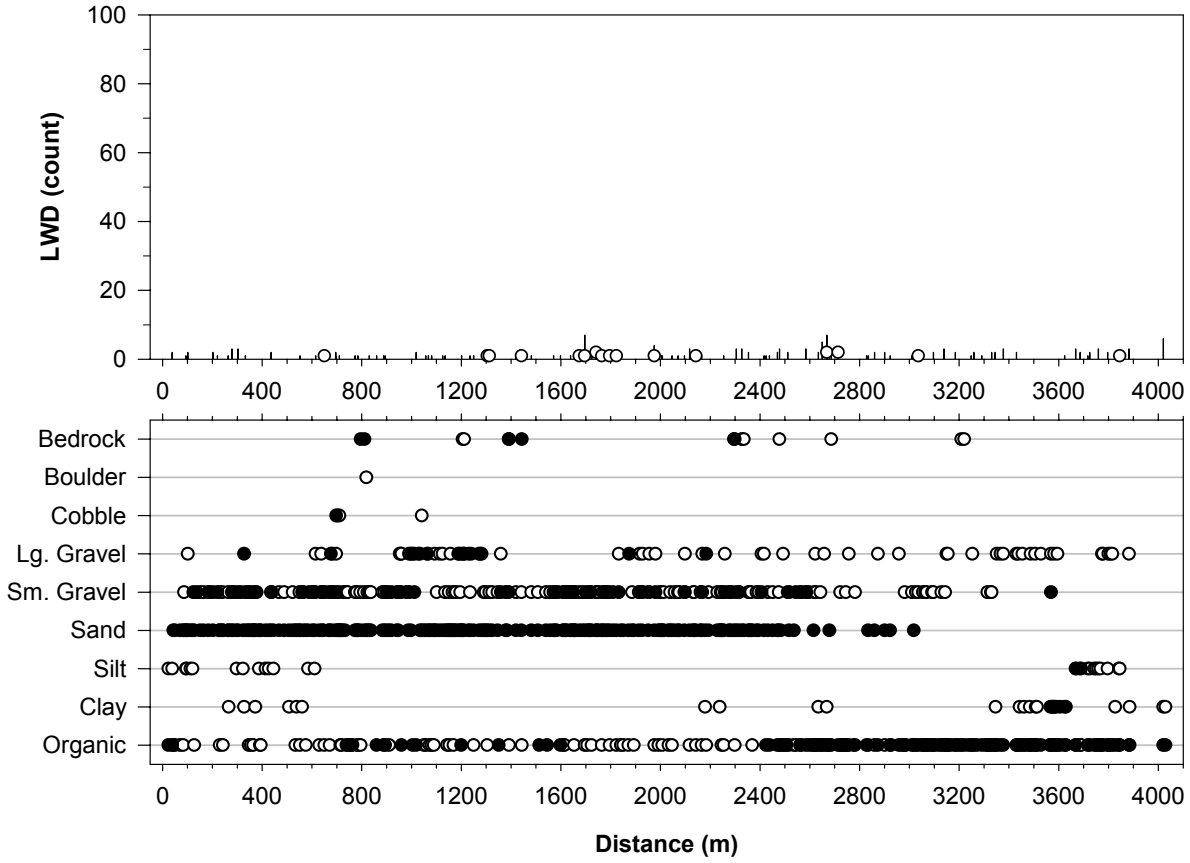


LWD per kilometer in Candy Branch, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Candy Branch during BVET habitat survey, summer 2001. Distance is meters from start of survey.

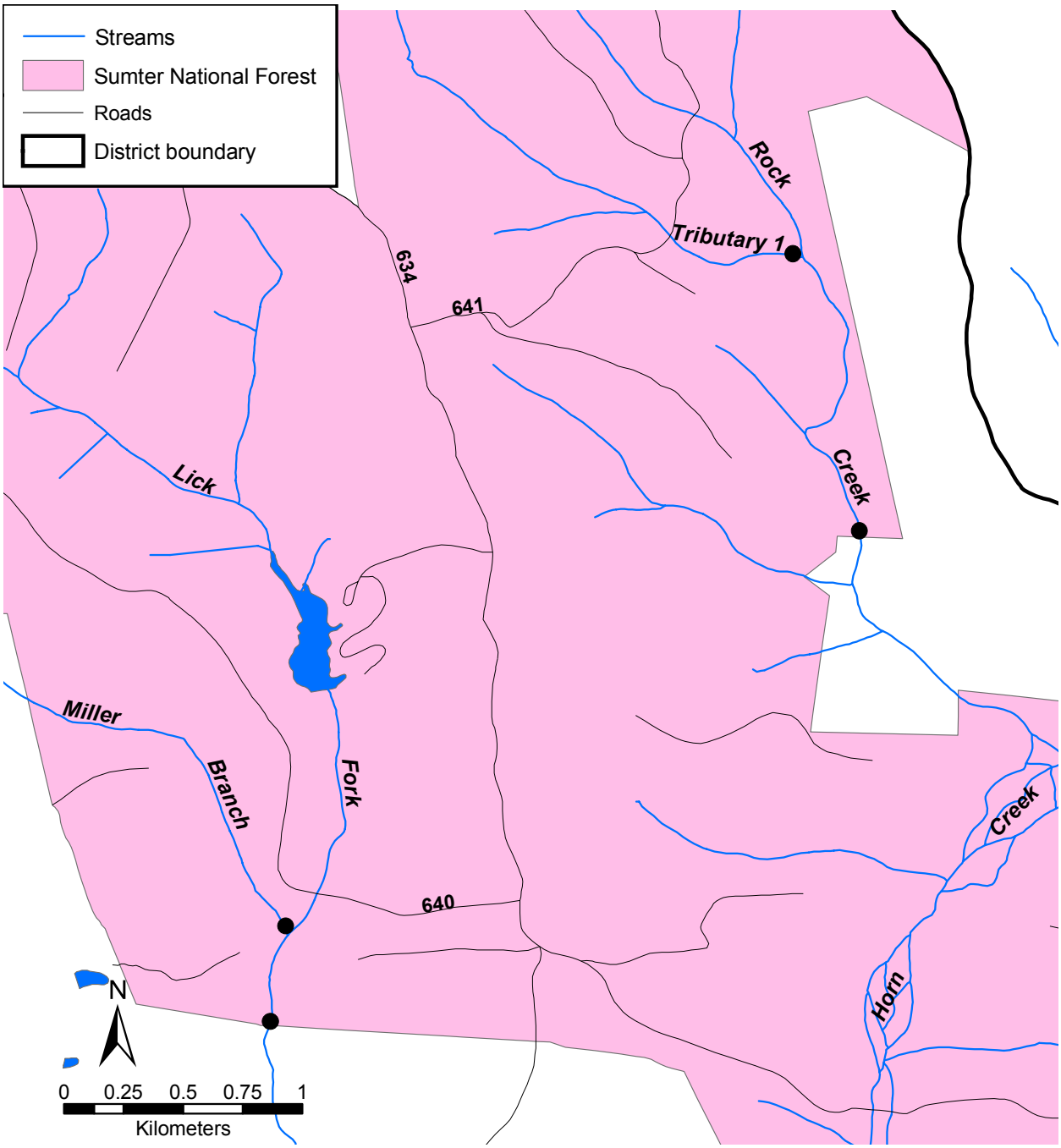
Stream Feature	Distance (m)	Width (m)	Comments
Tributary	940.7		on right
Tributary	1178.4		on left - dry
Shock Site	1457.0		start site 2
Shock Site	1554.0		end site 2
Tributary	1419.2		dry
Tributary	1608.2		on left
Tributary	1615.4		
Shock Site	2573.1		start site 3
Shock Site	2685.1		end site 3
Gully	3814.9		
Gully	4019.2		



Distribution and abundance of LWD and distribution of substrates in Candy Branch, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance 0.25 meters upstream from confluence.

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.



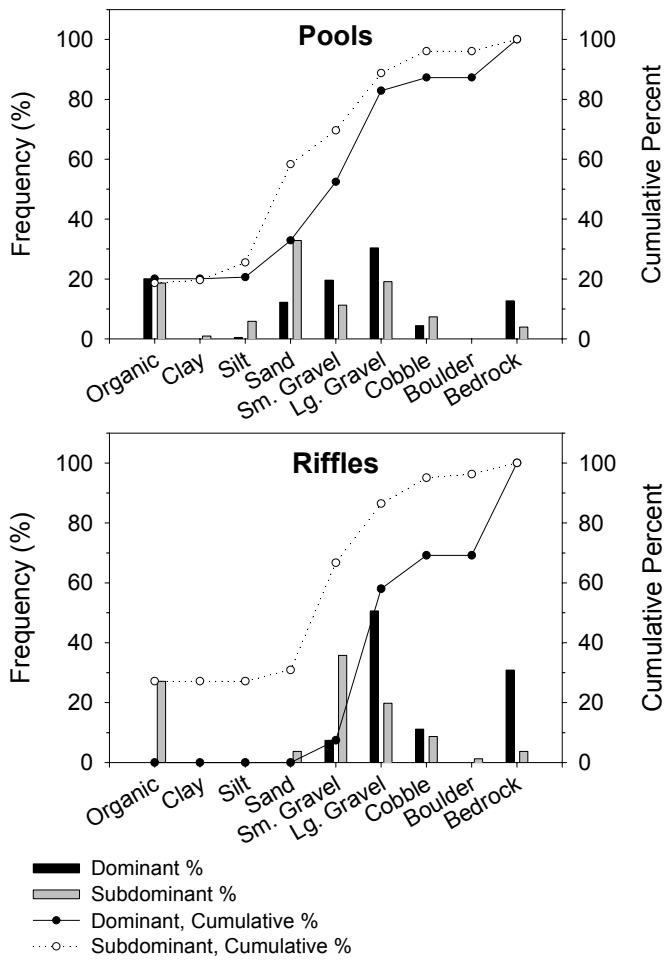
Location of stream habitat survey starting points (closed circles) for Lick Fork, Miller Branch, and Rock Creek and its tributary, summer 2001.

Stream:	**Lick Fork**
District:	Long Cane
USGS Quadrangle:	Colliers
Survey Date:	06/09/01
Downstream Starting Point:	Forest boundary south of road 640
Total Distance Surveyed (km):	3.9

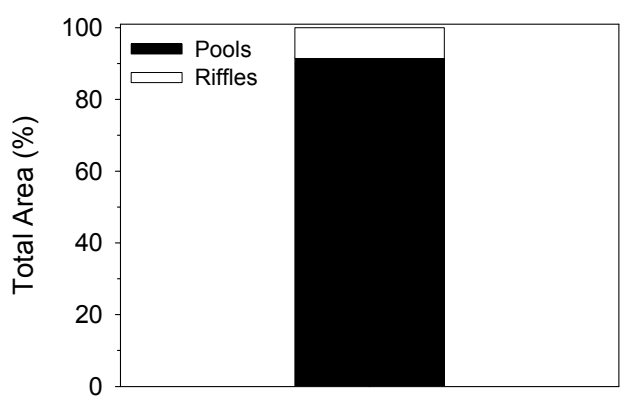
	Pools	**Riffles**
Percent of Total Stream Area:	92	8
Total Area (m^2):	11772±4198	1072±360
Correction Factor Applied:	1.09	1.14
Number of Paired Samples:	23	13
Total Count:	204	81
Number per km:	52	21
Mean Area (m^2):	58	13
Mean Maximum Depth (cm):	36	9
Mean Average Depth (cm):	20	6
Mean Residual Depth (cm):	16	--
Percent Surveyed as Glides:	34	--
Percent Surveyed as Runs:	--	2
Percent Surveyed as Cascades:	--	1
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	23
< 5 m long, > 55 cm diameter:	3
> 5 m long, 10 cm – 55 cm diameter:	20
> 5 m long, > 55 cm diameter:	5
Total:	51

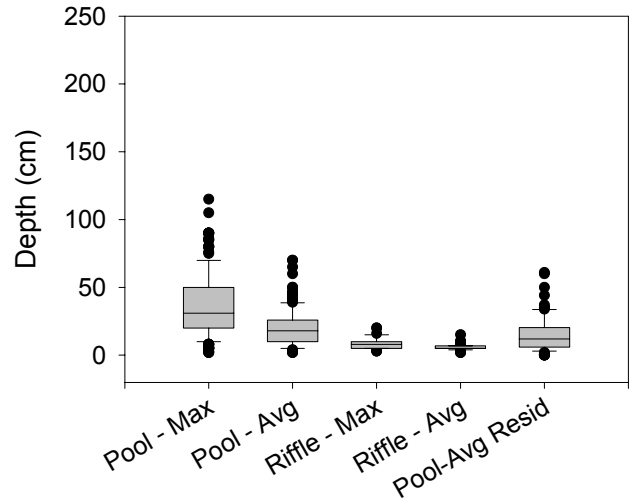
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	4	4	21
Maximum	5	7	28
75th Percentile	4	5	22
Median	4	3	20
25th Percentile	3	2	20
Minumum	1	2	19
Sample Size	12	11	8



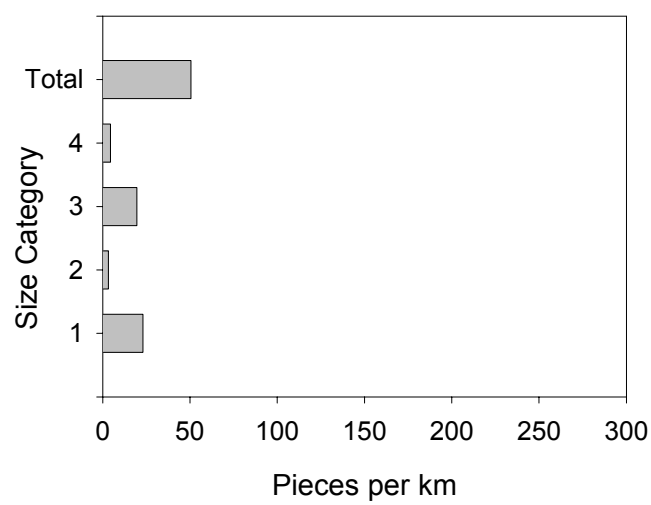
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Lick Fork, summer 2001.



