SALMON AND STEELHEAD RESTORATION AND ENHANCEMENT PROGRAM

NORTH COAST

BASIN PLANNING PROJECT

STREAM INVENTORY REPORT

STITZ CREEK

CALIFORNIA DEPARTMENT OF FISH AND GAME

SPORT FISH RESTORATION ACT

1997

North Coast Basin Planning Project

NORTH COAST BASIN PLANNING PROJECT

The North Coast Basin Planning Project (BPP) was begun in 1991 to develop salmon and steelhead restoration and enhancement programs in North Coast watersheds for the Department of Fish and Game (DFG). The objectives of the project conform with the goals of California's Salmon and Steelhead Restoration and Enhancement Program of 1988. The Restoration Program strives to enhance the status of anadromous salmonid populations and improve the fishing experience for Californians. The program intends to achieve a doubling of the population of salmon and steelhead by the year 2000. The project is supported by the Sport Fish Restoration Act, which uses sport fishermen's funds to improve sport fisheries.

The BPP conducts stream and habitat inventories according to the standard methodologies discussed in the *California Salmonid Stream Habitat Restoration Manual* (Flosi and Reynolds, 1994). Biological sampling is conducted using electrofishing and direct observation to determine species presence and distribution; selected streams are electrofished for population estimates. Some streams are also sampled for sediment composition. Collected information is used for base-line data, public cooperation development, restoration program planning, specific project design and implementation, and for project evaluation.

The Eel River system was identified as the initial basin for project planning activities. Most anadromous tributaries to the Van Duzen, South Fork Eel, Mainstem Eel, Middle Fork Eel, and North Fork Eel rivers have been inventoried since 1991. Initial field inventory of the Eel River system should be essentially complete in 1996. BPP personnel have also worked in cooperation with the DFG Salmon Restoration Project's staff to inventory streams on the Mattole River, Mendocino Coast, and Humboldt Bay.

STREAM INVENTORY REPORT

STITZ CREEK

INTRODUCTION

A stream inventory was conducted during the summer of 1992 on Stitz Creek to assess habitat conditions for anadromous salmonids. The inventory was conducted in two parts: habitat inventory and biological inventory. The objective of the habitat inventory was to document the habitat available to anadromous salmonids in Stitz Creek. The objective of the biological inventory was to document the salmonid species present and their distribution. After analysis of the information and data gathered, stream restoration and enhancement recommendations are presented.

There is no known record of adult spawning surveys having been conducted on Stitz Creek. The objective of this report is to document the current habitat conditions, and recommend options for the potential enhancement of habitat for chinook salmon, coho salmon and steelhead trout.

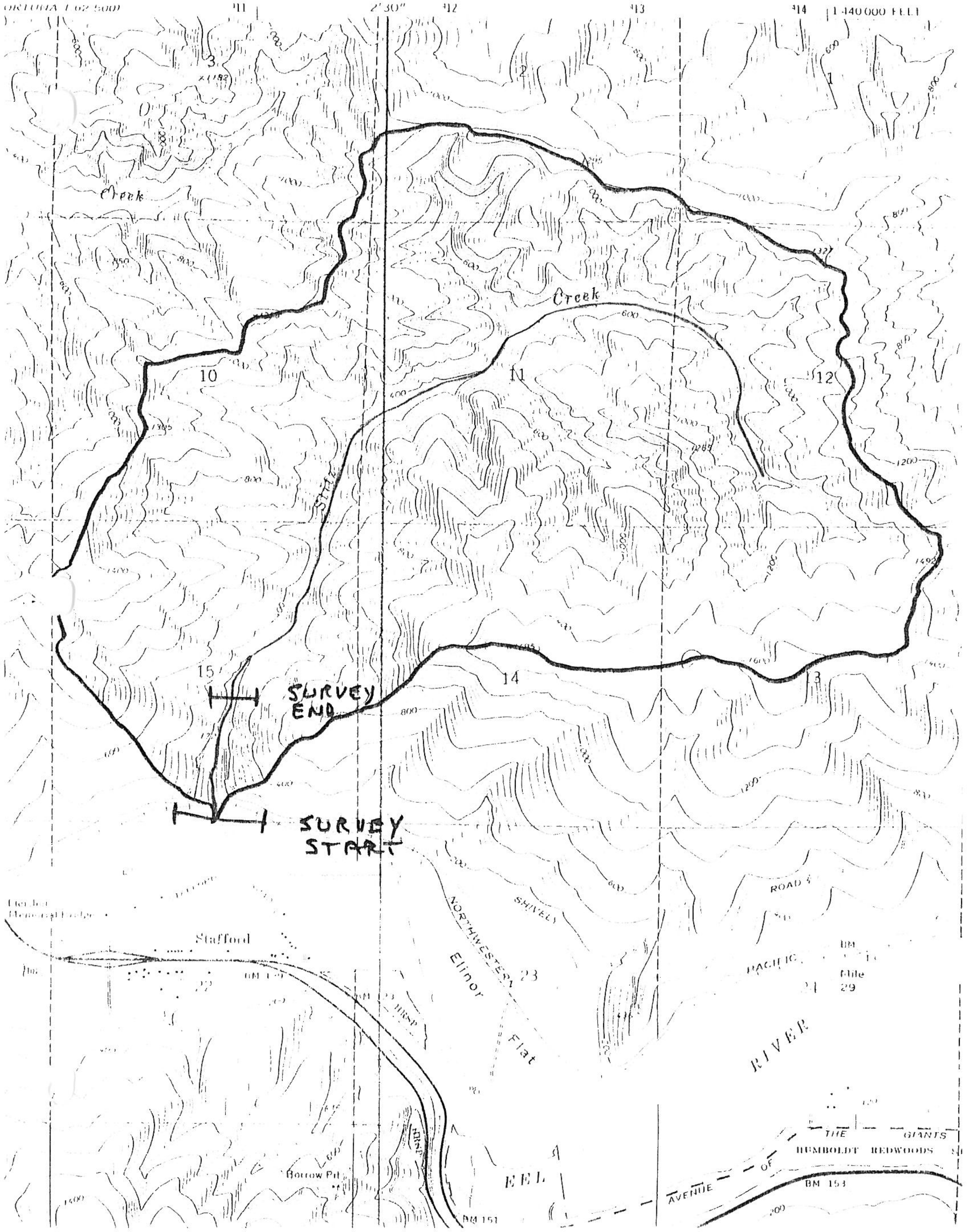
WATERSHED OVERVIEW

Stitz Creek is tributary to the Eel River, located in Humboldt County, California (Figure 1). Stitz Creek's legal description at the confluence with the Eel River is T1N R1E S15. Its location is 40°27'39" N. latitude and 124°03'08" W. longitude. Stitz Creek is a first order stream and has approximately 3.4 miles of blue line stream, according to the USGS Scotia 7.5 minute quadrangle.

Stitz Creek drains a watershed of approximately 4.0 square miles. Elevations range from about 80 feet at the mouth of the creek to 1,000 feet in the headwater areas. Redwood forest dominates the watershed. The watershed is owned by the Pacific Lumber Company and is managed for timber production. Vehicle access exists from U.S. Highway 101 approximately 1/2 mile north of Stafford, via Shively Road.

METHODS

The habitat inventory conducted in Stitz Creek follows the methodology presented in the California Salmonid Stream Habitat Restoration Manual (Flosi and Reynolds, 1991). The California Conservation Corps (CCC) Technical Advisors that conducted the inventory were trained in standardized habitat inventory methods by the California Department of Fish and Game (DFG). Stitz Creek personnel were trained in May and June, 1992, by Gary Flosi and Scott Downie. This inventory was conducted by two person teams.



SURVEY END
SURVEY START
Creek
Creek
Stafford
Elinor
Flat
NORTHWESTERN PACIFIC
SHIVELY ROAD
EEL RIVER
AVENUE OF THE GIANTS
HUMBOLDT REDWOODS
Borrow Pit
Mile 29

Stitz Crèek

HABITAT INVENTORY COMPONENTS:

A standardized habitat inventory form has been developed for use in California stream surveys and can be found in the California Salmonid Stream Habitat Restoration Manual. This form was used in Stitz Creek to record measurements and observations. There are nine components to the inventory form.

1. Flow:

Flow is measured in cubic feet per second (cfs) at the bottom of the stream survey reach using standard flow measuring equipment, if available. In some cases flows are estimated. Flows should also be measured or estimated at major tributary confluences.

