

State of California  
The Resources Agency  
DEPARTMENT OF FISH AND GAME

ANNUAL REPORT  
MOKELUMNE RIVER HATCHERY, 1990-91

by

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Region 2, Inland Fisheries

Inland Fisheries  
Administrative Report No. 92-7

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ABSTRACT

This report describes the operation of the Mokelumne River Hatchery from July 1, 1990 through June 30, 1991. The installation consists of a hatchery building, concrete raceways, and rearing ponds for chinook salmon, Oncorhynchus tshawytscha, and steelhead trout, O. mykiss.

The Hatchery received 2,529,160 chinook salmon fingerlings of Feather River origin, to be reared and released when they reach 60/lb or larger. There were 2,665,800 chinook salmon fingerlings released during the 1990-91 season. Also, there were 792,900 chinook salmon yearlings released during the 1990-91 season.

There were 506,395 yearling steelhead released during the 1990-91 season. A total of 100,000 91-BY steelhead fingerlings were received from Feather River Hatchery.

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

### INTRODUCTION

This is the 28th annual report for operation of the Mokelumne River Hatchery. It describes operations of the Hatchery from July 1, 1990 through June 30, 1991. Copies of previous annual reports are available upon request from Inland Fisheries Division, Rancho Cordova.

The Mokelumne River Hatchery is located on the south bank of the Mokelumne River at the base of Camanche Dam in San Joaquin County. Camanche Dam is presently the upper limit of anadromous fish migration in the Mokelumne River. The Mokelumne River enters the San Joaquin River about 61 miles downstream from Camanche Dam.

Mokelumne River Hatchery was constructed to compensate for the loss of fall-run chinook salmon and steelhead trout spawning and rearing areas inundated by Camanche Dam. The Hatchery is operated by the California Department of Fish and Game. The East Bay Municipal Utility District paid original construction costs of the Hatchery and also pays the annual operation and maintenance costs for all mitigation fish. Production costs for enhancement fish are funded by the Commercial Salmon Trollers Stamp Fund (Salmon Stamp).

This report summarizes the number of fish trapped, eggs and fish received, and the production of fish. Appendix tables detail trapping data and water conditions from July 1, 1990 to June 30, 1991.

### PRODUCTION SUMMARY

There were 100,000 steelhead fingerlings received from Feather River Hatchery for rearing yearling size. A total of 2,529,160 chinook salmon fingerlings of Feather River Hatchery origin was received for rearing to advanced fingerling size (Table 1).

TABLE 1. Mokelumne River Hatchery Production Summary, 1990-91

<u>Species</u>	<u>Adults trapped</u>	<u>Eggs taken or received</u>	<u>Fingerlings received</u>	<u>Advanced fingerlings planted</u>	<u>Yearlings planted</u>	<u>Total pounds planted</u>	<u>Fish on hand 6/30/91</u>
<b>Chinook salmon</b>							
1989-BY	80	1,898,900	1,895,900	2,633,225	488,900	117,343	
1990-BY	68	25,600	2,529,160	1,555,600	304,000	67,110	445,400
<b>Steelhead</b>							
1990-BY	11	684,631	0	0	489,765	134,145	24,025
1991-BY	20		100,000	0	0	0	99,000

Disease

There were no significant mortalities from diseases at the Hatchery this season. East Bay Municipal Utility District (EBMUD) began releasing 230 cfs from Pardee Reservoir on April 26 and this prevented any major problems this year. Dissolved oxygen and minor hydrogen sulfide problems occurred in the incoming water by late summer. Fish losses remained normal and problems were short lived. The hydrogen sulfide odors that occurred the last few years did not occur in 1990-91. EBMUD did inject potassium permanganate into the incoming water during late summer.

CHINOOK SALMON PROGRAM  
History of the 1990-91 Season

There were 68 chinook salmon trapped at the Hatchery this season; 16 adult males, 9 adult females, and 43 grilse ( $\leq$  24 inches FL).

All fish entered the Hatchery between October 22, 1990 and February 12, 1991. Water releases from Camanche Reservoir into the Mokelumne River varied from 400 to 102 cfs during the salmon migration period. The flows were 400 cfs for 3 days starting October 15, when they were reduced to 250 cfs until November 15. On November 16, flows were reduced to 102 cfs and held for the remainder of the season.

