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ANNUAL REPORT
TRINITY RIVER SALMON AND STEELHEAD HATCHERY 1989-90

by

Gerald W. Bedell
Region 1, Inland Fisheries

Inland Fisheries
Administrative Report No. 91-8

1991

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ABSTRACT

This report describes the operation of Trinity River Salmon and Steelhead Hatchery for the period July 1, 1989 through June 30, 1989. 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.

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INTRODUCTION

This is the 32nd 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, 1989 through June 30, 1990. 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 (Table 1). The run continued through October 10, at which time the majority of the salmon arriving were fall run. The fall run continued until December 18.

Coho salmon were trapped from October 12, 1989 through January 8, 1990. Steelhead entered the Hatchery from October 12, 1989 through March 15, 1990.

TABLE 1. Production Summary, 1989-90.

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	6,663	953	2,961,645	1,725,237	608,580	67,864	350,000
Fall-run chinook salmon	9,709	1,604	4,381,430	2,749,774	1,112,412	97,683	1,000,000
Coho salmon	4,969	763	1,757,000	0	519,134	40,012	674,000
Steelhead	4,765	907	3,088,838	0	456,487	75,022	1,307,000
Totals	26,106	4,227	12,188,913	4,475,011	2,696,613	280,581	3,331,000

HATCHERY OPERATIONS

All production fish were reared on a Biodiet starter and Oregon Moist Pellet (OMP). A total of 410,684 lb of feed produced 280,581 lb of fish during fiscal year 1989-90. The feed conversion rate (pounds of feed required to raise 1 lb of fish) was 1.46.

Chinook and coho salmon number were down from previous years but still very abundant. The steelhead run was the second highest in the history of the Hatchery.

Phase II of Hatchery modernization began in May and was progressing on schedule by the end of the fiscal year.

Visitors to the Hatchery this past year totaled 11,508. We provided several tours to schools and other organized groups.

CHINOOK SALMON MAINTENANCE PROGRAM

History of the 1989 Run

Chinook salmon arrived in the upper river about May 22. The ladder was opened on September 5 and spawning operations began September 11.

Spring Run

Between September 11 and October 10, a total of 6,663 chinook salmon, mostly spring run was trapped at the Hatchery (Table 1). This number included 3,424 males; 3,098 females; and 141 grilse. Chinook males <56 cm (22 inches) FL are considered grilse. The 953 females spawned during this period produced 2,961,645 eggs, an average of 3,108/female. Egg size averaged 82/oz.

Fall Run

There were 9,709 chinook salmon trapped from October 11 to December 18. Of this number 4,794 were males; 4,630 females; and 285 grilse. The 1,604 females spawned produced 4,381,430 eggs, an average of 2,732/female. Egg size averaged 95/oz.

Planting 1988 Brood Year Chinook Salmon

We planted a total of 1,720,992 chinook yearlings this fiscal year (Table 2).

Table 2. Yearling Chinook Salmon Planted, 1989-90

Date	Size/lb	Race	Release site	Number
10/24/89	13.3	Spring	Hatchery	608,580
10/27/89	15.5	Fall	Hatchery	1,066,044
→ 11/01/89	8.0	Fall	Hatchery	46,368
<i>feed experiment</i>				
Total				1,720,992

AC Same
AC
AC

Planting 1989 Brood Year Chinook Salmon

A total of 4,475,011 chinook salmon fingerlings were planted in 1990 (Table 3).

Table 3. 1989 Brood Year Fingerling Chinook Salmon

Date	Size/lb	Race	Release site	Number
5/18/90	86	Spring	Hatchery	516,413
5/18/90	79	Spring	Hatchery	508,000
5/18/90	66	Spring	Hatchery	200,400
5/18/90	73	Spring	Hatchery	250,200
5/18/90	112	Fall	Hatchery	538,000
5/18/90	108	Fall	Hatchery	476,000
5/18/90	156	Fall	Hatchery	501,622
5/18/90	127	Fall	Hatchery	484,000
5/18/90	105	Fall	Hatchery	500,200
5/21/90	78	Spring	Hatchery	250,224
5/21/90	146	Fall	Hatchery	249,952
Total				4,475,011

AC Same a wt
AC
AC Same a wt

Marked Chinook Salmon Returns

There were 1,791 chinook salmon previously marked with an adipose fin-clip and tagged with coded-wire tags, trapped at the Hatchery during the 1989-90 season (Appendix Table 1). All had been released from the Trinity River system (the Hatchery, Ambrose Ponds, and Sawmill Ponds).

