

LP
R3
Jones

HUCKLEBERRY CREEK

INTRODUCTION

A physical fish habitat inventory was completed on Huckleberry Creek, from the confluence with Hollow Tree Creek, on July 31, 1990 and August 17, 1990 by Steve Holzerland and John Fredrick, California Conservation Corps (CCC), Technical Advisors. The objective of this survey was to collect baseline data as to the habitat available to anadromous salmonids and determine if stream restoration/enhancement work is warranted.

WATERSHED OVERVIEW

Huckleberry Creek is a tributary to Hollow Tree Creek, a tributary to the South Fork Eel River, in Mendocino County, California (Figure 1). The legal description at the confluence of Hollow Tree Creek and Huckleberry Creek is T22N R17W S23. The total length of the stream surveyed was 6218 feet, with 129.5 feet of side channel. The total length of blue line stream according to the USGS topographical map is 1.6 miles. The total watershed area is 2.8 square miles. This survey was ended due to several probable fish barriers needing modification. Huckleberry Creek is a first order stream.

The watershed is a second growth redwood forest, under the ownership of the Louisiana-Pacific Corporation and is managed for timber production. Vehicle access is from the Hales Grove Road, through the locked Louisiana-Pacific gate.

METHODS

Huckleberry Creek was habitat typed using the 24 habitat types classification (Mc Cain et al). The methodology follows the draft California Salmonid Stream Habitat Restoration Manual (Flosi et al. In preparation). Channel typing was conducted according to the classification system of Rosgen (1985). Electrofishing was conducted to determine species composition and distribution.

The minimum length of measured habitat unit was as long as the mean channel wetted width. Channel measurements were accomplished with range finders and tape measures. Habitat type measurements included mean length, mean width, mean depth, and maximum depth (to the nearest 0.1 foot). Depth of the pool tail crest at each pool habitat unit was measured at the thalweg.

A shelter rating was calculated for each habitat unit by multiplying shelter value and percent cover. A shelter value of 1 (low), 2 (medium), or 3 (high) was given according to the shelter complexity. An estimate on percent cover within each habitat unit was recorded. At each habitat unit 100% of the cover was classified into nine cover types.



The dominant and sub-dominant substrate was estimated using seven size classes of substrate composition and recorded for all habitat units. Embeddedness was optically estimated at the tail out of pool habitat units as 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3), 76 - 100% (value 4).

An estimate of the percent canopy was recorded for each habitat unit. The percent right and left bank covered with vegetation, and the dominant vegetation sub-type was estimated.

Time and temperature were recorded at every tenth habitat unit.

RESULTS

* ALL TABLES AND GRAPHS ARE LOCATED IN THE BACK OF THIS REPORT *

Eighteen of the 24 habitat types were identified, including one dry unit. The physical habitat data is summarized in Table 1A. The most frequent habitat types by percent occurrence were low gradient riffles 20.5%, lateral scour pools - bedrock 16.0%, and glides 12.0% (Graph 1).

Table 2A summarizes the riffle, flatwater, and pool habitat types. By percent occurrence, pools make up 48.0%, flatwater types make up 28.5%, and riffles make up 23.0% (Graph 2). Pools make up 54.45% of the percent total length. Flatwater habitat types make up 34.53% of the percent total length. Riffles make up 10.7% the percent total length (Graph 3).

Table 3A summarizes the pool habitat types. Scour pools occurred most often at 84.38% and comprised 84.38% of the total length (Graph 4). Backwater pools had the highest mean shelter rating at 90.0, scour pools at 89.38, and main channel pools at 69.38.

Table 4A is a summary of maximum pool depths by pool habitat types. The maximum depth for 56 of the 96 pools or 58.3% were less than 2 feet. Four pools were greater than 4 feet deep.

Table 5A is a summary of the dominant substrate by habitat type. Gravel was the dominant substrate in 50.5% of the units, bedrock the dominant substrate in 19.0%, and boulder was dominant in 12.5% of the units.

Table 6A summarizes mean percent cover by habitat type. The majority of the cover consisted of boulders and bedrock ledges. Small and large woody debris was lacking.

