

**Current Condition of Streams on the Mt. Rogers National Recreation Area,
George Washington - Jefferson National Forest, Virginia**



**Center for Aquatic Technology Transfer
134 Cheatham Hall
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061-0321**

**Current Condition of Streams on the Mt. Rogers National Recreation Area,
George Washington - Jefferson National Forest, Virginia**

United States Department of Agriculture
Forest Service
Center for Aquatic Technology Transfer

134 Cheatham Hall
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061-0321

Martin K. Underwood
Fisheries Biologist

and

C. Andrew Dolloff
Project Leader
Coldwater Fisheries Research Unit
Southern Research Station

Prepared By:

J. Keith Whalen, J. Steven Quarles, and Martin K. Underwood

January 1999

Table of Contents

Introduction	1
Methods	1
User's Guide	2
Literature Cited	3
Reference Tables	4
Table 1. Large woody debris (LWD) pieces per kilometer in streams on the Mt. Rogers National Recreation Area	4
Table 2. Percent pool habitat of streams surveyed on the Mt. Rogers National Recreation Area	5
Stream Summaries	7
Laurel Bloomery quadrangle	8
London Bridge Branch.....	9
Ramsey Branch.....	18
Damascus and Konnarock quadrangles	27
Beech Creek.....	28
Buzzard Den Branch.....	37
Dry Branch.....	46
Feathercamp Branch.....	55
Green Cove Creek.....	64
Henry Widener Branch.....	73
Rush Creek.....	82
Star Hill Branch.....	91
Straight Branch.....	100
Whitetop Laurel Creek (Lower).....	109
Whitetop Laurel Creek (Upper).....	118
Whitetop Mtn. quadrangle	127
Barton Branch.....	128
Cabin Creek.....	137
Dell's Branch.....	146
East Fork Hopkins Branch.....	155
Grassy Branch.....	164
Jerry's Creek.....	173
Little Laurel Creek.....	182
Pennington Branch.....	191
Rowland Creek.....	200

Whitetop Creek.....	209
Troutdale quadrangle.....	218
Dickey's Creek.....	219
Houndshell Branch.....	228
Little Wilson Creek.....	237
Raccoon Branch.....	246
Solomon Branch.....	255
Atkins quadrangle.....	264
Cressy Creek.....	265
East Fork Nicks Creek.....	274
Nicks Creek.....	283
South Fork Holston River (Upper).....	292
Marion quadrangle.....	301
South Fork Holston River (Lower).....	302
Staley Creek.....	311
Cedar Springs quadrangle.....	320
Dry Creek.....	321
Killenger Creek.....	330
Kinser Creek.....	339
Middle Creek.....	348
Parks Creek.....	357
Speedwell quadrangle.....	366
East Fork Dry Run.....	367
West Fork Dry Run.....	376
Cripple Creek quadrangle.....	385
Bournes Branch.....	386
Francis Mill Creek.....	395

Introduction - In Spring 1998 we began stream habitat surveys on the Mt. Rogers National Recreation Area (MRNRA), George Washington - Jefferson National Forest (GW - JNF) to quantify current stream conditions. Habitat in over 65 miles of stream (41 streams) was classified and inventoried between 30 May and 15 August 1998 using Basinwide Visual Estimation Techniques (BVET [Dolloff et. al 1993]).

We modified standard BVET methods to measure stream habitat parameters identified in the George Washington (GW) forest plan. Included in the forest plan is an outline of the desired-future-condition (DFC) for all the streams within the GW based on physical habitat. The pertinent DFCs for the GW include woody debris loading of 78 to 186 pieces per kilometer and 30 to 70 percent of the total stream habitat in pools. The use of BVET allowed us to estimate woody debris loading, percentage of pool and riffle area, and the width of the riparian area of streams in the MRNRA. Further, we were able to map the distribution of woody debris, and Rosgen's channel type in all streams surveyed.

The purpose of this report is to describe the current conditions of MRNRA streams in a format useful to the MRNRA and the GW-JNF. The enclosed information is intended as a baseline for MRNRA managers involved in habitat improvement projects or land use decisions.

Methods - Two-stage visual estimation techniques were used to quantify habitat and DFCs in selected MRNRA streams. During the first stage, all habitat units were classified and the surface area and depth were estimated. Sampling strata were based on naturally occurring habitat units such as pools (an area in the stream with low water velocity, streambed gradient less than zero, and a smooth water surface), riffles (an area in the stream with moderately steep gradient, shallow water, relatively high velocity, and turbulent surface), glides (an area in the stream with moderate to low water velocity, gradient at or near zero, and uniform depth), cascades (an area in the stream with very high velocity, turbulent surface, and steep gradient), and braids (an area in the stream where multiple channels occur regardless of habitat type). Surveys began at confluences for streams confined to the MRNRA and at the downstream USFS boundary for all other streams. Surveys were terminated when we encountered an upstream USFS property boundary or determined the stream to be intermittent.

Habitat in each stream was classified and inventoried by a two-person crew. One crew member identified each habitat unit by type, estimated surface area, estimated the average and maximum depth, and substrate composition for each habitat unit. This crew member also determined whether or not embeddedness (an area on the stream bottom where larger substratum was embedded by at least 35% or more of smaller substratum) was present in pools. Average depth of each habitat unit was estimated by taking depth measurements at various places across the channel profile with a graduated staff marked in 5cm increments. The length (0.1m) of each habitat unit was measured with a hip chain.

Another crew member classified and inventoried large woody debris (LWD) within the stream channel, and Rosgen's channel type associated with each habitat unit. This crew member also recorded the data on a Husky Hunter field computer.

LWD was divided into four classes: 1) less than 5m long, less than 55 cm in diameter, 2) less than 5m long, greater than 55cm in diameter, 3) greater than 5m long, less than 55cm in diameter, and 4) greater than 5m long, greater than 55cm in diameter. All LWD less than 1m long and less than 10cm in diameter were omitted from the survey. Rosgen's channel types were restricted to A, B, C, D, and F (pers. comm. Gary Kappesser, GW-JNF Hydrologist). This was performed following the guidelines found in Rosgen, 1996.

The first unit of each habitat type selected for intensive sampling (accurate measurement of surface area - second stage sampling) was determined randomly. Additional units were selected systematically (one unit out of 10 for each habitat type). The width of these systematically selected habitat units was measured with a 30-m measuring tape at intervals ranging from about 1 m to 15 m. Interval size was determined by the length and the morphology of the unit (e.g., intervals of measured widths increased with increasing unit length).

The relationship between the estimated surface area and the measured surface area typically is strongly and positively correlated when the estimates are made by experienced personnel; thus, visual estimates were corrected by multiplying all estimates by a calibration ratio (Hankin and Reeves 1988). The calibration ratio (\hat{Q}), the estimated true total area (\hat{M}) and the variance of the area estimator $\hat{V}(\hat{M})$ were calculated separately for each habitat type and each stream.

In each of the systematically selected riffles we also estimated the stream channel width (m) at bankfull and riparian width (m) as described by Harrelson et. al 1994. We used this information to describe the channel and flood plain associated with each stream. Temperature (Celsius) and channel gradient (%) were also measured at different intervals in each stream.

BVET calculations were computed using a Statistical Analysis Systems (SAS) program developed by Dr. Patricia Flebbe (140 Cheatham Hall, VA Tech, Blacksburg, VA 24061-0321). Data were summarized using a Quattro Pro spreadsheet.

User's Guide - Stream Summaries are organized by U. S. Geological Survey Topographic Quadrangle. Two streams, White Top Laurel Creek and the South Fork Holston River, were divided into sections (i.e. upper, and lower). Data for each stream section were collected, analyzed, and presented separately. Glides and cascades were included with pools and riffles summaries respectively, unless otherwise specified (i.e. percent of pool habitat called as glide). Each stream or stream section summary contains: 1) synopsis of stream characteristics; 2) boxplots of maximum and average depth for pools and riffles, and average residual pool depth; 3) LWD size graph; 4) LWD distribution graph; 5) substrate composition for pools and riffles; 6) boxplot of riparian measurements; 7) percent pools and riffles graph; and 8) distribution of Rosgen's channel type. GW-JNF DFCs are indicated on all pertinent graphs.

We also included references tables of all streams surveyed which will allow managers to quickly assess the present condition of MRNRA streams in relation to pertinent DFCs. Streams are arranged by DFC parameters (percent pool habitat and LWD pieces per kilometer) in descending order. DFCs are indicated within each table.

Literature Cited

- Dolloff, C. A., D. G. Hankin, and G. H. Reeves. 1993. Basinwide estimation of habitat and fish populations in streams. General Technical Report SE-83. Asheville, North Carolina: U.S. Department of Agriculture, Forest Service, Southeastern Forest Experimental Station. 25 pp.
- Hankin, D. G. and G. H. Reeves. 1988. Estimating total fish abundance and total habitat area in small streams based on visual estimation methods. *Canadian Journal of Fisheries and Aquatic Sciences*. 45: 834-844.
- Harrelson, Cheryl C.; Rawlins, C. L.; Potyondy, John P. 1994. Stream channel reference sites: an illustrated guide to field technique. Gen. Tech. Rep. RM-245. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 61p.
- Rosgen, D.L. 1996. Applied River Morphology. Wildland Hydrology Books, Pagosa Springs, Colorado. 390pp.

Acknowledgments

We would like to thank the following people for their contributions to this report: Cecil Thomas, Tom Blevins, Mike Robertshaw, John Fuller, and Antoinette DiVittorio.

Reference Tables

Table 1. Large woody debris (LWD) pieces per kilometer in streams on the Mt. Rogers National Recreation Area. Streams above the double line meet GW-JNF DFCs.

Stream	LWD per kilometer	Kilometers Surveyed
Staley Creek	619.3	0.8
Killenger Creek	557.1	2.2
Star Hill Branch	555.5	2
Green Cove Creek	497.8	3.1
Henry Widener Branch	450	0.5
Buzzard Den Branch	442.4	1.7
Houndshell Branch	433.6	2.3
Whitetop Laurel Creek (Upper)	427.5	8
Barton Branch	413	1.2
East Fork Hopkins Branch	410	1.1
Dell's Branch	408.5	0.6
Beech Creek	379.5	1.6
Middle Creek	379.2	1.4
Little Laurel Creek	360.3	5.5
Rowland Creek	348.6	4.1
Dry Branch	282.6	1
Francis Mill Creek	274.4	4.1
Grassy Branch	268.1	0.8
London Bridge Branch	250.4	0.8
Dry Creek	245.6	1.8
East Fork Dry Run	205.3	3.4
Straight Branch	200.7	13.7
Solomon Branch	197.5	0.8
West Fork Dry Run	196.6	1.2
Pennington Branch	188.3	1.6
Whitetop Creek	184.9	1.4
Jerry's Creek	175.5	1.7
Rush Creek	166.4	2.8
Raccoon Branch	158.6	0.9
Bournes Branch	156.9	2.6
Whitetop Laurel Creek (Lower)	156	7.8
Feathercamp Branch	150.4	2.5
Ramsey Branch	149.3	0.7
Kinser Creek	105.4	0.6
Parks Creek	96.5	1.4
East Fork Nicks Creek	88.4	1.4
Cabin Creek	86.2	0.5
South Fork Holston River (Upper)	84	1.6
South Fork Holston River (Lower)	83	3.3

Table 1. Continued.

Stream	LWD per kilometer	Kilometers Surveyed

LWD \geq 78 pieces per kilometer		

Little Wilson Creek	77.1	2.5
Dickey's Creek	69.5	3.4
Cressy Creek	63.6	3.4
Nicks Creek	45.8	2.7

Table 2. Percent pool habitat of streams surveyed on the Mt. Rogers National Recreation Area. Streams above the double line meets GW-JNF DFCs.

Stream	Percent Pool Habitat	Kilometers Surveyed
South Fork Holston River (Upper)	73.9	1.6
London Bridge Branch	72.9	0.8
Francis Mill Creek	59.3	4.1
Staley Creek	58.3	0.8
Boumes Branch	57.1	2.6
Kinser Creek	56	0.6
West Fork Dry Run	55.6	1.2
Raccoon Branch	55.4	0.9
Dickey's Creek	54.5	3.4
East Fork Dry Run	52.9	3.4
South Fork Holston River (Lower)	49	3.3
Parks Creek	42.3	1.4
Dry Creek	41.8	1.8
Little Wilson Creek	40.3	2.5
Rowland Creek	40.1	4.1
Cressy Creek	40	3.4
Whitetop Laurel Creek (Upper)	39.7	8
Straight Branch	39.5	13.7
Middle Creek	39.2	1.4
Whitetop Laurel Creek (Lower)	37.6	7.8
Barton Branch	36.4	1.2
Star Hill Branch	35.8	2
Houndshell Branch	33.2	2.3
Little Laurel Creek	31.6	5.5

Pool Habitat \geq 30%		

Nicks Creek	28	2.7
Cabin Creek	27.5	0.5
Rush Creek	26.4	2.8

Table 2. Continued.

Stream	Percent Pool Habitat	Kilometers Surveyed
East Fork Hopkins Branch	25.7	1.1
Killenger Creek	24.7	2.2
Ramsey Branch	22.2	0.7
Dell's Branch	21.4	0.6
Henry Widener Branch	21.2	0.5
Grassy Branch	21.1	0.8
Pennington Branch	20.4	1.6
Green Cove Creek	19.9	3.1
Jerry's Creek	19.7	1.7
East Fork Nicks Creek	17.9	1.4
Feathercamp Branch	17.4	2.5
Beech Creek	16.6	1.6
Whitetop Creek	15.5	1.4
Dry Branch	15.3	1
Buzzard Den Branch	12.4	1.7
Solomon Branch	7.8	0.8

Stream Summaries

Laurel Bloomery Quadrangle

Stream: London Bridge Branch

District: Mount Rogers National Recreation Area

Quadrangle: Laurel Bloomery

Sample Date: 06/02/98

Downstream Starting Point: Confluence with Beaver Dam Creek

Total Distance Surveyed: 0.8 kilometers

Percent of Total Area - Pools: 72.9%

Number of Pools: 29

Number of Pools per kilometer: 36.3

Total Pool Area: 2257.8 sq. meters

Mean Pool Area: 77.9 sq. meters

Correction Factor: 1.62

Mean Maximum Depth: 33.7 cm

Mean Average Depth: 18.4 cm

Mean Average Residual Pool Depth: 10.6 cm

Percent of Total Area - Riffles: 27.1%

Number of Riffles: 25

Number of Riffles per kilometer: 31.3

Total Riffle Area: 839.8 sq. meters

Mean Riffle Area: 33.6 sq. meters

Correction Factor: 1.02

Mean Maximum Depth: 18.4 cm

Mean Average Depth: 23.2 cm

Number of Large Woody Debris Pieces per kilometer: 250.4

Wood < 5 m and < 55 cm: 57.3

Wood < 5 m and > 55 cm: 7.5

Wood > 5 m and < 55 cm: 155.7

Wood > 5 m and > 55 cm: 29.9

Mean Channel Width: 5.5 m

Mean Riparian Width: 18.3 m

Mean Maximum Riparian Distance (either side): 10.2 m

Mean Minimum Riparian Distance (either side): 2.6 m

Maximum Riparian Width (Total): 22.7 m

Minimum Riparian Width (Total): 13.7 m

London Bridge Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 2.4%

Rosgen's Channel Type Frequency:

Channel Type A: 23.6%

Channel Type B: 61.8%

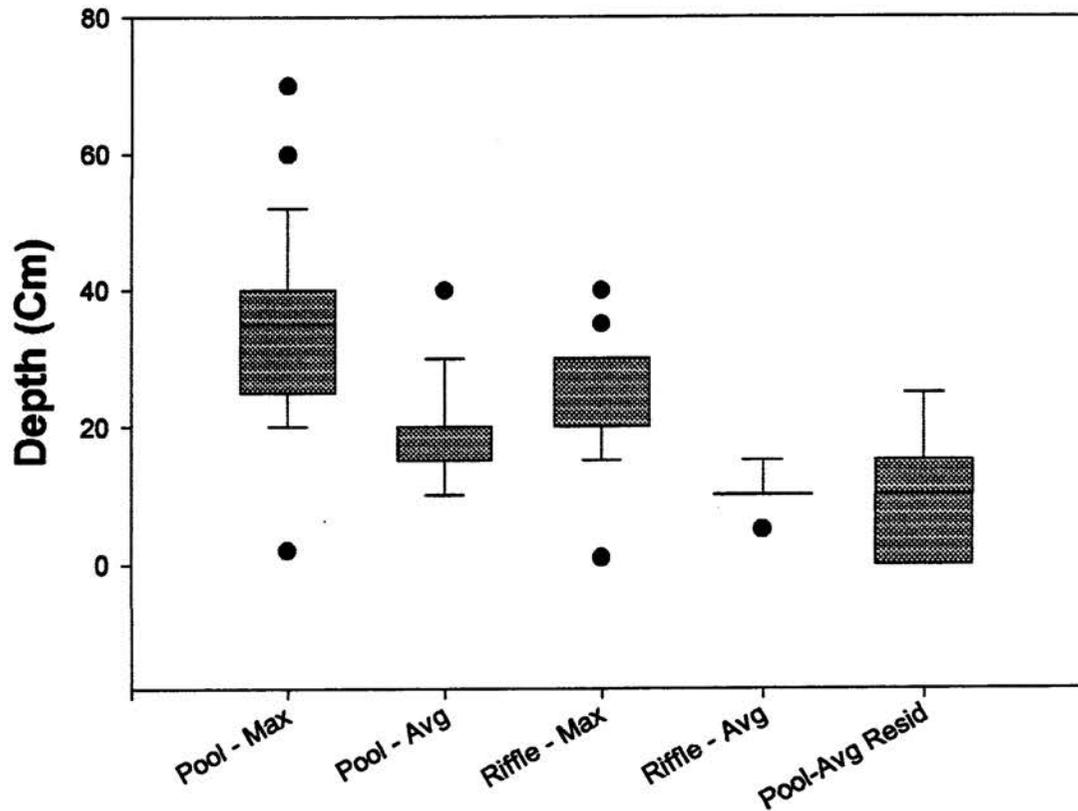
Channel Type C: 14.6%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 27.6%

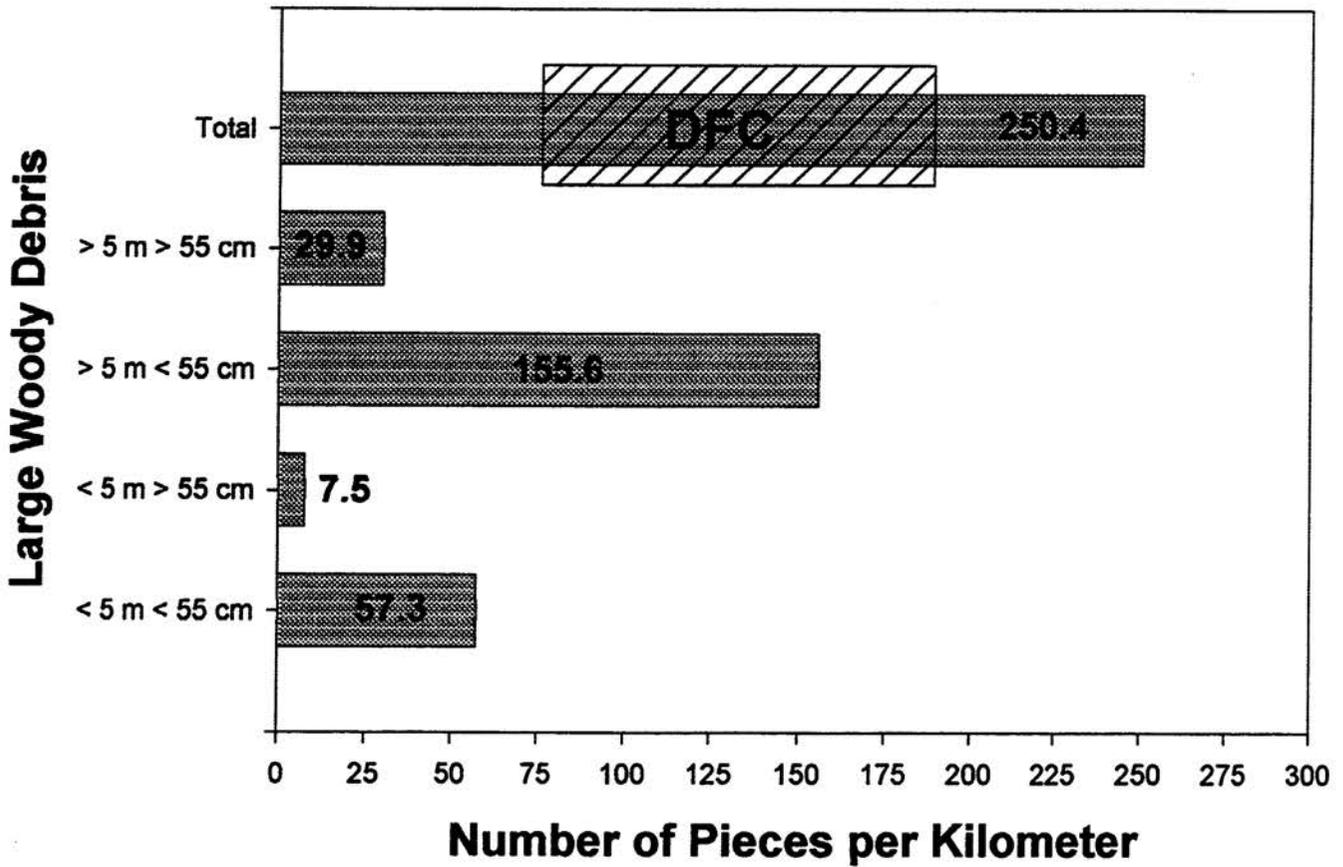
Average Channel Gradient: 14.0

London Bridge Branch

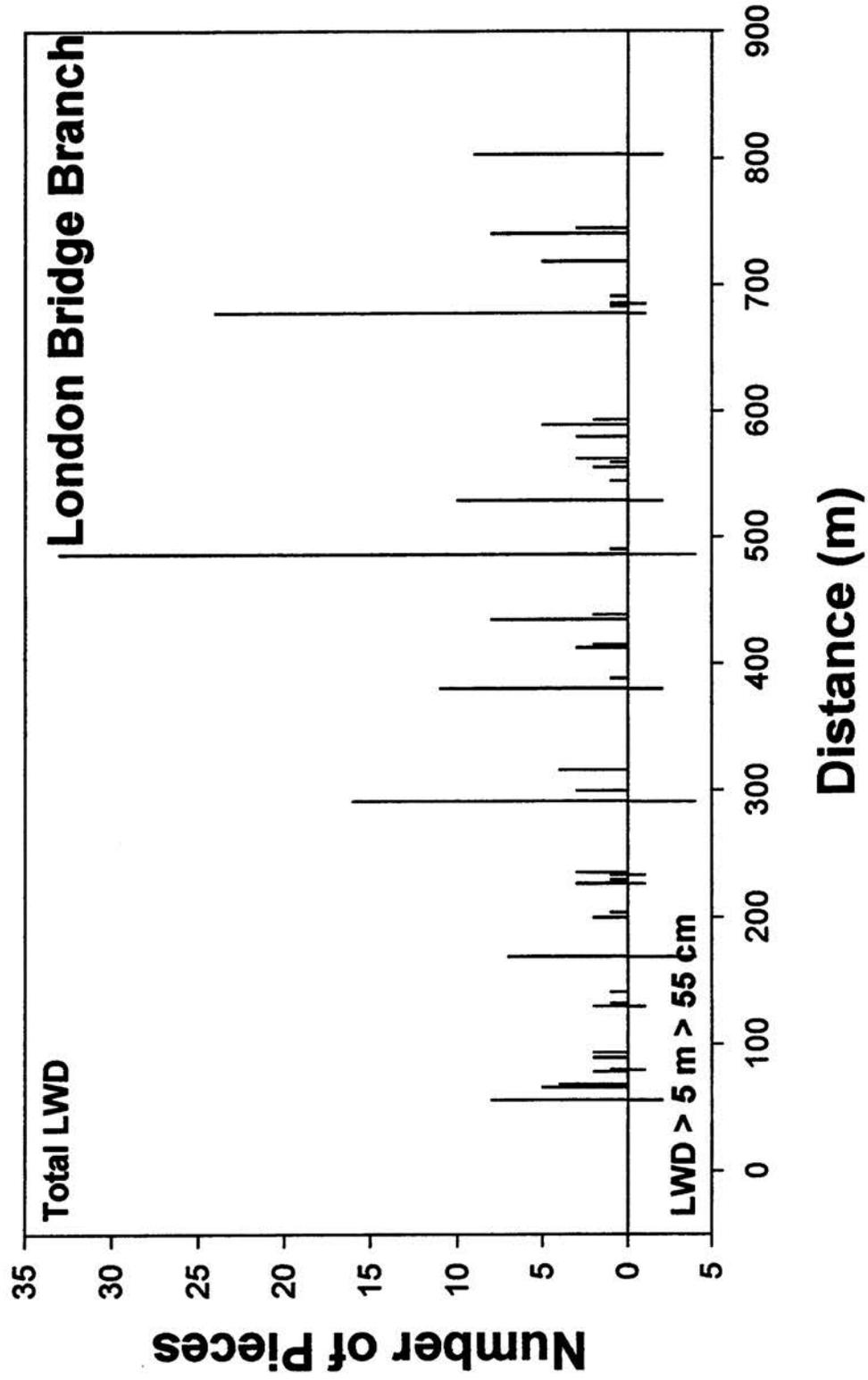


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

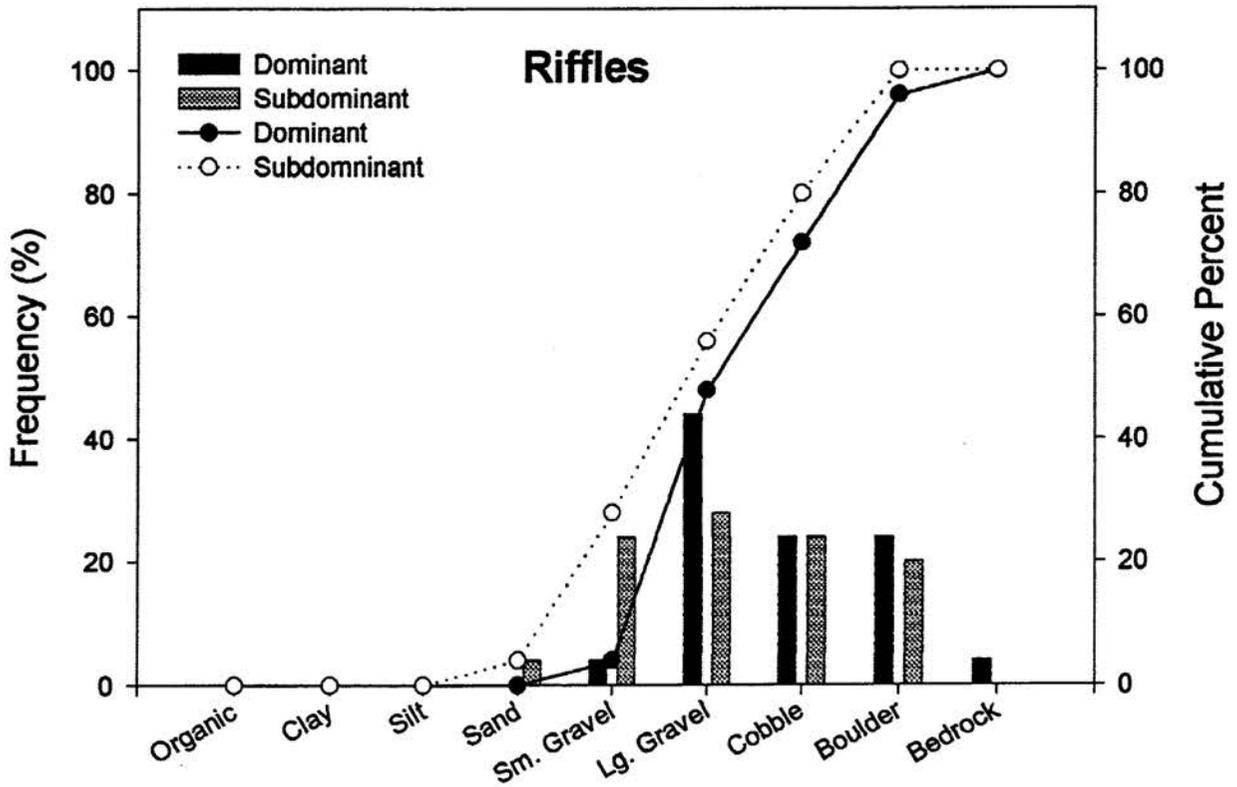
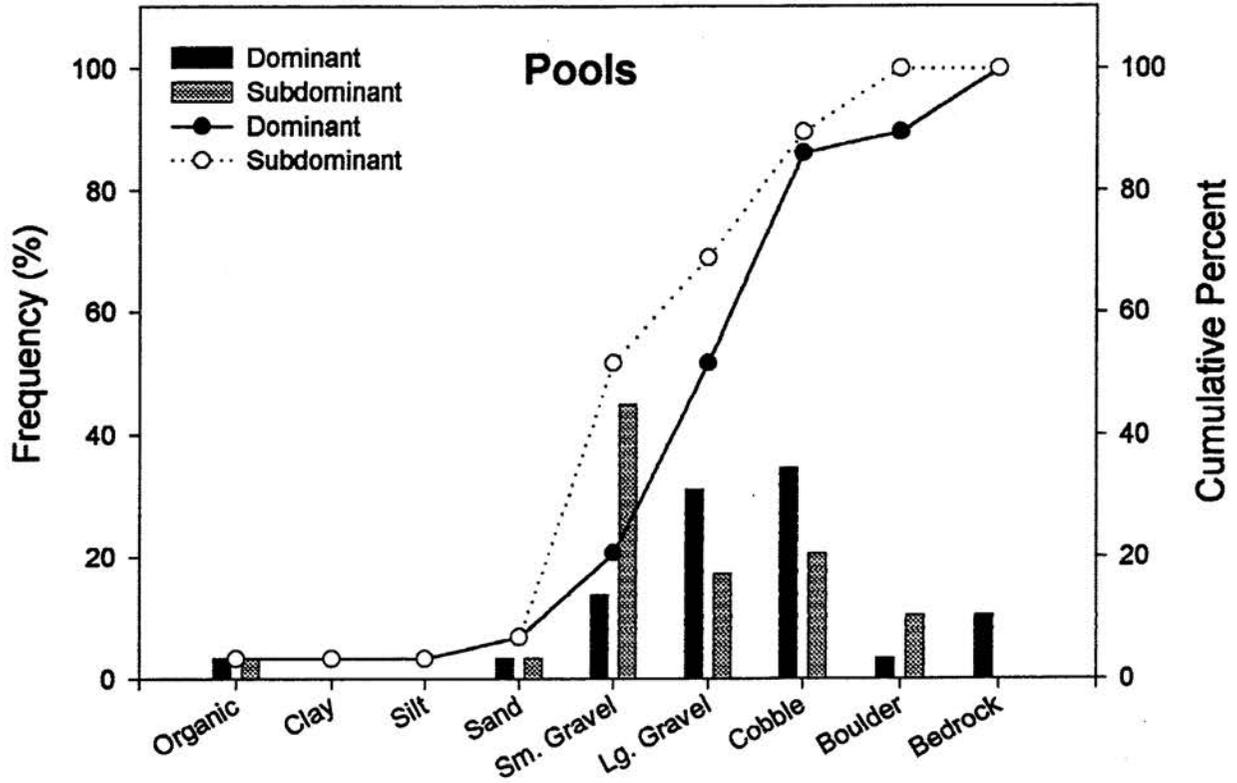
London Bridge Branch

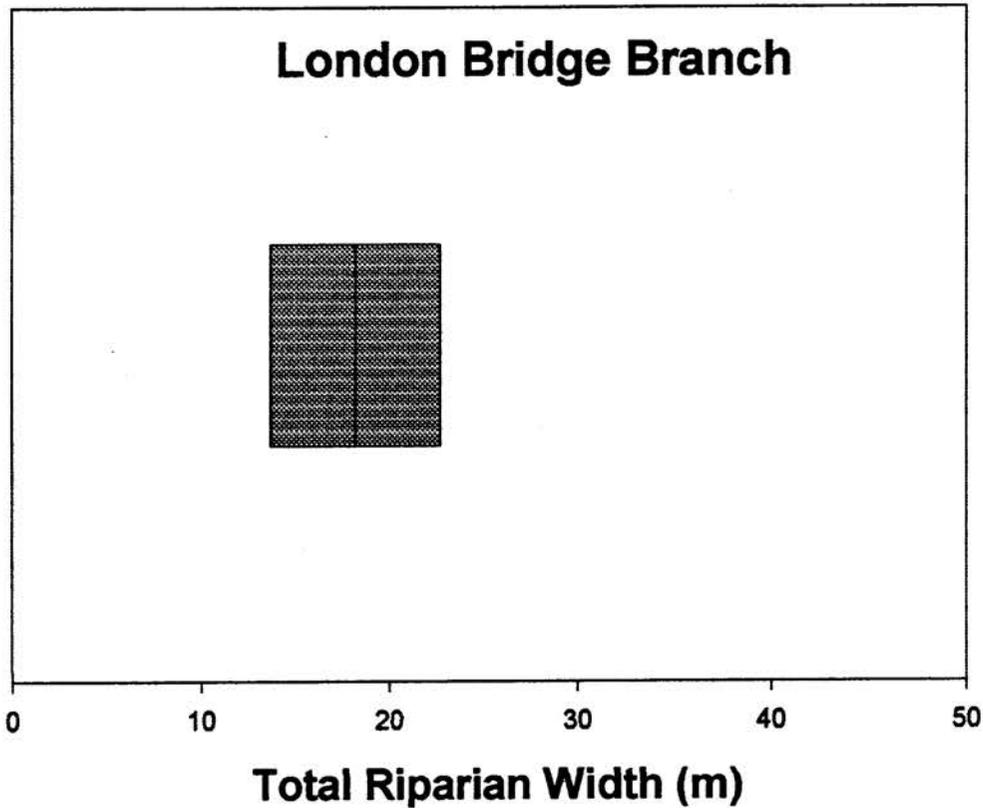


Distribution and Abundance of Large Woody Debris



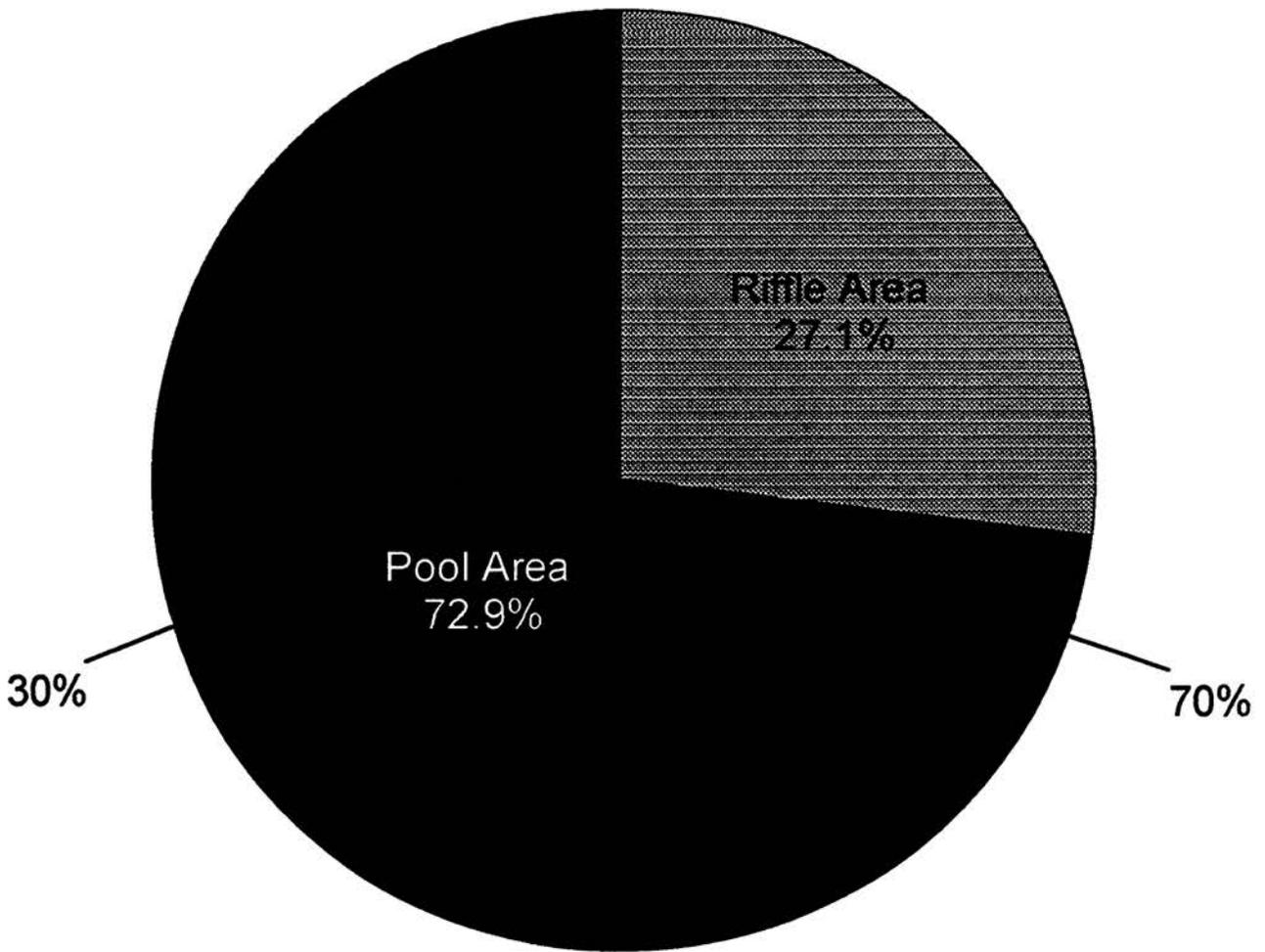
London Bridge Branch Substrate Composition



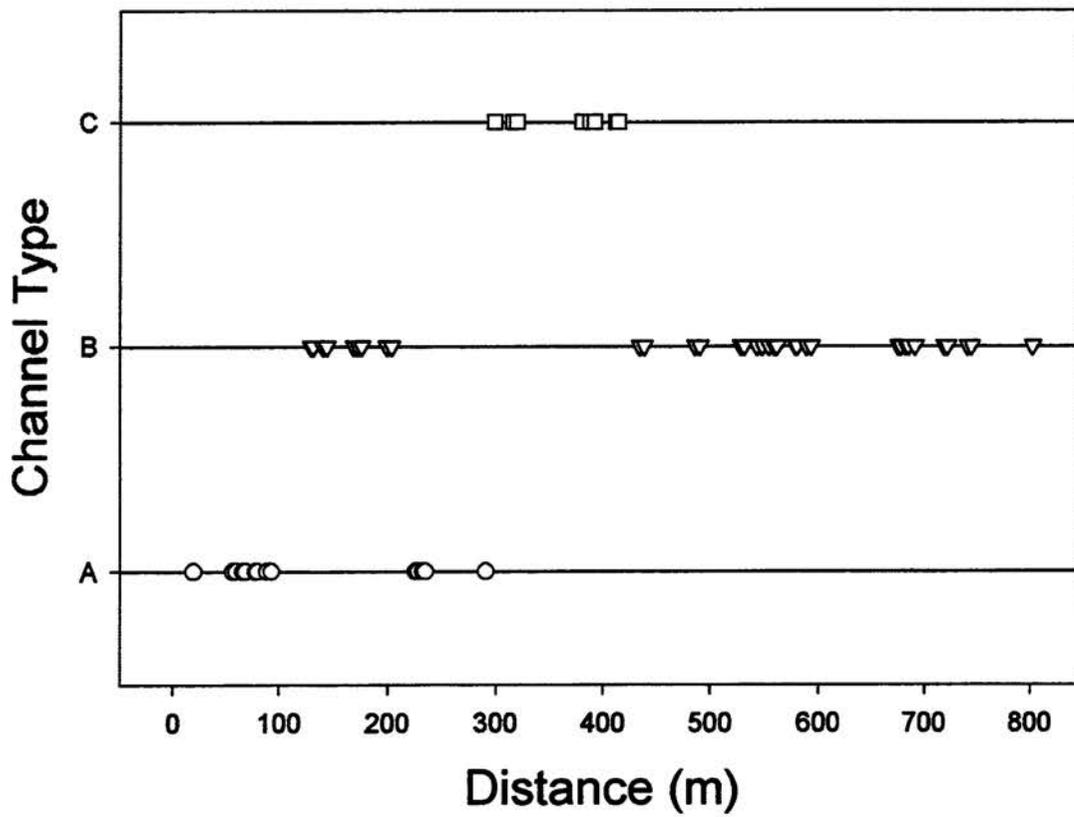
Riparian Width**Stream: London Bridge Branch****Number of Measurements: 2****Mean Width: 18.2m Std Dev: 6.4****Max: 22.7m Min: 13.7m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**London Bridge Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



London Bridge Branch Rosgen's Channel Type Distribution



Stream: Ramsey Branch

District: Mount Rogers National Recreation Area

Quadrangle: Laurel Bloomery

Sample Date: 06/02/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 0.7 kilometers

Percent of Total Area - Pools: 22.2%

Number of Pools: 45

Number of Pools per kilometer: 64.3

Total Pool Area: 319.7 sq. meters \pm 29.6

Mean Pool Area: 7.1 sq. meters

Correction Factor: 1.03

Mean Maximum Depth: 31.7 cm

Mean Average Depth: 23.0 cm

Mean Average Residual Pool Depth: 15.5 cm

Percent of Total Area - Riffles: 77.8%

Number of Riffles: 41

Number of Riffles per kilometer: 58.6

Total Riffle Area: 1118.6 sq. meters \pm 579.9

Mean Riffle Area: 27.3 sq. meters

Correction Factor: 1.03

Mean Maximum Depth: 18.3 cm

Mean Average Depth: 9.8 cm

Number of Large Woody Debris Pieces per kilometer: 149.3

Wood < 5 m and < 55 cm: 106.2

Wood < 5 m and > 55 cm: 3.1

Wood > 5 m and < 55 cm: 38.5

Wood > 5 m and > 55 cm: 1.5

Mean Channel Width: 3.6 m

Mean Riparian Width: 13.0 m

Mean Maximum Riparian Distance (either side): 6.1 m

Mean Minimum Riparian Distance (either side): 3.3 m

Maximum Riparian Width (Total): 17.3 m

Minimum Riparian Width (Total): 10.4 m

Ramsey Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 3.7%

Rosgen's Channel Type Frequency:

Channel Type A: 17.5%

Channel Type B: 76.7%

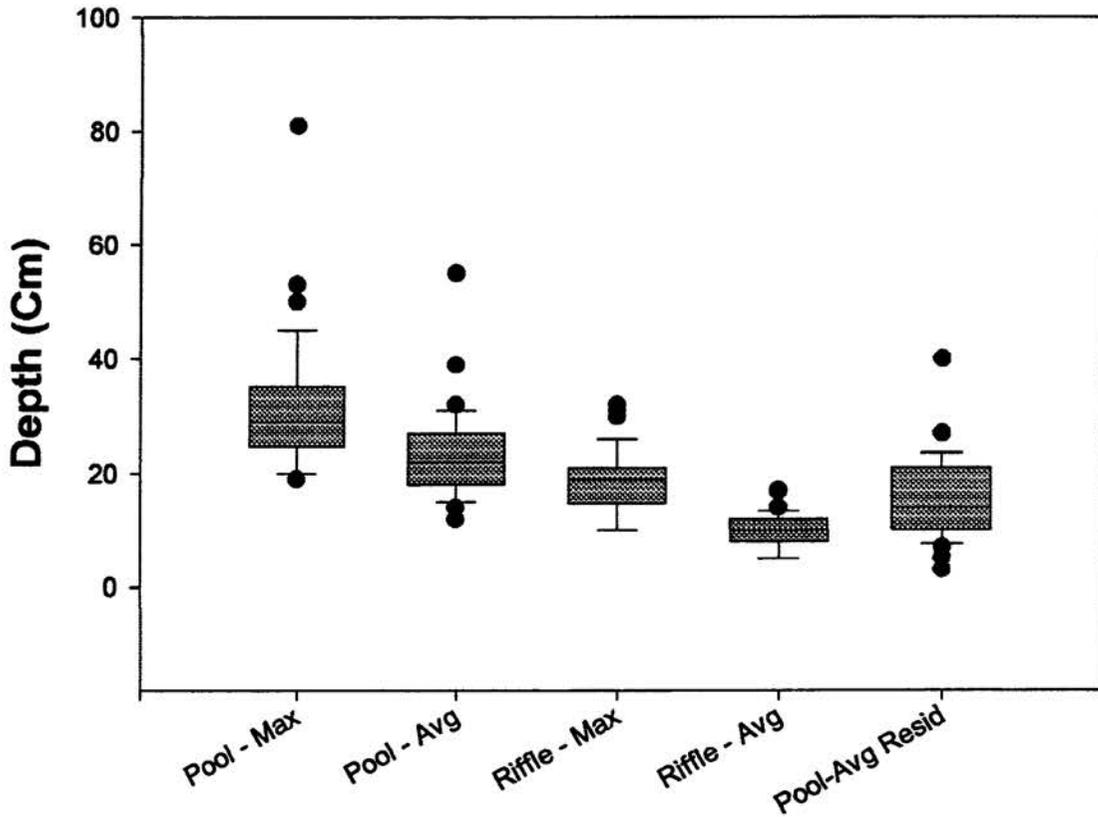
Channel Type C: 5.8%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 35.6%

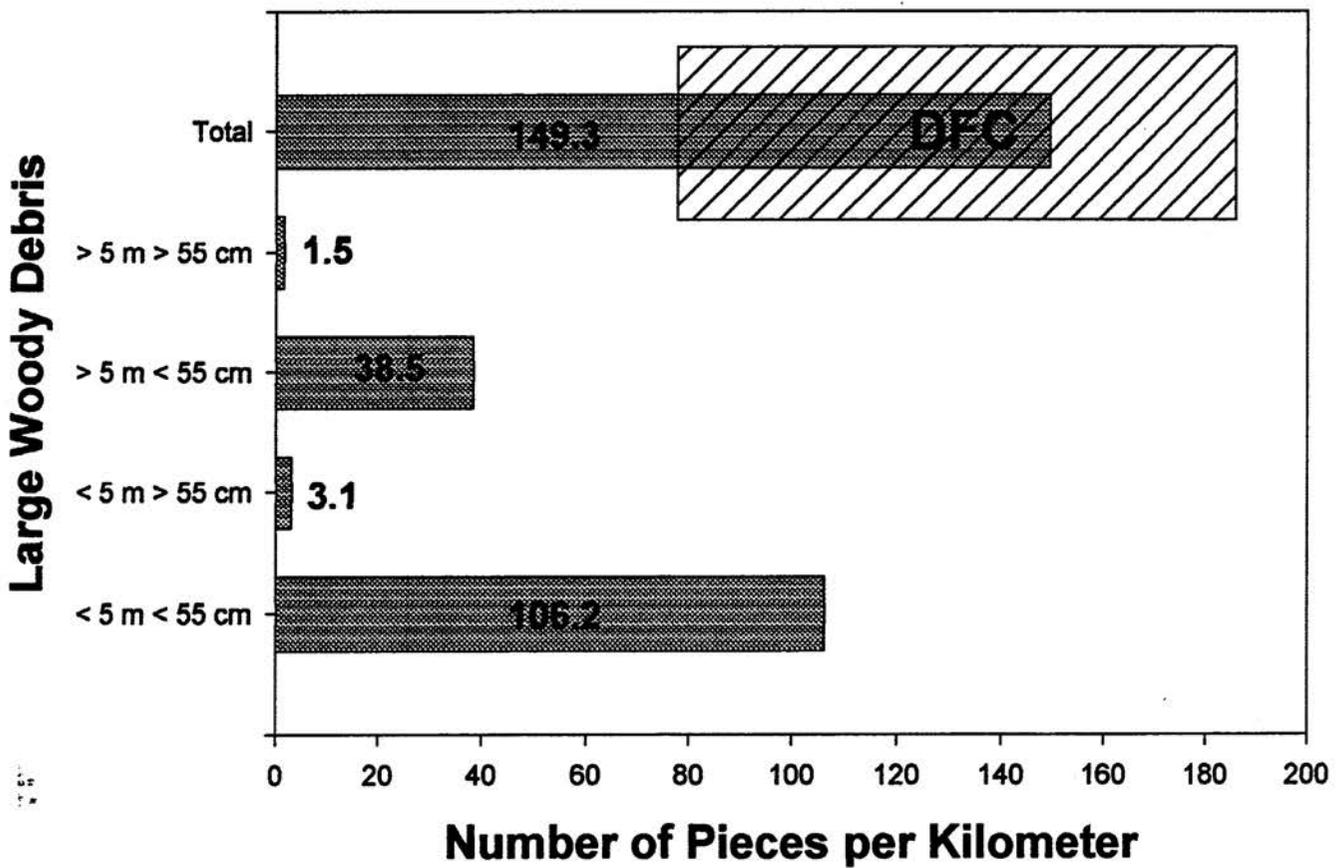
Average Channel Gradient: 8.8

Ramsey Branch

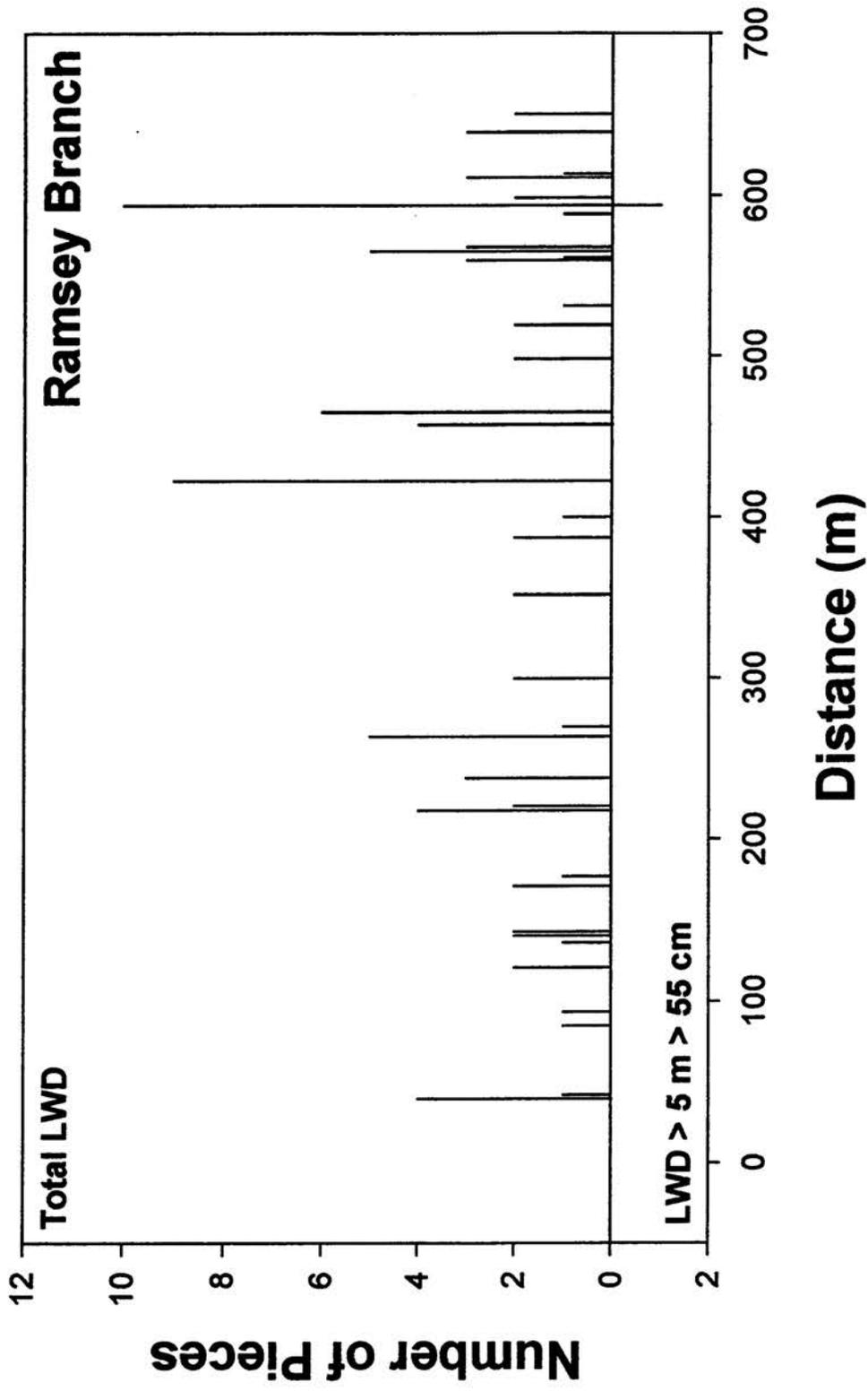


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

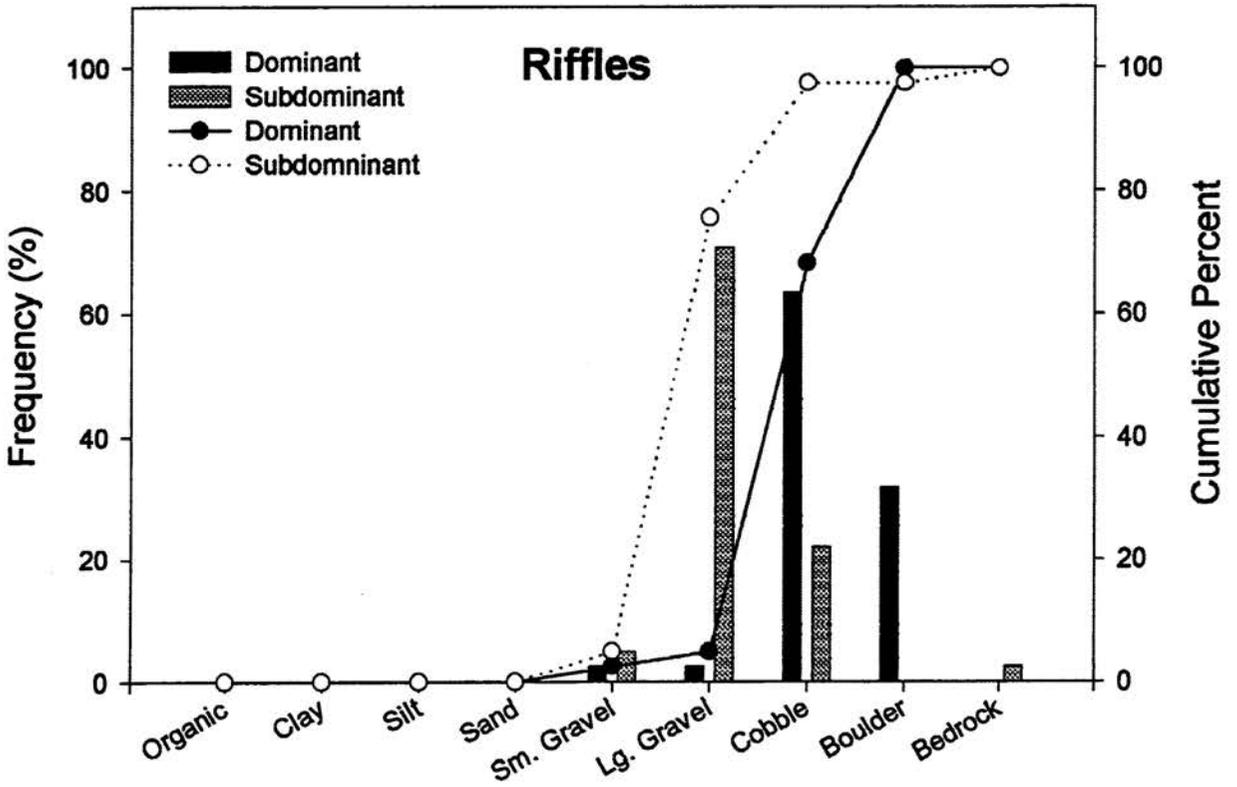
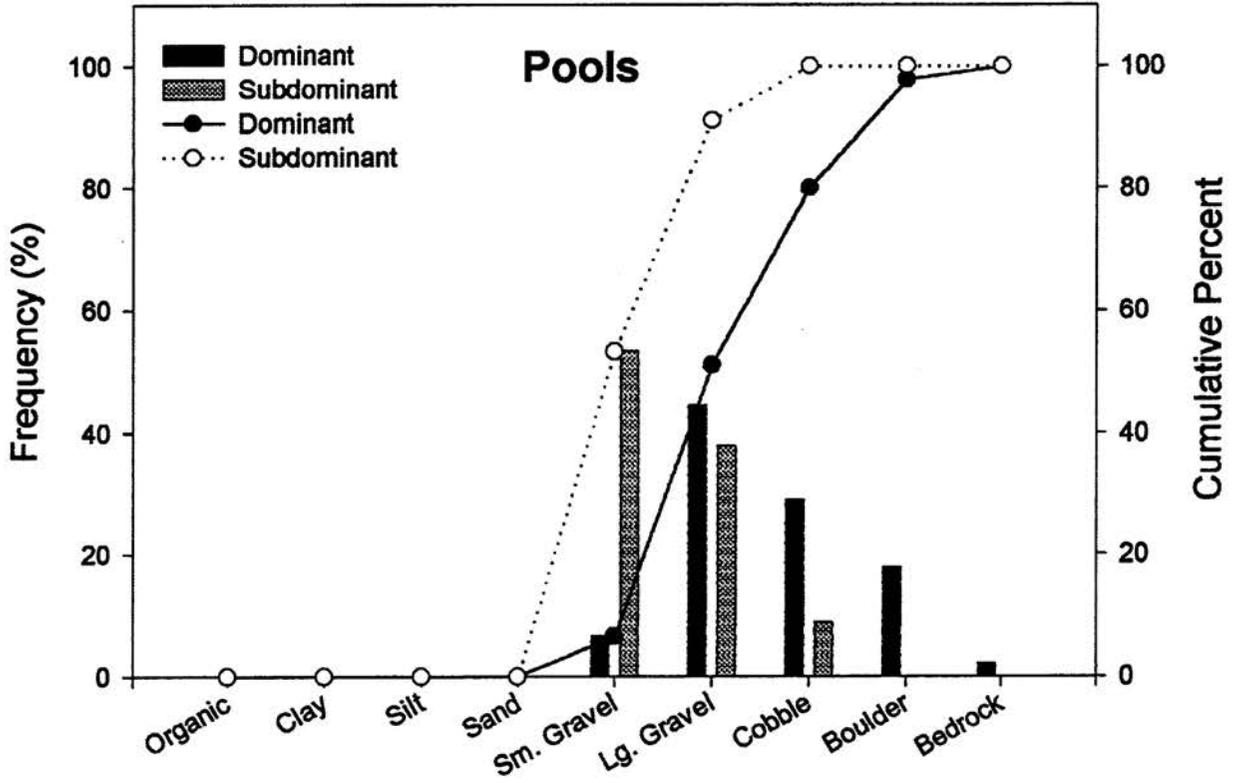
Ramsey Branch

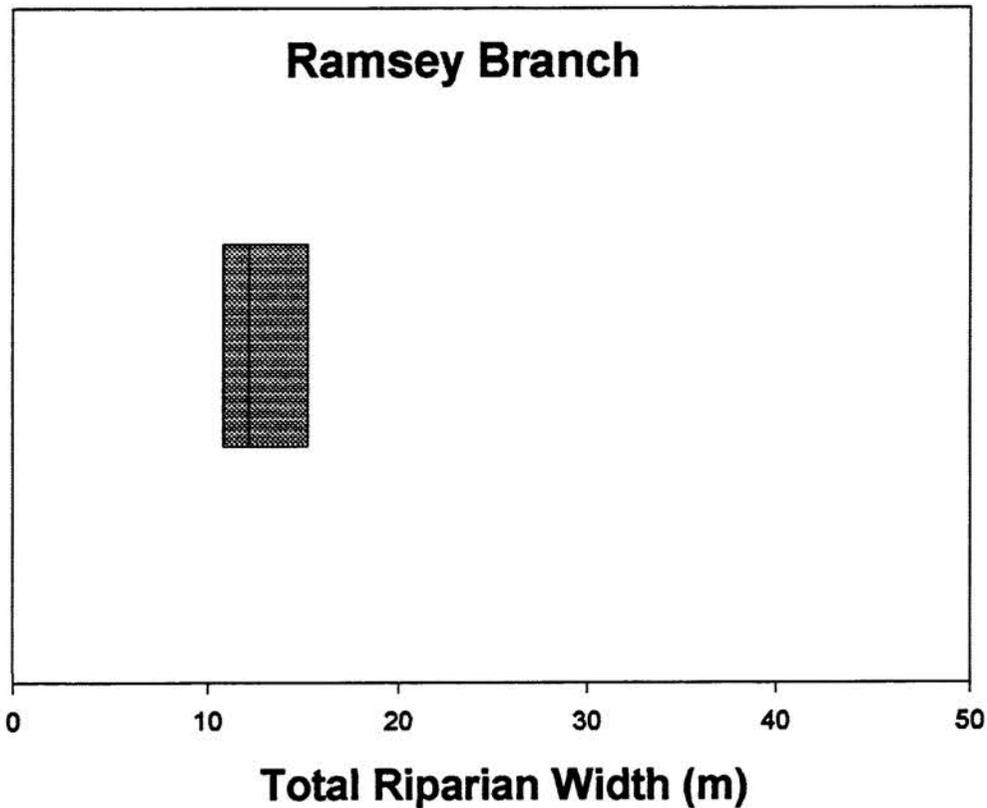


Distribution and Abundance of Large Woody Debris



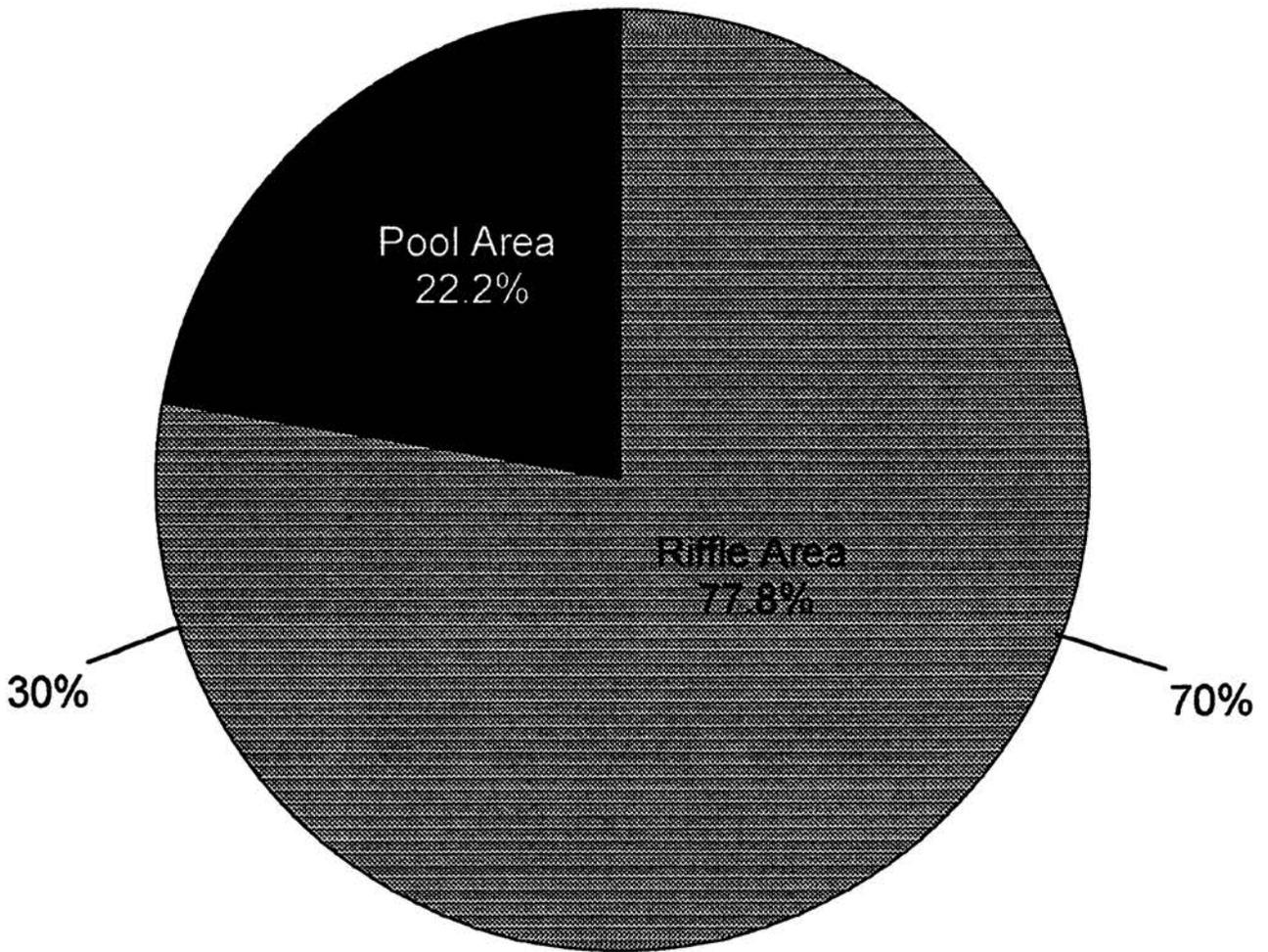
Ramsey Branch Substrate Composition



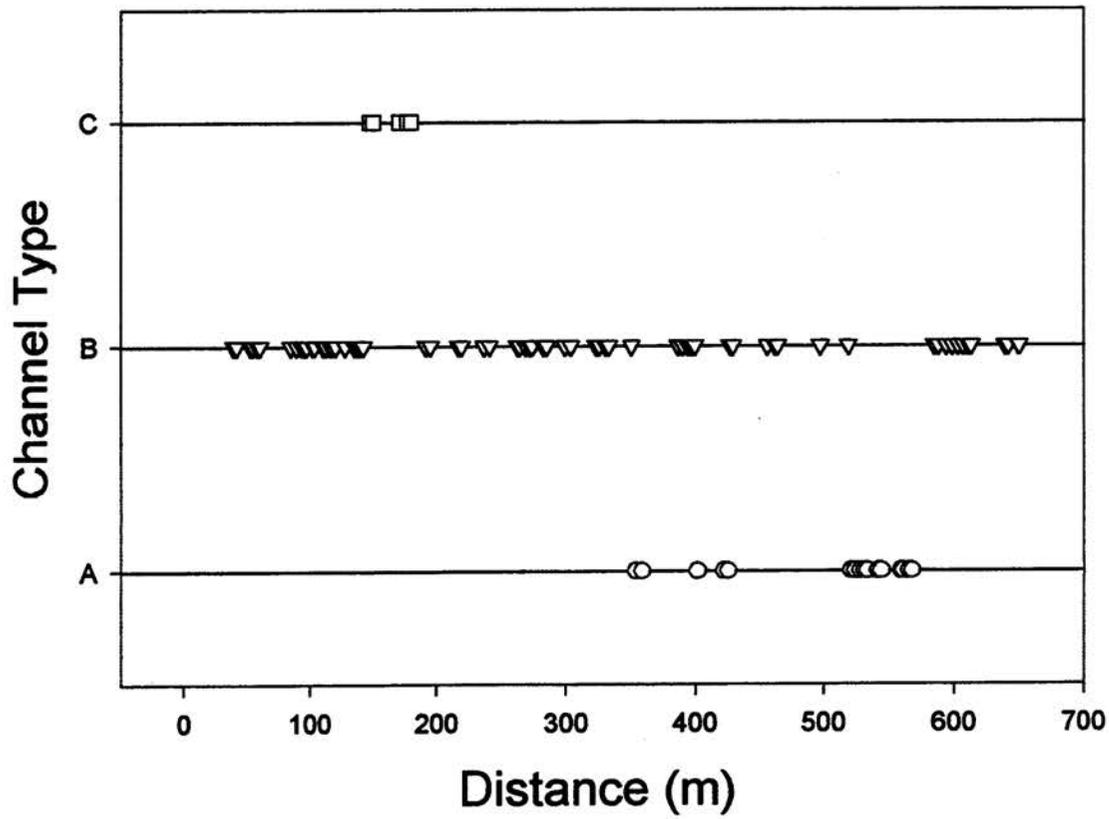
Riparian Width**Stream: Ramsey Branch****Number of Measurements: 4****Mean Width: 13.0m Std Dev: 3.1****Max: 17.3m Min: 10.4m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Ramsey Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Ramsey Branch Rosgen's Channel Type Distribution



Damascus and Konnarock Quadrangles

Stream: Beech Creek

District: Mount Rogers National Recreation Area

Quadrangle: Damascus/Konnarock

Sample Date: 06/03/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 1.6 kilometers

Percent of Total Area - Pools: 16.6%

Number of Pools: 60

Number of Pools per kilometer: 36.8

Total Pool Area: 570.8 sq. meters \pm 117.3

Mean Pool Area: 9.5 sq. meters

Correction Factor: 1.05

Mean Maximum Depth: 31.2 cm

Mean Average Depth: 17.3 cm

Mean Average Residual Pool Depth: 10.2 cm

Percent of Total Area - Riffles: 83.4%

Number of Riffles: 57

Number of Riffles per kilometer: 35.0

Total Riffle Area: 2867.2 sq. meters \pm 701.5

Mean Riffle Area: 50.3 sq. meters

Correction Factor: 1.18

Mean Maximum Depth: 16.8 cm

Mean Average Depth: 9.0 cm

Number of Large Woody Debris Pieces per kilometer: 379.5

Wood < 5 m and < 55 cm: 138.3

Wood < 5 m and > 55 cm: 28.2

Wood > 5 m and < 55 cm: 163.4

Wood > 5 m and > 55 cm: 49.6

Mean Channel Width: 3.2 m

Mean Riparian Width: 12.1 m

Mean Maximum Riparian Distance (either side): 5.9 m

Mean Minimum Riparian Distance (either side): 3.0 m

Maximum Riparian Width (Total): 18.3 m

Minimum Riparian Width (Total): 8.3 m

Beech Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 2.8%

Rosgen's Channel Type Frequency:

Channel Type A: 61.0%

Channel Type B: 25.0%

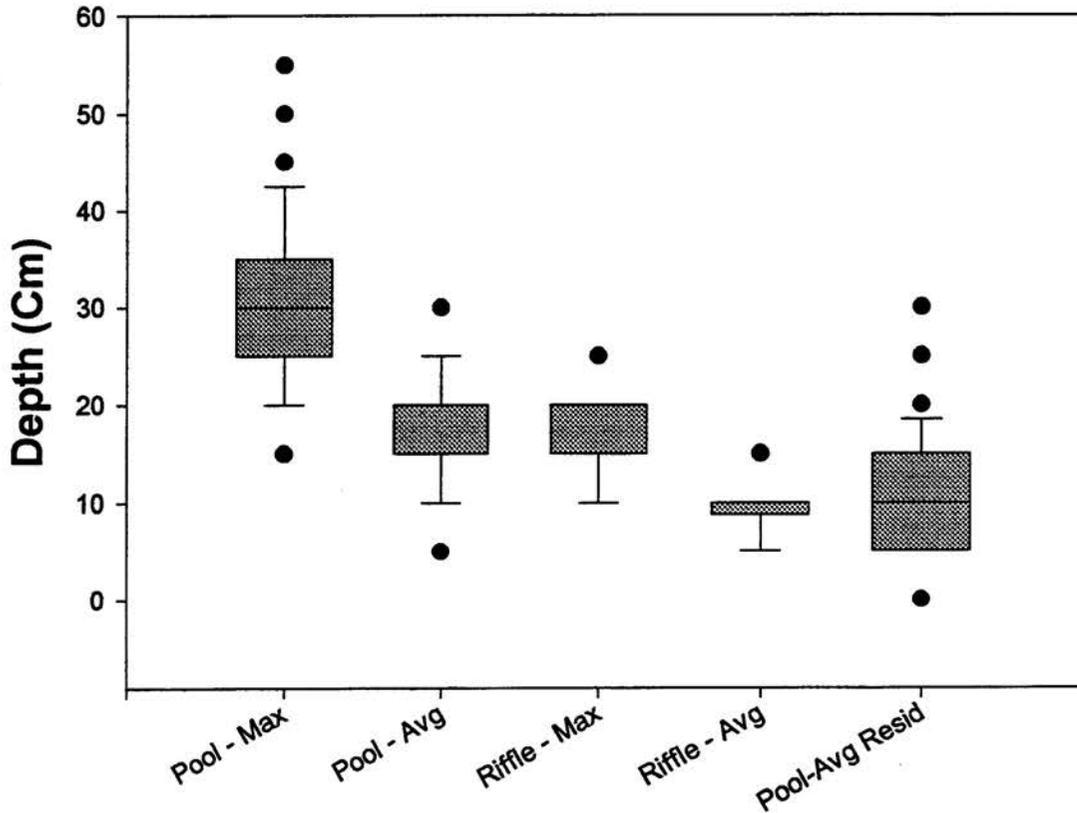
Channel Type C: 14.0%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 48.3%

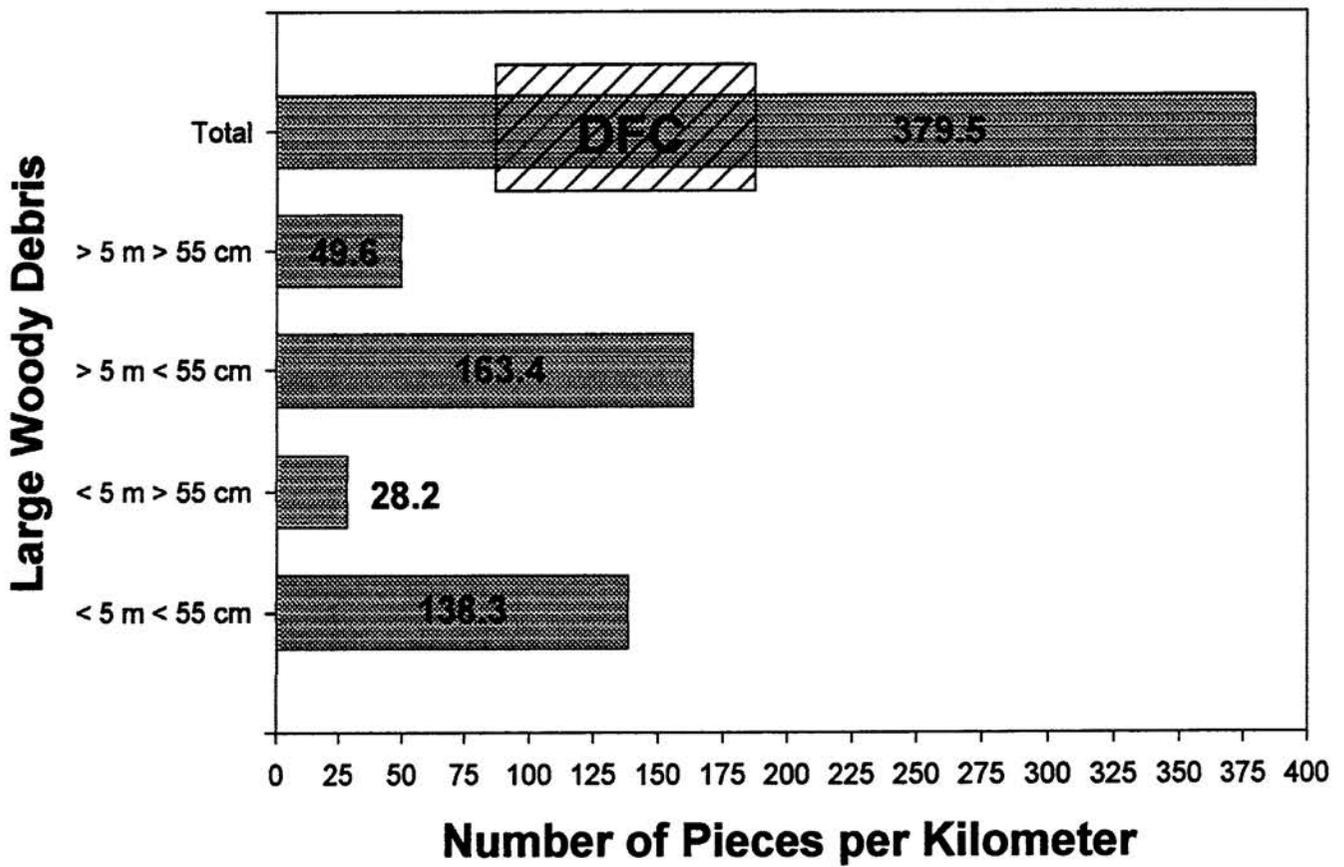
Average Channel Gradient: N/A

Beech Creek

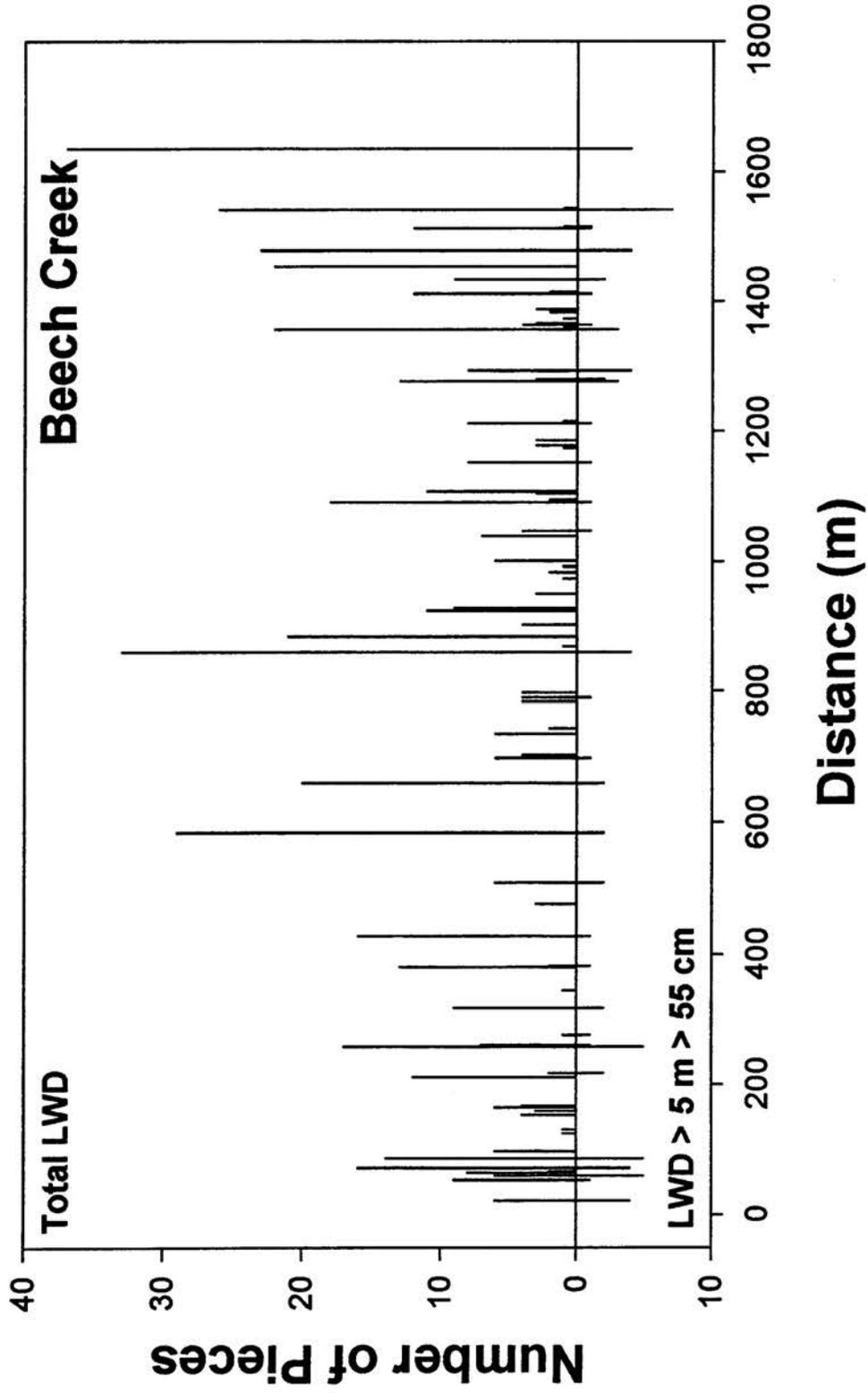


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

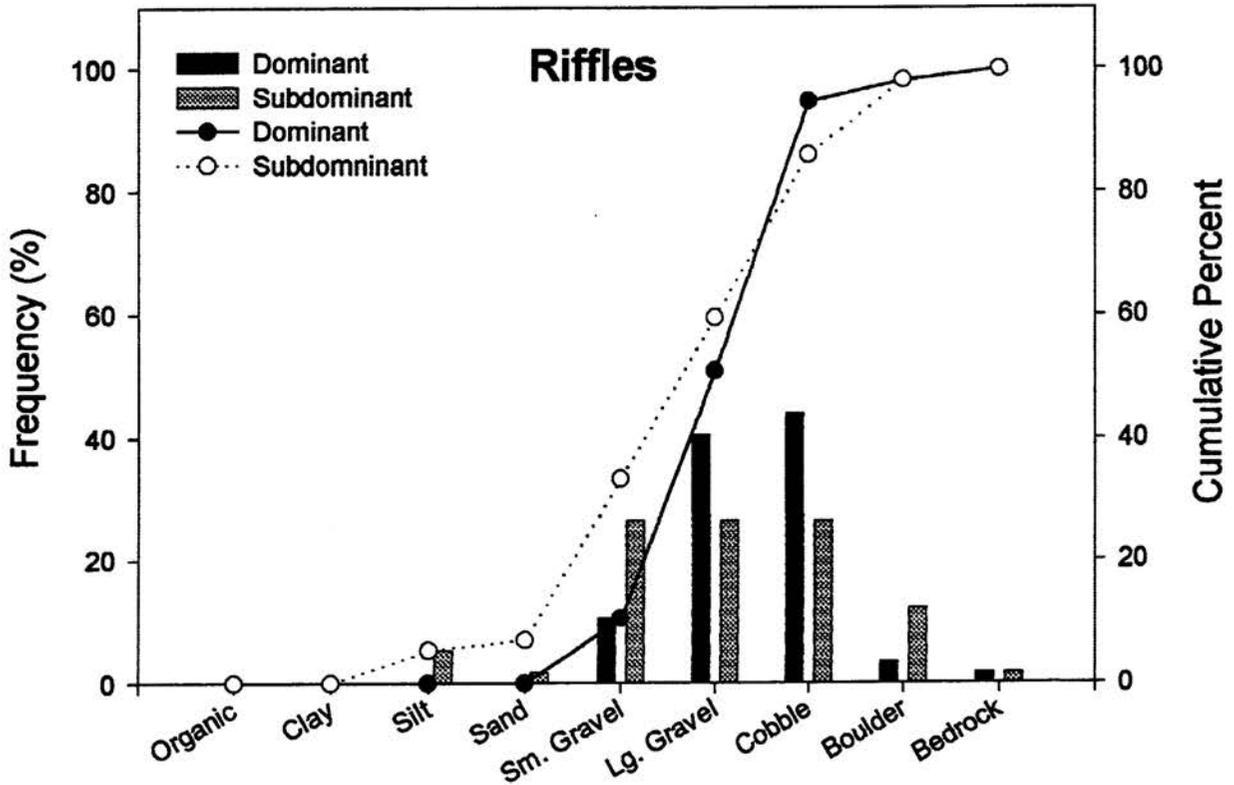
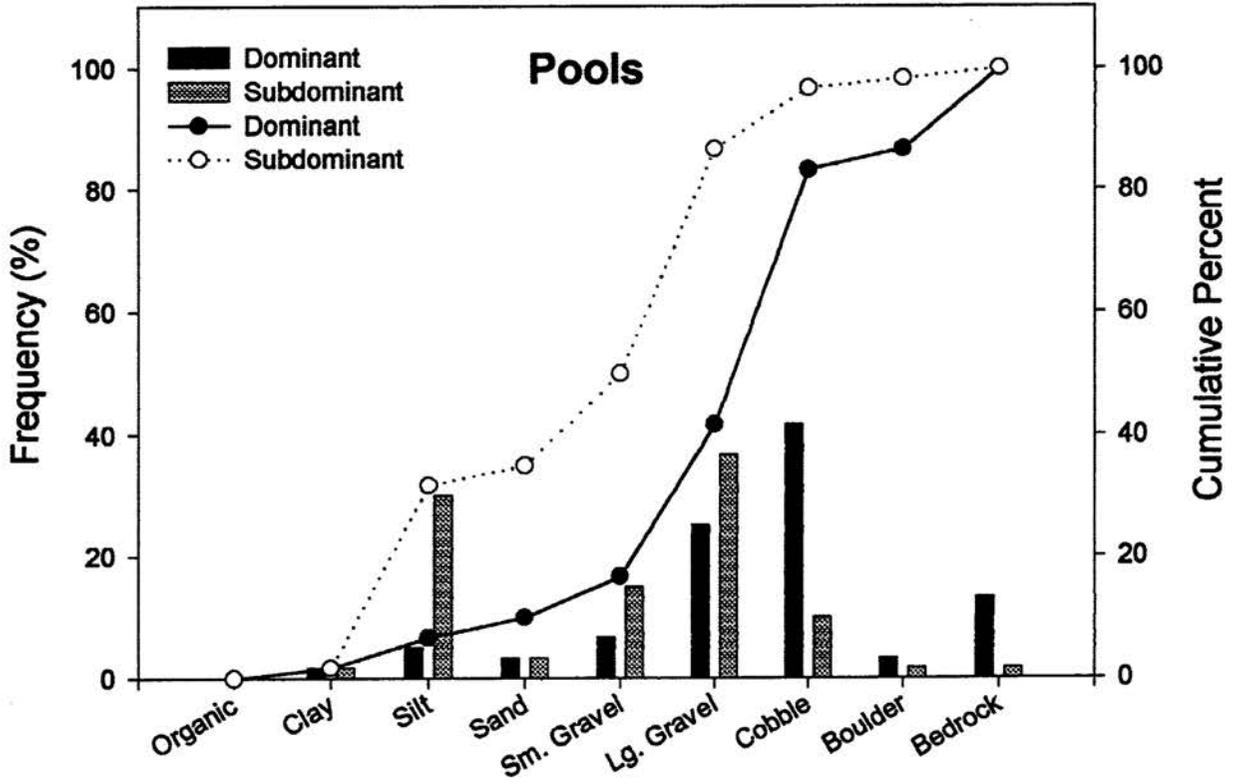
Beech Creek

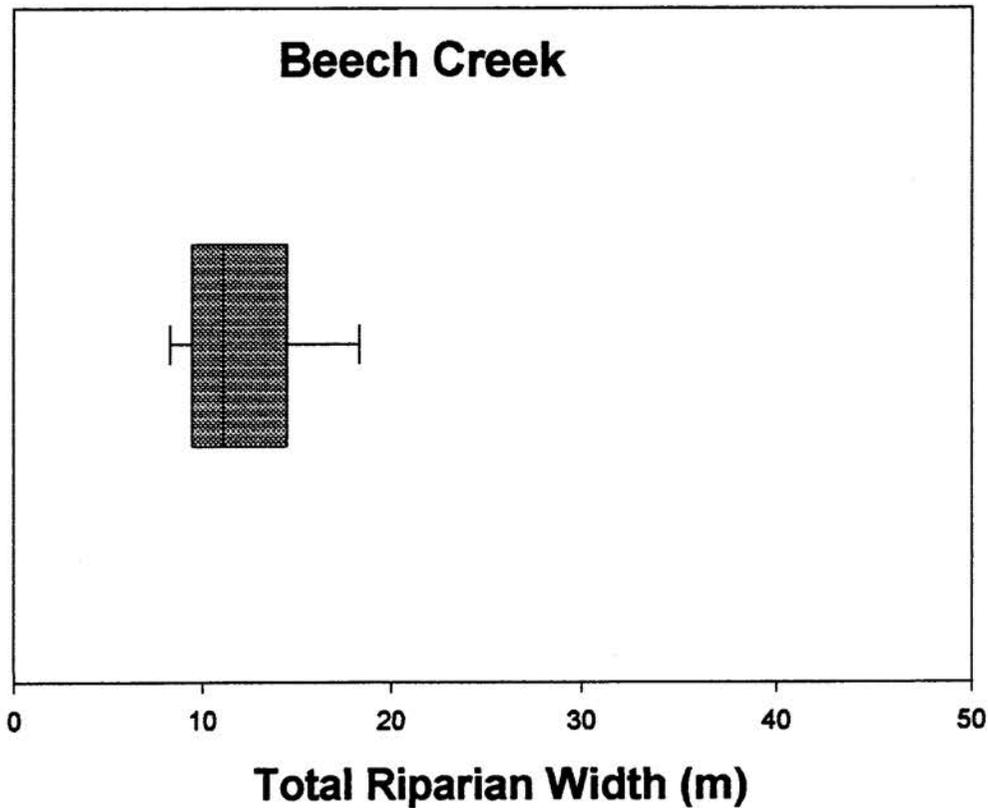


Distribution and Abundance of Large Woody Debris



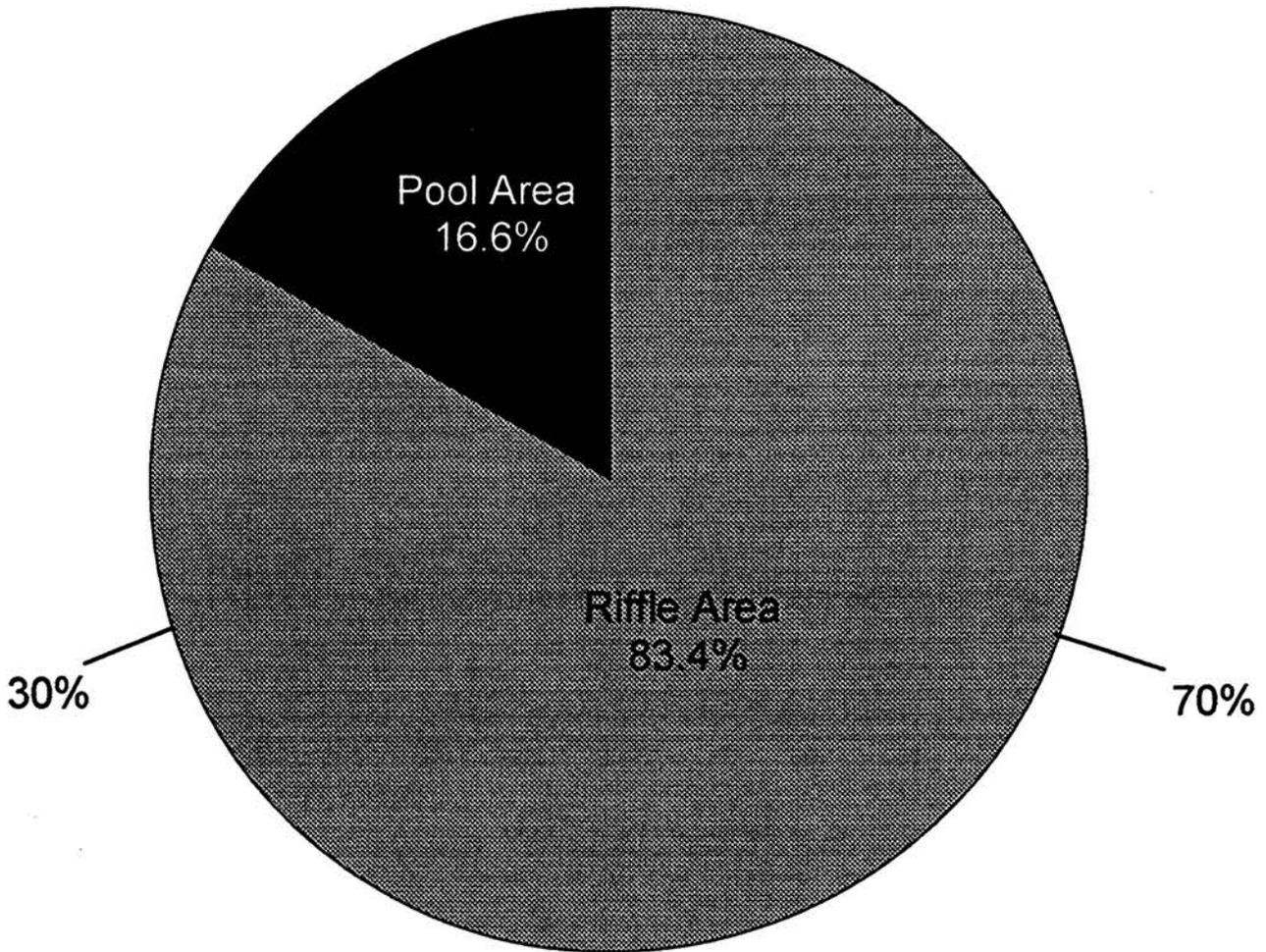
Beech Creek Substrate Composition



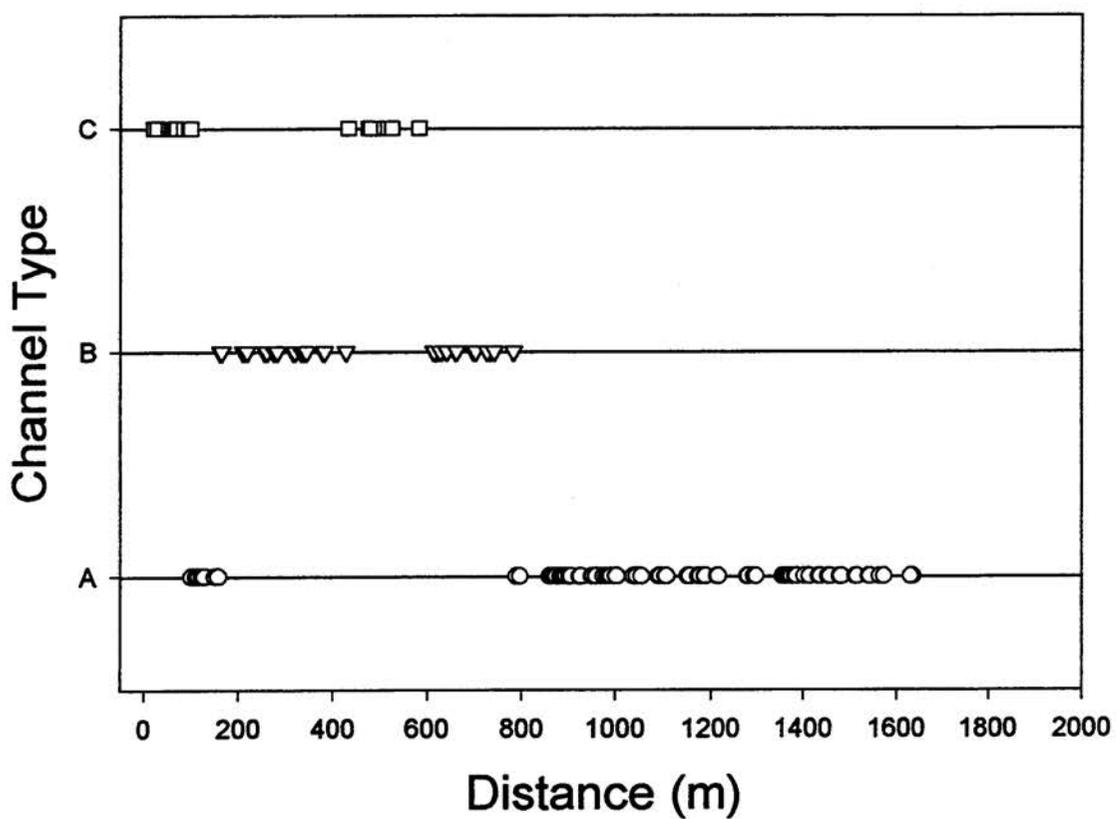
Riparian Width**Stream: Beech Creek****Number of Measurements: 5****Mean Width: 12.1m Std Dev: 3.9****Max: 18.3m Min: 8.3m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Beech Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Beech Creek Rosgen's Channel Type Distribution



Stream: Buzzard Den Branch

District: Mount Rogers National Recreation Area

Quadrangle: Konnarock

Sample Date: 06/17/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 1.7 kilometers

Percent of Total Area - Pools: 12.4%

Number of Pools: 75

Number of Pools per kilometer: 44.7

Total Pool Area: 462.0 sq. meters \pm 44.4

Mean Pool Area: 6.2 sq. meters

Correction Factor: 1.02

Mean Maximum Depth: 36.8 cm

Mean Average Depth: 24.9 cm

Mean Average Residual Pool Depth: 17.7 cm

Percent of Total Area - Riffles: 87.6%

Number of Riffles: 66

Number of Riffles per kilometer: 39.4

Total Riffle Area: 3250.5 sq. meters \pm 275.8

Mean Riffle Area: 49.3 sq. meters

Correction Factor: 1.02

Mean Maximum Depth: 22.6 cm

Mean Average Depth: 11.1 cm

Number of Large Woody Debris Pieces per kilometer: 442.4

Wood < 5 m and < 55 cm: 256.4

Wood < 5 m and > 55 cm: 26.2

Wood > 5 m and < 55 cm: 142.5

Wood > 5 m and > 55 cm: 17.3

Mean Channel Width: 3.6 m

Mean Riparian Width: 11.8 m

Mean Maximum Riparian Distance (either side): 6.5 m

Mean Minimum Riparian Distance (either side): 1.7 m

Maximum Riparian Width (Total): 23.5 m

Minimum Riparian Width (Total): 5.6 m

Buzzard Den Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 21.6%

Rosgen's Channel Type Frequency:

Channel Type A: 88.4%

Channel Type B: 11.6%

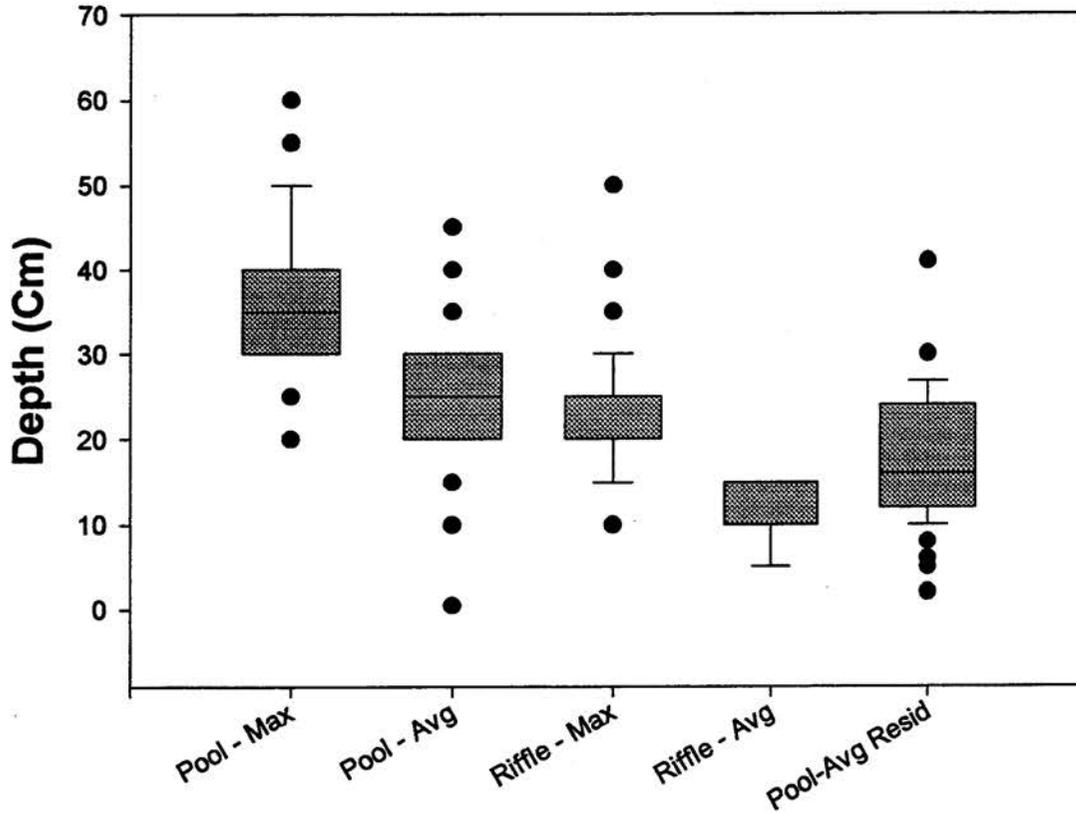
Channel Type C:

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 41.3%

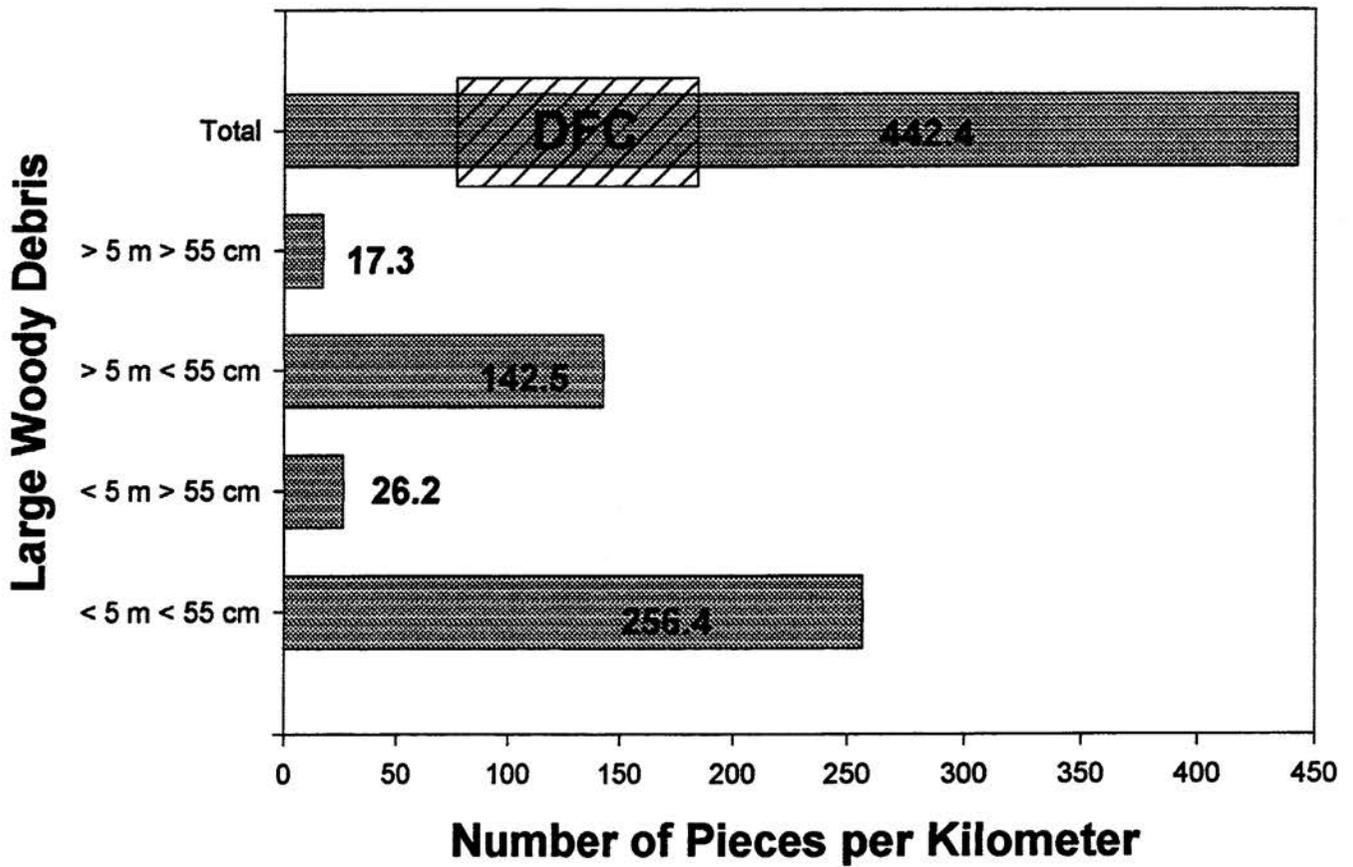
Average Channel Gradient: 16.0

Buzzard Den Branch

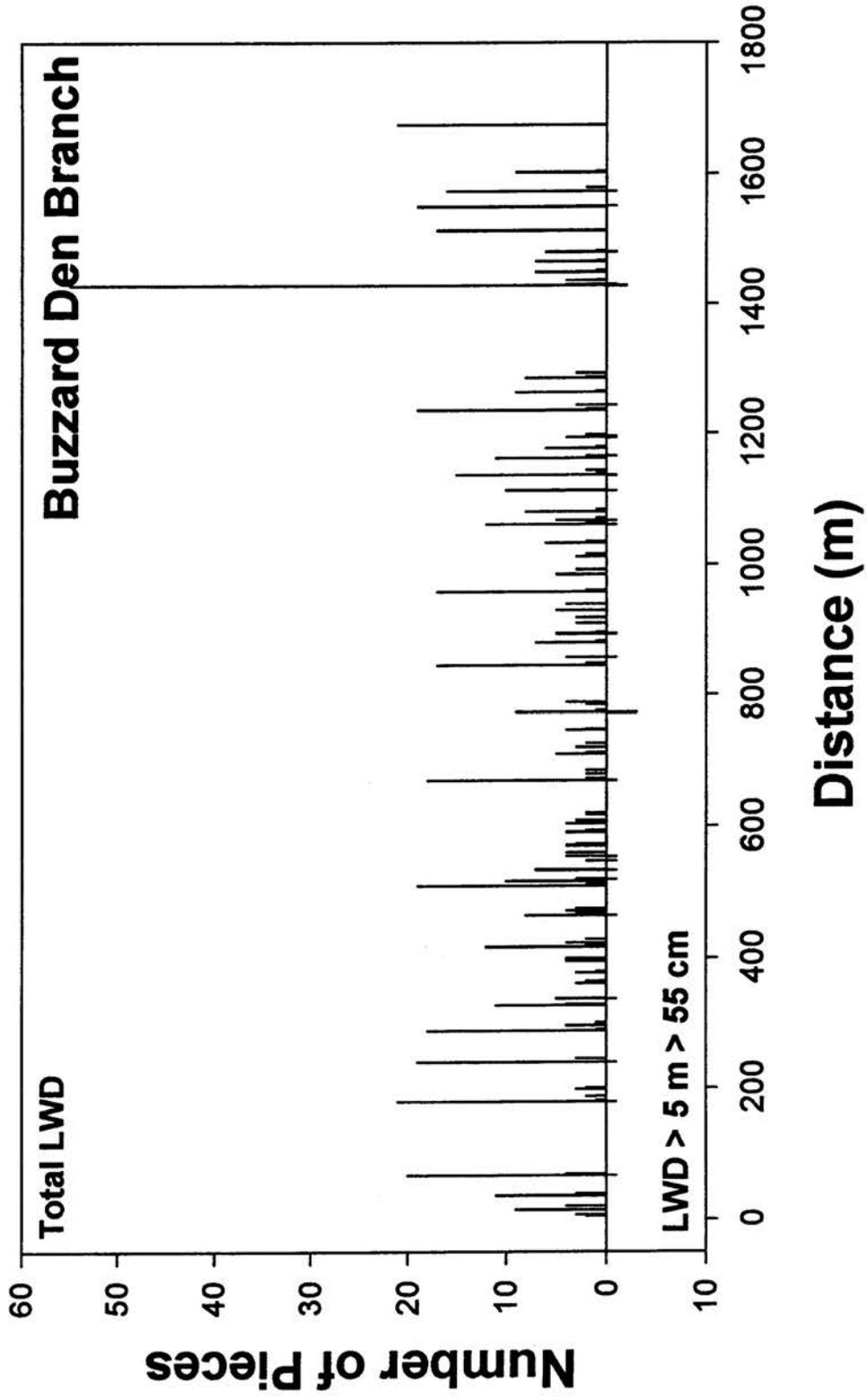


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

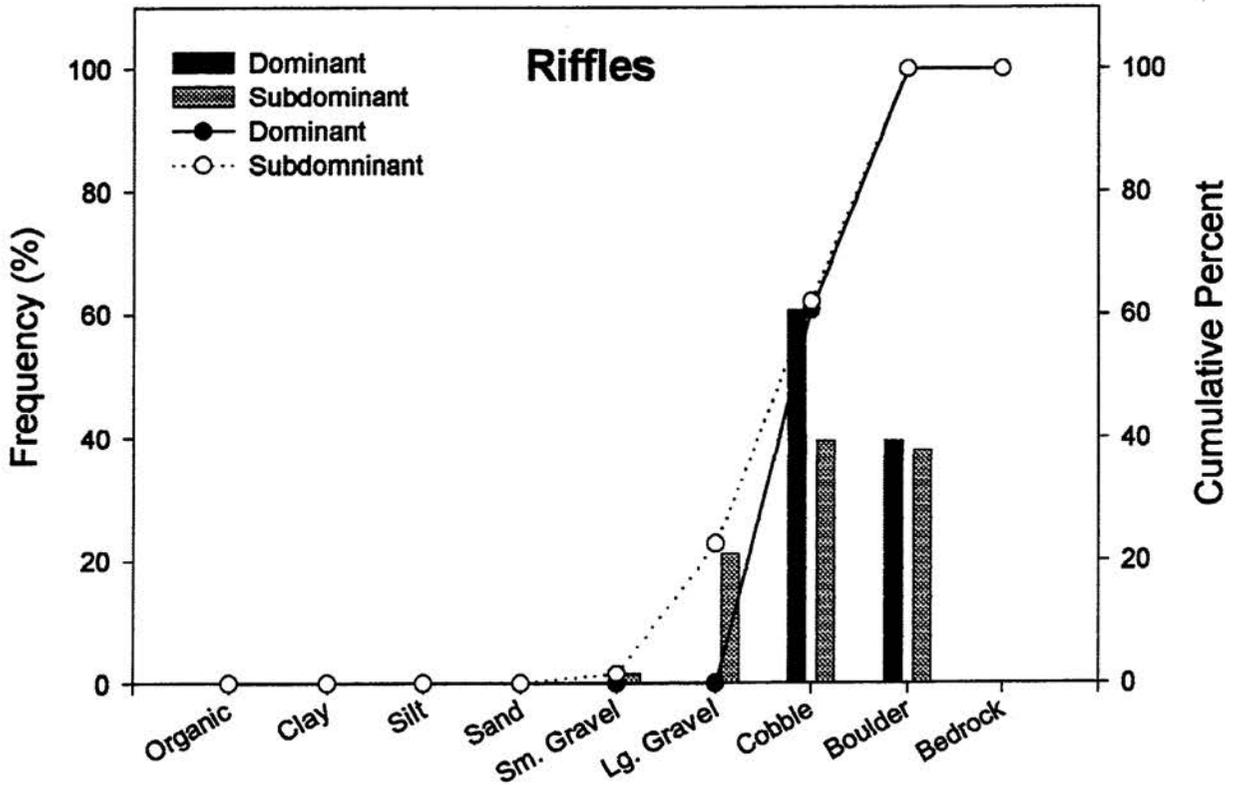
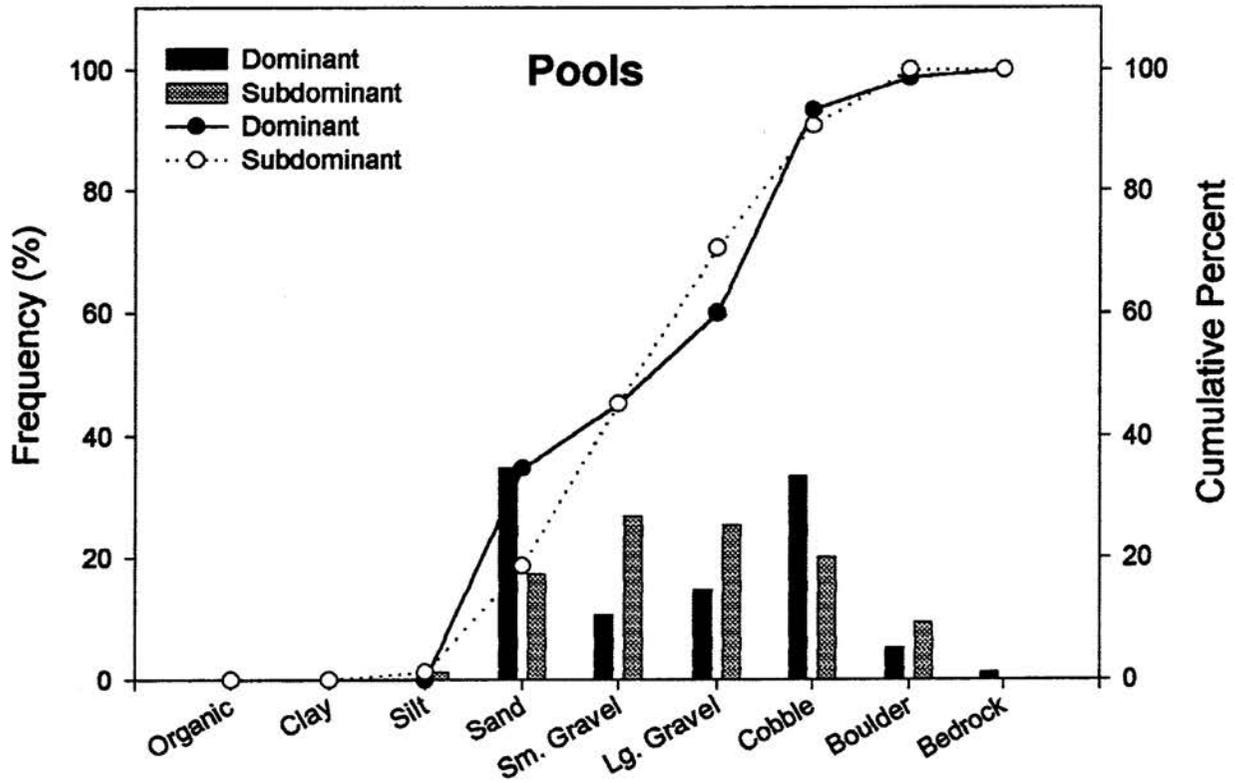
Buzzard Den Branch

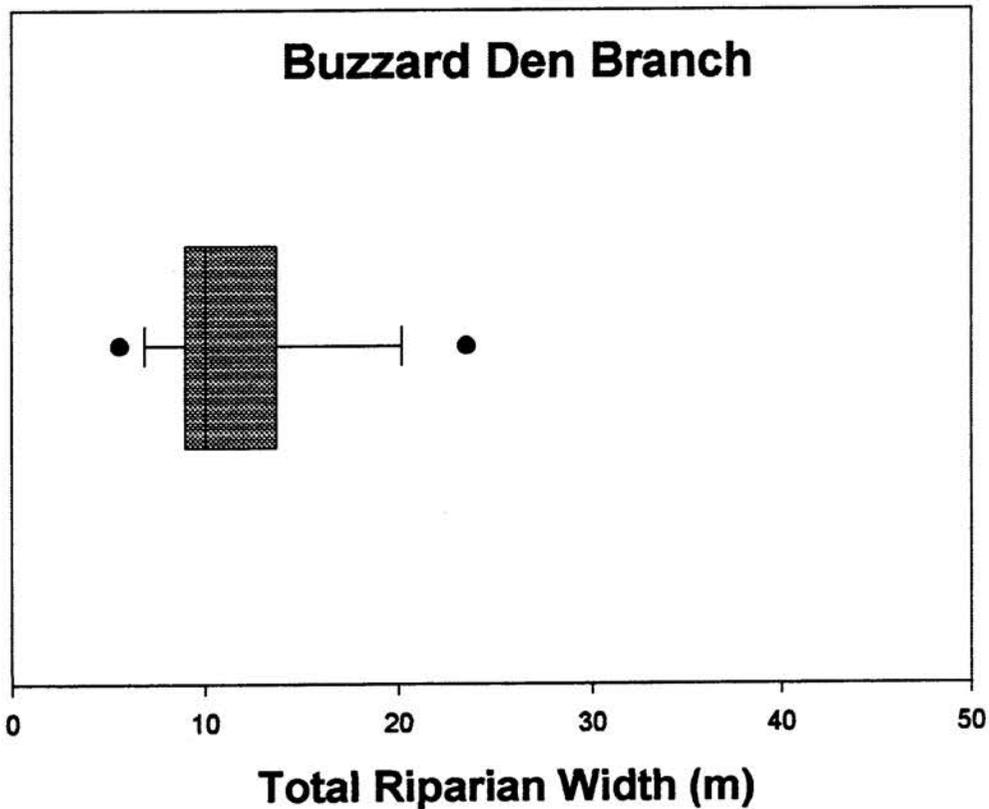


Distribution and Abundance of Large Woody Debris



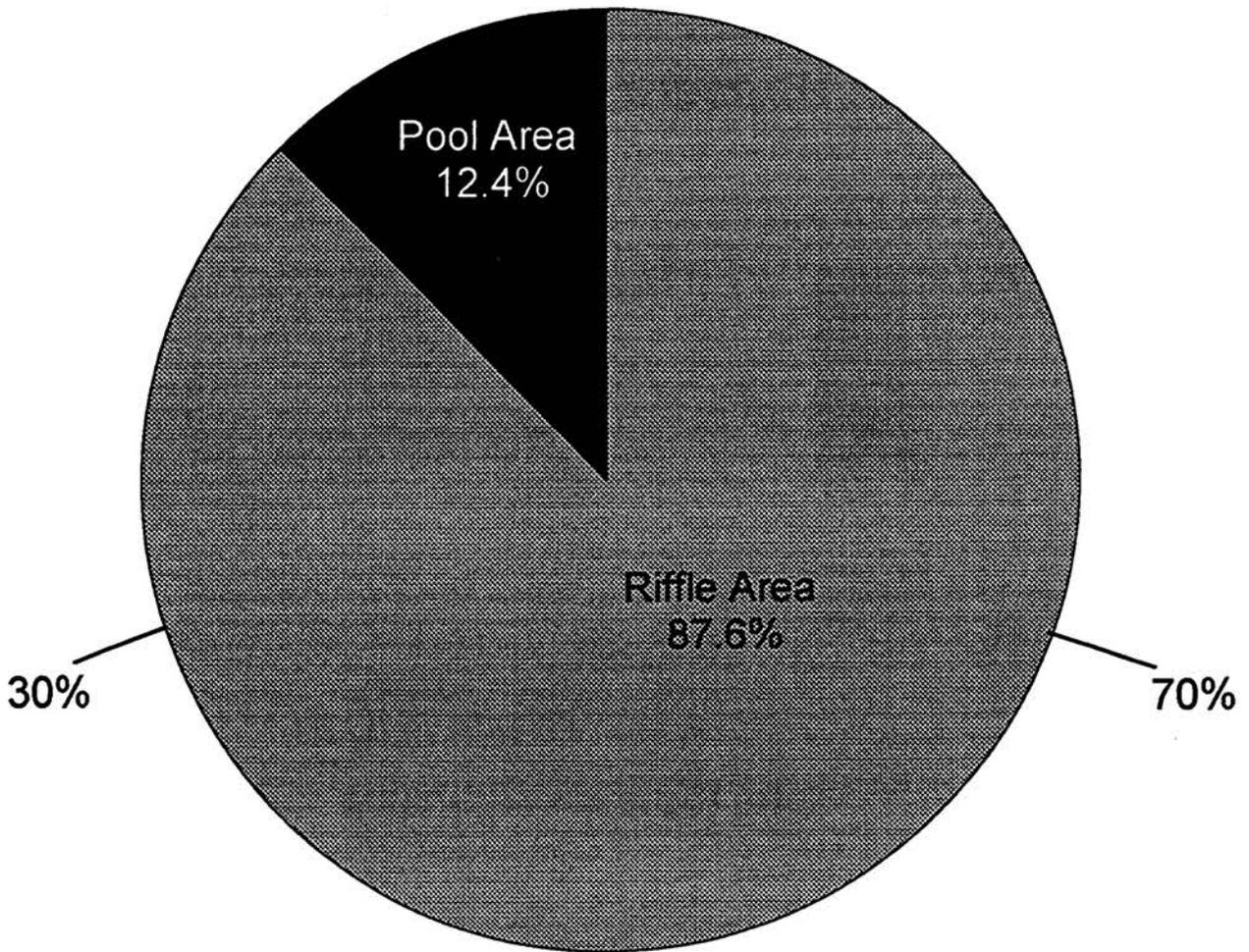
Buzzard Den Branch Substrate Composition



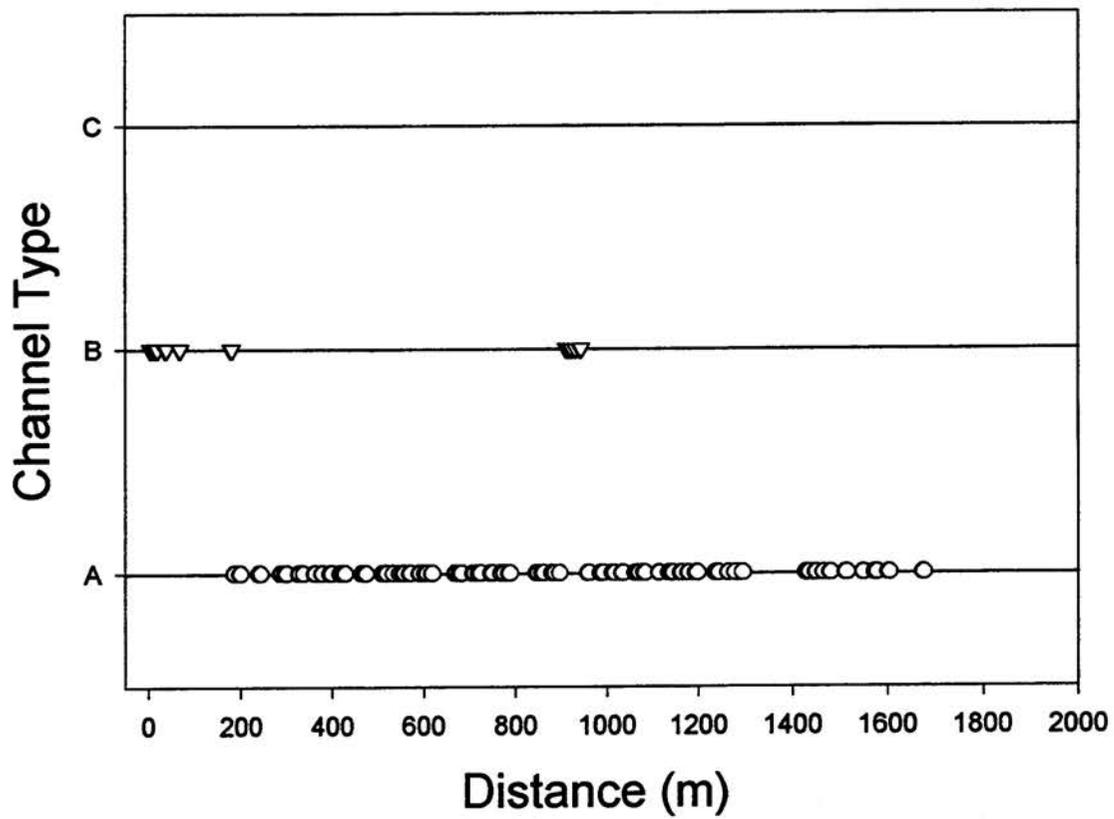
Riparian Width**Stream: Buzzard Den Branch****Number of Measurements: 9****Mean Width: 11.8m Std Dev: 5.2****Max: 23.5m Min: 5.6m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Buzzard Den Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Buzzard Den Branch Rosgen's Channel Type Distribution



Stream: Dry Branch

District: Mount Rogers National Recreation Area

Quadrangle: Konnarock

Sample Date: 06/16/98

Downstream Starting Point: Forest Service Boundary along State Rt. 606

Total Distance Surveyed: 1.0 kilometers

Percent of Total Area - Pools: 15.3%

Number of Pools: 37

Number of Pools per kilometer: 37

Total Pool Area: 335.0 sq. meters \pm 26.0

Mean Pool Area: 9.1 sq. meters

Correction Factor: 1.26

Mean Maximum Depth: 40.8 cm

Mean Average Depth: 32.8 cm

Mean Average Residual Pool Depth: 20.5 cm

Percent of Total Area - Riffles: 84.7%

Number of Riffles: 37

Number of Riffles per kilometer: 37

Total Riffle Area: 1847.9 sq. meters \pm 222.1

Mean Riffle Area: 49.9 sq. meters

Correction Factor: 0.99

Mean Maximum Depth: 24.3 cm

Mean Average Depth: 13.2 cm

Number of Large Woody Debris Pieces per kilometer: 282.6

Wood < 5 m and < 55 cm: 141.8

Wood < 5 m and > 55 cm: 23.3

Wood > 5 m and < 55 cm: 100.0

Wood > 5 m and > 55 cm: 17.5

Mean Channel Width: 3.4 m

Mean Riparian Width: 14.3 m

Mean Maximum Riparian Distance (either side): 9.7 m

Mean Minimum Riparian Distance (either side): 1.2 m

Maximum Riparian Width (Total): 28.3 m

Minimum Riparian Width (Total): 3.3 m

Dry Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 0.0%

Rosgen's Channel Type Frequency:

Channel Type A: 55.0%

Channel Type B: 45.0%

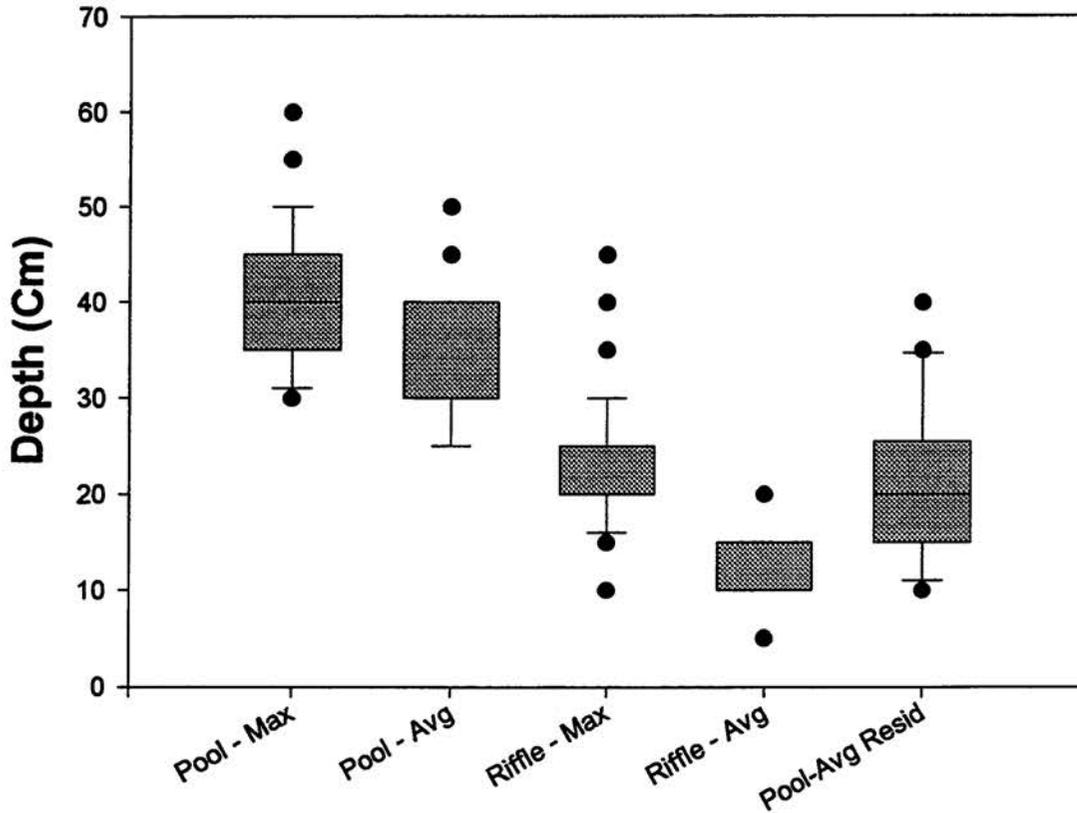
Channel Type C:

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 32.4%

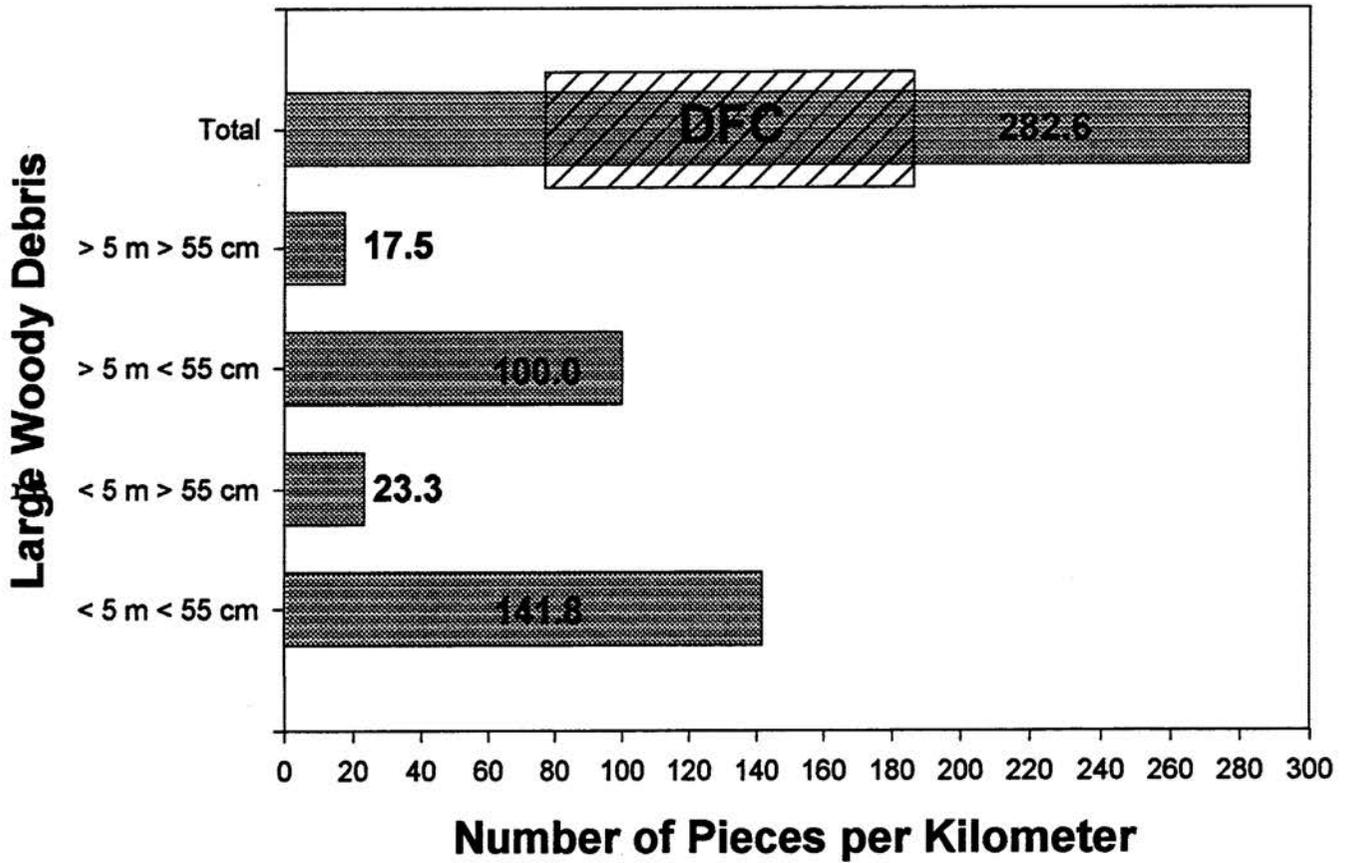
Average Channel Gradient: 10.2

Dry Branch

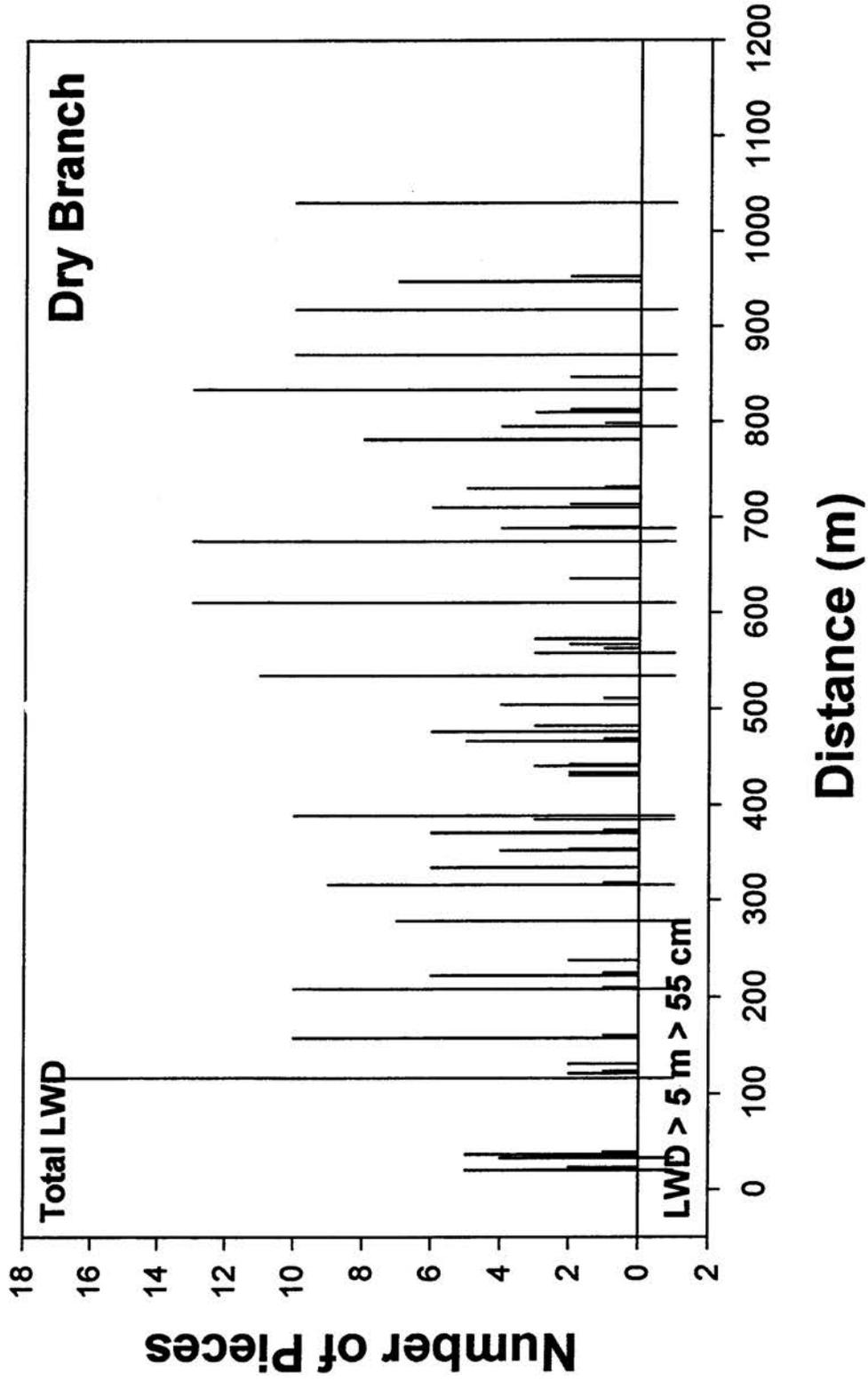


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

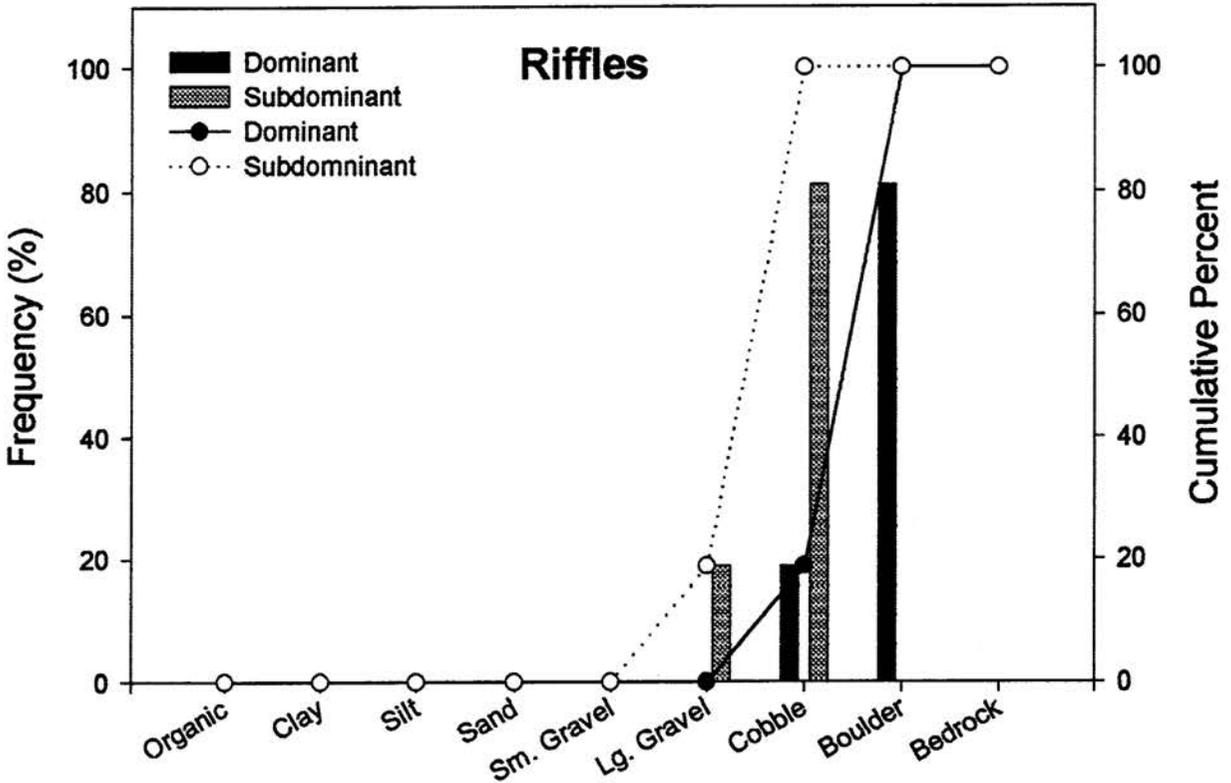
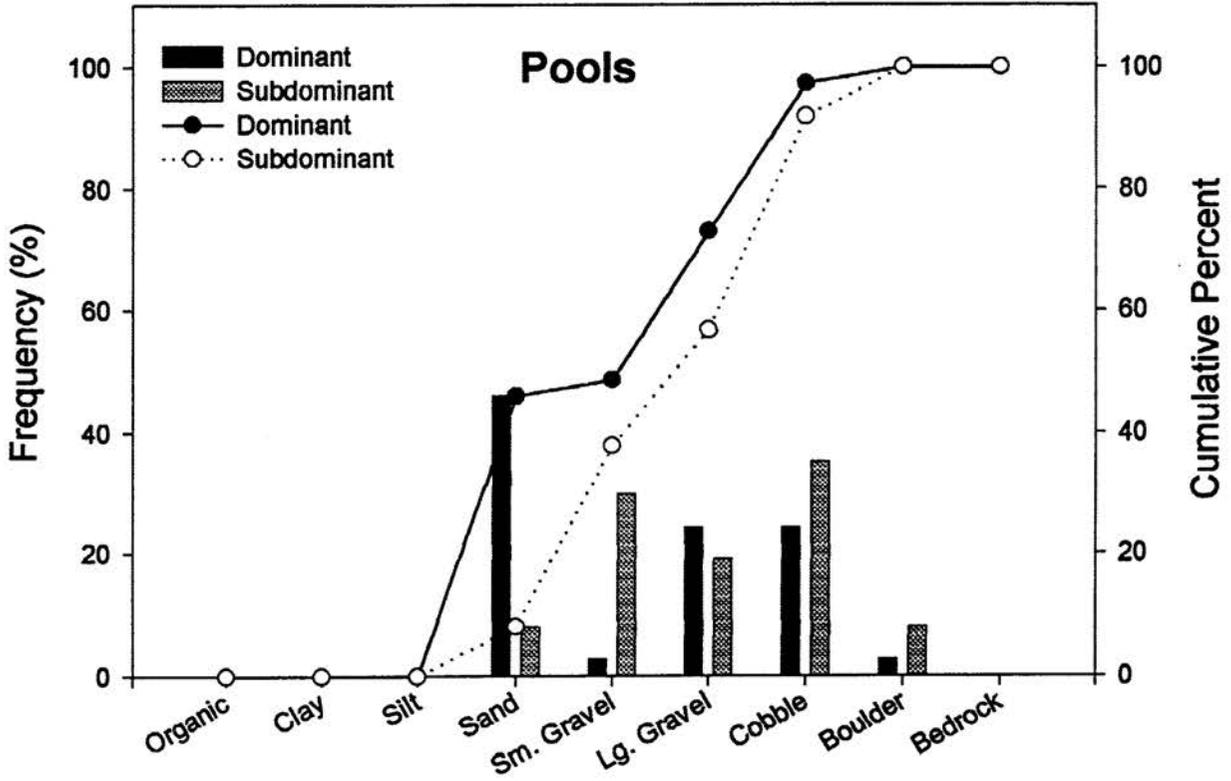
Dry Branch

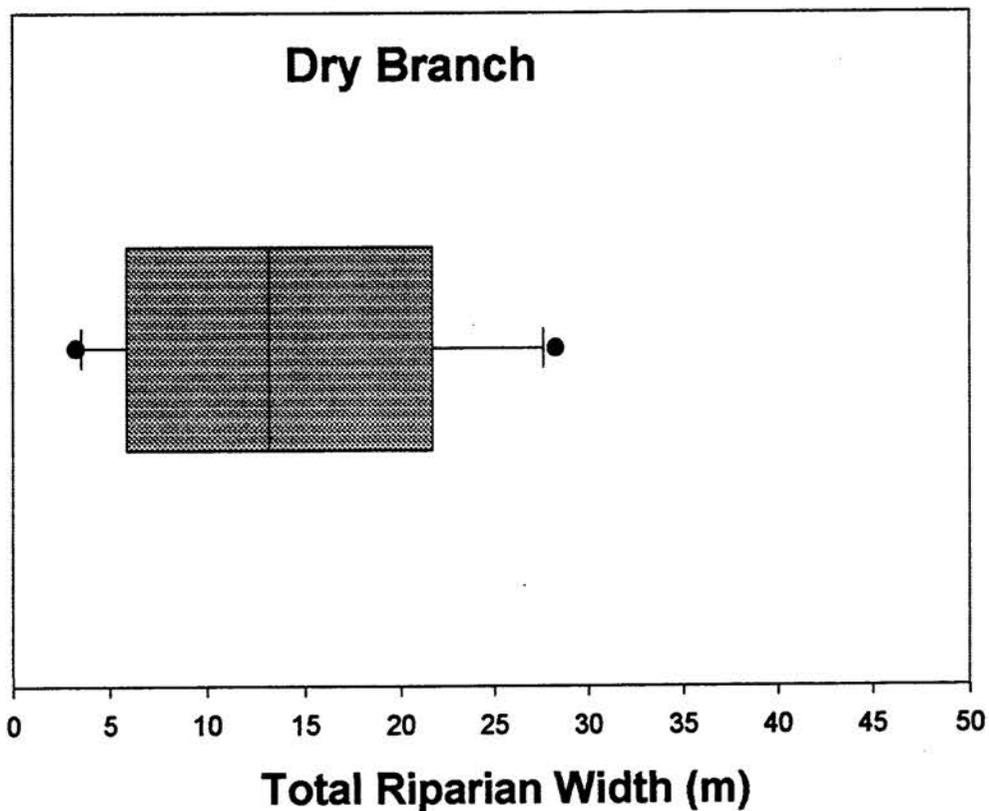


Distribution and Abundance of Large Woody Debris



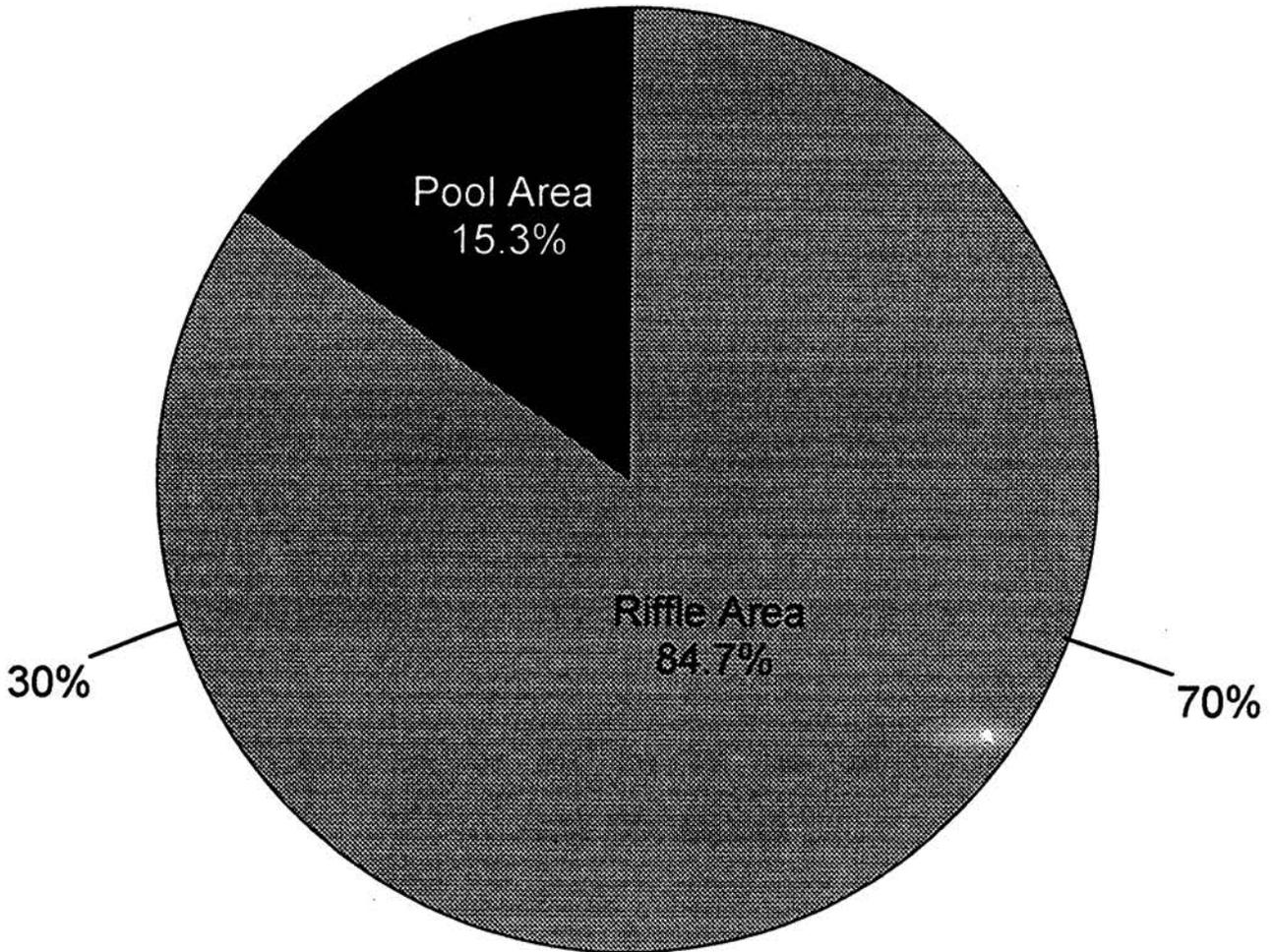
Dry Branch Substrate Composition



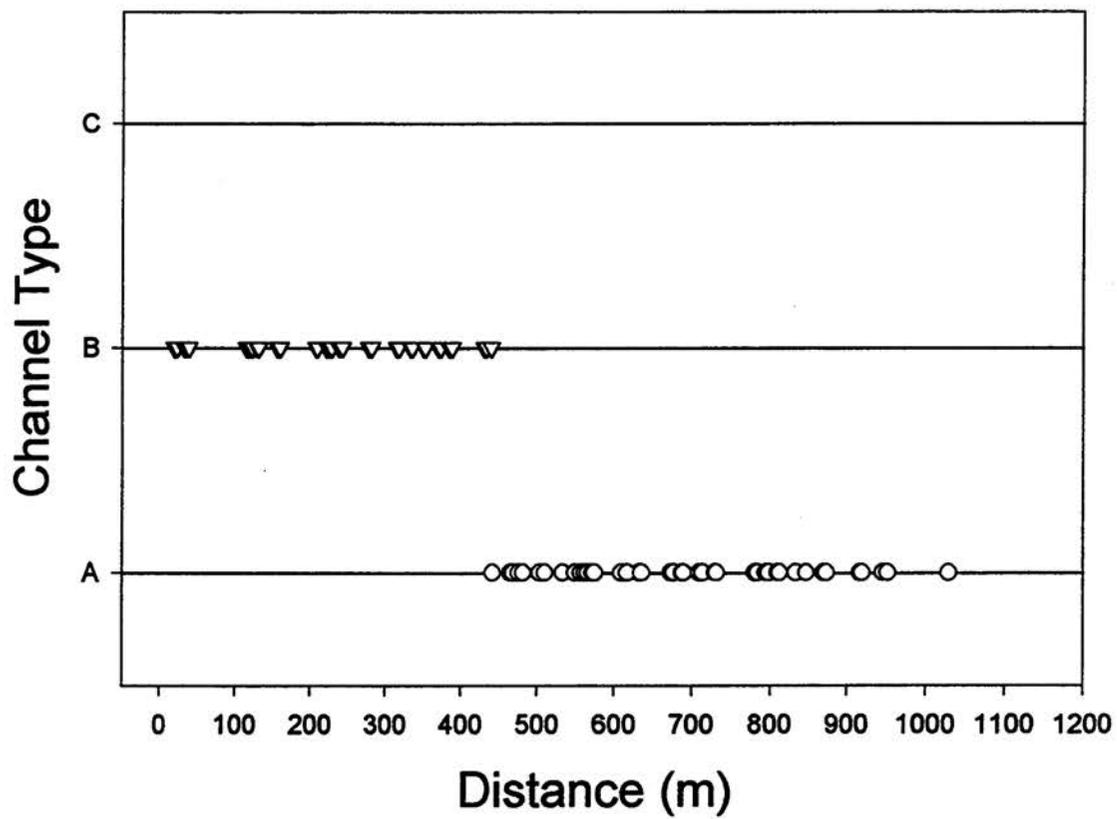
Riparian Width**Stream: Dry Branch****Number of Measurements: 6****Mean Width: 14.3m Std Dev: 10.0****Max: 28.3m Min: 3.3m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Dry Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Dry Branch Rosgen's Channel Type Distribution