2. Channel Type:

Channel typing is conducted according to the classification system developed by David Rosgen (1985). This methodology is described in the California Salmonid Stream Habitat Restoration Manual. Channel typing is conducted simultaneously with habitat typing and follows a standard form to record measurements and observations. There are four measured parameters used to determine channel type: 1) water slope gradient, 2) channel confinement, 3) width/depth ratio, 4) substrate composition.

3. Temperatures:

Both water and air temperatures are taken and recorded at each tenth unit typed. The time of the measurement is also recorded. Both temperatures are taken in fahrenheit at the middle of the habitat unit and within one foot of the water surface.

4. Habitat Type:

Habitat typing uses the 24 habitat classification types defined by McCain and others (1988). Habitat units are numbered sequentially and assigned a type identification number selected from a standard list of 24 habitat types. Dewatered units are labeled "dry". Stitz Creek habitat typing used standard basin level measurement criteria. These parameters require that the minimum length of a described habitat unit must be equal to or greater than the stream's mean wetted width. Channel dimensions were measured using hip chains, range finders, tape measures, and stadia rods. Unit measurements included mean length, mean width, mean depth, and maximum depth. Depth of the pool tail crest at each pool habitat unit was measured at the thalweg. All measurements were taken in feet to the nearest tenth.

5. Embeddedness:

The depth of embeddedness of the cobbles in pool tail-out reaches is measured by the percent of the cobble that is surrounded or buried by fine sediment. In Stitz Creek, embeddedness was ocularly estimated. The values were recorded using the following ranges: 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3), 76 - 100% (value 4).

6. Shelter Rating:

Instream shelter is composed of those elements within a stream channel that provide salmonids protection from predation, reduce water velocities so fish can rest and conserve energy, and allow separation of territorial units to reduce density related competition. The shelter rating is calculated for each habitat unit by multiplying shelter value and percent cover. Using an overhead view, a quantitative estimate of the percentage of the habitat unit covered is made. All cover is then classified according to a list of nine cover types. In Stitz Creek, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the cover. Thus, shelter ratings can range from 0-300, and are expressed as mean values by habitat types within a stream.

7. Substrate Composition:

Substrate composition ranges from silt/clay sized particles to boulders and bedrock elements. In all habitat units, dominant and sub-dominant substrate elements were ocularly estimated using a list of seven size classes.

8. Canopy:

Stream canopy is estimated using handheld spherical densiometers and is a measure of the water surface shaded during periods of high sun. In Stitz Creek, an estimate of the percentage of the habitat unit covered by canopy was made from the center of each unit. The area of canopy was further analyzed to estimate its percentages of coniferous or deciduous trees, and the results recorded.

9. Bank Composition:

Bank composition elements range from bedrock to bare soil. However, the stream banks are usually covered with grass, brush, or trees. These factors influence the ability of stream banks to withstand winter flows. In Stitz Creek, the dominant composition type in both the right and left banks was selected from a list of

eight options on the habitat inventory form. Additionally, the percent of each bank covered by vegetation was estimated and recorded.

BIOLOGICAL INVENTORY:

Biological sampling during stream inventory is used to determine fish species and their distribution in the stream. Biological inventory is conducted using one or more of three basic methods: 1) stream bank observation, 2) underwater observation, 3) electrofishing. These sampling techniques are discussed in the California Salmonid Stream Habitat Restoration Manual.

Biological inventory was conducted in Stitz Creek to document the fish species composition and distribution. Three sites were electrofished in Stitz Creek using one Smith Root Model 12 electrofisher. Each site was end-blocked with nets to contain the fish within the sample reach. Fish from each site were counted by species, measured, and returned to the stream.

DATA ANALYSIS:

Data from the habitat inventory form are entered into Runtime, a dBASE 4.1 data entry program developed by the Department and Fish and Game. This program processes and summarizes the data.

The Runtime program produces the following summary tables:

- Riffle, flatwater, and pool habitat types
- Habitat types and measured parameters
- Pool types
- Maximum pool depths by habitat types
- Dominant substrates by habitat types
- Mean percent shelter by habitat types

Graphics are produced from the tables using Lotus 1,2,3. Graphics developed for Stitz Creek include:

- Riffle, flatwater, pool habitats by percent occurrence
- Riffle, flatwater, pool habitats by total length
- Total habitat types by percent occurrence
- Pool types by percent occurrence
- Total pools by maximum depths
- Embeddedness
- Pool cover by cover type
- Dominant substrate in low gradient riffles
- Percent canopy
- Bank composition by composition type

Stitz Crèek

HABITAT INVENTORY RESULTS:

* ALL TABLES AND GRAPHS ARE LOCATED AT THE END OF THE REPORT *

The habitat inventory of June 5 and 8, 1992, was conducted by Jason Cleckler, Judah Sanders, and Craig Mesman (contract seasonals). The total length of the stream surveyed was 1,983 feet, with an additional 107 feet of side channel.

Flow was not measured on Stitz Creek.

Stitz Creek is a B3 channel type for the entire 1,983 feet of stream reach surveyed. B3 channels are moderate gradient (1.5-4.0%), well confined streams, with unstable stream banks.

Water temperatures ranged from 56 to 57 degrees fahrenheit. Air temperatures ranged from 57 to 73 degrees fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. By percent **occurrence**, riffles made up 40.0%; pools 36.7%; and flatwater types 23.3% (Graph 1). Riffles made up 52.4% of the total survey **length**, pools 25.5%, and flatwater habitat types 22.1% (Graph 2).

Eleven Level IV habitat types were identified. The data are summarized in Table 2. The most frequent habitat types by percent **occurrence** were low gradient riffles, 20.0%; mid-channel pools, also 20.0%; and high gradient riffles, 18.3% (Graph 3). By percent total **length**, low gradient riffles made up 32.4%, high gradient riffles 19.2%, and mid-channel pools 13.8% (Table 2).

Twenty-two pools were identified (Table 3). Main-channel pools were most often encountered at 63.6%, and comprised 36.4% of the total length of pools (Graph 4).

Table 4 is a summary of maximum pool depths by pool habitat types. Depth is an indicator of pool quality. Thirteen of the 22 pools (59%) had a depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 21 pool tail-outs measured, zero had a value of 1 (0.0%); ØñeHhad a value of 2 (4.8%); 15 had a value of 3 (71.4%); and 5 had a value of 4 (23.8%). On this scale, a value of one is the best for fisheries (Graph 6).

A shelter rating was calculated for each habitat unit and expressed as a mean value for each habitat type within the survey using a scale of 0-300. Pools had the highest shelter rating at 51.6. Riffle habitats followed with a rating of 49.6 (Table 1).

Of the pool types, the scour pools had the highest mean shelter rating at 52.5, and main channel pools rated 51.1 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover type in Stitz Creek and are extensive. Large woody debris is the next most common cover type. Graph 7 describes the pool cover in Stitz Creek.

Table 6 summarizes the dominant substrate by habitat type. Silt/clay was the dominant substrate observed in four of the 12 low gradient riffles (33.3%). Large cobble was the next most frequently observed dominant substrate type, and occurred in 25.0% of the low gradient riffles (Graph 8).

Eighteen percent of the survey reach lacked shade canopy. Of the 82% of the stream covered with canopy, 68% was composed of deciduous trees, and 32% was composed of coniferous trees. Graph 9 describes the canopy in Stitz Creek.

Table 2 summarizes the mean percentage of the right and left stream banks covered with vegetation by habitat type. For the stream reach surveyed, the mean percent right bank vegetated was 73.5%. The mean percent left bank vegetated was 73.1%. The dominant elements composing the structure of the stream banks consisted of 0.8% bedrock, 1.8% boulder, 0.8% cobble/gravel, 5.2% bare soil, 0.8% grass, 18.9% brush. Additionally, 58.7% of the banks were covered with deciduous trees, and 12.9% with coniferous trees, including downed trees, logs, and root wads (Graph 10).

BIOLOGICAL INVENTORY RESULTS

Three electrofishing sites were sampled on Stitz Creek. The objective was to identify fish species and distribution. The units were sampled on June 30, 1992 by Erick Elliot and Brian Humphrey (CCC). Each unit was end-blocked with nets to contain the fish within the sample reach. Three passes were conducted at each site, fork lengths (FL) measured and recorded, and the fish returned to the stream.

The first site sampled was habitat unit 026, a plunge pool, approximately 798 feet from the confluence with the Eel River. This site had an area of 399 sq ft, and a volume of 399 cu ft. The unit yielded one steelhead, 65 mm FL.

The second sample site was habitat unit 043, a plunge pool, located approximately 1,470 feet above the creek mouth. This site had an area of 455 sq ft, and a volume of 364 cu ft. One steelhead was sampled, 147 mm FL.

