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ANNUAL REPORT
WARM SPRINGS SALMON AND STEELHEAD HATCHERY, 1989-90

by

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Region 3, Inland Fisheries

Inland Fisheries
Administrative Report No.91-14

1991

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ABSTRACT

This report describes the operation of the Warm Springs Salmon and Steelhead Hatchery from July 1, 1989 through June 30, 1990. 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.

Seventeen chinook salmon, Oncorhynchus tshawytscha, 170 coho salmon, O. kisutch, and 703 steelhead trout, O. mykiss, were trapped at the Hatchery this season. There were 13,770 advanced fingerling and 36,037 yearling chinook salmon, 135,710 yearling coho salmon, and 347,447 fingerling and 212,769 yearling steelhead trout planted and transferred.

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California Department of Fish and Game, 1416 Ninth Street,
Sacramento, CA 95814.

INTRODUCTION

This is the 10th annual report for operation of the Warm Springs Salmon and Steelhead Hatchery. It describes operation of the Hatchery from July 1, 1989 through June 30, 1990. 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, 1989 through June 30, 1990.

PRODUCTION SUMMARY

The ladder was opened September 18, 1989. The flows in Dry Creek were maintained between 75 to 125 cfs through most of the year, except for May, when flows were 25 to 40 cfs. Seventeen chinook, 170 coho salmon, and 703 steelhead were trapped; and 384,516 yearlings and 361,217 fingerlings were planted during the 1989-90 season (Table 1 and Appendix Table 1).

All fish were started on Bio-Diet and then fed Oregon Moist Pellets. A total of 75,846 lb of fish was produced using 136,182 lb of feed, giving a conversion rate (pounds of feed to produce 1 lb of fish) of 1.8.

WATER QUALITY

This is the 5th season of propagation and rearing since Lake Sonoma has filled. The turbidity of the incoming water was consistently between 0.5 to 2.5 nephelometric turbidity units (N.T.U.s) most of the year. The only two major variations occurred during November and January when they were 11.0 and 14.0 N.T.U.s, respectively. The lowest turbidity recorded was 0.48 N.T.U.s, in December.

DISEASE

There were no major disease problems at the Hatchery. Salt and 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.

TABLE 1. Warm Springs Hatchery Production Summary, 1989-90

Species	Adults trapped	Females spawned	Dry Creek eggs taken	Other eggs taken	Eggs shipped	Fingerlings planted	Yearlings transferred and planted	Total pounds released
Chinook salmon								
1988 BY							36,037	3,875
1989 BY	14	4	17,600			13,770		270
Coho salmon								
1988 BY								
1989 BY	70	26	53,200	113,429			135,710	14,975
Steelhead								
1989 BY						93,407	212,769	56,520
1990 BY	688	227	1,134,000		425,566	254,040		206
Totals	772	257	1,204,800	113,429	425,566	361,217	384,516	75,846

CHINOOK SALMON PROGRAM
History of the 1989-90 Season

There were 17 chinook salmon trapped at the Hatchery this season: 8 adult male, 6 adult female, and 3 grilse. The four females spawned produced 17,600 eggs, at an average of 4,400 eggs per female. These eggs produced 13,770 fish, which were released in Dry Creek. A total of 36,037 yearlings was carried over from the 1988-89 season and were released in Dry Creek. The origin of these fish was Hollow Tree and Outlet creeks; they were fin clipped left and right ventral, respectively (Table 2).

TABLE 2. Chinook Salmon Plants, 1989-90

Date	Strain	Release site	Size/lb	Number	Mark
10-25-89	Hollow Tree Ck. Outlet Creek	Dry Creek	9.3	36,037	Left Ventral
04-19-90	Dry Creek	Dry Creek	51.0	13,770	
Total				49,807	

COHO SALMON PROGRAM
History of the 1989-90 Season

There were 170 coho salmon trapped at the Hatchery this season: 35 male, 35 female, and 100 grilse. The 26 females spawned produced 53,200 eggs, for an average of 2,046 eggs per female. These eggs produced approximately 20,000 fingerlings that are being retained for release as yearlings during the 1990-91 production year.