Estimated area of Lick Fork in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Lick Fork, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

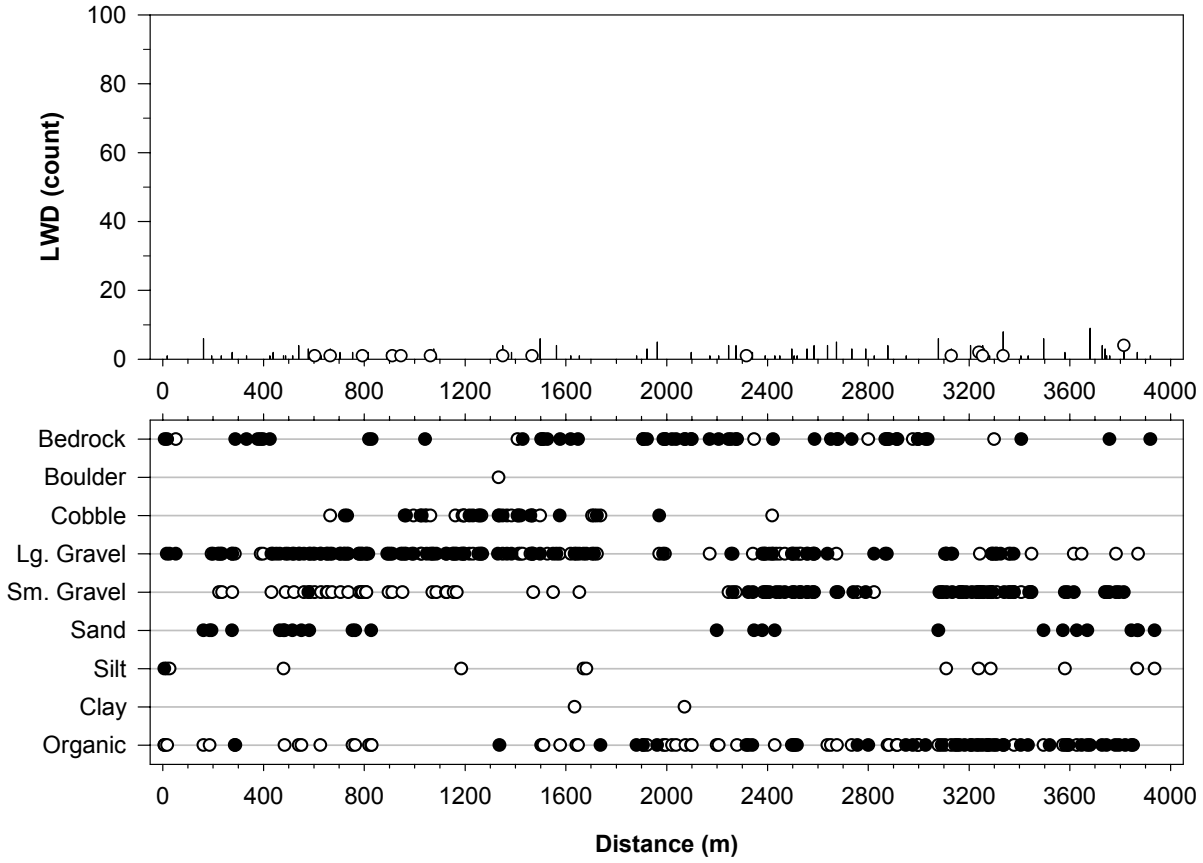


LWD per kilometer in Lick Fork, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Lick Fork during BVET habitat survey, summer 2001. Distance is meters from start of survey.

Stream Feature	Distance (m)	Width (m)	Comments
Tributary	479.4		Miller Branch
Waterfall	1619.1		very short
Spillway	1879.9		
Gully	1906.0	0.3	
Tributary	2074.3		on right
Shock Site	2390.3		start
Shock Site	2496.2		end; not definite distance, which is distance of the pool
Gully	2789.5		on right
Gully	2823.0		
Gully	2977.0		on right
Gully	3077.7		on right
Tributary	3338.2		on left; seperated from main channel by 8+ size 3 LWD, causing a fish barrier with boulders and logs.
Gully	3783.3		on left
Gully	3936.5		on right
Beaver dam	3936.5	29.0	Height = 2m
Beaver dam	4016.5	6.0	Height = 1m
Beaver dam	4071.5	32.0	Height = 1.5m
Beaver dam	4187.5	5.0	Height = 0.5m
Beaver dam	4218.5	6.0	Height = 1m
Beaver dam	4236.5	16.0	Height = 0.5m
Beaver dam	4263.5	4.5	Height = 0.35m & Impoundment = 29m long



Distribution and abundance of LWD and distribution of substrates in Lick Fork, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

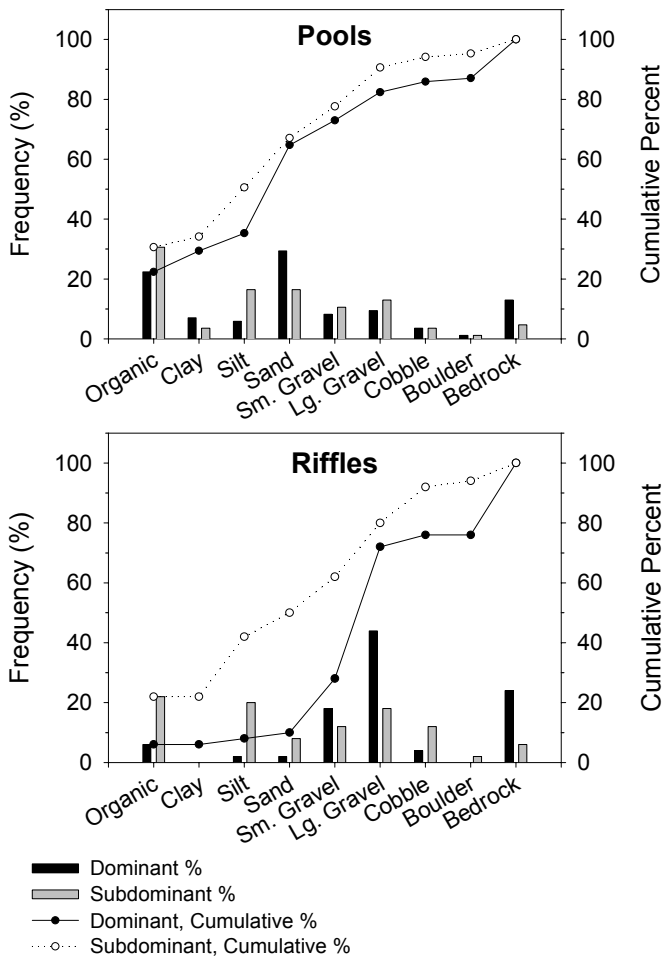
Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.

Stream:	**Miller Branch**
District:	Long Cane
USGS Quadrangle:	Colliers
Survey Date:	06/20/01
Downstream Starting Point:	Confluence with Lick Fork – ***see map for Lick Fork***
Total Distance Surveyed (km):	1.9

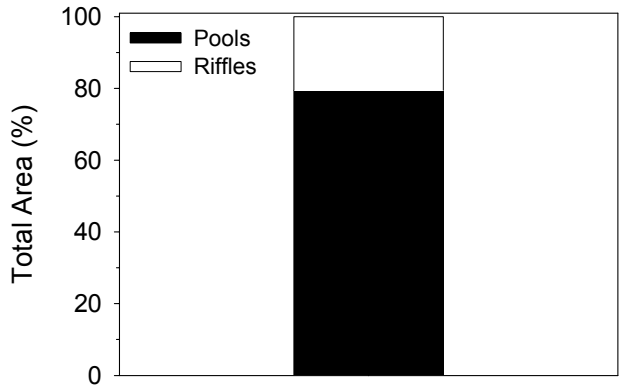
	Pools	**Riffles**
Percent of Total Stream Area:	80	20
Total Area (m^2):	3110±473	802±534
Correction Factor Applied:	0.97	1.62
Number of Paired Samples:	8	4
Total Count:	85	50
Number per km:	46	27
Mean Area (m^2):	37	16
Mean Maximum Depth (cm):	41	12
Mean Average Depth (cm):	25	6
Mean Residual Depth (cm):	15	--
Percent Surveyed as Glides:	38	--
Percent Surveyed as Runs:	--	26
Percent Surveyed as Cascades:	--	2
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	47
< 5 m long, > 55 cm diameter:	2
> 5 m long, 10 cm – 55 cm diameter:	16
> 5 m long, > 55 cm diameter:	3
Total:	67

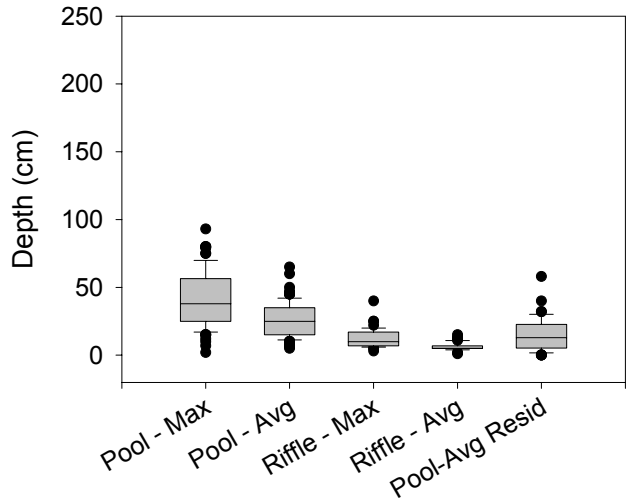
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	3	6	20
Maximum	5	11	21
75th Percentile	4	5	21
Median	3	5	20
25th Percentile	3	4	19
Minumum	2	3	18
Sample Size	5	5	6



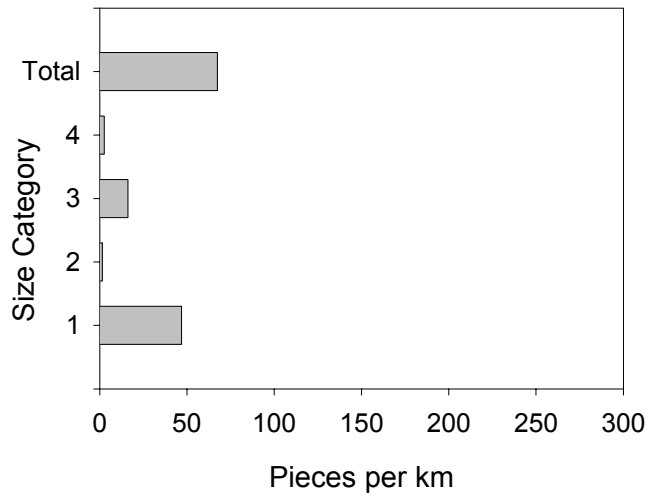
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Miller Branch, summer 2001.



Estimated area of Miller Branch in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Miller Branch, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

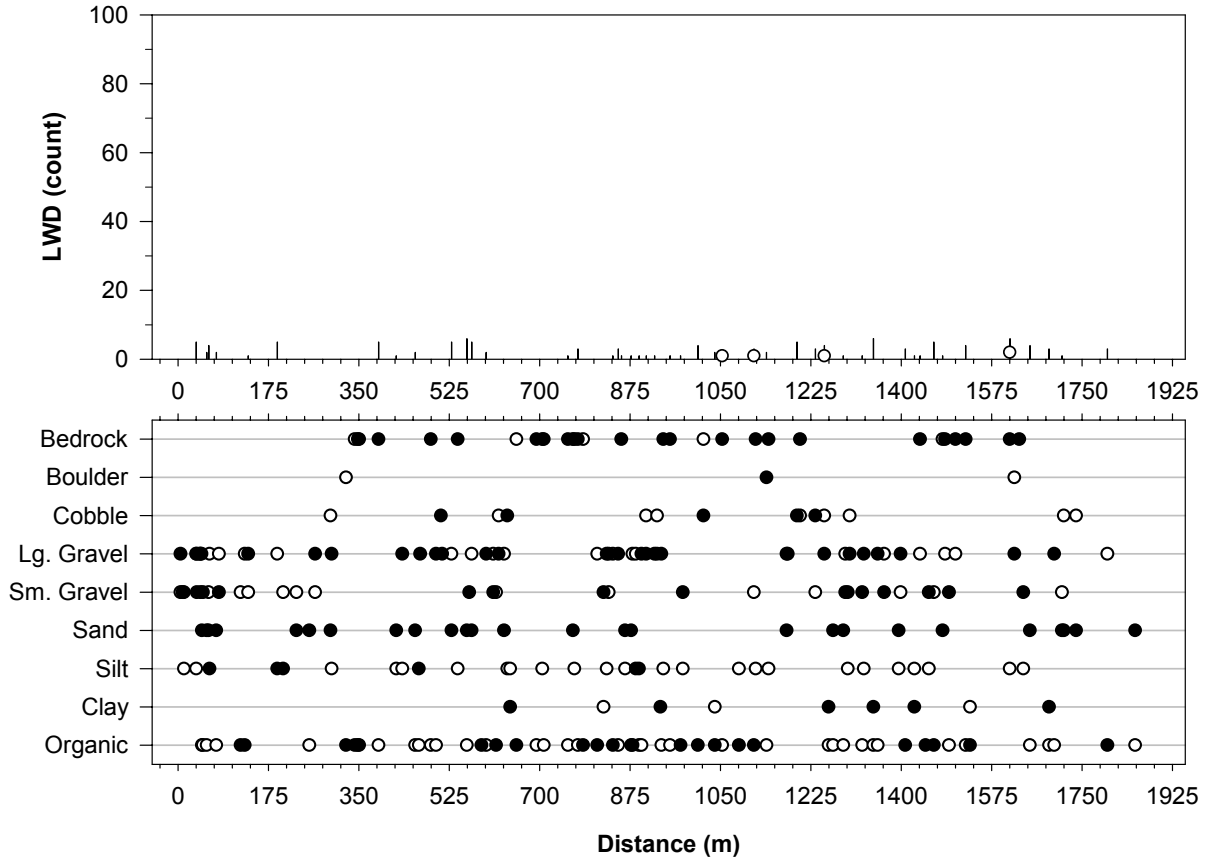


LWD per kilometer in Miller Branch, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Miller Branch during BVET habitat survey, summer 2001. Distance is meters from start of survey.

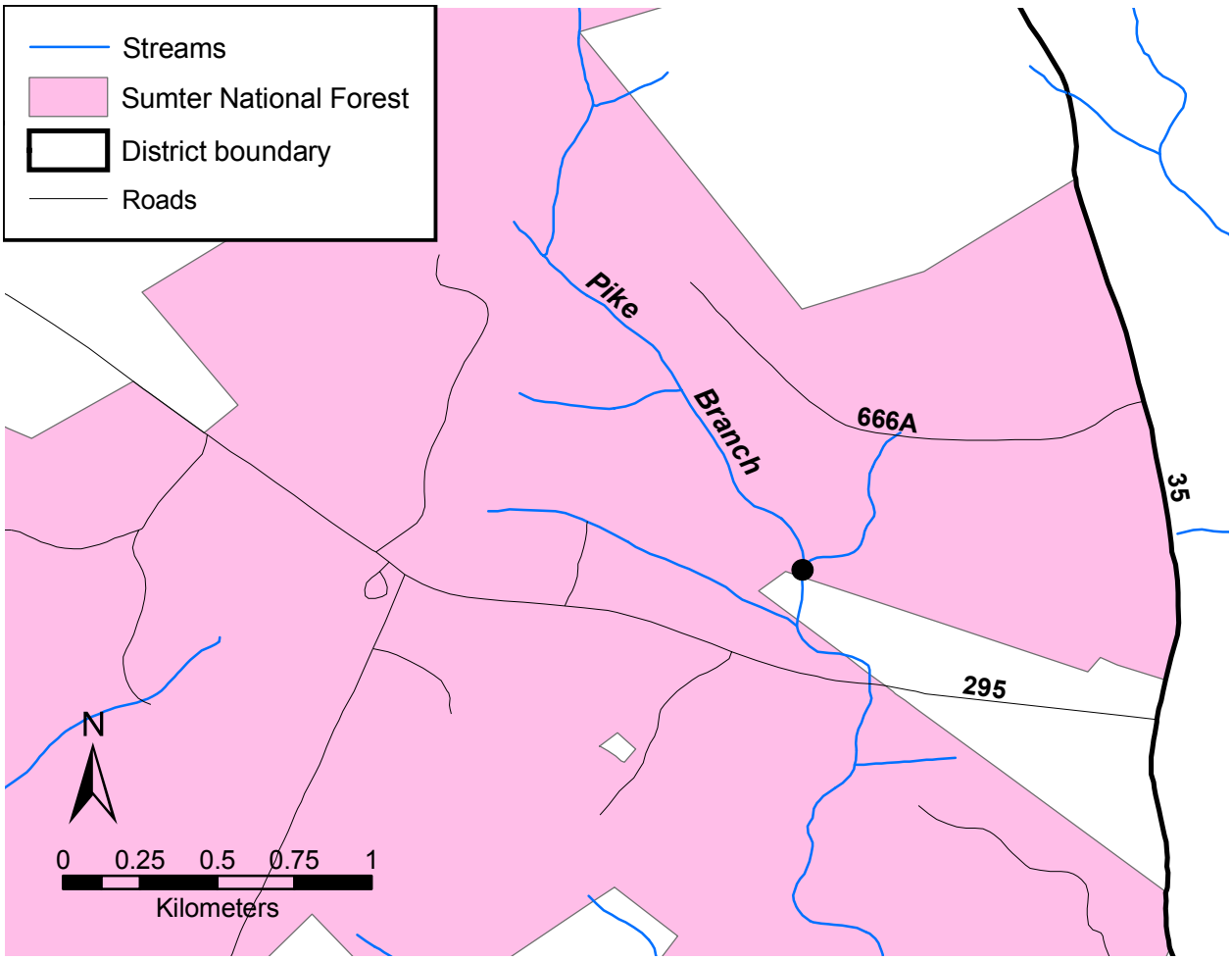
Stream Feature	Distance (m)	Width (m)	Comments
Tributary	348.2		on left
Gully	631.0		on left
Island	933.9		starts on left
Island	935.7		starts
Island	944.0		ends
Island	972.9		ends
Shock Site	1178.1		end; "Fish Crew Upper Site (1178.1)"
Gully	1233.7		on left
Gully	1395.0		
Gully	1407.9		
Gully	1453.4		on right
Gully	1649.0		2 on left
Gully	1799.0		on right



Distribution and abundance of LWD and distribution of substrates in Miller Branch, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.



