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State of California
The Resources Agency
Department of Fish and Game

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ANNUAL REPORT
TRINITY RIVER SALMON AND STEELHEAD HATCHERY
TWELFTH YEAR OF OPERATION 1969-70¹/₁

by

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Region 1, Inland Fisheries

SUMMARY

King salmon, Oncorhynchus tshawytscha, entered the hatchery from September 2, through November 24. Silver salmon, O. kisutch, began entering the hatchery on October 20. The run ended on December 29. Steelhead trout, Salmo gairdnerii gairdnerii, were trapped at the hatchery from October 16 to April 20. A few brown trout, Salmo trutta, entered the hatchery from September 29 to December 29, 1969.

Production data are as follows:

Species	Number Trapped	Number Females Spawned	Number Eggs Taken	Number Fingerlings Planted	Number Yearlings Planted	Total Pounds Planted	On Hand June 30, 1970
King salmon	2,586	781	2,401,000	1,270,230	500,000	46,392	768,000
Silver salmon	1,996	122	291,000	52,000*	452,760	35,045	457,400
Steelhead trout	241	56	535,000**	200,400***	608,988	66,045	1,026,000
Brown trout	70	26	53,000				74,200

* Transferred to Darrah Springs Hatchery.

** Includes 337,000 eggs from Trinity River Steelhead broodstock.

*** Transferred to Iron Gate Hatchery.

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Anadromous Fisheries Administrative Report No. 70-19
Submitted October 1970

INTRODUCTION

This is the twelfth consecutive fiscal year report covering operation of the Trinity River Salmon and Steelhead Hatchery, located near Lewiston, Trinity County. Copies of the previous reports are available upon request from Anadromous Fisheries Branch, Sacramento.

The hatchery was constructed by the United States Bureau of Reclamation to compensate for spawning areas blocked by the Trinity River project. The California Department of Fish and Game began operation of the permanent installation on May 15, 1963, with funds for operation and maintenance supplied by the Bureau. Operation of the hatchery from July 1, 1969, through June 30, 1970 is described in this report.

BUDGET

The hatchery operating budget for fiscal year 1969-70 was \$222,700.00.

Total - Salary and Wages	\$100,300.00
Fish food	67,150.00
General expense	4,680.00
Chemicals	3,000.00
Nets and seines	600.00
Liability insurance	120.00
Telephone	350.00
Postage	100.00
Travel, instate	3,900.00
Utilities	200.00
Recurring maintenance of facility	18,000.00
Vehicle operation, automobile	6,300.00
Rental of refrigeration unit	3,600.00
Equipment, field and oper. additional	1,700.00
Equipment, misc. replacement	200.00
Equipment, misc. additional	200.00
Sub-total	\$210,400.00
Administrative charges	27,300.00
Total	\$237,700.00

Due to adjustments in Salary and wages, Recurring maintenance, Travel, instate, and Administrative charges, actual expenditures amounted to \$221,936.00.

HATCHERY OPERATION

With the exception of a stubborn kidney infection among a small group of Eel River steelhead yearlings, there were no disease problems at the hatchery during 1969-70. Even the more common occurrences of bacterial gill disease and the various external bacterial and protozoan parasites were conspicuously absent -- due, probably, to stocking the ponds at a fairly low density.

11 fish were reared on a diet of Oregon Moist Pellet. A total of 336,650 pounds of this feed produced 147,482 pounds of fish during fiscal year 1969-70. Thus the conversion rate (pounds of feed required to produce a pound of fish) was 2.3.

For the first time at Trinity River Hatchery, eggs were spawned from brood-stock steelhead -- fish from the 1967 brood year which had been held at the hatchery for this purpose. Of the 750 females on hand, 172 matured and were spawned. Approximately 100 of the largest females which did not spawn this year are being held over to spawn as four-year olds in the spring of 1971. All others, including spawned and unspawned, were planted in the Klamath River at Pecwan. Average size of the females spawned was 17.2 inches fork length and 1.7 pounds. Eggs per female averaged 1,959 and there were 279 per ounce. This program is designed to insure a positive source of steelhead eggs to the hatchery each year. Enough fish from each year class will be held at the hatchery to produce approximately one million eggs. No attempt is being made to establish a domesticated strain of steelhead.

Release?

During the 1969-70 season a leak developed in the pipeline carrying water from the aerator to the ponds. Repairs, which necessitated running a temporary pipeline to supply water to 3 series of raceways, were carried out in November, 1969, by Bureau of Reclamation personnel. Due to lack of pond space caused by the limited amount of water from the temporary pipeline, most of the fall plants normally made in November were made in September.

In January, 1970, Trinity Dam spilled and high flows occurred in the Trinity River. The maximum spill resulted in a flow of more than 6,000 cfs past the hatchery on January 27. The effect of this high water on emerging salmon fry and yearling steelhead is not known, but it did cause a brief increase in the number of adult steelhead entering the trap at the hatchery.

During fiscal year 1969-70, 11,864 people visited Trinity River Hatchery. Guided tours were provided several of the larger groups, mostly from schools in the area. An additional 1,384 anglers used the river adjacent to the hatchery during the fly-fishing only season from June 1 to September 15.

172 * 1959 =
336,948
895

MARKING PROGRAM

In 1964, a marking program was initiated at Trinity River Hatchery. Since then, over two million king salmon, silver salmon, steelhead and brown trout have been marked. This program is to aid in determining the planting size, time, and place of release which will provide the maximum catch plus return of spawners to the hatchery. By comparing the returns of fish which were marked and released at different sizes at different times of the year and in different areas, we hope to formulate an improved planting policy. At least one more year will be required before enough data are collected to draw meaningful conclusions.

KING SALMON MAINTENANCE PROGRAM

History of the 1969 King Salmon Run

Spring-run king salmon were first observed in the Trinity River adjacent to the hatchery on July 2. By the end of August about 50 salmon were in the large hole at the base of Lewiston Dam. Altogether there were probably fewer than 100 in the stretch of river between the hatchery and the old Lewiston Bridge 2 miles downstream. The scarcity of these fish is most likely a result of two very poor spring-run king salmon years at the hatchery -- 1965 and 1966. Heavy losses of fry and fingerlings due to "gas-bubble" and bacterial gill disease occurred during both of those years. Fingerlings that did survive to be planted were of doubtful quality. No spring-run king salmon yearlings were planted in either 1965 or 1966.

