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ANNUAL REPORT
WARM SPRINGS SALMON AND STEELHEAD HATCHERY, 1990-91

by

Wilber F. Cartwright
Region 3, Inland Fisheries

Inland Fisheries
Administrative Report No. 92-5
1992

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ABSTRACT

This report describes the operation of Warm Springs Salmon and Steelhead Hatchery from July 1, 1990 through June 30, 1991. Tables and Appendices present daily records of water temperatures, daily numbers of salmon and steelhead entering the Hatchery, and total number of salmonids reared and released.

Ninety-nine chinook salmon, Oncorhynchus tshawytscha, 277 coho salmon, O. kisutch, and 423 steelhead trout, O. mykiss, were trapped at the Hatchery this season. There were 110,690 yearling coho salmon; 80,186 fingerling, 41,140 advanced fingerling and 243,881 yearling steelhead trout planted and transferred.

^{1/} Inland Fisheries Administrative Report No. 92-5.
Submitted February 1992. Edited by K. A. Hashagen,
California Department of Fish and Game, 1416 Ninth Street,
Sacramento, CA 95814.

INTRODUCTION

This is the 11th annual report for operation of the Warm Springs Salmon and Steelhead Hatchery. It describes operation of the Hatchery from July 1, 1990 through June 30, 1991. Copies of previous annual reports are available upon request from the Inland Fisheries Division, Rancho Cordova.

Warm Springs Hatchery is located on Dry Creek, 14 miles upstream from its confluence with the Russian River, 2 miles south of Healdsburg, Sonoma County. The Hatchery was constructed by the Department of the Army, Corps of Engineers, to compensate for spawning and nursery areas blocked by the Warm Springs Dam - Lake Sonoma Project. The Department of Fish and Game, under agreement with the Department of the Army, operates the fish hatchery and related facilities.

This report summarizes the number of fish trapped and spawned, production of eggs and fish, and water temperatures from July 1, 1990 through June 30, 1991.

PRODUCTION SUMMARY

The ladder was opened September 17, 1990. The flows in Dry Creek were maintained between 75 to 125 cfs through most of the year, except for April and May when flows were 25 to 40 cfs. Ninety-nine chinook, 277 coho salmon, and 423 steelhead were trapped; 354,571 yearlings and 121,326 fingerlings were planted during the 1990-91 season (Table 1 and Appendix Table 1).

All fish were started on Bio-Diet and then fed Oregon Moist Pellets. A total of 78,838 lb of fish was produced using 128,050 lb of feed, giving a conversion rate (pounds of feed to produce 1 lb of fish) of 1.62.

TABLE 1. Warm Springs Hatchery Production Summary

<u>Species trapped</u>	<u>Adults spawned</u>	<u>Females spawned</u>	<u>Dry Creek eggs taken</u>	<u>Other eggs rec'd</u>	<u>Eggs shipped</u>	<u>Fingerlings transferred and planted</u>	<u>Yearlings planted</u>	<u>Total pounds released</u>
Chinook salmon								
1989 BY								
1990 BY	67	0	0					
Coho salmon								
1989 BY							110,690	12,625
1990 BY	187	86	174,250	34,709				
Steelhead								
1990 BY						94,826	243,881	66,197
1991 BY	420	159	795,000		252,640	26,500		16
Totals	674	245	969,250	34,709	252,640	121,326	354,571	78,838

WATER QUALITY

This is the 6th season of propagation and rearing since Lake Sonoma has filled. The turbidity of the incoming water was consistently between 0.4 to 2.5 nephelometric turbidity units (N.T.U.s) most of the year. The only major variations occurred during April when 17 N.T.U.s, were recorded. The lowest turbidity recorded was 0.35 N.T.U.s, taken in January.

DISEASE

There were no major disease problems at the Hatchery. Formaldehyde treatments controlled fungal growth (Saprolegnia parasitica) on the eggs during incubation. Minor outbreaks of Columnaris were controlled by administering Terramycin feed and Hyamine flushes.

CHINOOK SALMON PROGRAM History of the 1990-91 Season

There were 99 chinook salmon trapped at the Hatchery this season: 67 adult male, 0 adult female, and 32 grilse. Because no females returned to the Hatchery, no eggs were taken.