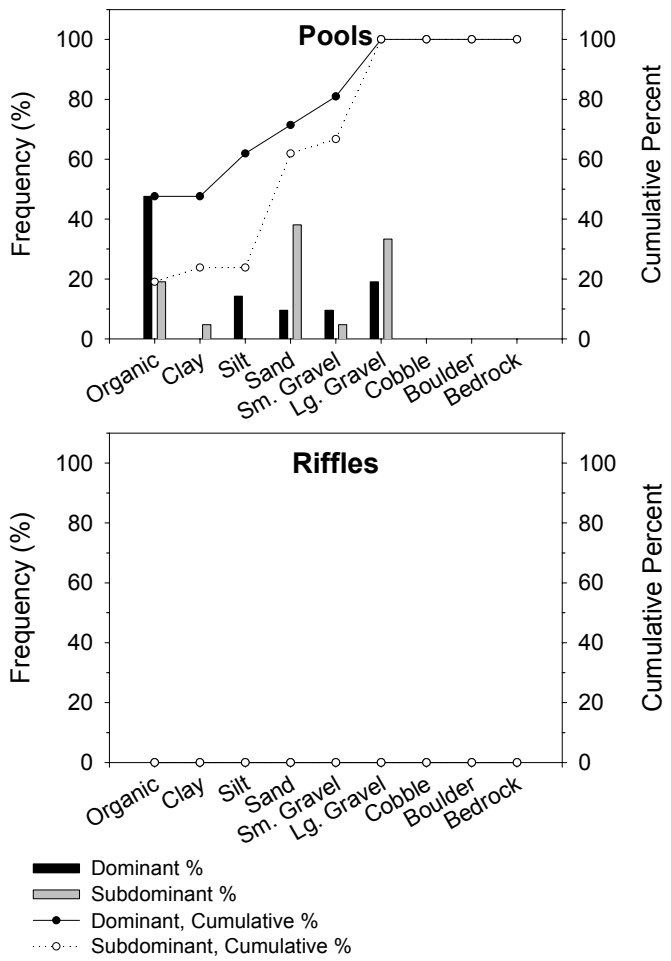
Location of stream habitat survey starting point (closed circle) on Pike Branch, summer 2001.

Stream:	**Pike Branch**
District:	Long Cane
USGS Quadrangle:	Limestone
Survey Date:	06/29/01
Downstream Starting Point:	Forest Service boundary north of road 295
Total Distance Surveyed (km):	1.5

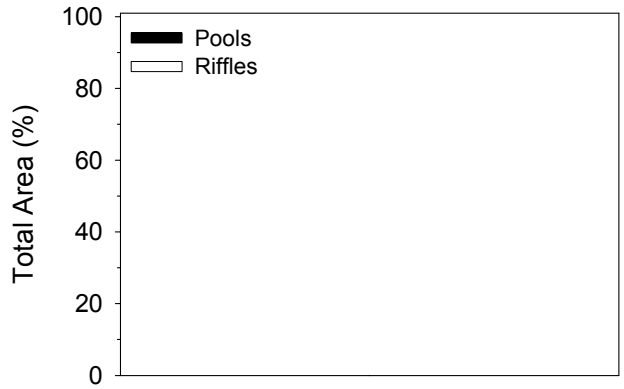
	Pools	**Riffles**
Percent of Total Stream Area:	--	--
Total Area (m^2):	794±231	-- ± --
Correction Factor Applied:	0.97	--
Number of Paired Samples:	2	0
Total Count:	21	0
Number per km:	14	0
Mean Area (m^2):	38	--
Mean Maximum Depth (cm):	25	--
Mean Average Depth (cm):	14	--
Mean Residual Depth (cm):	--	--
Percent Surveyed as Glides:	24	--
Percent Surveyed as Runs:	--	--
Percent Surveyed as Cascades:	--	--
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	11
< 5 m long, > 55 cm diameter:	0
> 5 m long, 10 cm – 55 cm diameter:	9
> 5 m long, > 55 cm diameter:	0
Total:	20

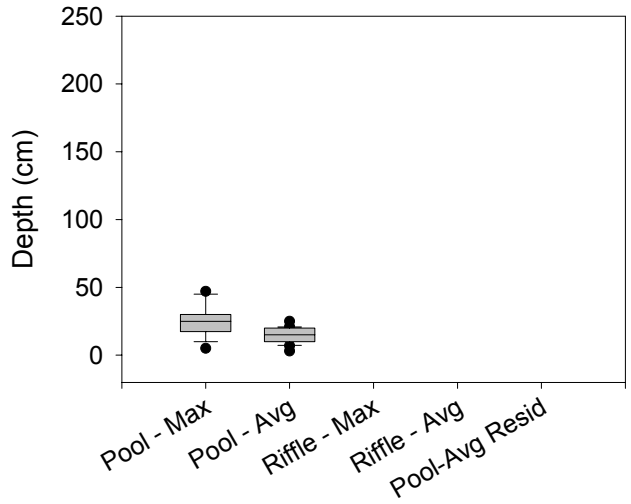
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean			
Maximum			
75th Percentile			
Median			
25th Percentile			
Minumum			
Sample Size	0	0	0



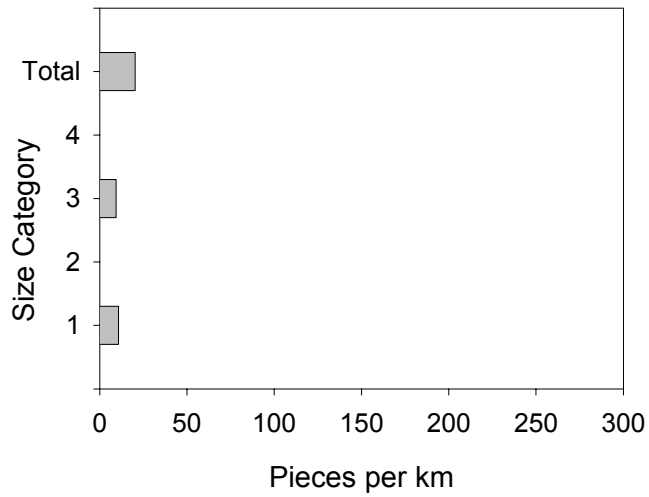
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Pike Branch, summer 2001.



Estimated area of Pike Branch in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Pike Branch, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

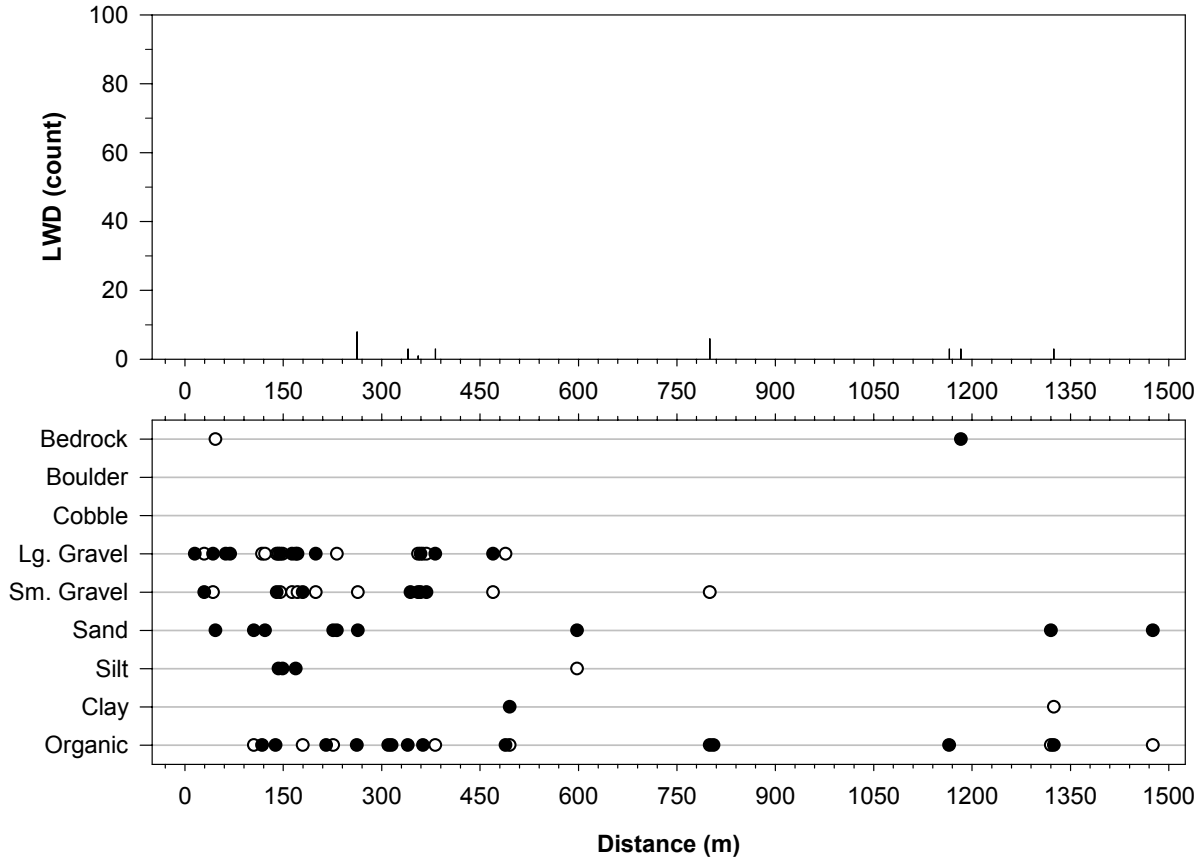


LWD per kilometer in Pike Branch, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Pike Branch during BVET habitat survey, summer 2001. Distance is meters from start of survey.

Stream Feature	Distance (m)	Width (m)	Comments
Beaver Dam	29.3		broken, unpacked dam
Beaver Dam	68.7		old
Beaver Dam	199.5		
Shock Site	293.6		starts
Gully	310.0		on right
Shock Site	362.9		ends
Gully	488.7		on right
Gully	488.7		on right
Beaver Dam	495.0		height = 85cm
Beaver Pond	597.6		length = 30.6m
Gully	800.0		on right
Gully	800.0		on left



Distribution and abundance of LWD and distribution of substrates in Pike Branch, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from Forest Service boundary.

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

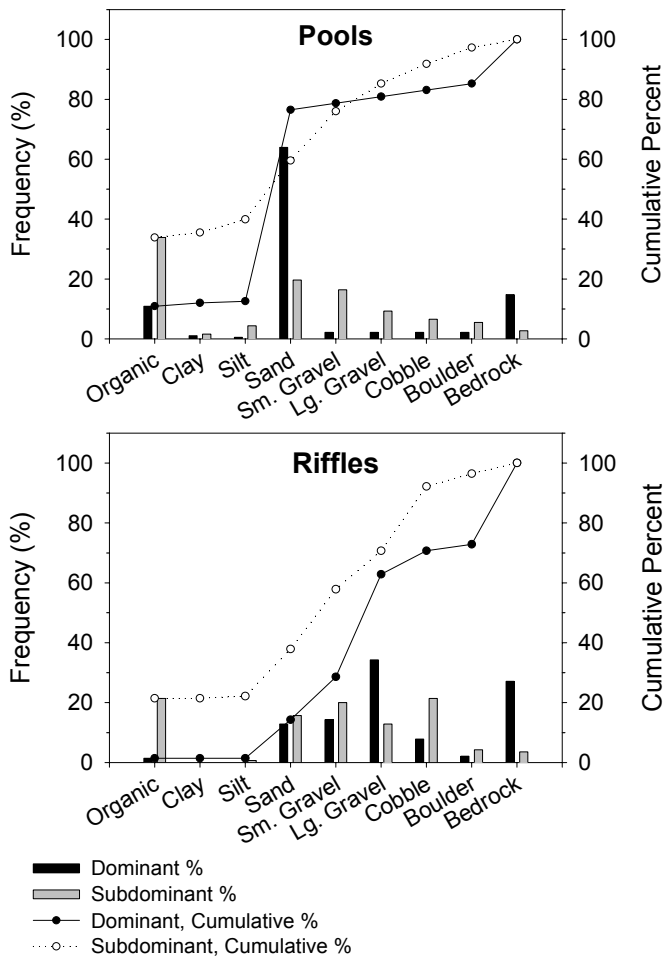
Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.