The fish ladder was opened on August 29. From that date through the third week in ~~September only 109 king salmon were trapped. Presumably these were all spring-run salmon and were the only spring-run fish taken this season.~~ This contrasted sharply with the 2,117 taken during a similar period the previous year. The 109 spring-run king salmon included 41 males, 19 females and 49 grilse. ~~All 19 females were spawned and produced a total of approximately 58,000 eggs.~~

Despite various reports of large numbers of salmon in the river below Lewiston, only 2,586 king salmon had been trapped at the hatchery when the run ended on November 24. This total included 2,477 fall-run fish of which ~~988 were males, 813 females, and 1,081 grilse.~~ Of the females trapped 762 were spawned, 46 died in the holding ponds, and 5 were killed while still too green to be spawned successfully. There were ~~2,343,000 fall-run eggs taken,~~ an average of 3,075 per female. Egg size averaged 82 per ounce. A sample of 200 adult fall-run king salmon, males and females, averaged 29.1 inches fork length.

Marked King Salmon Returns

During the 1969-70 season there were 302 marked king salmon trapped; 5 different marks were represented, as listed below:

MARKED KING SALMON, 1969-70 SEASON

Mark	Brood Year	Date	Released Area	Number	Size at Release	Number Recorded	Mean Fork Length at Recovery
LM	1964	5/25/65	Hatchery	100,000	192/lb	20	31.1*
RM	"	10/29/65	"	"	15.7/lb	26	30.1**
Ad	1966	3/19/68	"	52,185	10.8/lb	165	22.8
LV	1967	12/3/68	"	100,000	17.4/lb	35	15.1
RV	"	4/10/69	"	"	6.8/lb	56	12.8

* Last year fish with this mark averaged 30.6 inches fork length.

** Last year fish with this mark averaged 30.0 inches fork length.

Planting 1968 Brood Year Spring-Run Salmon

In October, 1969, 500,000 spring-run king salmon yearlings averaging 6.4 inches fork length and 13.9 per pound were planted in the Trinity River at the hatchery. Two hundred thousand of them were marked Ad-IP.

Of the 6,094,000 king salmon eggs taken in 1968, 4,752,000 or 78 percent were later returned to the river as fish.

Planting the 1969 Brood Year Salmon

The 1969 king salmon (mostly fall-run) fingerlings were released near the hatchery as follows:

<u>Date</u>	<u>Size</u>	<u>Number</u>
6-1-70	106/lb	61,480
6-3-70	110/lb	63,250
6-4-70	123/lb	76,260
6-5-70	130/lb	143,000
6-8-70	146/lb	29,200
6-8-70	118/lb	143,960
6-9-70	138/lb	31,740

(continued)

<u>Date</u>	<u>Size</u>	<u>Number</u>
6-9-70	102/lb	97,920
6-9-70	131/lb	10,480
6-9-70	158/lb	21,330
6-9-70	128/lb	57,600
— 6-10-70	136/lb	101,320
- 6-10-70	86/lb	25,800
6-10-70	102/lb	30,600
6-10-70	118/lb	35,400
6-10-70	138/lb	41,400
6-11-70	118/lb	21,830
6-11-70	106/lb	21,200
6-11-70	134/lb	117,920
6-11-70	148/lb	25,160
6-12-70	142/lb	53,960
6-12-70	140/lb	44,800
6-12-70	172/lb	14,620
TOTAL		1,270,230

The fish were planted 2 miles downstream from the hatchery below the old Lewiston Bridge.

Since very few spring-run fingerlings were on hand they were not held separately from the fall-run fish but were planted as fingerlings with the earlier lots. About 750,000 fall-run fingerlings from later spawnings are being held over for planting as yearlings in November, 1970.

SILVER SALMON MAINTENANCE PROGRAM

History of the 1969 Silver Salmon Run

Silver salmon began entering the hatchery on October 20. When the run ended on December 29, 153 males, 132 females, and 1,711 grilse had been trapped. Of the 132 females entering the hatchery 128 were spawned and 4 died in the holding ponds. There were 291,000 eggs taken, an average of 2,273 per female. Egg size averaged 95 per ounce. Average fork length of adults, excluding grilse, was 27.1 inches.

Trinity River Hatchery also received 225,000 eyed silver salmon eggs from Alsea Hatchery in Oregon. As of June 30, 1970, there were approximately 457,000 silver salmon fingerlings on hand at the hatchery.

Planting 1968 Brood Year Silver Salmon

In September, 1969, 52,000 Cascade strain silver salmon averaging 27.3 per pound were transferred to Darrah Springs Hatchery. These fish were reared to catchable size and later planted in Clare Engle Lake above Trinity Dam.

In March, 1970, 452,760 silver salmon (212,140 Cascade and 240,620 Noyo River strain) were planted in the Trinity River. Marks, sizes, and release sites are as follows:

<u>Number</u>	<u>Mark</u>	<u>Size</u>	<u>Strain</u>	<u>Release Site</u>
50,000	LVRM	11.9/lb	Cascade	China Slide
"	An-LV	"	"	Hatchery
"	An-RV	15.9/lb	Noyo	China Slide
"	LVRM	"	"	Hatchery

These fish were marked to:

- (1) Compare rate of return of the two strains of silver salmon (Cascade and Noyo).
- (2) Compare rate of return from two different release sites (hatchery and China Slide).

Half of the unmarked silver salmon were released at the hatchery and half at China Slide.

Of the 300,000 eyed eggs (Cascade) received from Oregon and the 250,000 fingerlings (Noyo) received from Mt. Shasta Hatchery, 504,760 or 92 percent were later transferred as fingerlings or planted as yearlings.

STEELHEAD MAINTENANCE PROGRAM

History of the 1969-70 Steelhead Run

Steelhead were trapped at the hatchery from October 16, 1969, through April 20, 1970. Two hundred and forty one fish were taken during this period, the third lowest run since the hatchery began operation in 1963. Nearly all of the fish were trapped after January 1, 1970, only 14 having been taken during the fall and winter months of 1969. Steelhead were not trapped at the weir below the hatchery as they had been the previous season (1968-69) since high river flows would have made such an operation hazardous. Instead, the fish were allowed to continue upstream to the hatchery trap. Very few were observed spawning naturally in the river between the weir and the hatchery. A stream survey conducted toward the end of April by Inland Fisheries personnel revealed very few steelhead in the Trinity River system.