Huckleberry Creek is a F1 channel type for the stream surveyed.

Table 1A summarizes mean percent right and left bank cover and mean percent canopy per habitat type. For the entire stream reach surveyed, the mean percent right bank cover was 62.2%. The mean percent left bank cover was 61.9%. The stream bank composition consisted of 15.3% rock/bedrock, 4.1% coniferous

trees, 20.3% grass, 20.5% deciduous trees, 22% brush, and 17.9% bare soil. The mean percent canopy was 81.31%.

For the 96 pools surveyed, the pool tail embeddedness was estimated. Of the 96 pool tail outs 20% had a value of 1, 21.5% had a value of 2, and 58.5% had a value of 3.

Air temperature ranged from 52 to 71 degrees fahrenheit. Water temperature ranged from 51 to 58 degrees fahrenheit.

The following landmarks and possible problem sites were noted. All the distances are approximate and taken from the confluence of Huckleberry Creek with Hollow Tree Creek:

- 3895' Tributary entering from the left bank.
- 4650' Bear Wallow Creek enters from the right bank.
- 5385' Bedrock chute possible fish barrier under low flows.
- 5485' Little Bear Wallow Creek enters from the right bank.
- 5560' Culvert 4' diameter X 27' long with a 3' jump into the culvert and bedrock below. The culvert is plugged on the upstream end with debris and is retaining gravel for approximately 300 feet upstream.
- 6000' Log debris accumulation 8'h X 25'w X 8'l retaining gravel. Possible barrier.
- 6200' Log debris accumulation 6'h X 20'w X 30' l.

ELECTROFISHING RESULTS

Electrofishing was completed on August 1, 1990 by Steve Holzerland and John Fredrick (CCC). Three habitat units were sampled. The results are as follows:

The first unit was a lateral scour pool - bedrock approximately 94 feet from the confluence of Hollow Tree Creek. Eleven coho ranging between 51 and 72 mm and 10 steelhead between 40 and 122 mm were found.

The second unit was a lateral scour pool - bedrock approximately 4440 feet from the confluence of Hollow Tree Creek. The fish found consisted of 17 coho ranging from 53 to 76 mm and 25 steelhead ranging from 41 to 106 mm.

The third unit was a lateral scour pool - log approximately 6110 feet from the confluence of Hollow Tree Creek. A total of three steelhead ranging from 91 to 132 mm were found.

RECOMMENDATIONS

- 1) Huckleberry Creek should be managed as an anadromous, natural production stream.
- 2) Increase woody cover in the pools. There is a lack of woody debris to provide cover throughout this entire stream reach.
- 3) Remove or modify the culvert at 5560 feet from the confluence with Hollow Tree Creek to provide for fish passage.
- 4) Modify the log debris accumulations to provide fish passage.