Stream: Feathercamp Branch

District: Mount Rogers National Recreation Area

Quadrangle: Konnarock

Sample Date: 06/03/98

Downstream Starting Point: Confluence with Straight Branch

Total Distance Surveyed: 2.5 kilometers

Percent of Total Area - Pools: 17.4%

Number of Pools: 137

Number of Pools per kilometer: 54.8

Total Pool Area: 1079.3 sq. meters \pm 178.7

Mean Pool Area: 7.9 sq. meters

Correction Factor: 1.16

Mean Maximum Depth: 41.4 cm

Mean Average Depth: 31.8 cm

Mean Average Residual Pool Depth: 25.9 cm

Percent of Total Area - Riffles: 82.6%

Number of Riffles: 123

Number of Riffles per kilometer: 49.2

Total Riffle Area: 5107.6 sq. meters \pm 364.5

Mean Riffle Area: 41.5 sq. meters

Correction Factor: 1.12

Mean Maximum Depth: 24.9 cm

Mean Average Depth: 13.5 cm

Number of Large Woody Debris Pieces per kilometer: 150.4

Wood < 5 m and < 55 cm: 120.8

Wood < 5 m and > 55 cm: 6.8

Wood > 5 m and < 55 cm: 22.0

Wood > 5 m and > 55 cm: 0.8

Mean Channel Width: 1.9 m

Mean Riparian Width: 9.6 m

Mean Maximum Riparian Distance (either side): 5.1 m

Mean Minimum Riparian Distance (either side): 2.6 m

Maximum Riparian Width (Total): 14.0 m

Minimum Riparian Width (Total): 7.7 m

Feathercamp Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 25.9%

Rosgen's Channel Type Frequency:

Channel Type A: 65.2%

Channel Type B: 33.7%

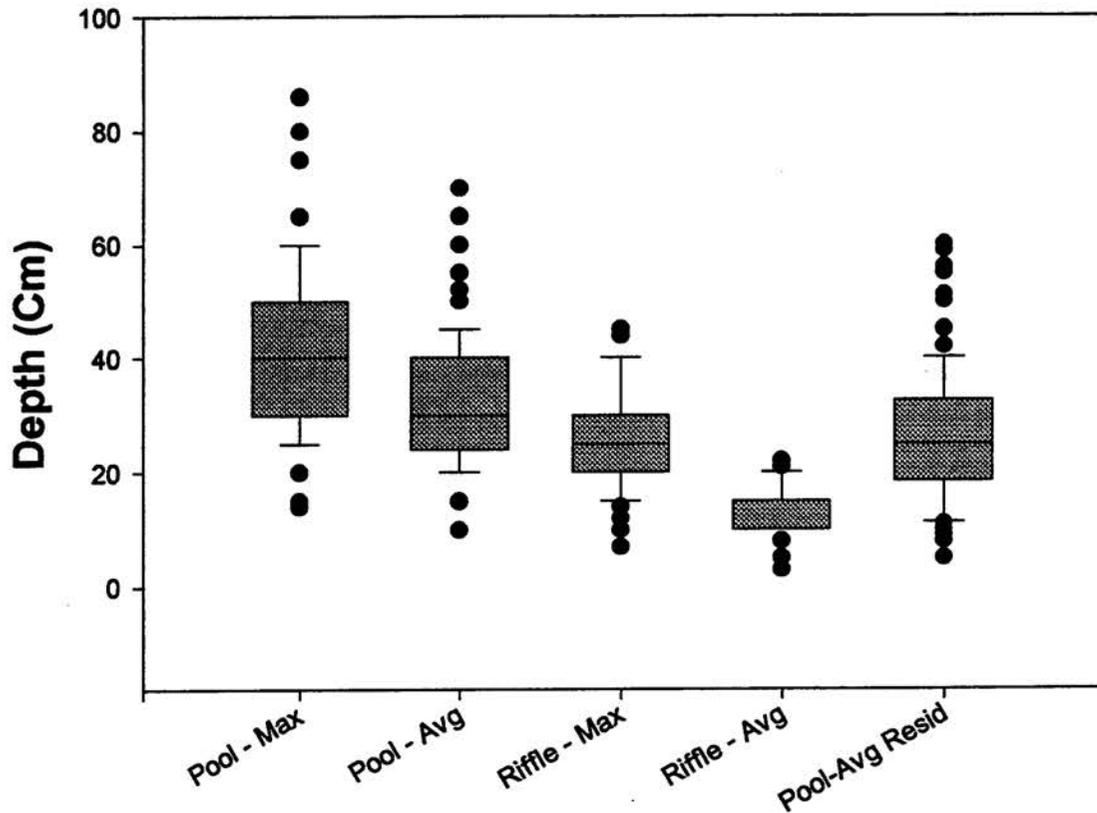
Channel Type C: 1.1%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 8.0%

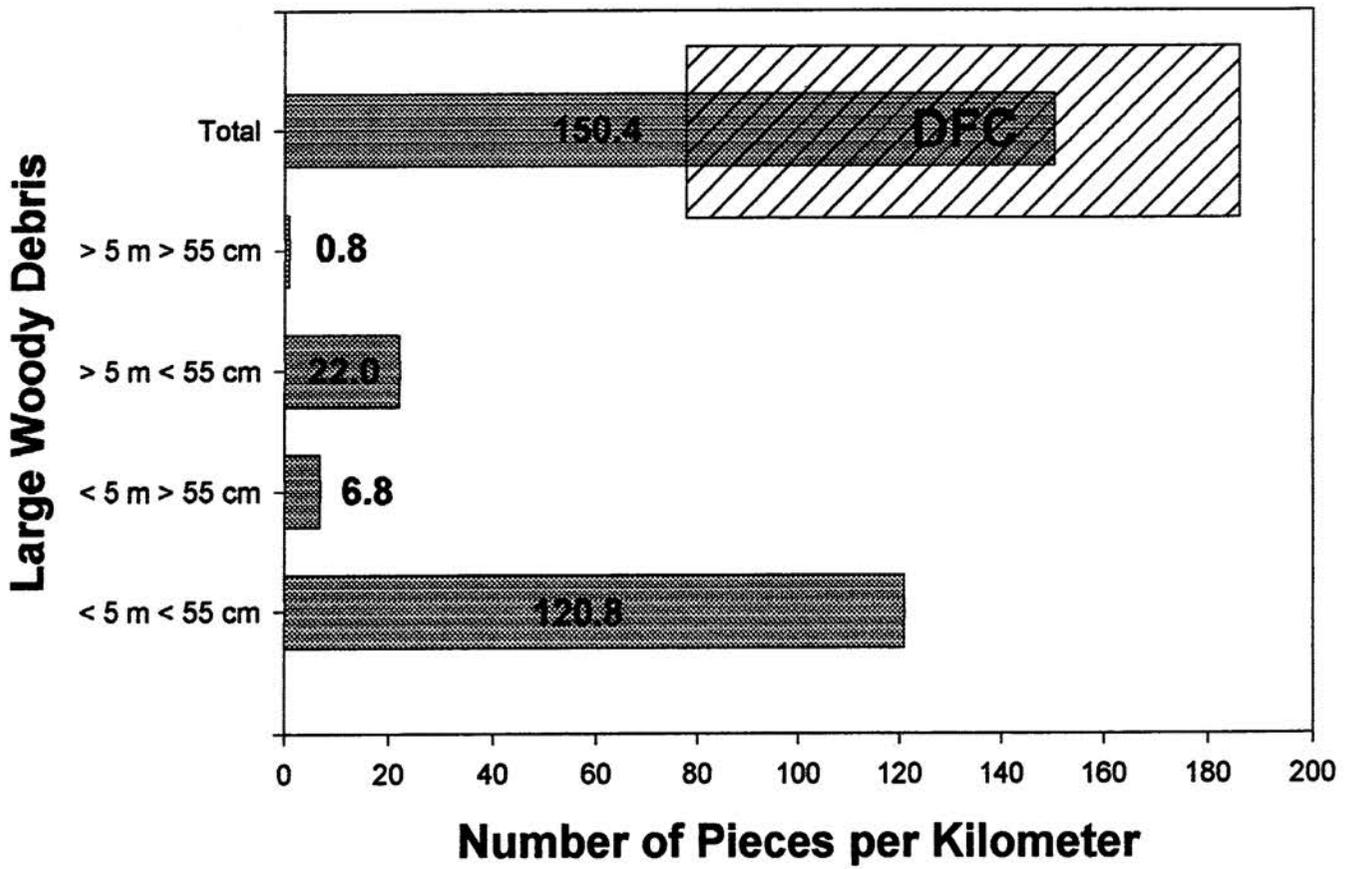
Average Channel Gradient: 13.0

Feathercamp Branch

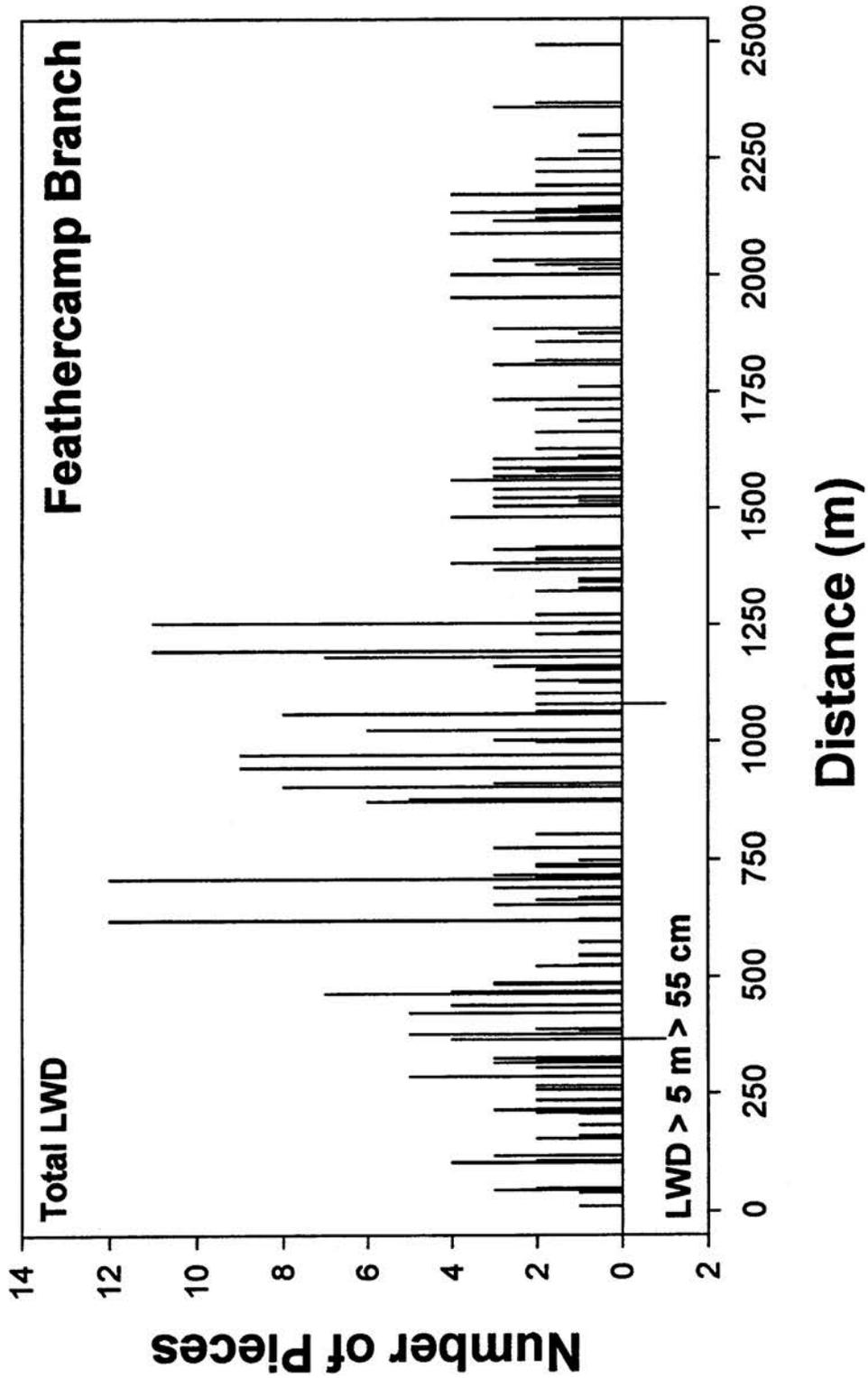


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

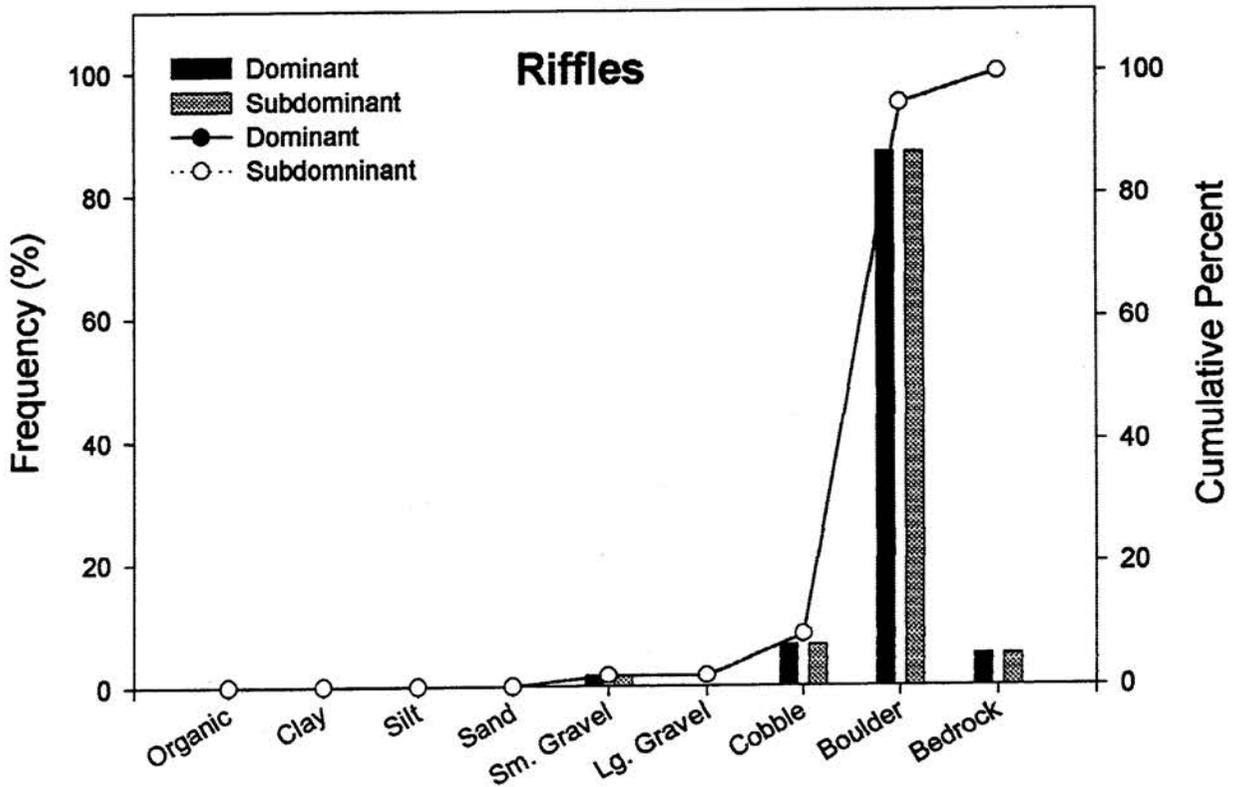
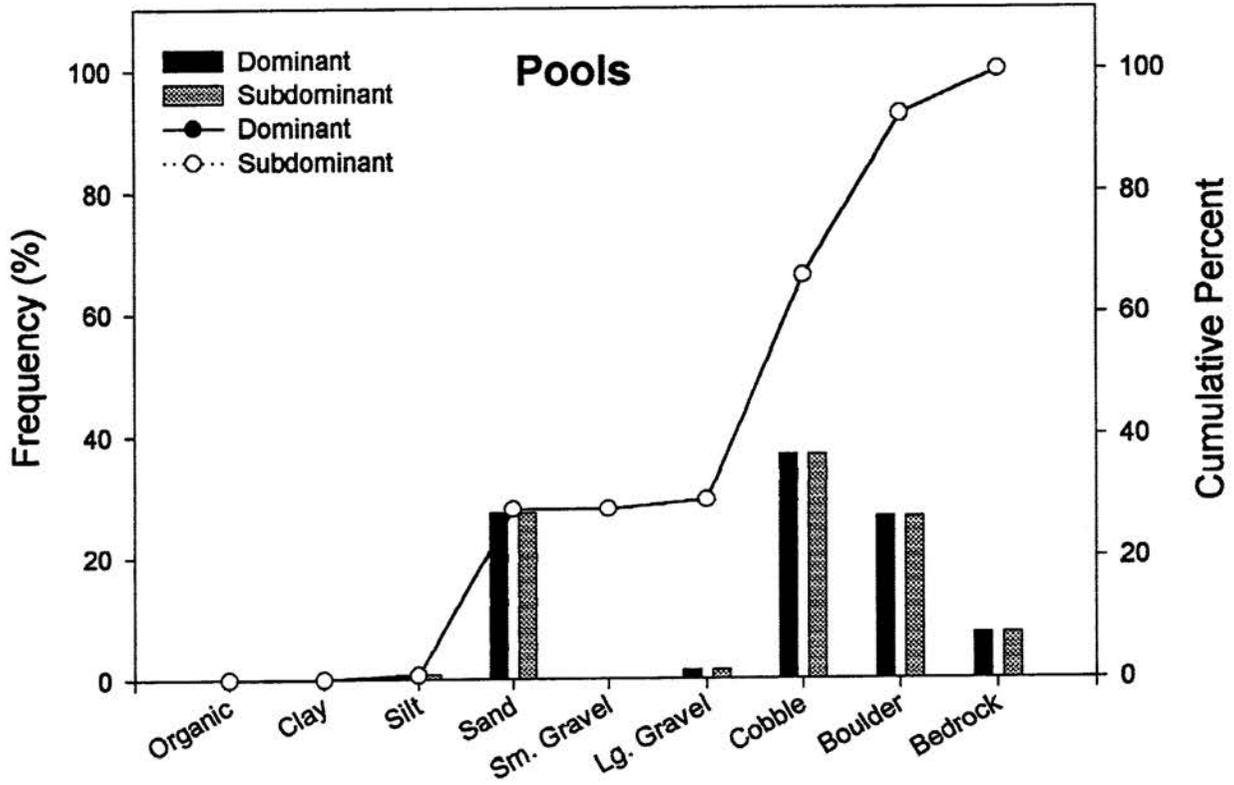
Feathercamp Branch

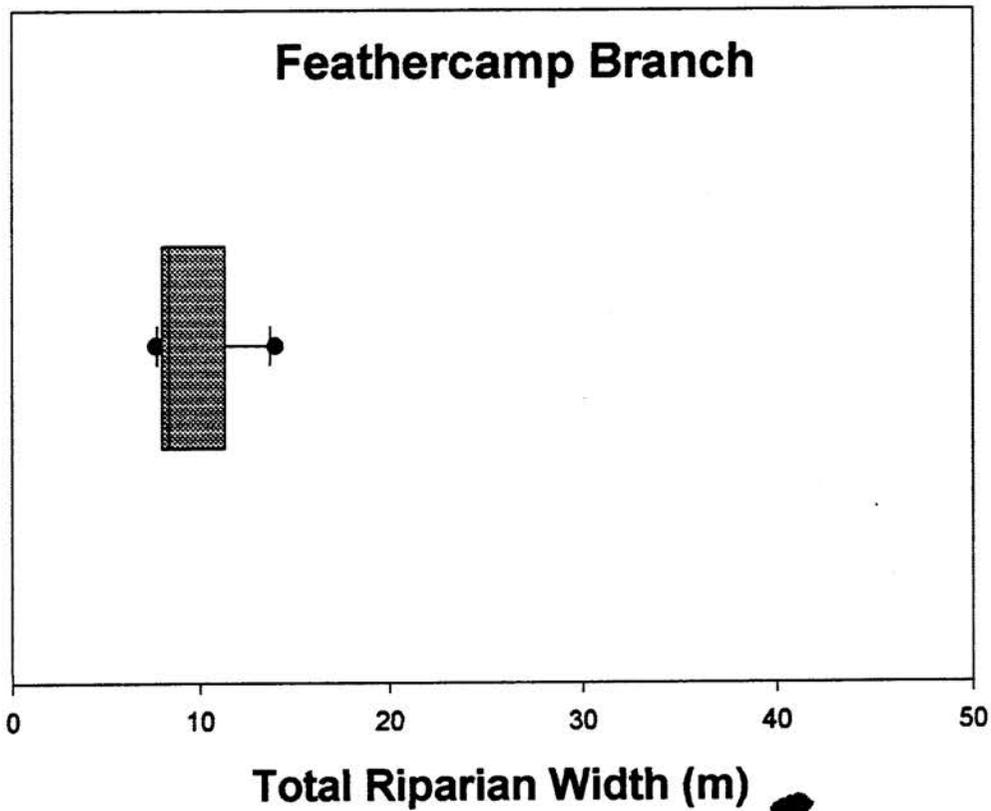


Distribution and Abundance of Large Woody Debris



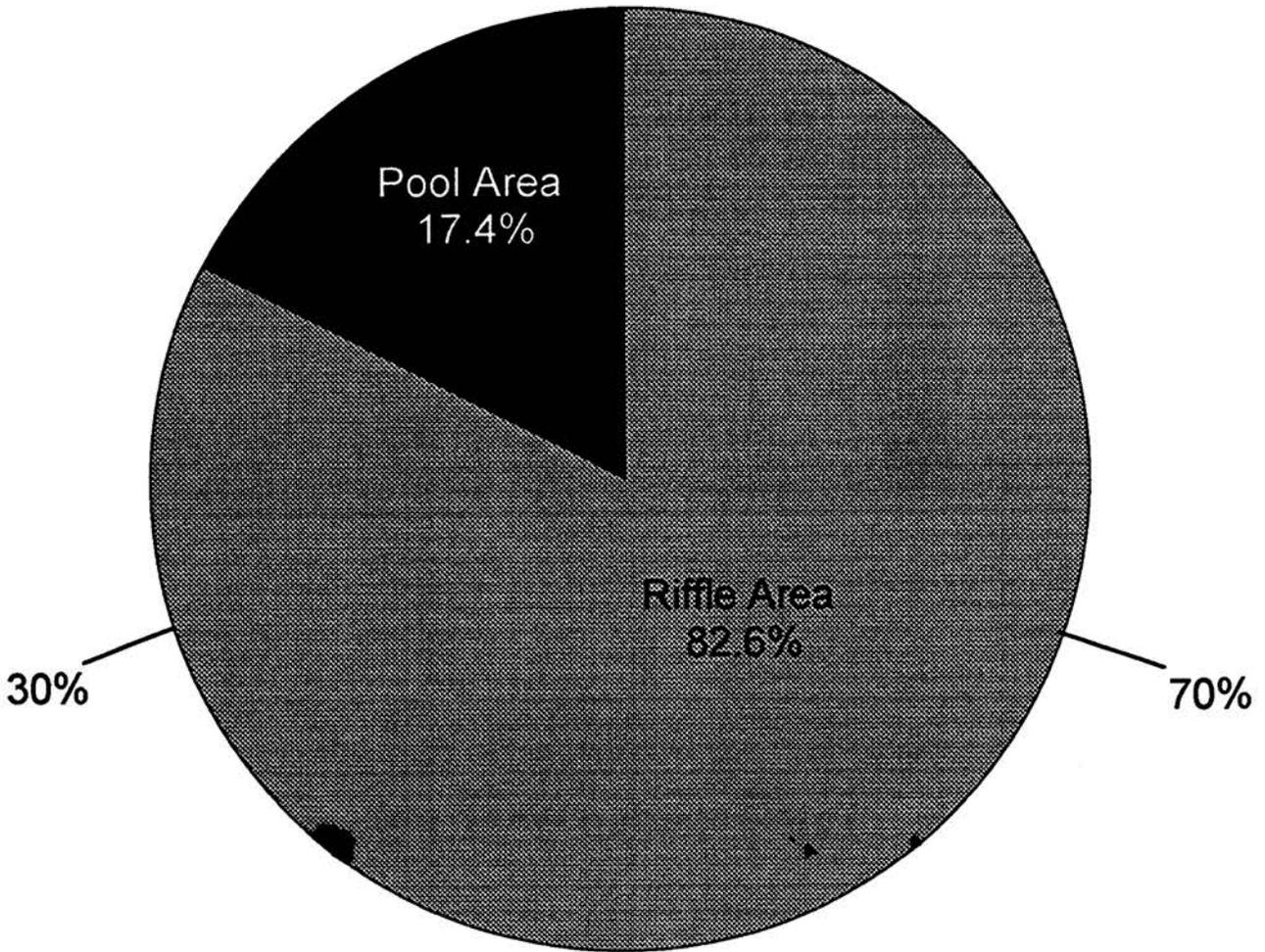
Feathercamp Branch Substrate Composition



Riparian Width**Stream: Feathercamp Branch****Number of Measurements: 6****Mean Width: 9.6m Std Dev: 2.5****Max: 14.0m Min: 7.7m**

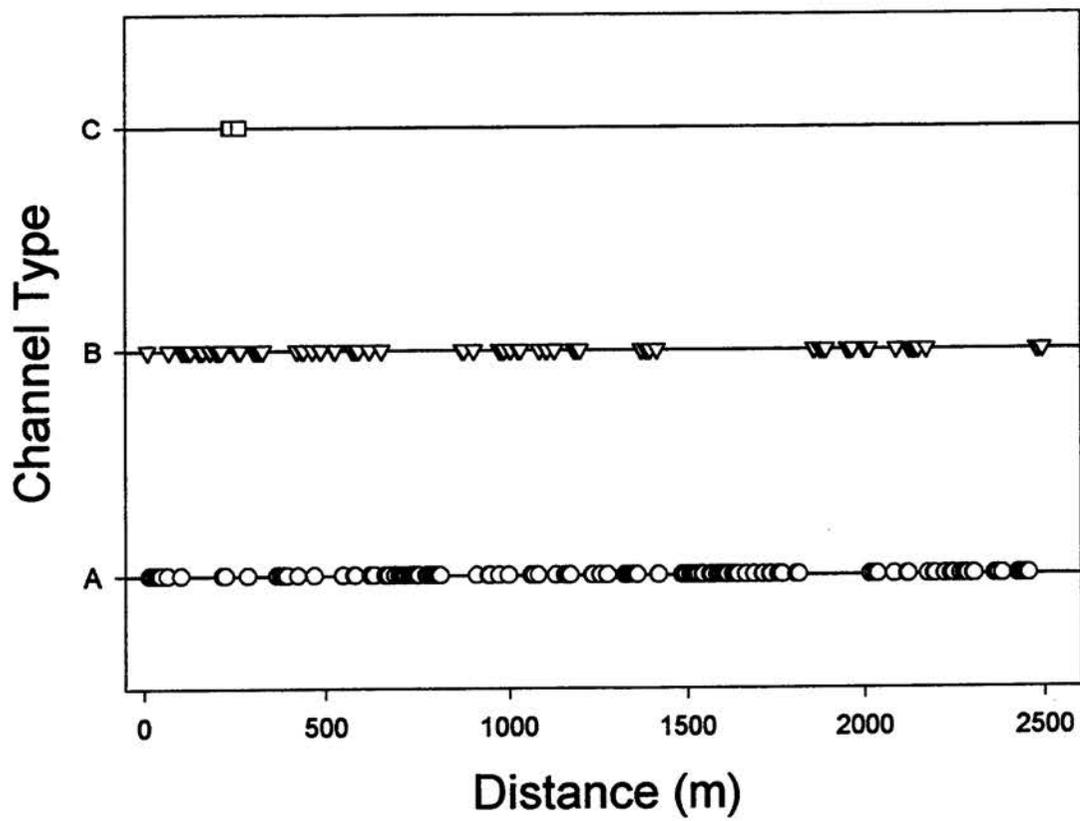
Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Feathercamp Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



near spot
d and wolec.

Feathercamp Branch Rosgen's Channel Type Distribution



Stream: Green Cove Creek

District: Mount Rogers National Recreation Area

Quadrangle: Konnarock

Sample Date: 06/09/98

Downstream Starting Point: Confluence with Whitetop Laurel Creek

Total Distance Surveyed: 3.1 kilometers

Percent of Total Area - Pools: 19.9%

Number of Pools: 67

Number of Pools per kilometer: 21.6

Total Pool Area: 4681.9 sq. meters \pm 217.7

Mean Pool Area: 69.9 sq. meters

Correction Factor: 0.86

Mean Maximum Depth: 97.9 cm

Mean Average Depth: 71.6 cm

Mean Average Residual Pool Depth: 40.2 cm

Percent of Total Area - Riffles: 80.1%

Number of Riffles: 54

Number of Riffles per kilometer: 17.4

Total Riffle Area: 18798.8 sq. meters \pm 2318.4

Mean Riffle Area: 348.1 sq. meters

Correction Factor: 1.11

Mean Maximum Depth: 65.3 cm

Mean Average Depth: 39.3 cm

Number of Large Woody Debris Pieces per kilometer: 497.8

Wood < 5 m and < 55 cm: 276.7

Wood < 5 m and > 55 cm: 9.9

Wood > 5 m and < 55 cm: 194.3

Wood > 5 m and > 55 cm: 16.9

Mean Channel Width: 11.9 m

Mean Riparian Width: 43.8 m

Mean Maximum Riparian Distance (either side): 29.0 m

Mean Minimum Riparian Distance (either side): 2.9 m

Maximum Riparian Width (Total): 125.6 m

Minimum Riparian Width (Total): 16.5 m

Green Cove Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 17.0%

Rosgen's Channel Type Frequency:

Channel Type A: 59.7%

Channel Type B: 28.8%

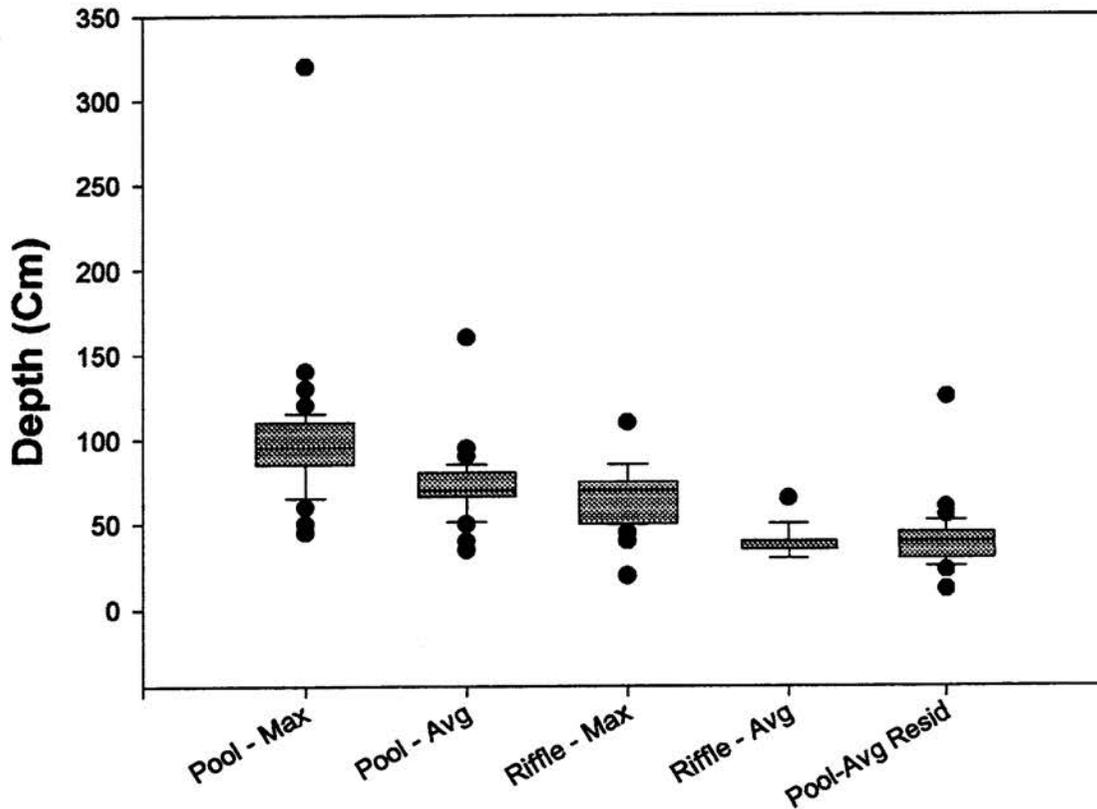
Channel Type C: 11.5%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 19.4%

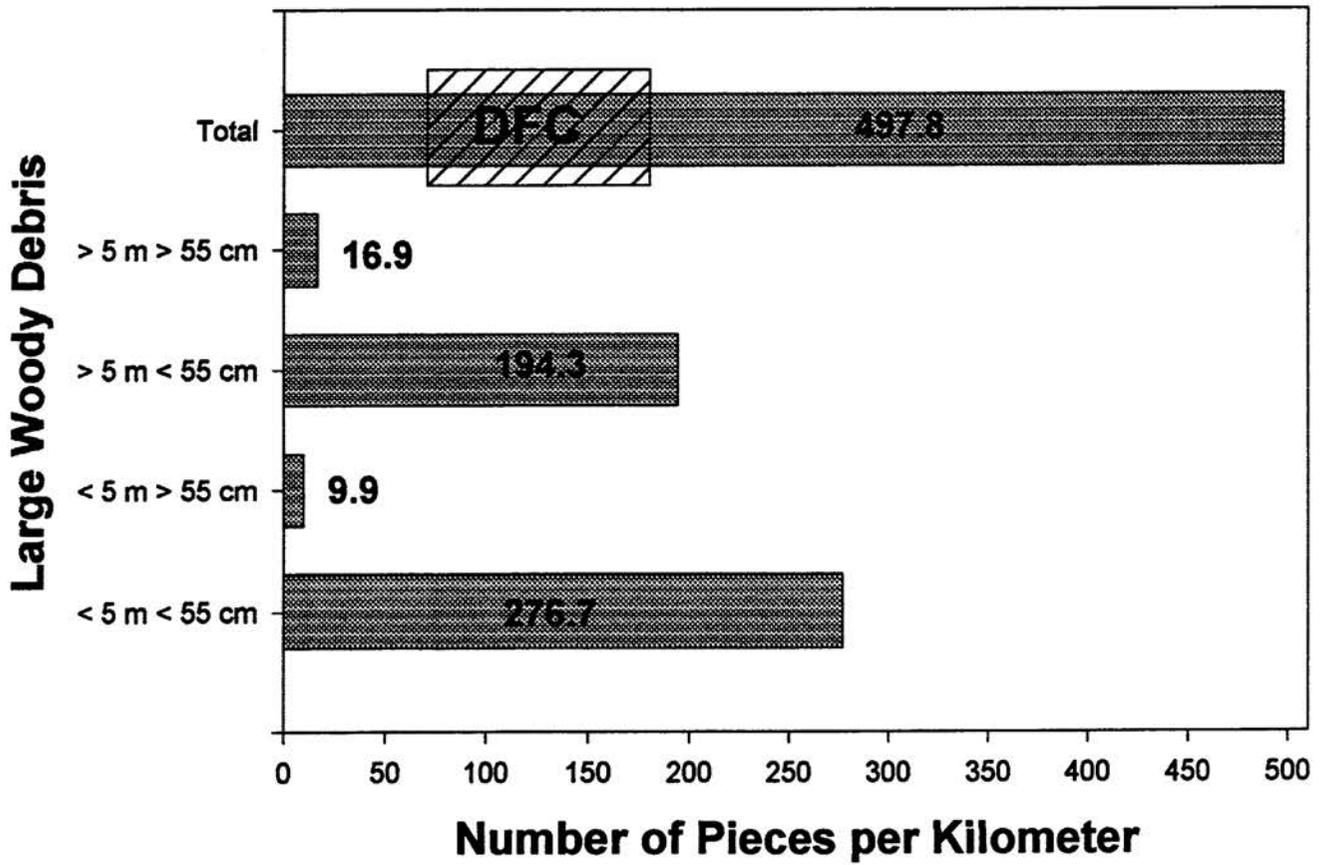
Average Channel Gradient: 7.8

Green Cove Creek

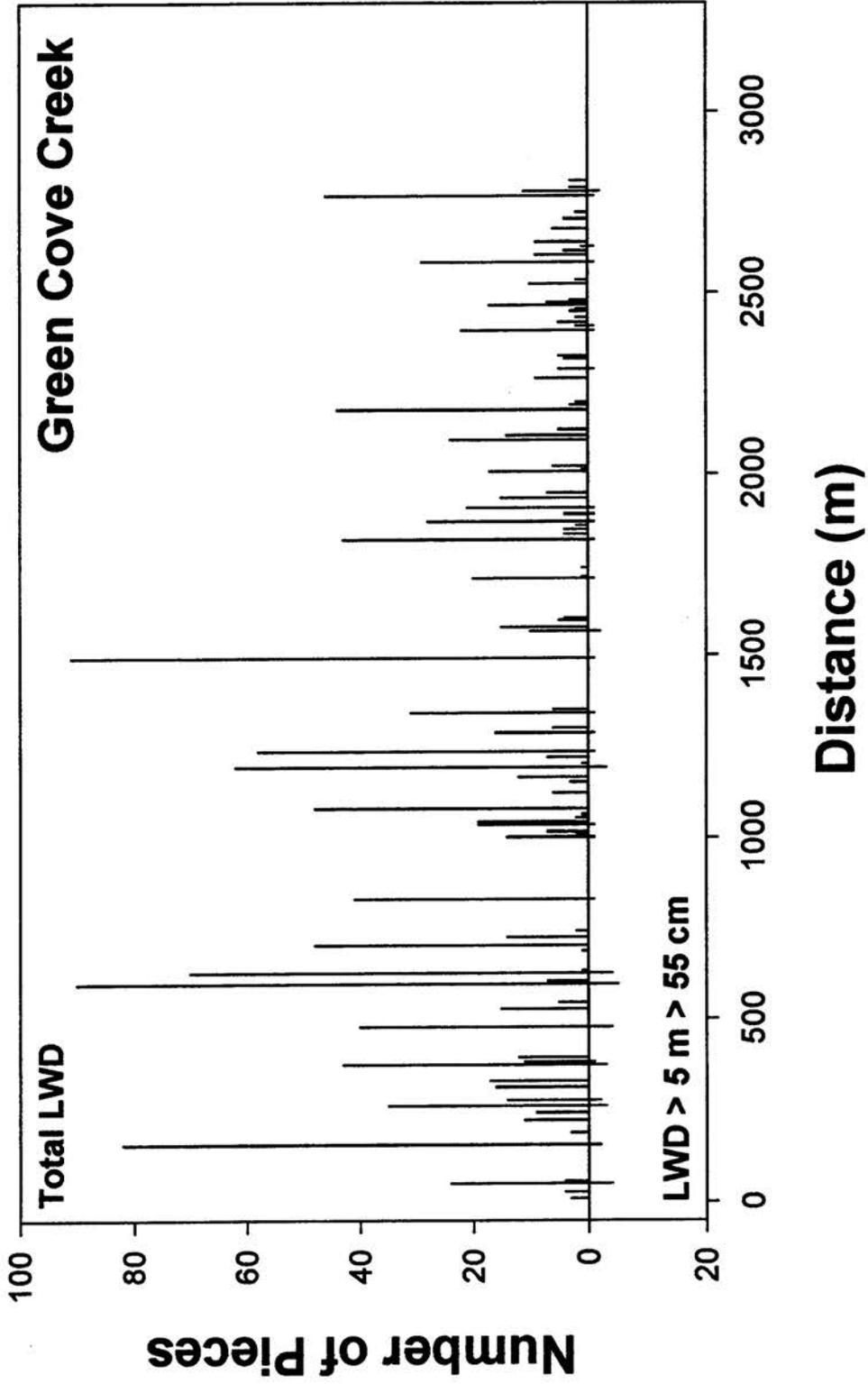


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

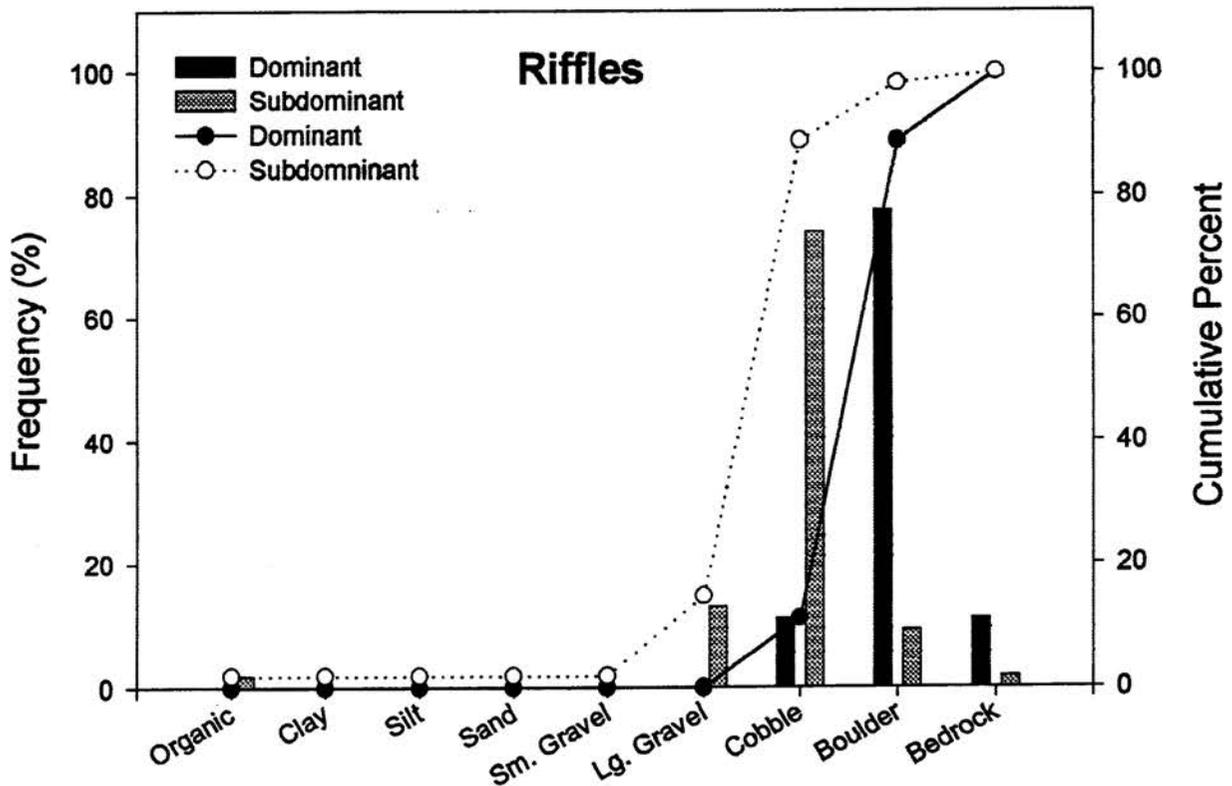
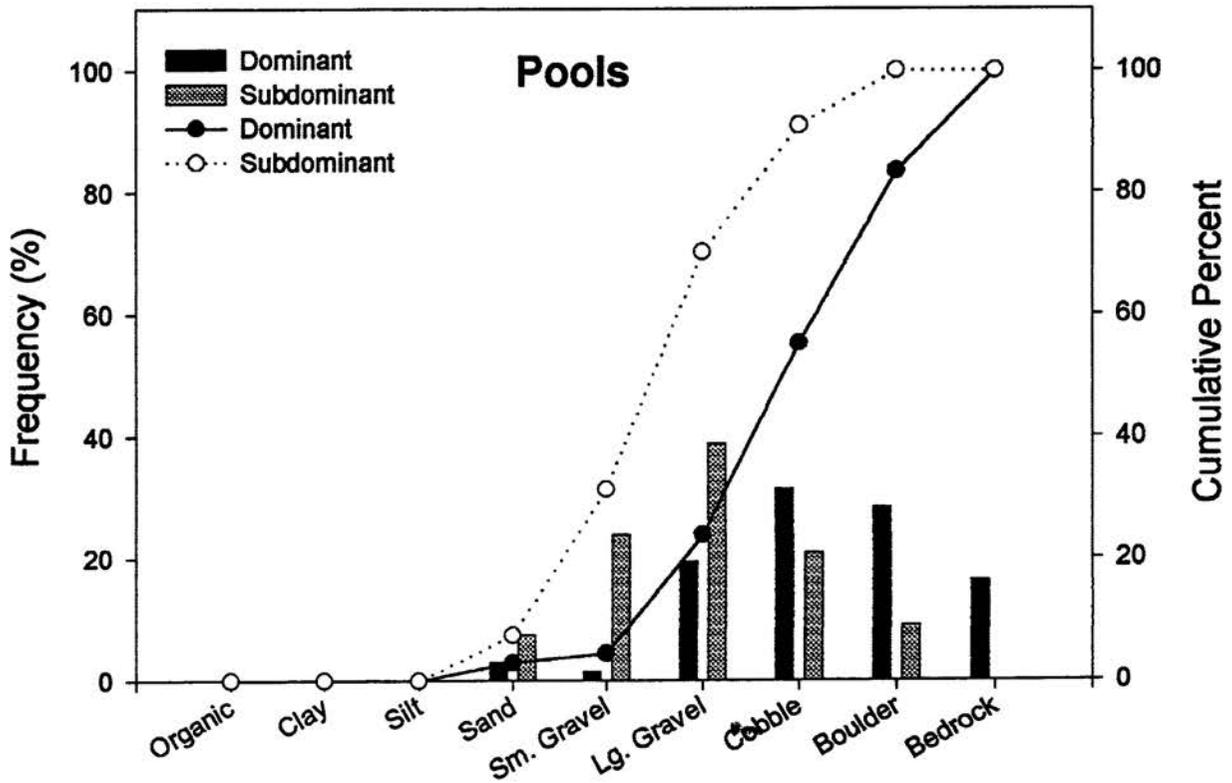
Green Cove Creek

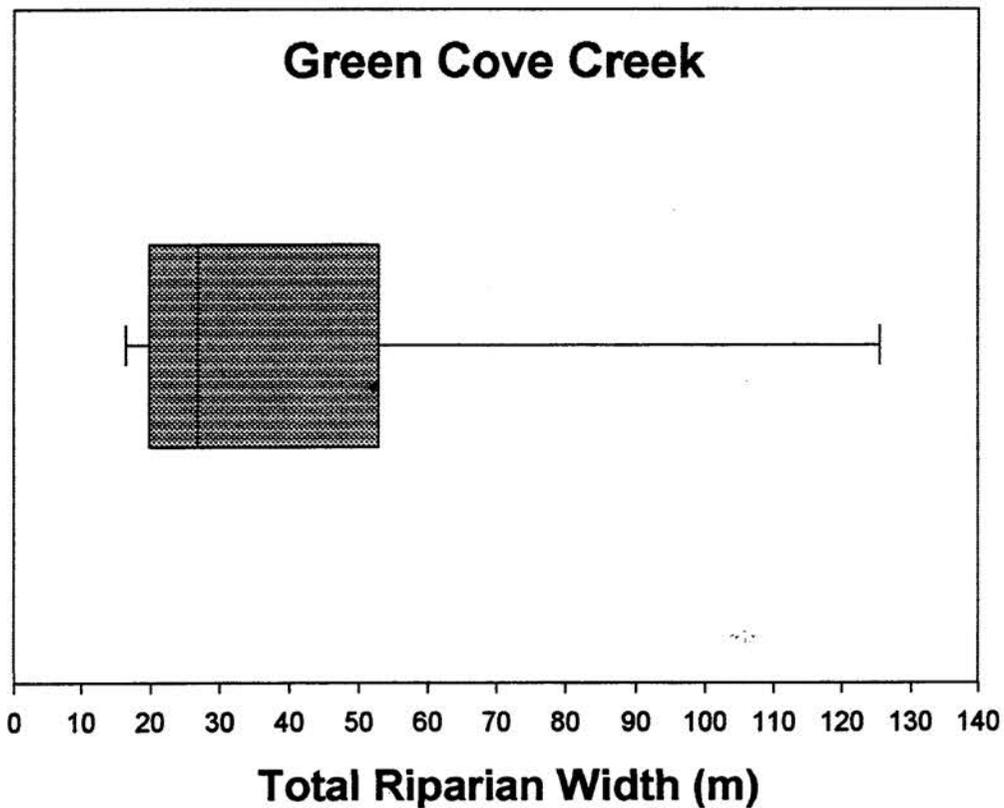


Distribution and Abundance of Large Woody Debris



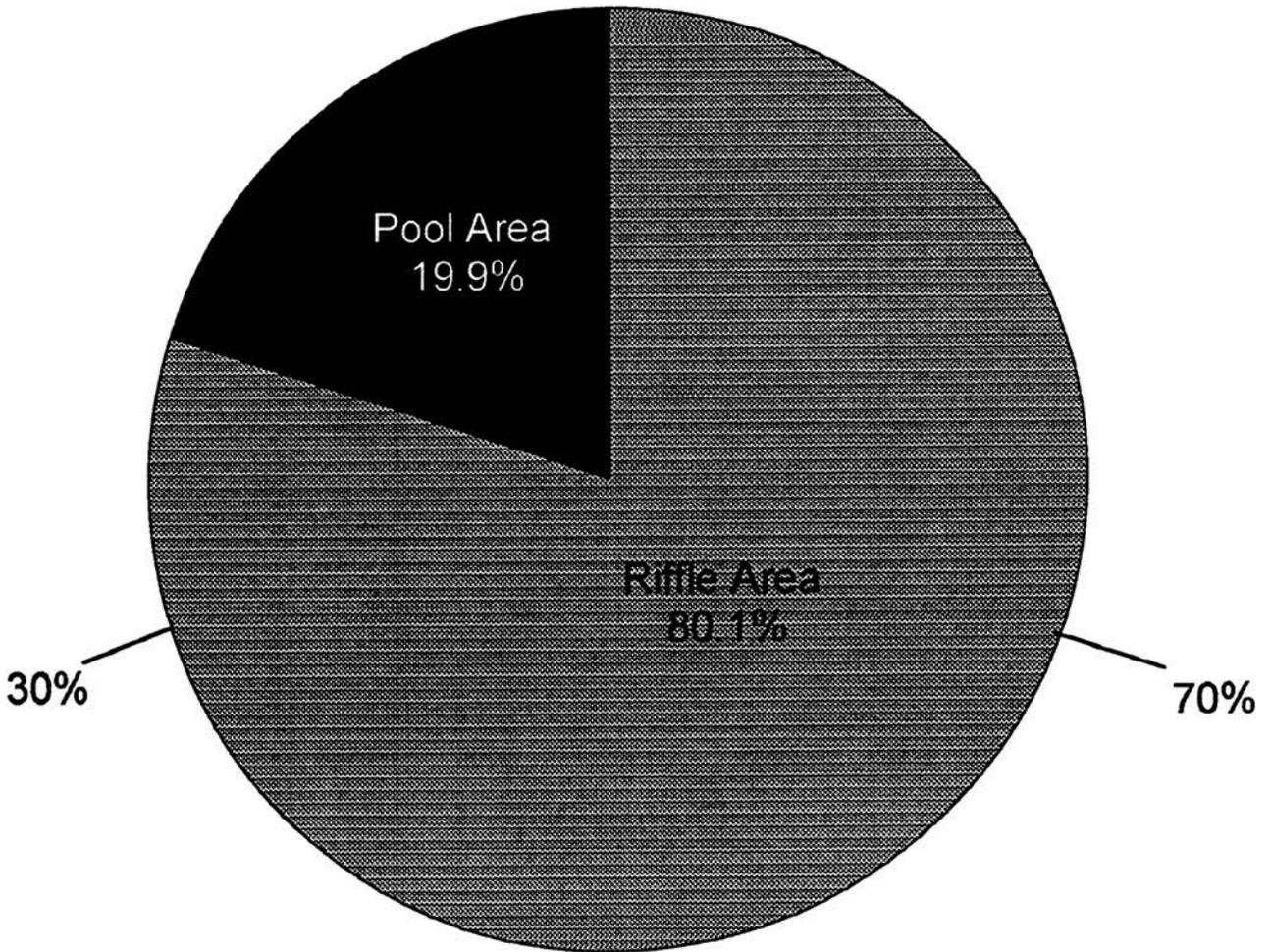
Green Cove Creek Substrate Composition



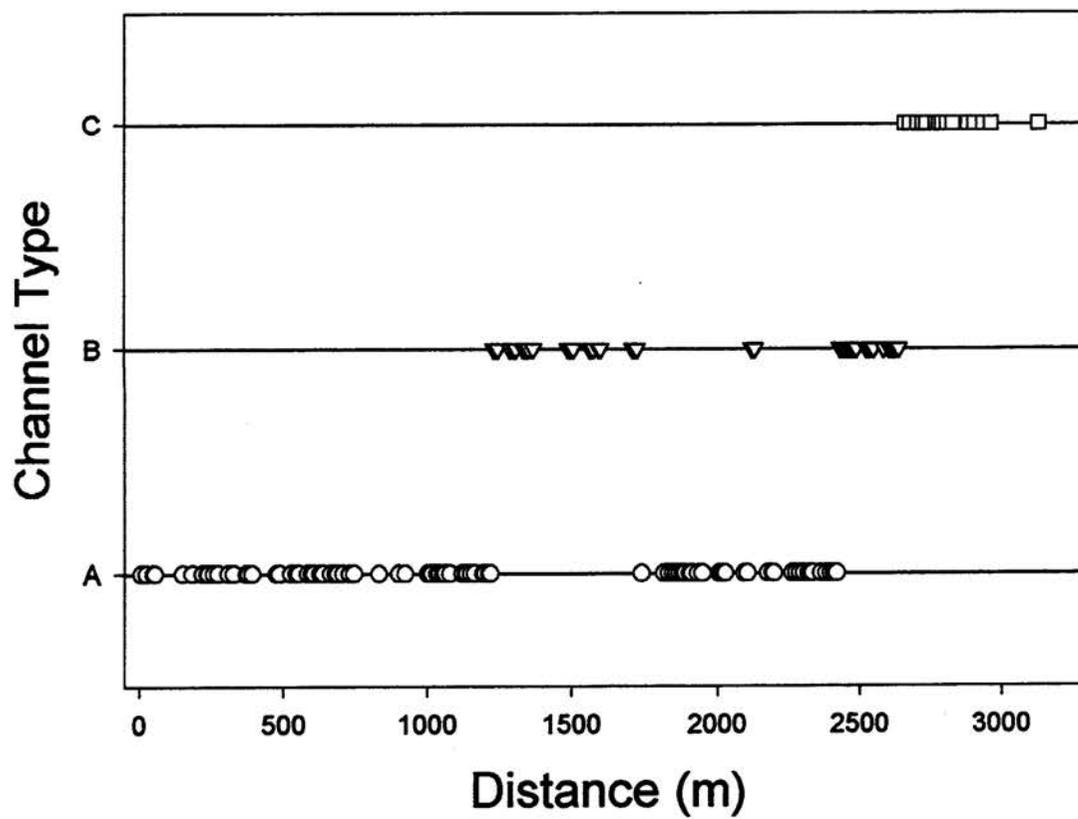
Riparian Width**Stream: Green Cove Creek****Number of Measurements: 5****Mean Width: 43.7m Std Dev: 46.0****Max: 125.6m Min: 16.5m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Green Cove Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Green Cove Creek Rosgen's Channel Type Distribution



Stream: Henry Widener Branch

District: Mount Rogers National Recreation Area

Quadrangle: Konnarock

Sample Date: 06/17/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 0.5 kilometers

Percent of Total Area - Pools: 21.2%

Number of Pools: 22

Number of Pools per kilometer: 44

Total Pool Area: 284.0 sq. meters \pm 71.0

Mean Pool Area: 12.9 sq. meters

Correction Factor: 1.21

Mean Maximum Depth: 37.7 cm

Mean Average Depth: 27.5 cm

Mean Average Residual Pool Depth: 17.5 cm

Percent of Total Area - Riffles: 78.8%

Number of Riffles: 21

Number of Riffles per kilometer: 42.0

Total Riffle Area: 1055.2 sq. meters \pm 132.2

Mean Riffle Area: 50.2 sq. meters

Correction Factor: 1.01

Mean Maximum Depth: 22.6 cm

Mean Average Depth: 12.1 cm

Number of Large Woody Debris Pieces per kilometer: 450.0

Wood < 5 m and < 55 cm: 263.2

Wood < 5 m and > 55 cm: 23.4

Wood > 5 m and < 55 cm: 142.2

Wood > 5 m and > 55 cm: 21.2

Mean Channel Width: 4.7 m

Mean Riparian Width: 10.5 m

Mean Maximum Riparian Distance (either side): 4.3 m

Mean Minimum Riparian Distance (either side): 1.5 m

Maximum Riparian Width (Total): 14.0 m

Minimum Riparian Width (Total): 6.6 m

Henry Widener Branch Continued.**Percent of Pool Habitat Surveyed as Glides: 38.1%****Rosgen's Channel Type Frequency:**

Channel Type A: 60.0%

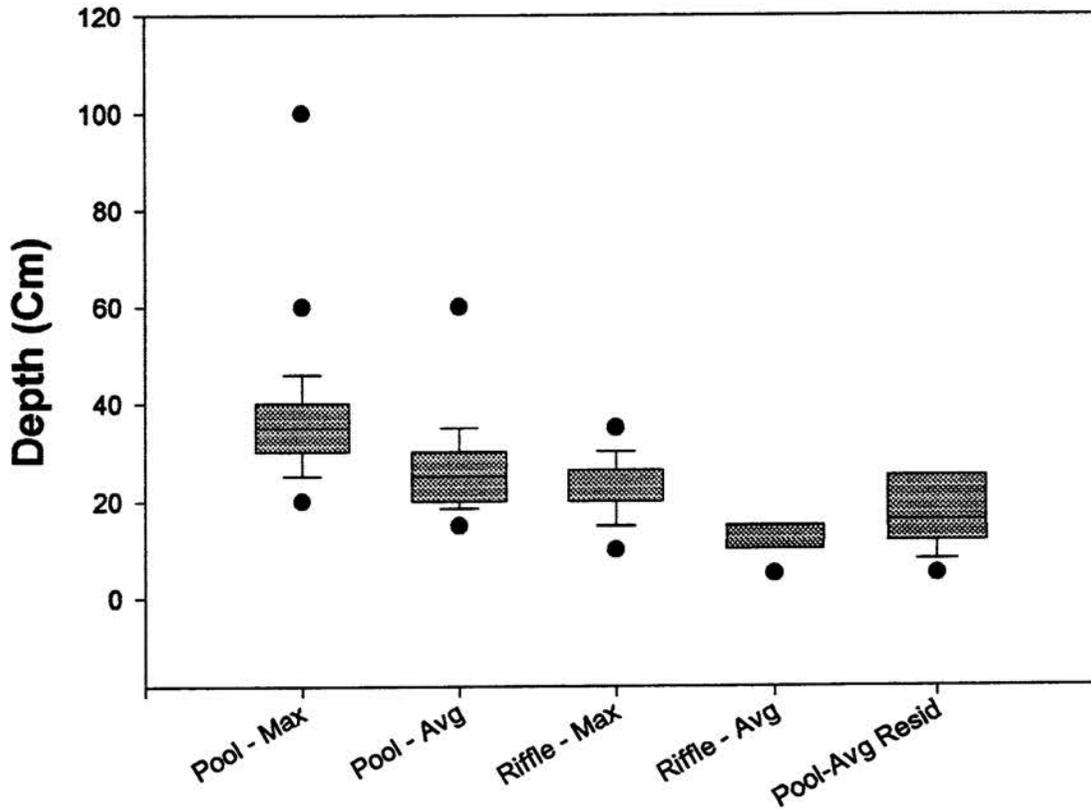
Channel Type B: 40.0%

Channel Type C:

Channel Type D:

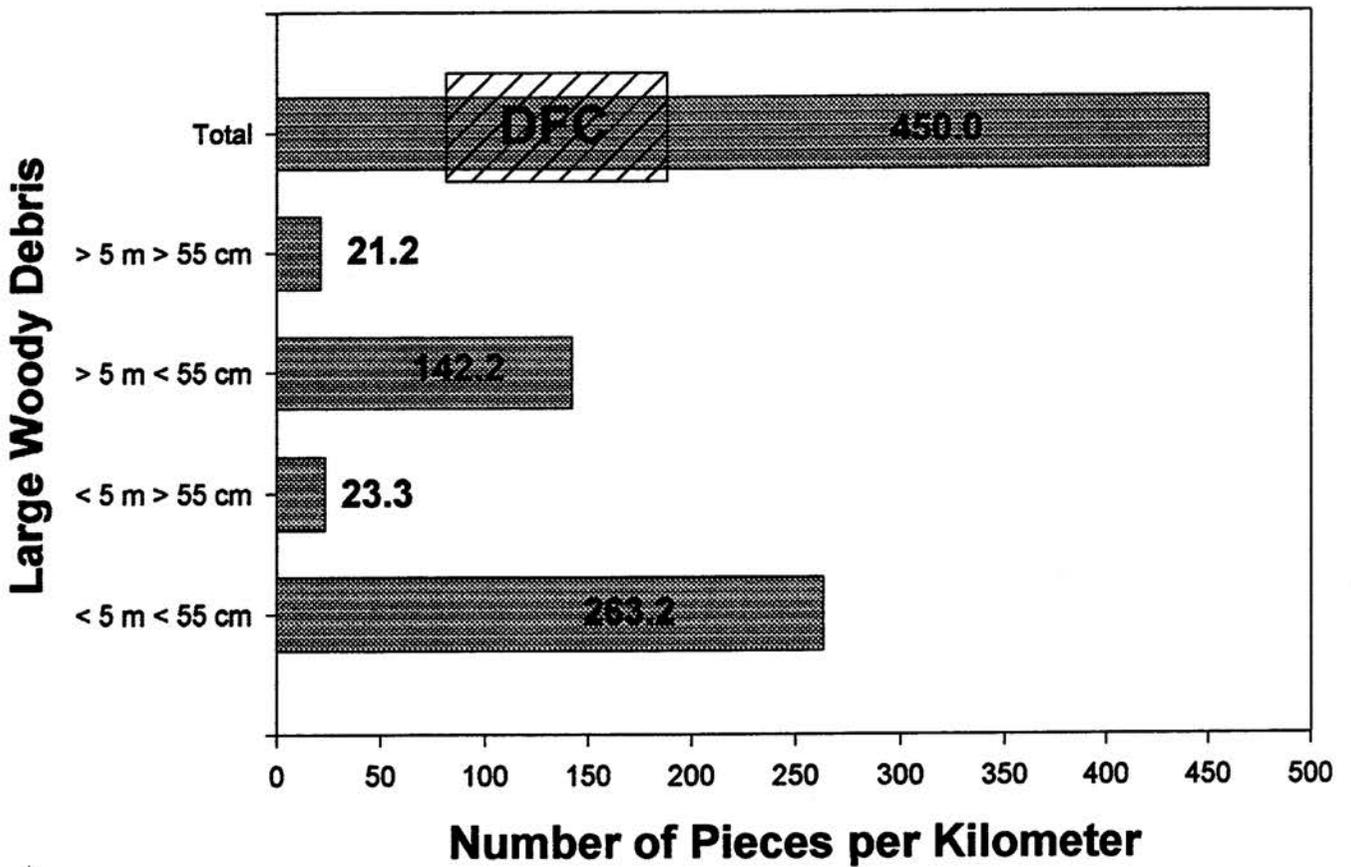
Percent Pools with \geq 35% Embeddedness: 27.3%**Average Channel Gradient: 6.0**

Henry Widener Branch

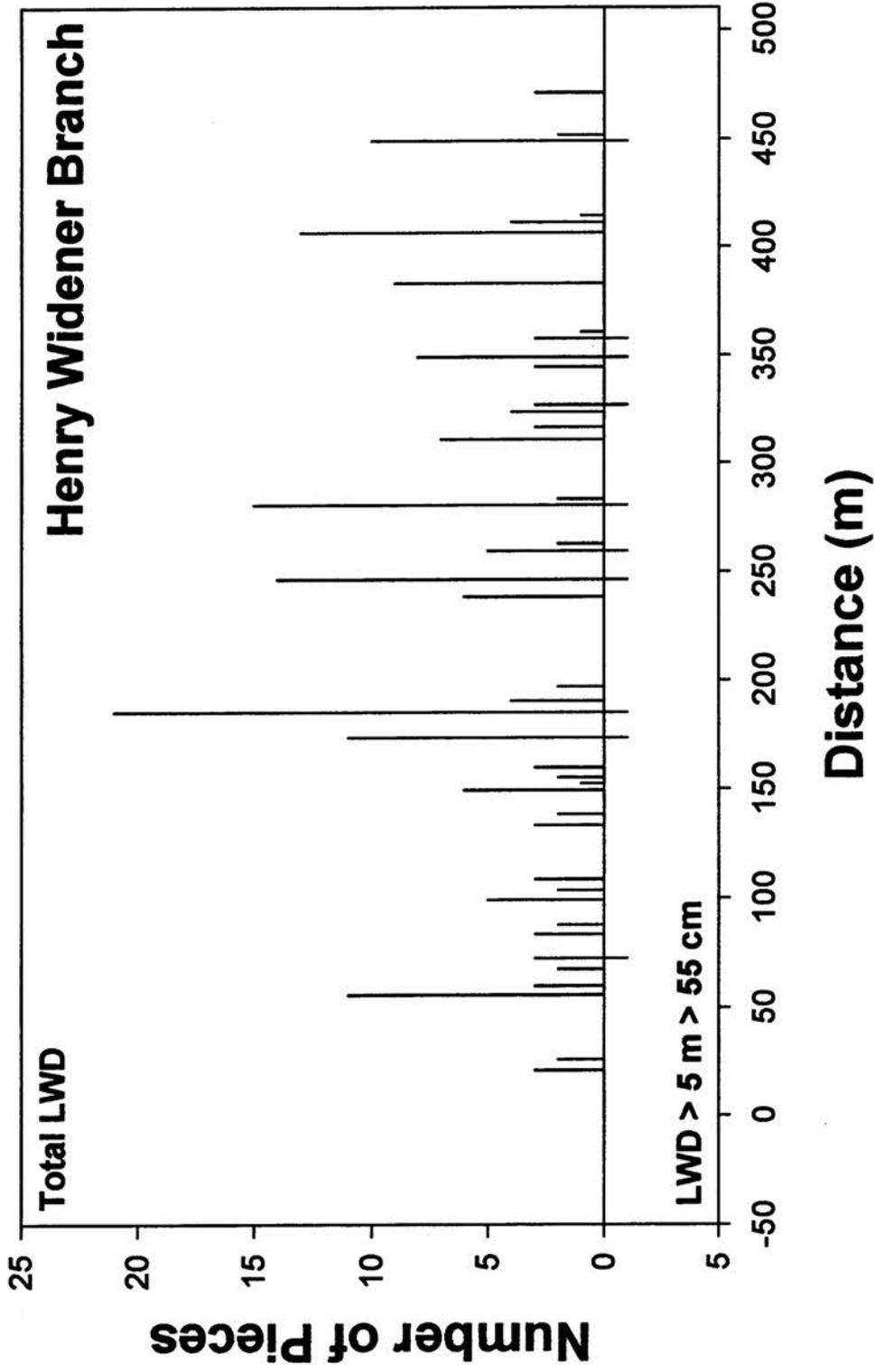


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

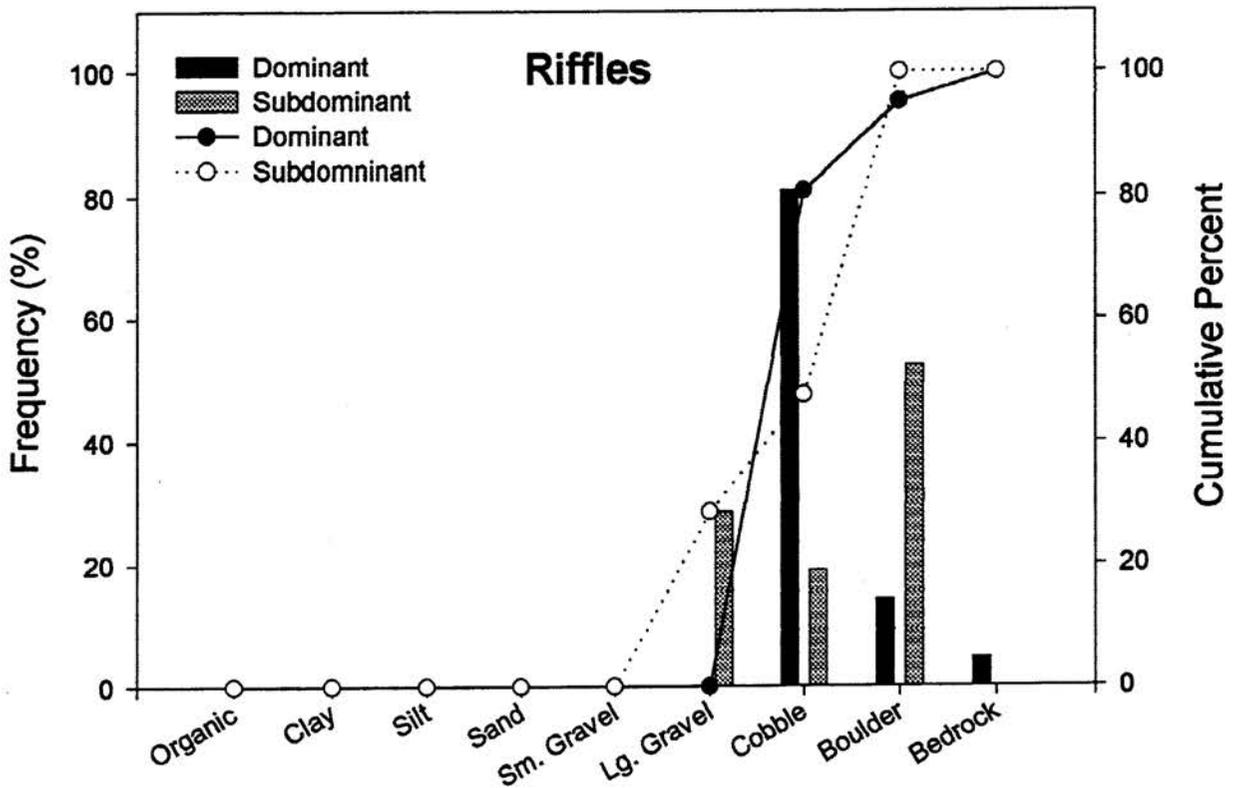
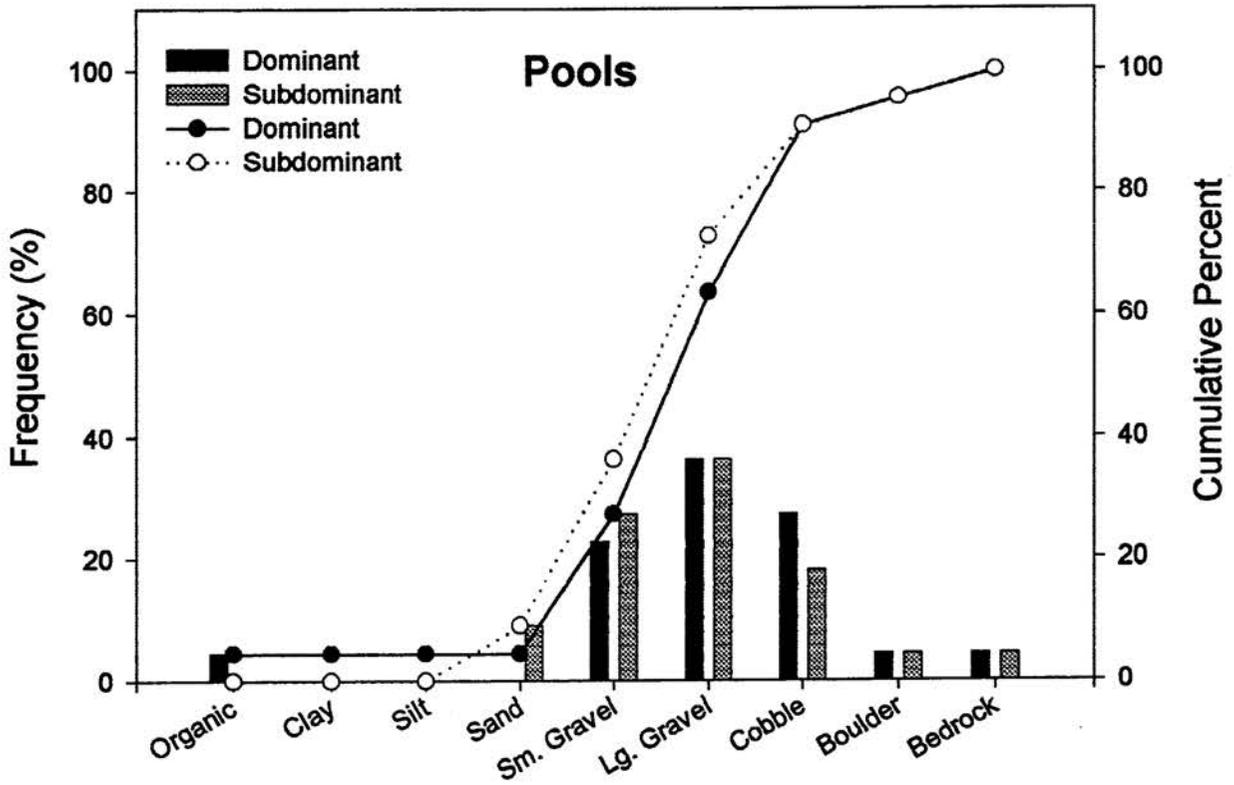
Henry Widener Branch

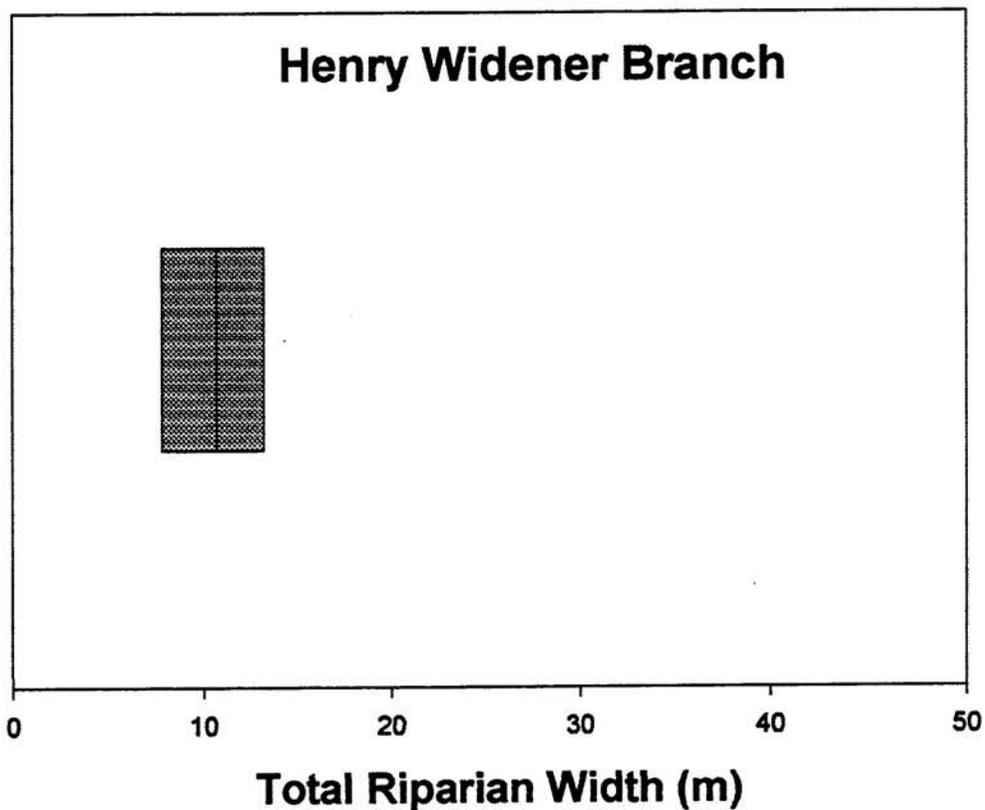


Distribution and Abundance of Large Woody Debris



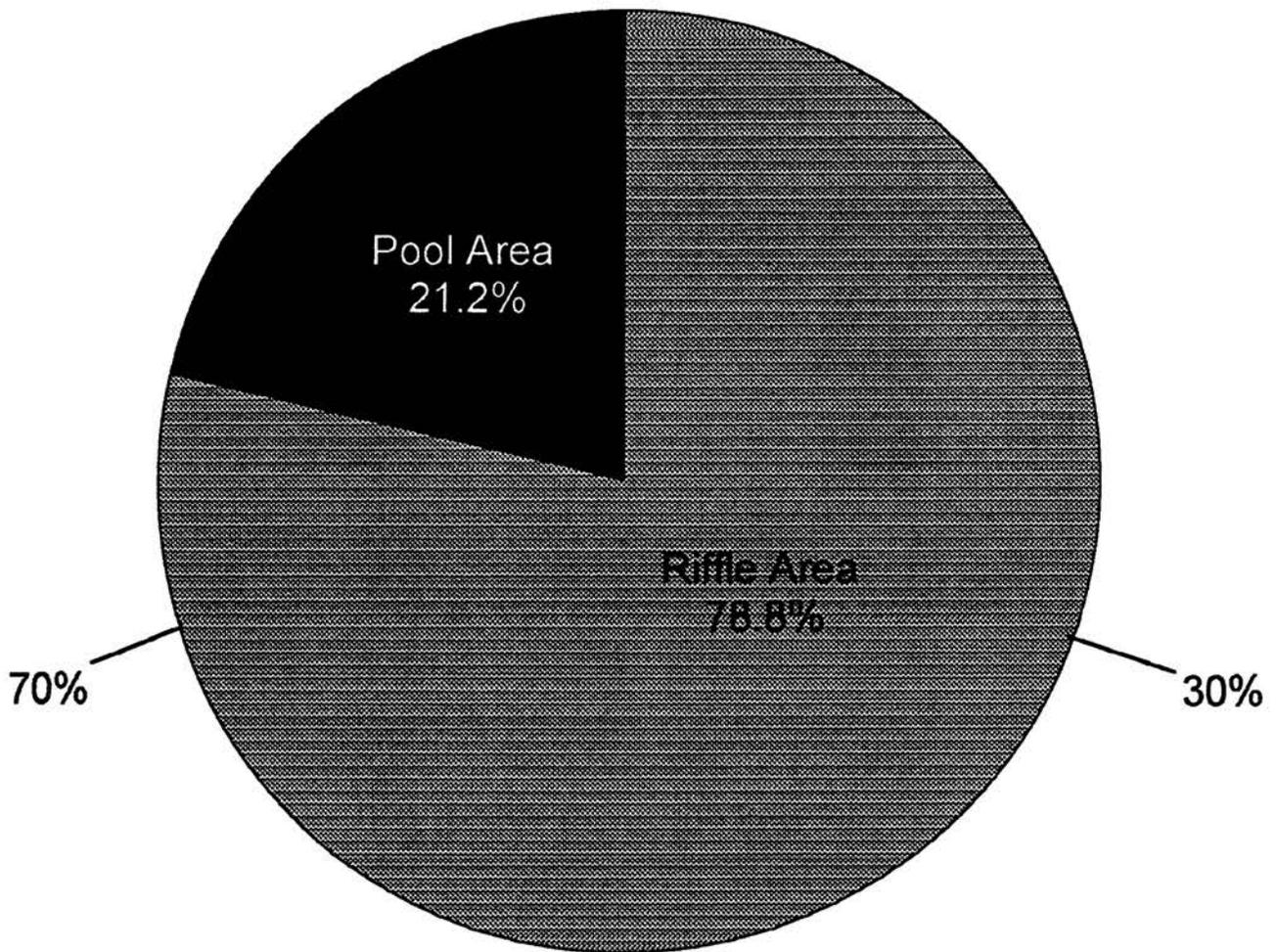
Henry Widener Branch Substrate Composition



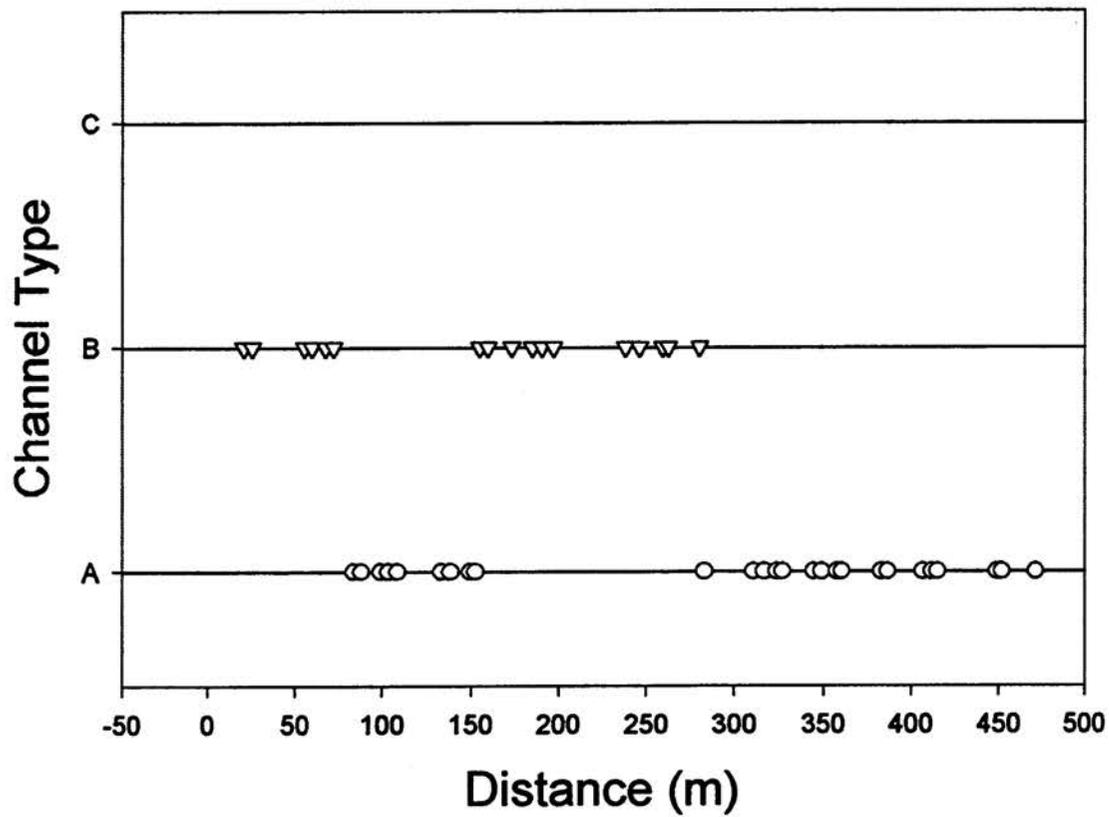
Riparian Width**Stream: Henry Widener Branch****Number of Measurements: 4****Mean Width: 10.5m Std Dev: 3.3****Max: 14.0m Min: 6.6m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Henry Widener Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Henry Widener Branch Rosgen's Channel Type Distribution



Stream: Rush Creek

District: Mount Rogers National Recreation Area

Quadrangle: Konnarock

Sample Date: 06/23/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 2.8 kilometers

Percent of Total Area - Pools: 26.4%

Number of Pools: 124

Number of Pools per kilometer: 44.3

Total Pool Area: 2806.3 sq. meters \pm 199.3

Mean Pool Area: 22.6 sq. meters

Correction Factor: 0.97

Mean Maximum Depth: 42.0 cm

Mean Average Depth: 27.5 cm

Mean Average Residual Pool Depth: 12.5 cm

Percent of Total Area - Riffles: 73.6%

Number of Riffles: 97

Number of Riffles per kilometer: 34.6

Total Riffle Area: 7808.7 sq. meters \pm 2953.9

Mean Riffle Area: 80.5 sq. meters

Correction Factor: 1.02

Mean Maximum Depth: 35.5 cm

Mean Average Depth: 19.4 cm

Number of Large Woody Debris Pieces per kilometer: 166.4

Wood < 5 m and < 55 cm: 107.3

Wood < 5 m and > 55 cm: 11.3

Wood > 5 m and < 55 cm: 37.2

Wood > 5 m and > 55 cm: 10.6

Mean Channel Width: 5.2 m

Mean Riparian Width: 13.4 m

Mean Maximum Riparian Distance (either side): 6.6 m

Mean Minimum Riparian Distance (either side): 1.6 m

Maximum Riparian Width (Total): 16.3 m

Minimum Riparian Width (Total): 10.9 m

Rush Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 48.7%

Rosgen's Channel Type Frequency:

Channel Type A: 76.8%

Channel Type B: 15.3%

Channel Type C: 7.9%

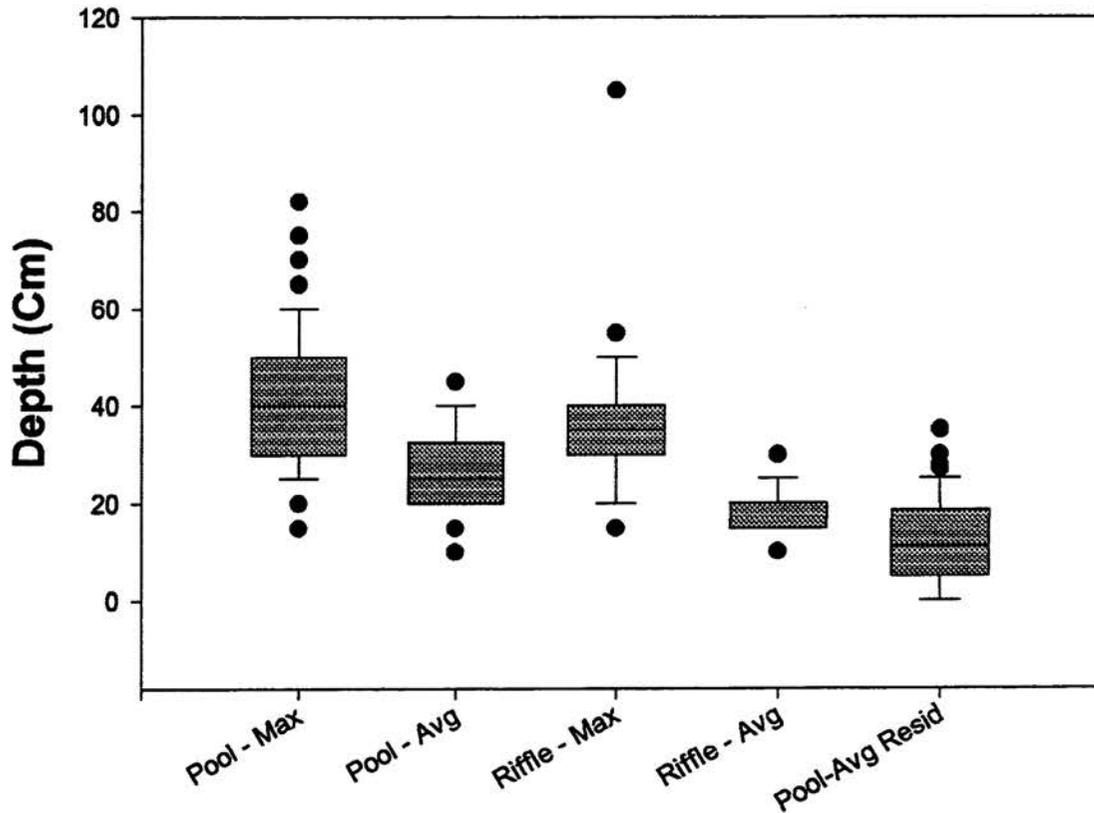
Channel Type D:

Percent Pools with \geq 35% Embeddedness: 41.9%

Average Channel Gradient: 12.0

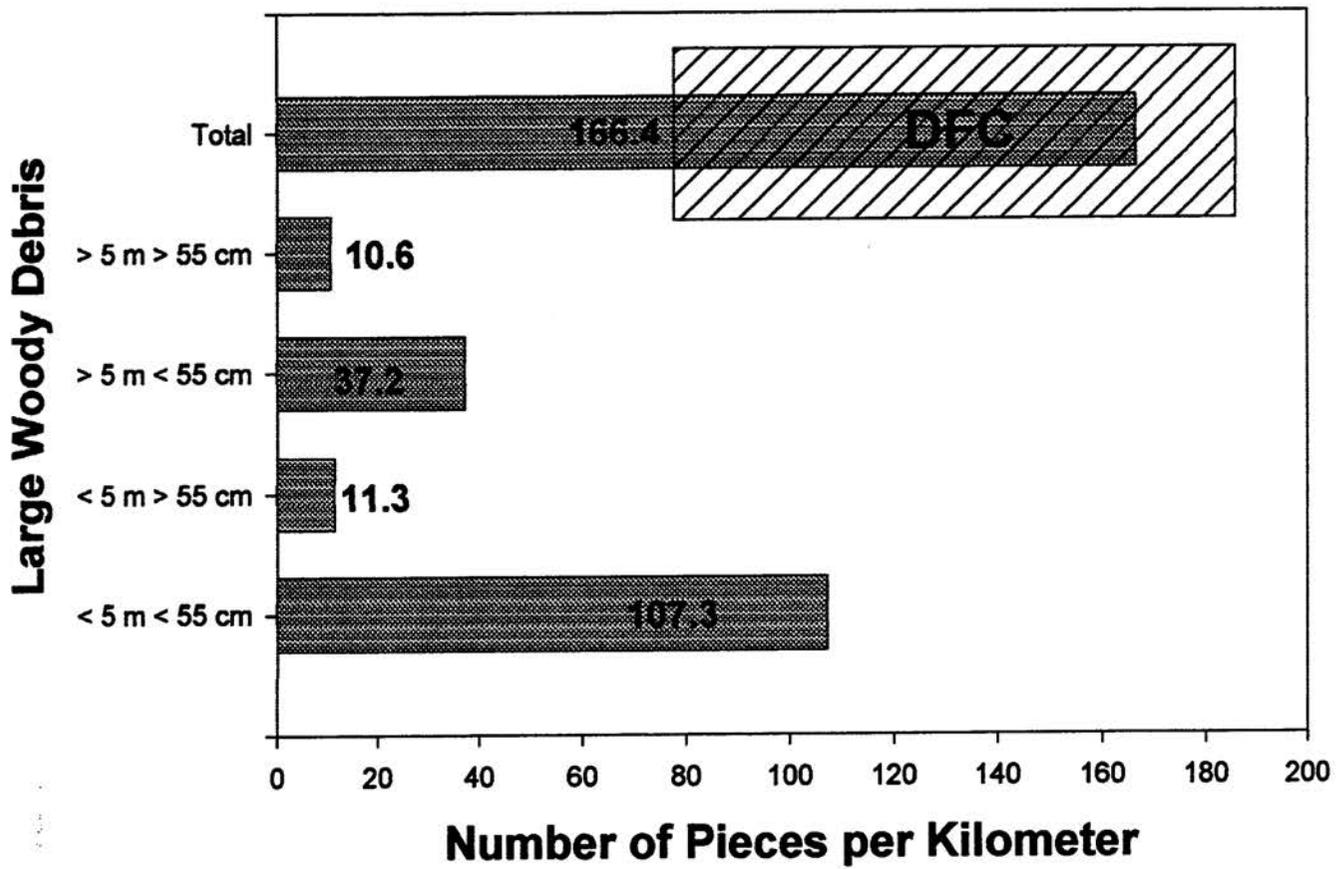
**sofi
ertt**

Rush Creek

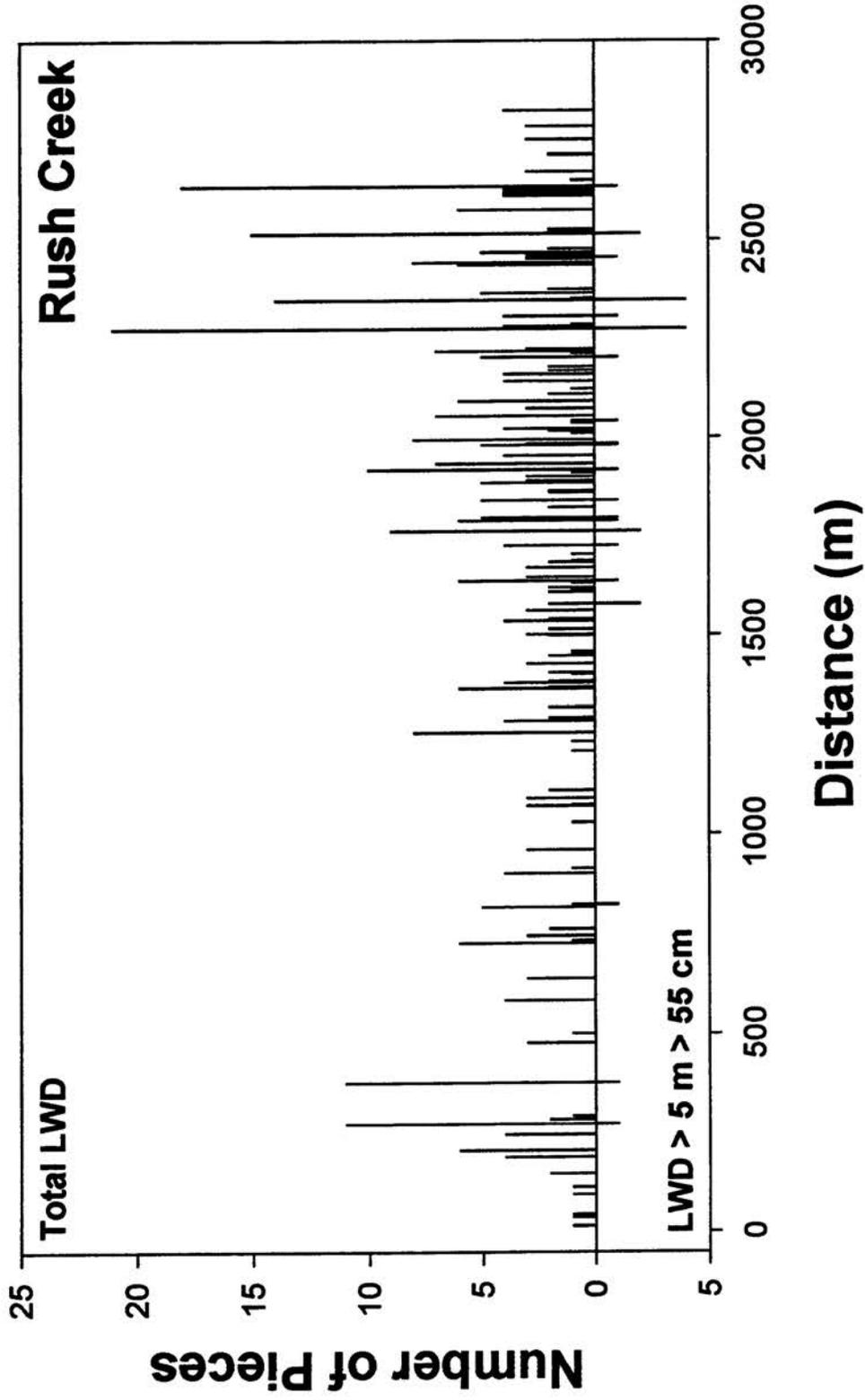


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

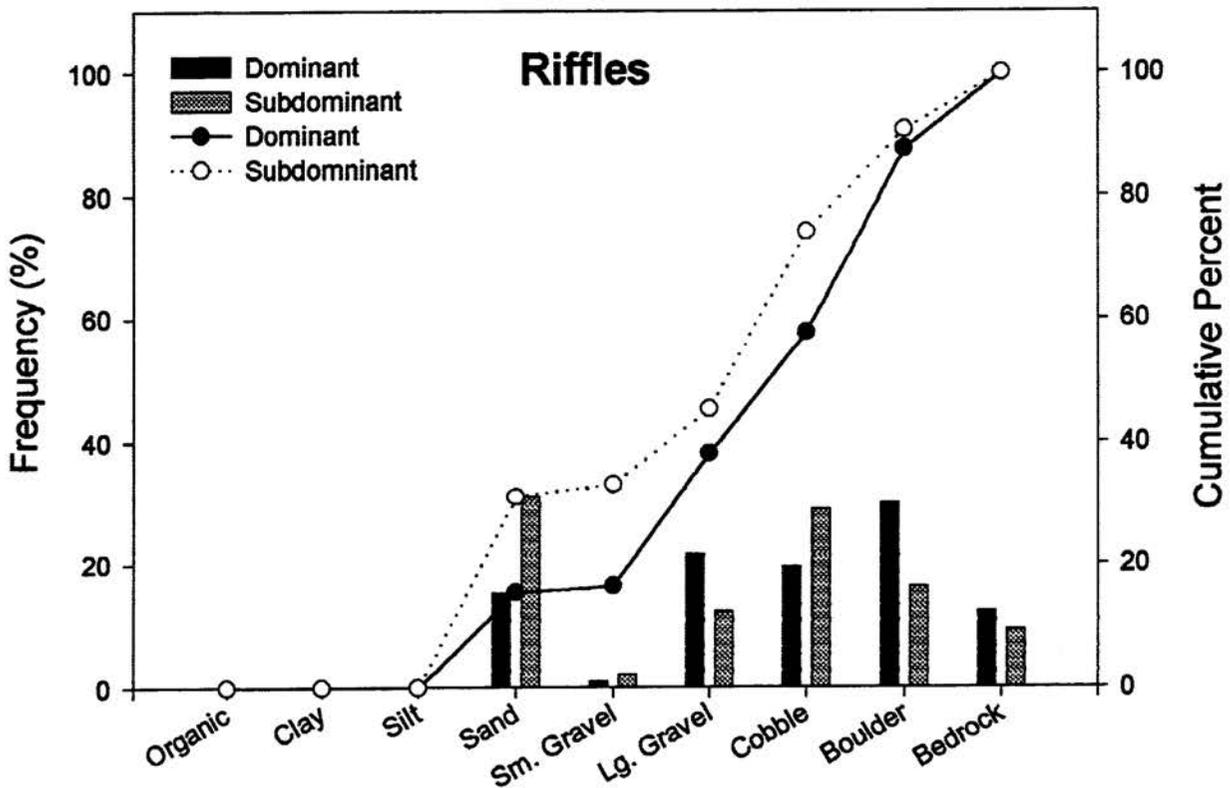
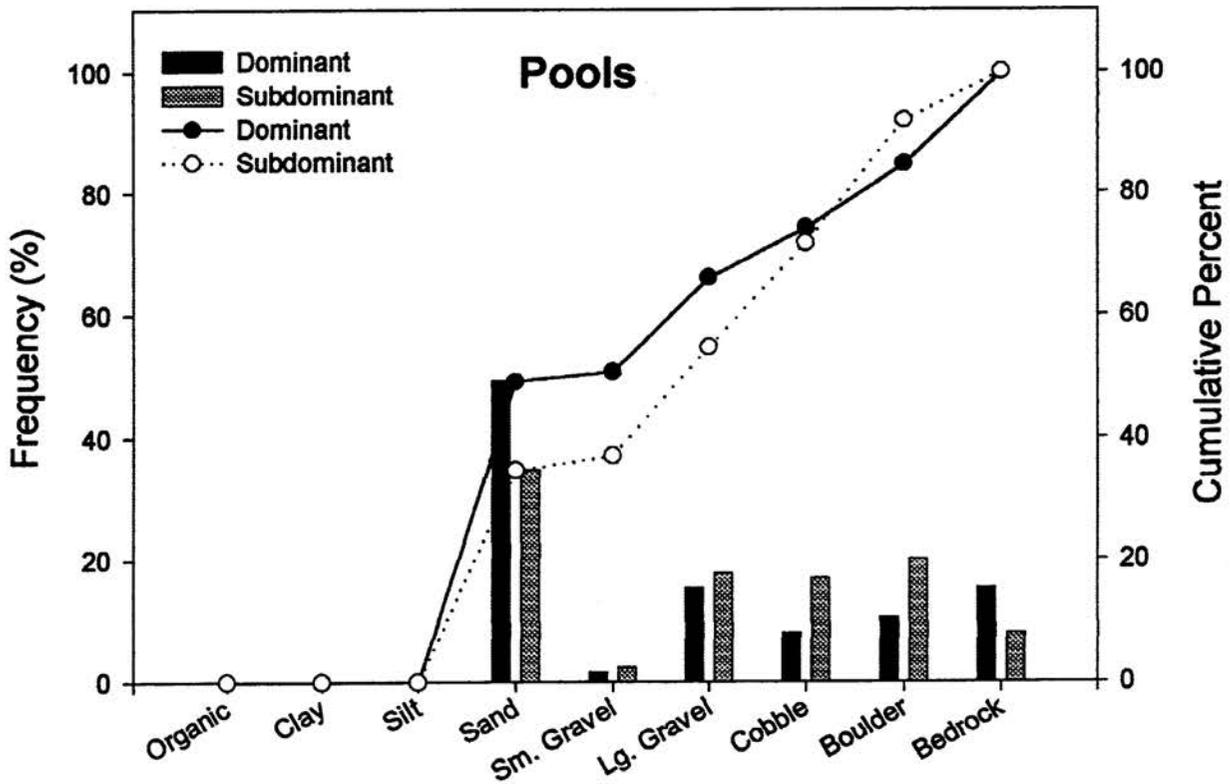
Rush Creek



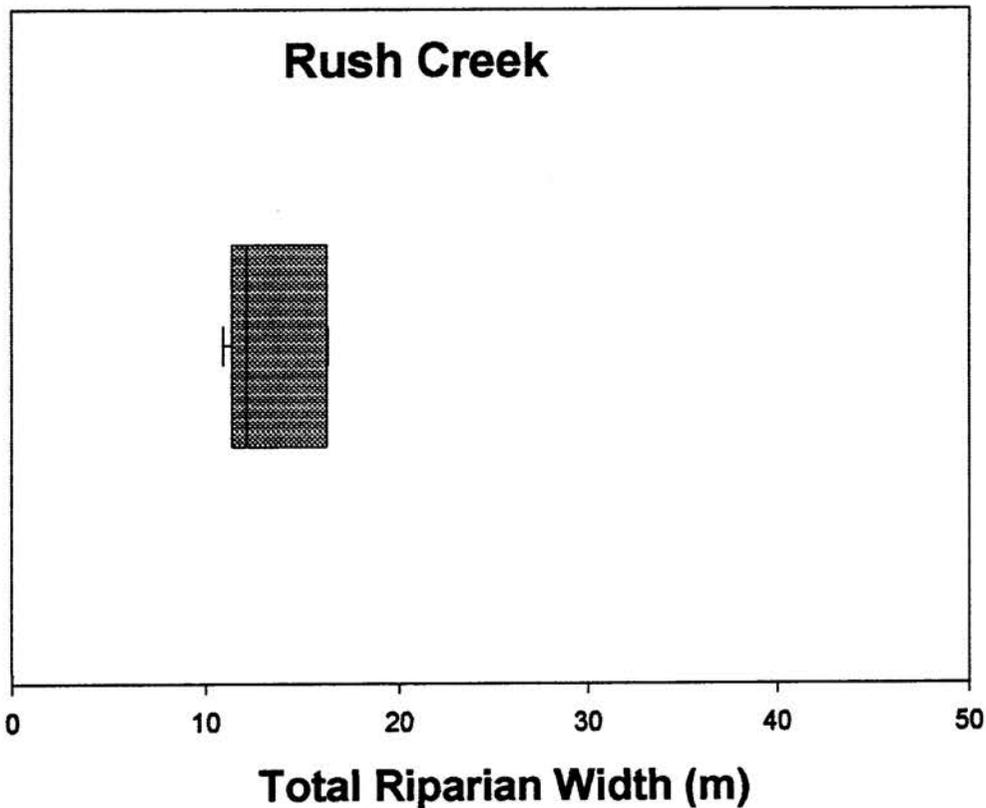
Distribution and Abundance of Large Woody Debris



Rush Creek Substrate Composition

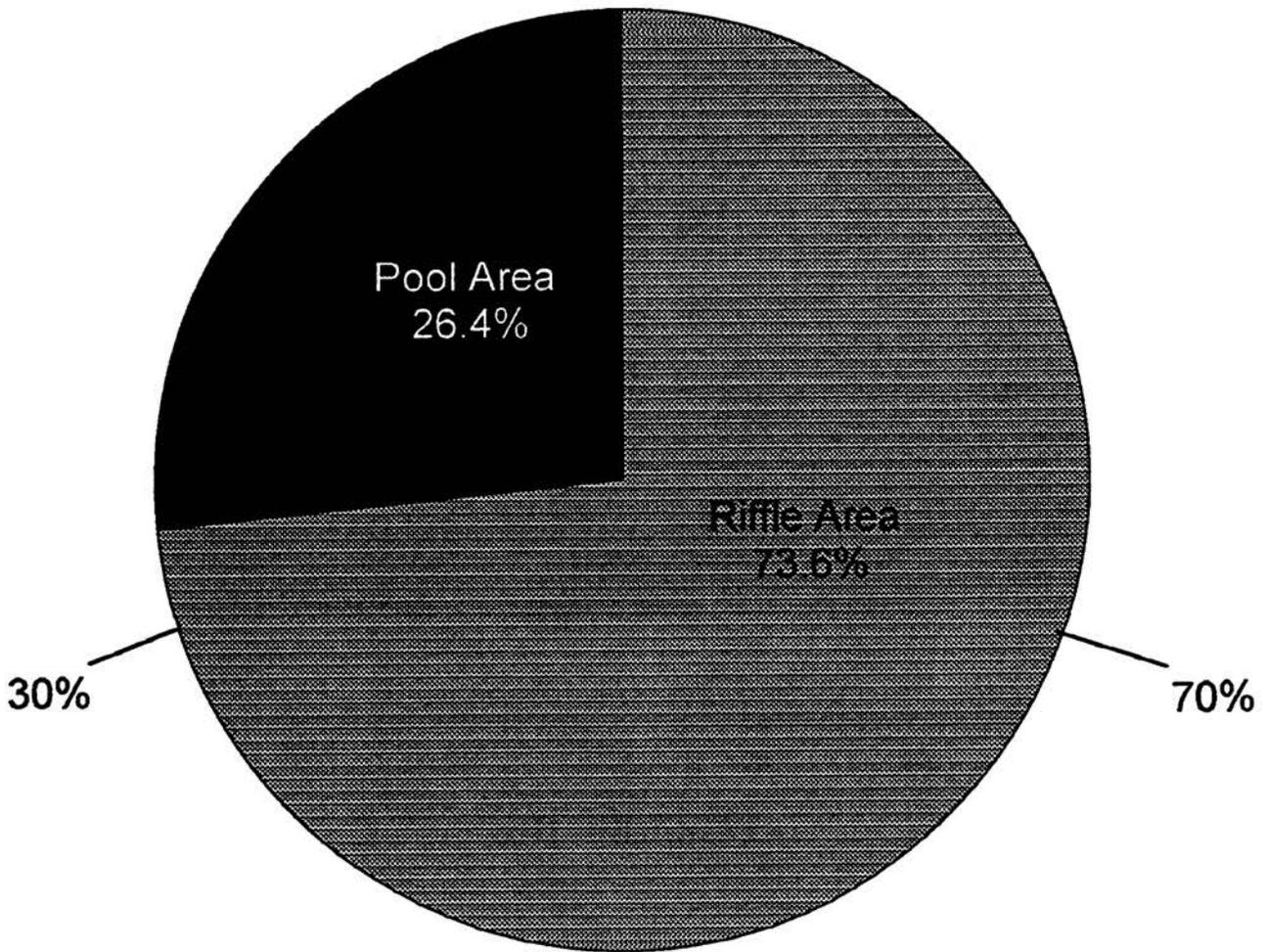


Riparian Width
Stream: Rush Creek
Number of Measurements: 5
Mean Width: 13.4m Std Dev: 2.6
Max: 16.3m Min: 10.9m



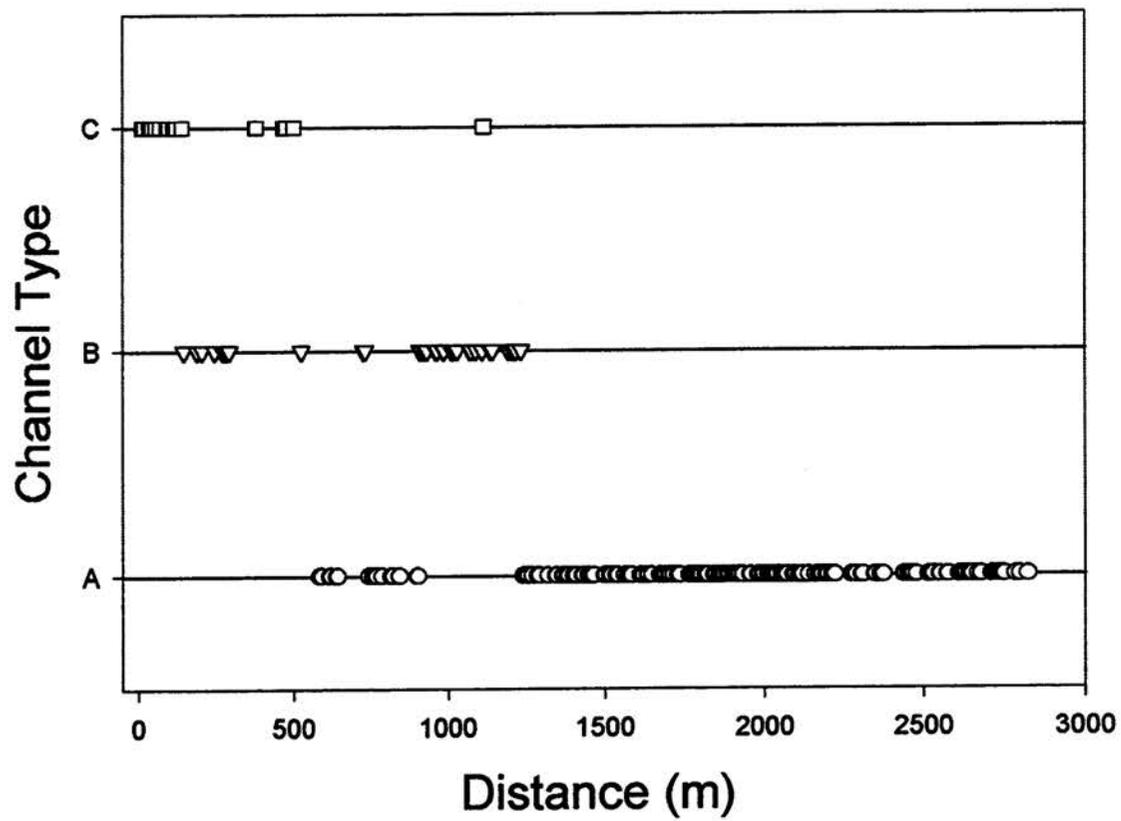
Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Rush Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Rush Creek

Rosgen's Channel Type Distribution



Stream: Star Hill Branch

District: Mount Rogers National Recreation Area

Quadrangle: Konnarock

Sample Date: 06/04/98

Downstream Starting Point: Confluence with Green Cove Creek (Creeper Bridge # 42)

Total Distance Surveyed: 2.0 kilometers

Percent of Total Area - Pools: 35.8%

Number of Pools: 93

Number of Pools per kilometer: 46.5

Total Pool Area: 1712.2 sq. meters \pm 197.2

Mean Pool Area: 18.4 sq. meters

Correction Factor: 1.03

Mean Maximum Depth: 41.2 cm

Mean Average Depth: 31.1 cm

Mean Average Residual Pool Depth: 23.0 cm

Percent of Total Area - Riffles: 64.2%

Number of Riffles: 79

Number of Riffles per kilometer: 39.5

Total Riffle Area: 3071.6 sq. meters \pm 1066.9

Mean Riffle Area: 38.9 sq. meters

Correction Factor: 0.86

Mean Maximum Depth: 23.4 cm

Mean Average Depth: 13.1 cm

Number of Large Woody Debris Pieces per kilometer: 555.5

Wood < 5 m and < 55 cm: 334.7

Wood < 5 m and > 55 cm: 19.6

Wood > 5 m and < 55 cm: 187.0

Wood > 5 m and > 55 cm: 14.2

Mean Channel Width: 3.2 m

Mean Riparian Width: 30.4 m

Mean Maximum Riparian Distance (either side): 23.8 m

Mean Minimum Riparian Distance (either side): 3.4 m

Maximum Riparian Width (Total): 73.6 m

Minimum Riparian Width (Total): 5.2 m

Star Hill Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 26.0%

Rosgen's Channel Type Frequency:

Channel Type A: 36.6%

Channel Type B: 20.2%

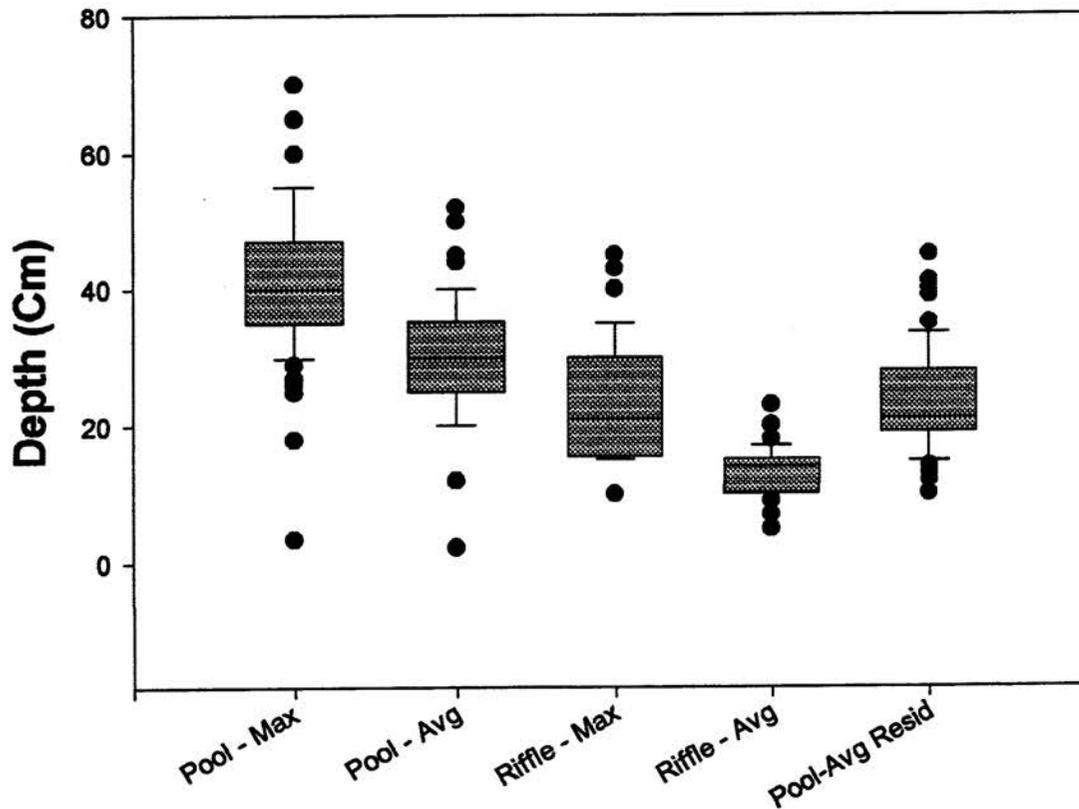
Channel Type C: 43.2%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 60.2%

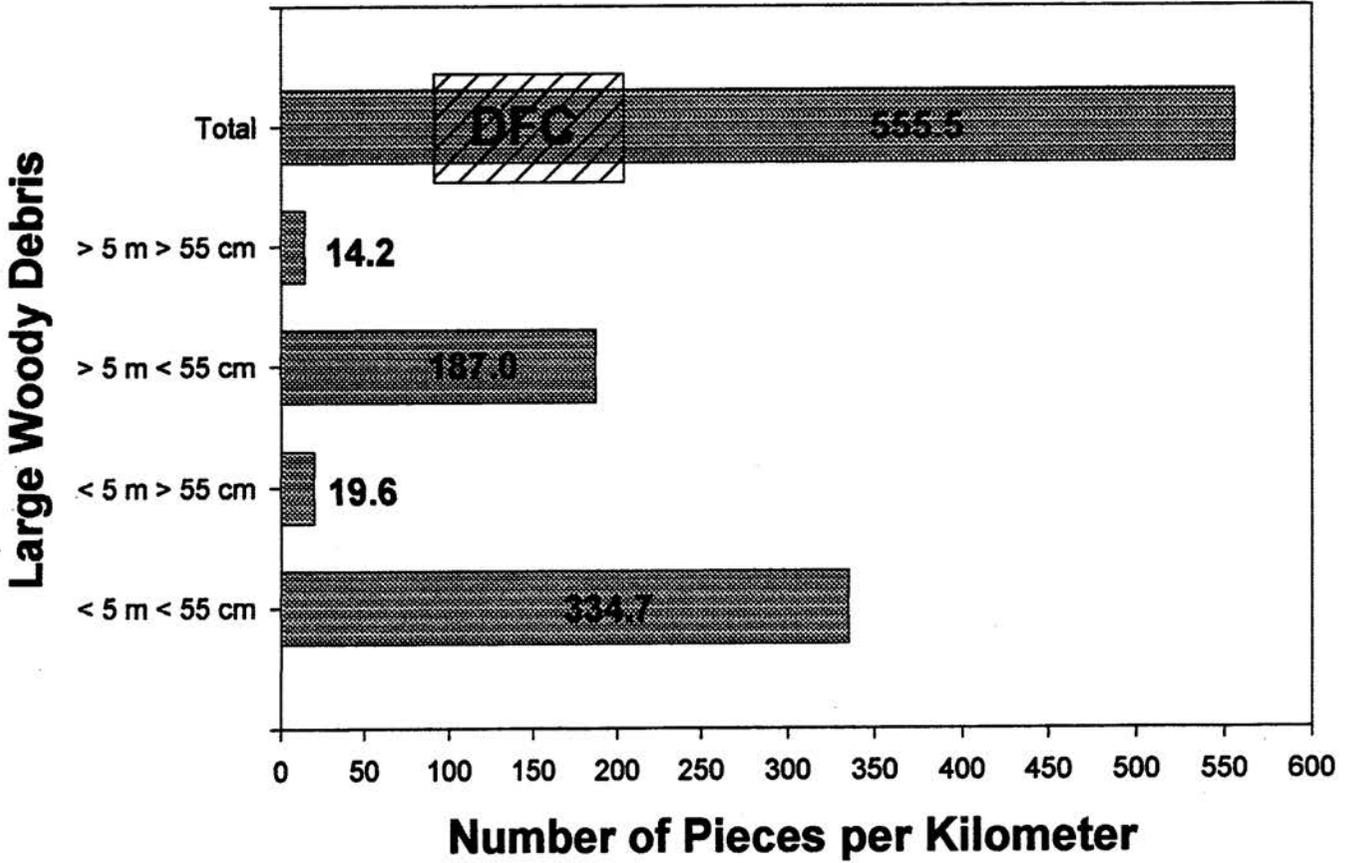
Average Channel Gradient: 3.3

Star Hill Branch

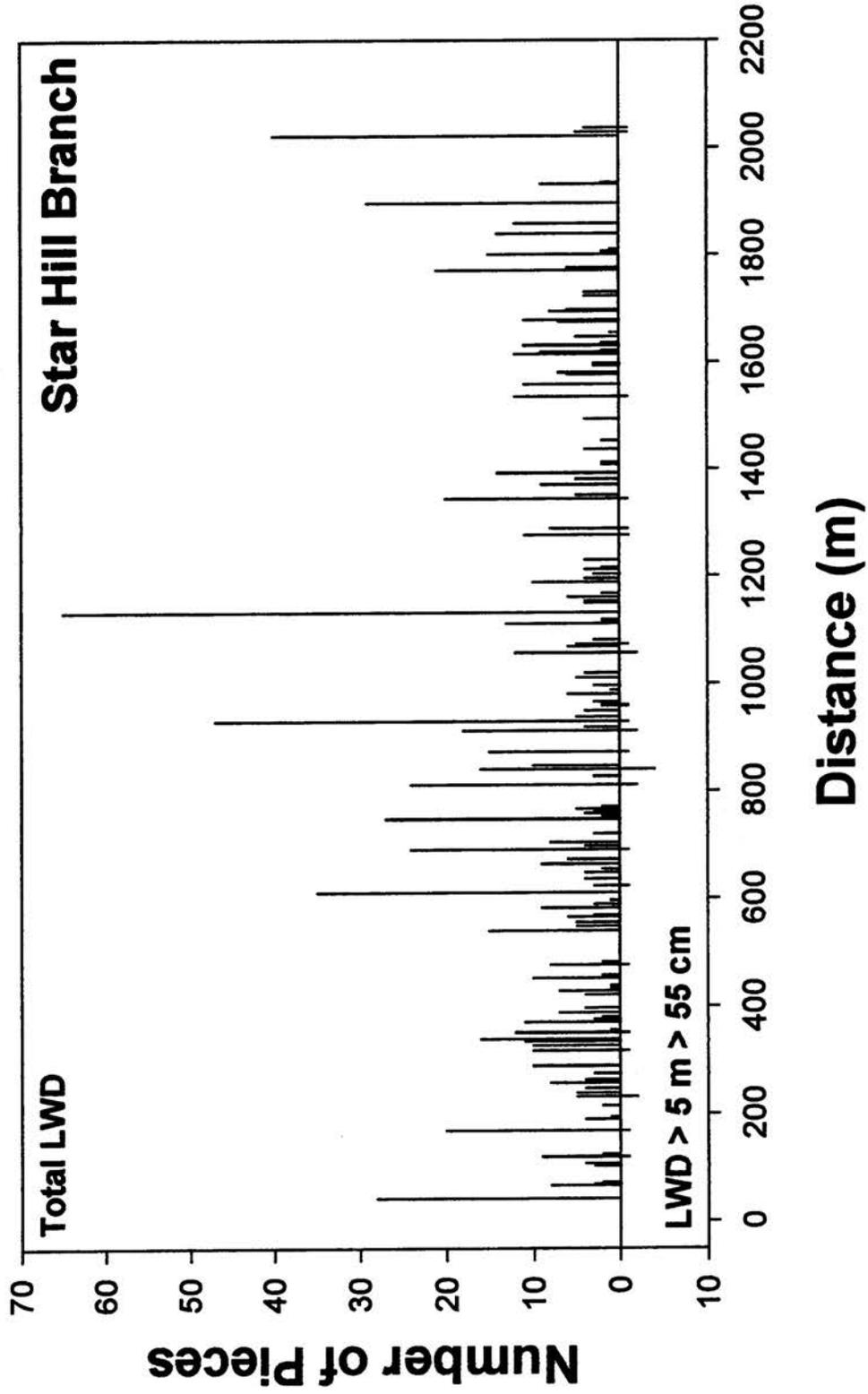


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

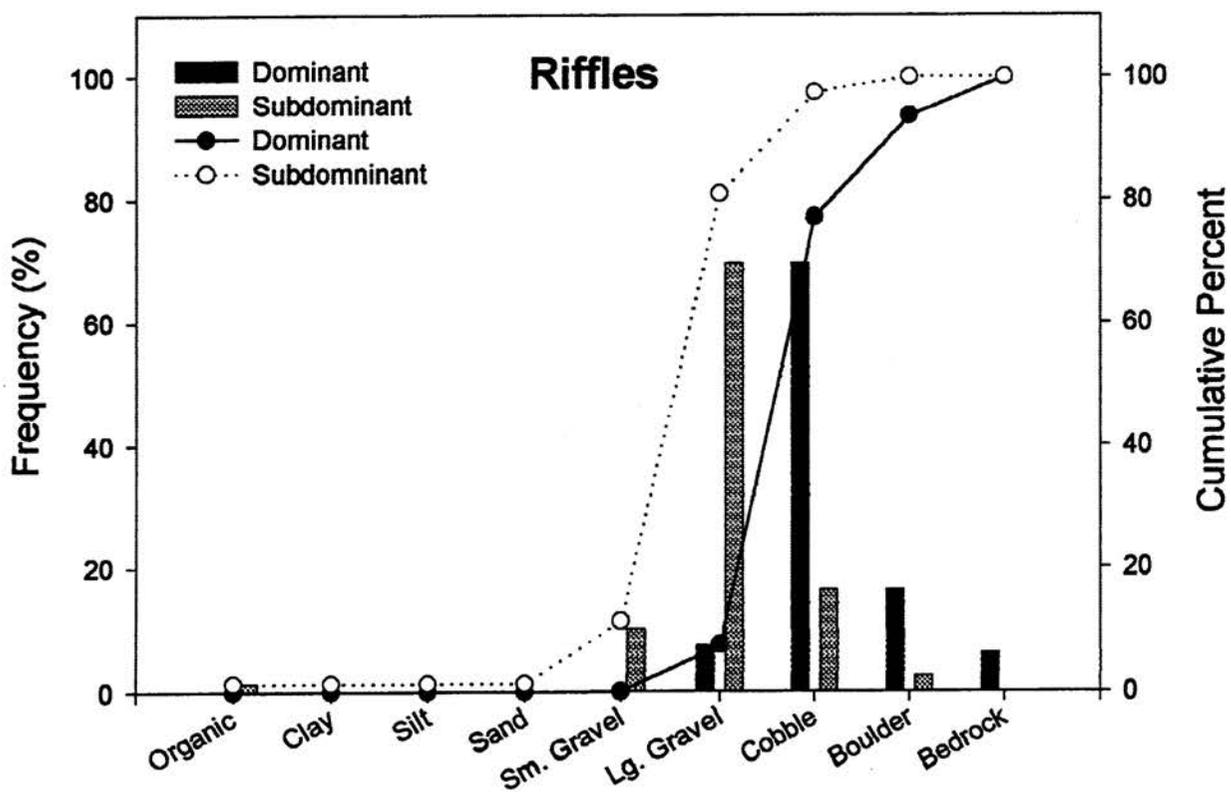
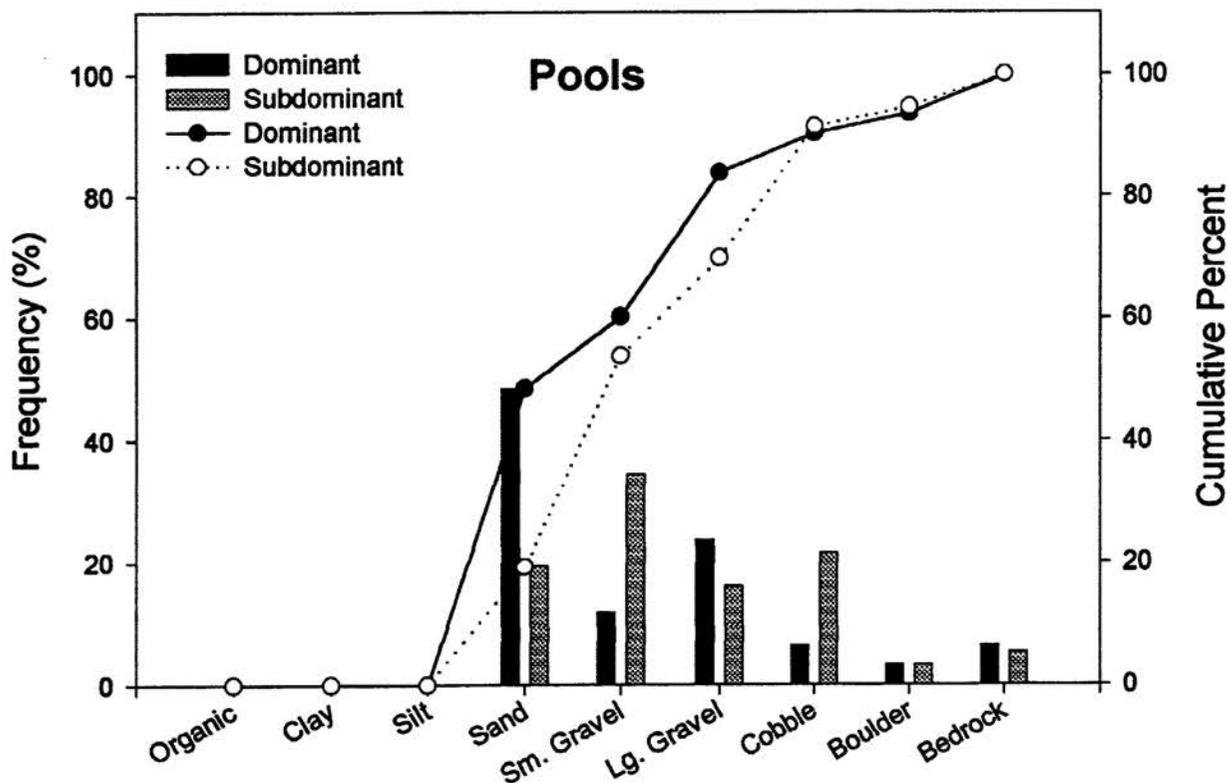
Star Hill Branch

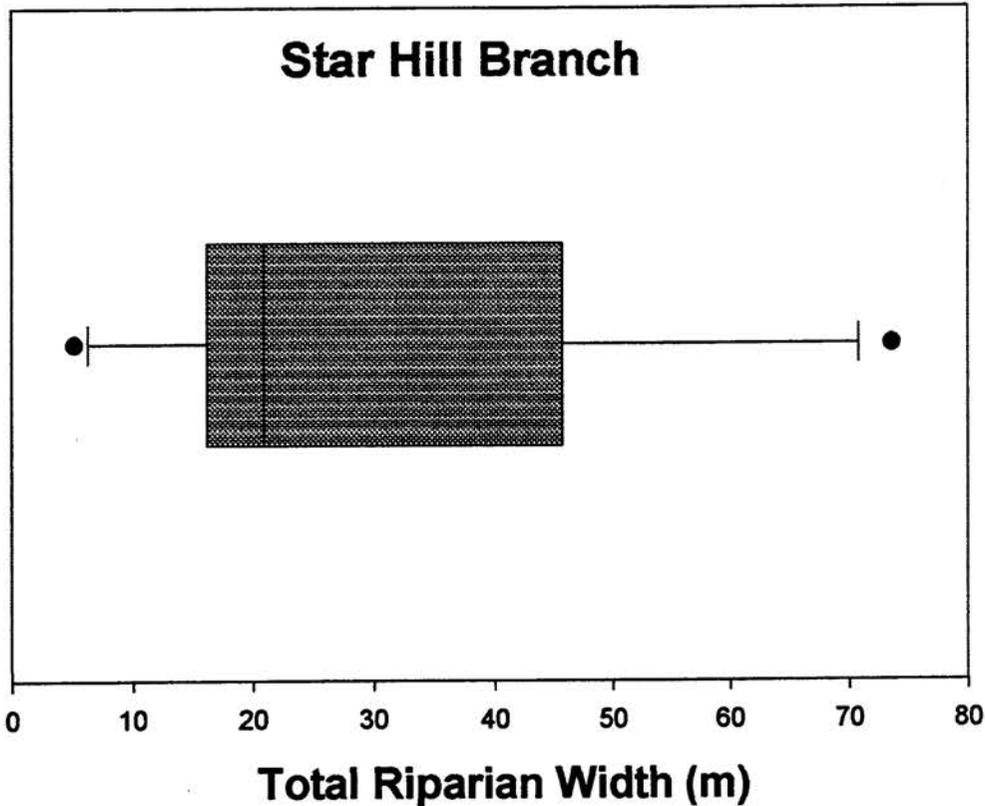


Distribution and Abundance of Large Woody Debris



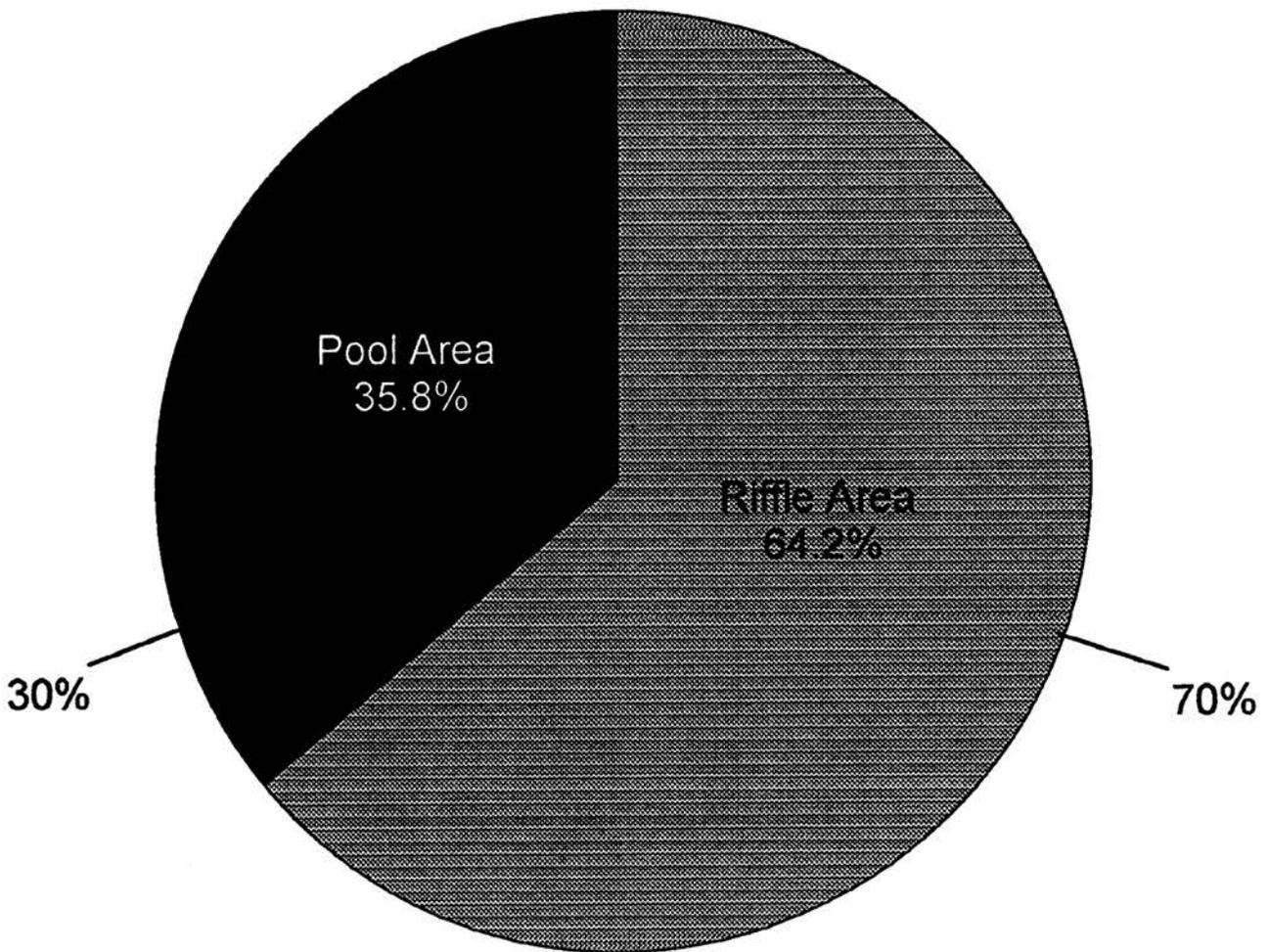
Star Hill Branch Substrate Composition



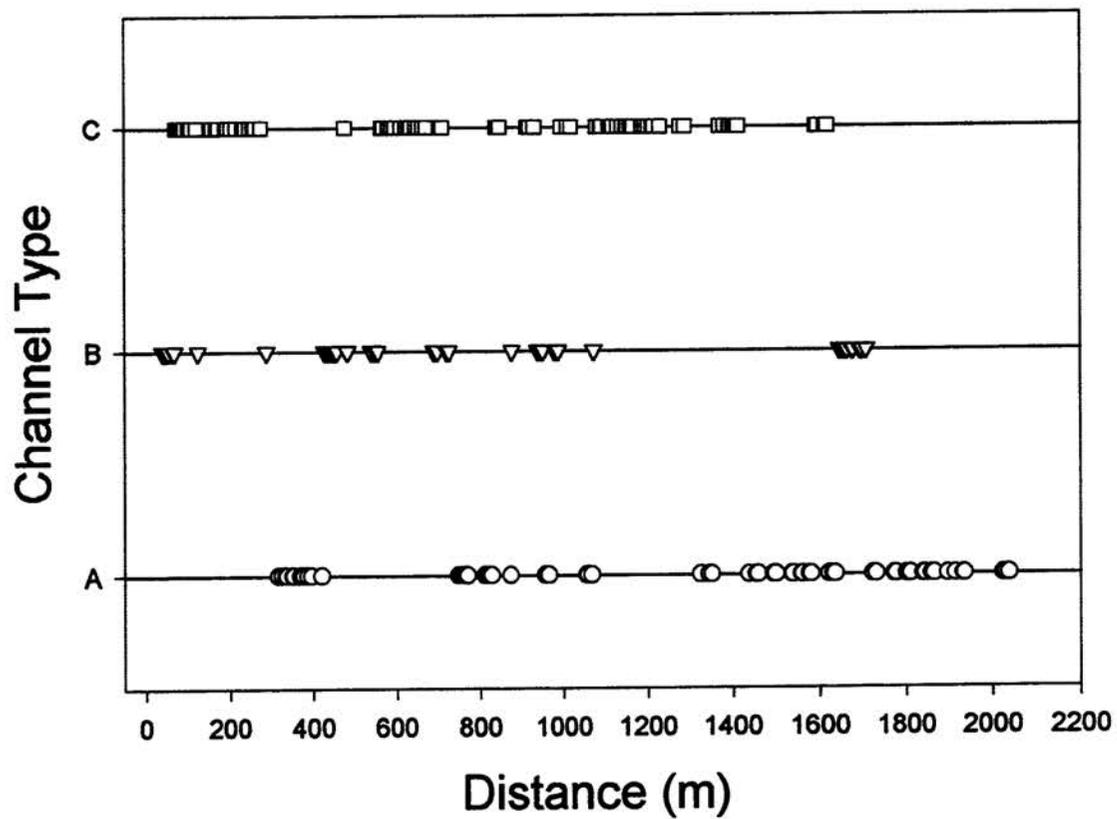
Riparian Width**Stream: Star Hill Branch****Number of Measurements: 6****Mean Width: 30.4m Std Dev: 25.0****Max: 73.6m Min: 5.2m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Star Hill Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Star Hill Branch Rosgen's Channel Type Distribution



Stream: Straight Branch

District: Mount Rogers National Recreation Area

Quadrangle: Konnarock

Sample Date: 06/08/98

Downstream Starting Point: Confluence with Whitetop Laurel Creek

Total Distance Surveyed: 13.7 kilometers

Percent of Total Area - Pools: 39.5%

Number of Pools: 368

Number of Pools per kilometer: 26.9

Total Pool Area: 23405.4 sq. meters \pm 734.4

Mean Pool Area: 63.6 sq. meters

Correction Factor: 0.96

Mean Maximum Depth: 56.8 cm

Mean Average Depth: 34.3 cm

Mean Average Residual Pool Depth: 18.3 cm

Percent of Total Area - Riffles: 60.5%

Number of Riffles: 242

Number of Riffles per kilometer: 17.7

Total Riffle Area: 35844.5 sq. meters \pm 5471.1

Mean Riffle Area: 148.1 sq. meters

Correction Factor: 1.07

Mean Maximum Depth: 41.0 cm

Mean Average Depth: 22.6 cm

Number of Large Woody Debris Pieces per kilometer: 200.7

Wood < 5 m and < 55 cm: 136.5

Wood < 5 m and > 55 cm: 9.5

Wood > 5 m and < 55 cm: 51.9

Wood > 5 m and > 55 cm: 2.8

Mean Channel Width: 7.9 m

Mean Riparian Width: 36.8 m

Mean Maximum Riparian Distance (either side): 26.0 m

Mean Minimum Riparian Distance (either side): 2.9 m

Maximum Riparian Width (Total): 117.1 m

Minimum Riparian Width (Total): 12.9 m

Straight Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 60.7%

Rosgen's Channel Type Frequency:

Channel Type A:

Channel Type B: 40.1%

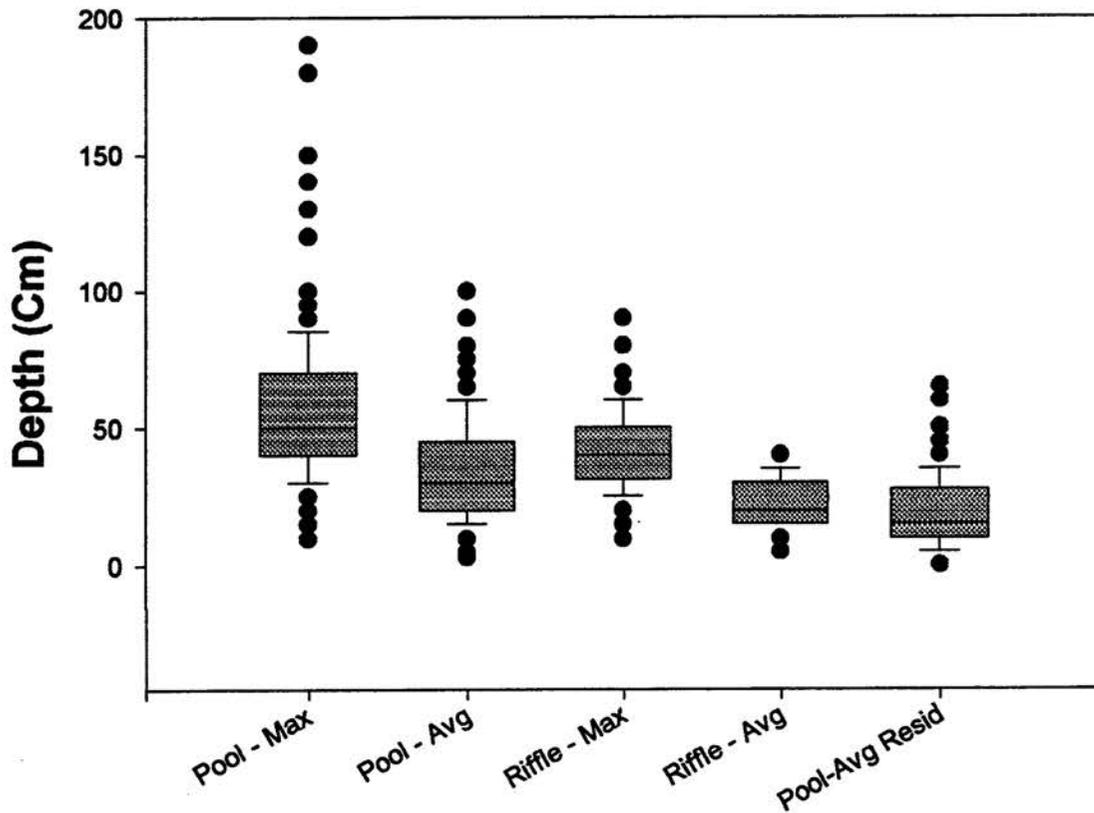
Channel Type C: 59.9%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 46.2%

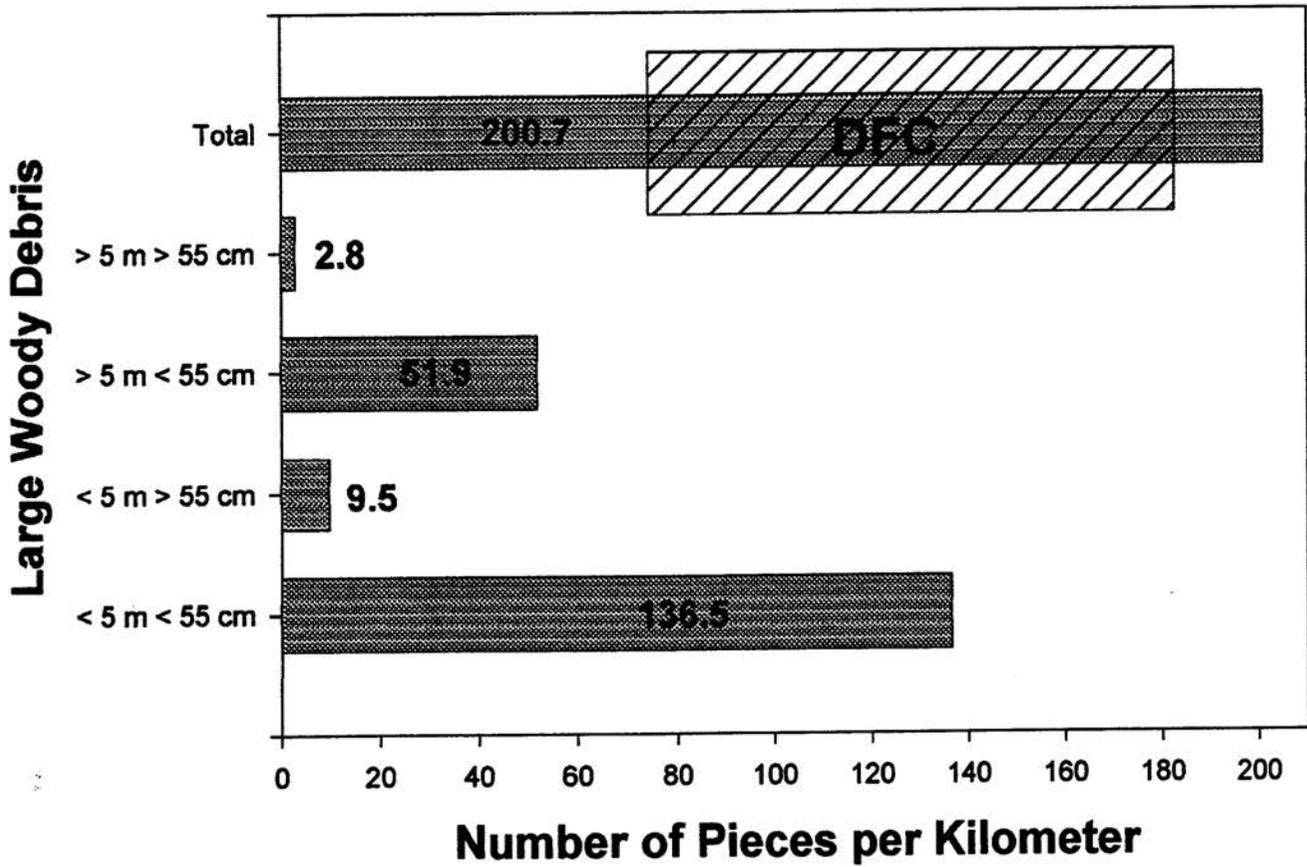
Average Channel Gradient: 5.2

Straight Branch

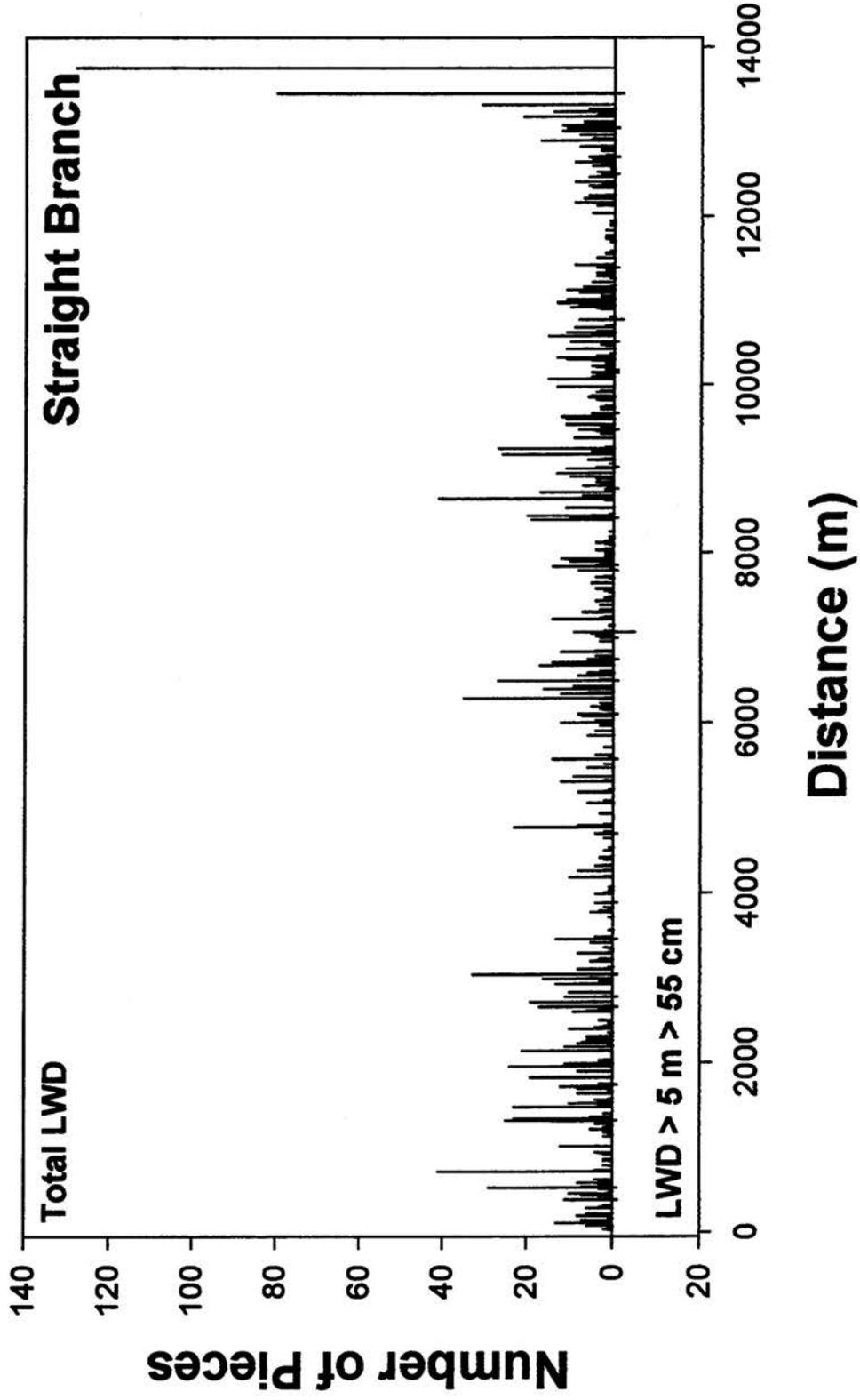


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

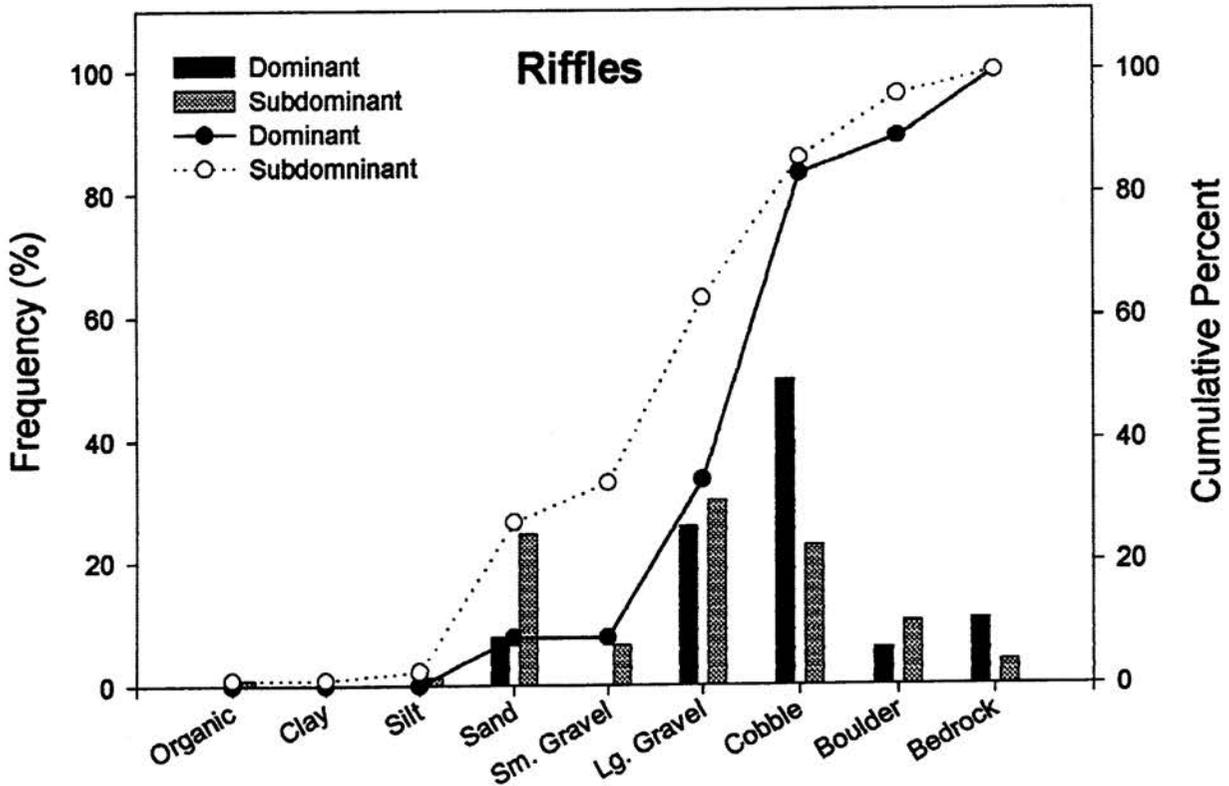
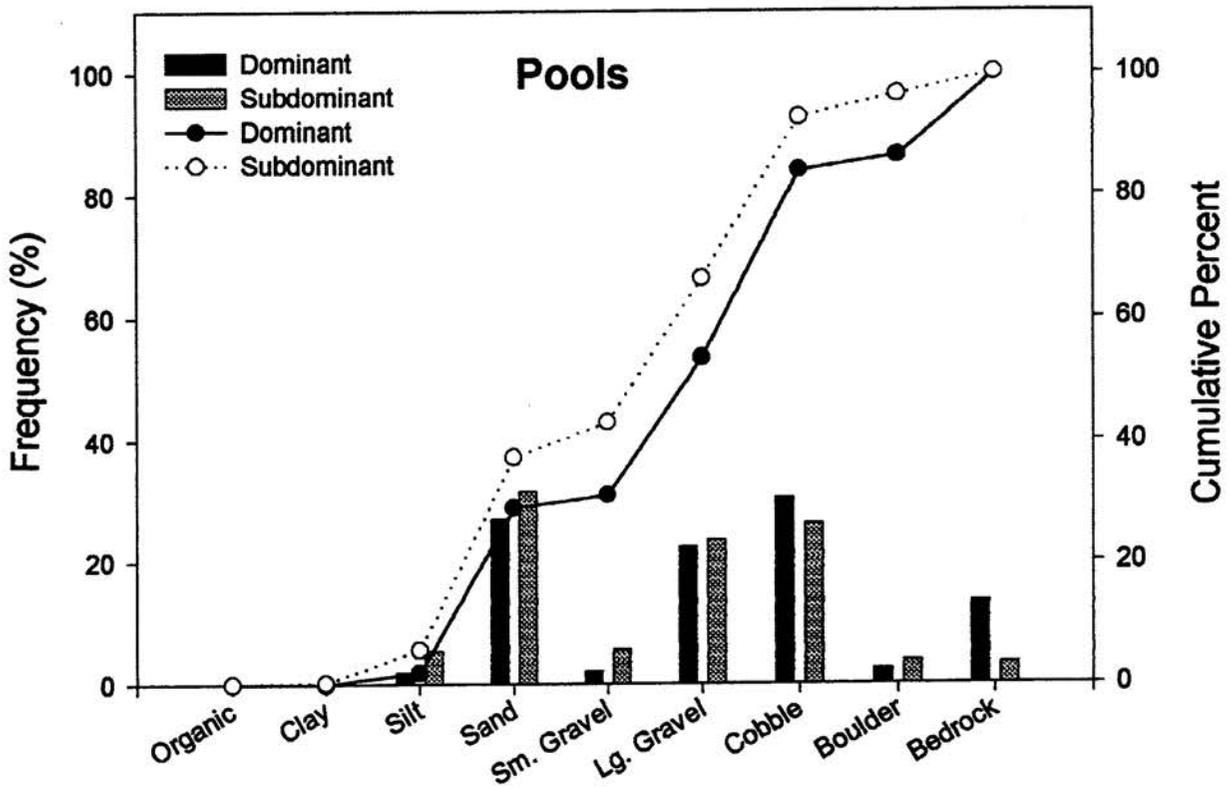
Straight Branch

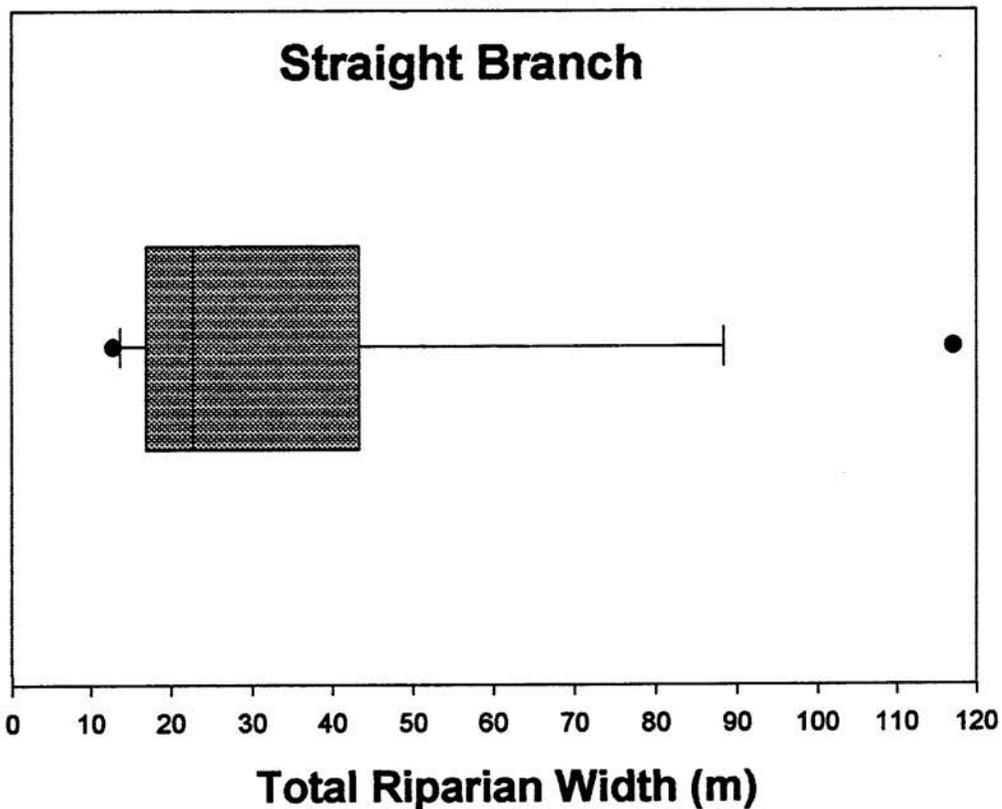


Distribution and Abundance of Large Woody Debris



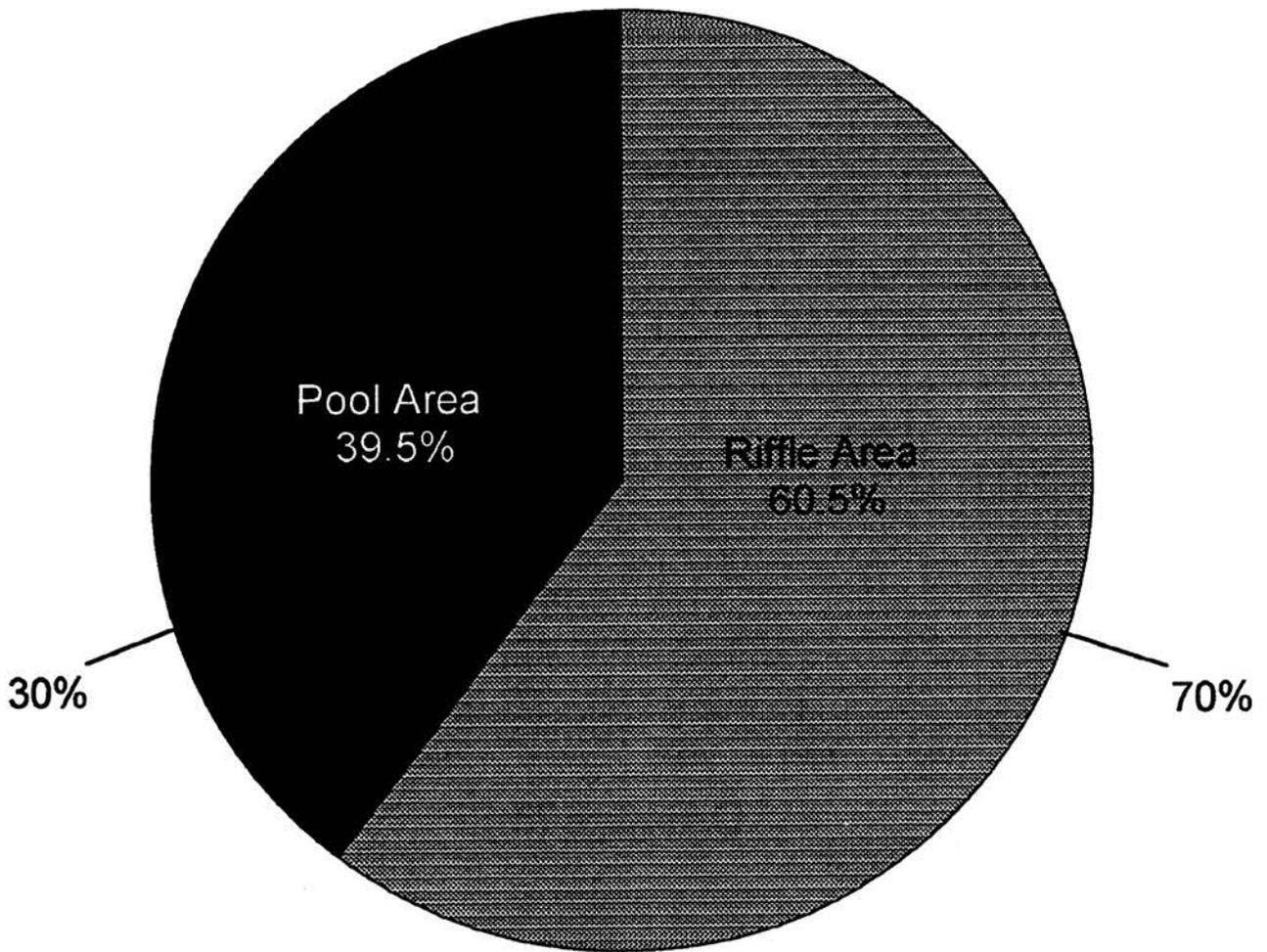
Straight Branch Substrate Composition



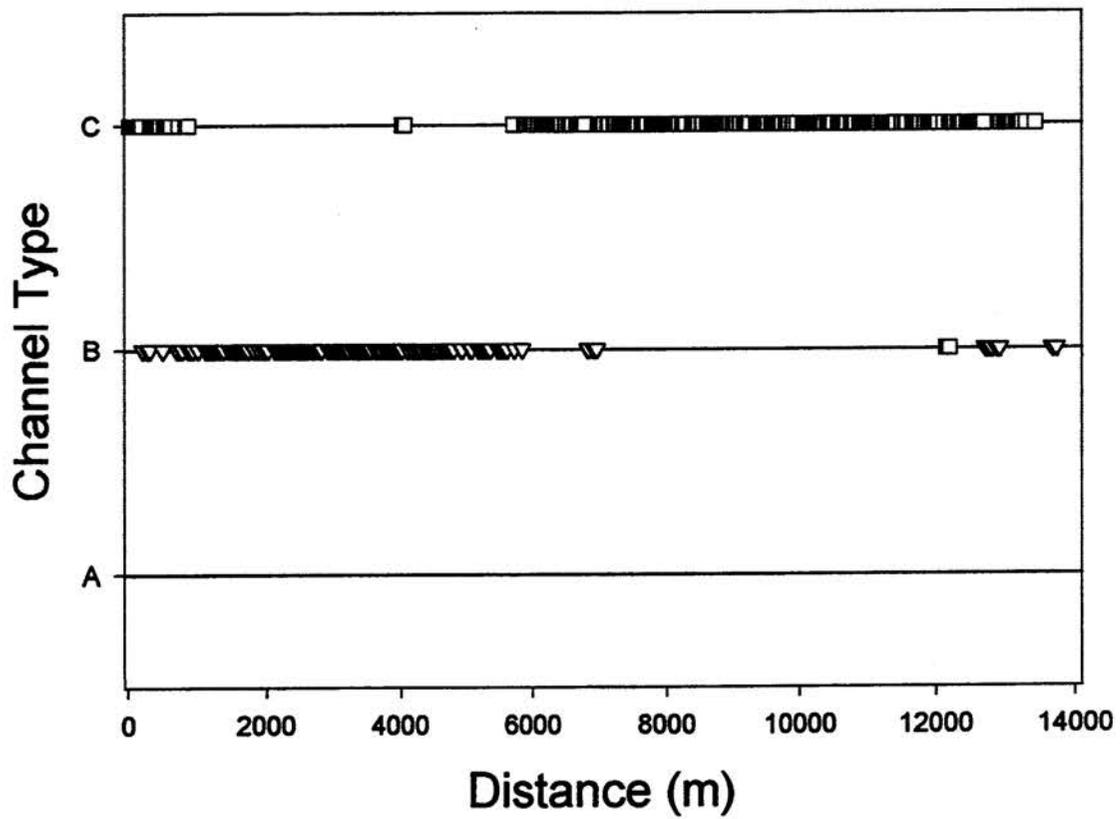
Riparian Width**Stream: Straight Branch****Number of Measurements: 10****Mean Width: 36.8m Std Dev: 32.1****Max: 117.1m Min: 12.9m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Straight Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Straight Branch Rosgen's Channel Type Distribution



Stream: Whitetop Laurel Creek (Lower)

District: Mount Rogers National Recreation Area

Quadrangle: Damascus/Konnarock

Sample Date: 08/03/98

Downstream Starting Point: Forest Service Boundary (Damascus)

Total Distance Surveyed: 7.8 kilometers

Percent of Total Area - Pools: 37.6%

Number of Pools: 109

Number of Pools per kilometer: 13.9

Total Pool Area: 34171.2 sq. meters \pm 5175.7

Mean Pool Area: 313.5 sq. meters

Correction Factor: 0.91

Mean Maximum Depth: 102.4 cm

Mean Average Depth: 59.4 cm

Mean Average Residual Pool Depth: 38.2 cm

Percent of Total Area - Riffles: 62.4%

Number of Riffles: 69

Number of Riffles per kilometer: 8.8

Total Riffle Area: 56766.0 sq. meters \pm 31233.7

Mean Riffle Area: 822.7 sq. meters

Correction Factor: 1.12

Mean Maximum Depth: 62.8 cm

Mean Average Depth: 31.6 cm

Number of Large Woody Debris Pieces per kilometer: 156.0

Wood < 5 m and < 55 cm: 97.5

Wood < 5 m and > 55 cm: 2.0

Wood > 5 m and < 55 cm: 51.5

Wood > 5 m and > 55 cm: 5.0

Mean Channel Width: 20.4 m

Mean Riparian Width: 66.1 m

Mean Maximum Riparian Distance (either side): 39.4 m

Mean Minimum Riparian Distance (either side): 6.3 m

Maximum Riparian Width (Total): 110.0 m

Minimum Riparian Width (Total): 25.5 m

Whitetop Laurel Creek (Lower) Continued.

