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ANNUAL REPORT
FEATHER RIVER HATCHERY 1978-79

BY

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Region 2, Inland Fisheries

Anadromous Fisheries Branch
Administrative Report No. 82-36

1982

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ABSTRACT

This report summarizes the operation of Feather River Hatchery from 1 July 1978 through 30 June 1979. Tables present temperature and weather data, numbers of chinook salmon, Oncorhynchus tshawytscha, and steelhead Salmo gairdneri, entering the hatchery, numbers of eggs taken and received, and numbers of fish released.

We trapped 4,961 chinook salmon and 189 steelhead and planted or transferred 3,126,899 chinook fingerlings, 1,689,215 chinook yearlings, and 204,460 steelhead yearlings. No steelhead were planted as fingerlings this year.

1/ Anadromous Fisheries Branch Administrative Report No. 82-36
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INTRODUCTION

This report describes activities of the Feather River Hatchery during its 12th year of operation, 1 July 1978 through 30 June 1979. The hatchery is located near the upper Thermalito bridge in Oroville, California; it was constructed by the California Department of Water Resources as part of the California Water Project to compensate for loss of spawning area above Oroville Dam. It is operated by the Department of Fish and Game with funds provided by the Department of Water Resources.

PRODUCTION SUMMARY

Personnel from the Feather River Hatchery trapped 4,961 chinook salmon, Oncorhynchus tshawytscha, and 189 steelhead, Salmo gairdneri, during the 1978-79 season (Table 1). Approximately 10,040,277 salmon eggs and 608,241 steelhead eggs were taken and received. We planted or transferred an estimated 4,816,114 salmon and 204,460 steelhead.

MARKING PROGRAM

Personnel from Anadromous Fisheries Branch had several different marking programs involving several different marks and strains of chinook salmon. A total of 24,000 1977 brood year (BY) spring run chinook salmon was planted at Verona to determine migration patterns in October 1978. Anadromous Fisheries Branch marked two groups of 1977 BY spring run salmon with a coded wire tag (CWT) and adipose clip (AD). Each marked group consisted of about 50,000 fish. One group was released in the Feather River between Yuba City and Verona in December 1978 and another group of about 50,000 in the Feather River at Gridley in late January 1979. Approximately 100,000 fall run chinook salmon 1977 BY were planted in August of 1978 in Suisun Bay at Concord Naval Station. In October 1978 two groups of spray marked fall run chinook salmon 1977 BY were released at Verona resort and Clifton Court. In June 1979 three different groups of fall run chinook salmon 1978 BY were released at Port Chicago in Suisun Bay, Discovery Park on the Sacramento River, and the Feather River Hatchery. Each group consisted of about 200,000 smolts.

CHINOOK SALMON MAINTENANCE PROGRAM
HISTORY OF THE 1978-79 RUNS
1978 BY Spring Run

The fish ladder was opened on 6 September 1978. We received 202 spring run fish between 6 September 1978 and 10 October 1978. The surviving spring run adults were sexed on 2 October 1978. At the time we had 90 males and 112 females on hand. Of the 112 females, we successfully spawned 32 from 2 October 1978 through 30 October 1978. The spawning yielded 182,823 eggs, for an average of 5,713 eggs

TABLE 1. Feather River Hatchery Production Summary, 1978-79

Species brood year	Adults trapped or received	Females spawned	Eggs taken or received	Fish planted or transferred		Estimated number on hand
				fingerlings	yearlings	
Chinook salmon spring run						
1977 BY	0	0		0	126,625	0
1978 BY	202	32	182,823	0		92,216
Chinook salmon fall run						
1977 BY	0	0	0	305,500 ^{a/}	733,700	0
1978 BY	4,759	1,759	9,857,454	2,821,399	0	3,464,513
Chinook salmon fall run Red Bluff						
1977 BY	0	0	0	0	704,540	0
Chinook salmon late fall run						
1977 BY	0	0			124,350	0
Steelhead						
1978 BY	0	0	0	0	108,230	0
1979 BY						
Early	135	57	197,439	0		163,776
Late	54	23	92,557	0		84,773
Steelhead Mad River						
1978 BY	0	0	0	0	96,230	0
Steelhead Nimbus						
1979 BY	0	0	100,190 ^{b/}	0	0	97,661
Steelhead summer						
1979 BY	0		218,055 ^{c/}	0	0	217,197

^{a/} Includes 206,500 shipped to Mokelumne Installation.