Production

A total of 3,458,700 chinook salmon was released during the season (Table 2). There were 2,529,160 (1990 BY) fingerlings received from Feather River Hatchery. On June 30, 1990, there were 445,400 (1990 BY) yearlings on hand.

TABLE 2. Chinook Salmon Plants

<u>Date</u>	<u>Release site</u>	<u>Weight (lb)</u>	<u>Number</u>
July 1990	Bennett's Marina (Rodeo)	28,100	650,500
	Benecia WCB Ramp	18,700	459,700
August 1990	Bennett's Marina (Rodeo)	31,300	488,900
April 1990	Mokelumne River (Hatchery)	400	20,800
April 1991	Mokelumne River (New Hope Landing)	2,310	103,950
May 1991	Mokelumne River (New Hope Landing)	3,100	103,850
	Lake Lodi	800	25,200
	Bennett's Marina (Rodeo)	25,100	821,400
		500	13,000
June 1991	Lake Lodi		
	Bennett's Marina (Rodeo)	<u>34,900</u>	<u>771,400</u>
<b>Total</b>		<b>145,210</b>	<b>3,458,700</b>

### Chinook Salmon Tagging and Marking Programs

There were two groups of chinook salmon (1990 BY) marked and tagged at the Hatchery this year. The two groups were marked by removing the adipose fin and then tagged with a coded-wire injected in the nose of the fish. These fish were released in the lower Mokelumne River at New Hope Landing. The first group, which averaged 45 fish per pound, was released on April 23 and the second group, which averaged 33 fish per pound was released on May 6. There were three groups of 12,000 spray dyed fish released above Lake Lodi for the Lake Lodi survival study being conducted by Bio-Systems for EBMUD. They were released 2 weeks apart starting the first week in May.

### STEELHEAD TROUT PROGRAM

There were 20 adult steelhead trapped at the Hatchery this season, 11 males and 9 females.

All fish entered the Hatchery between January 3, 1991 and March 29, 1991. River flows were at 102 cfs during most of the steelhead migration period, with only moderate rainfall to assist them in finding their way back to the Hatchery.

The arrival of males and females to the Hatchery were poorly timed and no eggs were taken. At one time we had five ripe females and no males.

### Production

This was a good steelhead production year. A total of 506,180 fish weighing 147,045 pounds was planted in the Sacramento and Mokelumne rivers (Table 3). There were 24,025 (BY 1990) and 99,000 (BY 1991) steelhead on hand June 30, 1991.

TABLE 3. Steelhead Trout Plants

<u>Date</u>	<u>Release site</u>	<u>Weight (lb)</u>	<u>Number</u>
July 1990	Mokelumne River	8,800	10,070
August 1990	Mokelumne River	4,400	4,220
September 1990	Mokelumne River	2,600	2,340
December 1990	Rancho Seco Lake	800	2,600
January 1991	Sacramento River (Rio Vista)	3,000	9,600
	Lower Mokelumne River	35,200	125,680
	Sacramento River (Balls Ferry)	13,100	52,340
January 1991	Sacramento River (Miller Park)	14,800	60,680

TABLE 3. Steelhead Trout Plants (Continued)

<u>Date</u>	<u>Release site</u>	<u>Weight (lb)</u>	<u>Number</u>
	Rancho Seco Lake	1,800	4,910
	Oak Grove Park Lake	1,800	4,910
February 1991	Sacramento River (Miller Park)	41,750	166,415
	Sacramento River (Rio Vista)	3,500	10,850
	Mokelumne River	4,865	16,575
	Rancho Seco Lake	1,000	2,700
	Oak Grove Park Lake	1,780	4,680
March 1991	Mokelumne River	2,200	11,000
April 1991	Mokelumne River	1,150	4,810
May 1991	Mokelumne River	2,350	6,990
June 1991	Mokelumne River	<u>2,150</u>	<u>4,810</u>
	<b>Total</b>	<b>147,045</b>	<b>506,180</b>

PUBLIC RELATIONS

During the 1990-91 season, 10,626 persons visited the Mokelumne River Hatchery. Tours were conducted for special interest groups and talks given to sports and civic organizations upon request. Many more persons use the day use area below the Hatchery for picnics, bird watching, relaxing and, of course, fishing; these numbers are not recorded as visitors.

