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State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

ANNUAL REPORT
TRINITY RIVER SALMON AND STEELHEAD HATCHERY 1990-91

by

Gerald W. Bedell
Region 1, Inland Fisheries

Inland Fisheries
Administrative Report No. 91-17

1991

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ABSTRACT

This report describes the operation of Trinity River Salmon and Steelhead Hatchery for the period July 1, 1990 through June 30, 1991. Chinook salmon, Oncorhynchus tshawytscha, coho salmon, O. kisutch, and steelhead, O. mykiss were reared.

Tables present the numbers of adults spawned and eggs and fish produced and planted. The appendix tables present the numbers of eggs and fish shipped and received and daily weather, water temperature, and fish trapping data for the fiscal year.

^{1/} Inland Fisheries Administrative Report No. 91-17
Submitted for publication September 1991. Edited by
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INTRODUCTION

This is the 33rd consecutive fiscal year report covering operation of the Trinity River Salmon and Steelhead Hatchery, located near Lewiston, Trinity County. 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. Operation and maintenance costs are paid by the Bureau.

This report describes operation of the Hatchery from July 1, 1990 through June 30, 1991. Copies of previous annual reports are available from the Inland Fisheries Division, Sacramento.

PRODUCTION SUMMARY

The ladder was opened on September 5, and spring-run chinook salmon began entering the Hatchery trap. The run continued through October 11, at which time the majority of the salmon arriving were fall run. The fall run continued until December 3, 1990 .

Coho salmon were trapped from October 15, 1989 through December 27, 1990. Steelhead entered the Hatchery from November 8, 1990 through March 21, 1991.

TABLE 1. Production Summary, 1990-91.

Species	Number trapped	Number females spawned	Eggs taken or received	Number fingerlings planted	Number yearlings planted	Total pounds planted	On hand June 30, 1986
Spring-run chinook salmon	2,676	1,207	3,438,625	1,839,541	348,914	52,185	600,000
Fall-run chinook salmon	1,580	663	1,886,300	0	1,099,574	76,766	650,000
Coho salmon	1,635	462	903,605	0	627,739	52,714	450,000
Steelhead	927	423	1,546,094	0	1,155,171	177,000	1,000,000
Totals	6,818	2,755	7,774,624	1,839,541	3,231,398	358,665	2,700,000

HATCHERY OPERATIONS

All production fish were reared on a Biodiet starter and Oregon Moist Pellet (OMP). A total of 450,650 lb of feed produced 358,665 lb of fish during fiscal year 1990-91. The feed conversion rate (pounds of feed required to raise 1 lb of fish) was 1.26.

The numbers of salmon and steelhead adults returning to the Hatchery were down significantly this past year. Fall-run chinook fared the worst; less than half the number of eggs required were taken. On top of this, the Hatchery experienced one of the most severe outbreaks of Infectious Hematopoietic Necrosis (IHN) in the history of the Hatchery. We lost nearly half the fall-run fingerlings on hand and therefore planted no fingerling smolts this year. There are approximately 650,000 fall-run chinook fingerlings on hand which will be planted as yearlings in October 1991.

By the end of June, Phase II of hatchery modernization was nearly complete. There were problems, however, in getting water to the incubation heater system and work to rectify this problem continues.

Visitors to the Hatchery this past year totaled 7,332. We provided several tours to schools and other organized groups.

CHINOOK SALMON MAINTENANCE PROGRAM

History of the 1990 Run

Chinook salmon arrived in the upper river about June 1. The ladder was opened on August 31 and the first salmon were spawned on September 13.

Spring Run

Between September 13 and October 11, a total of 2,676 chinook salmon, mostly spring run was trapped at the Hatchery. This number included 1,174 males, 1,397 females, and 105 grilse. Chinook males equal to or less than <u>56</u> cm (22 inches) fork length were considered grilse. The 1,207 females spawned during this period produced 3,438,625 eggs, an average of 2,849/female. Egg size averaged 87/oz.

Fall Run

There were 1,580 chinook salmon trapped from October 12 to December 3. Of this number 503 were males, 769 females, and 308 grilse. The 663 females spawned produced 1,886,300 eggs, an average of 2,845/female. Egg size averaged 89/oz.

