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ANNUAL REPORT  
FEATHER RIVER HATCHERY 1977-78

BY

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Region 2, Inland Fisheries

Anadromous Fisheries Branch  
Administrative Report No. 82-35

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ABSTRACT

This report summarizes the operation of Feather River Hatchery from 1 July 1977 through 30 June 1978. 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 9,130 chinook salmon and 131 steelhead and planted or transferred 6,394,648 chinook fingerlings, 815,601 chinook yearlings, and 221,700 steelhead yearlings. No steelhead were planted as fingerlings this year.

## INTRODUCTION

This report describes activities of Feather River Hatchery during its 11th year of operation, 1 July 1977 through 30 June 1978. 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 the 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 Feather River Hatchery trapped 9,130 chinook salmon, Oncorhynchus tshawytscha, and 131 steelhead, Salmo gairdneri, during the 1977-78 season (Table 1). Approximately 23,019,619 salmon and 224,086 steelhead eggs were taken. We planted or transferred an estimated 6,672,311 Feather River strain salmon and 221,700 steelhead. An additional 3,518 chinook salmon were imported from the Sacramento River and yielded 6,366,428 eggs. We received 983,766 eggs from Sacramento River chinook from Coleman Hatchery and 260,610 Mad River strain steelhead eggs. We transferred 487,250 Sacramento River strain chinook salmon to the Mokelumne River facility and planted 50,688 fry in the Feather River.

## MARKING PROGRAMS

Personnel from Anadromous Fisheries Branch marked 71,540 spring run chinook salmon of the 1976 brood year (BY) and 71,900 fall run chinook salmon from the 1976 BY, to compare returns of the two stocks. An additional 571,872 chinook salmon 1977 fall run BY were marked adipose clip (AD) and tagged with coded wire tags (CWT) to compare three planting sites; Port Chicago, Discovery Park, and Feather River.

## CHINOOK SALMON MAINTENANCE PROGRAM

### HISTORY OF THE 1977-78 RUNS

#### 1977 BY Spring Run

The fish ladder was opened on 24 August 1977 to allow spring run chinook salmon to enter the hatchery. The ladder was closed on 30 August 1977 because of high temperatures in the Feather River caused by drought conditions. The 121 fish trapped were transferred to a converted sewer pond on Department of Water Resources property. The water feeding the sewer pond was drawn from the Oroville-Wyandotte irrigation ditch which drew water from a low level on the lake. This water was much cooler, 11° C, compared to the water in the river (about 19° C). The adults were moved back to the hatchery, when river temperatures had dropped, on 16 September 1977. The river was then 10° C. We lost only two fish during the operation. The fish ladder was reopened on 16 September 1977, and 73 more spring run adults entered the hatchery, bringing the total of the 1977 adult run to 194 fish: 78 males and 116 females. Hatchery personnel successfully spawned 95 females between 30 September 1977 and 31 October 1977, for a total of 593,286 eggs, or average of 6,245 eggs per female.



An estimated 232,142 fingerlings were transferred to the ponds, for an average fertility rate of 39%. The poor fertility rate was due primarily to crowding and water temperature fluctuation during one point in the incubation in October, when temperatures rose briefly to almost 16° C. An estimated 218,272 fish remained on hand 30 June 1977. These were to be planted as yearlings the following season.

#### 1977 BY Fall Run

The first fall run entered the hatchery on 1 October 1977 and the last entered on 5 December 1977. The season total was 8,787 fish. We spawned 3,982 females from 1 October through 5 December 1977, and took 22,086,963 eggs, for an average of 5,547 eggs per female. Fry production totaled 15,224,435, for an average fertility rate of 69%. The reason for the poor fertility rate was high water temperatures in October because the Department of Water Resources lost the ability to control river temperatures. It should be noted that on 10 September 1977 the Department of Water Resources opened a cone valve in the bottom of the Oroville Dam and dropped the river temperatures in mid September and early October to about 11° C. As the water in Oroville Reservoir lowered, temperatures tended to rise and reached as high as 16° C. in the last half of October 1977. We installed a recirculation system for the warm water that is taken from Thermalito Irrigation District annually. The recirculation system did not work too well and caused problems with gill bacteria. Gill bacteria losses and Infectious Hematopoietic Necrosis (IHN) losses combined, amounted to about 6,536,179. Between 8 February 1978 and 22 June 1978 we planted 2,605,232 fall run 1977 BY fry and transferred another 3,234,468 fall run 1977 BY fry to Coleman Hatchery. An estimated 2,848,556 fall run chinook salmon remained on hand on 30 June 1978.