This year, we set up a booth at the San Joaquin County Conservation Faire, held at Mickey Grove Park.

APPENDIX TABLE 1. Weekly Adult Salmon and Steelhead Trapping Data for Mokelumne River Hatchery, 1987-88

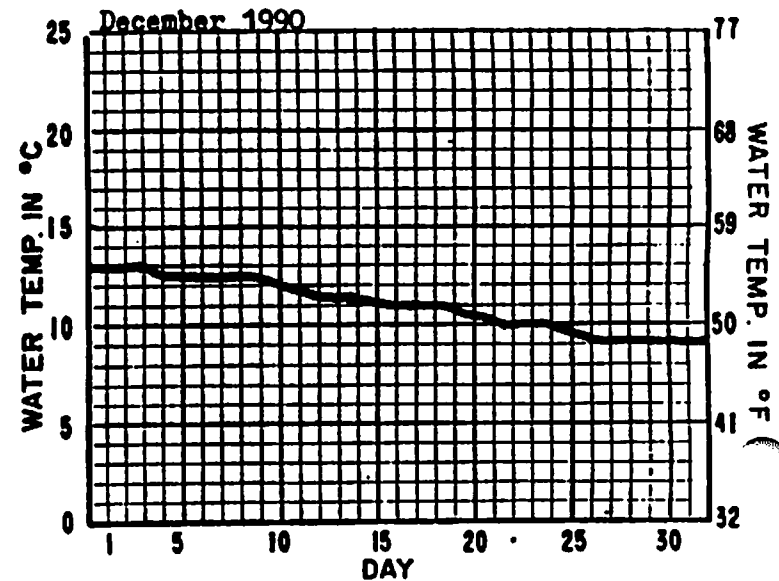
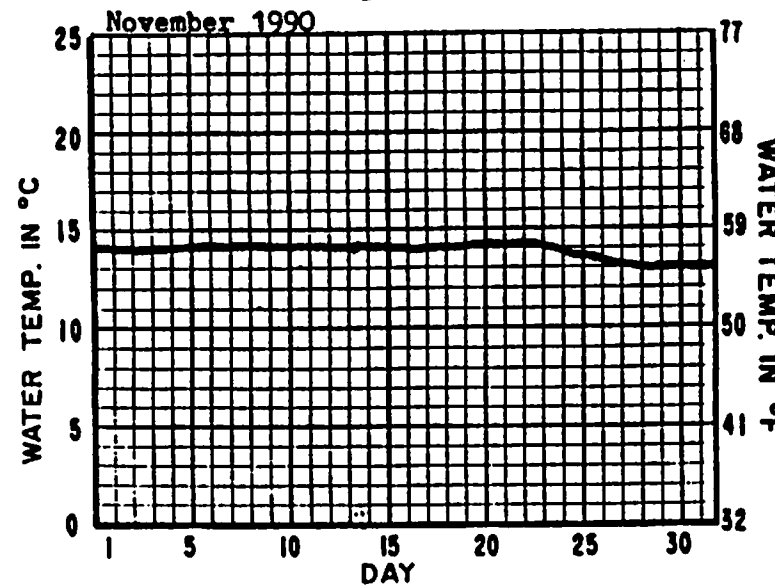
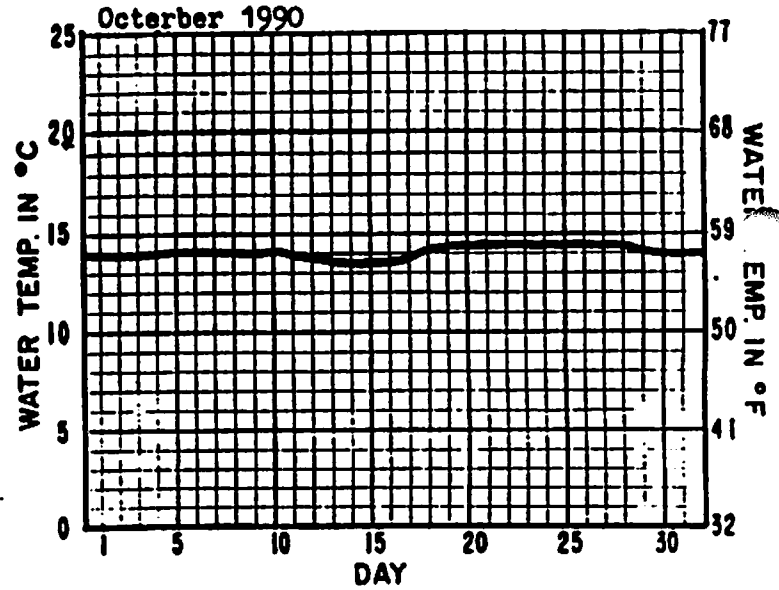
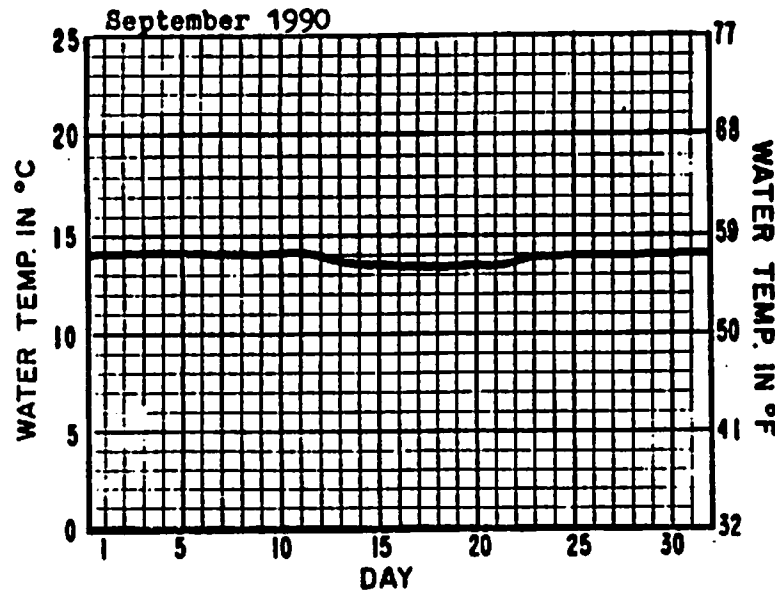
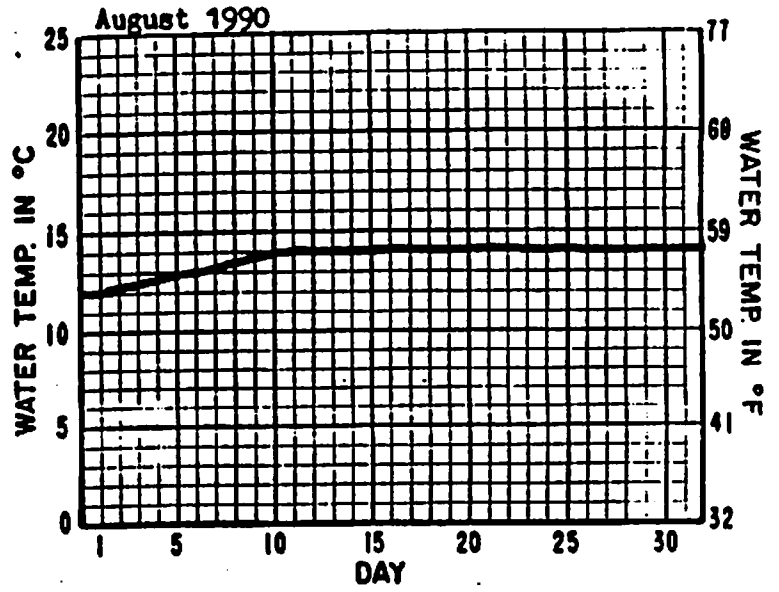
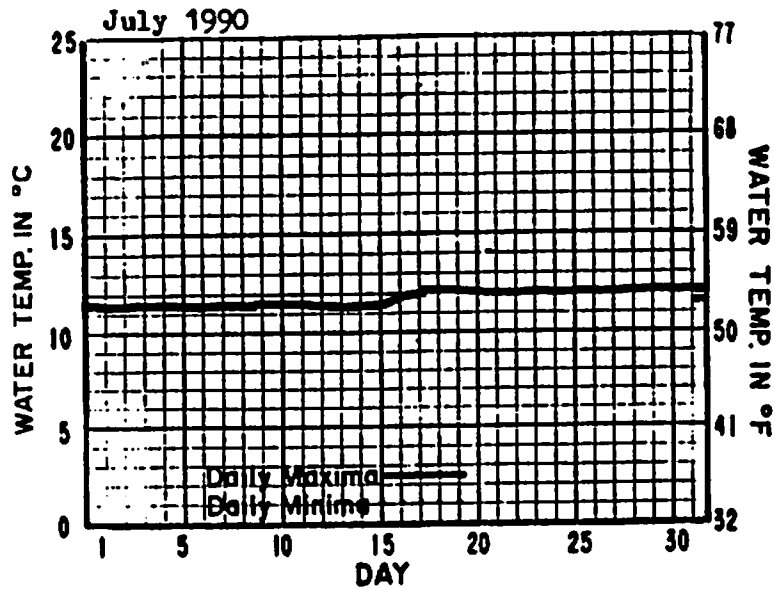
<u>Week</u>	<u>Chinook salmon</u>		<u>Steelhead trout</u>	
	<u>Adults</u>	<u>Grilse</u>	<u>Males</u>	<u>Females</u>
Oct. 21-27	3	3	0	0
Oct. 28-Nov. 3	10	10	0	0
Nov. 4-10	4	11	0	0
Nov. 11-17	5	14	0	0
Nov. 18-24	1	2	0	0
Nov. 25-Dec. 1	2	1	0	0
Dec. 2-8	0	0	0	0
Dec. 9-15	0	0	0	0
Dec. 16-22	0	0	0	0
Dec. 23-29	0	0	0	0
Dec. 30-Jan. 5	0	1	1	0
Jan. 6-12	0	0	0	3
Jan. 13-19	1	1	0	1
Jan. 20-26	0	0	1	0
Jan. 27-Feb. 2	1	0	0	2
Feb. 3-9	0	0	1	0
Feb. 10-16	1	0	0	1
Feb. 17-23	0	0	1	2
Feb. 24-March	0	0	3	0
March 3-9	0	0	1	0
March 17-23	0	0	2	0
March 24-30	0	0	1	0
Season totals	25	43	11	9