A total of 113,429 eggs was received from Noyo River. These eggs produced approximately 93,000 fingerlings that are also being retained for release as yearlings during the 1990-91 production year.

A total of 135,710 yearling was planted and transferred from the Hatchery; 7,998 Hollow Tree Creek strain were right ventral clipped (Table 3).

TABLE 3. Coho Salmon Plants and Transfers, 1989-90

Date	Strain	Release site	Size/lb	Number
10-20-89	Noyo River	Silverado Fisheries Base	9.0	6,955
10-24-89	Dry Creek	Dry Creek	5.0	6,250
10-24-89	Dry Creek	Dry Creek	9.0	4,950
11-28-89	Dry Creek	Dry Creek	9.8	8,085
11-29-89	Dry Creek	Dry Creek	9.8	5,390
11-29-89	Dry Creek	Dry Creek	9.7	12,610
01-24-90	Dry Creek	Dry Creek	8.7	41,108
01-25-90	Dry Creek	Dry Creek	9.6	39,600
01-26-90	Hollow Tree Creek	Dry Creek	12.3	7,998 ^{a/}
01-26-90	Dry Creek	Dry Creek	12.3	2,764
Total				135,710

a/ Right ventral clip

STEELHEAD TROUT PROGRAM
History of the 1989-90 Season

The first adult steelhead entered the trap on October 30, 1989 and the last on April 26, 1990. A total of 703 fish was trapped: 428 male, 260 female, and 15 half-pounders. The 227 females spawned produced 1,134,000 eggs, an average of 4,996 eggs per female. All surplus adult fish were trucked to the Russian River and some of its tributaries.

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 over as long a period as

possible. A total of 113,160 eyed eggs was shipped to Mad River Hatchery for the Talmage Rearing Ponds, and a total of 312,406 eyed eggs was shipped to Nimbus Hatchery for the American River program. The surplus fingerlings were planted in Dry Creek and the Russian River (Table 4).

TABLE 4. Fingerling Steelhead Trout Plants, 1989-90

<u>Date</u>	<u>Strain</u>	<u>Release site</u>	<u>Average size/lb</u>	<u>Number</u>
07-06-89	Dry Creek	Dry Creek	460	15,180
07-06-89	Dry Creek	Dry Creek	432	12,096
07-06-89	Dry Creek	Dry Creek	372	5,952
07-19-89	Dry Creek	Dry Creek	320	16,960
07-19-89	Dry Creek	Dry Creek	352	9,856
07-19-89	Dry Creek	Dry Creek	504	11,088
08-04-89	Dry Creek	Dry Creek	135	22,275
03-19-90	Dry Creek	Dry Creek	1,500	51,000
03-21-90	Dry Creek	Dry Creek	1,500	55,000
04-03-90	Dry Creek	Dry Creek	1,150	62,100
05-08-90	Dry Creek	Dry Creek	1,500	19,500
05-23-90	Dry Creek	Dry Creek	1,500	15,000
05-29-90	Dry Creek	Dry Creek	2,500	45,000
06-20-90	Dry Creek	Russian River	161	6,440
<hr/>				
Total				347,447

A total of 212,769 steelhead yearlings was released into Dry Creek and the Russian River (Table 5).