Stream:	**Rock Creek**
District:	Long Cane
USGS Quadrangle:	Colliers
Survey Date:	06/07/01
Downstream Starting Point:	Forest boundary directly east of the intersection of roads 634 and 638D on USGS quadrangle map – ***see map for Lick Fork***
Total Distance Surveyed (km):	3.9

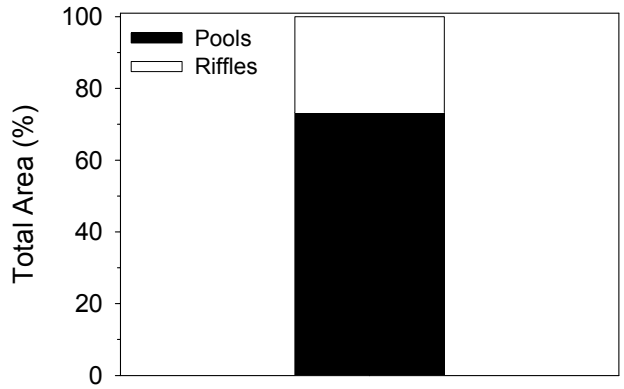
	Pools	**Riffles**
Percent of Total Stream Area:	73	27
Total Area (m^2):	9494±641	3459±323
Correction Factor Applied:	1.08	1.24
Number of Paired Samples:	14	17
Total Count:	183	140
Number per km:	46	35
Mean Area (m^2):	52	25
Mean Maximum Depth (cm):	37	13
Mean Average Depth (cm):	23	7
Mean Residual Depth (cm):	17	--
Percent Surveyed as Glides:	10	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	9
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	3
< 5 m long, > 55 cm diameter:	2
> 5 m long, 10 cm – 55 cm diameter:	12
> 5 m long, > 55 cm diameter:	27
Total:	45

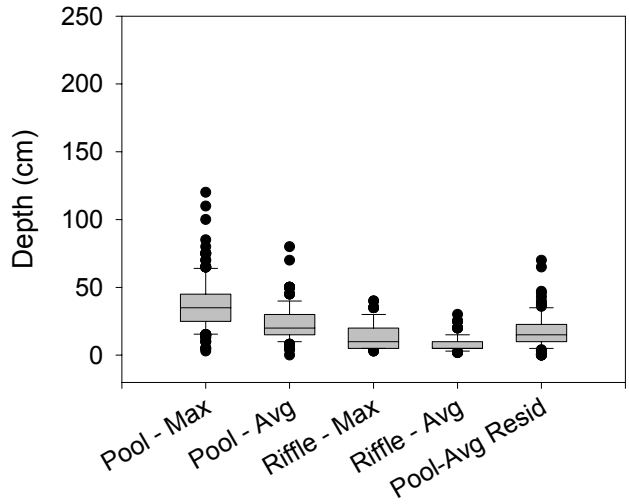
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	5	2	
Maximum	13	20	
75th Percentile	5	2	
Median	4	1	
25th Percentile	3	1	
Minumum	2	1	
Sample Size	32	31	0



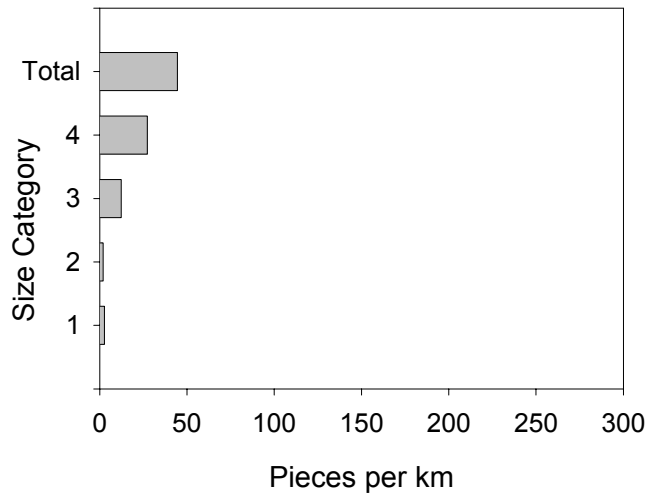
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Rock Creek, summer 2001.



Estimated area of Rock Creek in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Rock Creek, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

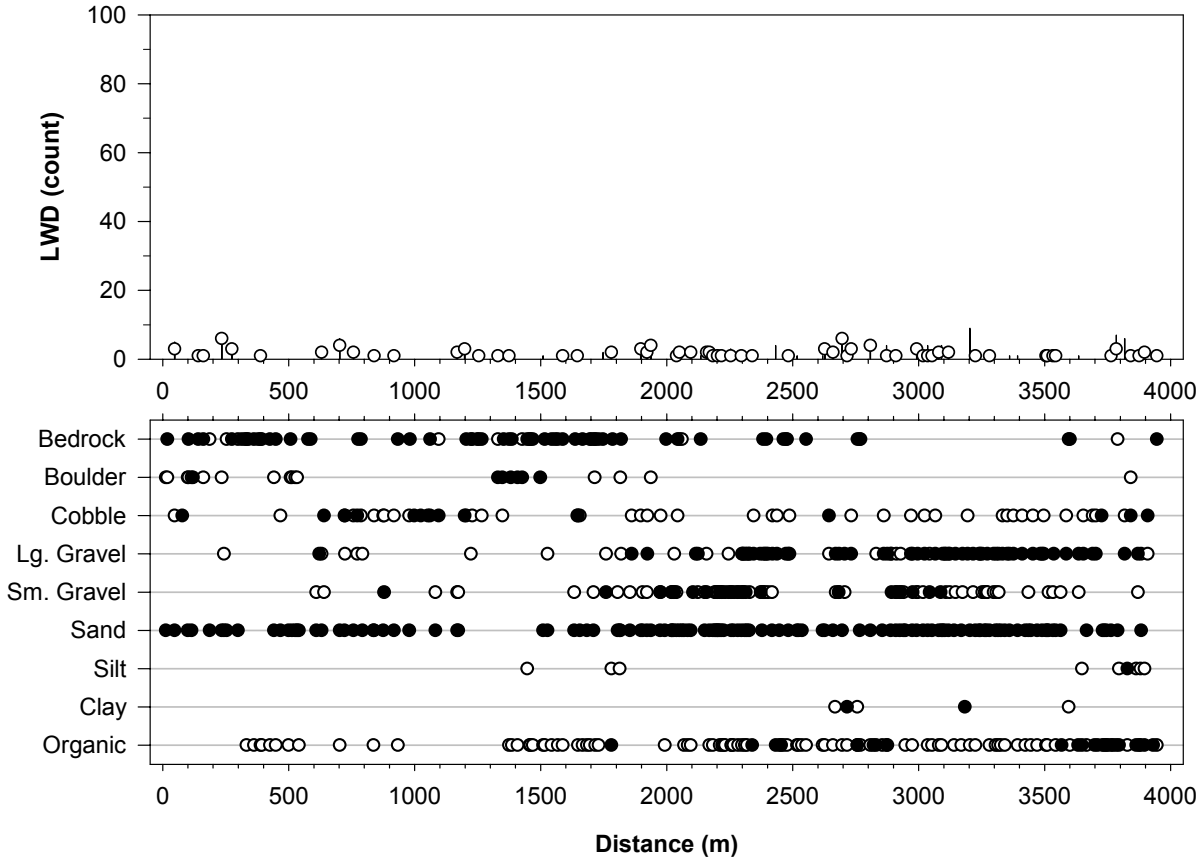


LWD per kilometer in Rock Creek, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Rock Creek during BVET habitat survey, summer 2001. Distance is meters from start of survey.

Stream Feature	Distance (m)	Width (m)	Comments
Shock Site	314.7		start site 1
Shock Site	441.0		end site 1
Tributary	576.0		on left
Tributary	792.0		on right
Tributary	1330.0		on right
Tributary	1509.0		on left; major
Shock Site	1904.0		start site 2
Shock Site	1995.0		end site 2
Tributary	1923.0		on right
Tributary	2382.0		on right
Tributary	2553.0		on right
Tributary	2808.0		on right
Shock Site	3023.0		start site 3
Shock Site	3140.0		end site 3
Tributary	3216.0		on left



Distribution and abundance of LWD and distribution of substrates in Rock Creek, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

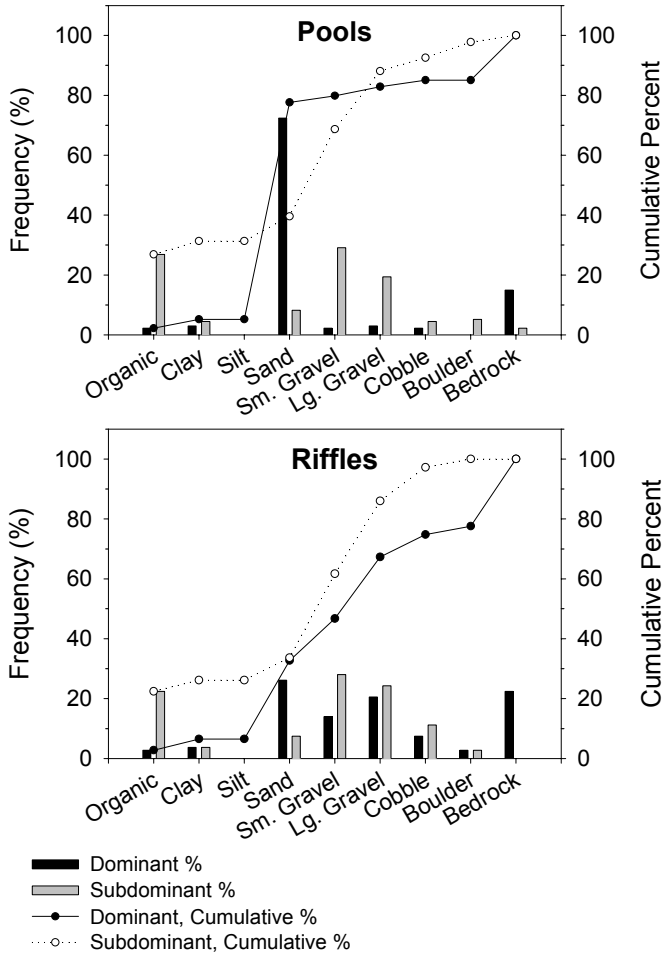
Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.

Stream:	**Tributary 1 - Rock Creek**
District:	Long Cane
USGS Quadrangle:	Colliers
Survey Date:	06/18/01
Downstream Starting Point:	Shown as intermittent tributary that forks to left and crosses road 641 south of intersection of roads 641 and L308-1 on USGS quadrangle map
Total Distance Surveyed (km):	2.6

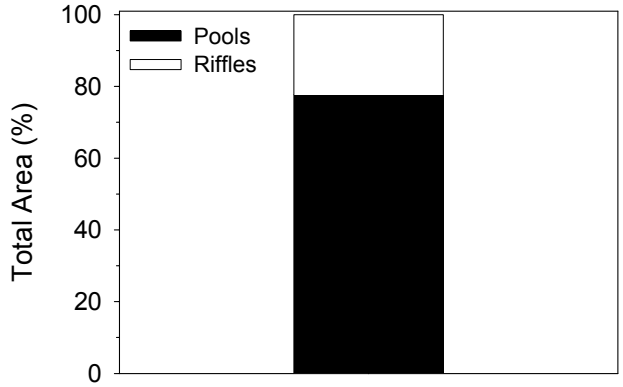
	Pools	**Riffles**
Percent of Total Stream Area:	78	22
Total Area (m^2):	4462±1034	1282±417
Correction Factor Applied:	0.93	0.97
Number of Paired Samples:	11	12
Total Count:	134	107
Number per km:	52	42
Mean Area (m^2):	33	12
Mean Maximum Depth (cm):	39	13
Mean Average Depth (cm):	23	6
Mean Residual Depth (cm):	17	--
Percent Surveyed as Glides:	9	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	4
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	15
< 5 m long, > 55 cm diameter:	5
> 5 m long, 10 cm – 55 cm diameter:	21
> 5 m long, > 55 cm diameter:	27
Total:	68

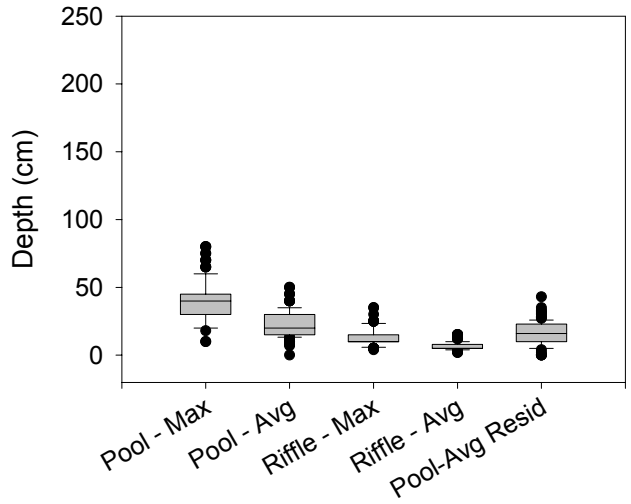
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	3	3	21
Maximum	5	20	23
75th Percentile	4	3	22
Median	4	2	21
25th Percentile	3	1	20
Minumum	2	1	20
Sample Size	23	25	6



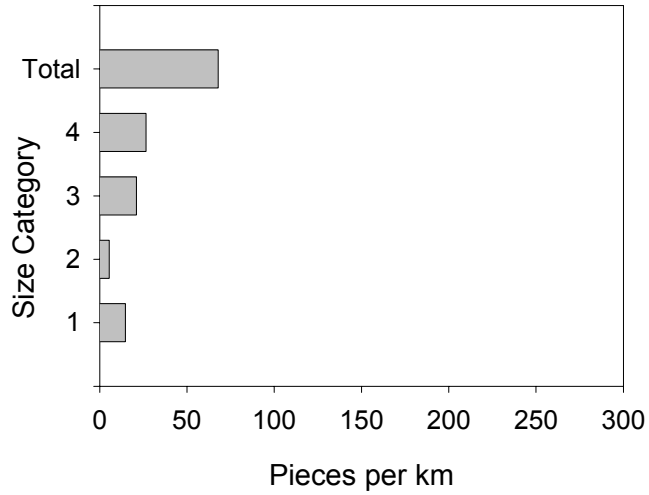
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Tributary 1 of Rock Creek, summer 2001.



Estimated area of Tributary 1 of Rock Creek in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Tributary 1 of Rock Creek, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

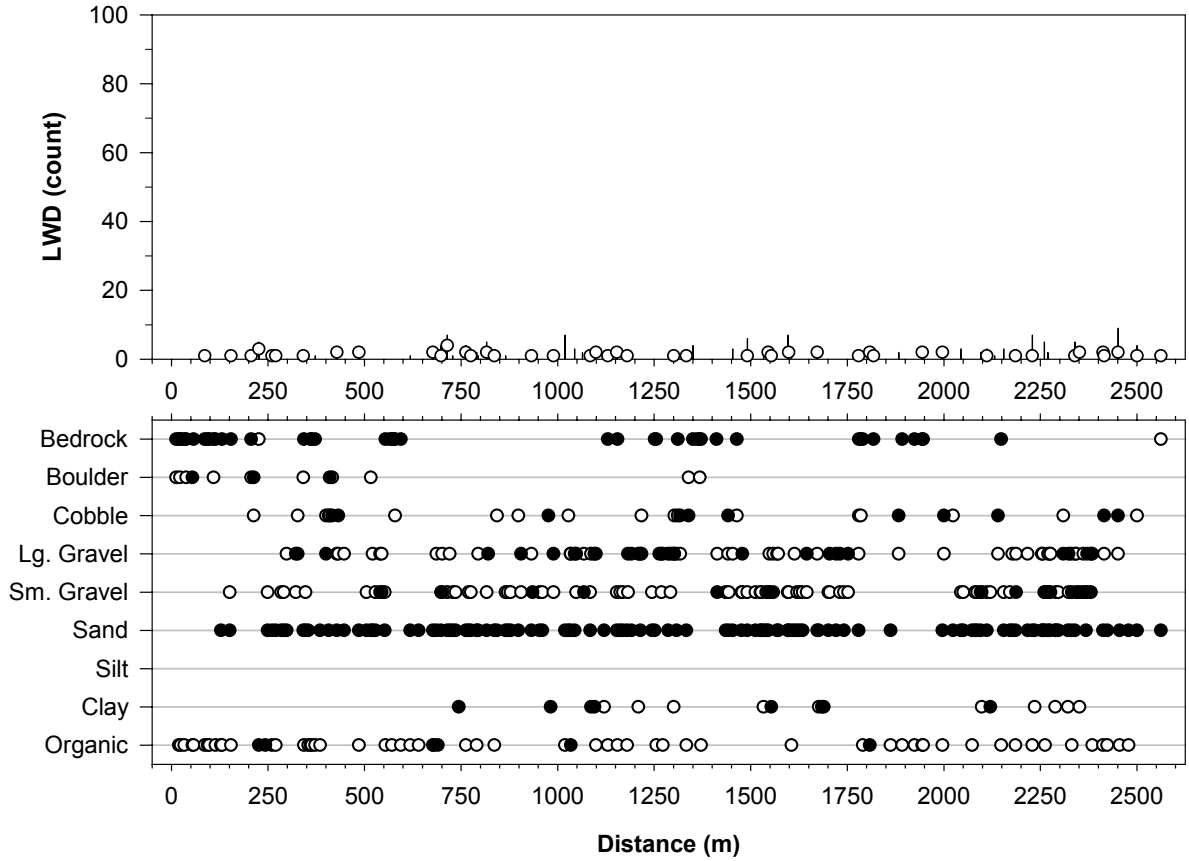


LWD per kilometer in Tributary 1 of Rock Creek, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Tributary 1 of Rock Creek during BVET habitat survey, summer 2001. Distance is meters from start of survey.