*Example
Counts in dif
reports don't
match.
Hals rel. dif.*

Planting 1989 Brood Year Chinook Salmon

We planted a total of 1,448,488 chinook yearlings this fiscal year (Table 2).

TABLE 2. Yearling Chinook Salmon Planted in 1990-91

Date	Size/lb	Race	Release site	Number
10/01/90	12	Spring	Hatchery	233,304
10/01/90	11	Spring	Hatchery	115,610
10/15/90	18	Fall	Hatchery	140,094
10/15/90	19	Fall	Hatchery	293,284
10/15/90	17	Fall	Hatchery	141,508
10/15/90	14	Fall	Hatchery	292,796
10/15/90	12	Fall	Hatchery	82,500
10/16/90	10	Fall	Hatchery	49,600
10/16/90	8	Fall	Hatchery	51,080
10/16/90	8	Fall	Hatchery	23,632
10/16/90	8	Fall	Hatchery	25,080
Total				1,448,488

*AC
CWT
Same*

Planting 1990 Brood Year Chinook Salmon

A total of 1,839,541 chinook salmon fingerlings was planted in 1991 (Table 3).

TABLE 3. 1990 Brood Year Fingerling Chinook Salmon

Date	Size/lb	Race	Release site	Number
5/28/91	84	Spring	Hatchery	380,520
5/28/91	62	Spring	Hatchery	178,436
5/28/91	86	Spring	Hatchery	364,640
5/18/91	72	Spring	Hatchery	204,624
5/28/90/91	90	Spring	Hatchery	445,140
5/28/90/91	105	Spring	Hatchery	133,245
5/18/90/91	87	Spring	Hatchery	132,936
Total				1,839,541

Code #601040103

Marked Chinook Salmon Returns

*TRP # 1,642,633
CWT # 1,847,257*

There were 556 chinook salmon previously marked with an adipose fin-clip and tagged with coded wire tags, trapped at the Hatchery during the 1990-91 season (Appendix Table 1). All fish had been released from the Trinity River system (the Hatchery, Ambrose Ponds, and Sawmill Ponds).

COHO SALMON MAINTENANCE PROGRAM

History of the 1990 Run

Coho salmon entered the Hatchery from October 15, to December 27. We trapped 1,635 fish: 666 males, 706 females, and 263 grilse. We spawned 462 females from November 13 through December 27. They produced 903,605 eggs, an average of 1956/female. Egg size averaged 102/ounce.

Planting 1989 Brood Year Coho Salmon

A total of 627,739 yearling coho salmon was planted in 1991 (Table 4).

TABLE 4. Coho Salmon Yearlings Planted in 1991

Date	Size/lb	Race	Release site	Number
03/18/91	12.0	Trinity	Hatchery	115,139
03/18/91	9.6	Trinity	Hatchery	66,500
03/18/91	14.4	Trinity	Hatchery	148,500
03/18/91	9.7	Trinity	Hatchery	198,500
03/18/91	18.3	Trinity	Hatchery	99,100
Total				627,739

065660 {

CWT AC
> 628,290

Marked Coho Salmon Returns *Difference 551*

No coho salmon previously marked with an adipose fin-clip and tagged with a coded-wire tag were trapped at the Hatchery in 1990-91.

STEELHEAD MAINTENANCE PROGRAM

History of the 1990-91 Run

Steelhead entered the trap from November 8, 1990 through March 21, 1991. The run consisted of 927 fish: 482 males and 445 females. From December 27, 1990 through April 4, 1991, 423 of the females were spawned. They produced 1,546,094 eggs, an average of 3,655/female. Egg size averaged 234/ounce.

Steelhead Planted

We planted a total of 1,155,177 yearling and 2-year old steelhead in FY 1990-91 (Table 5).