Percent of Pool Habitat Surveyed as Glides: 26.5%

Rosgen's Channel Type Frequency:

Channel Type A: 1.5%

Channel Type B: 25.0%

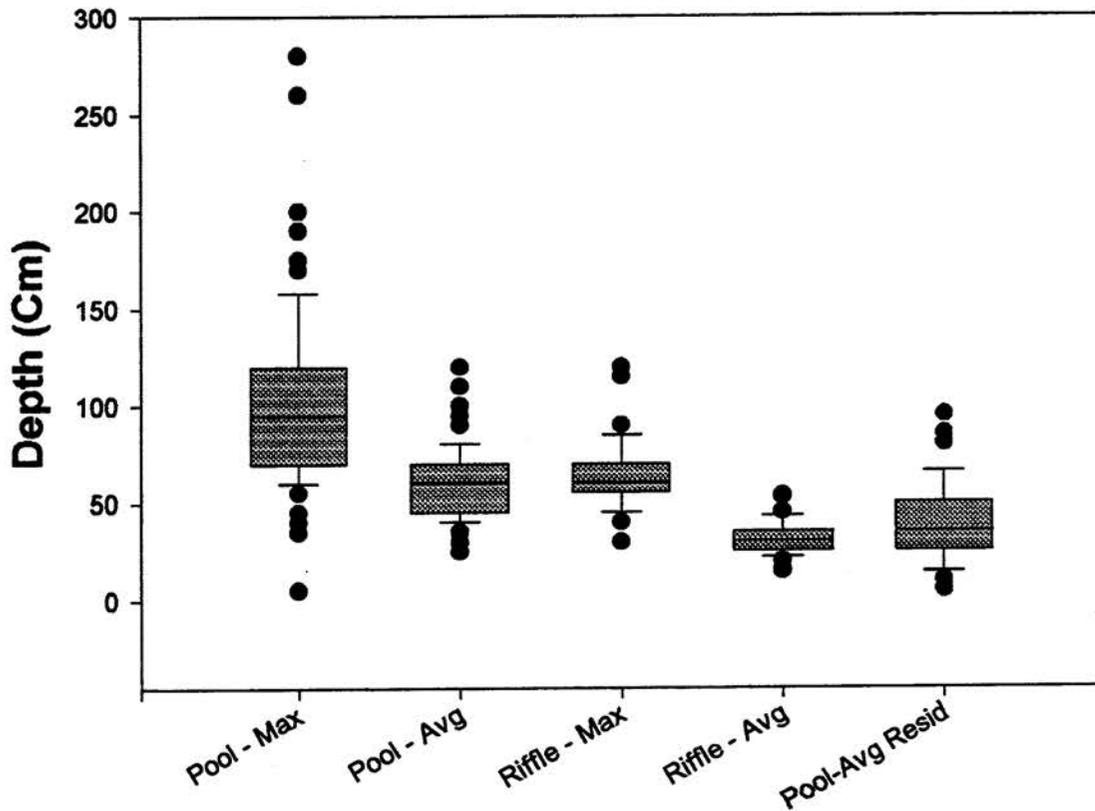
Channel Type C: 73.5%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 29.4%

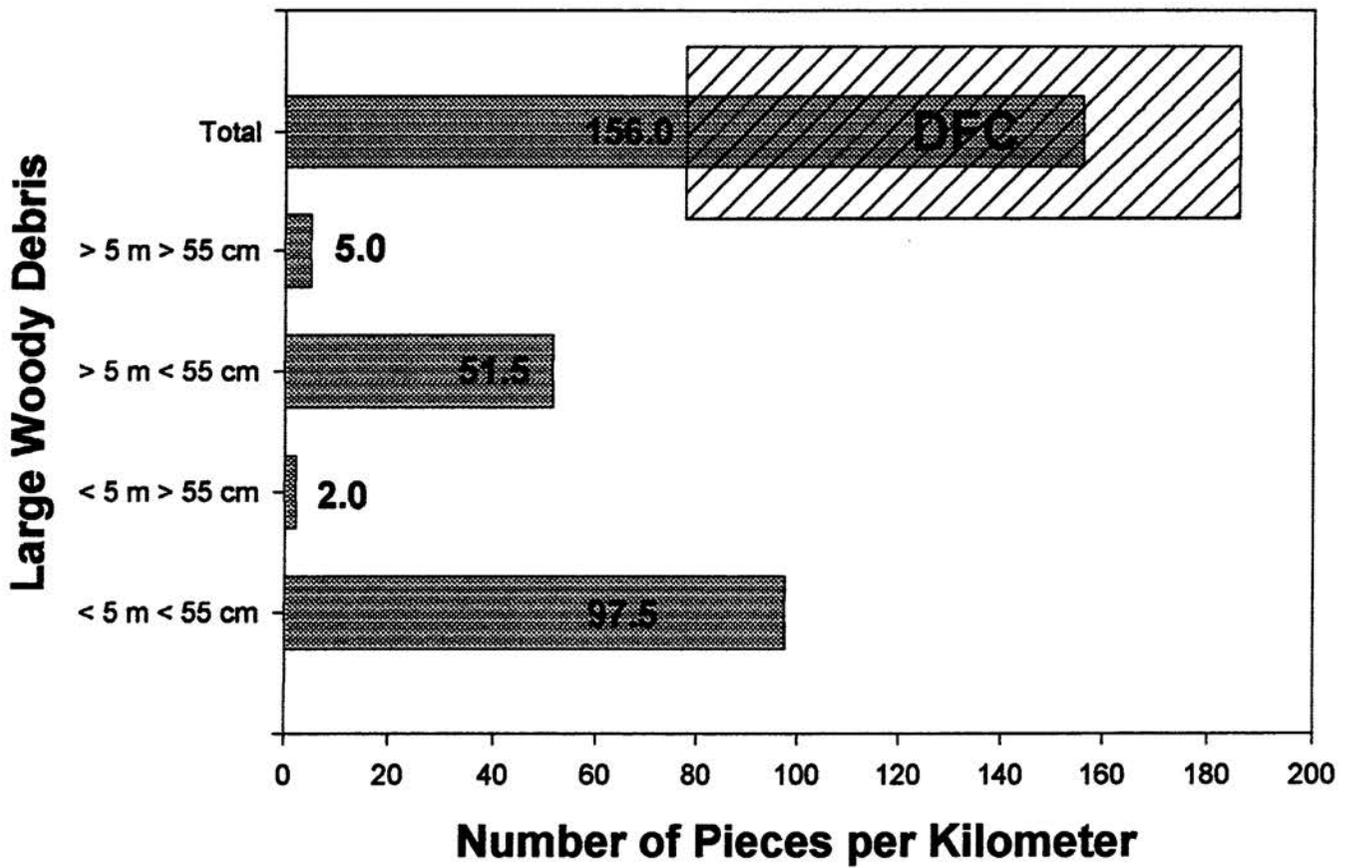
Average Channel Gradient: 3.0

Whitetop Laurel Creek (Lower)

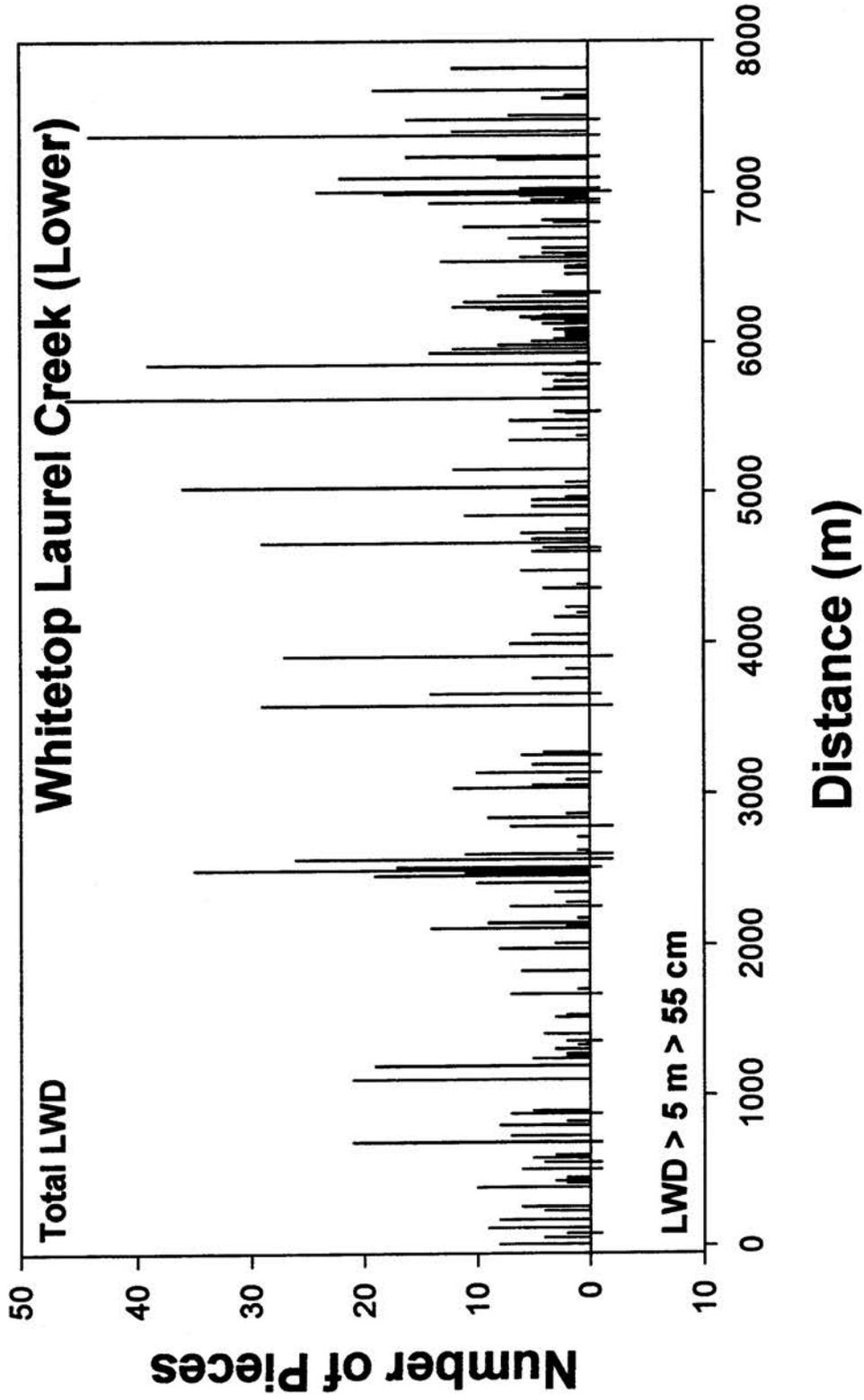


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

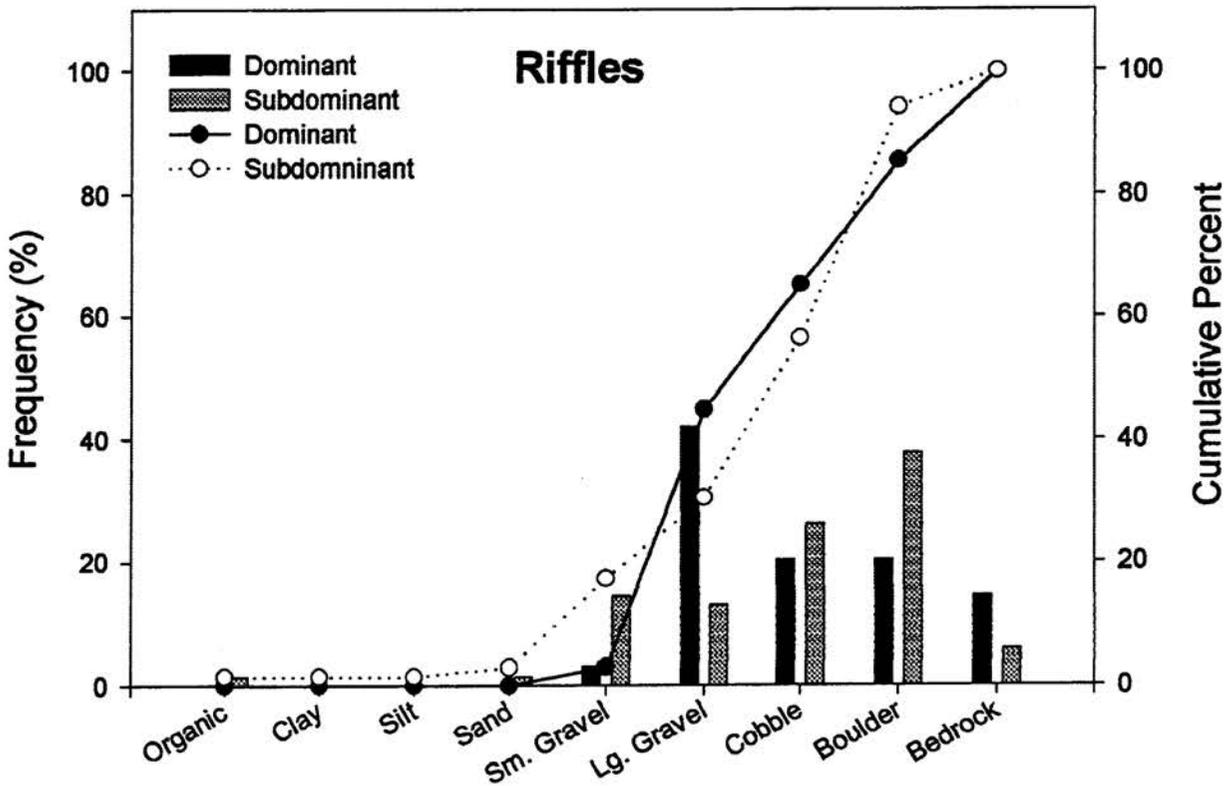
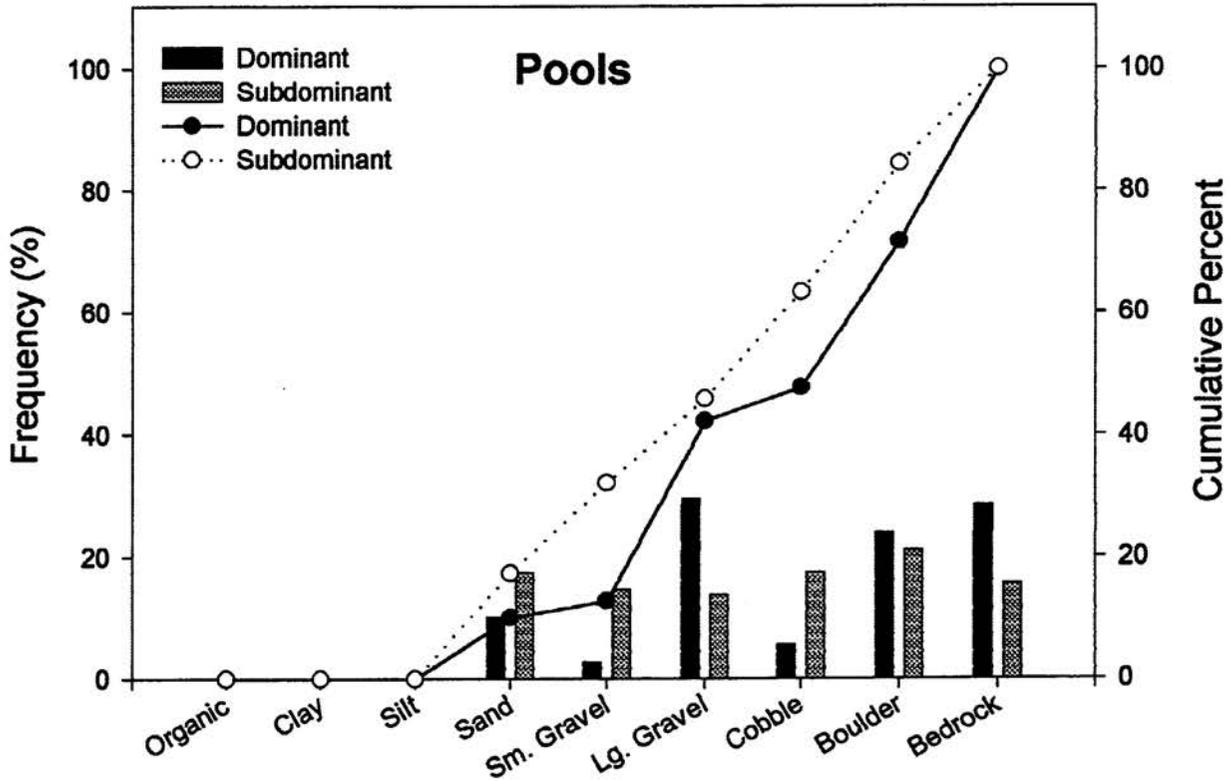
Whitetop Laurel Creek (Lower)

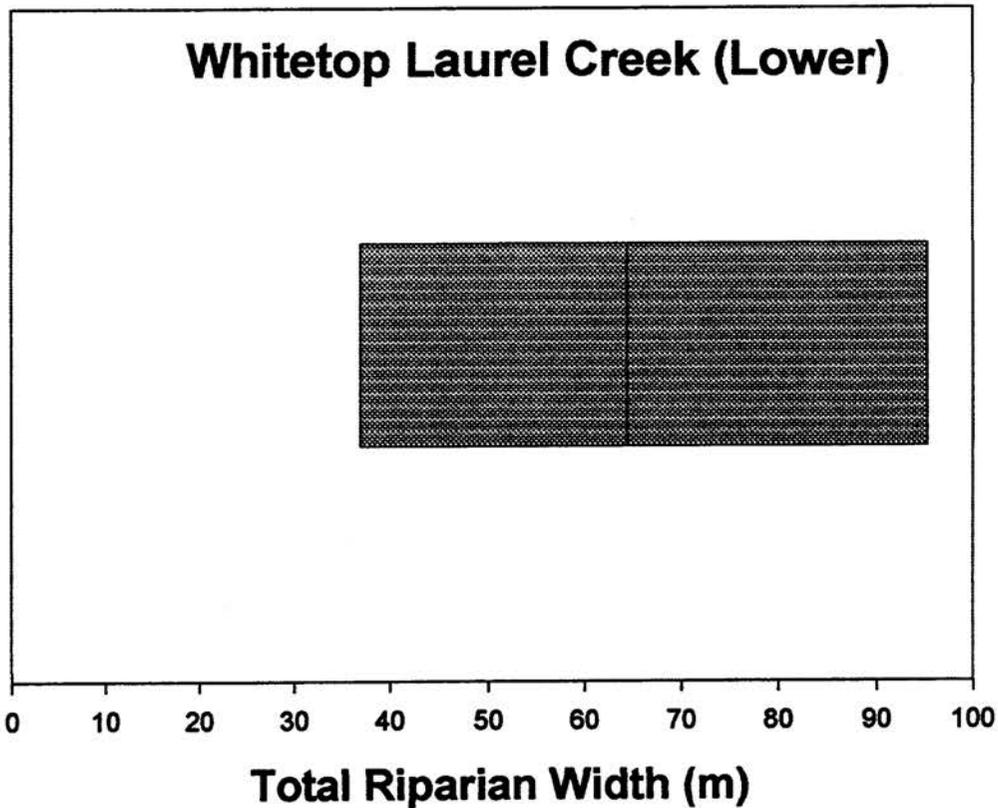


Distribution and Abundance of Large Woody Debris



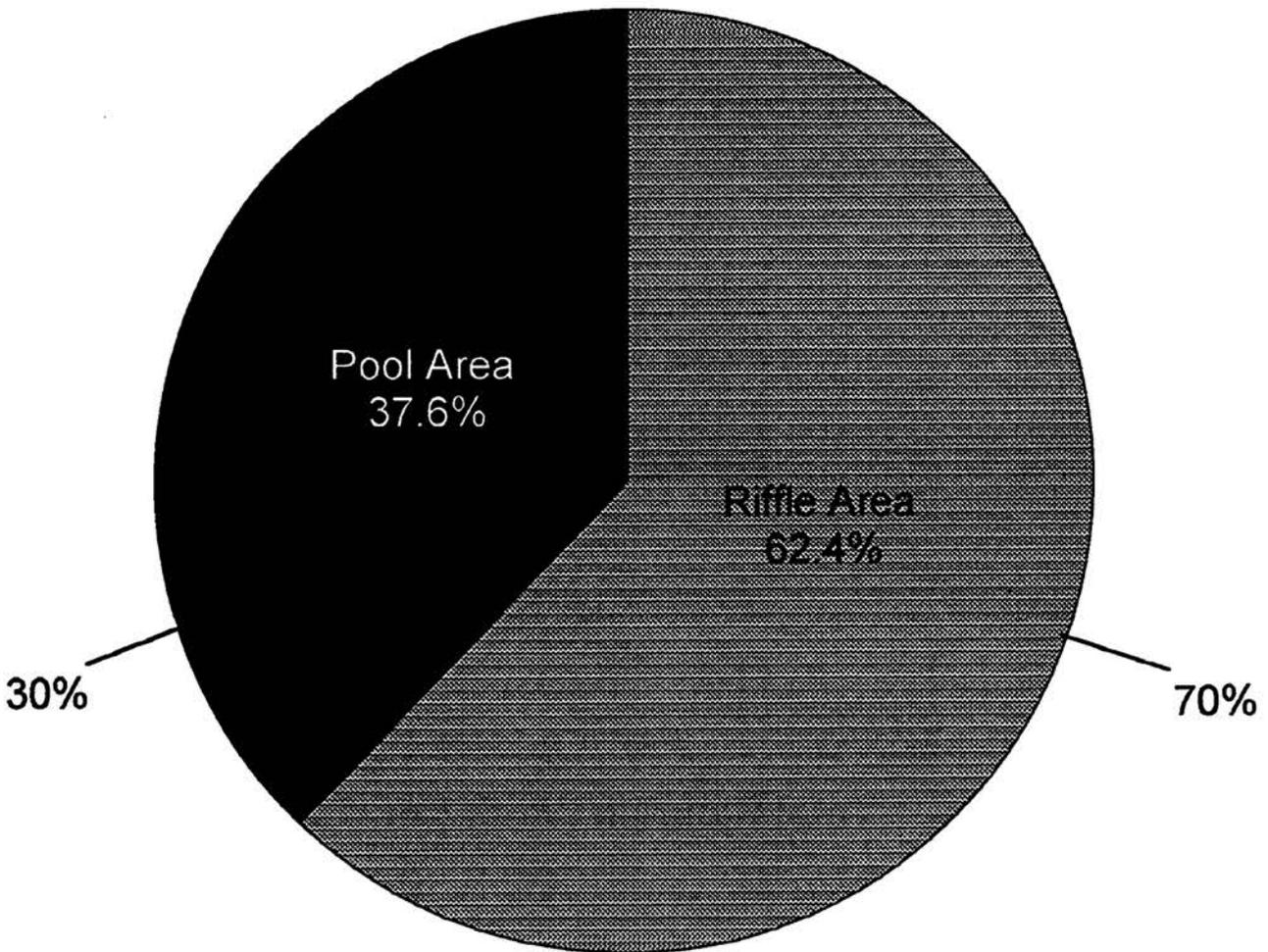
Whitetop Laurel Creek (Lower) Substrate Composition



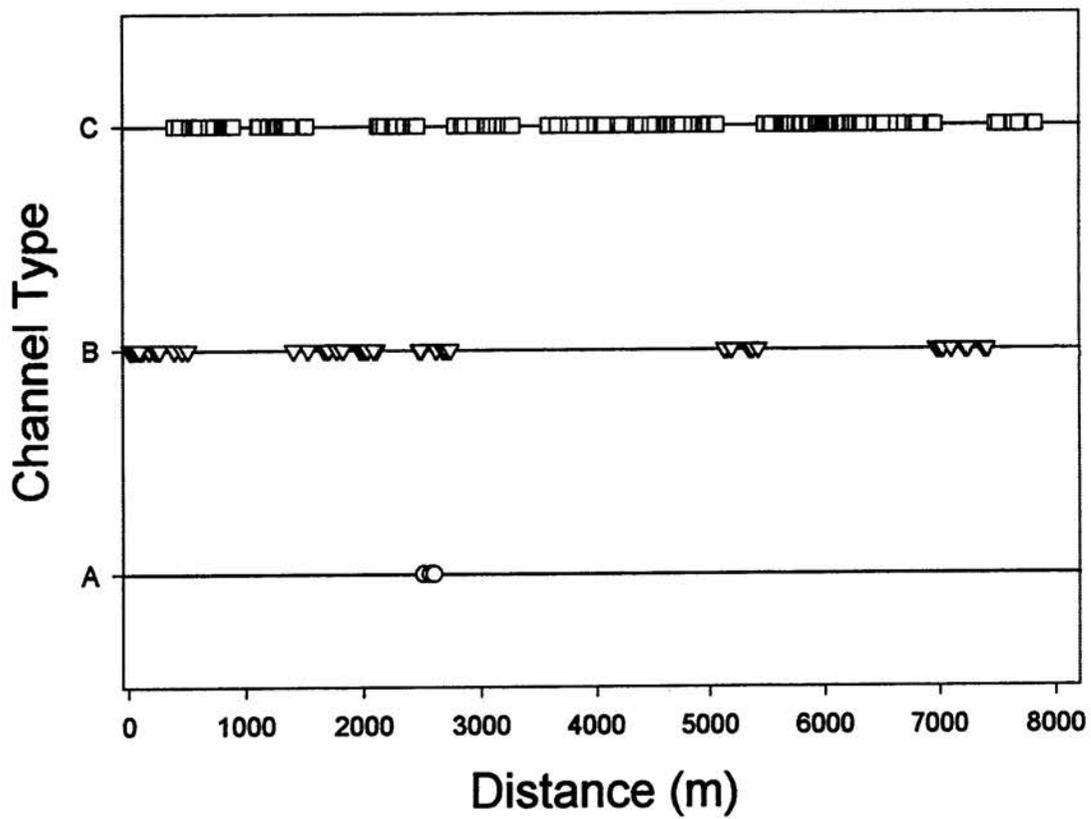
Riparian Width**Stream: Whitetop Laurel Creek (Lower)****Number of Measurements: 4****Mean Width: 66.1m Std Dev: 37.0****Max: 110.0m Min: 25.5m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Whitetop Laurel Creek (Lower)
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Whitetop Laurel Creek (Lower) Rosgen's Channel Type Distribution



Stream: Whitetop Laurel Creek (Upper)

District: Mount Rogers National Recreation Area

Quadrangle: Konnarock

Sample Date: 08/03/98

Downstream Starting Point: Forest Service Boundary (Taylors Valley)

Total Distance Surveyed: 8.0 kilometers

Percent of Total Area - Pools: 39.7%

Number of Pools: 146

Number of Pools per kilometer: 18.25

Total Pool Area: 37045.8 sq. meters \pm 2537.7

Mean Pool Area: 253.7 sq. meters

Correction Factor: 1.03

Mean Maximum Depth: 84.3 cm

Mean Average Depth: 55.4 cm

Mean Average Residual Pool Depth: 30.9 cm

Percent of Total Area - Riffles: 60.3%

Number of Riffles: 106

Number of Riffles per kilometer: 13.3

Total Riffle Area: 56208.2 sq. meters \pm 6421.9

Mean Riffle Area: 530.3 sq. meters

Correction Factor: 1.14

Mean Maximum Depth: 45.9 cm

Mean Average Depth: 29.7 cm

Number of Large Woody Debris Pieces per kilometer: 427.5

Wood < 5 m and < 55 cm: 245.7

Wood < 5 m and > 55 cm: 4.9

Wood > 5 m and < 55 cm: 157.6

Wood > 5 m and > 55 cm: 19.3

Mean Channel Width: 15.7 m

Mean Riparian Width: 43.3 m

Mean Maximum Riparian Distance (either side): 23.6 m

Mean Minimum Riparian Distance (either side): 4.0 m

Maximum Riparian Width (Total): 74.7 m

Minimum Riparian Width (Total): 23.0 m

Whitetop Laurel Creek Creek (Upper) Continued.

Percent of Pool Habitat Surveyed as Glides: 22.3%

Rosgen's Channel Type Frequency:

Channel Type A: 19.2%

Channel Type B: 62.4%

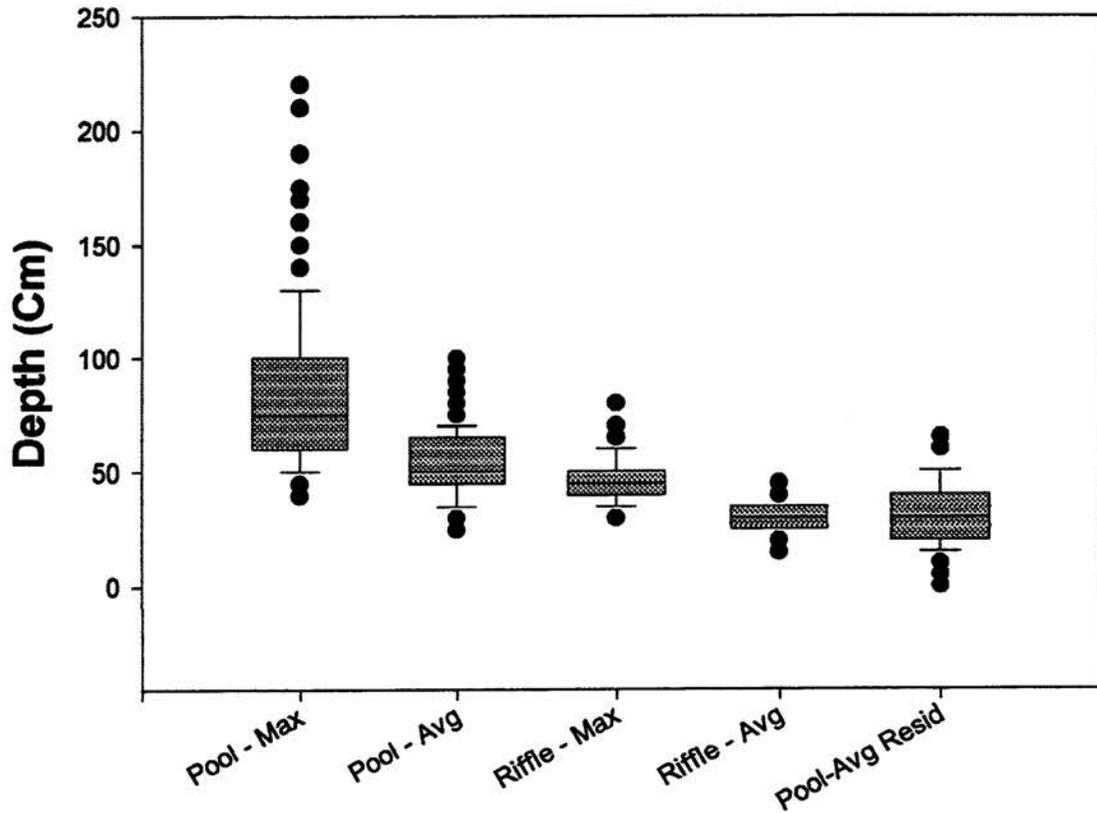
Channel Type C: 18.4%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 19.2%

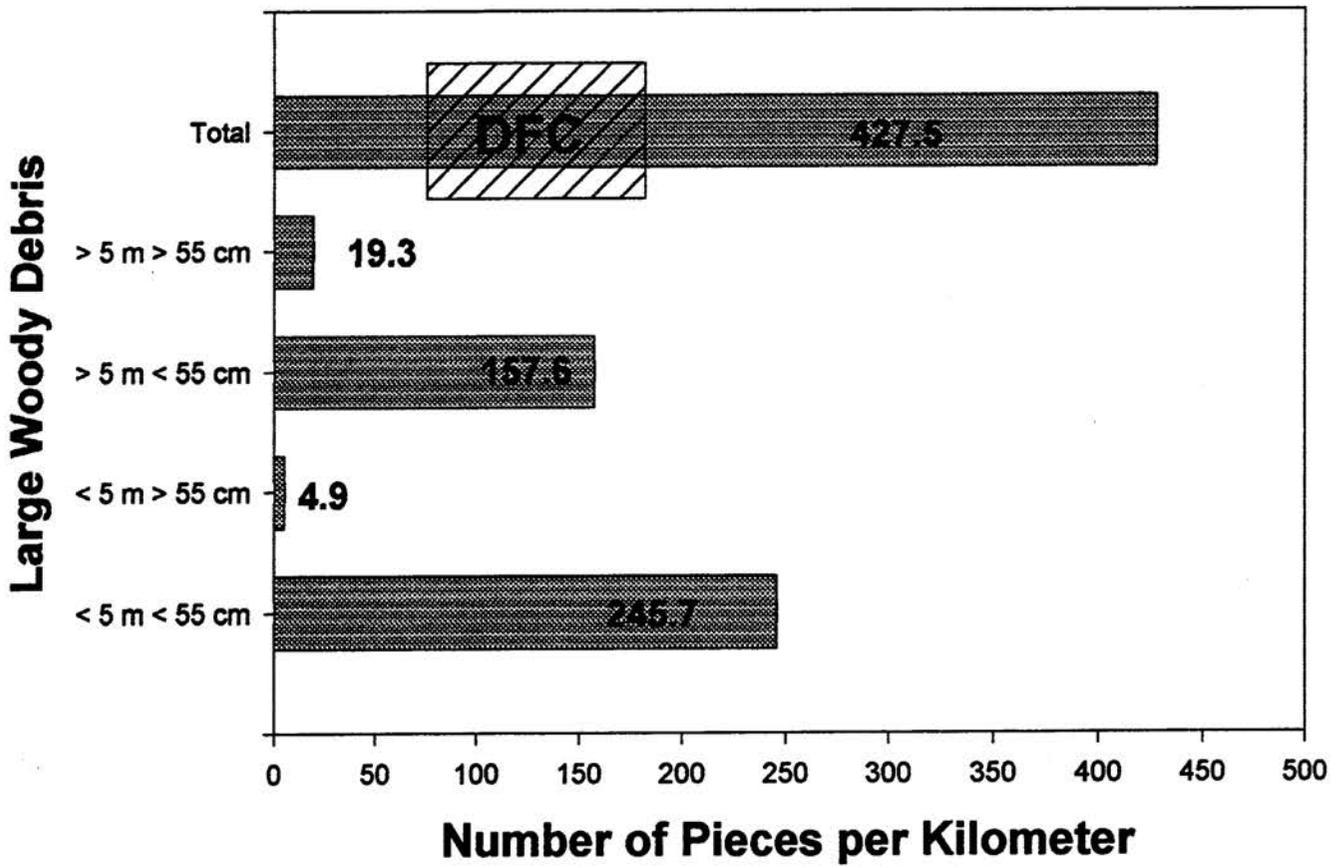
Average Channel Gradient: 5.0

Whitetop Laurel Creek (Upper)

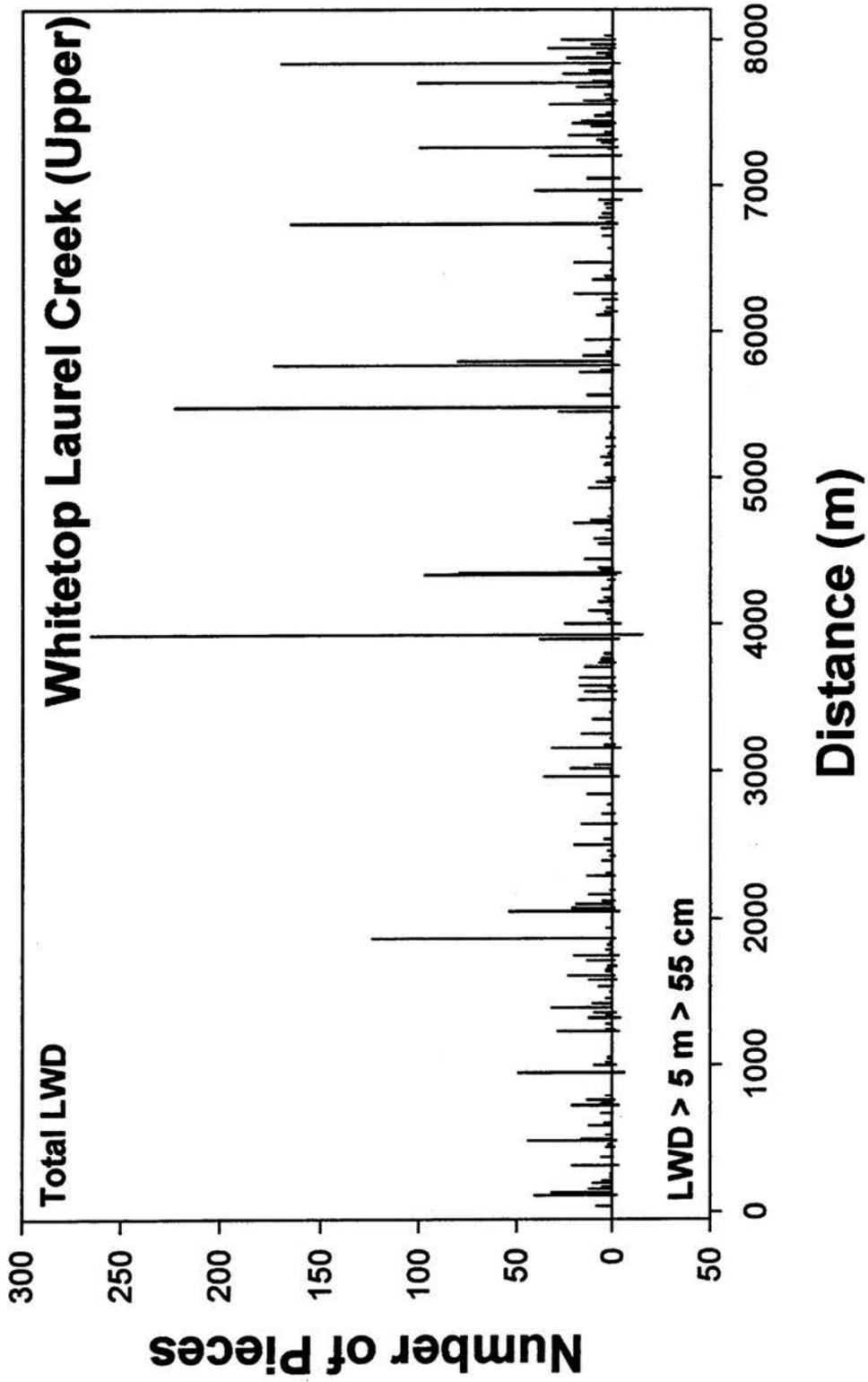


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

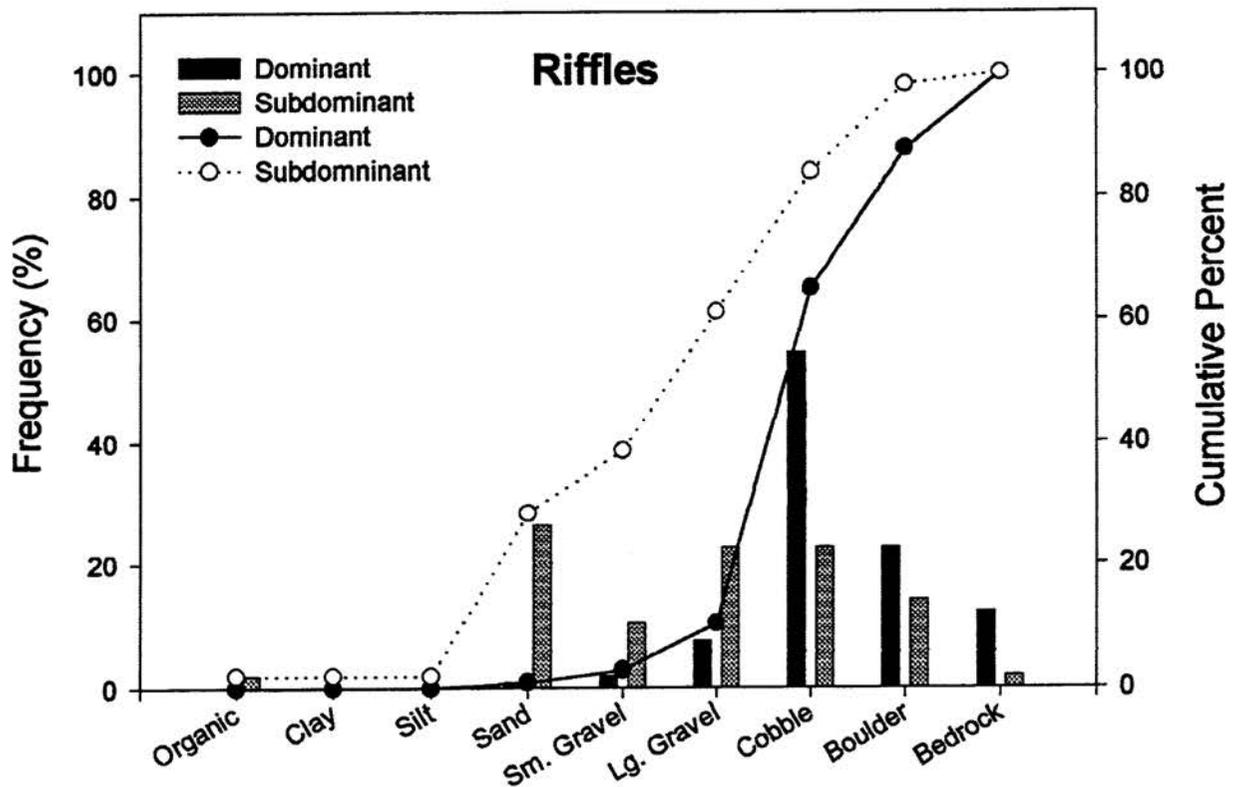
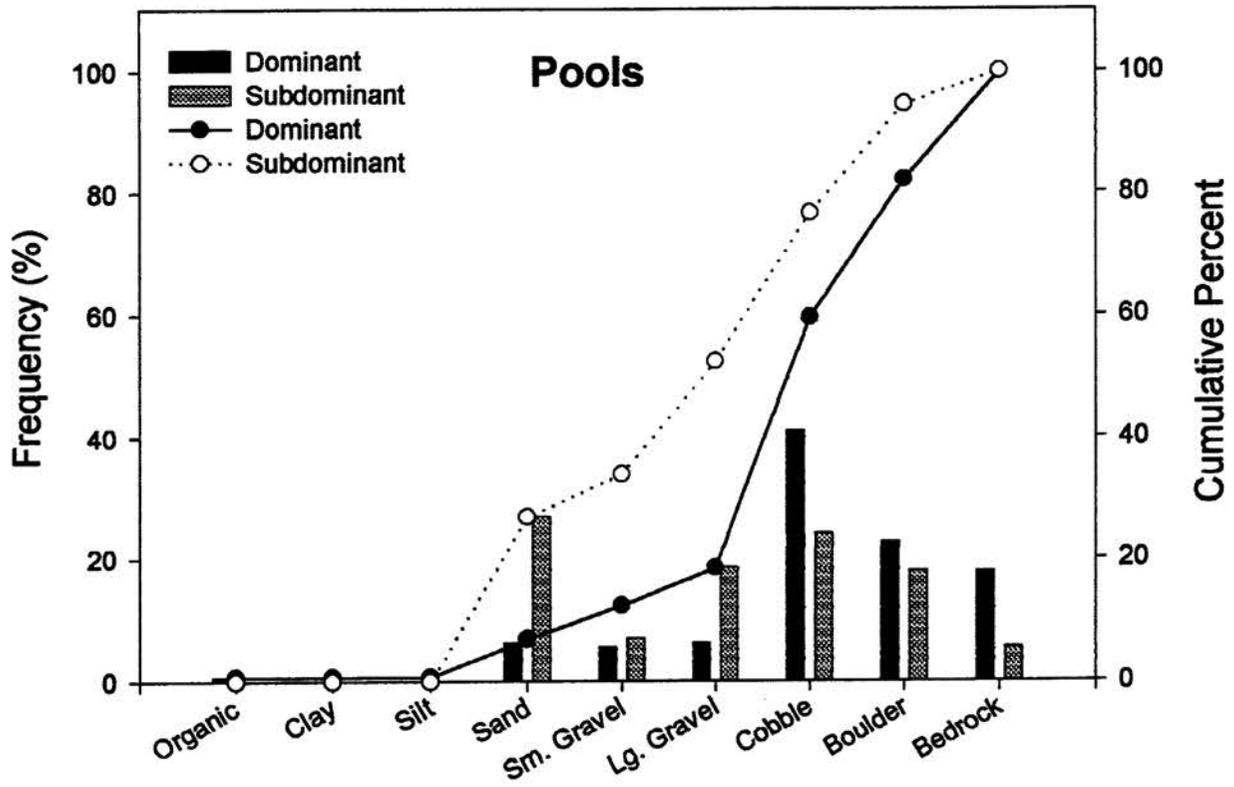
Whitetop Laurel Creek (Upper)

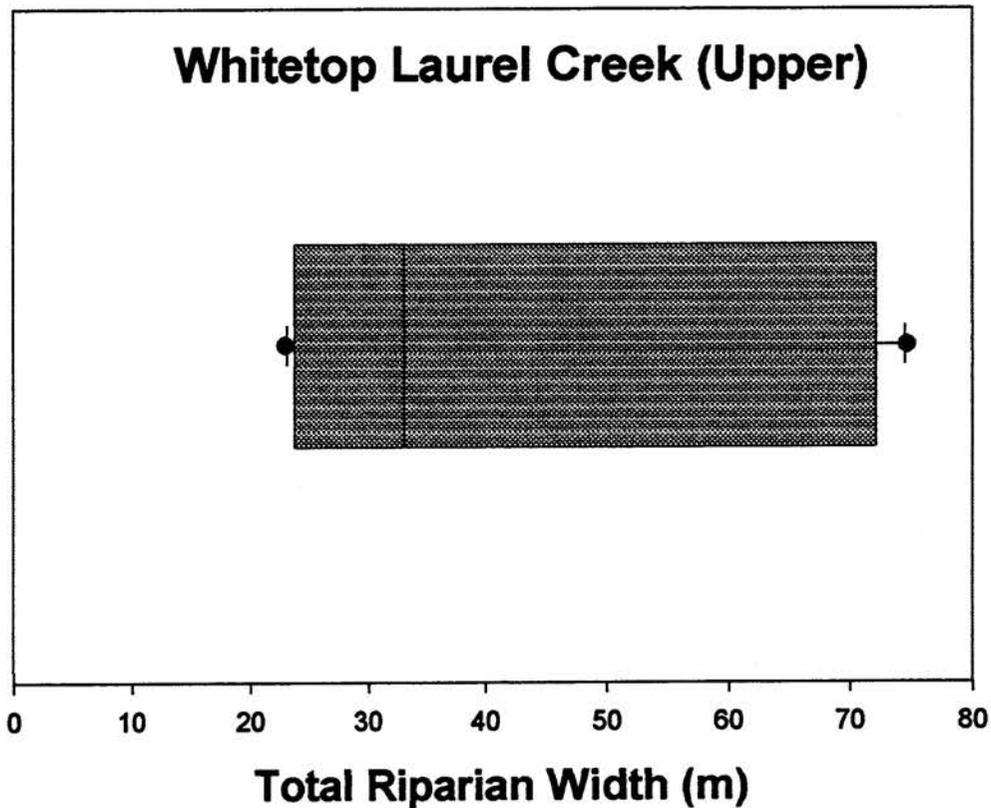


Distribution and Abundance of Large Woody Debris



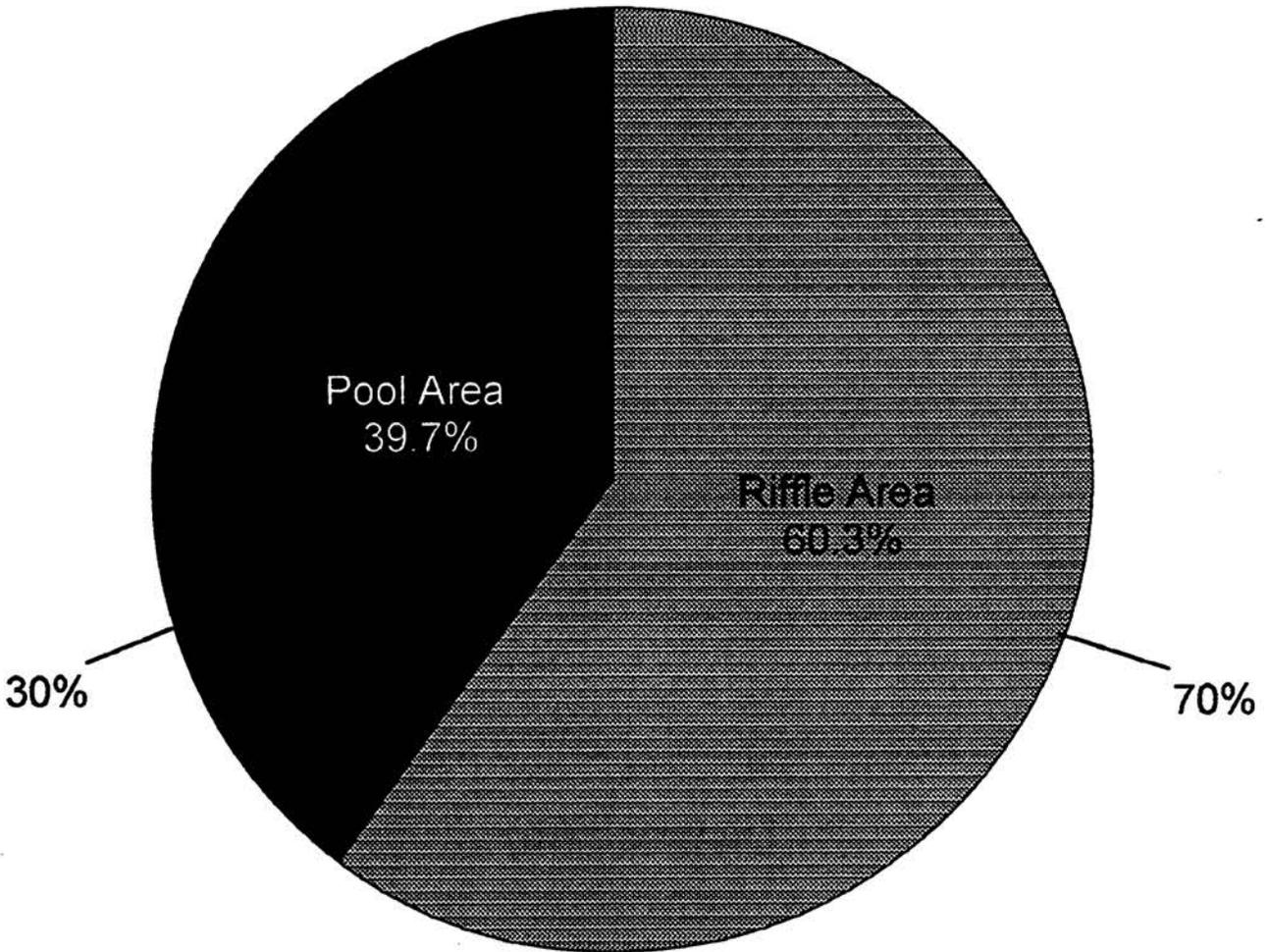
Whitetop Laurel Creek (Upper) Substrate Composition



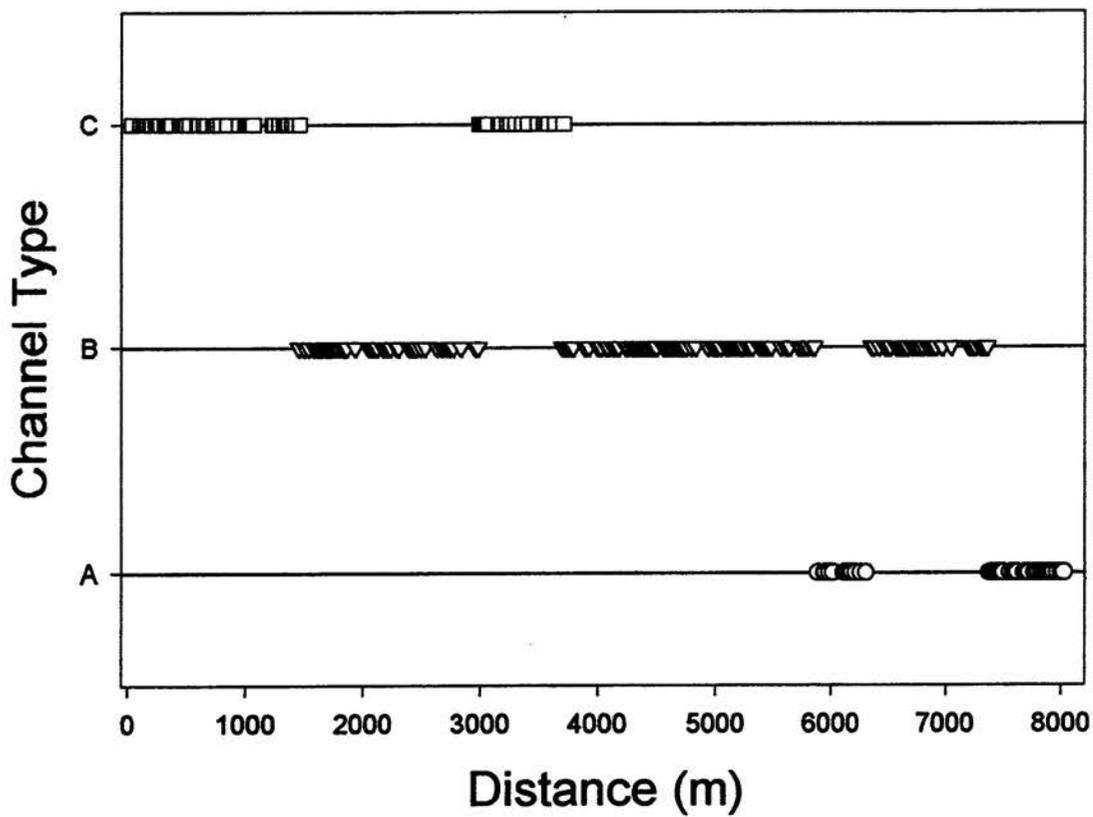
Riparian Width**Stream: Whitetop Laurel Creek (Upper)****Number of Measurements: 6****Mean Width: 43.3m Std Dev: 23.8****Max: 74.7m Min: 23.0m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Whitetop Laurel Creek (Upper)
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Whitetop Laurel Creek (Upper) Rosgen's Channel Type Distribution



Whitetop Mtn. Quadrangle

Stream: Barton Branch

District: Mount Rogers National Recreation Area

Quadrangle: Whitetop Mtn.

Sample Date: 06/30/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 1.2 kilometers

Percent of Total Area - Pools: 36.4%

Number of Pools: 83

Number of Pools per kilometer: 69.8

Total Pool Area: 720.2 sq. meters \pm 66.7

Mean Pool Area: 8.7 sq. meters

Correction Factor: 1.09

Mean Maximum Depth: 26.9 cm

Mean Average Depth: 17.2 cm

Mean Average Residual Pool Depth: 14.4 cm

Percent of Total Area - Riffles: 63.6%

Number of Riffles: 48

Number of Riffles per kilometer: 40.4

Total Riffle Area: 1258.1 sq. meters \pm 174.1

Mean Riffle Area: 26.2 sq. meters

Correction Factor: 1.16

Mean Maximum Depth: 15.8 cm

Mean Average Depth: 8.4 cm

Number of Large Woody Debris Pieces per kilometer: 413.0

Wood < 5 m and < 55 cm: 256.3

Wood < 5 m and > 55 cm: 13.1

Wood > 5 m and < 55 cm: 127.3

Wood > 5 m and > 55 cm: 16.3

Mean Channel Width: 4.3 m

Mean Riparian Width: 10.0 m

Mean Maximum Riparian Distance (either side): 4.8 m

Mean Minimum Riparian Distance (either side): 0.9 m

Maximum Riparian Width (Total): 12.8 m

Minimum Riparian Width (Total): 8.3 m

Barton Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 48.0%

Rosgen's Channel Type Frequency:

Channel Type A: 45.7%

Channel Type B: 54.3%

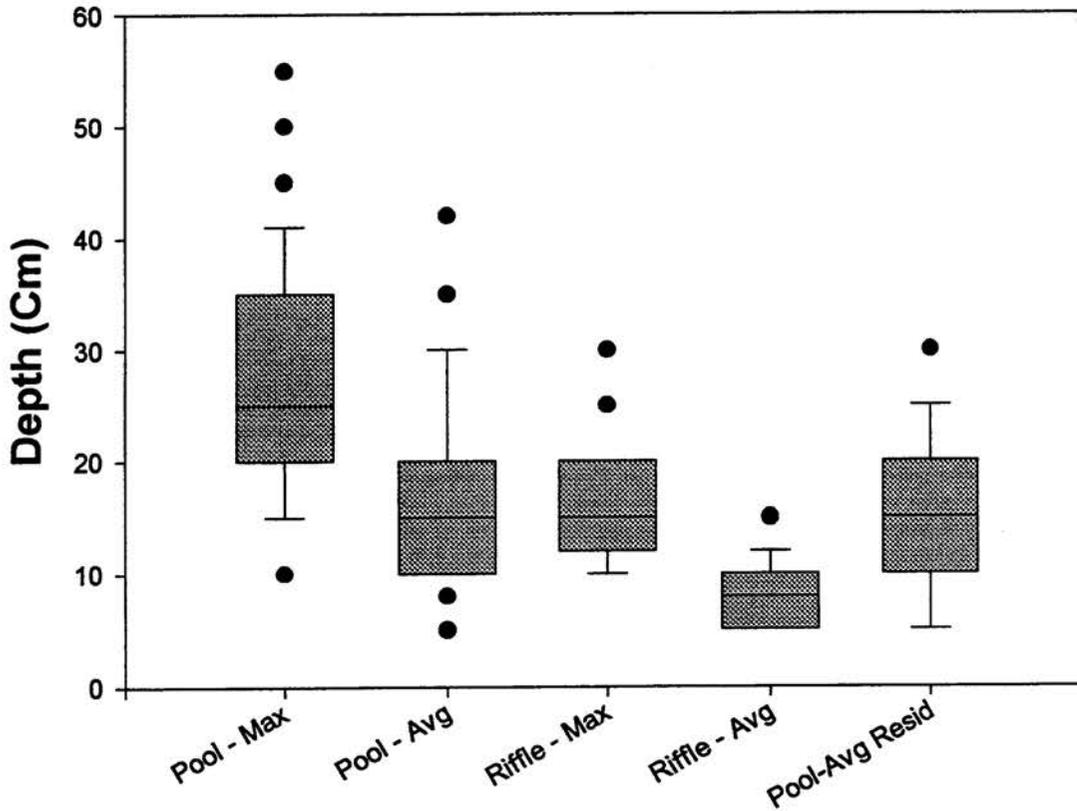
Channel Type C:

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 65.1%

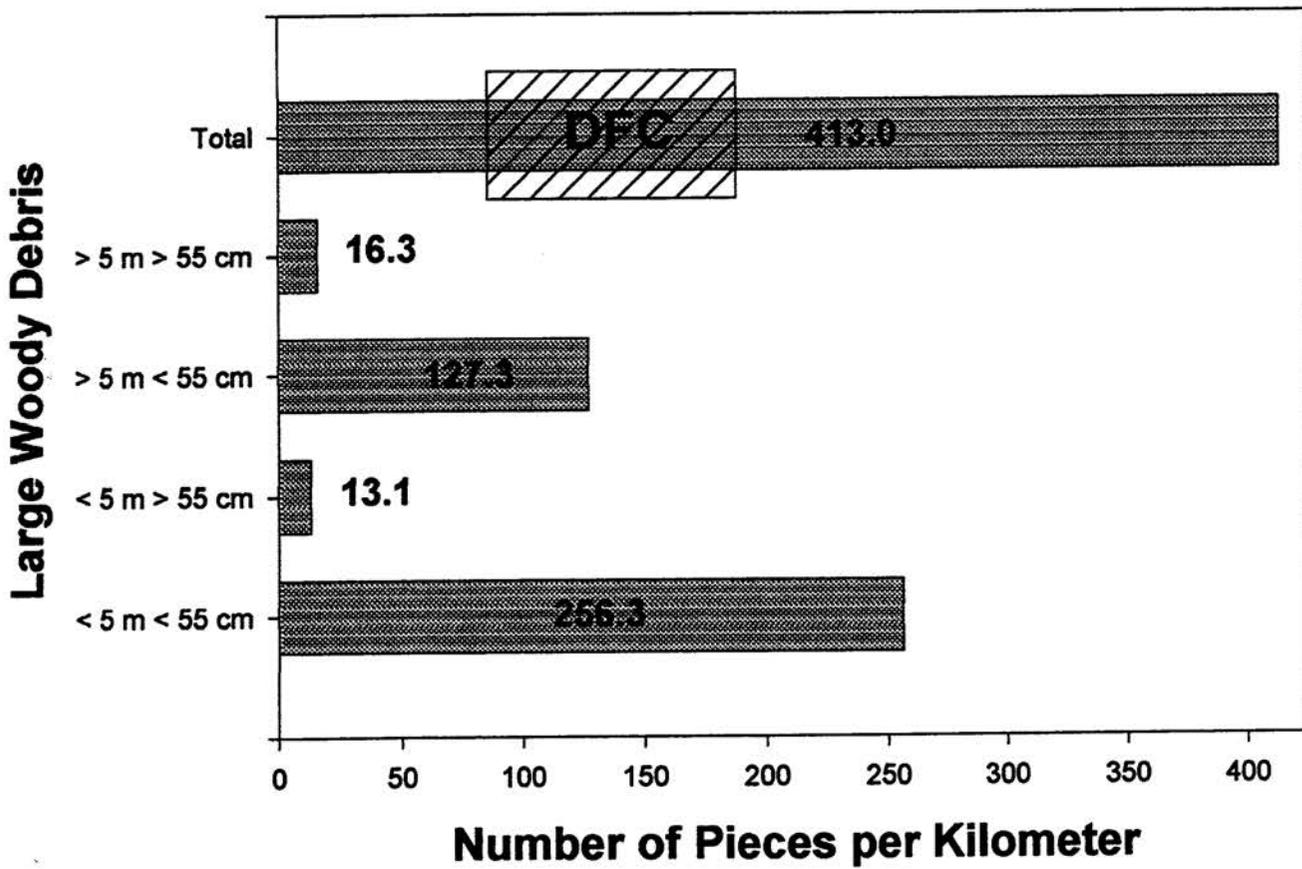
Average Channel Gradient: 8.5

Barton Branch

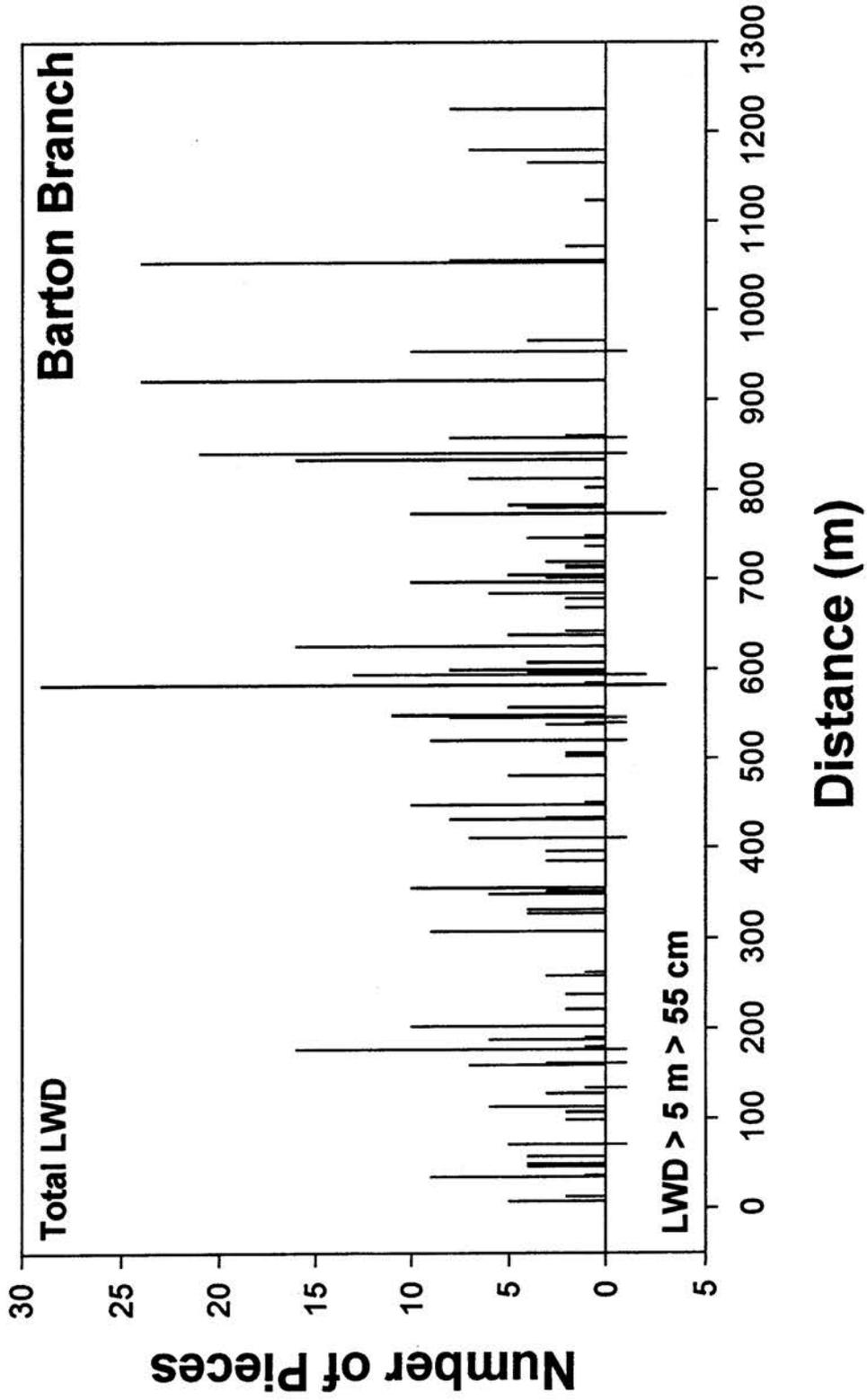


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

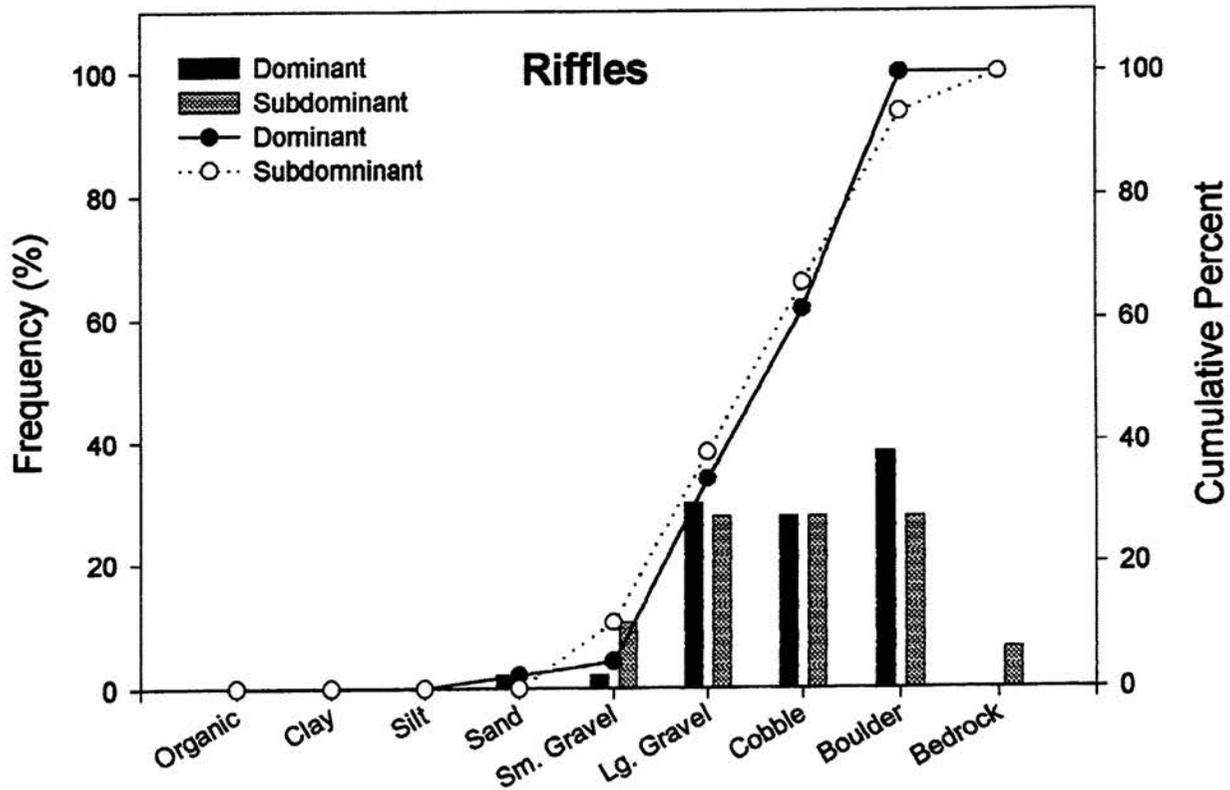
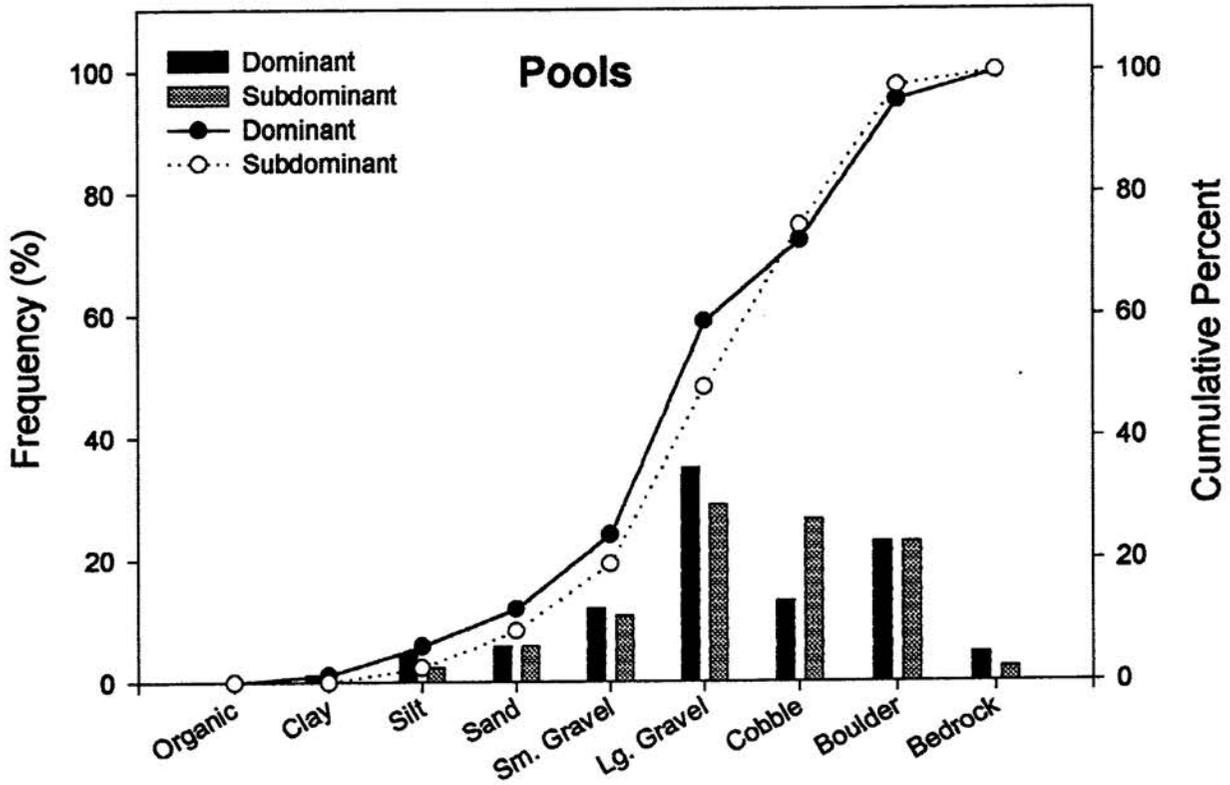
Barton Branch

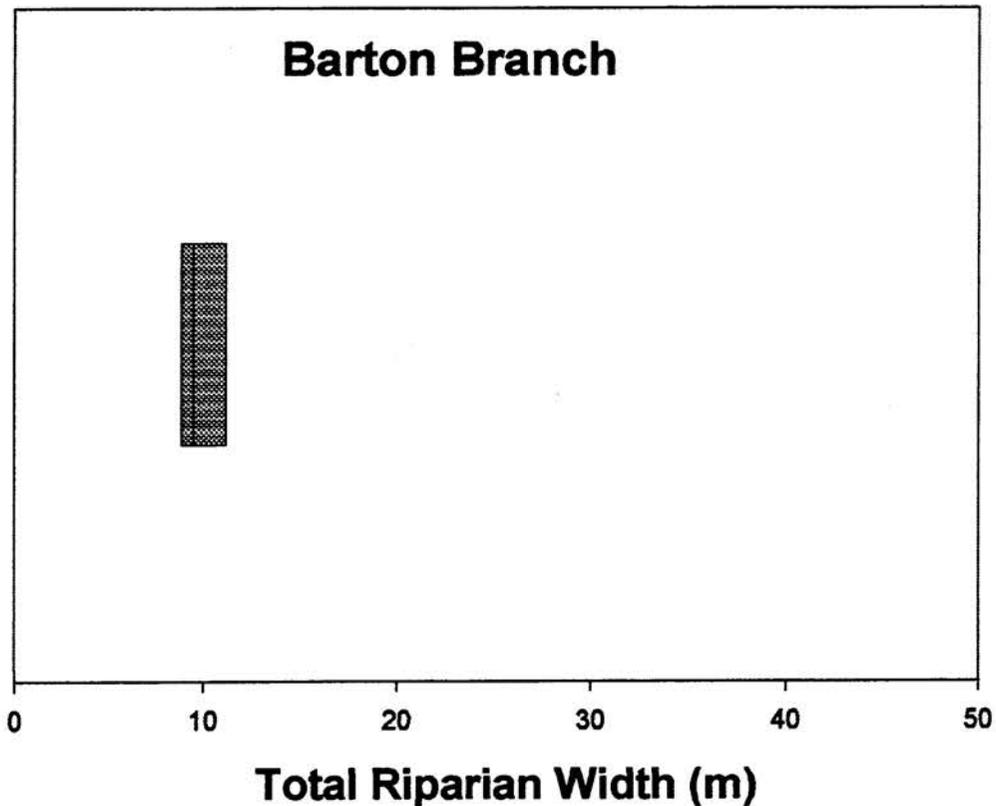


Distribution and Abundance of Large Woody Debris



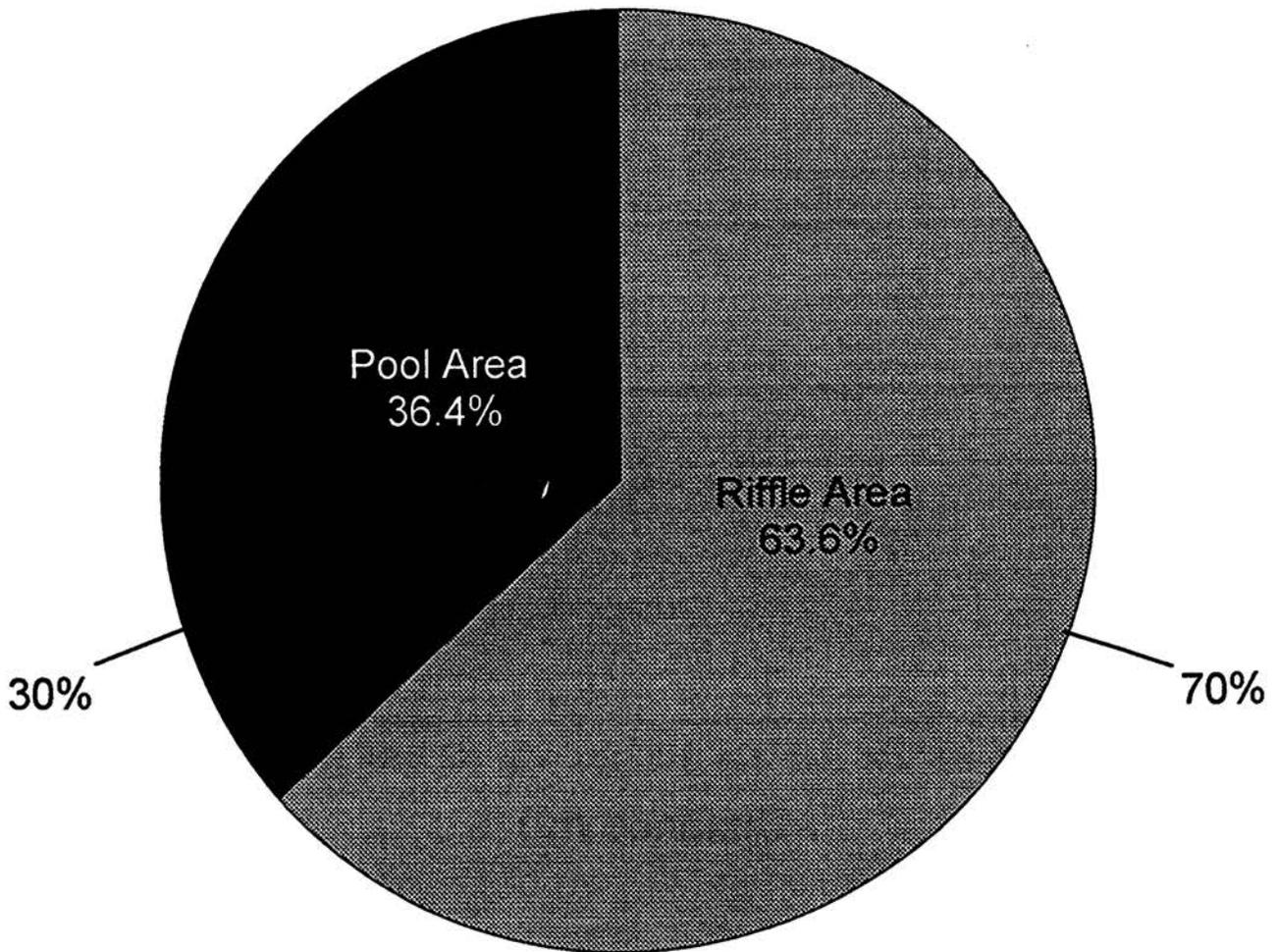
Barton Branch Substrate Composition



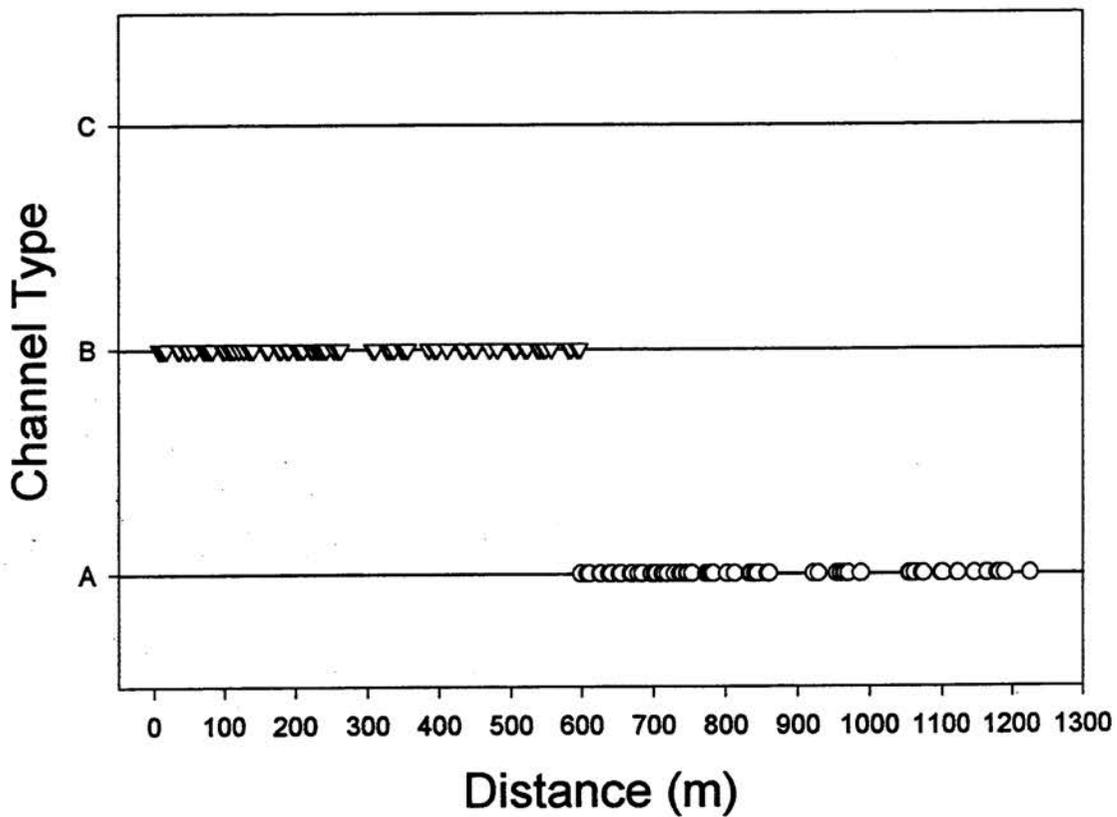
Riparian Width**Stream: Barton Branch****Number of Measurements: 4****Mean Width: 10.0m Std Dev: 1.9****Max: 12.8m Min: 8.3m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Barton Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Barton Branch Rosgen's Channel Type Distribution



Stream: Cabin Creek

District: Mount Rogers National Recreation Area

Quadrangle: Whitetop Mtn.

Sample Date: 07/08/98

Downstream Starting Point: Forest Service and State Park Boundary

Total Distance Surveyed: 0.5 kilometers

Percent of Total Area - Pools: 27.5%

Number of Pools: 26

Number of Pools per kilometer: 52

Total Pool Area: 306.4 sq. meters \pm 19.8

Mean Pool Area: 11.8 sq. meters

Correction Factor: 1.02

Mean Maximum Depth: 43.1 cm

Mean Average Depth: 32.3 cm

Mean Average Residual Pool Depth: 14.0 cm

Percent of Total Area - Riffles: 72.5%

Number of Riffles: 22

Number of Riffles per kilometer: 44

Total Riffle Area: 806.7 sq. meters \pm 170.6

Mean Riffle Area: 36.7 sq. meters

Correction Factor: 0.98

Mean Maximum Depth: 29.3 cm

Mean Average Depth: 16.1 cm

Number of Large Woody Debris Pieces per kilometer: 86.2

Wood < 5 m and < 55 cm: 57.5

Wood < 5 m and > 55 cm: 0.0

Wood > 5 m and < 55 cm: 22.1

Wood > 5 m and > 55 cm: 6.6

Mean Channel Width: 5.2 m

Mean Riparian Width: 14.8 m

Mean Maximum Riparian Distance (either side): 2.4 m

Mean Minimum Riparian Distance (either side): 7.2 m

Maximum Riparian Width (Total): 21.2 m

Minimum Riparian Width (Total): 9.6 m

Cabin Creek Continued.**Percent of Pool Habitat Surveyed as Glides: 15.5%****Rosgen's Channel Type Frequency:**

Channel Type A: 71.2%

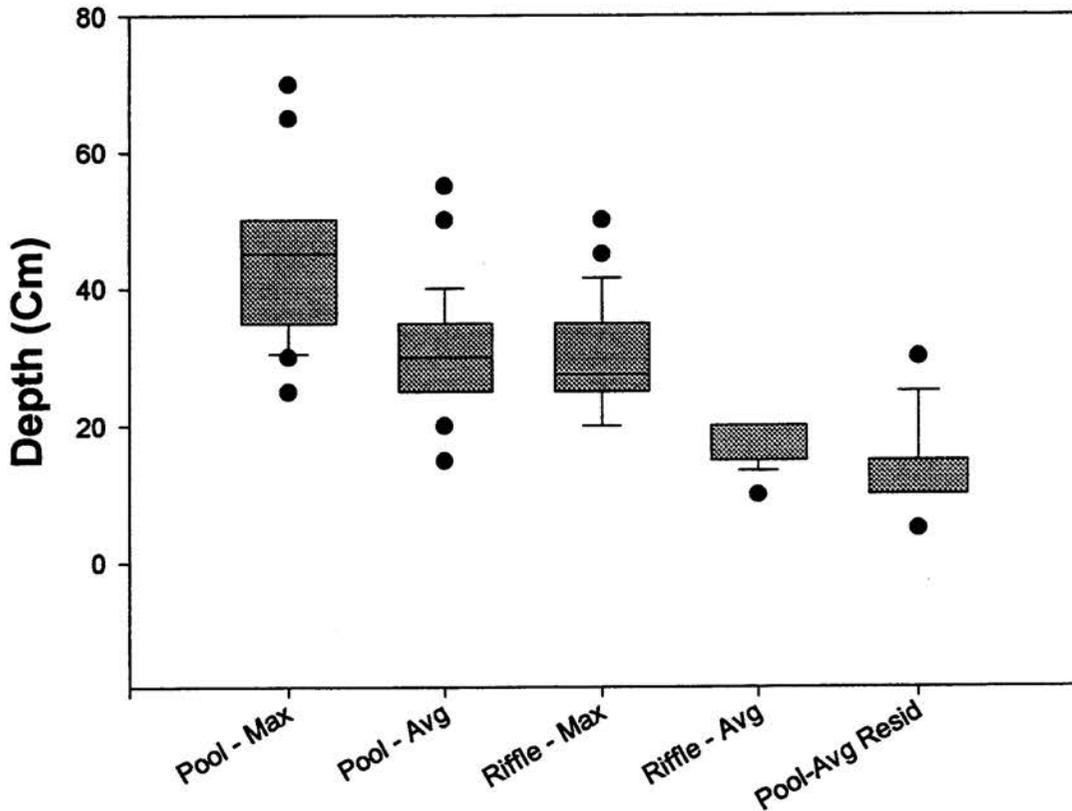
Channel Type B: 25.0%

Channel Type C: 3.8%

Channel Type D:

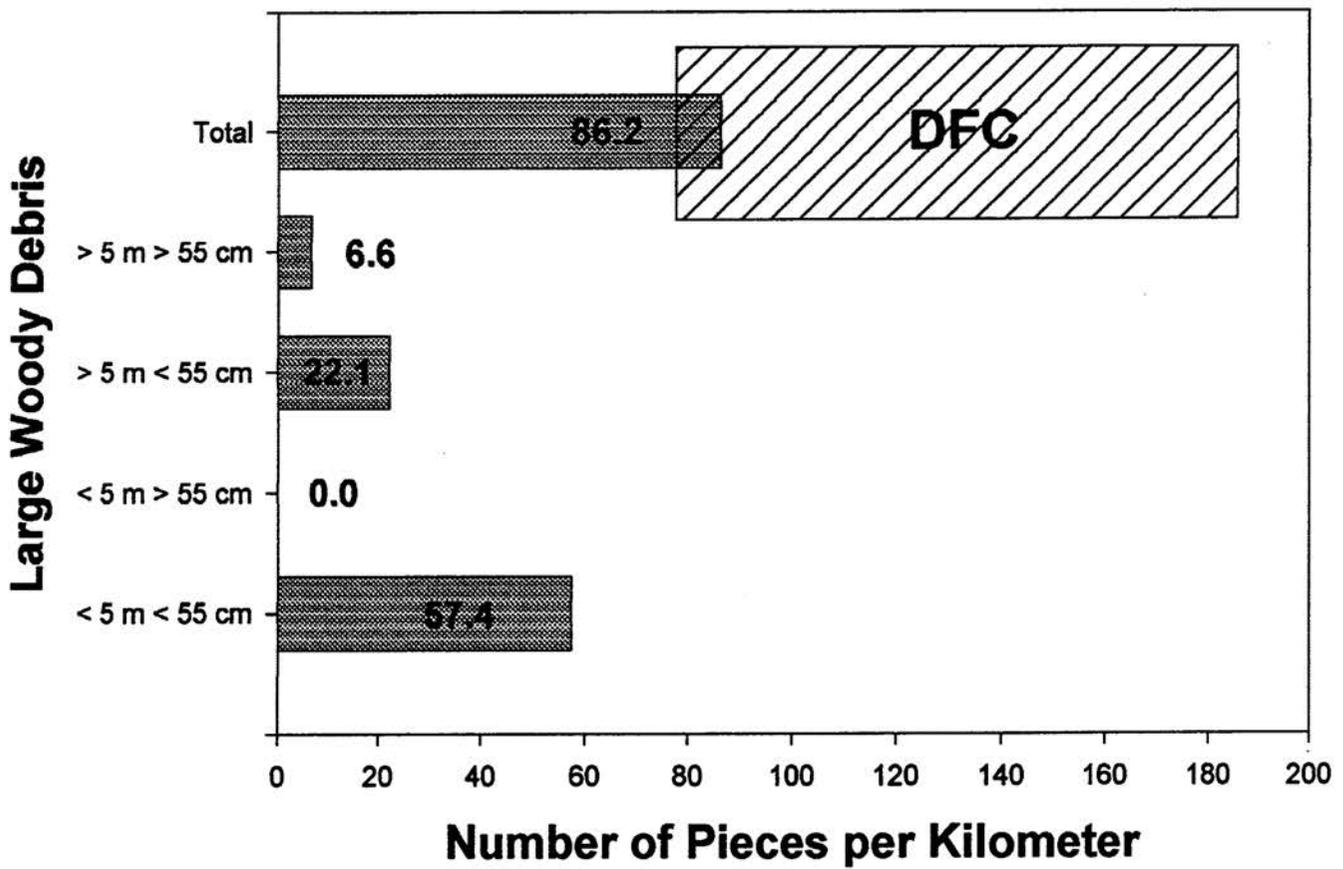
Percent Pools with \geq 35% Embeddedness: 30.8%**Average Channel Gradient: 13.3**

Cabin Creek

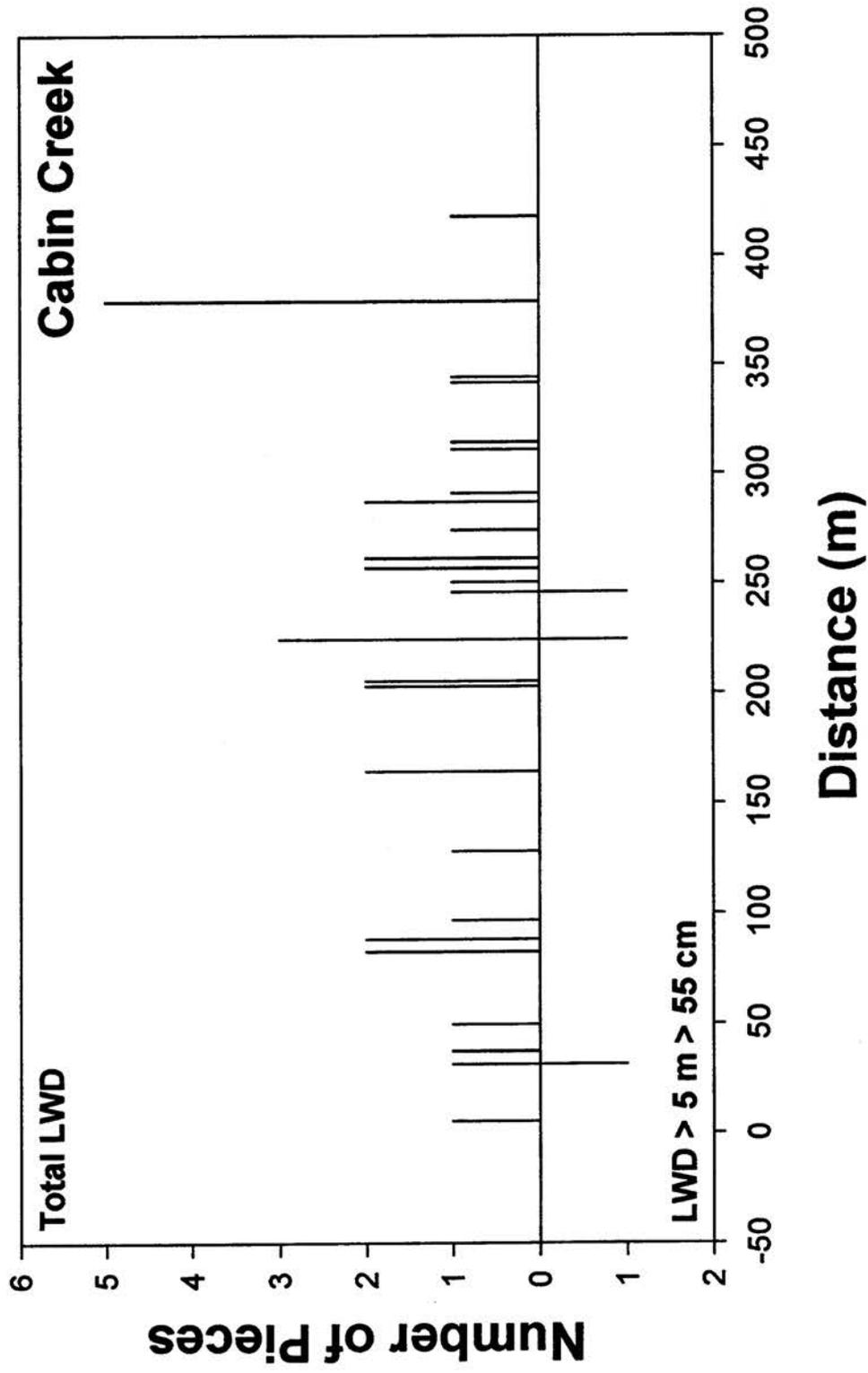


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

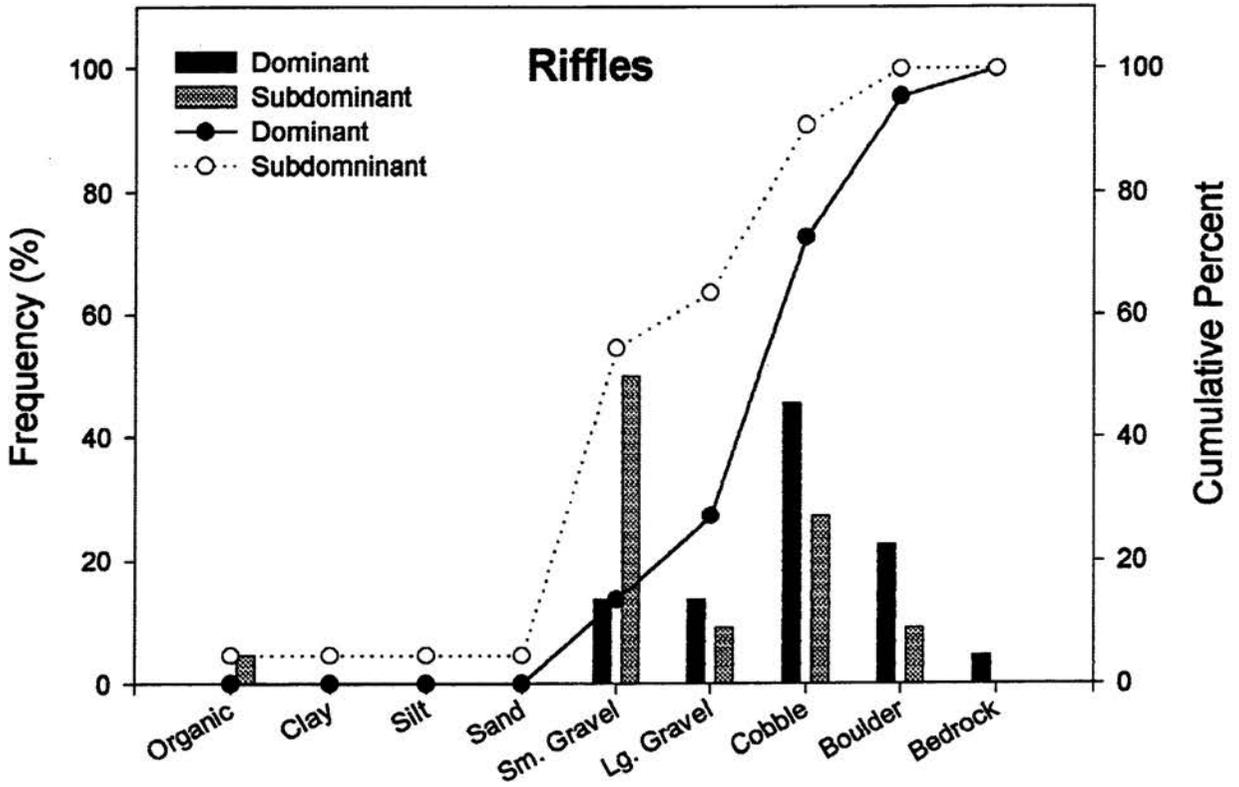
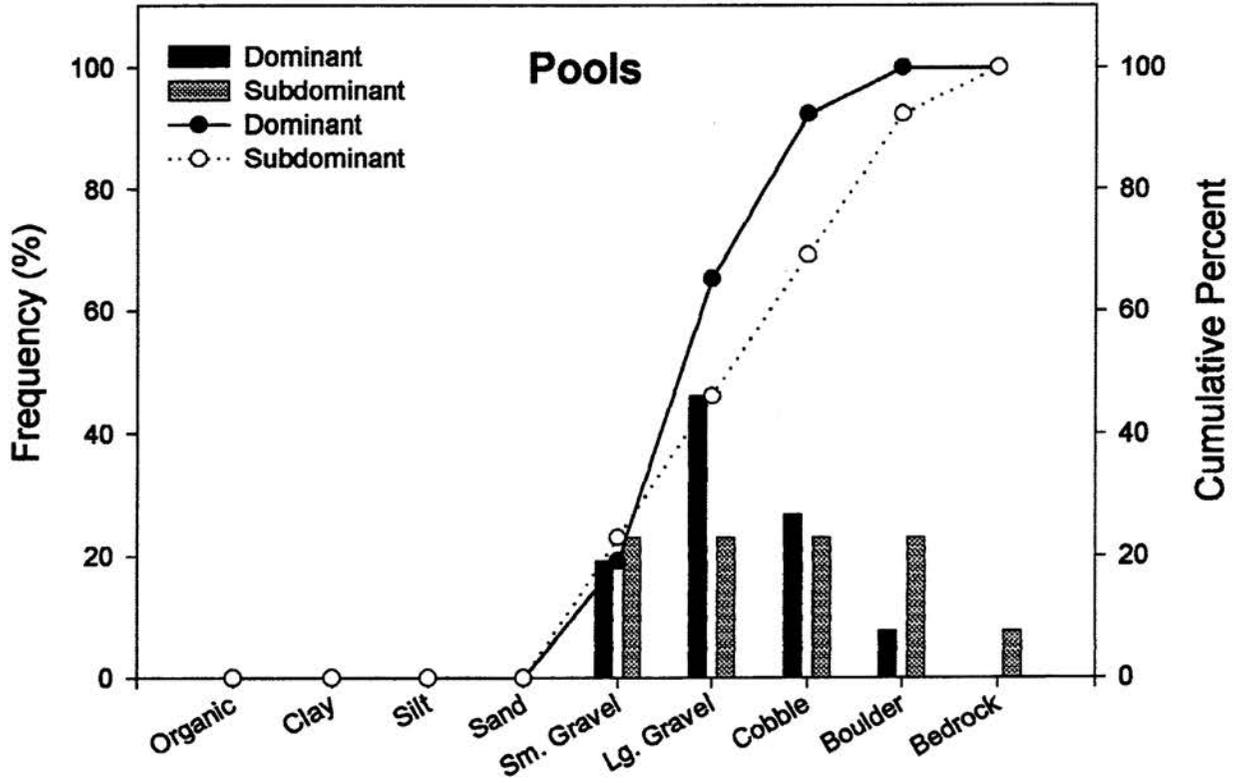
Cabin Creek

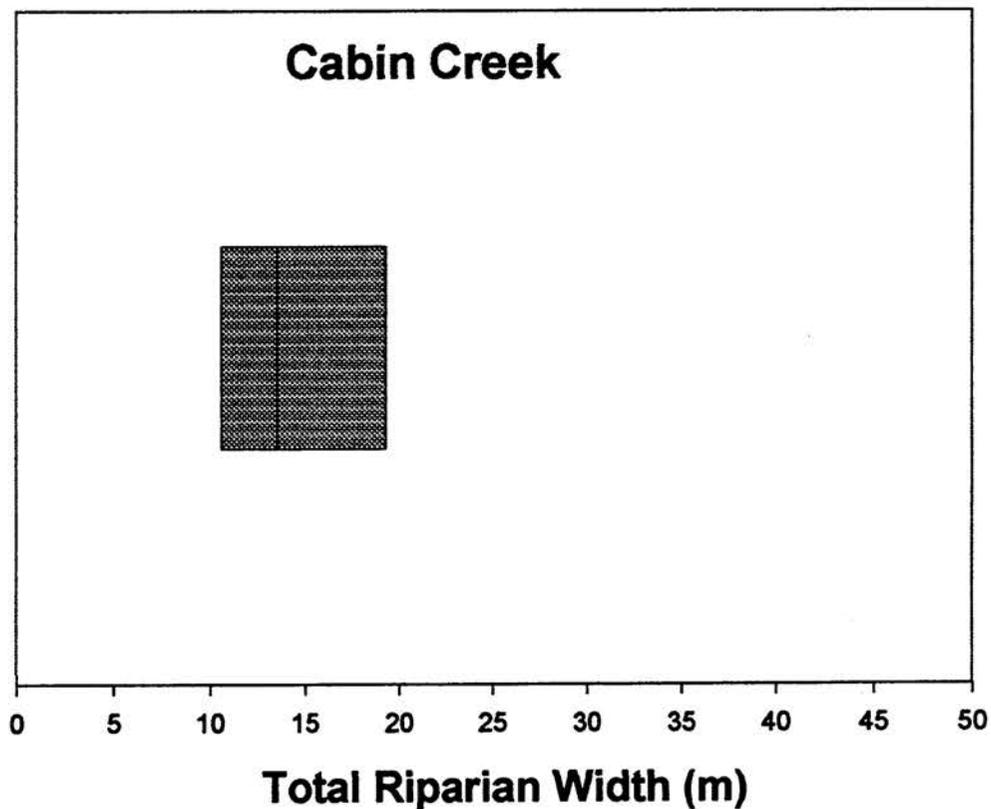


Distribution and Abundance of Large Woody Debris



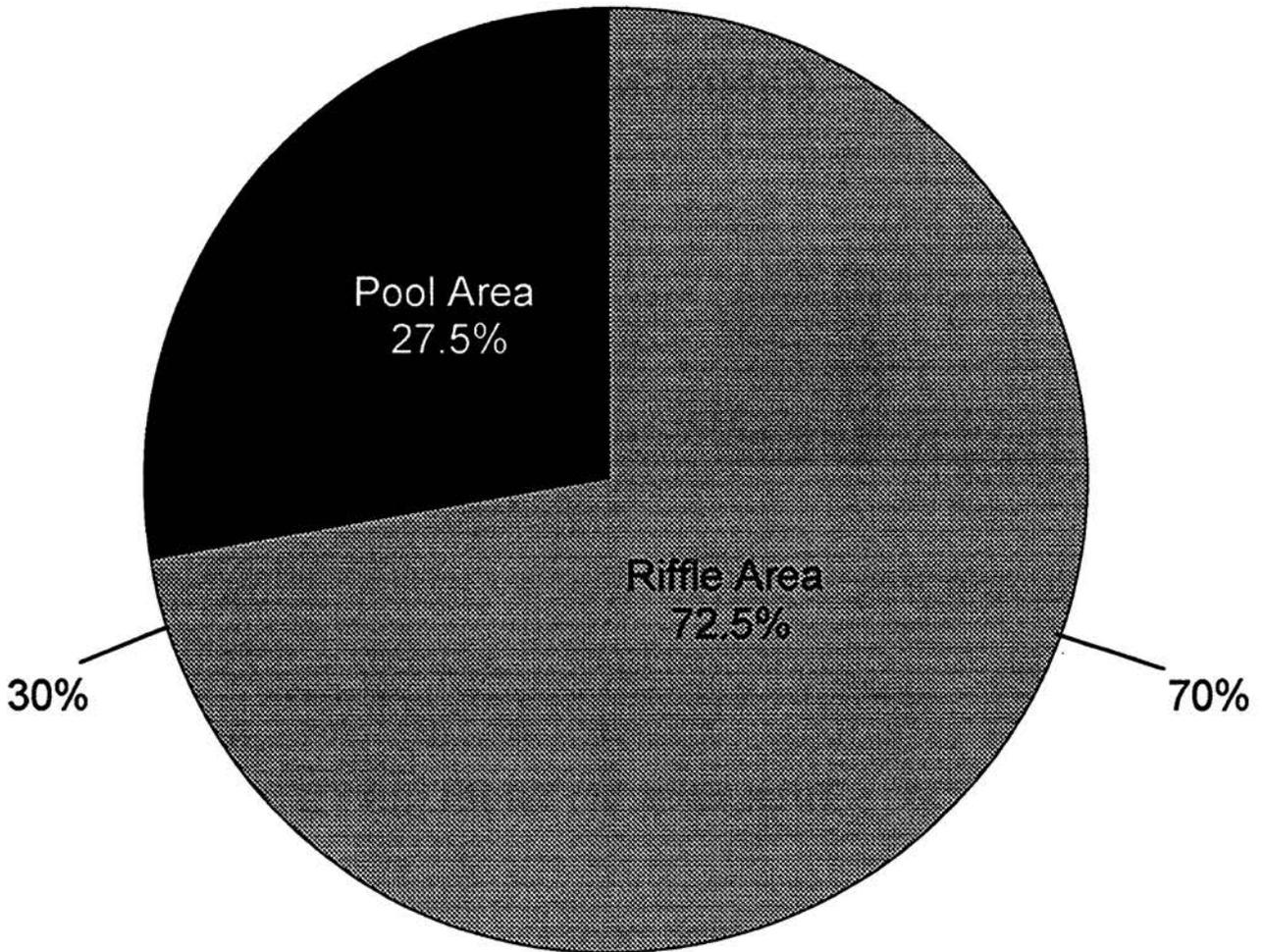
Cabin Creek Substrate Composition



Riparian Width**Stream: Cabin Creek****Number of Measurements: 3****Mean Width: 14.8m Std Dev: 5.9****Max: 21.2m Min: 9.6m**

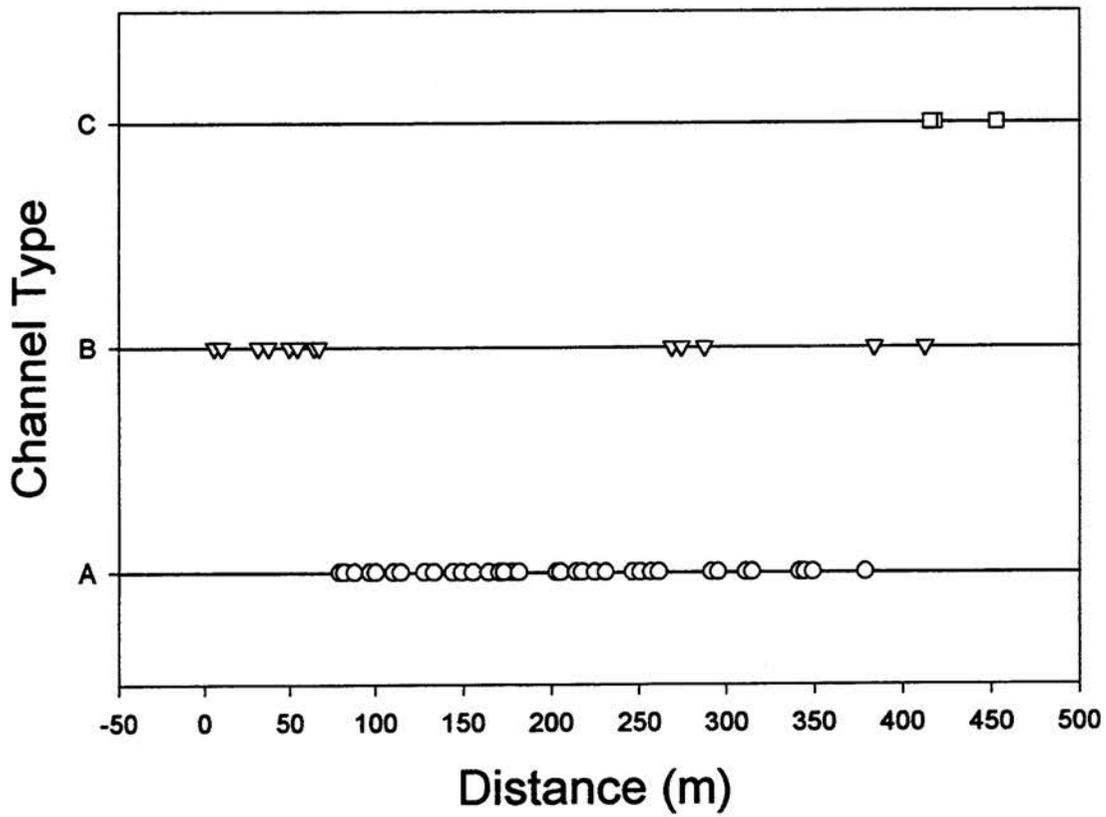
Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Cabin Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Cabin Creek

Rosgen's Channel Type Distribution



Stream: Dell's Branch

District: Mount Rogers National Recreation Area

Quadrangle: Whitetop Mtn.

Sample Date: 07/06/98

Downstream Starting Point: Forest Service Boundary; Junction State Rt. 603 and Rt.600

Total Distance Surveyed: 0.6 kilometers

Percent of Total Area - Pools: 21.4%

Number of Pools: 24

Number of Pools per kilometer: 40

Total Pool Area: 266.1 sq. meters \pm 41.2

Mean Pool Area: 11.1 sq. meters

Correction Factor: 1.00

Mean Maximum Depth: 29.2 cm

Mean Average Depth: 20.1 cm

Mean Average Residual Pool Depth: 13.6 cm

Percent of Total Area - Riffles: 78.6%

Number of Riffles: 20

Number of Riffles per kilometer: 33.3

Total Riffle Area: 975.4 sq. meters \pm 92.9

Mean Riffle Area: 48.8 sq. meters

Correction Factor: 1.10

Mean Maximum Depth: 19.8 cm

Mean Average Depth: 11.0 cm

Number of Large Woody Debris Pieces per kilometer: 408.5

Wood < 5 m and < 55 cm: 222.9

Wood < 5 m and > 55 cm: 14.3

Wood > 5 m and < 55 cm: 157.0

Wood > 5 m and > 55 cm: 14.3

Mean Channel Width: 4.9 m

Mean Riparian Width: 20.5 m

Mean Maximum Riparian Distance (either side): 11.1 m

Mean Minimum Riparian Distance (either side): 4.5 m

Maximum Riparian Width (Total): 12.8 m

Minimum Riparian Width (Total): 3.0 m

Dell's Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 38.5%

Rosgen's Channel Type Frequency:

Channel Type A:

Channel Type B: 65.2%

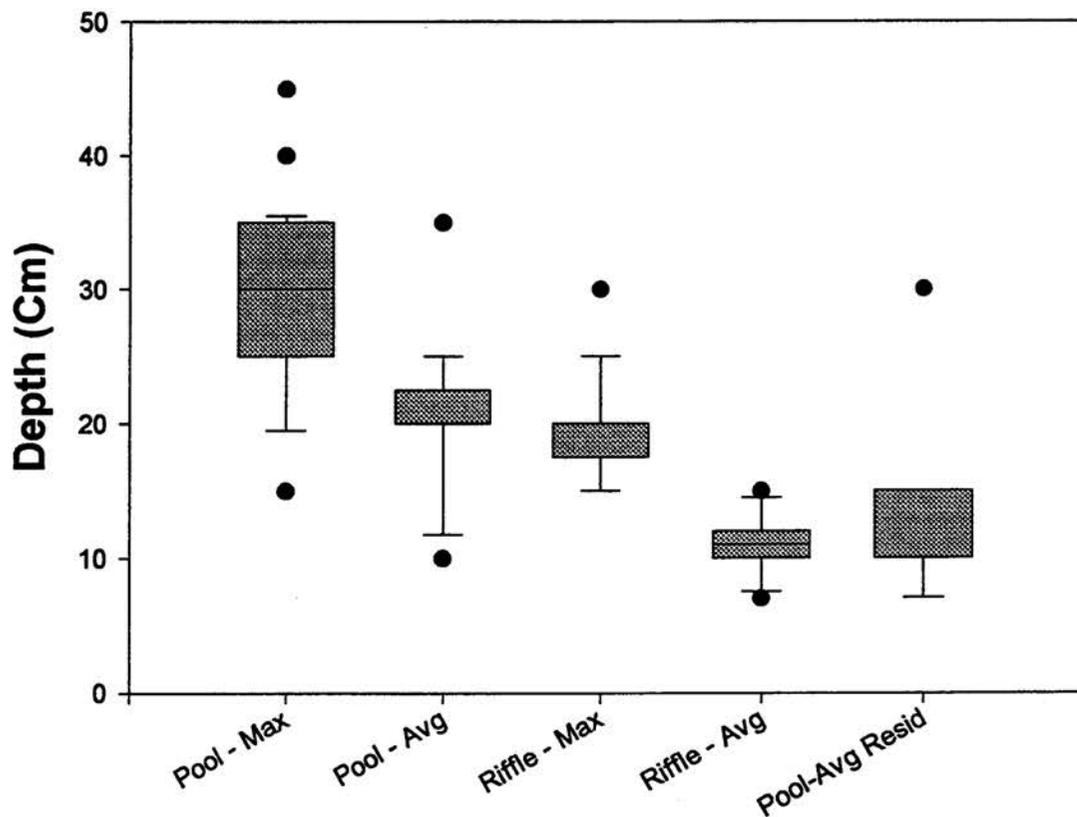
Channel Type C: 34.8%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 75.0%

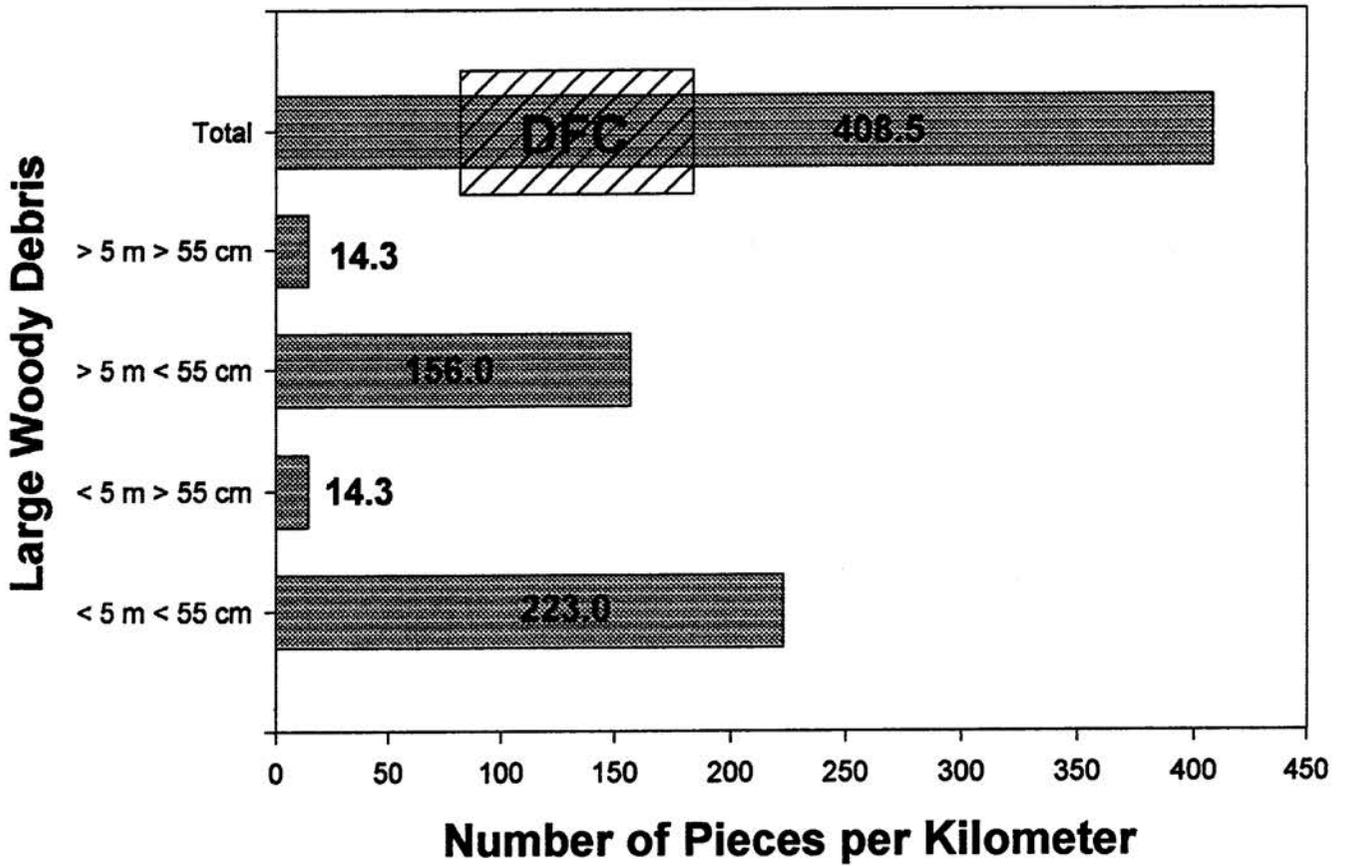
Average Channel Gradient: 6.3

Dell's Branch

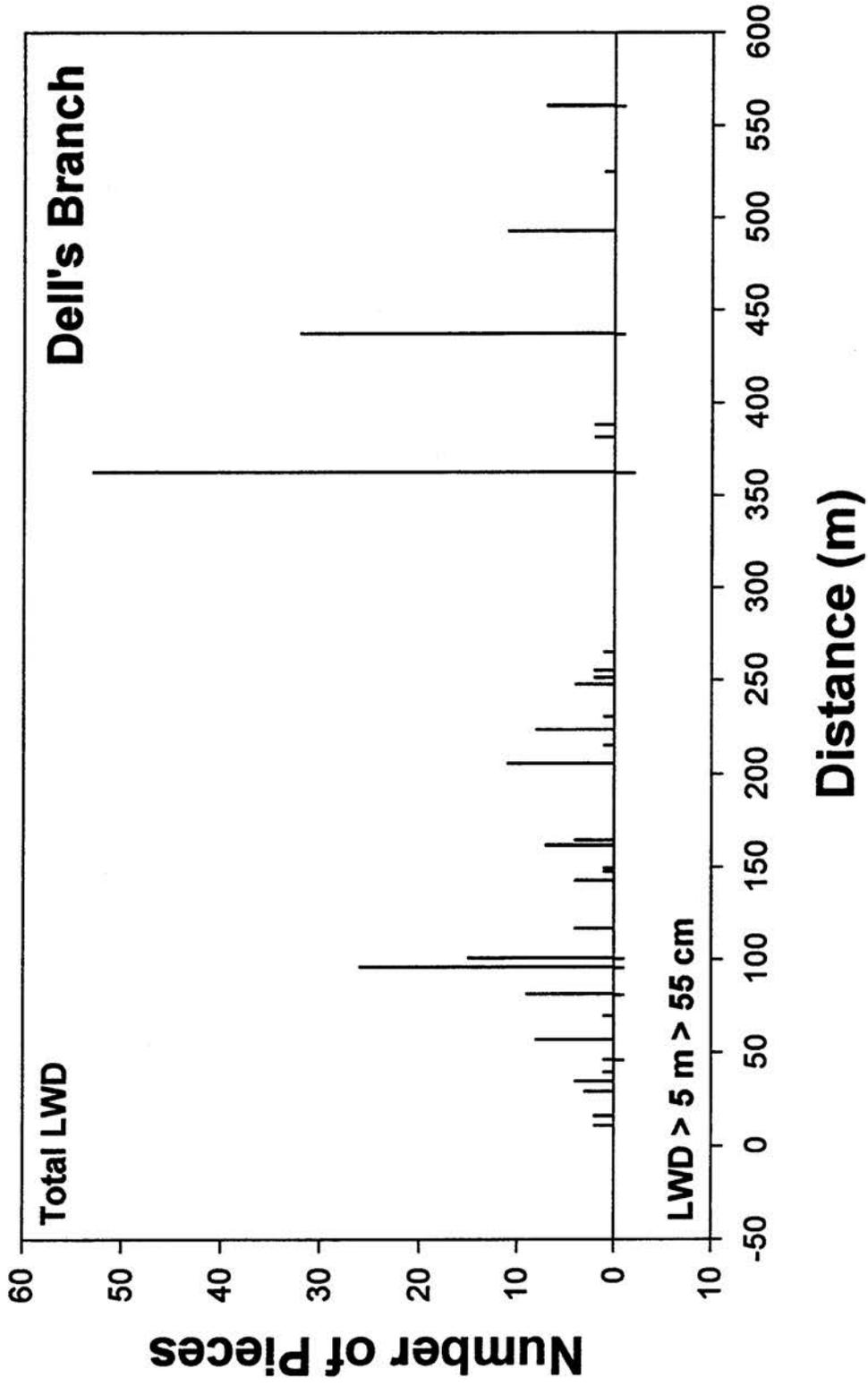


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

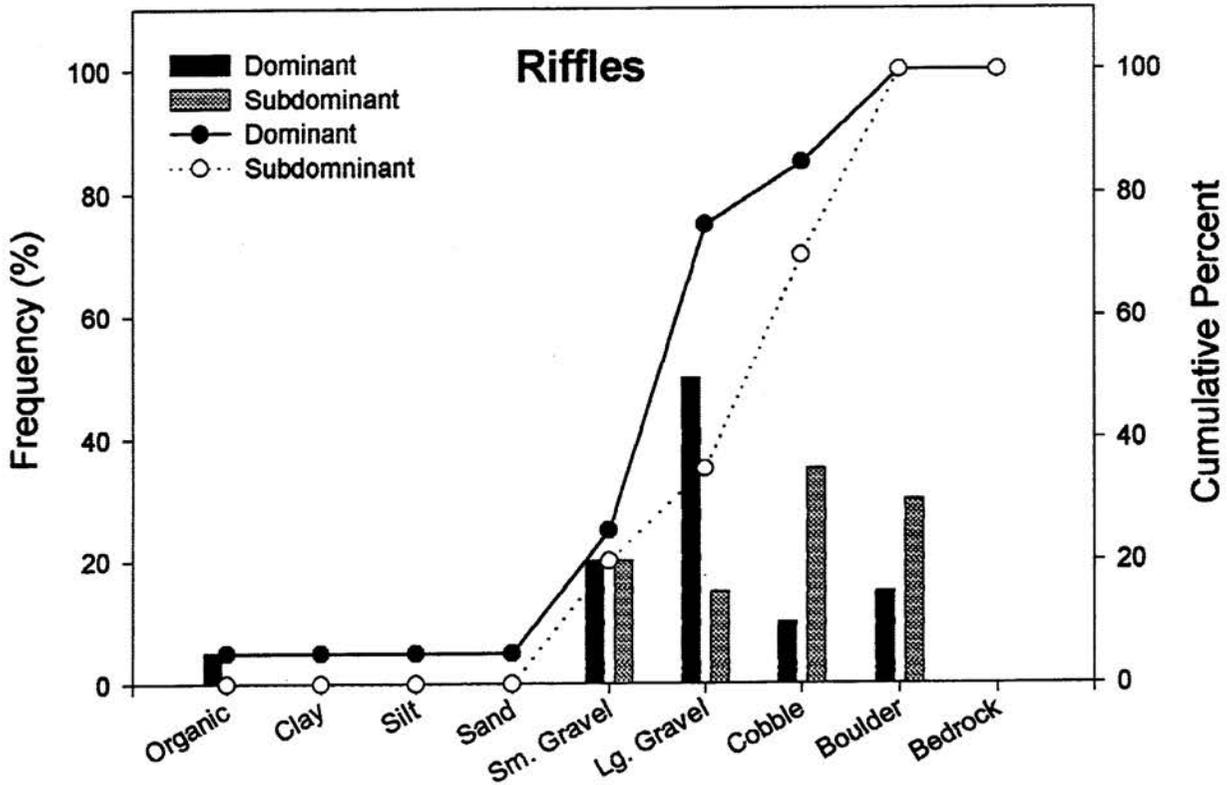
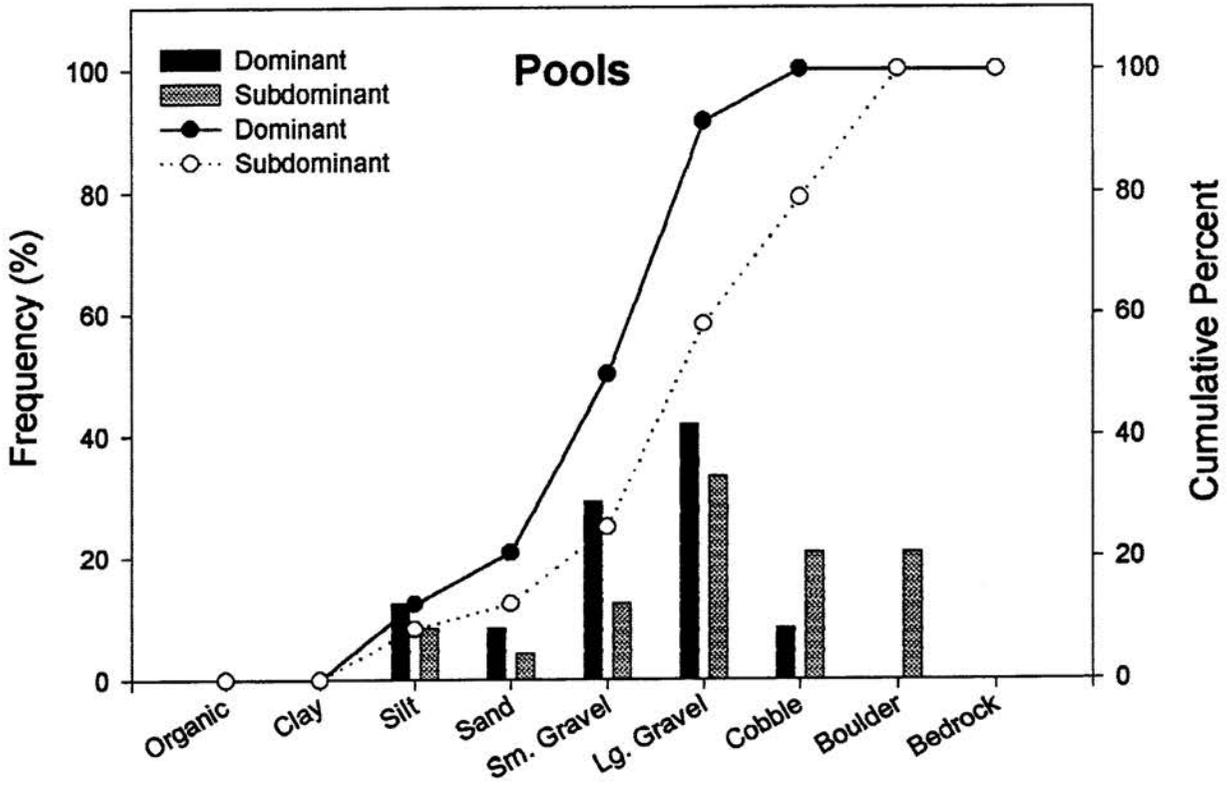
Dell's Branch

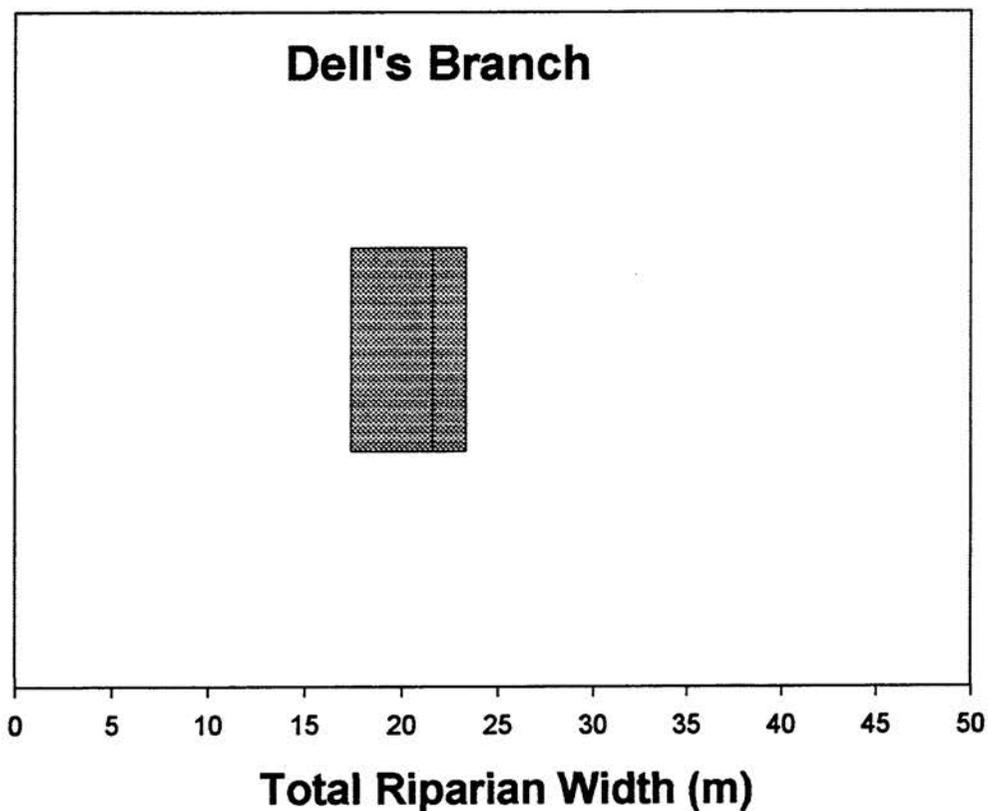


Distribution and Abundance of Large Woody Debris



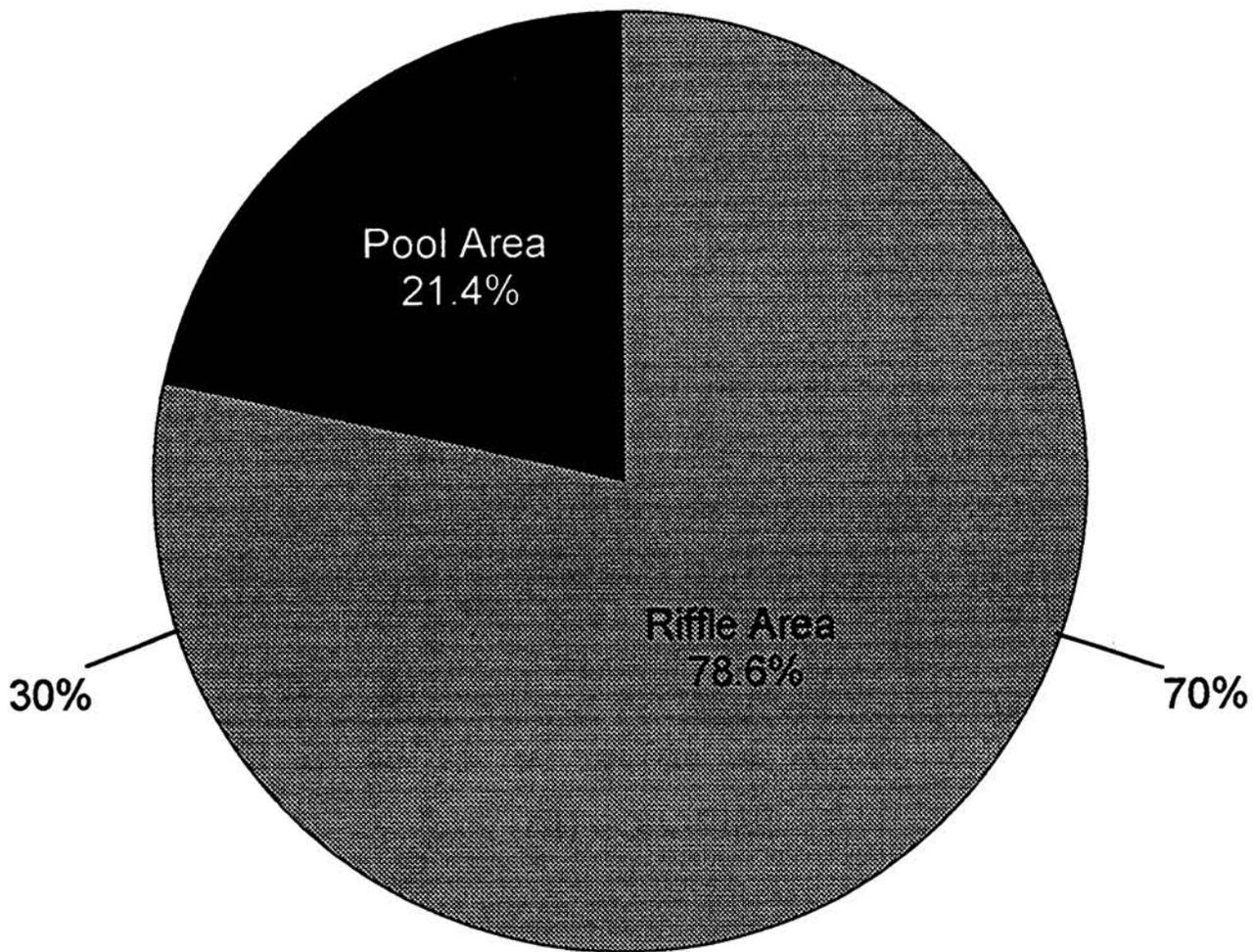
Dell's Branch Substrate Composition



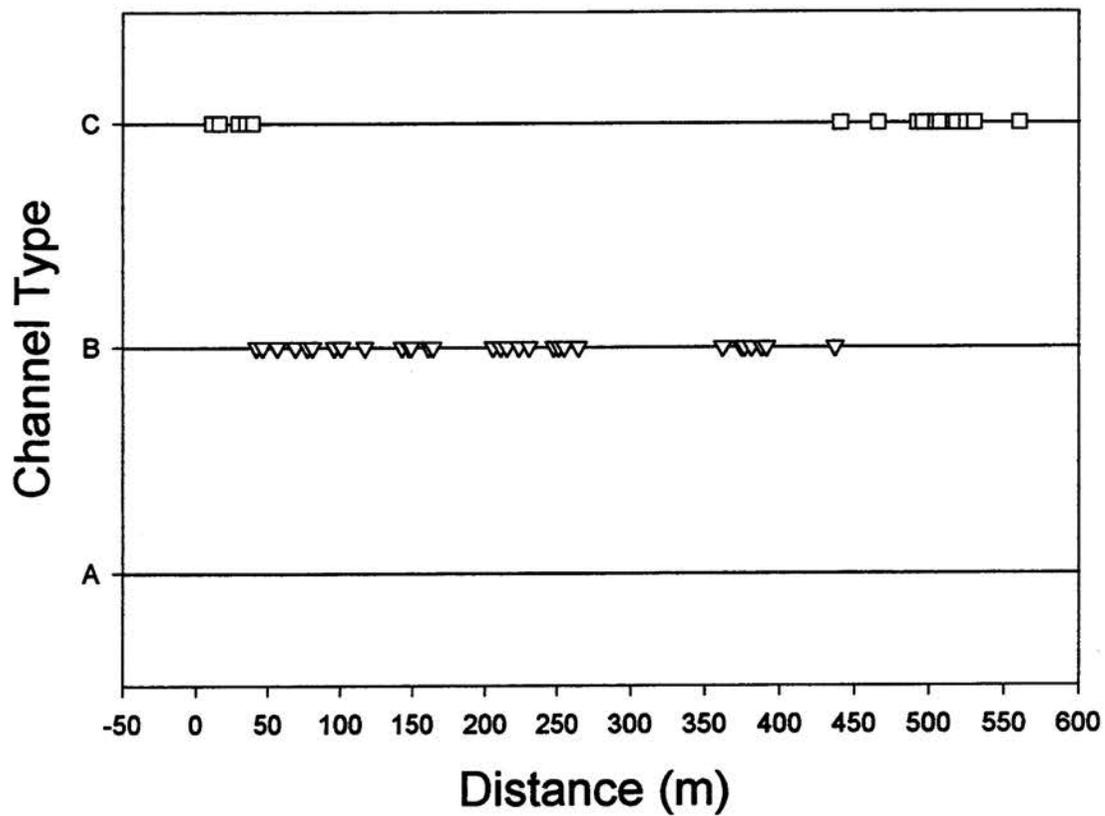
Riparian Width**Stream: Dell's Branch****Number of Measurements: 3****Mean Width: 20.5m Std Dev: 4.1****Max: 23.9m Min: 16.0m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Dell's Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Dell's Branch Rosgen's Channel Type Distribution



Stream: East Fork Hopkins Branch

District: Mount Rogers National Recreation Area

Quadrangle: Whitetop Mtn.