Of the 241 adult steelhead trapped at the hatchery, 70.9 percent were males (171) and 29.1 percent were females (70). Fifty-six of the females were spawned successfully for a total of 198,000 eggs, an average of 3,536 per female. Average egg size was 178 per ounce. Average fork length of 100 fish was 24.9 inches.

Marked Steelhead Returns

Of the 241 steelhead trapped during 1969-70, 65 (27.0 percent) were marked, all at Trinity River Hatchery. No strays from other hatcheries were taken. Marks were as follows:

Mark	Brood		Released		Size at Release	Marks Recovered (1969-70)	
	Year	Date	Area	Number		Number	Mean Fork Length
Ad-LV	1965	April	1966 Hatchery	98,132	35/lb	14	20.5 (inches)
Ad-LM	"	"	"	3,116	10/lb	2	23.5
Ad-RM	"	Nov.	1966 "	100,000	5.9/lb	8	25.3
Ad-RV	"	Feb.	1967 Lime Point 6 miles below Junction City	70,921	5.3/lb	2	26.7
RV-LV	"	April	1967 Hawkins Bar 60 miles below hatchery	97,679	9.1/lb	3	27.3
LM	1966	April	1967 "	12,503	5.6/lb	2	26.5

(continued)

Mark	Brood		Released		Size at Release	Marks Recovered (1969-70)	
	Year	Date	Area	Number		Number	Mean Fork Length
LV	1966	May	1967 Hawkins Bar 60 miles be- low hatchery	100,000	44/lb ² / ₁	1	27.5
RM	"	Nov.	1967 "	50,000	6.9/lb	5	26.0
RV	"	March	1968 "	27,057	6.9/lb	1	26.0
Ad	"	April	1968 "	100,011	6.9/lb	19	24.7
LVRM	"	Nov.	1967 "	24,960	11.9/lb	3	23.7
RVLM	"	March	1968 "	50,063	4.1/lb	2	23.7
LVLM	1967	April	1968 "	30,771	6/lb	3	18.0

Planting 1967 Brood Year Steelhead

On September 10, 1969, 1,360 steelhead weighing 1.25 pounds apiece, were planted in the Klamath River at Klamath Glen. These fish were excess broodstock and were released near the mouth of the river in hopes that they would migrate to sea.

On May 7, 1970, 968 spawned and unspawned broodfish averaging 1.7 pounds per fish were planted in the Klamath River at Pecwan.

Neither of the two groups above were marked.

Planting 1968 Brood Year Steelhead

On September 10, 1969, 1,800 steelhead, excess broodfish weighing about three quarters of a pound apiece, were planted in the Klamath River at Klamath Glen. They were not marked.

In October, 1969, the balance of the 1968 brood year steelhead (with the exception of about 3,000 being held for broodfish) were marked and released as follows:

Mark	Number	Size	Area
An-LV	50,000	6.6/lb	Hatchery
An-RV	46,900	"	Hawkins Bar
An-Ad	50,000	"	Pecwan
TOTAL	146,900		

²/ Erroneously reported as 4.4/lb in Anadromous Fisheries Administrative Report No. 70-5 (1968-69)

Planting 1969 Brood Year Steelhead

Trinity River Strain

During the last week of March, large numbers of yearling steelhead were observed milling around the screens at the downstream end of the raceway ponds. On April 3, the screens were removed from one series of ponds and the fish allowed to migrate into the river if they desired. Two weeks later, when the fish remaining in the series were loaded in trucks and planted downstream, it was determined that nearly half the fish in the series (46,100 out of a total of about 100,000) had already migrated. They averaged 8.5 per pound and were not marked.

The remaining 1969 brood year steelhead, with the exception of 150,000 being held for planting in November, 1970, and 3,000 for broodstock, were planted as follows:

<u>Date</u>	<u>Size</u>	<u>Mark</u>	<u>Area</u>	<u>Number</u>
4-13-70	8.5/lb	--	China Slide	20,400
4-13-70	8/lb	LV	Old Lewiston Br.	20,000
4-14-70	8.7/lb	--	Pecwan	5,100
4-14-70	8.7/lb	RV	Pecwan	21,000
4-15-70	10/lb	--	China Slide	32,500
4-15-70	10.3/lb	--	China Slide	13,390
4-16-70	10.4/lb	--	Pecwan	31,200
4-17-70	11.4/lb	--	China Slide	13,680
5-4-70	15/lb	--	China Slide	45,000
5-5-70	17.4/lb	--	China Slide	43,500
5-5-70	50/lb	--	China Slide	25,000
5-19-70	9.6/lb	--	Deadwood Creek	960
5-19-70	10.2/lb	--	Rush Creek	2,040
5-19-70	10.2/lb	--	East Weaver Creek	2,040
5-19-70	10.1/lb	--	Indian Creek	2,020
5-19-70	10/lb	--	Canyon Creek	4,000

(continued)

<u>Date</u>	<u>Size</u>	<u>Mark</u>	<u>Area</u>	<u>Number</u>
5-20-70	8.4/lb	--	Browns Creek	2,016
5-20-70	9.9/lb	--	Indian Creek	1,980
5-21-70	11/lb	--	Browns Creek	4,004
5-22-70	11/lb	--	Reading Creek	4,004
5-22-70	11.4/lb	--	Browns Creek	1,995
5-22-70	11.4/lb	--	Dutch Creek	1,003
5-25-70	10.5/lb	--	East Fork of North Fork of Trinity River	3,938
TOTAL				300,770

All of the creeks listed above are tributary to the Trinity River.

Planting 1969 Brood Year Steelhead

Cowlitz River Strain

These fish are from eggs received from the State of Washington in May, 1969. They were planted as follows:

<u>Date</u>	<u>Size</u>	<u>Area</u>	<u>Number</u>
4-15-70	10/lb	China Slide	18,000
5-6-70	18/lb	Pecwan	45,000
5-7-70	16/lb	Pecwan	22,400
5-8-70	16/lb	China Slide	25,750
TOTAL			111,150

All Cowlitz River Strain steelhead were marked by removal of the adipose fin.