The third site sampled was a step run, located approximately 2,013 feet above the creek mouth and 30 feet above the end of the habitat survey. Two steelhead were sampled, 110 and 134 mm FL.

GRAVEL SAMPLING RESULTS

No gravel samples were taken on Stitz Creek.

DISCUSSION

The B3 channel type is generally not suitable for fish habitat improvement structures. B3 channels are found in moderate gradient stream reaches. They have channels dominated by cobble and gravel, and have unstable stream banks.

The water temperatures recorded on the survey days June 5 & 8, 1992, ranged from 56° F to 57° F. Air temperatures ranged from 57° F to 73° F. This is a very good water temperature regime for salmonids. However, to make any further conclusions, temperatures would need to be monitored throughout the warm summer months, and more extensive biological sampling conducted.

Riffle habitat types comprised 52.4% of the total **length** of this survey, pools 25.5%, and flatwater 22.1%. The pools are relatively deep with 13 of the 22 pools having a maximum depth greater than 2 feet. However, in coastal coho and steelhead streams, it is generally desirable to have primary pools comprise approximately 50% of total habitat. Therefore, installing structures that will increase or deepen pool habitat is recommended for locations where their installation will not interfere with the unstable stream banks of the B3 channel type.

Twenty of the 21 pool tail-outs measured had embeddedness ratings of 3 or 4. None had a 1 rating. Embeddedness in excess of 26%, a rating of 2 or more, is considered poor quality for fish habitat. In Stitz Creek, sediment sources should be mapped and rated according to their potential sediment yields, and control measures taken.

The mean shelter rating for pools was moderate with a rating of 51.6. The shelter rating in the flatwater habitats was lower at 38.2. However, a pool shelter rating of approximately 100 is desirable. The cover that now exists is being provided primarily by boulders in all habitat types. Additionally, large and small woody debris contribute a small amount. Log and root wad cover structures in the pool and flatwater habitats are needed to improve both summer and winter salmonid habitat. Log cover

structure provides rearing fry with protection from predation, rest from water velocity, and also divides territorial units to reduce density related competition.

Only three of the 12 low gradient riffles had gravel or small cobble as the dominant substrate. Four of the riffles had silt/clay as the dominant substrate. This is generally considered a poor spawning environment for salmonids.

The mean percent canopy for the stream was 82%. This is a relatively high percentage of canopy, since 80 percent is generally considered optimum in these north coast streams. In areas of stream bank erosion, planting endemic species of coniferous and deciduous trees, in conjunction with bank stabilization, is recommended.

RECOMMENDATIONS

1) Stitz Creek should be managed as an anadromous, natural production stream.

2) Where feasible, design and engineer pool enhancement structures to increase the number of pools. This must be done where the banks are stable or in conjunction with stream bank armor to prevent erosion.

3) Increase woody cover in the pools and flatwater habitat units. Most of the existing cover is from boulders. Adding high quality complexity with woody cover is desirable and in some areas the material is at hand.

4) There are several log debris accumulations present on Stitz Creek that are retaining large quantities of fine sediment. The modification of these debris accumulations is desirable, but must be done carefully over time to avoid excessive sediment loading in downstream reaches. The stream is already over-loaded in fine sediments.

5) Inventory and map sources of stream bank erosion, and prioritize them according to present and potential sediment yield. Identified sites should then be treated to reduce the amount of fine sediments entering the stream.

Stitz Creek

PROBLEM SITES AND LANDMARKS

The following landmarks and possible problem sites were noted. All the distances are approximate and taken from the beginning of the survey reach.

0'	Begin survey at confluence with the Eel River. Channel type is a B3 for the entire survey reach.
159'	Railroad bridge 75' high. Concrete channel with no natural substrate.
181'	Plunge 7' high. CCC/DFG site.
408'	Boulder/log jam 6.5' high; possible barrier.
798'	Log and debris accumulation (LDA) 4.5' high.
1102'	Waterfall 11' high x 13' wide; possible barrier.
1202'	Creek flows through culvert 8' diameter x 100' long.
1470'	Small tributary enters from the right bank.
1761'	LDA 30' wide x 13' long x 6' high.
1860'	LDA 56' wide x 30' long x 11' high.
1928'	LDA 30' wide x 15' long x 9' high; probable barrier.
1983'	LDA 19' wide x 18' long x 8' wide. End of survey due to multiple LDAs, however 1 + steelhead were found 30' above this point during electrofishing.

Stitz Creek

Drainage: Eel River

Table 1 - SUMMARY OF RIFFLE, FLATWATER, AND POOL HABITAT TYPES

Survey Dates: June 5 & 8, 1992

Confluence: T1N R1E S15

UNITS MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (ft.)	TOTAL LENGTH (ft.)	PERCENT TOTAL LENGTH	MEAN WIDTH (ft.)	MEAN DEPTH (ft.)	MEAN AREA (sq.ft.)	TOTAL AREA (sq.ft.)	MEAN VOLUME (cu.ft.)	TOTAL VOLUME (cu.ft)	MEAN RESIDUAL POOL VOL (cu.ft.)	MEAN SHELTER RATING
24	RIFFLE	40.00	45.63	1095.00	52.39	11.10	0.43	408.88	9813.10	160.43	3850.30	0.00	49.58
14	FLATWATER	23.33	33.00	462.00	22.11	8.75	0.55	271.92	3806.90	154.01	2156.10	0.00	38.21
22	POOL	36.67	24.23	533.00	25.50	13.25	1.04	324.12	7130.60	370.97	8161.40	216.90	51.59

TOTAL UNITS	TOTAL LENGTH (ft.)	TOTAL AREA (sq. ft.)	TOTAL VOL. (cu. ft.)
60	2090.00	20750.60	14167.80

Level III and LEVEL IV HABITAT TYPE KEY:

HABITAT TYPE	LETTER	NUMBER
RIFFLE		
Low Gradient Riffle	[LGR]	1.1
High Gradient Riffle	[HGR]	1.2
CASCADE		
Cascade	[CAS]	2.1
Bedrock Sheet	[BRS]	2.2
FLATWATER		
Pocket Water	[POW]	3.1
Glide	[GLD]	3.2
Run	[RUN]	3.3
Step Run	[SRN]	3.4
Edgewater	[EDW]	3.5
MAIN CHANNEL POOLS		
Trench Pool	[TRP]	4.1
Mid-Channel Pool	[MCP]	4.2
Channel Confluence Pool	[CCP]	4.3
Step Pool	[STP]	4.4
SCOUR POOLS		
Corner Pool	[CRP]	5.1
Lateral Scour Pool - Log Enhanced	[LSL]	5.2
Lateral Scour Pool - Root Wad Enhanced	[LSR]	5.3
Lateral Scour Pool - Bedrock Formed	[LSBk]	5.4
Lateral Scour Pool - Boulder Formed	[LSBo]	5.5
Plunge Pool	[PLP]	5.6
BACKWATER POOLS		
Secondary Channel Pool	[SCP]	6.1
Backwater Pool - Boulder Formed	[BPB]	6.2
Backwater Pool - Root Wad Formed	[BPR]	6.3
Backwater Pool - Log Formed	[BPL]	6.4
Dammed Pool	[DPL]	6.5