COHO SALMON MAINTENANCE PROGRAM

Histor of the 1989-90 Run

Coho salmon entered the Hatchery from October 12, 1989 to January 8, 1990. We trapped 4,969 fish; 2,509 males; 2,324 females; and 136 grilse. We spawned 763 females from November 6 through December 7. They produced 1,757,000 eggs, an average of 2,303/females. Egg size averaged 99/ounce.

Marked Coho Salmon Returns

A total of 421 coho salmon, previously marked with an adipose fin-clip and tagged with a coded-wire tag, was trapped at the Hatchery during the 1989-90 season (Appendix Table 1).

Planting 1988 Brood Year Coho Salmon

Table 4. Coho Salmon Yearlings Planted in 1990

Date	Size/lb	Race	Release site	Number
03/02/90	25	Trinity	Hatchery	236,995
03/02/90	13	Trinity	Hatchery	118,794
03/02/90	17	Trinity	Hatchery	148,495
03/02/90	25	Trinity	Hatchery	14,850
Total				519,134

STEELHEAD MAINTENANCE PROGRAM

History of the 1989-90 Run

Steelhead entered the trap from October 12, 1989 through March 15, 1990. The run consisted of 4,765 fish; 2,887 males; and 1,878 females. From December 11, 1989 through March 8, 1990, we spawned 907 of the females. They produced 3,088,838 eggs, an average of 3,406/female. Egg size averaged 225/ounce.

Steelhead Planted

We planted a total of 456,487 steelhead in FY 1989-90 (Table 6).

Table 6. Steelhead planted in 1989-90 FY

Strain and brood year	Date released	Average size/lb	Mark	Release site	Number
TR 1988	3/15/90	1.6	RV	Hatchery	50,490
TR 1989	4/06/90	9.0	LV	Hatchery	257,997
TR 1989	4/23/90	10.0	LV	Hatchery	148,000
Total					456,487

TRP sum
TRP sum
TRP sum

Marked Steelhead Returns

Of the 4,765 steelhead returning to Trinity River hatchery, 14 were marked.

Table 7. Marked Steelhead Returned at Trinity River Hatchery, 1989-90

Mark	Number trapped	Mean fork length in inches (range)	<u>Probable origin</u>			
			Brood Date year planted	Location	Number	Strain
Ad	8	24.6 (21.5-27.0)	Unknown			
RV	4	22.6 (21.5-24.0)	1985 3/20/87	Hatchery	28,000	Klamath R.
RP-Ad	1	27.0	Unknown			
RP	1	25.0	Unknown			

BROWN TROUT MAINTENANCE PROGRAM

No brown trout were spawned or planted in 1989-90.

BROWN TROUT MAINTENANCE PROGRAM

No brown trout were spawned or planted in 1989-90.

APPENDIX TABLE 1. Coded-Wire Tag (CWT) Recoveries at Trinity River Hatchery (TRH), with Release Data, 1989-90.