TABLE 5. Yearling Steelhead Trout Plants, 1989-90

<u>Date</u>	<u>Strain</u>	<u>Release site</u>	<u>Average size/lb</u>	<u>Number</u>
12-26-89	Dry Creek	Russian River	3.6	20,430
12-27-89	Dry Creek	Russian River	3.8	3,895
12-28-89	Dry Creek	Russian River	3.8	3,800
12-28-89	Dry Creek	Dry Creek	3.8	2,090
12-28-89	Dry Creek	Dry Creek	4.0	2,200
12-28-89	Dry Creek	Russian River	4.0	4,000
02-21-90	Dry Creek	Dry Creek	4.0	8,300
02-21-90	Dry Creek	Dry Creek	4.0	8,000
02-21-90	Dry Creek	Dry Creek	4.0	8,000
02-22-90	Dry Creek	Dry Creek	4.0	3,600
02-22-90	Dry Creek	Dry Creek	3.8	9,690
02-23-90	Dry Creek	Dry Creek	4.0	6,100
03-26-90	Dry Creek	Dry Creek	4.0	20,200
04-11-90	Dry Creek	Dry Creek	3.4	14,705
04-11-90	Dry Creek	Dry Creek	4.1	18,245
04-12-90	Dry Creek	Dry Creek	4.6	20,355
04-23-90	Dry Creek	Dry Creek	3.8	21,375
04-23-90	Dry Creek	Dry Creek	3.3	18,067
04-24-90	Dry Creek	Dry Creek	3.3	19,717
Total				212,769

PUBLIC RELATIONS

All visitors to the Hatchery must enter through the Visitor Center, where they are counted. During the 1989-90 season, 94,425 people visited the Hatchery (Table 6). This is a 9% decrease over the previous report period.

TABLE 6. Warm Springs Hatchery Monthly Visitation Data, 1989-90

<u>Month</u>	<u>Visitors</u>
July	13,406
August	12,101
September	6,128
October	5,627
November	5,582
December	3,620
January	6,136
February	8,418
March	9,226
April	7,957
May	7,417
June	8,807
Total	94,425

APPENDIX TABLE 1. Weekly Adult Salmon and Steelhead Trapping Data for Warm Springs Salmon and Steelhead Hatchery, 1989-90