Sample Date: 06/29/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 1.1 kilometers

Percent of Total Area - Pools: 25.7%

Number of Pools: 54

Number of Pools per kilometer: 49.1

Total Pool Area: 659.1 sq. meters \pm 52.8

Mean Pool Area: 12.2 sq. meters

Correction Factor: 1.07

Mean Maximum Depth: 27.1 cm

Mean Average Depth: 17.8 cm

Mean Average Residual Pool Depth: 16.2 cm

Percent of Total Area - Riffles: 74.3%

Number of Riffles: 39

Number of Riffles per kilometer: 35.5

Total Riffle Area: 1904.5 sq. meters \pm 704.5

Mean Riffle Area: 48.8 sq. meters

Correction Factor: 1.35

Mean Maximum Depth: 17.5 cm

Mean Average Depth: 9.1 cm

Number of Large Woody Debris Pieces per kilometer: 410.0

Wood < 5 m and < 55 cm: 265.5

Wood < 5 m and > 55 cm: 10.0

Wood > 5 m and < 55 cm: 121.8

Wood > 5 m and > 55 cm: 12.7

Mean Channel Width: 5.7 m

Mean Riparian Width: 15.3 m

Mean Maximum Riparian Distance (either side): 7.8 m

Mean Minimum Riparian Distance (either side): 1.8 m

Maximum Riparian Width (Total): 24.9 m

Minimum Riparian Width (Total): 9.2 m

East Fork Hopkins Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 57.6%

Rosgen's Channel Type Frequency:

Channel Type A: 56.8%

Channel Type B: 43.2%

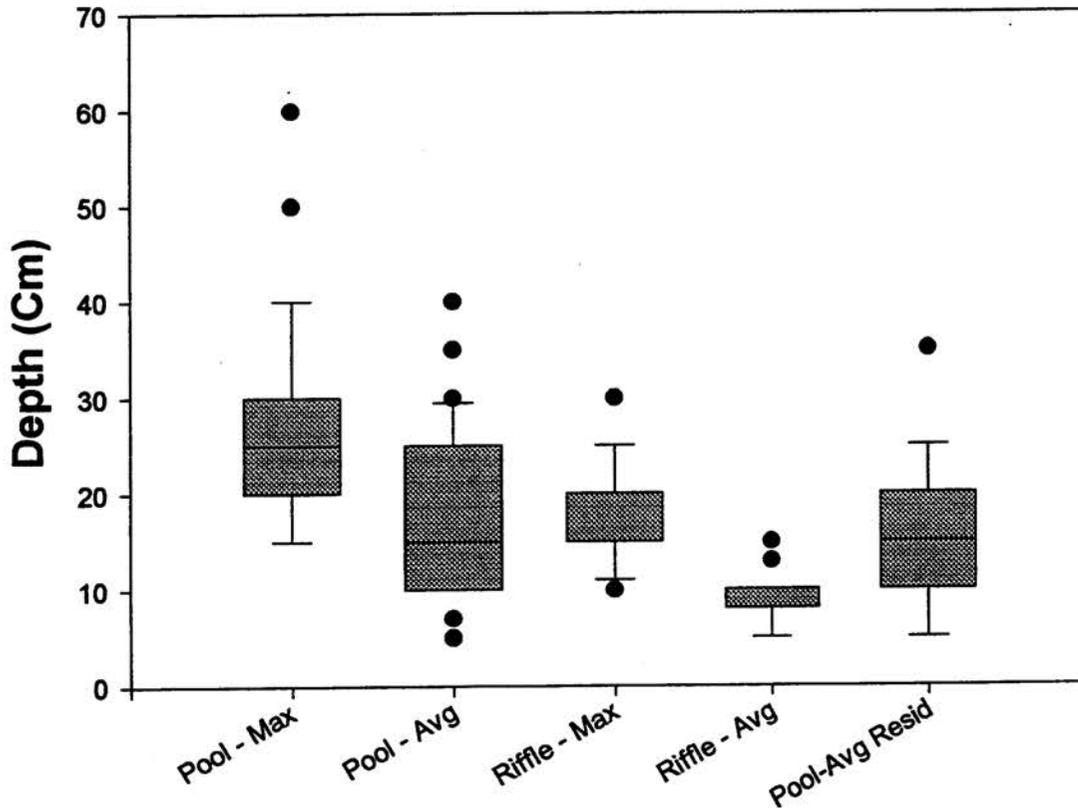
Channel Type C:

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 64.8%

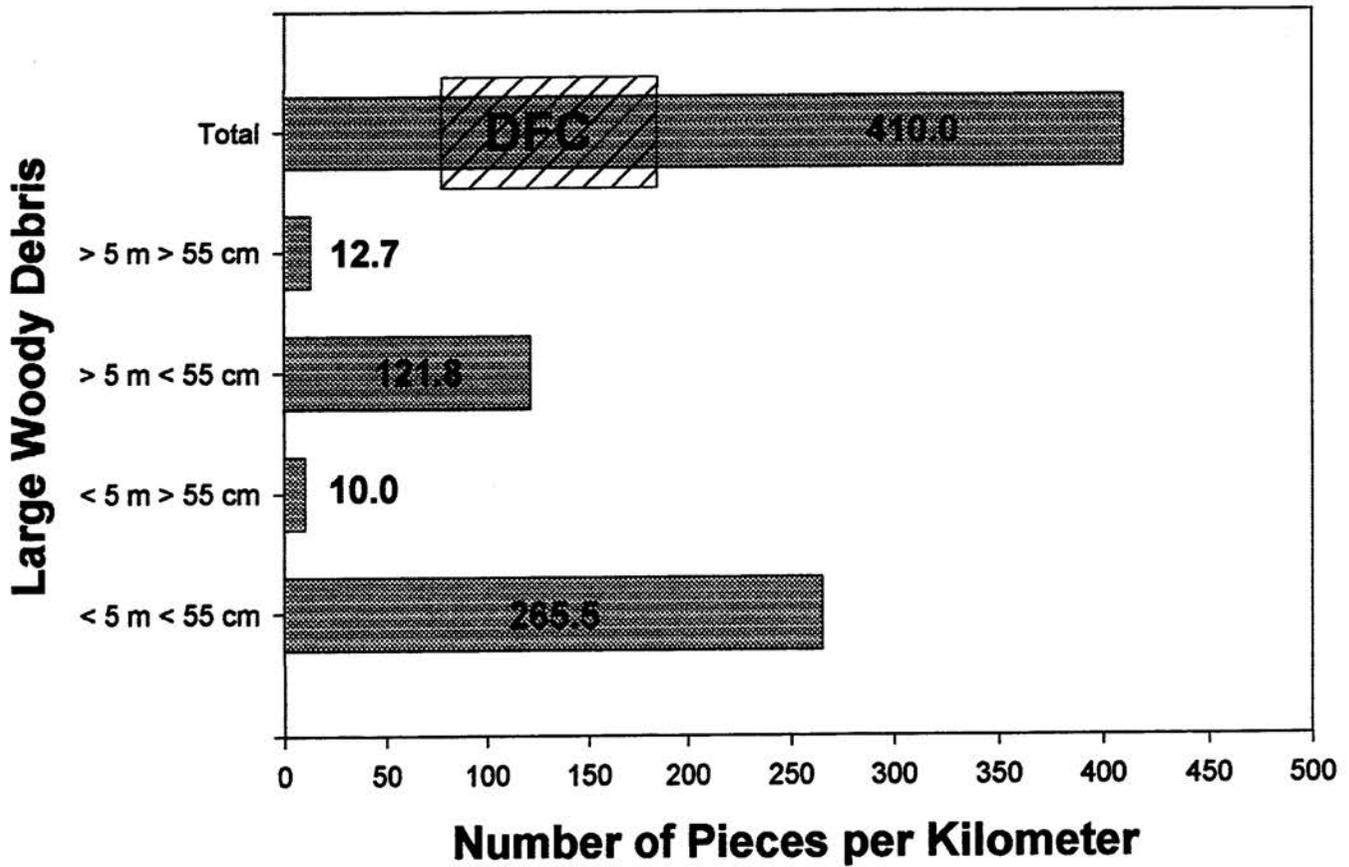
Average Channel Gradient: 8.5

East Fork Hopkins Branch

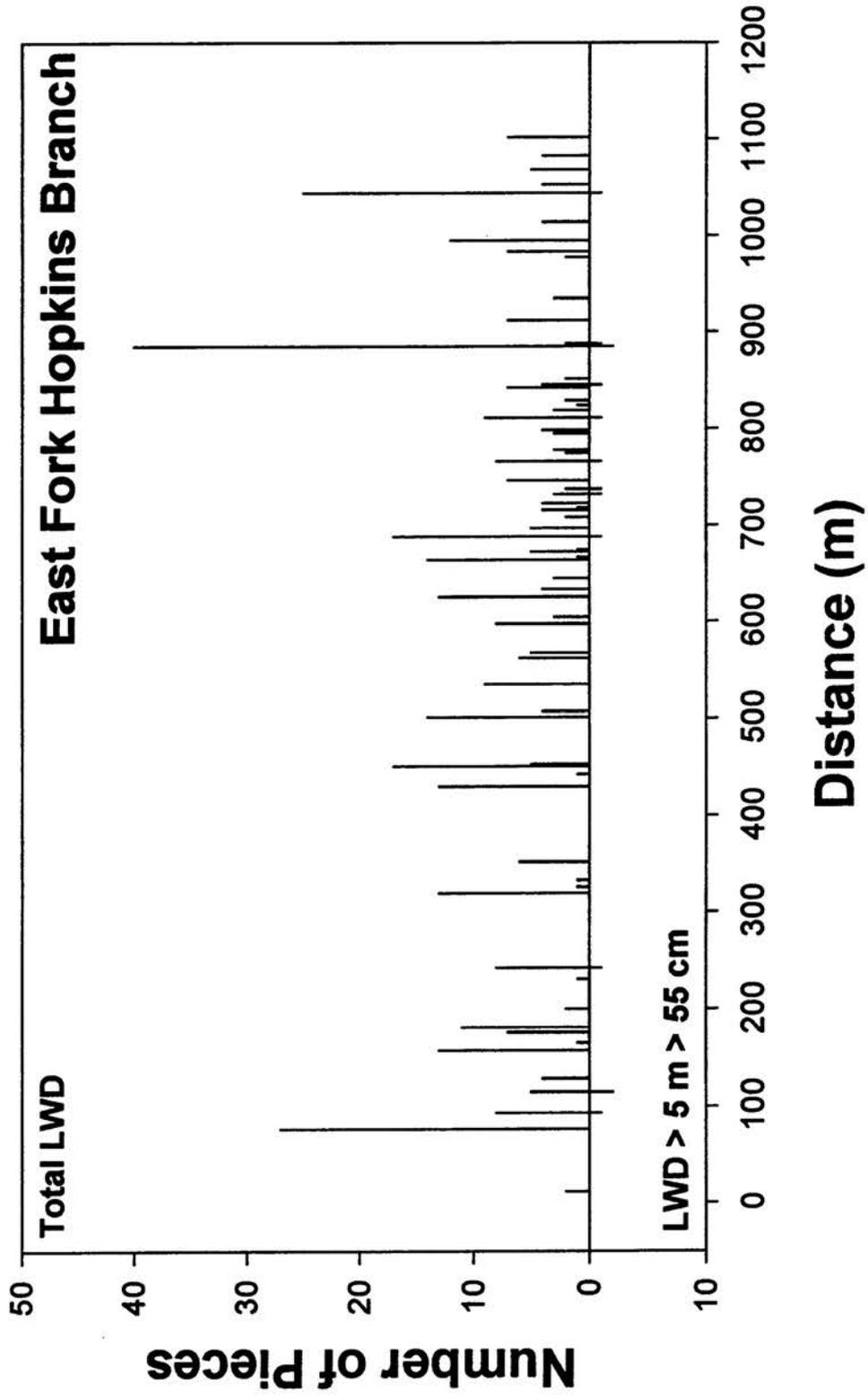


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

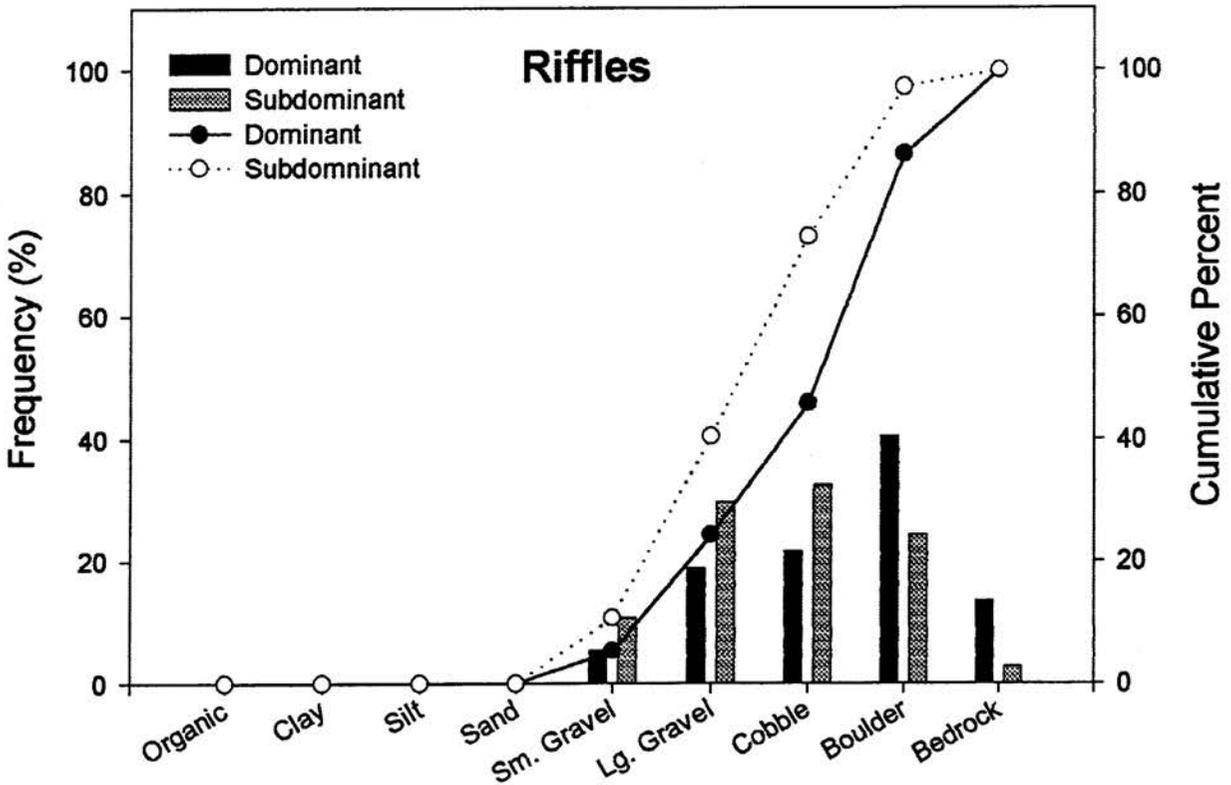
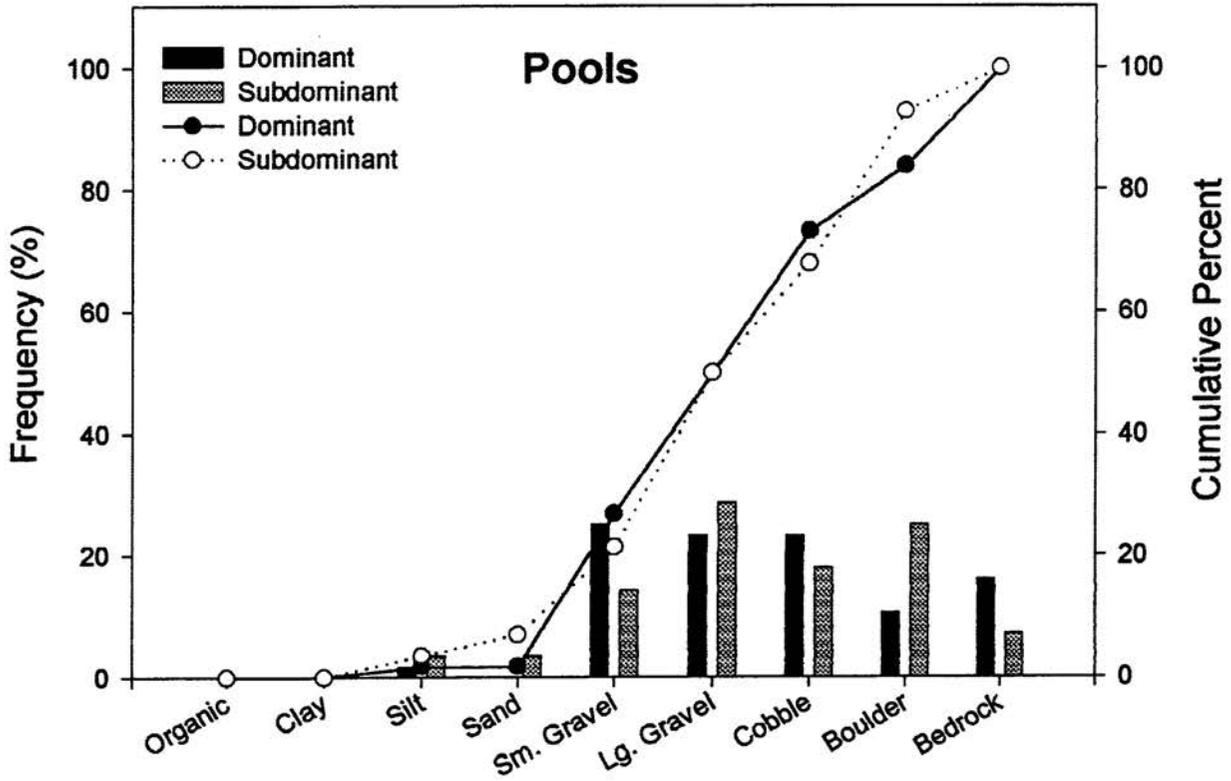
East Fork Hopkins Branch

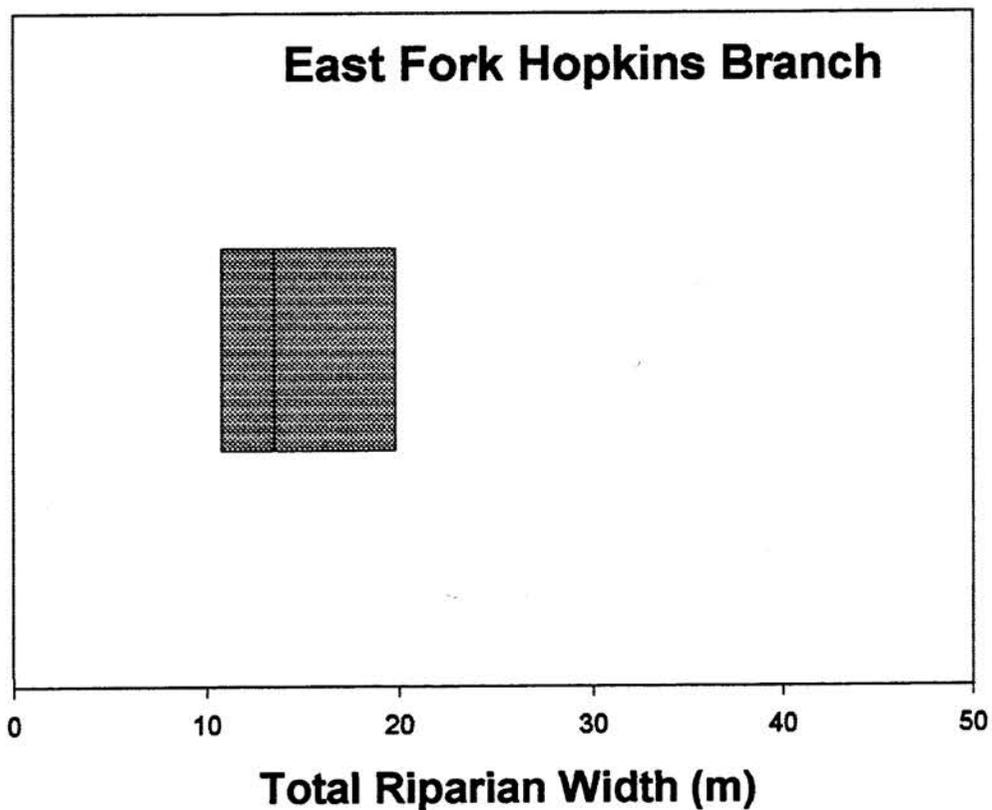


Distribution and Abundance of Large Woody Debris



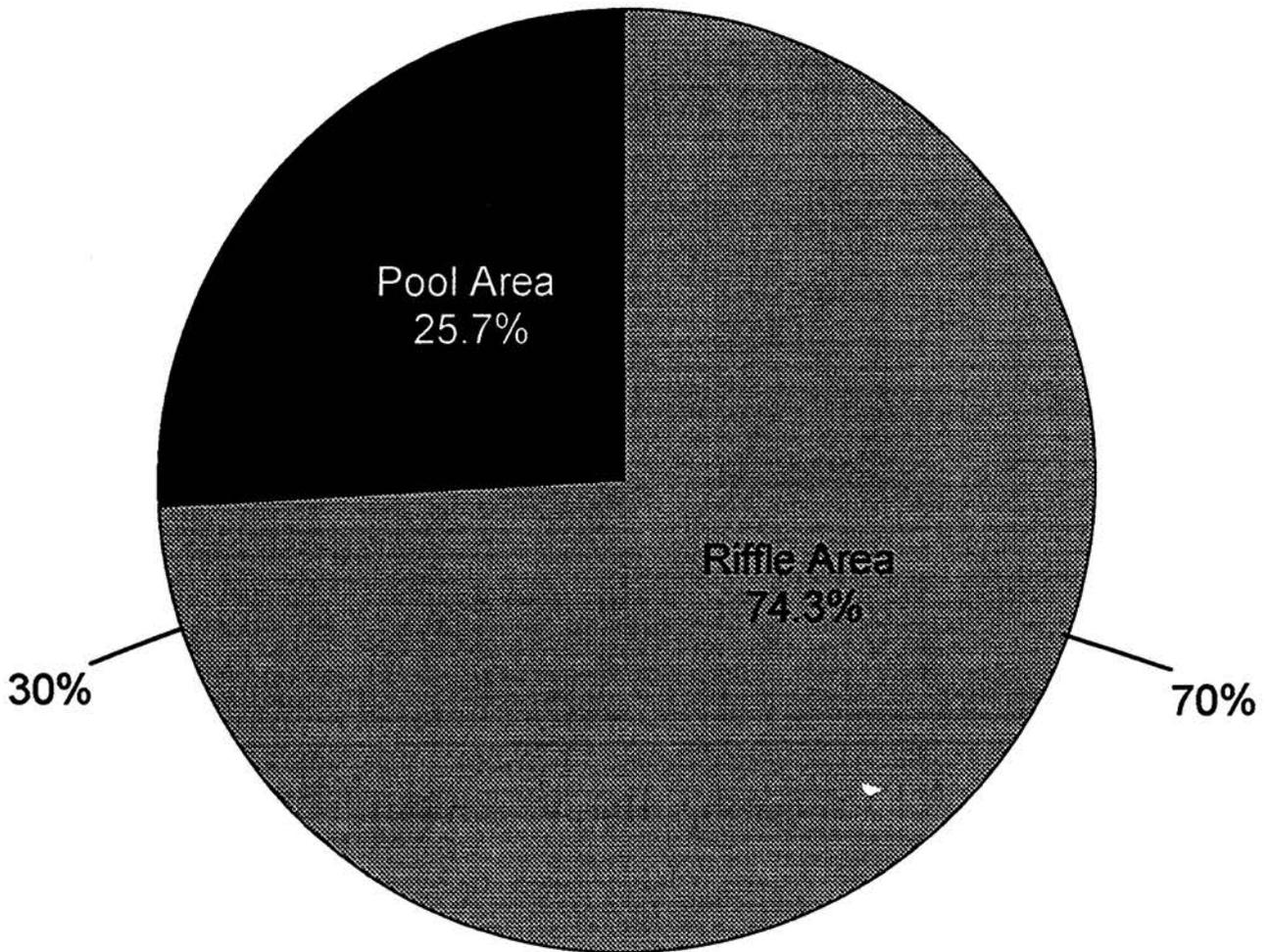
East Fork Hopkins Branch Substrate Composition



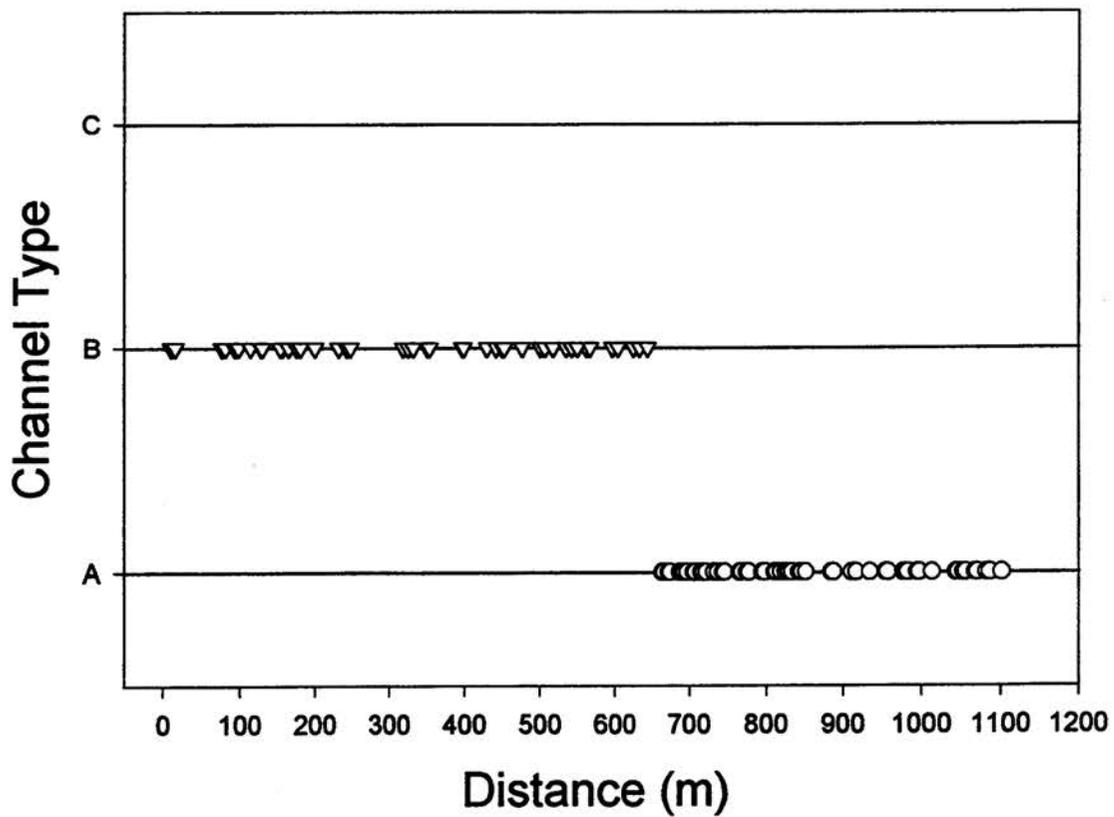
Riparian Width**Stream: East Fork Hopkins Branch****Number of Measurements: 4****Mean Width: 15.3m Std Dev: 6.8****Max: 24.9m Min: 9.2m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**East Fork Hopkins Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



East Fork Hopkins Branch Rosgen's Channel Type Distribution



Stream: Grassy Branch

District: Mount Rogers National Recreation Area

Quadrangle: Whitetop Mtn.

Sample Date: 07/06/98

Downstream Starting Point: Forest Service Boundary at Grassy Branch trail crossing

Total Distance Surveyed: 0.8 kilometers

Percent of Total Area - Pools: 21.1%

Number of Pools: 33

Number of Pools per kilometer: 41.3

Total Pool Area: 586.6 sq. meters \pm 142.1

Mean Pool Area: 17.8 sq. meters

Correction Factor: 1.04

Mean Maximum Depth: 49.1 cm

Mean Average Depth: 34.4 cm

Mean Average Residual Pool Depth: 26.6 cm

Percent of Total Area - Riffles: 78.9%

Number of Riffles: 32

Number of Riffles per kilometer: 40

Total Riffle Area: 2188.5 sq. meters \pm 149.6

Mean Riffle Area: 68.4 sq. meters

Correction Factor: 1.13

Mean Maximum Depth: 33.3 cm

Mean Average Depth: 16.8 cm

Number of Large Woody Debris Pieces per kilometer: 268.1

Wood < 5 m and < 55 cm: 186.3

Wood < 5 m and > 55 cm: 10.8

Wood > 5 m and < 55 cm: 42.1

Wood > 5 m and > 55 cm: 28.9

Mean Channel Width: 6.3 m

Mean Riparian Width: 15.0 m

Mean Maximum Riparian Distance (either side): 7.8 m

Mean Minimum Riparian Distance (either side): 0.9 m

Maximum Riparian Width (Total): 20.8 m

Minimum Riparian Width (Total): 6.8 m

Grassy Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 39.2%

Rosgen's Channel Type Frequency:

Channel Type A: 33.8%

Channel Type B: 41.2%

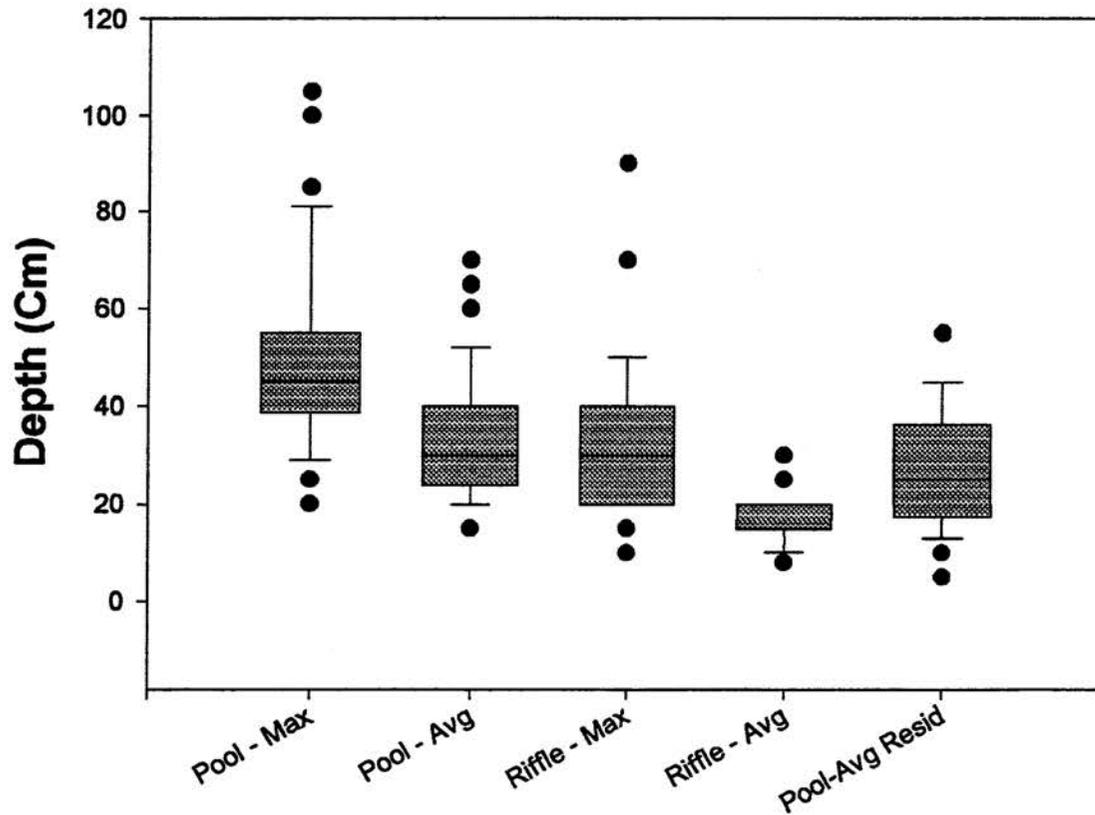
Channel Type C: 25.0%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 42.4%

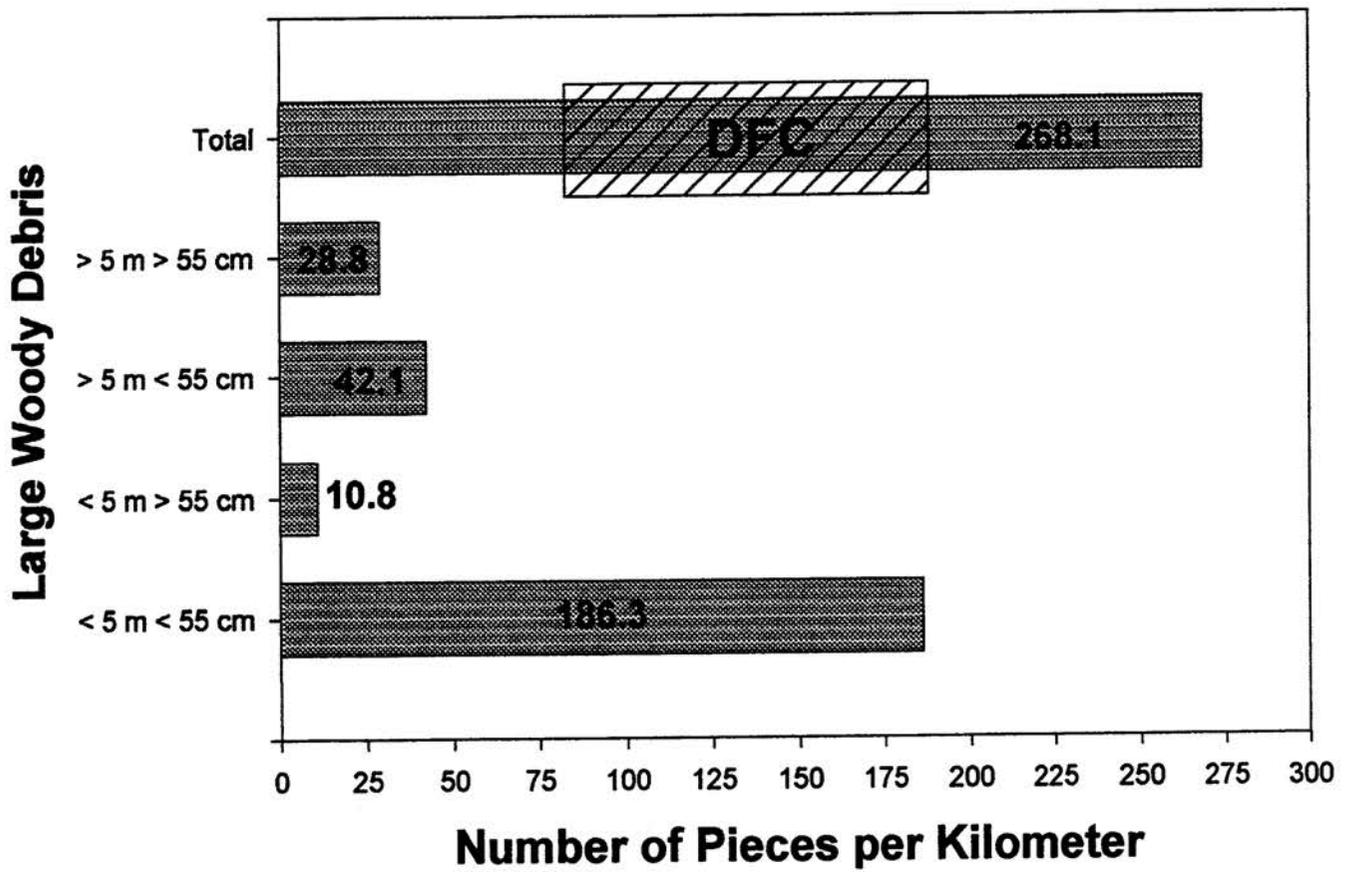
Average Channel Gradient: 27.8

Grassy Branch

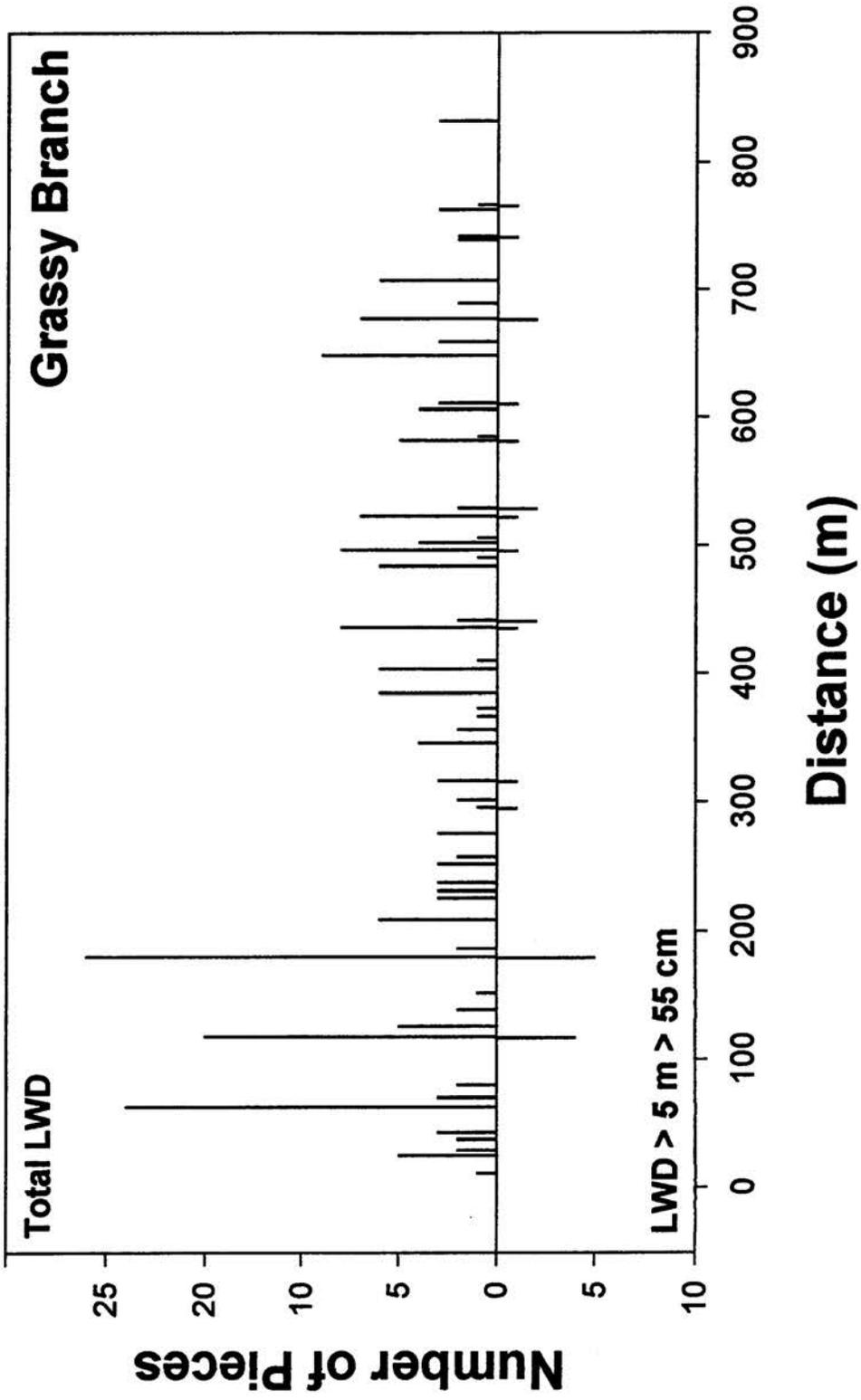


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

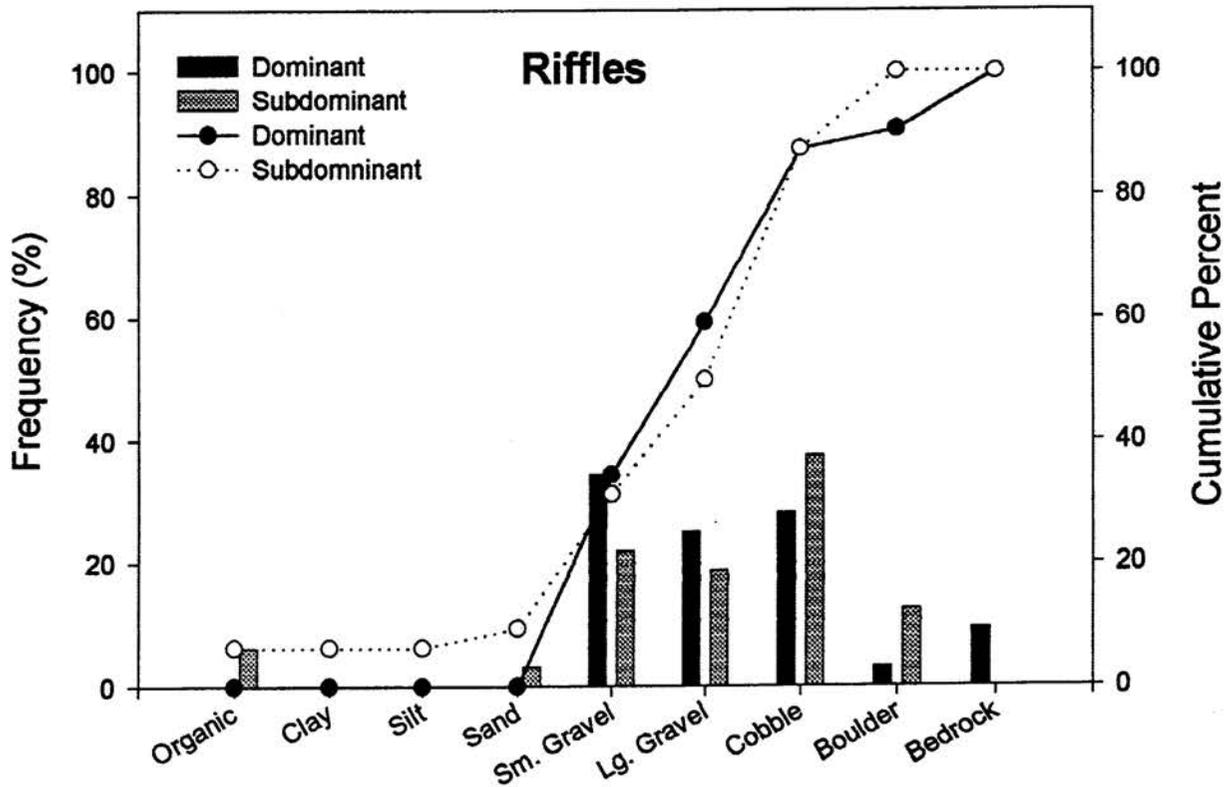
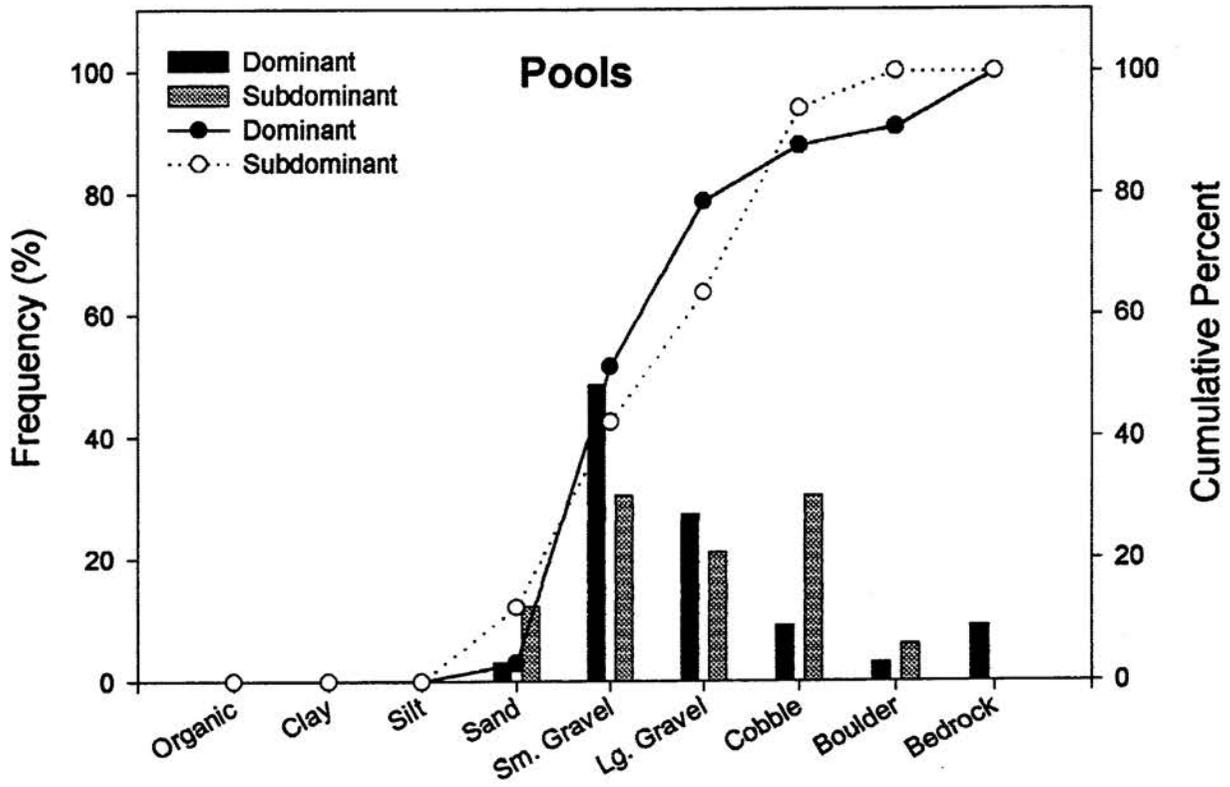
Grassy Branch

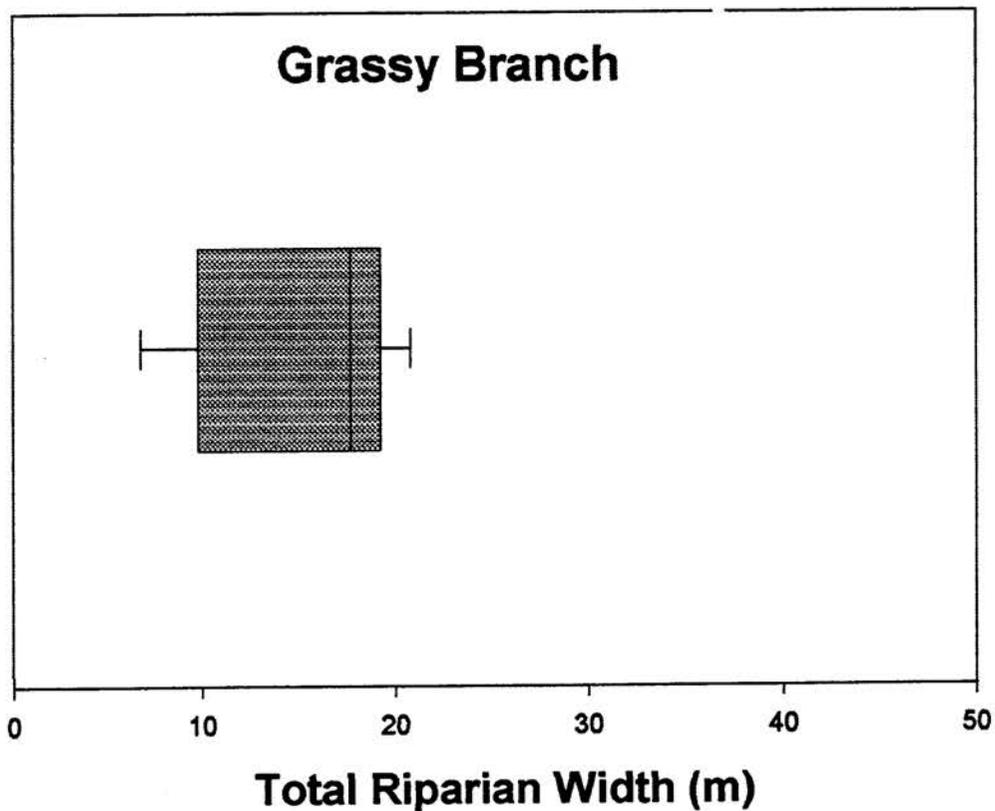


Distribution and Abundance of Large Woody Debris



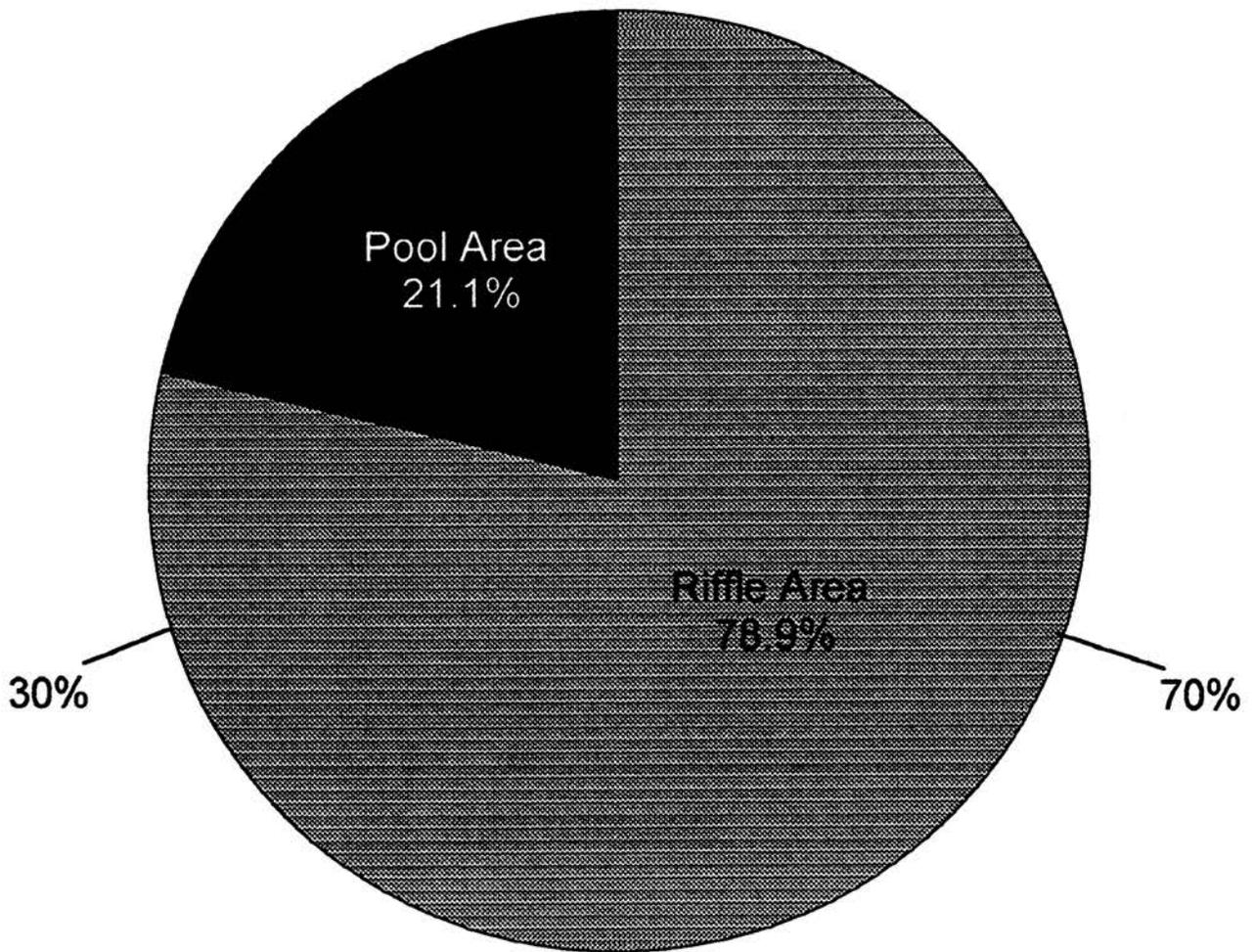
Grassy Branch Substrate Composition



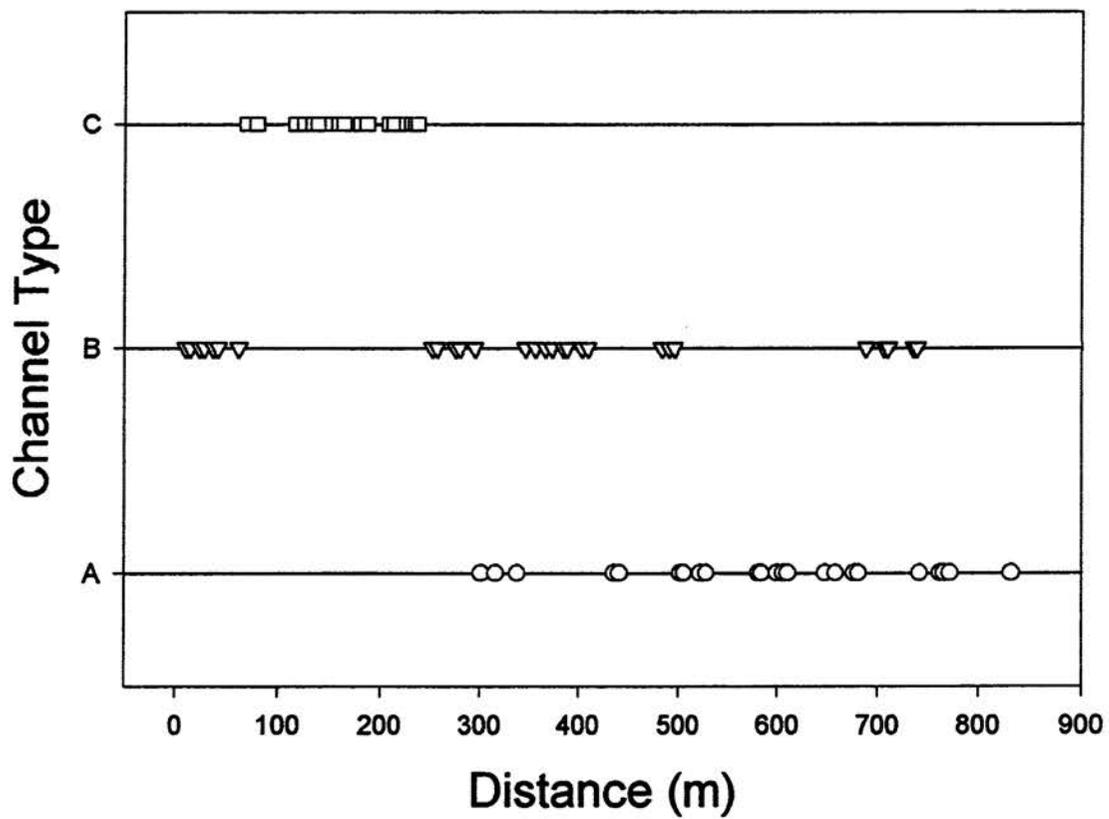
Riparian Width**Stream: Grassy Branch****Number of Measurements: 5****Mean Width: 15.0m Std Dev: 5.9****Max: 20.8m Min: 6.8m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Grassy Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Grassy Branch Rosgen's Channel Type Distribution



Stream: Jerry's Creek

District: Mount Rogers National Recreation Area

Quadrangle: Whitetop Mtn.

Sample Date: 07/07/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 1.7 kilometers

Percent of Total Area - Pools: 19.7%

Number of Pools: 82

Number of Pools per kilometer: 48.2

Total Pool Area: 848.6 sq. meters \pm 167.2

Mean Pool Area: 10.3 sq. meters

Correction Factor: 0.94

Mean Maximum Depth: 39.1 cm

Mean Average Depth: 26.4 cm

Mean Average Residual Pool Depth: 19.1 cm

Percent of Total Area - Riffles: 80.3%

Number of Riffles: 71

Number of Riffles per kilometer: 41.8

Total Riffle Area: 3457.1 sq. meters \pm 754.2

Mean Riffle Area: 48.7 sq. meters

Correction Factor: 1.06

Mean Maximum Depth: 23.5 cm

Mean Average Depth: 11.6 cm

Number of Large Woody Debris Pieces per kilometer: 175.5

Wood < 5 m and < 55 cm: 110.2

Wood < 5 m and > 55 cm: 15.0

Wood > 5 m and < 55 cm: 38.9

Wood > 5 m and > 55 cm: 11.4

Mean Channel Width: 4.7 m

Mean Riparian Width: 15.6 m

Mean Maximum Riparian Distance (either side): 8.6 m

Mean Minimum Riparian Distance (either side): 2.3 m

Maximum Riparian Width (Total): 25.0 m

Minimum Riparian Width (Total): 11.9 m

Jerry's Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 38.1%

Rosgen's Channel Type Frequency:

Channel Type A: 34.4%

Channel Type B: 57.1%

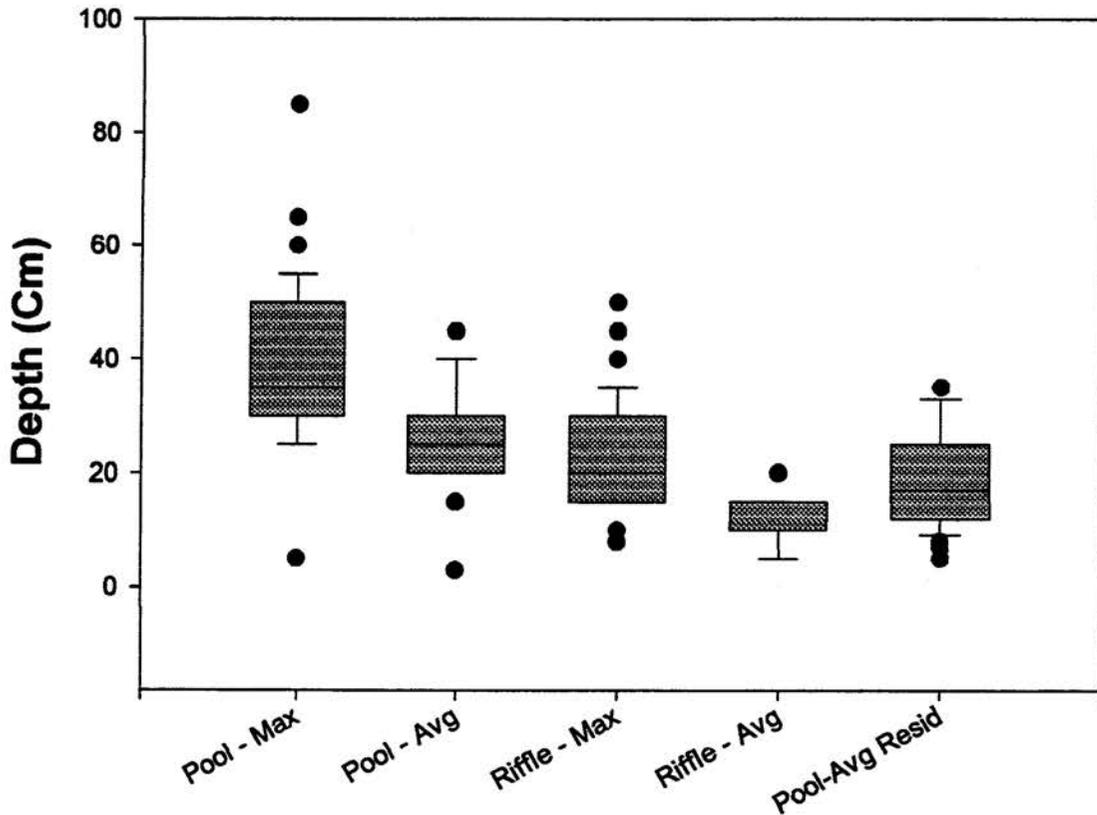
Channel Type C: 8.5%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 22.0%

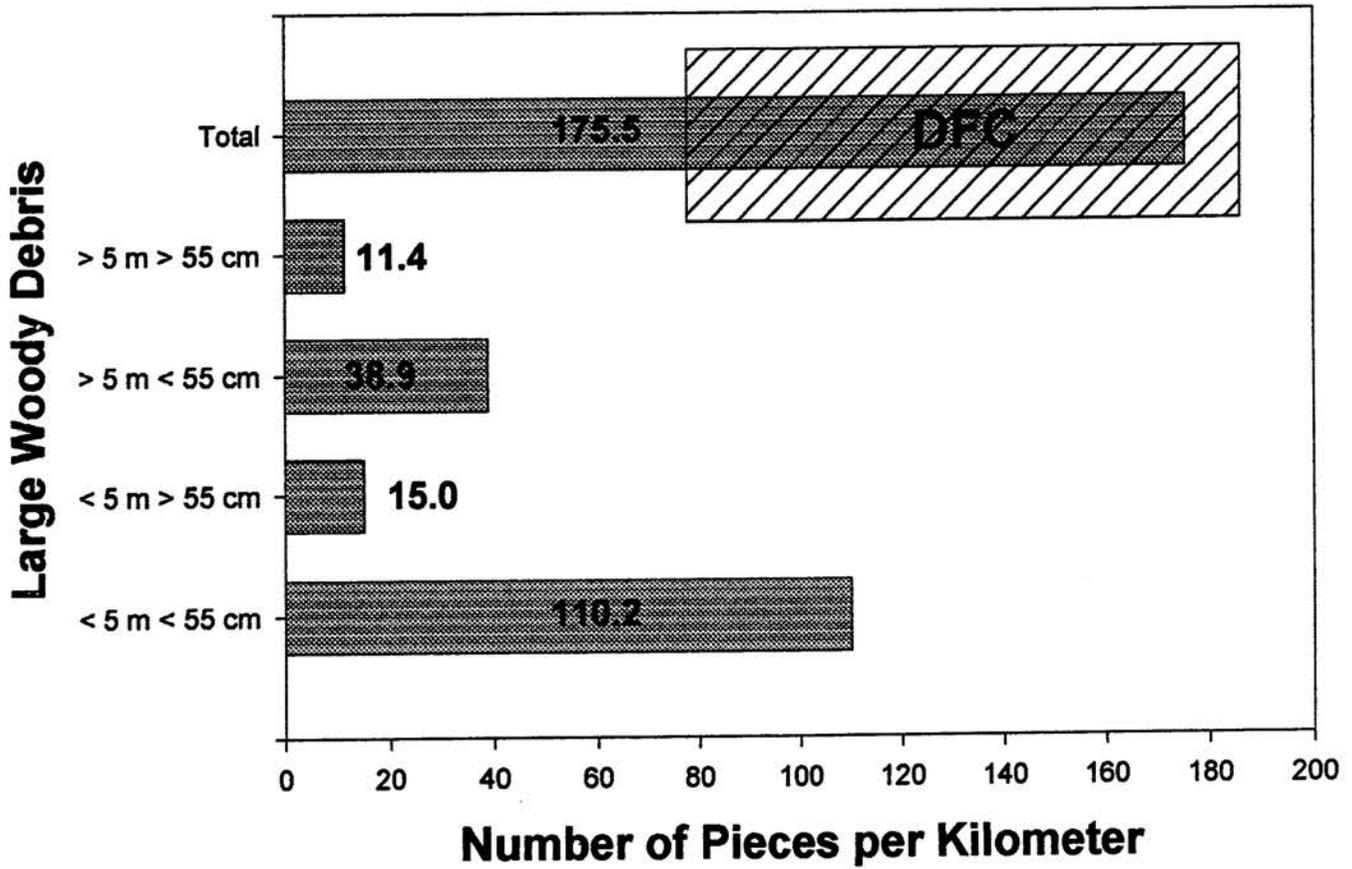
Average Channel Gradient: 6.4

Jerry's Creek

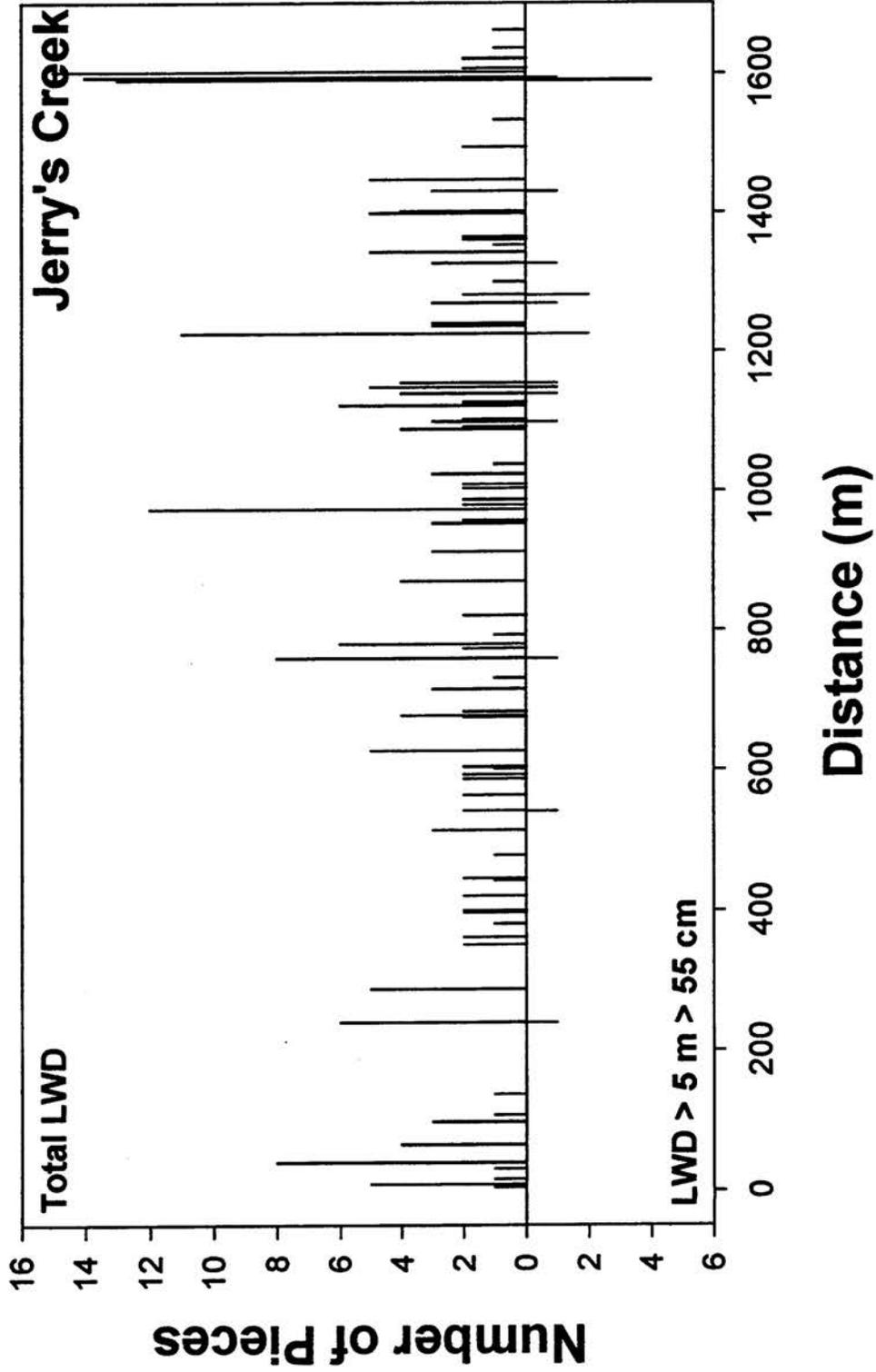


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

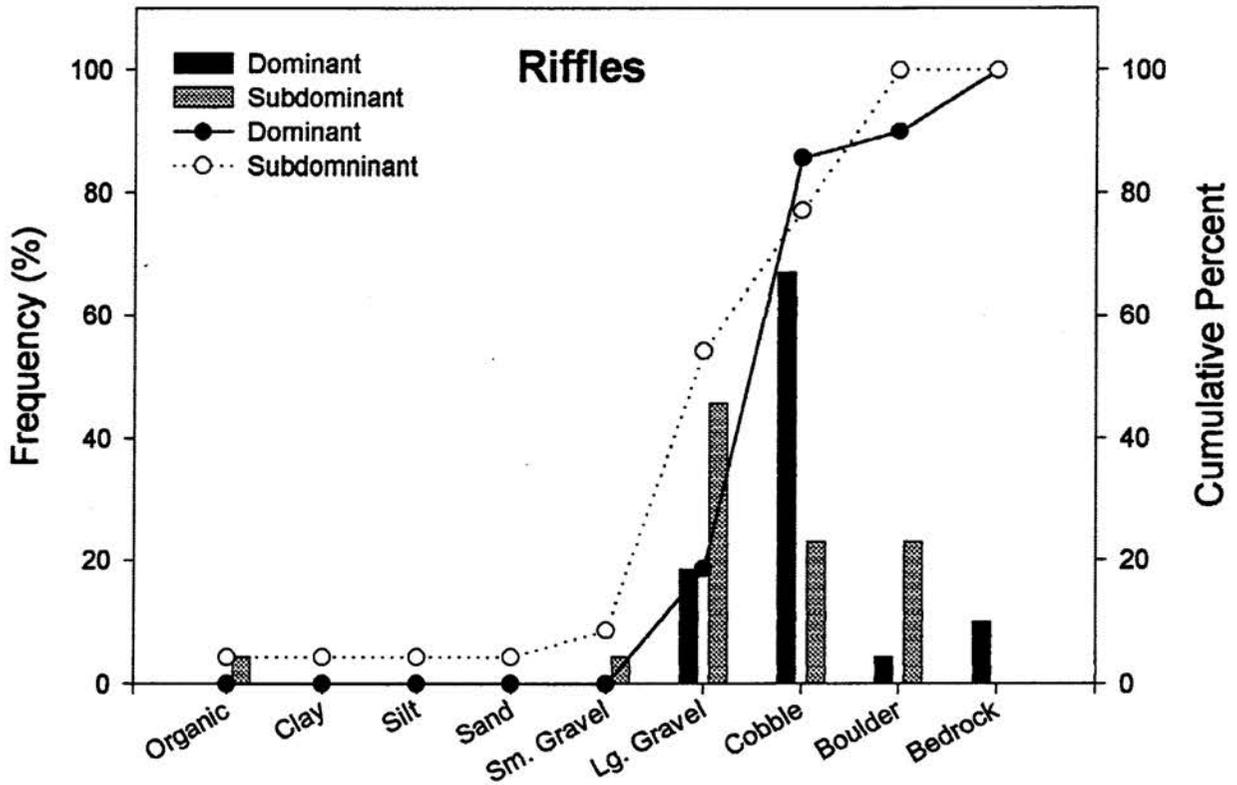
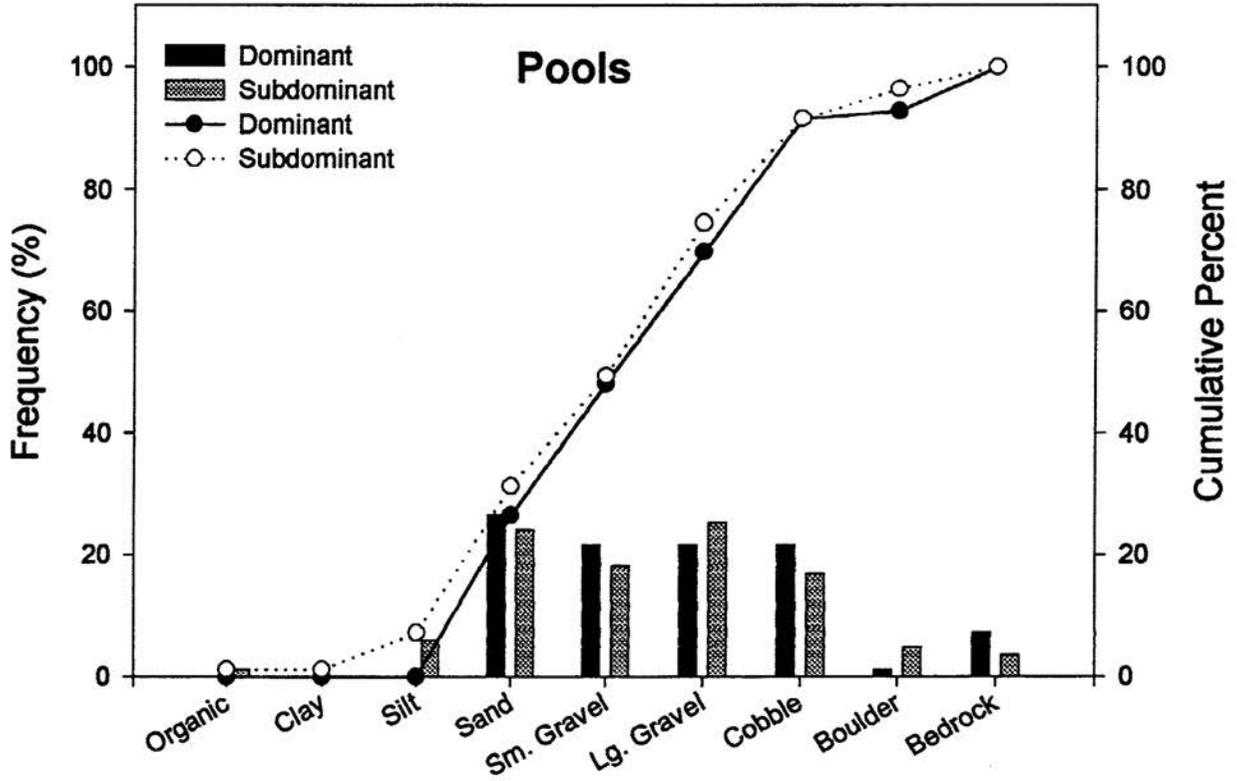
Jerry's Creek

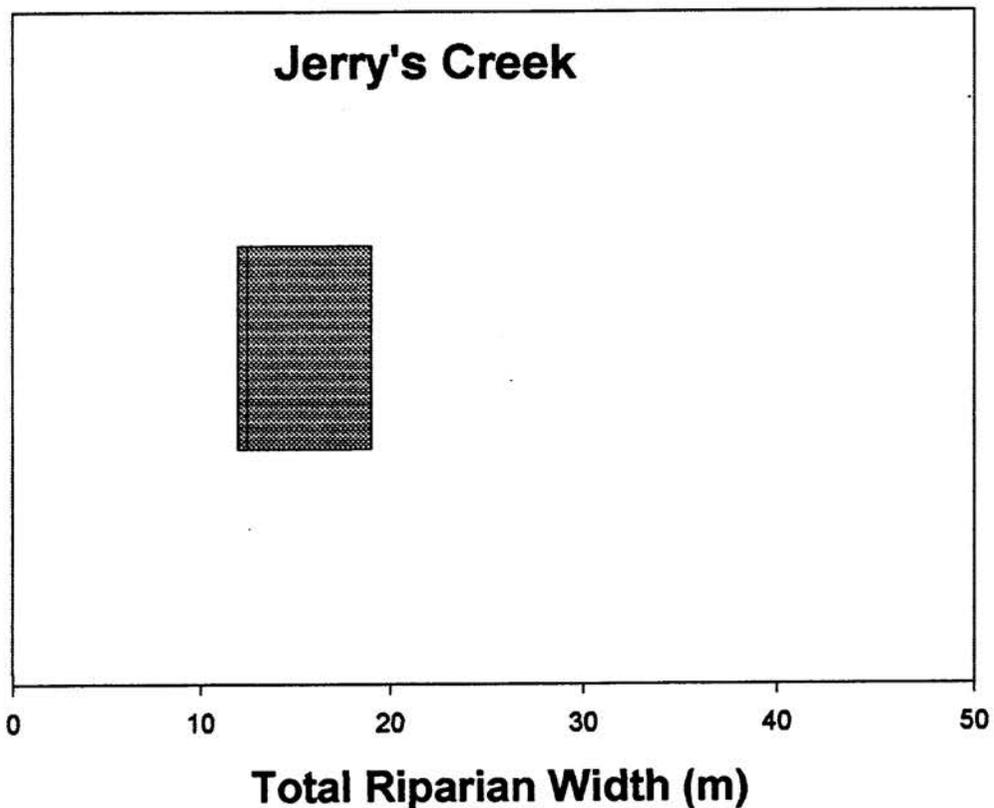


Distribution and Abundance of Large Woody Debris



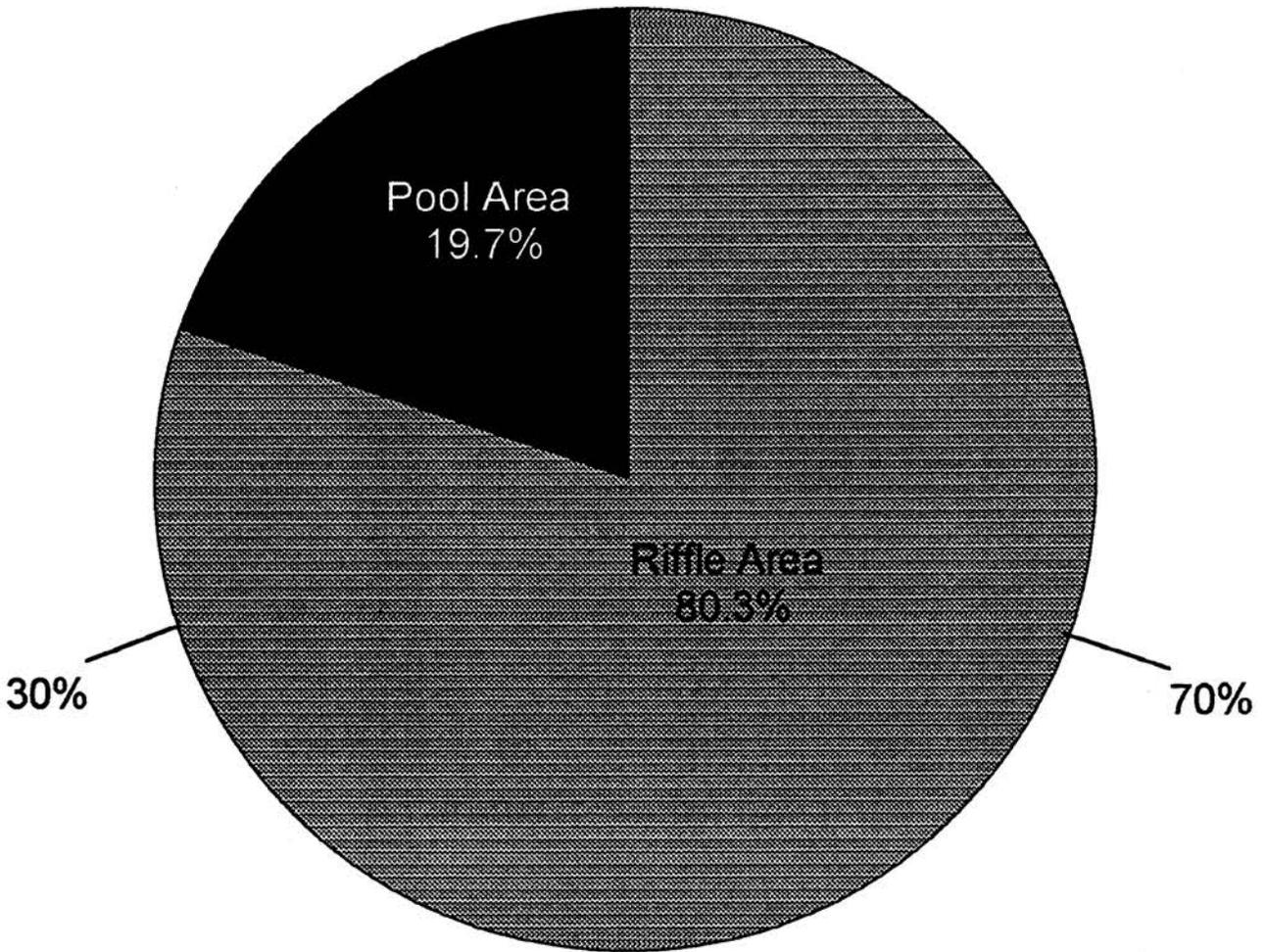
Jerry's Creek Substrate Composition



Riparian Width**Stream: Jerry's Creek****Number of Measurements: 4****Mean Width: 15.5m Std Dev: 6.4****Max: 25.0m Min: 12.0m**

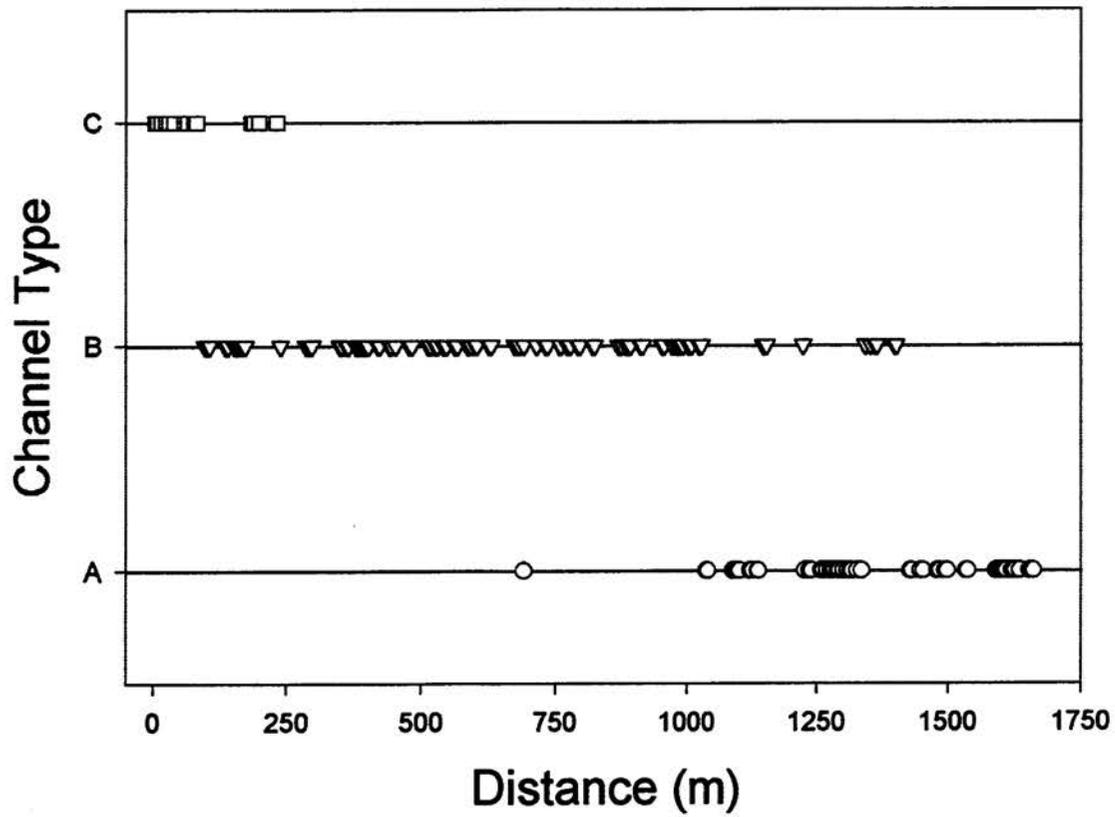
Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Jerry's Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Jerry's Creek

Rosgen's Channel Type Distribution



Stream: Little Laurel Creek

District: Mount Rogers National Recreation Area

Quadrangle: Whitetop Mtn.

Sample Date: 06/19/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 5.5 kilometers

Percent of Total Area - Pools: 31.6%

Number of Pools: 194

Number of Pools per kilometer: 35.3

Total Pool Area: 5237.9 sq. meters \pm 194.1

Mean Pool Area: 27.0 sq. meters

Correction Factor: 1.04

Mean Maximum Depth: 42.4 cm

Mean Average Depth: 26.5 cm

Mean Average Residual Pool Depth: 15.3 cm

Percent of Total Area - Riffles: 68.4%

Number of Riffles: 124

Number of Riffles per kilometer: 22.5

Total Riffle Area: 11314.1 sq. meters \pm 823.0

Mean Riffle Area: 91.2 sq. meters

Correction Factor: 1.08

Mean Maximum Depth: 31.5 cm

Mean Average Depth: 17.6 cm

Number of Large Woody Debris Pieces per kilometer: 360.3

Wood < 5 m and < 55 cm: 262.5

Wood < 5 m and > 55 cm: 18.0

Wood > 5 m and < 55 cm: 71.3

Wood > 5 m and > 55 cm: 8.5

Mean Channel Width: 7.1 m

Mean Riparian Width: 24.3 m

Mean Maximum Riparian Distance (either side): 13.8 m

Mean Minimum Riparian Distance (either side): 3.4 m

Maximum Riparian Width (Total): 39.7 m

Minimum Riparian Width (Total): 16.1 m

Little Laurel Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 66.2%

Rosgen's Channel Type Frequency:

Channel Type A: 13.0%

Channel Type B: 85.2%

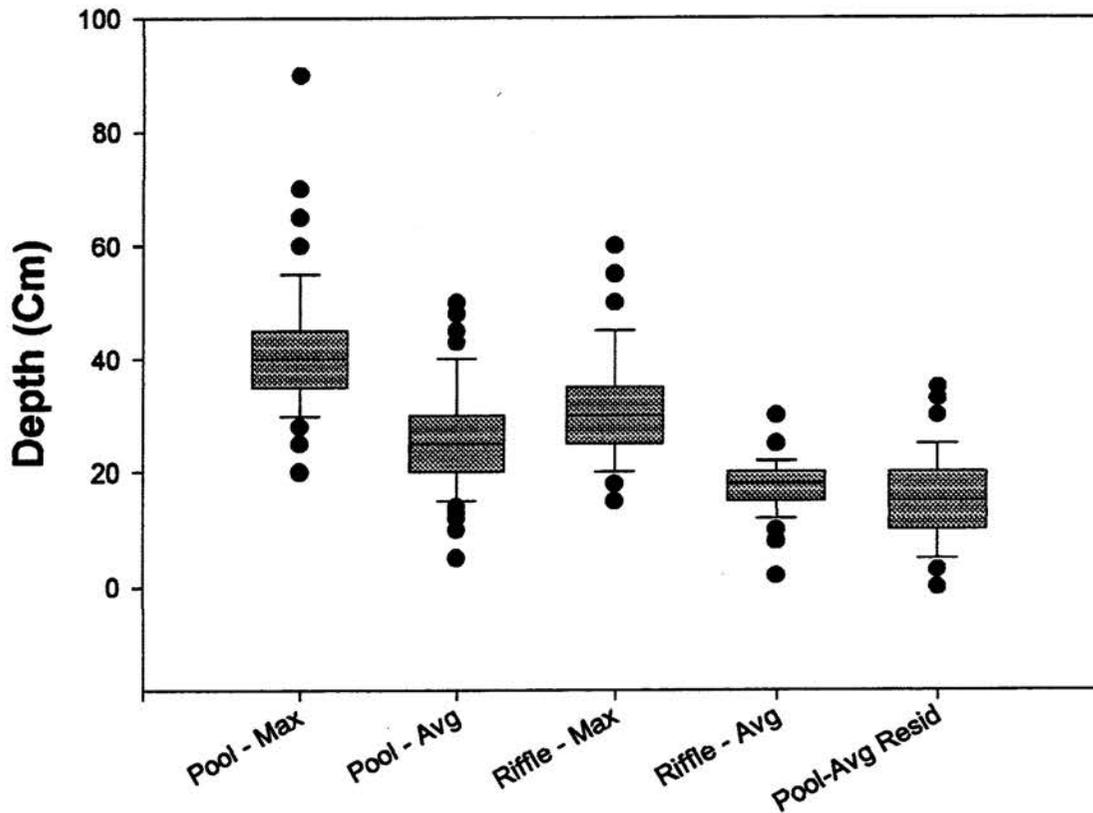
Channel Type C: 1.8%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 43.3%

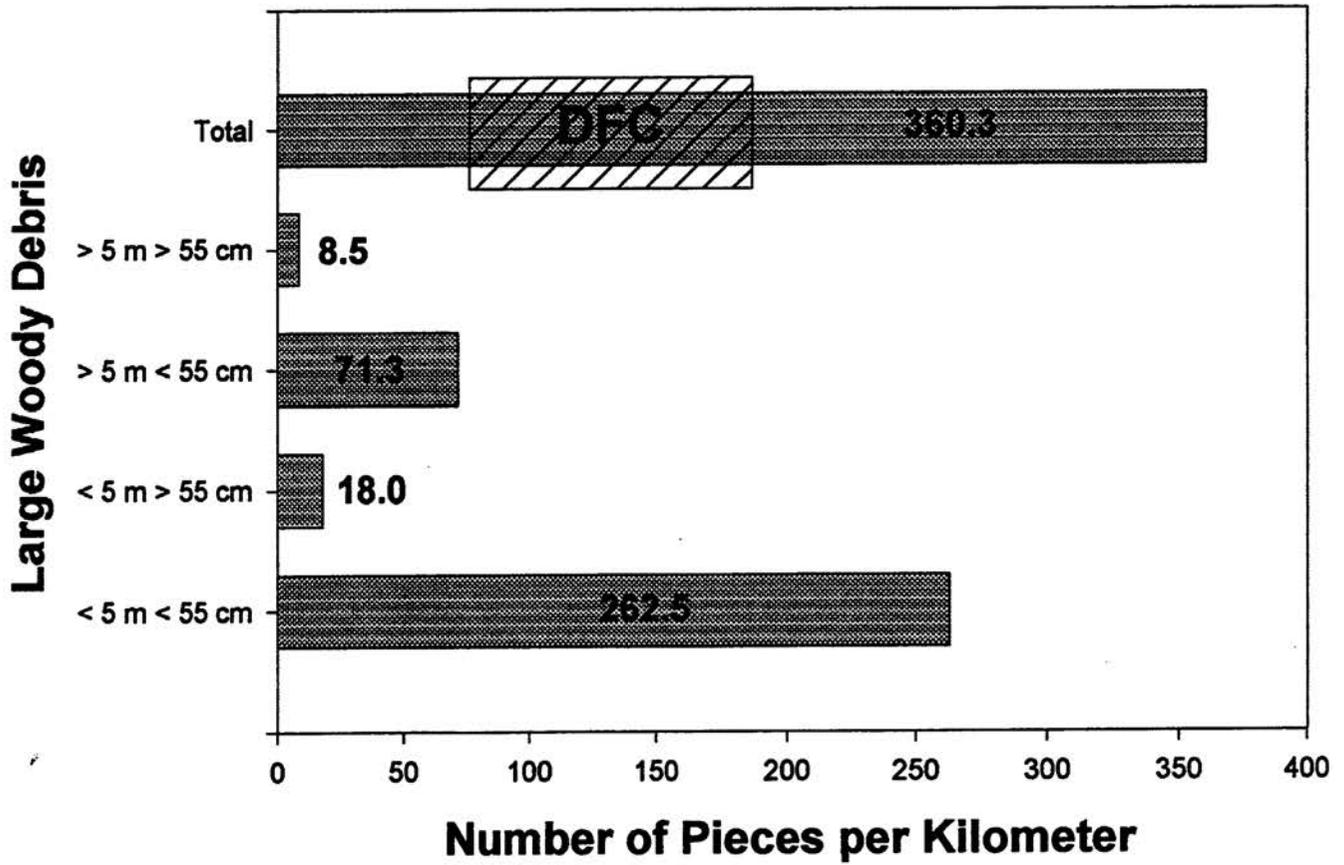
Average Channel Gradient: 7.8

Little Laurel Creek

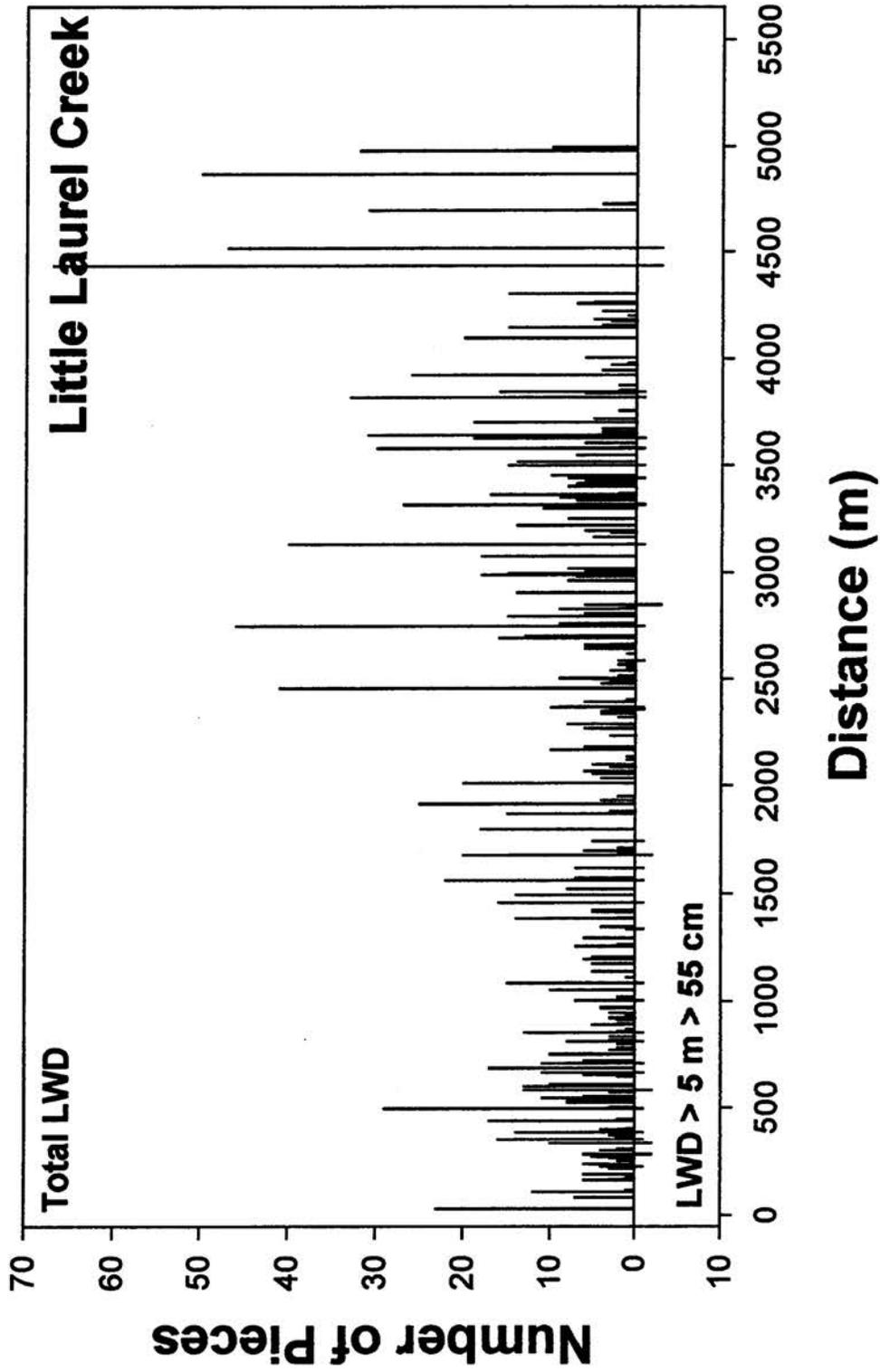


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

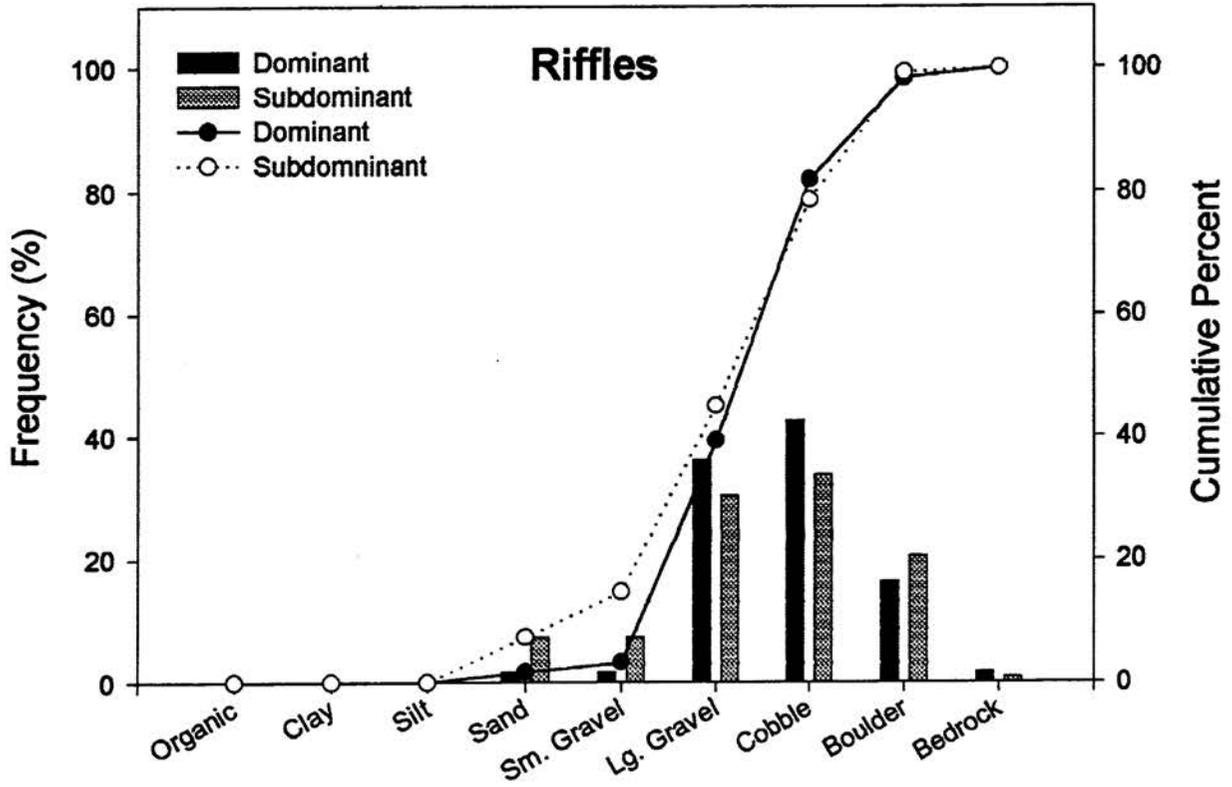
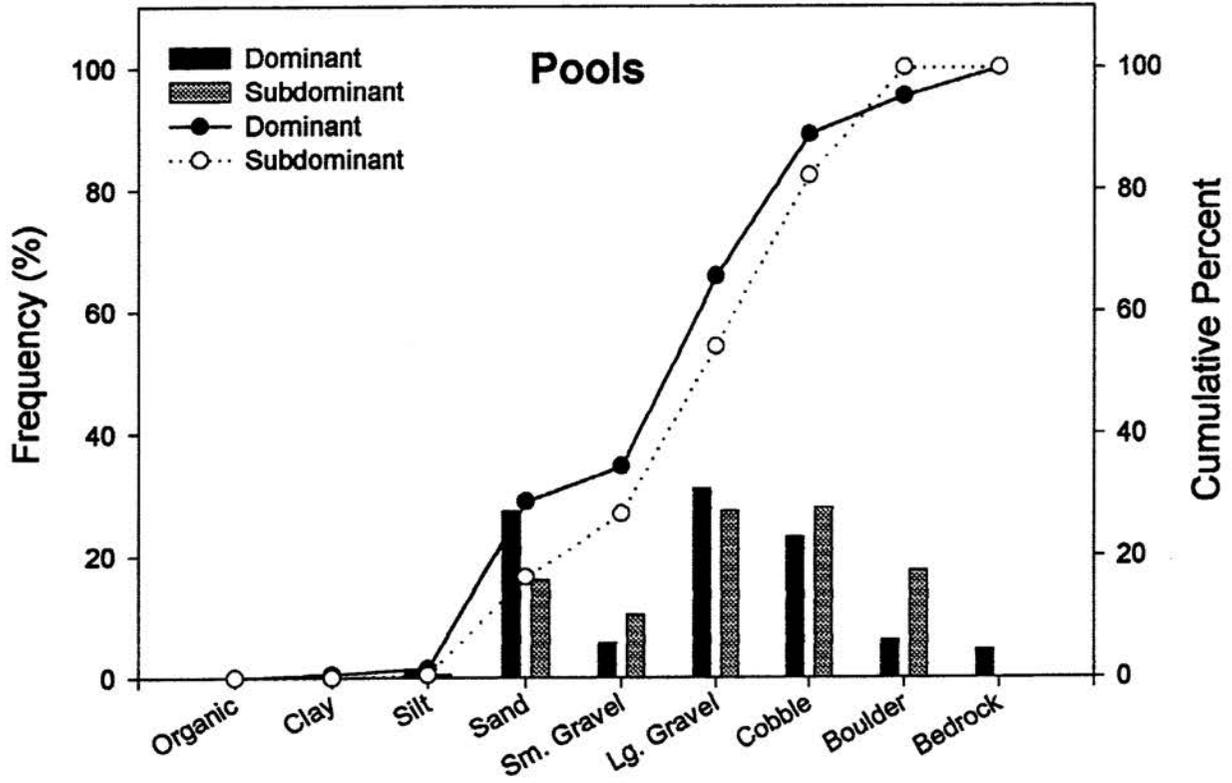
Little Laurel Creek

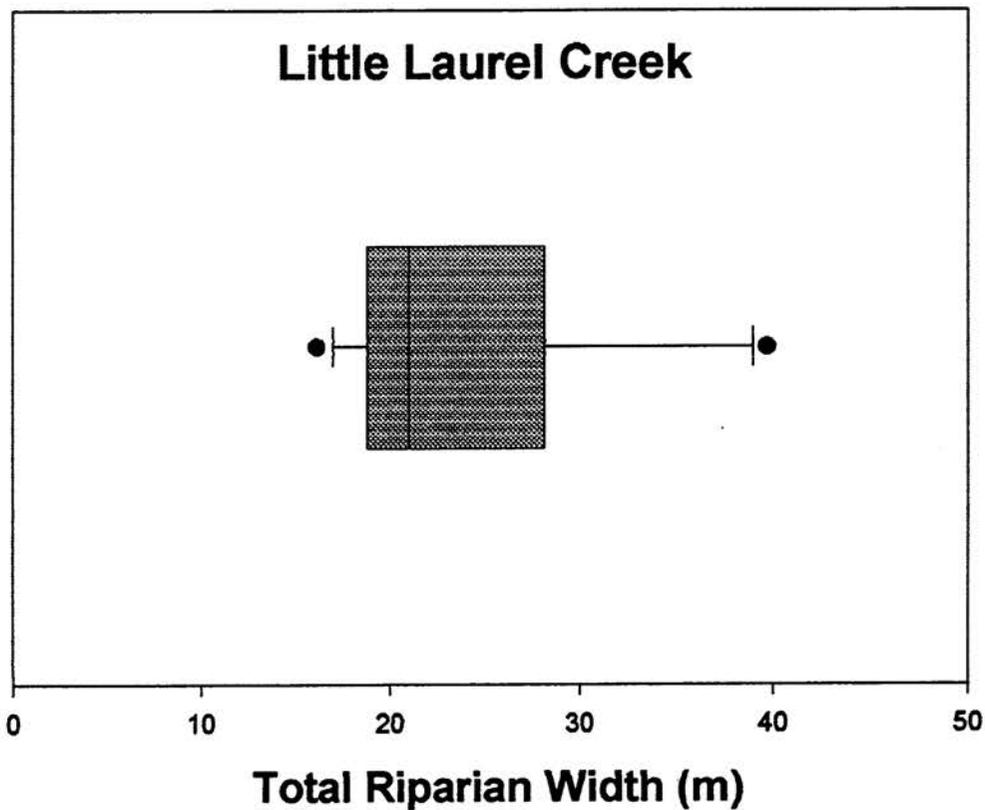


Distribution and Abundance of Large Woody Debris



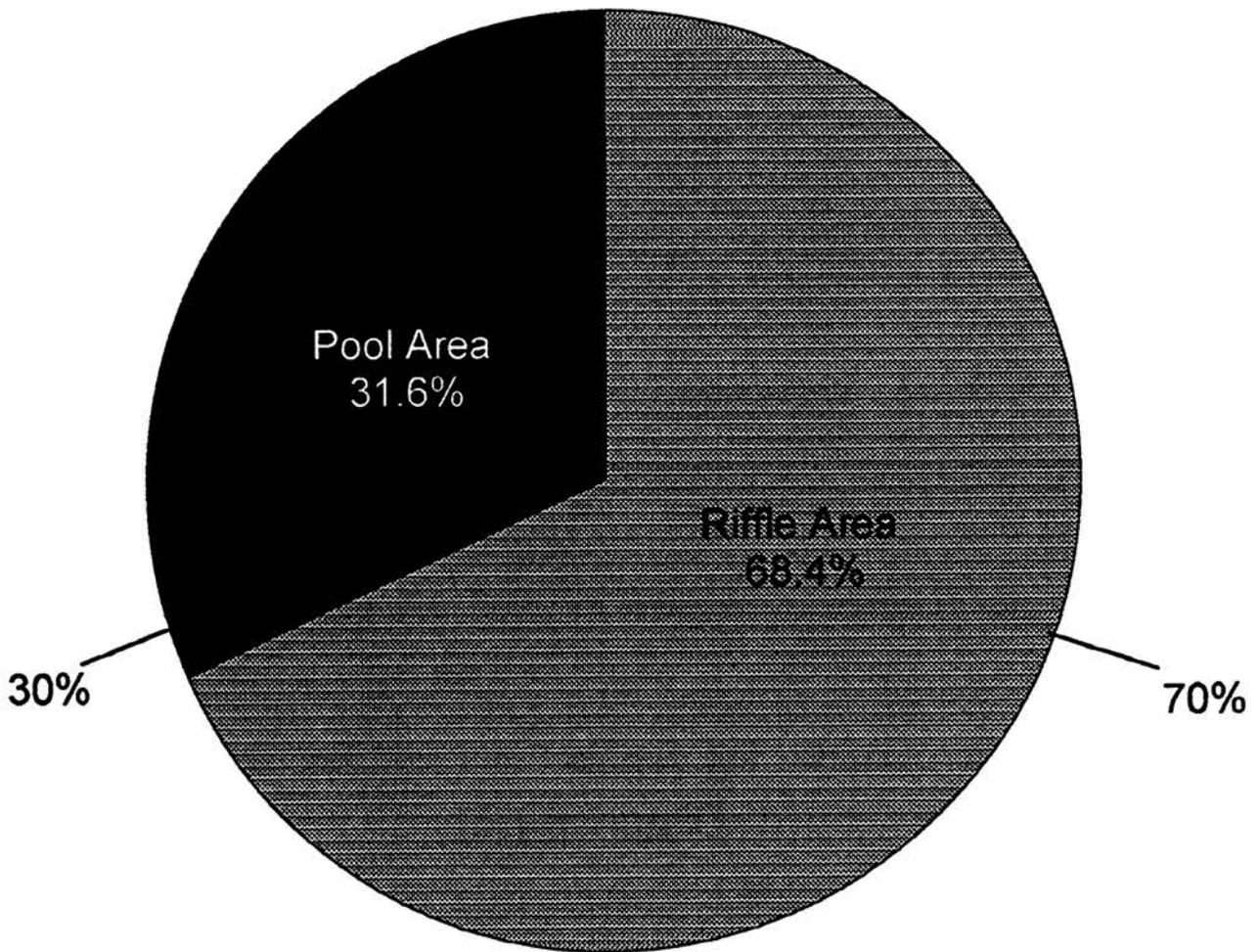
Little Laurel Creek Substrate Composition



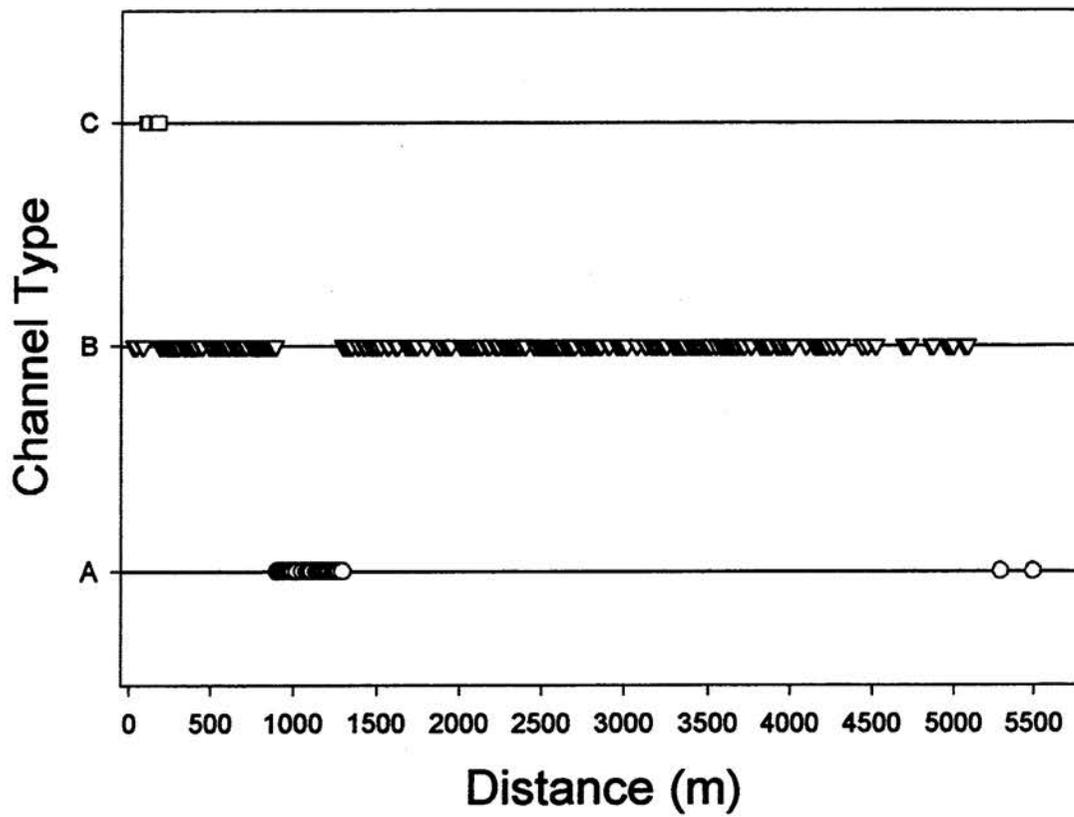
Riparian Width**Stream: Little Laurel Creek****Number of Measurements: 9****Mean Width: 24.4m Std Dev: 8.6****Max: 39.7m Min: 16.1m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Little Laurel Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Little Laurel Creek Rosgen's Channel Type Distribution



Stream: Pennington Branch

District: Mount Rogers National Recreation Area

Quadrangle: Whitetop Mtn.

Sample Date: 07/14/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 1.6 kilometers

Percent of Total Area - Pools: 20.4%

Number of Pools: 64

Number of Pools per kilometer: 40.0

Total Pool Area: 818.9 sq. meters \pm 207.0

Mean Pool Area: 12.8 sq. meters

Correction Factor: 1.05

Mean Maximum Depth: 41.3 cm

Mean Average Depth: 28.5 cm

Mean Average Residual Pool Depth: 20.9 cm

Percent of Total Area - Riffles: 79.6%

Number of Riffles: 56

Number of Riffles per kilometer: 35

Total Riffle Area: 3191.9 sq. meters \pm 193.1

Mean Riffle Area: 57.0 sq. meters

Correction Factor: 1.01

Mean Maximum Depth: 27.2 cm

Mean Average Depth: 13.9 cm

Number of Large Woody Debris Pieces per kilometer: 188.3

Wood < 5 m and < 55 cm: 132.4

Wood < 5 m and > 55 cm: 8.2

Wood > 5 m and < 55 cm: 38.9

Wood > 5 m and > 55 cm: 8.8

Mean Channel Width: 4.8 m

Mean Riparian Width: 16.2 m

Mean Maximum Riparian Distance (either side): 8.1 m

Mean Minimum Riparian Distance (either side): 3.3 m

Maximum Riparian Width (Total): 20.3 m

Minimum Riparian Width (Total): 12.4 m

Pennington Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 18.7%

Rosgen's Channel Type Frequency:

Channel Type A: 82.0%

Channel Type B: 18.0%

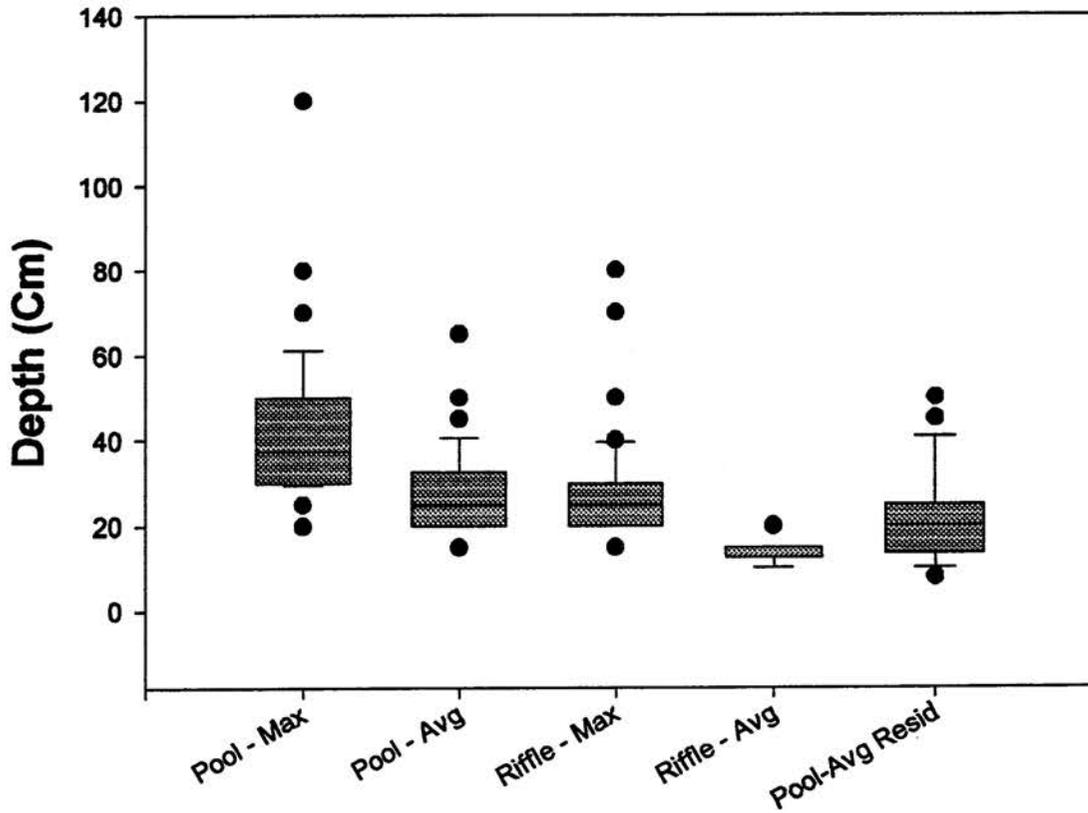
Channel Type C:

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 21.9%

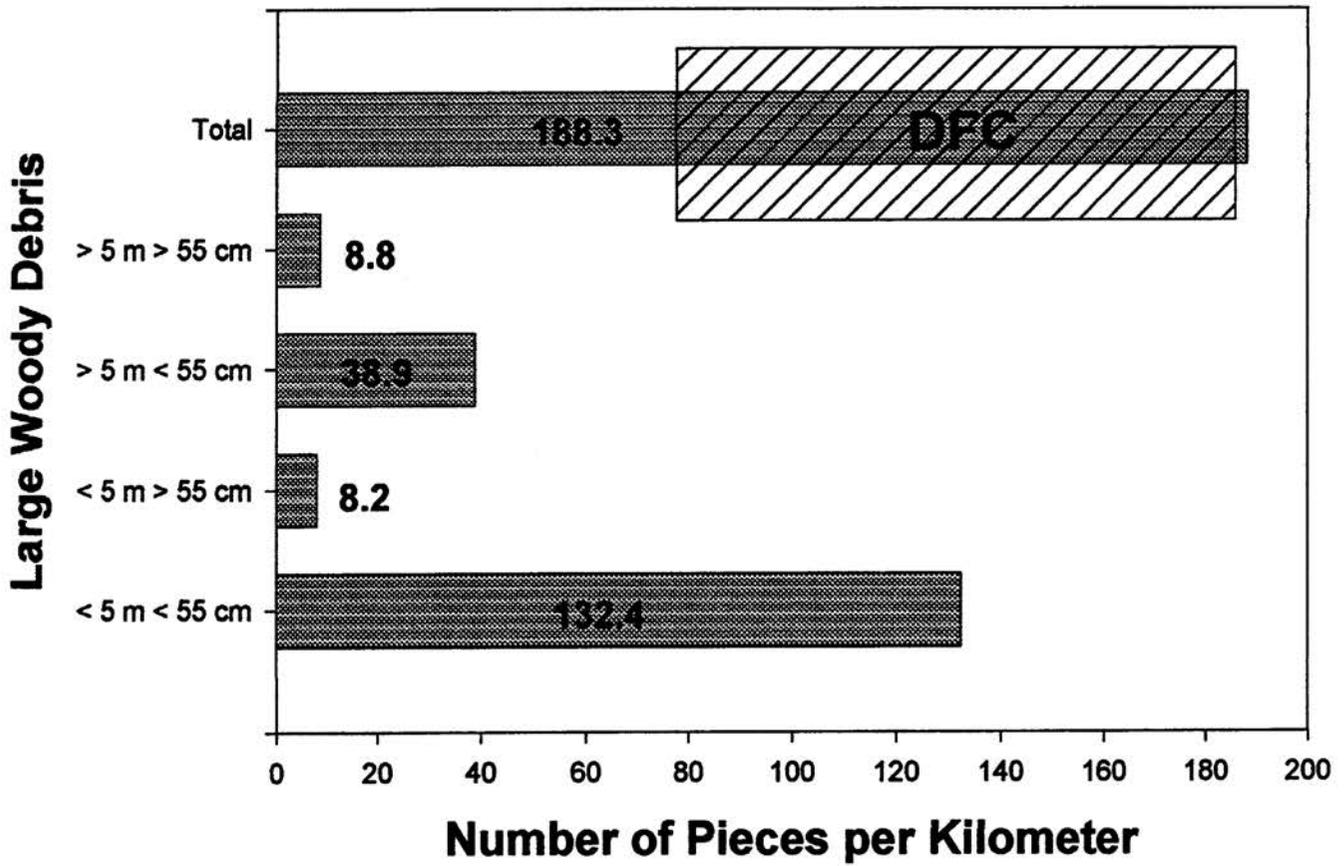
Average Channel Gradient: 6.7

Pennington Branch

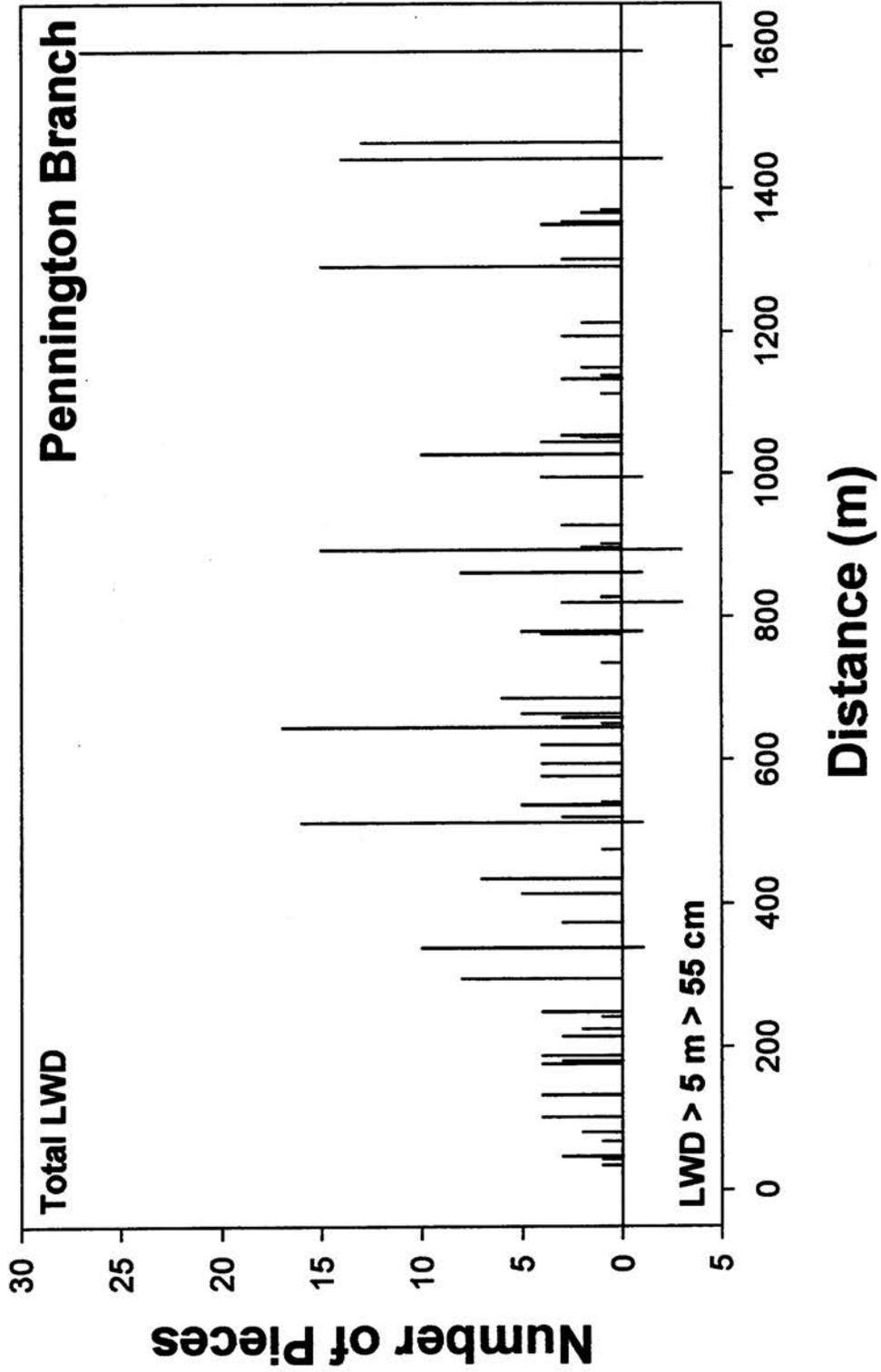


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

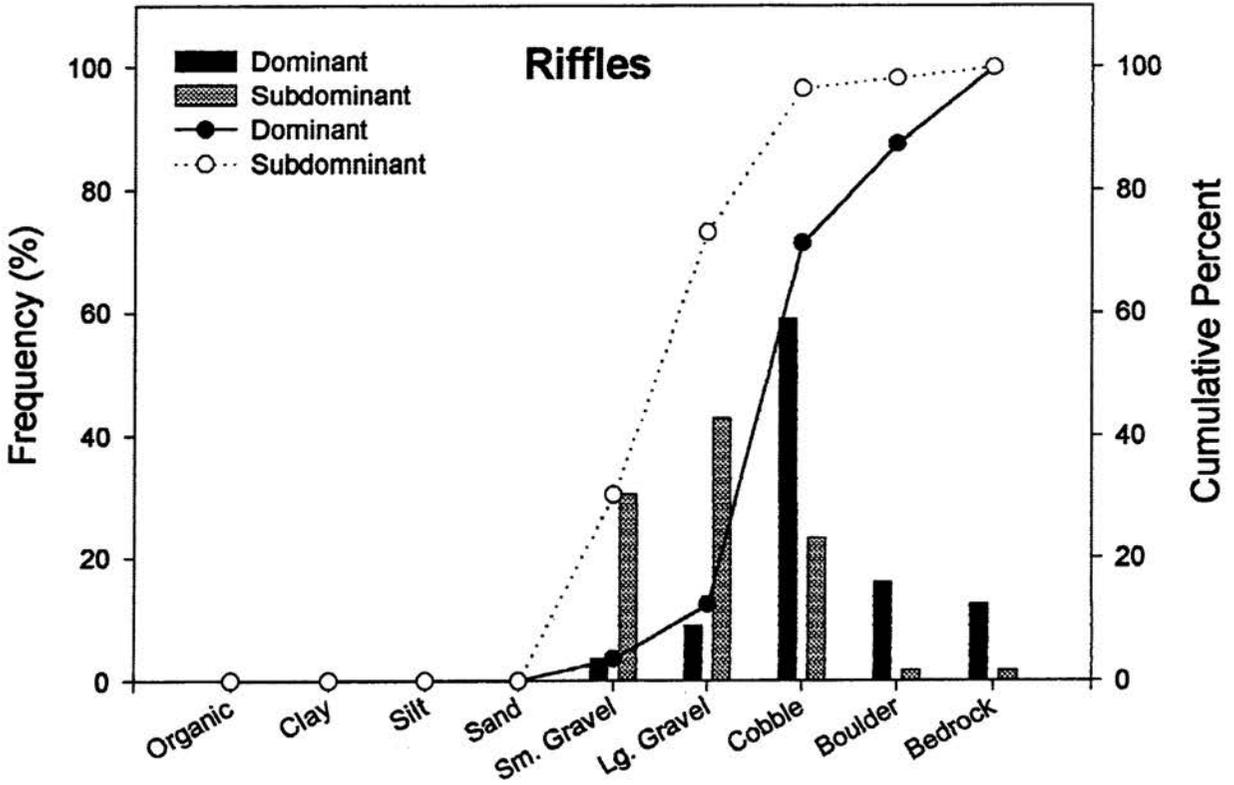
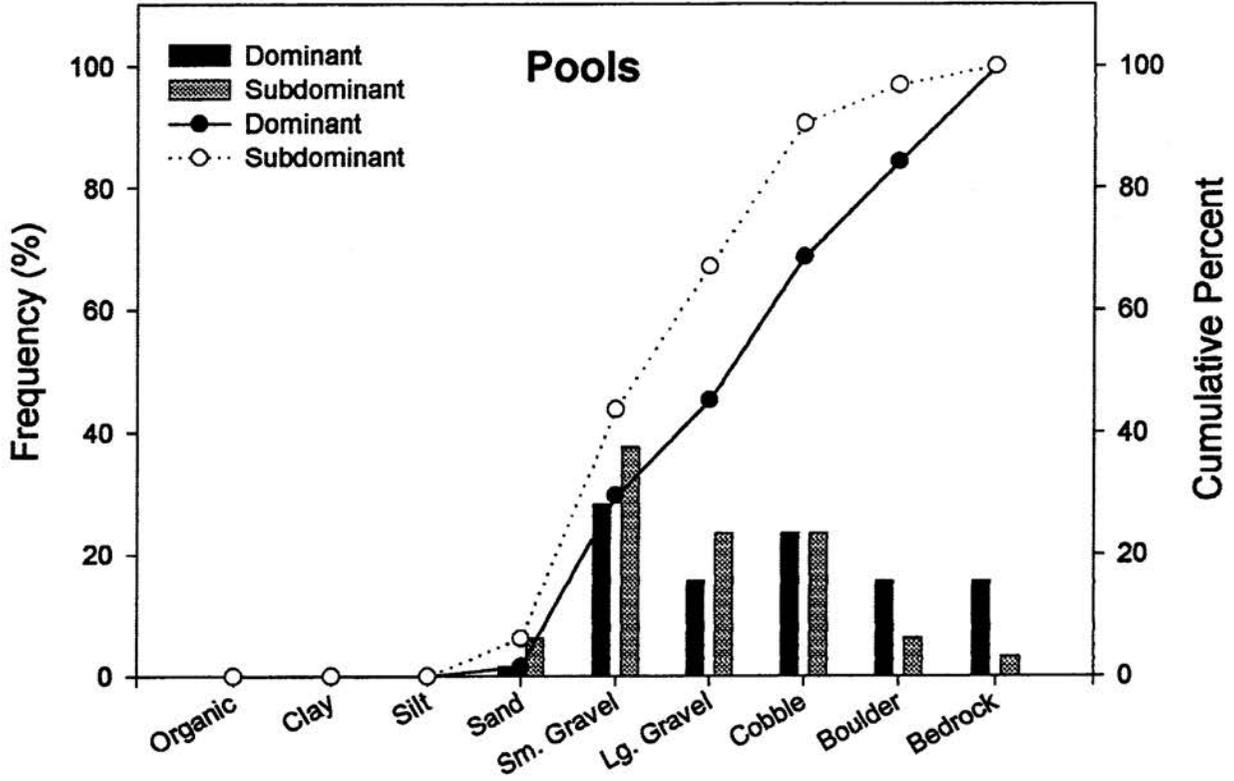
Pennington Branch

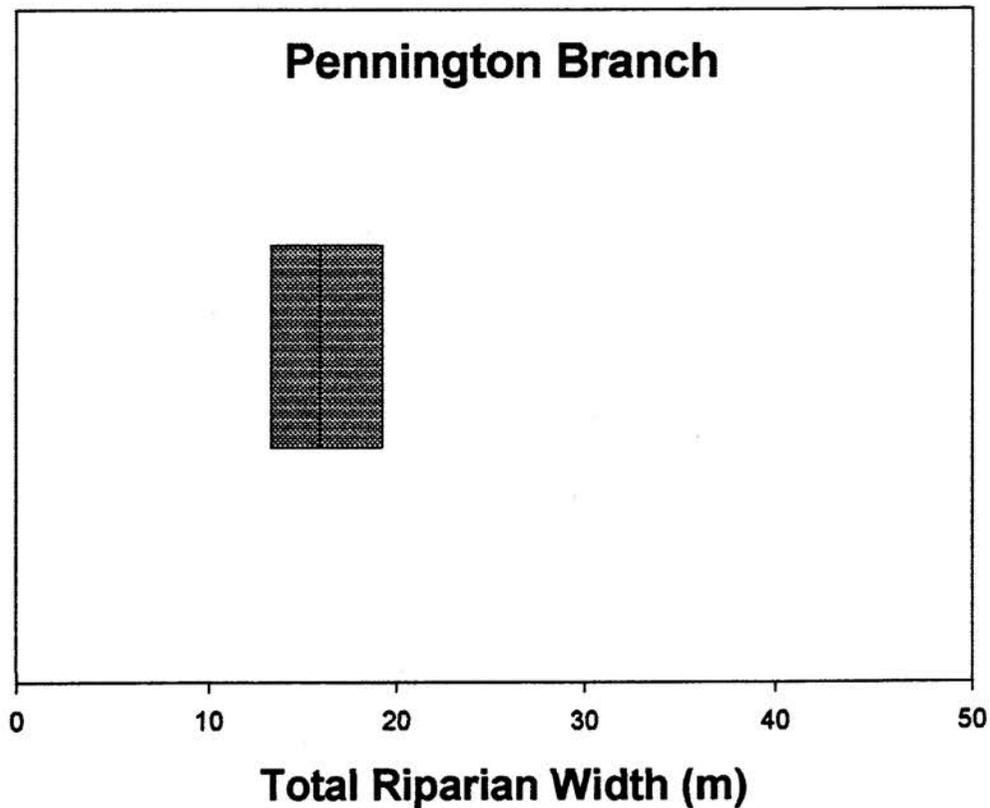


Distribution and Abundance of Large Woody Debris



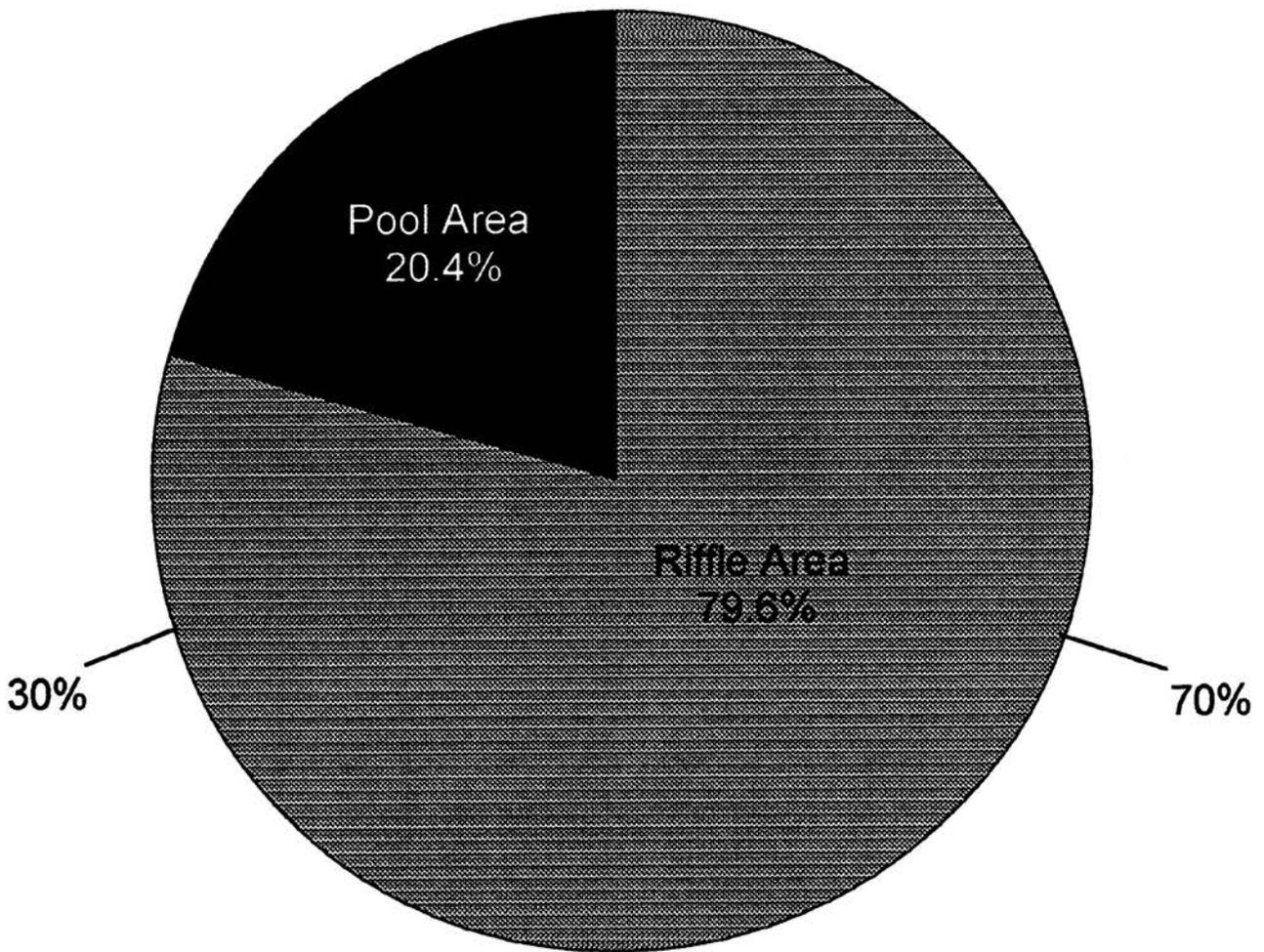
Pennington Branch Substrate Composition



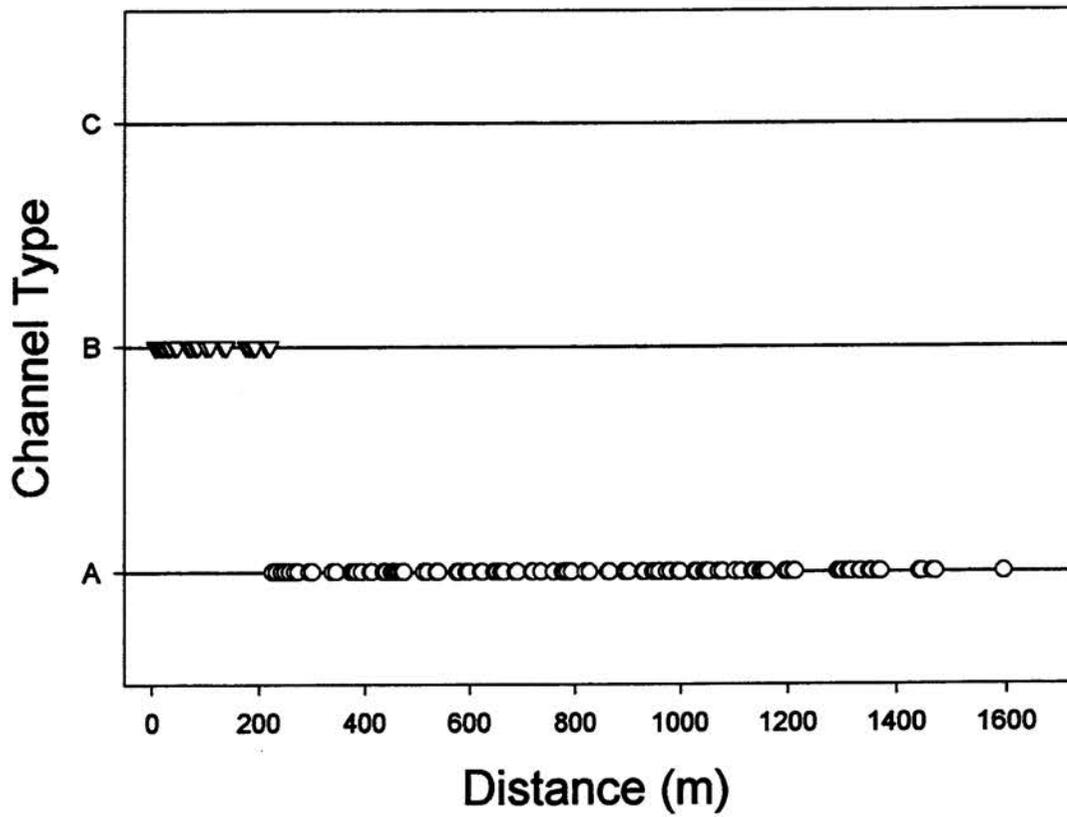
Riparian Width**Stream: Pennington Branch****Number of Measurements: 3****Mean Width: 16.2m Std Dev: 4.0****Max: 20.3m Min: 12.4m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Pennington Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Pennington Branch Rosgen's Channel Type Distribution



Stream: Rowland Creek

District: Mount Rogers National Recreation Area

Quadrangle: Whitetop Mtn.