COHO SALMON PROGRAM History of the 1990-91 Season

There were 277 coho salmon trapped at the Hatchery this season: 100 male, 87 female, and 90 grilse. The 86 females spawned produced 174,250 eggs, for an average of 2,026 eggs per female. These eggs produced approximately 141,000 fingerlings that are being retained for release as yearlings during the 1991-92 production year.

A total of 34,709 eggs was received from Noyo River. These eggs were shipped to Mad River Hatchery after being eyed.

A total of 110,690 yearling was planted from the Hatchery.

TABLE 2. Chinook Salmon Plants, 1990-91

Date	Strain	Release site	Average size/lb	Number
10-17-90	Noyo River	Dry Creek	7.6	28,120
10-17-90	Noyo River	Dry Creek	9.0	3,600
10-17-90	Noyo River and Dry Creek	Dry Creek	10.0	6,000
12-13-90	Noyo River	Dry Creek	8.0	8,400
12-13-90	Dry Creek, Noyo River, and Hollow Tree Creek	Dry Creek	7.9	8,295
03-11-91	Dry Creek	Dry Creek	9.8	30,625
03-11-91	Dry Creek and Noyo River	Dry Creek	9.5	25,650
Total				110,690
*Right Ventral Clip				

(Hollow Tree?)
*HTC-RV Clip
HTC

STEELHEAD TROUT PROGRAM
History of the 1990-91 Season

The first adult steelhead entered the trap on January 5, 1991, and the last on April 30, 1991. A total of 423 fish was trapped: 239 male, 181 female, and 3 half-pounders. The 159 females spawned produced 795,000 eggs, at an average of 5,000 eggs per female. All surplus adult fish were trucked to the Russian River.

Surplus eggs were taken to safeguard against the high fry mortality caused by high turbidity experienced in previous years and to spread the spawning period as long as possible. A total of 252,640 eggs was shipped to Mad River Hatchery for rearing and release as yearlings in the Russian River below Coyote Dam.

TABLE 3. Fingerling Steelhead Trout Plants and Transfers, 1990-91

Date	Strain	Release site	Average size/lb	Number
07-17-90	Dry Creek	Russian River	100	13,500
07-18-90	Dry Creek	Dry Creek	204	28,616
07-18-90	Dry Creek	Dry Creek	190	11,570
05-09-91	Dry Creek	Dry Creek	1,500	16,500
05-13-91	Dry Creek	Yountville Pollution Control Lab (Transfer)	2,000	10,000
Total				80,186

TABLE 4. Fingerling Steelhead Trout Plants, 1990-91

<u>Date</u>	<u>Strain</u>	<u>Release site</u>	<u>Average size/lb</u>	<u>Number</u>
09-27-90	Dry Creek	Russian River	22	12,100
09-27-90	Dry Creek	Russian River	21	5,040
09-28-90	Dry Creek	Russian River	32	24,000
Total				41,140

TABLE 5. Yearling Steelhead Trout Plants, 1990-91

<u>Date</u>	<u>Strain</u>	<u>Release site</u>	<u>Average size/lb</u>	<u>Number</u>
09-28-90	Dry Creek	Russian River	15.0	13,125
12-13-90	Dry Creek	Dry Creek	4.0	22,800
12-14-90	Dry Creek	Dry Creek	4.0	3,800
12-14-90	Dry Creek	Dry Creek	4.0	8,800
02-14-91	Dry Creek	Dry Creek	3.5	4,375
02-14-91	Dry Creek	Dry Creek	3.4	6,715
02-14-91	Dry Creek	Dry Creek	3.7	2,682
02-14-91	Dry Creek	Dry Creek	3.3	5,940
02-14-91	Dry Creek	Dry Creek	3.4	2,975
02-14-91	Dry Creek	Dry Creek	3.7	1,017
03-15-91	Dry Creek	Dry Creek	3.9	27,982
03-15-91	Dry Creek	Dry Creek	3.6	25,650
03-15-91	Dry Creek	Dry Creek	3.9	11,895
04-11-91	Dry Creek	Dry Creek	3.4	14,535
04-11-91	Dry Creek	Dry Creek	3.5	15,225
04-11-91	Dry Creek	Dry Creek	3.2	14,880
04-12-91	Dry Creek	Dry Creek	3.4	14,773
04-12-91	Dry Creek	Dry Creek	3.7	13,875
04-12-91	Dry Creek	Dry Creek	3.5	14,787
04-12-91	Dry Creek	Dry Creek	3.8	18,050
Total				243,881

PUBLIC RELATIONS

All visitors to the Hatchery must enter through the Visitor Center, where they are counted. During the 1990-91 season, 81,000 people visited the Hatchery (Table 6). This is a 15% decrease over the previous report period.