Stitz Creek

Drainage: Eel River

Table 2 - SUMMARY OF HABITAT TYPES AND MEASURED PARAMETERS

Survey Dates: June 5 & 8, 1992

Confluence: T1N R1E S15

UNITS MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (ft.)	TOTAL LENGTH (ft.)	% TOTAL LENGTH	MEAN WIDTH (ft.)	MEAN DEPTH (ft.)	MAXIMUM DEPTH (ft.)	MEAN AREA (sq.ft.)	TOTAL AREA	MEAN VOLUME	TOTAL VOLUME	MEAN RESIDUAL POOL VOL (cu.ft.)	MEAN SHELTER RATING	MEAN % RT. BANK VEGETATED	MEAN % LT. BANK VEGETATED	MEAN % CANOPY
12	LGR	20.00	56.42	677.00	32.39	10.29	0.34	1.10	497.40	5968.80	166.93	2003.10	0.00	37.50	78.75	74.58	84.17
11	HGR	18.33	36.55	402.00	19.23	12.36	0.46	2.10	339.30	3732.30	157.75	1735.20	0.00	59.09	71.36	77.73	77.27
1	CAS	1.67	16.00	16.00	0.77	7.00	1.00	2.40	112.00	112.00	112.00	112.00	0.00	90.00	70.00	80.00	85.00
5	GLD	8.33	37.80	189.00	9.04	9.50	0.60	2.00	352.30	1761.50	214.38	1071.90	0.00	14.00	61.00	54.00	83.00
5	RUN	8.33	25.20	126.00	6.03	8.30	0.52	1.40	169.98	849.90	89.28	446.40	0.00	54.00	66.00	69.00	85.00
4	SRN	6.67	36.75	147.00	7.03	8.38	0.53	1.80	298.88	1195.50	159.45	637.80	0.00	48.75	85.00	76.25	88.75
12	MCP	20.00	24.00	288.00	13.78	11.83	0.92	3.10	299.30	3591.60	325.46	3905.50	168.91	45.83	71.67	76.25	80.00
2	STP	3.33	40.00	80.00	3.83	10.50	0.95	2.30	427.50	855.00	397.25	794.50	294.00	82.50	77.50	77.50	80.00
1	LSL	1.67	12.00	12.00	0.57	6.50	0.80	1.70	78.00	78.00	62.40	62.40	7.80	60.00	85.00	65.00	95.00
1	LSR	1.67	20.00	20.00	0.96	8.00	0.90	1.60	160.00	160.00	144.00	144.00	96.00	75.00	95.00	90.00	90.00
6	PLP	10.00	22.17	133.00	6.36	19.00	1.38	3.90	407.67	2446.00	542.50	3255.00	342.18	47.50	74.17	68.33	75.00

TOTAL UNITS	LENGTH (ft.)	AREA (sq.ft)	TOTAL VOL. (cu.ft)
60	2090.00	20750.60	14167.80

Stitz Creek

Drainage: Eel River

Table 3 - SUMMARY OF POOL TYPES

Survey Dates: June 5 & 8, 1992

Confluence: T1N R1E S15

UNITS MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (ft.)	TOTAL LENGTH (ft.)	PERCENT TOTAL LENGTH	MEAN WIDTH (ft.)	MEAN DEPTH (ft.)	MEAN AREA (sq.ft.)	TOTAL AREA (sq.ft.)	MEAN VOLUME (cu.ft.)	TOTAL VOLUME (cu.ft)	MEAN RESIDUAL POOL VOL. (cu.ft.)	MEAN SHELTER RATING
14	MAIN	63.64	26.29	368.00	69.04	11.64	0.92	317.61	4446.60	335.71	4700.00	186.78	51.07
8	SCOUR	36.36	20.63	165.00	30.96	16.06	1.25	335.50	2684.00	432.68	3461.40	269.61	52.50

TOTAL MEASURED	TOTAL LENGTH (ft.)	TOTAL AREA (sq.ft.)	TOTAL VOL. (cu.ft.)
22	533.00	7130.60	8161.40

Stitz Creek

Drainage: Eel River

Table 4 - SUMMARY OF MAXIMUM POOL DEPTHS BY POOL HABITAT TYPES

Survey Dates: June 5 & 8, 1992

Confluence: T1N R1E S15

UNITS MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	<1 FOOT MAXIMUM DEPTH	<1 FOOT PERCENT OCCURRENCE	1-<2 FT. MAXIMUM DEPTH	1-<2 FOOT PERCENT OCCURRENCE	2-<3 FT. MAXIMUM DEPTH	2-<3 FOOT PERCENT OCCURRENCE	3-<4 FT. MAXIMUM DEPTH	3-<4 FOOT PERCENT OCCURRENCE	>=4 FEET MAXIMUM DEPTH	>=4 FEET PERCENT OCCURRENCE
12	MCP	54.55	0	0.00	7	58.33	3	25.00	2	16.67	0	0.00
2	STP	9.09	0	0.00	0	0.00	2	100.00	0	0.00	0	0.00
1	LSL	4.55	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00
1	LSR	4.55	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00
6	PLP	27.27	0	0.00	0	0.00	2	33.33	4	66.67	0	0.00

TOTAL UNITS
22

Stitz Creek

Drainage: Eel River

Table 5 - SUMMARY OF MEAN PERCENT COVER BY HABITAT TYPE

Survey Dates: June 5 & 8, 1992

Confluence: T1N R1E S15

UNITS MEASURED	HABITAT TYPE	MEAN % UNDERCUT BANKS	MEAN % SWD	MEAN % LWD	MEAN % ROOT MASS	MEAN % TERR. VEGETATION	MEAN % AQUATIC VEGETATION	MEAN % WHITE WATER	MEAN % BOULDERS	MEAN % BEDROCK LEDGES
12	LGR	3.75	12.50	19.58	0.83	5.83	0.00	0.83	47.50	0.00
11	HGR	1.36	19.55	10.45	4.55	6.82	0.00	1.82	53.64	1.82
1	CAS	0.00	15.00	40.00	20.00	0.00	0.00	0.00	20.00	5.00
5	GLD	0.00	6.00	16.00	3.00	10.00	0.00	0.00	40.00	5.00
5	RUN	0.00	19.00	22.00	0.00	10.00	0.00	2.00	47.00	0.00
4	SRN	23.75	18.75	12.50	0.00	16.25	0.00	0.00	31.25	0.00
12	MCP	5.00	10.83	26.67	8.33	6.67	0.00	0.00	41.67	0.83
2	STP	0.00	5.00	60.00	5.00	0.00	0.00	5.00	20.00	5.00
1	LSL	50.00	0.00	25.00	0.00	0.00	0.00	0.00	25.00	0.00
1	LSR	60.00	0.00	10.00	30.00	0.00	0.00	0.00	0.00	0.00
6	PLP	13.33	18.33	23.33	10.00	1.67	0.00	4.17	29.17	0.00

Stitz Creek

Drainage: Eel River

Table 6 - SUMMARY OF DOMINANT SUBSTRATES BY HABITAT TYPE

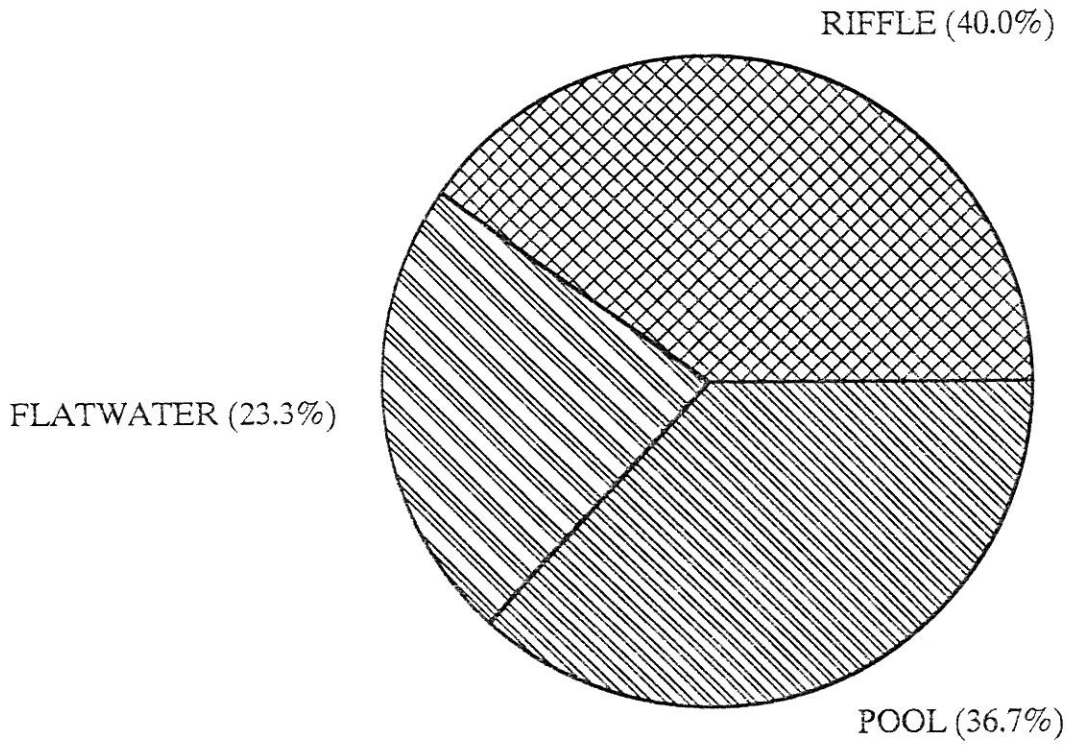
Survey Dates: June 5 & 8, 1992

Confluence: T1N R1E S15

UNITS MEASURED	HABITAT TYPE	# UNITS SILT/CLAY DOMINANT	% TOTAL SILT/CLAY DOMINANT	# UNITS SAND DOMINANT	% TOTAL SAND DOMINANT	# UNITS GRAVEL DOMINANT	% TOTAL GRAVEL DOMINANT	# UNITS SM COBBLE DOMINANT	% TOTAL SM COBBLE DOMINANT	# UNITS LG COBBLE DOMINANT	% TOTAL LG COBBLE DOMINANT	# UNITS BOULDER DOMINANT	% TOTAL BOULDER DOMINANT	# UNITS BEDROCK DOMINANT	% TOTAL BEDROCK DOMINANT
12	LGR	4	33.33	0	0.00	1	8.33	2	16.67	3	25.00	0	0.00	0	0.00
11	HGR	1	9.09	1	9.09	1	9.09	1	9.09	4	36.36	3	27.27	0	0.00
1	CAS	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
5	GLD	3	60.00	0	0.00	1	20.00	0	0.00	0	0.00	0	0.00	0	0.00
5	RUN	2	40.00	0	0.00	2	40.00	1	20.00	0	0.00	0	0.00	0	0.00
4	SRN	4	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
12	MCP	12	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
2	STP	2	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
1	LSL	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
1	LSR	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
6	PLP	6	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

