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ANNUAL REPORT  
MOKELUMNE RIVER HATCHERY, 1992-93

by

Don F. Estey  
Region 2, Inland Fisheries

Inland Fisheries  
Administrative Report No. 94-6

1994

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ABSTRACT

This report describes the operation of the Mokelumne River Hatchery from July 1, 1992 through June 30, 1993. 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 3,143,700 chinook salmon fingerlings from Feather River Hatchery, to be reared and released when they reach 60/lb or larger.

There were 249,694 chinook salmon fingerlings, 3,362,900 chinook salmon smolts and 131,552 chinook salmon yearlings released during the 1992-93 season. There were also 586,259 yearling steelhead released during the 1992-93 season.

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

## INTRODUCTION

This is the 30th annual report for operation of the Mokelumne River Hatchery. It describes operations of the Hatchery from July 1, 1992 through June 30, 1993. 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, 1992 to June 30, 1993.

## PRODUCTION SUMMARY

There were a total of 935,300 92-BY chinook salmon eggs received from Feather River Hatchery to be incubated and reared for release at smolt size. There were 399,896 chinook salmon eggs taken from Mokelumne River-origin chinook salmon to be incubated and reared for release at yearling size during the fall of 1993. East Bay Municipal Utility District fin-clipped and coded-wire tags (CWT) 110,000 of these and they will be released as part of the total yearling release.

## DISEASE

There were no significant mortalities from diseases at the hatchery this season. After several below average water years, the fall and winter of 1992-93 was about 140 percent of normal rainfall. Therefore, we had a very good water year. The water quality and temperatures were similar to those prior to the drought years. Growth seemed to be slower due to cooler water temperatures than normal during the spring months.

TABLE 1. Mokelumne River Hatchery Production Summary, 1992-93

<u>Species</u>	<u>Fish trapped</u>	<u>Eggs taken or received</u>	<u>Fingerlings received</u>	<u>and Smolts planted</u>	<u>Yearlings planted</u>	<u>Total pounds planted</u>
<u>Chinook salmon</u>						
1991-BY	41	1,711,265	3,341,150	2,795,684	131,552	122,624
1992-BY	710		3,143,700	2,224,634	0	49,337
<u>Steelhead</u>						
1992-BY	29	0	690,850	0	574,570	186,175
1993-BY	108	31,600	0	0	0	0

TABLE 2. Chinook Salmon Plants

<u>Date</u>	<u>Release site</u>	<u>Weight (lb)</u>	<u>Number</u>
July 1992	Rodeo Marina Rodeo	42,850	1,164,100
August 1992	Rodeo Marina	7,400	213,800
October 1992	Mokelumne River at Hatchery	11,572	131,552
March 1992	Mokelumne River Drum Trap Tests	4	1,200
April 1992	Byron	120	15,000
	Mokelumne River	46	5,440
	Tracy Pumping Plant	31	3,658
May 1992	Mokelumne River-Lower	3,114	206,756
	Tracy Pumping Plant	122	7,630
	San Pablo Bay - Rodeo Marina	7,600	437,500
June 1992	Mokelumne River - Woodbridge	182	10,010
	San Pablo Bay	38,300	1,547,500
<b>TOTAL</b>		<b>111,341</b>	<b>3,744,146</b>

## Chinook Salmon Program History of the 1992-93 Season

There were 710 chinook salmon trapped at the hatchery this season; 157 adult males, 107 adult females and 446 grilse (<24 inches FL).

All salmon entered the hatchery between October 29, 1992 and February 26, 1993. The flash boards at Woodbridge were removed on October 26, and river flow was increased to 700 cfs. The flow remained at that level until November 2 when it was reduced to 200 cfs. The flow remained at 200 cfs until January 4, 1993 when it was reduced to 160 cfs. January 20 flow was increased to 200 cfs again where it remained until March 1 when it was increased to 600 cfs for the remainder of the trapping season.

### Chinook Salmon Production

A total of 3,744,146 chinook salmon were released during the report period. A total of 3,143,700 (92 BY) salmon fingerlings and 935,300 (92 BY) eyed eggs were received from Feather River Hatchery. In addition, we took 399,896 eggs at the hatchery. On June 3, 1993, there were 1,748,040 (92 BY) chinook salmon on hand.

### Chinook Salmon Tagging and Marking Program

Three groups of chinook salmon (92 BY) were marked and tagged at the hatchery this report period. They were marked by removing the adipose fin and tagged by placing a coded-wire in the nose of the fish.

Two groups were marked and tagged by a crew under the direction of Vogel Environmental Services, who were under contract with EBMUD to do the Mokelumne River studies this year. The first group of 101,844 averaged 82 fish per pound and were released at New Hope Landing on May 6. The second group of 103,712 which averaged 56 fish per pound were also released at New Hope Landing on May 21.