Table 5. Steelhead Planted in 1990-91

Strain and brood year	Date released	Average size/lb	Mark	Release site	Number
TR 1990	3/18/91	7.5	AdLV	Hatchery	121,600
TR 1990	3/18/91	7.9	AdLV	Hatchery	135,500
TR 1990	3/18/91	8.0	AdLV	Hatchery	136,100
TR 1990	3/18/91	8.4	AdLV	Hatchery	146,100
TR 1990	3/18/91	7.8	AdLV	Hatchery	137,900
TR 1990	3/18/91	7.2	AdLV	Hatchery	61,100
TR 1990	3/18/91	5.6	AdLV	Hatchery	98,500
TR 1990	3/18/91	7.4	AdLV	Hatchery	132,800
132,800					98,600
TR 1989	3/18/91	4.5	AdRV	Sawmill Site	83,551
TR 1989	3/18/91	3.6	AdRV	Hatchery	63,820
TR 1989	3/18/91	3.4	AdRV	Hatchery	38,200
				Total	1,155,171

TRP Same

TRP

Marked Steelhead Returns

Of the 927 steelhead returning to Trinity River Hatchery, 22 were marked (Table 6).

TABLE 6. Marked Steelhead Returned at Trinity River Hatchery, 1990-91

Mark	Number trapped	Mean fork length in inches (range)	Brood Date year planted	Probable origin	
				Location	Number Strain
Ad	5	24.5 (15.0-25.5)	Unknown		
RV	15	19.0 (15.0-25.5)	1988 3/15/90	Hatchery	50,490 TR
LV	1	20.5	1985 9/22/86	Hatchery	29,140 TR
AdRV	1	24.0	Unknown		

BROWN TROUT MAINTENANCE PROGRAM

No brown trout were spawned or planted in 1990-91.

Marked Chinook Salmon Returns

PENDIX TABLE 1. Coded Wire Tag (CWT) Recoveries at Trinity River Hatchery (TRH), with Release Data, 1990-91. #

CWT	Race	EGG source	Brood year	Date	Number	Size /lb	Site	Recovery Data			Year	Actual CWT recoveries	Expanded CWT recoveries	Mean male FL (cm)	Mean female FL (cm)
								87-88	88-89	89-90					
6-61-42	Spring chinook	TRH	85	6/2/86	192,487	70.0	TRH	68	382	68	49 (67)♂	66	67	(1)	
								68	382	68	69 (177)	66	66	(205)	
								53	53	53	78 (25)	75	75	(28)	
								3	3	3	86 (1)	74	74	(2)	
6-61-44	Spring chinook	TRH	85	10/3/86	101,091	12.6	TRH	51	1,026	51	44 (51)	63	63	(0)	
								51	1,026	51	66 (650)	(376)	63	(376)	
								308	308	308	77 (170)	(138)	73	(138)	
								10	10	10	76 (4)	78	78	(4)	
6-61-45	Spring chinook		86	5/28/87	197,113	75.2	TRH	7	15	7	50 (7)	66	66	(0)	
								7	15	7	69 (10)	(5)	66	(5)	
								11	11	11	74 (4)	(7)	71	(7)	
6-61-46	Spring chinook	TRH	86	9/24/87	101,030	18.0	TRH	48	285	48	45 (47)	44	44	(1)	
								48	285	48	65 (210)	(158)	44	(158)	
								264	264	264	73 (106)	71	71	(158)	
								6	6	6	50 (6)	(0)	64	(0)	
								55	55	55	64 (23)	(32)	64	(32)	
6-61-47	Spring chinook	TRH	87	5/23/88	185,718	85.0	TRH	6	6	6	50 (6)	(0)	64	(0)	
								2	2	2	52 (2)	(0)	-	(0)	
								160	160	160	65 (100)	(60)	65	(60)	
								50	50	50	75 (24)	(26)	71	(26)	
								34	34	34	64 (15)	(19)	68	(19)	
100,000	Spring chinook	FL						160	160	160	65 (100)	(60)	65	(60)	

Marked Chinook Salmon Returns
 APPENDIX TABLE 1. Coded Wire Tag (CWT) Recoveries at Trinity River Hatchery (TRH), with Release Data, 1990-91. (Continued)