STITZ CREEK

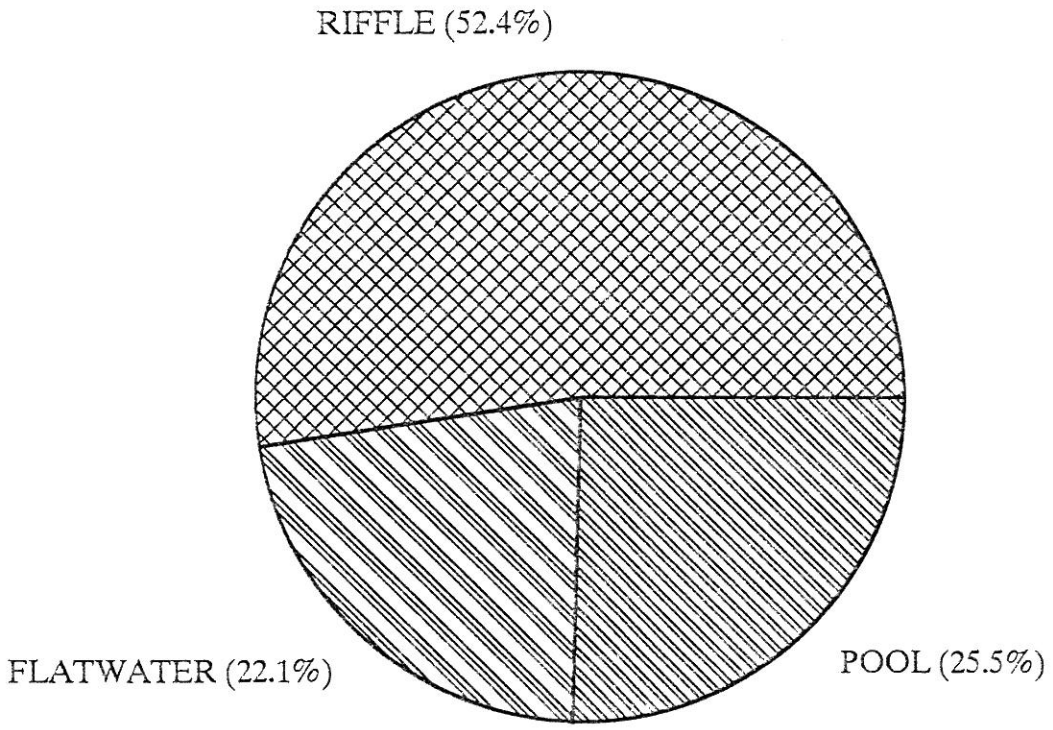
HABITAT TYPES BY PERCENT OCCURRENCE



GRAPH 1

STITZ CREEK

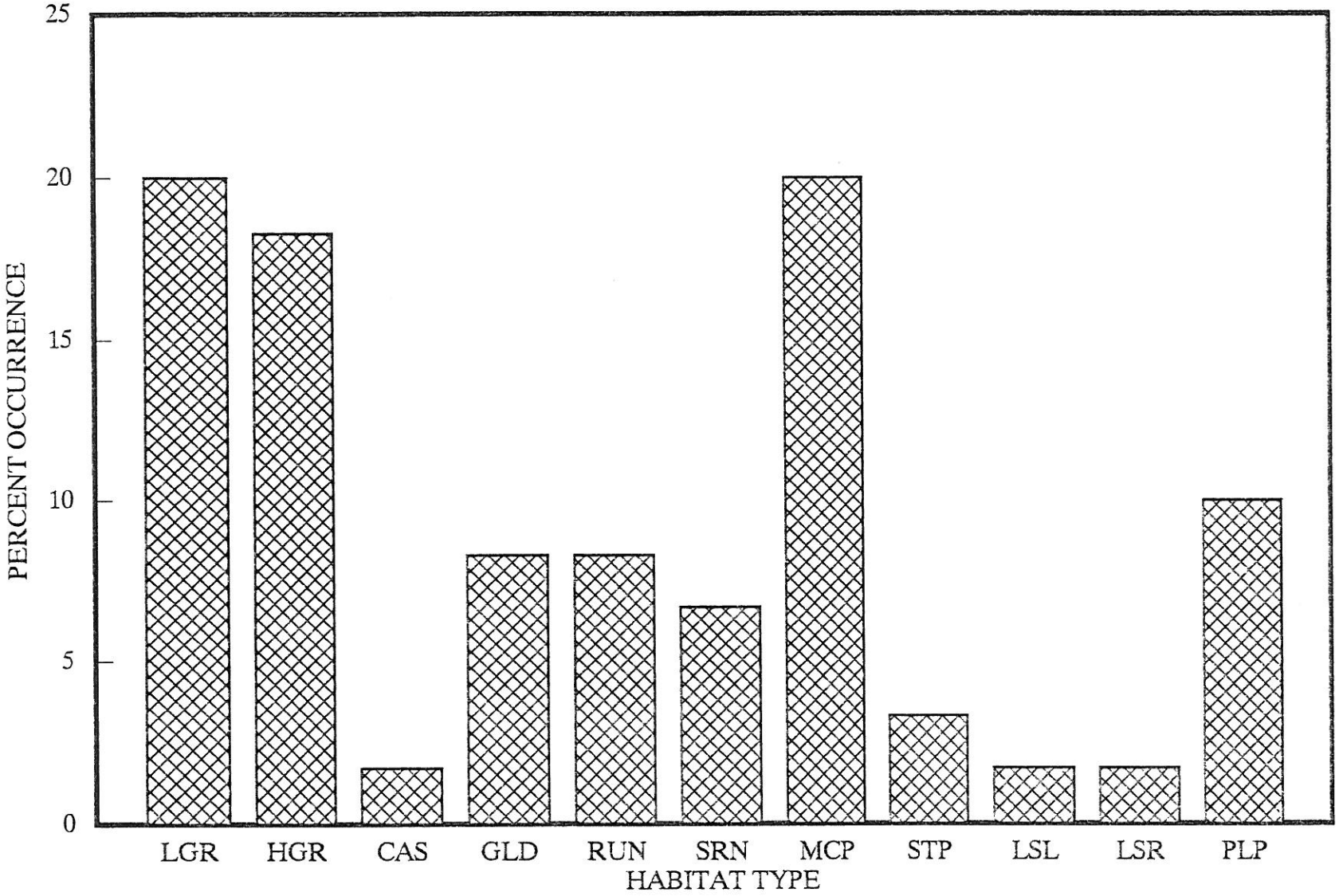
HABITAT TYPES BY PERCENT TOTAL LENGTH



GRAPH 2

STITZ CREEK

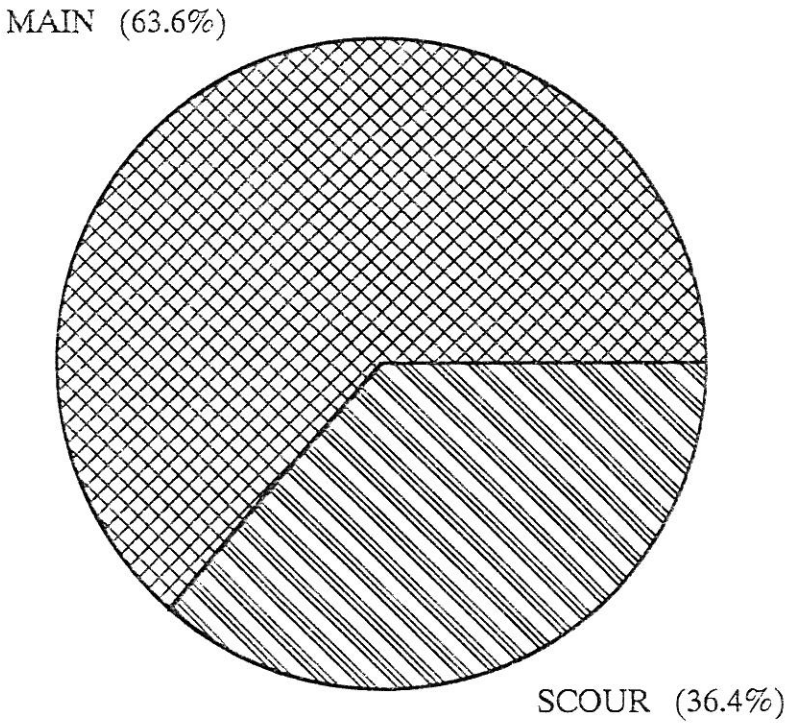
HABITAT TYPES BY PERCENT OCCURRENCE



GRAPH 3

STITZ CREEK

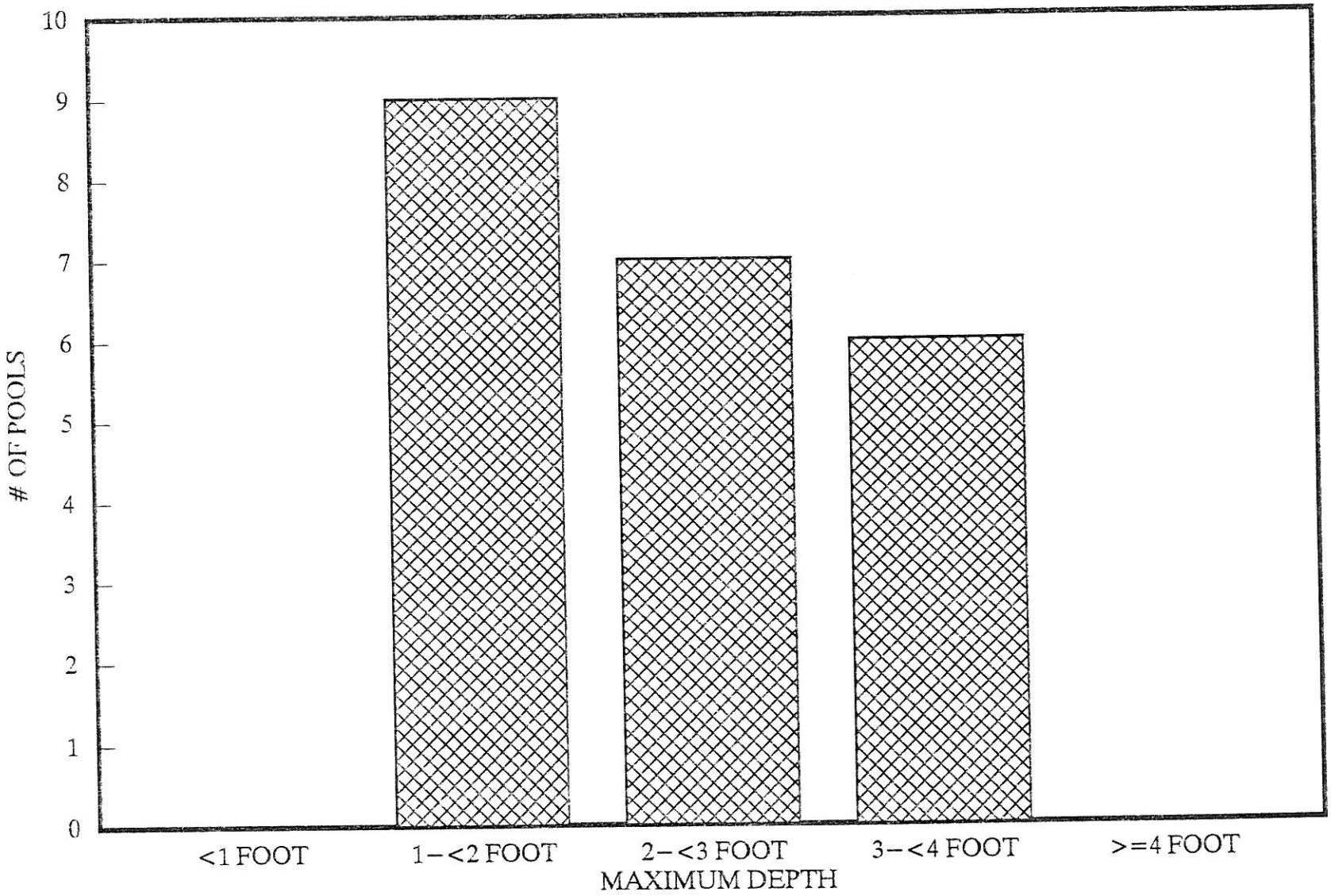
POOL HABITAT TYPES BY PERCENT OCCURRENCE