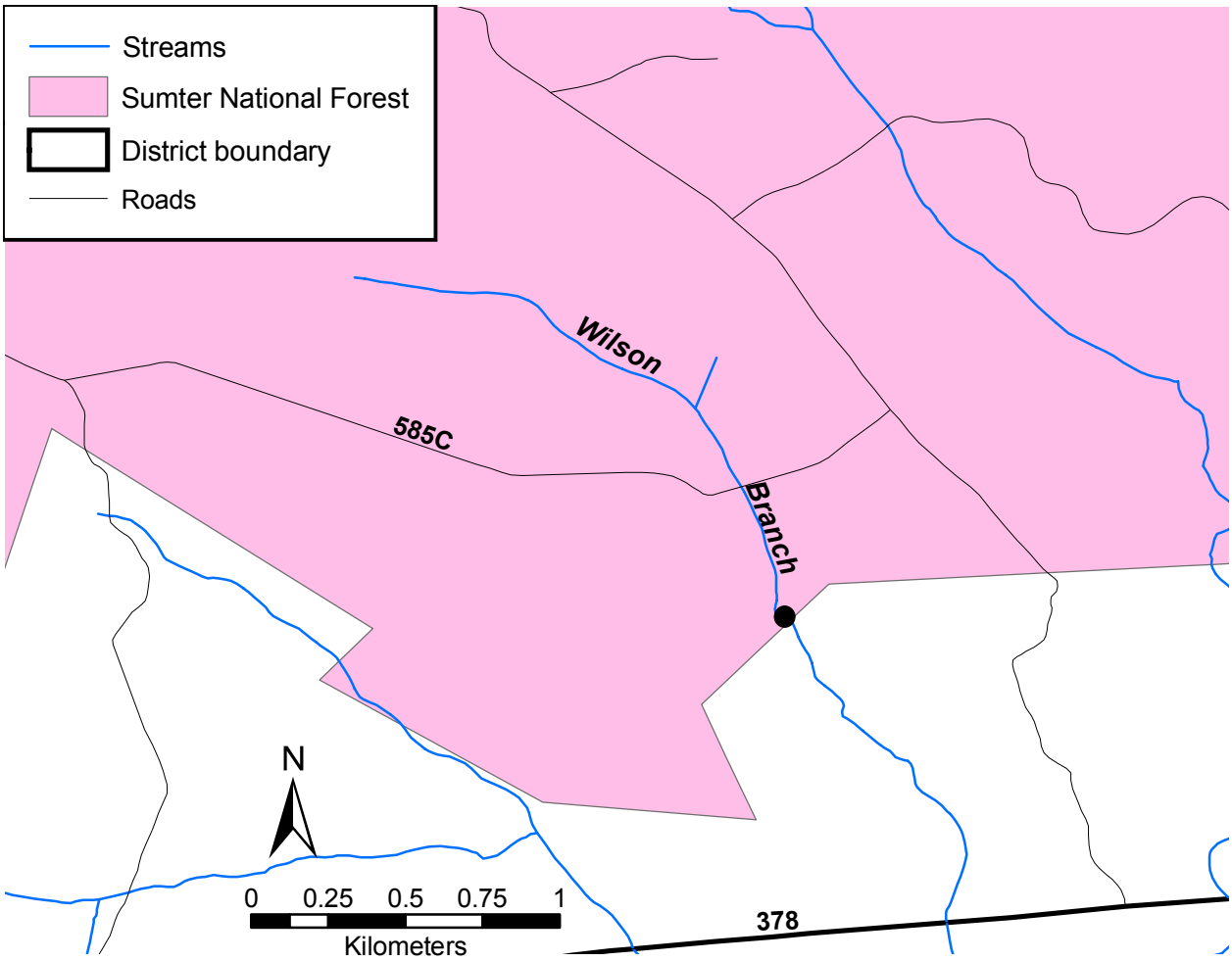
Stream Feature	Distance (m)	Width (m)	Comments
Tributary	932.0		on right
Tributary	1162.0		on left
Tributary	1525.0		on left
Tributary	2073.0		on left - even split
Tributary	2081.0		even split



Distribution and abundance of LWD and distribution of substrates in Tributary 1 of Rock Creek, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded).

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.



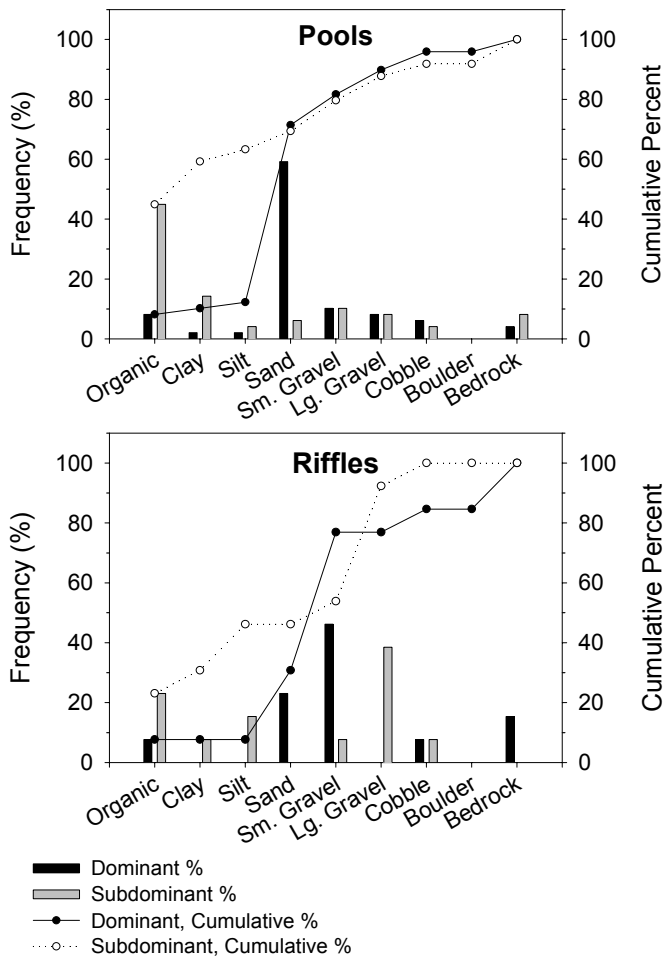
Location of stream habitat survey starting point (closed circle) for Wilson Branch, summer 2001.

Stream:	**Wilson Branch**
District:	Long Cane
USGS Quadrangle:	Limestone
Survey Date:	06/28/01
Downstream Starting Point:	Forest boundary south of road 585C
Total Distance Surveyed (km):	1.1

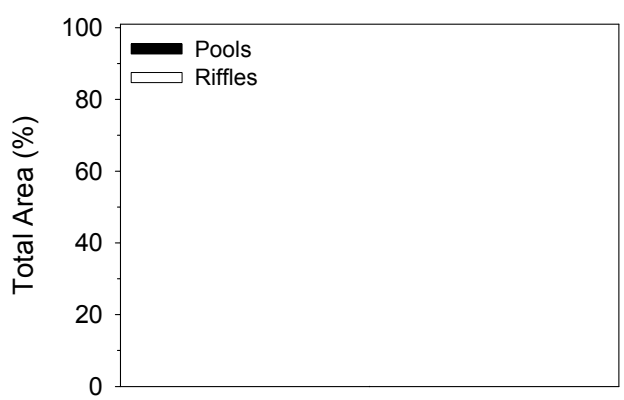
	Pools	**Riffles**
Percent of Total Stream Area:	--	--
Total Area (m^2):	1419±236	-- ± --
Correction Factor Applied:	0.91	--
Number of Paired Samples:	6	0
Total Count:	49	13
Number per km:	44	12
Mean Area (m^2):	29	--
Mean Maximum Depth (cm):	31	8
Mean Average Depth (cm):	17	4
Mean Residual Depth (cm):	15	--
Percent Surveyed as Glides:	8	--
Percent Surveyed as Runs:	--	0
Percent Surveyed as Cascades:	--	0
Percent with Substrate > 35% Embedded:	--	--

Large Woody Debris Size	**Pieces per km**
< 5 m long, 10 cm – 55 cm diameter:	11
< 5 m long, > 55 cm diameter:	12
> 5 m long, 10 cm – 55 cm diameter:	13
> 5 m long, > 55 cm diameter:	29
Total:	64

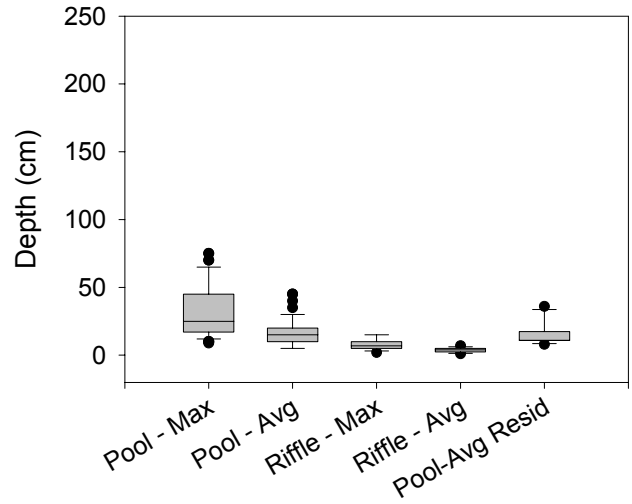
	Bankfull Width (m)	**Gradient (%)**	**Water Temperature (C)**
Mean	3	1	22
Maximum	3	2	23
75th Percentile	3	1	23
Median	3	1	22
25th Percentile	3	1	22
Minumum	2	1	21
Sample Size	6	6	2



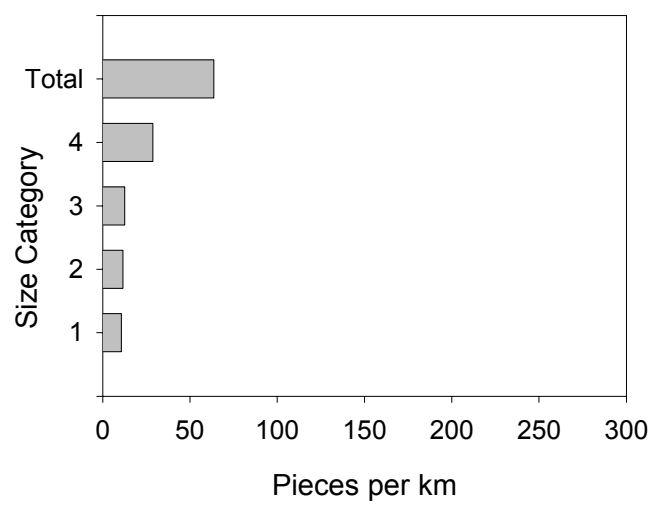
Frequency (percent) and cumulative percent of dominant and subdominant substrate occurrence for pools and riffles in Wilson Branch, summer 2001.



Estimated area of Wilson Branch in pools and riffles as calculated using BVET techniques, summer 2001.



Maximum and average depths and residual pool depths for pools and riffles in Wilson Branch, summer 2001. The top and bottom of the boxes represent the 25th and 75th percentiles, the bar in the center of the box represents the median, whiskers represent the 10th and 90th percentiles, and closed circles represent the entire range of the data.

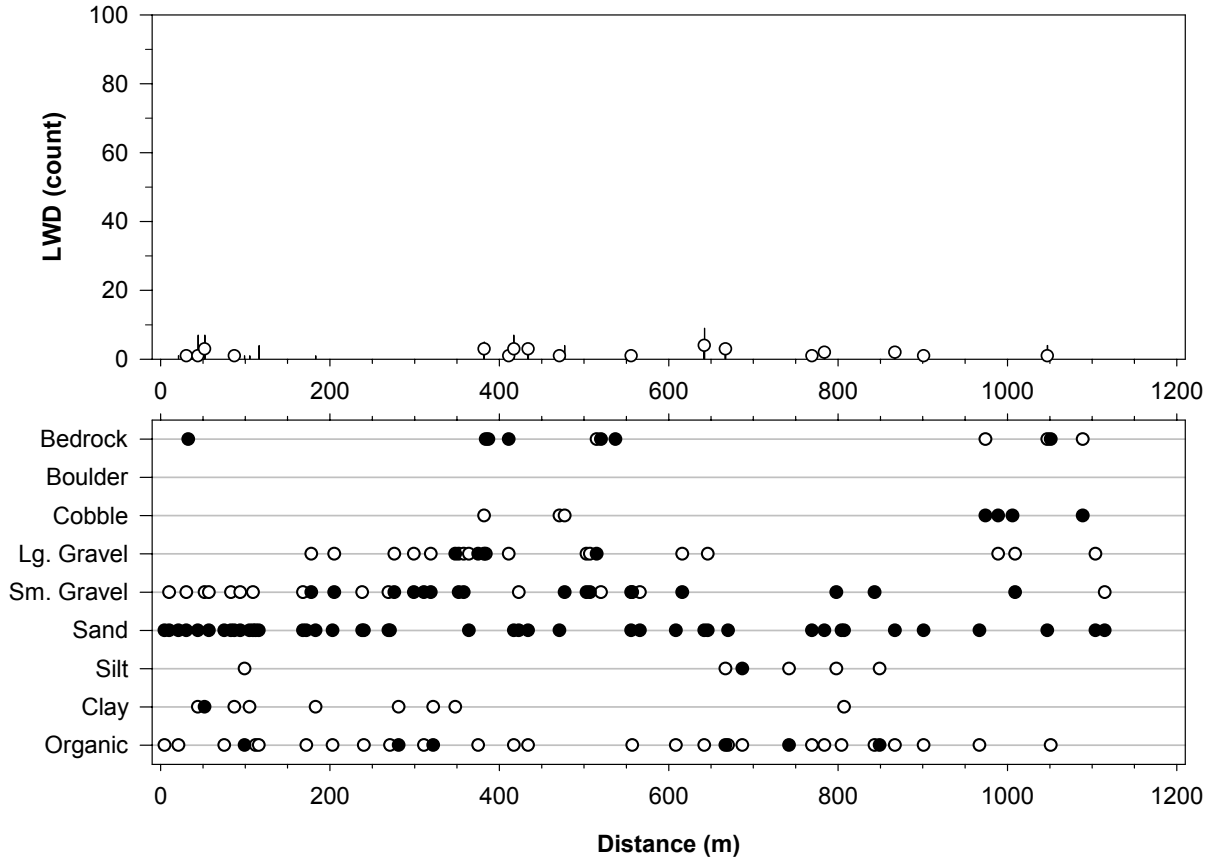


LWD per kilometer in Wilson Branch, summer 2001. Y-axis labels are LWD size classes described below.