Drainage: South Fork Eel River

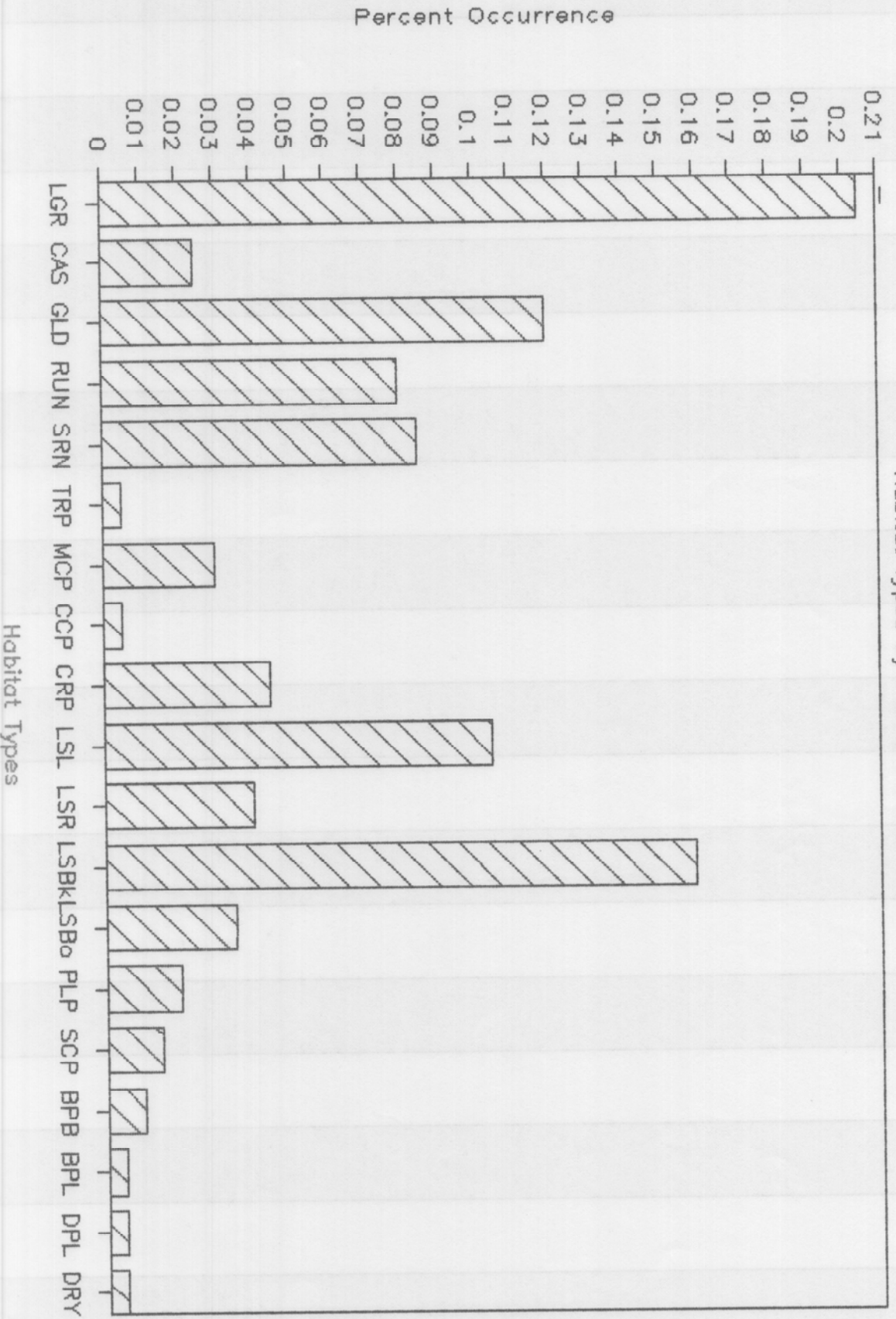
Survey Dates: July 31 and August 17, 1991