GRAPH 4

STITZ CREEK

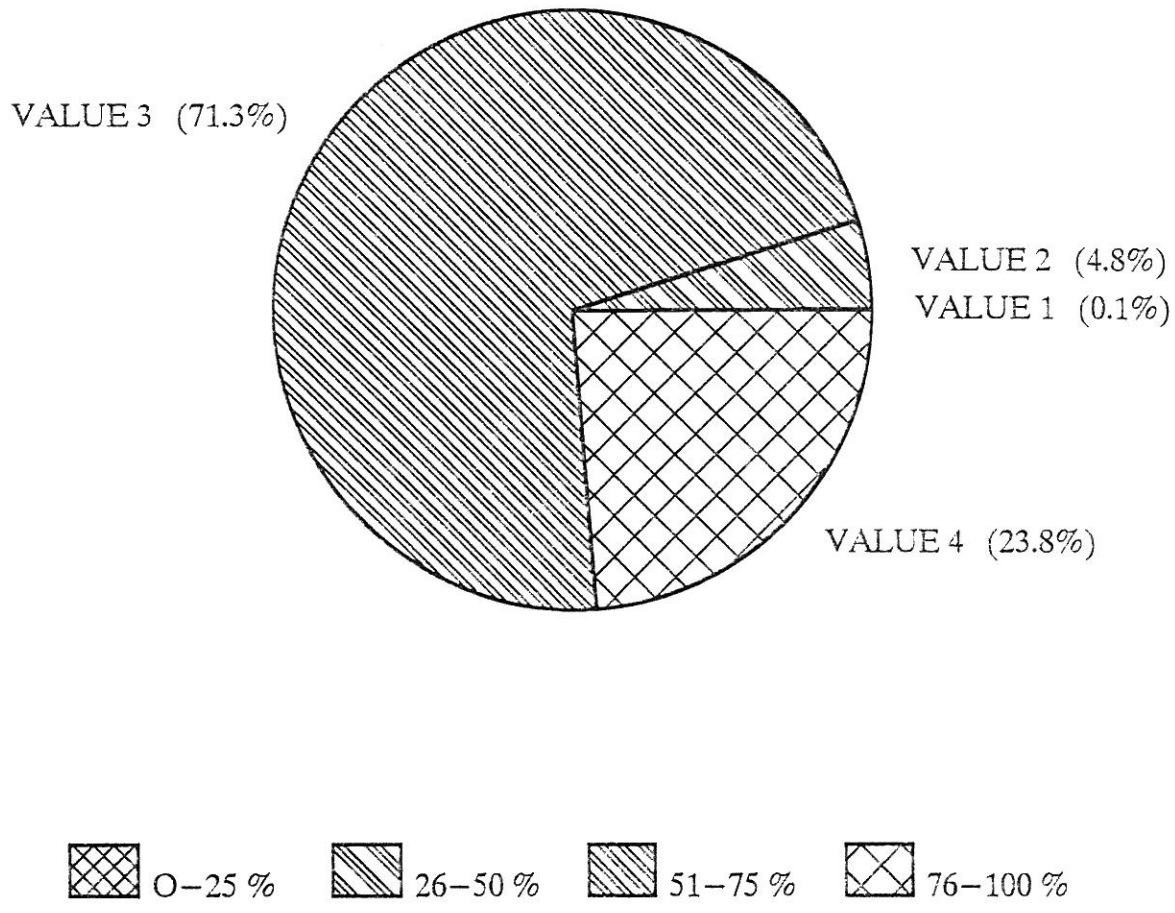
MAXIMUM DEPTH IN POOLS



GRAPH 5

STITZ CREEK

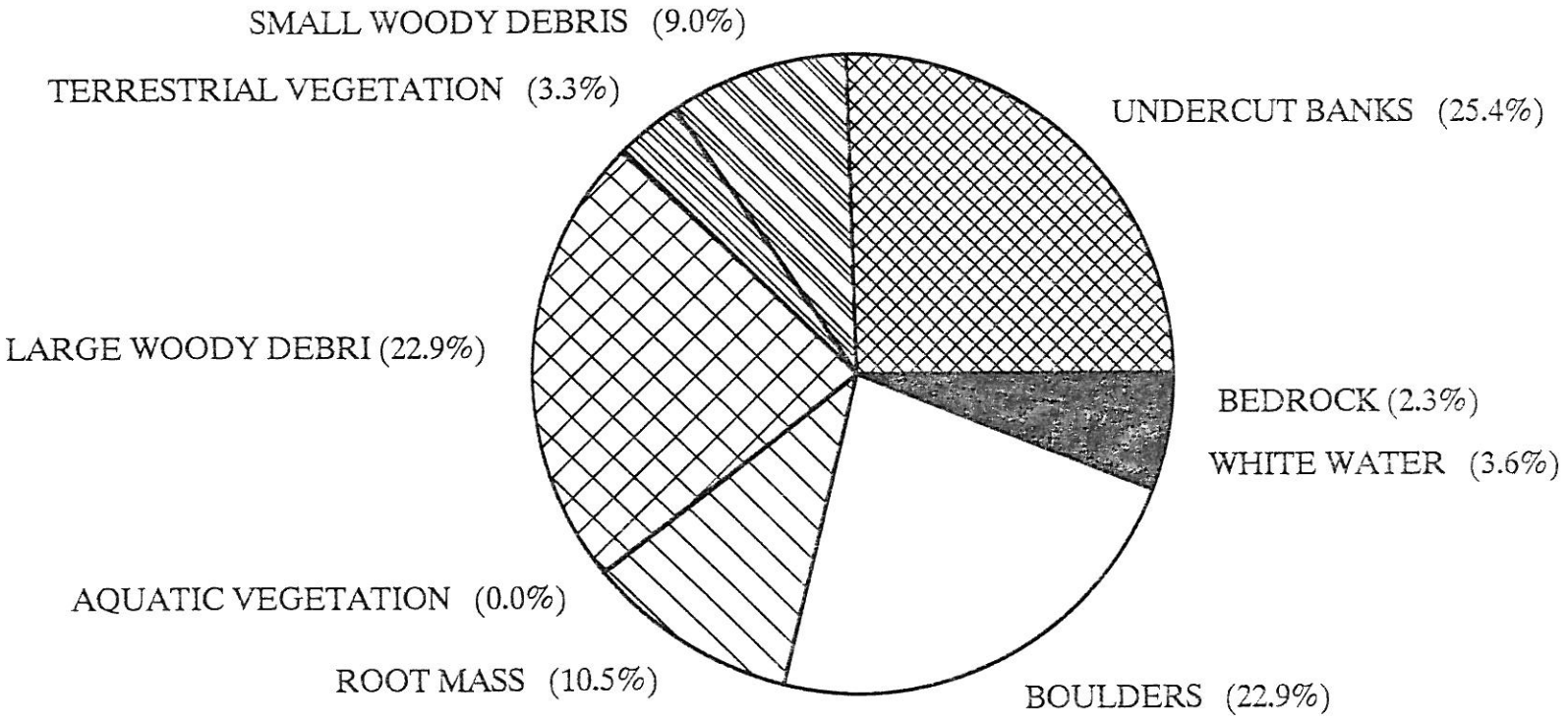
PERCENT EMBEDDEDNESS



GRAPH 6

STITZ CREEK