Total 1969 brood year steelhead yearlings planted (Trinity and Cowlitz strains combined) was 458,020.

BROWN TROUT MAINTENANCE PROGRAM

History of the 1969 Brown Trout Run

From September 29 to December 29, 1969, 70 brown trout were trapped at the hatchery. The run consisted of about 60 percent males and 40 percent females. Twenty-six females produced 53,000 eggs, an average of 2,038 each. Egg size averaged 221 per ounce.

Marked Brown Trout Returns

Forty-one of the brown trout trapped were marked -- 40 Ad and 1 LV. The fish marked Ad were from the 1964 brood year and 28,500 were released at the hatchery at 32 per pound in April 1966. They averaged 17.8 inches fork length when trapped in 1969. The fish marked LV was from the 1965 brood year of which 10,577 marked and 20,547 unmarked had been released at Hawkins Bar at 7.4 per pound in December 1967. The recovered fish was 18 inches fork length when trapped at the hatchery in 1969.

The entire crop of 1967 brood year brown trout fingerlings failed to survive, therefore no yearlings were planted during fiscal year 1969-70. There are, however, approximately 30,000 1968 brood year brown trout yearlings on hand to be planted in November, 1970.

APPENDIX

TABLE A-1 Yearly Comparison of Fish Trapped at Lewiston. Compares the number of fish by species trapped at the Lewiston Fish Trapping Facilities and at the Trinity River Hatchery from July 1, 1969 through June 30, 1970.

TABLE A-2 Chart of Operation. Enumerates details of each activity.

TABLE A-3 Weather, Water and Fish Data Report. Summarizes daily air and water temperatures, weather condition, river flow, and number of fish by species trapped at the Trinity River Hatchery.

FIGURES A-1, A-2, and A-3 Shows weekly number of king salmon, silver salmon, and steel-head trout trapped.

TABLE A-1

Yearly Comparison of Fish Trapped at Lewiston.
July 1, 1964 through June 30, 1970

Species	July 1, 1964 through June 30, 1965	July 1, 1965 through June 30, 1966	July 1, 1966 through June 30, 1967	July 1, 1967 through June 30, 1968	July 1, 1968 through June 30, 1969	July 1, 1969 through June 30, 1970
King Salmon						
Male	1,974	477	1,052	1,620	1,797	624
Female	3,042	1,077	1,002	1,250	2,102	832
Total Adults	5,016	1,554	2,054	2,870	3,899	1,456
Grilse	1,287	1,521	2,786	1,746	873	1,130
Totals	6,303	3,075	4,840	4,616	4,772	2,586
Silver Salmon						
Male	23	2	45	287	3	153
Female	25	1	173	519	1	132
Total Adults	48	3	218	806	4	285
Grilse	2	9	807	59	34	1,711
Totals	50	12	1,025	865	38	1,996
Steelhead trout						
Adults	6,941	992	135	232	554	241
Brown trout						
Adults	145	100	152	231	170	70

TABLE A-2

Chart of Operations
Trinity River Salmon and Steelhead Hatchery
1969-70

Species	Adult fish trapped	Females spawned	Eggs taken	Eggs and fish received by transfer	Fingerlings planted	Yearlings planted	Total pounds planted	Fish on hand June 30, 1969	Fish on hand June 30, 1970
King Salmon									
Male	624								
Female	832								
Grilse	1,130								
Totals	2,586	781	2,401,000		1,270,230	500,000	46,392	597,500	768,000
Silver Salmon									
Male	153								
Female	132								
Grilse	1,711								
Totals	1,996	128	291,000	225,000 <u>1/</u>	52,000 <u>2/</u>	452,760	35,045 <u>3/</u>	501,000	457,400
Steelhead Trout	241	56	535,000 <u>4/</u>	484,072 <u>5/</u>	200,400 <u>6/</u>	608,988	66,045 <u>7/</u>	1,311,200	1,026,000 <u>8/</u>
Brown Trout	70	26	53,000					54,900	74,200 <u>9/</u>

1/ From Alsea, Oregon

2/ Transferred to Darrah Springs Hatchery

3/ Includes 1,905 lbs. transferred to Darrah Springs Hatchery

4/ Includes 337,000 eggs taken from Trinity River Steelhead Brood Fish

5/ Includes: 107,000 from Washougal Hatchery, Washington

261,248 from Iron Gate Hatchery

115,824 from Roaring River Hatchery, Oregon

6/ Transferred to Iron Gate Hatchery

7/ Includes 920 lbs. transferred to Iron Gate Hat.

8/ Includes 1,500 1968 B.Y., 167,500 1969 B.Y. and 857,000 1970 B.Y. Steelhead

9/ Includes 27,000 1968 B.Y. and 47,200 1969 B.Y. fish

TABLE A-3
Trinity River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
July 1969

Temperatures (degrees F)							Fish Trapped		
Date	Air		Water		Weather	Flow of Trinity River at Lewiston (c.f.s.)*	King Salmon		Steelhead Trout
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	
1	90	50	50	47	Clear	164			
2	87	49	49	47	Clear	164			
3	88	44	49	47	Clear	167			
4	90	44	49	46	Clear	167			
5	91	43	49	47	Clear	167			
6	92	48	50	47	Clear	167			
7	92	49	50	47	Clear	138			
8	98	50	50	48	Clear	125			
9	94	54	50	48	Clear	136			
10	97	53	50	48	Clear	134			
11	97	58	50	48	Clear	153			
12	96	60	50	49	Clear	164			
13	97	58	50	48	Clear	164			
14	93	52	50	49	Clear	164			
15	93	47	50	48	Clear	164			
16	95	50	50	49	Clear	162			
17	99	50	50	49	Clear	162			
18	102	51	50	49	Clear	160			
19	102	57	50	49	Clear	160			
20	104	58	50	49	Clear	160			
21	102	59	50	49	Clear	160			
22	104	58	50	49	Clear	160			
23	98	54	51	49	Partly Cloudy	160			
24	95	60	51	50	Clear	174			
25	95	56	52	49	Clear	256			
26	98	54	54	48	Clear	273			
27	96	50	52	48	Clear	450			
28	98	51	50	49	Clear	470			
29	98	54	50	50	Clear	400			
30	96	52	51	49	Clear	319			
31	100	50	51	49	Clear	270			
TOTALS									