Sample Date: 07/07/98

Downstream Starting Point: Forest Service Boundary; Junction RT 668 & 643

Total Distance Surveyed: 4.1 kilometers

Percent of Total Area - Pools: 40.1%

Number of Pools: 278

Number of Pools per kilometer: 67.8

Total Pool Area: 3888.4 sq. meters \pm 172.3

Mean Pool Area: 14.0 sq. meters

Correction Factor: 1.03

Mean Maximum Depth: 42.3 cm

Mean Average Depth: 28.9 cm

Mean Average Residual Pool Depth: 18.9 cm

Percent of Total Area - Riffles: 59.9%

Number of Riffles: 200

Number of Riffles per kilometer: 48.8

Total Riffle Area: 5802.4 sq. meters \pm 2044.6

Mean Riffle Area: 29.0 sq. meters

Correction Factor: 0.94

Mean Maximum Depth: 23.1 cm

Mean Average Depth: 14.3 cm

Number of Large Woody Debris Pieces per kilometer: 348.6

Wood < 5 m and < 55 cm: 181.8

Wood < 5 m and > 55 cm: 28.3

Wood > 5 m and < 55 cm: 114.9

Wood > 5 m and > 55 cm: 23.6

Mean Channel Width: 5.7 m

Mean Riparian Width: 14.8 m

Mean Maximum Riparian Distance (either side): 7.9 m

Mean Minimum Riparian Distance (either side): 1.2 m

Maximum Riparian Width (Total): 24.6 m

Minimum Riparian Width (Total): 7.0 m

Rowland Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 11.7%

Rosgen's Channel Type Frequency:

Channel Type A: 31.7%

Channel Type B: 64.2%

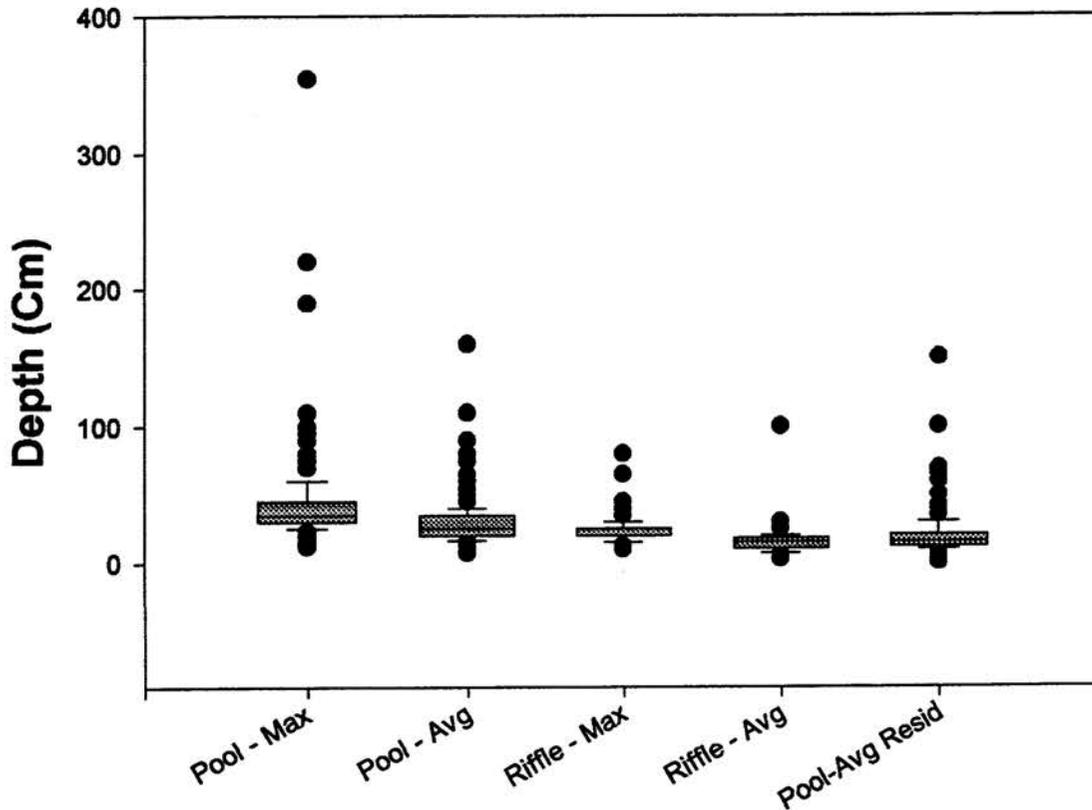
Channel Type C: 4.1%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 85.3%

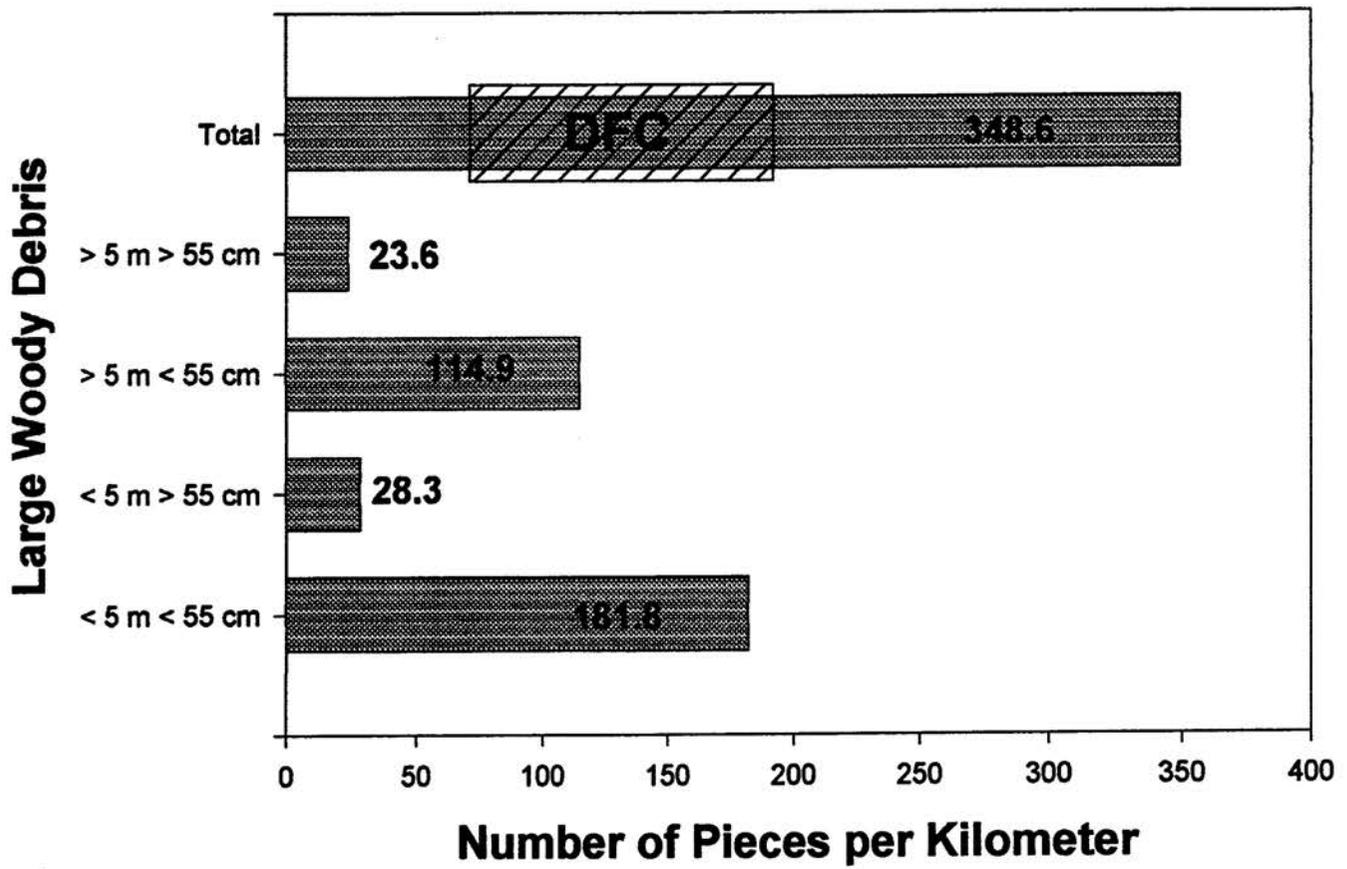
Average Channel Gradient: 9.1

Rowland Creek

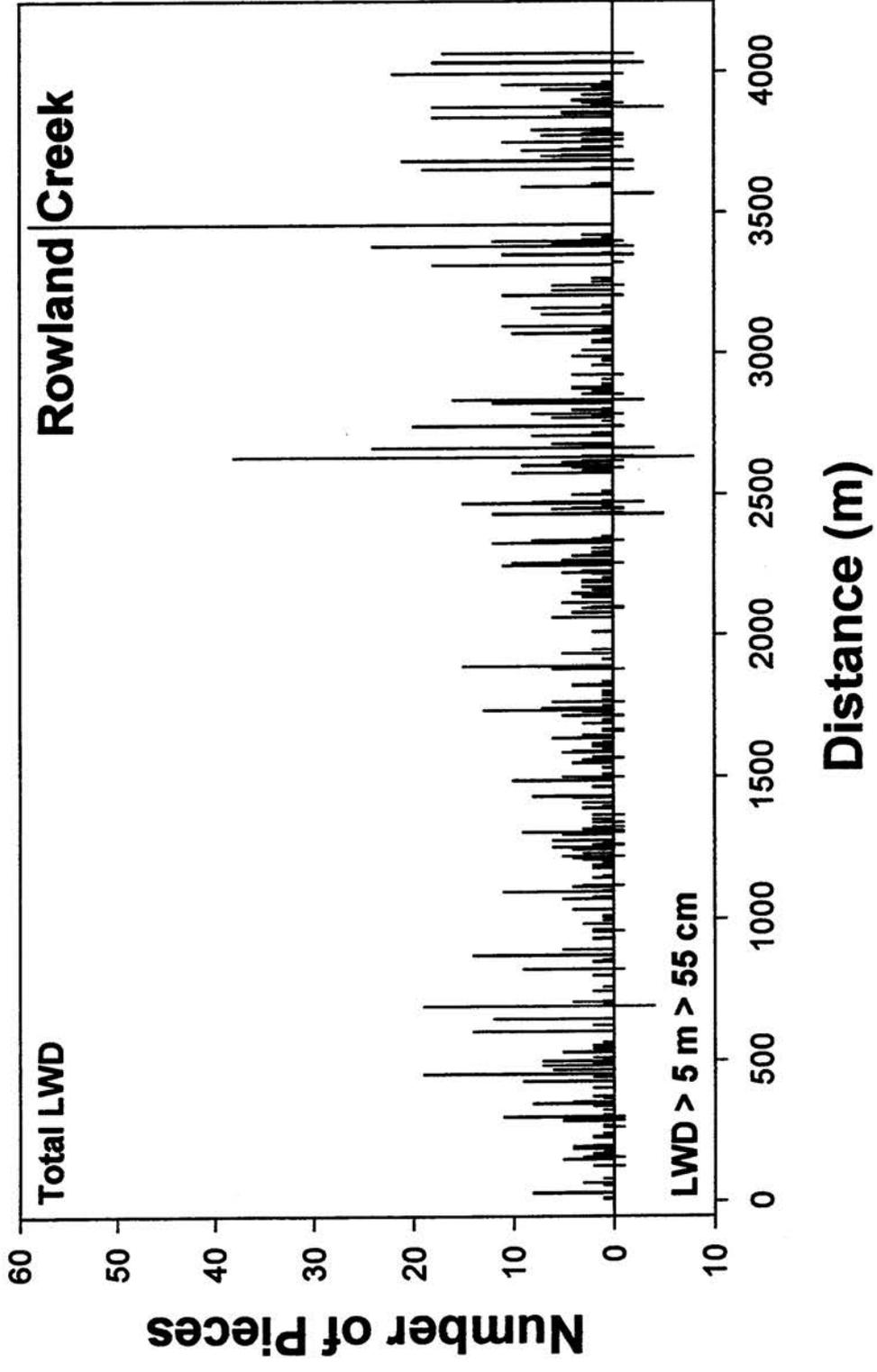


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

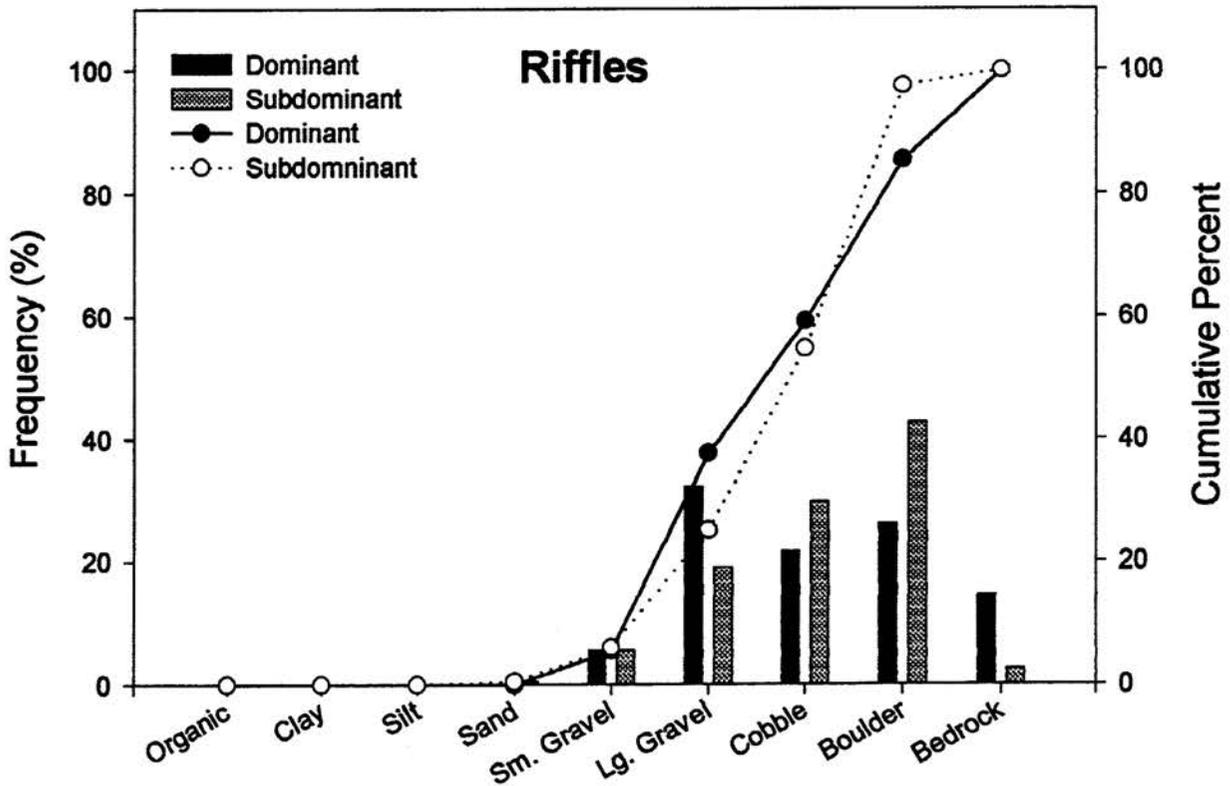
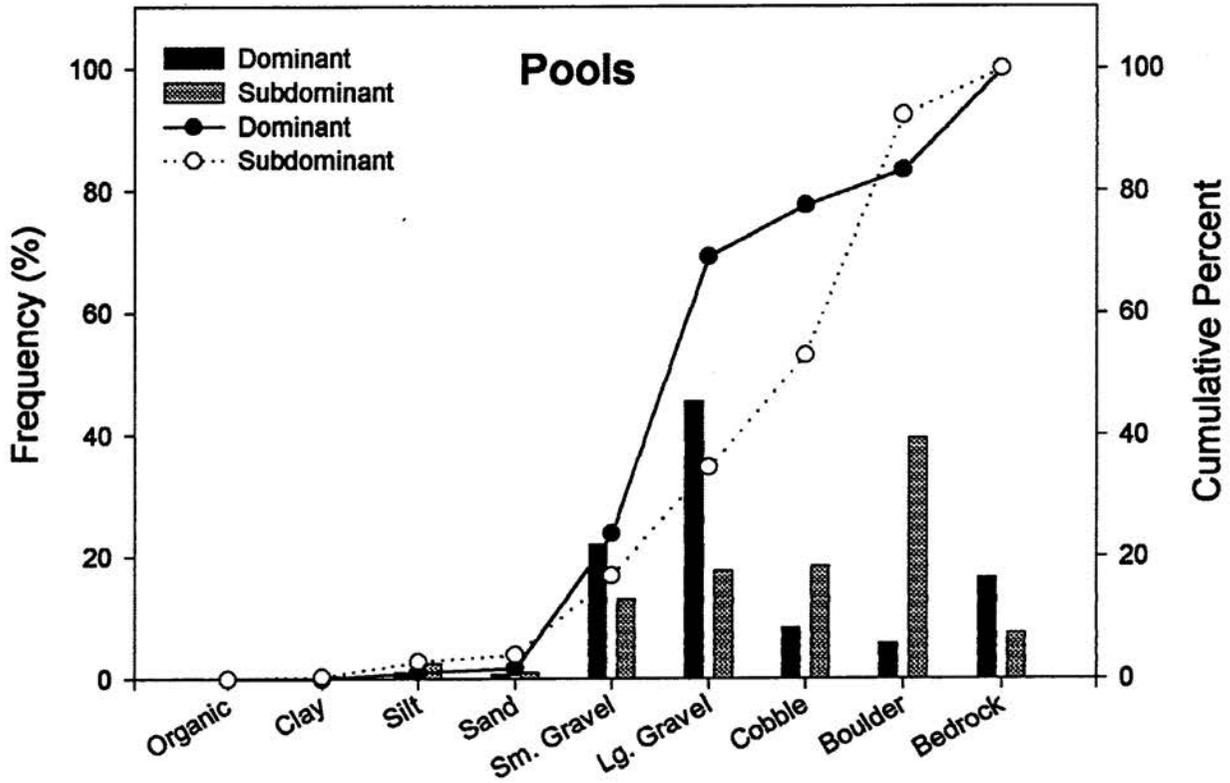
Rowland Creek

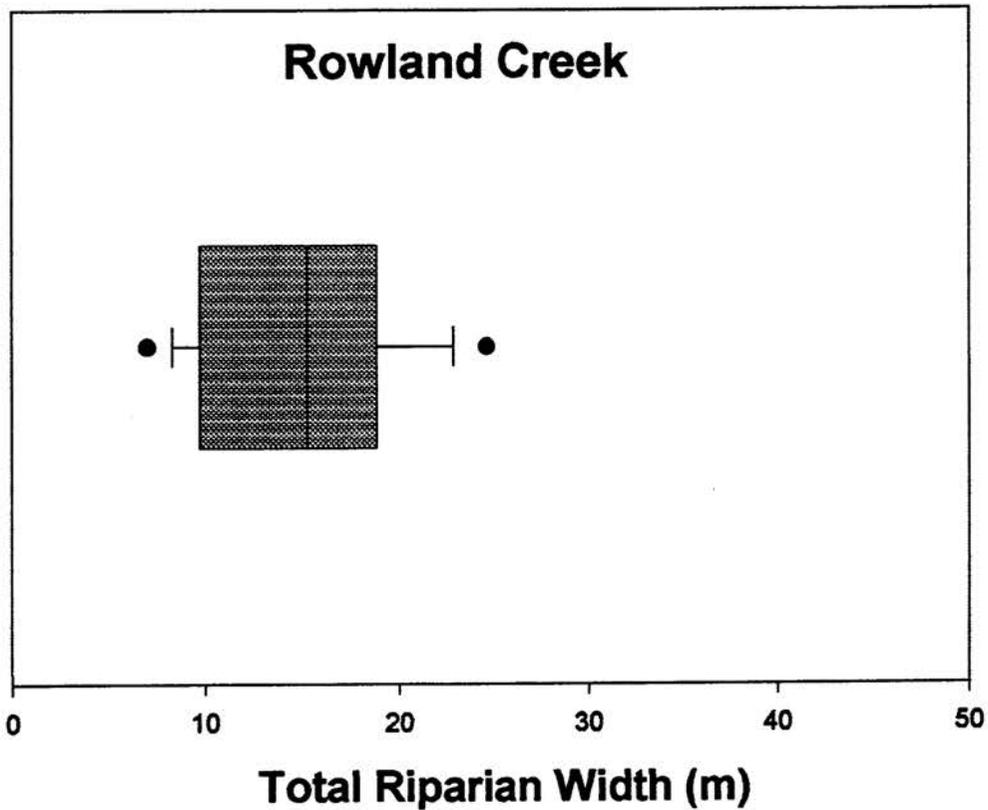


Distribution and Abundance of Large Woody Debris



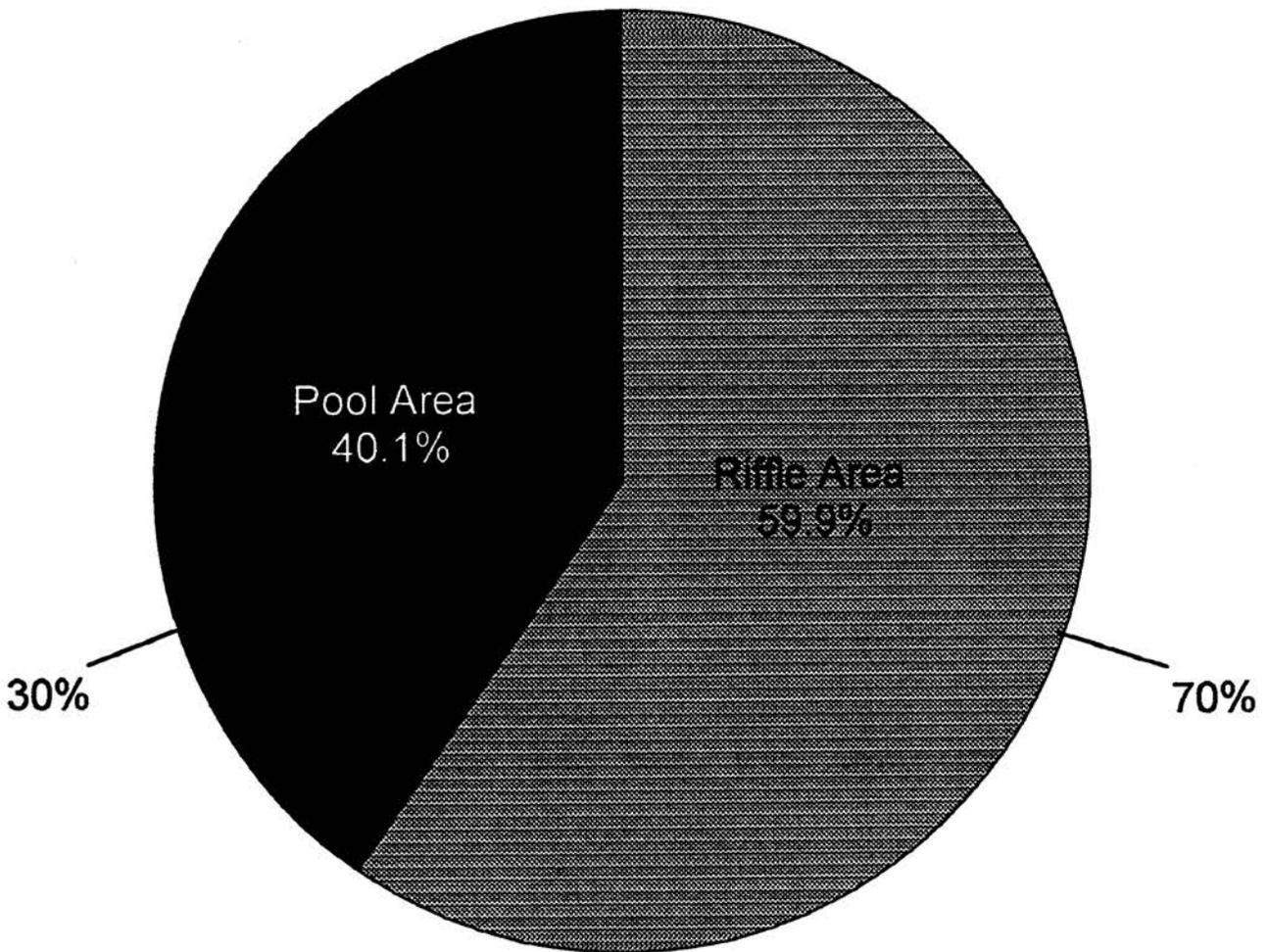
Rowland Creek Substrate Composition



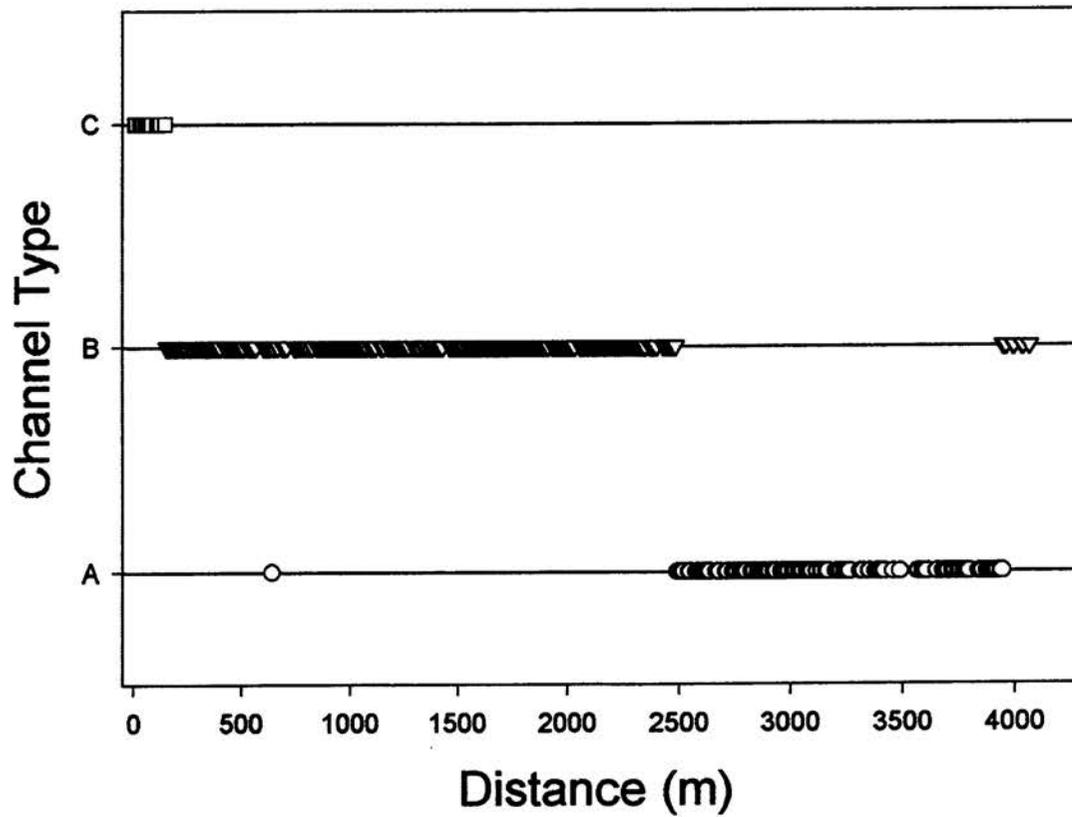
Riparian Width**Stream: Rowland Creek****Number of Measurements: 13****Mean Width: 14.9m Std Dev: 5.6****Max: 24.6m Min: 7.0m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Rowland Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Rowland Creek Rosgen's Channel Type Distribution



Stream: Whitetop Creek

District: Mount Rogers National Recreation Area

Quadrangle: Park/Whitetop Mtn.

Sample Date: 07/08/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 1.4 kilometers

Percent of Total Area - Pools: 15.5%

Number of Pools: 55

Number of Pools per kilometer: 39.3

Total Pool Area: 707.3 sq. meters \pm 60.2

Mean Pool Area: 12.9 sq. meters

Correction Factor: 1.02

Mean Maximum Depth: 47.8 cm

Mean Average Depth: 36.2 cm

Mean Average Residual Pool Depth: 26.5 cm

Percent of Total Area - Riffles: 84.5%

Number of Riffles: 51

Number of Riffles per kilometer: 36.4

Total Riffle Area: 3866.2 sq. meters \pm 1273.1

Mean Riffle Area: 75.8 sq. meters

Correction Factor: 1.21

Mean Maximum Depth: 30.9 cm

Mean Average Depth: 16.2 cm

Number of Large Woody Debris Pieces per kilometer: 184.9

Wood < 5 m and < 55 cm: 113.4

Wood < 5 m and > 55 cm: 13.3

Wood > 5 m and < 55 cm: 44.9

Wood > 5 m and > 55 cm: 13.3

Mean Channel Width: 5.0 m

Mean Riparian Width: 17.5 m

Mean Maximum Riparian Distance (either side): 9.3 m

Mean Minimum Riparian Distance (either side): 3.2 m

Maximum Riparian Width (Total): 22.9 m

Minimum Riparian Width (Total): 11.5 m

Whitetop Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 17.0%

Rosgen's Channel Type Frequency:

Channel Type A: 72.2%

Channel Type B: 25.0%

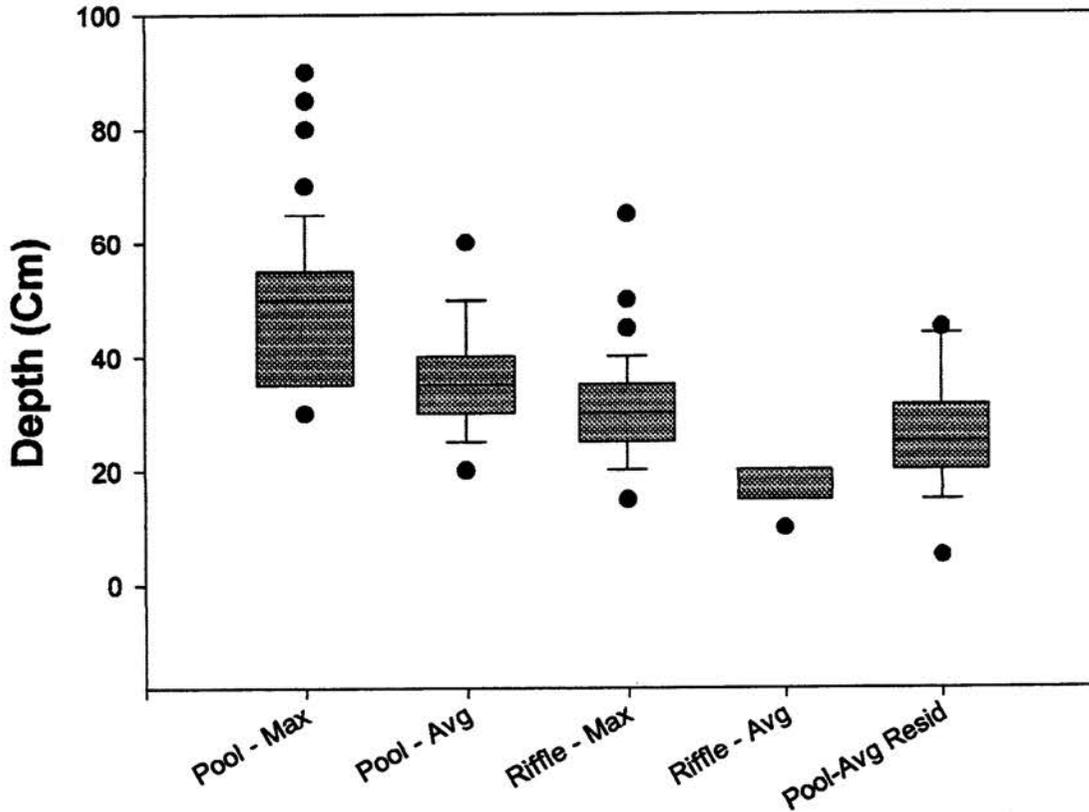
Channel Type C: 2.8%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 36.4%

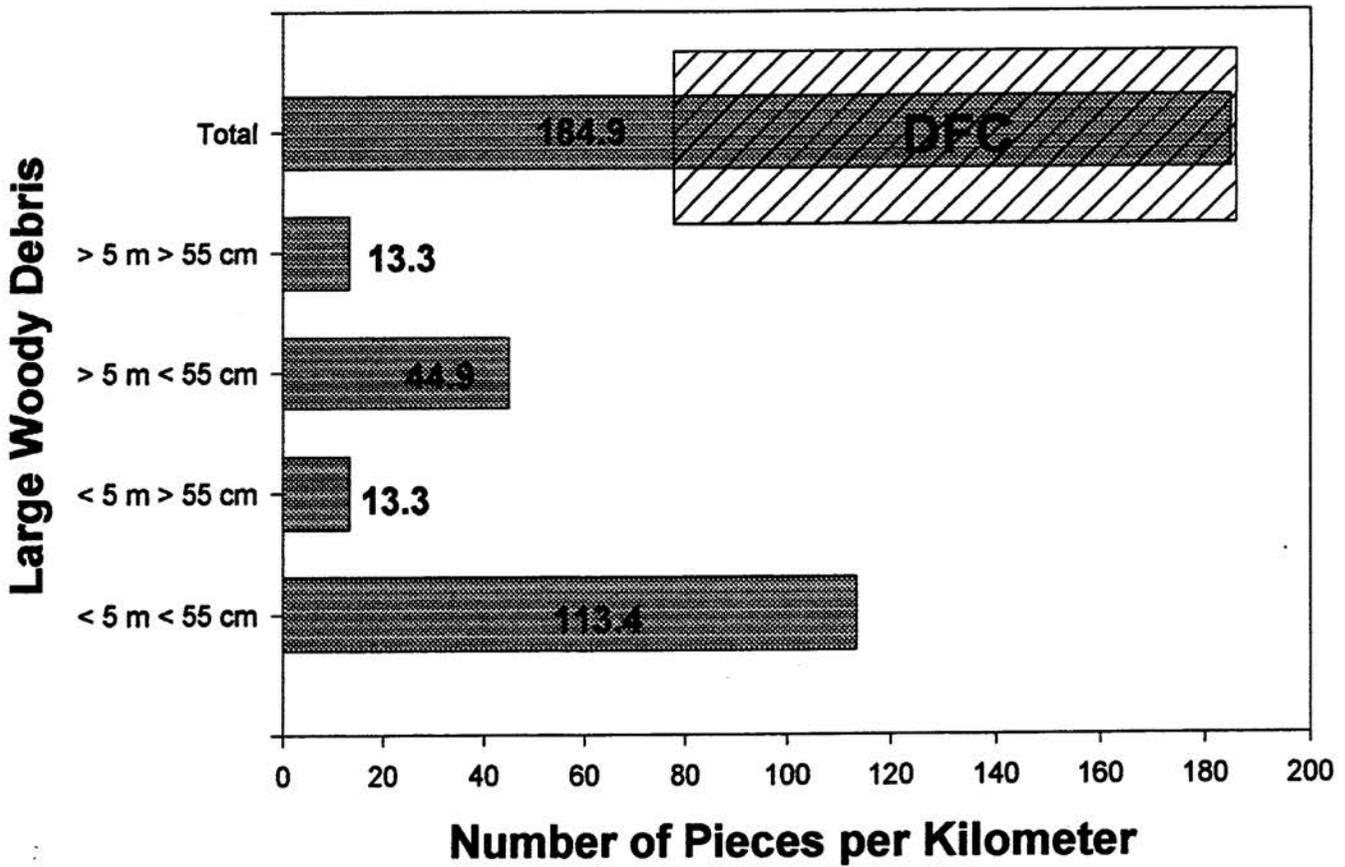
Average Channel Gradient: 25.8

Whitetop Creek

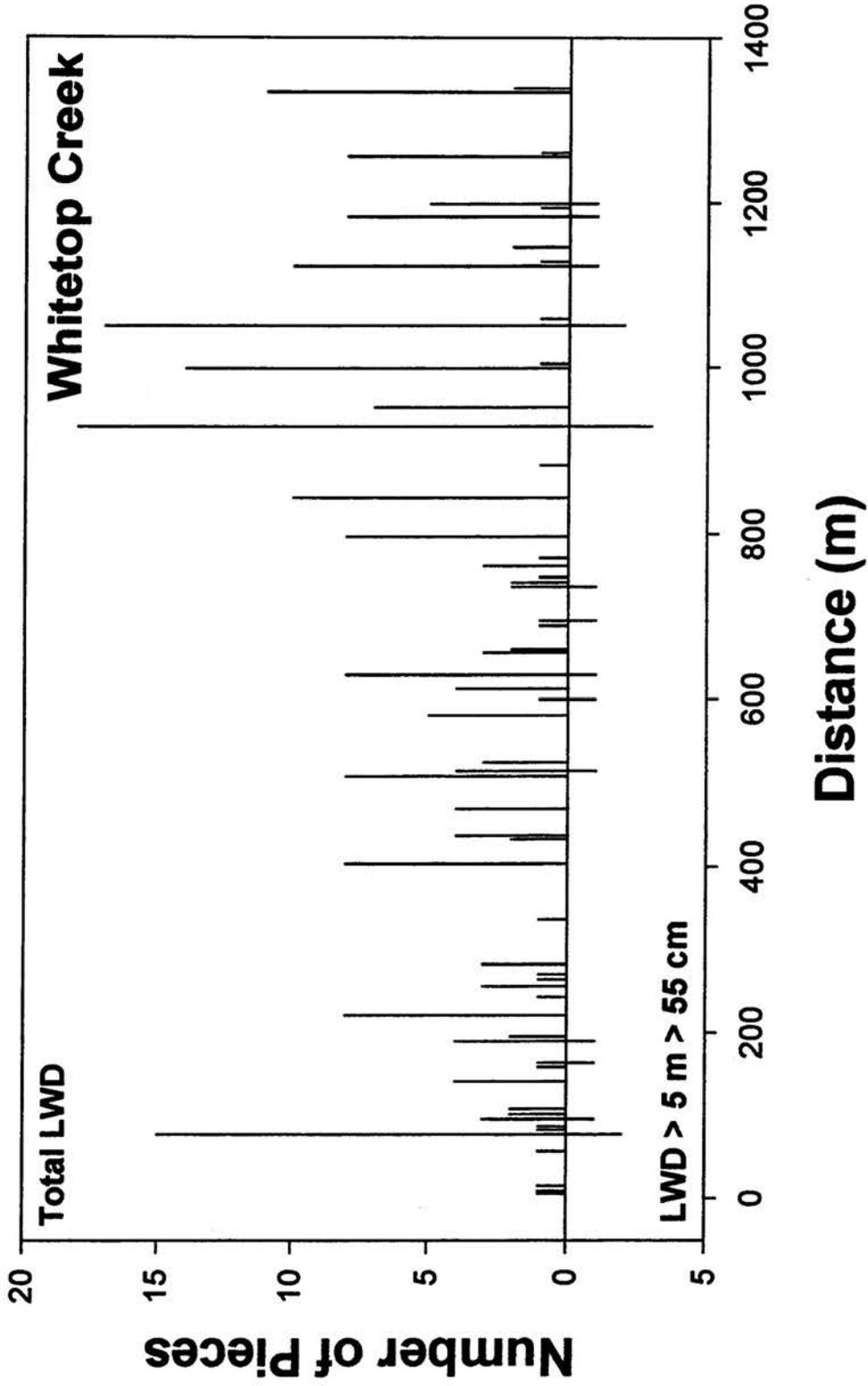


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

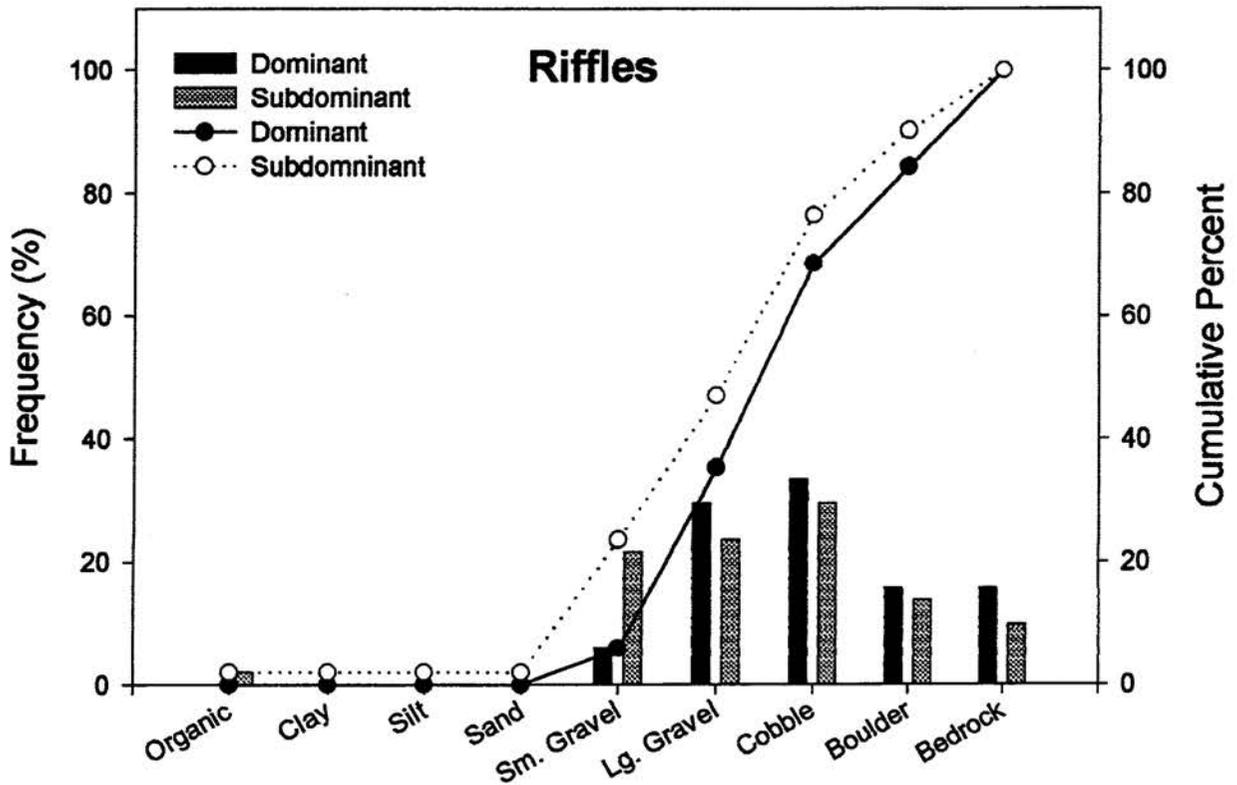
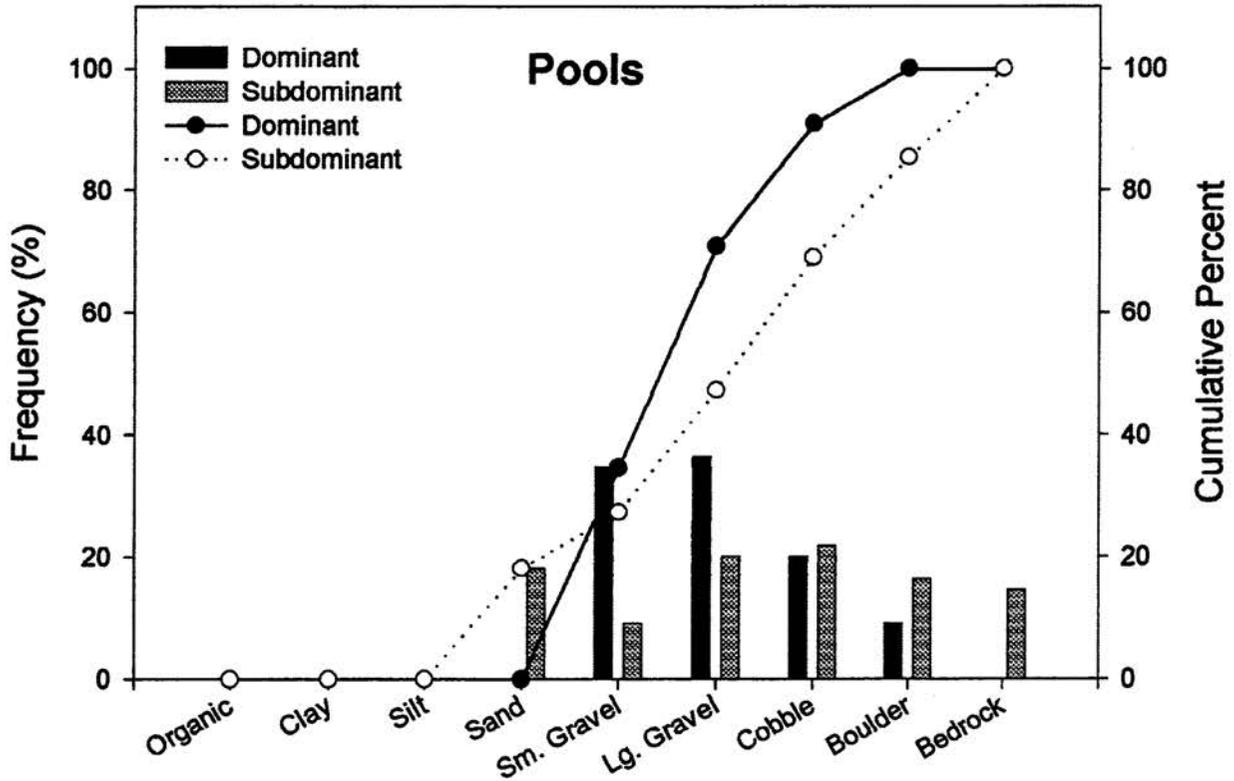
Whitetop Creek

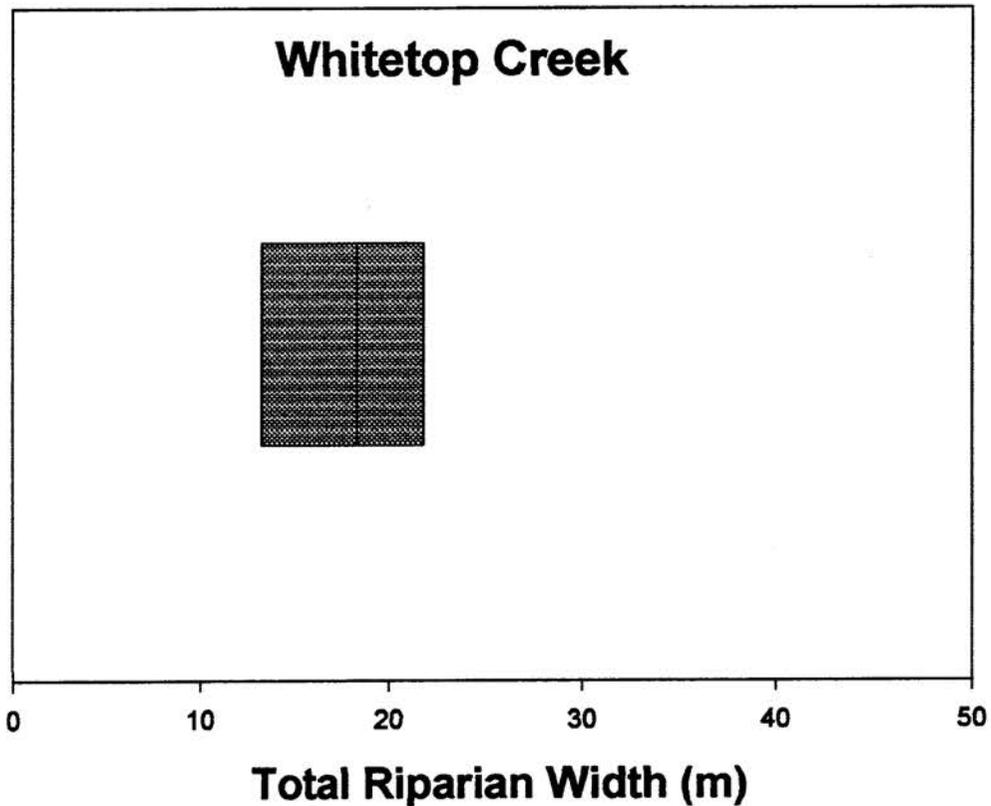


Distribution and Abundance of Large Woody Debris



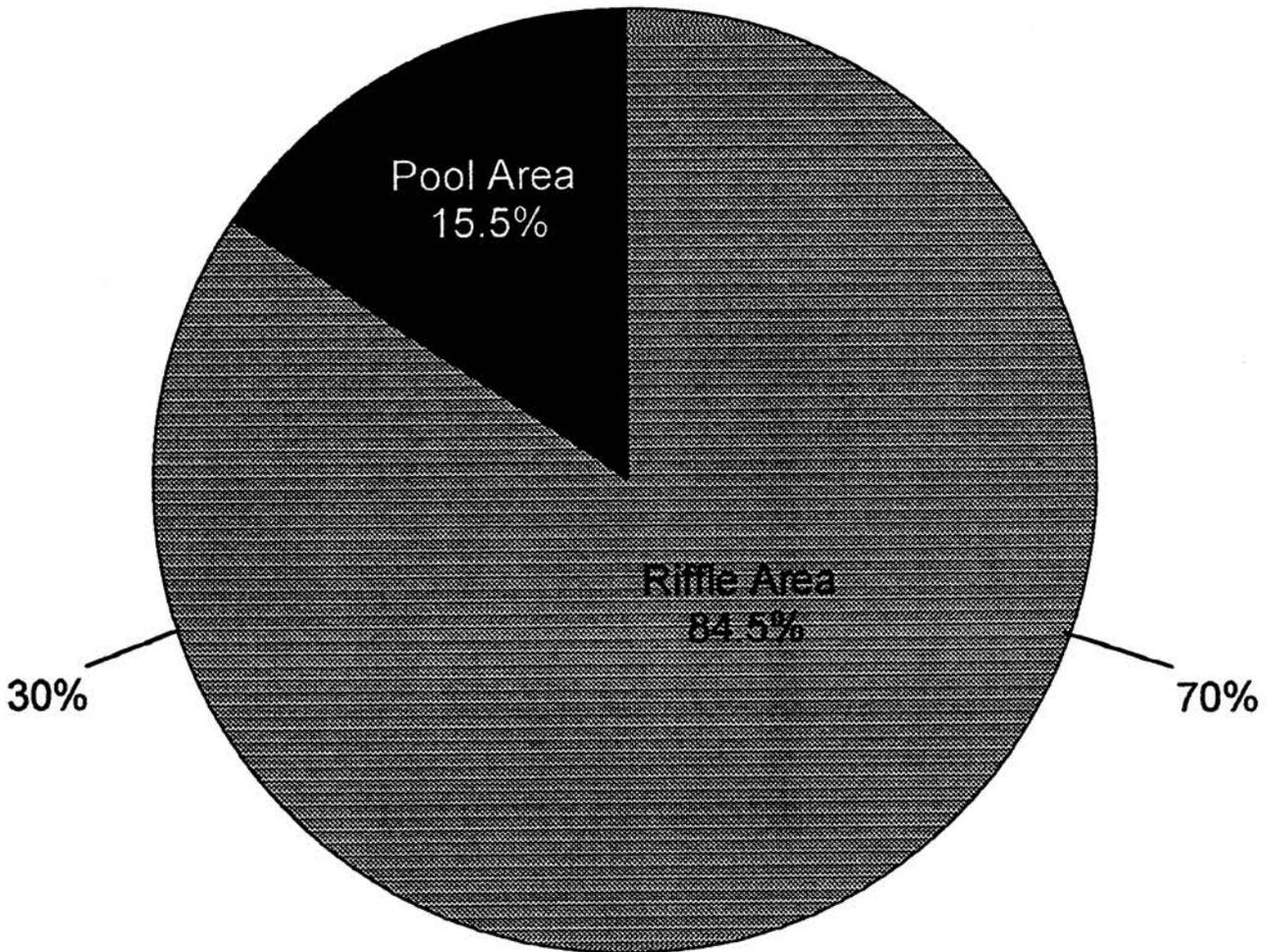
Whitetop Creek Substrate Composition



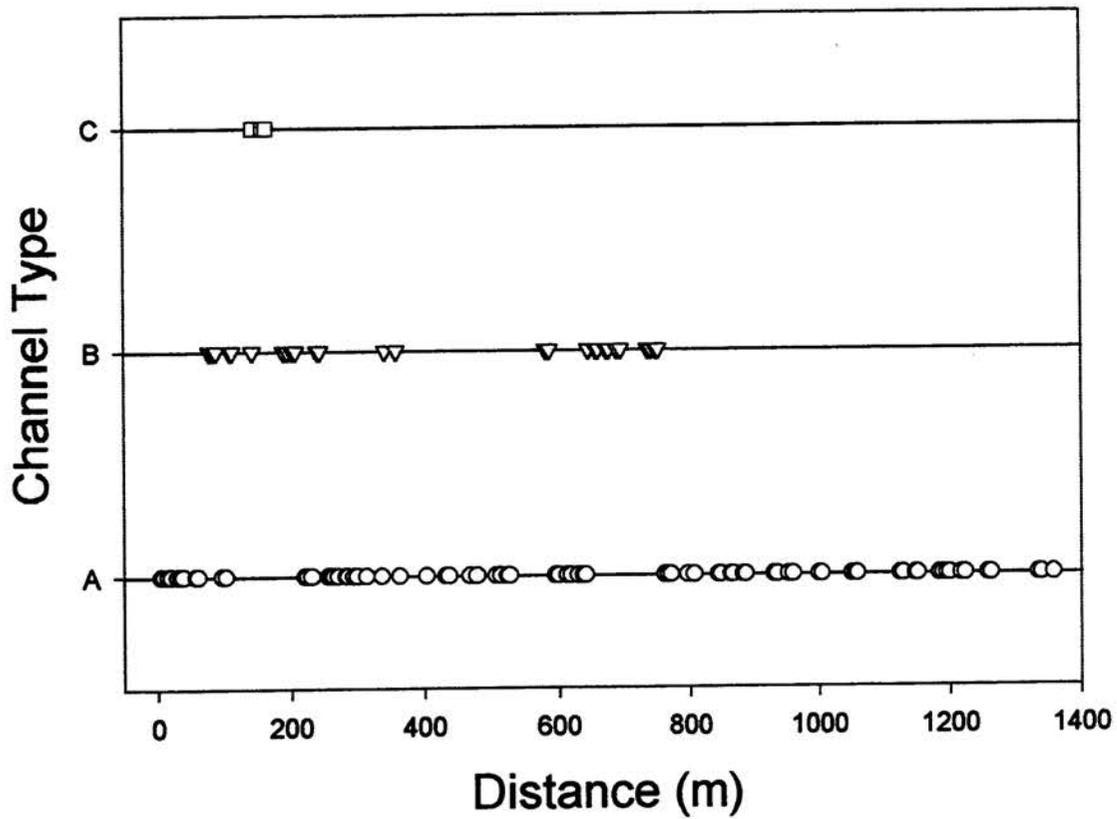
Riparian Width**Stream: Whitetop Creek****Number of Measurements: 3****Mean Width: 17.6m Std Dev: 5.7****Max: 22.9m Min: 11.5m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Whitetop Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Whitetop Creek Rosgen's Channel Type Distribution



Troutdale Quadrangle

Stream: Dickey's Creek

District: Mount Rogers National Recreation Area

Quadrangle: Atkins/Troutdale

Sample Date: 07/09/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 3.4 kilometers

Percent of Total Area - Pools: 54.5%

Number of Pools: 161

Number of Pools per kilometer: 47.4

Total Pool Area: 6173.9 sq. meters \pm 561.3

Mean Pool Area: 38.3 sq. meters

Correction Factor: 1.09

Mean Maximum Depth: 36.7 cm

Mean Average Depth: 23.6 cm

Mean Average Residual Pool Depth: 17.8 cm

Percent of Total Area - Riffles: 45.5%

Number of Riffles: 78

Number of Riffles per kilometer: 22.9

Total Riffle Area: 5164.4 sq. meters \pm 733.8

Mean Riffle Area: 66.2 sq. meters

Correction Factor: 1.04

Mean Maximum Depth: 19.6 cm

Mean Average Depth: 9.9 cm

Number of Large Woody Debris Pieces per kilometer: 69.5

Wood < 5 m and < 55 cm: 42.6

Wood < 5 m and > 55 cm: 0.9

Wood > 5 m and < 55 cm: 21.9

Wood > 5 m and > 55 cm: 4.1

Mean Channel Width: 7.4 m

Mean Riparian Width: 47.6 m

Mean Maximum Riparian Distance (either side): 34.2 m

Mean Minimum Riparian Distance (either side): 6.0 m

Maximum Riparian Width (Total): 55.7 m

Minimum Riparian Width (Total): 34.8 m

Dickey's Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 28.8%

Rosgen's Channel Type Frequency:

Channel Type A: 5.2%

Channel Type B: 67.6%

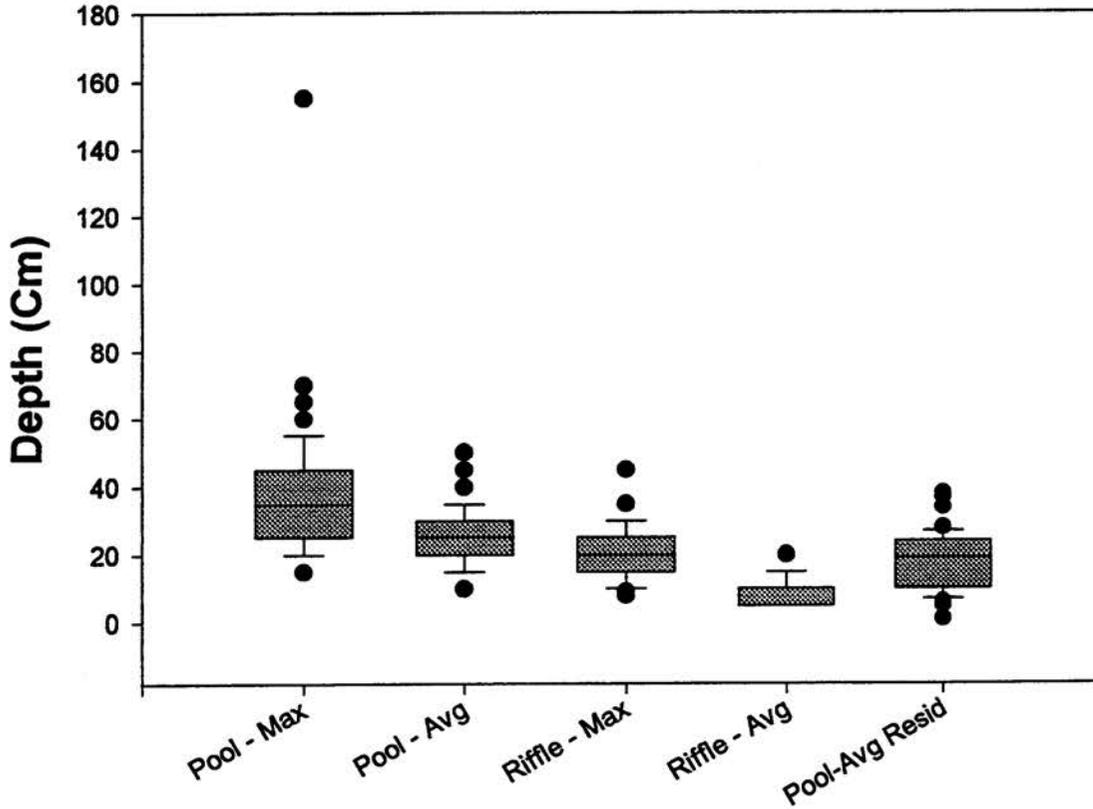
Channel Type C: 27.2%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 20.5%

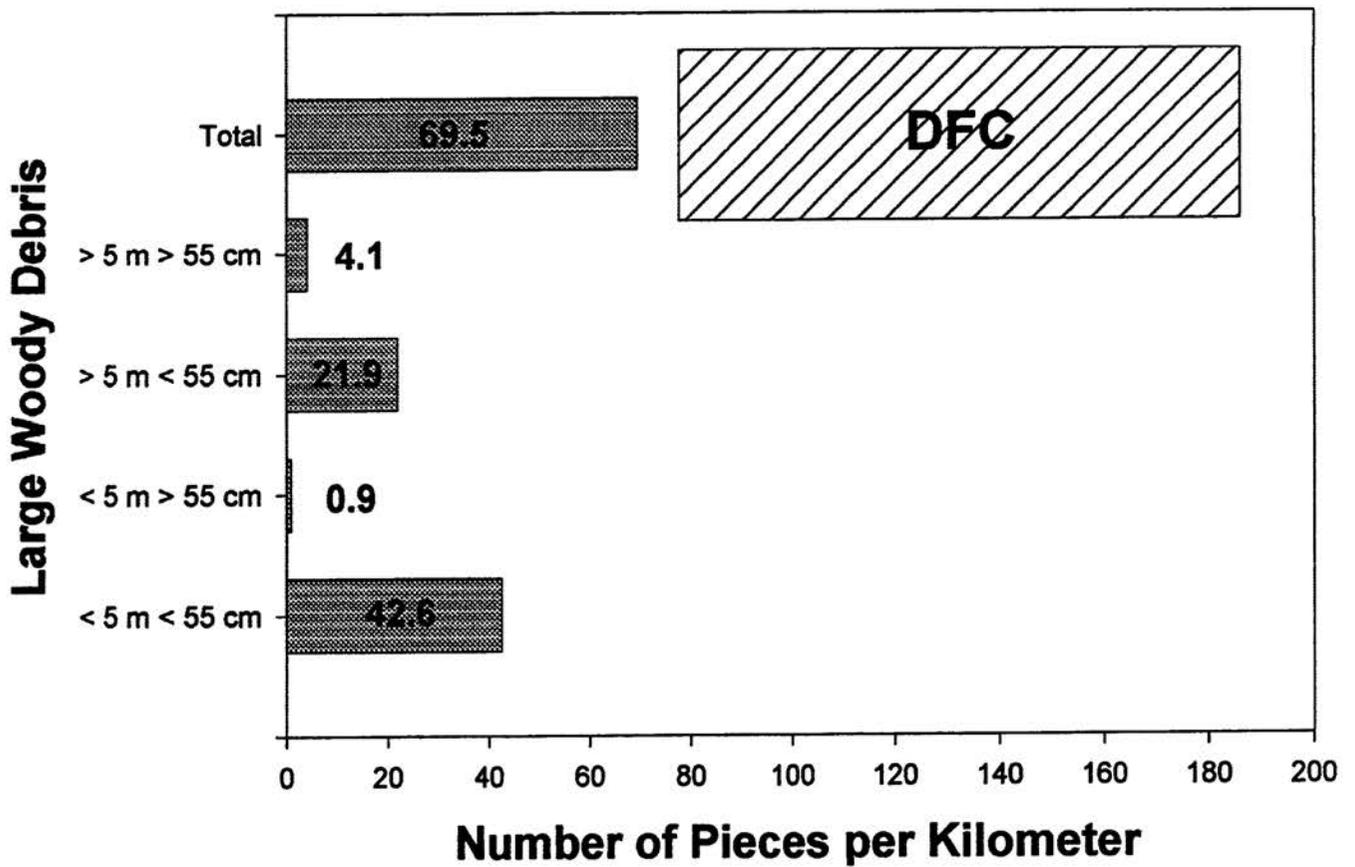
Average Channel Gradient: 4.0

Dickey's Creek

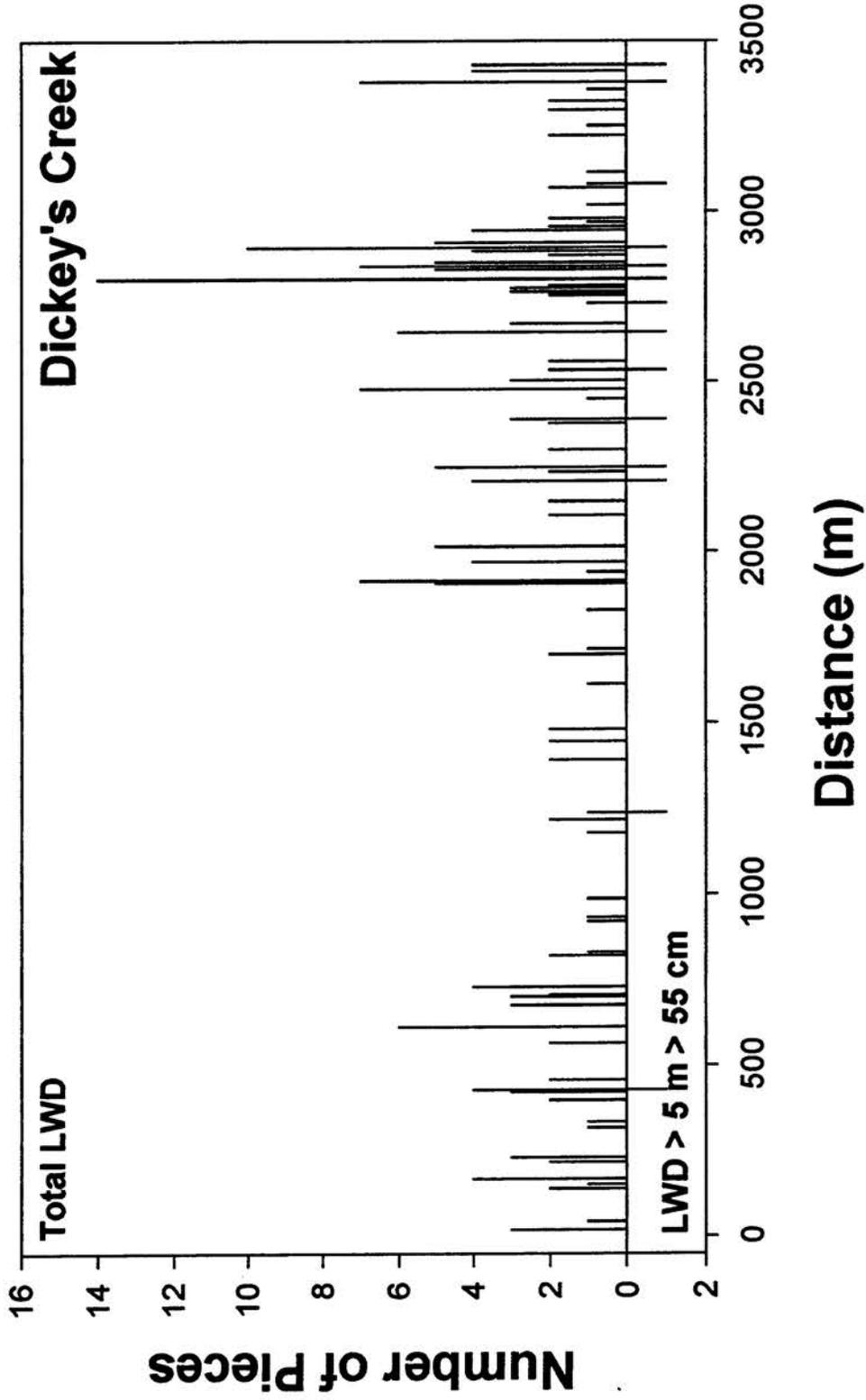


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

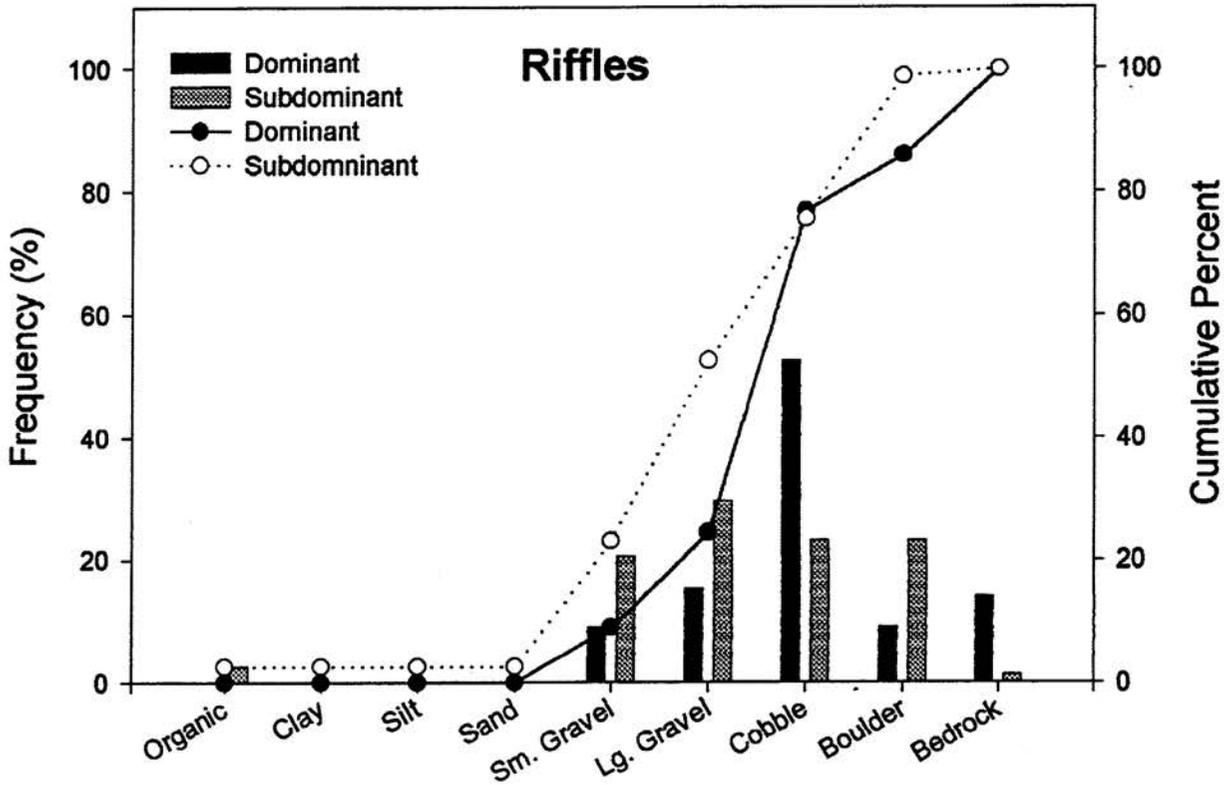
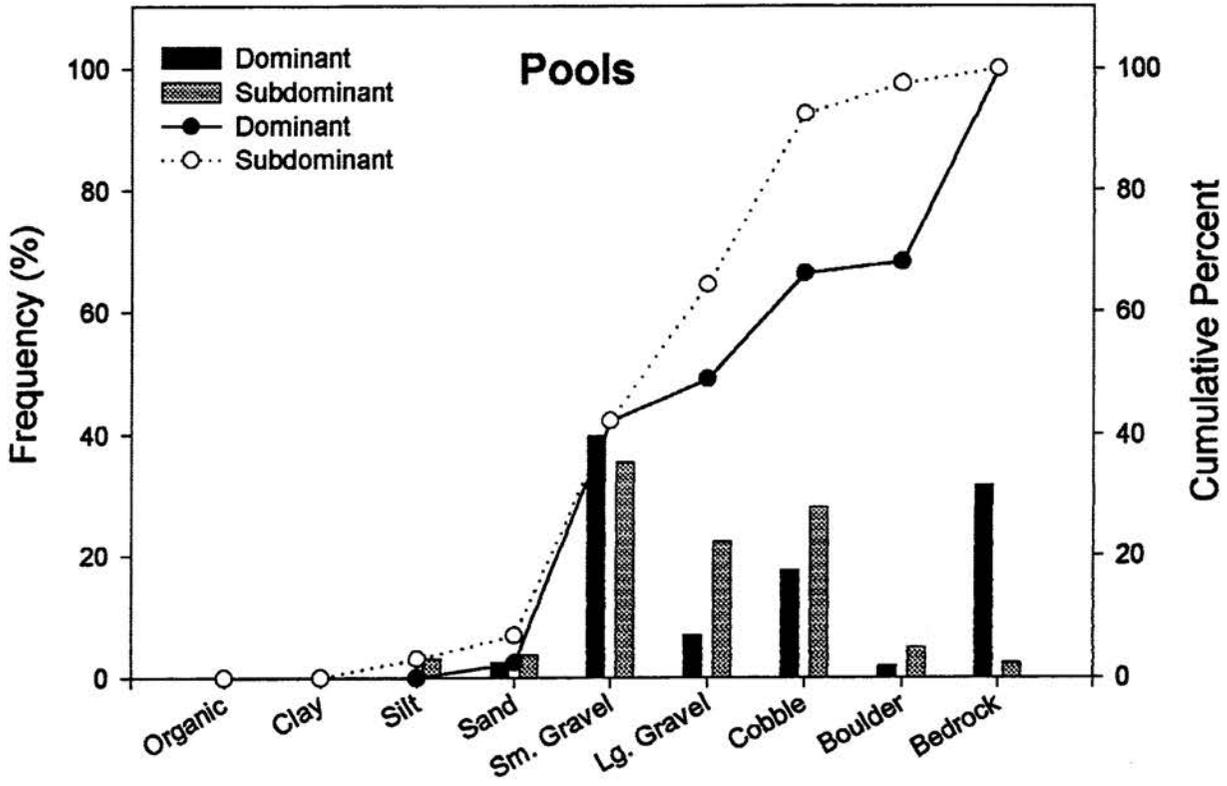
Dickey's Creek

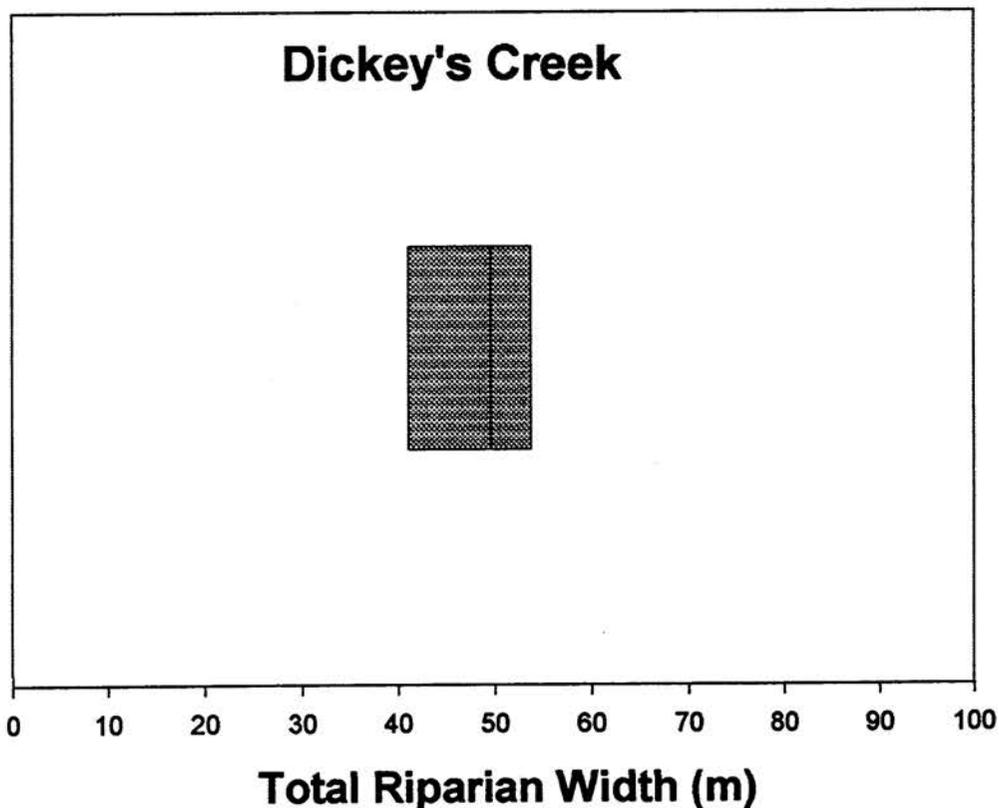


Distribution and Abundance of Large Woody Debris



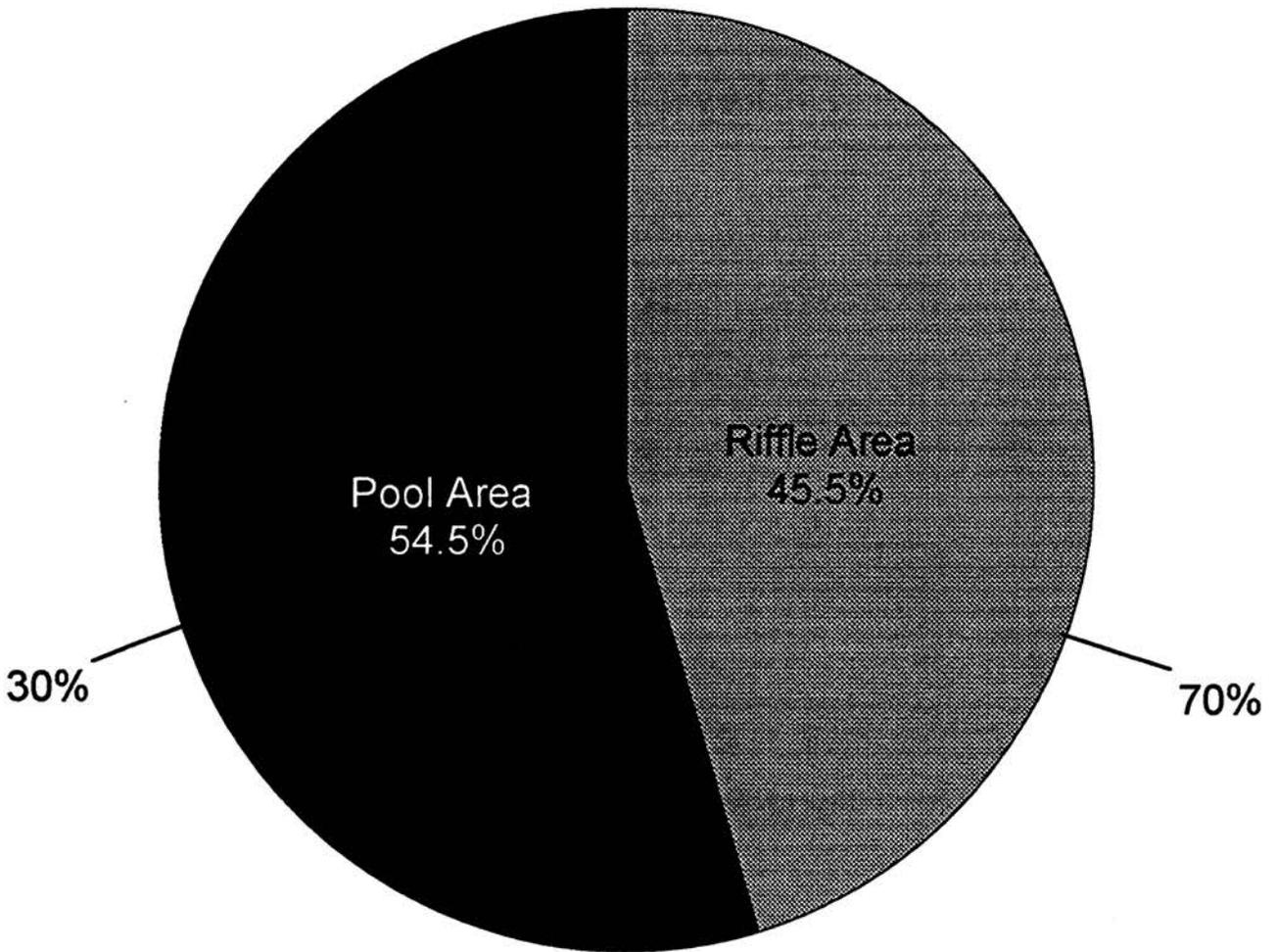
Dickey's Creek Substrate Composition



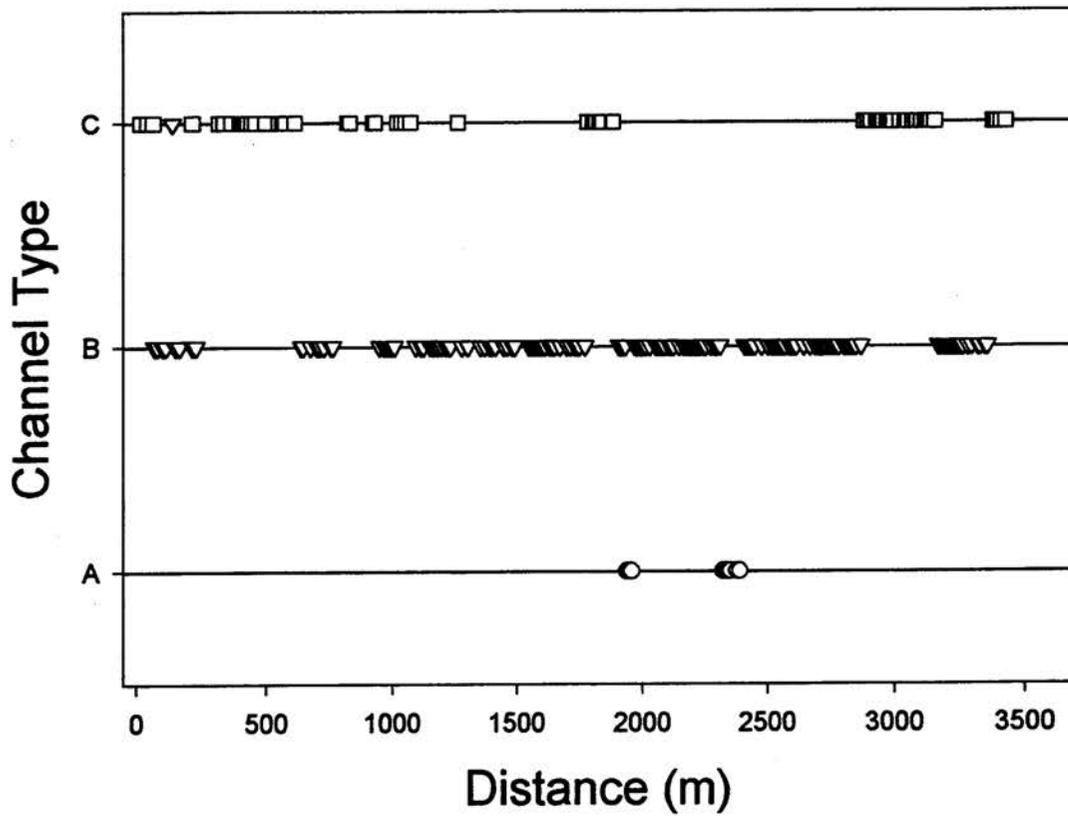
Riparian Width**Stream: Dickey's Creek****Number of Measurements: 4****Mean Width: 47.5m Std Dev: 9.1****Max: 55.7m Min: 34.8m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Dickey's Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Dickey's Creek Rosgen's Channel Type Distribution



Stream: Houndshell Branch

District: Mount Rogers National Recreation Area

Quadrangle: Atkins/Troutdale/Middle Fox Cr.

Sample Date: 07/15/98

Downstream Starting Point: Confluence with Cressy Creek

Total Distance Surveyed: 2.3 kilometers

Percent of Total Area - Pools: 33.2%

Number of Pools: 144

Number of Pools per kilometer: 62.6

Total Pool Area: 1175.2 sq. meters \pm 79.1

Mean Pool Area: 8.2 sq. meters

Correction Factor: 1.04

Mean Maximum Depth: 34.4 cm

Mean Average Depth: 24.9 cm

Mean Average Residual Pool Depth: 18.3 cm

Percent of Total Area - Riffles: 66.8%

Number of Riffles: 122

Number of Riffles per kilometer: 53.0

Total Riffle Area: 3389.7 sq. meters \pm 248.3

Mean Riffle Area: 27.8 sq. meters

Correction Factor: 1.08

Mean Maximum Depth: 20.3 cm

Mean Average Depth: 11.8 cm

Number of Large Woody Debris Pieces per kilometer: 433.6

Wood < 5 m and < 55 cm: 259.8

Wood < 5 m and > 55 cm: 8.1

Wood > 5 m and < 55 cm: 153.3

Wood > 5 m and > 55 cm: 12.4

Mean Channel Width: 5.3 m

Mean Riparian Width: 14.9 m

Mean Maximum Riparian Distance (either side): 7.9 m

Mean Minimum Riparian Distance (either side): 1.7 m

Maximum Riparian Width (Total): 23.5 m

Minimum Riparian Width (Total): 9.4 m

Houndshell Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 24.3%

Rosgen's Channel Type Frequency:

Channel Type A: 47.3%

Channel Type B: 45.8%

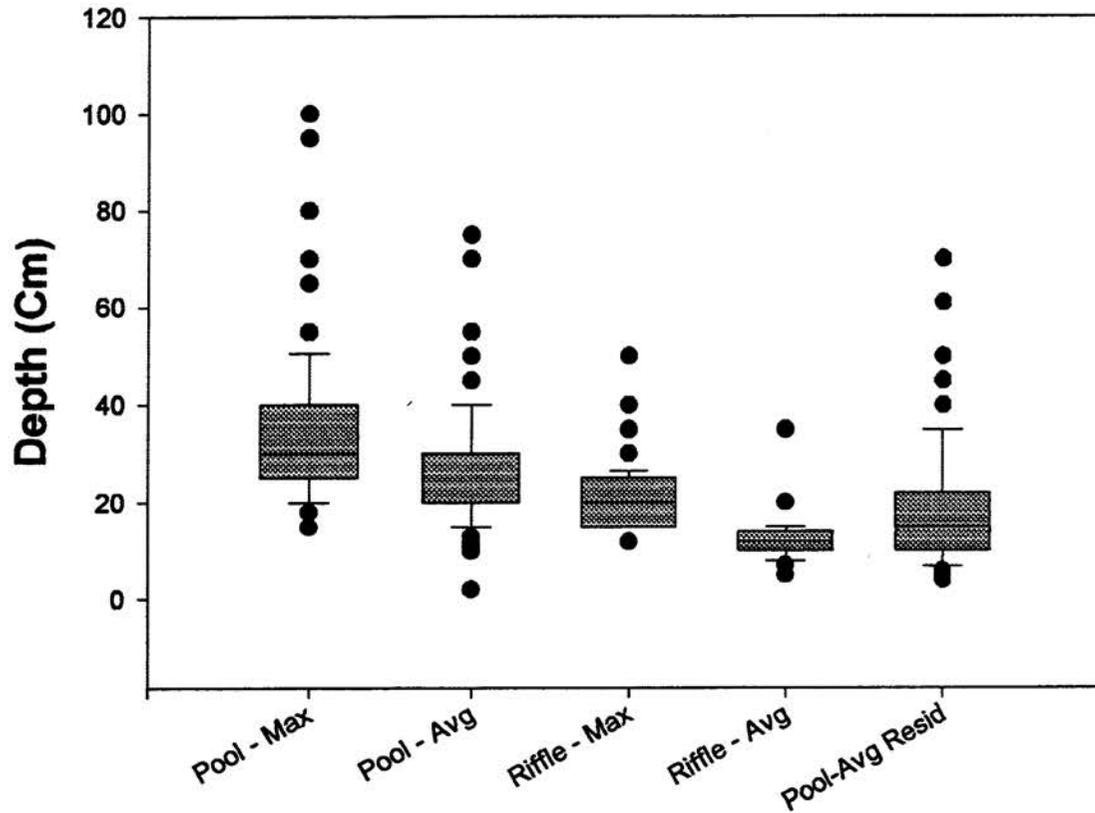
Channel Type C: 6.9%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 84.7%

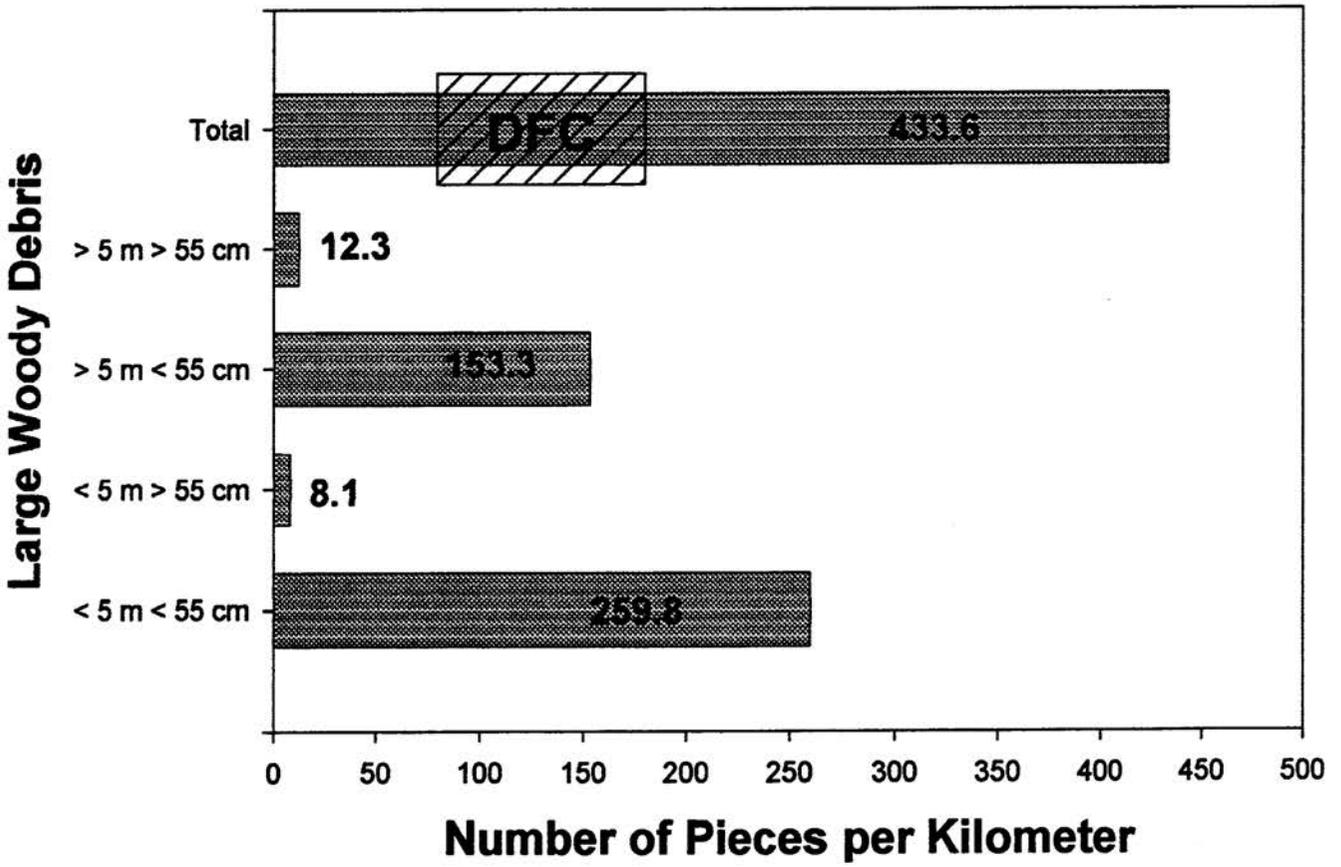
Average Channel Gradient: 9.4

Houndshell Branch

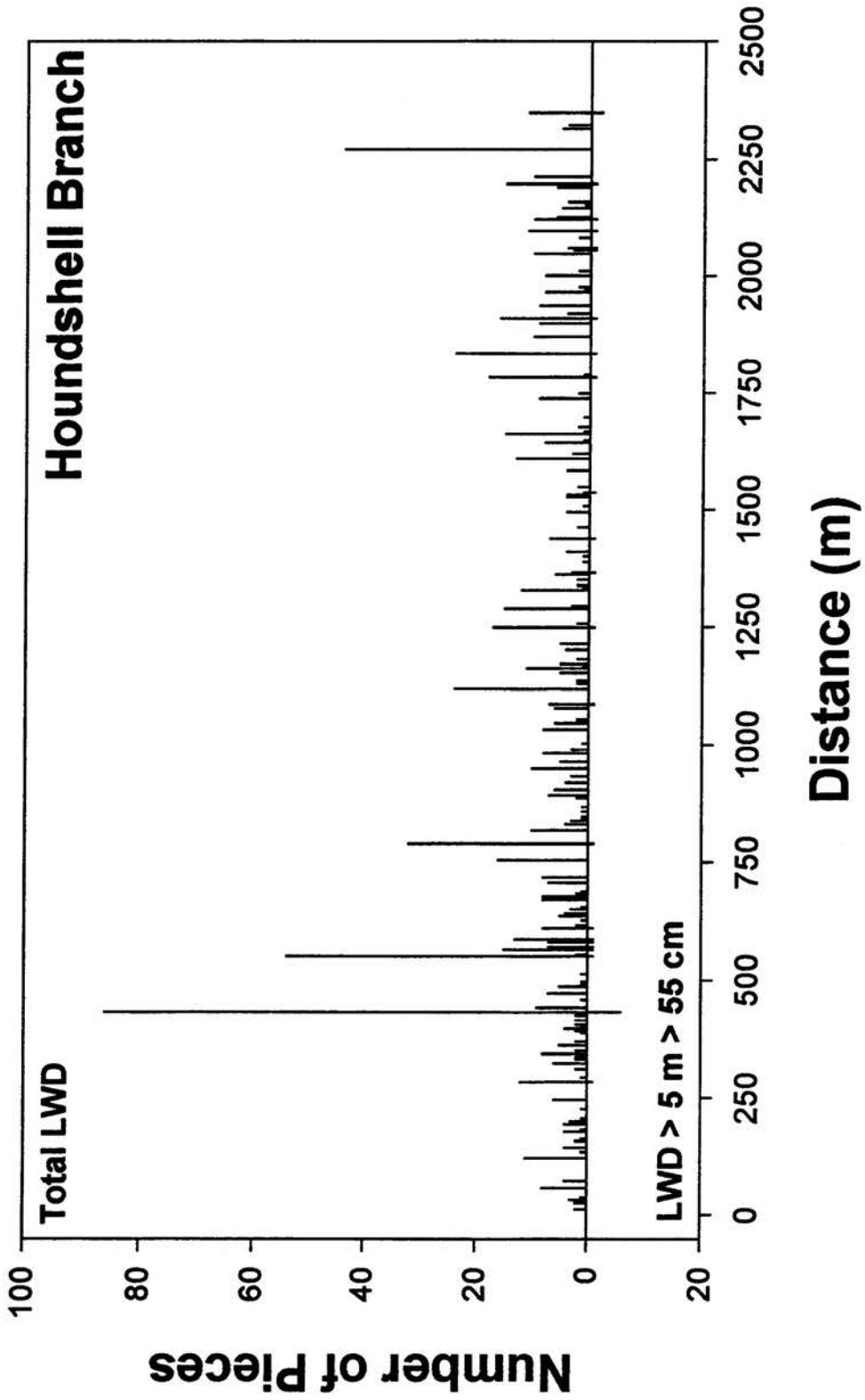


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

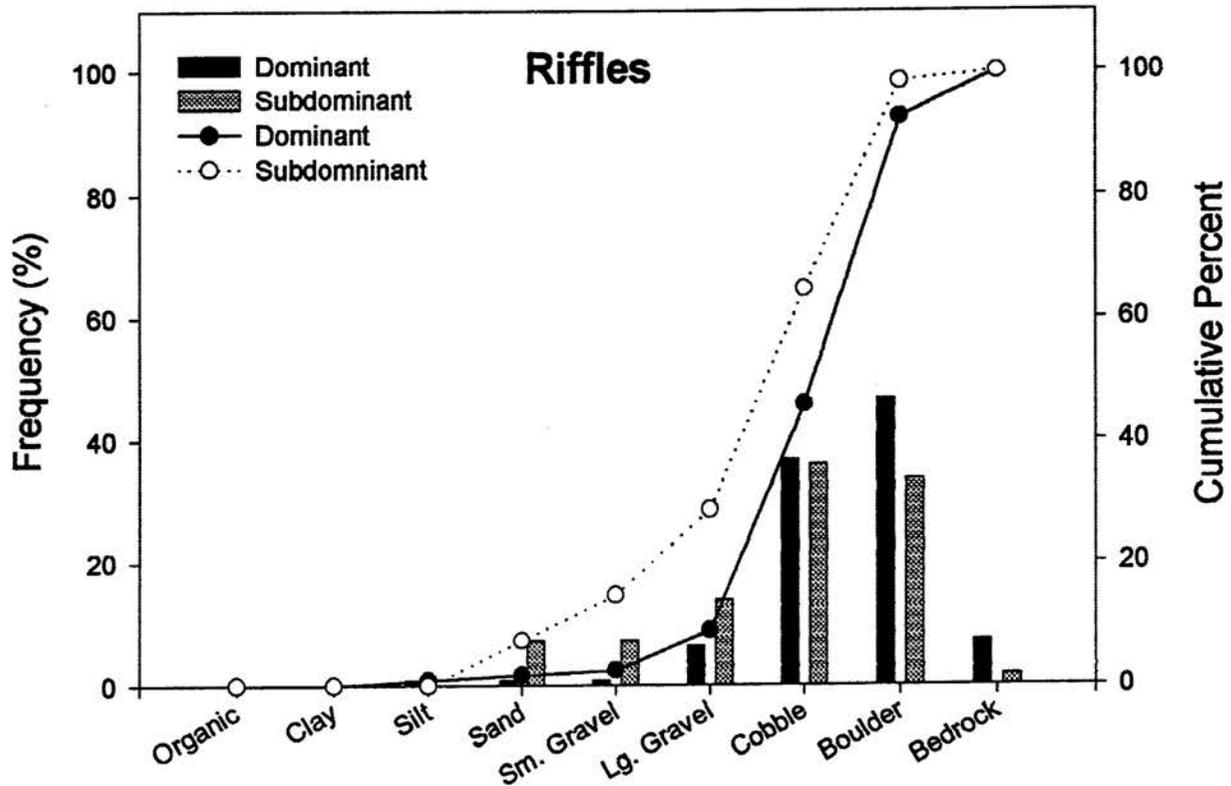
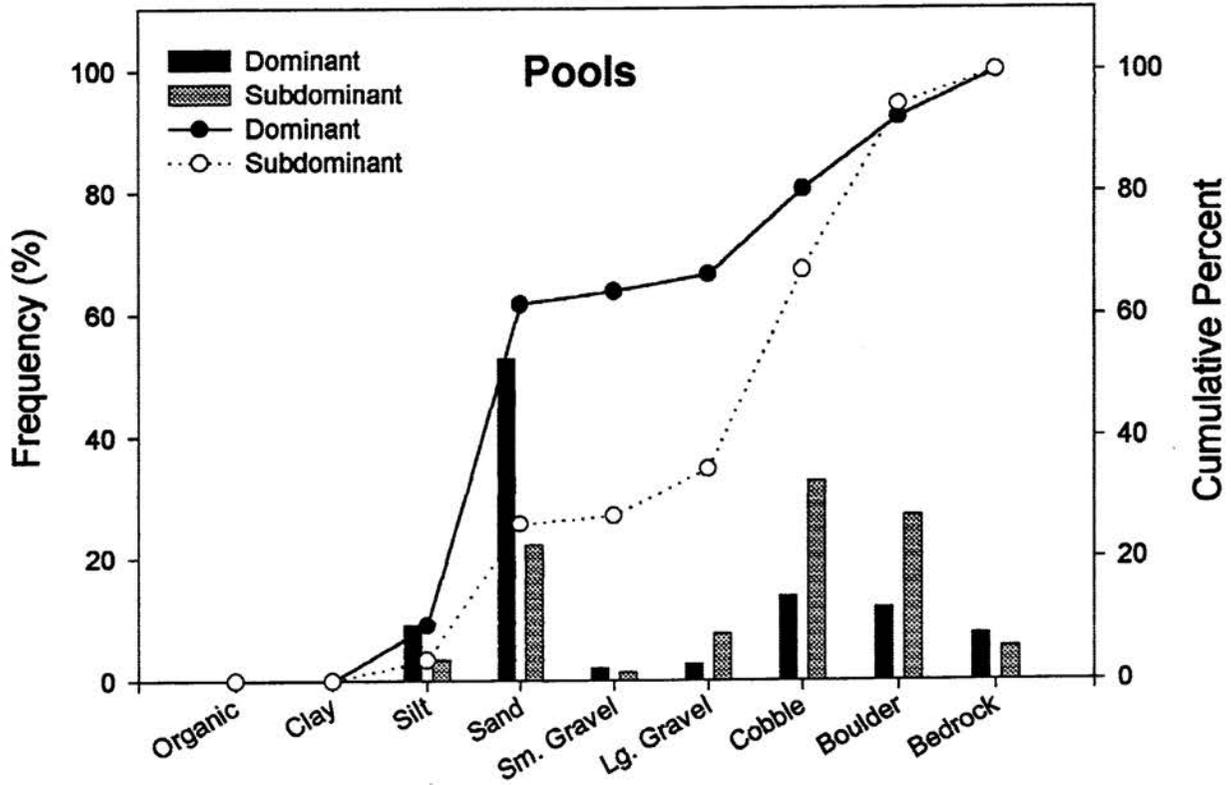
Houndshell Branch

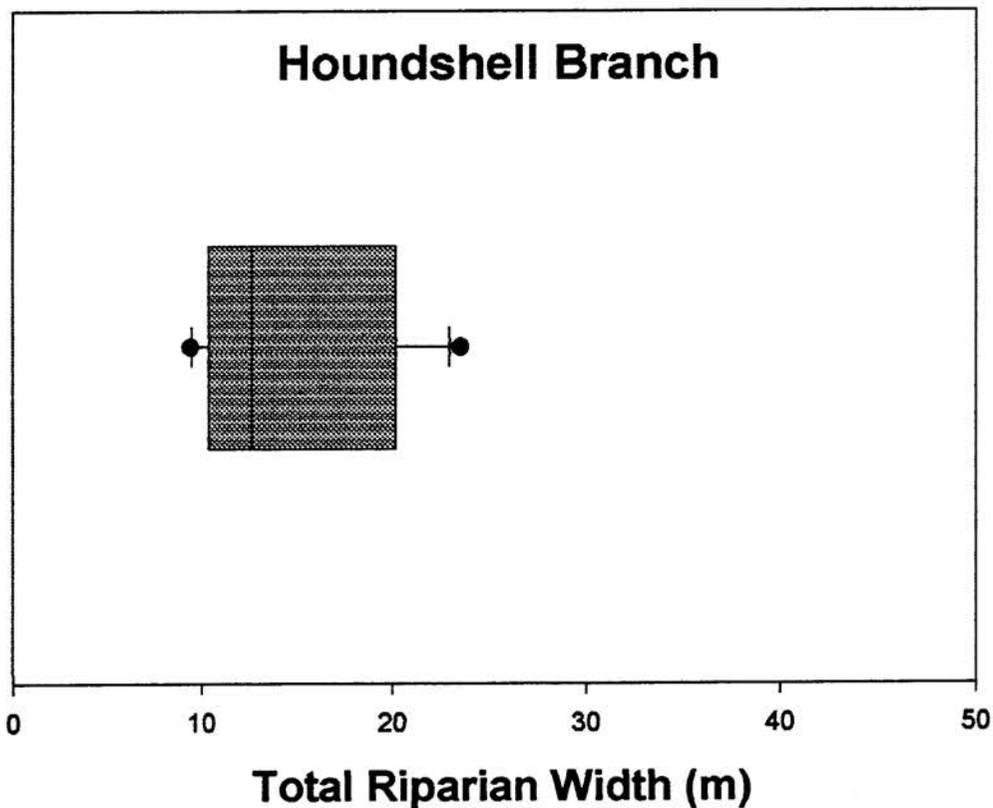


Distribution and Abundance of Large Woody Debris



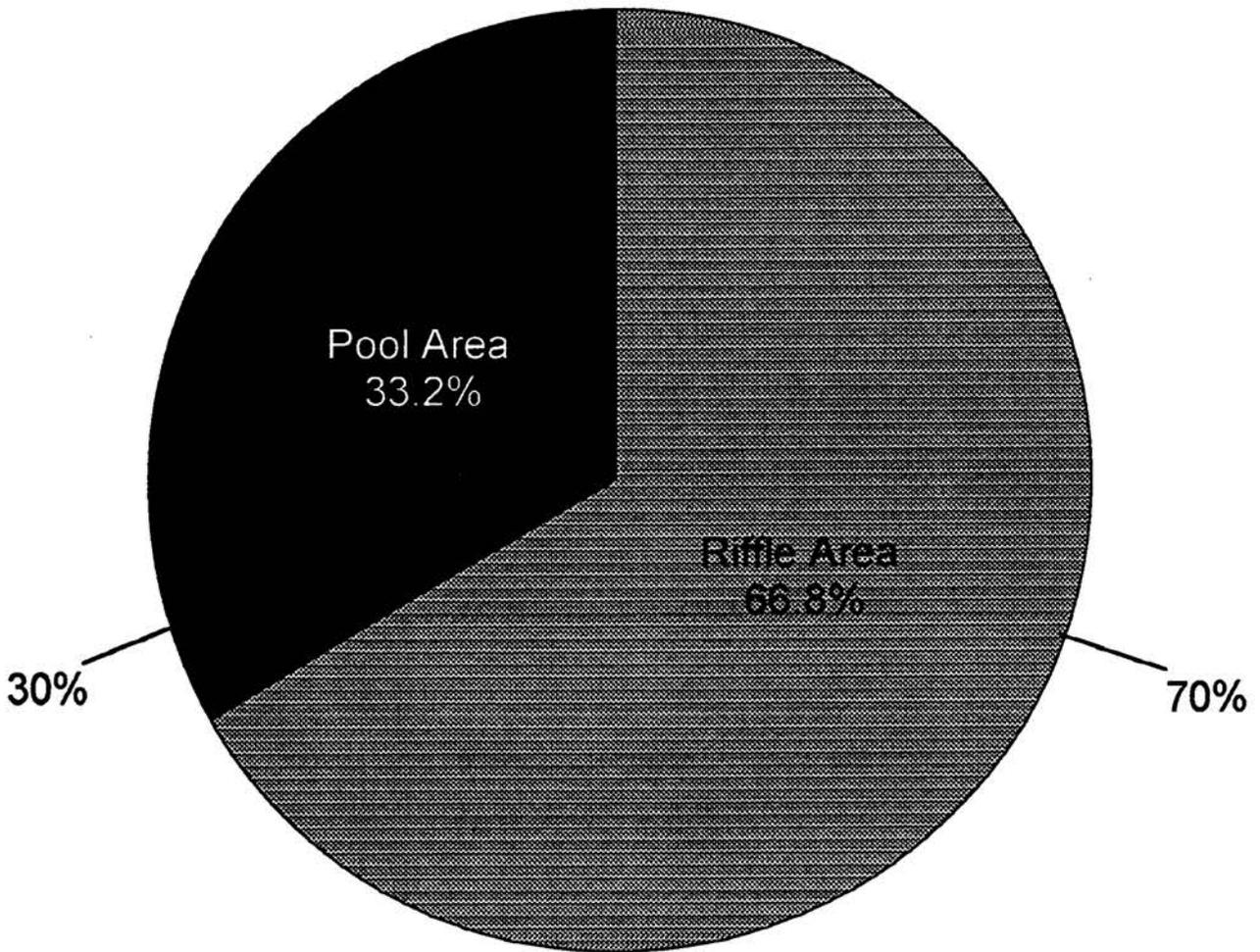
Houndshell Branch Substrate Composition



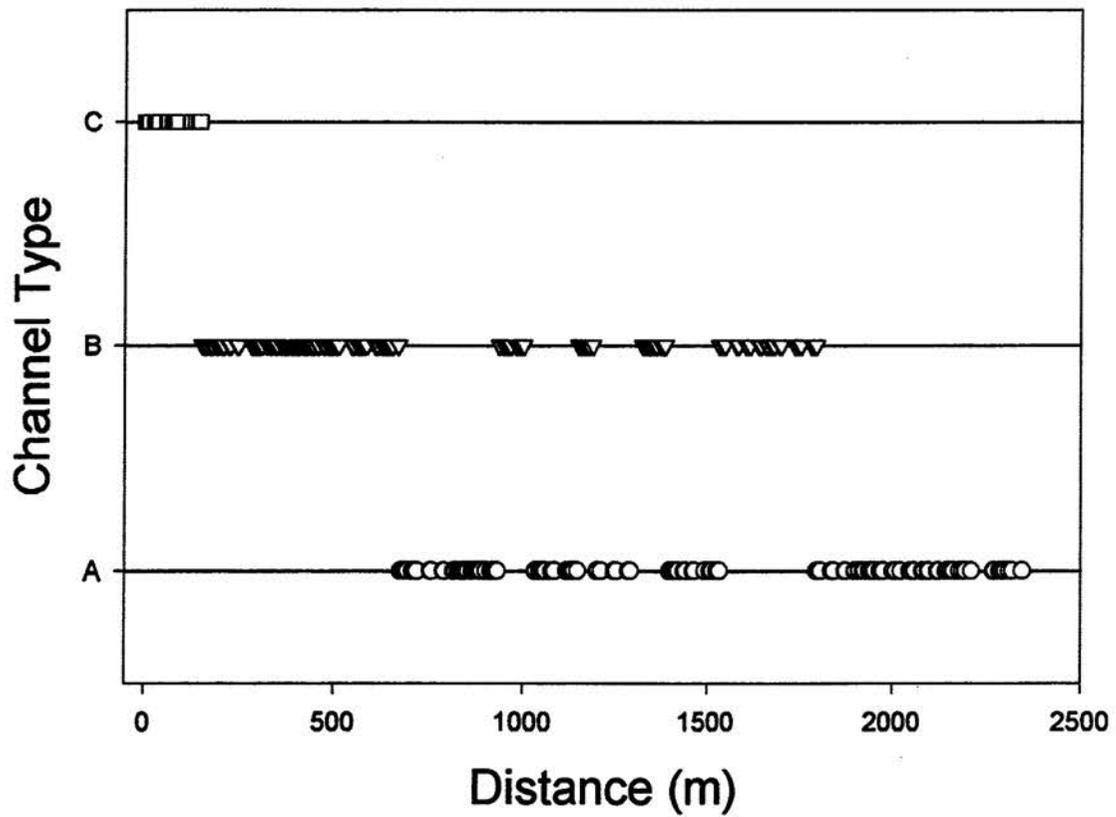
Riparian Width**Stream: Houndshell Branch****Number of Measurements: 8****Mean Width: 14.9m Std Dev: 5.6****Max: 23.5m Min: 9.4m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Houndshell Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Houndshell Branch Rosgen's Channel Type Distribution



Stream: Little Wilson Creek

District: Mount Rogers National Recreation Area

Quadrangle: Troutdale

Sample Date: 07/14/98

Downstream Starting Point: Confluence with Big Wilson Creek

Total Distance Surveyed: 2.5 kilometers

Percent of Total Area - Pools: 40.3%

Number of Pools: 117

Number of Pools per kilometer: 46.8

Total Pool Area: 2465.9 sq. meters \pm 224.1

Mean Pool Area: 21.1 sq. meters

Correction Factor: 1.11

Mean Maximum Depth: 49.5 cm

Mean Average Depth: 33.8 cm

Mean Average Residual Pool Depth: 25.5 cm

Percent of Total Area - Riffles: 59.7%

Number of Riffles: 84

Number of Riffles per kilometer: 33.6

Total Riffle Area: 3649.3 sq. meters \pm 490.1

Mean Riffle Area: 43.4 sq. meters

Correction Factor: 0.95

Mean Maximum Depth: 28.9 cm

Mean Average Depth: 12.8 cm

Number of Large Woody Debris Pieces per kilometer: 77.1

Wood < 5 m and < 55 cm: 56.3

Wood < 5 m and > 55 cm: 9.0

Wood > 5 m and < 55 cm: 5.7

Wood > 5 m and > 55 cm: 6.1

Mean Channel Width: 7.0 m

Mean Riparian Width: 19.2 m

Mean Maximum Riparian Distance (either side): 10.9 m

Mean Minimum Riparian Distance (either side): 1.3 m

Maximum Riparian Width (Total): 42.1 m

Minimum Riparian Width (Total): 9.0 m

Little Wilson Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 3.2%

Rosgen's Channel Type Frequency:

Channel Type A: 65.0%

Channel Type B: 34.0%

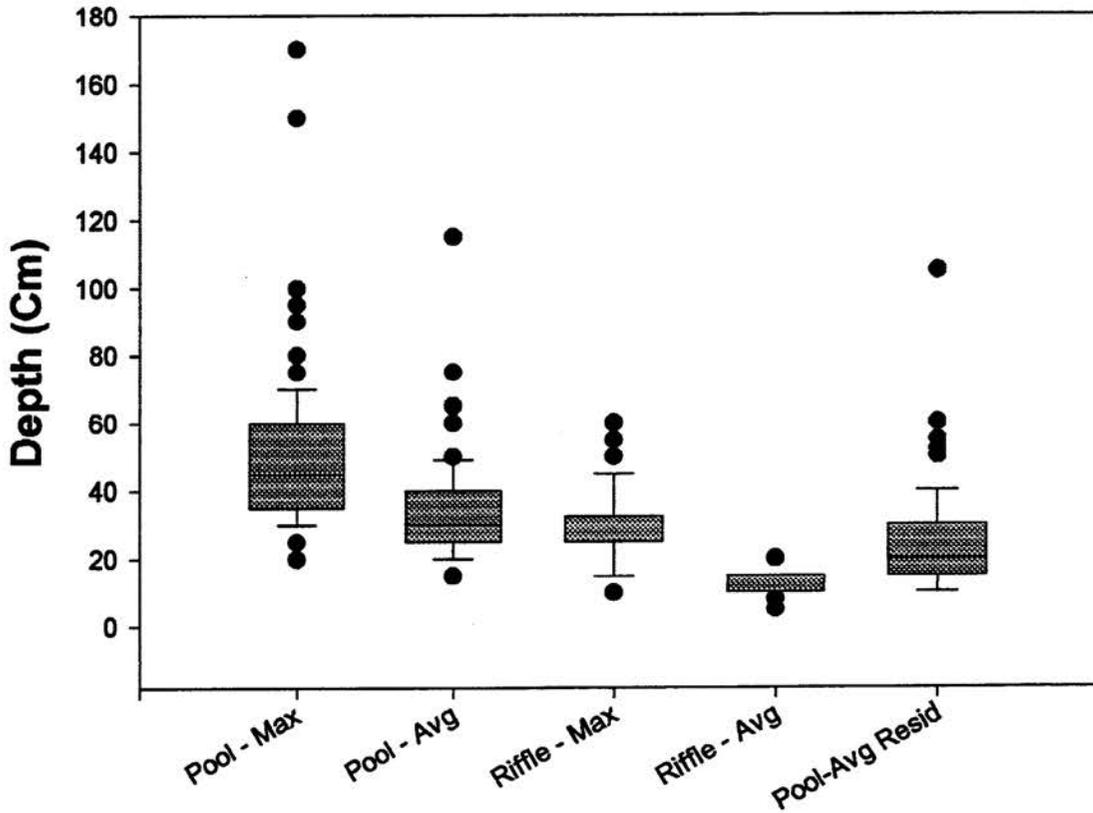
Channel Type C: 1.0%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 41.0%

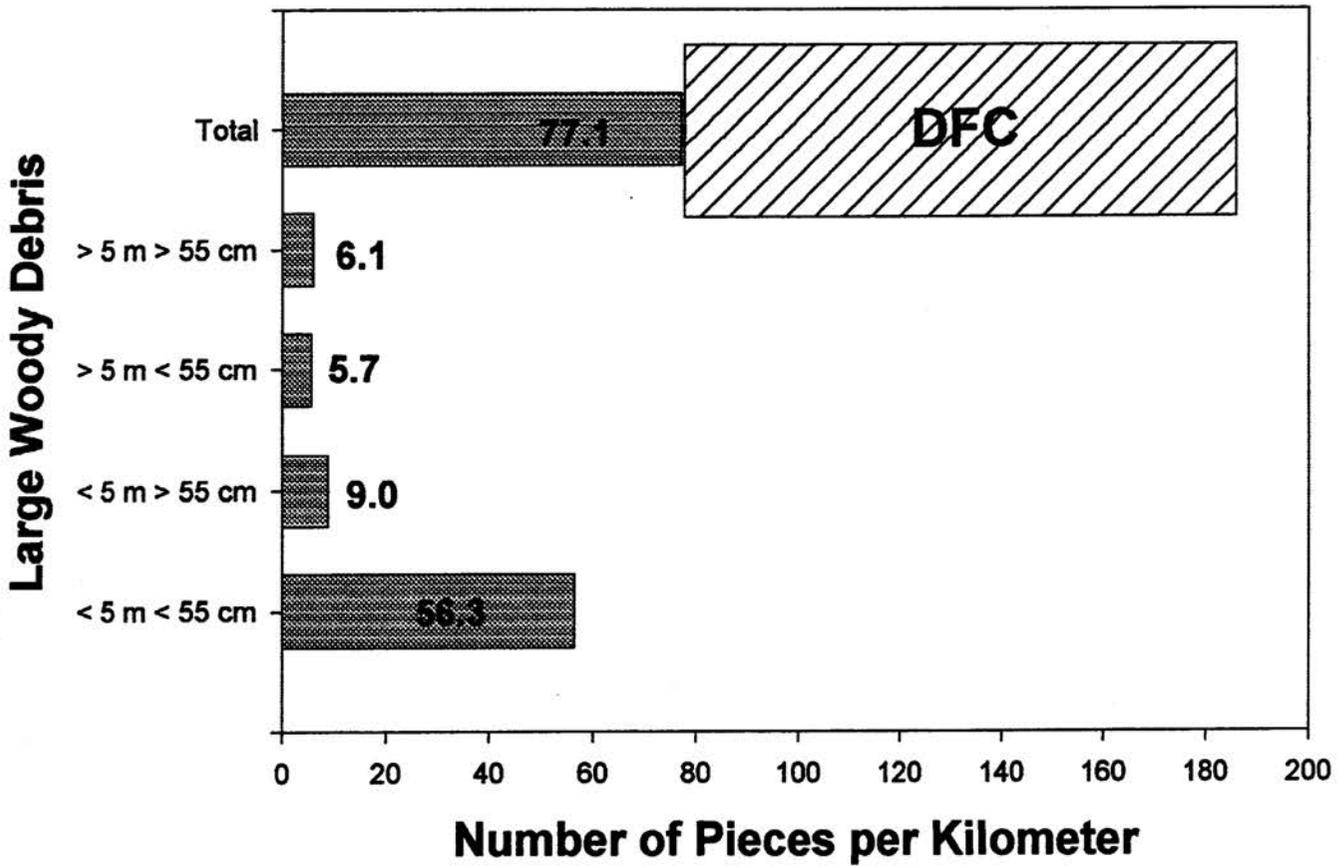
Average Channel Gradient: 13.8

Little Wilson Creek

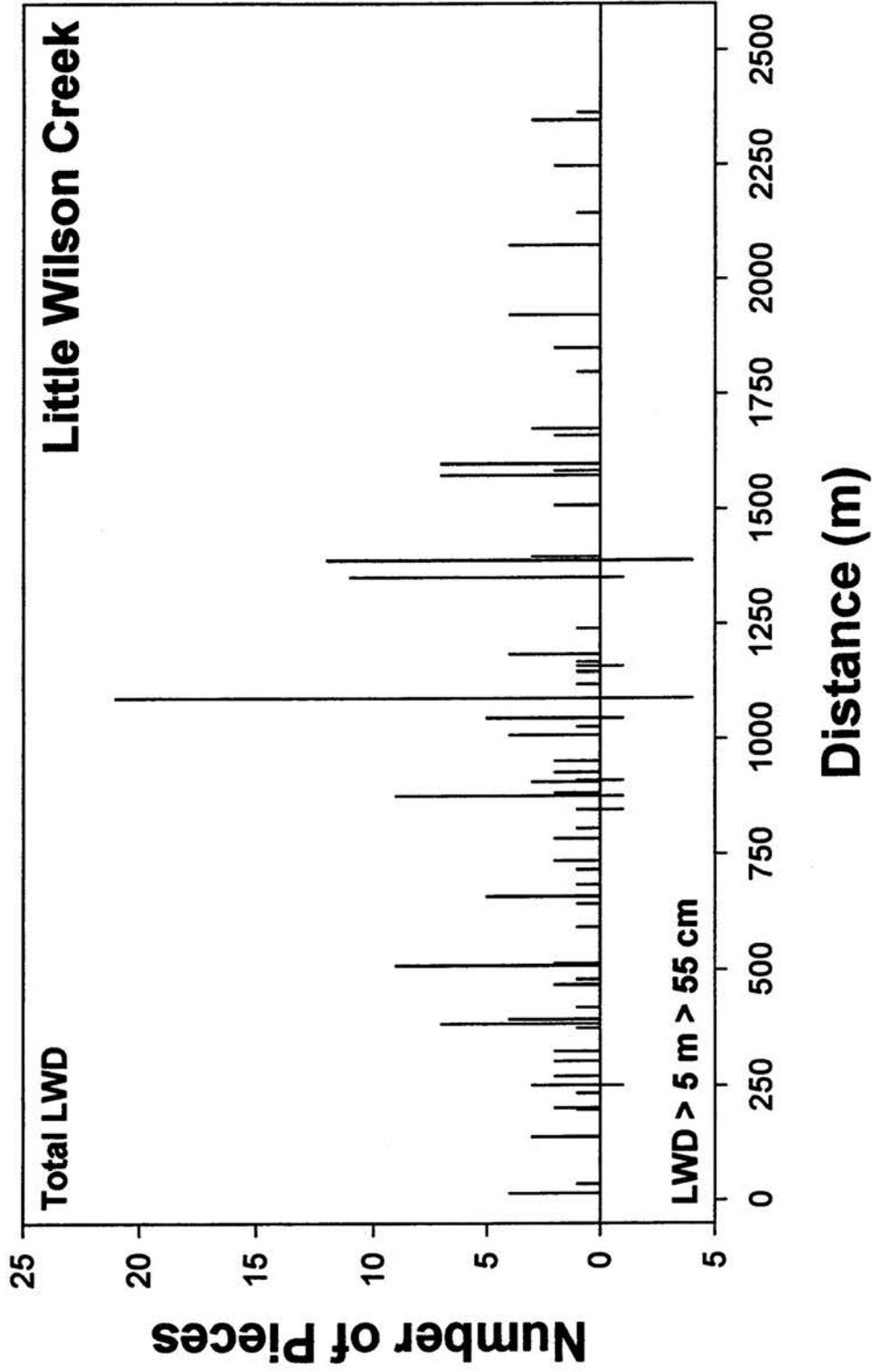


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

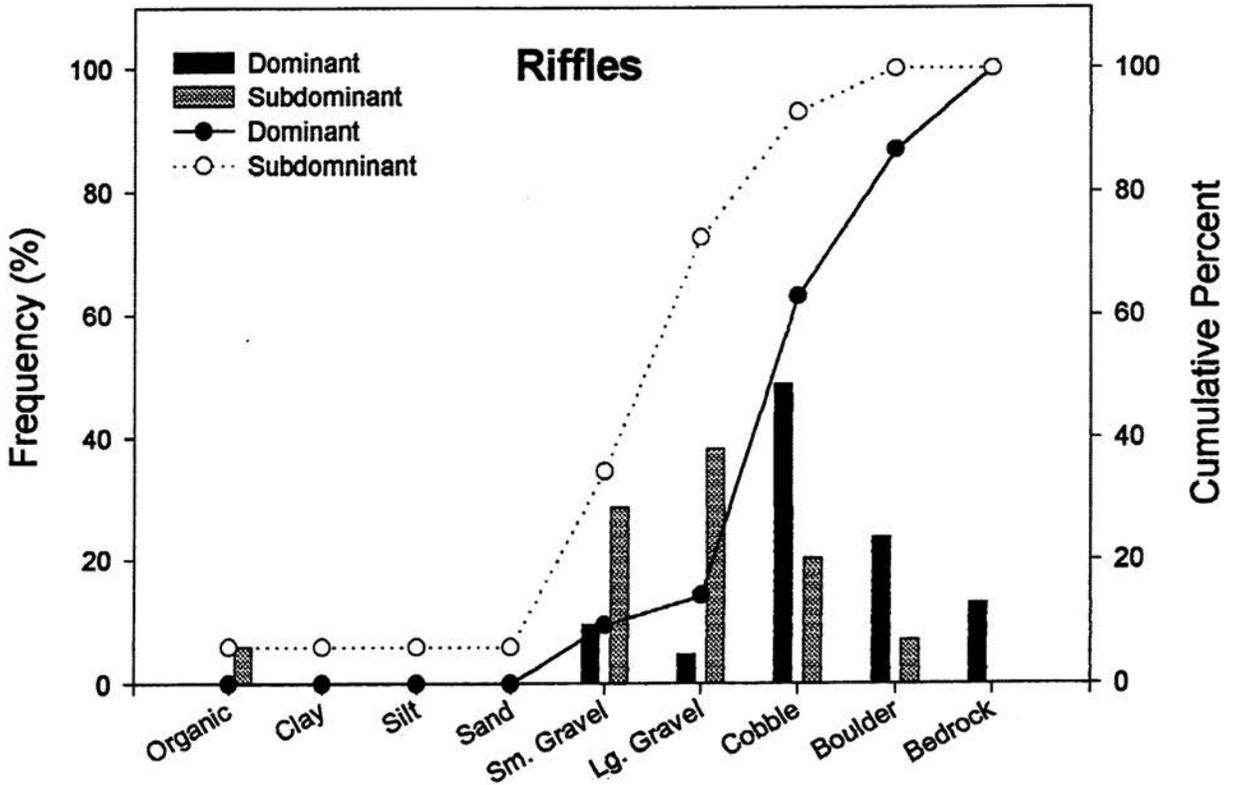
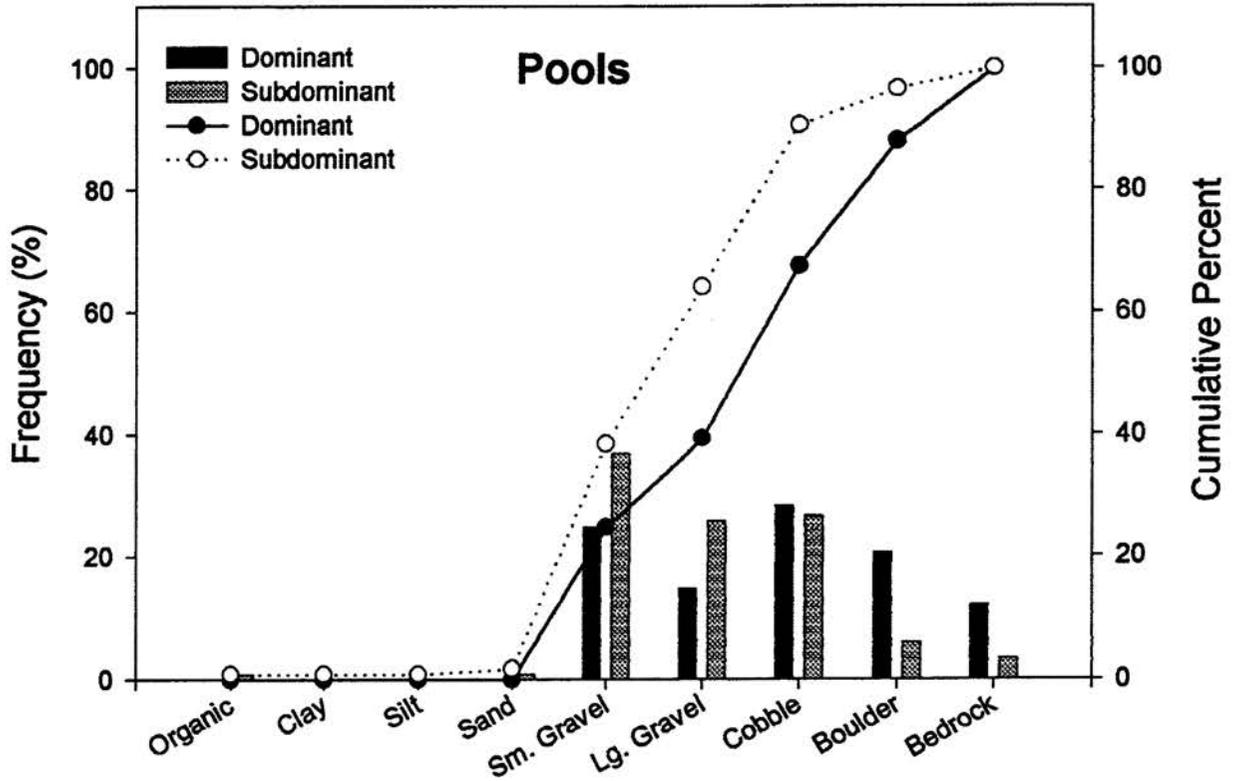
Little Wilson Creek

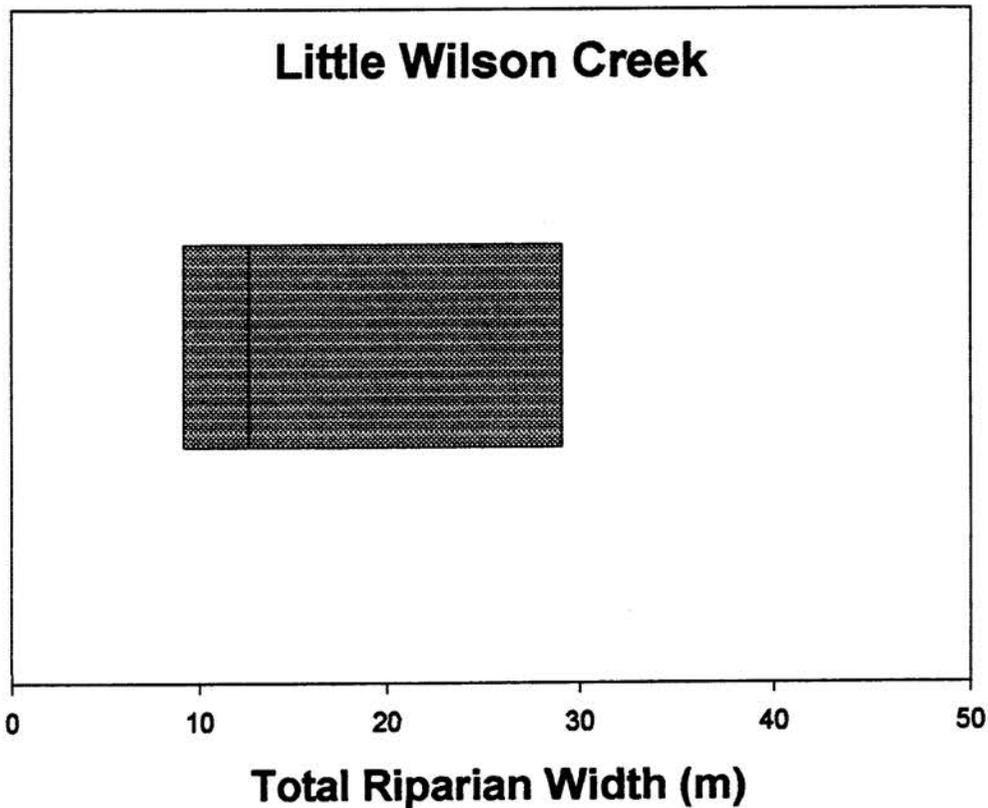


Distribution and Abundance of Large Woody Debris



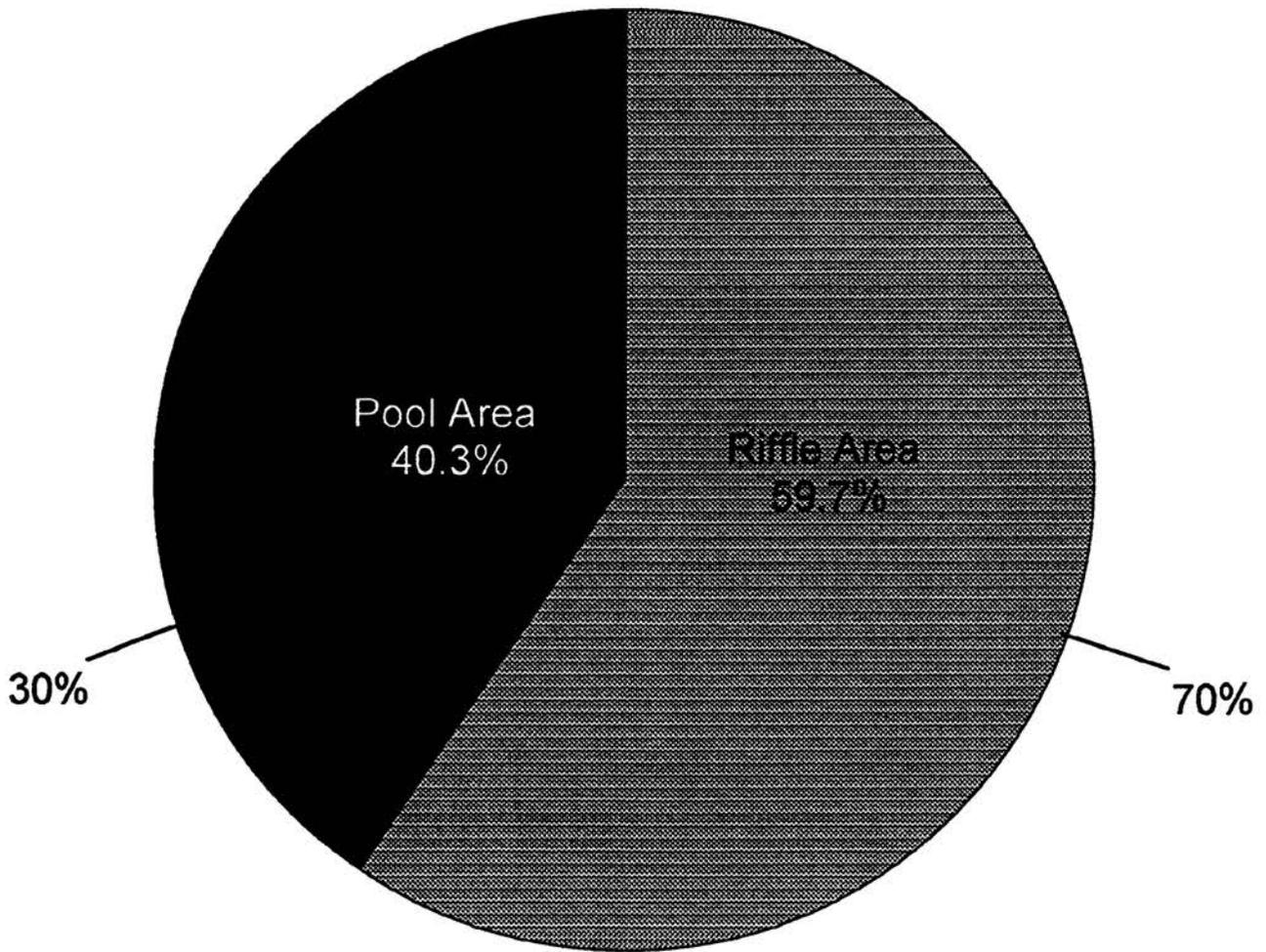
Little Wilson Creek Substrate Composition



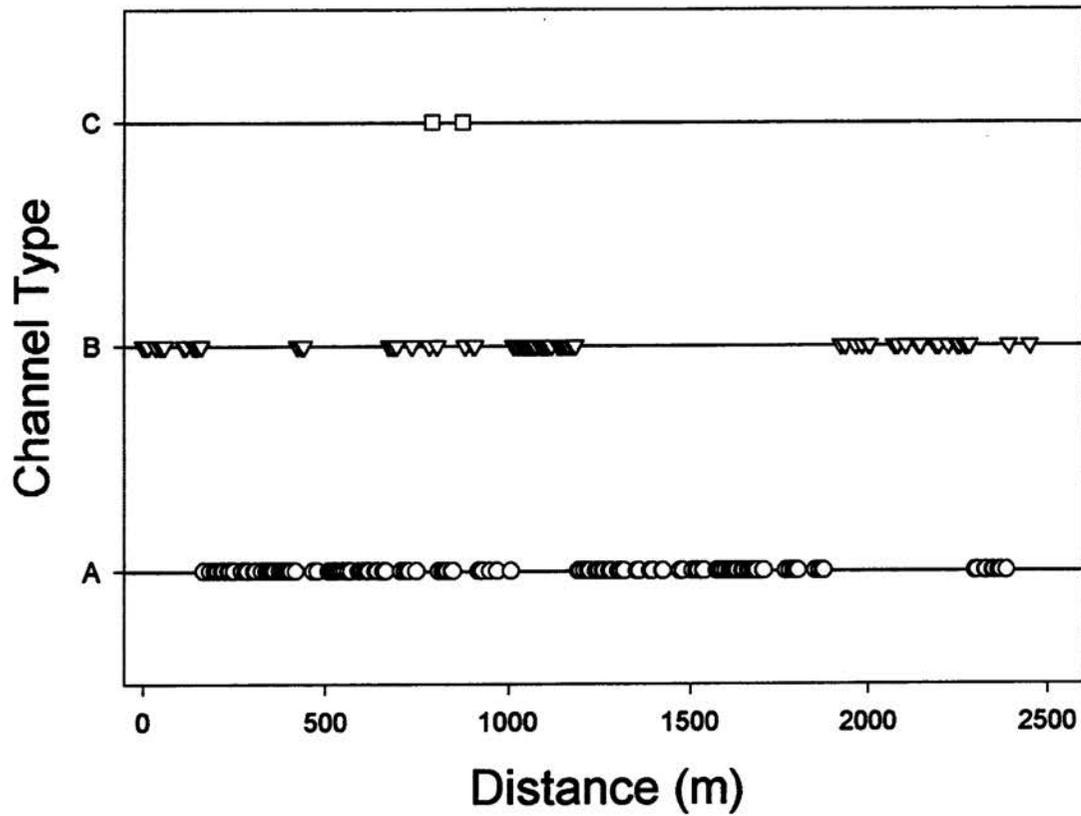
Riparian Width**Stream: Little Wilson Creek****Number of Measurements: 4****Mean Width: 19.1m Std Dev: 15.7****Max: 42.1m Min: 9.0m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Little Wilson Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Little Wilson Creek Rosgen's Channel Type Distribution



Stream: Raccoon Branch

District: Mount Rogers National Recreation Area

Quadrangle: Troutdale

Sample Date: 07/13/98

Downstream Starting Point: Confluence with Dickey's Creek

Total Distance Surveyed: 0.9 kilometers

Percent of Total Area - Pools: 55.4%

Number of Pools: 46

Number of Pools per kilometer: 51.1

Total Pool Area: 1185.4 sq. meters \pm 292.3

Mean Pool Area: 25.8 sq. meters

Correction Factor: 1.31

Mean Maximum Depth: 29.0 cm

Mean Average Depth: 17.8 cm

Mean Average Residual Pool Depth: 11.4 cm

Percent of Total Area - Riffles: 44.6%

Number of Riffles: 28

Number of Riffles per kilometer: 31.1

Total Riffle Area: 955.2 sq. meters \pm 49.2

Mean Riffle Area: 34.1 sq. meters

Correction Factor: 1.16

Mean Maximum Depth: 20.4 cm

Mean Average Depth: 10.6 cm

Number of Large Woody Debris Pieces per kilometer: 158.6

Wood < 5 m and < 55 cm: 93.7

Wood < 5 m and > 55 cm: 1.2

Wood > 5 m and < 55 cm: 62.5

Wood > 5 m and > 55 cm: 1.2

Mean Channel Width: 6.5 m

Mean Riparian Width: 20.8 m

Mean Maximum Riparian Distance (either side): 11.7 m

Mean Minimum Riparian Distance (either side): 2.6 m

Maximum Riparian Width (Total): 34.9 m

Minimum Riparian Width (Total): 14.7 m

Raccoon Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 42.3%

Rosgen's Channel Type Frequency:

Channel Type A: 5.0%

Channel Type B: 95.0%

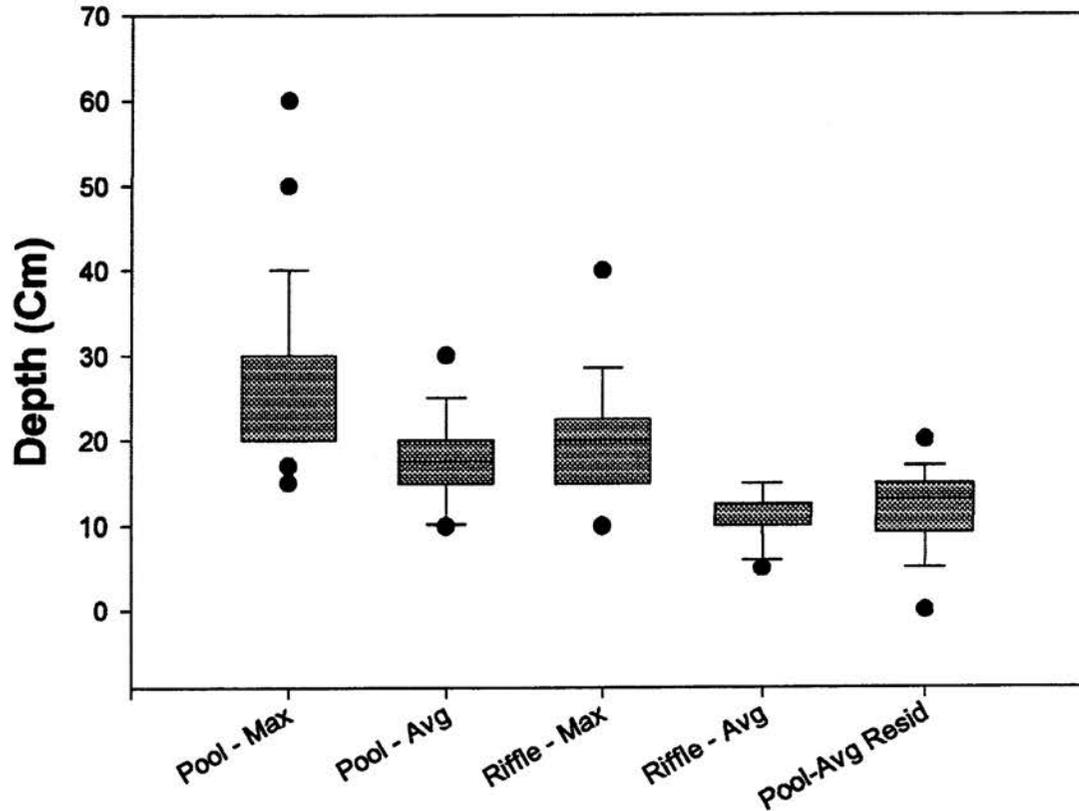
Channel Type C:

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 69.6%

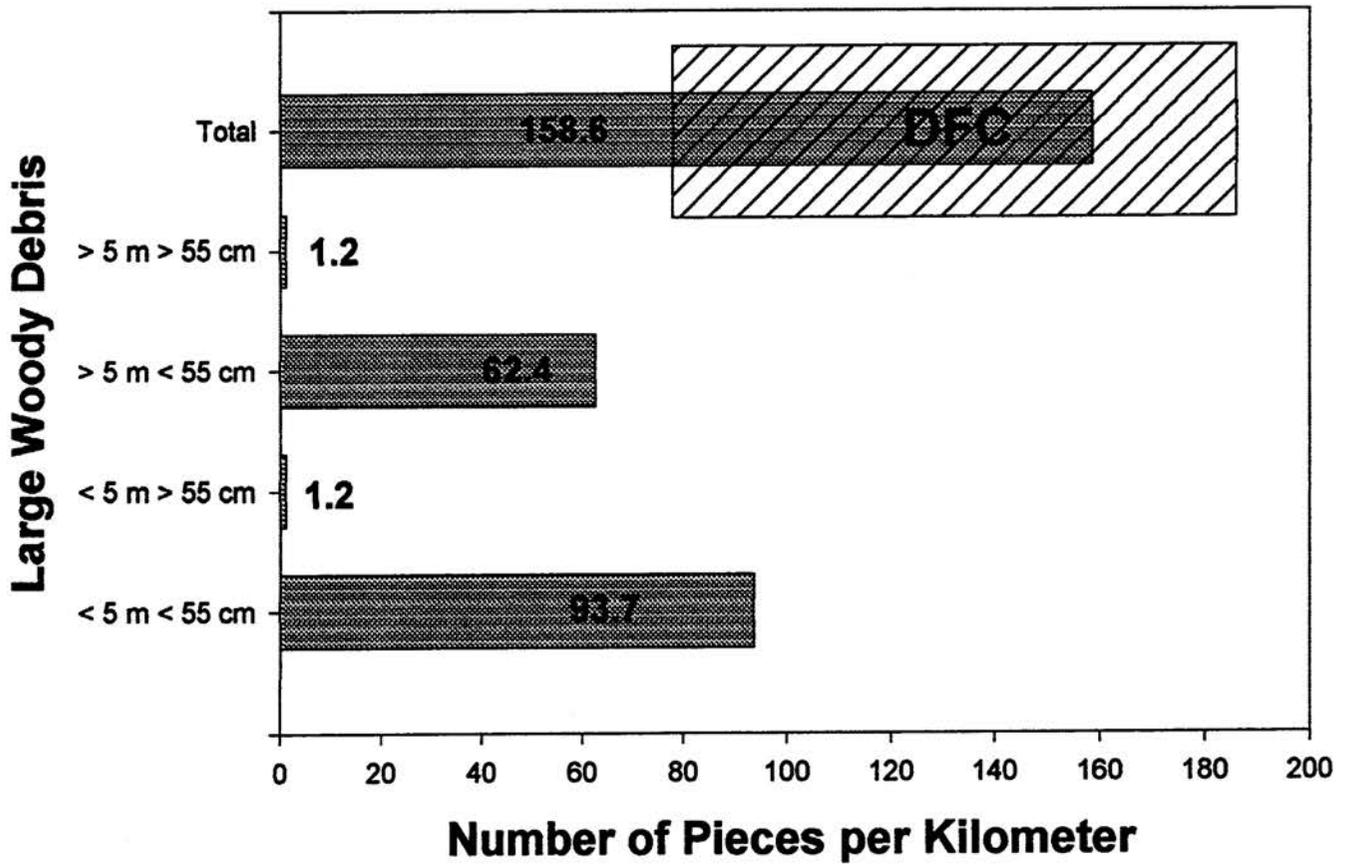
Average Channel Gradient: 4.0

Raccoon Branch

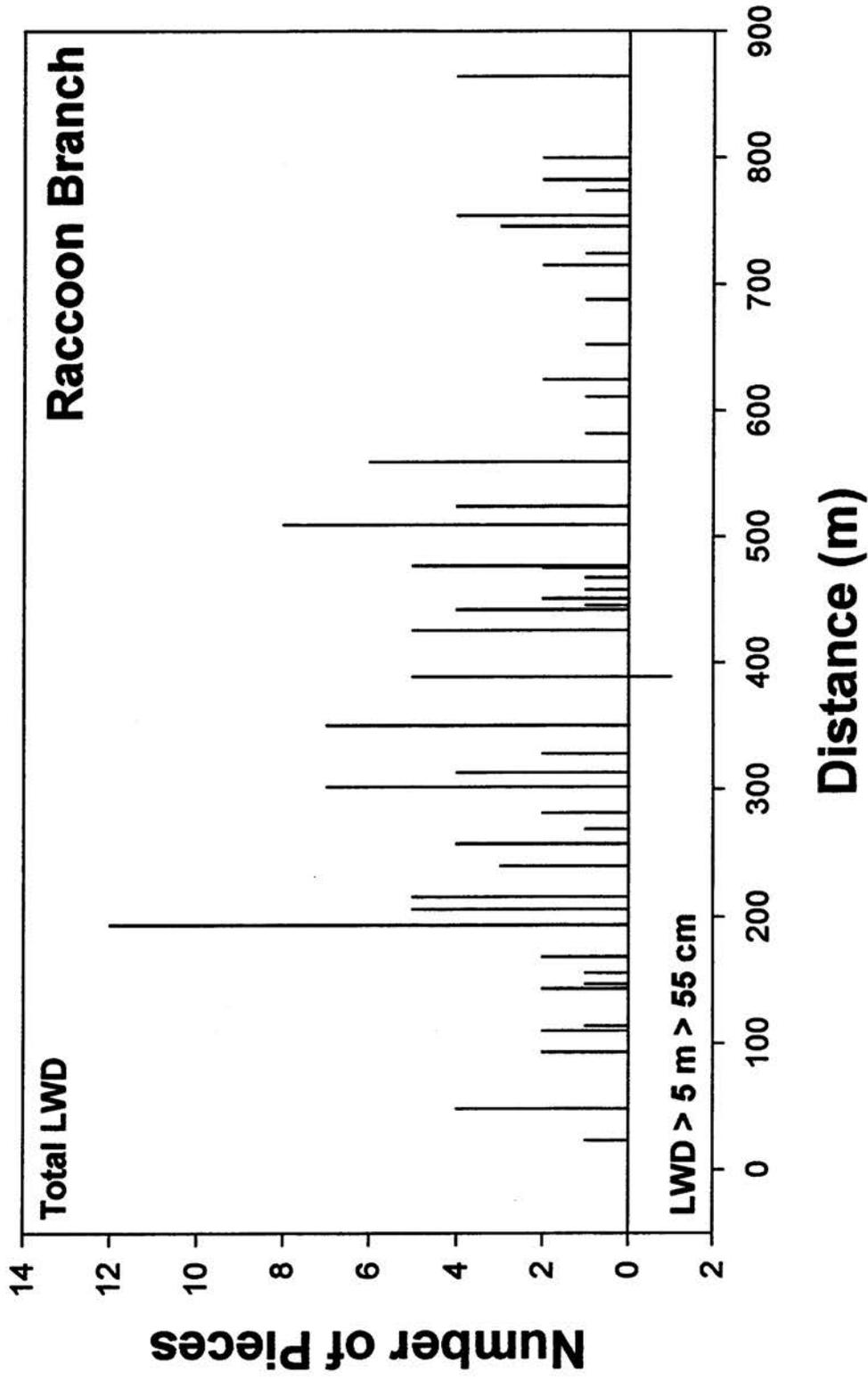


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

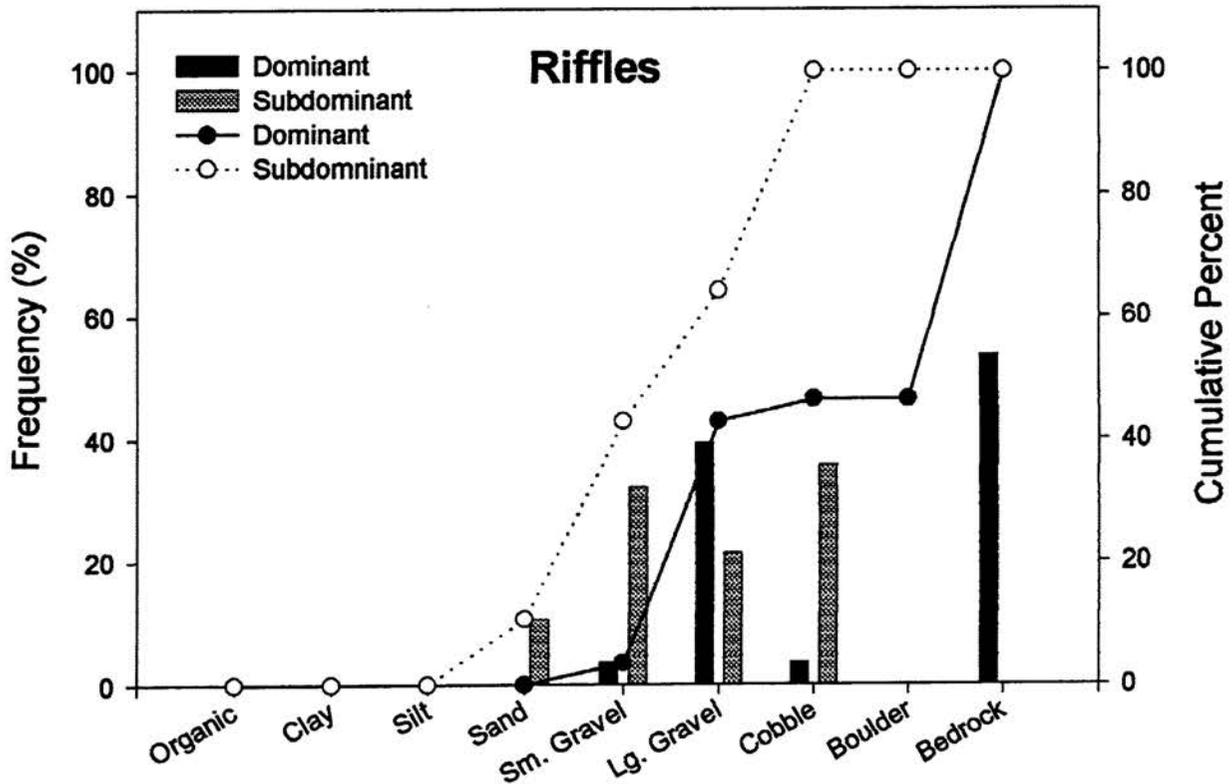
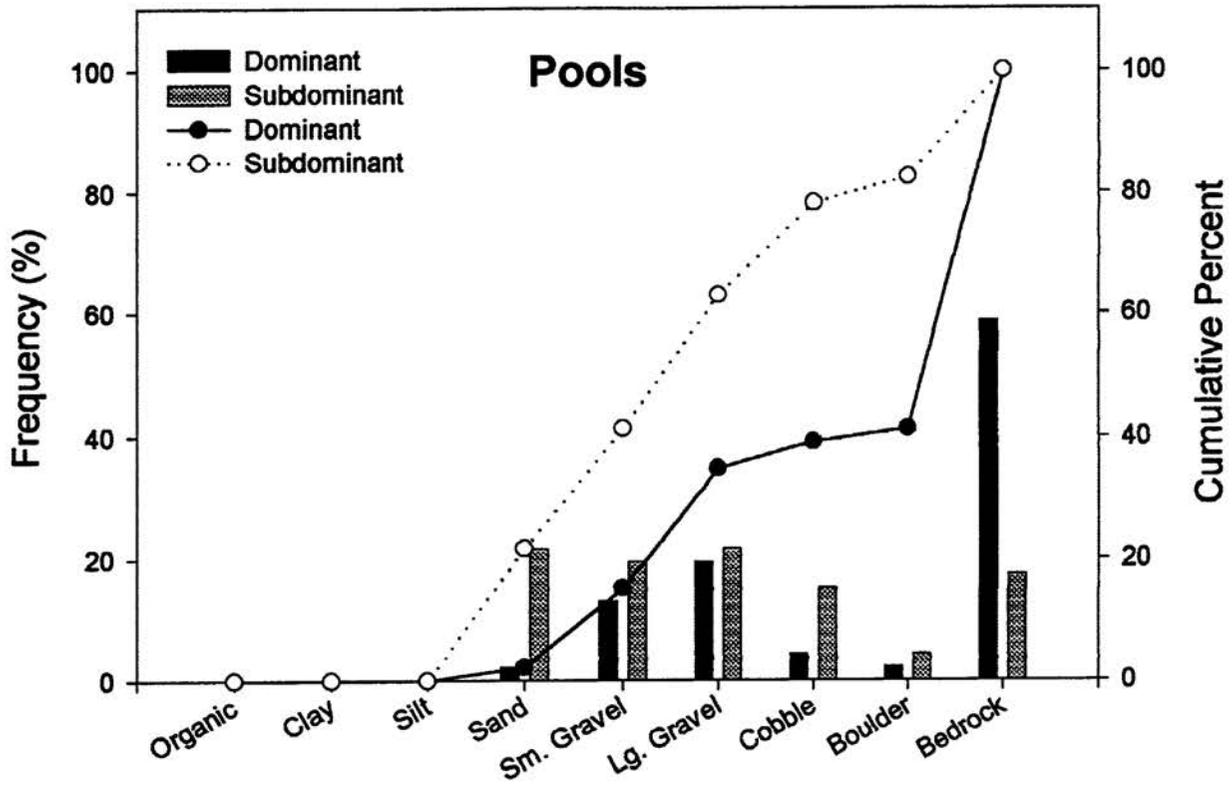
Raccoon Branch