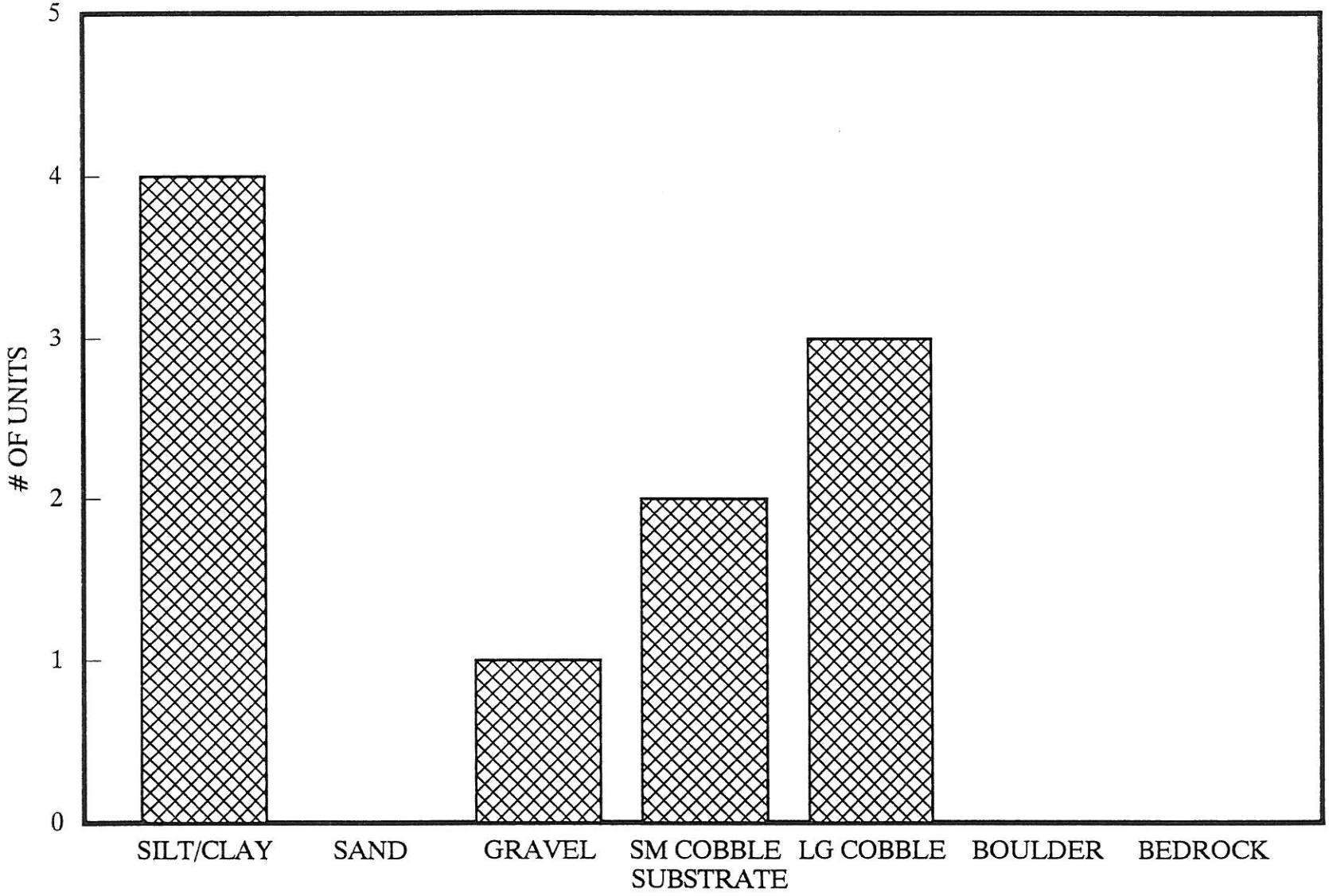
MEAN PERCENT COVER TYPES IN POOLS



GRAPH 7

STITZ CREEK

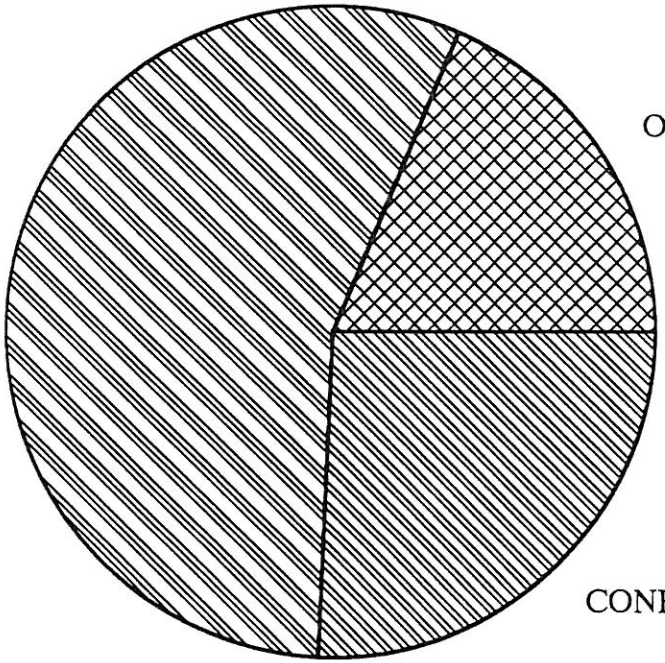
SUBSTRATE COMPOSITION IN LOW GRADIENT RIFFLES