#### 1977 BY Fall Run Red Bluff

Because of high water temperatures on the upper Sacramento River in the fall of 1977, we received a total of 3,518 fall run adults from the Red Bluff Diversion Dam. Between 12 September 1977 and 4 October 1977 hatchery personnel successfully spawned 1,122 females and took a total of 6,366,428 eggs for an average of 5,674 eggs per female. We also received a total of 983,766 Sacramento River fall run eggs from Coleman Hatchery. We encountered the same problems with these eggs and fish that we did with the Feather River 1977 BY fall run crop. An additional reason for poor egg survival was the fact that the adult fish had to be transported in tank trucks from Red Bluff to Oroville. A total of 4,438,648 fish were put in the ponds, an average fertility rate of 69.7%. From the total of 4,438,648 fry that went to the ponds, 487,250 were transferred to Mokelumne River Installation, we planted an estimated 50,688, and about 856,390 remained on hand 30 June 1978.

#### 1978 BY Late Fall Run

add trend

The first late run fall run chinook salmon was received on 4 January 1978 and the last entered the hatchery on 24 February 1978. The season total was 149 fish. We successfully spawned 59 females and took a total of 339,370 eggs, for an average of 5,752 eggs per female. A total of 241,978 survived, for a total fertility rate of 71%. We shipped 17,010 to Mokelumne Hatchery and had 224,968 fish on hand 30 June 1978.

TABLE 1. Feather River Hatchery Production Summary, 1977-78

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						
1976 BY	0	0	0	0	160,330	0
1977 BY	194	95	593,286	0	0	218,272
Chinook salmon fall run						
1976 BY	0	0	0	0	655,271	0
1977 BY	8,787	3,982	22,086,963	5,839,700 <sup>a/</sup>		2,848,556
Chinook salmon late fall run						
1978 BY	149	59	339,370	17,010 <sup>b/</sup>	0	224,968
Chinook salmon fall run Red Bluff						
1977 BY	3,518	1,122	7,350,194 <sup>c/</sup>	537,938 <sup>d/</sup>	0	856,390
Steelhead summer run Nimbus						
1977 BY	0	0	0	0	99,320	0
Steelhead Feather River						
1977 BY		0	0	0	122,380	0
1978 BY	131	58	224,086	0	0	147,006
Steelhead Mad River						
1978 BY	0	0	260,610	0	0	220,470

<sup>a/</sup> Includes 3,234,468 shipped to Coleman Hatchery.

<sup>b/</sup> Shipped to Mokelumne River Hatchery.

<sup>c/</sup> Includes 983,766 eggs received from Coleman Hatchery.

<sup>d/</sup> Includes 487,250 shipped to Mokelumne River Hatchery.

TABLE 2. Chinook Salmon Planting Summary, Feather River Hatchery, 1977-78

Brood year	Race	Month of release	Average size (g)	Number released	Mark	Release site
1976	Spring run	Oct. 1977	49.7	50,660		Feather River at Boyds Pump
		Nov. 1977	56	24,180		Feather River at Boyds Pump
		Dec. 1977	74.6	38,700	AD & CWT	Feather River at Yuba City
		Jan. 1978	89.6	46,790	AD & CWT	Feather River at Yuba City
		Total		160,330		
1976	Fall run	Sept. 1977	37.3	25,650		Sacramento R. at Rio Vista
		Oct. 1977	63.9	145,540		Feather River at Yuba City
		Nov. 1977	63.9	303,950		Feather River at Yuba City
		Dec. 1977	85.1	57,000	AD & CWT	Feather River at Yuba City
		Dec. 1977	85.1	89,481		Feather River at Yuba City
		Jan. 1978	89.6	14,900	AD & CWT	Feather River at Yuba City
		Jan. 1978	89.6	18,750		Feather River at Yuba City
		Total		655,271		
1977	Fall run	Feb. 1978	.33	217,600		Feather River at hatchery
		Apr. 1978	3.54	100,489		Sacramento R. at Rio Vista
		May 1978	3.7	744,240		Sacramento R. at Rio Vista
		June 1978	7.9	199,920	AD & CWT	Port Chicago
		June 1978	7.9	180,992	AD & CWT	Sacramento R. at Discovery Park
		June 1978	7.9	190,960	AD & CWT	Feather River at hatchery
		June 1978	7.7	150,500		Tiburon
		June 1978	7.2	820,540		Sacramento R. at Rio Vista
		Total		2,605,232		
1977	Fall run	Feb. 1978	.32	50,688		Feather River at hatchery
	Red Bluff	May 1978	6.6	93,800		Mokelumne Installation
		June 1978	6.3	393,450		Mokelumne Installation
		Total		537,938		



