

MOKELUMNE RIVER FISH INSTALLATION
ANNUAL REPORT FOR 1980-81 SEASON^{1/}

by

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ABSTRACT

This report describes the operation of the Mokelumne River Fish Installation from July 1, 1980 through June 30, 1981. The installation consists of a hatchery, rearing ponds, and spawning channel for chinook salmon, Oncorhynchus tshawytscha, and steelhead trout, Salmo gairdneri.

We received 2,201,320 eyed eggs from Nimbus Hatchery and 538,399 green eggs from spawning 131 Mokelumne River females.

We released 1,282,814 salmon fingerlings and yearlings during the 1980-81 season.

There were 100,188 1981 eyed steelhead trout eggs received from Nimbus Hatchery. We released 34,649 steelhead yearlings in the Mokelumne River, and 20,000 in Lake Merced in San Francisco, as catchable trout.

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INTRODUCTION

This is the 18th annual report of the Mokelumne River Fish Installation. It covers the period of operation from July 1, 1980 through June 30, 1981. Copies of previous annual reports are available upon request from the Anadromous Fisheries Branch, Rancho Cordova.

The Mokelumne River Fish Installation 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 river. The Mokelumne River enters the San Joaquin River about 61 miles downstream from the dam.

The installation was constructed to mitigate for the loss of fall-run chinook salmon and steelhead trout spawning and rearing areas inundated by Camanche Dam. It is operated by the California Department of Fish and Game. The East Bay Municipal Utility District paid construction costs and also pays the annual operation and maintenance cost for the mitigation portion.

The installation consists of a spawning channel for natural spawning and rearing of fall-run chinook salmon and hatchery and rearing pond facilities for artificial spawning of salmon and steelhead. A detailed description of the original facility appears in the first annual report (Groh 1965).

During the spring of 1979 the first loop of the spawning channel was modified to two 250-ft and two 500-ft rearing ponds. This was a result of the Salmon Enhancement Program. This section is scheduled to rear 1 million yearling chinook salmon each year. The operational cost of this portion is funded by the Salmon Stamp Project.

WATER TEMPERATURES

Water temperatures were recorded continuously. Maximum and minimum recorded temperatures were 16.1°C (61°F) and 10.6°C (51°F), respectively (Appendix Table 1).

COPPER AND ZINC ANALYSIS

In only 3 of the 18 years of operation copper and zinc concentrations have become high enough to cause significant mortalities. Considerable remedial work has been done at the source of pollution. For the past few years we have not been routinely analyzing water samples.

DISEASE

There were no significant mortalities caused by disease this season.

PUBLIC RELATIONS

During the 1980-81 season an estimated 15,000 persons visited the facility. Tours were conducted for special interest groups and talks were given to sportsman and civic organizations.

PRODUCTION SUMMARY

A total of 2,839,907 chinook salmon and steelhead eggs was received for rearing (Table 1).

TABLE 1. Production Summary, Mokelumne River Fish Installation, 1980-81.

Species	Number of adults trapped	Number of eggs received	Number of fingerlings received	Number of fingerlings planted	Number of yearlings planted	On hand 6/30/81
Chinook	639	2,739,719	0	332,834	949,980	1,568,160
Steelhead	0	100,188	0	0	54,649	81,544

CHINOOK SALMON MAINTENANCE

Six hundred thirty-nine adult salmon entered the installation from October 10, 1980 to December 15, 1980. There were 192 males, 219 grilse and 228 females. Twenty males, 20 grilse, and 19 females marked with an adipose mark were recovered.

One hundred thirty-nine Mokelumne River females were spawned and produced 538,399 eggs, an average of 3,878 per female. From these eggs, 150,000 fingerlings were released into the rearing ponds and 253,799 fry were released into the spawning channels. The fish in the channels received no artificial feed; 167,034 were recovered and planted in the Mokelumne River in June 1981.

PRODUCTION

On July 1, 1980, there were 1,366,500 1979 BY Feather River chinook fingerlings on hand. We received 2,201,320 1980 BY eyed eggs from Nimbus Hatchery, and spawned 538,399 eggs from 1980 BY Mokelumne River females (Table 2). On June 30, 1981 there were 1,473,350 1980 BY Nimbus and 94,810 1980 BY Mokelumne River fingerlings on hand.