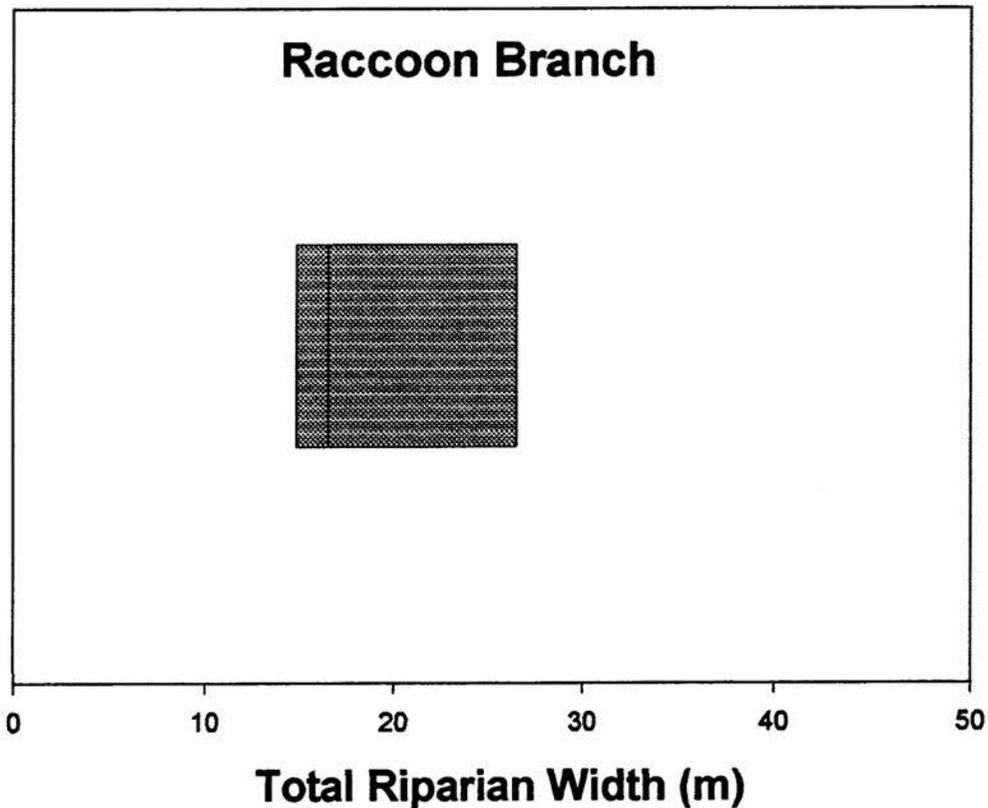


Distribution and Abundance of Large Woody Debris



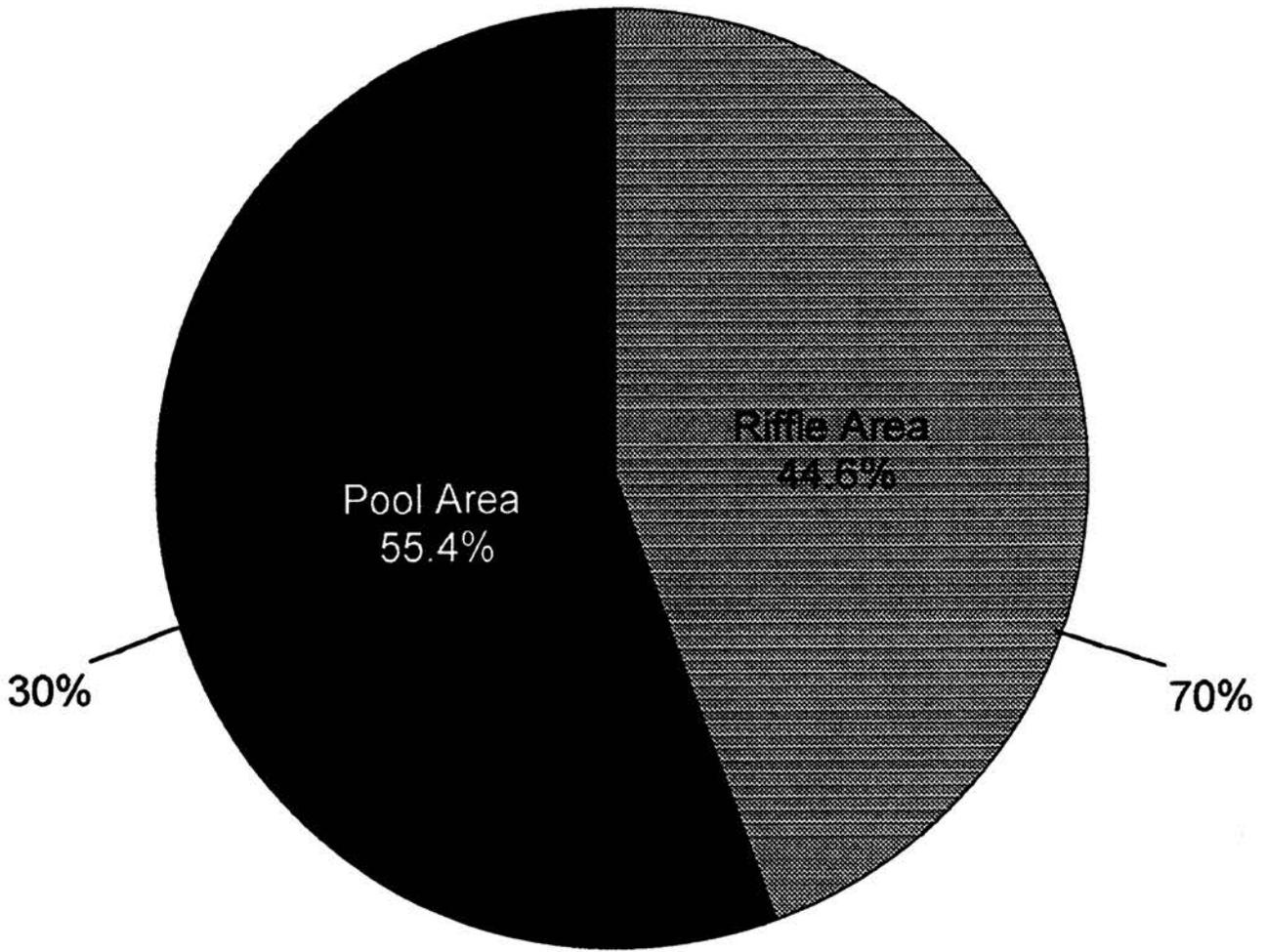
Raccoon Branch Substrate Composition



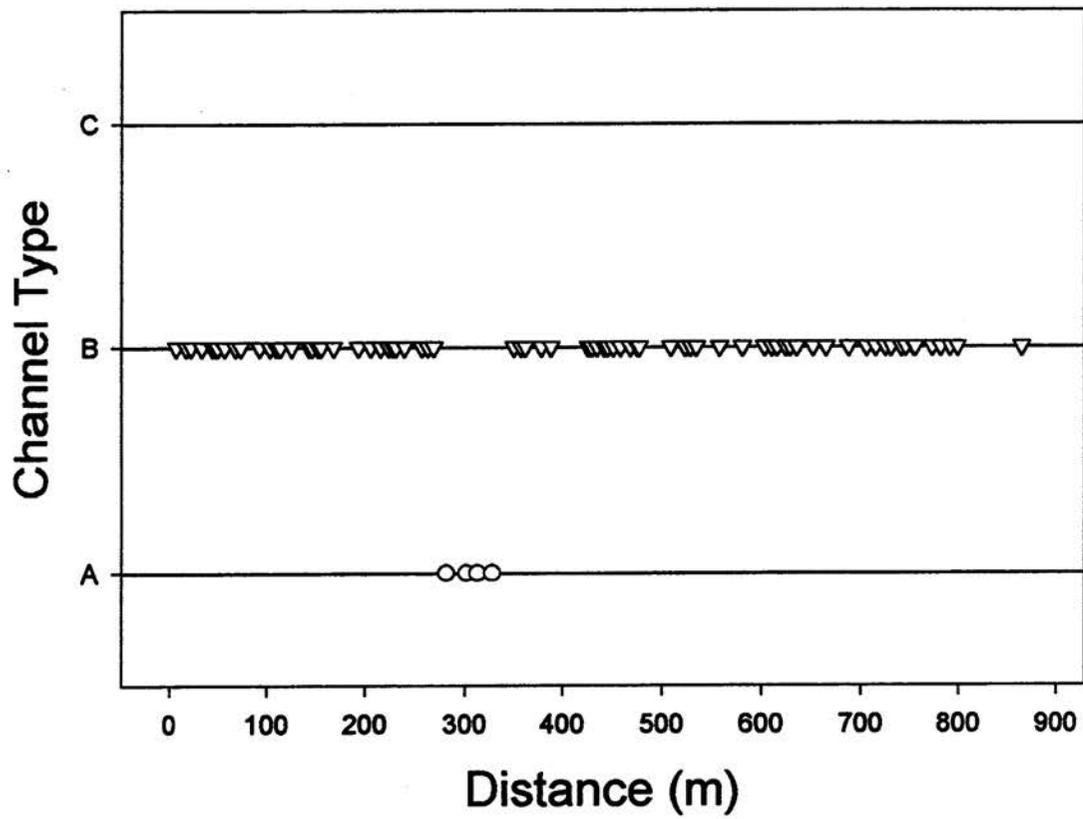
Riparian Width**Stream: Raccoon Branch****Number of Measurements: 4****Mean Width: 20.7m Std Dev: 9.6****Max: 34.9m Min: 14.7m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Raccoon Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Raccoon Branch Rosgen's Channel Type Distribution



Stream: Solomon Branch

District: Mount Rogers National Recreation Area

Quadrangle: Troutdale

Sample Date: 06/22/98

Downstream Starting Point: Forest Service Boundary @ State Rt. 739

Total Distance Surveyed: 0.8 kilometers

Percent of Total Area - Pools: 7.8%

Number of Pools: 16

Number of Pools per kilometer: 20

Total Pool Area: 179.7 sq. meters

Mean Pool Area: 11.2 sq. meters

Correction Factor: 0.98

Mean Maximum Depth: 36.9 cm

Mean Average Depth: 22.5 cm

Mean Average Residual Pool Depth: 10.7 cm

Percent of Total Area - Riffles: 92.2%

Number of Riffles: 16

Number of Riffles per kilometer: 20

Total Riffle Area: 2112.4 sq. meters \pm 584.0

Mean Riffle Area: 132.0 sq. meters

Correction Factor: 0.94

Mean Maximum Depth: 31.9 cm

Mean Average Depth: 16.3 cm

Number of Large Woody Debris Pieces per kilometer: 197.5

Wood < 5 m and < 55 cm: 135.5

Wood < 5 m and > 55 cm: 3.3

Wood > 5 m and < 55 cm: 57.1

Wood > 5 m and > 55 cm: 1.6

Mean Channel Width: 4.7 m

Mean Riparian Width: 22.5 m

Mean Maximum Riparian Distance (either side): 13.9 m

Mean Minimum Riparian Distance (either side): 3.9 m

Maximum Riparian Width (Total): 24.0 m

Minimum Riparian Width (Total): 20.8 m

Solomon Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 23.3%

Rosgen's Channel Type Frequency:

Channel Type A: 14.3%

Channel Type B: 57.1%

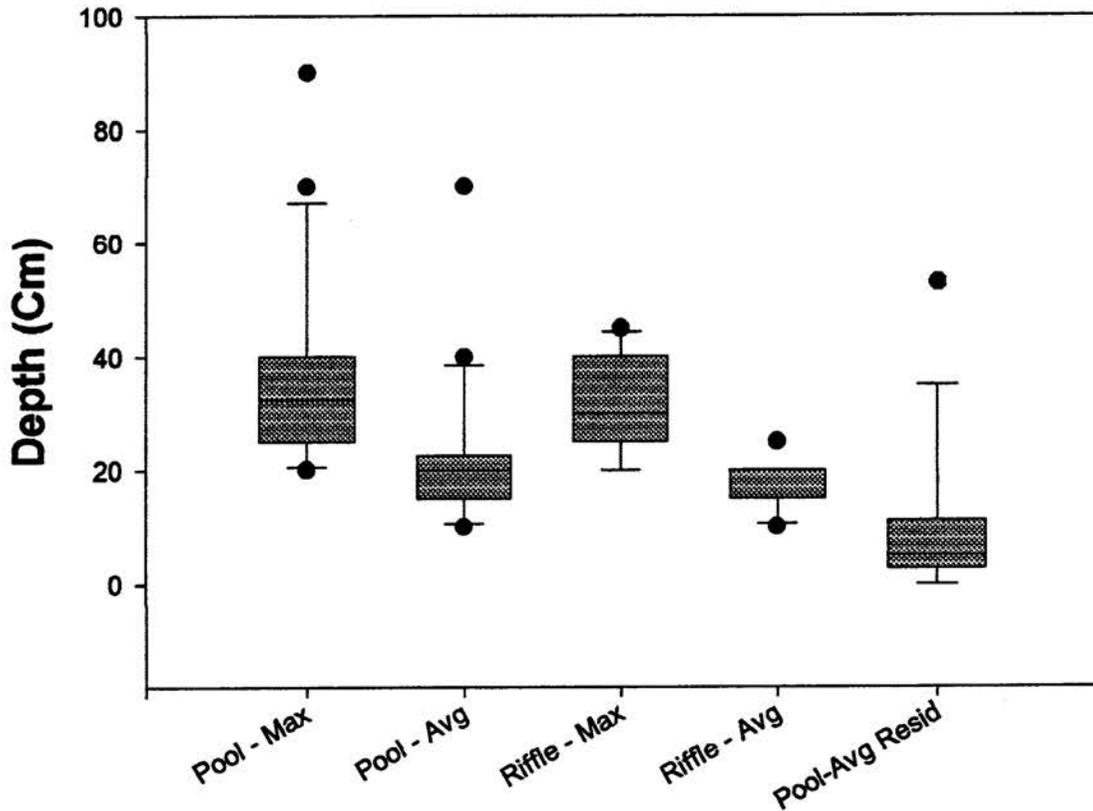
Channel Type C: 28.6%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 68.8%

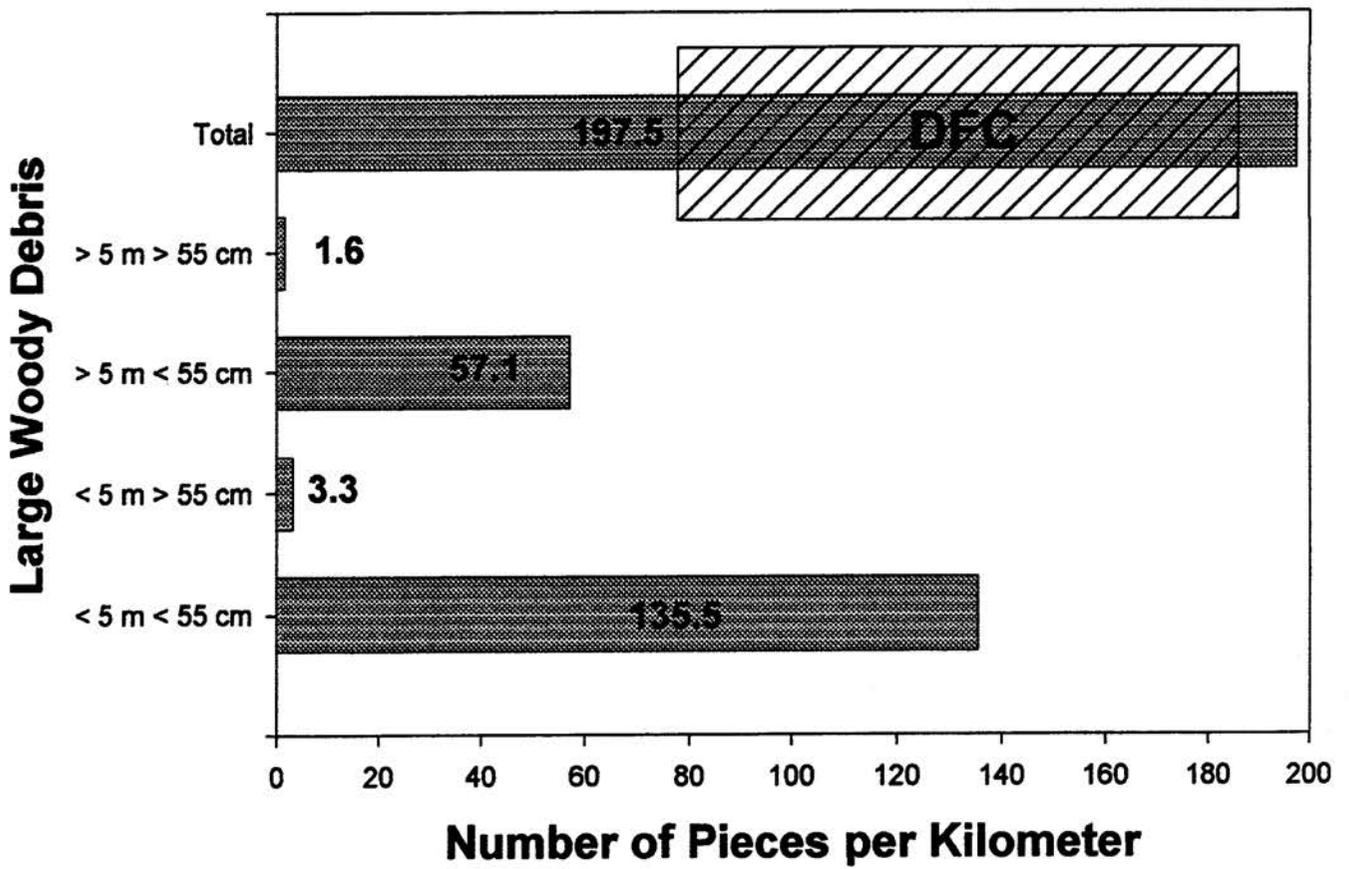
Average Channel Gradient: 10.0

Solomon Branch

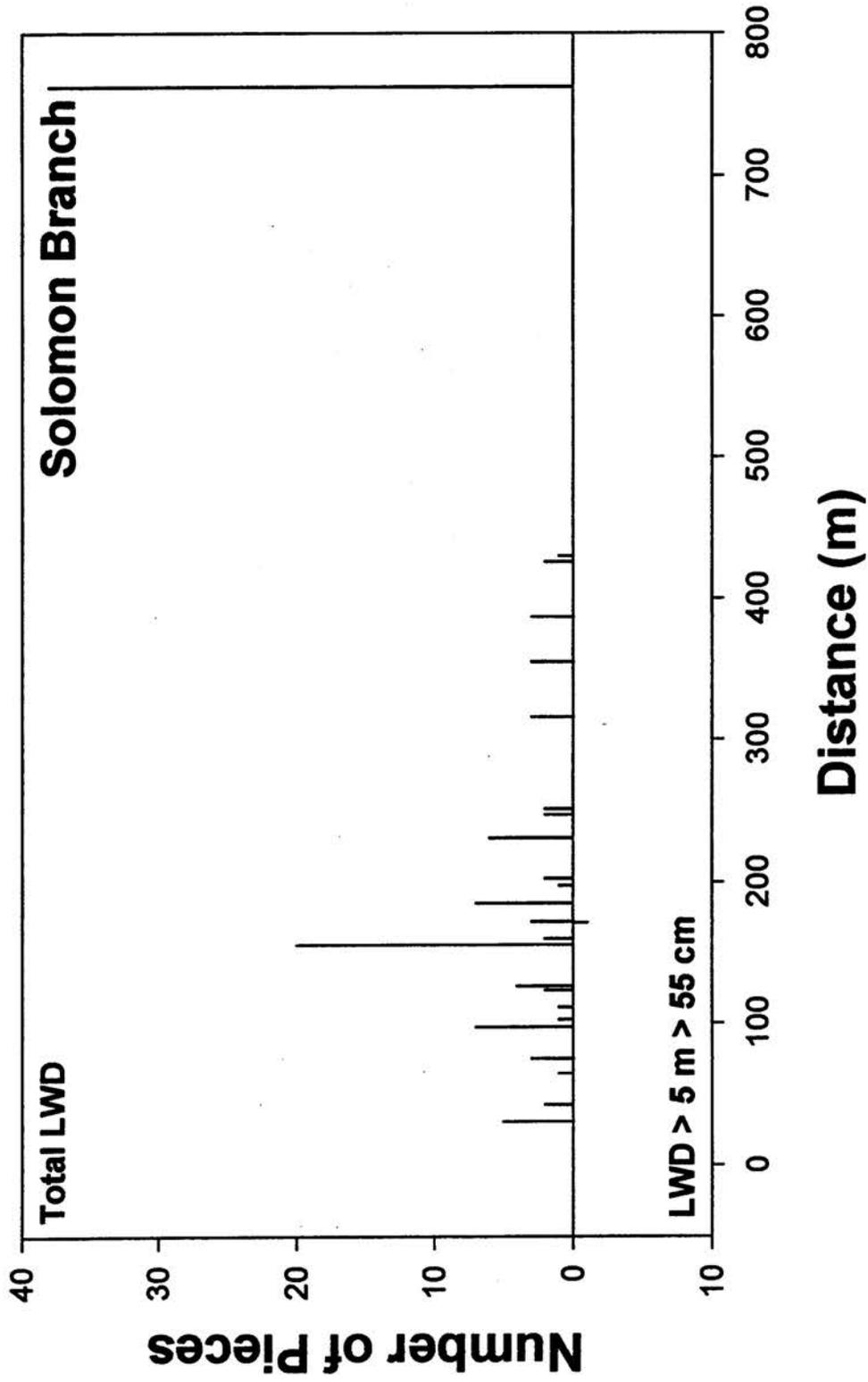


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

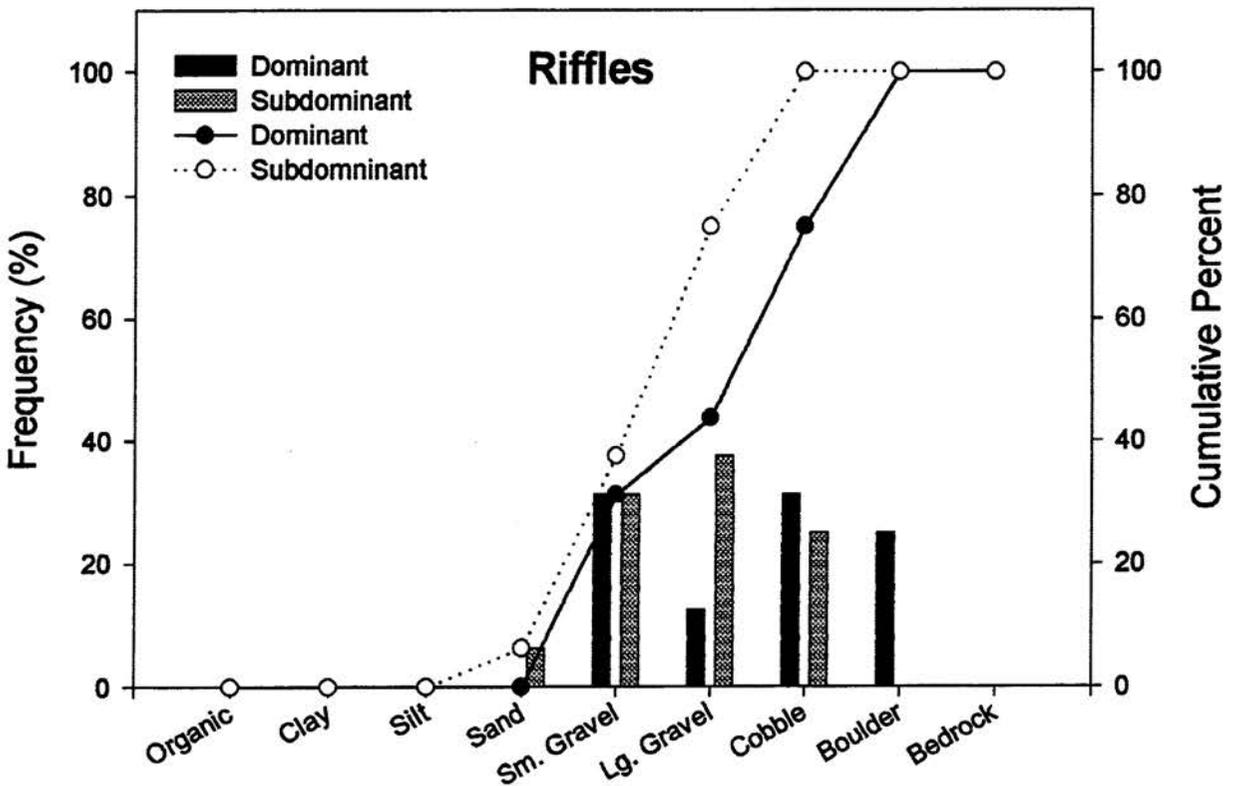
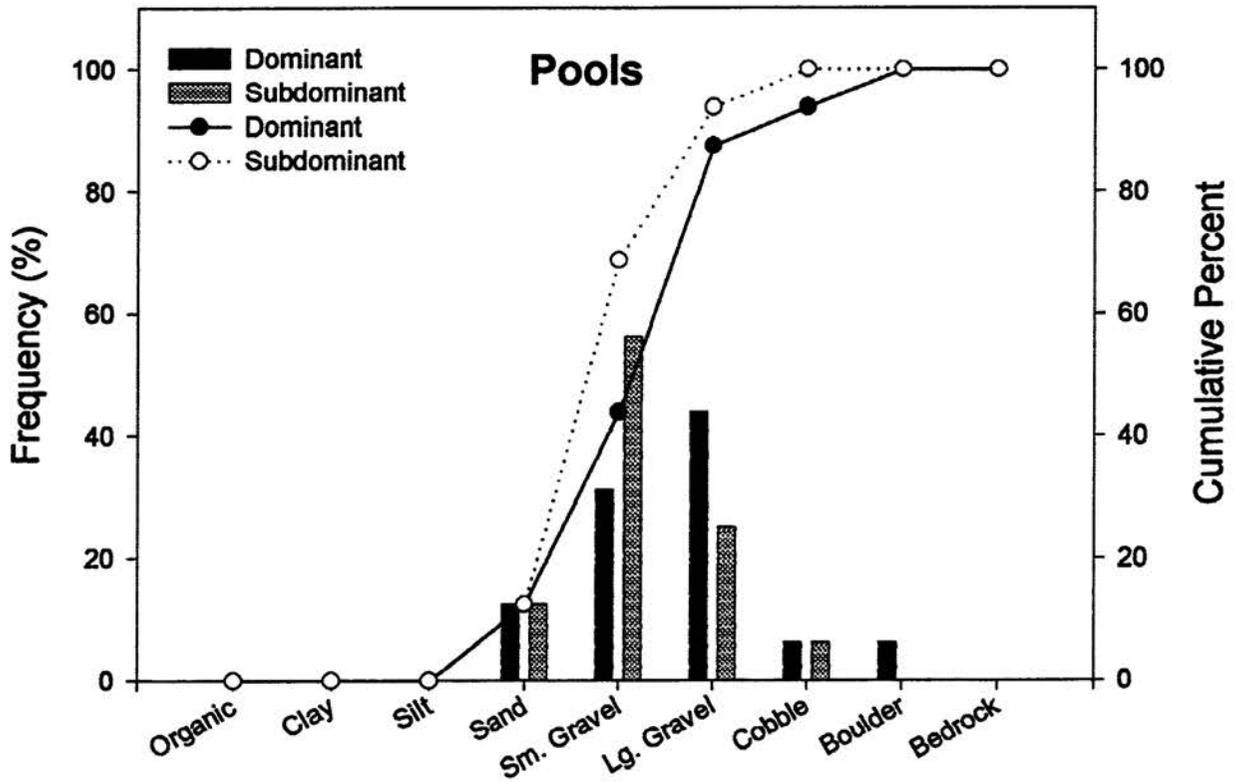
Solomon Branch

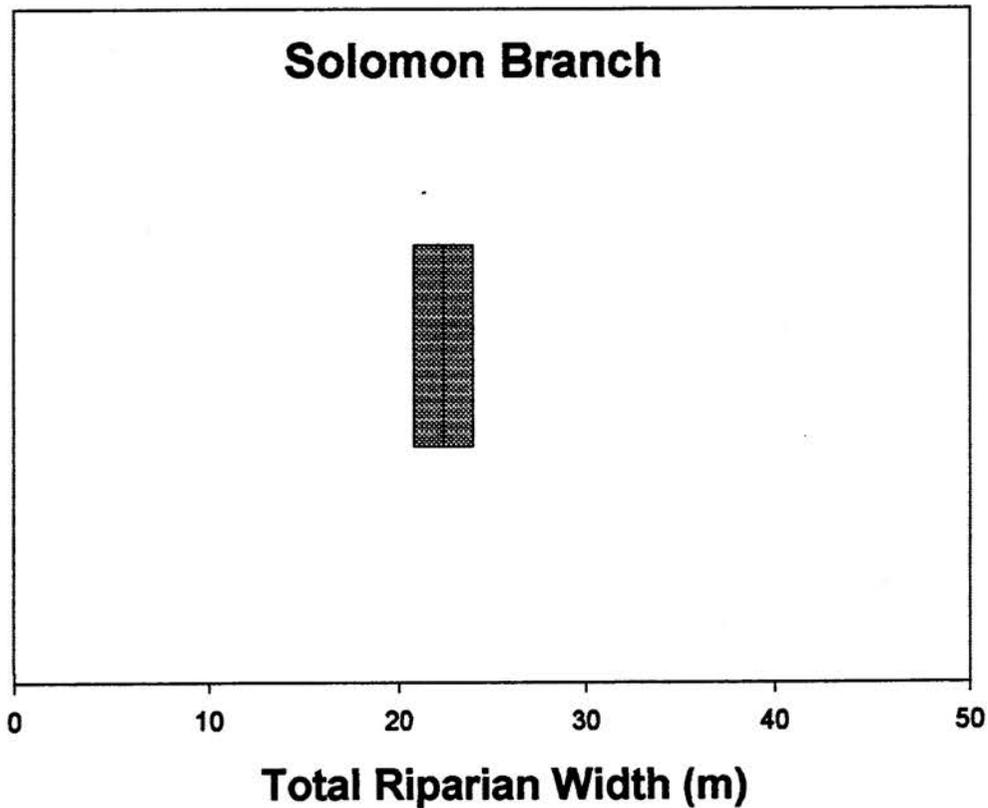


Distribution and Abundance of Large Woody Debris



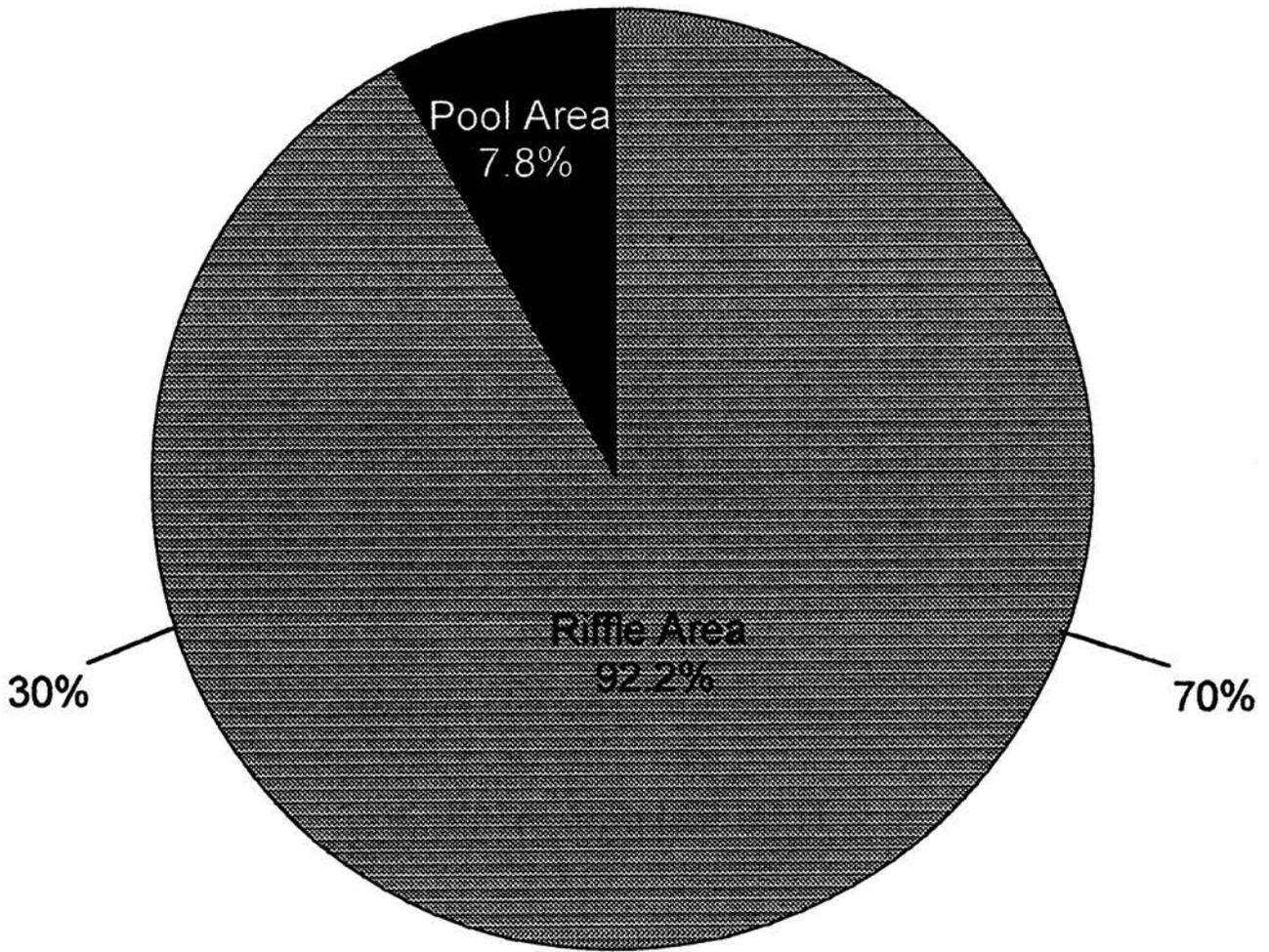
Solomon Branch Substrate Composition



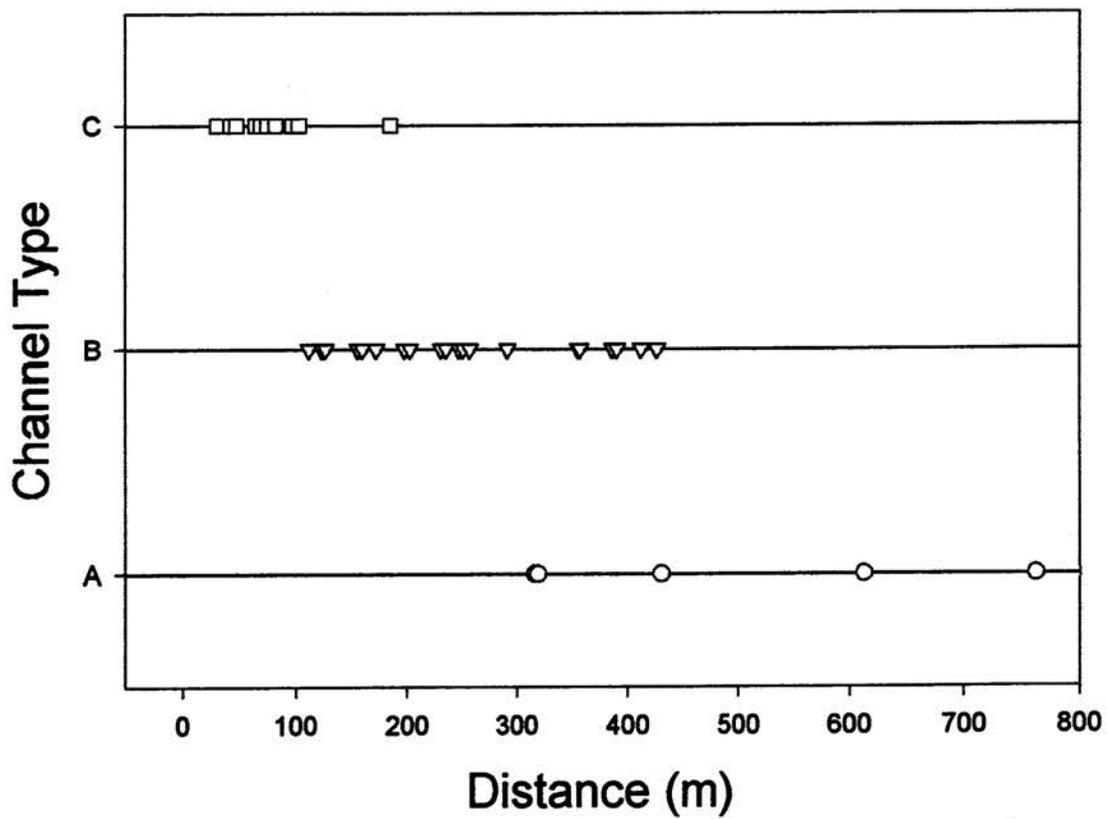
Riparian Width**Stream: Solomon Branch****Number of Measurements: 2****Mean Width: 22.4m Std Dev: 2.3****Max: 24.0m Min: 20.8m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Solomon Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Solomon Branch Rosgen's Channel Type Distribution



Atkins Quadrangle

Stream: Cressy Creek

District: Mount Rogers National Recreation Area

Quadrangle: Atkins/Cedar Springs

Sample Date: 07/16/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 3.4 kilometers

Percent of Total Area - Pools: 40.0%

Number of Pools: 156

Number of Pools per kilometer: 45.9

Total Pool Area: 6173.9 sq. meters \pm 561.3

Mean Pool Area: 39.6 sq. meters

Correction Factor: 1.07

Mean Maximum Depth: 39.1 cm

Mean Average Depth: 24.4 cm

Mean Average Residual Pool Depth: 16.0 cm

Percent of Total Area - Riffles: 60.0%

Number of Riffles: 99

Number of Riffles per kilometer: 29.1

Total Riffle Area: 6736.7 sq. meters \pm 435.9

Mean Riffle Area: 68.0 sq. meters

Correction Factor: 1.01

Mean Maximum Depth: 24.0 cm

Mean Average Depth: 14.5 cm

Number of Large Woody Debris Pieces per kilometer: 63.6

Wood < 5 m and < 55 cm: 38.8

Wood < 5 m and > 55 cm: 0.6

Wood > 5 m and < 55 cm: 19.8

Wood > 5 m and > 55 cm: 4.4

Mean Channel Width: 7.8 m

Mean Riparian Width: 23.5 m

Mean Maximum Riparian Distance (either side): 14.0 m

Mean Minimum Riparian Distance (either side): 1.7 m

Maximum Riparian Width (Total): 51.1 m

Minimum Riparian Width (Total): 9.9 m

Cressy Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 29.9%

Rosgen's Channel Type Frequency:

Channel Type A: 36.2%

Channel Type B: 38.6%

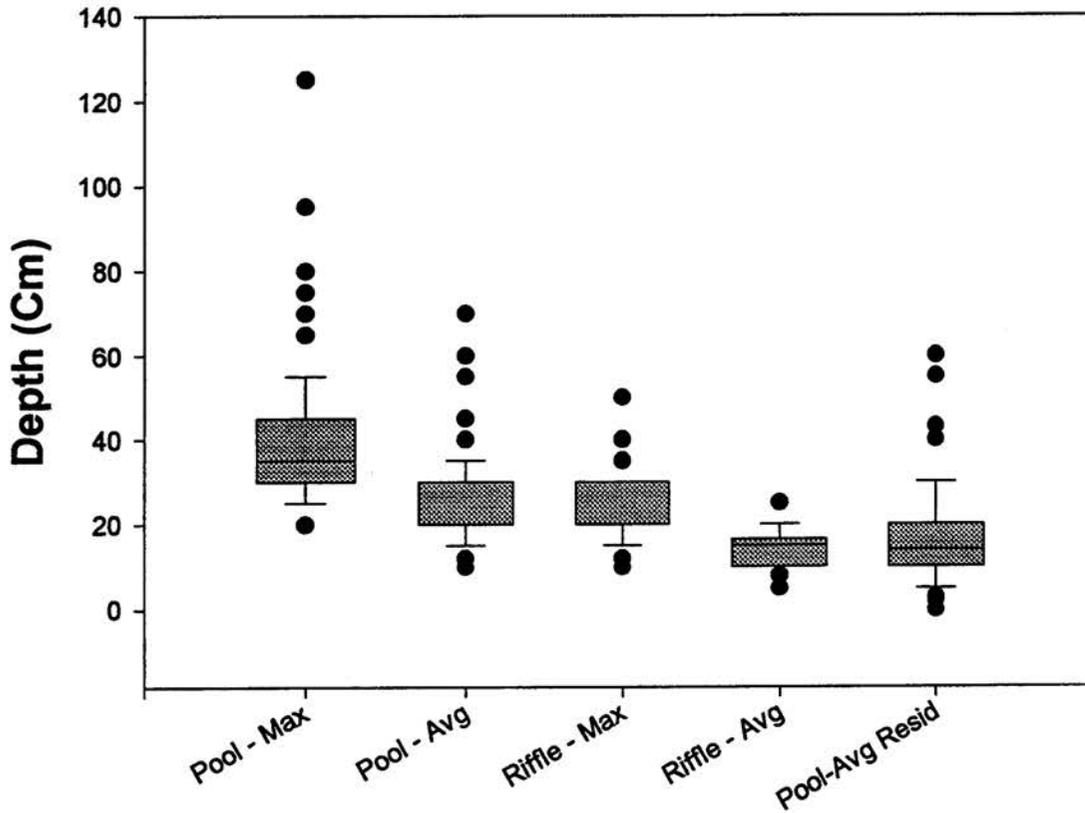
Channel Type C: 25.2%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 46.8%

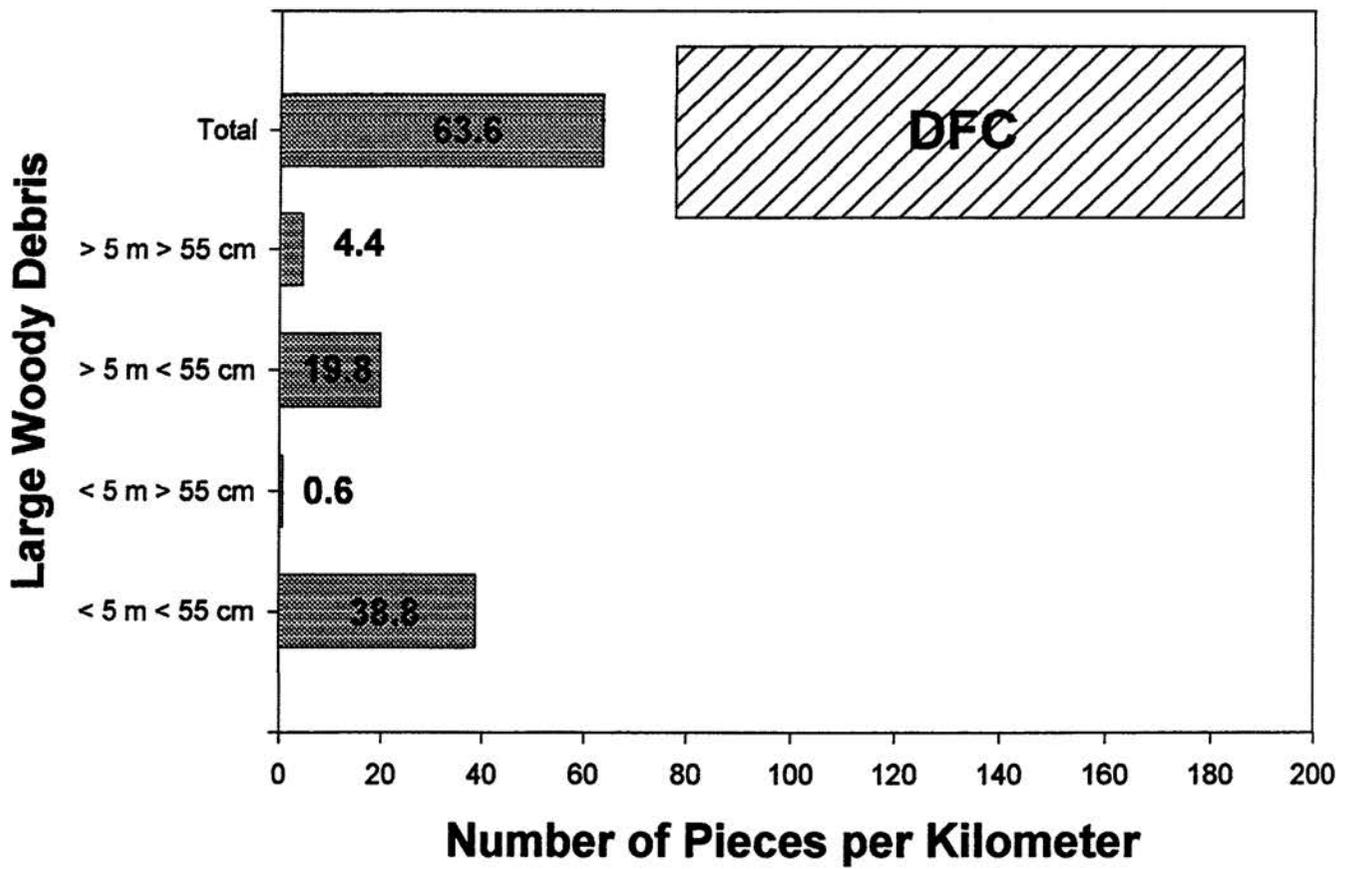
Average Channel Gradient: 5.3

Cressy Creek

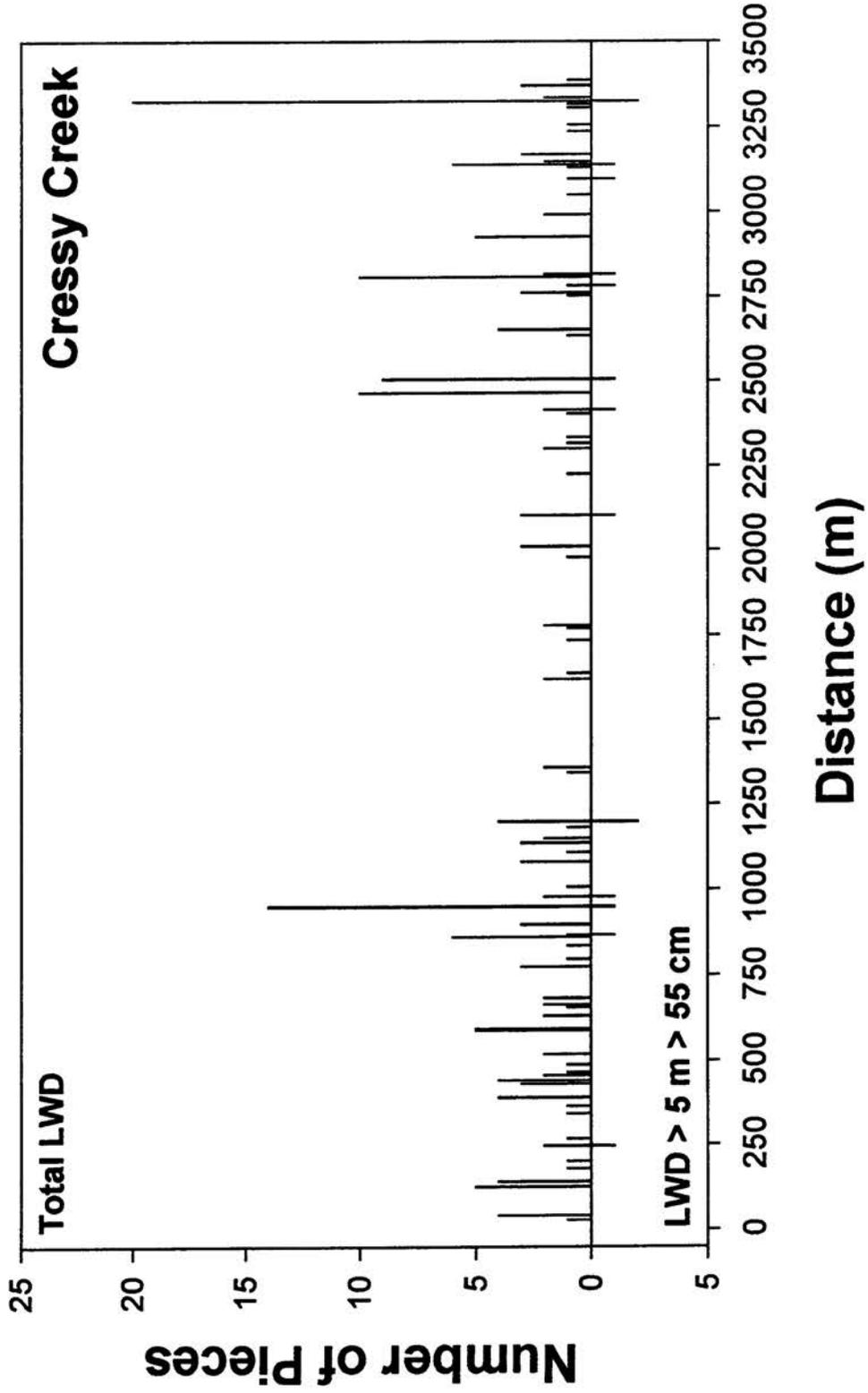


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

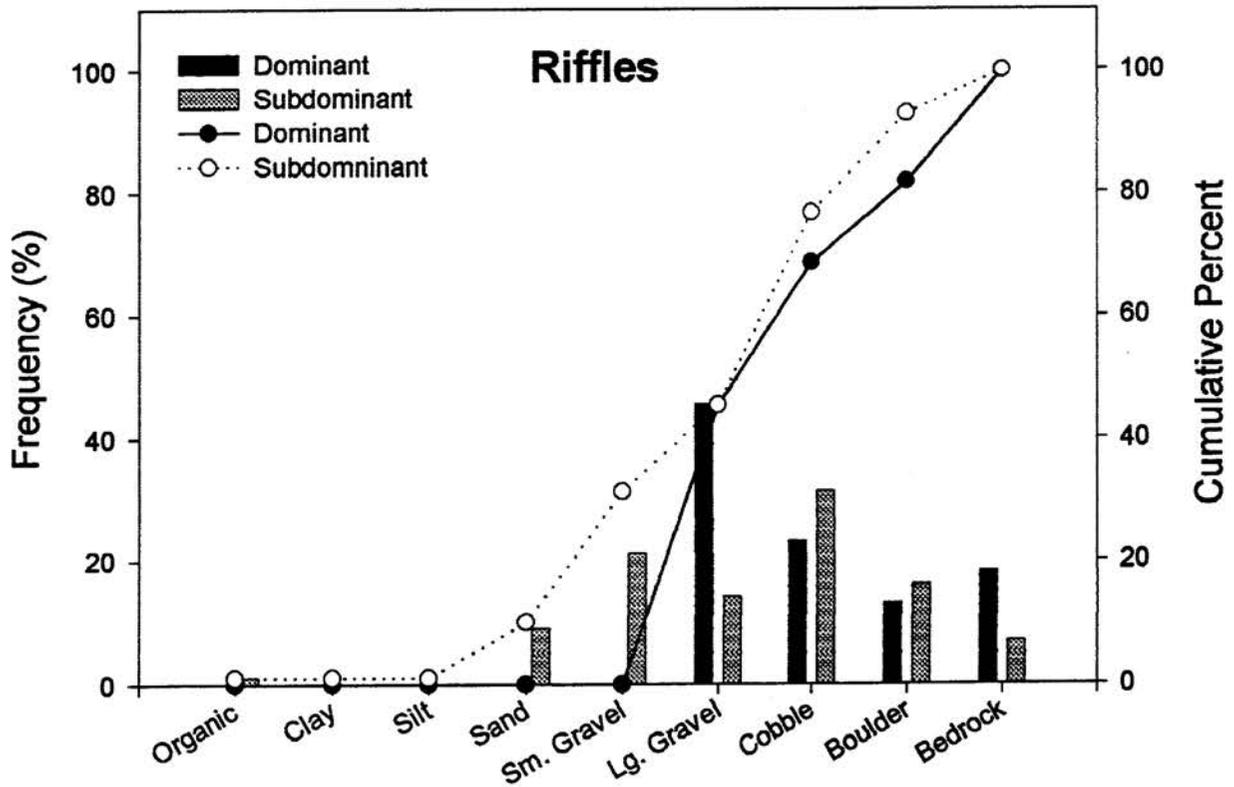
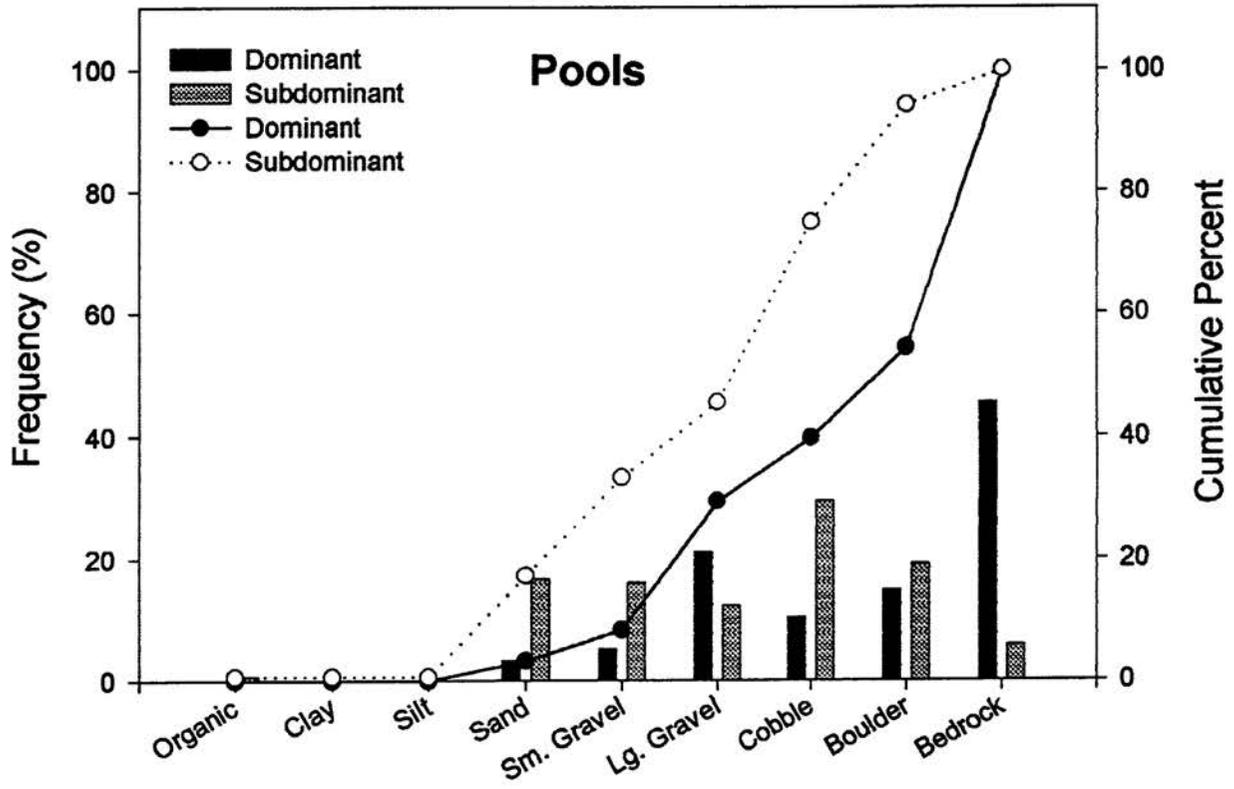
Cressy Creek

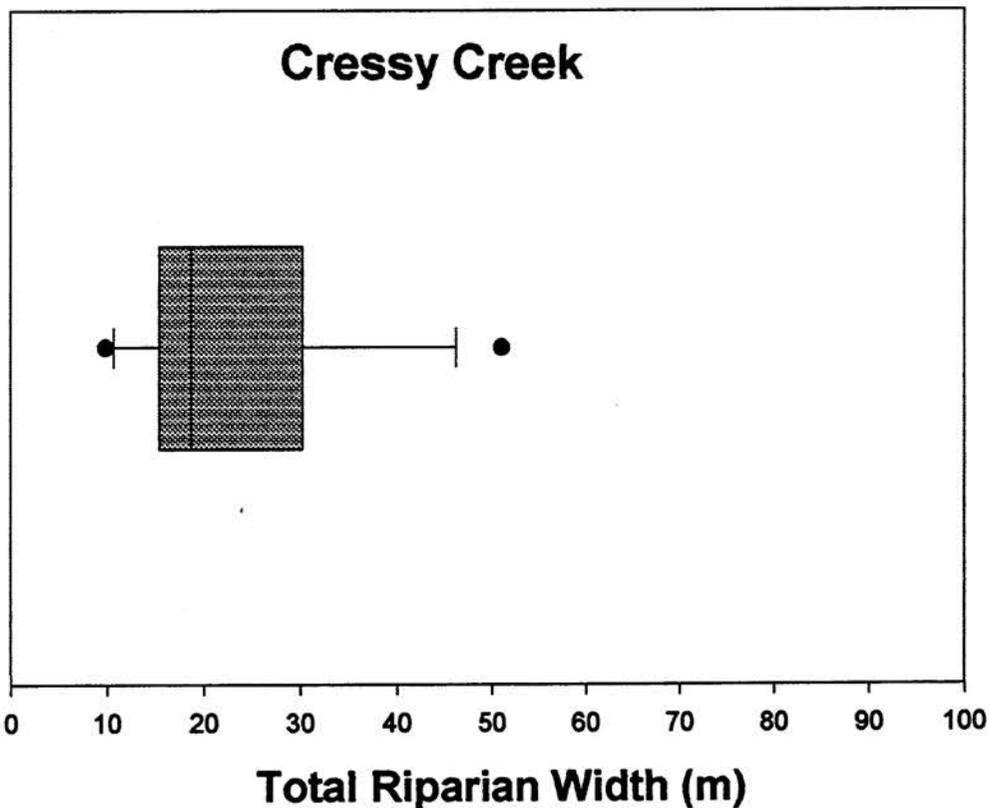


Distribution and Abundance of Large Woody Debris



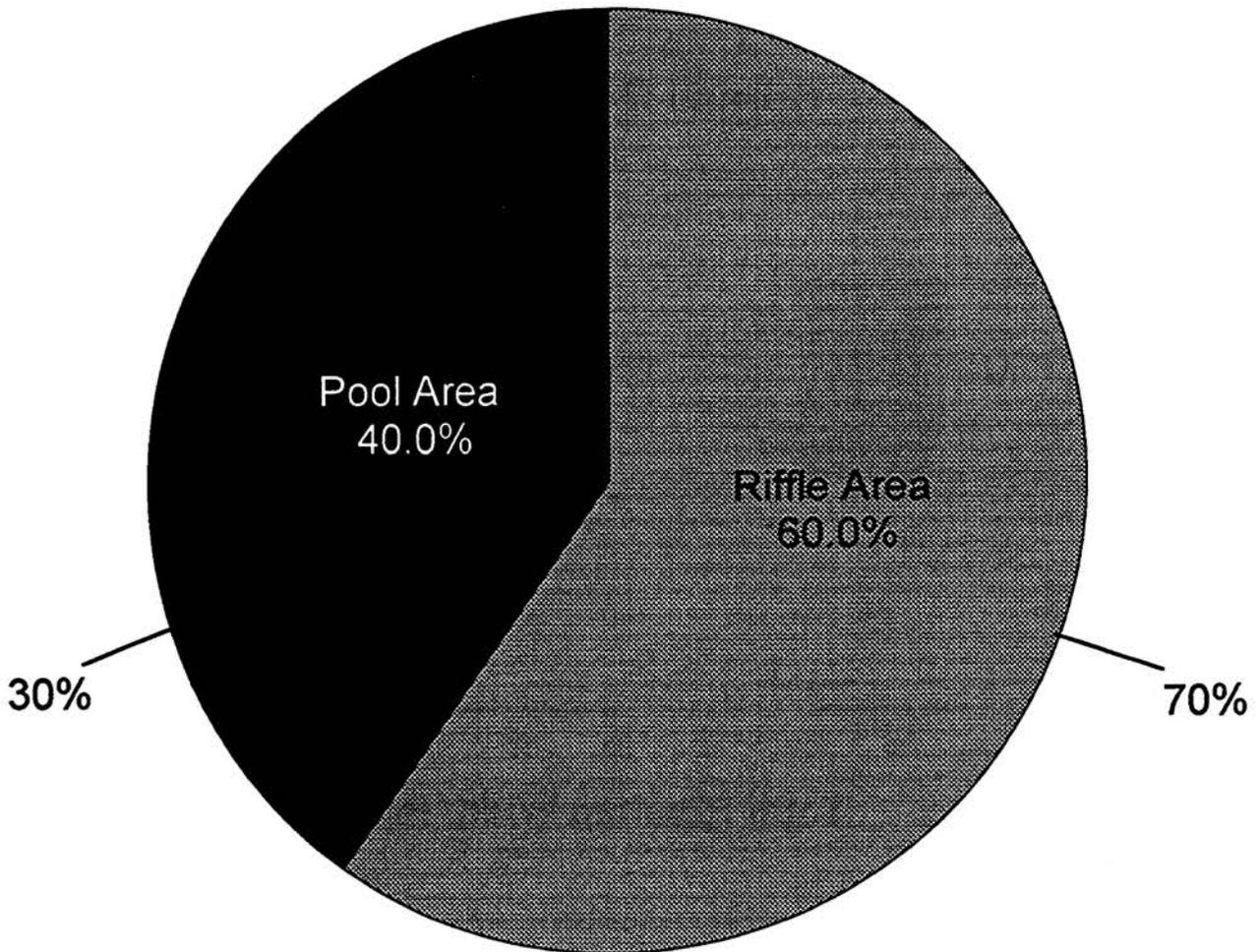
Cressy Creek Substrate Composition



Riparian Width**Stream: Cressy Creek****Number of Measurements: 9****Mean Width: 23.5m Std Dev: 13.5****Max: 51.1m Min: 9.9m**

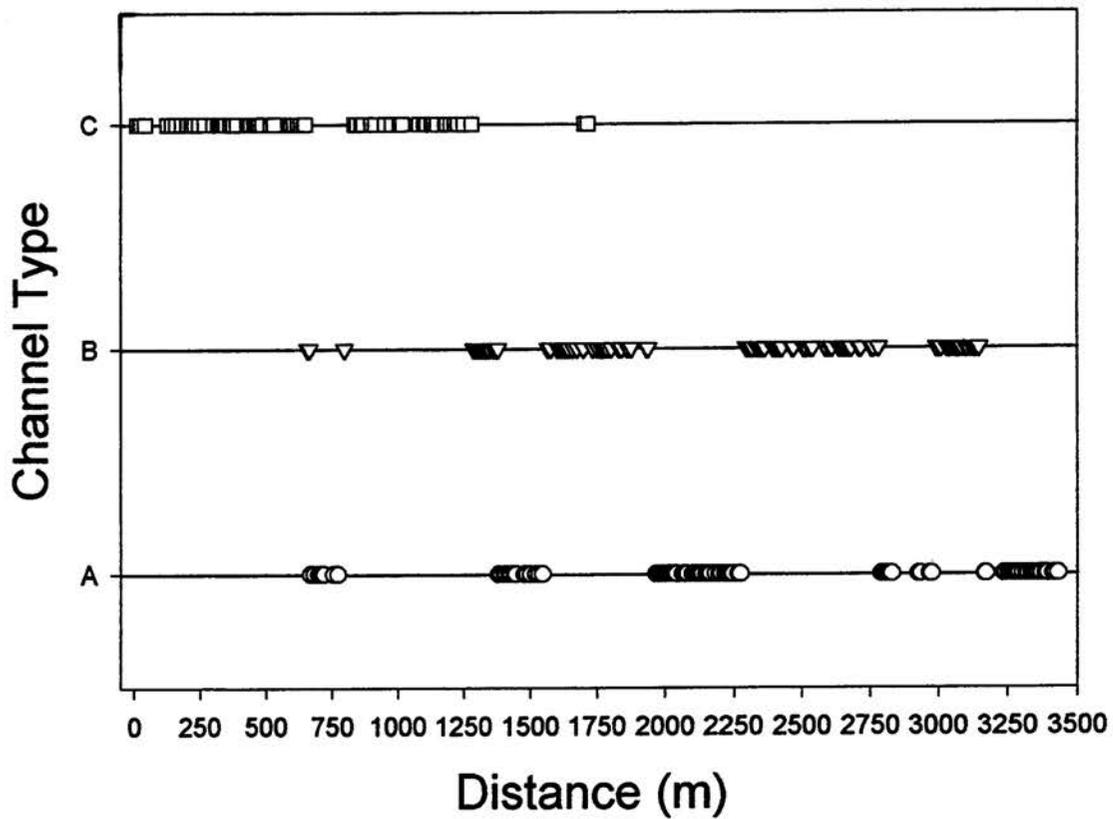
Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Cressy Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Cressy Creek

Rosgen's Channel Type Distribution



Stream: East Fork Nicks Creek

District: Mount Rogers National Recreation Area/Old Wythe Ranger District

Quadrangle: Atkins

Sample Date: 07/21/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 1.4 kilometers

Percent of Total Area - Pools: 17.9%

Number of Pools: 67

Number of Pools per kilometer: 47.9

Total Pool Area: 528.8 sq. meters \pm 15.5

Mean Pool Area: 7.9 sq. meters

Correction Factor: 1.05

Mean Maximum Depth: 31.2 cm

Mean Average Depth: 23.1 cm

Mean Average Residual Pool Depth: 17.2 cm

Percent of Total Area - Riffles: 82.1%

Number of Riffles: 59

Number of Riffles per kilometer: 42.1

Total Riffle Area: 2424.1 sq. meters \pm 57.8

Mean Riffle Area: 41.1 sq. meters

Correction Factor: 1.09

Mean Maximum Depth: 18.9 cm

Mean Average Depth: 11.3 cm

Number of Large Woody Debris Pieces per kilometer: 88.4

Wood < 5 m and < 55 cm: 66.3

Wood < 5 m and > 55 cm: 3.0

Wood > 5 m and < 55 cm: 18.4

Wood > 5 m and > 55 cm: 0.7

Mean Channel Width: 4.6 m

Mean Riparian Width: 15.8 m

Mean Maximum Riparian Distance (either side): 9.4 m

Mean Minimum Riparian Distance (either side): 1.8 m

Maximum Riparian Width (Total): 27.3 m

Minimum Riparian Width (Total): 9.7 m

East Fork Nicks Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 35.0%

Rosgen's Channel Type Frequency:

Channel Type A:

Channel Type B: 100%

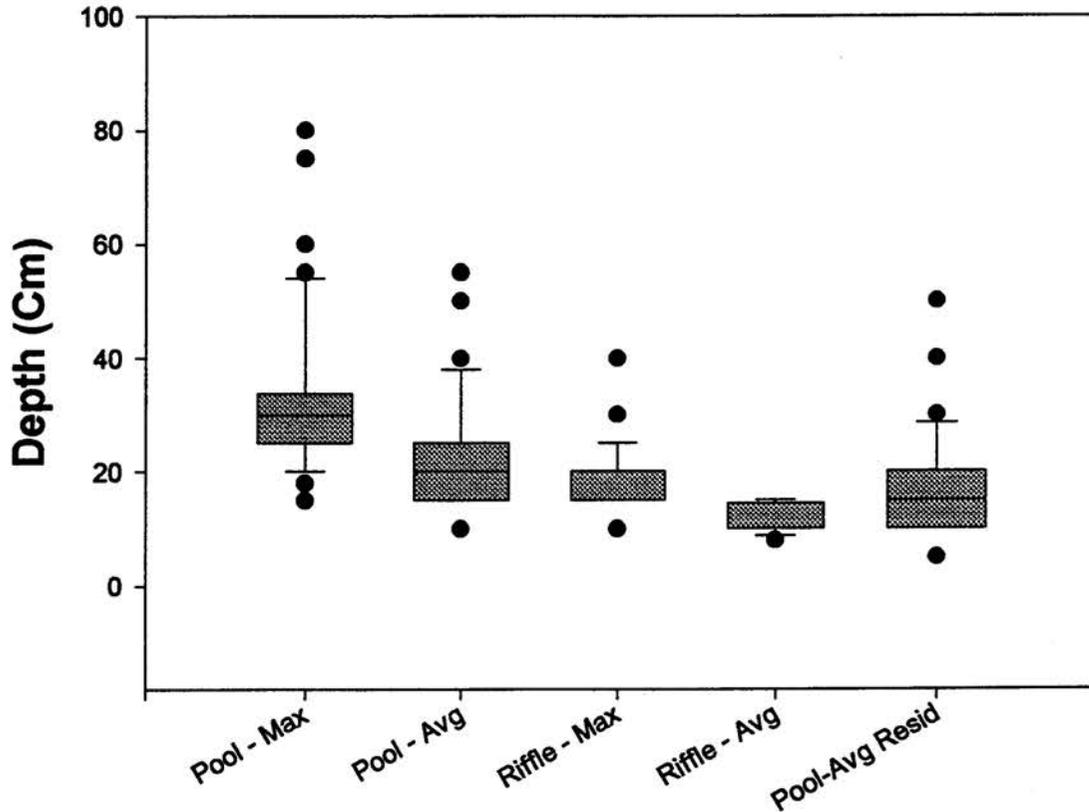
Channel Type C:

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 52.2%

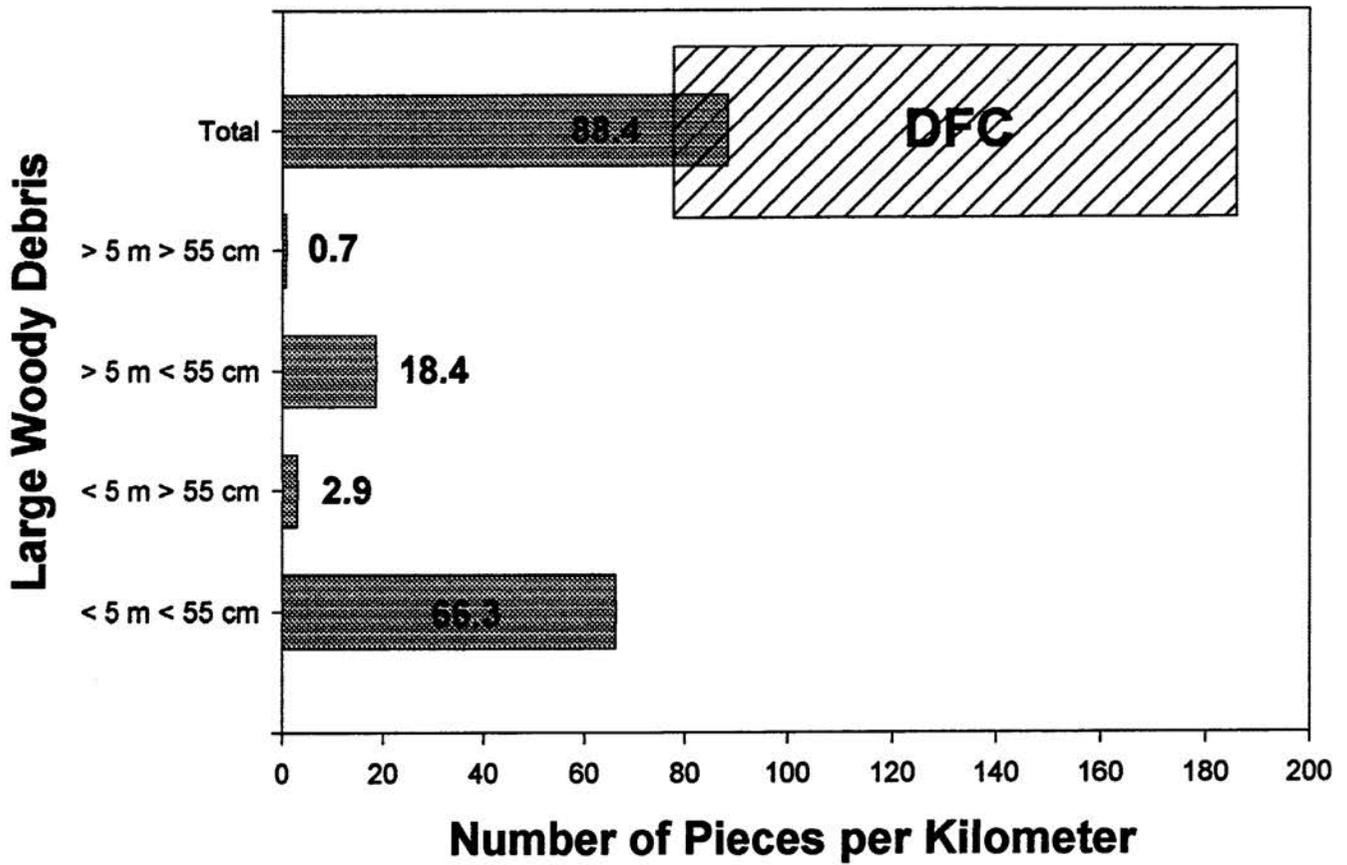
Average Channel Gradient: 8.0

East Fork Nicks Creek

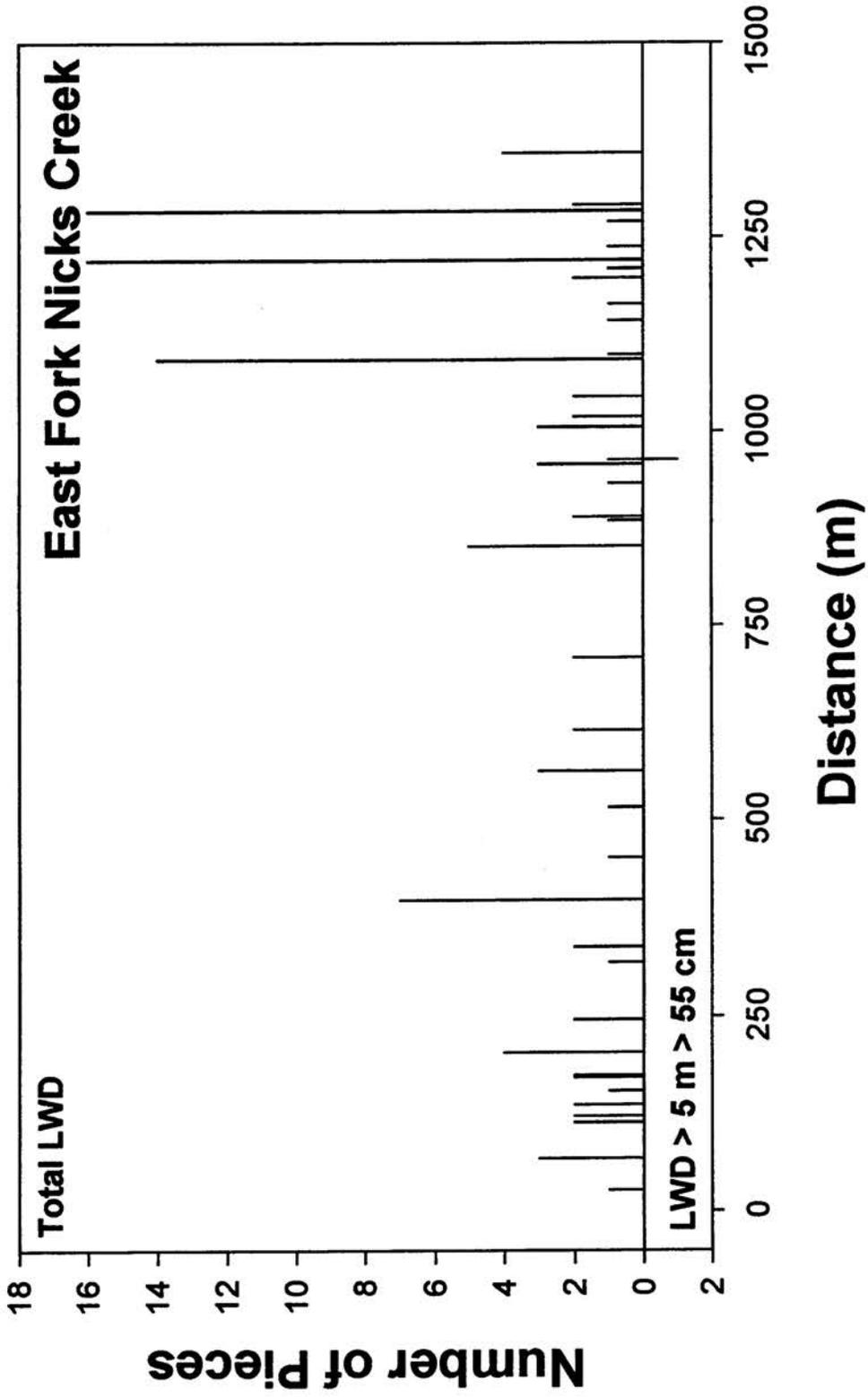


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

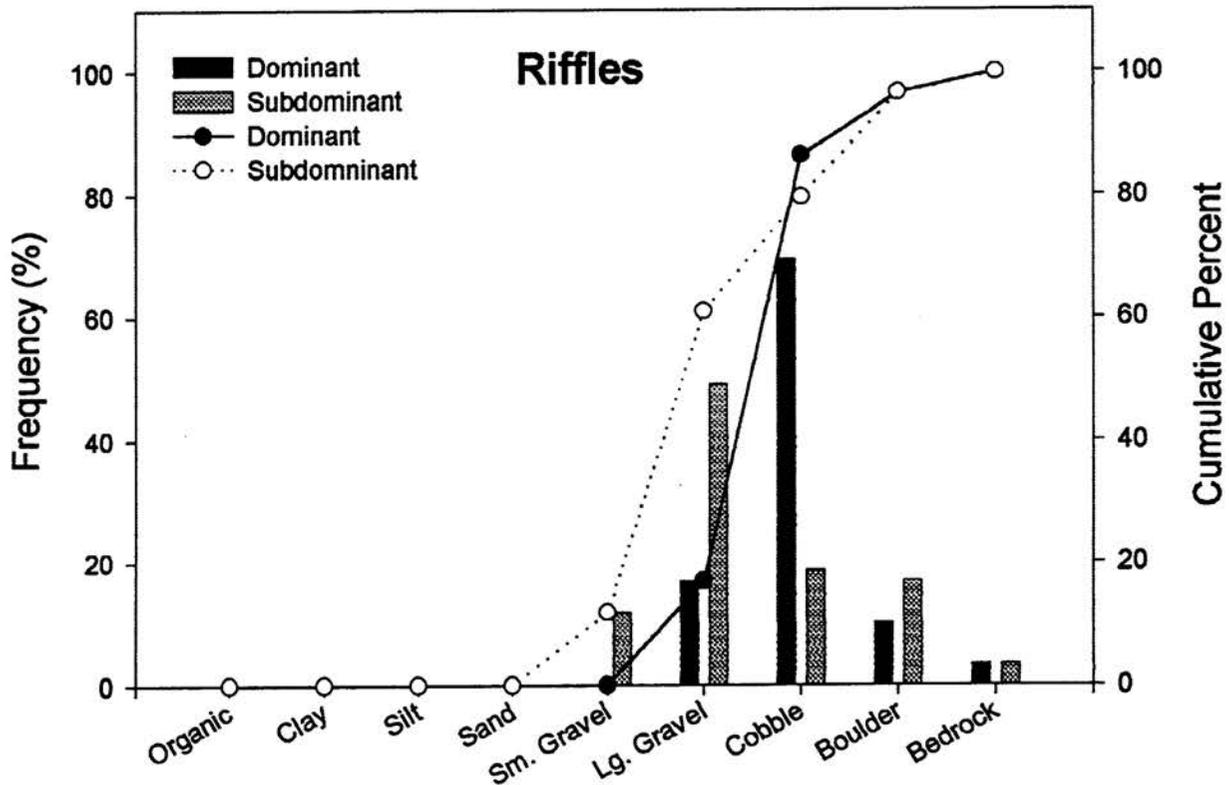
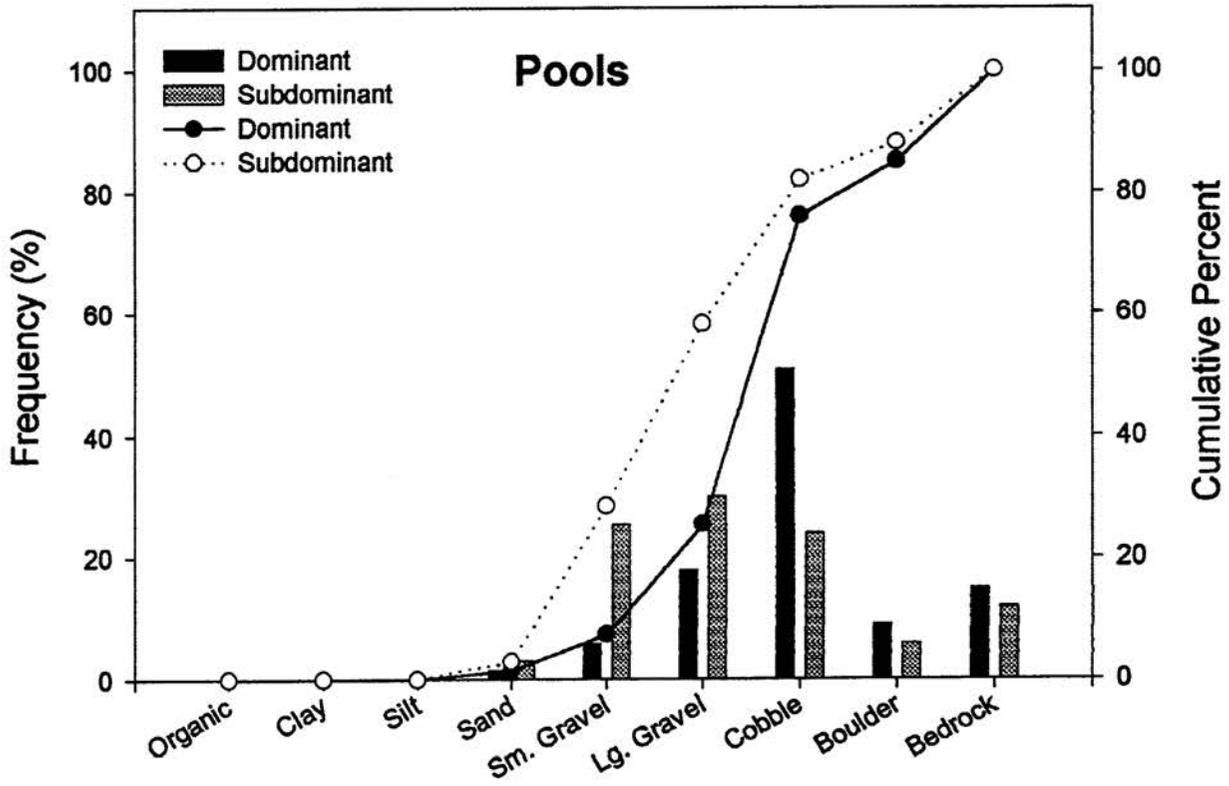
East Fork Nicks Creek

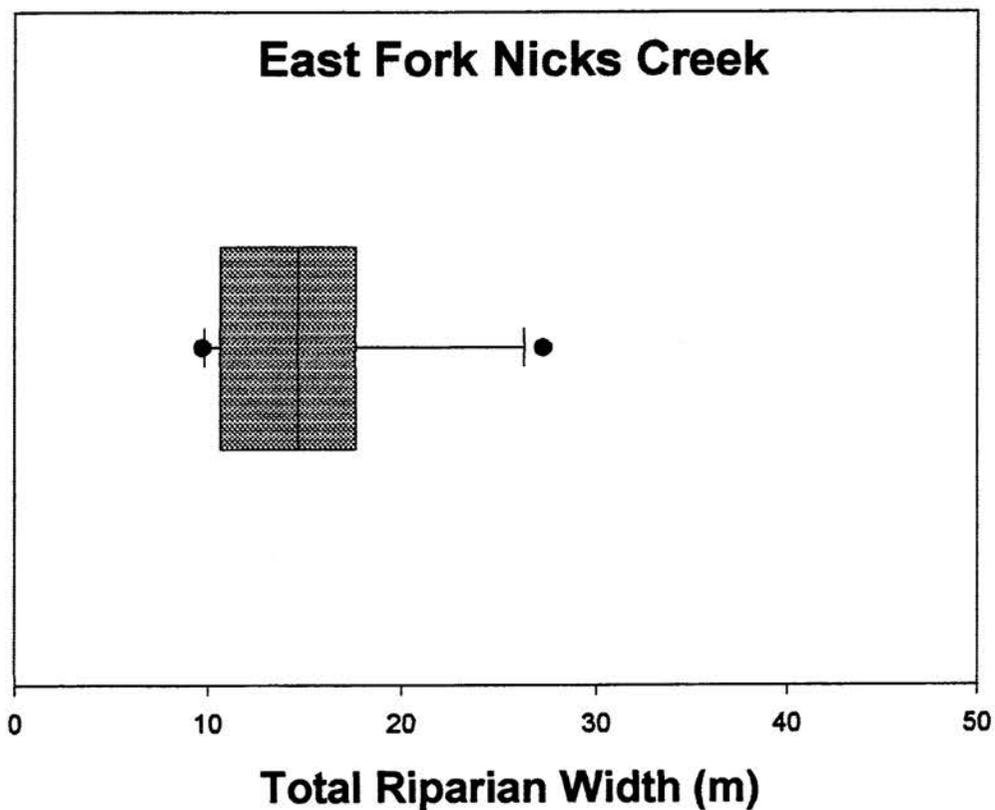


Distribution and Abundance of Large Woody Debris



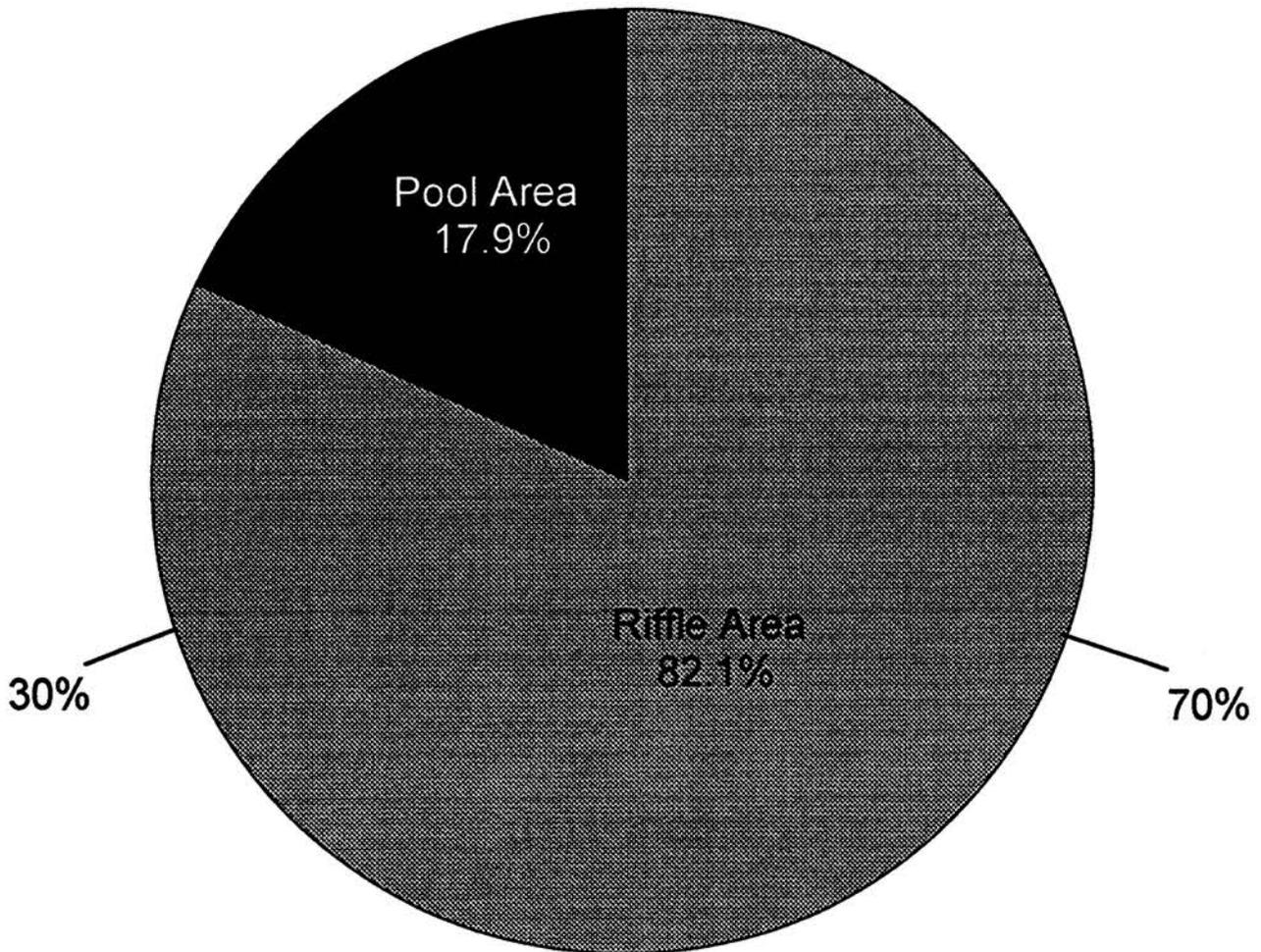
East Fork Nicks Creek Substrate Composition



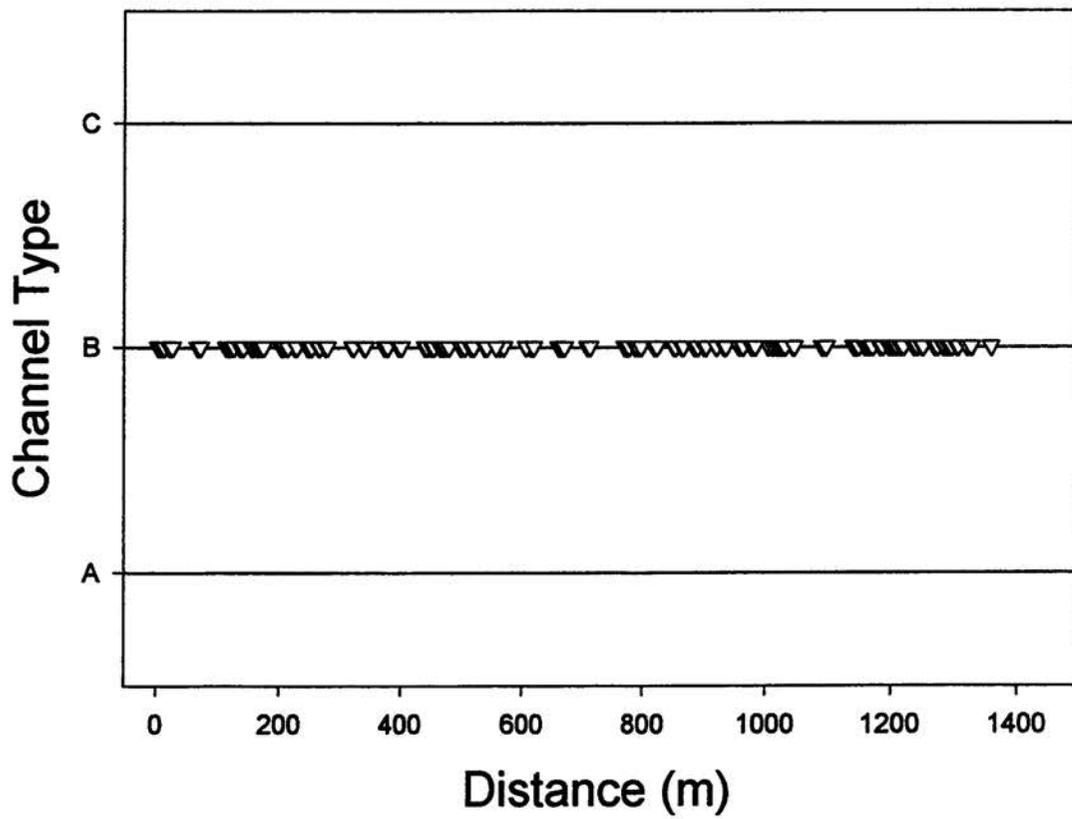
Riparian Width**Stream: East Fork Nicks Creek****Number of Measurements: 6****Mean Width: 15.7m Std Dev: 6.4****Max: 27.3m Min: 9.7m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**East Fork Nicks Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



East Fork Nicks Creek Rosgen's Channel Type Distribution



Stream: Nicks Creek

District: Mount Rogers National Recreation Area/Old Wythe Ranger District

Quadrangle: Atkins

Sample Date: 09/09/98

Downstream Starting Point: Confluence of East Fork Nicks Creek

Total Distance Surveyed: 2.7 kilometers

Percent of Total Area - Pools: 28.0%

Number of Pools: 157

Number of Pools per kilometer: 58.1

Total Pool Area: 2419.7 sq. meters \pm 95.2

Mean Pool Area: 15.4 sq. meters

Correction Factor: 1.04

Mean Maximum Depth: 32.6 cm

Mean Average Depth: 22.4 cm

Mean Average Residual Pool Depth: 15.7 cm

Percent of Total Area - Riffles: 72.0%

Number of Riffles: 134

Number of Riffles per kilometer: 49.6

Total Riffle Area: 6207.5 sq. meters \pm 191.8

Mean Riffle Area: 46.3 sq. meters

Correction Factor: 1.04

Mean Maximum Depth: 14.8 cm

Mean Average Depth: 9.4 cm

Number of Large Woody Debris Pieces per kilometer: 45.8

Wood < 5 m and < 55 cm: 33.6

Wood < 5 m and > 55 cm: 0.4

Wood > 5 m and < 55 cm: 11.8

Wood > 5 m and > 55 cm: 0.0

Mean Channel Width: 5.1 m

Mean Riparian Width: 21.3 m

Mean Maximum Riparian Distance (either side): 12.2 m

Mean Minimum Riparian Distance (either side): 4.0 m

Maximum Riparian Width (Total): 38.9 m

Minimum Riparian Width (Total): 11.4 m

Nicks Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 0.0%

Rosgen's Channel Type Frequency:

Channel Type A: 55.7%

Channel Type B: 38.3%

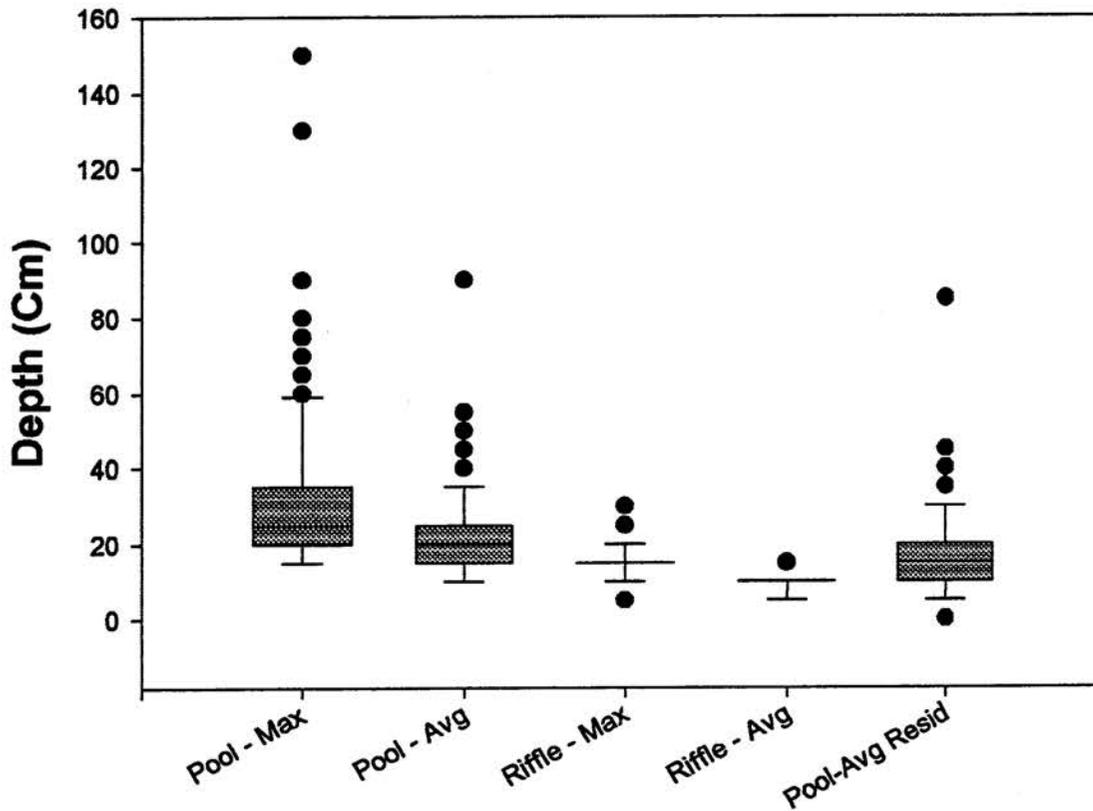
Channel Type C: 6.0%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: N/A

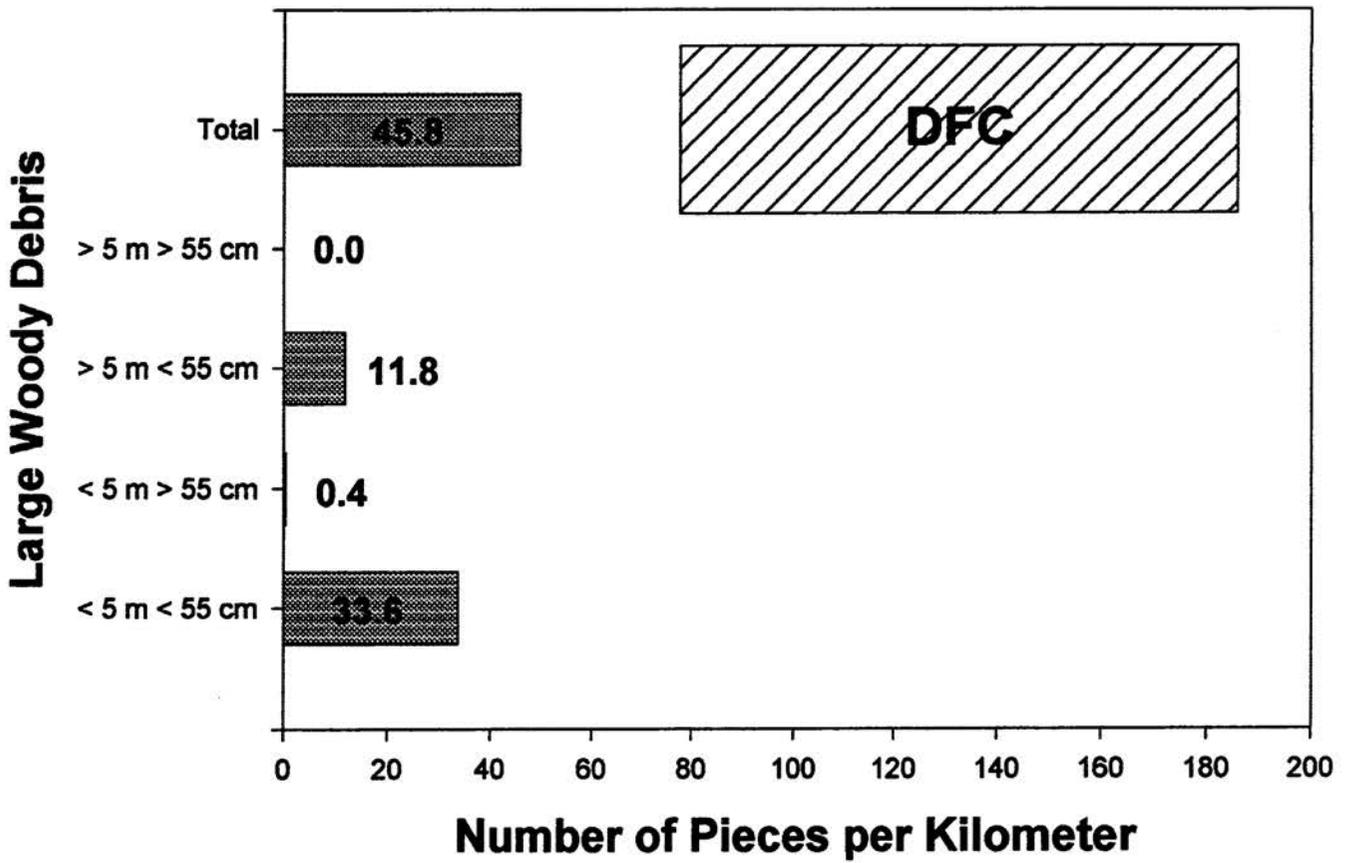
Average Channel Gradient: N/A

Nicks Creek

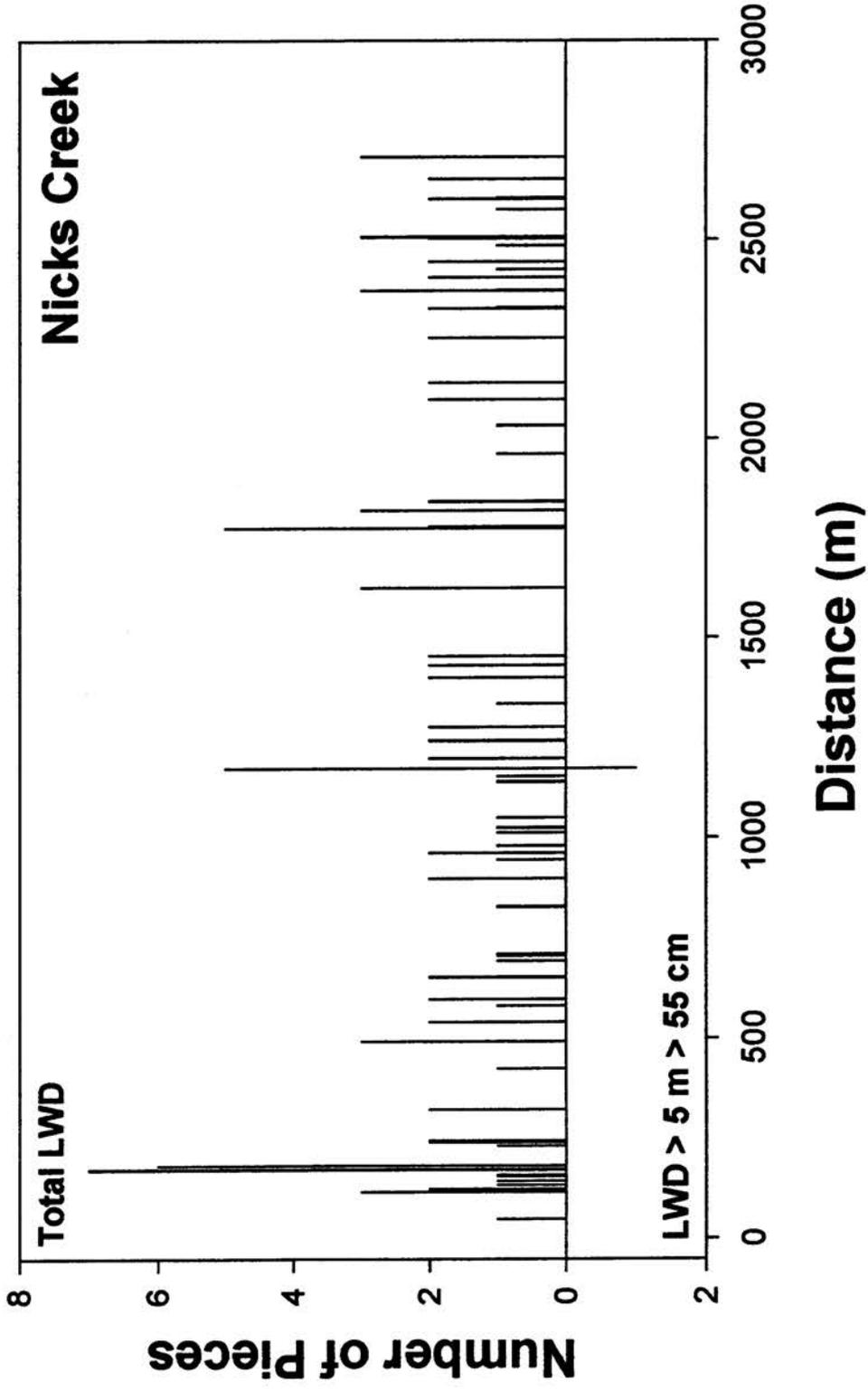


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

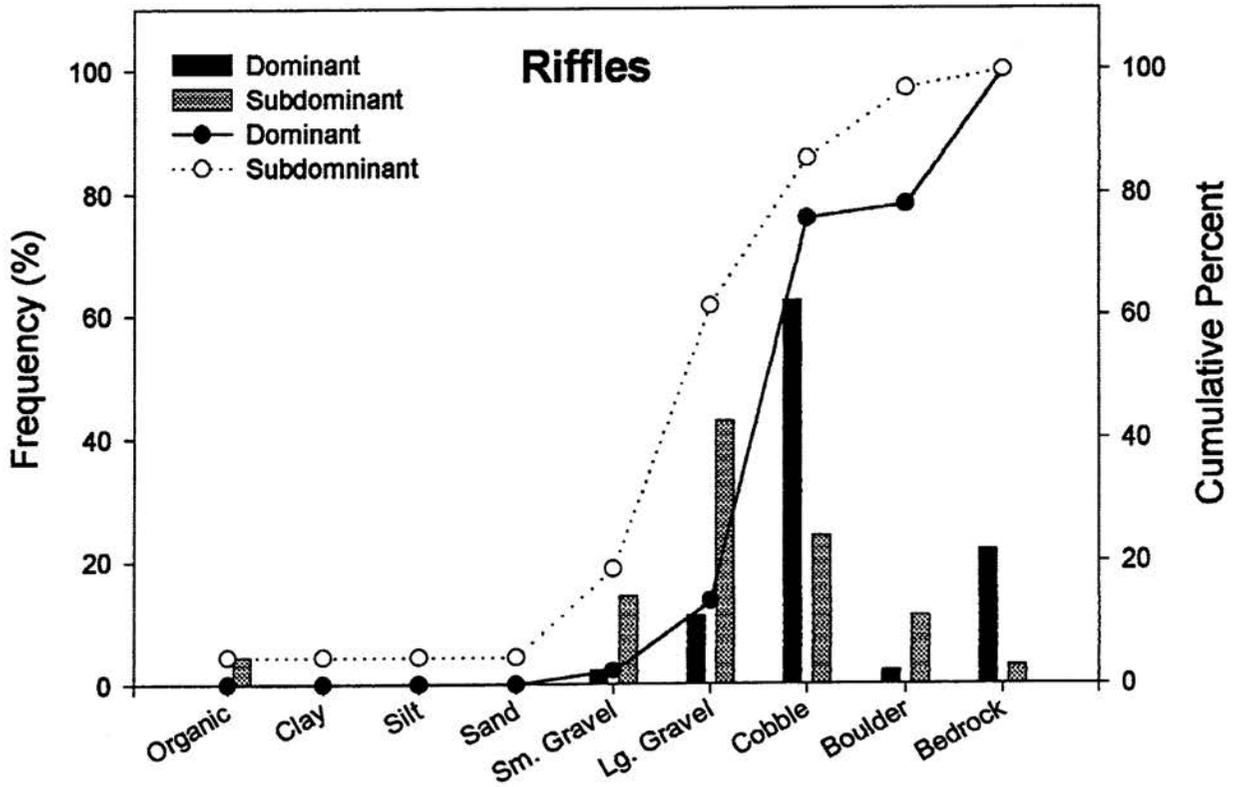
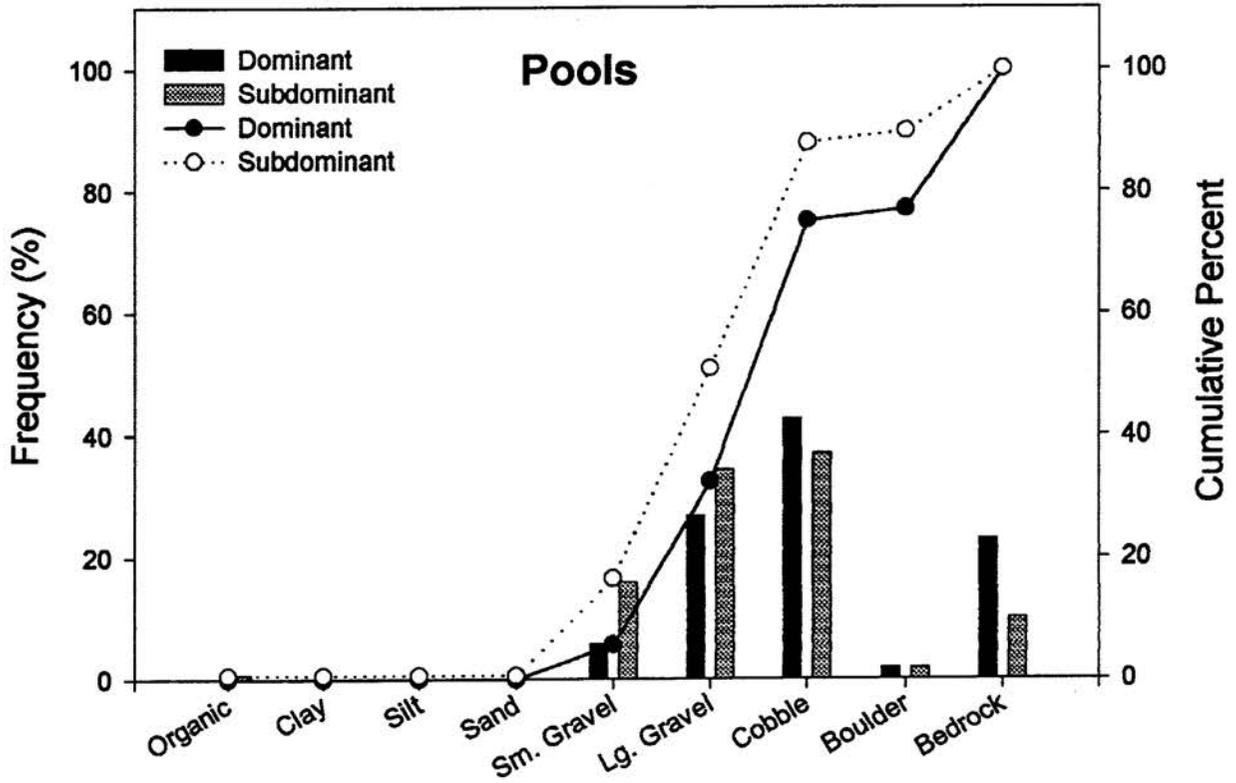
Nicks Creek

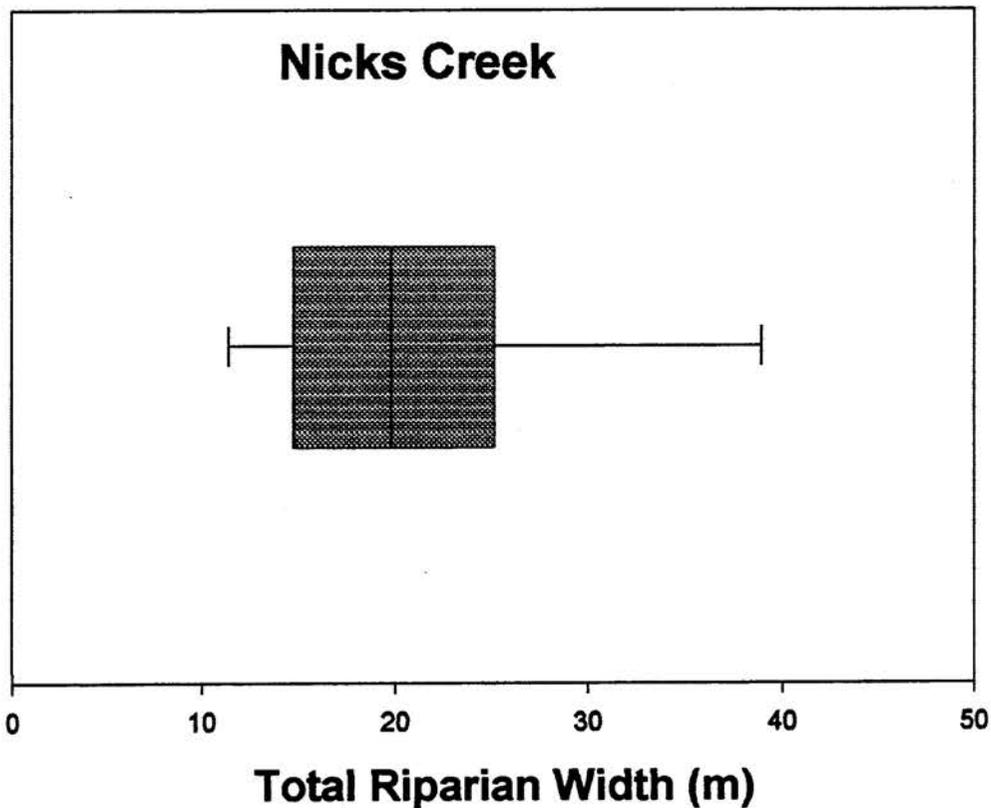


Distribution and Abundance of Large Woody Debris



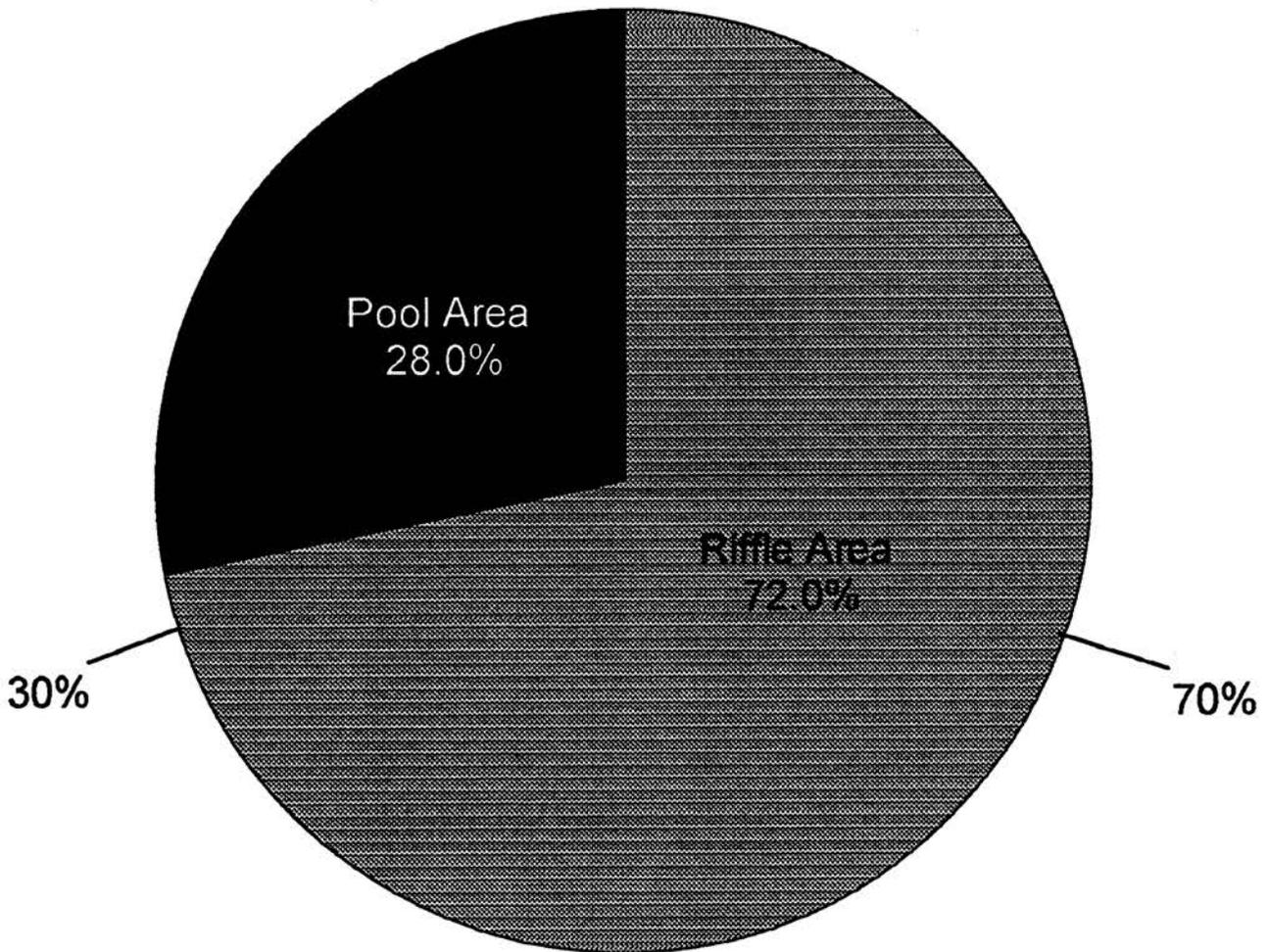
Nicks Creek Substrate Composition



Riparian Width**Stream: Nicks Creek****Number of Measurements: 5****Mean Width: 21.3m Std Dev: 10.5****Max: 39.0m Min: 11.4m**

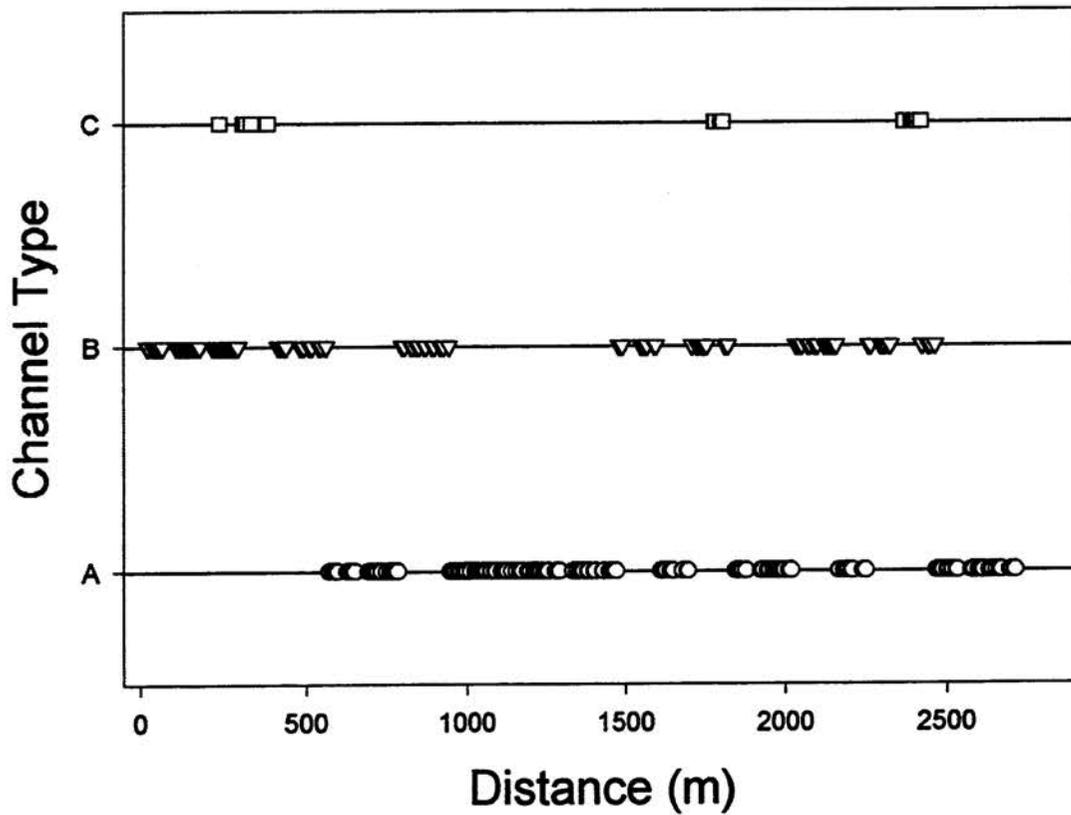
Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Nicks Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Nicks Creek

Rosgen's Channel Type Distribution



Stream: South Fork Holston River (Upper)

District: Mount Rogers National Recreation Area

Quadrangle: Atkins

Sample Date: 07/22/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 1.6 kilometers

Percent of Total Area - Pools: 73.9%

Number of Pools: 25

Number of Pools per kilometer: 15.6

Total Pool Area: 14159.6 sq. meters \pm 10276.3

Mean Pool Area: 566.4 sq. meters

Correction Factor: 1.20

Mean Maximum Depth: 69.8 cm

Mean Average Depth: 47.6 cm

Mean Average Residual Pool Depth: 29.5 cm

Percent of Total Area - Riffles: 26.1%

Number of Riffles: 16

Number of Riffles per kilometer: 10

Total Riffle Area: 5004.7 sq. meters \pm 883.0

Mean Riffle Area: 312.8 sq. meters

Correction Factor: 1.00

Mean Maximum Depth: 41.3 cm

Mean Average Depth: 28.4 cm

Number of Large Woody Debris Pieces per kilometer: 84.0

Wood < 5 m and < 55 cm: 37.0

Wood < 5 m and > 55 cm: 0.0

Wood > 5 m and < 55 cm: 40.8

Wood > 5 m and > 55 cm: 6.2

Mean Channel Width: 11.4 m

Mean Riparian Width: 43.4 m

Mean Maximum Riparian Distance (either side): 26.6 m

Mean Minimum Riparian Distance (either side): 5.4 m

Maximum Riparian Width (Total): 51.8 m

Minimum Riparian Width (Total): 34.8 m

South Fork Holston River (Upper) Continued.

Percent of Pool Habitat Surveyed as Glides: 33.4%

Rosgen's Channel Type Frequency:

Channel Type A:

Channel Type B: 36.4%

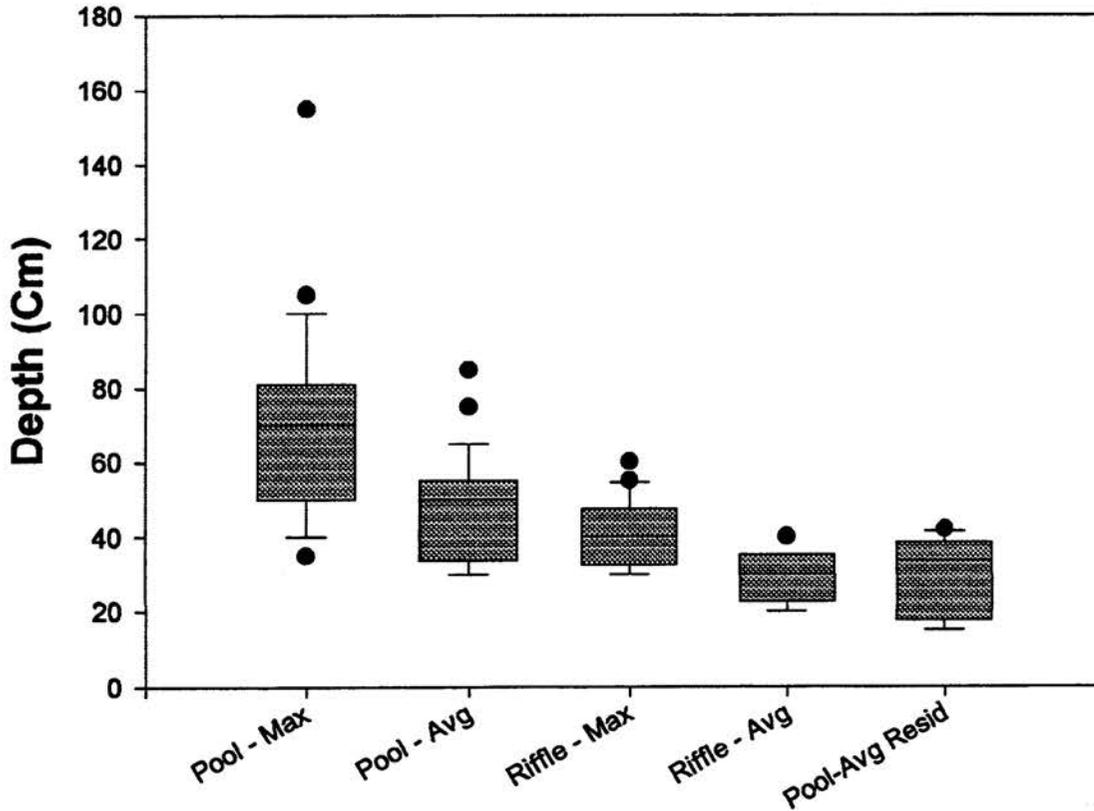
Channel Type C: 63.6%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 16.0%

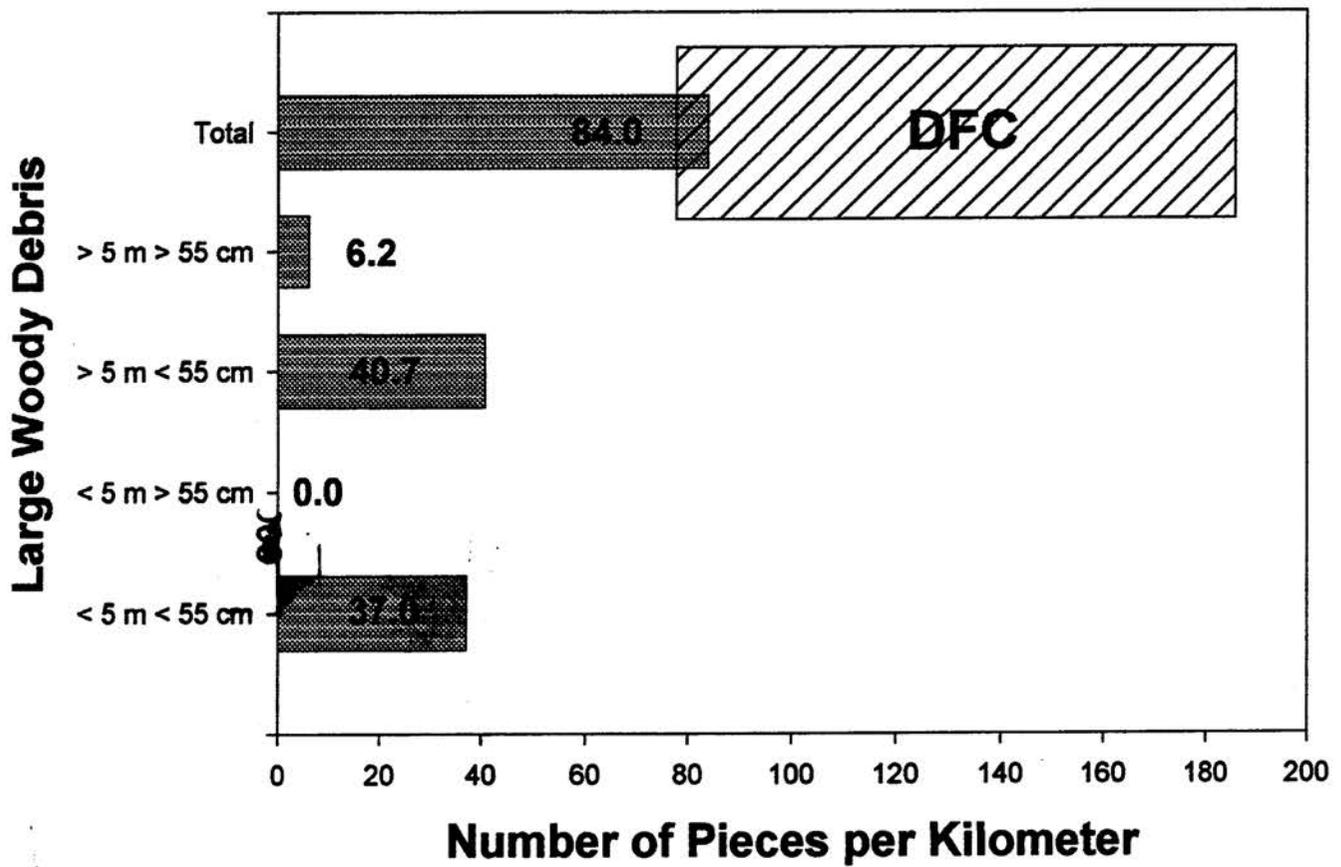
Average Channel Gradient: 2.0

South Fork Holston River (Upper)

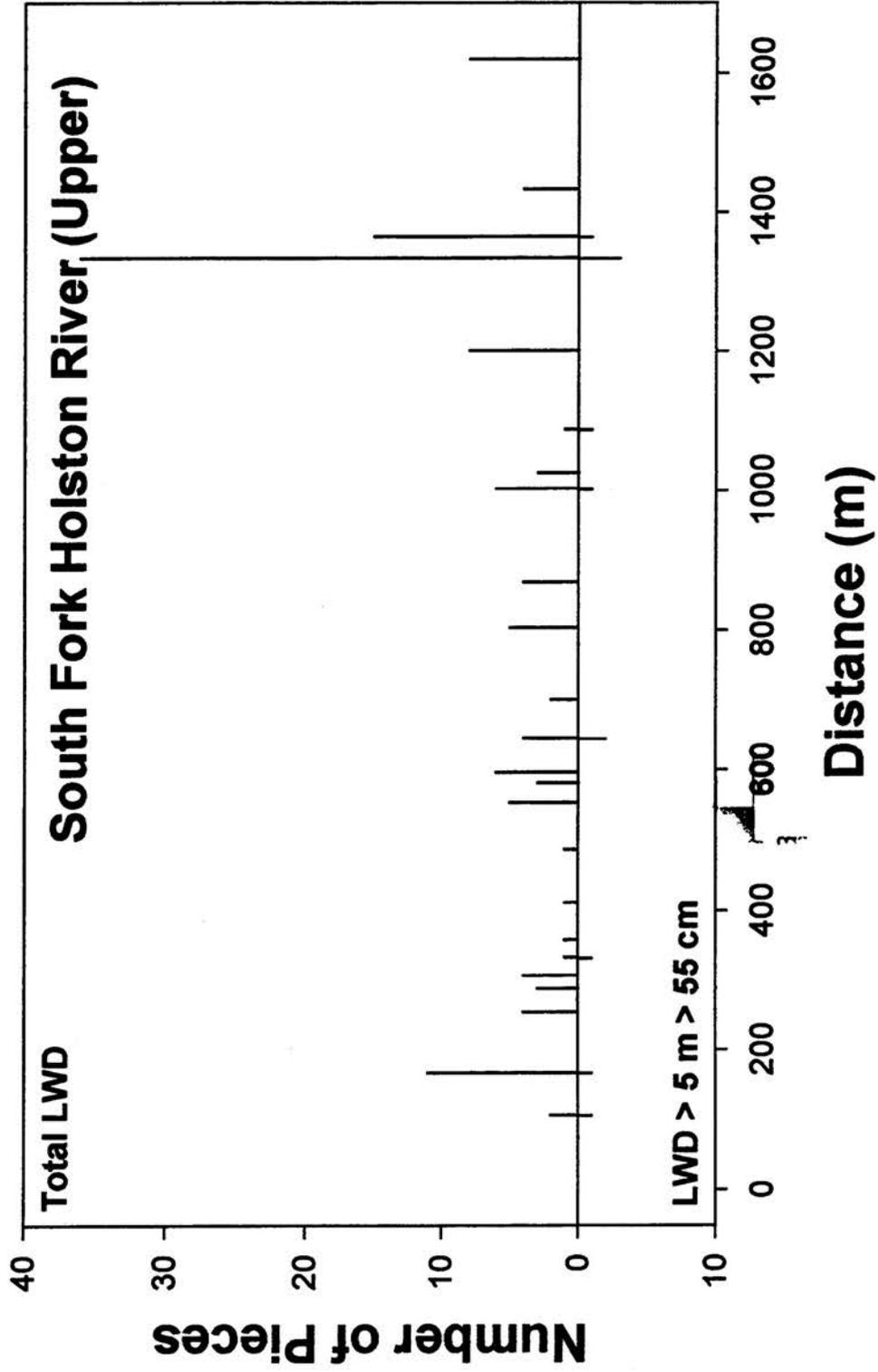


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

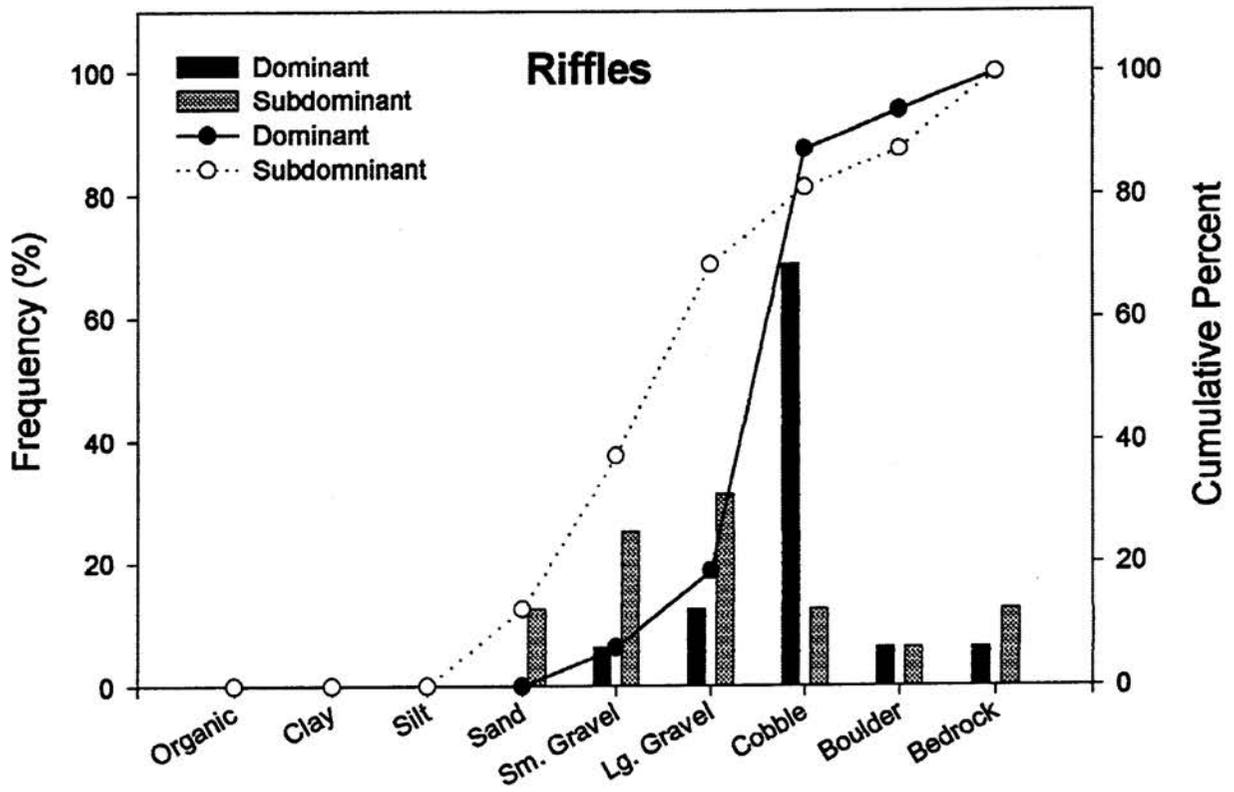
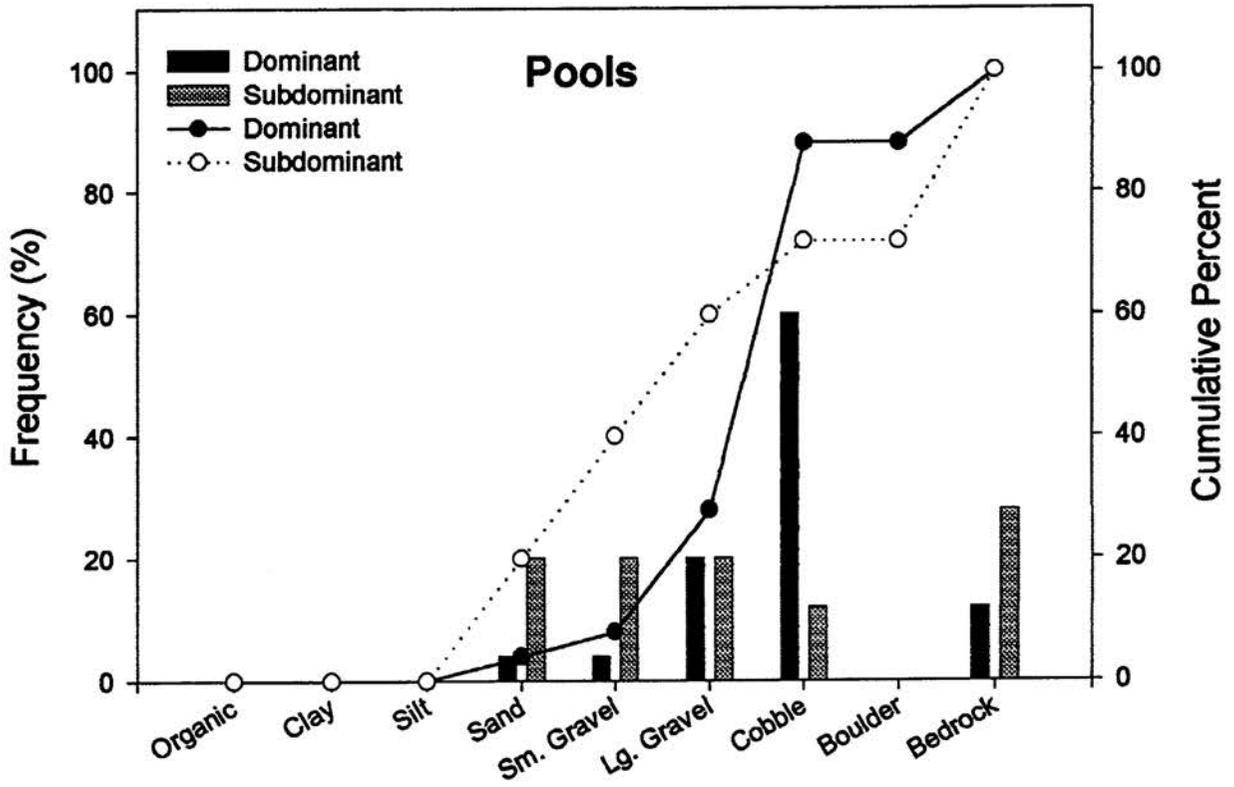
South Fork Holston River (Upper)

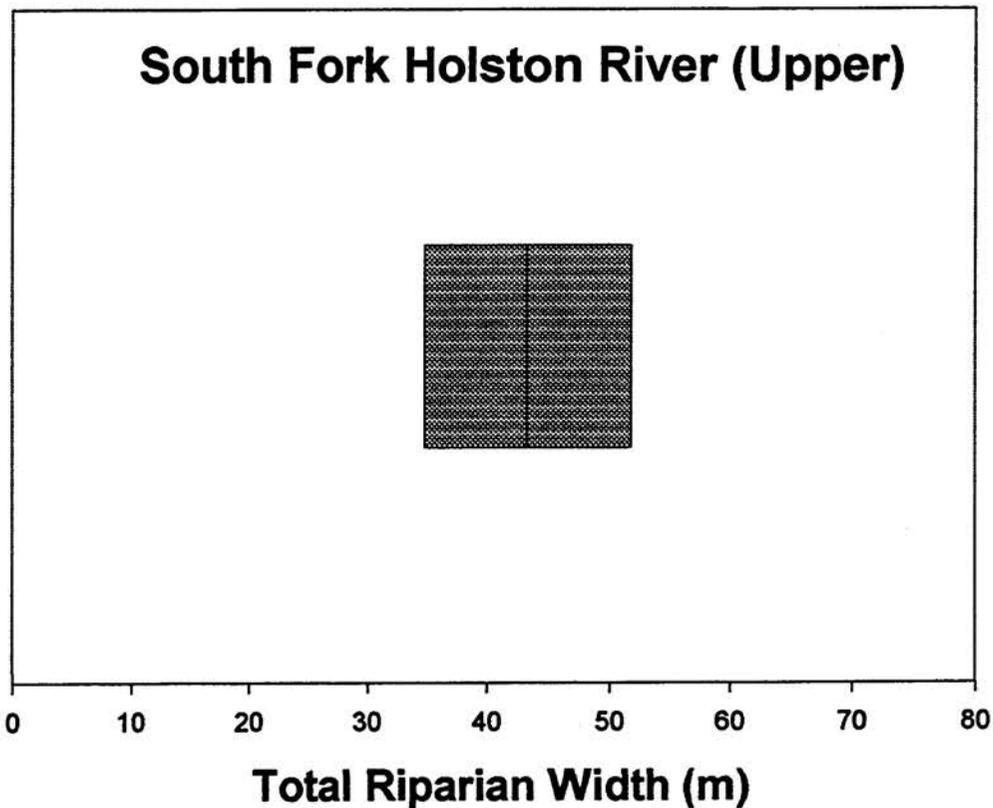


Distribution and Abundance of Large Woody Debris



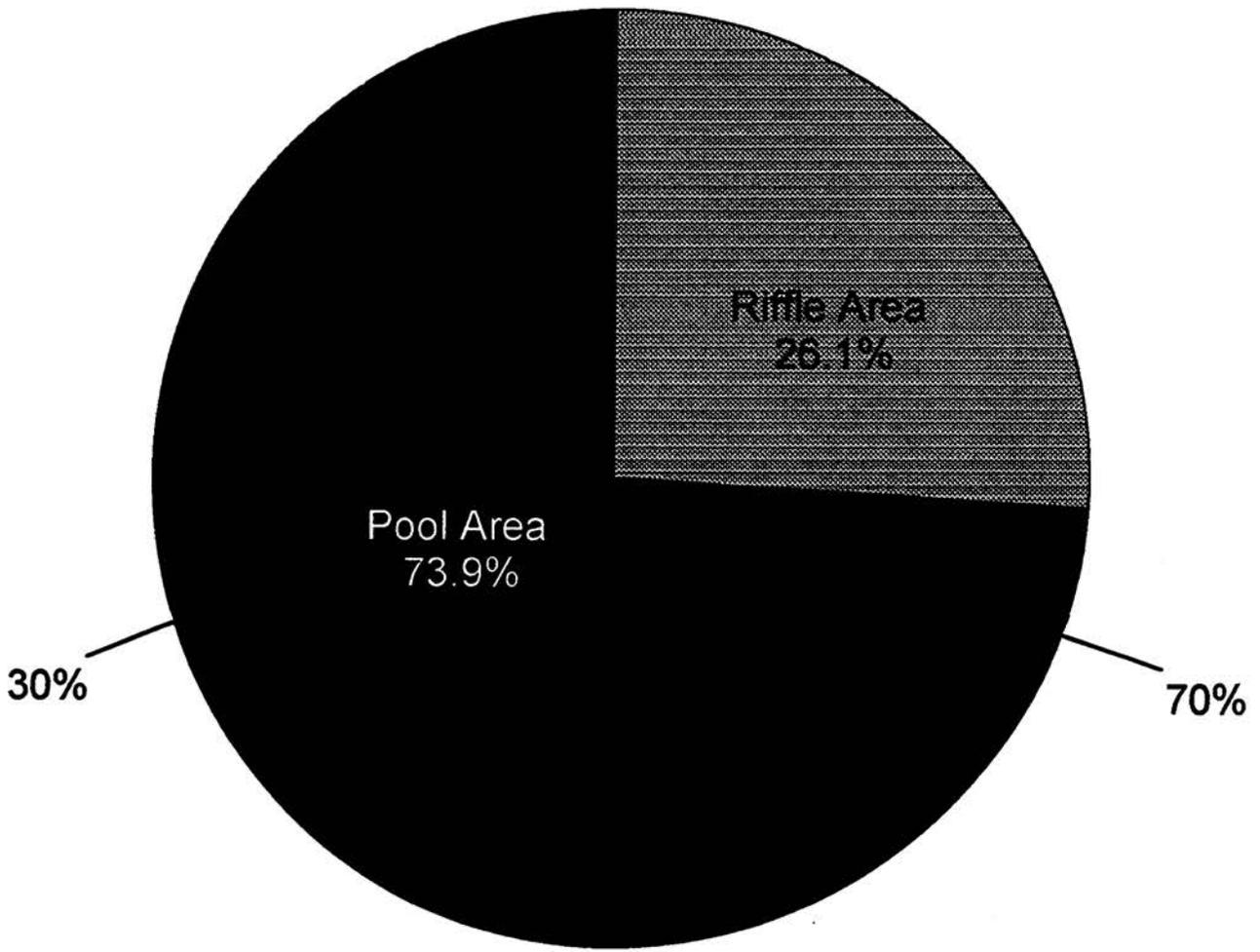
South Fork Holston River (Upper) Substrate Composition



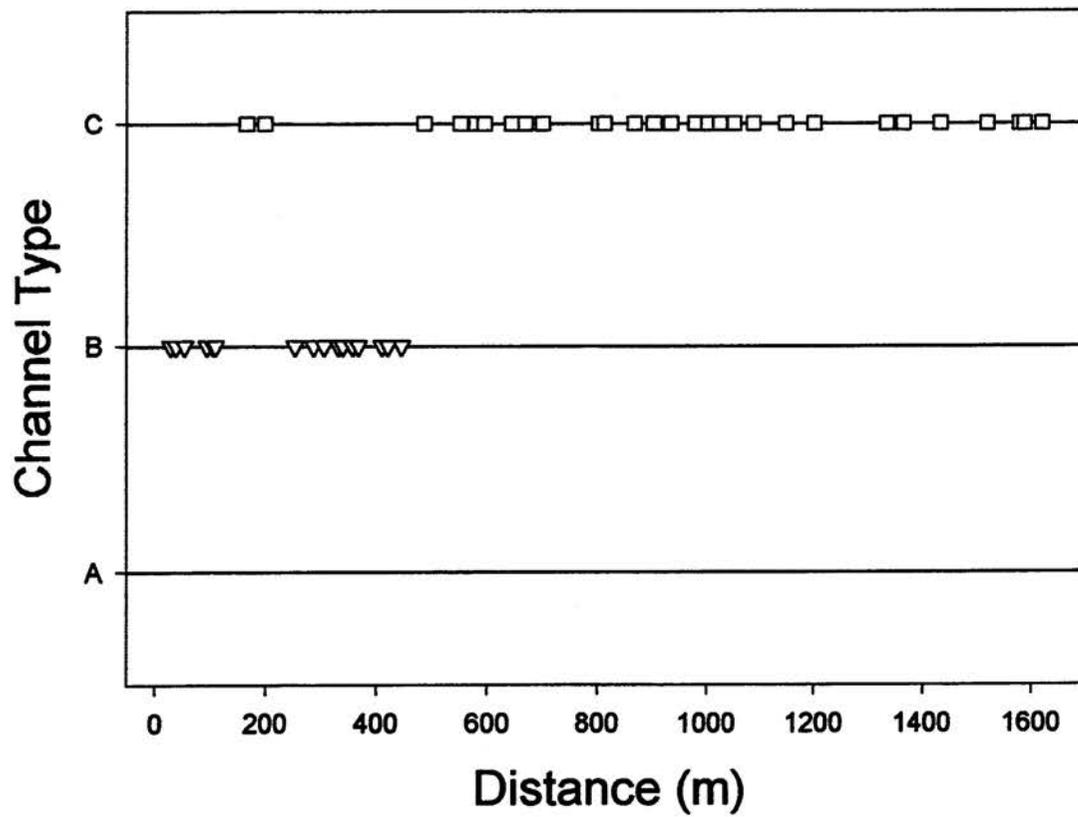
Riparian Width**Stream: South Fork Holston River (Upper)****Number of Measurements: 2****Mean Width: 43.3m Std Dev: 12.0****Max: 51.8m Min: 34.8m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**South Fork Holston River (Upper)
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



South Fork Holston River (Upper) Rosgen's Channel Type Distribution



Marion Quadrangle

Stream: South Fork Holston River (Lower)

District: Mount Rogers National Recreation Area

Quadrangle: Marion

Sample Date: 07/22/98

Downstream Starting Point: Forest Service Boundary (Buller Bass Hatchery)

Total Distance Surveyed: 3.3 kilometers

Percent of Total Area - Pools: 49.0%

Number of Pools: 44

Number of Pools per kilometer: 13.3

Total Pool Area: 22823.2 sq. meters \pm 5000.7

Mean Pool Area: 518.7 sq. meters

Correction Factor: 1.02

Mean Maximum Depth: 85.2 cm

Mean Average Depth: 50.1 cm

Mean Average Residual Pool Depth: 26.3 cm

Percent of Total Area - Riffles: 51.0%

Number of Riffles: 33

Number of Riffles per kilometer: 10.0

Total Riffle Area: 23744.9 sq. meters \pm 17947.4

Mean Riffle Area: 719.5 sq. meters

Correction Factor: 1.09

Mean Maximum Depth: 54.2 cm

Mean Average Depth: 28.2 cm

Number of Large Woody Debris Pieces per kilometer: 83.0

Wood < 5 m and < 55 cm: 48.7

Wood < 5 m and > 55 cm: 0.3

Wood > 5 m and < 55 cm: 27.9

Wood > 5 m and > 55 cm: 6.1

Mean Channel Width: 18.0 m

Mean Riparian Width: 71.8 m

Mean Maximum Riparian Distance (either side): 47.9 m

Mean Minimum Riparian Distance (either side): 5.9 m

Maximum Riparian Width (Total): 139.2 m

Minimum Riparian Width (Total): 36.3 m

South Fork Holston River (Lower) Continued.