TABLE 6. Warm Springs Hatchery Monthly Visitation Data, 1990-91

<u>Month</u>	<u>Visitors</u>
July	12,610
August	11,003
September	4,616
October	2,580
November	5,018
December	2,073
January	4,720
February	5,360
March	6,199
April	6,277
May	7,315
June	13,229
<hr/> Total	<hr/> 81,000

APPENDIX TABLE 1. Weekly Adult Salmon and Steelhead Trapping Data for Warm Springs Salmon and Steelhead Hatchery, 1990-91

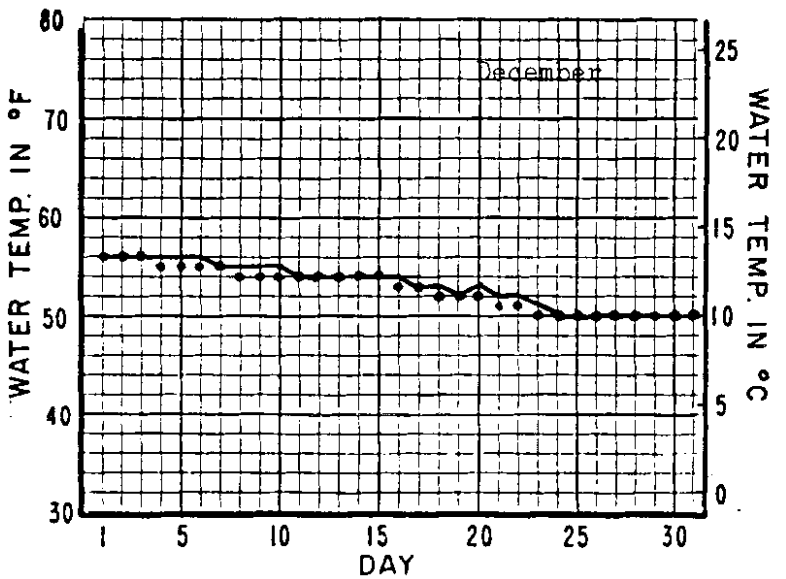
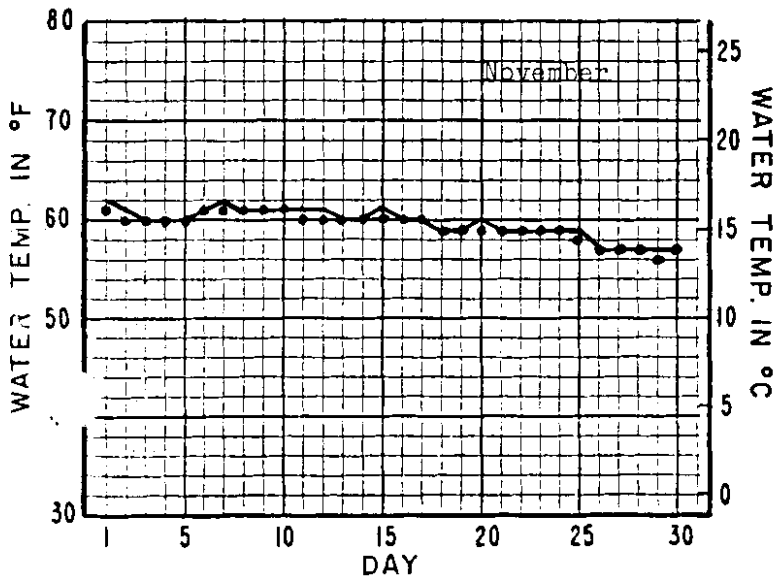
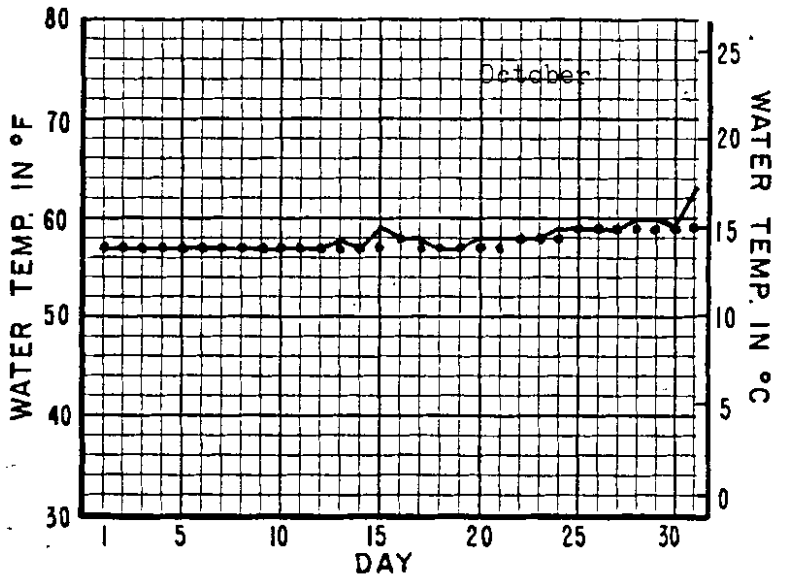
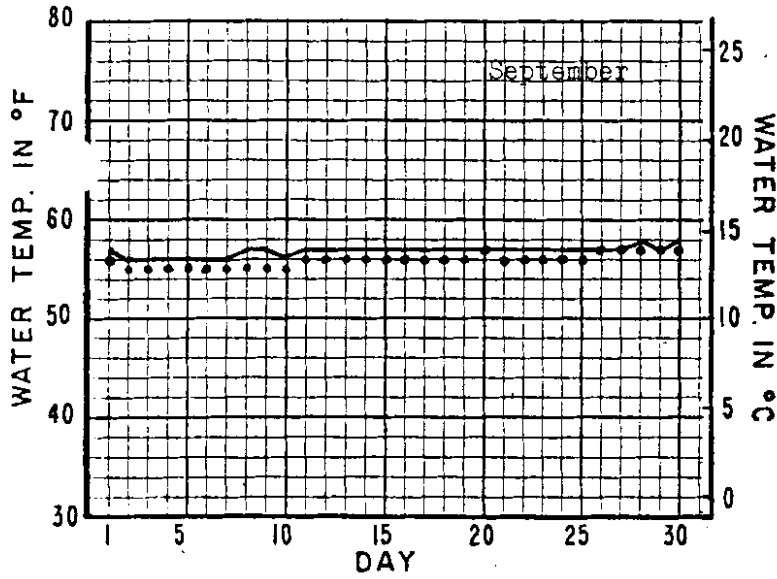
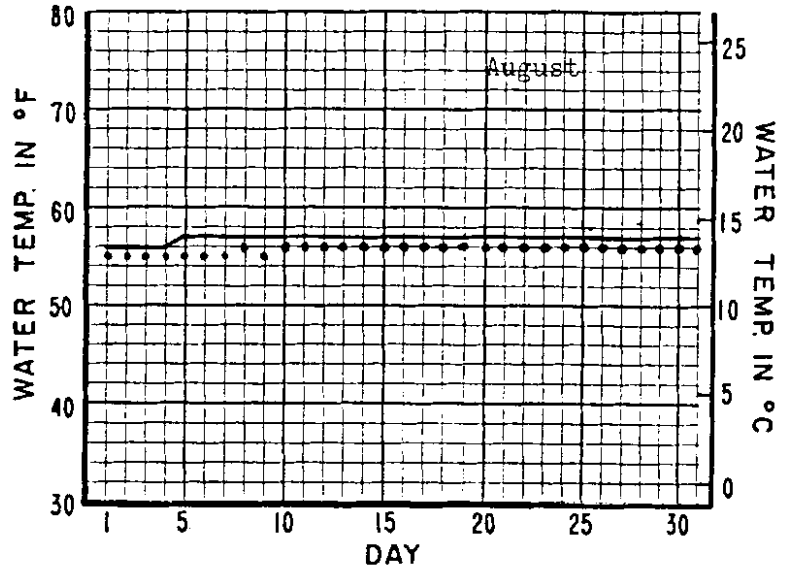
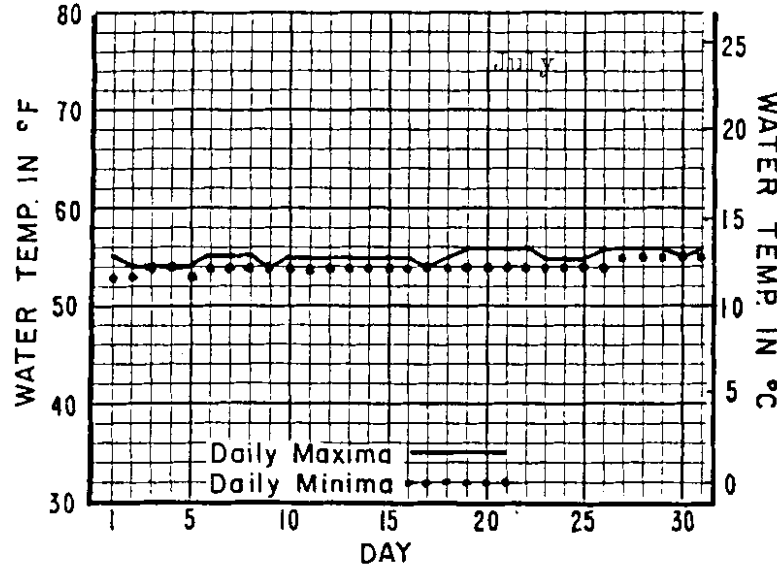
<u>Week</u>	<u>Chinook salmon</u>		<u>Coho salmon</u>		<u>Steelhead trout</u>	
	<u>Adults</u>	<u>Grilse</u>	<u>Adults</u>	<u>Grilse</u>	<u>Males</u>	<u>Females</u>
09/30/90 - 10/06/90	2					
10/07/90 - 10/13/90	3	4				