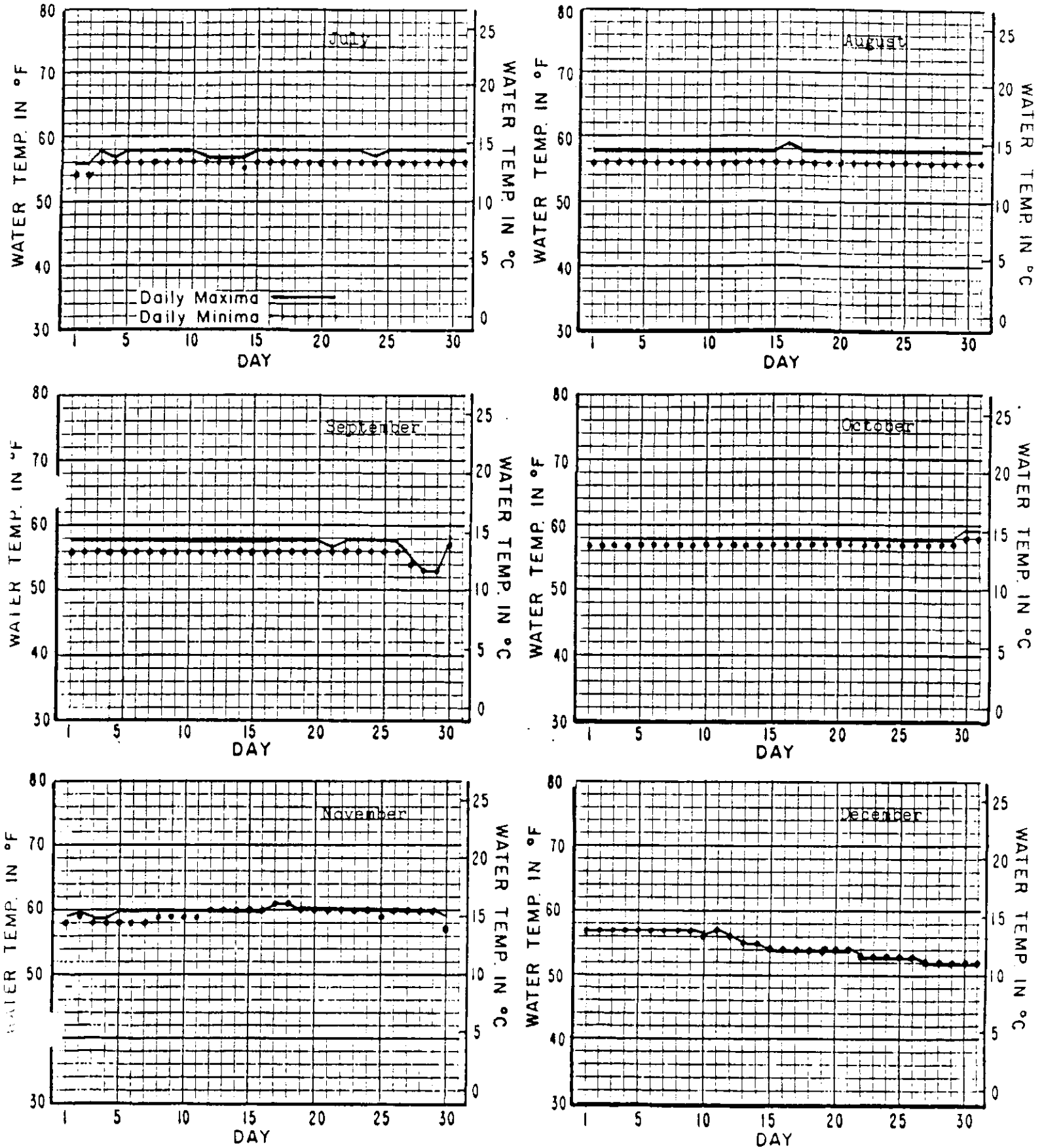
Week	<u>Chinook salmon</u>		<u>Coho salmon</u>		<u>Steelhead trout</u>	
	<u>Adults</u>	<u>Grilse</u>	<u>Adults</u>	<u>Grilse</u>	<u>Males</u>	<u>Females</u>
09/17/89 - 09/23/89	1					
09/24/89 - 09/30/89						
10/01/89 - 10/07/89	1					
10/08/89 - 10/14/89	6					
10/15/89 - 10/21/89						
10/22/89 - 10/28/89	2				3	
10/29/89 - 11/04/89	1				1	
11/05/89 - 11/11/89	1		1	1		
11/12/89 - 11/18/89				1		
11/19/89 - 11/25/89	1			4		
11/26/89 - 12/02/89		1	14	41	7	2
12/03/89 - 12/09/89		1	4	5	2	
12/10/89 - 12/16/89			2	1	4	
12/17/89 - 12/23/89			9	13	6	3
12/24/89 - 12/30/89			9	10	7	
12/31/89 - 01/06/90			5	1	6	
01/07/90 - 01/13/90	1		26	23	44	23
01/14/90 - 01/20/90					28	29
01/21/90 - 01/27/90					28	13
01/28/90 - 02/03/90					31	23
02/04/90 - 02/10/90					69	45
02/11/90 - 02/17/90					35	28
02/18/90 - 02/24/90					48	31
02/25/90 - 03/03/90		1			8	7
03/04/90 - 03/10/90					38	10
03/11/90 - 03/17/90					28	14
03/18/90 - 03/24/90					14	8
03/25/90 - 03/31/90					25	18
04/01/90 - 04/07/90					4	2
04/08/90 - 04/14/90					1	1
04/15/90 - 04/21/90					2	1
04/22/90 - 04/28/90					4	2
Season Totals	14	3	70	100	443	260

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

APPENDIX FIGURE 1. Daily Water Temperatures for Warm Springs Salmon and Steelhead Hatchery from July 1, 1989, Through June 30, 1990.

DAILY WATER TEMPERATURES BY MONTH



DAILY WATER TEMPERATURES BY MONTH