GRAPH 8

STITZ CREEK

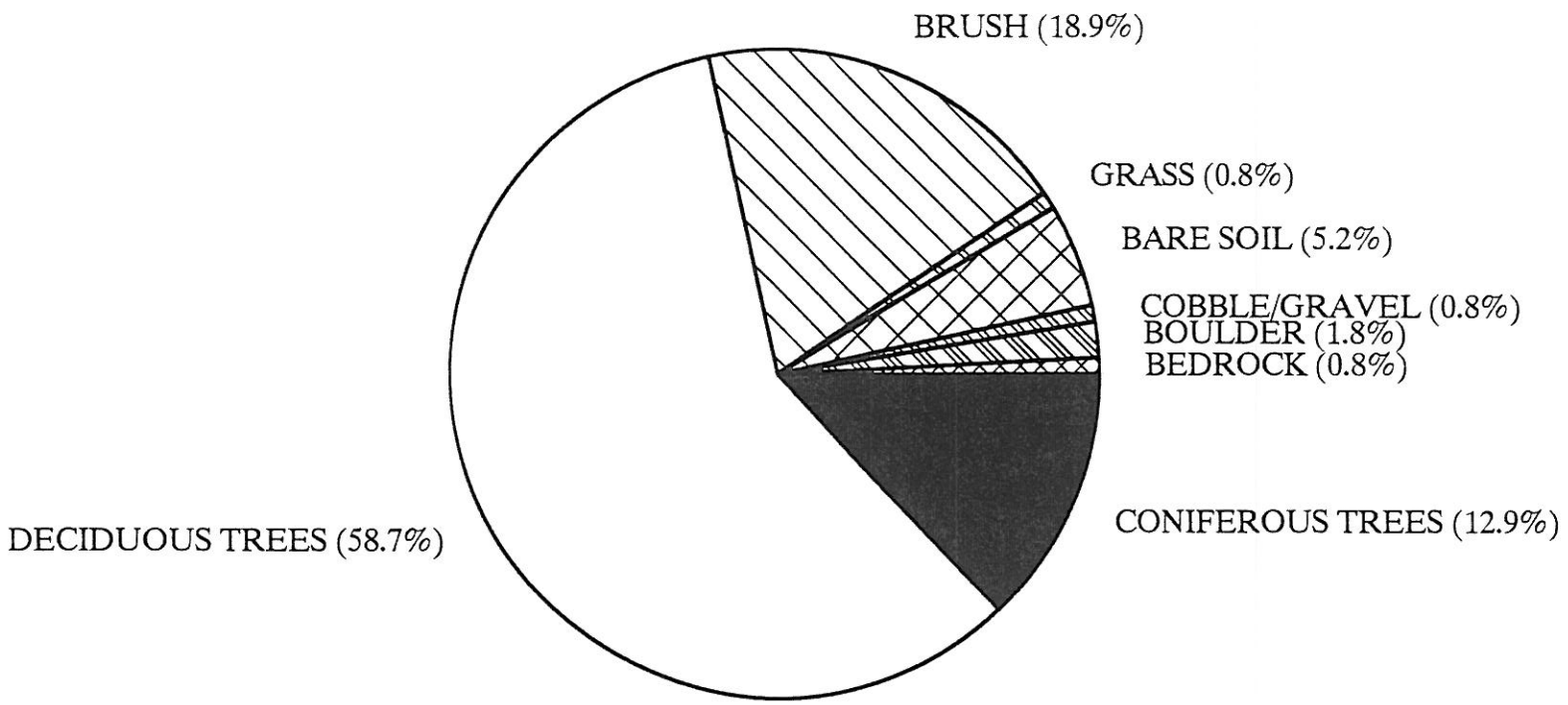
PERCENT CANOPY



GRAPH 9

STITZ CREEK

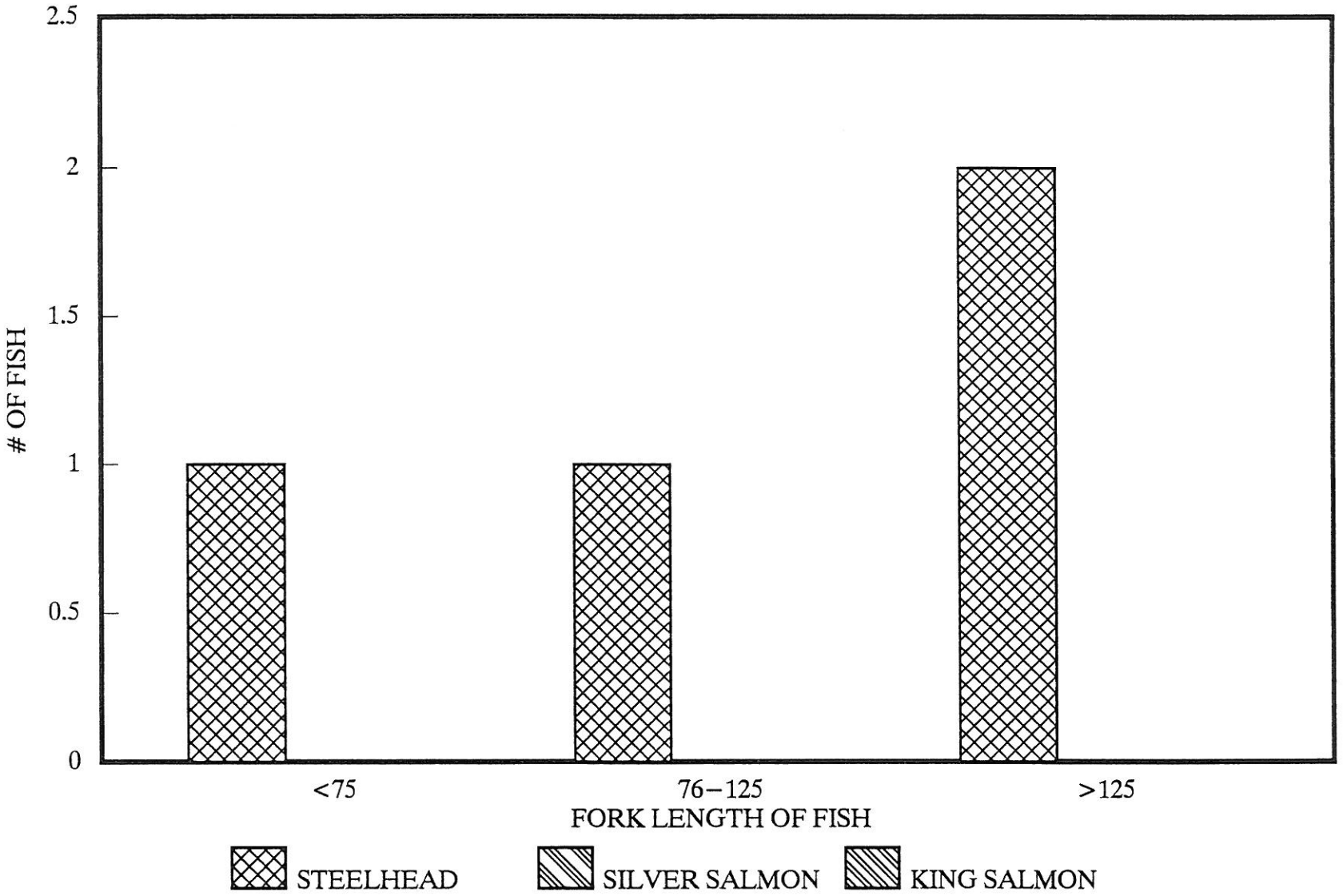
PERCENT BANK COMPOSITION



GRAPH 10

STITZ CREEK

FISH SPECIES BY LENGTH



GRAPH 11