Size 1: < 5 m long, 10-55 cm diameter
Size 2: <5 m long, > 55 cm diameter
Size 3: > 5 m long, 10-55 cm diameter
Size 4: > 5 m long, > 55 cm diameter

Stream features found on Wilson Branch during BVET habitat survey, summer 2001. Distance is meters from start of survey.

Stream Feature	Distance (m)	Width (m)	Comments
Tributary	75.0		located between 2 distances
Tributary	168.0		
Tributary	299.0		
Tributary	338.0		
Tributary	358.0		
Tributary	670.0		
Tributary	1006.0		



Distribution and abundance of LWD and distribution of substrates in Wilson Branch, summer 2001. LWD and substrate were recorded for each habitat unit in the stream. X-axis indicates distance upstream from (not recorded)

LWD figure: Vertical bars represent total count of LWD (all sizes). Open circles represent the amount of the total LWD that was >5 m in length, >55 cm in diameter (size 4 only).

Substrate figure: Closed circles are dominant substrates, open circles are subdominant substrates. See Appendix A for substrate sizes.

Appendix C: Electrofishing Results

Enoree District 123
McCluney Branch, site 01 124
McCluney Branch, site 02 125
Pattersons Branch, site 01 126
Pattersons Branch, site 02 127
Pattersons Branch, site 03 128
Sispring Branch, site 02 129
Sispring Branch, site 03 130
Sparks Creek, site 01 131
Sparks Creek, site 02 132
Sparks Creek, site 03 133
UT Clarks Creek, site 01 134
UT Clarks Creek, site 02 135
UT Clarks Creek, site 03 136
UT Tyger River, site 01 137
UT Tyger River, site 02 138
UT Tyger River, site 03 139

Long Cane District 140
Big Curltail Creek, site 01 140
Big Curltail Creek, site 02 141
Big Curltail Creek, site 03 142
Bold Branch, site 01 143
Bold Branch, site 02 144
Bold Branch, site 03 145
Byrd Creek, site 01 146
Byrd Creek, site 02 147
Byrd Creek, site 03 148
Camp Branch, site 01 149
Camp Branch, site 02 150
Camp Branch, site 03 151
Candy Branch, site 01 152
Candy Branch, site 02 153
Candy Branch, site 03 154
Lick Fork, site 01 155
Lick Fork, site 02 156
Lick Fork, site 03 157
Miller Branch, site 01 158
Pike Branch, site 01 159
Rock Creek, site 01 160
Rock Creek, site 02 161
Rock Creek, site 03 162
Wilson Branch, site 01 163
Wilson Branch, site 02 164
Wilson Branch, site 03 165

How to interpret tables in Appendix C

Example Fork, site 01, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Species 1	7	1	2	10	-	-	-	-	-	-	-	-	-
Species 2	76	55	13	163	-	-	-	-	-	-	-	-	-
Species 3	10	1	0	11	15	17	14	100	115	107	50	70	60
Species 4	1	1	0	2	-	-	-	-	-	-	-	-	-

This table shows three-pass electrofishing results for site 01 on the stream named Example Fork. For species 1, there were 7 individuals captured on pass 1, 1 on pass 2 and 2 on pass 3. No individuals of species 1 were measured or weighed. Kwak (1991) could not be used to calculate a population estimate here since fewer individuals were not captured on each successive pass. The population estimate for species 1 is simply the sum of passes 1-3. Kwak (1991) was used to calculate a population estimate for species 2 and species 3, but not species 4. Only species 3 was measured or weighed. The minimum length is the length of the smallest individual on each respective pass. The maximum length is the length of the largest individual on each respective pass. The weight is the batch weight of all individuals captured on each respective pass.

Enoree District

McCluney Branch, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	13	0	0	13	-	-	-	-	-	-	-	-	-
Chub Sp. YOY	76	55	13	163	-	-	-	-	-	-	-	-	-
Creek chub	10	1	0	11	-	-	-	-	-	-	-	-	-
Creek chubsucker	1	1	0	2	-	-	-	-	-	-	-	-	-
Eastern mosquitofish	2	1	2	5	-	-	-	-	-	-	-	-	-
Green sunfish	1	0	0	1	-	-	-	-	-	-	-	-	-
Redbreast sunfish	1	0	0	1	-	-	-	-	-	-	-	-	-
Rosyside dace YOY	7	4	1	13	-	-	-	-	-	-	-	-	-

McCluney Branch, site 01, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluegill	1	0	0	1	97	-	-	-	-	-	16	-	-
Creek chub	31	3	2	36	48	44	61	110	47	63	107	6	7
Creek chubsucker	1	0	0	1	71	-	-	-	-	-	5	-	-
Eastern mosquitofish	3	3	1	7	71	31	53	58	45	-	4	4	2
Redbreast sunfish	0	2	0	2	-	45	-	-	93	-	-	18	-
Rosyside dace	1	0	0	1	71	-	-	-	-	-	4	-	-

McCluney Branch, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	0	1	0	1	-	-	-	-	-	-	-	-	-
Chub Sp. YOY	109	34	11	159	-	-	-	-	-	-	-	-	-
Creek chub	24	9	2	36	-	-	-	-	-	-	-	-	-
Creek chubsucker	22	4	10	36	-	-	-	-	-	-	-	-	-

McCluney Branch, site 02, 2002 – not visited

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Pattersons Branch, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	53	13	16	82	-	-	-	-	-	-	-	-	-
Chub Sp. YOY	35	15	0	51	-	-	-	-	-	-	-	-	-
Creek chub	43	15	13	82	-	-	-	-	-	-	-	-	-
Creek chubsucker	4	1	1	6	-	-	-	-	-	-	-	-	-
Highback chub	39	22	5	71	-	-	-	-	-	-	-	-	-
Redbreast sunfish	26	11	0	38	-	-	-	-	-	-	-	-	-
Yellowfin shiner	43	20	10	82	-	-	-	-	-	-	-	-	-

Pattersons Branch, site 01, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	76	50	32	218	33	37	33	111	92	109	122	87	46
Chub Sp. YOY	15	51	35	101	16	15	16	26	29	30	3	8	2
Creek chub	27	25	8	78	48	45	52	73	87	91	58	66	32
Creek chubsucker	3	4	1	8	69	75	93	135	95	-	40	30	10
Highback chub	68	60	16	176	37	38	35	63	64	62	98	66	14
Redbreast sunfish	28	20	8	69	34	34	36	120	107	91	108	94	34
Yellow bullhead	0	0	1	1	-	-	135	-	-	-	-	-	36
Yellowfin shiner	65	44	8	128	31	32	36	52	56	44	34	28	4

Pattersons Branch, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	76	34	9	126	-	-	-	-	-	-	-	-	-
Chub Sp. YOY	15	0	3	18	-	-	-	-	-	-	-	-	-
Creek chub	42	14	11	75	-	-	-	-	-	-	-	-	-
Highback chub	79	4	2	85	-	-	-	-	-	-	-	-	-
Redbreast sunfish	36	16	8	67	-	-	-	-	-	-	-	-	-
Striped jumprock	0	1	0	1	-	-	-	-	-	-	-	-	-
Yellowfin shiner	54	20	11	92	-	-	-	-	-	-	-	-	-

Pattersons Branch, site 02, 2002 – not visited

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Pattersons Branch, site 03, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	38	18	12	81	-	-	-	-	-	-	-	-	-
Chub Sp. YOY	1	1	0	2	-	-	-	-	-	-	-	-	-
Creek chub	32	16	4	56	-	-	-	-	-	-	-	-	-
Highback chub	15	11	4	36	-	-	-	-	-	-	-	-	-
Pumpkinseed	21	3	1	25	-	-	-	-	-	-	-	-	-
Redbreast sunfish	1	0	0	1	-	-	-	-	-	-	-	-	-
Sunfish Hybrid	9	12	11	32	-	-	-	-	-	-	-	-	-
Yellowfin shiner	46	12	7	68	-	-	-	-	-	-	-	-	-

Pattersons Branch, site 03, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	47	22	9	86	43	40	41	92	93	75	114	70	20
Chub Sp. YOY	10	4	2	17	17	21	22	30	25	26	2	<1	<1
Creek chub	25	17	8	63	43	46	50	82	110	89	68	70	22
Highback chub	45	12	7	67	41	36	39	56	60	50	48	10	6
Redbreast sunfish	38	17	11	77	35	31	32	105	87	50	166	40	12
Yellowfin shiner	39	13	3	57	42	42	51	63	61	60	58	18	6

Sispring Branch, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	42	15	9	72	-	-	-	-	-	-	-	-	-
Chub Sp. YOY	12	0	0	12	-	-	-	-	-	-	-	-	-
Creek chub	63	11	1	75	-	-	-	-	-	-	-	-	-
Creek chubsucker	4	0	0	4	-	-	-	-	-	-	-	-	-
Highback chub	4	3	1	10	-	-	-	-	-	-	-	-	-
Redbreast sunfish	7	6	0	14	-	-	-	-	-	-	-	-	-
Sunfish sp. YOY	1	0	1	2	-	-	-	-	-	-	-	-	-
Yellowfin shiner	36	7	1	44	-	-	-	-	-	-	-	-	-

Sispring Branch, site 02, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	6	13	7	26	50	45	56	98	92	94	45	54	38
Chub Sp. YOY	20	31	35	86	20	17	17	30	31	29	5	6	4
Creek chub	20	30	12	62	55	52	57	114	108	95	110	74	64
Creek chubsucker	7	1	1	9	70	68	70	87	-	-	38	4	6
Highback chub	1	1	1	3	67	65	39	-	-	-	1	4	1
Redbreast sunfish	21	7	2	31	36	40	28	113	86	52	118	38	4
Tessellated darter YOY	1	0	0	1	15	-	-	-	-	-	<1	-	-
Yellowfin shiner	1	0	0	1	46	-	-	-	-	-	1	-	-

Sispring Branch, site 03, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	34	8	10	52	-	-	-	-	-	-	-	-	-
Chub Sp. YOY	2	35	15	52	-	-	-	-	-	-	-	-	-
Creek chub	16	1	1	18	-	-	-	-	-	-	-	-	-
Creek chubsucker	4	0	0	4	-	-	-	-	-	-	-	-	-
Highback chub	13	11	0	26	-	-	-	-	-	-	-	-	-
Redbreast sunfish	27	6	0	33	-	-	-	-	-	-	-	-	-
Yellow bullhead	1	0	0	1	-	-	-	-	-	-	-	-	-
Yellowfin shiner	1	1	0	2	-	-	-	-	-	-	-	-	-

Sispring Branch, site 03, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	12	3	0	15	65	62		99	70		72	10	
Chub Sp. YOY	212	67	32	327	14	10	12	30	30	27	31	10	6
Creek chub	18	6	3	29	52	51	56	124	94	65	102	22	8
Highback chub	2	0	0	2	59	-	-	59	-	-	2	-	-
Redbreast sunfish	12	0	1	13	30	-	36	95	-	-	82	-	1
Yellowfin shiner	1	0	0	1	49	-	-	-	-	-	1	-	-

Sparks Creek, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	6	2	1	10	-	-	-	-	-	-	-	-	-
Creek chub	5	0	0	5	-	-	-	-	-	-	-	-	-
Highback chub	76	1	0	77	-	-	-	-	-	-	-	-	-
Rosyside dace	1	1	0	2	-	-	-	-	-	-	-	-	-

Sparks Creek, site 01, 2002 – not visited

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Sparks Creek, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	41	8	7	58	-	-	-	-	-	-	-	-	-
Creek chub	21	7	2	31	-	-	-	-	-	-	-	-	-
Highback chub	2	3	3	8	-	-	-	-	-	-	-	-	-
Pumpkinseed	5	1	0	6	-	-	-	-	-	-	-	-	-
Redfin pickerel	1	0	0	1	-	-	-	-	-	-	-	-	-
Rosyside dace	1	0	1	2	-	-	-	-	-	-	-	-	-
Tessellated darter	5	0	0	5	-	-	-	-	-	-	-	-	-
Yellowfin shiner	44	12	8	68	-	-	-	-	-	-	-	-	-

Sparks Creek, site 02, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	29	20	3	57	32	36	48	101	100	80	88	72	10
Chub Sp. YOY	99	120	58	277	12	13	14	38	39	31	22	24	10
Creek chub	25	23	7	70	38	53	56	100	91	79	82	80	24
Redbreast sunfish	5	2	1	9	37	26	41	70	27	-	12	1	1
Tessellated darter	0	1	0	1	-	47	-	-	-	-	-	2	-
Yellowfin shiner	1	0	1	2	47	-	30	-	-	-	1	-	1

Sparks Creek, site 03, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	65	38	41	144	-	-	-	-	-	-	-	-	-
Creek chub	40	15	19	74	-	-	-	-	-	-	-	-	-
Green sunfish	3	1	1	5	-	-	-	-	-	-	-	-	-
Highback chub	28	5	4	38	-	-	-	-	-	-	-	-	-
Pumpkinseed	0	2	1	3	-	-	-	-	-	-	-	-	-
Rosyside dace	1	0	0	1	-	-	-	-	-	-	-	-	-
Striped jumprock	2	1	0	3	-	-	-	-	-	-	-	-	-
Yellowfin shiner	82	50	44	280	-	-	-	-	-	-	-	-	-

Sparks Creek, site 03, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	102	30	10	146	35	41	39	101	95	95	208	62	24
Chub Sp. YOY	68	35	6	115	17	16	17	32	30	30	12	4	1
Creek chub	77	25	3	107	40	47	57	81	109	73	174	60	10
Redbreast sunfish	12	5	2	20	32	51	32	94	85	69	58	32	8
Tessellated darter	14	1	3	18	20	46	63	71		72	24	1	10
Yellowfin shiner	38	3	2	43	37	41	42	62	46	43	46	4	2

UT Clarks Creek, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	74	27	23	144	-	-	-	-	-	-	-	-	-
Chub Sp. YOY	0	6	1	7	-	-	-	-	-	-	-	-	-
Creek chub	4	1	1	6	-	-	-	-	-	-	-	-	-
Eastern mosquitofish	1	0	0	1	-	-	-	-	-	-	-	-	-
Rosyside dace	2	3	1	6	-	-	-	-	-	-	-	-	-
Yellowfin shiner	2	1	2	5	-	-	-	-	-	-	-	-	-

UT Clarks Creek, site 01, 2002 – not visited

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

UT Clarks Creek, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluegill	3	0	0	3	-	-	-	-	-	-	-	-	-
Bluehead chub	36	10	2	49	-	-	-	-	-	-	-	-	-
Chub Sp. YOY	1	0	0	1	-	-	-	-	-	-	-	-	-
Creek chub	45	9	1	55	-	-	-	-	-	-	-	-	-
Highback chub	13	2	0	15	-	-	-	-	-	-	-	-	-
Pumpkinseed	9	5	0	14	-	-	-	-	-	-	-	-	-
Redbreast sunfish	3	0	0	3	-	-	-	-	-	-	-	-	-
Rosyside dace	42	7	6	57	-	-	-	-	-	-	-	-	-
Tessellated darter	4	3	0	7	-	-	-	-	-	-	-	-	-
Yellowfin shiner	45	11	0	56	-	-	-	-	-	-	-	-	-