* From U.S.G.S. Records

TABLE A-4
Trinity River Salmon and Steelhead Hatchery
Weather, Water and Fish Report
August 1969

Temperatures (degrees F)						Flow of Trinity River at Lewiston (c.f.s.)*	Fish Trapped		
Air		Water		Weather	King Salmon		Silver Salmon	Steelhead Trout	
Date	Maximum	Minimum	Maximum		Minimum		Adults Grilse	Adults Grilse	
1	102	49	52	49	Clear			192	
2	101	52	52	51	Clear			162	
3	98	51	52	50	Clear			164	
4	89	51	51	50	Clear			152	
5	92	44	51	50	Clear			162	
6	96	48	51	50	Clear			162	
7	96	46	51	50	Clear			164	
8	96	48	51	49	Clear			162	
9	101	50	52	50	Clear			164	
10	98	55	52	51	Clear			164	
11	93	50	51	51	Clear			164	
12	97	46	52	50	Clear			164	
13	101	50	51	50	Clear			164	
14	100	53	52	50	Clear			162	
15	97	53	52	50	Clear			162	
16	99	53	51	50	Clear			162	
17	93	52	51	50	Clear			162	
18	91	54	51	50	Clear			162	
19	96	49	53	50	Clear			162	
20	100	50	53	53	Clear			160	
21	100	52	54	53	Clear			160	
22	102	54	55	53	Clear			160	
23	93	53	54	53	Clear			160	
24	85	48	54	53	Clear			160	
25	94	42	54	53	Clear			160	
26	90	45	54	53	Clear			160	
27	91	42	53	53	Clear			160	
28	86	41	54	53	Clear			162	
29	91	46	54	53	Clear			162	
30	97	46	54	53	Clear			162	
31	102	47	54	53	Clear			162	
Totals									

*From U.S.G.S. Records

TABLE A-5
Trinity River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
September 1969

Temperatures (degrees F)									
Air		Water		Weather	Flow of Trinity River at Lewiston (c.f.s.)*	Fish Trapped			
Date	Maximum	Minimum	Maximum	Minimum		King Salmon Adults	Grilse	Silver Salmon Adults	Steelhead Trout Grilse
1	102	48	54	53	Clear	198			
2	101	50	53	50	Clear	220	4	2	
3	95	47	53	53	Clear	220	1		
4	97	45	53	53	Clear	220			
5	93	47	53	52	Clear	220			
6	100	46	53	52	Clear	220			
7	90	55	52	52	Cloudy	220			
8	97	51	52	52	Partly Cloudy	220	8	1	
9	95	53	52	51	Partly Cloudy	220			
10	98	50	51	51	Clear	220	11	8	
11	97	52	52	51	Clear	220	2	5	
12	97	50	52	51	Clear	220	1	3	
13	96	50	51	51	Clear	220			
14	86	45	51	51	Clear	223			
15	84	45	51	51	Clear	223	21	14	
16	83	48	50	49	Partly Cloudy	223			
17	80	45	50	49	Partly Cloudy	223			
18	76	54	50	49	Rain	223	12	16	
19	78	47	49	49	Clear	220			
20	70	48	49	49	Partly Cloudy	220			
21	81	41	49	49	Clear	220			
22	85	45	49	49	Clear	220	41	30	
23	78	43	49	49	Rain	220			
24	86	45	50	49	Clear	220	51	43	
25	92	46	49	49	Clear	220	20	22	
26	94	47	50	49	Clear	220	4	15	
27	86	50	50	49	Clear	223			
28	88	45	50	49	Clear	223			
29	87	48	50	49	Partly Cloudy	223	57	59	
30	82	46	50	49	Clear	223	18	17	
Totals							251	235	

*From U.S.G.S. Records

PART - A
Trinity River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
October 1969

Temperatures (degrees F)

Date	Air		Water		Weather	Flow of Trinity River at Lewiston (c.f.s.)*	Fish Trapped		Steelhead Trout	
	Maximum	Minimum	Maximum	Minimum			King Salmon Adults Grilse	Silver Salmon Adults Grilse	Steelhead Trout	
1	83	43	49	48	Cloudy	223	28	29		
2	71	43	49	48	Clear	223	27	25		
3	70	31	49	48	Clear	223				
4	74	29	49	48	Clear	220				
5	78	28	49	48	Clear	220				
6	80	30	49	49	Clear	220	121	76		
7	73	38	49	48	Overcast	217	16	23		
8	61	44	49	49	Cloudy	214				
9	65	38	48	48	Cloudy	217	69	61		
10	69	49	49	48	Clear	223	24	27		
11	71	32	49	48	Clear	220				
12	70	30	49	48	Clear	220				
13	59	29	49	48	Cloudy	252				
14	59	38	48	48	Cloudy	259	154	90		
15	48	45	48	47	Rain	259				
16	50	45	47	47	Rain	256	118	64		2
17	58	38	47	47	Clear	256	43	32		
18	62	37	47	47	Clear	252				
19	67	33	48	48	Clear	252				
20	76	37	49	48	Clear	252	101	90	1	5
21	82	39	49	48	Clear	252	44	52		4
22	80	40	50	48	Clear	252	53	38	1	5
23	67	44	50	49	Cloudy	252	34	39	5	11
24	63	45	50	49	Cloudy	248	23	15	1	13
25	72	37	50	49	Clear	248				
26	66	38	52	50	Cloudy	248				
27	62	42	50	50	Cloudy	248	98	73	1	27
28	68	35	51	50	Clear	248				
29	71	35	51	50	Clear	248				
30	71	40	51	50	Clear	248	57	67	7	76
31	76	41	51	50	Clear	248				
Totals							1,010	801	16	141

TABLE 4-7
Trinity River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
November 1969

Temperatures (degrees F.)