^{b/} Received from Nimbus Hatchery as eggs.

^{c/} Received from Region 3 as fry.

per female. In late September vandals opened the drain on the holding tank, causing stress on the fish; we had a delayed mortality of adults and poor egg quality.

An estimated 94,016 fingerlings were transferred to the ponds for an average fertility rate of 51%. An estimated 92,216 remained on hand 30 June 1979.

1978 BY Fall Run

The first fall run chinook salmon entered the hatchery on 6 October and the last was received on 26 December 1978 (Appendix Table 1). The season total was 4,759 fish. We spawned 1,759 females this season, 6 October 1978 through 2 January 1979, and took 9,857,454 eggs, for an average of 5,604 eggs per female. Fry production totaled 7,467,550, for an average fertility rate of 76%. Losses to infectious Hematopoietic Necrosis (IHN) totaled about 1,181,638 fish. Between 17 May 1979 and 28 June 1979 we planted 2,821,399 fall run 1978 fry. An estimated 3,464,513 remained on hand 30 June 1979.

RECOVERY OF MARKED CHINOOK SALMON

All chinook salmon entering the hatchery were examined for marks. We observed a total of 442 marked fish (Appendix Table 2).

CHINOOK SALMON PLANTING

We planted or transferred an estimated 3,126,899 fingerlings and 1,689,215 yearling chinook salmon this season (Tables 1 and 2).

STEELHEAD MAINTENANCE PROGRAM HISTORY OF THE 1978-79 PRODUCTION 1979 BY

Steelhead were not counted or held until 7 December 1978. No marked or tagged fish were counted this season. We counted fish from 7 December 1978 through 2 March 1979.

The total run was 189 fish: 109 males and 80 females. We successfully spawned all 80 females (Table 3) and took 289,996 eggs. We had on hand 30 June 1979 a total of 248,549 fish, for a total survival rate of 85.7%.

Steelhead spawning was divided into two categories. "Early" -- adults arriving before 16 January 1979 and "late" -- steelhead arriving after 16 January 1979.

TABLE 2. Chinook Salmon Planting Summary, Feather River Hatchery 1978-79

Brood year	Race	Month of release	Average size (G)	Number released	Mark	Release site
1977	Spring run	Oct. 1978	37	24,000	Dye	Feather River at Verona
		Dec. 1978	56	16,800	AD & CWT	Feather River at Verona
		Dec. 1978	56	32,025	AD & CWT	Feather River at Yuba City
		Jan. 1979	75	53,800	AD & CWT	Feather River at Gridley
		Total		126,625		
1977	Fall run	July 1978	63	206,500		Mokelumne Hatchery
		Aug. 1978	22	99,000	AD & CWT	Concord Naval Base
		Oct. 1978	25	57,200	Spray	Feather River at Verona
		Oct. 1978	12	25,020	Spray	Clifton Court
		Nov. 1978q	32	10,010		Yuba River
		Nov. 1978	40	110,000		Feather River at Verona
		Nov. 1978	40	94,250		Feather River at Yuba City
		Dec. 1978	50	274,425		Feather River at Yuba City
		Dec. 1978	50	162,795		Feather River at Verona
		Total		1,039,200		
1977	Fall run "late"	Dec. 1978	16	98,250		Feather River at Verona
		Dec. 1978	15	26,100		Feather River at Yuba City
		Total		124,350		
1977	Fall run Red Bluff	Nov. 1978	56	157,500		Sacto. River at Red Bluff
		Nov. 1978	56	76,175		Sacto. River at Tehama Colusa
		Dec. 1978	44	42,100		Sacto. River at Red Bluff
		Dec. 1978	44	401,265		Sacto. River at Tehama Colusa
		Dec. 1978	44	27,500		Feather River at hatchery
		Total		704,540		
1978	Fall run	May 1979	6	339,400		Sacto. River at Rio Vista
		June 1979	6	1,226,200		Sacto. River at Rio Vista
		June 1979	5	219,755	AD & CWT	Sacto. River at Discovery Park
		June 1979	4	230,000	AD & CWT	Feather River at hatchery
		June 1979	7	164,944	AD & CWT	Port Chicago
		June 1979	6	500,800		Mokelumne Hatchery
		June 1979	6	131,300		Feather River at Verona
		Total		2,821,399		