## RECOVERY OF MARKED CHINOOK SALMON

All chinook salmon entering the hatchery were examined for marks. We observed a total of 20 marked fish (Appendix Table 1).

## CHINOOK SALMON PLANTING

We planted or transferred an estimated 6,394,648 fingerlings and 815,601 yearling chinook salmon this season (Tables 1 and 2).

## STEELHEAD MAINTENANCE PROGRAM

### HISTORY OF 1977-78 PRODUCTION

#### 1978 BY

Steelhead were not counted or held until 19 December 1977. From 19 December 1977 through 2 March 1978, a total of 131 fish entered the hatchery. None was marked. We successfully spawned 58 females (Table 3) and took 224,086 eggs. An estimated 155,307 fry were transferred to the ponds, for a survival rate of 69%. No fish were planted this season. A total of 147,006 remained on hand 30 June 1978.

TABLE 3. Steelhead Spawning Data

<u>Date</u>	<u>Fish spawned</u>		<u>Date</u>	<u>Fish spawned</u>	
	<u>M</u>	<u>F</u>		<u>M</u>	<u>F</u>
9 Jan. 1978	5	8	8 Feb. 1978	5	5
16 Jan. 1978	5	9	17 Feb. 1978	6	9
26 Jan. 1978	8	16	24 Feb. 1978	1	3
1 Feb. 1978	7	5	2 Mar. 1978	4	3

#### 1978 BY Mad River

A total of 260,610 eyed eggs was received from Mad River Hatchery in March 1978. On 30 June 1978 we had 220,470 fish on hand.

#### 1977 BY Summer Run Nimbus

As part of an on going attempt to establish a summer run in the Feather River, we planted a total of 99,320 yearlings in January and February 1978. (Table 4).

TABLE 4. Steelhead Planting Summary, 1977-78

Date	Average size (g)	Number released	Release site
Nimbus January	89	68,050	Sacramento River at Garcia Bend
February 1978	63	31,270	Sacramento River at Garcia Bend
Feather January 1978	96	26,230	Feather River at Yuba City
February 1978	62	96,150	Feather River at Yuba City

1977 BY Steelhead

We planted an estimated 122,380 Feather River 1977 BY steelhead this season (Table 4).

VISITOR USE

During the 1977-78 fiscal year 87,706 people visited the installation.



Appendix Table 1

Fork Lengths (to Nearest Inch) of Marked Chinook Salmon  
Trapped at Feather River Hatchery, 1977-78

FL (inches)	AD		LV		RVLP		LVLP		RPLV	
	M	F	M	F	M	F	M	F	M	F
20	1				1					
21					1					
22										
23										
24					1			2		
25								2		
26								1		
27								1		
28			1							
29							2	2		
30		1					1	1		1
31										
32										
33		1								