Release Data								Recovery Data				
CWT Code	Race	Egg source	Brood year	Date	Number	Size/ lb	Site	Actual CWT recoveries	Expanded CWT recoveries	Mean Male FL (cm)	Mean female FL (cm)	
6-61-43	Spring chinook	TRH	84	10/2/85	98,568	13.5	TRH	86-87	109	109	43(108) 9/	50 (1)
								87-88	769	769	62(532)	62(237)
								88-89	232	232	74 (98)	71(134)
								89-90	4	4	84 (1)	80 (3)
6-61-42	Spring chinook	TRH	85	6/2/86	192,487	70.0	TRH	87-88	68	68	49 (67)	67 (1)
								88-89	382	382	69(177)	66(205)
								89-90	53	53	78 (25)	75 (28)
6-61-44	Spring chinook	TRH	85	10/3/86	101,091	12.6	TRH	87-88	51	51	44 (51)	(0)
								88-89	1,026	1,026	66(650)	63(376)
								89-90	308	308	77(170)	73(138)
6-61-45	Spring chinook	TRH	86	5/28/87	197,113	75.2	TRH	88-89	7	7	50 (7)	(0)
								89-90	15	15	69 (10)	66 (5)
6-61-46	Spring chinook	TRH	86	9/24/87	101,030	18.0	TRH	88-89	48	48	45 (47)	44 (1)
								89-90	285	285	65(210)	64 (75)
6-61-47	Spring chinook	TRH	87	5/23/88	185,718	85.0	TRH	89-90	6	6	50 (6)	(0)
100000	Spring b/ c/ chinook							87-88	93	93	61 (54)	68 (39)
								88-89	160	160	65(100)	65 (60)
								89-90	50	50	75 (24)	71 (26)
200000	Spring b/ d/ chinook							87-88	4	4	62 (2)	64 (2)
								88-89	8	8	66 (5)	72 (3)
								89-90	2	2	93 (1)	72 (1)

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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)
6-61-27	Fall Chinook	TRH	84	6/10/85	189,708	53.0	TRH	86-87	178	178	50(175)	50 (3)
								87-88	226	226	66 (95)	67(131)
								88-89	28	28	72 (6)	74 (22)
								89-90	1	1	68 (1)	(0)
6-21-28	Fall Chinook	TRH	84	10/10/85	97,070	11.0	TRH	86-87	126	126	44(125)	49 (1)
								87-88	608	608	61(435)	62(173)
								88-89	173	173	72 (60)	73(113)
								89-90	1	1	80 (1)	(0)
6-56-24	Fall Chinook	TRH	84	2/27-28/86	102,512	5.6	TRH	86-87	161	161	38(159)	38 (2)
								87-88	1,359	1,359	59(1,048)	60(311)
								88-89	337	337	74(100)	72(237)
								89-90	6	6	(0)	76 (6)
6-56-23	Fall Chinook	TRH	85	6/19/86	196,249	71.0	TRH	87-88	272	272	51(271)	50 (1)
								88-89	492	492	68(232)	68(260)
								89-90	40	40	79 (14)	78 (26)
6-56-25	Fall Chinook	TRH	85	10/24/86	97,368	13.5	TRH	87-88	93	93	46 (92)	66
								88-89	812	812	65(563)	65(247)
								89-90	202	202	78 (79)	75(123)
6-56-26	Fall Chinook	TRH	86	6/11,17/87	202,486	89.0	TRH	88-89	20	20	49 (20)	(0)
								89-90	19	19	65 (13)	68 (6)
6-56-29	Fall Chinook	TRH	86	6/11/87	99,118	83.0	Sawmill Pond	88-89	3	3	52 (3)	(0)
								89-90	9	9	62 (2)	64 (7)
6-56-30	Fall Chinook	TRH	86	6/27/87	92,351	69.0	Ambrose Pond	88-89	7	7	51 (7)	(0)
								89-90	14	14	65 (9)	67 (5)
6-56-27	Fall Chinook	TRH	86	9/21/87	100,320	19.0	TRH	88-89	424	424	49(415)	49 (9)
								89-90	738	738	65(422)	65(316)

APPENDIX TABLE 1. Coded-Wire Tag (CWT) Recoveries at Trinity River Hatchery (TRH), with Release Data, 1989-90. (Cont.)