Percent of Pool Habitat Surveyed as Glides: 30.9%

Rosgen's Channel Type Frequency:

Channel Type A:

Channel Type B: 15.1%

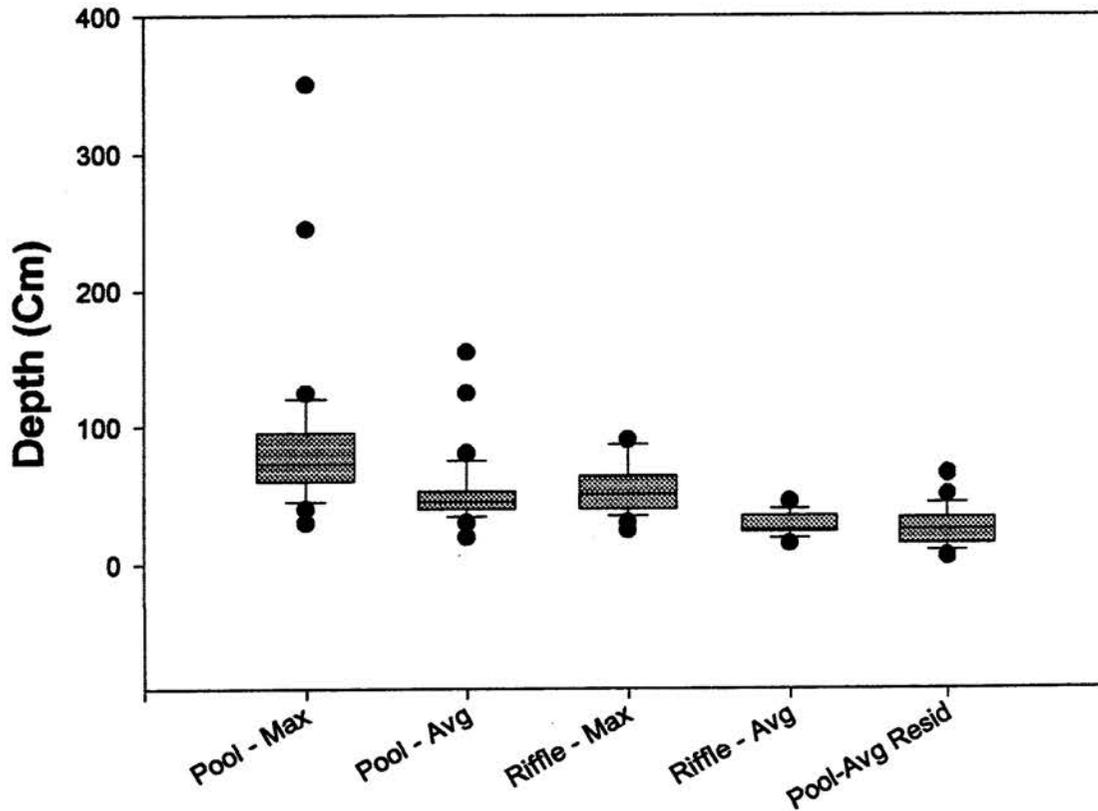
Channel Type C: 84.9%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 25.0%

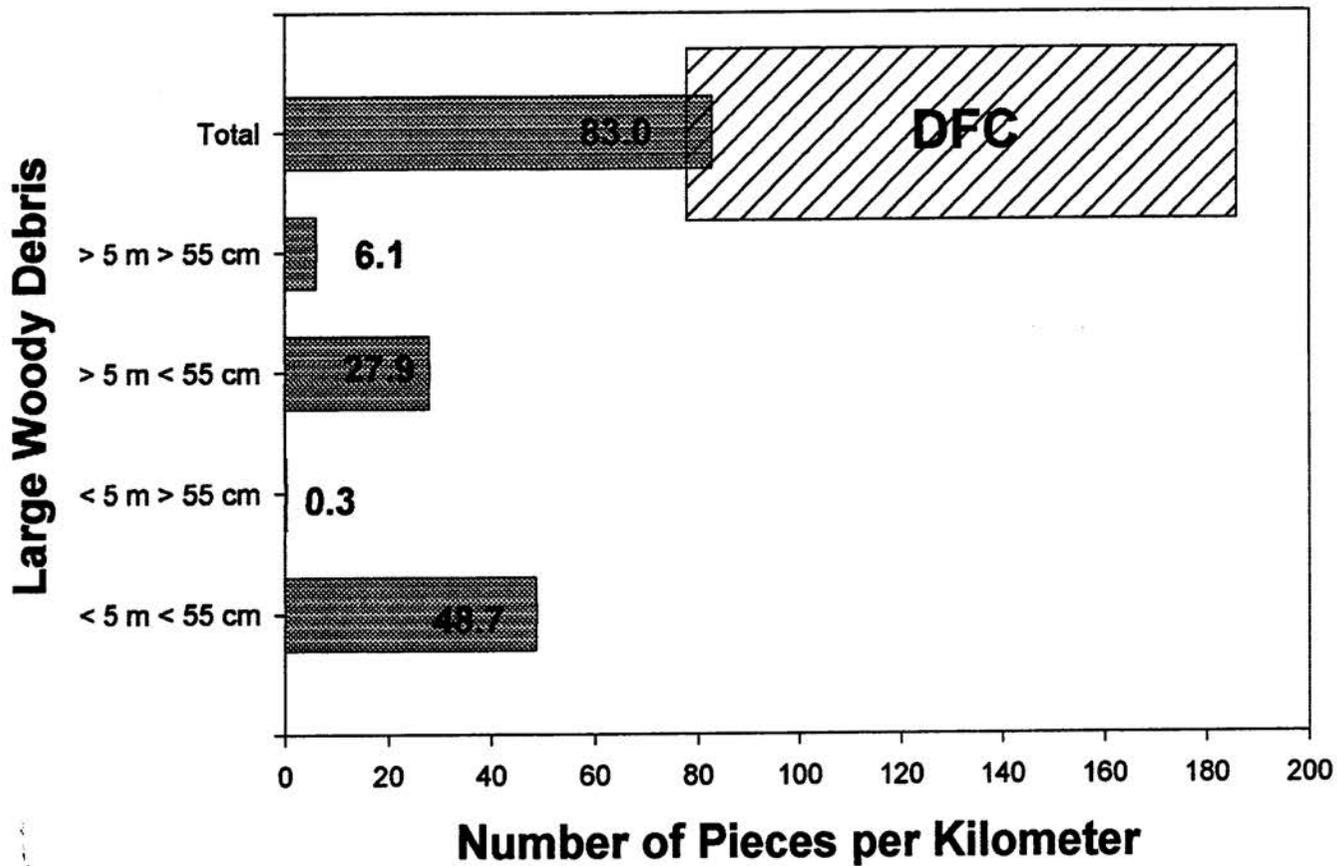
Average Channel Gradient: 3.3

South Fork Holston River (Lower)

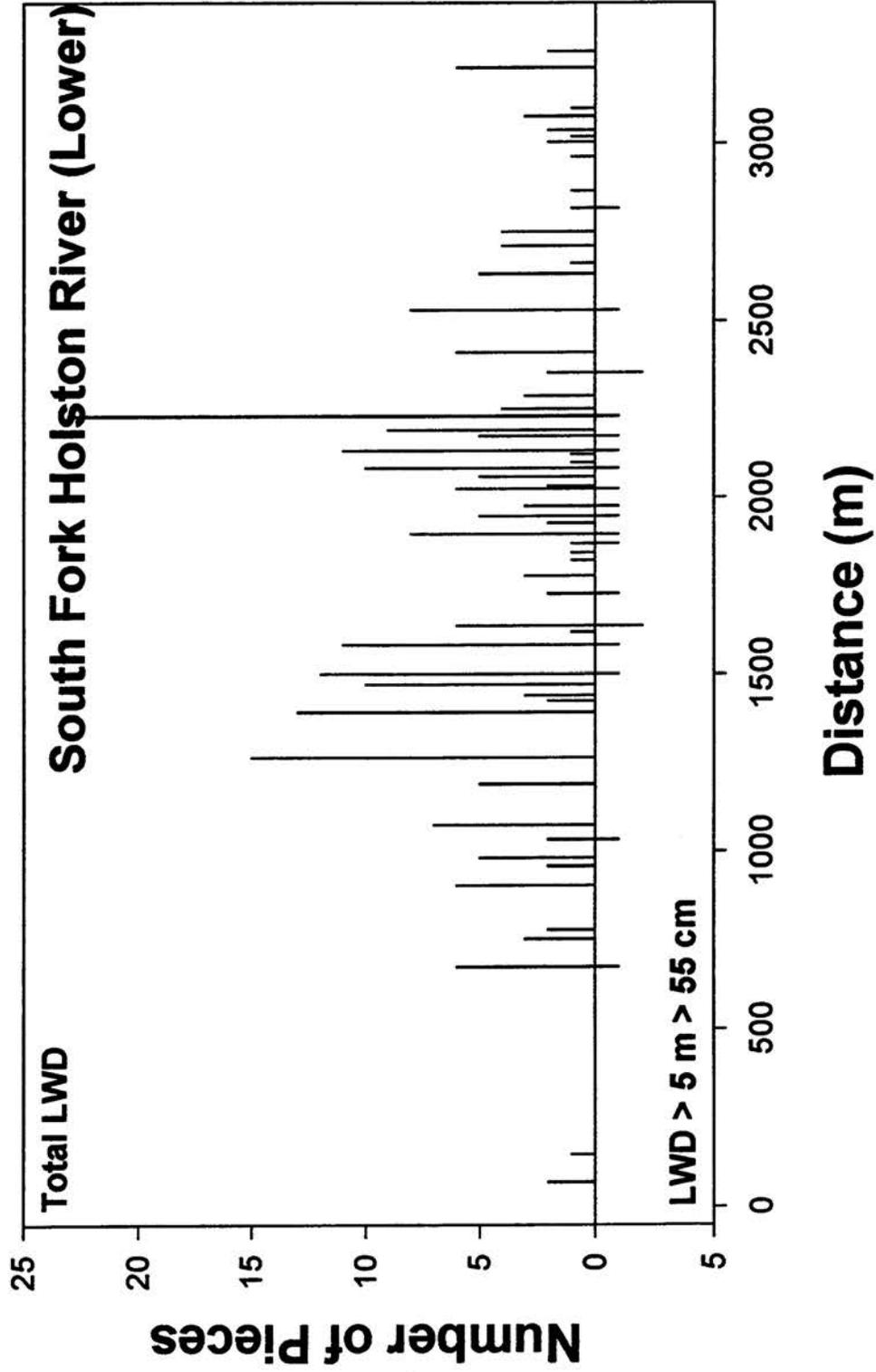


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

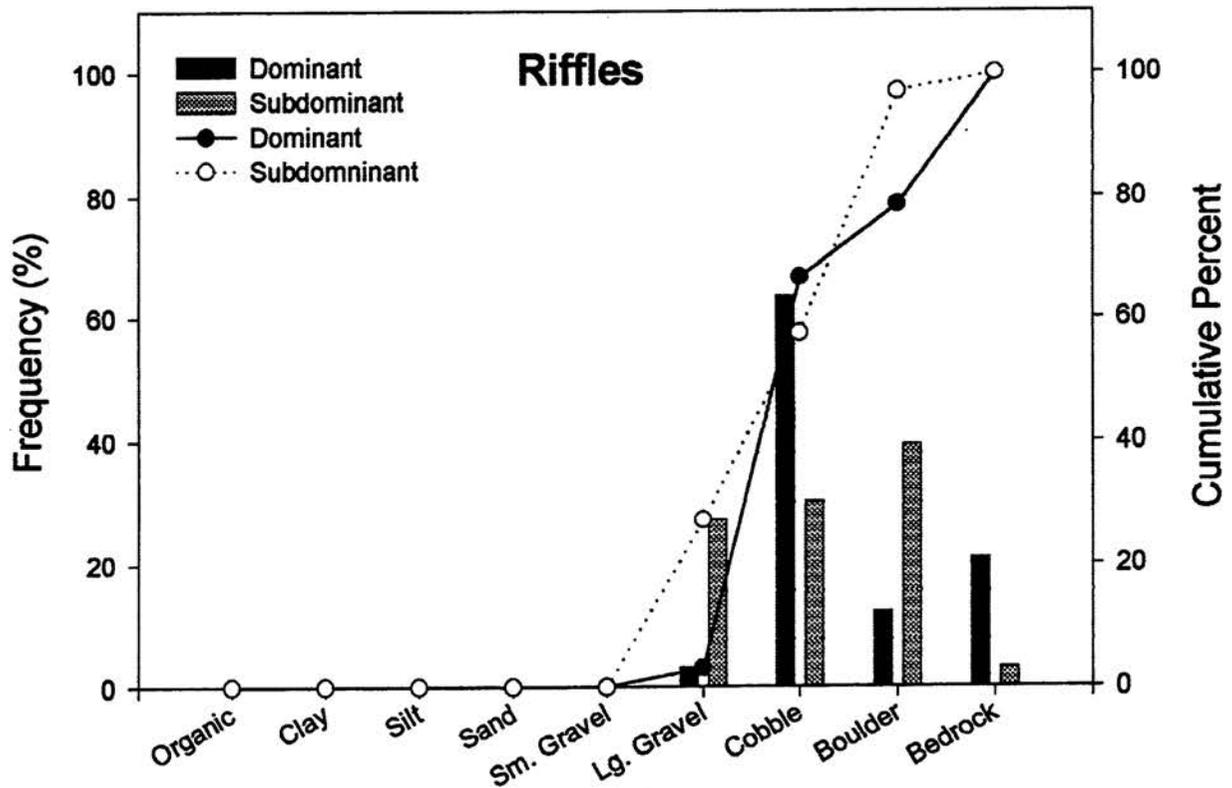
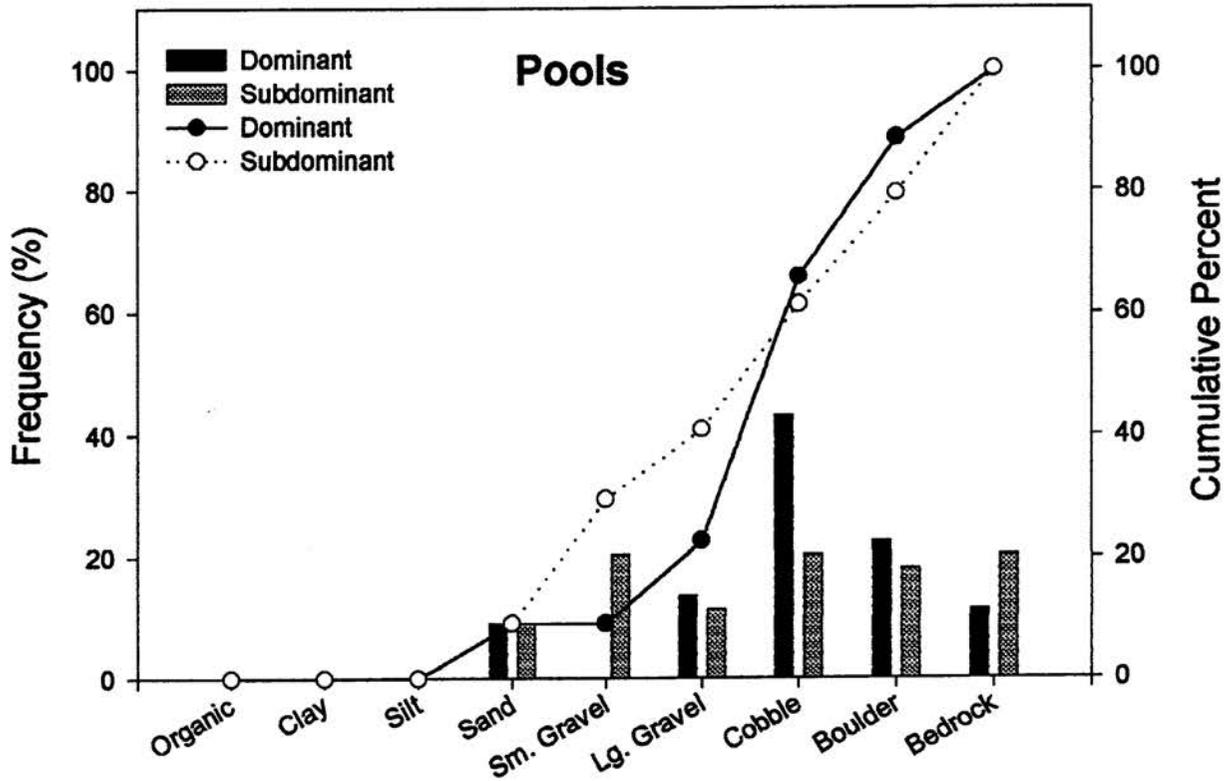
South Fork Holston River (Lower)

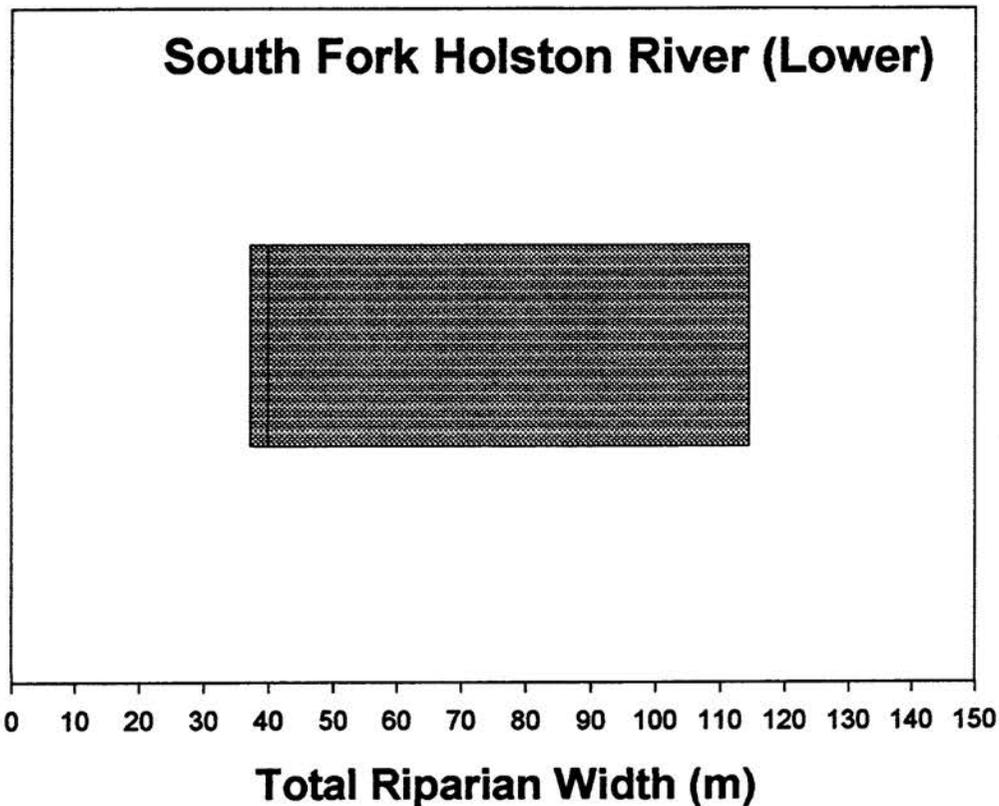


Distribution and Abundance of Large Woody Debris



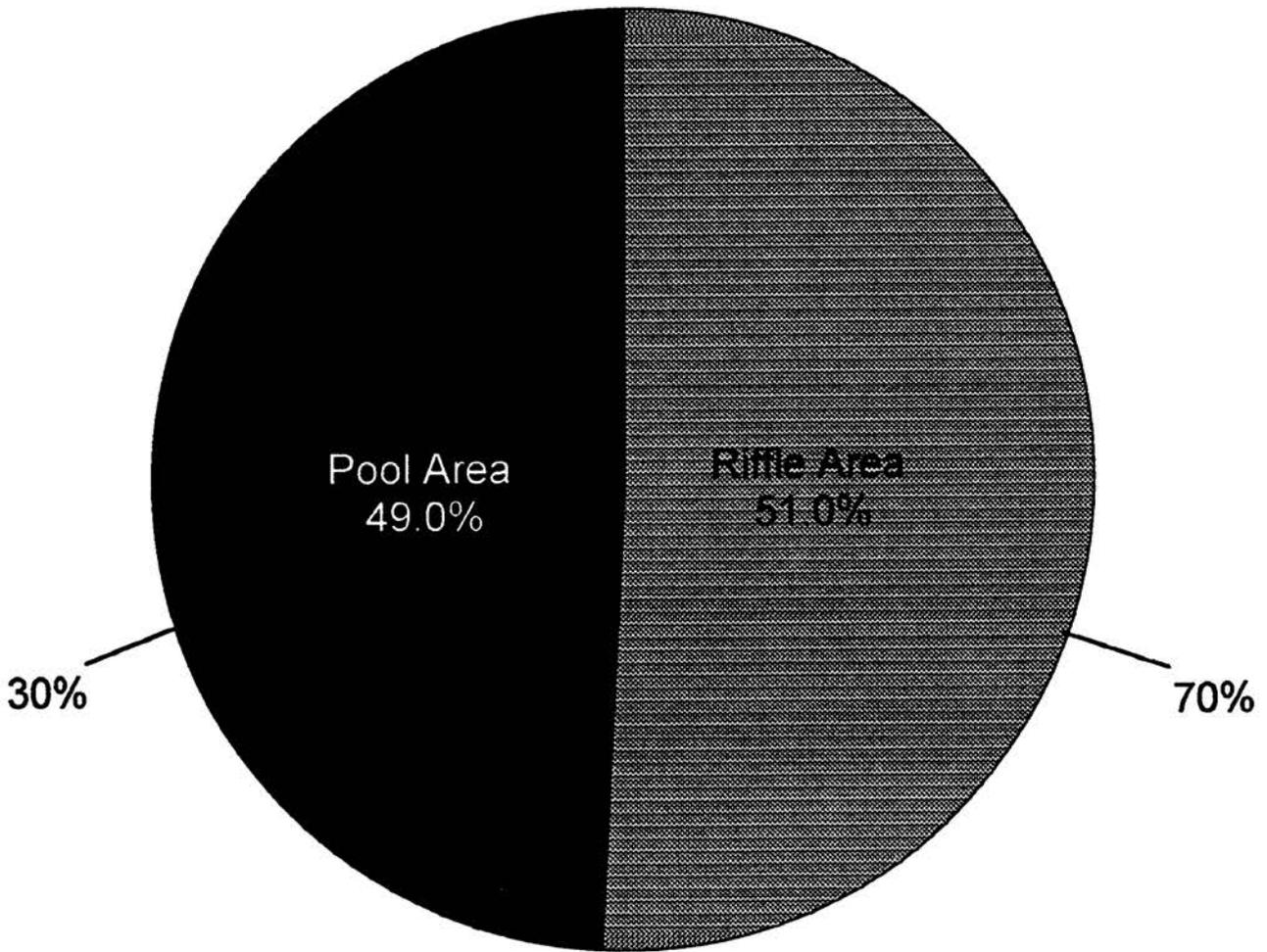
South Fork Holston River (Lower) Substrate Composition



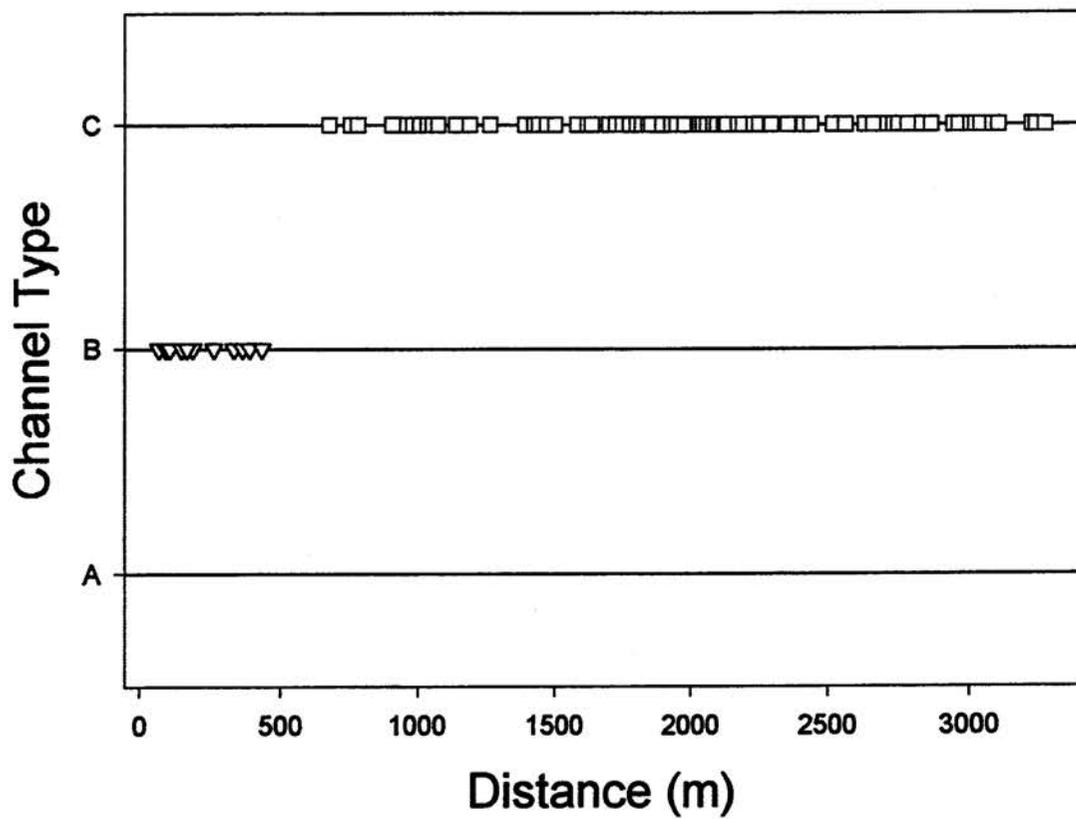
Riparian Width**Stream: South Fork Holston River (Lower)****Number of Measurements: 3****Mean Width: 71.8m Std Dev: 58.4****Max: 139.2m Min: 36.3m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**South Fork Holston River (Lower)
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



South Fork Holston River (Lower) Rosgen's Channel Type Distribution



Stream: Staley Creek

District: Mount Rogers National Recreation Area

Quadrangle: Atkins/Marion

Sample Date: 07/22/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 0.8 kilometers

Percent of Total Area - Pools: 58.3%

Number of Pools: 41

Number of Pools per kilometer: 51.3

Total Pool Area: 959.5 sq. meters \pm 8.1

Mean Pool Area: 23.4 sq. meters

Correction Factor: 0.96

Mean Maximum Depth: 30.1 cm

Mean Average Depth: 18.4 cm

Mean Average Residual Pool Depth: 14.0 cm

Percent of Total Area - Riffles: 41.7%

Number of Riffles: 20

Number of Riffles per kilometer: 34.1

Total Riffle Area: 686.0 sq. meters \pm 150.1

Mean Riffle Area: 34.3 sq. meters

Correction Factor: 0.95

Mean Maximum Depth: 17.5 cm

Mean Average Depth: 10.2 cm

Number of Large Woody Debris Pieces per kilometer: 619.3

Wood < 5 m and < 55 cm: 455.0

Wood < 5 m and > 55 cm: 10.1

Wood > 5 m and < 55 cm: 142.8

Wood > 5 m and > 55 cm: 11.4

Mean Channel Width: 3.4 m

Mean Riparian Width: 74.8 m

Mean Maximum Riparian Distance (either side): 45.1 m

Mean Minimum Riparian Distance (either side): 26.3 m

Maximum Riparian Width (Total): 79.4 m

Minimum Riparian Width (Total): 70.0 m

Staley Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 52.1%

Rosgen's Channel Type Frequency:

Channel Type A:

Channel Type B: 46.0%

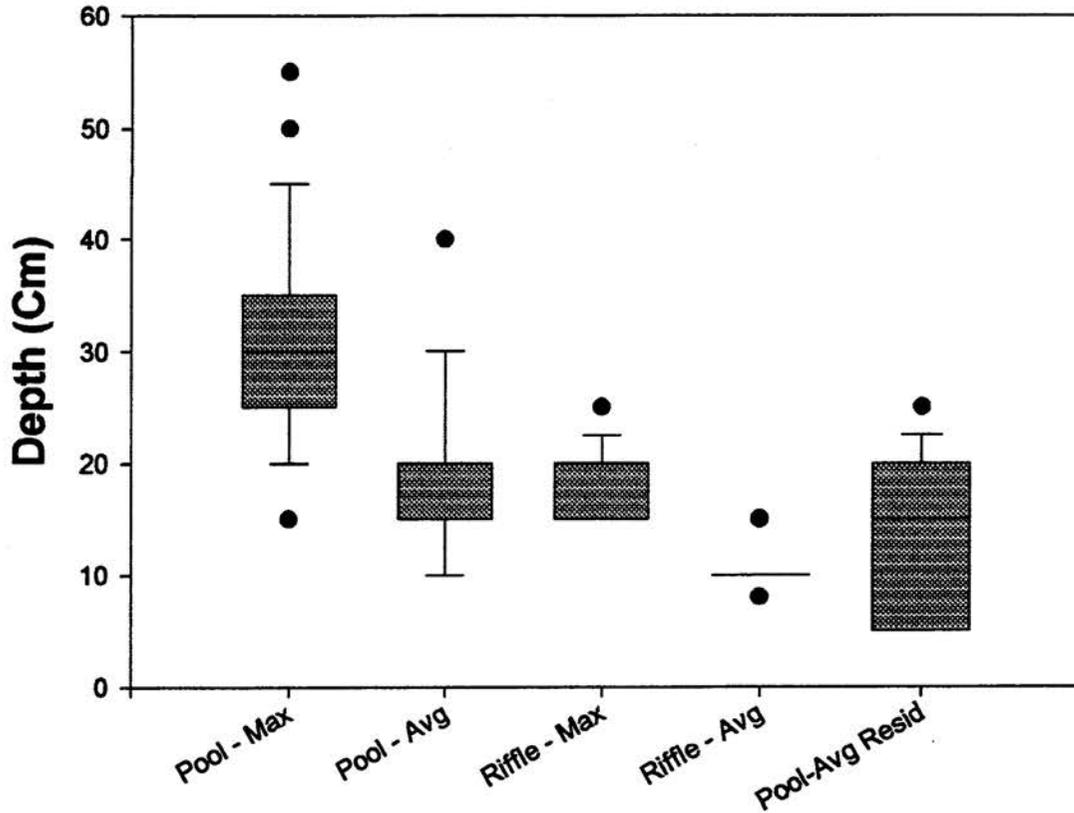
Channel Type C: 54.0%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 26.8%

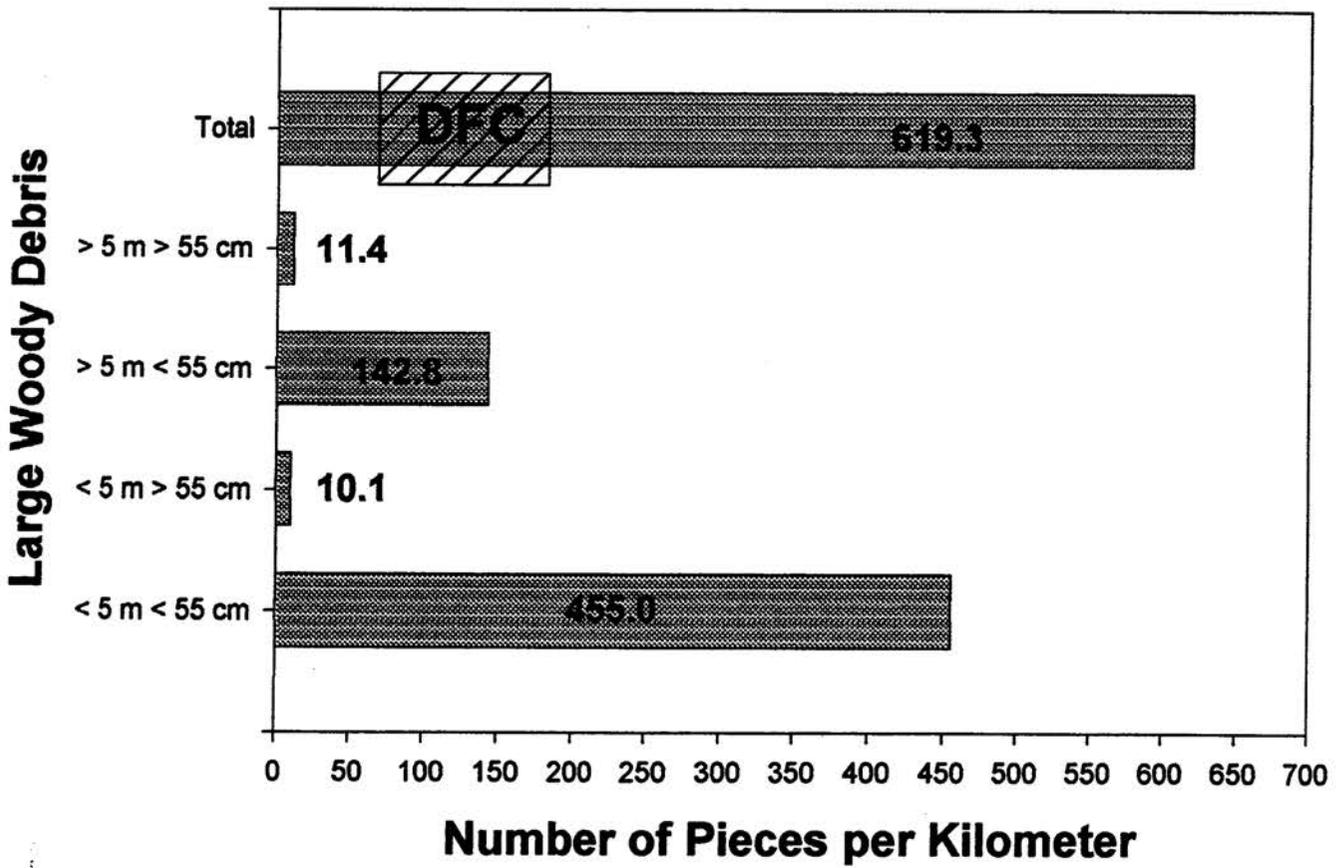
Average Channel Gradient: 4.5

Staley Creek

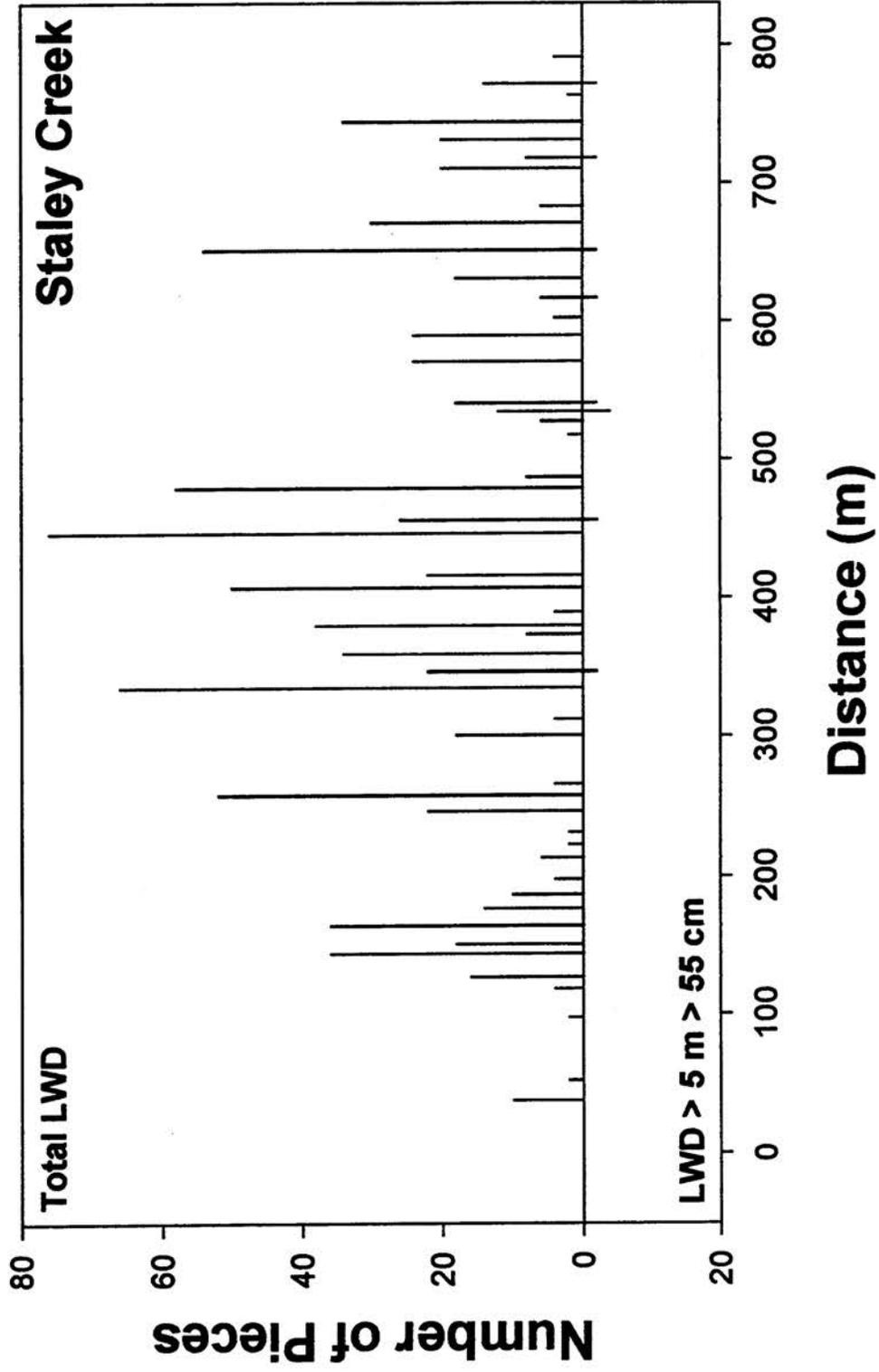


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

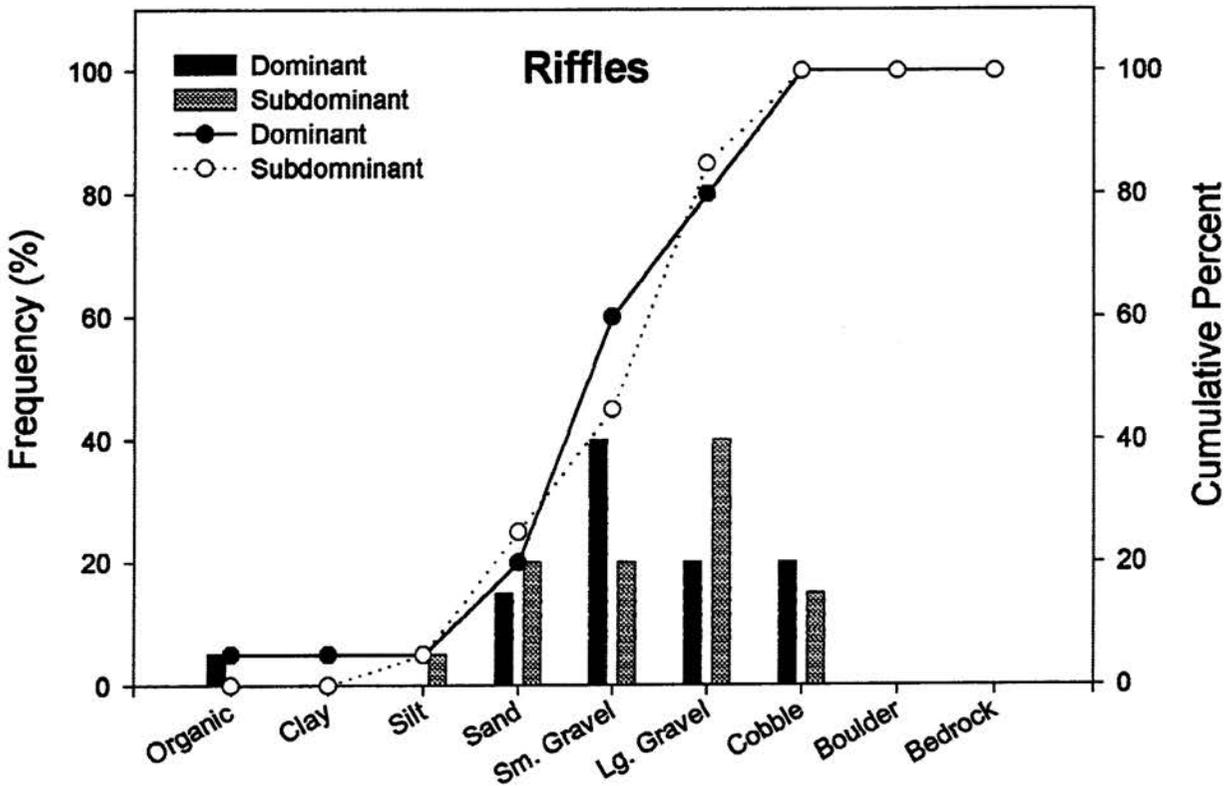
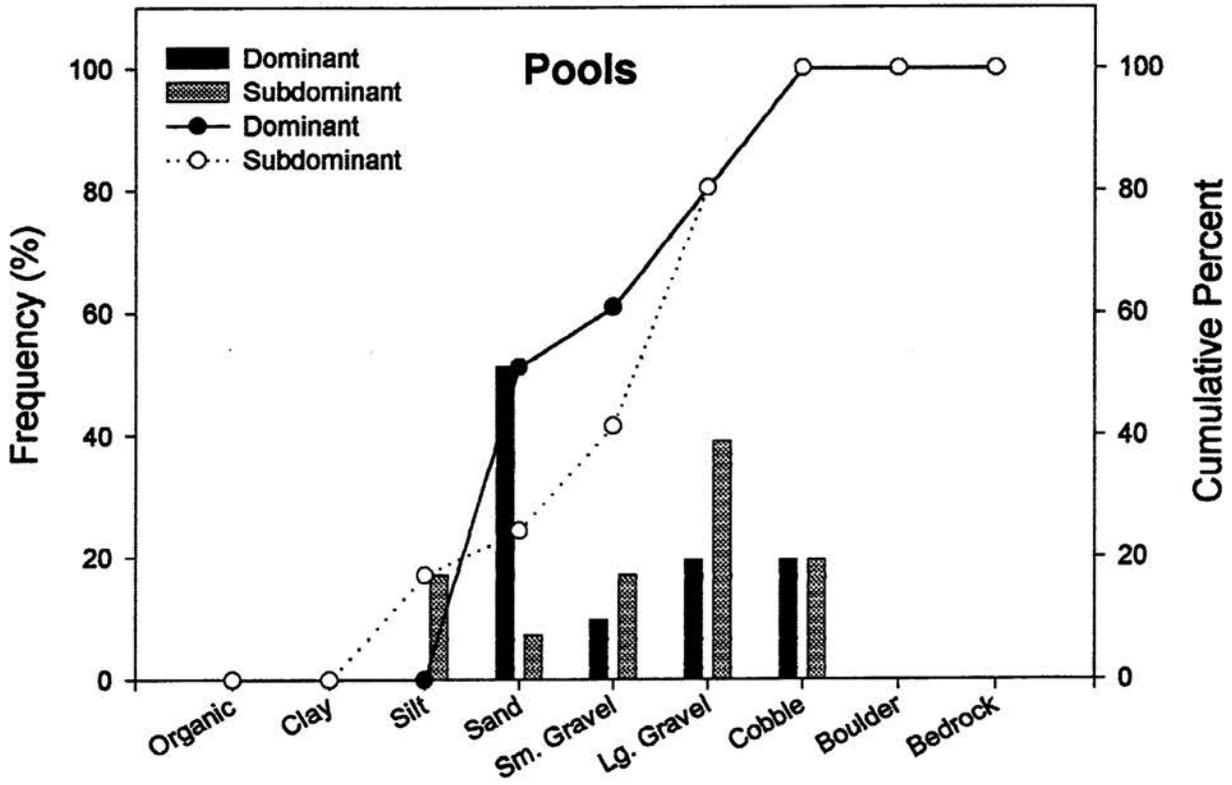
Staley Creek

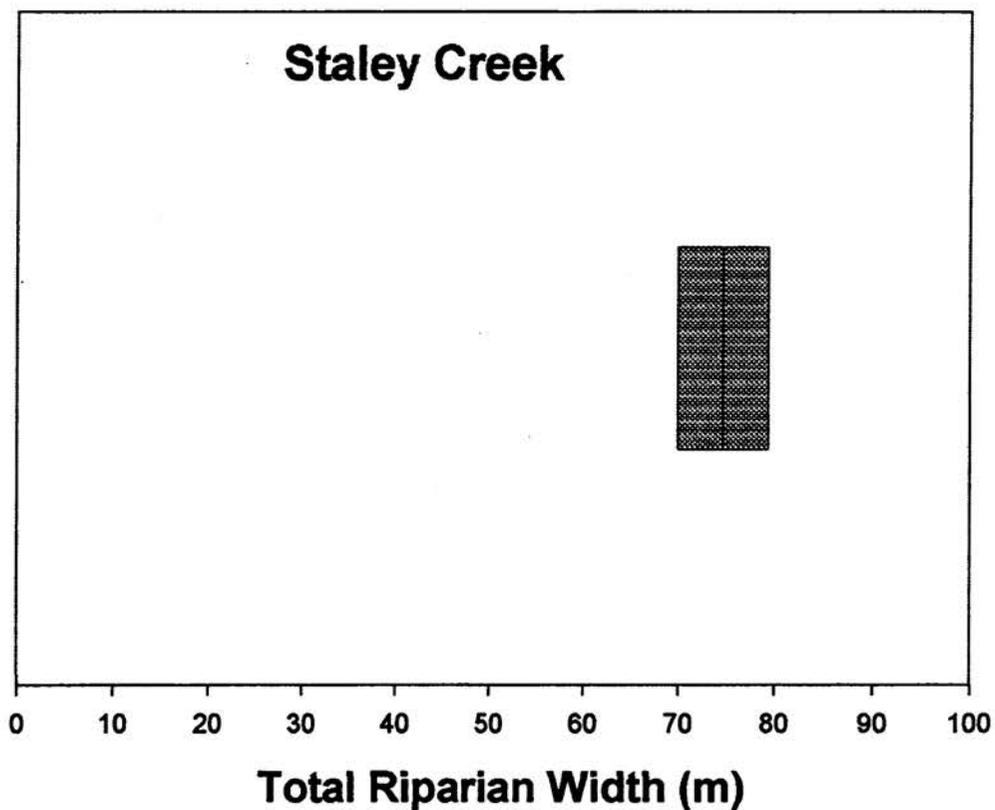


Distribution and Abundance of Large Woody Debris



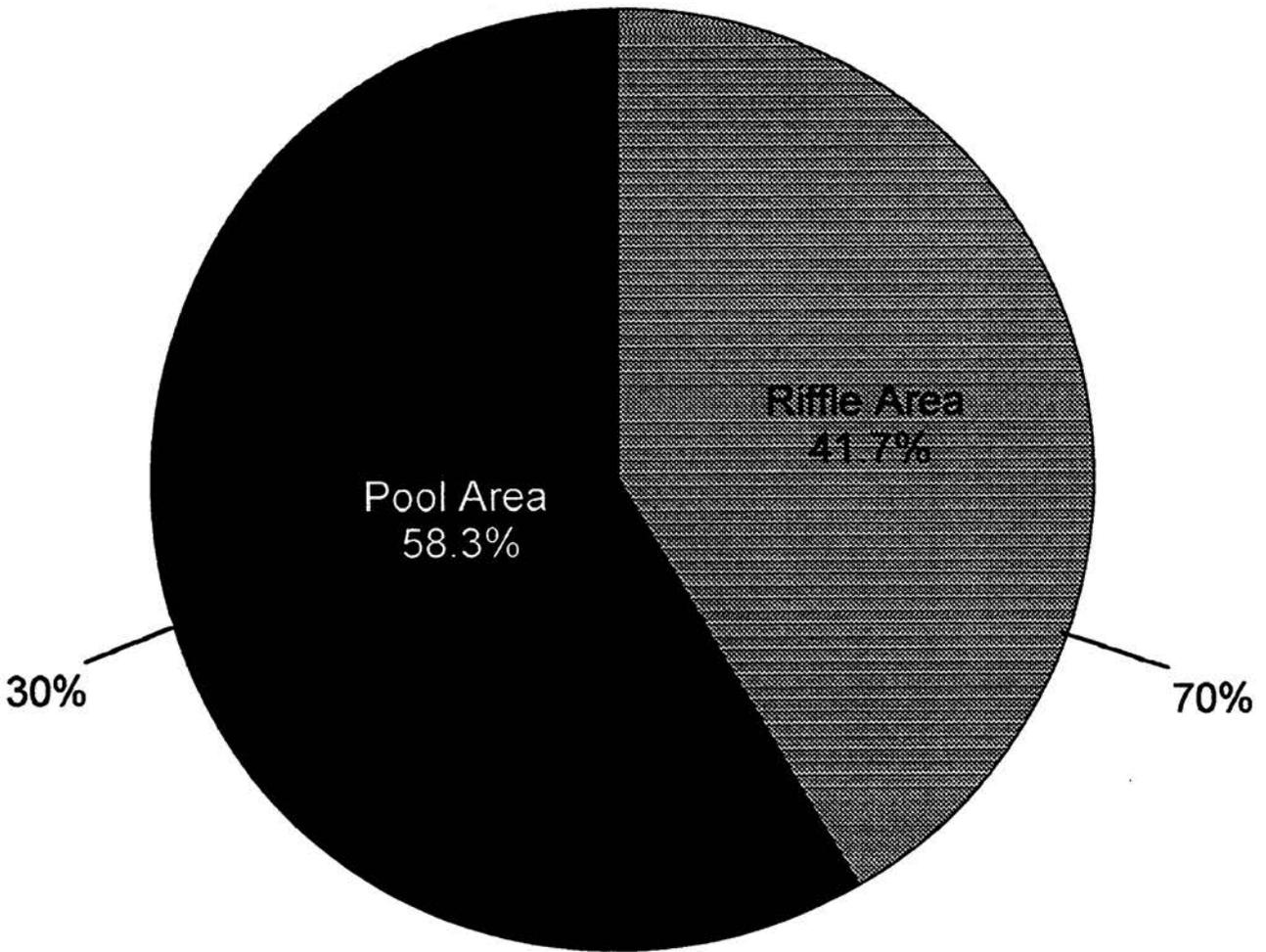
Staley Creek Substrate Composition



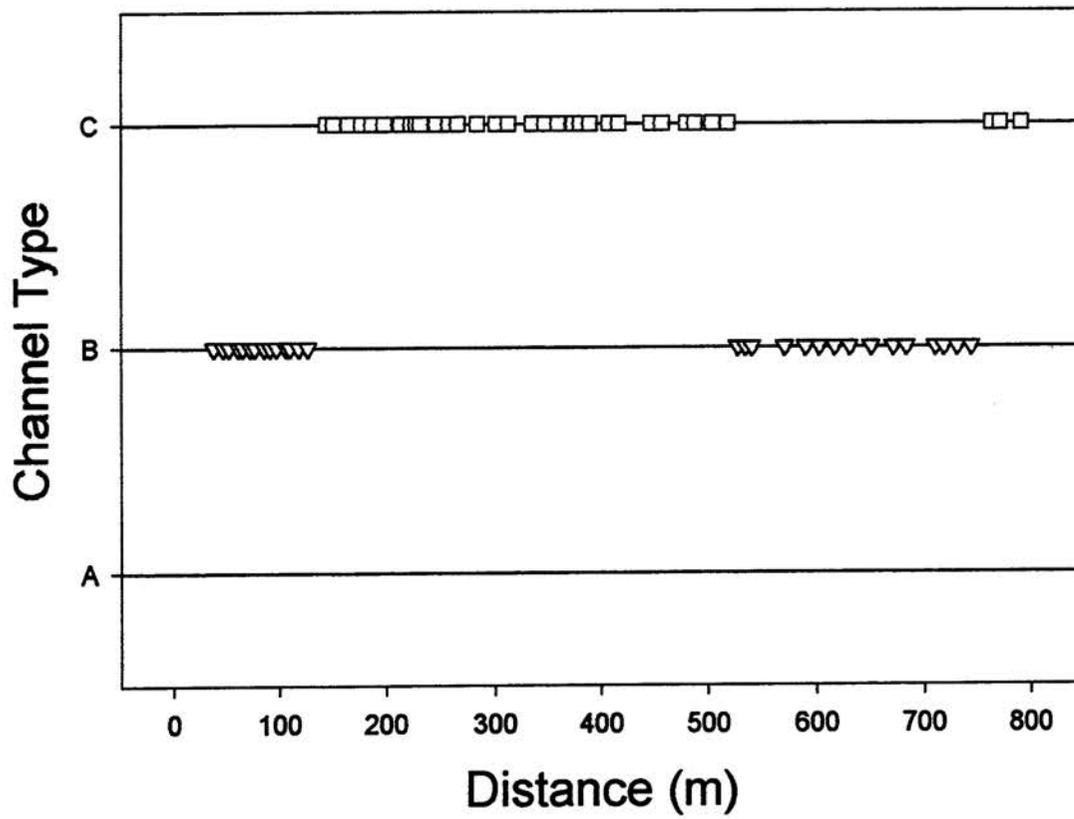
Riparian Width**Stream: Staley Creek****Number of Measurements: 2****Mean Width: 74.7m Std Dev: 6.6****Max: 79.4m Min: 70.0m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Staley Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Staley Creek Rosgen's Channel Type Distribution



Cedar Springs Quadrangle

Stream: Dry Creek

District: Mount Rogers National Recreation Area

Quadrangle: Cedar Springs

Sample Date: 07/22/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 1.8 kilometers

Percent of Total Area - Pools: 41.8%

Number of Pools: 100

Number of Pools per kilometer: 55.6

Total Pool Area: 1889.6 sq. meters \pm 186.6

Mean Pool Area: 18.9 sq. meters

Correction Factor: 1.01

Mean Maximum Depth: 35.1 cm

Mean Average Depth: 22.3 cm

Mean Average Residual Pool Depth: 17.4 cm

Percent of Total Area - Riffles: 58.2%

Number of Riffles: 75

Number of Riffles per kilometer: 41.7

Total Riffle Area: 2631.2 sq. meters \pm 149.5

Mean Riffle Area: 35.1 sq. meters

Correction Factor: 1.08

Mean Maximum Depth: 17.6 cm

Mean Average Depth: 8.7 cm

Number of Large Woody Debris Pieces per kilometer: 245.6

Wood < 5 m and < 55 cm: 98.8

Wood < 5 m and > 55 cm: 9.3

Wood > 5 m and < 55 cm: 126.6

Wood > 5 m and > 55 cm: 10.9

Mean Channel Width: 5.9 m

Mean Riparian Width: 11.5 m

Mean Maximum Riparian Distance (either side): 4.7 m

Mean Minimum Riparian Distance (either side): 0.9 m

Maximum Riparian Width (Total): 19.1 m

Minimum Riparian Width (Total): 7.0 m

Dry Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 18.6%

Rosgen's Channel Type Frequency:

Channel Type A: 33.5%

Channel Type B: 52.5%

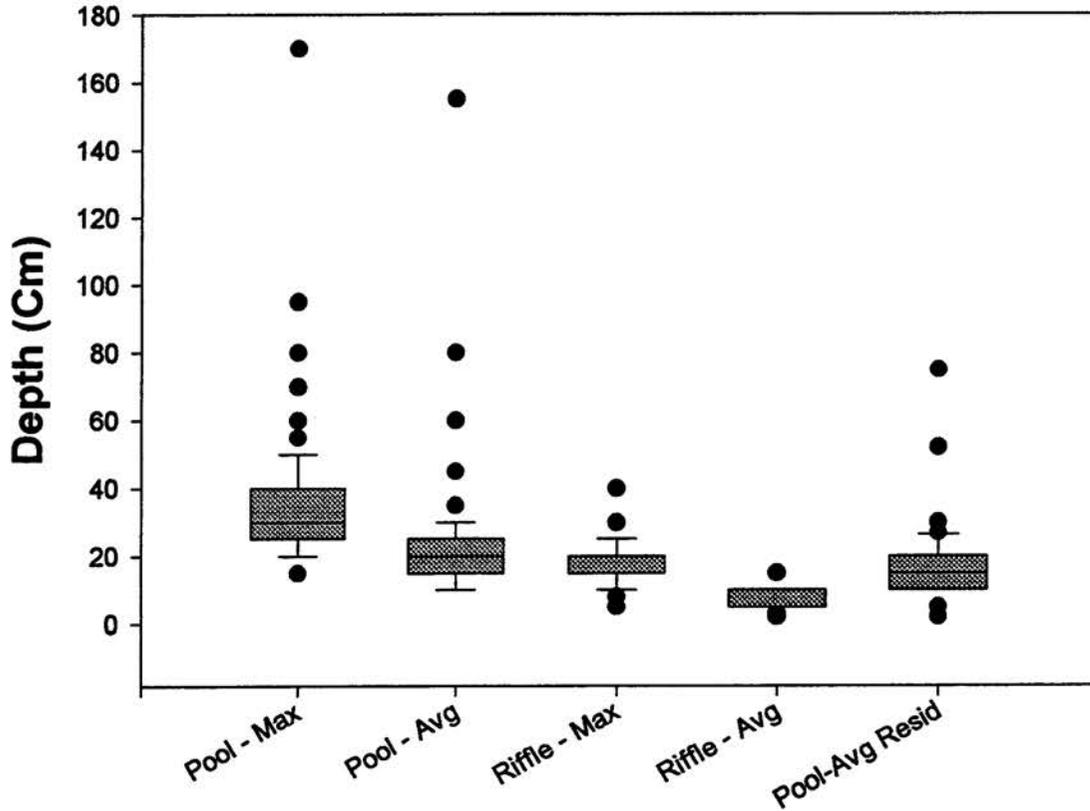
Channel Type C: 14.0%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 37.0%

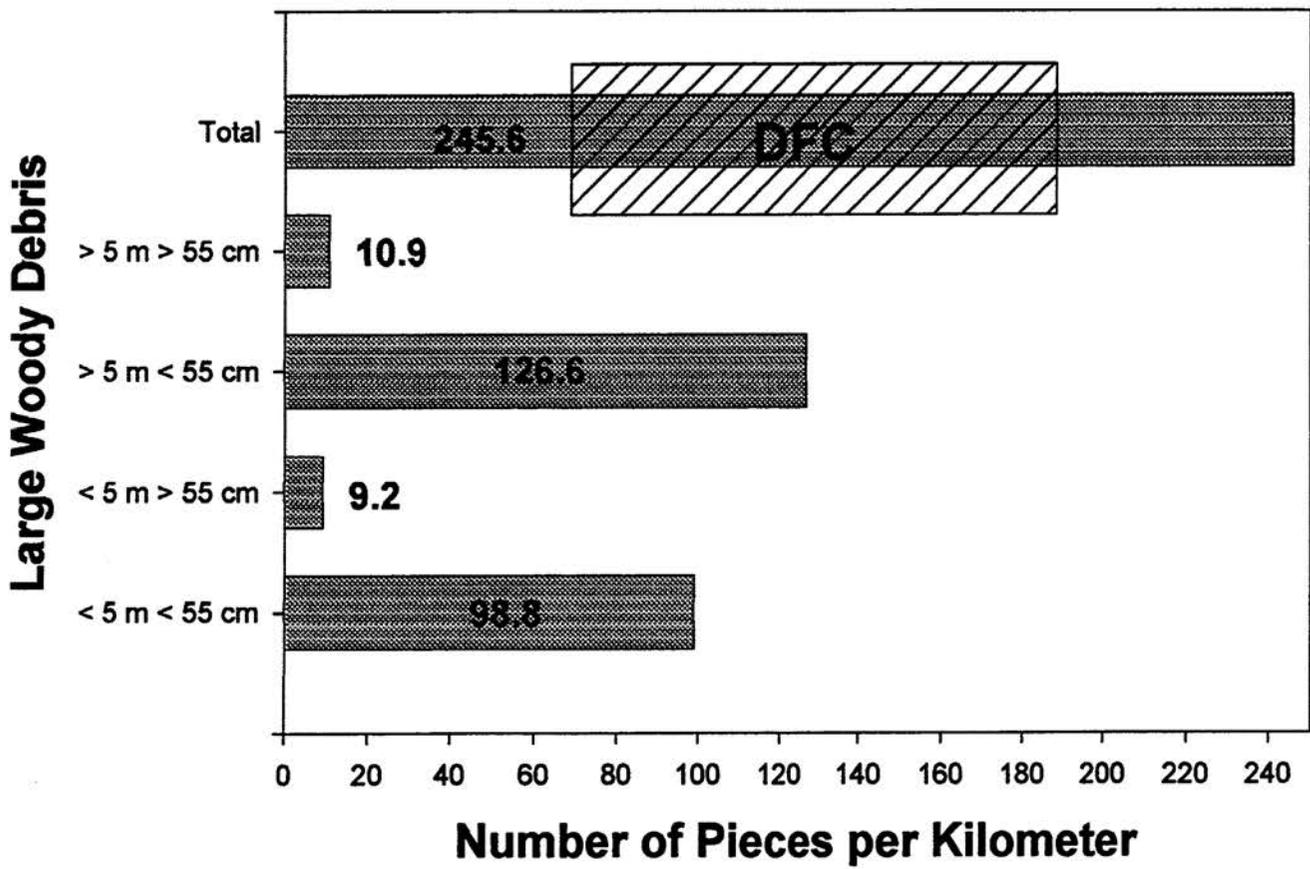
Average Channel Gradient: 9.8

Dry Creek

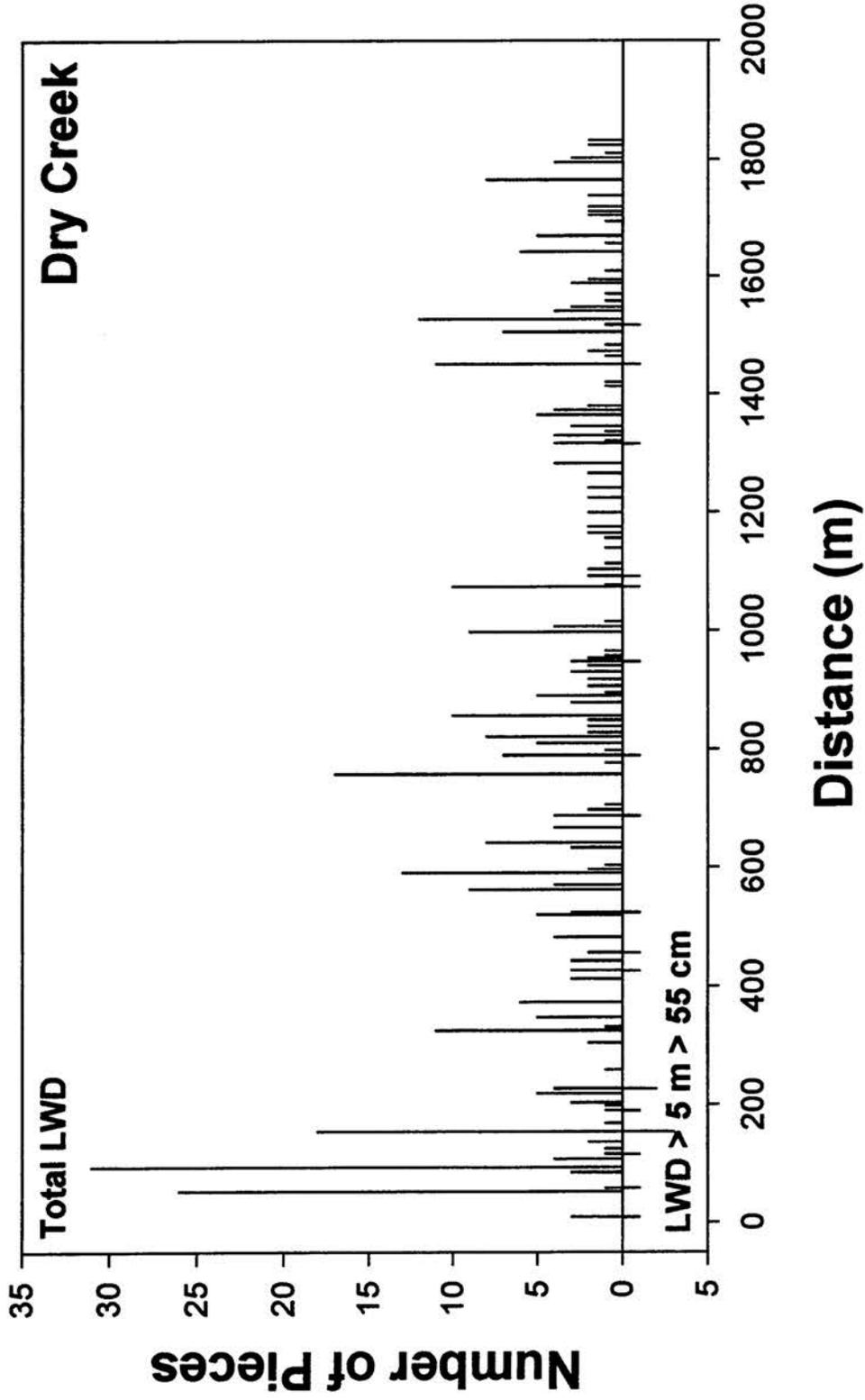


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

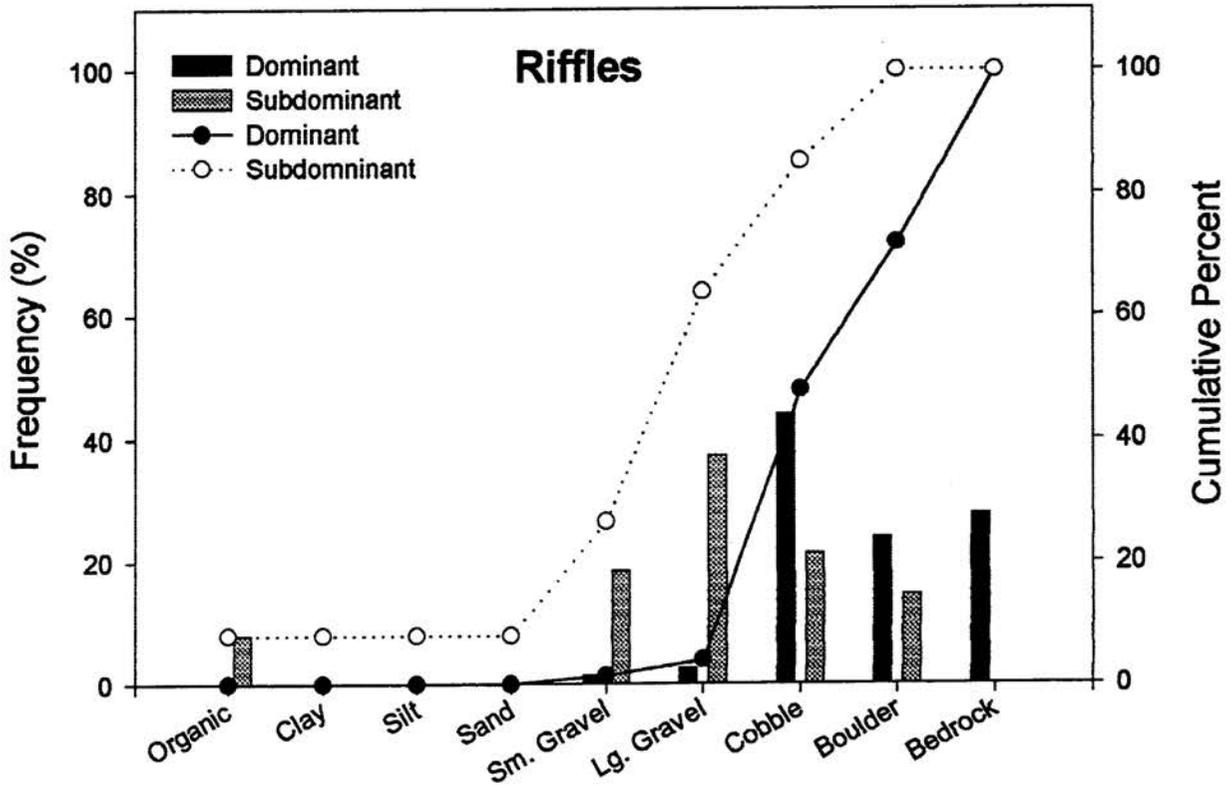
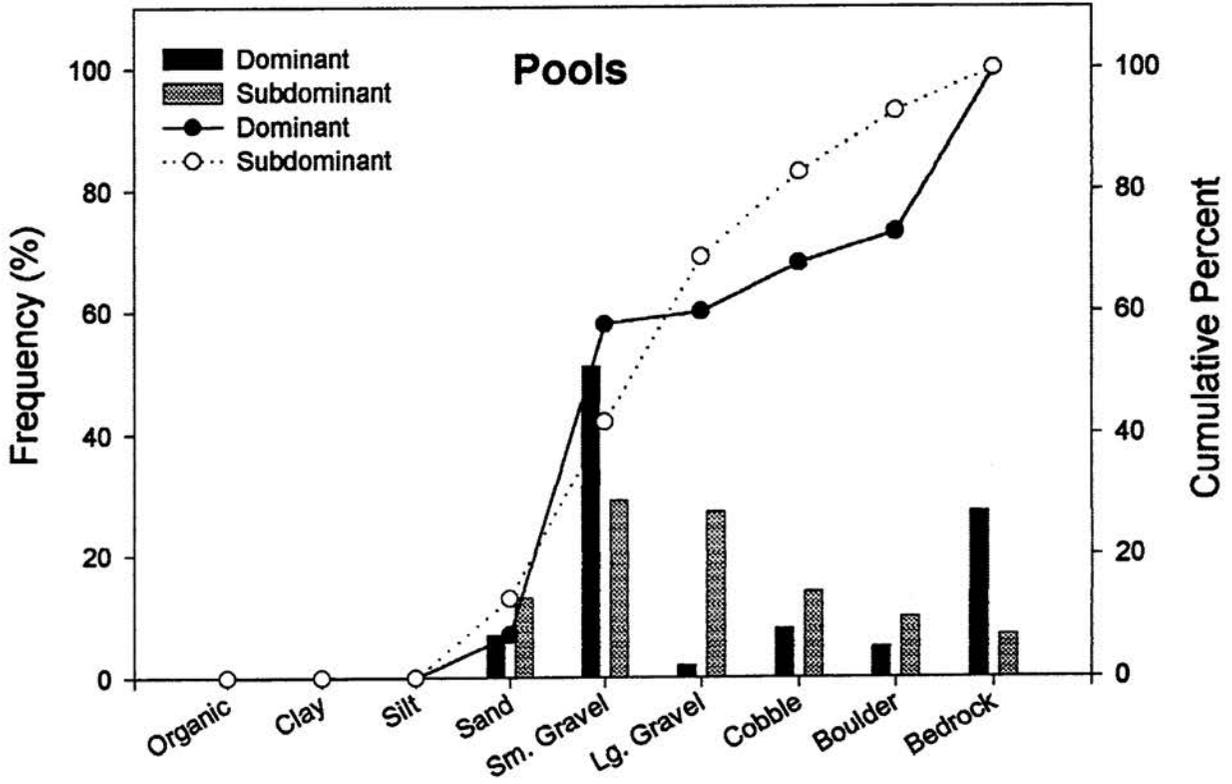
Dry Creek

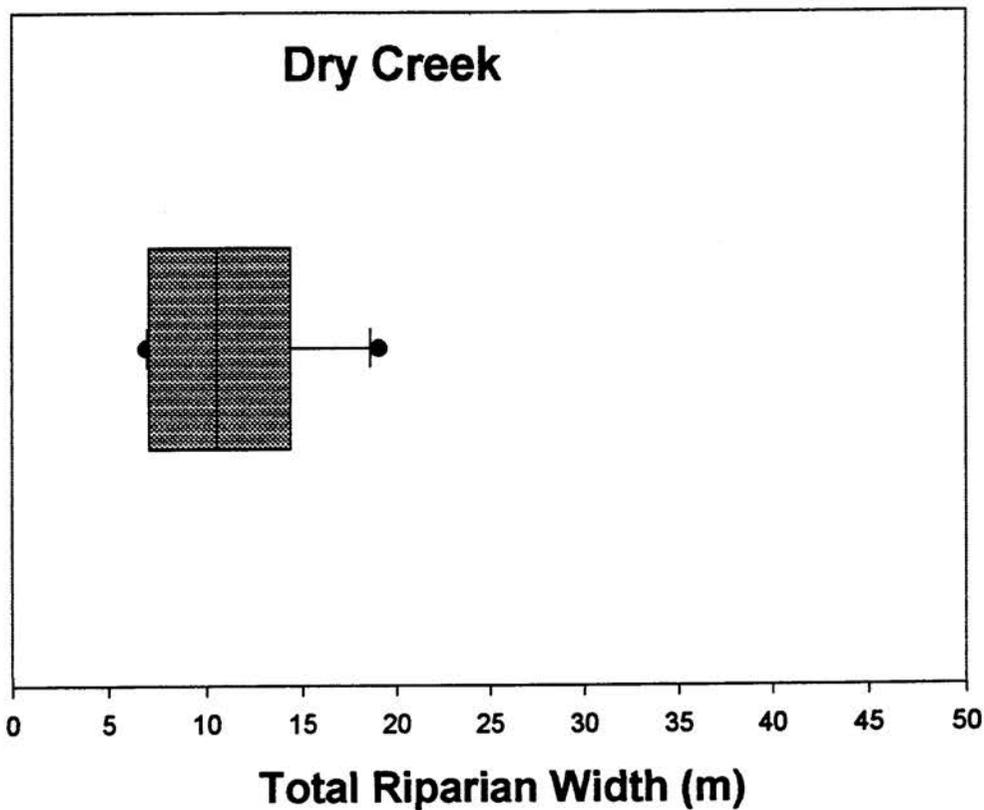


Distribution and Abundance of Large Woody Debris



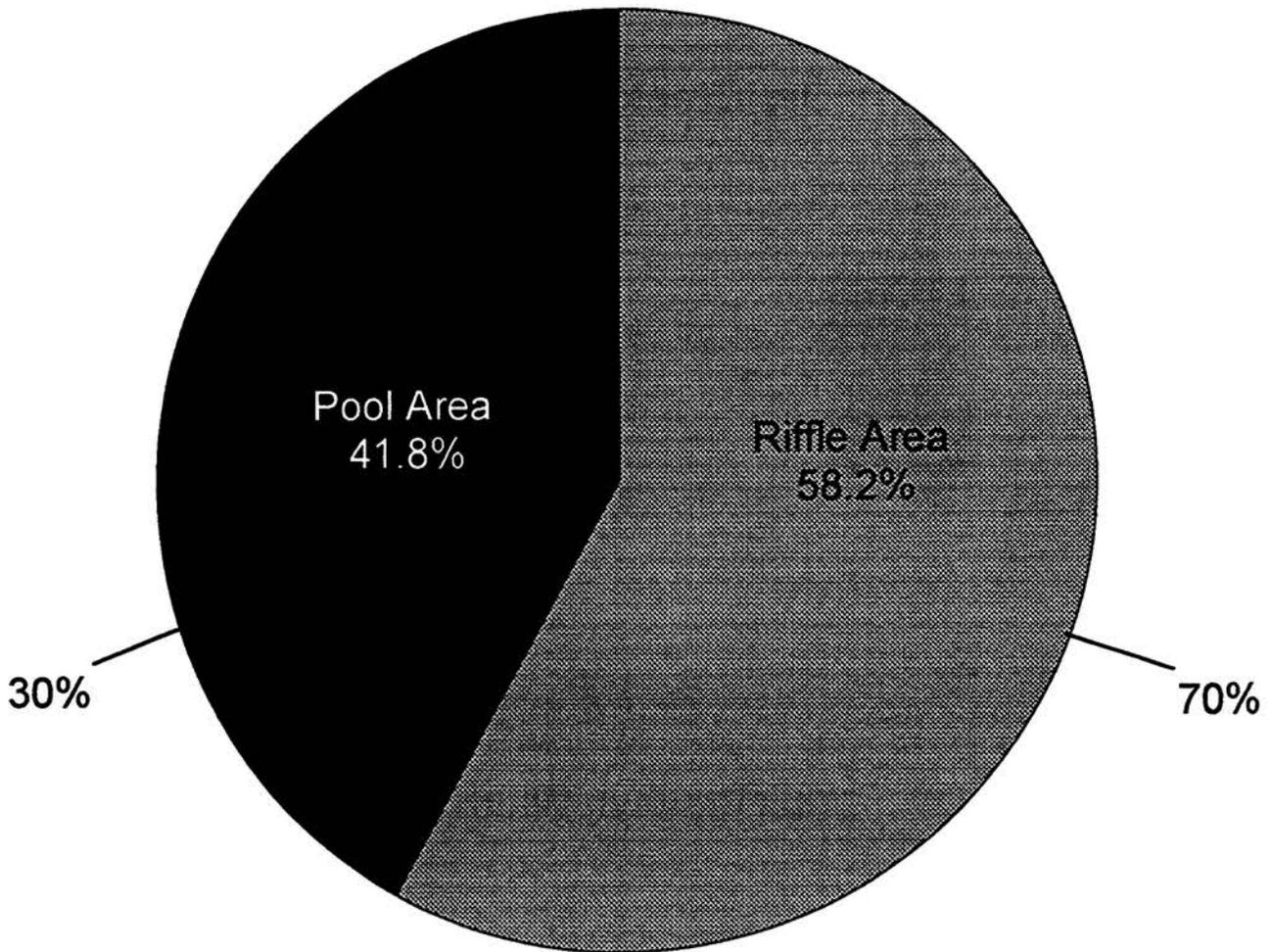
Dry Creek Substrate Composition



Riparian Width**Stream: Dry Creek****Number of Measurements: 6****Mean Width: 11.5m Std Dev: 4.6****Max: 19.1m Min: 7.0m**

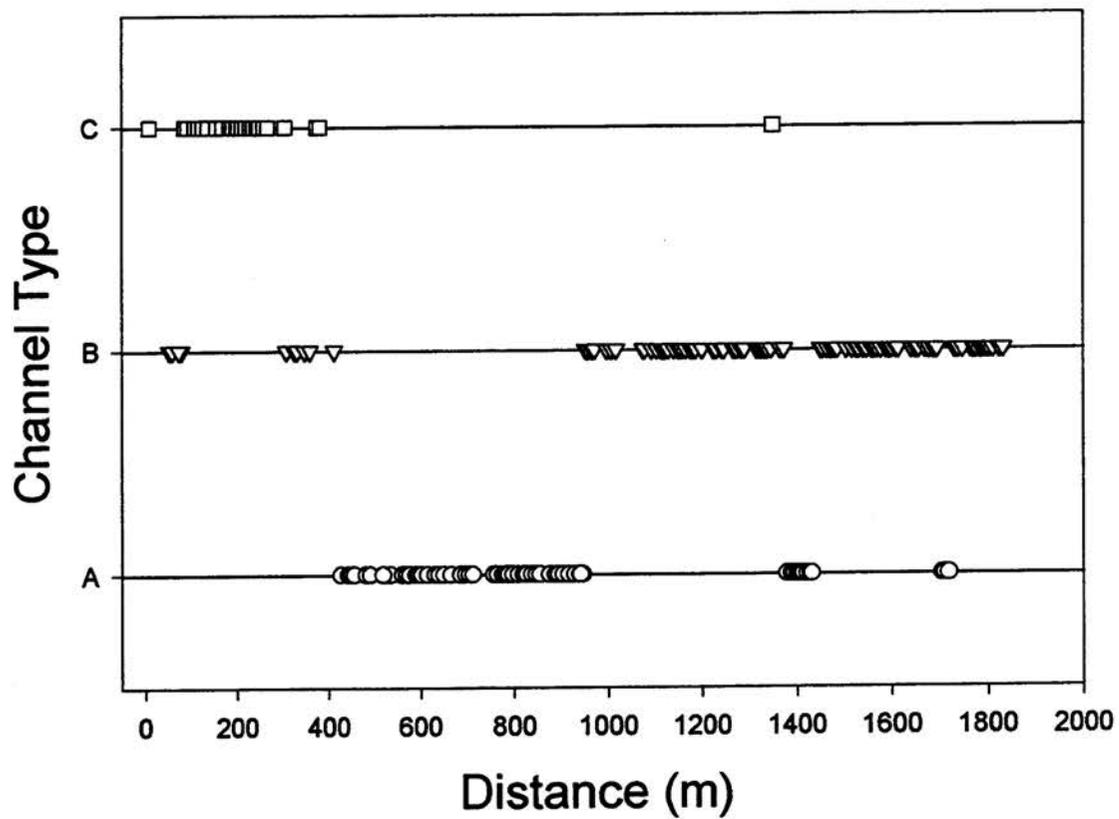
Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Dry Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Dry Creek

Rosgen's Channel Type Distribution



Stream: Killenger Creek

District: Mount Rogers National Recreation Area/Old Wythe Ranger District

Quadrangle: Cedar Springs

Sample Date: 07/20/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 2.2 kilometers

Percent of Total Area - Pools: 24.7%

Number of Pools: 86

Number of Pools per kilometer: 39.1

Total Pool Area: 1248.2 sq. meters \pm 108.2

Mean Pool Area: 14.5 sq. meters

Correction Factor: 1.08

Mean Maximum Depth: 38.0 cm

Mean Average Depth: 26.6 cm

Mean Average Residual Pool Depth: 20.9 cm

Percent of Total Area - Riffles: 75.3%

Number of Riffles: 75

Number of Riffles per kilometer: 34.1

Total Riffle Area: 3806.7 sq. meters \pm 309.0

Mean Riffle Area: 50.8 sq. meters

Correction Factor: 1.03

Mean Maximum Depth: 21.1 cm

Mean Average Depth: 11.7 cm

Number of Large Woody Debris Pieces per kilometer: 557.1

Wood < 5 m and < 55 cm: 6.8

Wood < 5 m and > 55 cm: 9.9

Wood > 5 m and < 55 cm: 344.3

Wood > 5 m and > 55 cm: 196.1

Mean Channel Width: 5.3 m

Mean Riparian Width: 17.1 m

Mean Maximum Riparian Distance (either side): 9.9 m

Mean Minimum Riparian Distance (either side): 1.9 m

Maximum Riparian Width (Total): 29.3 m

Minimum Riparian Width (Total): 10.8 m

Killenger Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 32.4%

Rosgen's Channel Type Frequency:

Channel Type A: 12.5%

Channel Type B: 78.1%

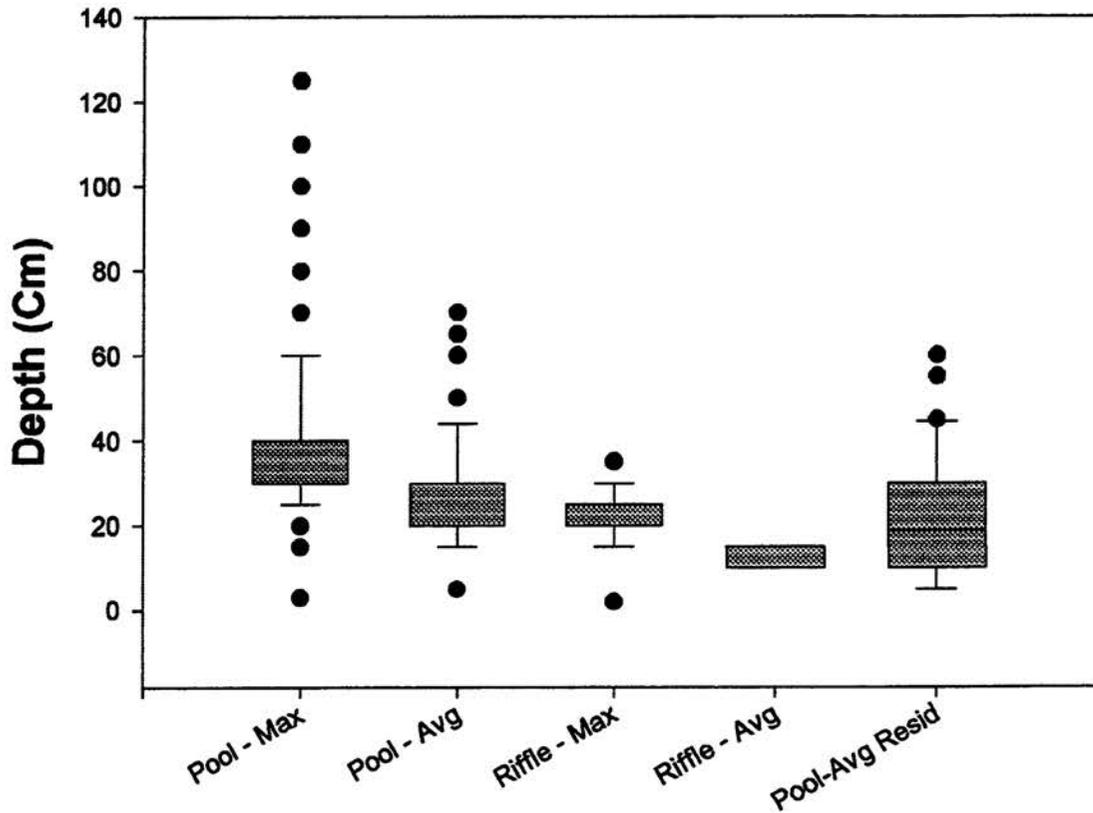
Channel Type C: 9.4%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 61.6%

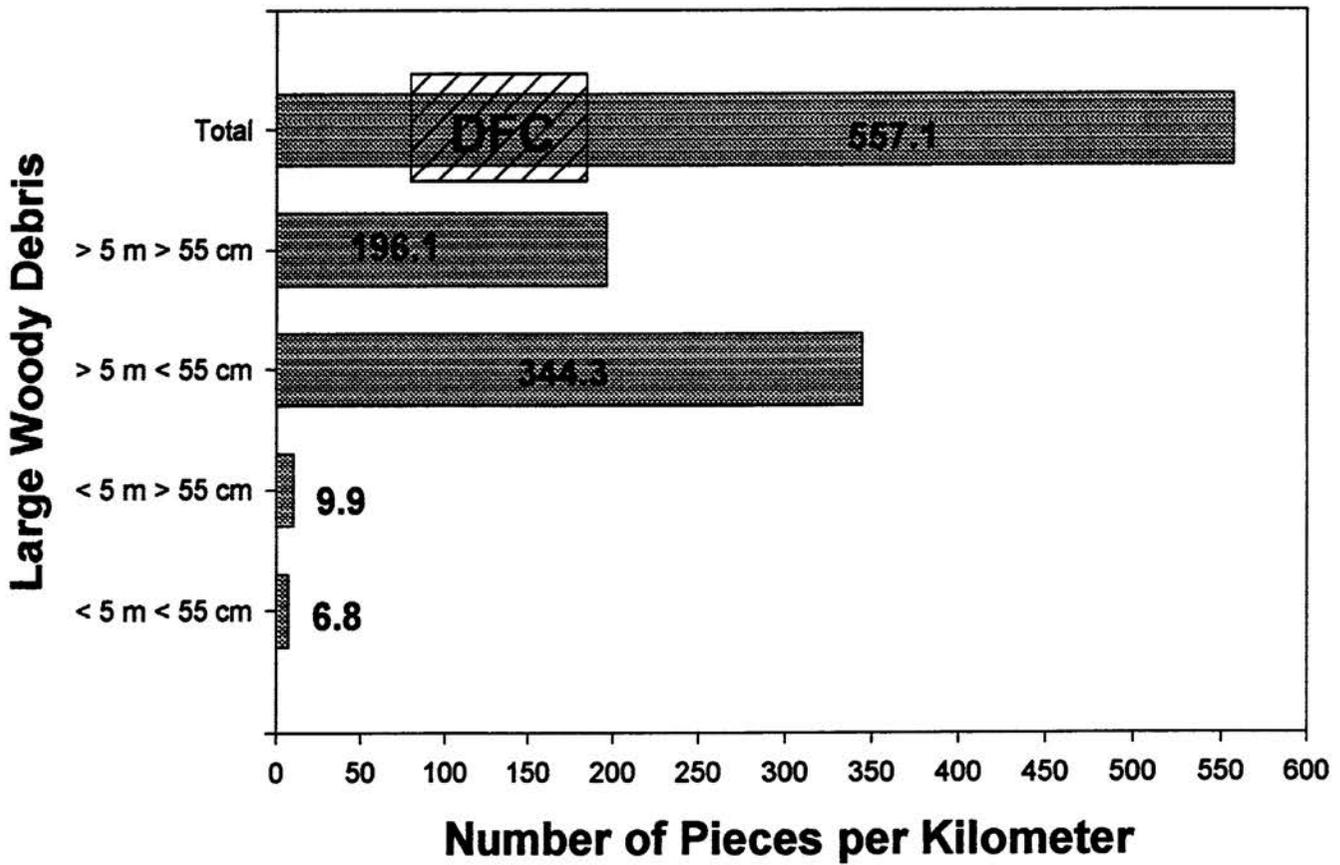
Average Channel Gradient: 5.8

Killenger Creek

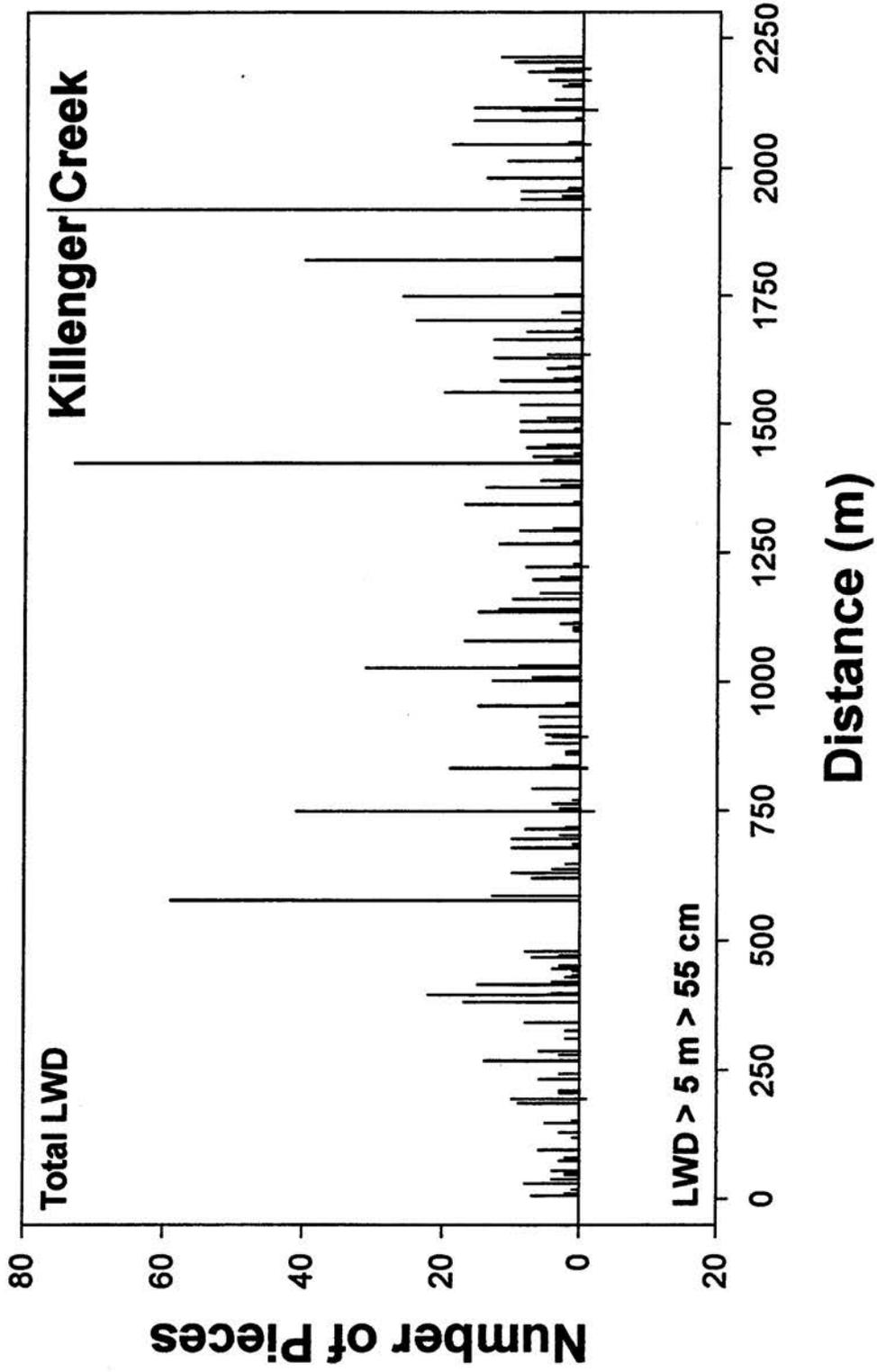


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

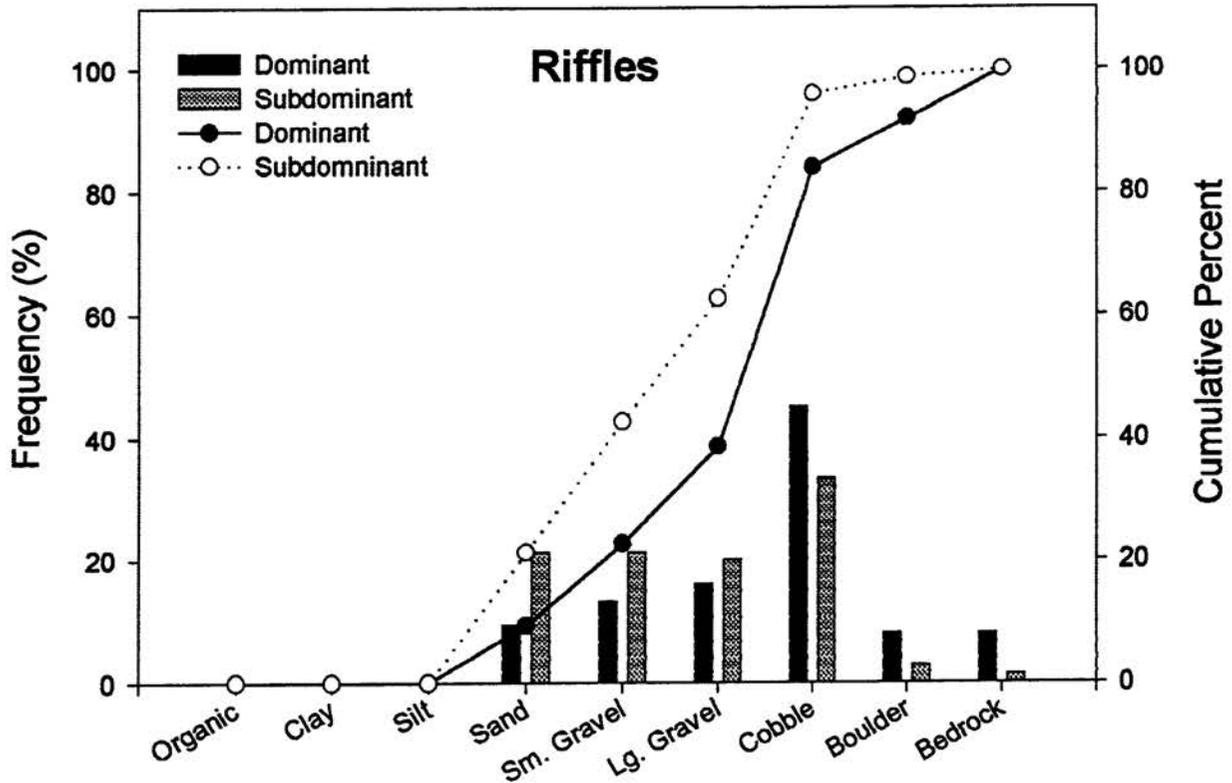
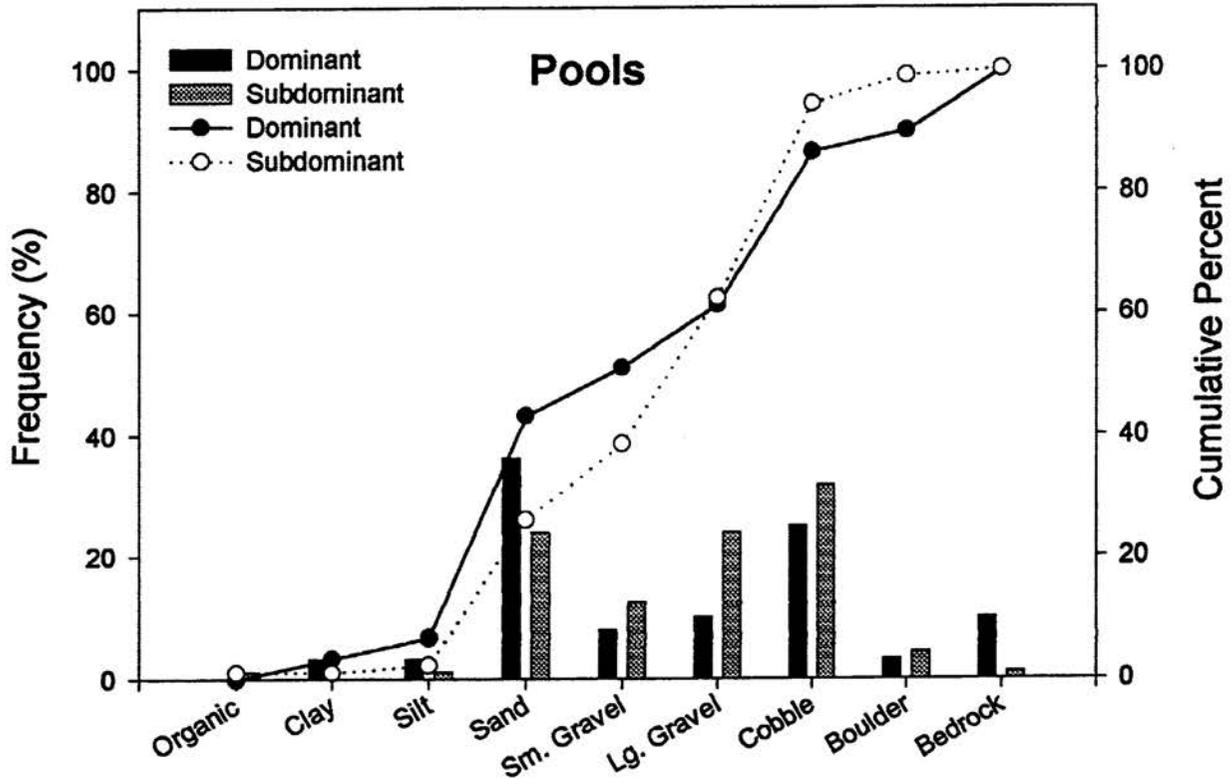
Killenger Creek

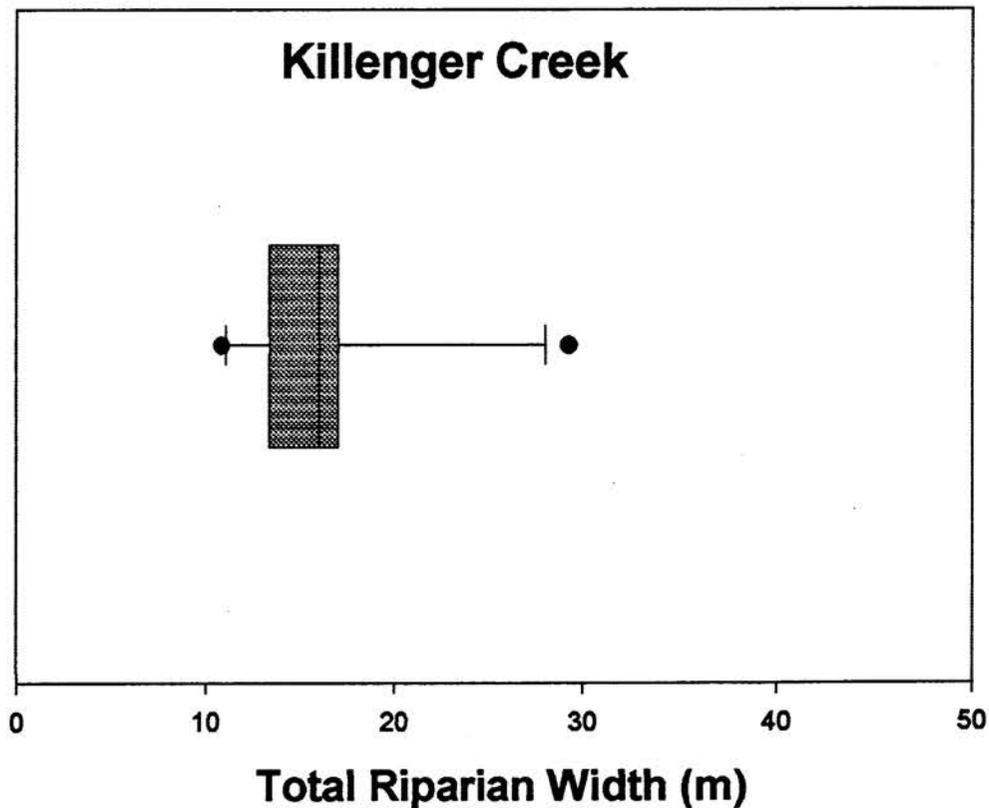


Distribution and Abundance of Large Woody Debris



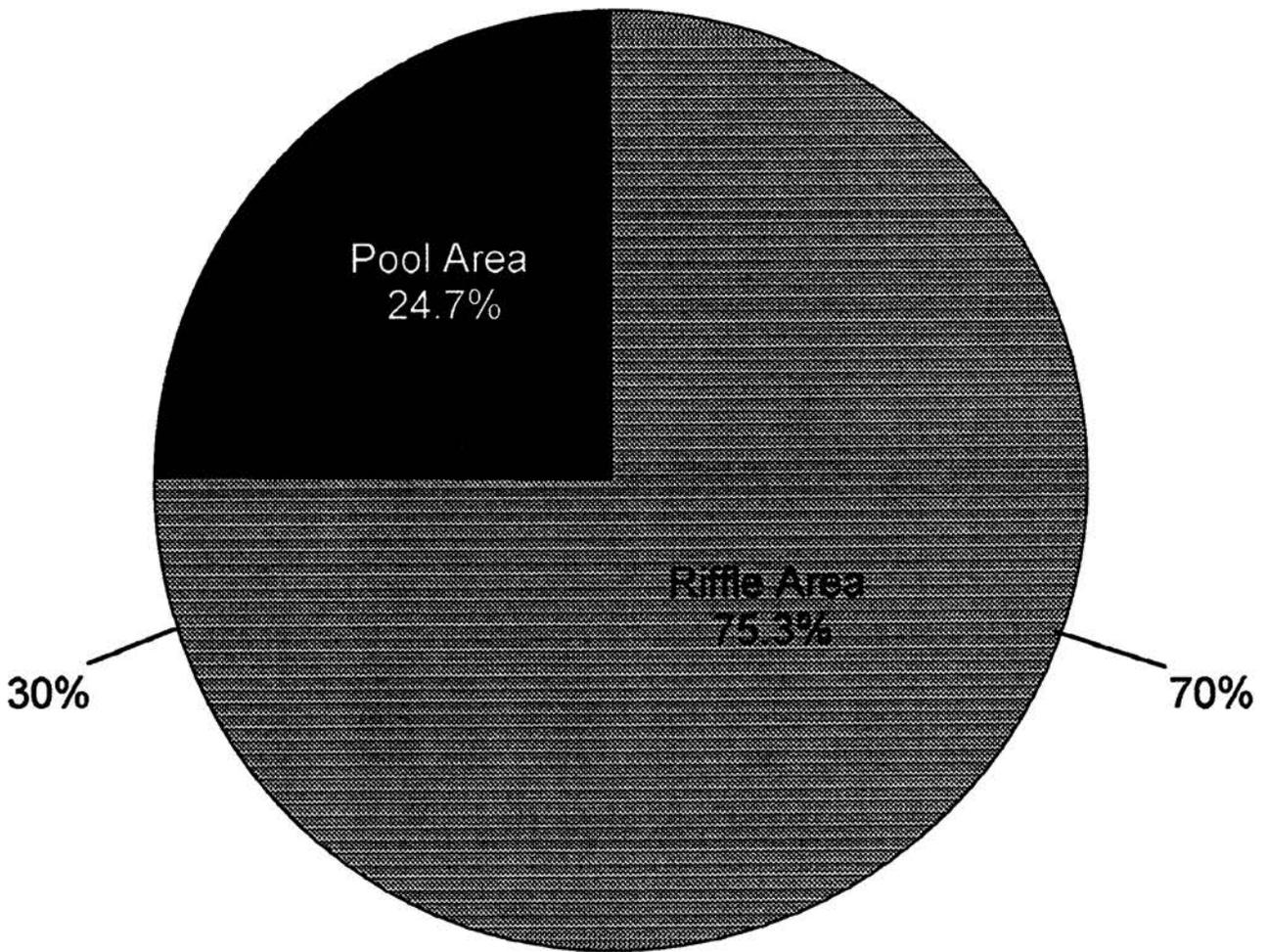
Killenger Creek Substrate Composition



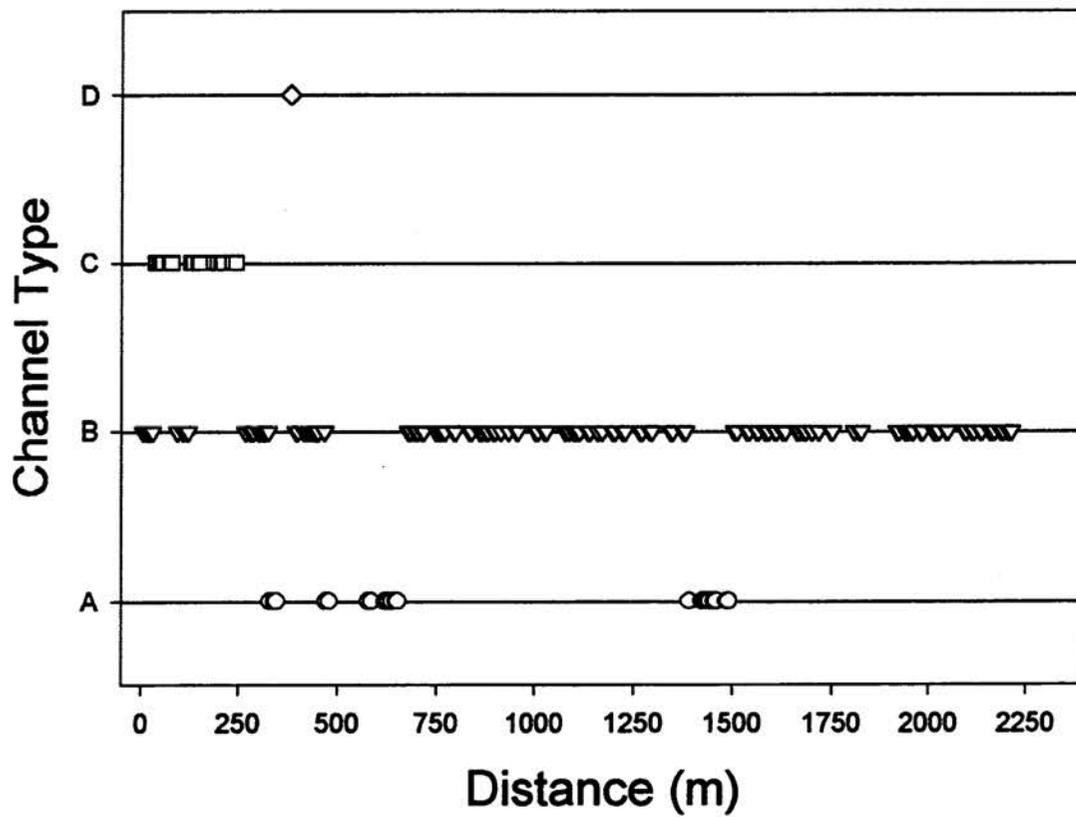
Riparian Width**Stream: Killenger Creek****Number of Measurements: 6****Mean Width: 17.1m Std Dev: 6.4****Max: 29.3m Min: 10.8m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Killenger Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Killenger Creek Rosgen's Channel Type Distribution



Stream: Kinser Creek

District: Mount Rogers National Recreation Area

Quadrangle: Cedar Springs/Speedwell

Sample Date: 07/22/98

Downstream Starting Point: Forest Service Boundary

Total Distance Surveyed: 0.6 kilometers

Percent of Total Area - Pools: 56.0%

Number of Pools: 46

Number of Pools per kilometer: 76.7

Total Pool Area: 868.0 sq. meters \pm 61.9

Mean Pool Area: 18.9 sq. meters

Correction Factor: 1.00

Mean Maximum Depth: 25.1 cm

Mean Average Depth: 13.9 cm

Mean Average Residual Pool Depth: 9.7 cm

Percent of Total Area - Riffles: 44.0%

Number of Riffles: 20

Number of Riffles per kilometer: 33.3

Total Riffle Area: 681.0 sq. meters \pm 180.3

Mean Riffle Area: 34.1 sq. meters

Correction Factor: 1.08

Mean Maximum Depth: 15.8 cm

Mean Average Depth: 8.3 cm

Number of Large Woody Debris Pieces per kilometer: 105.4

Wood < 5 m and < 55 cm: 75.8

Wood < 5 m and > 55 cm: 0.0

Wood > 5 m and < 55 cm: 26.3

Wood > 5 m and > 55 cm: 3.3

Mean Channel Width: 6.0 m

Mean Riparian Width: 13.2 m

Mean Maximum Riparian Distance (either side): 4.8 m

Mean Minimum Riparian Distance (either side): 2.4 m

Maximum Riparian Width (Total): 16.0 m

Minimum Riparian Width (Total): 10.4 m

Kinser Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 21.8%

Rosgen's Channel Type Frequency:

Channel Type A: 5.9%

Channel Type B: 88.2%

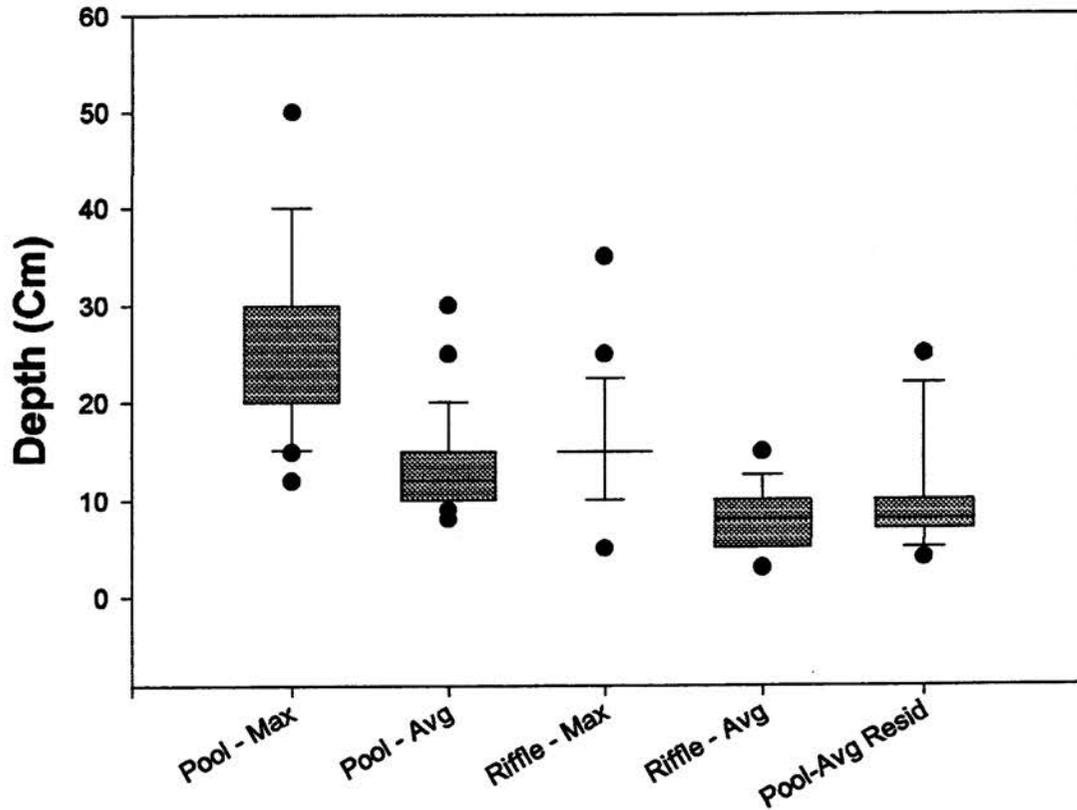
Channel Type C: 5.9%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 30.4%

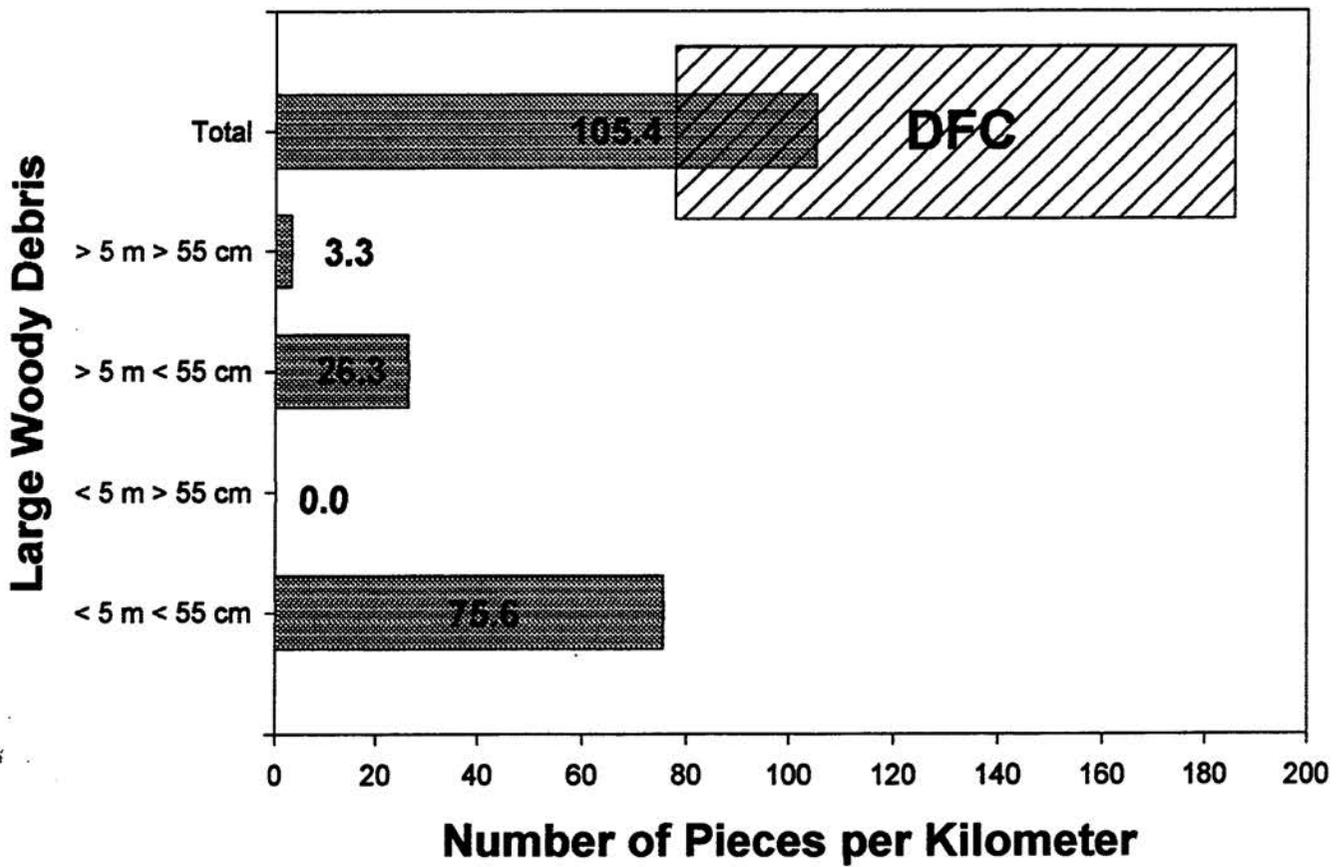
Average Channel Gradient: 7.8

Kinser Creek

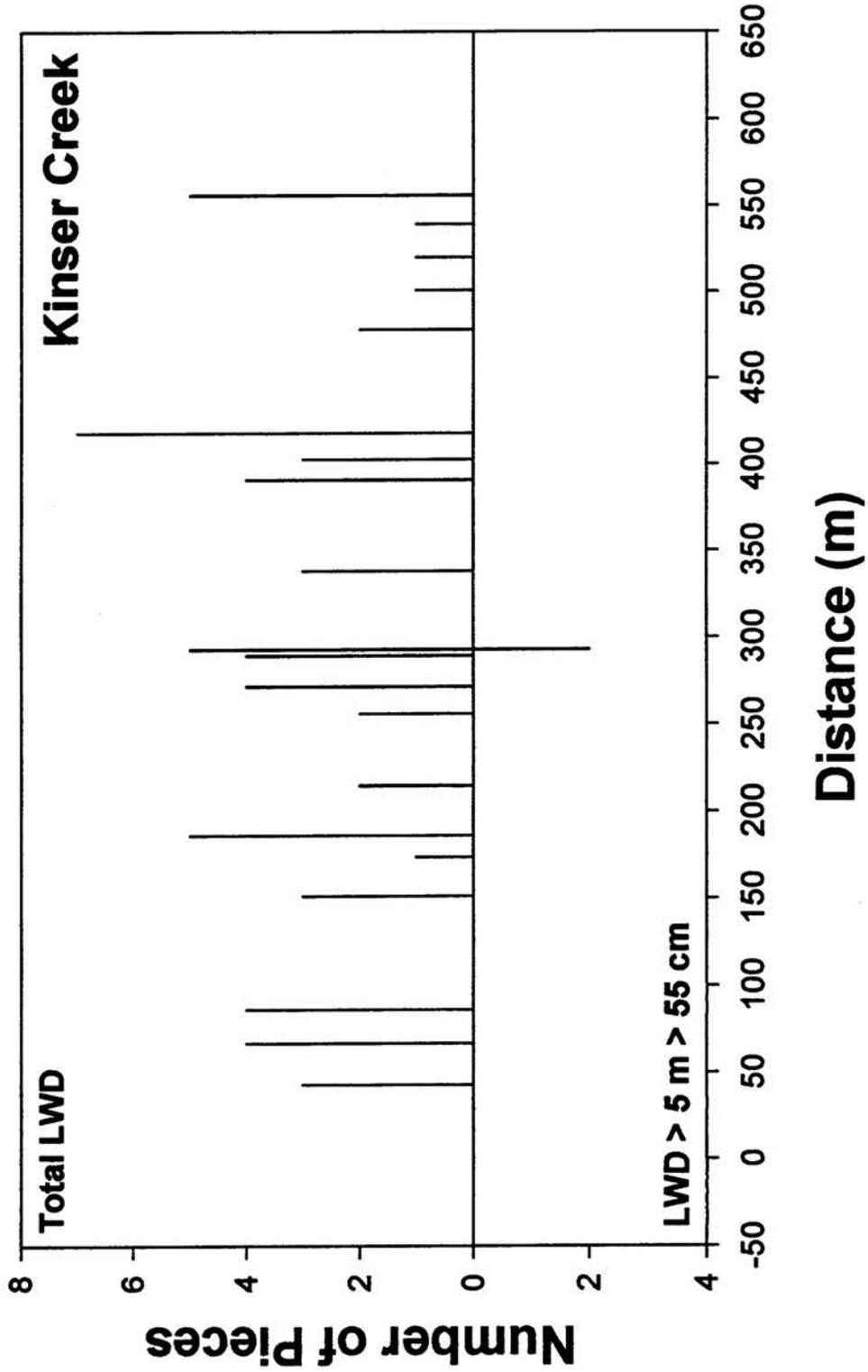


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

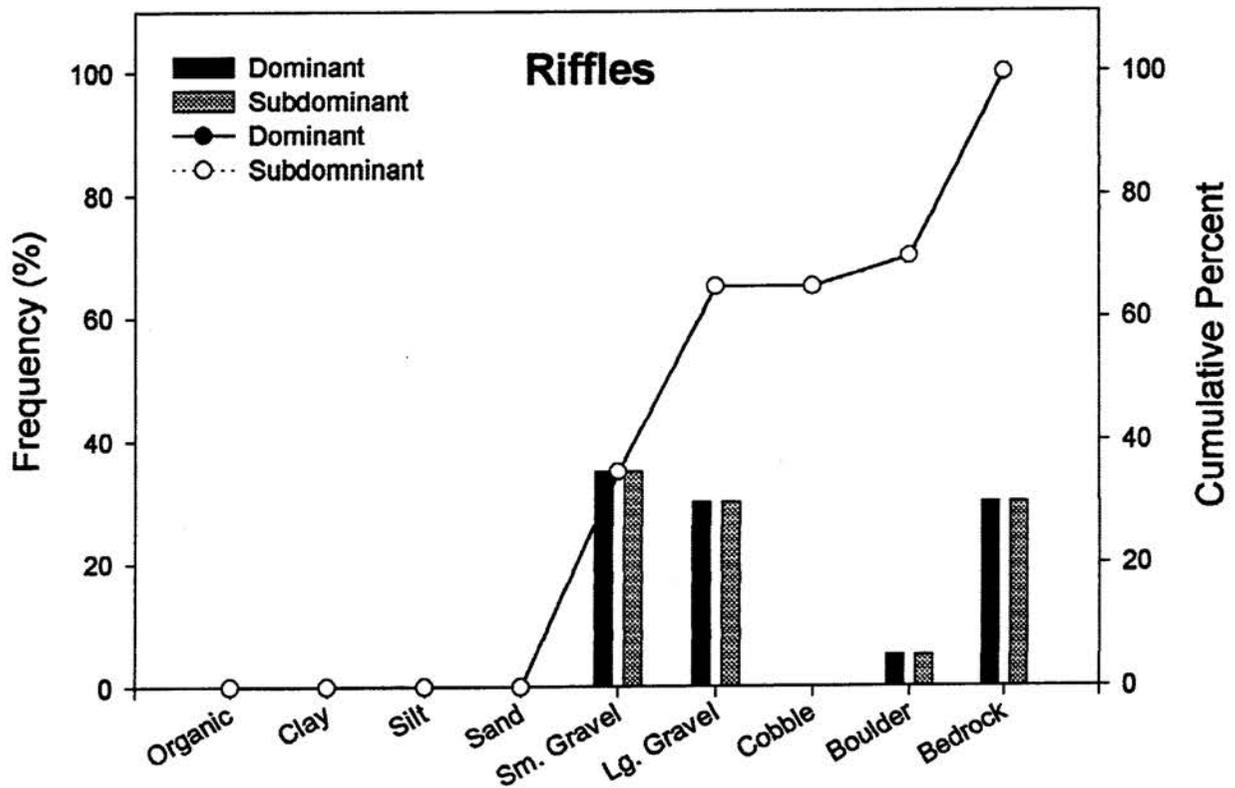
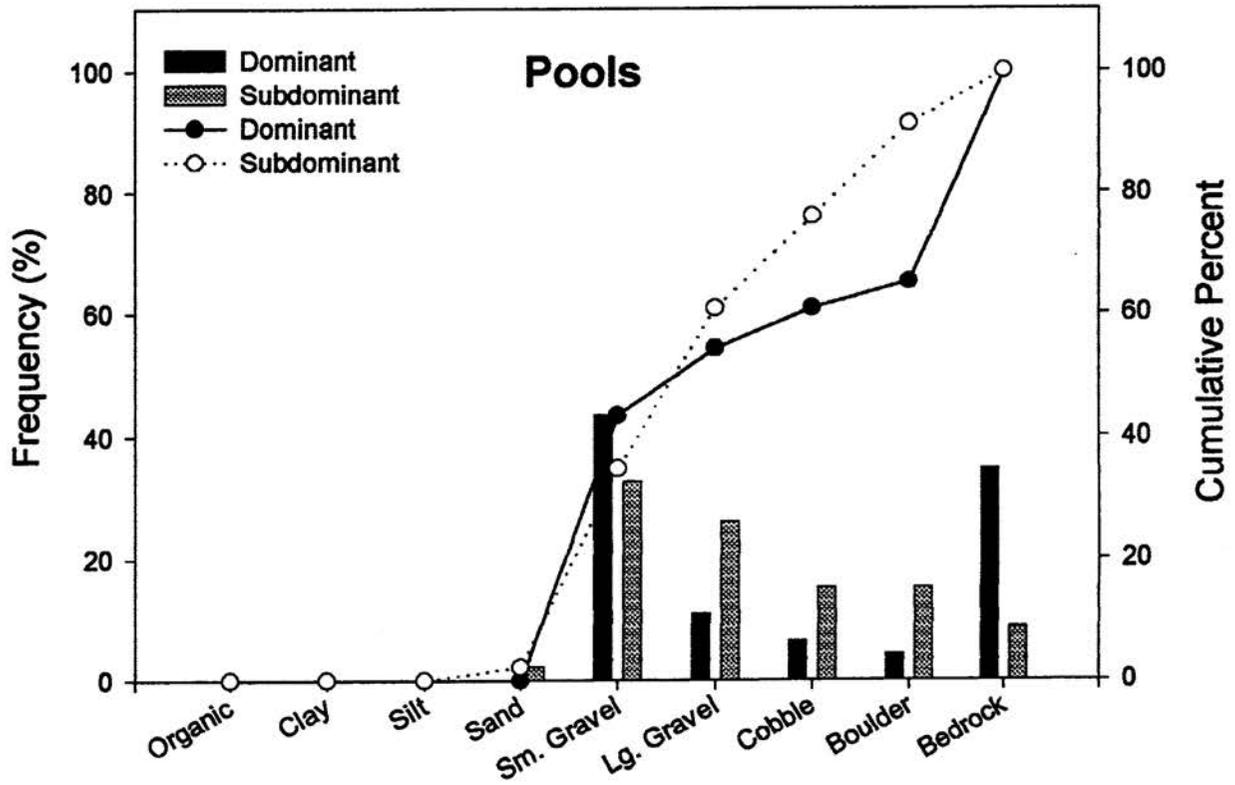
Kinser Creek

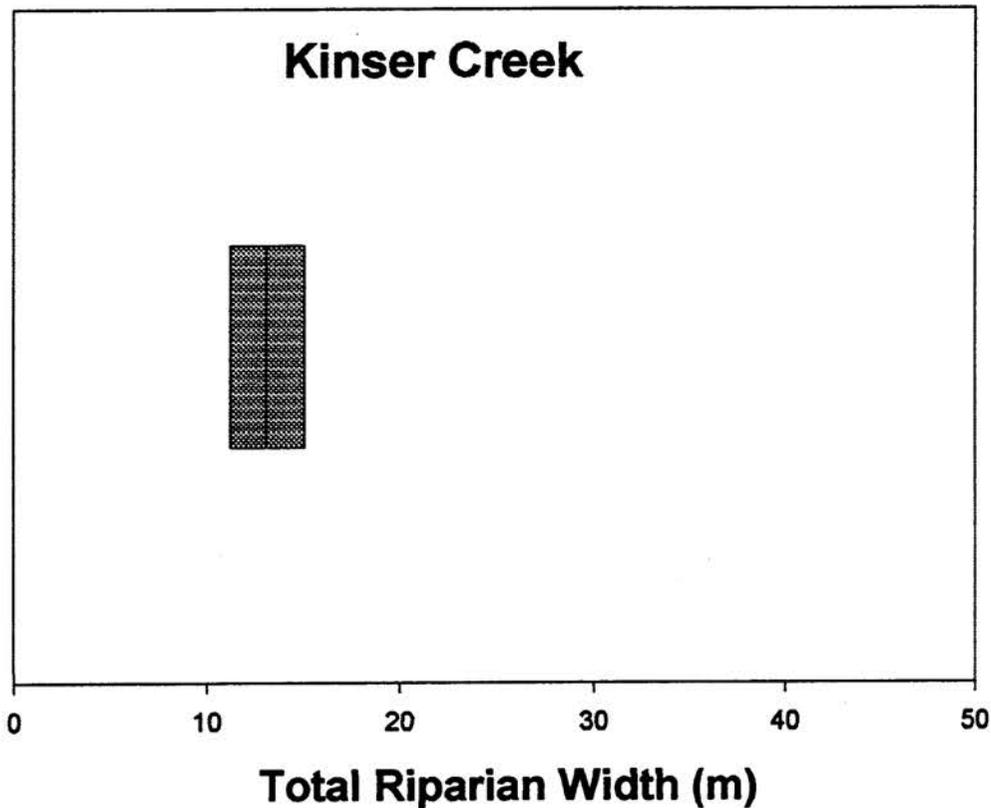


Distribution and Abundance of Large Woody Debris



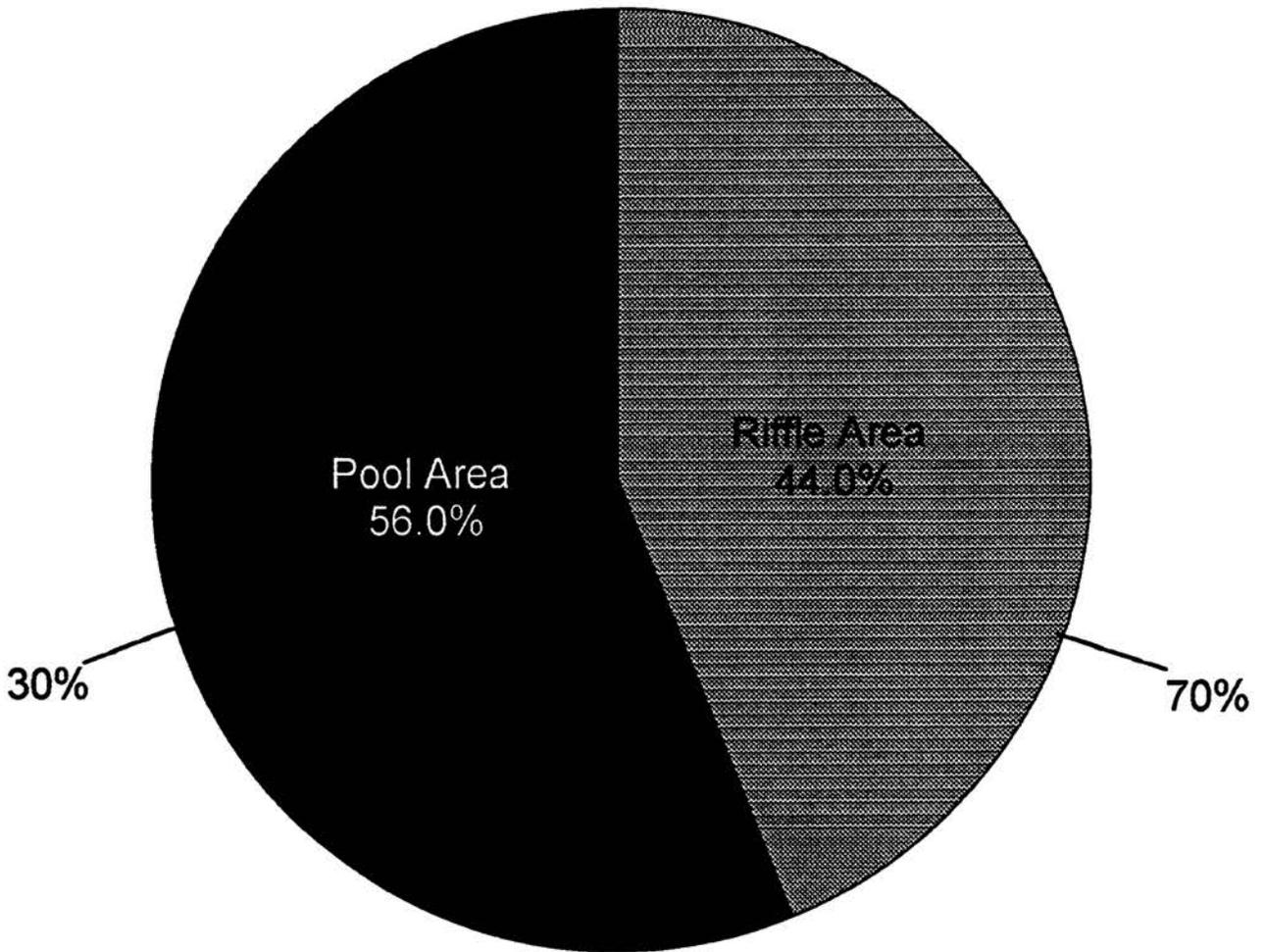
Kinser Creek Substrate Composition



Riparian Width**Stream: Kinser Creek****Number of Measurements: 4****Mean Width: 13.2m Std Dev: 2.5****Max: 16.0m Min: 10.4m**

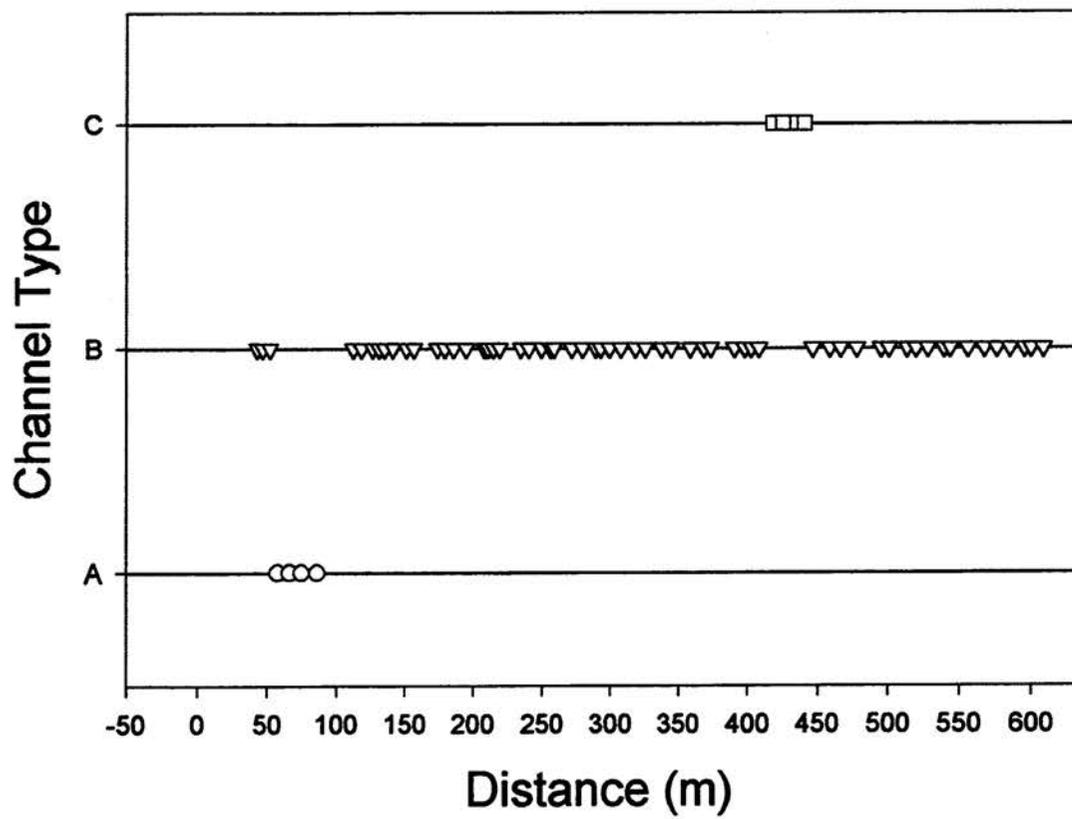
Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Kinser Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Kinser Creek

Rosgen's Channel Type Distribution



Stream: Middle Creek

District: Mount Rogers National Recreation Area

Quadrangle: Cedar Springs

Sample Date: 07/21/98

Downstream Starting Point: Forest Service Boundary on FS Road 16

Total Distance Surveyed: 1.4 kilometers

Percent of Total Area - Pools: 39.2%

Number of Pools: 77

Number of Pools per kilometer: 55.0

Total Pool Area: 1138.1 sq. meters \pm 255.5

Mean Pool Area: 14.8 sq. meters

Correction Factor: 1.02

Mean Maximum Depth: 36.7 cm

Mean Average Depth: 20.8 cm

Mean Average Residual Pool Depth: 16.1 cm

Percent of Total Area - Riffles: 60.8%

Number of Riffles: 57

Number of Riffles per kilometer: 40.7

Total Riffle Area: 1764.9 sq. meters \pm 167.2

Mean Riffle Area: 31.0 sq. meters

Correction Factor: 0.96

Mean Maximum Depth: 17.3 cm

Mean Average Depth: 7.3 cm

Number of Large Woody Debris Pieces per kilometer: 379.2

Wood < 5 m and < 55 cm: 195.5

Wood < 5 m and > 55 cm: 18.0

Wood > 5 m and < 55 cm: 143.5

Wood > 5 m and > 55 cm: 22.2

Mean Channel Width: 7.0 m

Mean Riparian Width: 16.4 m

Mean Maximum Riparian Distance (either side): 7.6 m

Mean Minimum Riparian Distance (either side): 1.8 m

Maximum Riparian Width (Total): 26.2 m

Minimum Riparian Width (Total): 12.2 m

Middle Creek Continued.**Percent of Pool Habitat Surveyed as Glides: 16.4%****Rosgen's Channel Type Frequency:**

Channel Type A: 61.0%

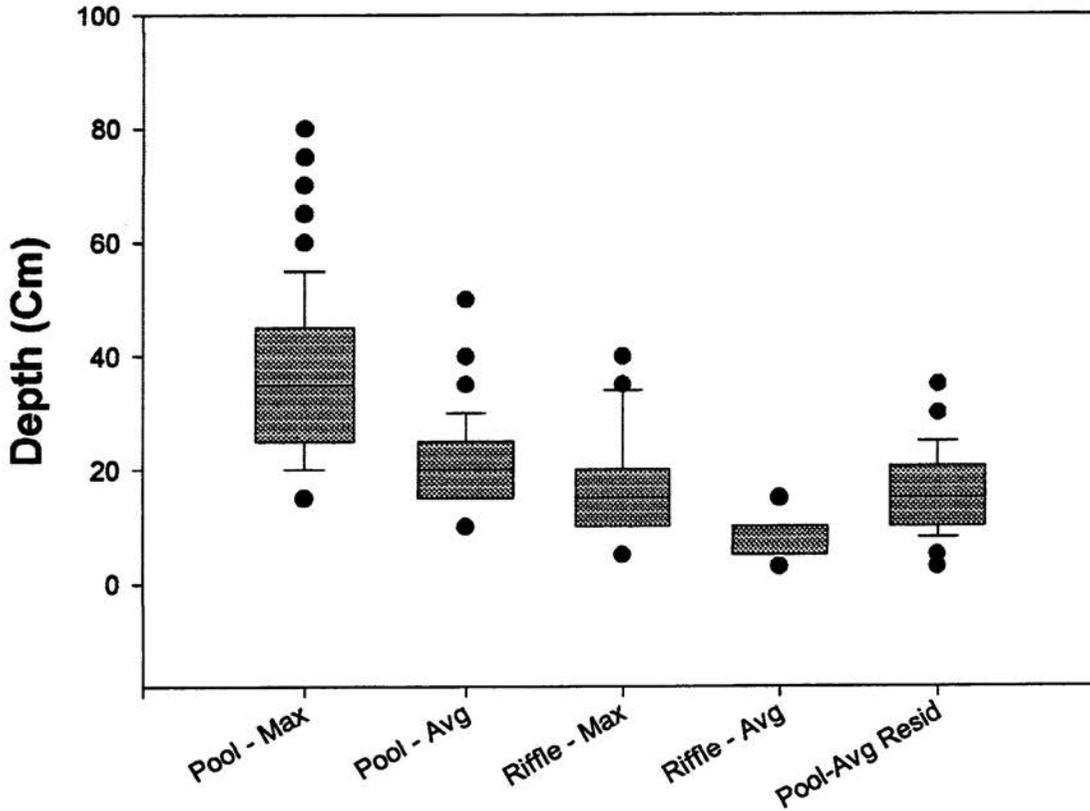
Channel Type B: 39.0%

Channel Type C:

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 31.2%**Average Channel Gradient: 8.0**

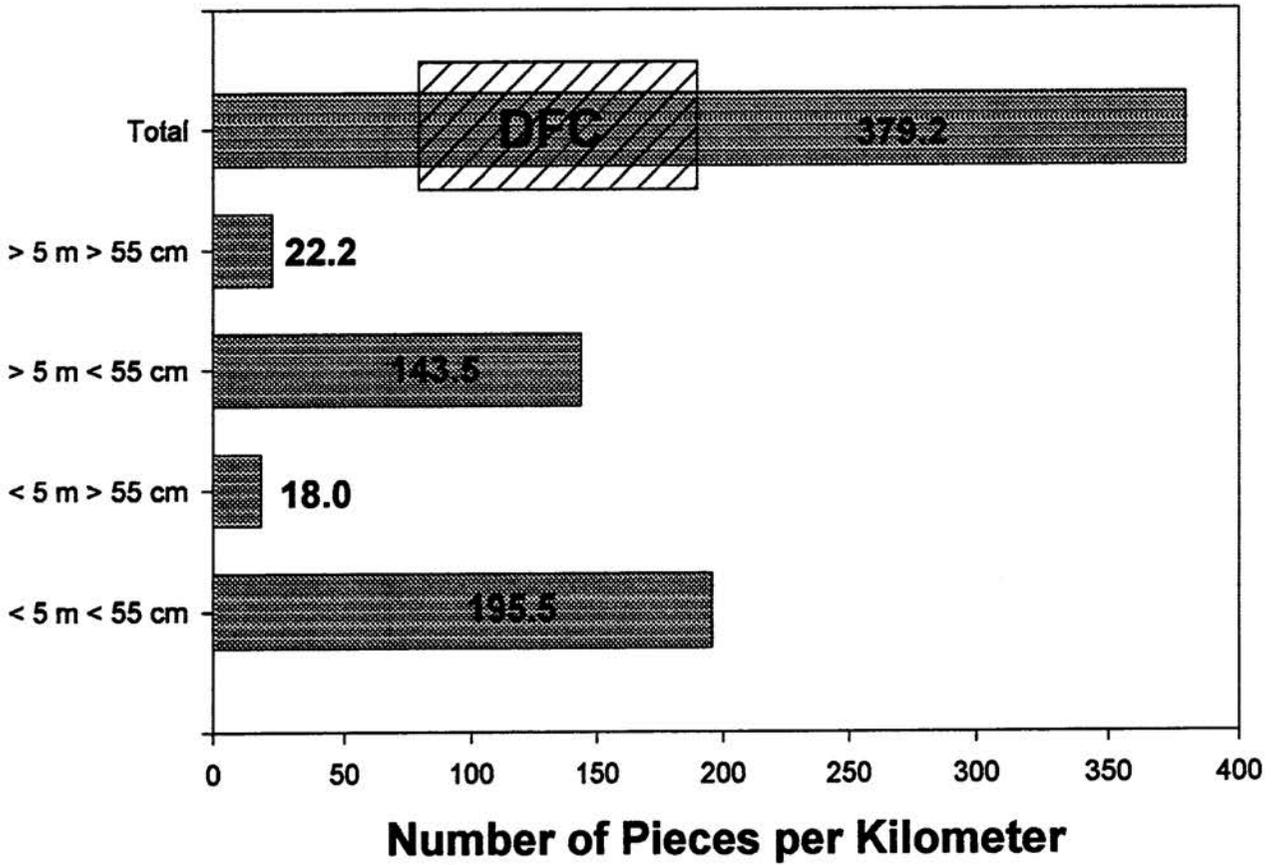
Middle Creek



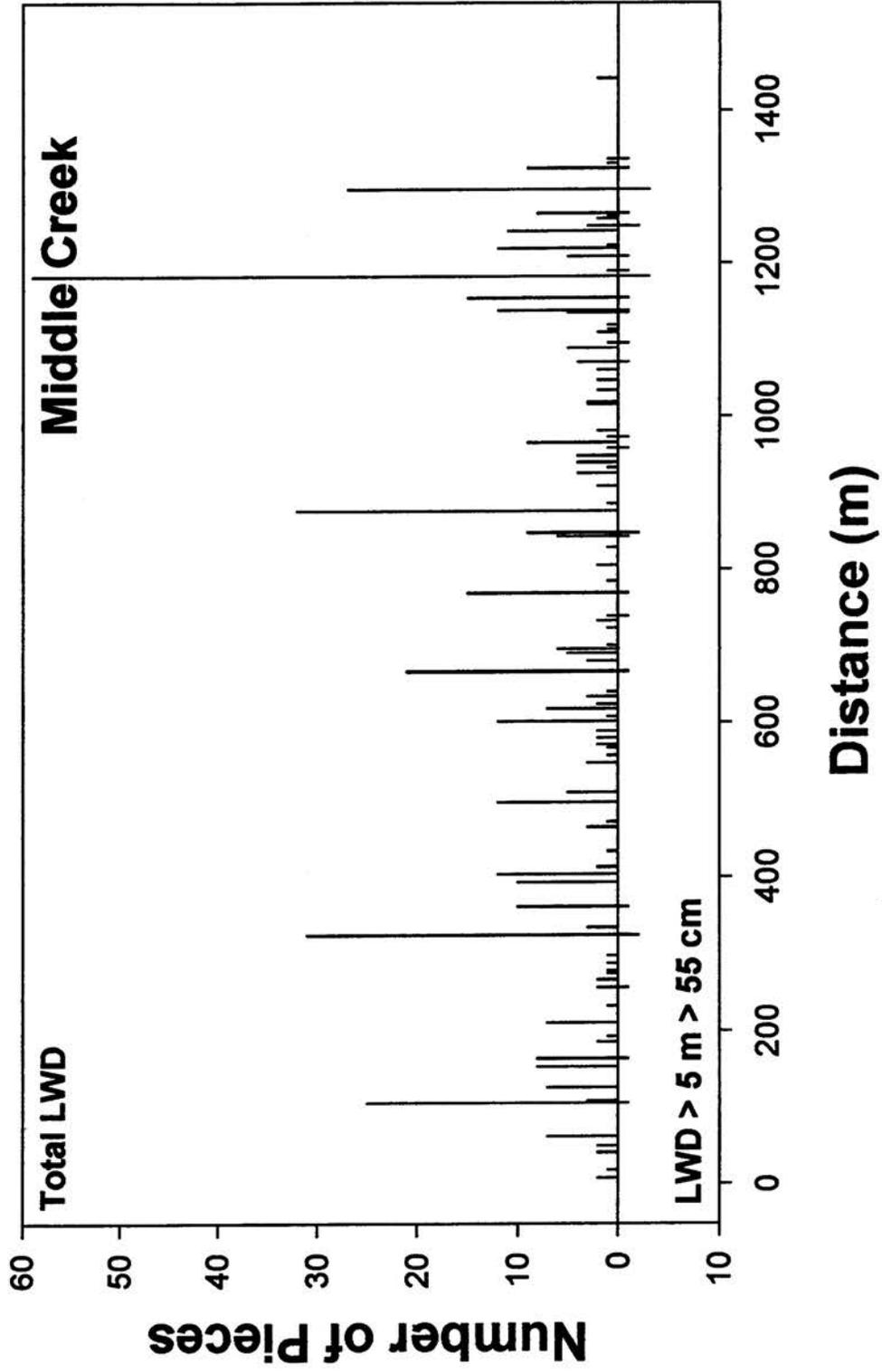
Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

Middle Creek

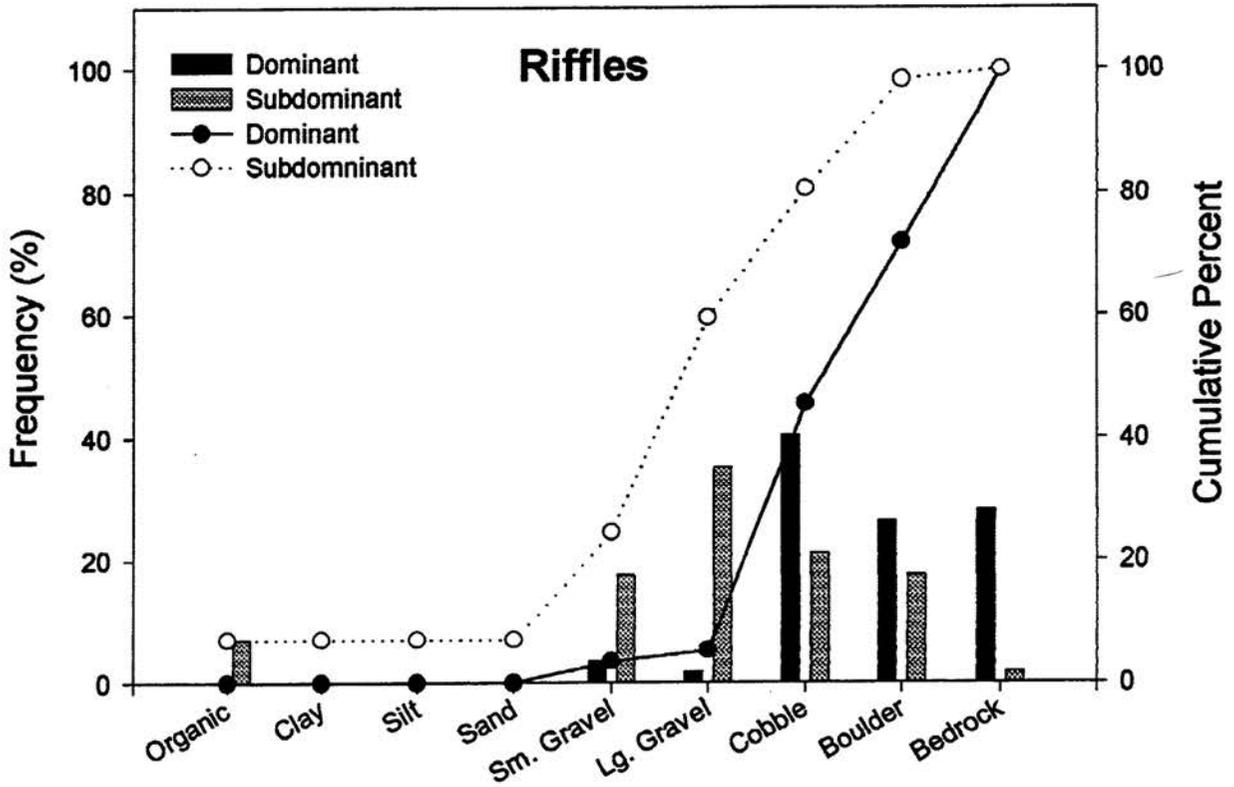
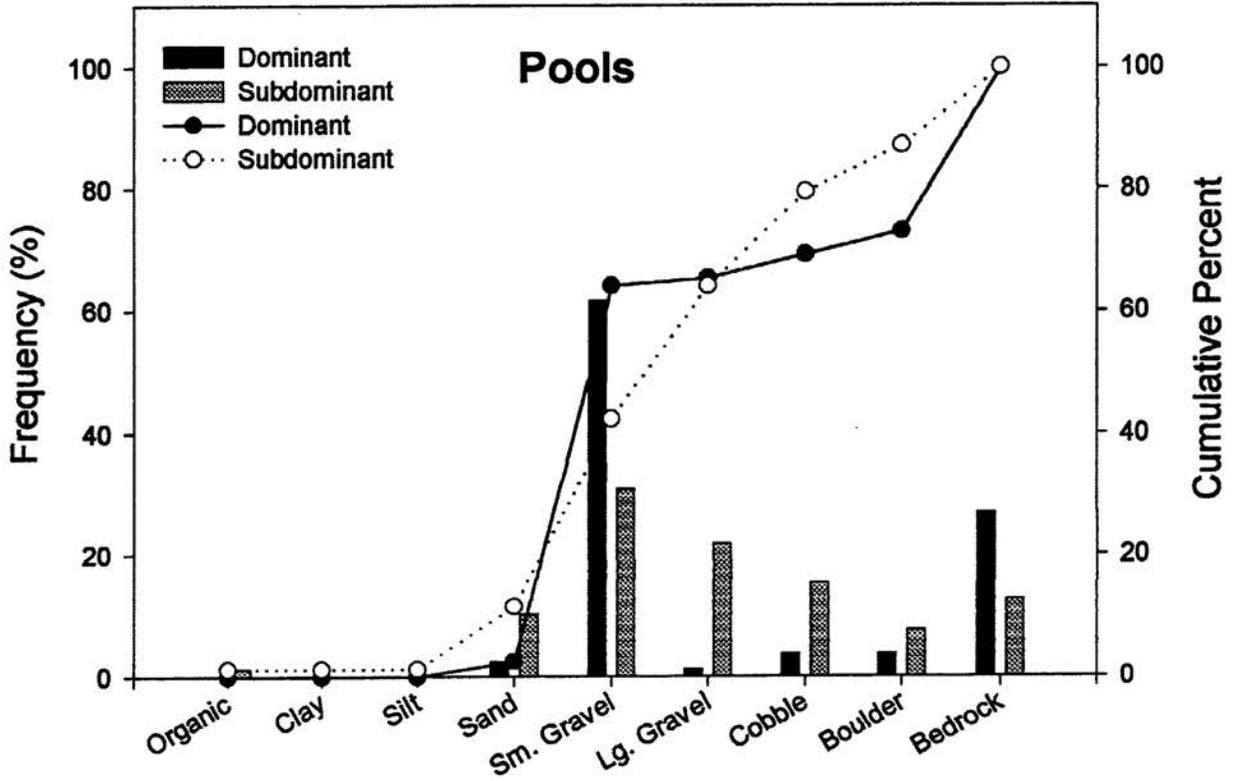
Large Woody Debris

