State of California
The Resources Agency
Department of Fish and Game

A STEELHEAD SPAWNING SURVEY OF THE TRIBUTARIES OF THE UPPER TRINITY RIVER AND UPPER HAYFORK CREEK DRAINAGE, 1972[1/]

by

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SUMMARY

From March 21, through April 14, 1972, a steelhead spawning survey was conducted on the streams tributary to the Trinity River between Lewiston Dam and Browns Creek and in the Upper Hayfork Creek drainage, a tributary of the South Fork Trinity River.

An estimated 1,011 spawners used the 68.8 miles of stream surveyed in the Trinity River drainage and 348 were estimated to have spawned in the 19 miles of stream surveyed in the Hayfork Creek drainage.

INTRODUCTION

From 1965, to 1971, steelhead runs in the Trinity River have been declining, as evidenced by returns to Trinity River Hatchery (Table 1). An estimated 7,400 to 8,700 spawned in the Trinity River and its tributaries between the North Fork and Lewiston Dam in 1964 (La Faunce, 1965). In 1964, there were 894 adults taken at the Trinity River Hatchery. This was by far the lowest year on record up to that time, but from 1967 on the counts have been below 250 in every year but one. In 1971, the hatchery take was down to its all-time low at 67, but increased to 242 fish in 1972.

In view of this apparent decline from a supposedly poor year in 1964, a steelhead spawning survey was conducted on some tributaries in the Upper Trinity River and in the Hayfork Creek drainage in 1971 (Rogers, 1972).

The 1971 survey indicated that the population was at a very low level in the tributary streams and it was decided to follow up with succeeding yearly surveys over the same areas to determine if an expected upward trend in steelhead numbers was occurring. This report gives the result of the 1972 survey.

1/ Anadromous Fisheries Branch Administrative Report No. 73-5A Submitted March, 1973.

Table 1

Summary of Steelhead Returns to Trinity River Hatchery for the Years 1960 through 1972*

Year	Number of steelhead	Year	Number of steelhead
1960	2,071	1967	135
1961	3,526	1968	232
1962	3,243	1969	554
1963	1,687	1970	241
1964	894	1971	67
1965	6,941	1972	242
1966	992		

* Trinity River Salmon and Steelhead Hatchery files.

METHODS

From March 21, through April 14, 1972, a steelhead spawning survey was conducted on the Trinity River tributaries from Lewiston Dam downstream to Browns Creek and in 19 miles of the Hayfork Creek drainage. Hayfork Creek is tributary to the South Fork Trinity River (Figure 1). The survey was conducted by walking in or along the stream and counting redds, usually to the upstream limits of steelhead migration. Each redd was assumed to represent 2.6 steelhead (La Faunce, 1965).

RESULTS

In the Trinity River drainage 13 streams totaling 68.8 miles and in the Hayfork Creek drainage 4 streams totaling 19 miles were surveyed in 1972 (Appendix Table).

Based on 2.6 fish per redd (La Faunce, op. cit.), the 389 redds observed in the Trinity River tributaries and the 134 in the Hayfork Creek drainage represent an estimated escapement of 1,011 and 348 respectively.

As in 1971, the number of redds per mile was higher in the Hayfork Creek drainage than in the Trinity River tributaries. In 1972, the surveyed portion of the Hayfork Creek drainage averaged 7.24 redds per mile of stream available to steelhead while in the Trinity River tributaries the average was 5.65 per mile.

In five of the creeks included in this study the entire length of stream available to steelhead was surveyed under good visibility conditions in all three years. The redd counts in these five streams were added. We then calculated the percent of the three year total which was counted in