## Appendix ble 2

**Feather River Salmon and Steelhead Hatchery  
Weather, Water, and Fish Data Report, 1977-78**

July 1977	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			16.7	16.1	Clear						
2			17.2	16.1	Clear						
3			16.7	16.1	Clear						
4			16.1	15.6	Clear						
5			16.7	15.6	Clear						
6			16.1	13.3	Clear						
7			14.4	13.3	Clear						
8			14.4	13.3	Clear						
9			13.9	12.8	Clear						
10			13.3	12.8	Clear						
11			13.3	12.8	Clear						
12			13.3	12.8	Clear						
13	33.0	13.5	15.0	13.3	Clear						
14	36.0	16.0	15.0	13.9	Clear						
15	40.0	20.0	15.0	13.9	Clear						
16	41.0	18.0	15.6	15.0	Clear						
17	39.0	15.5	16.1	15.6	Clear						
18	35.5	17.5	16.1	15.0	Clear						
19	34.0	15.0	15.6	15.6	Clear						
20	36.0	14.0	15.6	15.6	Clear						
21	16.0	13.5	16.1	15.6	Clear						
22	35.0	13.0	16.1	16.1	Clear						
23	30.0	14.0	16.1	15.6	Clear						
24	29.0	12.0	15.6	15.6	Clear						
25	33.0	14.0	15.6	15.0	Clear						
26	36.0	15.0	15.0	13.9	Clear						
27	38.0	13.5	15.6	14.4	Clear						
28	37.0	17.0	15.6	13.9	Clear						
29	40.0	18.5	15.6	13.3	Clear						
30	42.5	14.5	16.1	15.0	Clear						
31	40.0	20.0	15.6	15.1	Clear						



September 1977	Temperature (C°)				Weather	Fish trapped				Steelhead M F
	Air		Water			Chinook salmon		Spring run		
	Maximum	Minimum	Maximum	Minimum		Fall run Adults	Grilse	Adults	Grilse	
1	31.5	14.0	20.0	20.0	Clear					
2	33.0	13.5	20.0	20.0	Clear					
3	36.0	16.0	19.4	20.0	Clear					
4	38.0	17.5	19.4	20.0						
5	39.5	18.5	20.0	20.0						
6	39.0	21.0	20.0	19.4	Clear					
7	40.0	19.0	20.0	19.4	Clear					
8	40.0	17.0	20.0	18.3	Clear					
9	37.0	14.0	20.0	19.4						
10	33.0	13.0	20.0	19.4						
11	32.0	12.5	20.0	19.4						
12	32.0	14.0	20.0	19.4	Clear					
13	31.0	15.5	19.4	17.2	Clear					
14	23.0	11.0	17.2	13.3	Clear					
15	18.5	13.0	13.3	11.7	Cloudy					
16	16.0	12.5	12.8	10.6						
17	21.5	12.5	12.2	11.1	Cloudy					
18	24.0	14.0	12.8	11.7	Rain					
19	20.5	11.5	16.7	11.1	Clear					
20	26.0	10.0	15.0	12.2	Clear					
21	21.8	9.7	13.9	12.2						73
22	28.0	11.8	12.8	11.7	Clear					
23	27.5	13.9	13.3	12.2	Clear					
24	26.0	14.8	13.9	12.8	Clear					
25	29.0	12.6	14.4	13.3	Clear					
26	28.0	14.0	13.9	11.7	Clear					
27	23.0	16.2	13.9	11.7	Clear					
28	23.0	16.0	15.0	12.8	Rain.					
29	22.5	10.0	15.0	12.8	Cloudy					
30	25.0	8.0	12.8	11.7	Clear					
Total										73
Cumulative total										194



Appendix Table 2 (Continued)

October 1977	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	28.2	11.8	13.9	10.0	Clear	13	1				
2	30.5	12.0	15.6	12.2	Clear						
3	32.0	14.0	15.6	12.8	Clear						
4	32.0	10.0	15.6	11.1	Clear						
5	26.0	11.0	11.7	10.6	Clear						
6	25.5	10.8	12.2	9.4	Clear						
7	27.0	9.0	12.8	11.1	Clear	392	18				
8	29.0	12.0	13.3	10.6	Clear						
9	30.5	10.0	13.9	11.1	Clear						
10	31.5	13.0	15.6	11.1	Clear						
11	32.0	15.0	15.1	15.0	Clear	195	30				
12	31.0	14.0	15.0	11.7	Clear						
13	32.0	12.0	11.7	10.6	Clear	294	46				
14	30.0	13.0	10.6	10.0	Clear						
15	29.3	10.5	10.6	10.6	Clear						
16	28.0	8.0	10.6	10.0	Clear						
17	18.0	16.0	12.8	9.4	Clear	45	10				
18	22.0	10.0	12.8	10.6	Clear						
19	25.0	8.5	11.1	10.0	Clear						
20	18.0	8.0	14.4	9.4	Clear						
21	25.0	9.8	14.4	10.6	Clear	1013	38				
22	19.0	11.0	14.4	10.6							
23	21.0	13.5	13.9	12.2							
24	26.0	13.0	12.2	11.7	Clear	608	75				
25	27.0	14.0	13.9	11.7	Clear						
26			13.3	11.7	Cloudy						
27			12.8	10.6	Cloudy	848	81				
28			13.3	10.6	Clear						
29			13.3	12.2	Clear						
30			13.3	12.2	Clear						
31			13.9	11.1	Clear						
Total						3408	299				
Cumulative total						3408	299	194			