Release Data								Recovery Data				
CWT Code	Race	Egg source	Brood year	Date	Number	Size/ lb	Site	Actual CWT year recoveries	Expanded CWT recoveries	Mean Male FL (cm)	Mean female FL (cm)	
6-56-28	Fall Chinook	TRH	86	9/24/87	26,730	11.0	TRH	88-89	45	45	50 (40)	51 (5)
								89-90	55	55	64 (26)	64 (29)
6-63-10	Fall Chinook	TRH	86	2/29/88	26,650	9.0	TRH	89-90	14	14	60 (7)	60 (7)
6-56-33	Fall Chinook	TRH	87	6/2/88	172,980	117.0	TRH	89-90	10	10	51 (10)	(0)
6-56-31	Fall Chinook	TRH	87	10/28/88	93,300	8.9	TRH	89-90	11	11	47 (11)	(0)
100000	Fall e/ Chinook							87-88	197	197	60(129)	65 (68)
								88-89	152	152	65(85)	68 (67)
								89-90	47	47	73 (22)	68 (25)
200000	Fall e/ Chinook							87-88	10	10	62 (7)	71 (3)
								88-89	20	20	62 (11)	66 (9)
								89-90	3	3	64 (2)	67 (1)

APPENDIX TABLE 1. Coded-Wire Tag (CWT) Recoveries at Trinity River Hatchery (TRH), with Release Data, 1989-90. (Cont.)

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)
6-56-56	Coho	TRH	86	3/8/88	51,721	14.0 TRH	88-89	44	48	43 (44)	(0)
							89-90	421	421	67(210)	67(211)
100000	Coho						88-89	111	121	58 (69)	67 (42)
							89-90	68	68	67 (38)	66 (30)
200000	Coho						88-89	20	22	64 (12)	66 (8)
							89-90	3	3	70 (2)	66 (1)

Footnotes:

- a/ Sample size in parenthesis
- b/ 100000 = No CWT in head of Ad-marked fish.
- c/ Assumed to be spring chinook by entry date into TRH.
- d/ 200000 = CWT lost during dissection or CWT not decoded.
- 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, 1989 - June 30, 1990

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	1,269	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