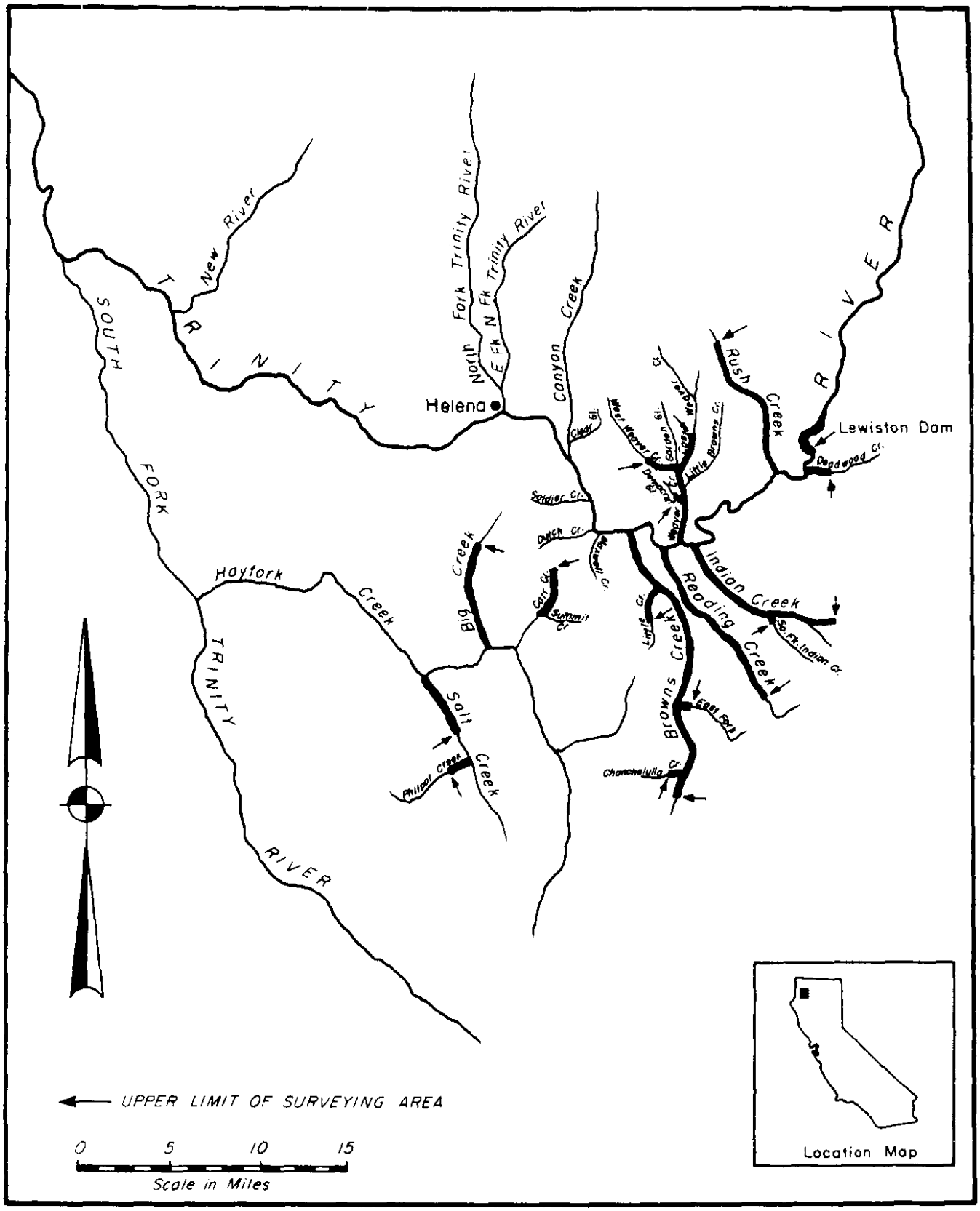

Figure 1. Streams covered in the 1972 steelhead survey in the Upper Trinity River and the Hayfork Creek Drainage. Heavy lines indicate surveyed portion.

each individual year. We also totaled the steelhead count at Trinity Hatchery for the same years and calculated the percent taken in each individual year (Table 2). The five streams used in this comparison were Rush Creek, Indian Creek, Weaver Creek, Reading Creek, and Browns Creek.

Table 2

Comparison of Redd Counts
with
Steelhead Entering Hatchery

	Redd count		Hatchery count	
Year	Number	% of total	Number	% of total
1964	1,490	75.1	894	74.3
1971	111	5.6	67	5.6
1972	384	19.3	242	20.1
TOTALS	1,985	100.0	1,203	100.0

DISCUSSION

The results of this survey were compared with the results of the 1964 and 1971 surveys (Table 2 and Appendix Table). In every stream the number of redds per mile was higher in 1964 than in 1971 or 1972. In 1972, the number of redds per mile was equal to or higher than in 1971 in every stream except four minor streams representing only 4.5 miles or 5% of the area surveyed. Three of these were incompletely surveyed in 1972.

This method of estimating steelhead spawning escapement with any degree of accuracy depends upon water conditions and timing and only applies to the portion of the stream surveyed. If done in the same manner and in the same streams each year, it does give a good indication of the trend and relative increase or decrease in steelhead numbers from one year to the next.

The relationship between the redd count and the hatchery count (Table 2) is exceedingly close, but includes only 3 years of data. If additional years of data continue to show a close relationship we will know that the hatchery count is a good index of the numbers of spawners in the tributary streams.

REFERENCES

LaFaunce, D. A., 1965. A steelhead spawning survey of the Upper Trinity River System. Calif. Dep. Fish and Game, Marine Resources Admin. Rep. No. 65-4, 5 p. (mimeo).

Rogers, David W. 1972. A steelhead spawning survey of the tributaries of the Upper Trinity River and Upper Hayfork Creek drainage, 1971. Calif. Dep. Fish and Game, Anadromous Fisheries Admin. Rep. No. 72-12, 6 p. (mimeo).