Survey Dates: July 31 and August 17, 1991

UNITS MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (feet)	TOTAL LENGTH (feet)	PERCENT TOTAL LENGTH	MEAN WIDTH (feet)	MEAN DEPTH (feet)	MAXIMUM DEPTH (feet)	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	MEAN % RT BANK COVER	MEAN % LEFT BANK COVER	MEAN % CANOPY
41	LOR	20.50%	14.72	603.50	9.51%	9.61	0.29	1.20	113.45	4651.39	30.68	1258.08		3.54	65.61	65.34	85.80
5	CAS	2.50%	15.10	75.50	1.19%	17.10	0.32	1.80	117.90	589.50	38.37	191.85		0.00	65.00	70.00	67.00
24	GLD	12.00%	40.33	968.00	15.25%	10.98	0.69	1.80	526.07	12625.75	370.12	8882.82		68.13	57.50	62.92	84.38
16	RUN	8.00%	21.44	343.00	5.40%	9.28	0.47	1.10	171.86	2749.79	80.38	1286.08		36.88	61.25	67.19	84.69
17	SRN	8.50%	51.79	880.50	13.87%	11.12	0.57	1.30	419.36	7129.09	234.23	3981.86		34.41	59.41	54.71	73.82
1	TRP	0.50%	67.50	67.50	1.06%	14.00	1.90	2.40	945.00	945.00	1795.50	1795.50	1512.00	70.00	50.00	60.00	60.00
6	MCP	3.00%	45.00	270.00	4.25%	11.67	1.14	3.80	664.75	3988.50	1050.37	6302.23	839.86	70.83	38.33	63.33	75.83
1	CCP	0.50%	21.00	21.00	0.33%	9.00	1.05	1.60	189.00	189.00	198.45	198.45	179.55	60.00	80.00	95.00	95.00
9	CRP	4.50%	60.11	541.00	8.52%	16.50	1.75	4.00	919.65	8276.83	1678.38	15105.40	1388.84	103.33	55.56	56.67	82.78
21	LSL	10.50%	29.33	616.00	9.70%	12.02	1.21	4.30	368.07	7729.53	511.00	10730.96	414.06	112.14	70.48	66.90	89.29
8	LSR	4.00%	38.88	311.00	4.90%	13.06	1.29	3.60	525.67	4205.33	718.86	5750.90	534.96	116.25	67.50	60.63	82.50
32	LSBK	16.00%	37.73	1207.50	19.02%	13.81	1.35	4.40	516.53	16529.10	846.22	27079.09	682.45	66.56	58.44	64.38	68.25
7	LSBo	3.50%	24.86	174.00	2.74%	13.29	1.01	2.00	276.14	1932.95	283.87	1987.12	188.05	59.29	58.57	54.29	79.29
4	PLP	2.00%	16.63	66.50	1.05%	13.50	1.26	3.30	250.88	1003.50	308.45	1233.80	260.79	120.00	85.00	67.50	96.25
3	SCP	1.50%	21.17	63.50	1.00%	6.00	0.72	1.30	147.00	441.00	112.80	338.40	59.87	63.33	68.33	0.00	95.00
2	BPB	1.00%	15.00	30.00	0.47%	6.25	0.73	1.00	93.25	186.50	67.83	135.65	63.09	100.00	75.00	0.00	97.50
1	BPL	0.50%	48.00	48.00	0.76%	16.00	1.20	2.50	729.60	729.60	875.52	875.52	656.64	120.00	40.00	70.00	95.00
1	DPL	0.50%	40.00	40.00	0.63%	19.00	1.45	2.00	760.00	760.00	1102.00	1102.00	950.00	120.00	60.00	40.00	90.00
1	DRY	0.50%	21.00	21.00	0.33%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL UNITS 200				TOTAL LENGTH 6347.50						TOTAL AREA 74662.34		TOTAL VOLUME 88235.71					