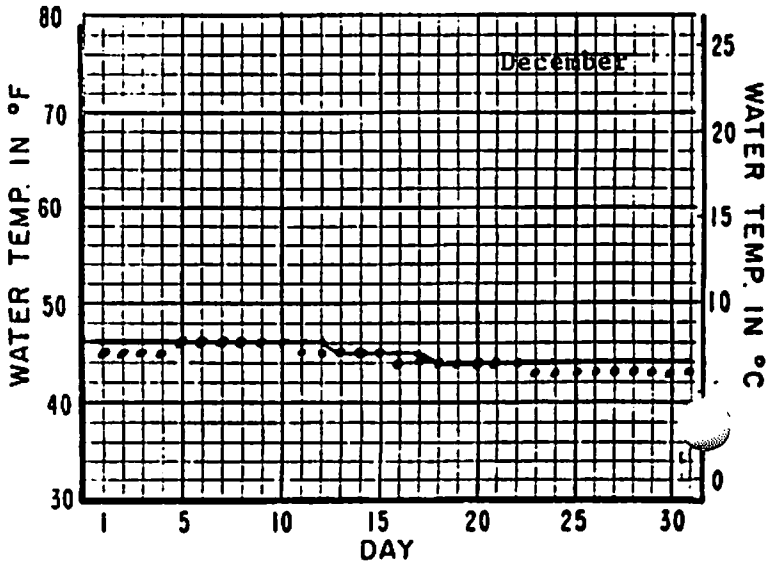
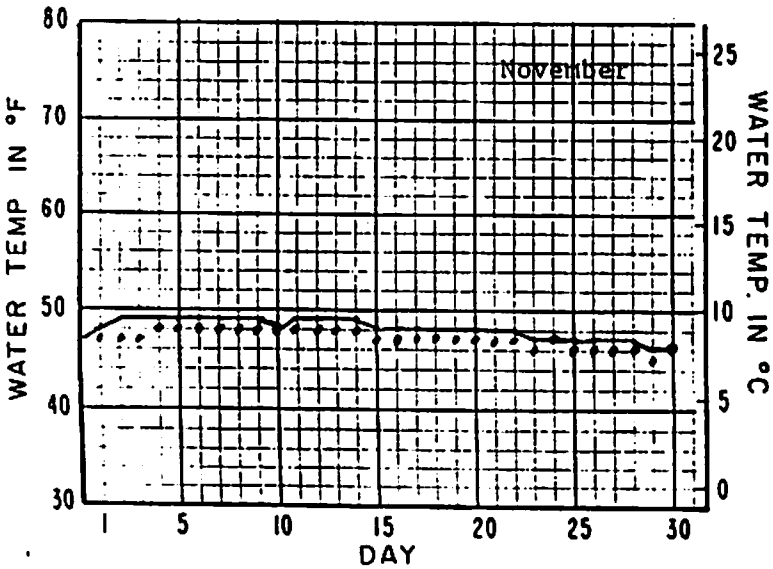
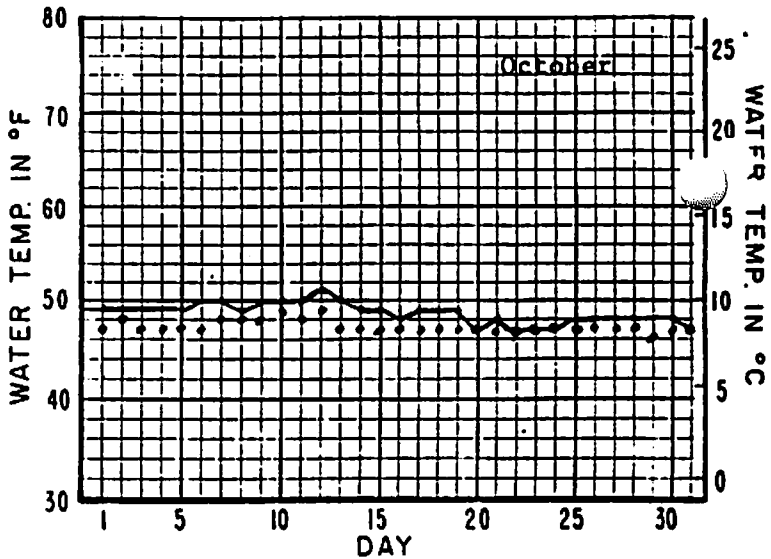
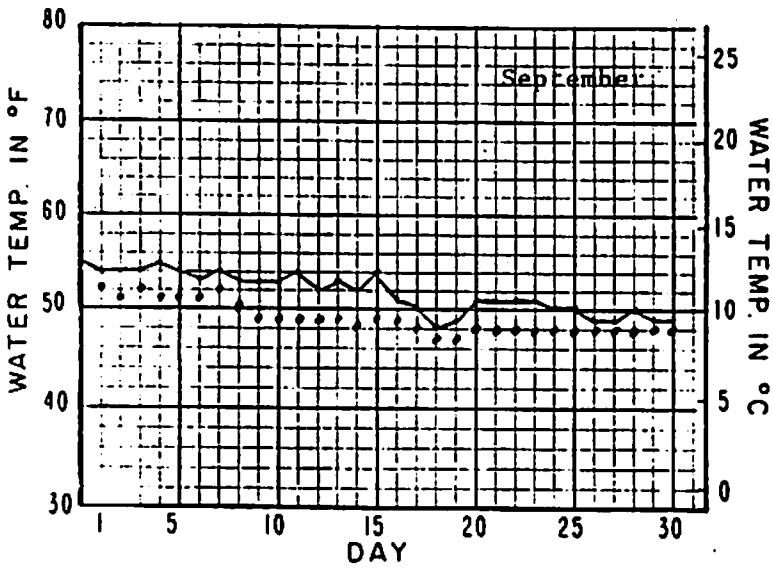
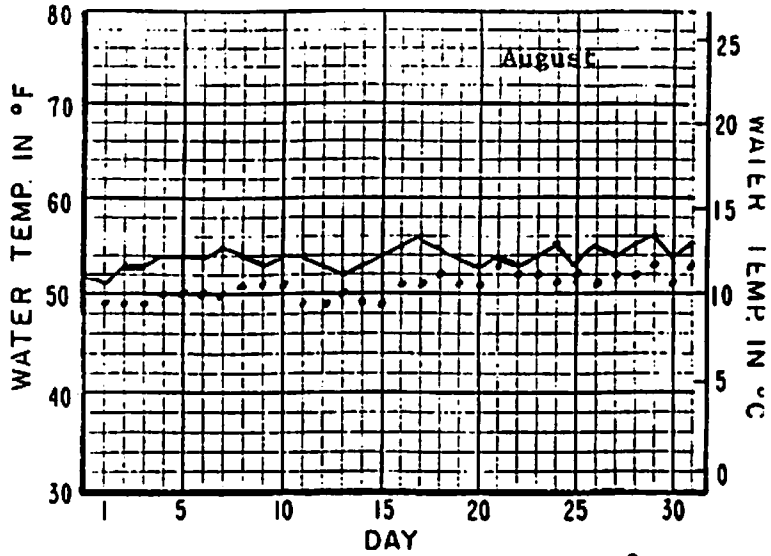
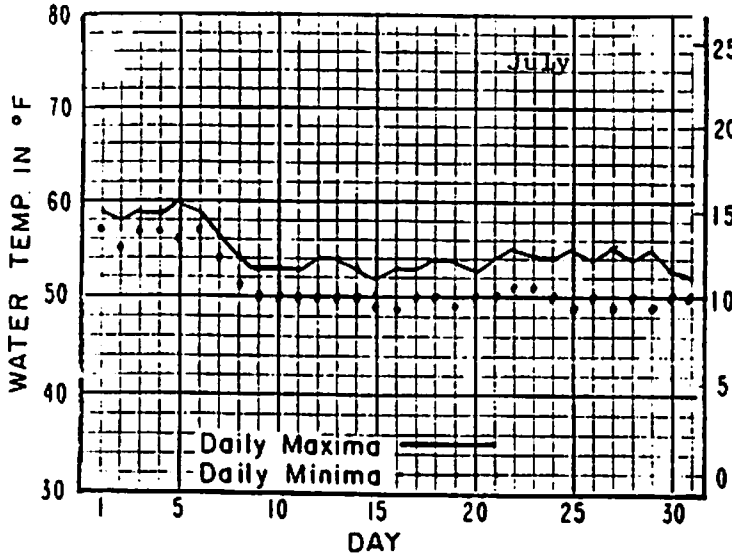
APPENDIX TABLE 4. Weekly Adult Salmon and Steelhead Trapping Data for 1989-90.