CWT	Race	EGG source	Brood year	Date	Number	Size /lb	Site	Recovery Data											
								Actual CWT recoveries	Expanded CWT recoveries	FL (cm) Mean	FL (cm) Mean								
6-56-25	Fall	TRH	85	10/24/86	97,368	13.5	TRH	87-88	88-89	89-90	90-91	93	46	(92)	46	(92)	66	(1)	
6-56-25	chinook							87-88	88-89	89-90	90-91	812	69	(563)	65	(249)	65	(249)	
6-56-26	Fall	TRH	86	6/11,17/87	202,486	89.0	TRH	88-89	89-90	90-91	20	19	20	49	(20)	65	(13)	68	(6)
6-56-26	chinook							88-89	89-90	90-91	20	19	20	49	(20)	65	(13)	68	(6)
6-56-29	Fall	TRH	86	6/11/87	99,118	83.0	Saw-mill	88-89	89-90	90-91	3	9	3	52	(3)	62	(2)	64	(0)
6-56-29	chinook							88-89	89-90	90-91	3	9	3	52	(3)	62	(2)	64	(0)
6-56-30	Fall	TRH	86	6/27/87	92,351	69.0	Amb-rose Pond	88-89	89-90	90-91	7	14	4	7	(7)	51	(9)	67	(5)
6-56-30	chinook							88-89	89-90	90-91	7	14	4	7	(7)	51	(9)	67	(5)
6-56-27	Fall	TRH	86	9/21/87	100,320	19.0	TRH	88-89	89-90	90-91	424	738	88	424	(415)	49	(22)	49	(9)
6-56-27	chinook							88-89	89-90	90-91	424	738	88	424	(415)	49	(22)	49	(9)
6-56-28	Fall	TRH	86	9/24/87	26,730	11.0	TRH	88-89	89-90	90-91	45	55	4	45	(40)	50	(26)	51	(3)
6-56-28	chinook							88-89	89-90	90-91	45	55	4	45	(40)	50	(26)	51	(3)
6-30-10	Fall	TRH	86	2/29/88	26,650	9.0	TRH	89-90	90-91	14	2	14	60	(7)	60	(0)	64	(2)	
6-30-10	chinook							89-90	90-91	14	2	14	60	(7)	60	(0)	64	(2)	
6-56-33	Fall	TRH	87	6/2/88	172,980	117.0	TRH	89-90	90-91	10	16	10	51	(10)	60	(12)	62	(4)	
6-56-33	chinook							89-90	90-91	10	16	10	51	(10)	60	(12)	62	(4)	
6-56-31	Fall	TRH	87	10/28/88	93,300	8.9	TRH	89-90	90-91	11	70	11	47	(11)	56	(56)	61	(0)	
6-56-31	chinook							89-90	90-91	11	70	11	47	(11)	56	(56)	61	(0)	

Marked Chinook Salmon Returns

APPENDIX TABLE 1. Coded Wire Tag (CWT) Recoveries at Trinity River Hatchery (TRH), with Release Data, 1990-91. (Continued)

Release Data								Recovery Data					
CWT Code	Race	EGG source	Brood year	Date	Number	Size /lb	Site	Year	Actual CWT recoveries	Expanded CWT recoveries	Mean male FL (cm)	Mean female FL (cm)	
6-56-35	Fall chinook	TRH	88	6/12/89	194,197	73.0	TRH	90-91	9	9	48 (9)	(0)	
6-56-32	Fall chinook	TRH	88	10/27/89	97,569	15.5	TRH	90-91	7	7	42 (7)		
100,000	Fall ^{e/} chinook							88-89	152	152	65 (85)	68 (67)	
								89-90	47	47	73 (22)	68 (25)	
								90-91	9	9	60 (4)	71 (5)	

TABLE - Coded-Wire Tag (CST) Recoveries at Trinity River Hatchery (TRH), with Release Data, 1990-91. (Continued)

Footnotes:

a/ Does not include two Ad-marked coho salmon that did not have a CWT.

b/ Sample size in parenthesis.

c/ 100,000 = No CWT in head of Ad-marked fish or tag unreadable.

d/ Assumed to be spring chinook by entry date into TRH.

e/ Assumed to be fall chinook by entry date into TRH.