TABLE 2. Chinook Salmon Eggs Received, Mokelumne River Fish Installation, 1980-81

	Broodyear	Date	Number received	Origin
Eggs(green)	1980	Dec. 1980	1,690,600	Nimbus
Eggs(green)	1980	Jan. 1980	510,720	Nimbus
Eggs(green)	1980	Nov.-Dec. 1980	538,399	Mokelumne River

Planting 1980-81 Chinook Salmon

We planted 165,800 1979 BY fingerlings, 949,980 1979 BY yearlings, and 167,034 1980 BY fingerlings, for a total of 1,232,814 chinook salmon (Table 3).

TABLE 3. Chinook Salmon Planting Summary, Mokelumne River Fish Installation, 1980-81

Date	Area	Number	Size/lb	Mark
<u>1980</u>				
July	Mokelumne River	25,800	60	
Aug.	Mokelumne River	90,000	24	
Oct.	Rio Vista	478,500	10	
Oct.	Mokelumne River	20,000	10	
Oct.	Rio Vista	194,250	15	
Nov.	Rio Vista	50,000	10	
Nov.	Carquinez Strait	35,805	9.3	Ad-CWT
Nov.	Rio Vista	43,925	7	Ad-CWT
Nov.	Mokelumne River	48,300	7	Ad-CWT
Nov.	Mokelumne River	50,000	40	
Nov.	Rio Vista	38,500	7	
Dec.	Rio Vista	13,200	12	
Dec.	Rio Vista	12,100	11	
Dec.	Rio Vista	15,400	7	
<u>1981</u>				
June	Mokelumne River	167,034	44	

Chinook Salmon Tagging Program

Three groups of Ad-CWT yearlings were released. The first group (35,805) was released on November 4, 1980 in Carquinez Strait. The second group (43,925) was released on November 4, 5, 6, and 7, 1980 in the Sacramento River at Rio Vista. The third group (48,300) was released on November 13, 1980 in the Mokelumne River at the installation.

STEELHEAD PROGRAM

On July 1, 1980 we had 15,122 1979 BY and 73,750 1980 BY on hand. In March 1981 we received 100,188 1981 BY eyed eggs from the Nimbus Hatchery. We released 15,095 1979 BY and 19,554 1980 BY into the Mokelumne River on a catchable trout basis. In addition, we released 20,000 1980 BY in Lake Merced in San Francisco. On June 30, 1981 we had 12,844 1980 BY and 68,700 1981 BY on hand.

REFERENCES

Groh, F. H. 1965 Annual Report Mokelumne River Fish Installation January 1, 1964 to June 30, 1965. Calif. Dep. Fish and Game, Inland Fish. Admin. Rep. 65-21. 28 p.

APPENDIX TABLE 1. Water Temperature Mokelumne River
Fish Installation, 1980-81 Season

Water temperature (C)			Water temperature (C)			Water temperature (C)		
Date	Max.	Min.	Date	Max.	Min.	Date	Max.	Min.
July			Aug.			Sept.		
1	13.3	12.8	1	14.4	13.3	1	15.0	13.9
2	12.8	12.2	2	14.4	13.3	2	15.0	13.9
3	13.3	12.8	3	14.4	13.3	3	15.0	13.9
4	13.3	12.8	4	14.4	13.3	4	15.0	13.9
5	13.3	12.8	5	14.4	13.3	5	15.0	13.9
6	13.3	12.8	6	14.4	13.3	6	15.0	13.9
7	13.3	12.8	7	14.4	13.3	7	15.0	13.9
8	13.3	12.8	8	14.4	13.3	8	15.0	13.9
9	13.3	12.8	9	14.4	13.3	9	15.0	13.0
10	13.3	12.8	10	14.4	13.3	10	15.0	14.4
11	13.3	12.8	11	14.4	13.3	11	15.6	14.4
12	13.3	12.8	12	14.4	13.3	12	15.6	14.4
13	13.3	12.8	13	14.4	13.3	13	15.0	14.4
14	13.3	12.8	14	14.4	13.3	14	15.0	14.4
15	13.9	12.8	15	14.4	13.9	15	15.6	14.4
16	13.9	12.8	16	14.4	13.9	16	15.6	14.4
17	13.9	12.8	17	14.4	13.9	17	15.6	14.4
18	13.9	12.8	18	14.4	13.9	18	15.6	14.4
19	13.9	12.8	19	14.4	13.9	19	15.6	14.4
20	13.9	12.8	20	14.4	13.9	20	15.6	14.4
21	14.4	13.3	21	14.4	13.9	21	15.6	14.4
22	14.4	13.3	22	14.4	13.9	22	15.6	14.4
23	14.4	13.3	23	14.4	13.9	23	15.6	14.4
24	14.4	13.3	24	15.0	13.9	24	15.6	14.4
25	14.4	13.3	25	15.0	13.9	25	16.1	15.0
26	14.4	13.3	26	15.0	13.9	26	16.1	15.0
27	14.4	13.3	27	15.0	13.9	27	15.6	14.4
28	14.4	13.3	28	15.0	13.9	28	16.1	15.0
29	14.4	13.3	29	15.0	13.9	29	16.1	15.0
30	14.4	13.3	30	15.0	13.9	30	16.1	15.0
31	14.4	13.3	31	15.0	13.9			