Date	Air		Water		Weather	Flow of Trinity River at Lewiston (c.f.s.)*	Fish Trapped			
	Maximum	Minimum	Maximum	Minimum			King Salmon Adults Grilse	Silver Salmon Adults Grilse	Steelhead Trout	
1	75	37	51	50	Clear	215				
2	75	40	52	51	Partly Cloudy	242				
3	72	41	52	51	Clear	245	53	38	23	177
4	59	41	52	51	Rain	252	17	14	3	51
5	56	41	51	50	Rain	248	16	13	4	24
6	50	41	50	50	Overcast	245	8	6	4	33
7	49	40	50	50	Rain	242	13	2	19	158
8	49	40	50	50	Partly Cloudy	245				
9	58	37	50	49	Clear	242				
10	59	37	50	49	Clear	242	29	14	45	248
11	66	40	50	49	Clear	245				
12	67	40	50	49	Clear	245	30	5	26	205
13	66	42	50	49	Clear	245	9		9	66
14	66	38	50	49	Clear	245			9	34
15	60	40	50	49	Cloudy	223				
16	52	33	49	48	Clear	211				
17	56	27	48	48	Clear	211	3	1	17	114
18	57	27	47	47	Partly Cloudy	211	1	1	3	28
19	57	31	47	47	Clear	211	2		2	34
20	57	29	47	46	Clear	211	3		4	23
21	60	29	46	46	Clear	211			2	10
22	58	35	46	45	Clear	211				
23	53	35	45	45	Clear	211				
24	56	32	45	45	Clear	211	1		12	48
25	52	34	45	45	Clear	209			5	54
26	55	32	45	45	Clear	206				
27	56	30	46	46	Clear	209				
28	53	32	46	45	Clear	206			5	66
29	62	30	46	45	Clear	203				
30	53	26	46	45	Clear	203				
Totals							195	94	191	1,383
										2

* From U.S.G.S. Records

TABLE A- 8
Trinity River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
December 1969

Temperatures (degrees F)						Flow of Trinity River at Lewiston (c.f.s.)*	Fish Trapped					
Date	Air		Water		Weather		King Salmon		Silver Salmon		Steelhead	Trout
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse		
1	54	25	45	45	Clear	174		12	36			
2	53	28	45	45	Clear	151						
3	56	28	45	44	Clear	155						
4	51	31	45	44	Clear	155		5	20			
5	48	26	44	44	Clear	151						
6	56	30	44	44	Clear	149						
7	52	32	44	44	Clear	149						
8	47	32	44	44	Rain	155		11	29			
9	45	32	44	44	Cloudy	158						
10	44	35	44	44	Cloudy	159						
11	50	40	44	44	Rain	160		10	35			
12	47	41	44	44	Rain	170						
13	51	41	44	44	Rain	160						
14	53	44	45	44	Rain	162						
15	49	37	45	45	Cloudy	160		26	53	1		
16	54	40	45	45	Rain	158						
17	50	43	45	45	Rain	155						
18	51	45	46	45	Rain	155						
19	50	40	46	46	Rain	155						
20	50	44	46	46	Rain	160						
21	52	48	46	46	Rain	164						
22	46	34	46	46	Cloudy	158						
23	34	32	45	45	Snow	162						
24	40	32	45	45	Rain	158		10	8	4		
25	47	38	45	45	Clear	158						
26	48	31	45	44	Rain	158		3	3	1		
27	44	26	45	44	Clear	158						
28	41	28	44	44	Clear	158		1	3	2		
29	39	29	44	44	Clear	158						
30	40	28	44	44	Clear	158						
31	42	28	43	43	Clear	158						
Totals								78	187	8		

* From U.S. G.S. Records

TABLE 4-9
Trinity River Salmon and Steelhead Hatchery
Seasonal Water and Flow Data Report
January 1970

Temperatures (degrees F.)									
Air		Water		Weather	Flow of Trinity River at Lewiston (c.f.s.)*	Fish Trapped			
Date	Maximum	Minimum	Maximum	Minimum		King Salmon Adults Grilse	Silver Salmon Adults Grilse	Steelhead Trout	
1	45	30	45	43	Clear	155			
2	44	21	43	43	Clear	155			
3	46	21	43	42	Clear	155			
4	44	22	42	42	Clear	155			
5	45	19	42	42	Clear	155			
6	37	16	42	41	Cloudy	155			
7	46	31	42	41	Rain	157			
8	44	36	42	41	Rain	160			
9	44	39	42	42	Rain	160			
10	42	40	42	42	Rain	160			
11	42	40	42	42	Rain	160			
12	47	40	42	42	Rain	160			
13	46	42	43	42	Rain	160			
14	52	44	44	43	Rain	160			
15	47	42	44	44	Rain	162			
16	51	40	45	44	Rain	167			
17	56	43	45	44	Rain	164			
18	54	44	45	44	Cloudy	162			
19	48	44	46	46	Cloudy	164			1
20	49	43	46	46	Rain	164			
21	52	47	46	46	Rain	170			
22	56	48	46	46	Rain	167			4
23	54	48	47	47	Rain	177			2
24	49	40	46	46	Showers	534			
25	46	37	46	46	Showers	3,590			
26	44	42	46	46	Rain	4,700			36
27	46	38	46	46	Cloudy	6,020			6
28	48	28	45	45	Clear	5,590			
29	50	25	45	45	Partly Cloudy	2,890			2
30	52	34	45	45	Partly Cloudy	2,960			6
31	52	34	45	45	Rain	3,080			
Totals									57

* From U.S.G.S. Records

TABLE A-10
Trinity River Salmon and Steelhead Hatchery
Weather Water and Fish Data Report
February 1970

Temperatures (degrees F)