TABLE 3. Steelhead Spawning Data

Date 1979	"Early" fish spawned		Date 1979	"Late" fish spawned	
	M	F		M	F
Jan. 2	2	4	Jan. 19	3	3
Jan. 8	6	5	Jan. 23	1	1
Jan. 12	2	3	Jan. 26	1	2
Jan. 16	7	5	Feb. 29	4	2
Jan. 23	12	17	Feb. 9	1	1
Jan. 29	4	4	Feb. 23	5	8
Feb. 6	6	6	Mar. 2	4	4
Feb. 13	5	7	Mar. 9	4	1
Feb. 20	9	4	Mar. 16	8	1
Feb. 26	26	2			

1979 BY Nimbus

In an attempt to assure the proper amount of yearling production, 100,190 eggs were brought to Feather River Hatchery from Nimbus Hatchery. On 30 June 1979 a total of 97,661 fry remained on hand.

1979 Summer

A total of 218,055 summer run fry (Washougal strain) was brought in from Region 3 in a continuing effort to establish a summer run steelhead in the Feather River. On 30 June 1979 we had a total of 217,197 fry on hand.

STEELHEAD PLANTING

We planted an estimated 204,460 steelhead yearlings during the 1978-79 season (Table 4).

TABLE 4. Steelhead Planting Summary, 1978-79

Date	Strain	Average size (g)	Number released	Release Site
March 1979	Mad River	56	96,230	Feather River at Verona
March 1979	Feather R.	130	<u>108,230</u>	Feather River at Verona
TOTAL			204,460	

VISITOR USE

During the 1978-79 fiscal year 51,807 people visited the installation.

Appendix Table 1
Feather River Salmon and Steelhead Hatchery
Weather, Water, and Fish Data Report, 1978-79

July 1978	Temperature (C°)				Weather	Fish trapped				Steelhead
	Air		Water			Chinook salmon		Steelhead		
	Maximum	Minimum	Maximum	Minimum		Fall run		Spring run		
						Adults	Grilse	Adults	Grilse	
1	27.0	12.0	15.6	15.0	Clear					
2	26.0	13.5	15.0	14.4						
3	28.0	17.0	15.6	15.0	Clear					
4	32.0	18.0	16.1	15.6	Clear					
5			16.1	15.0	Clear					
6			16.1	15.0	Clear					
7			16.1	15.6	Clear					
8			16.1	16.1	Clear					
9	45.0		16.1	16.1	Clear					
10			16.7	16.1	Clear					
11			16.7	15.6	Clear					
12	31.0		16.7	15.6	Clear					
13	37.0		16.7	16.1	Clear					
14	36.0		16.7	16.7	Clear					
15	40.0		16.7	16.7	Clear					
16	40.0		17.2	16.1	Clear					
17	37.0		17.2	16.1	Clear					
18	37.0		17.2	16.7	Clear					
19			17.2	15.6	Clear					
20			15.6	14.4	Clear					
21			15.6	15.0	Clear					
22			15.6	15.0	Clear					
23			16.1	15.6	Clear					
24			16.1	15.0	Clear					
25			16.1	15.6	Clear					
26	35.0		16.1	15.6	Clear					
27	35.0		16.1	15.6	Clear					
28	36.0		16.1	15.6	Clear					
29	37.0		16.7	16.1	Clear					
30	39.0		16.7	15.6	Clear					
31			16.7	15.6	Clear					

Appendix Table 1 (Continued)