APPENDIX TABLE 1. Water Temperature Mokelumne River Fish Installation, 1980-81 Season (continued)

Water temperature (C)			Water temperature (C)			Water temperature (C)		
Date	Max.	Min.	Date	Max.	Min.	Date	Max.	Min.
Oct.			Nov.			Dec.		
1	16.1	15.0	1	15.6	14.4	1	14.4	13.9
2	16.1	15.0	2	15.6	14.4	2	14.4	13.9
3	16.1	15.0	3	15.6	14.4	3	14.4	13.9
4	16.1	15.0	4	15.6	14.4	4	14.4	13.9
5	16.1	15.0	5	15.6	15.0	5	14.4	13.9
6	16.1	15.0	6	15.6	15.0	6	14.4	13.9
7	16.1	15.0	7	15.6	15.0	7	14.4	13.9
8	16.1	15.0	8	15.6	15.0	8	14.4	13.9
9	16.1	15.0	9	15.6	15.0	9	14.4	13.9
10	16.1	15.0	10	15.6	15.0	10	14.4	13.9
11	16.1	15.0	11	15.6	15.0	11	14.4	13.9
12	16.1	15.0	12	15.6	15.0	12	14.4	13.9
13	16.1	15.0	13	15.6	15.0	13	14.4	13.9
14	16.1	15.0	14	15.6	15.0	14	14.4	13.9
15	16.1	15.0	15	15.6	15.0	15	14.4	13.9
16	16.1	15.0	16	15.6	15.0	16	14.4	13.9
17	16.1	15.0	17	15.6	15.0	17	14.4	13.9
18	16.1	15.0	18	15.6	15.0	18	14.4	13.9
19	16.1	15.0	19	15.6	15.0	19	14.4	13.9
20	16.1	15.0	20	15.6	15.0	20	14.4	13.9
21	16.1	15.0	21	15.6	15.0	21	14.4	13.9
22	16.1	15.0	22	15.6	15.0	22	14.4	13.9
23	15.6	15.0	23	15.0	14.4	23	14.4	13.9
24	15.6	15.0	24	15.0	14.4	24	14.4	13.9
25	15.6	15.0	25	15.0	14.4	25	14.4	13.9
26	15.6	14.4	26	15.0	14.4	26	14.4	13.9
27	15.6	14.4	27	14.4	14.4	27	14.4	13.9
28	15.6	14.4	28	14.4	14.4	28	14.4	13.9
29	15.6	14.4	29	14.4	14.4	29	14.4	13.9
30	15.6	14.4	30	14.4	14.4	30	14.4	13.9
31	15.6	14.4	31	14.4	14.4	31	14.4	13.9

APPENDIX TABLE 1. Water Temperature Mokelumne River Fish Installation, 1980-81 Season (continued)