10/14/90 - 10/20/90	16	5				
10/21/90 - 10/27/90	27	14				
10/28/90 - 11/03/90	19	7				
11/04/90 - 11/10/90		1				
11/11/90 - 11/17/90						
11/18/90 - 11/24/90						
11/25/90 - 12/01/90				1		
12/02/90 - 12/08/90			1			
12/09/90 - 12/15/90		1	21	7		
12/16/90 - 12/22/90			30	11		
12/23/90 - 12/29/90			1			
12/30/90 - 01/05/90			1			1
01/06/91 - 01/12/91			50	37		
01/13/91 - 01/19/91			30	14	4	1
01/20/91 - 01/26/91			2	2	3	
01/27/91 - 02/02/91			4	1	5	1
02/03/91 - 02/09/91			45	16	34	32
02/10/91 - 02/16/91					24	29
2/17/91 - 02/23/91			1	1	17	10
2/24/91 - 03/02/91					23	15
03/03/91 - 03/09/91			1		34	50
03/10/91 - 03/16/91					26	17
03/17/91 - 03/23/91					25	16
03/24/91 - 03/30/91					13	3
03/31/91 - 04/06/91					13	3
04/07/91 - 04/13/91					9	3
04/14/91 - 04/20/91					5	
04/21/91 - 04/27/91						
04/28/91 - 05/04/91					4	
Season Total	67	32	187	90	239	181

APPENDIX TABLE 2. Summary of Fish Runs to Warm Springs Salmon and Steelhead Hatchery.

<u>Year</u>	<u>Chinook salmon</u>			<u>Coho salmon</u>			<u>Steelhead trout</u>		
	<u>Males</u>	<u>Females</u>	<u>Grilse</u>	<u>Males</u>	<u>Females</u>	<u>Grilse</u>	<u>Males</u>	<u>Females</u>	<u>Half-pounders</u>
1980-81							148	185	
1981-82				2	2		124	235	
1982-83	1		1	515	277	194	322	242	
1983-84	2	1	1		1	8	1,039	923	
1984-85	7	1		32	44		369	468	
1985-86	65						812	484	4
1986-87	50	25	36	139	5	328	519	696	36
1987-88	176	4	124	164	155	257	660	375	10
1988-89	151	61	21	219	139	176	453	421	17
1989-90	8	6	3	35	35	100	428	260	15
1990-91	67		32	100	87	90	239	181	3

APPENDIX FIGURE 1. Daily Water Temperatures for Warm springs Salmon and Steelhead Hatchery from July 1, 1990, Through June 30, 1991.

DAILY WATER TEMPERATURES BY MONTH



DAILY WATER TEMPERATURES BY MONTH