August 1978	Temperature (C°)					Fish trapped				Steelhead
	Air		Water		Chinook salmon					
	Maximum	Minimum	Maximum	Minimum	Weather	Fall run		Spring run		
						Adult	Grilse	Adult	Grilse	
1	39.0		17.2	16.7	Clear					
2	38.0		17.2	16.1	Clear					
3	38.0		17.2	16.7	Clear					
4	38.0		17.2	16.7	Clear					
5	38.0		17.2	16.7	Clear					
6	43.0		17.2	16.7	Clear					
7	44.0		17.8	16.7	Clear					
8	42.0		17.8	15.6	Clear					
9	45.0		15.6	14.4	Clear					
10	40.0		15.0	13.9	Clear					
11	35.0		14.4	13.9	Clear					
12	30.0		14.4	13.9	Clear					
13	33.0		15.0	14.4	Clear					
14	34.0		15.0	14.4	Clear					
15	34.0		15.0	14.4	Clear					
16	32.5		15.0	14.4	Clear					
17	35.0		16.1	14.4	Clear					
18	35.0		16.1	16.1	Clear					
19	27.5		16.1	16.1	Clear					
20	27.0		16.1	15.0	Clear					
21	29.0		16.1	15.0	Clear					
22	29.0		16.1	15.0	Clear					
23			16.1	16.1	Clear					
24			16.1	15.0	Clear					
25			15.0	14.4	Clear					
26			15.0	14.4	Clear					
27			15.0	13.9	Clear					
28			15.0	13.9	Clear					
29			15.0	14.4	Clear					
30	29.0		15.0	13.3	Clear					
31			14.4	13.3	Clear					

Appendix Table 1 (Continued)

September 1978	Temperature (C°)				Weather	Fish trapped				Steelhead
	Air		Water			Chinook salmon				
	Maximum	Minimum	Maximum	Minimum		Fall run		Spring run		
						Adults	Grilse	Adults	Grilse	
1	35.0		14.4	12.8	Clear					
2	34.0		13.3	12.2	Cloudy					
3	26.0		13.3	11.7	Cloudy					
4	31.0		13.3	11.7						
5	22.0		12.8	11.7	Clear					
6	25.0		11.7	11.1	Clear					
7	24.0		11.7	11.1	Clear					
8	27.5		11.4	11.1	Clear					
9	20.0		11.7	11.1	Rain					
10	26.0		11.7	11.1	Cloudy					
11	28.0		11.7	11.1	Clear					
12	29.0		12.2	11.7	Clear					
13	27.0		12.2	11.1	Clear					
14	27.5		12.8	11.1	Clear					
15	29.0		12.8	12.2						
16	32.0		12.8	12.2	Clear					
17	30.0		13.3	12.8	Clear					
18	23.0		13.3	12.8	Clear					
19	27.0		13.3	12.8	Clear					
20	27.0		12.8	10.6	Clear				193	
21	27.0		11.7	11.7	Clear					
22	27.0		12.2	11.7	Clear					
23	31.0		12.2	10.6						
24	34.5		11.7	10.6	Clear					
25	35.0		11.7	10.6	Clear					
26			11.1	10.6	Clear					
27	29.0		11.1	11.1	Clear					
28	35.1		11.7	10.6	Clear					
29	33.0		10.6	10.6	Clear					
30	28.0	9.0	10.6	10.6	Clear					
Total									193	

Appendix Table 1 (Continued)

October 1978	Temperature (C°)					Fish trapped				Steelhead
	Air		Water		Weather	Chinook salmon				
	Maximum	Minimum	Maximum	Minimum		Fall run	Spring run			
						Adults	Grilse		Adults	
1	31.9	11.0	11.1	10.6	Clear					
2	32.4	10.5	11.7	10.6	Clear					
3	29.2	10.6	11.1	10.6	Clear					
4	31.2	11.0	11.7	10.6	Clear					
5	33.2		11.7	10.6						
6	36.0		11.1	10.0	Clear	156	29	5		
7	36.0		11.1	10.0	Clear					
8	35.0		11.1	10.0	Clear					
9	28.2		11.1	10.0	Clear					
10	26.0		10.0	10.0	Clear	91	14	4		
11	26.2		10.0	9.4	Clear					
12	31.5		10.0	10.0	Clear					
13	22.0		10.0	10.0	Clear	87	19			
14	24.2		10.6	10.0	Clear					
15	25.0		10.6	10.6	Clear					
16	29.3		11.1	10.6	Clear	178	15			
17	35.0		11.1	10.6	Clear					
18	27.1		11.1	10.0	Clear					
19	29.9		10.6	10.0	Clear	281	42			
20	27.1		10.6	10.0	Clear					
21	28.0		10.6	10.0	Clear					
22	27.5		11.1	10.6	Clear					
23	20.5		11.1	10.6	Clear	287	65			
24	22.0		10.6	10.6	Clear					
25	15.5		10.6	10.0	Clear					
26	19.5		10.6	10.6	Clear	252	54			
27	18.0		10.6	10.0	Clear					
28	22.5		10.6	10.6	Clear					
29	22.0		11.1	10.6	Clear					
30	26.8		11.1	10.6	Clear	386	102			
31	26.0		11.1	10.6	Clear					
Total						1718	340	9		
Cumulative total						1718	340	202		