Date	Water temperature (C)		Date	Water temperature (C)		Date	Water temperature (C)	
	Max.	Min.		Max.	Min.		Max.	Min.
Jan.			Feb.			Mar.		
1	12.2	12.2	1	10.6	10.6	1	11.1	10.6
2	12.2	12.2	2	10.6	10.6	2	11.1	10.6
3	12.2	12.2	3	10.6	10.6	3	11.1	10.6
4	12.2	12.2	4	10.6	10.6	4	11.1	10.6
5	12.2	12.2	5	10.6	10.6	5	11.7	10.6
6	12.2	12.2	6	10.6	10.6	6	11.7	10.6
7	11.1	10.6	7	10.6	10.6	7	11.7	10.6
8	10.6	10.6	8	10.6	10.6	8	11.7	10.6
9	10.6	10.6	9	10.6	10.6	9	11.7	10.6
10	10.6	10.6	10	11.7	10.6	10	11.7	10.6
11	10.6	10.6	11	11.1	10.6	11	11.7	10.6
12	10.6	10.6	12	11.1	10.6	12	11.7	10.6
13	11.1	10.6	13	11.1	10.6	13	11.7	10.6
14	10.6	10.6	14	11.1	10.6	14	11.7	10.6
15	10.6	10.6	15	10.6	10.6	15	11.7	10.6
16	10.6	10.6	16	10.6	10.6	16	11.7	10.6
17	10.6	10.6	17	11.1	10.6	17	11.7	10.6
18	10.6	10.6	18	11.1	10.6	18	11.7	10.6
19	10.6	10.6	19	11.1	10.6	19	11.7	10.6
20	10.6	10.6	20	11.1	10.6	20	11.7	10.6
21	11.1	10.6	21	11.1	10.6	21	11.7	10.6
22	10.6	10.6	22	11.1	10.6	22	11.7	10.6
23	10.6	10.6	23	11.1	10.6	23	11.7	10.6
24	10.6	10.6	24	11.1	10.6	24	11.1	11.1
25	10.6	10.6	25	11.1	11.1	25	11.1	11.1
26	10.6	10.6	26	11.1	11.1	26	11.1	11.1
27	11.1	11.1	27	11.1	11.1	27	11.1	11.1
28	10.6	10.6	28	11.1	11.1	28	11.7	11.1
29	10.6	10.6				29	11.7	11.1
30	10.6	10.6				30	11.7	11.1
31	10.6	10.6				31	11.7	11.1

APPENDIX TABLE 1. Water Temperature Mokelumne River Fish Installation, 1980-81 Season (continued)

Date	Water temperature (C)		Date	Water temperature (C)		Date	Water temperature (C)	
	Max.	Min.		Max.	Min.		Max.	Min.
April			May			June		
1	11.7	11.1	1	12.2	11.7	1	12.8	12.2
2	11.7	11.1	2	12.2	11.7	2	12.8	12.2
3	11.7	11.1	3	12.2	11.7	3	13.3	12.2
4	11.7	11.1	4	12.2	11.7	4	13.3	12.2
5	11.7	11.1	5	12.2	11.7	5	13.3	12.2
6	11.7	11.1	6	12.2	11.7	6	13.3	12.2
7	11.7	11.1	7	12.2	11.7	7	13.3	12.2
8	11.7	11.1	8	12.2	11.7	8	13.3	12.2
9	11.7	11.1	9	12.2	11.7	9	13.3	12.2
10	11.7	11.1	10	12.2	11.7	10	13.3	12.2
11	11.7	11.1	11	12.2	11.7	11	13.3	12.2
12	11.7	11.1	12	12.2	11.7	12	13.3	12.2
13	11.7	11.1	13	12.2	11.7	13	13.3	12.2
14	12.2	11.1	14	12.2	11.7	14	13.3	12.2
15	12.2	11.1	15	12.2	11.7	15	13.3	12.2
16	12.2	11.1	16	12.2	11.7	16	13.3	12.2
17	12.2	11.1	17	12.2	11.7	17	13.3	12.2
18	12.2	11.1	18	12.2	11.7	18	13.3	12.2
19	12.2	11.1	19	12.2	11.7	19	13.3	12.2
20	12.2	11.1	20	12.2	11.7	20	13.3	12.2
21	12.2	11.1	21	12.2	11.7	21	13.3	12.2
22	12.2	11.1	22	12.8	12.2	22	13.3	12.2
23	12.2	11.1	23	12.8	12.2	23	13.3	12.2
24	12.2	11.1	24	12.8	12.2	24	13.9	12.8
25	12.2	11.1	25	12.8	12.2	25	13.9	12.8
26	12.2	11.1	26	12.8	12.2	26	13.9	12.8
27	12.2	11.1	27	12.8	12.2	27	13.9	12.8
28	12.2	11.1	28	12.8	12.2	28	13.9	12.8
29	12.2	11.7	29	12.8	12.2	29	13.9	12.8
30	12.2	11.7	30	12.8	12.2	30	13.9	12.8
			31	12.8	12.2			