Huckleberry Creek

Habitat Types by Percent Occurrence



GRAPH 1

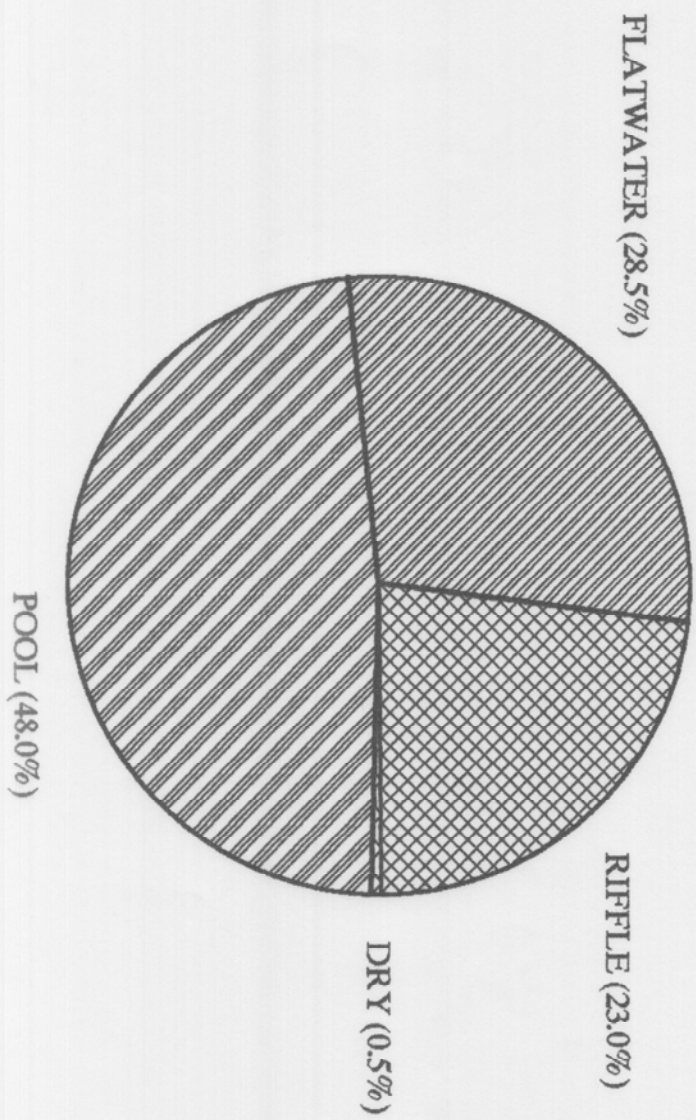
Drainage: South Fork Eel River

Survey Dates: July 31 and August 17, 1991

UNITS MEASURED	HABITAT TYPE	HABITAT PERCENT	MEAN LENGTH (feet)	TOTAL LENGTH (feet)	PERCENT TOTAL LENGTH	MEAN WIDTH (feet)	MEAN DEPTH (feet)	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
46	RIFLE	23.00%	14.76	679.00	10.70%	10.42	0.30	113.93	5240.89	31.52	1449.94		3.15
57	FLATWATER	28.50%	38.45	2191.50	34.53%	10.54	0.59	394.82	22504.63	248.26	14150.77		49.30
96	POOL	48.00%	36.00	3456.00	54.45%	13.05	1.28	488.72	46916.83	756.61	72635.01	607.45	81.98
1	DRY	0.50%	21.00	21.00	0.33%								
TOTAL MEASURED				TOTAL LENGTH					TOTAL AREA		TOTAL VOLUME		
200				6347.50					75698.73		88235.71		