Appendix Table 1 (Continued)

November 1978	Temperature (C°)					Fish trapped			
	Air		Water		Weather	Chinook salmon		Steelhead	
	Maximum	Minimum	Maximum	Minimum		Fall run Adults	Spring run Grilse	Adults	Grilse
1	26.0		10.6	10.0	Clear	261	77		
2	27.5		11.1	10.6	Clear				
3	20.0		11.7	10.6	Clear				
4	14.0		11.1	11.1	Clear				
5	12.0		11.7	11.1	Clear				
6	8.8		11.7	11.1	Clear	376	130		
7	9.5		11.8	11.1	Clear				
8	15.8		11.7	11.1	Clear				
9			11.8	11.7	Clear	251	90		
10			11.7	11.7					
11			12.2	11.7	Cloudy				
12			12.2	12.2	Rain				
13			12.2	11.7	Cloudy	311	105		
14			11.7	11.7	Clear				
15	10.0		11.7	11.7	Clear				
16	12.0		11.7	11.7	Clear				
17	12.0		11.7	11.7	Clear	275	73		
18	17.5		11.7	11.7	Cloudy				
19	13.2		11.7	11.7	Rain				
20	15.7		11.7	11.7	Rain	149	30		
21	17.0		11.7	11.1					
22			11.7	11.1	Clear	187	34		
23			11.7	11.7	Cloudy				
24			11.7	11.1	Cloudy				
25			11.1	11.1	Clear				
26			11.1	11.1	Cloudy				
27			11.1	11.1	Clear	148	27		
28			11.1	10.6	Clear				
29			11.1	11.1					
30	12.9		11.1	11.1	Rain	99	10		
Total						2057	576		
Cumulative total						3775	916		

Appendix Table 1 (Continued)

December 1978	Temperature (C°)				Weather	Fish trapped				Steelhead	
	Air		Water			Chinook salmon				M	F
	Maximum	Minimum	Maximum	Minimum		Fall run		Spring run			
						Adults	Grilse	Adults	Grilse		
1	8.0		11.1	11.1	Clear						
2	8.5		11.1	11.1	Clear						
3	9.0		11.1	11.1	Clear						
4	13.0		11.1	10.6	Clear	20	3				
5	11.0		10.6	10.6							
6	13.2		11.1	10.6	Clear						
7	18.5		11.1	11.1	Clear	17				2	
8	14.5		11.1	10.6	Pt. Cloudy						
9	16.5		10.6	10.6	Cloudy						
10	11.0		10.6	10.0	Cloudy						
11	8.0		10.0	10.0	Cloudy	1				1	1
12	7.0		10.0	10.0	Cloudy						
13	10.5		10.0	10.0	Clear						
14			10.0	10.0	Clear					8	4
15			10.0	10.0	Clear						
16			10.0	10.0	Clear						
17			10.0	10.0	Rain						
18			10.0	10.0	Clear	17				6	4
19			10.0	10.0	Clear						
20			10.0	10.0	Clear						
21			10.0	10.0	Clear	9				16	6
22			10.0	10.0	Clear						
23			10.0	10.0	Fog						
24			10.0	9.4	Fog						
25			9.4	9.4	Fog						
26			9.4	9.4	Fog	1				5	6
27			9.4	9.4	Fog						
28			9.4	9.4	Fog						
29			9.4	9.4	Fog						
30			9.4	9.4	Fog						
31			9.4	9.4	Fog						
Total						65	3			38	21
Cumulative total						3840	919				

Appendix Table 1 (Continued)