Air

Water

Flow of Trinity River
at Lewiston (c.f.s.)*

Fish Trapped

King Salmon
Adults Grilse

Silver Salmon
Adults Grilse

Steelhead Trout

Date	Maximum	Minimum	Maximum	Minimum	Weather	Flow of Trinity River at Lewiston (c.f.s.)*	King Salmon Adults Grilse	Silver Salmon Adults Grilse	Steelhead Trout
1	54	32	46	45	Clear	2860			
2	58	32	46	45	Partly Cloudy	2610			3
3	52	36	46	45	Cloudy	2130			1
4	57	36	46	45	Cloudy	1780			4
5	59	38	46	46	Cloudy	1710			3
6	60	39	46	46	Partly Cloudy	1230			1
7	64	33	46	45	Clear	1030			
8	64	33	46	45	Clear	707			
9	57	35	46	46	Partly Cloudy	607			31
10	69	40	46	46	Cloudy	694			
11	55	40	46	46	Cloudy	574			5
12	54	46	45	45	Rain	306			
13	48	36	46	46	Rain	259			24
14	53	39	45	45	Cloudy	256			
15	52	38	45	45	Cloudy	256			
16	44	42	46	45	Rain	362			11
17	52	31	45	45	Clear	655			2
18	58	32	45	45	Clear	607			2
19	60	26	46	45	Clear	525			
20	67	23	46	45	Clear	465			
21	65	27	46	45	Clear	291			
22	65	28	46	45	Clear	245			
23	60	28	46	45	Partly Cloudy	203			
24	67	32	46	45	Clear	174			6
25	70	31	46	45	Clear	174			
26	72	31	46	45	Partly Cloudy	174			
27	68	34	46	45	Cloudy	162			1
28	56	42	46	45	Rain	148			
Totals									94

* From U.S.G.S. Records

TABLE A- 11
Trinity River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
March 1970

Temperatures (degrees F)									
Air		Water				Flow of Trinity River at Lewiston (c.f.s.)*	Fish Trapped		
Date	Maximum	Minimum	Maximum	Minimum	Weather		King Salmon Adults	Silver Salmon Grilse	Steelhead Trout
1	48	30	46	45	Clear	148			
2	53	27	45	45	Partly Cloudy	153			3
3	48	33	45	45	Clear	155			
4	40	37	45	45	Rain	155			
5	60	35	45	45	Partly Cloudy	153			2
6	54	37	46	45	Cloudy	153			
7	50	42	45	45	Rain	155			
8	60	34	45	45	Clear	153			
9	42	34	45	45	Rain	155			4
10	56	35	45	45	Partly Cloudy	153			
11	54	40	45	45	Rain	153			14
12	54	42	45	45	Cloudy	153			
13	64	41	46	45	Cloudy	153			
14	62	44	46	45	Partly Cloudy	155			
15	66	35	46	45	Clear	157			
16	65	41	47	46	Clear	160			2
17	60	28	47	46	Clear	157			
18	62	27	46	46	Clear	155			2
19	65	26	46	46	Clear	157			
20	74	28	46	46	Clear	157			
21	73	30	47	46	Clear	157			
22	78	33	47	46	Clear	157			
23	82	32	47	47	Clear	157			
24	79	36	48	47	Clear	157			7
25	80	32	49	48	Clear	155			3
26	68	32	49	48	Clear	155			
27	73	34	49	48	Clear	155			2
28	76	38	48	47	Clear	155			
29	72	30	48	47	Clear	155			
30	62	28	48	47	Clear	155			
31	64	26	48	47	Clear	155			4
Totals									43

Totals

*From U.S.O.S. Records

TABLE A- 12
Trinity River Salmon and Steelhead Hatchery
Weather, Water, and Fish Data Report
April 1970

Temperatures (degrees F)

Air

Water

Flow of Trinity River
at Lewiston (c.f.s.)*

King Salmon
Adults Grilse

Fish Trapped
Silver Salmon
Adults Grilse

Steelhead Trout

Date	Maximum	Minimum	Maximum	Minimum	Weather	Flow of Trinity River at Lewiston (c.f.s.)*	King Salmon Adults Grilse	Fish Trapped Silver Salmon Adults Grilse	Steelhead Trout
1	76	28	47	47	Clear	157			
2	70	31	47	47	Partly Cloudy	157			
3	78	29	47	46	Clear	155			4
4	78	29	47	46	Clear	157			
5	80	33	49	46	Clear	157			
6	68	31	47	47	Partly Cloudy	155			17
7	68	26	47	46	Clear	153			
8	74	38	47	46	Partly Cloudy	150			2
9	71	35	47	47	Partly Cloudy	157			
10	60	53	49	47	Partly Cloudy	157			4
11	64	28	48	47	Clear	155			
12	69	20	48	47	Partly Cloudy	155			
13	48	33	47	46	Snow	155			2
14	56	32	46	46	Partly Cloudy	155			
15	54	31	46	46	Partly Cloudy	155			
16	56	30	46	46	Partly Cloudy	155			
17	68	32	46	46	Cloudy	157			1
18	66	36	46	46	Clear	157			
19	72	38	46	46	Clear	157			
20	58	25	46	46	Clear	160			3
21	62	28	46	46	Partly Cloudy	157			
22	64	27	47	46	Partly Cloudy	157			
23	64	30	47	46	Partly Cloudy	157			
24	62	34	46	46	Partly Cloudy	157			
25	56	36	46	46	Clear	155			
26	50	35	46	46	Clear	155			
27	54	25	46	45	Cloudy	153			
28	59	24	47	45	Partly Cloudy	155			
29	70	27	47	45	Clear	157			
30	74	37	49	47	Clear	157			
Totals									33

* From U.S.G.S. Records

TABLE 13
Trinity River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
May 1970

Temperatures (degrees F)											
Air		Water					Flow of Trinity River at Lewiston (c.f.s.)*		Fish Trapped		
Date	Maximum	Minimum	Maximum	Minimum	Weather				King Salmon Adults Grilse	Silver Salmon Adults Grilse	Steelhead Trout
1	85	36	48	47	Clear		160				
2	86	40	49	48	Clear		160				
3	88	42	50	48	Clear		157				
4	83	45	50	48	Clear		157				
5	74	40	49	48	Partly Cloudy		157				
6	70	44	49	47	Partly Cloudy		157				
7	70	35	48	47	Partly Cloudy		160				
8	62	41	48	47	Rain		162				
9	62	42	47	47	Rain		162				
10	57	42	47	46	Clear		160				
11	54	42	48	47	Clear		160				
12	52	34	47	47	Rain		160				
13	71	42	48	47	Clear		157				
14	86	40	49	48	Clear		157				
15	92	42	51	50	Clear		157				
16	90	44	51	49	Clear		155				
17	88	48	52	50	Clear		157				
18	84	48	52	51	Clear		155				
19	78	41	51	51	Clear		155				
20	79	43	51	50	Clear		153				
21	87	41	52	51	Clear		153				
22	85	48	53	52	Clear		153				
23	89	42	54	52	Clear		153				
24	95	43	53	52	Clear		153				
25	98	47	52	52	Clear		153				
26	89	50	52	52	Clear		153				
27	82	51	52	52	Clear		153				
28	84	43	51	51	Clear		150				
29	82	43	52	52	Clear		150				
30	89	43	52	52	Clear		150				
31	94	46	55	53	Clear		150				