Huckleberry Creek

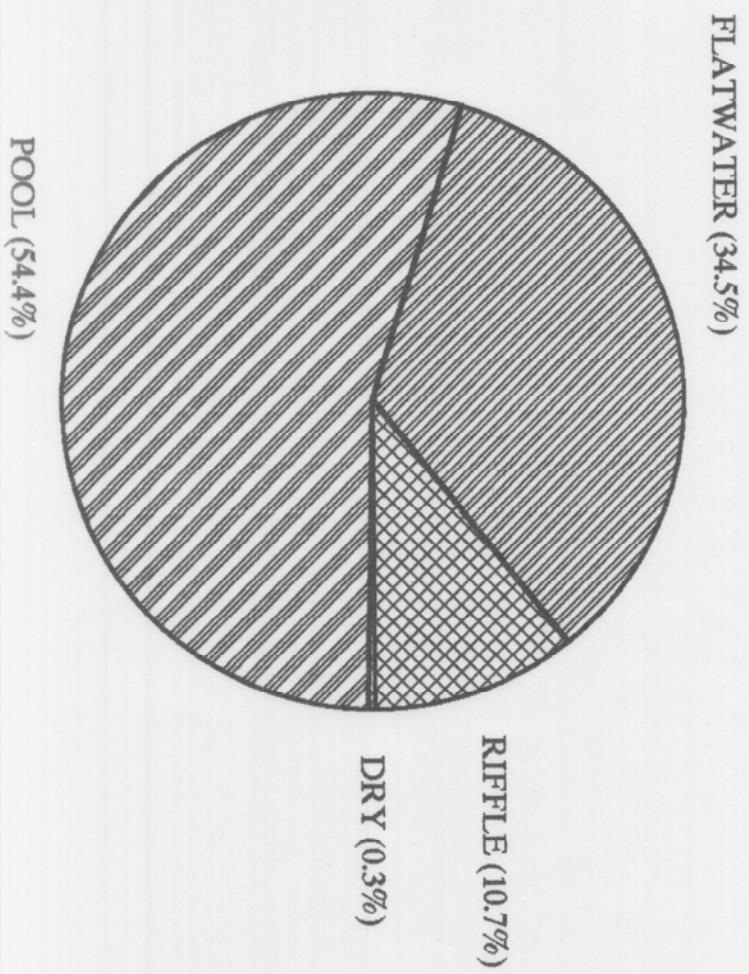
HABITAT TYPES BY PERCENT OCCURRENCE



GRAPH 2

Huckleberry Creek

HABITAT TYPES BY PERCENT TOTAL LENGTH



GRAPH 3

Huckleberry Creek

Drainage: South Fork Eel River

TABLE 3A SUMMARY OF POOL TYPES

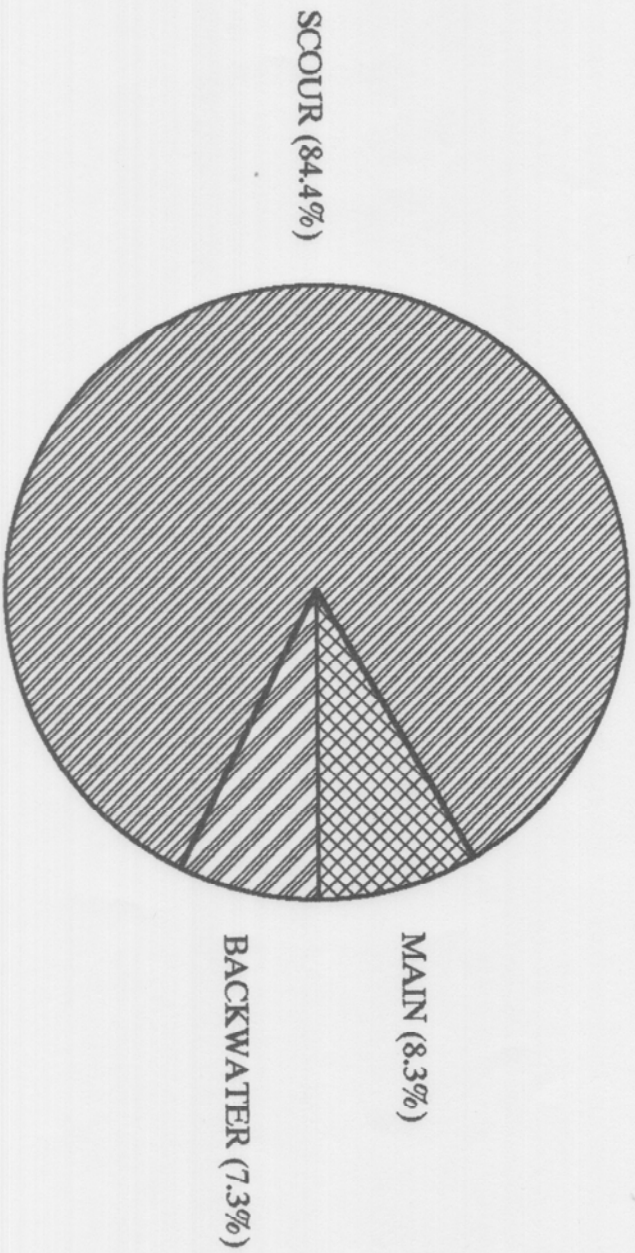
Survey Dates: July 31 and August 17, 1991