January 1979	Temperature (C°)					Fish trapped				Steelhead	
	Air		Water		Weather	Chinook salmon				M	F
	Maximum	Minimum	Maximum	Minimum		Fall run	Spring run				
						Adults	Grilse	Adults	Grilse		
1	11.0		9.4	8.9	Fog						
2			8.9	8.9	Fog					3	1
3	13.0		8.9	8.9	Fog						
4	13.5	6.0	9.4	8.9	Fog						
5	13.0	6.0	9.4	9.4	Fog						
6	14.0	5.0	9.4	9.4	Clear						
7	15.0	6.0	9.4	9.4	Rain						
8	12.0	9.0	9.4	9.4	Rain					9	2
9	14.0	8.0	9.4	9.4	Rain						
10	12.0	1.0	9.4	9.4	Rain						
11	13.0	6.0	9.4	9.4	Rain						
12	15.5	4.0	9.4	9.4	Cloudy					21	15
13	9.5	6.5	9.4	8.9	Cloudy						
14	9.0	7.5	8.9	8.9	Rain						
15	14.0	1.5	8.9	8.9	Rain						
16	8.0	1.5	8.9	8.9	Clear					7	18
17	14.0	2.0	8.9	8.9	Clear						
18	6.0		8.9	8.9	Clear						
19	12.0	2.0	8.9	8.9	Clear					7	9
20	14.0	2.0	8.9	8.9	Clear						
21	13.0	3.0	8.9	8.9	Clear						
22	14.0	3.0	8.9	8.9	Clear						
23	9.0	2.0	8.9	8.9	Fog					6	1
24	9.0		8.9	8.9	Cloudy						
25	13.5		8.9	8.9	Fog						
26	13.0	- .2	8.9	8.9	Clear					3	2
27	14.5		8.9	8.3	Clear						
28	20.5	- .2	8.3	8.3	Clear						
29	10.0	3.5	8.3	8.3	Clear						
30			8.3	8.3	Cloudy						
31			8.3	8.3	Rain						
Total										56	48
Cumulative total										94	69

Appendix Table 1 (Continued)

February 1979	Temperature (C°)					Fish trapped				Steelhead		
	Air		Water		Weather	Chinook salmon				M	F	
	Maximum	Minimum	Maximum	Minimum		Fall run		Spring run				
						Adults	Grilse	Adults	Grilse			
1			8.3	8.3	Cloudy							
2			8.3	8.3	Clear					4		
3			8.3	8.3	Clear							
4			8.3	8.3	Clear							
5	11.0		8.3	8.3	Clear							
6	17.0	4.5	8.3	8.3	Clear							
7	19.0	5.0	8.3	8.3	Cloudy							
8	13.5	7.0	8.3	8.3	Pt. Cloudy							
9	13.0	8.0	8.3	8.3	Clear					1	2	
10	16.5	4.5	8.3	8.3	Cloudy							
11	19.5	4.0	8.3	8.3	Cloudy							
12	15.0	8.0	8.3	8.3	Rain							
13	13.0	4.5	8.3	8.3	Rain							
14	11.0		8.3	8.3	Pt. Cloudy							
15	13.0	5.0	8.3	8.3	Rain							
16	13.5	7.0	8.3	8.3	Cloudy							
17	13.0	3.0	8.3	8.3								
18	12.0	7.0	8.3	8.3								
19	14.0	7.0	8.9	8.3	Clear							
20	8.0	7.0	8.9	8.3	Rain							
21	13.5	7.0	8.3	7.8	Pt. Cloudy							
22	8.0	6.0	7.8	7.8	Rain							
23	12.0	6.0	7.8	7.8	Cloudy					9	8	
24	15.0	7.0	7.8	7.8	Clear							
25	14.0	7.0	7.8	7.8	Cloudy							
26	15.5	8.0	7.8	7.8	Clear							
27	16.5	4.5	7.8	7.8	Clear							
28	18.0	4.0	7.8	7.8	Rain							
Total											14	10
Cumulative total											108	79

Appendix Table 1 (Continued)