UT Clarks Creek, site 02, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	21	16	3	45	50	41	49	96	71	110	110	40	18
Chub Sp. YOY	2	1	2	5	-	-	-	-	-	-	-	-	-
Creek chub	27	4	1	32	50	47	76	141	80	-	156	54	2
Eastern mosquitofish	3	0	0	3	31	-	-	31	-	-	1	-	-
Highback chub	10	3	1	14	46	50	55	58	54	-	10	4	2
Redbreast sunfish	28	7	5	42	34	59	36	90	130	84	18	84	23
Rosyside dace	32	12	0	45	46	55	-	76	75	-	88	34	-
Tessellated darter	6	4	2	15	45	34	46	63	64	47	8	6	4
Yellowfin shiner	22	6	1	29	38	39	40	59	56	-	30	12	1

UT Clarks Creek, site 03, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	43	26	10	91	-	-	-	-	-	-	-	-	-
Creek chub	39	9	6	56	-	-	-	-	-	-	-	-	-
Highback chub	38	13	1	53	-	-	-	-	-	-	-	-	-
Pumpkinseed	14	6	4	28	-	-	-	-	-	-	-	-	-
Redbreast sunfish	1	0	0	1	-	-	-	-	-	-	-	-	-
Rosyside dace	14	1	0	15	-	-	-	-	-	-	-	-	-
Tessellated darter	5	1	1	7	-	-	-	-	-	-	-	-	-
Yellowfin shiner	38	19	12	83	-	-	-	-	-	-	-	-	-

UT Clarks Creek, site 03, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	77	15	10	105	32	37	35	93	64	82	154	12	15
Chub Sp. YOY	5	3	0	8	-	-	-	-	-	-	-	-	-
Creek chub	47	8	2	57	43	40	41	130	71	80	167	19	6
Highback chub	41	12	4	59	35	43	47	54	54	51	40	13	4
Redbreast sunfish	29	7	2	39	28	30	55	91	117	55	101	45	5
Rosyside dace	10	8	0	19	57	52	-	76	69	-	27	13	-
Tessellated darter	1	0	1	2	44	-	62	-	-	-	2	-	2
Yellowfin shiner	68	8	4	80	30	34	36	64	56	50	65	5	3

UT Tyger River, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	28	6	6	40	-	-	-	-	-	-	-	-	-
Creek chub	0	1	0	1	-	-	-	-	-	-	-	-	-
Pumpkinseed	4	0	0	4	-	-	-	-	-	-	-	-	-
Redbreast sunfish	1	0	0	1	-	-	-	-	-	-	-	-	-
Redfin pickerel	2	2	0	4	-	-	-	-	-	-	-	-	-
Tessellated darter	1	0	0	1	-	-	-	-	-	-	-	-	-

UT Tyger River, site 01, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Chub Sp. YOY	13	0	0	13	25	-	-	29	-	-	3	-	-
Tessellated darter	1	0	0	1	60	-	-	-	-	-	2	-	-

UT Tyger River, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	27	24	0	55	-	-	-	-	-	-	-	-	-
Chain pickerel	2	0	0	2	-	-	-	-	-	-	-	-	-
Chub Sp. YOY	0	1	3	4	-	-	-	-	-	-	-	-	-
Creek chub	4	1	1	6	-	-	-	-	-	-	-	-	-
Green sunfish	1	0	0	1	-	-	-	-	-	-	-	-	-
Highback chub	6	0	0	6	-	-	-	-	-	-	-	-	-
Yellowfin shiner	1	2	3	6	-	-	-	-	-	-	-	-	-

UT Tyger River, site 02, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	0	1	0	1	-	52	-	-	-	-	-	0.5	-
Chain Pickerel	6	6	2	14	62	63	63	79	82	72	16	18	8
Chub Sp. YOY	101	12	4	117	14	24	25	29	26	-	18	4	1
Creek chub	8	1	0	9	52	58	-	83	-	-	36	2.5	-
Redbreast sunfish	0	1	1	2	-	107	100	-	-	-	-	28	20

UT Tyger River, site 03, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	3	5	7	15	-	-	-	-	-	-	-	-	-
Creek chub	51	32	5	95	-	-	-	-	-	-	-	-	-
Highback chub	8	5	0	14	-	-	-	-	-	-	-	-	-
Rosyside dace	7	2	0	9	-	-	-	-	-	-	-	-	-
Spottail shiner	2	0	0	2	-	-	-	-	-	-	-	-	-
Yellowfin shiner	31	0	2	33	-	-	-	-	-	-	-	-	-

UT Tyger River, site 03, 2002 – not visited

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Long Cane District

Big Curltail Creek, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	63			-	-			-			-		
Creek chub	6			-	-			-			-		
Pumpkinseed	2			-	-			-			-		
Rosyside dace	4			-	-			-			-		
Spottail shiner	1			-	-			-			-		
Striped jumprock	1			-	-			-			-		
Yellowfin shiner	46			-	-			-			-		

Big Curltail Creek, site 01, 2002 – not visited

	Pass (# captured)			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Big Curltail Creek, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Blackbanded darter	5			-	-			-			-		
Bluehead chub	99			-	-			-			-		
Creek chub	5			-	-			-			-		
Margined madtom	1			-	-			-			-		
Pumpkinseed	1			-	-			-			-		
Rosyside dace	2			-	-			-			-		
Yellow bullhead	1			-	-			-			-		
Yellowfin shiner	47			-	-			-			-		

Big Curltail Creek, site 02, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Blackbanded darter	2	0	0	2	58	-	-	65	-	-	4	-	-
Bluegill	3	0	0	3	65	-	-	78	-	-	12	-	-
Bluehead chub	213	65	26	316	35	36	25	115	131	86	456	177	45
Chub Sp. YOY	19	4	8	31	15	28	-	28	30	-	2	1	-
Creek chub	79	23	19	132	25	34	25	85	79	80	174	46	28
Margined Madtom	1	0	2	3	-	-	50	61	-	70	3	-	5
Northern hog sucker	1	0	0	1	-	-	-	90	-	-	8	-	-
Pirate perch	0	1	0	1	-	-	-	-	30	-	-	1	-
Redbreast sunfish	1	0	0	1	-	-	-	51	-	-	2	-	-
Spottail shiner	1	0	0	1	-	-	-	80	-	-	3	-	-
Tessellated darter	2	2	1	5	56	53	60	59	55	-	4	3	2
Yellowfin shiner	172	74	25	289	32	23	41	76	69	63	250	90	34

Big Curltail Creek, site 03, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluegill	3			-	-			-			-		
Bluehead chub	11			-	-			-			-		
Pirate perch	1			-	-			-			-		
Redeye bass	1			-	-			-			-		
Spottail shiner	3			-	-			-			-		
Yellow bullhead	3			-	-			-			-		
Yellow perch	4			-	-			-			-		
Yellowfin shiner	10			-	-			-			-		

Big Curltail Creek, site 03, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Blackbanded darter	3	2	0	5	59	59	-	61	72	-	8	4	-
Bluegill	17	7	5	34	40	50	46	135	85	94	122	32	45
Bluehead chub	215	94	43	386	34	33	31	131	118	114	571	268	100
Christmas darter	1	0	0	1	-	-	-	57	-	-	3	-	-
Chub Sp. YOY	18	11	4	38	24	22	20	27	37	30	2	4	2
Creek chub	30	7	2	40	35	30	34	83	79	52	58	16	1
Creek chubsucker	2	0	0	2	45	-	-	114	-	-	18	-	-
Eastern mosquitofish	10	1	0	11	30	-	-	45	45	-	10	< 1	-
Flat bullhead	1	0	0	1	-	-	-	60	-	-	2	-	-
Green sunfish	0	1	1	2	-	-	-	-	87	65	-	8	4
Largemouth bass	0	0	1	1	-	-	-	-	-	45	-	-	3
Margined Madtom	3	2	5	10	62	57	65	117	115	140	22	18	78
Northern hog sucker	0	3	1	4	-	47	-	-	105	33	-	18	< 1
Redbreast sunfish	9	3	2	15	46	41	54	68	58	57	22	8	5
Rosyface chub	7	3	0	10	60	62	-	70	68	-	18	8	-
Tessellated darter	5	4	0	10	49	50	-	69	61	-	10	6	-
Yellow bullhead	1	0	0	1	-	-	-	179	-	-	70	-	-
Yellow Perch	9	2	0	11	85	90	-	101	97	-	42	6	-
Yellowfin shiner	365	175	58	647	42	41	40	73	68	63	570	278	87

Bold Branch, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluegill	4	-	-	-	-	-	-	-	-	-	-	-	-
Bluehead chub	6	-	-	-	-	-	-	-	-	-	-	-	-
Creek chub	25	-	-	-	-	-	-	-	-	-	-	-	-
Green sunfish	1	-	-	-	-	-	-	-	-	-	-	-	-
Pumpkinseed	2	-	-	-	-	-	-	-	-	-	-	-	-
Redbreast sunfish	4	1	0	5	-	-	-	-	-	-	-	-	-
Striped jumprock	1	0	1	2	-	-	-	-	-	-	-	-	-
Yellow bullhead	1	-	-	-	-	-	-	-	-	-	-	-	-
Yellowfin shiner	25	-	-	-	-	-	-	-	-	-	-	-	-

Bold Branch, site 01, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	36	6	2	44	31	52	58	97	64	60	75	13	4
Christmas darter	2	0	0	2	28	-	-	28	-	-	1	-	-
Christmas darter YOY	0	2	2	4	-	16	22	-	23	22	-	-	-
Chub Sp. YOY	15	3	0	18	-	-	-	-	-	-	-	-	-
Creek chub	144	31	20	201	30	25	35	121	79	81	292	59	20
Creek chubsucker YOY	2	0	2	4	28	-	21	30	-	34	1	-	1
Green sunfish	5	0	1	6	67	-	-	106	-	53	56	-	2
Redbreast sunfish	1	0	0	1	-	-	-	98	-	-	16	-	-
Yellowfin shiner	18	2	0	20	23	23	-	63	67	-	6	3	-
Yellowfin shiner YOY	0	0	2	2	-	-	25	-	-	26	-	-	1

Bold Branch, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	8	-	-	-	-	-	-	-	-	-	-	-	-
Christmas darter	1	-	-	-	-	-	-	-	-	-	-	-	-
Creek chub	20	-	-	-	-	-	-	-	-	-	-	-	-
Green sunfish	2	-	-	-	-	-	-	-	-	-	-	-	-
Pumpkinseed	15	-	-	-	-	-	-	-	-	-	-	-	-
Striped jumprock	8	6	2	19	-	-	-	-	-	-	-	-	-
Yellow bullhead	0	1	0	1	-	-	-	-	-	-	-	-	-
Yellowfin shiner	15	-	-	-	-	-	-	-	-	-	-	-	-

Bold Branch, site 02, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	38	8	7	56	37	43	42	73	64	56	51	11	8
Christmas darter	1	0	0	1	-	-	-	44	-	-	1	-	-
Chub Sp. YOY	49	4	0	53	20	-	-	32	-	-	9	-	-
Creek chub	87	19	14	125	25	30	30	97	108	70	146	55	15
Creek chubsucker	12	2	2	16	30	30	35	123	31	35	23	1	1
Green sunfish	13	0	2	15	41	-	54	115	-	90	53	-	13
Redbreast sunfish	3	2	1	8	38	83	-	99	93	91	20	20	10
Rosyface chub	3	0	0	3	55	-	-	56	-	-	5	-	-
Yellow bullhead	2	3	1	6	116	60	-	176	135	60	77	39	2
Yellowfin shiner	46	16	4	68	35	33	39	65	55	44	41	12	3

Bold Branch, site 03, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Chub Sp. YOY	9	0	0	9	-	-	-	-	-	-	-	-	-

Bold Branch, site 03, 2002, dry

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Byrd Creek, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Golden shiner	3			-	-			-			-		
Green sunfish	3			-	-			-			-		
Pumpkinseed	10			-	-			-			-		
Rosyside dace	1			-	-			-			-		
Warmouth sunfish	2			-	-			-			-		
Yellow bullhead	1			-	-			-			-		

Byrd Creek, site 01, 2002 – not visited

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Byrd Creek, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Brown bullhead	0	1	0	1	-	-	-	-	-	-	-	-	-
Creek chubsucker	52	-	-	-	-	-	-	-	-	-	-	-	-
Golden shiner	16	-	-	-	-	-	-	-	-	-	-	-	-
Green sunfish	23	-	-	-	-	-	-	-	-	-	-	-	-
Pumpkinseed	1	-	-	-	-	-	-	-	-	-	-	-	-
Redbreast sunfish	1	1	0	2	-	-	-	-	-	-	-	-	-
Striped jumprock	0	2	1	3	-	-	-	-	-	-	-	-	-
Sunfish hybrid	2	-	-	-	-	-	-	-	-	-	-	-	-
Yellow bullhead	0	1	0	1	-	-	-	-	-	-	-	-	-

Byrd Creek, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Creek chubsucker	33	6	5	45	27	28	35	40	36	35	13	2	2
Golden shiner	15	9	2	28	22	23	38	44	41	40	6	3	1
Green sunfish	2	1	1	4	88	-	-	101	110	103	29	24	19
Warmouth sunfish	2	0	0	2	132	-	-	142	-	-	103	-	-

Byrd Creek, site 03, 2001 – dry

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Byrd Creek, site 03, 2002 – dry

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Camp Branch, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluegill	1	-	-	-	-	-	-	-	-	-	-	-	-
Bluehead chub	29	-	-	-	-	-	-	-	-	-	-	-	-
Christmas darter	4	-	-	-	-	-	-	-	-	-	-	-	-
Creek chub	14	-	-	-	-	-	-	-	-	-	-	-	-
Creek chubsucker	1	-	-	-	-	-	-	-	-	-	-	-	-
Green sunfish	6	-	-	-	-	-	-	-	-	-	-	-	-
Margined madtom	5	-	-	-	-	-	-	-	-	-	-	-	-
Pirate perch	19	-	-	-	-	-	-	-	-	-	-	-	-
Redbreast sunfish	48	1	0	49	-	-	-	-	-	-	-	-	-
Redeye bass	1	-	-	-	-	-	-	-	-	-	-	-	-
Spottail shiner	1	-	-	-	-	-	-	-	-	-	-	-	-
Striped jumprock	2	3	4	9	-	-	-	-	-	-	-	-	-
Tessellated darter	3	-	-	-	-	-	-	-	-	-	-	-	-
Yellow bullhead	1	-	-	-	-	-	-	-	-	-	-	-	-
Yellowfin shiner	21	-	-	-	-	-	-	-	-	-	-	-	-

Camp Branch, site 01, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Blackbanded darter	4	0	0	4	55	-	-	89	-	-	14	-	-
Bluehead chub	67	25	9	106	26	28	27	114	103	78	197	64	18
Christmas darter	9	6	1	17	40	42	-	53	54	50	8	6	1
Chub Sp. YOY	1	5	0	6	x	x	x	x	x	x	x	x	x
Creek chub	19	9	4	36	25	20	67	119	95	128	66	17	41
Creek chubsucker	3	2	0	5	122	115	-	130	135	-	75	50	-
Dusky shiner	3	1	0	4	54	-	-	58	55	-	4	1	-
Green sunfish	13	2	2	17	66	86	76	129	102	115	170	28	31
Pirate perch	5	4	2	15	60	29	60	86	84	65	24	14	7
Redbreast sunfish	67	27	4	101	34	38	43	110	148	78	394	197	15
Redeye bass	2	2	0	4	91	67	-	135	75	-	35	7	-
Rosyface chub	1	1	0	2	-	-	-	73	59	-	3	1	-
Tessellated darter	1	0	0	1	-	-	-	55	-	-	1	-	-
Yellow bullhead	1	1	0	2	-	-	-	133	151	-	29	41	-
Yellowfin shiner	44	16	9	75	43	36	44	73	73	72	69	20	17