The third group was marked and tagged by the same crew, but under the direction of EBMUD. A total of 108,671 fish averaging 40 fish per pound were marked and tagged in June, and will be held for release in late October 1993 as yearlings. They will be released at the hatchery.

### Steelhead Trout Program

There were 108 adult steelhead (<16 inches FL) trapped at the hatchery during this report period, 87 males and 21 females.

The fish entered the hatchery between December 2, 1992 and March 12, 1993. The river flows for steelhead trapping were the same as outlined in the Chinook Salmon Program for the 1992-93 season.

Most of the trapped fish were fairly small, just making the 16 inch cutoff length. Of the 21 females trapped, we were able to spawn 12, taking a total of 31,800 (93 BY) eggs. From these eggs we ponded 22,500 fingerlings.

### Production

There were a total of 247,600 (92 BY) steelhead fingerlings received from Feather River Hatchery to fulfill our production goals. Low, warm water in the American River forced Nimbus Hatchery to transfer their steelhead yearling production to Mokelumne River Hatchery. We received 443,250 (92 BY) steelhead fingerlings from Nimbus Hatchery which we reared to yearling size and trucked to release sites on the Sacramento River. On hand June 30, 1993 were 21,125 (92 BY) steelhead.

During the 1992-93 report period, there were 586,259 fish weighing 199,505 pounds released in the Mokelumne and Sacramento River at various locations. Of the 586,259 total, 392,785 were Nimbus fish. 41,500 were 4-Pumps fish; and the remaining 151,974 were EBMUD migration fish.

TABLE 3. Steelhead Trout Plants

<u>Date</u>	<u>Release site</u>	<u>Weight (lb)</u>	<u>Number</u>
July 1992	Mokelumne River	3,100	3,460
August 1992	Mokelumne River	3,450	3,367
September 1992	Mokelumne River	5,170	4,089
October 1992	Mokelumne River	1,160	773
December 1992	Oak Grove Park Lake	1,200	4,000
	Sacramento River - Garcia Bend	16,500	59,105
January 1993	Oak Grove Park Lake	1,950	5,550
	Rancho Seco Park Lake	500	1,250
	Sacramento River - Garcia Bend	110,900	333,680
	Sacramento River - Rio Vista	10,100	41,500
February 1993	Rancho Seco Park Lake	2,100	5,600
	Mokelumne River	40,500	119,770
June 1993	Mokelumne River	2,875	4,115
TOTALS		<u>199,505</u>	<u>586,259</u>

### Public Relations

During the 1992-93 season, 12,616 persons visited the Mokelumne River Hatchery. Tours were conducted for schools and special interest groups. Talks were given to sports and civic organizations upon request. A large number of people use the day use area below the hatchery for picnics, bird watching, relaxing, and of course, fishing. These are not added into the hatchery visitors count.

The hatchery crew participated with two major events during the 1992-93 report period. They were the San Joaquin County Conservation Fair and Free Fishing Day festivities at Lodi Lake.

APPENDIX TABLE 1. Weekly Adult Salmon and Steelhead Trapping Data for Mokelumne River Hatchery, 1992-93

Week	Chinook Salmon			Steelhead Trout	
	Males	Females	Grilse	Males	Females
Oct. 25-31	2	2	14		
Nov. 1-7	15	12	98		
Nov. 8-14	22	10	81		
Nov. 15-21	18	8	80		
Nov. 22-28	24	14	70		
Nov. 29-Dec. 5	32	17	62		1
Dec. 6-12	20	24	30		1
Dec. 13-19	5	7	7	2	
Dec. 20-26	3	1		1	1
Dec. 27-Jan. 2	5	4	2	3	3
Jan. 3-9	3	2		8	2
Jan. 10-16	4	4	2	15	9
Jan. 17-23	3	1		9	1
Jan. 24-30				15	2
Jan 31-Feb. 6	1			9	1
Feb. 7-13				5	
Feb. 14-20				7	
Feb. 21-27		1		9	
Feb. 28-March 6				2	
March 7-13				2	
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Season Totals	157	107	446	87	21