March 1979	Temperature (C°)					Fish trapped				Steelhead		
	Air		Water		Weather	Chinook salmon				M	F	
	Maximum	Minimum	Maximum	Minimum		Fall run	Spring run					
						Adults	Grilse	Adults	Grilse			
1	14.0	4.0	7.8	7.8	Rain							
2	11.5	7.0	8.3	7.8	Rain					1	1	
3	16.0	6.0	7.8	7.8	Cloudy							
4	21.0	8.0	7.8	7.8								
5	18.0	9.0	7.8	7.8	Cloudy							
6	23.0	13.0	7.8	7.8	Clear							
7	23.0	15.0	7.8	7.8	Clear							
8	25.0	10.0	7.8	7.2	Clear							
9	25.0	10.0	7.2	7.2	Clear							
10	17.0	8.0	7.8	7.2	Clear							
11			7.8	7.8	Clear							
12			7.8	7.8	Clear							
13			7.8	7.8	Clear							
14	14.5	7.5	8.3	7.8	Cloudy							
15	13.0	7.0	8.3	7.8	Rain							
16	10.0	5.0	7.8	7.8	Rain							
17	16.0	8.0	7.8	7.8	Pt. Cloudy							
18	21.0	4.0	8.3	7.8	Pt. Cloudy							
19	21.0	6.0	8.3	7.8	Rain							
20			8.3	7.8	Cloudy							
21	15.0	7.5	8.3	7.8	Cloudy							
22	15.0	9.5	8.3	8.3	Cloudy							
23	21.0	7.5	8.3	7.8	Clear							
24	23.0	8.0	8.9	8.3	Clear							
25	21.0	10.0	8.9	8.3	Rain							
26	14.0	10.0	9.4	8.9	Rain							
27	11.0	7.5	8.9	8.9	Rain							
28	22.0	8.0	8.9	8.9	Rain							
29	17.0	7.0	8.3	8.3	Pt. Cloudy							
30	19.0	6.0	8.9	8.3	Clear							
31	20.0	4.0	8.9	8.9	Clear							
Total											1	1
Cumulative total											109	80

Appendix Table I (Continued)

April 1979	Temperature (C°)					Fish trapped				Steelhead	
	Air		Water		Weather	Chinook salmon		Spring run	M	F	
	Maximum	Minimum	Maximum	Minimum		Fall run					
						Adults	Grilse				
1	19.0	5.0	9.4	8.9	Clear						
2	21.5	7.0	9.4	8.9	Clear						
3			9.4	8.9	Clear						
4	24.0	12.0	9.4	8.9	Clear						
5	23.0	10.5	9.4	8.9	Pt. Cloudy						
6	17.0	6.5	10.0	8.9	Clear						
7	23.5	8.0	10.6	9.4	Clear						
8	15.5	9.0	10.6	9.4	Clear						
9	17.0	4.0	11.1	9.4	Cloudy						
10	13.0	9.0	11.1	10.0	Cloudy						
11	21.0	13.5	11.1	10.6	Cloudy						
12	22.5	8.0	11.1	10.0	Cloudy						
13	25.0	8.0	11.7	10.6	Clear						
14	25.5	9.0	11.7	10.6	Clear						
15	25.0	5.0	11.7	10.6	Clear						
16			11.7	10.6	Rain						
17			10.6	10.0	Rain						
18	21.0		10.0	10.0	Cloudy						
19			11.1	10.0	Clear						
20			11.7	10.0	Clear						
21			11.7	10.6	Cloudy						
22			11.7	10.6	Cloudy						
23			11.7	11.1	Rain						
24			11.1	11.1	Clear						
25			11.7	11.1	Cloudy						
26			11.7	11.7	Rain						
27			11.7	11.7	Pt. Cloudy						
28			11.7	11.7	Clear						
29			11.7	11.7	Clear						
30			12.2	11.7	Pt. Cloudy						

Appendix Table 1 (Continued)