Appendix Table

Steelhead Redd Count Results Compared for the Years 1964, 1971, and 1972, for Some Streams in the Trinity River and Hayfork Creek Drainage

Stream	Year	Miles surveyed	Miles available to steelhead	Redds observed	Redds per available mile surveyed	Estimated population in area surveyed
Deadwood Cr.	1964	0.9	2.0	27	30.0	70
	1971	2.0	2.0	0	0	0
	1972	2.0	2.0	0	0	0
Rush Cr.	1964	9.25	9.0	169	18.8	439
	1971	9.2	9.0	13	1.4	34
	1972	9.0	9.0	43	4.8	112
Indian Cr.	1964	8.5	7.9	253	32.0	658
	1971	11.0	11.0	2	.2	5
	1972	11.0	11.0	53	4.8	138
S.F. Indian Cr.	1964	0.2	? [5]	4	20.0	10
	1971	1.0	1.0	3	3.0	8
	1972	0.5	1.0	0	0	0
Weaver Cr.	1964	6.0	6.0	134	22.3	348
	1971	6.0	6.0	5	.8	13
	1972	6.0	6.0	10	1.7	26
E. Weaver Cr.	1964	4.7	4.7	89	18.9	231
	1971	4.7	4.7	0	0	0
	1972	2.0	4.7	3	1.5	8
E. Branch	1964	0.2	? [5]	2	10.0	5
	1971[1]	-	0.1	-	-	-
	1972[1]	-	-	-	-	-
W. Weaver Cr.	1964	1.5	? [5]	2	1.3	5
	1971	1.5	? [5]	0	0	0
	1972[2]	2.0	? [5]	0	-	-
Garden Gl.	1964[3]	-	-	-	-	-
	1971	0.5	? [5]	0	0	0
	1972[3]	-	-	-	-	-
Little Browns Cr.	1964	1.3	2.0	41	31.5	107
	1971	3.0	? [5]	3	1.0	8
	1972[3]	-	-	-	-	-

Appendix Table (continued)

Stream	Year	Miles surveyed	Miles available in steelhead	Redds observed	Redds per available mile surveyed	Estimated population in area surveyed
Democrat Gl	1964	0.5	? 5/	8	16.0	21
	1971	1.7	1.7	1	.6	3
	1972	0.5	1.7	0	0	0
Reading Cr.	1964	8.8	8.3	279	33.6	725
	1971	10.4	10.4	35	3.4	91
	1972	10.4	10.4	81	7.8	211
Browns Cr.	1964	21.8	21.8	655	30.0	1,703
	1971	21.4	21.4	56	2.6	146
	1972	21.4	21.4	197	9.2	512
Chanchelulla Cr.	1964	0.1	0.05	1	20.0	3
	1971	0.5	? 5/	0	0	0
	1972	0.5	? 5/	0	0	0
E. Fk. Browns Cr.	1964	2.2	2.2	71	32.3	185
	1971	2.2	2.2	11	5.0	29
	1972	0.5	2.2	2	4.0	5
Little Cr.	1964	2.7	2.0	91	45.5	237
	1971	3.0	3.0	19	6.3	49
	1972 4/	3.0	3.0	0	0	0
Maxwell Cr.	1964	0.2	0.1	6	60	16
	1971	0.9	? 5/	1	1.1	3
	1972 3/	-	-	-	-	-
Dutch Cr.	1964	1.4	? 5/	72	51.4	187
	1971	1.0	? 5/	0	0	0
	1972 3/	-	-	-	-	-
Soldier Cr.	1964	1.0	? 5/	21	21.0	55
	1971	1.6	? 5/	1	.6	3
	1972 3/	-	-	-	-	-
Canyon Cr.	1964	11	11	232	21.1	603
	1971	11.2	17.0	8	.7	21
	1972 3/	-	-	-	-	-
Clear Cl.	1964	.8	2.2	12	15.0	31
	1971	2.1	2.1	0	0	0
	1972 3/	-	-	-	-	-
Hayfork Cr.	1971	10.2	37.2	31	3.0	81
	1972 3/	-	-	-	-	-

Appendix Table (continued)

Stream	Year	Miles surveyed	Miles available to steelhead	Redds observed	Redds per available mile surveyed	Estimated population in area surveyed
Carr Cr.	1971	2.7	2.7	7	2.6	18
	1972	2.7	2.7	7	2.6	18
Summit Cr.	1971	1.6	1.6	0	0	0
	1972 3/	-	-	-	-	-
Big Cr.	1971	7.8	? 5/	35	4.5	91
	1972	7.8	? 5/	78	10.0	203
Salt Cr.	1971	12.3	? 5/	16	1.3	42
	1972	6.5	? 5/	44	6.8	114
Philpot Cr.	1971	2.0	1.5	0	0	0
	1972	2.0	1.5	5	3.3	13

1/ A steep concrete apron and a steep culvert under a county road at the mouth of this creek precludes its use as a steelhead spawning stream during 1971 and 1972.

2/ Muddy water during the 1972 survey obscured the bottom although one adult steelhead was observed.

3/ A survey was not made.

4/ Muddy water negated the survey although one spawning pair was observed earlier by a local resident.

5/ Length of stream available to steelhead not determined, but is equal to or greater than the distance surveyed.