Totals

*From U.S.G.S. Records

TABLE 11
Trinity River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
June 1970

Temperatures (degrees F)							Fish Trapped			
Air		Water		Weather	Flow of Trinity River at Lewiston (c.f.s.)*		King Salmon	Silver Salmon	Steelhead Trout	
Date	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse
1	96	48	53	53	Clear	150				
2	102	52	53	52	Clear	148				
3	99	56	52	52	Clear	148				
4	101	49	52	52	Clear	148				
5	99	53	54	52	Clear	150				
6	92	56	55	54	Cloudy	150				
7	88	52	55	54	Cloudy	150				
8	60	52	52	51	Rain	153				
9	65	47	52	51	Rain	150				
10	74	42	51	50	Clear	150				
11	74	42	51	51	Partly Cloudy	150				
12	70	40	52	52	Cloudy	150				
13	77	50	52	51	Overcast	150				
14	75	52	52	51	Overcast	150				
15	82	44	51	50	Clear	153				
16	85	48	51	51	Clear	153				
17	86	49	53	52	Clear	153				
18	98	49	53	53	Clear	153				
19	104	49	53	53	Clear	153				
20	103	56	54	53	Clear	153				
21	106	59	53	53	Partly Cloudy	153				
22	105	59	54	53	Clear	153				
23	93	60	53	53	Clear	153				
24	96	59	53	53	Partly Cloudy	153				
25	101	54	53	53	Clear	153				
26	90	57	53	52	Clear	153				
27	70	57	53	53	Partly Cloudy	153				
28	68	53	53	53	Cloudy	155				
29	78	40	53	53	Clear	155				
30	84	45	52.5	52	Clear	155				
Totals										

*From U.S.G.S. Records

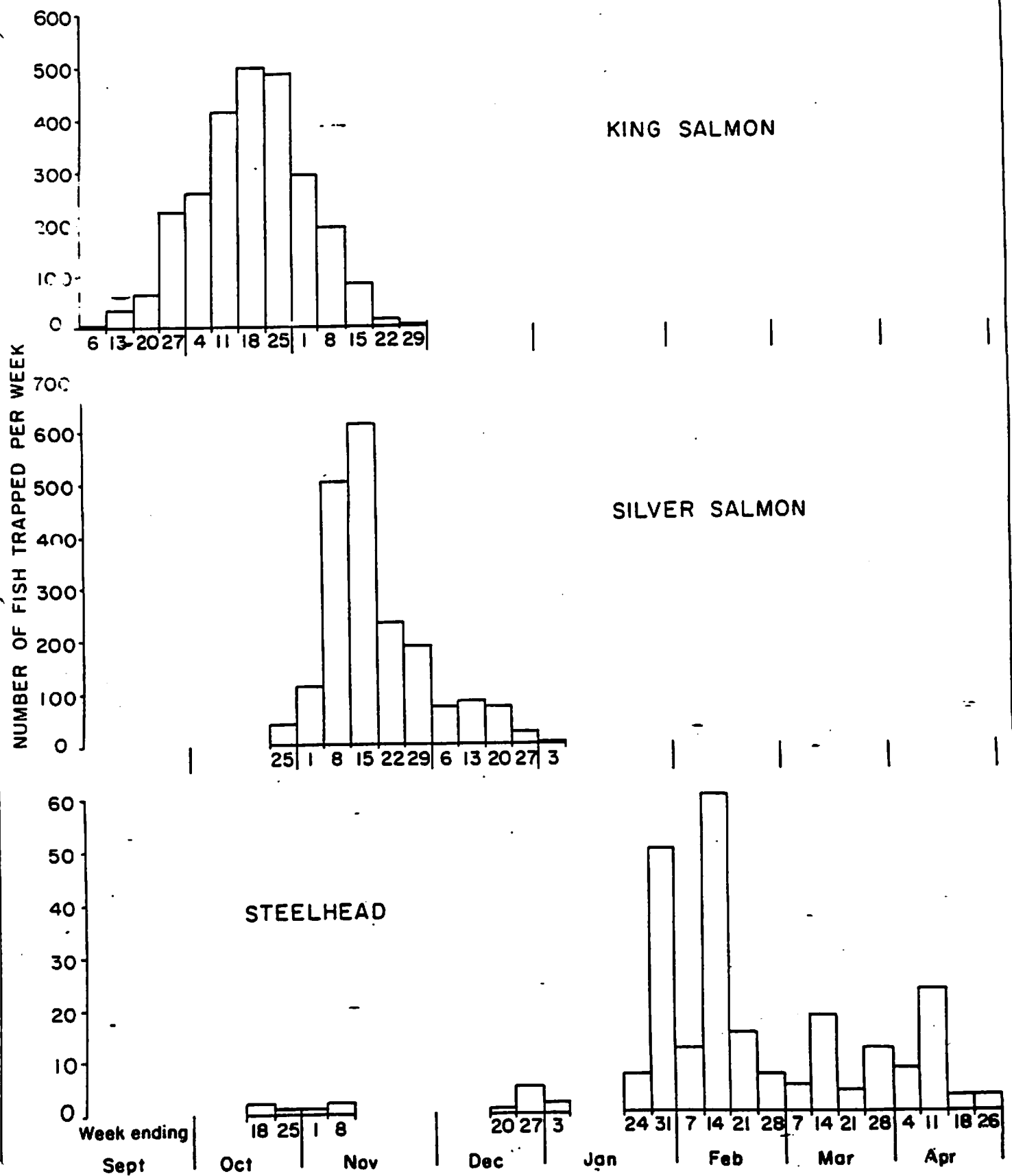


Figure 1. Salmon and steelhead trapped at Trinity River Fish Hatchery. Weekly counts during 1969-1970 season.