May 1979	Temperature (C°)				Weather	Fish trapped				Steelhead
	Air		Water			Chinook salmon				
	Maximum	Minimum	Maximum	Minimum		Fall run		Spring run		
						Adults	Grilse	Adults	Grilse	
1			12.2	11.7	Pt. Cloudy					
2	27.0		12.2	11.7	Clear					
3	15.0	11.0	12.2	12.2	Clear					
4	19.0	10.5	12.2	11.7	Clear					
5	14.0	10.0	11.7	11.7	Rain					
6	16.5	9.0	12.2	10.6	Rain					
7	19.0	4.0	10.6	10.6	Rain					
8	21.0	6.0	11.7	10.6	Rain					
9	23.0		12.2	11.7	Rain					
10	27.0	8.0	12.2	12.2	Clear					
11	30.0	12.0	12.2	11.7	Clear					
12	33.0	14.0	12.2	11.7	Clear					
13	33.0	14.0	12.2	11.7	Clear					
14	33.0	18.0	12.8	11.7	Clear					
15	27.9	14.3	12.8	12.2	Clear					
16	30.1	10.0	12.2	11.7	Clear					
17	34.0	12.0	12.2	11.7	Clear					
18			12.8	12.2	Clear					
19	34.9	13.5	12.8	12.8	Clear					
20	27.5	13.0	12.8	12.2	Clear					
21	26.0	12.0	12.8	12.2	Clear					
22	26.8	12.5	13.3	12.8	Clear					
23	29.5	13.0	13.9	13.3						
24	35.0		13.9	13.9	Clear					
25	34.0	14.0	14.4	13.9	Clear					
26	34.9	18.0	14.4	14.4	Clear					
27	28.8	16.0	15.0	13.9	Clear					
28	15.5	12.9	14.4	13.9	Clear					
29	22.0	12.0	15.0	13.9	Clear					
30	33.0	15.0	15.0	14.4	Clear					
31	34.0	18.0	15.6	15.0	Clear					

Appendix Table 1 (Continued)

June 1979	Temperature (C°)				Weather	Fish trapped				Steelhead
	Air		Water			Chinook salmon				
						Fall run		Spring run		
	Maximum	Minimum	Maximum	Minimum		Adults	Grilse	Adults	Grilse	
1	37.0	15.8	15.6	15.0	Clear					
2	37.5	17.0	15.0	14.4	Clear					
3	37.0	18.0	15.6	13.9	Clear					
4	33.0	15.0	15.0	13.9	Clear					
5	40.0	16.0	15.0	14.4	Clear					
6	34.0	17.0	15.6	15.0	Clear					
7	30.0	16.0	15.6	15.0	Clear					
8	33.0	13.0	16.1	15.6	Clear					
9	35.0	15.9	16.1	15.6	Clear					
10	36.0	20.0	15.6	15.0	Clear					
11	37.5	21.1	15.0	14.4	Clear					
12	34.5	19.5	14.4	14.4	Clear					
13	30.0	11.5	14.4	13.9	Clear					
14	28.0	10.0	14.4	13.3	Clear					
15	24.5	13.0	13.3	12.8	Clear					
16	19.5	9.0	13.3	13.3	Cloudy					
17	26.9	11.8	15.0	13.3	Cloudy					
18	29.0	15.0	15.0	14.4	Clear					
19	29.0	15.9	15.0	13.9	Clear					
20	30.5	13.5	15.0	13.3	Clear					
21	31.0	10.0	13.9	12.8	Clear					
22	34.0	13.0	14.4	13.3	Clear					
23	36.0	16.5	14.4	13.3	Clear					
24	34.0	16.9	14.4	14.4	Clear					
25	31.0	12.2	14.4	13.9	Clear					
26	31.0	11.5	14.4	13.9	Clear					
27	34.5	13.5	15.0	13.9	Clear					
28	24.0	14.0	15.0	14.4	Clear					
29	32.0	13.5	15.0	14.4	Clear					
30	22.0	12.0	15.0	14.4	Clear					

Appendix Table 2

Fork Lengths (to Nearest Inch) of Marked Chinook Salmon
Trapped at Feather River Hatchery, 1978-79

FL inches	RVLP		LVLP		AD & CWT	
	M	F	M	F	M	F
15						
16						
17					1	
18					2	
19					4	
20					12	
21					21	
22					13	1
23	1				13	
24	1				10	3
25	2	1			9	6
26		2			3	5
27	2	1			10	15
28	4	3			10	16
29	5	6			10	15
30	8	7			8	22
31	3	5			7	8
32	5	2			10	6
33	4	1			11	3
34	1				3	3
35	2				3	4
36	2	1			6	1
37	40	29			4	3
38					2	3
39					3	
40					8	1
41					3	
42					2	
43					1	

Note: Not all marked fish were recorded
for fork length.