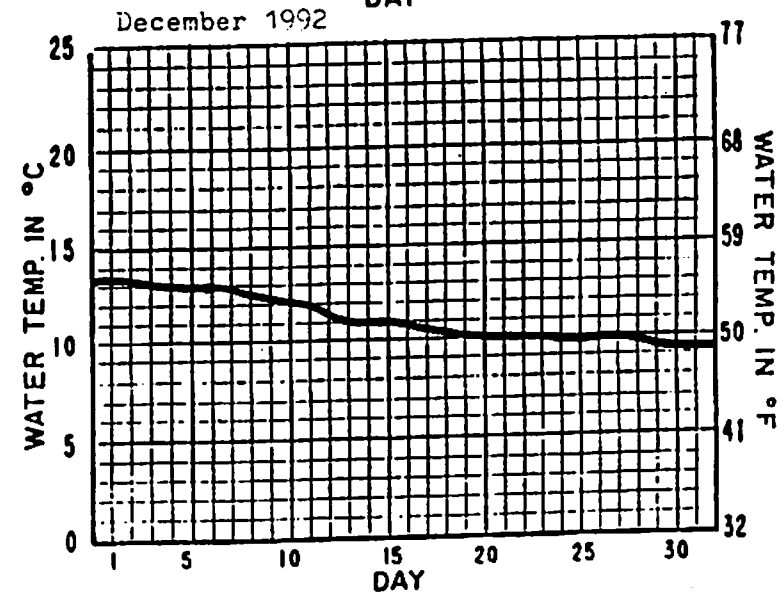
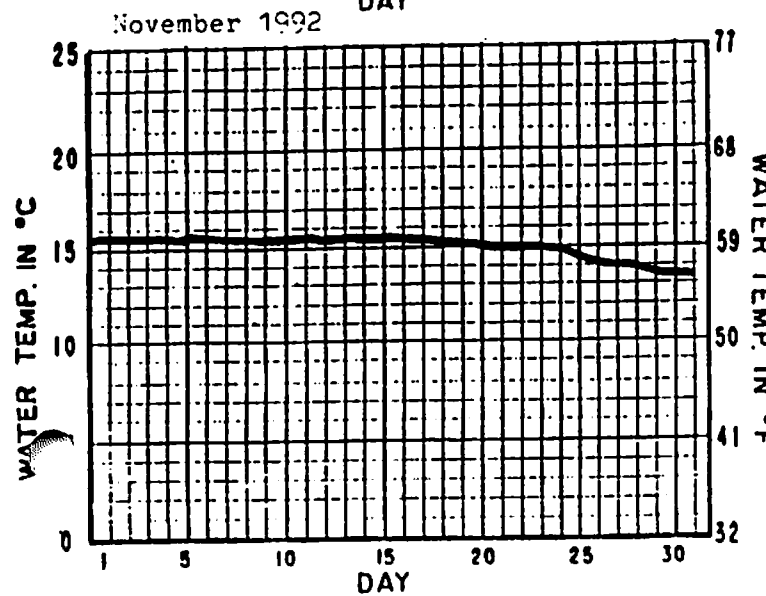
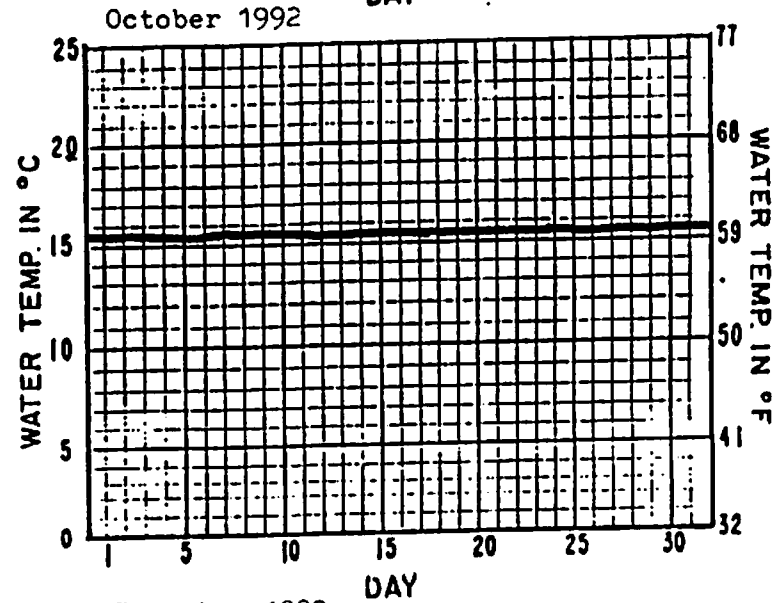
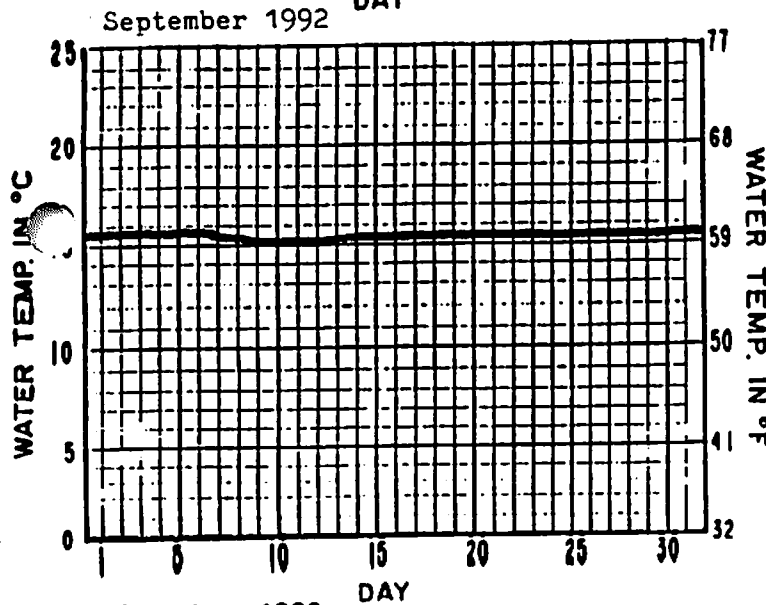
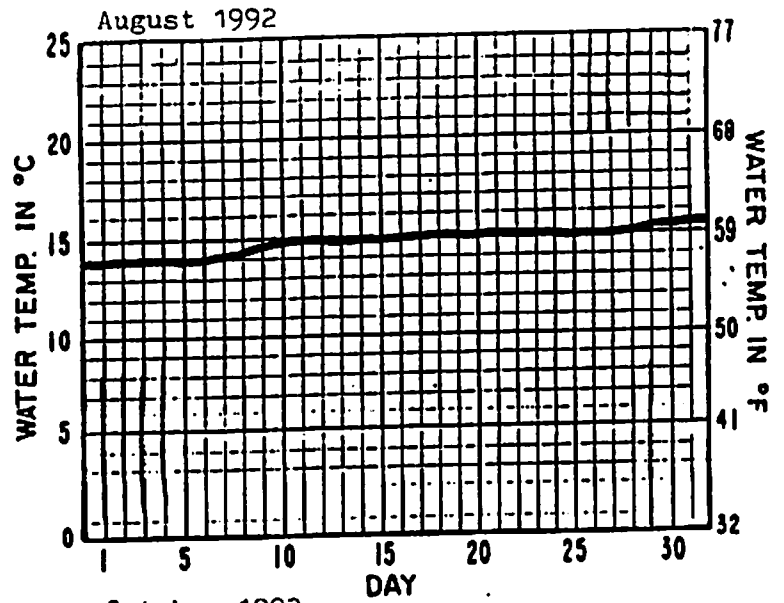
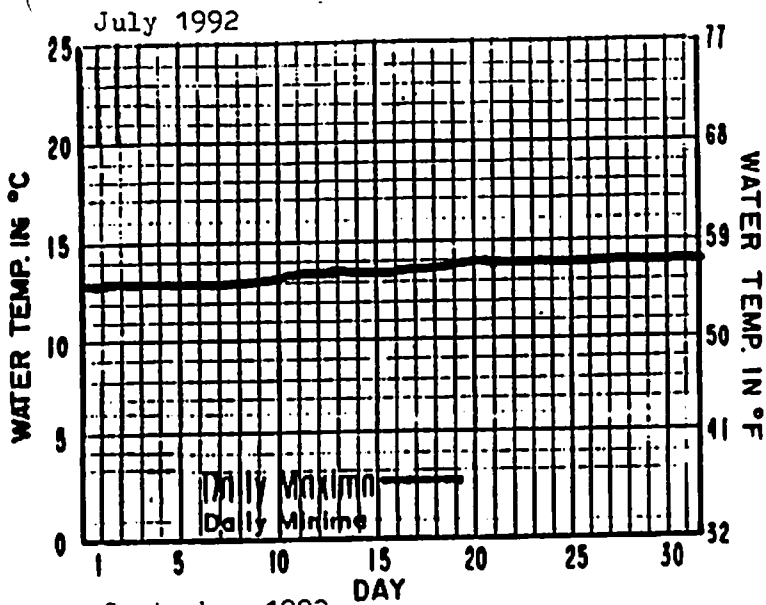


APPENDIX TABLE 2. Summary of Fish Runs to Mokelumne River Fish Hatchery

Year	Chinook Salmon			Steelhead Trout	
	Male	Female	Grilse	Males	Females
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	118
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
1991-92	22	11	8	21	8
1992-93	157	107	446	87	21

DAILY WATER TEMPERATURES BY MONTH

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DAILY WATER TEMPERATURES BY MONTH