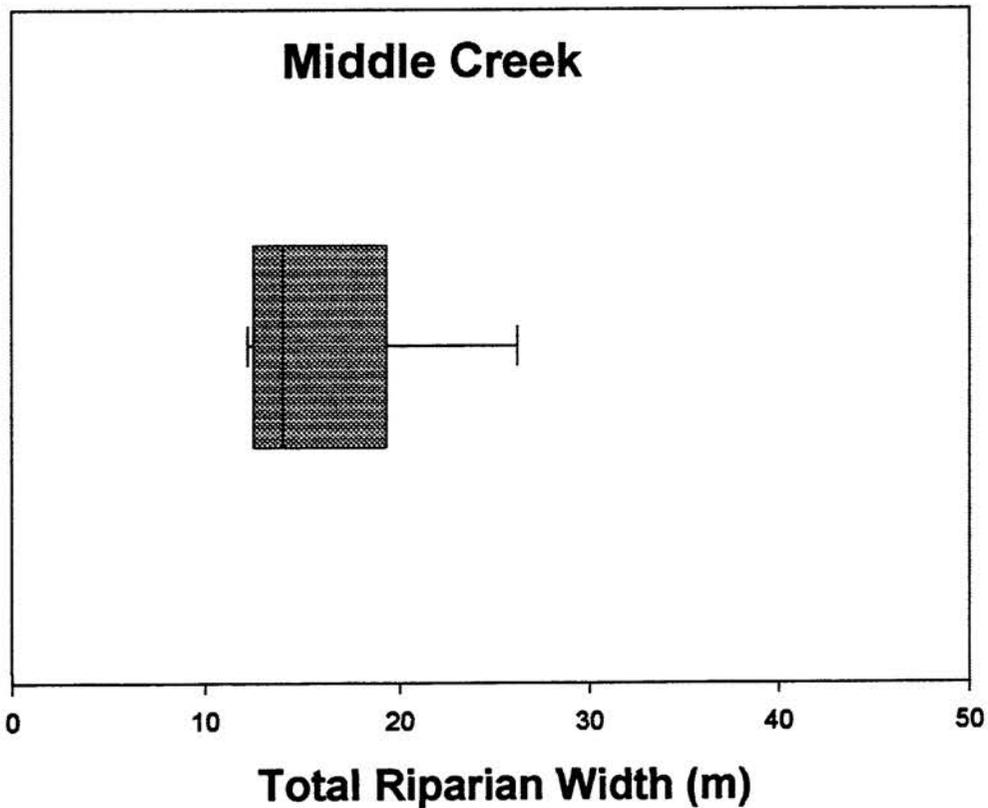


Distribution and Abundance of Large Woody Debris



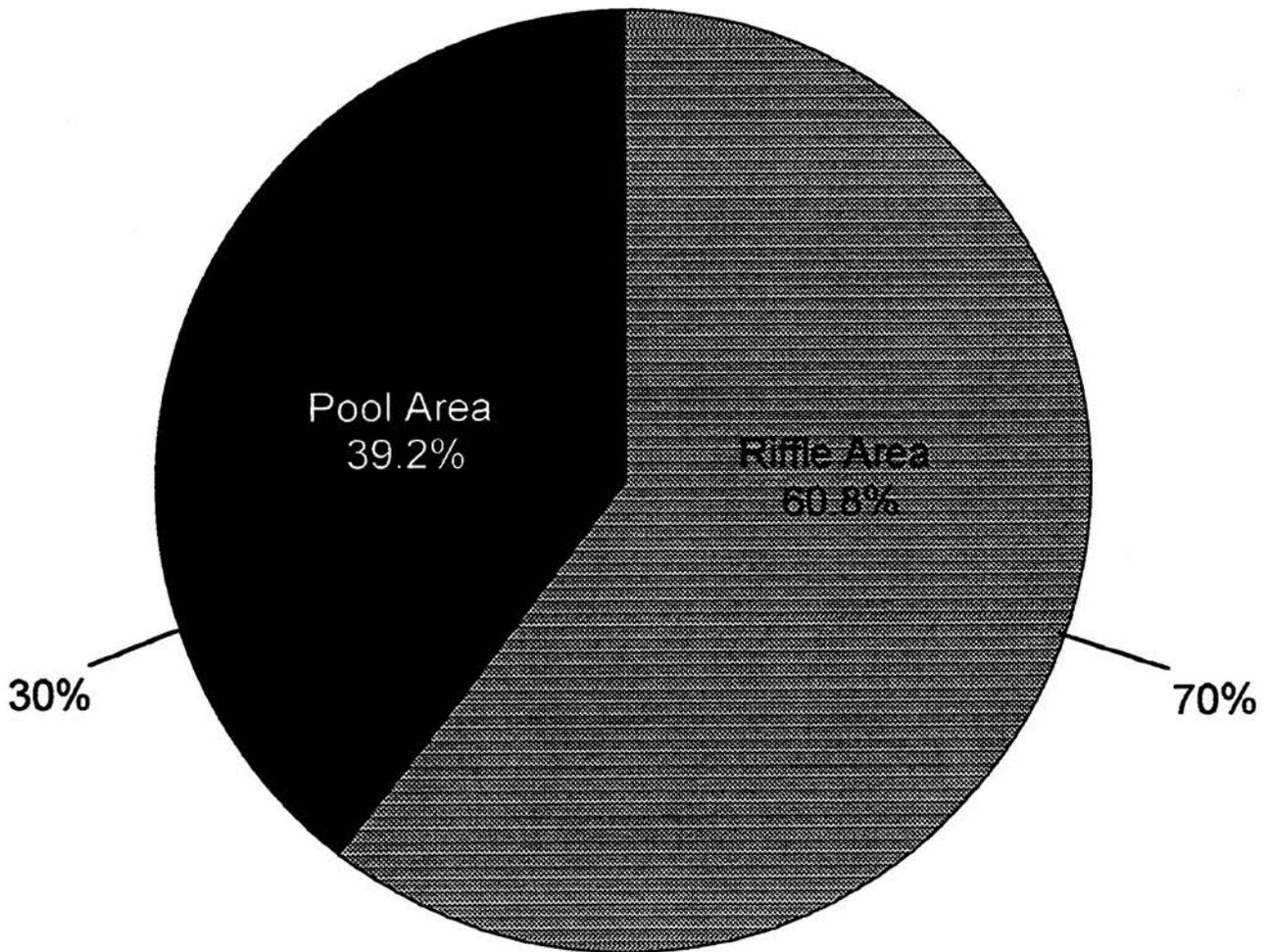
Middle Creek Substrate Composition



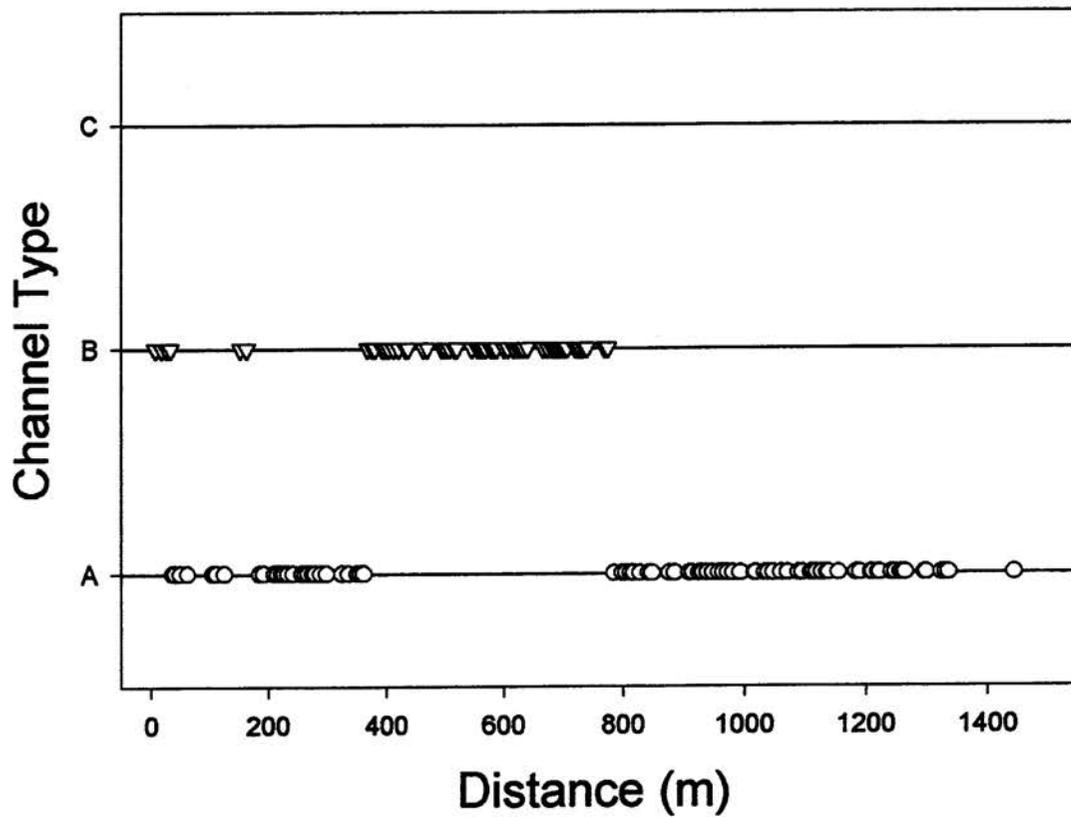
Riparian Width**Stream: Middle Creek****Number of Measurements: 5****Mean Width: 16.4m Std Dev: 5.8****Max: 26.2m Min: 12.2m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Middle Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Middle Creek Rosgen's Channel Type Distribution



Stream: Parks Creek

District: Mount Rogers National Recreation Area

Quadrangle: Cedar Springs/Middle Fox Creek

Sample Date: 07/15/98

Downstream Starting Point: Confluence with Cressy Creek

Total Distance Surveyed: 1.4 kilometers

Percent of Total Area - Pools: 42.3%

Number of Pools: 113

Number of Pools per kilometer: 80.7

Total Pool Area: 1292.6 sq. meters \pm 118.49

Mean Pool Area: 11.4 sq. meters

Correction Factor: 1.08

Mean Maximum Depth: 34.5 cm

Mean Average Depth: 22.8 cm

Mean Average Residual Pool Depth: 17.6 cm

Percent of Total Area - Riffles: 57.7%

Number of Riffles: 64

Number of Riffles per kilometer: 45.7

Total Riffle Area: 1762.7 sq. meters \pm 573.8

Mean Riffle Area: 27.5 sq. meters

Correction Factor: 1.01

Mean Maximum Depth: 20.1 cm

Mean Average Depth: 9.5 cm

Number of Large Woody Debris Pieces per kilometer: 96.5

Wood < 5 m and < 55 cm: 60.6

Wood < 5 m and > 55 cm: 3.7

Wood > 5 m and < 55 cm: 30.7

Wood > 5 m and > 55 cm: 1.5

Mean Channel Width: 6.3 m

Mean Riparian Width: 15.2 m

Mean Maximum Riparian Distance (either side): 7.9 m

Mean Minimum Riparian Distance (either side): 1.0 m

Maximum Riparian Width (Total): 7.9 m

Minimum Riparian Width (Total): 1.0 m

Parks Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 26.0%

Rosgen's Channel Type Frequency:

Channel Type A: 68.0%

Channel Type B: 32.0%

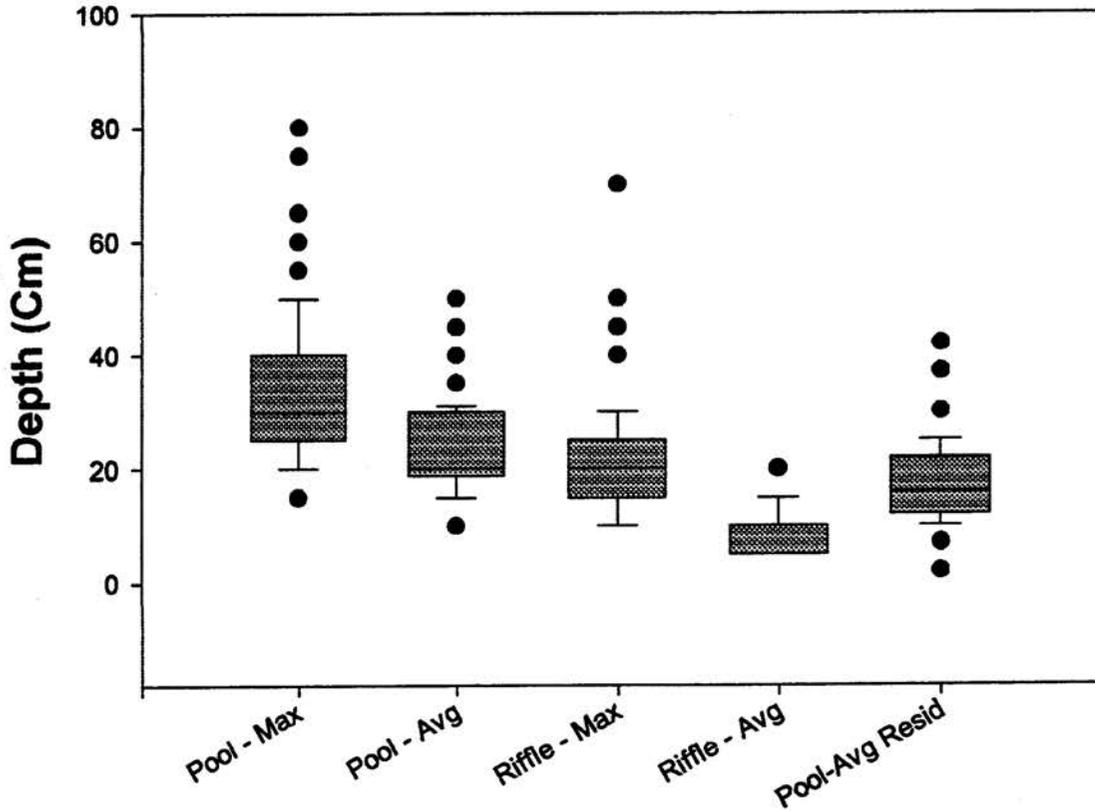
Channel Type C:

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 27.4%

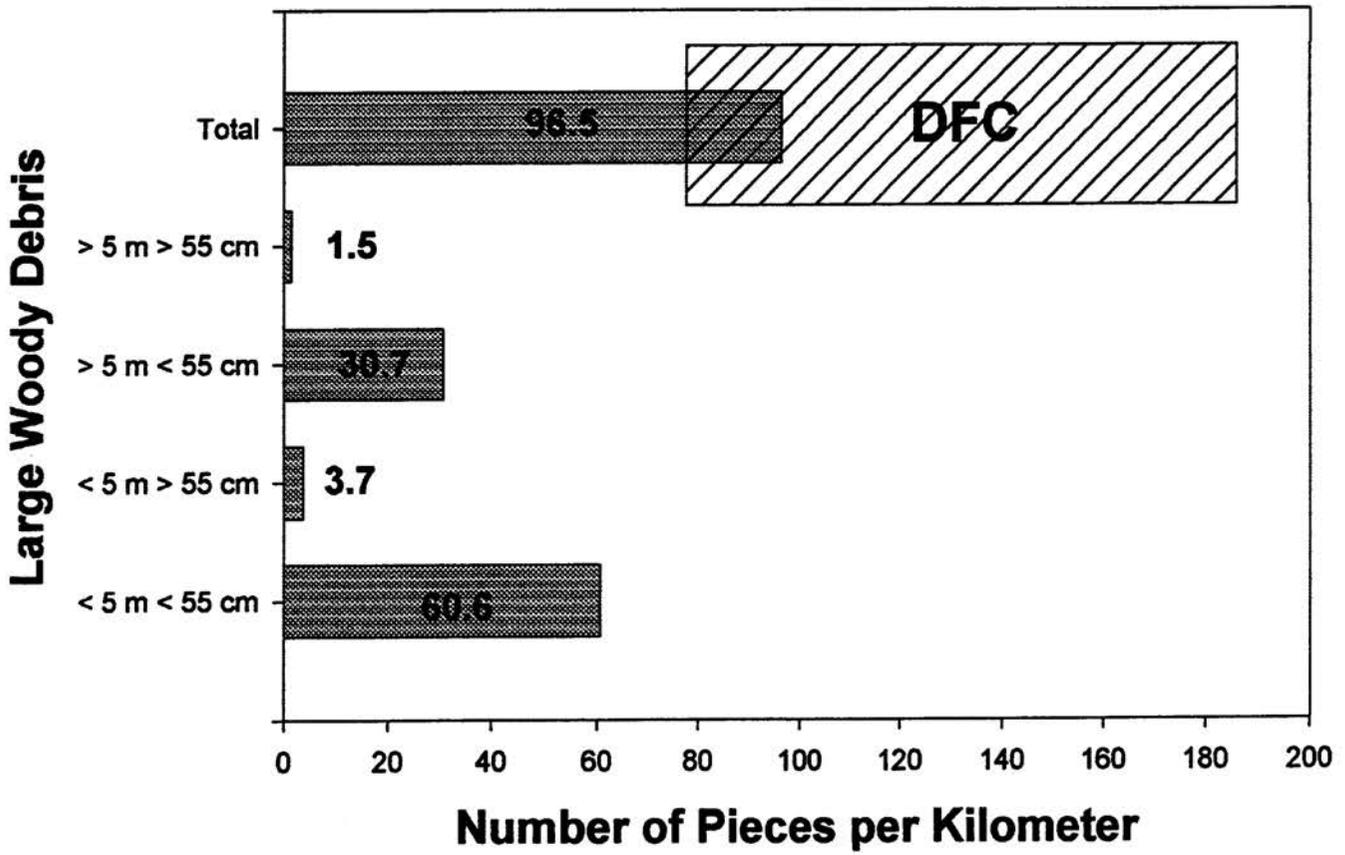
Average Channel Gradient: 10.7

Parks Creek

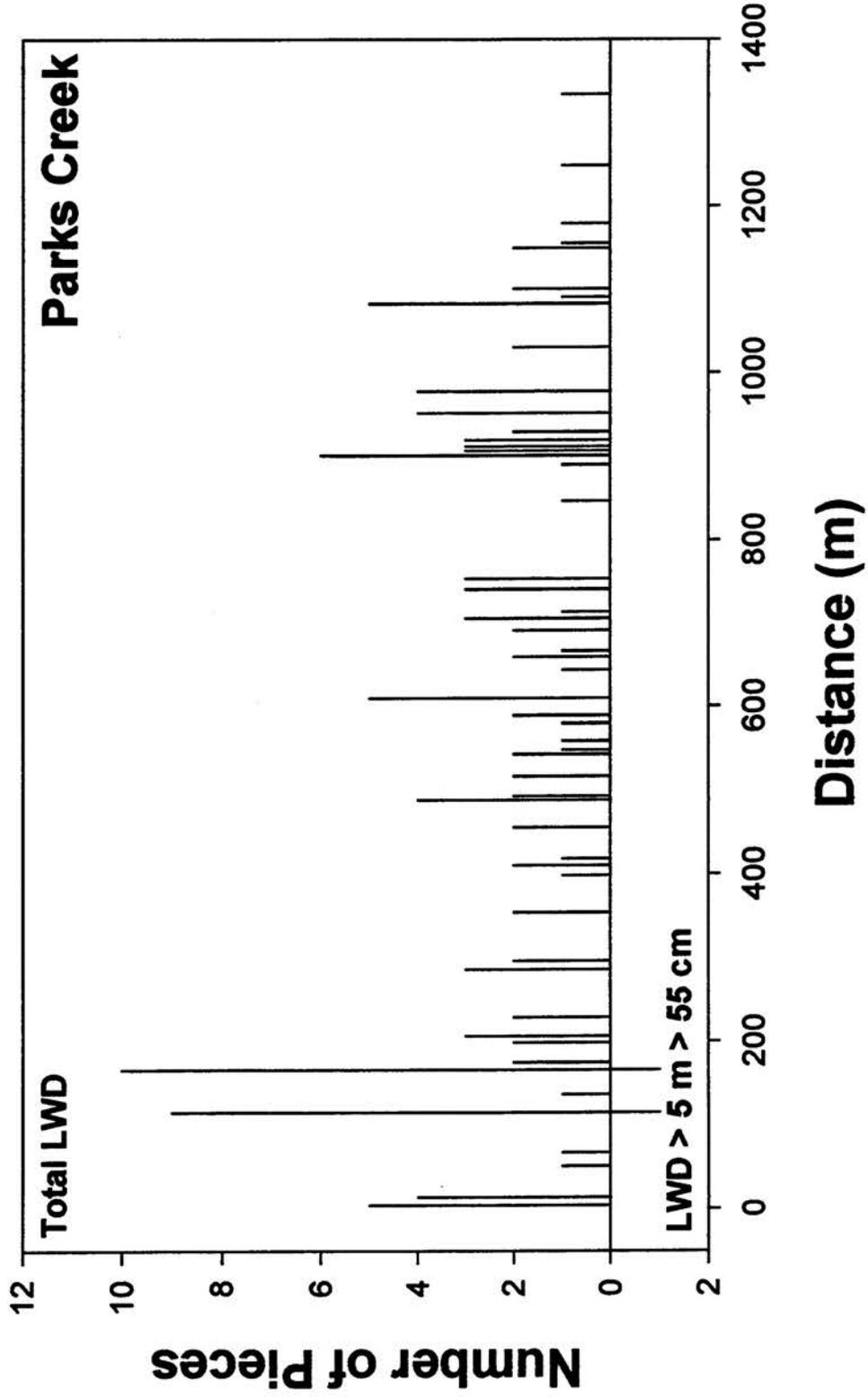


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

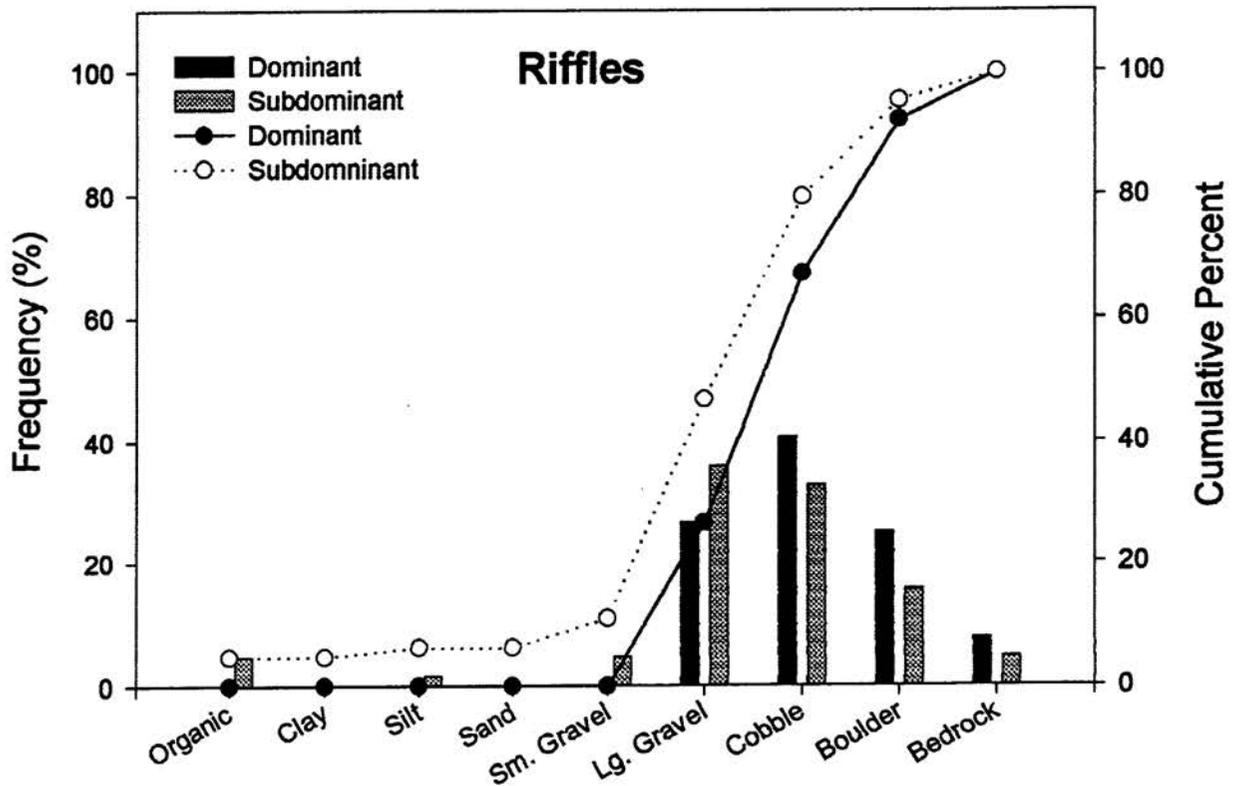
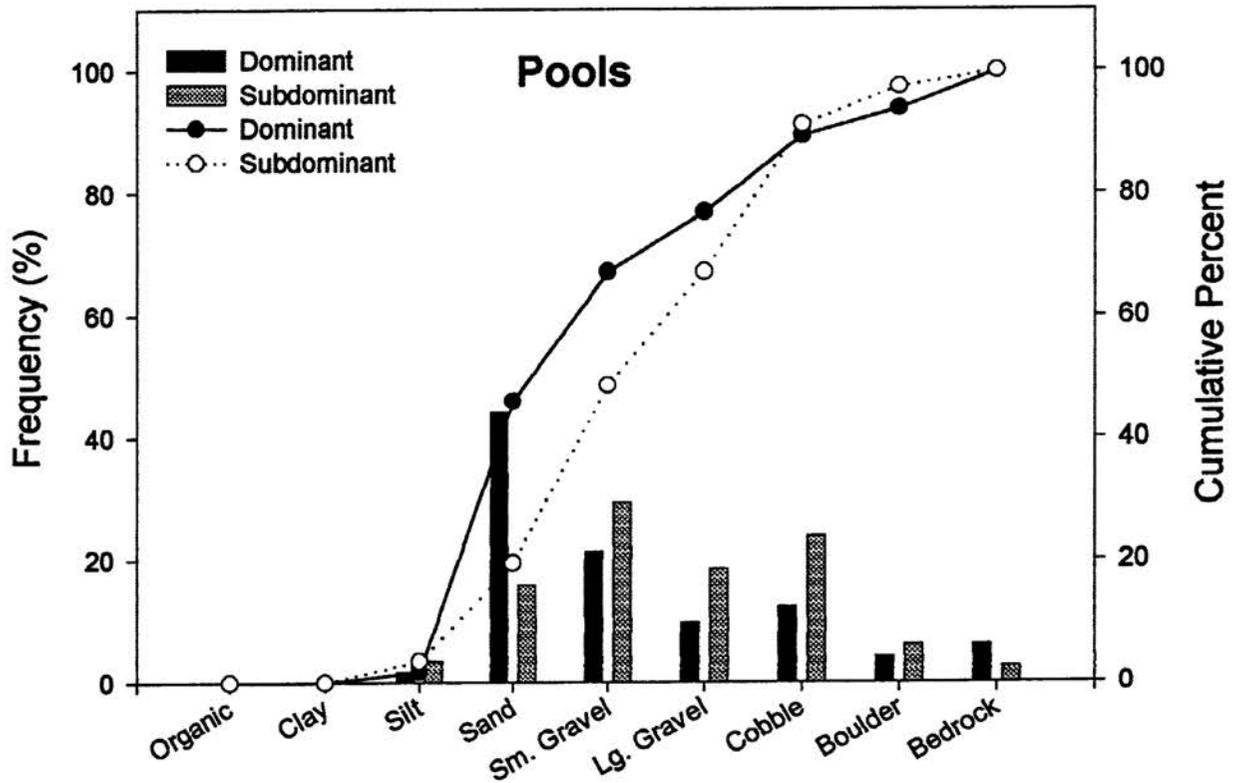
Parks Creek

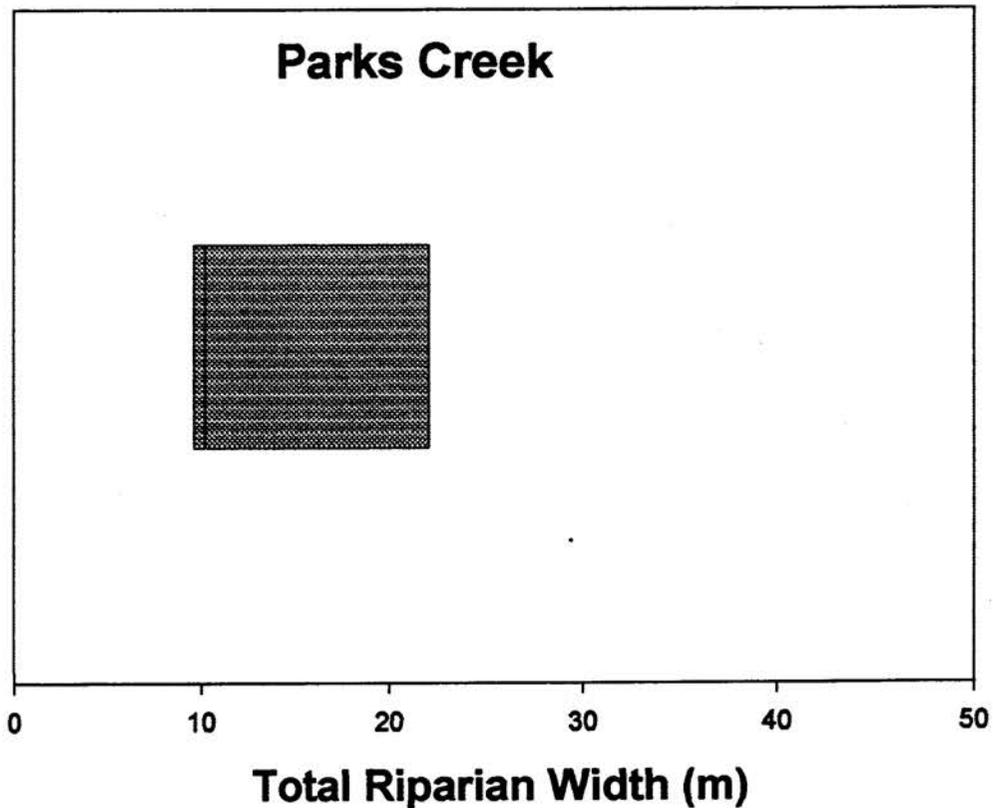


Distribution and Abundance of Large Woody Debris



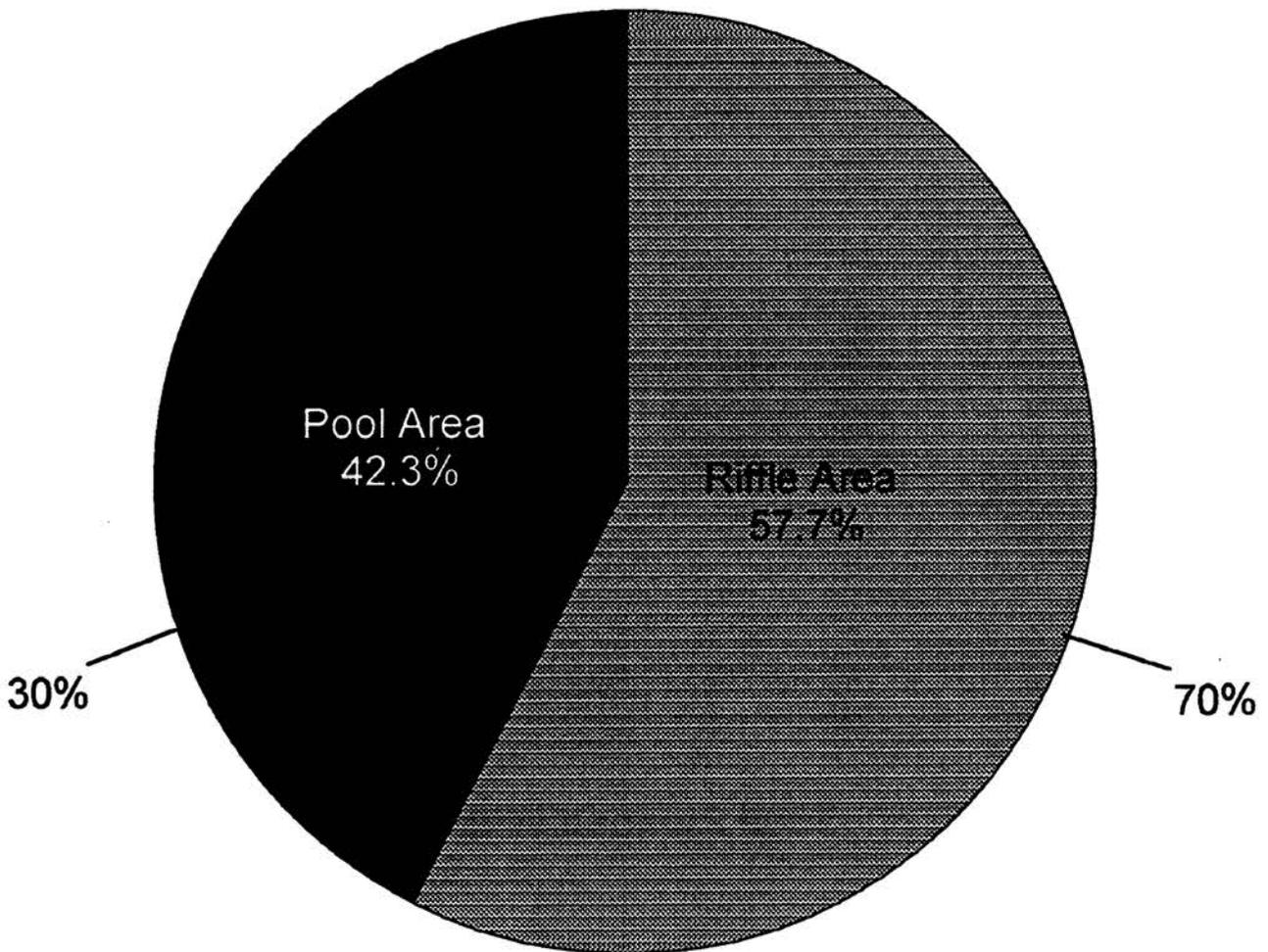
Parks Creek Substrate Composition



Riparian Width**Stream: Parks Creek****Number of Measurements: 3****Mean Width: 15.2m Std Dev: 9.4****Max: 26.0m Min: 9.4m**

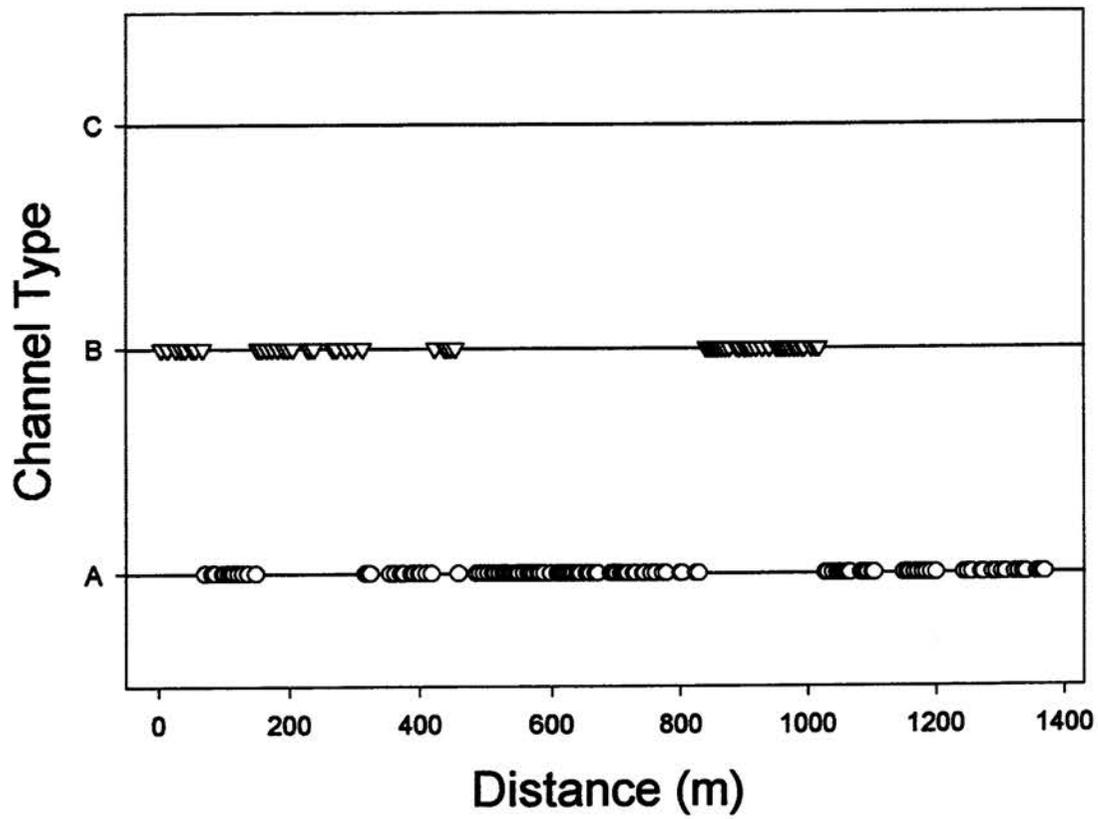
Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Parks Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Parks Creek

Rosgen's Channel Type Distribution



Speedwell Quadrangle

Stream: East Fork Dry Run

District: Mount Rogers National Recreation Area

Quadrangle: Speedwell

Sample Date: 07/23/98

Downstream Starting Point: Junction with West Fork Dry Run

Total Distance Surveyed: 3.4 kilometers

Percent of Total Area - Pools: 52.9%

Number of Pools: 132

Number of Pools per kilometer: 39.7

Total Pool Area: 4922.8 sq. meters \pm 601.9

Mean Pool Area: 37.3 sq. meters

Correction Factor: 1.12

Mean Maximum Depth: 43.1 cm

Mean Average Depth: 28.8 cm

Mean Average Residual Pool Depth: 22.7 cm

Percent of Total Area - Riffles: 47.1%

Number of Riffles: 81

Number of Riffles per kilometer: 23.8

Total Riffle Area: 4379.5 sq. meters \pm 515.7

Mean Riffle Area: 54.1 sq. meters

Correction Factor: 1.12

Mean Maximum Depth: 15.6 cm

Mean Average Depth: 8.8 cm

Number of Large Woody Debris Pieces per kilometer: 205.3

Wood < 5 m and < 55 cm: 123.9

Wood < 5 m and > 55 cm: 5.0

Wood > 5 m and < 55 cm: 67.1

Wood > 5 m and > 55 cm: 9.3

Mean Channel Width: 6.4 m

Mean Riparian Width: 43.5 m

Mean Maximum Riparian Distance (either side): 33.0 m

Mean Minimum Riparian Distance (either side): 4.1 m

Maximum Riparian Width (Total): 101.9 m

Minimum Riparian Width (Total): 15.5 m

East Fork Dry Run Continued.

Percent of Pool Habitat Surveyed as Glides: 14.5%

Rosgen's Channel Type Frequency:

Channel Type A:

Channel Type B: 28.8%

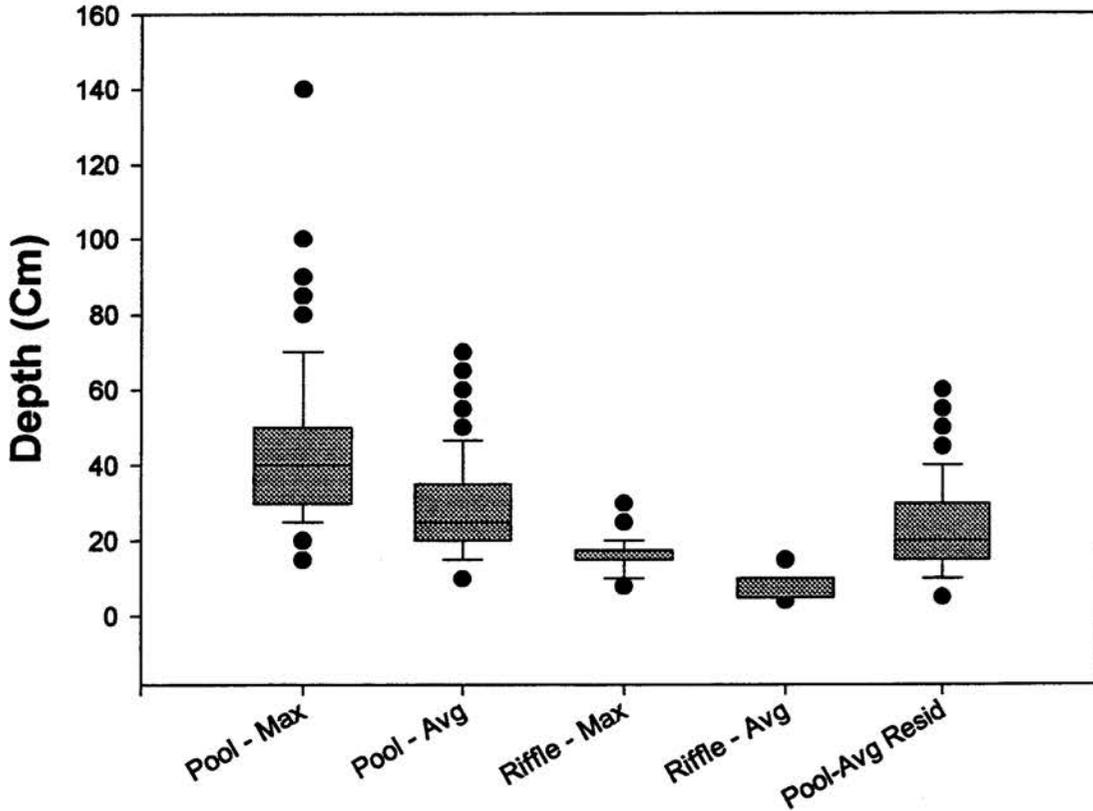
Channel Type C: 71.2%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 38.6%

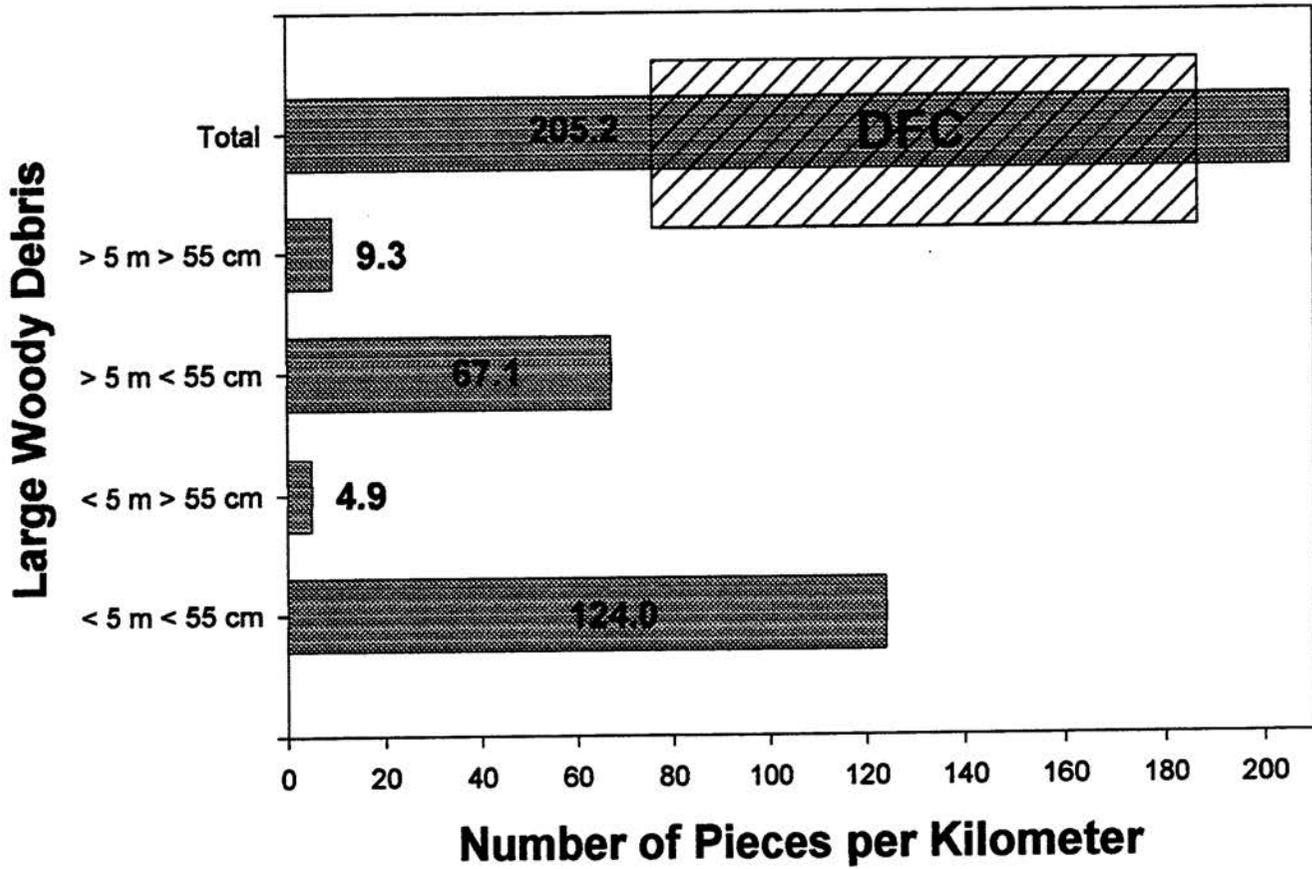
Average Channel Gradient: 3.9

East Fork Dry Run

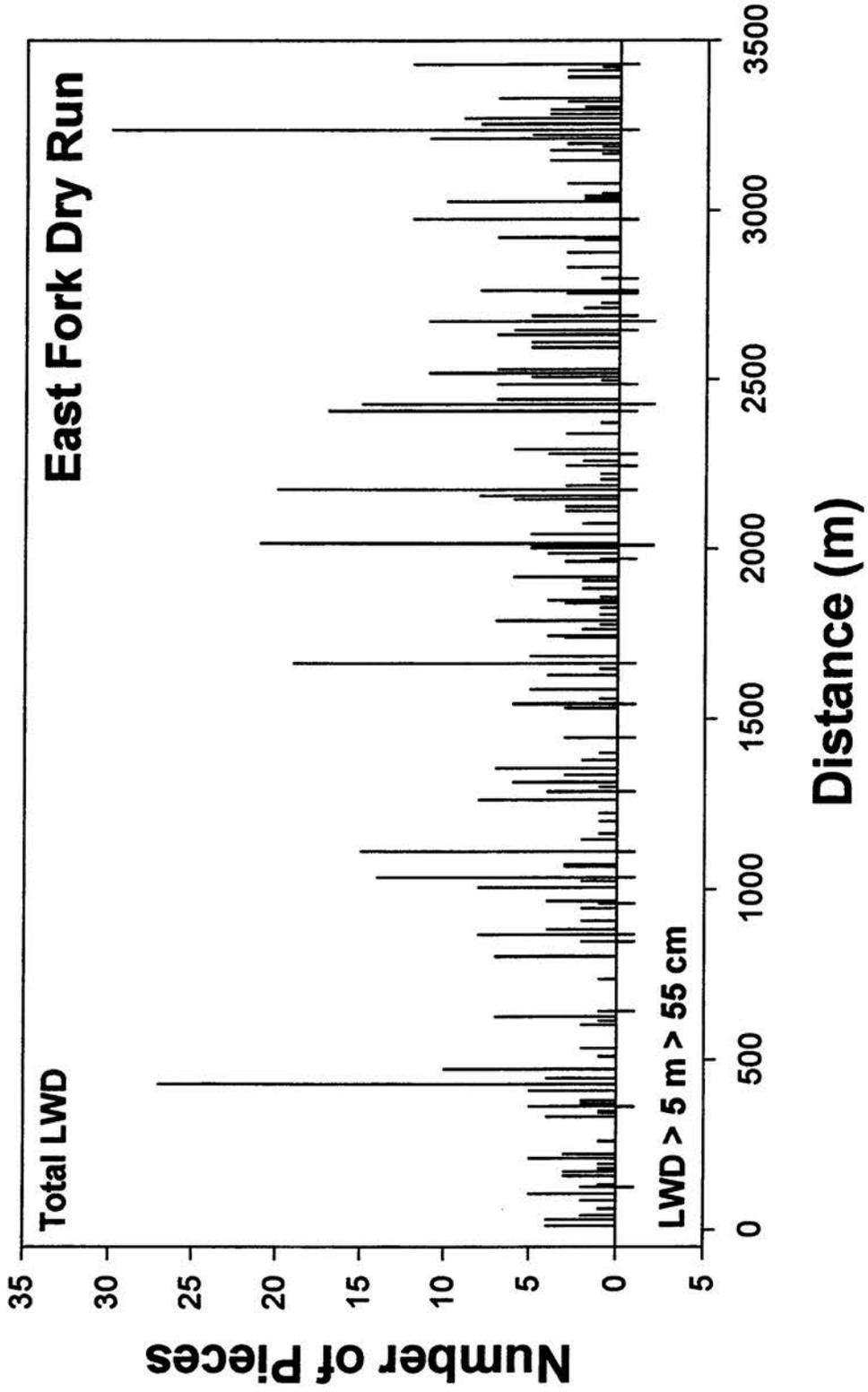


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

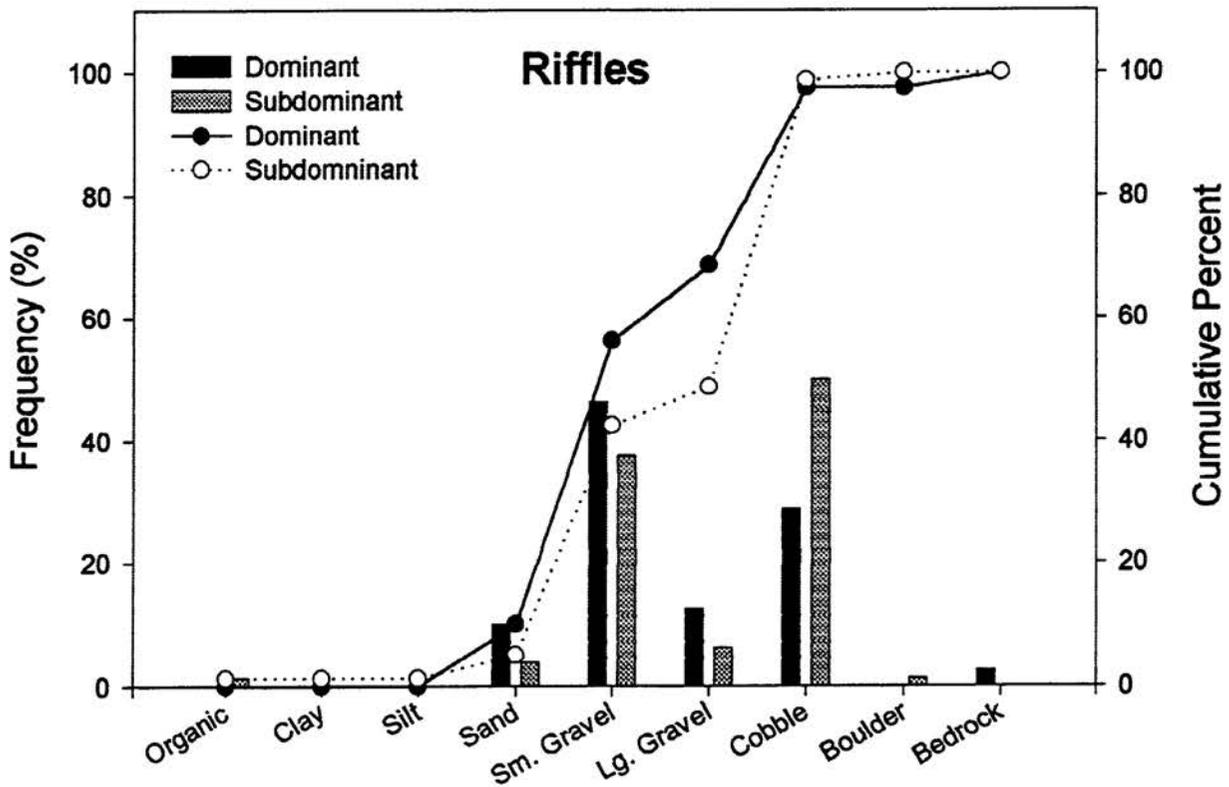
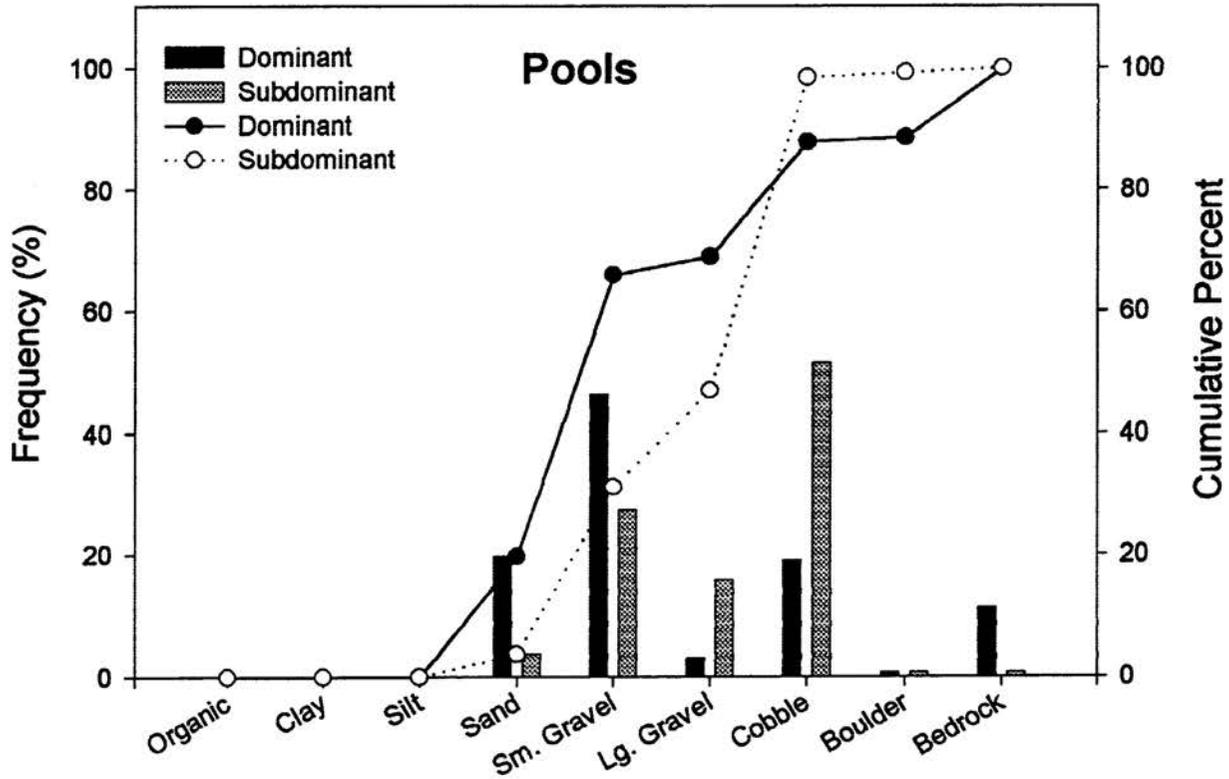
East Fork Dry Run

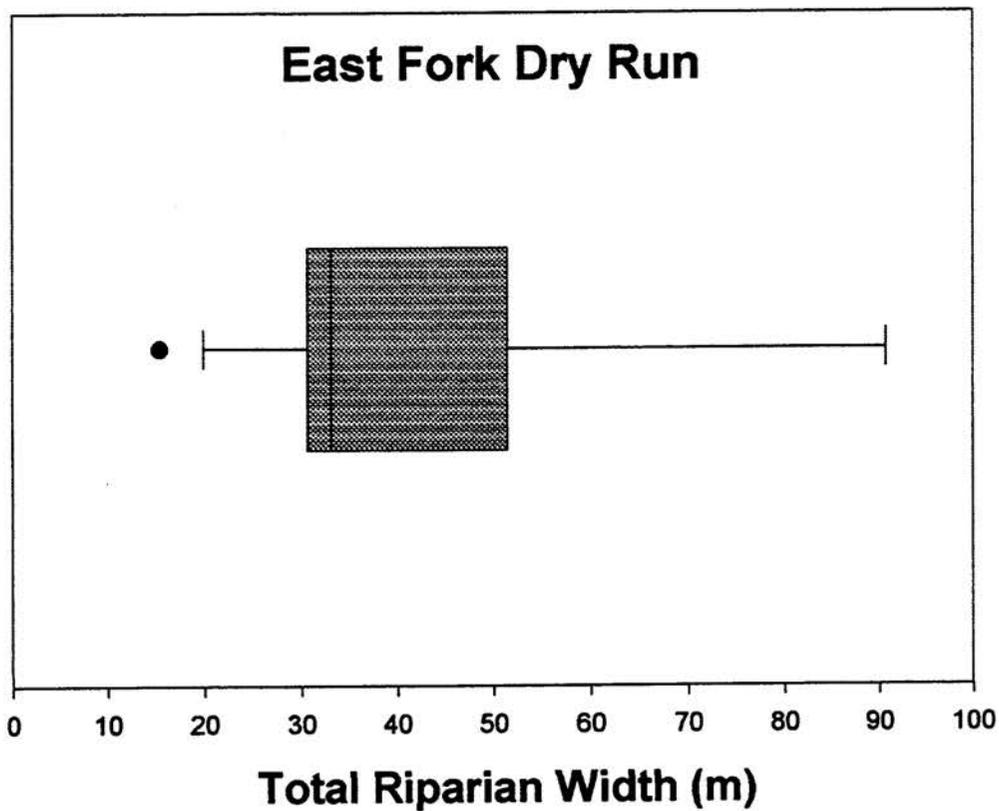


Distribution and Abundance of Large Woody Debris



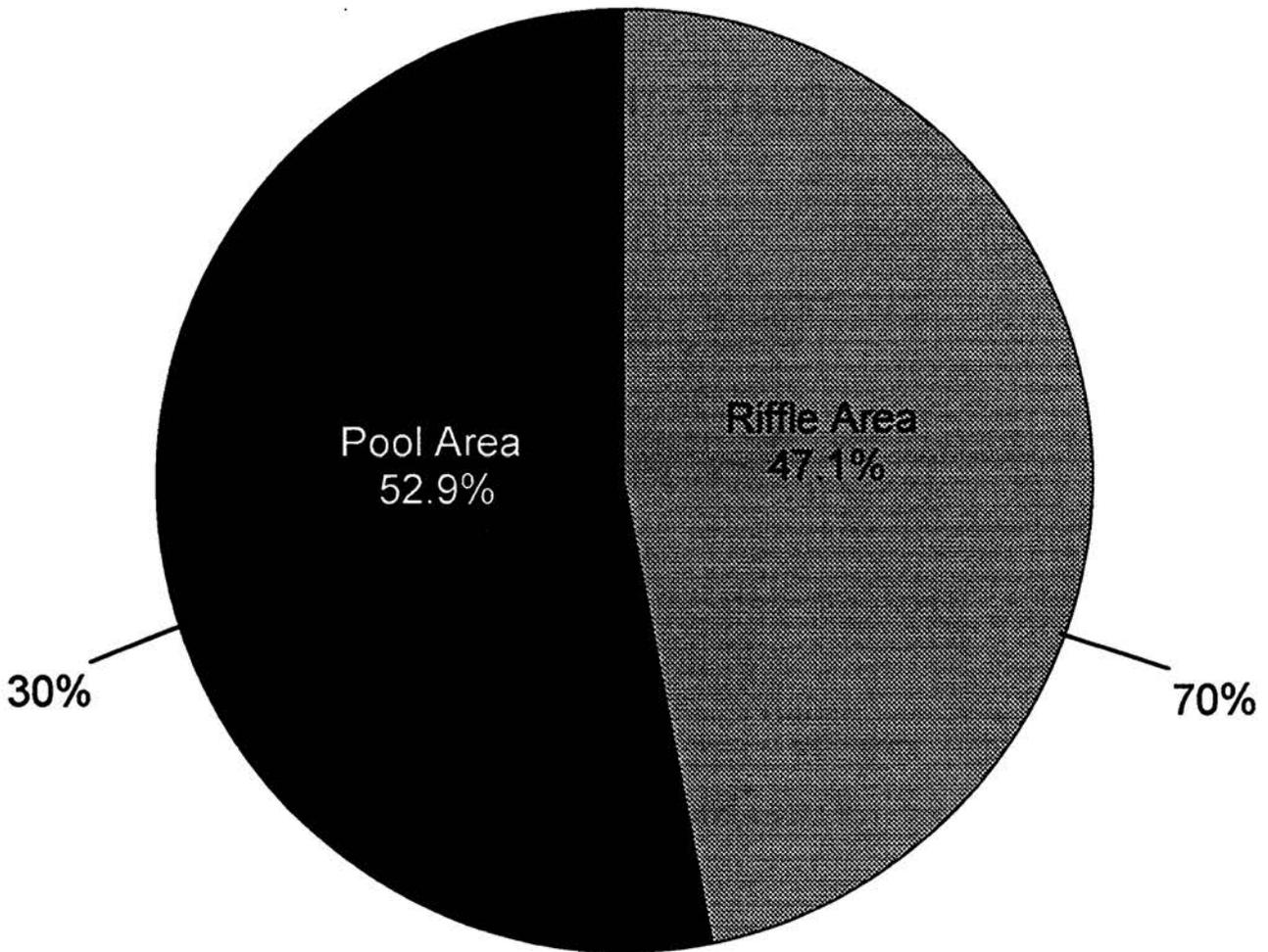
East Fork Dry Run Substrate Composition



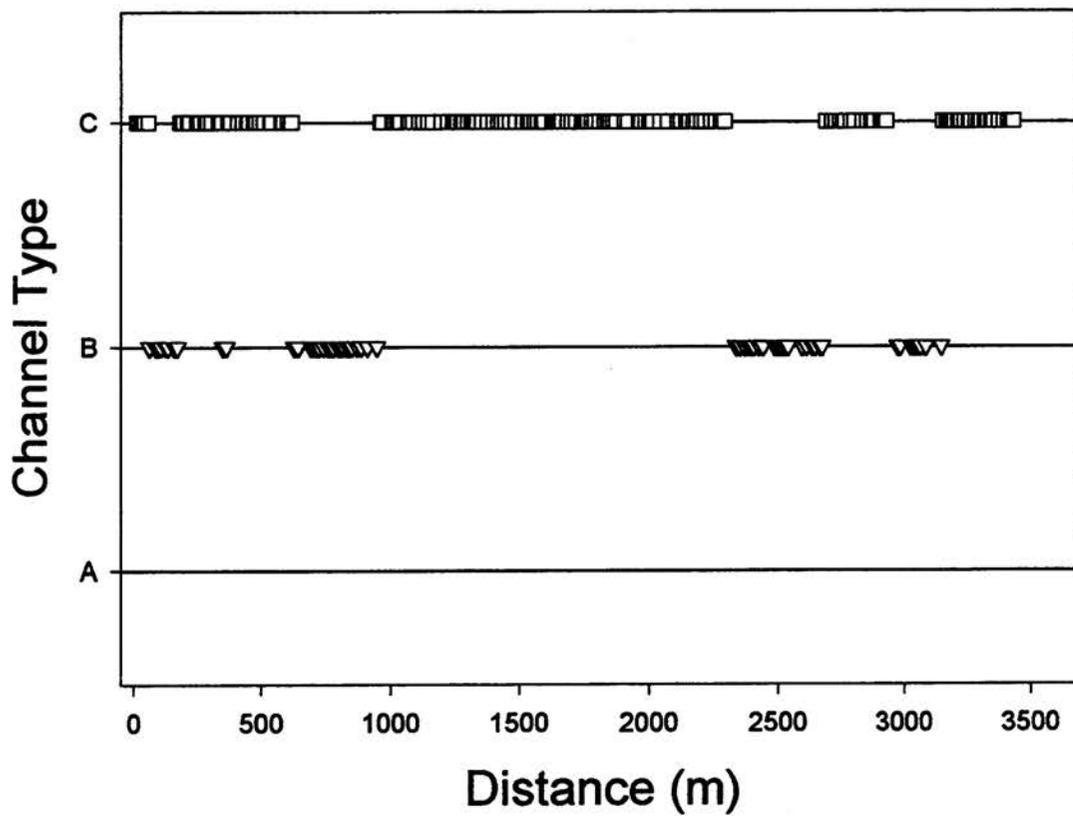
Riparian Width**Stream: East Fork Dry Run****Number of Measurements: 8****Mean Width: 43.5m Std Dev: 27.3****Max: 102m Min: 15.5m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**East Fork Dry Run
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



East Fork Dry Run Rosgen's Channel Type Distribution



Stream: West Fork Dry Run

District: Mount Rogers National Recreation Area

Quadrangle: Speedwell

Sample Date: 07/23/98

Downstream Starting Point: Junction with East Fork Dry Run

Total Distance Surveyed: 1.2 kilometers

Percent of Total Area - Pools: 55.6%

Number of Pools: 60

Number of Pools per kilometer: 50.0

Total Pool Area: 1556.6 sq. meters \pm 244.8

Mean Pool Area: 25.9 sq. meters

Correction Factor: 0.94

Mean Maximum Depth: 30.7 cm

Mean Average Depth: 15.3 cm

Mean Average Residual Pool Depth: 12.8 cm

Percent of Total Area - Riffles: 44.4%

Number of Riffles: 43

Number of Riffles per kilometer: 35.8

Total Riffle Area: 1242.3 sq. meters \pm 115.5

Mean Riffle Area: 28.9 sq. meters

Correction Factor: 1.04

Mean Maximum Depth: 13.8 cm

Mean Average Depth: 5.9 cm

Number of Large Woody Debris Pieces per kilometer: 196.6

Wood < 5 m and < 55 cm: 79.4

Wood < 5 m and > 55 cm: 8.8

Wood > 5 m and < 55 cm: 91.5

Wood > 5 m and > 55 cm: 16.9

Mean Channel Width: 6.0 m

Mean Riparian Width: 26.6 m

Mean Maximum Riparian Distance (either side): 17.3 m

Mean Minimum Riparian Distance (either side): 3.3 m

Maximum Riparian Width (Total): 47.2 m

Minimum Riparian Width (Total): 11.7 m

West Fork Dry Run Continued.

Percent of Pool Habitat Surveyed as Glides: 14.2%

Rosgen's Channel Type Frequency:

Channel Type A: 15.1%

Channel Type B: 70.7%

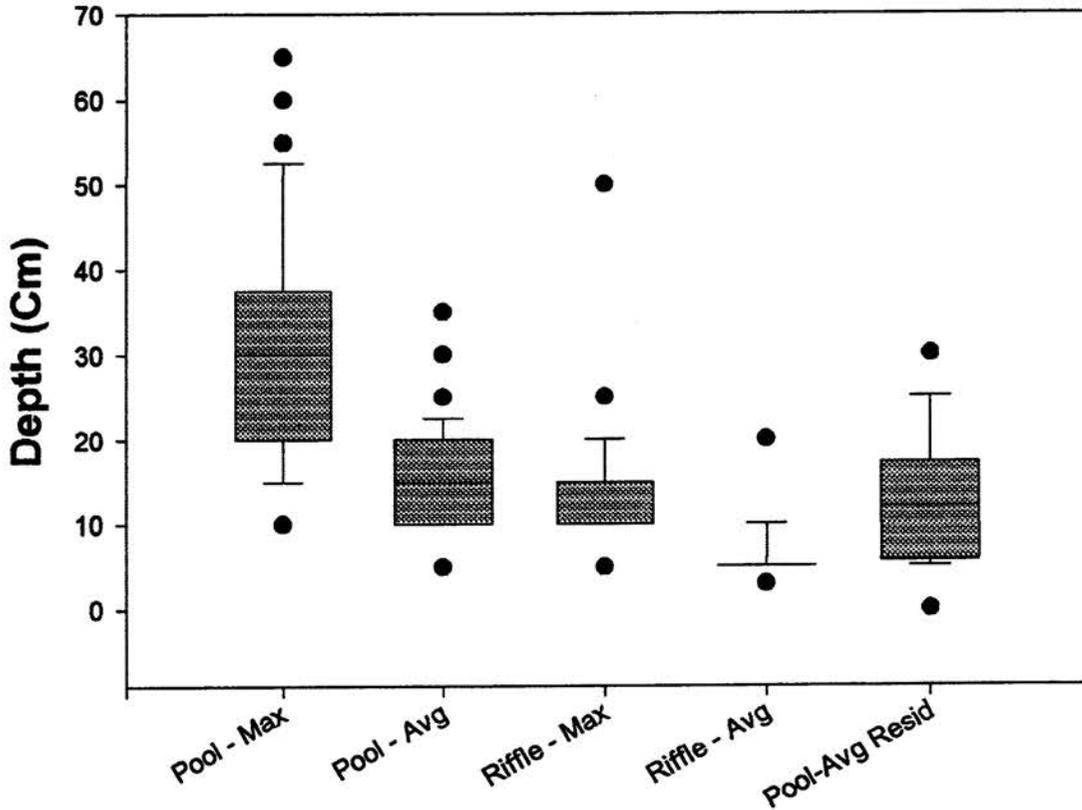
Channel Type C: 14.2%

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 46.7%

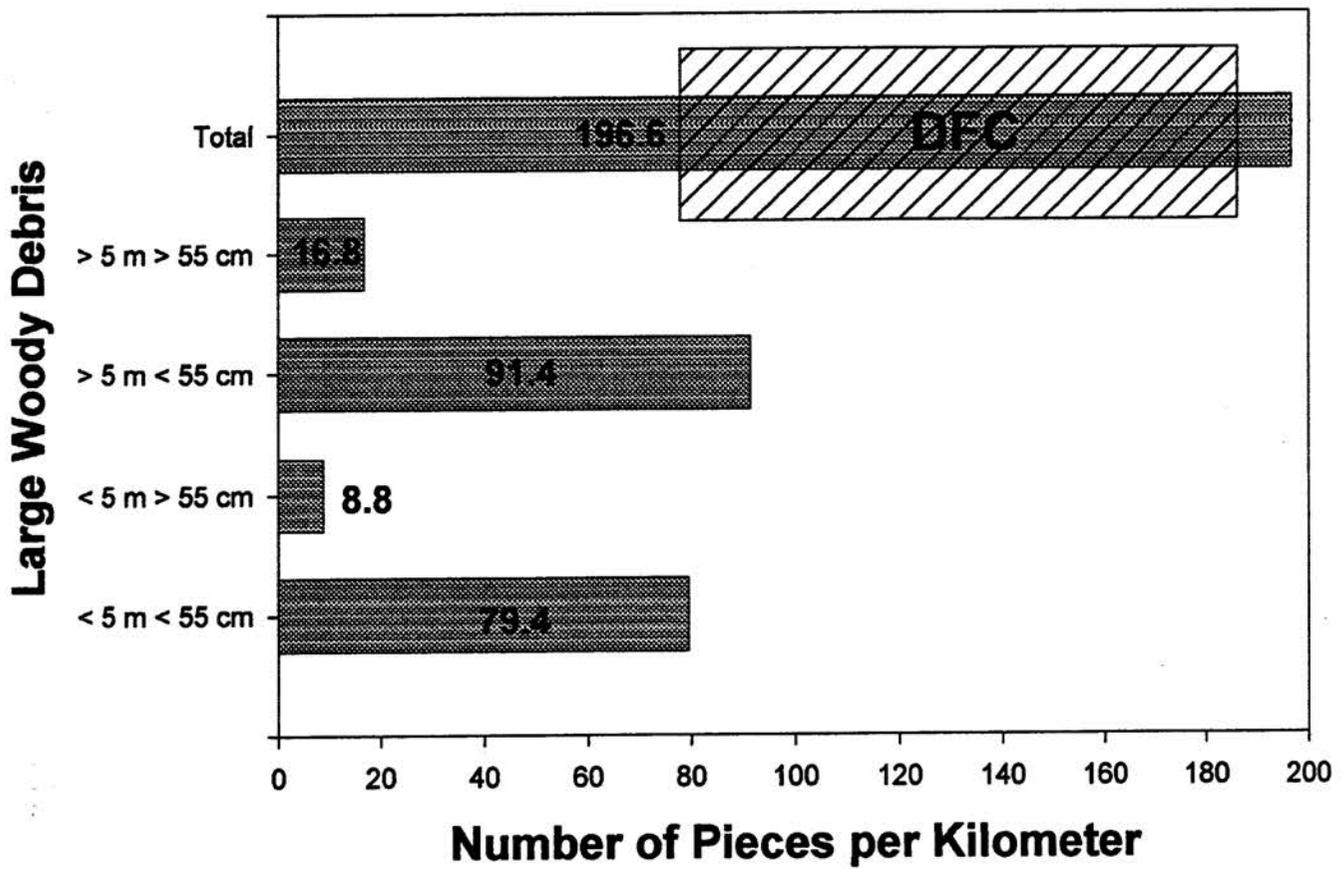
Average Channel Gradient: 15.8

West Fork Dry Run

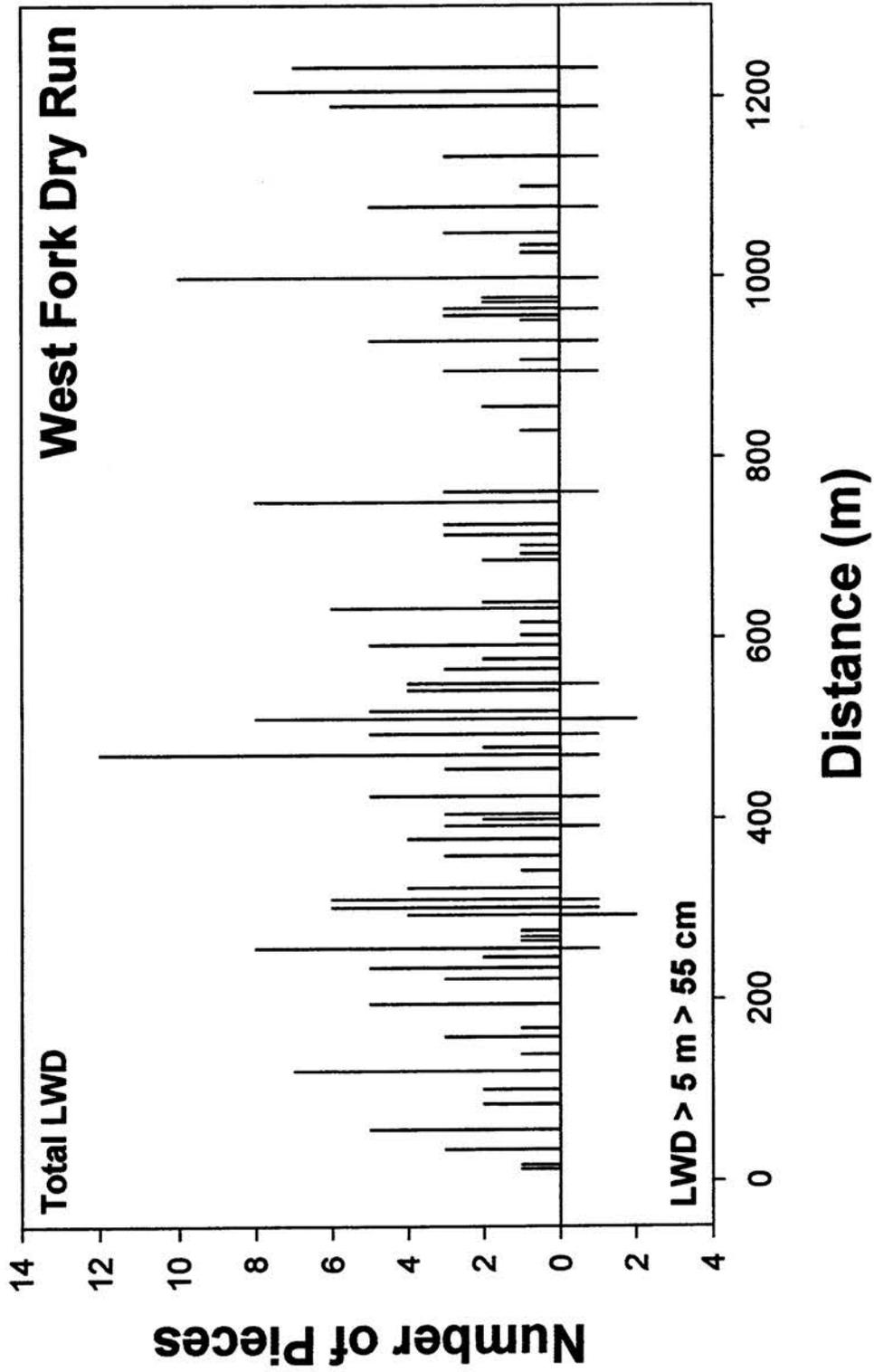


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

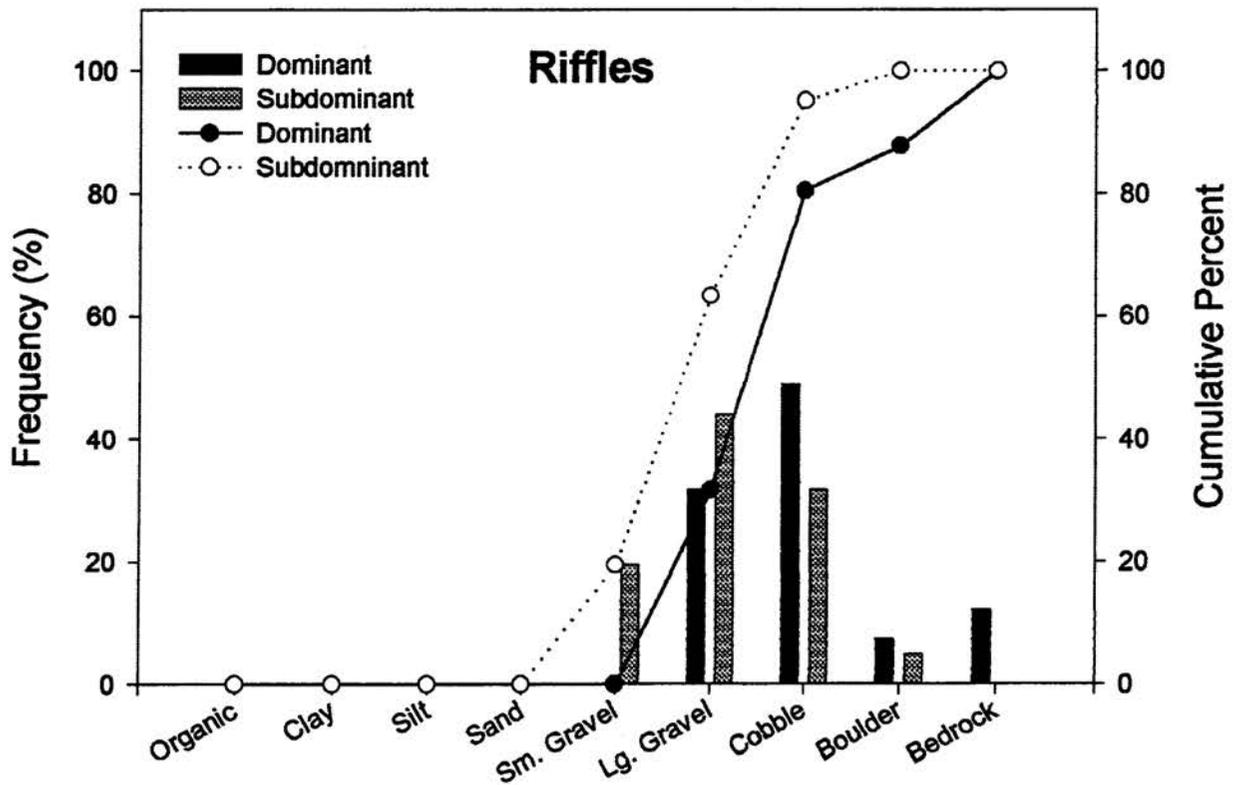
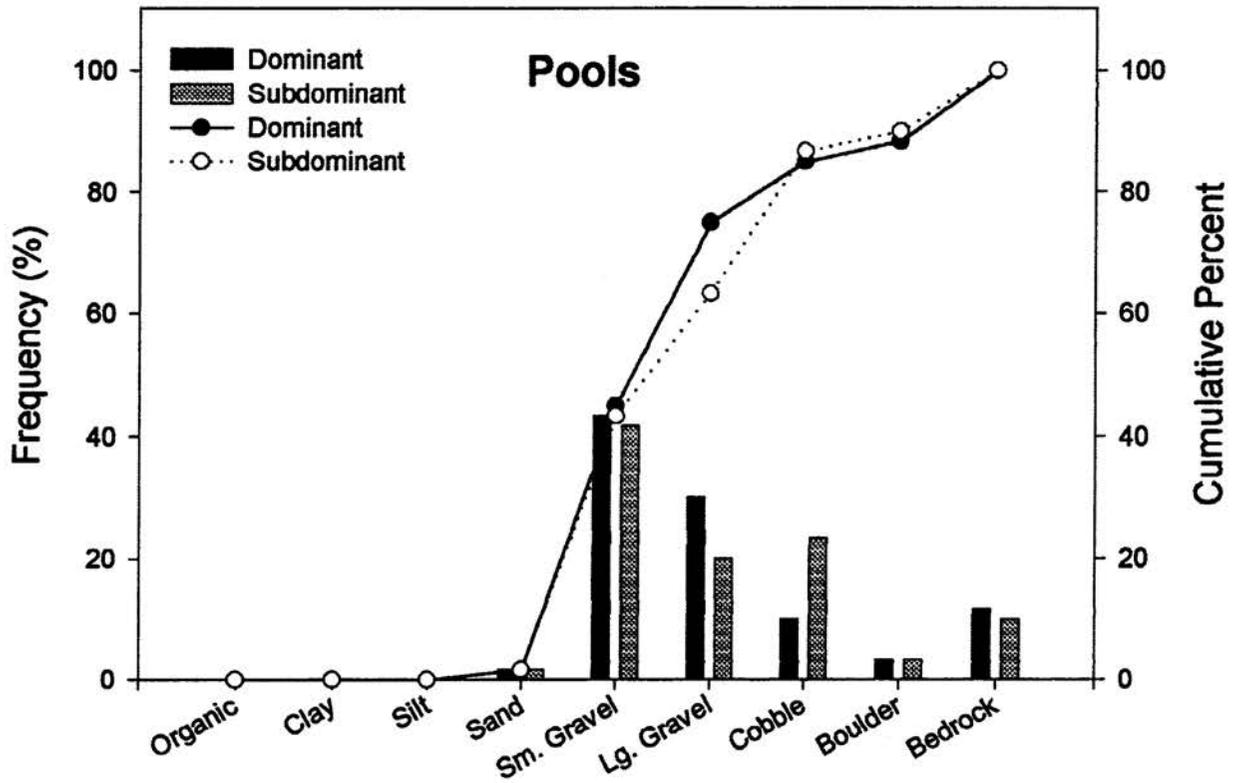
West Fork Dry Run

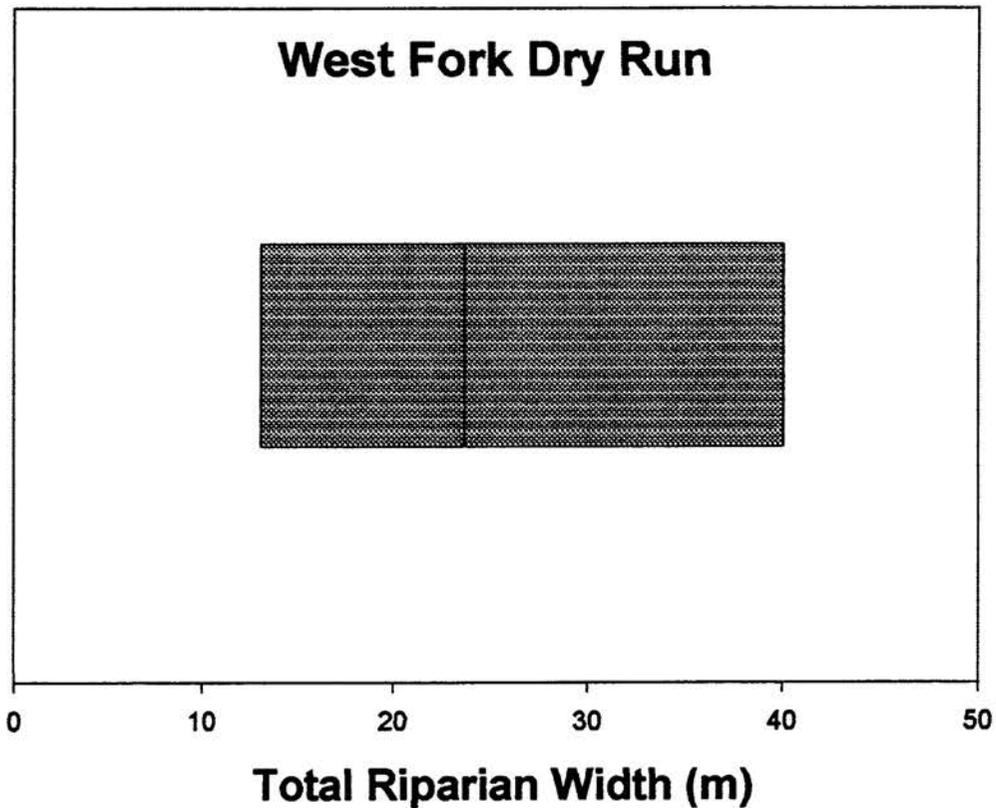


Distribution and Abundance of Large Woody Debris



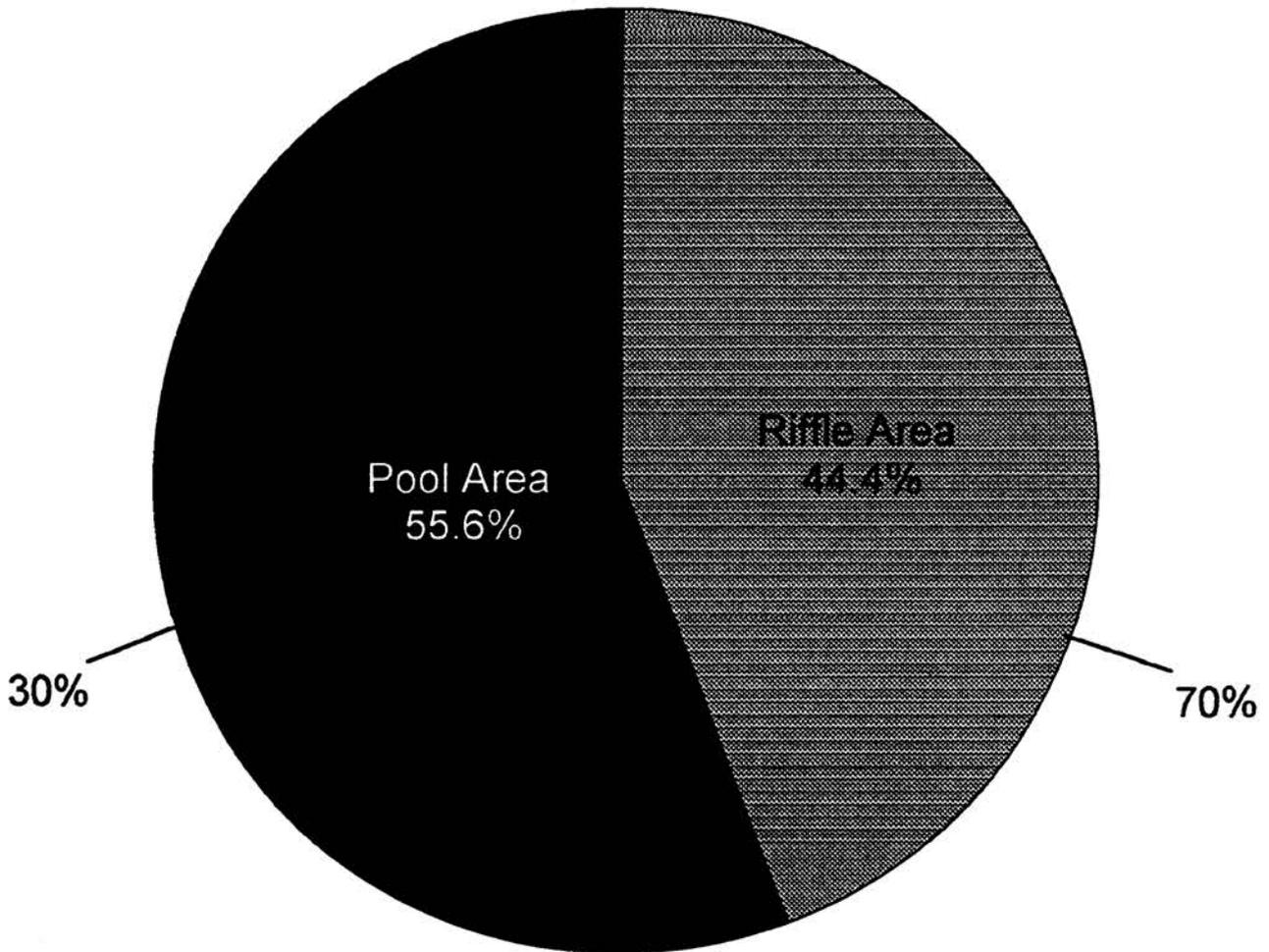
West Fork Dry Run Substrate Composition



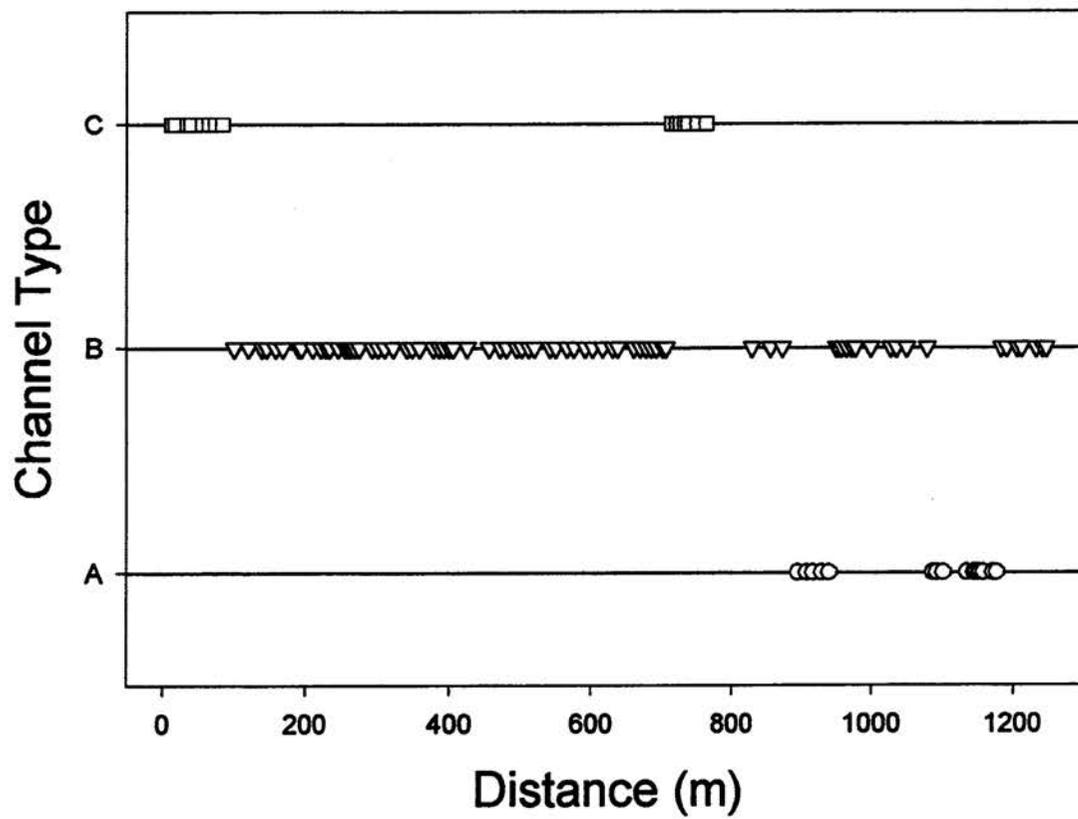
Riparian Width**Stream: West Fork Dry Run****Number of Measurements: 4****Mean Width: 26.6m Std Dev: 16.7****Max: 47.2m Min: 11.7m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**West Fork Dry Run
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



West Fork Dry Run Rosgen's Channel Type Distribution



Cripple Creek Quadrangle

Stream: Bournes Branch

District: Mount Rogers National Recreation Area

Quadrangle: Cripple Cr.

Sample Date: 07/28/98

Downstream Starting Point: Confluence with Brush Creek

Total Distance Surveyed: 2.6 kilometers

Percent of Total Area - Pools: 57.1%

Number of Pools: 106

Number of Pools per kilometer: 40.9

Total Pool Area: 3638.4 sq. meters \pm 288.2

Mean Pool Area: 34.3 sq. meters

Correction Factor: 1.05

Mean Maximum Depth: 34.6 cm

Mean Average Depth: 22.2 cm

Mean Average Residual Pool Depth: 20.8 cm

Percent of Total Area - Riffles: 42.9%

Number of Riffles: 80

Number of Riffles per kilometer: 30.9

Total Riffle Area: 2736.4 sq. meters \pm 125.7

Mean Riffle Area: 34.2 sq. meters

Correction Factor: 0.97

Mean Maximum Depth: 13.5 cm

Mean Average Depth: 7.2 cm

Number of Large Woody Debris Pieces per kilometer: 156.9

Wood < 5 m and < 55 cm: 97.3

Wood < 5 m and > 55 cm: 1.5

Wood > 5 m and < 55 cm: 51.2

Wood > 5 m and > 55 cm: 6.9

Mean Channel Width: 5.6 m

Mean Riparian Width: 50.6 m

Mean Maximum Riparian Distance (either side): 36.4 m

Mean Minimum Riparian Distance (either side): 8.6 m

Maximum Riparian Width (Total): 75.5 m

Minimum Riparian Width (Total): 24.8 m

Bournes Branch Continued.

Percent of Pool Habitat Surveyed as Glides: 23.9%

Rosgen's Channel Type Frequency:

Channel Type A: 16.6%

Channel Type B: 83.4%

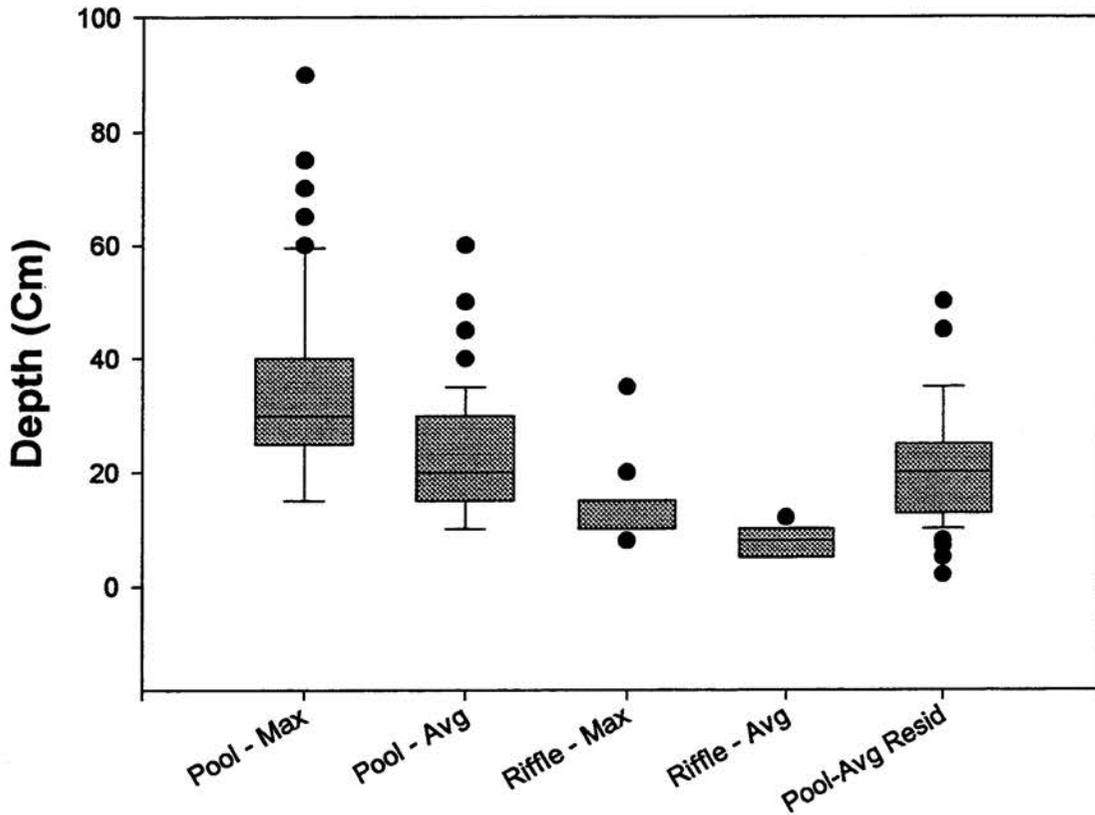
Channel Type C:

Channel Type D:

Percent Pools with \geq 35% Embeddedness: 50.0%

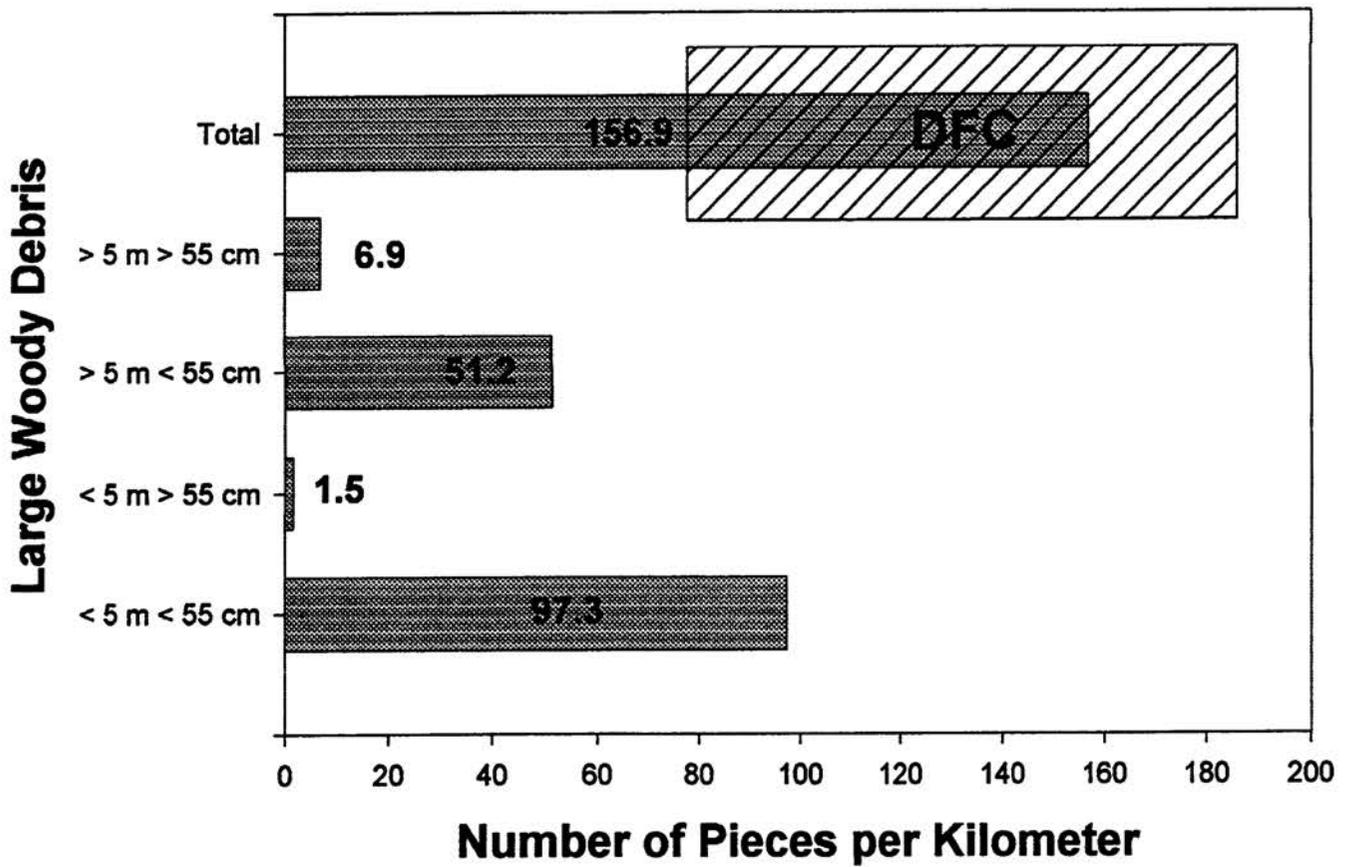
Average Channel Gradient: 4.7

Bournes Branch

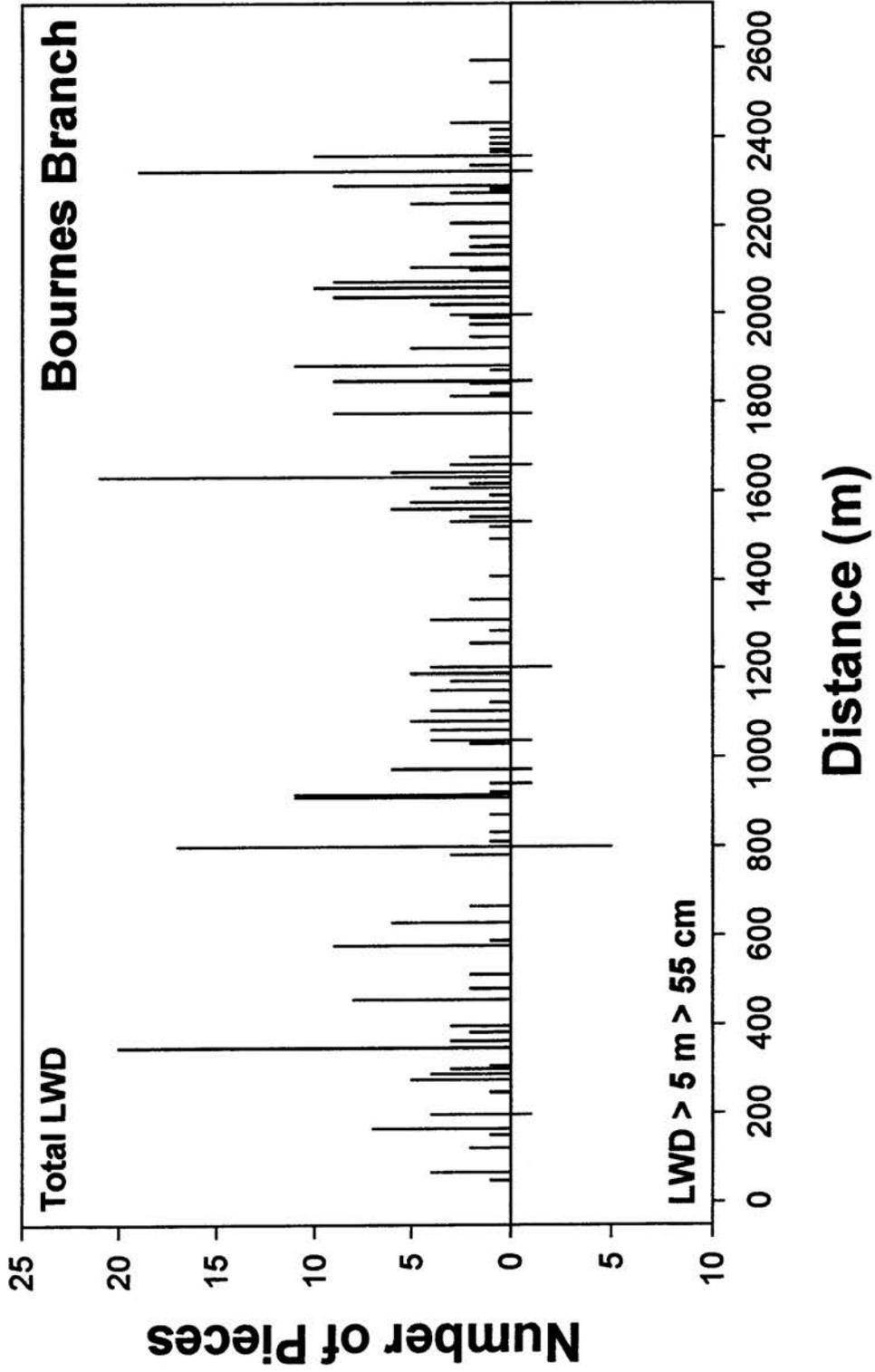


Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

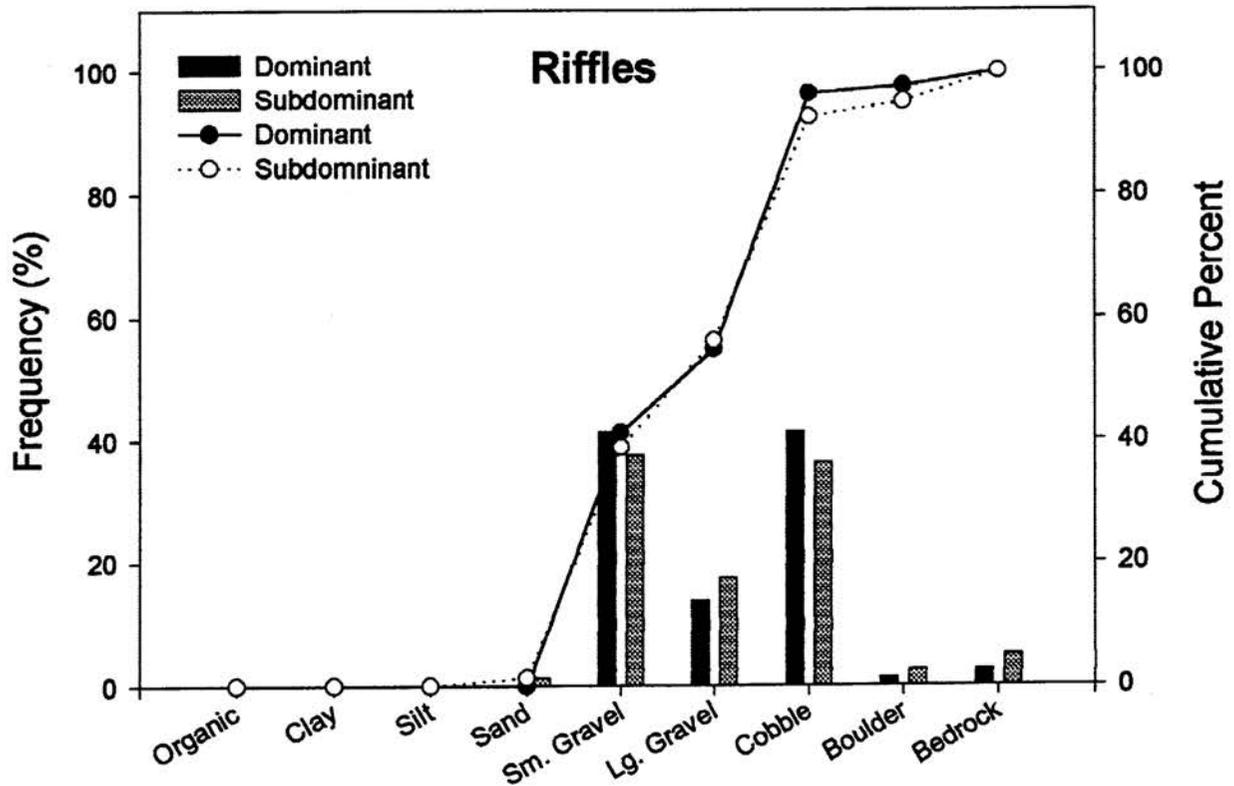
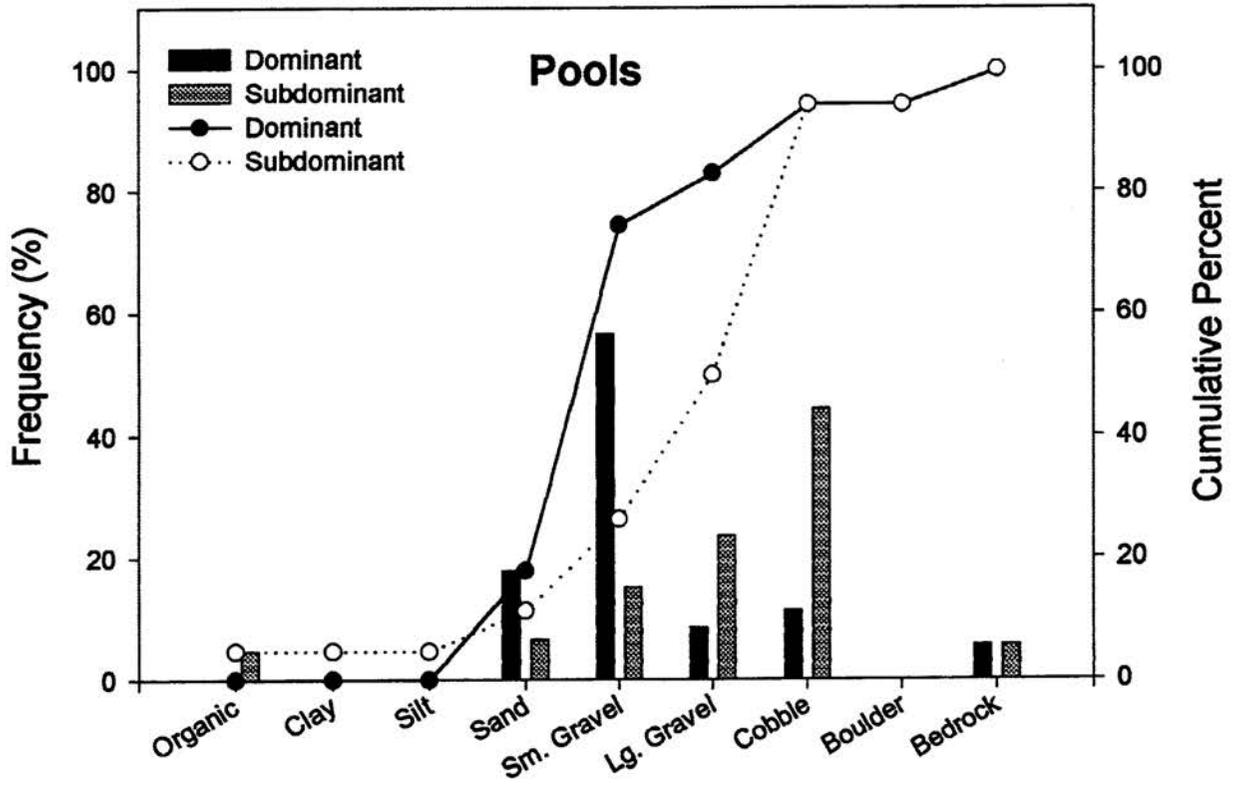
Bournes Branch

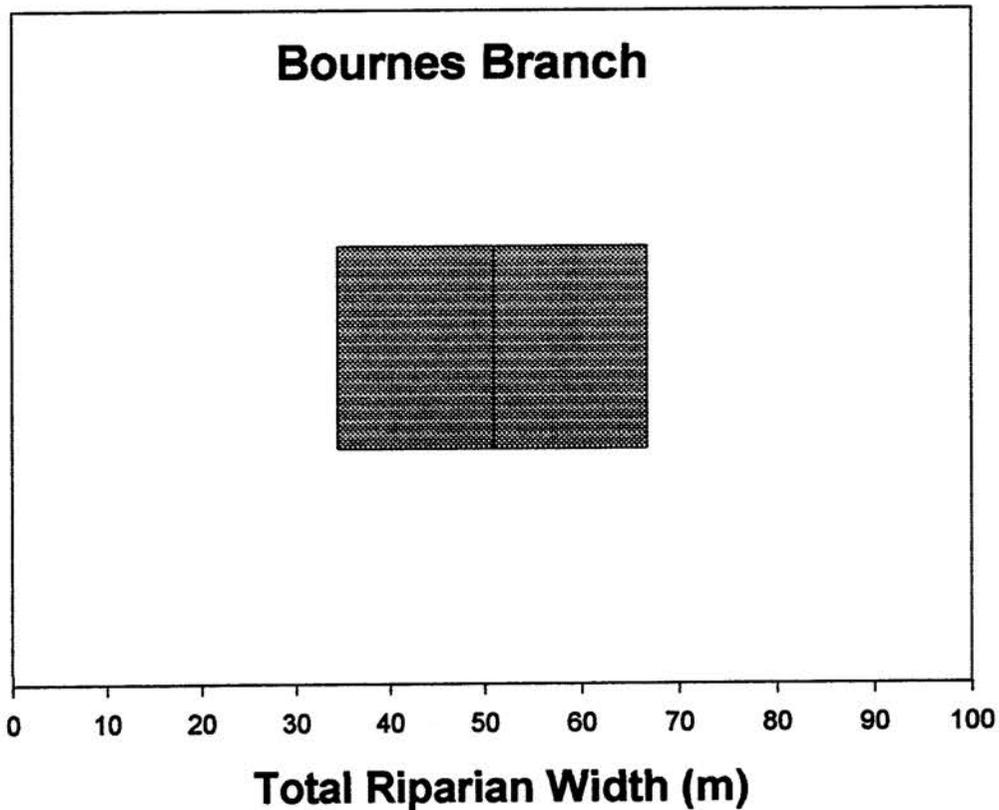


Distribution and Abundance of Large Woody Debris



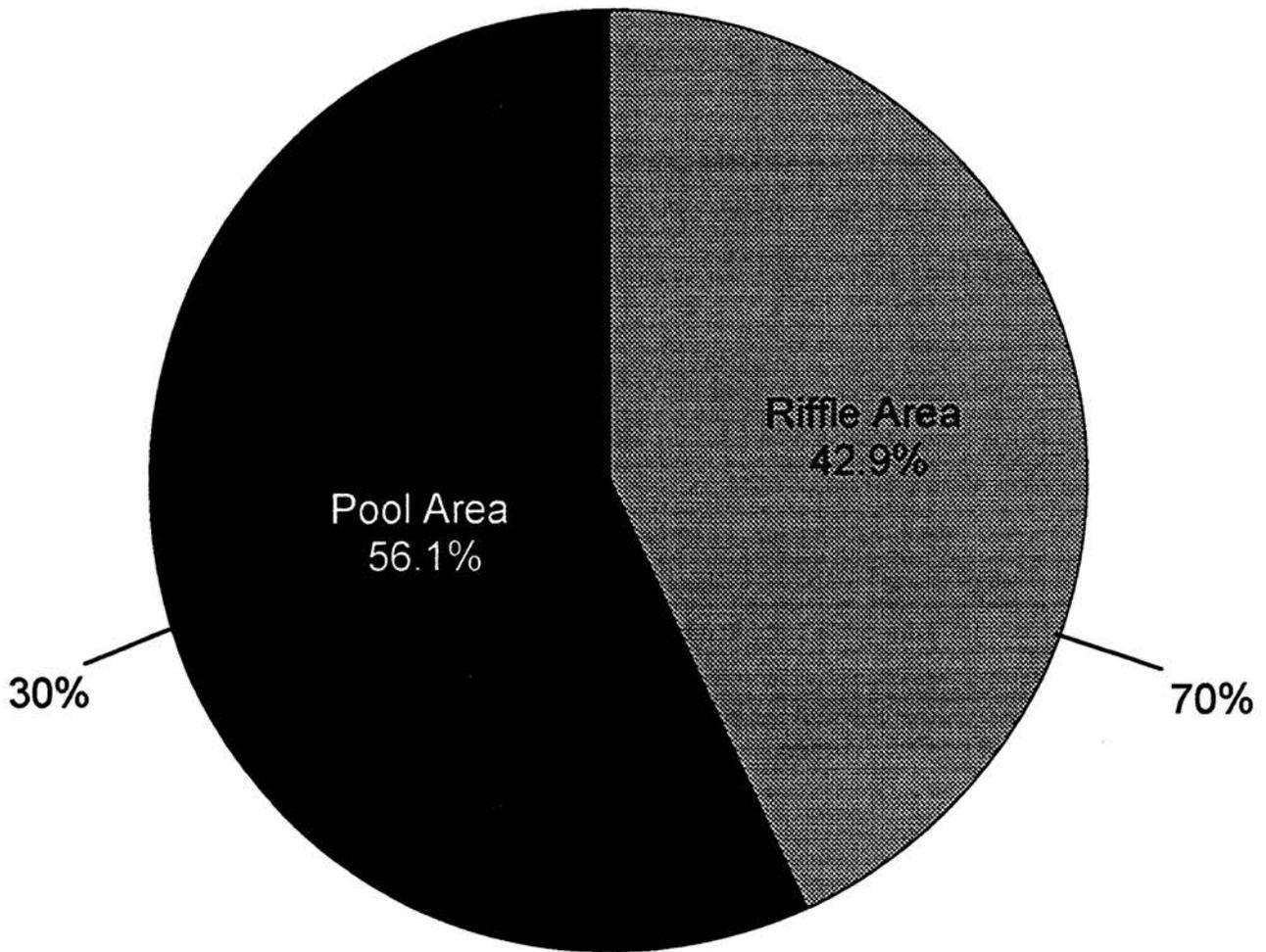
Bournes Branch Substrate Composition



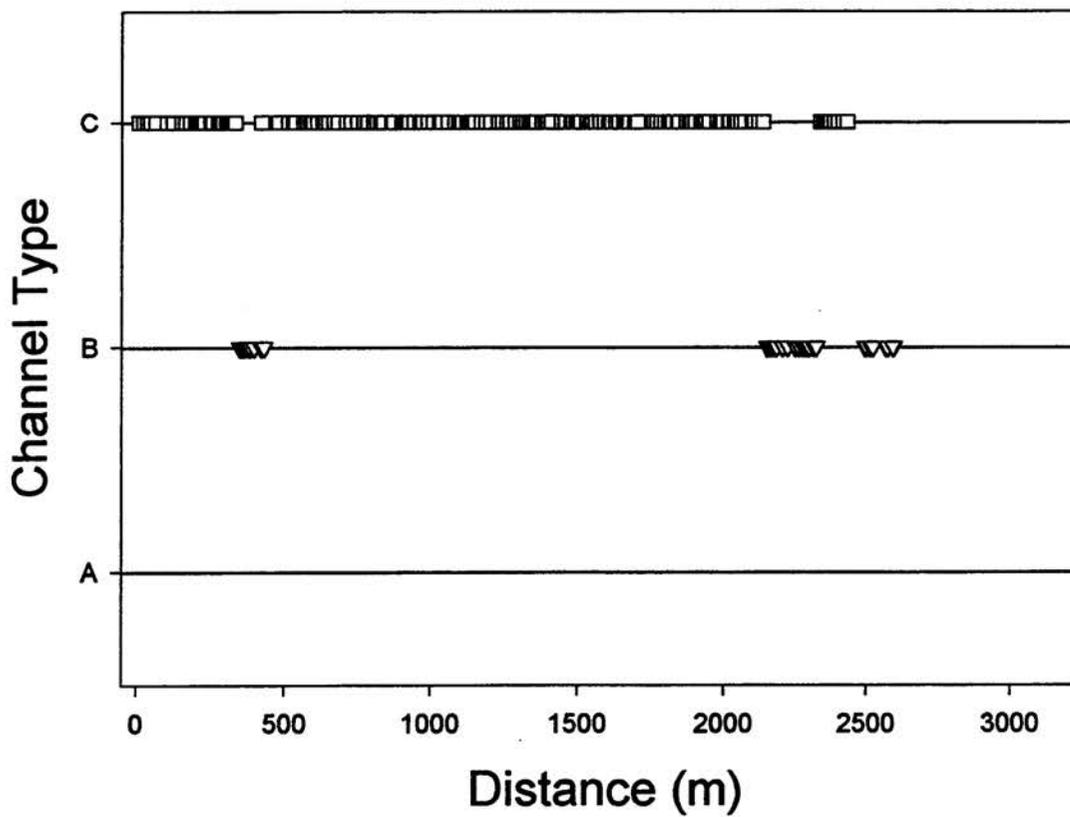
Riparian Width**Stream: Bournes Branch****Number of Measurements: 4****Mean Width: 50.6m Std Dev: 21.5****Max: 75.5m Min: 24.8m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Bournes Branch
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Bournes Branch Rosgen's Channel Type Distribution



Stream: Francis Mill Creek

District: Mount Rogers National Recreation Area

Quadrangle: Cripple Creek

Sample Date: 07/27/98

Downstream Starting Point: Forest Service Boundary on FS Road 14

Total Distance Surveyed: 4.1 kilometers

Percent of Total Area - Pools: 59.3%

Number of Pools: 219

Number of Pools per kilometer: 53.4

Total Pool Area: 6482.1 sq. meters \pm 261.7

Mean Pool Area: 29.6 sq. meters

Correction Factor: 1.01

Mean Maximum Depth: 33.3 cm

Mean Average Depth: 16.9 cm

Mean Average Residual Pool Depth: 13.1 cm

Percent of Total Area - Riffles: 40.7%

Number of Riffles: 130

Number of Riffles per kilometer: 31.7

Total Riffle Area: 4444.8 sq. meters \pm 275.2

Mean Riffle Area: 34.2 sq. meters

Correction Factor: 1.07

Mean Maximum Depth: 13.2 cm

Mean Average Depth: 6.0 cm

Number of Large Woody Debris Pieces per kilometer: 274.4

Wood < 5 m and < 55 cm: 103.7

Wood < 5 m and > 55 cm: 8.6

Wood > 5 m and < 55 cm: 132.3

Wood > 5 m and > 55 cm: 29.8

Mean Channel Width: 6.3 m

Mean Riparian Width: 32.9 m

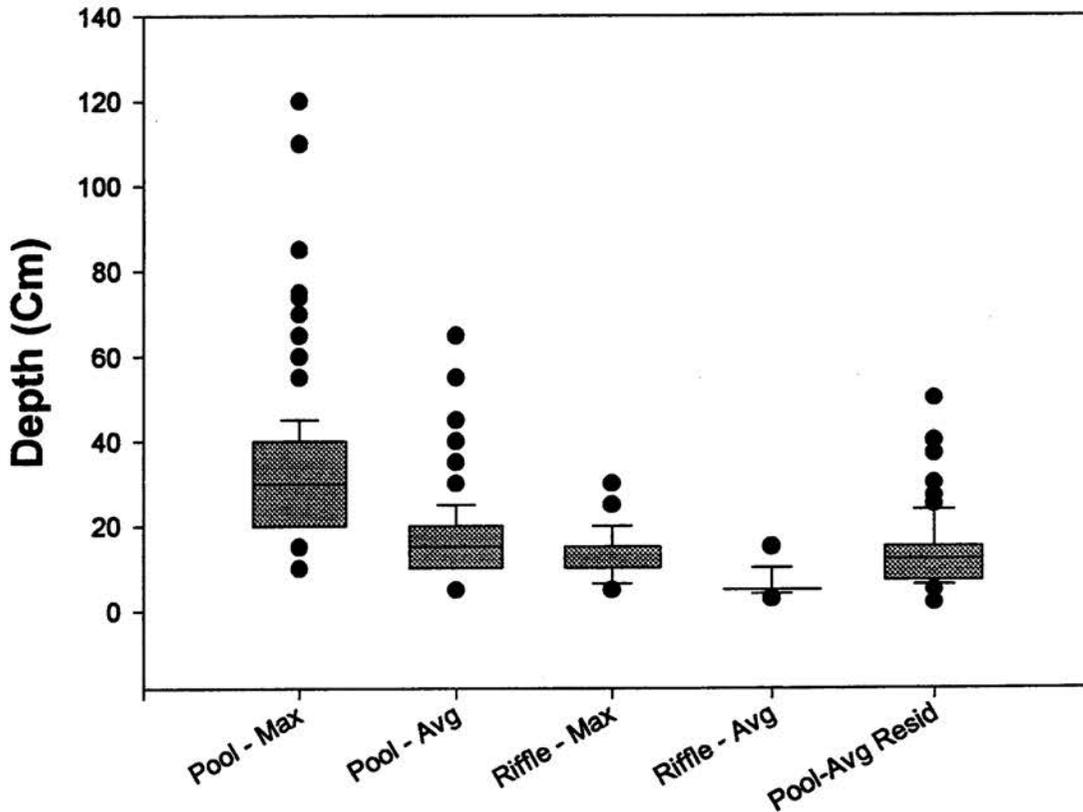
Mean Maximum Riparian Distance (either side): 23.2 m

Mean Minimum Riparian Distance (either side): 3.4 m

Maximum Riparian Width (Total): 71.4 m

Minimum Riparian Width (Total): 8.4 m

Francis Mill Creek



Box plots representing maximum and average depths for pools and riffles, and average residual pool depths for this stream. The boxes enclose the middle 50% of the observations, the bar in the center of the boxes represent the median, and the capped lines extending above and below the boxes represent the 90% and 10% quantiles.

Francis Mill Creek Continued.

Percent of Pool Habitat Surveyed as Glides: 10.2%

Rosgen's Channel Type Frequency:

Channel Type A: 48.5%

Channel Type B: 34.8%

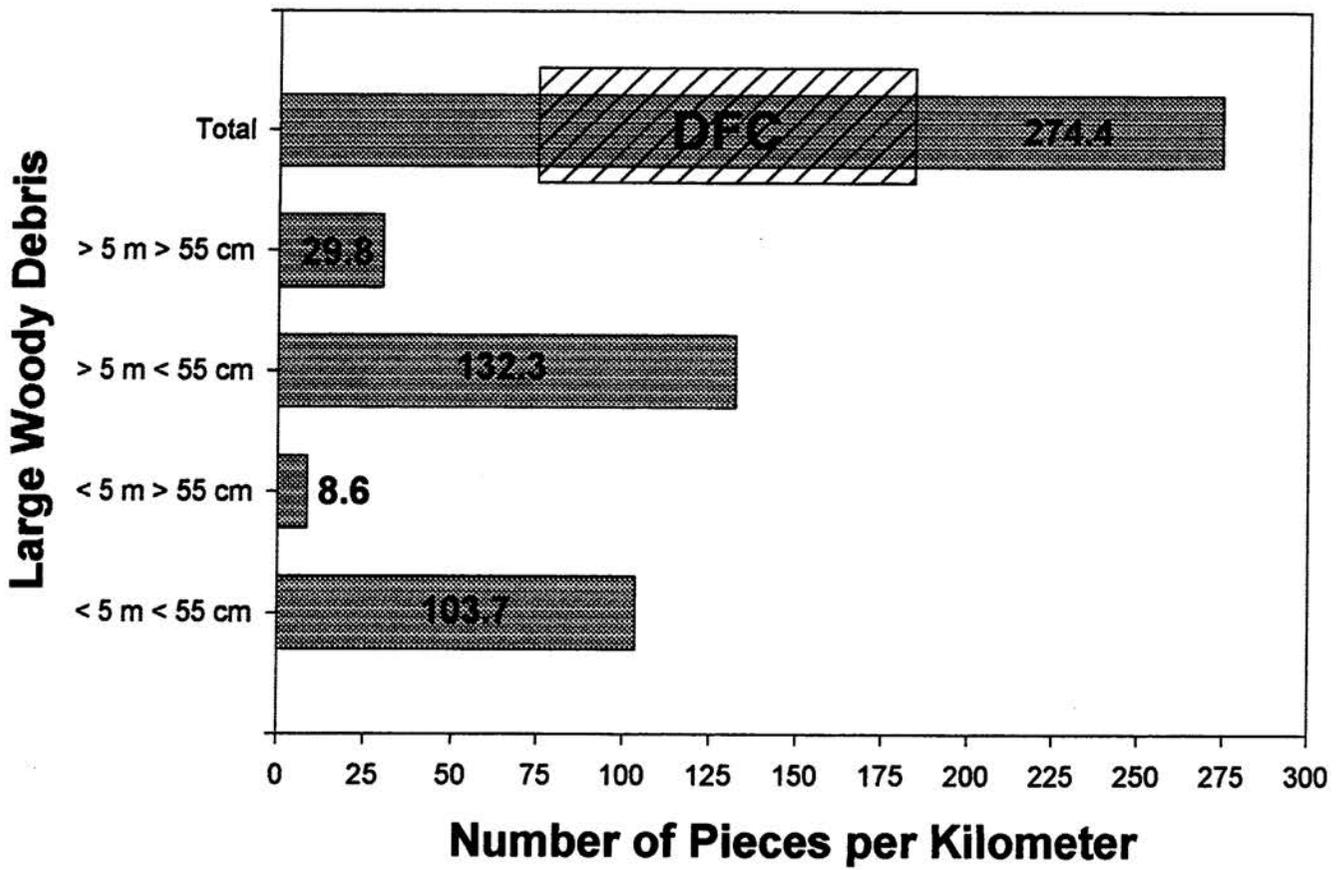
Channel Type C: 16.7%

Channel Type D:

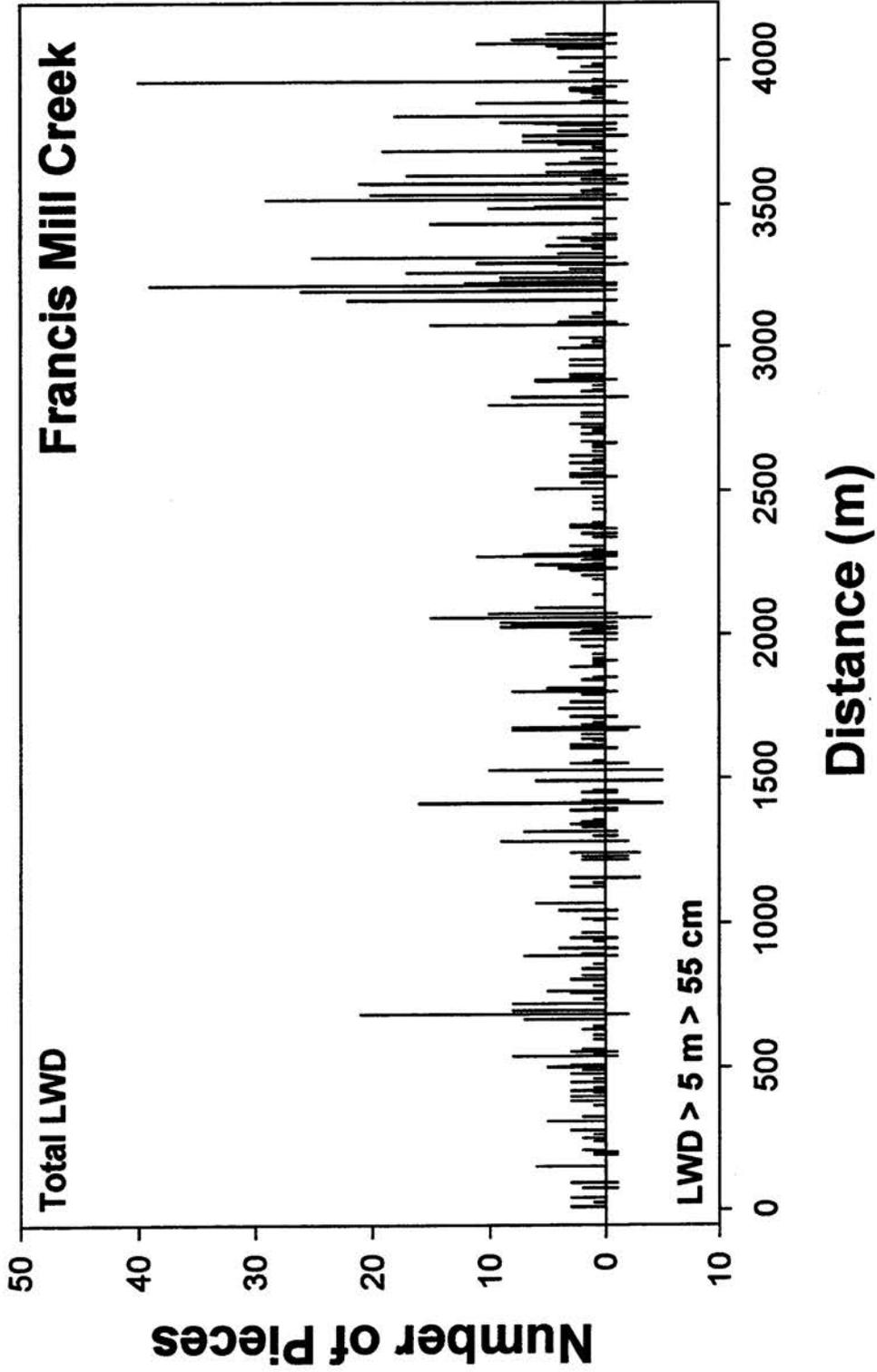
Percent Pools with \geq 35% Embeddedness: 45.2%

Average Channel Gradient: 3.4

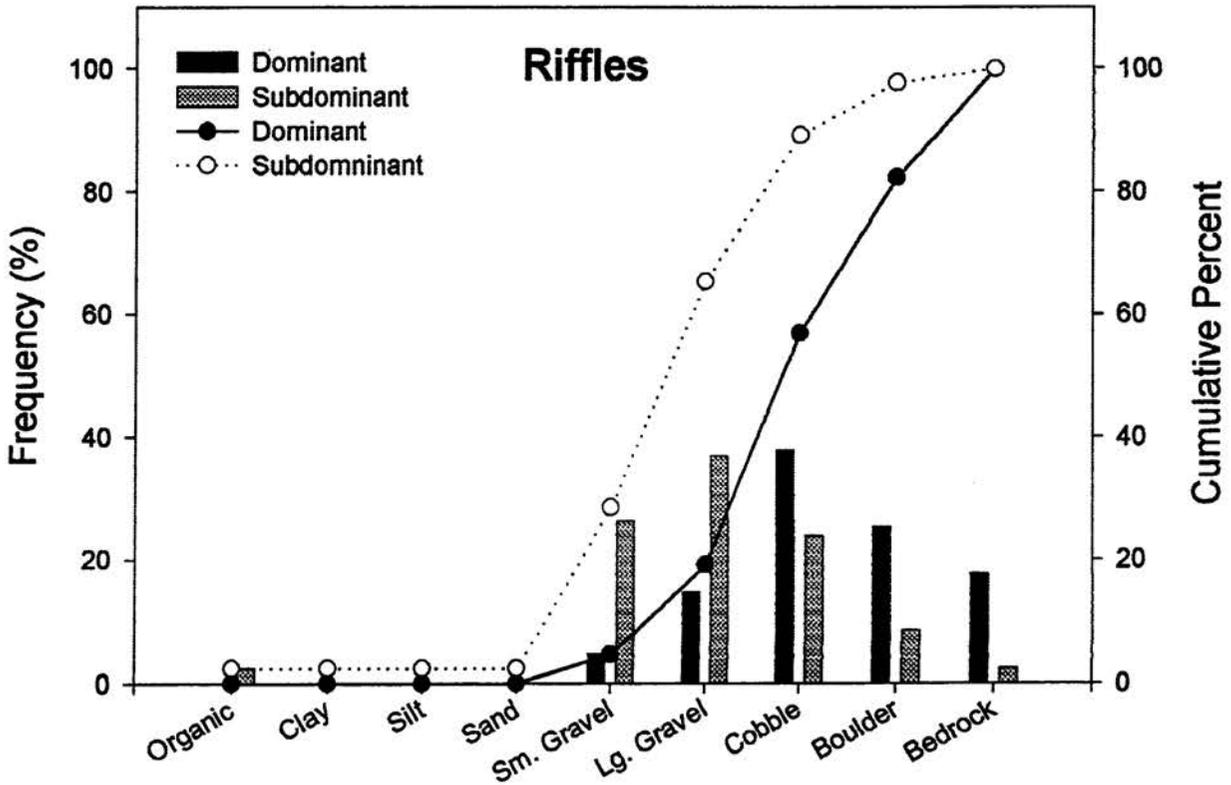
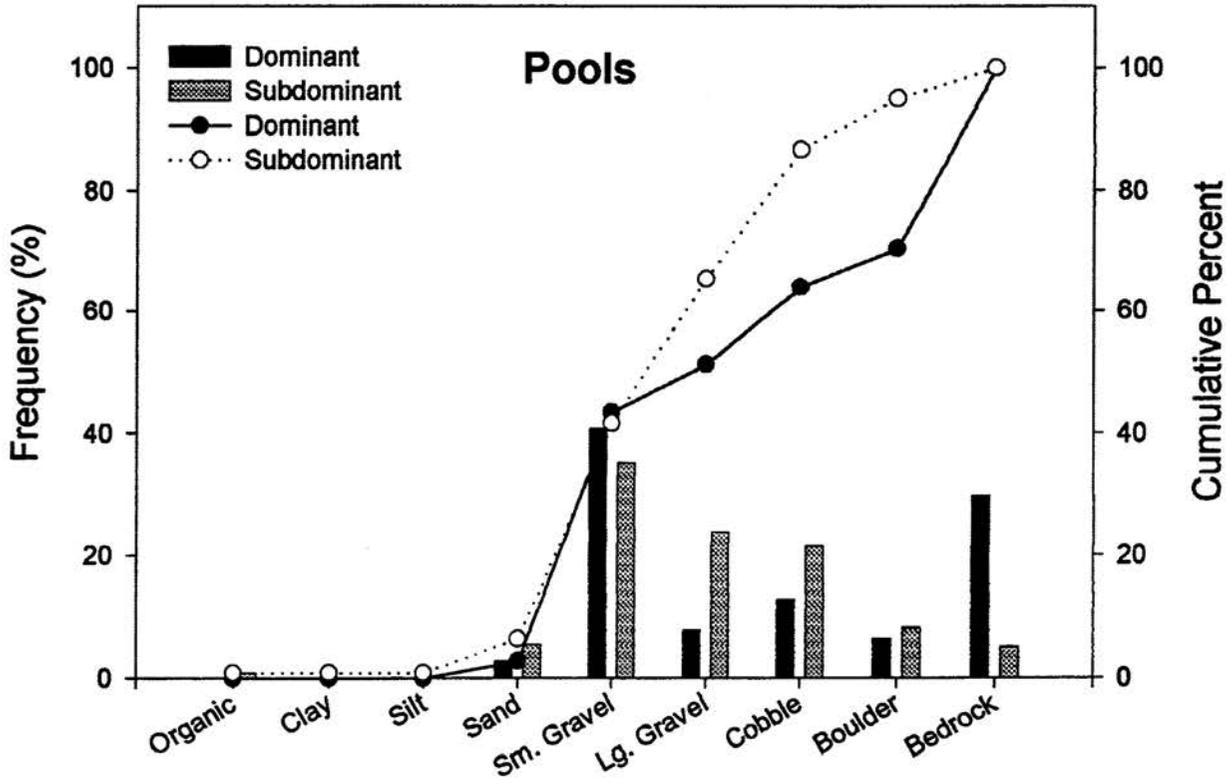
Francis Mill Creek

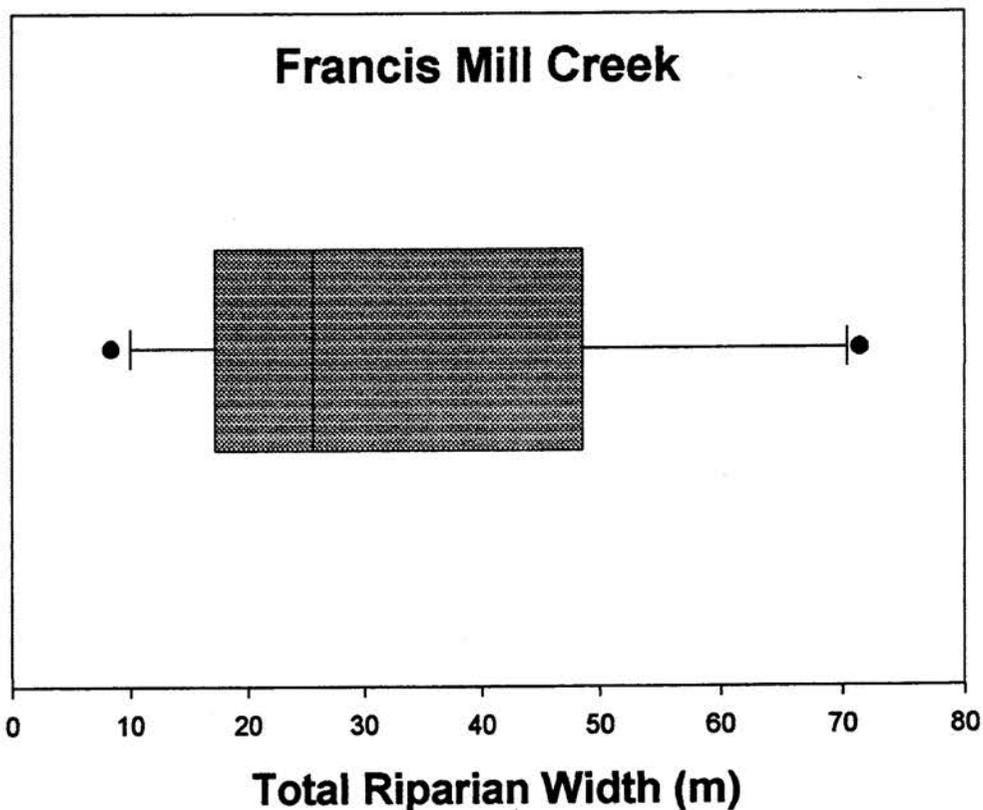


Distribution and Abundance of Large Woody Debris



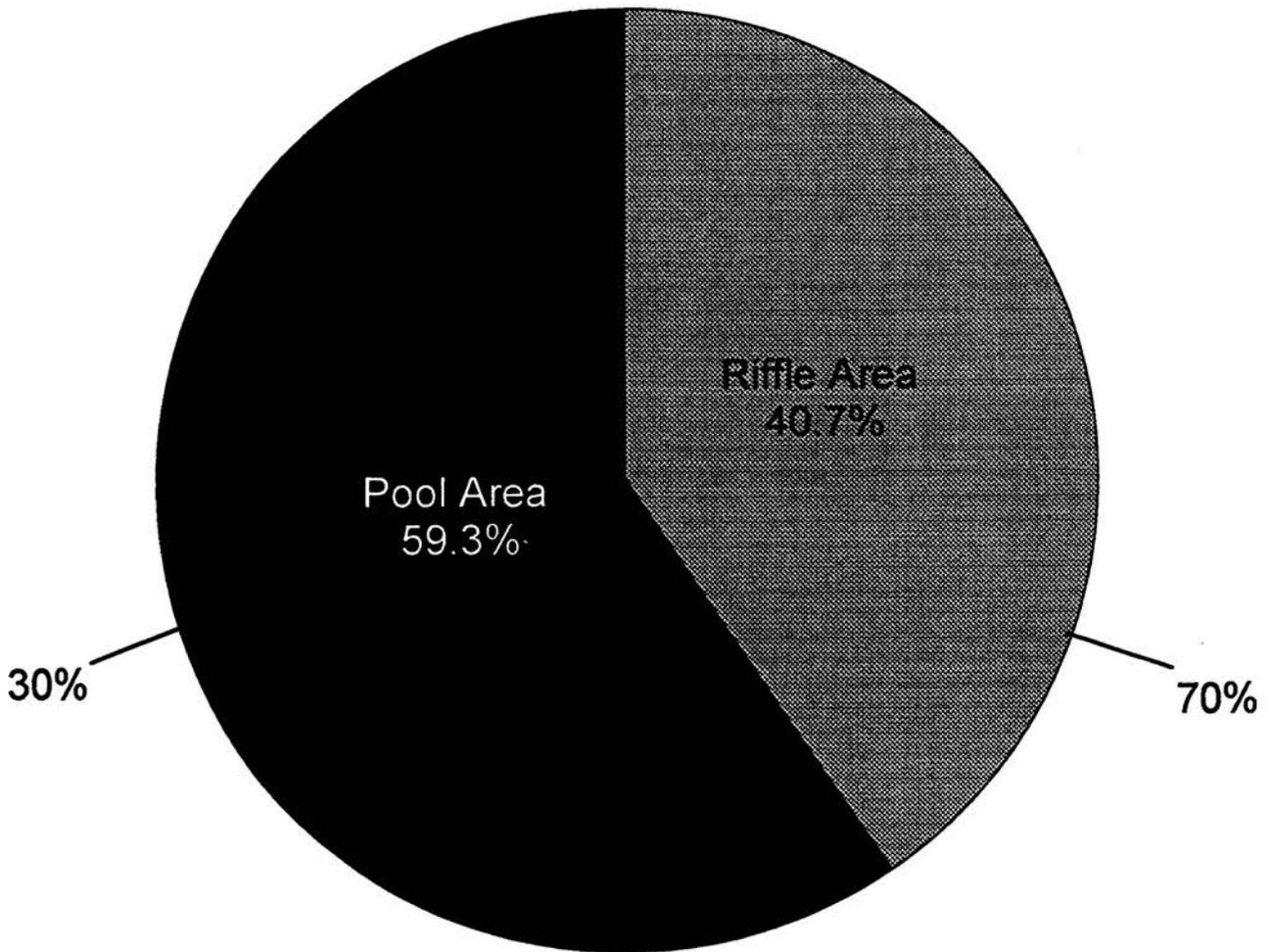
Francis Mill Creek Substrate Composition



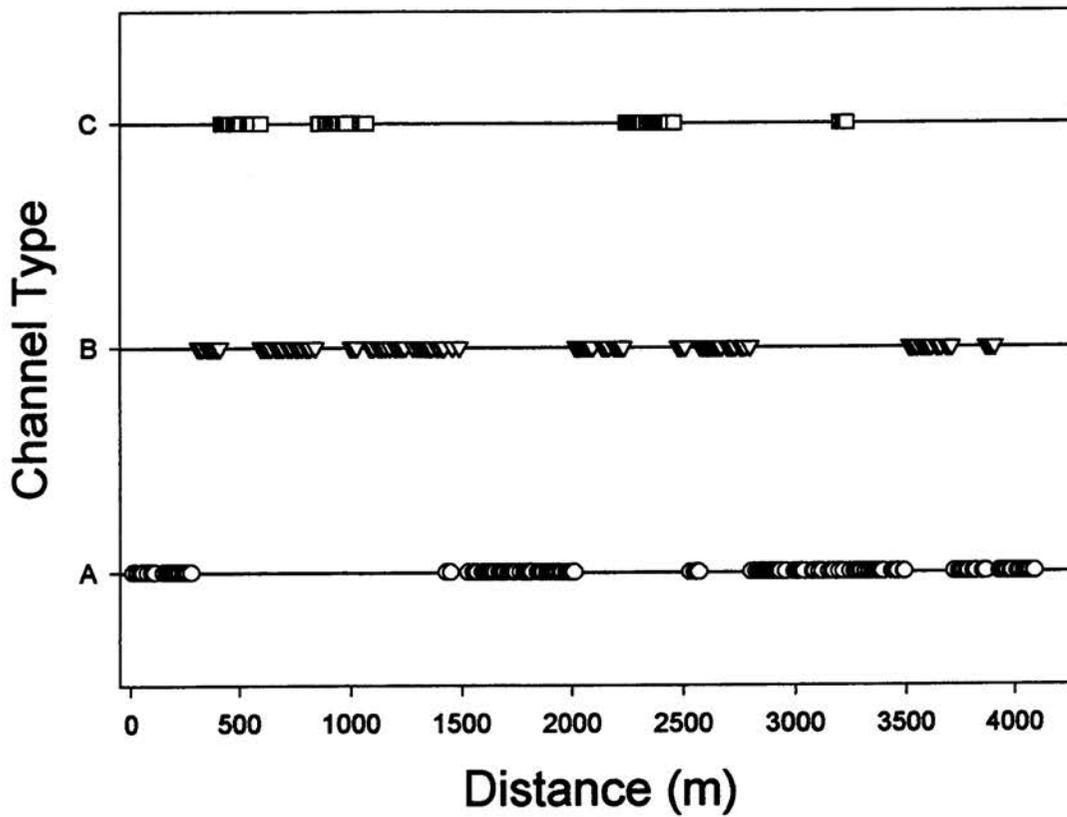
Riparian Width**Stream: Francis Mill Creek****Number of Measurements: 12****Mean Width: 32.8m Std Dev: 22.9****Max: 71.4m Min: 8.4m**

Box plot of total riparian width. The box encloses the middle 50% of the observations, the bar in the center of the box represents the median, and the capped lines extending above and below the box represent the 90% and 10% quantiles.

**Francis Mill Creek
Pool:Riffle Ratio
DFC: 30 - 70% of the Stream Area
in Pool Habitat**



Francis Mill Creek Rosgen's Channel Type Distribution



Appendix 1a. Substrate classification criteria.

SUBSTRATE CLASSES

1	organic debris
2	clay
3	silt
4	silt- 2mm sand
5	2-10mm small gravel
6	1-10cm large gravel
7	11-30cm cobble
8	30cm boulder
9	bedrock

Appendix 1b. Large woody debris (LWD) classification criteria.

LWD SIZE CLASSES

- 1 < 5 m (length) and < 55 cm (diameter)
- 2 < 5 m (length) and > 55 cm (diameter)
- 3 > 5 m (length) and < 55 cm (diameter)
- 4 > 5 m (length) and > 55 cm (diameter)

Appendix 1c. Rosgen's channel type criteria, table from Rosgen 1996.

Stream TYPE →	A	B	C	D	DA	E	F	G
Dominate Bed Material	Bedrock							
	Boulder							
	Cobble							
	Gravel							
	Sand							
	Silt-Clay							
Entrchmnt	< 1.4	1.4 - 2.2	> 2.2	n/a	> 4.0	> 2.2	< 1.4	< 1.4
WD Ratio	< 12	> 12	> 12	> 40	< 40	< 12	> 12	< 12
Sinuosity	1 - 1.2	> 1.2	> 1.2	n/a	variable	> 1.5	> 1.2	> 1.2
Slope	.04-.099	.02-.039	< .02	< .04	< .005	< .02	< .02	.02-.039

Appendix 1d. Streams present on the MRNRA that were not sampled due to either low water or dry conditions.

Stream	Quadrangle
Charlie's Branch	Whitetop Mtn.
Grindstone Branch	Whitetop Mtn.
West Fork Hopkins Branch	Whitetop Mtn.
Quebec Branch	Whitetop Mtn.
St. Clair Creek	Whitetop Mtn.
Mill Creek	Troutdale
Jones Creek	Speedwell
Brier Run	Troutdale
No Name Branch	Atkins/Troutdale
Middle Fox Creek	Middle Fox Creek
Crigger Creek	Cedar Springs
Little Dry Run	Speedwell
Turkey Fork	Speedwell
Waddle Hollow	Atkins
Overbay Hollow	Atkins
Quarter Branch	Atkins
Laurel Hollow Branch	Speedwell
Lick Creek	Cripple Creek
Big Branch	Austinsville
Big Branch	Whitetop Mtn.
Buzzard Den (@ Widener Springs)	Konnarock