Camp Branch, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluegill	1	-	-	-	-	-	-	-	-	-	-	-	-
Bluehead chub	20	-	-	-	-	-	-	-	-	-	-	-	-
Christmas darter	6	-	-	-	-	-	-	-	-	-	-	-	-
Creek chub	9	-	-	-	-	-	-	-	-	-	-	-	-
Eastern silvery minnow	0	0	1	1	-	-	-	-	-	-	-	-	-
Green sunfish	2	-	-	-	-	-	-	-	-	-	-	-	-
Pirate perch	3	-	-	-	-	-	-	-	-	-	-	-	-
Redbreast sunfish	9	2	1	12	-	-	-	-	-	-	-	-	-
Redeye bass	3	-	-	-	-	-	-	-	-	-	-	-	-
Rosyside dace	3	-	-	-	-	-	-	-	-	-	-	-	-
Sandbar shiner	1	-	-	-	-	-	-	-	-	-	-	-	-
Spottail shiner	4	-	-	-	-	-	-	-	-	-	-	-	-
Yellow bullhead	1	-	-	-	-	-	-	-	-	-	-	-	-
Yellowfin shiner	51	-	-	-	-	-	-	-	-	-	-	-	-

Camp Branch, site 02, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	67	28	8	108	48	42	26	98	80	68	151	61	13
Christmas darter	17	6	3	28	41	42	42	53	48	47	13	4	2
Creek chub	36	10	4	52	28	27	65	120	108	95	162	41	25
Green sunfish	1	0	0	1	-	-	-	68	-	-	4	-	-
Northern hog sucker	1	0	0	1	-	-	-	105	-	-	11	-	-
Pirate perch	8	8	2	18	57	55	57	82	90	85	37	32	10
Redbreast sunfish	17	9	5	37	38	43	42	120	62	59	100	22	7
Redeye bass	5	1	0	6	64	-	-	116	78	-	35	5	-
Rosyface chub	4	4	2	10	57	54	57	65	61	60	7	6	3
Yellowfin shiner	108	32	13	159	36	37	44	75	61	67	129	30	20

Camp Branch, site 03, 2001 – beaver

Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Camp Branch, site 03, 2002 – not visited

Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Candy Branch, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	7			-	-			-			-		
Chub Sp. YOY	43			-	-			-			-		
Creek chub	17			-	-			-			-		
Eastern mosquitofish	1			-	-			-			-		

Candy Branch, site 01, 2002 – not visited

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Candy Branch, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	74			-	-			-			-		
Chub Sp. YOY	7			-	-			-			-		
Creek chub	46			-	-			-			-		
Yellowfin shiner	144			-	-			-			-		

Candy Branch, site 02, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	8	3	2	14	44	54	58	88	69	62	28	8	4
Chub Sp. YOY	247	144	57	514	12	10	8	26	29	31	20	14	6
Creek chub	11	1	5	17	32	-	25	108	115	95	58	18	10
Yellow bullhead	0	1	0	1	-	-	-	-	144	-	-	42	-
Yellowfin shiner	43	10	6	61	41	50	37	62	62	60	54	16	8

Candy Branch, site 03, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	43			-	-			-			-		
Creek chub	73			-	-			-			-		
Yellowfin shiner	144			-	-			-			-		

Candy Branch, site 03, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	13	12	7	56	44	38	46	60	63	66	18	22	14
Chub Sp. YOY	87	73	6	182	17	18	17	27	27	27	10	8	1
Creek chub	90	65	34	253	29	25	35	131	103	77	174	116	62
Yellowfin shiner	92	31	14	144	39	35	35	58	51	46	70	26	10

Lick Fork, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	48	-	-	-	-	-	-	-	-	-	-	-	-
Christmas darter	2	2	0	4	-	-	-	-	-	-	-	-	-
Creek chub	25	-	-	-	-	-	-	-	-	-	-	-	-
Eastern mosquitofish	1	-	-	-	-	-	-	-	-	-	-	-	-
Pumpkinseed	20	-	-	-	-	-	-	-	-	-	-	-	-
Redbreast sunfish	5	4	2	15	-	-	-	-	-	-	-	-	-
Rosyside dace	1	-	-	-	-	-	-	-	-	-	-	-	-
Shiner sp.	12	-	-	-	-	-	-	-	-	-	-	-	-
Spottail shiner	4	-	-	-	-	-	-	-	-	-	-	-	-
Striped jumprock	2	2	0	4	-	-	-	-	-	-	-	-	-
Yellowfin shiner	135	-	-	-	-	-	-	-	-	-	-	-	-

Lick Fork, site 01, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluegill	5	1	1	7	60	-	72	80	68	-	26	5	5
Bluehead chub	45	36	9	105	25	23	49	84	73	68	112	58	19
Christmas darter	8	2	0	10	46	50	-	61	57	-	10	3	-
Chub Sp. YOY	21	6	0	27	-	-	-	-	-	-	-	-	-
Creek chub	52	11	1	64	28	31	36	130	119	41	96	24	1
Eastern mosquitofish	24	12	23	59	19	30	15	54	49	46	13	9	8
Largemouth bass	0	1	0	1	-	-	-	-	110	-	-	13	-
Redbreast sunfish	20	14	2	39	34	47	41	99	109	73	121	117	6
Redear sunfish	1	0	0	1	-	-	-	82	-	-	9	-	-
Rosyface chub	17	4	2	24	52	51	52	71	75	71	31	5	4
Warmouth sunfish	4	0	0	4	79	134	-	134	-	-	98	-	-
Yellow bullhead	1	0	0	1	-	-	-	-	125	-	-	21	-
Yellowfin shiner	147	46	15	215	23	24	33	61	59	62	129	36	13

Lick Fork, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluegill	2	-	-	-	-	-	-	-	-	-	-	-	-
Bluehead chub	39	-	-	-	-	-	-	-	-	-	-	-	-
Christmas darter	1	-	-	-	-	-	-	-	-	-	-	-	-
Creek chub	13	-	-	-	-	-	-	-	-	-	-	-	-
Pumpkinseed	1	-	-	-	-	-	-	-	-	-	-	-	-
Redbreast sunfish	9	4	2	17	-	-	-	-	-	-	-	-	-
Rosyside dace	1	-	-	-	-	-	-	-	-	-	-	-	-
Shiner sp.	4	-	-	-	-	-	-	-	-	-	-	-	-
Striped jumprock	2	0	1	3	-	-	-	-	-	-	-	-	-
Warmouth sunfish	1	-	-	-	-	-	-	-	-	-	-	-	-
Yellow bullhead	2	-	-	-	-	-	-	-	-	-	-	-	-
Yellowfin shiner	81	-	-	-	-	-	-	-	-	-	-	-	-

Lick Fork, site 02, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluegill	37	16	4	60	40	47	49	74	67	57	108	41	8
Bluehead chub	52	18	6	79	41	46	55	121	118	71	200	91	12
Creek chub	40	9	2	52	45	46	51	115	62	87	90	17	9
Eastern mosquitofish	78	16	13	111	14	29	20	57	57	55	66	15	6
Flat bullhead	2	1	1	4	103	-	-	104	120	103	30	16	10
Golden shiner	3	1	0	4	70	-	-	72	59	-	11	1	-
Largemouth bass	17	9	1	28	40	39	-	90	70	43	23	11	1
Redbreast sunfish	10	4	1	16	71	73	-	130	95	78	123	36	6
Warmouth sunfish	36	18	7	67	41	45	45	140	125	85	343	124	27
Yellow bullhead	1	1	0	2	-	-	-	129	96	-	22	11	-
Yellowfin shiner	9	5	2	18	31	31	42	66	50	74	13	2	4

Lick Fork, site 03, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	47	-	-	-	-	-	-	-	-	-	-	-	-
Creek chub	39	-	-	-	-	-	-	-	-	-	-	-	-
Pumpkinseed	21	-	-	-	-	-	-	-	-	-	-	-	-
Redbreast sunfish	15	4	3	23	-	-	-	-	-	-	-	-	-
Rosyside dace	5	-	-	-	-	-	-	-	-	-	-	-	-
Yellow bullhead	0	1	1	2	-	-	-	-	-	-	-	-	-
Yellowfin shiner	155	-	-	-	-	-	-	-	-	-	-	-	-

Lick Fork, site 03, 2002 – not visited

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Miller Branch, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	51	-	-	-	-	-	-	-	-	-	-	-	-
Creek chub	45	-	-	-	-	-	-	-	-	-	-	-	-
Pumpkinseed	46	-	-	-	-	-	-	-	-	-	-	-	-
Redbreast sunfish	5	3	1	10	-	-	-	-	-	-	-	-	-
Rosyside dace	3	-	-	-	-	-	-	-	-	-	-	-	-
Sandbar shiner	4	-	-	-	-	-	-	-	-	-	-	-	-
Spottail shiner	10	-	-	-	-	-	-	-	-	-	-	-	-
Yellowfin shiner	163	-	-	-	-	-	-	-	-	-	-	-	-

Miller Branch, site 01, 2002 – not visited

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Pike Branch, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Green sunfish	1			-	-			-			-		
Pumpkinseed	1			-	-			-			-		

Pike Branch, site 01, 2002 – not visited

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Rock Creek, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluegill	2	-	-	-	-	-	-	-	-	-	-	-	-
Bluehead chub	124	-	-	-	-	-	-	-	-	-	-	-	-
Creek chub	29	-	-	-	-	-	-	-	-	-	-	-	-
Dusky shiner	53	-	-	-	-	-	-	-	-	-	-	-	-
Margined madtom	4	-	-	-	-	-	-	-	-	-	-	-	-
Pirate perch	0	2	0	2	-	-	-	-	-	-	-	-	-
Pumpkinseed	43	-	-	-	-	-	-	-	-	-	-	-	-
Redbreast sunfish	4	0	1	5	-	-	-	-	-	-	-	-	-
Rosyside dace	13	-	-	-	-	-	-	-	-	-	-	-	-
Spottail shiner	18	-	-	-	-	-	-	-	-	-	-	-	-
Striped jumprock	25	2	5	32	-	-	-	-	-	-	-	-	-
Warmouth sunfish	8	-	-	-	-	-	-	-	-	-	-	-	-
Yellow bullhead	2	-	-	-	-	-	-	-	-	-	-	-	-
Yellowfin shiner	172	-	-	-	-	-	-	-	-	-	-	-	-

Rock Creek, site 01, 2002 – not visited

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Rock Creek, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	58	-	-	-	-	-	-	-	-	-	-	-	-
Christmas darter	0	1	0	1	-	-	-	-	-	-	-	-	-
Creek chub	64	-	-	-	-	-	-	-	-	-	-	-	-
Pumpkinseed	40	-	-	-	-	-	-	-	-	-	-	-	-
Redbreast sunfish	1	1	0	2	-	-	-	-	-	-	-	-	-
Rosyface chub	17	-	-	-	-	-	-	-	-	-	-	-	-
Rosyside dace	10	-	-	-	-	-	-	-	-	-	-	-	-
Sandbar shiner	2	-	-	-	-	-	-	-	-	-	-	-	-
Striped jumprock	4	4	0	8	-	-	-	-	-	-	-	-	-
Yellowfin shiner	223	-	-	-	-	-	-	-	-	-	-	-	-

Rock Creek, site 02, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	282	56	34	381	38	39	29	95	90	82	255	85	49
Christmas darter	13	13	15	41	30	32	34	51	57	53	8	11	10
Chub Sp. YOY	18	0	7	25	x	-	x	x	-	x	x	-	x
Creek chub	49	25	12	98	25	26	30	101	100	73	106	72	20
Dusky shiner	8	4	4	16	48	51	50	54	57	56	8	4	3
Flat bullhead	0	1	0	1	-	-	-	-	75	-	-	4	-
Green sunfish	11	2	0	13	42	47	-	126	50	-	68	4	-
Margined Madtom	1	2	0	3	-	63	-	62	83	-	2	6	-
Northern hog sucker	7	2	3	12	76	77	85	149	87	91	95	10	19
Pirate perch	14	9	12	35	29	27	26	85	62	79	44	24	41
Redbreast sunfish	37	18	6	66	41	41	40	177	130	99	477	121	29
Rosyface chub	88	8	11	107	45	47	46	68	59	56	98	9	11
Striped Jumprock	7	3	0	10	88	110	-	133	169	-	93	78	-
Yellowfin shiner	446	145	66	691	30	16	22	72	62	64	311	95	46

Rock Creek, site 03, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	46	-	-	-	-	-	-	-	-	-	-	-	-
Chub Sp. YOY	2	-	-	-	-	-	-	-	-	-	-	-	-
Creek chub	40	-	-	-	-	-	-	-	-	-	-	-	-
Pumpkinseed	3	-	-	-	-	-	-	-	-	-	-	-	-
Redbreast sunfish	2	1	0	3	-	-	-	-	-	-	-	-	-
Rosyside dace	2	-	-	-	-	-	-	-	-	-	-	-	-
Sandbar shiner	1	-	-	-	-	-	-	-	-	-	-	-	-
Spottail shiner	6	-	-	-	-	-	-	-	-	-	-	-	-
Yellowfin shiner	152	-	-	-	-	-	-	-	-	-	-	-	-

Rock Creek, site 03, 2002

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	135	55	30	243	28	32	27	103	82	100	180	68	40
Christmas darter	1	0	0	1	-	-	-	58	-	-	2	-	-
Chub Sp. YOY	19	6	2	28	-	-	-	-	-	-	-	-	-
Creek chub	77	25	12	120	23	27	28	131	92	102	248	52	23
Redbreast sunfish	32	12	7	56	46	46	46	104	160	68	120	172	18
Rosyface chub	68	12	4	85	44	43	42	72	51	44	80	10	3
Yellowfin shiner	263	80	40	402	29	33	32	65	61	55	170	49	25

Wilson Branch, site 01, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	36			-	-			-			-		
Golden shiner	1			-	-			-			-		
Green sunfish	1			-	-			-			-		
Pirate perch	1			-	-			-			-		
Yellowfin shiner	21			-	-			-			-		

Wilson Branch, site 01, 2002 – not visited

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3

Wilson Branch, site 02, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Creek chubsucker	99			-	-			-			-		
Green sunfish	2			-	-			-			-		

Wilson Branch, site 02, 2002 – stream dry except a few pools

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
No fish captured	0			-	-			-			-		

Wilson Branch, site 03, 2001

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
Bluehead chub	5	-	-	-	-	-	-	-	-	-	-	-	-
Creek chub	21	-	-	-	-	-	-	-	-	-	-	-	-
Creek chubsucker	4	-	-	-	-	-	-	-	-	-	-	-	-
Golden shiner	0	0	1	1	-	-	-	-	-	-	-	-	-
Green sunfish	25	-	-	25	-	-	-	-	-	-	-	-	-
Pirate perch	0	1	0	1	-	-	-	-	-	-	-	-	-
Pumpkinseed	6	-	-	-	-	-	-	-	-	-	-	-	-
Redbreast sunfish	3	-	-	-	-	-	-	-	-	-	-	-	-

Wilson Branch, site 03, 2002 – stream dry except for a few pools

	Number Captured			Population	Minimum Length (mm)			Maximum Length (mm)			Weight (g)		
	1	2	3	Estimate	1	2	3	1	2	3	1	2	3
No fish captured	0			-	-			-			-		