Week -----	Chinook Adults -----	salmon Grilse -----	Coho salmon Adults Grilse -----	Steelhead trout Males Females -----
9/10-9/16/89	1,063	8		
9/17-9/23/89	1,966	31		
9/24-9/30/89	1,496	36		
10/1-10/7/89	981	32		
10/8-10/14/89	1,740	59		1
10/15-10/21/89	2,620	70	6	1
10/22-10/28/89	1,823	37	42	2
10/29-11/4/89	2,336	74	200	5
11/5-11/11/89	1,465	53	459	34
11/12-11/18/89	395	22	805	48
11/19-11/25/89	43	4	1,054	9
11/26-12/2/89	13		817	13
12/3-12/9/89	4		563	7
12/10-12/16/89			477	9
12/17-12/23/89	1		279	7
12/24-12/30/89			83	
12/31/89-1/6/90			40	
1/7-1/13/90			8	
1/14-1/20/90				
1/21-1/27/90				
1/28-2/3/90				
2/4-2/10/90				
2/11-2/17/90				
2/18-2/24/90				
2/25-3/3/90				
3/4-3/10/90				
3/11-3/17/90				

Season Totals	15,946	426	4,833	136
				2,887
				1,878

Appendix Table 5. Daily Water Temperatures for Trinity River Salmon and Steelhead Hatchery from July 1, 1989 through June 30, 1990

DAILY WATER TEMPERATURES BY MONTH



DAILY WATER TEMPERATURES BY MONTH