Confluence: T22N R17W S26

UNITS MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (feet)	TOTAL LENGTH (feet)	PERCENT TOTAL LENGTH	MEAN WIDTH (feet)	MEAN DEPTH (feet)	MEAN AREA (sq. ft.)	TOTAL AREA (sq. ft.)	MEAN VOLUME (cu. ft.)	TOTAL VOLUME (cu. ft.)	MEAN RESIDUAL VOLUME (cu. ft.)	MEAN SHELTER RATING
8	MAIN	8.33%	44.81	358.50	10.37%	11.63	1.23	640.31	5122.50	1037.02	8296.18	841.34	69.38
81	SCOUR	84.38%	36.00	2916.00	84.38%	13.51	1.32	489.84	39677.23	764.04	61887.27	613.24	89.38
7	BACKWATER	7.29%	25.93	181.50	5.25%	9.36	0.89	302.44	2117.10	350.22	2451.57	273.20	90.00
TOTAL MEASURED	96												
				TOTAL LENGTH				TOTAL AREA			TOTAL VOLUME		
				3456.00				46916.83			72635.01		

Huckleberry Creek

POOL TYPES BY PERCENT OCCURRENCE



Huckleberry Creek

Drainage: South Fork Eel River

TABLE 4A SUMMARY OF MAXIMUM POOL DEPTHS BY POOL HABITAT TYPES

Survey Dates: July 31 and August 17, 1991

Confluence: T22N R17W S26

UNITS MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	<1 FOOT MAXIMUM DEPTH	<1 FOOT PERCENT OCCURRENCE	1-<2 FEET MAXIMUM DEPTH	1-<2 FEET PERCENT OCCURRENCE	2-<3 FEET MAXIMUM DEPTH	2-<3 FEET PERCENT OCCURRENCE	3-<4 FEET MAXIMUM DEPTH	3-<4 FEET PERCENT OCCURRENCE	>4 FEET MAXIMUM DEPTH	>4 FEET PERCENT OCCURRENCE
1	TRP	1.04%	0	0.00%	0	0.00%	1	100.00%	0	0.00%	0	0.00%
6	MCP	6.25%	0	0.00%	4	66.67%	1	16.67%	1	16.67%	0	0.00%
1	CCP	1.04%	0	0.00%	1	100.00%	0	0.00%	0	0.00%	0	0.00%
9	CRP	9.38%	0	0.00%	1	11.11%	5	55.56%	2	22.22%	1	11.11%
21	LSL	21.88%	2	9.52%	13	61.90%	3	14.29%	2	9.52%	1	4.76%
8	LSR	8.33%	0	0.00%	5	62.50%	2	25.00%	1	12.50%	0	0.00%
32	LSBK	33.33%	0	0.00%	17	53.13%	9	28.13%	4	12.50%	2	6.25%
7	LSBo	7.29%	1	14.29%	5	71.43%	1	14.29%	0	0.00%	0	0.00%
4	PLP	4.17%	0	0.00%	2	50.00%	1	25.00%	1	25.00%	0	0.00%
3	SCP	3.13%	1	33.33%	2	66.67%	0	0.00%	0	0.00%	0	0.00%
2	BPB	2.08%	0	0.00%	2	100.00%	0	0.00%	0	0.00%	0	0.00%
1	BPL	1.04%	0	0.00%	0	0.00%	1	100.00%	0	0.00%	0	0.00%
1	DPL	1.04%	0	0.00%	0	0.00%	1	100.00%	0	0.00%	0	0.00%