APPENDIX TABLE 2. Eggs and Fish Shipped from and Received at
Trinity River Hatchery, July 1, 1990 -
June 30, 1991

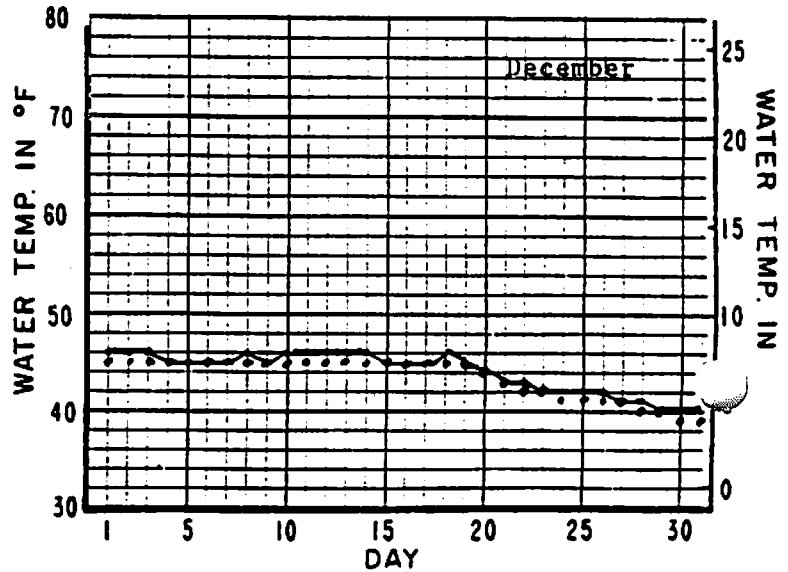
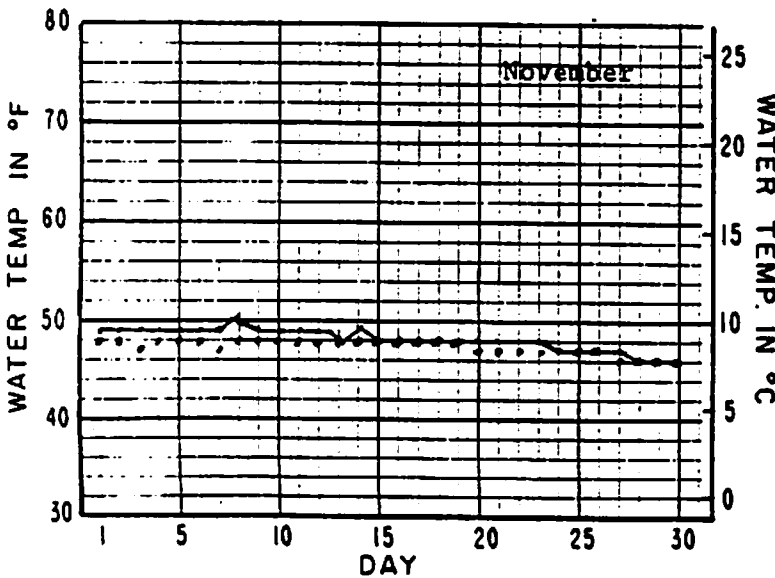