APPENDIX TABLE 2. Summary of Fish Runs to Mokelumne River Fish Hatchery, 1964-65 to Present

<u>Year</u>	<u>Chinook salmon</u>			<u>Steelhead Trout</u>	
	<u>Male</u>	<u>Females</u>	<u>Grilse</u>	<u>Males</u>	<u>Females</u>
1964-65	184	178		30	15
1965-66	60	35	78	20	10
1966-67	181	99	200	10	7
1967-68	99	97	54	60	43
1968-69	202	159	593	16	8
1969-70	182	314	119	109	25
1970-71	423	305	180	97	18
1971-72	520	539	171	8	6
1972-73	285	30	38	7	4
1973-74	222	128	58	13	5
1974-75	49	37	134	2	--
1975-76	68	81	250	--	--
1976-77	11	6	57	--	--
1977-78	--	--	--	--	--
1978-79	161	143	180	--	--
1979-80	181	64	262	--	--
1980-81	192	228	219	--	--
1981-82	572	490	324	--	--
1982-83	830	952	895	--	--
1983-84	494	1,191	2,888	--	--
1984-85	348	456	155	--	--
1985-86	119	65	39	--	--
1986-87	434	681	798	31	17
1987-88	60	35	535	--	--
1988-89	47	46	35	6	1
1989-90	23	26	31	8	3
1990-91	16	9	43	11	9



DAILY WATER TEMPERATURES BY MONTH



# DAILY WATER TEMPERATURES BY MONTH