TOTAL
MEASURED
96

Drainage: South Fork El River

Survey Dates: July 31 and August 17, 1991

UNITS MEASURED	HABITAT TYPE	# UNITS		% TOTAL		# UNITS		% TOTAL		# UNITS		% TOTAL		# UNITS		% TOTAL		# UNITS		% TOTAL		# UNITS		% TOTAL	
		SILT/CLAY DOMINANT	SAND DOMINANT	SILT/CLAY DOMINANT	SAND DOMINANT	GRAVEL DOMINANT	SM COBBLE DOMINANT	LG COBBLE DOMINANT	Boulder DOMINANT	Boulder DOMINANT	BEDROCK DOMINANT	BEDROCK DOMINANT													
41	LGR	0	0	0.00%	0.00%	15	36.59%	8	19.51%	4	9.76%	8	19.51%	6	14.63%										
5	CAS	0	0	0.00%	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	5	100.00%										
24	GLD	0	0	0.00%	0.00%	17	70.83%	1	4.17%	2	8.33%	4	16.67%	0	0.00%										
16	RUN	0	1	0.00%	6.25%	8	50.00%	2	12.50%	3	18.75%	0	0.00%	2	12.50%										
17	SRN	0	1	0.00%	5.88%	4	23.53%	1	5.88%	3	17.65%	4	23.53%	4	23.53%										
1	TRP	0	0	0.00%	0.00%	1	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%										
6	MCP	0	0	0.00%	0.00%	4	66.67%	0	0.00%	0	0.00%	2	33.33%	0	0.00%										
1	CCP	0	0	0.00%	0.00%	0	0.00%	1	100.00%	0	0.00%	0	0.00%	0	0.00%										
9	CRP	0	0	0.00%	0.00%	9	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%										
21	LSL	0	1	0.00%	4.76%	19	90.48%	0	0.00%	1	4.76%	0	0.00%	0	0.00%										
8	LSR	0	0	0.00%	0.00%	6	75.00%	0	0.00%	1	12.50%	0	0.00%	1	12.50%										
32	LSBK	0	0	0.00%	0.00%	9	28.13%	2	6.25%	0	0.00%	3	9.38%	18	56.25%										
7	LSBg	0	0	0.00%	0.00%	2	28.57%	0	0.00%	2	28.57%	3	42.86%	0	0.00%										
4	PLP	0	0	0.00%	0.00%	4	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%										
3	SCP	0	0	0.00%	0.00%	2	66.67%	1	33.33%	0	0.00%	0	0.00%	0	0.00%										
2	BPB	0	0	0.00%	0.00%	1	50.00%	0	0.00%	0	0.00%	1	50.00%	0	0.00%										
1	BPL	0	0	0.00%	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%										
1	DPL	0	0	0.00%	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%										

Huckleberry Creek

Drainage: South Fork Eel River

TABLE 6A SUMMARY OF MEAN PERCENT COVER BY HABITAT TYPE

Survey Dates: July 31 and August 17, 1991

Confluence: T22N R17W S26

UNITS MEASURED	HABITAT TYPE	MEAN % UNDERCUT	MEAN % SWD	MEAN % LWD	MEAN % ROOT	MEAN % TEMP.	MEAN % AQUATIC	MEAN % WHITE	MEAN % BOULDERS	MEAN % BEDROCK LEDGES
BANKS										
41	LGR	0.00	0.49	2.93	0.00	0.00	0.00	0.00	14.39	4.15
5	CAS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	GLD	13.96	4.38	11.67	1.25	1.67	0.00	0.00	63.33	3.75
16	RUN	1.25	6.56	7.81	0.00	0.00	0.00	1.25	74.38	8.75
17	SRN	0.59	0.00	2.94	0.88	0.00	0.00	2.35	70.59	22.65
1	TRP	40.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	40.00
6	MCP	21.67	5.00	3.33	0.00	2.50	0.00	0.00	59.17	8.33
1	CCP	30.00	0.00	0.00	0.00	0.00	0.00	0.00	70.00	0.00
9	CRP	13.33	10.00	15.56	5.00	1.11	0.00	0.00	35.56	19.44
21	LSL	5.48	11.67	50.48	7.14	0.48	0.00	0.95	19.05	4.76
8	LSR	5.00	8.75	3.13	45.63	0.00	0.00	3.13	22.50	11.88
32	LSBK	7.03	0.63	0.31	0.47	0.00	0.00	4.38	28.44	59.38
7	LSBo	2.14	2.14	4.29	2.14	0.00	0.00	1.43	79.29	8.57
4	PLP	7.50	11.25	18.75	0.00	0.00	0.00	17.50	23.75	13.75
3	SCP	46.67	0.00	0.00	0.00	23.33	0.00	0.00	30.00	0.00
2	BPB	0.00	15.00	20.00	0.00	0.00	0.00	0.00	65.00	0.00
1	BPL	0.00	0.00	10.00	0.00	0.00	0.00	0.00	30.00	60.00
1	DPL	0.00	0.00	20.00	0.00	0.00	0.00	0.00	10.00	70.00