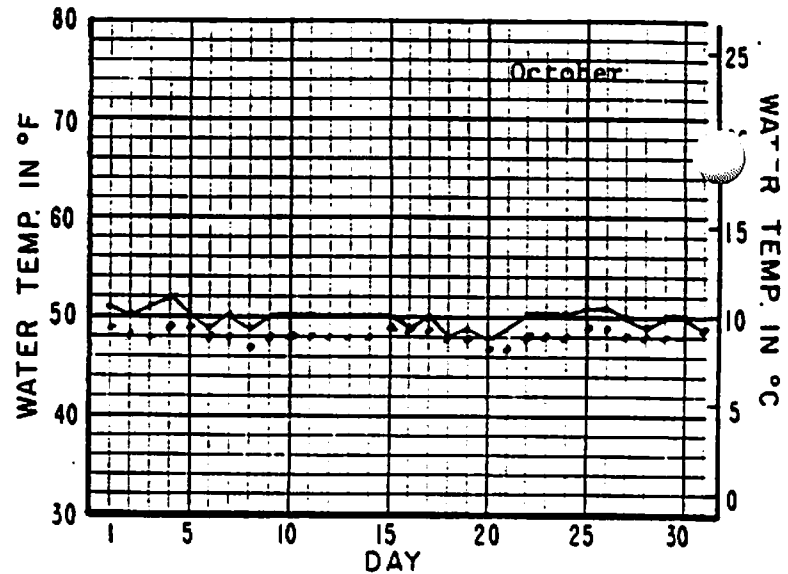
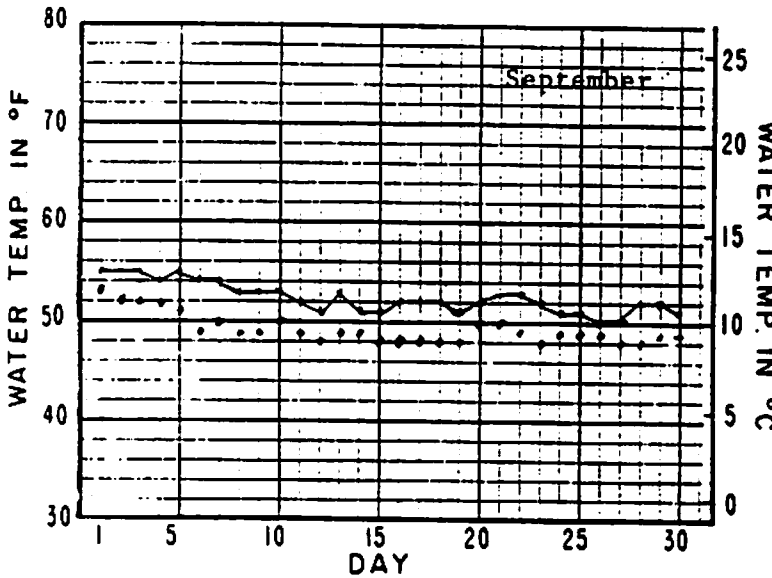
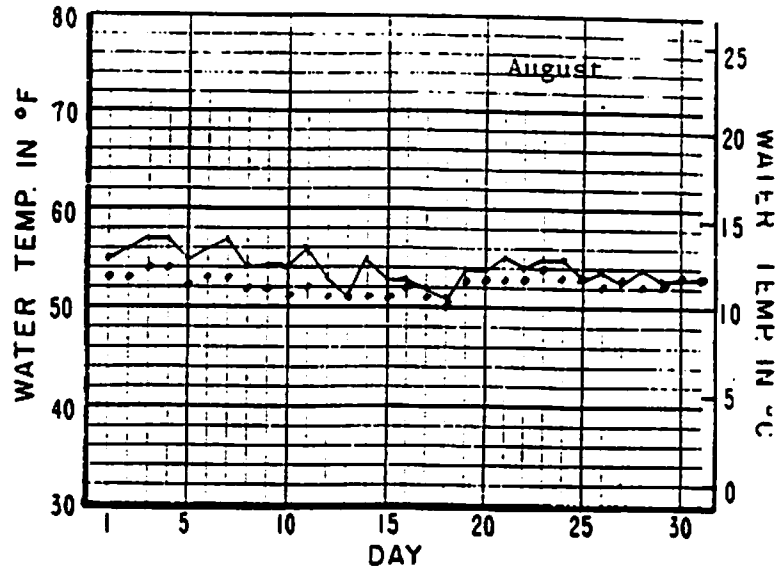
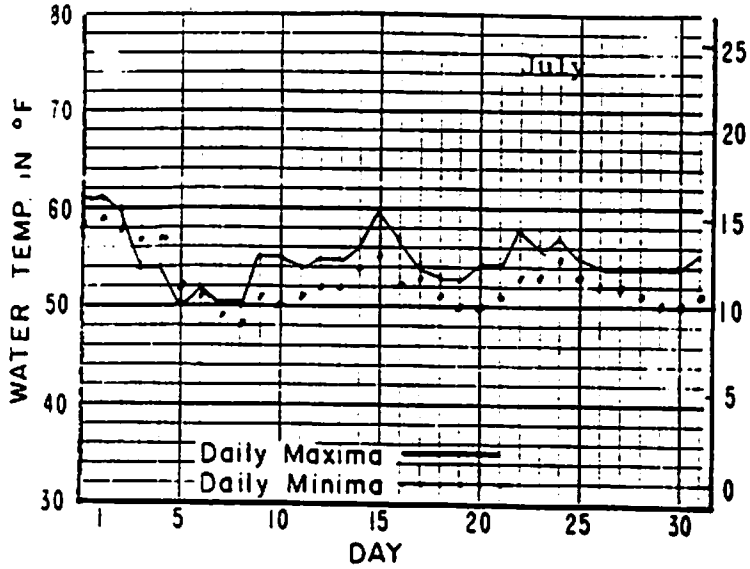
No eggs or fish were shipped or received during this report
period.

APPENDIX TABLE 3. Summary of Fish Runs to Trinity River Salmon and Steelhead Hatchery

	Chinook salmon			Coho salmon			Steelhead	Brown trout
	Males	Females	Grilse	Males	Females	Grilse		
1958-59	1,219	1,744	878	240	343	33	2,880	80
1959-60	1,716	2,833	2,701	49	44	26	2,071	52
1960-61	1,493	1,287	4,130	84	54	70	3,526	82
1961-62	885	1,613	2,899	158	160	37	3,243	35
1962-63	1,308	1,608	6,535	7	0	9	1,687	49
1963-64	1,569	2,627	2,539	32	40	11	894	34
1964-65	1,974	3,042	1,287	23	25	2	6,941	145
1965-66	477	1,077	1,521	2	1	9	992	100
1966-67	1,052	1,002	2,876	45	173	807	135	152
1967-68	1,620	1,250	1,746	287	519	59	232	231
1968-69	1,797	2,102	873	3	1	34	554	170
1969-70	624	832	1,130	153	132	1,711	241	70
1970-71	773	725	2,946	1,410	1,396	341	67	23
1971-72	3,648	4,645	928	28	11	8	242	7
1972-73	5,217	5,825	339	28	30	2,612	271	111
1973-74	2,483	1,152	1,577	3,808	3,787	486	162	39
1974-75	4,547	2,840	677	33	22	40	372	32
1975-76	2,958	3,405	860	68	109	2,060	175	24
1976-77	2,845	1,901	2,878	1,171	1,414	223	13	49
1977-78	1,841	1,318	2,562	381	317	1,230	285	0
1978-79	4,478	5,131	1,287	580	995	2,080	683	0
1979-80	1,138	1,480	1,452	1,241	1,547	1,253	382	0
1980-81	2,745	2,271	2,242	753	1,070	1,500	2,019	0
1981-82	2,214	2,514	1,146	830	1,164	2,529	1,007	0
1982-83	1,874	1,683	4,112	1,686	2,112	1,000	715	0
1983-84	2,764	3,256	903	223	256	227	603	0
1984-85	1,923	1,157	664	574	676	7,611	142	0
1985-86	6,548	2,821	14,533	3,729	3,919	4,138	461	0
1986-87	13,109	9,376	5,462	1,309	1,593	5,230	3,780	0
1987-88	12,374	8,593	5,273	9,165	11,243	2,930	3,007	0
1988-89	19,391	12,594	4,401	5,713	5,802	1,301	817	0
1989-90	8,218	7,728	426	2,509	2,324	136	4,765	0
1990-91	1,677	2,166	413	666	706	263	927	0

APPENDIX FIGURE 1. Daily Water Temperatures for Trinity River Salmon and Steelhead Hatchery from July 1, 1990 through June 30, 1991

DAILY WATER TEMPERATURES BY MONTH



APPENDIX FIGURE 1. (Continued)

DAILY WATER TEMPERATURES BY MONTH