Appendix Table (Continued)

November 1977	Temperature (C°)				Weather	Fish trapped				Steelhead	
	Air		Water			Chinook salmon		Spring run		M	F
	Maximum	Minimum	Maximum	Minimum		Fall run Adults	Grilse	Adults	Grilse		
1			14.4	11.1	Clear	1012		68			
2			14.4	12.2	Clear						
3		16.0	14.4	11.7	Clear						
4	20.5	10.0	13.9	11.7	Clear	848		44			
5	15.0	4.0	13.3	11.7							
6	16.0	17.0	13.3	11.7							
7	19.5	17.0	13.9	12.2		625		25			
8	18.0	5.0	13.9	12.8	Clear						
9	21.0	5.5	14.4	12.8	Clear	493		14			
10	22.0	9.0	14.4	13.3	Clear	252		4			
11	20.0	9.5	13.9	13.3	Clear						
12	20.5	9.0	14.4	13.9	Clear						
13	21.0	5.5	14.4	13.9	Clear						
14	22.5	6.0	14.4	13.9	Clear						
15	26.0	6.5	13.9	13.9	Clear	597		31			
16	25.0	8.0	13.9	13.9	Clear						
17	18.0	3.5	13.9	13.9	Clear	464		8			
18	14.0	2.0	13.9	13.9	Clear	109		10			
19	12.0	8.0	13.9	13.9	Clear						
20	10.0	4.0	13.9	13.3	Rain						
21	10.0	9.0	13.3	13.3	Clear	284		8			
22	13.0	11.8	13.3	13.3	Clear						
23	17.0	5.5	13.3	12.8	Clear	104		2			
24	18.5	9.0	12.8	12.2	Clear						
25	18.0	4.0	12.2	12.2	Clear						
26	21.0	6.0	12.8	12.2	Clear						
27	17.0	6.0	12.8	12.2	Clear						
28	19.0	6.0	12.8	12.2	Clear						
29	16.5	4.0	12.8	12.2	Clear						
30	14.0	4.0	12.8	12.2	Clear						
Total						4788		214			
Cumulative total						8196		513			194

Appendix Table 2 (Continued)

December 1977	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	5.5	12.8	12.2	Clear	78					
2	10.0	7.0	12.2	12.2	Clear						
3	9.0	7.0	12.2	12.2	Clear						
4	11.0	9.5	12.2	12.2							
5	12.5	9.0	12.2	12.2	Foggy						
6	11.0	9.5	12.2	12.2	Foggy						
7			12.2	12.2	Foggy						
8			12.2	12.2	Foggy						
9			12.2	11.7	Clear						
10			11.7	11.7	Clear						
11			11.7	11.7	Clear						
12			11.7	11.1	Clear						
13	13.0	6.0	11.1	11.1	Clear						
14	12.9	1.5	11.1	11.1	Rain						
15			11.1	11.1	Clear						
16	15.0	9.0	11.1	11.1	Rain						
17	11.5	9.5	11.1	11.1							
18	12.0	11.9	11.1	10.6							
19	17.0	6.9	10.6	10.6	Clear					9	7
20			10.6	10.0	Clear						
21			10.0	9.4	Rain						
22			10.0	9.4	Rain						
23			9.4	9.4	Clear					15	7
24			10.0	9.4	Clear						
25			10.0	10.0							
26			10.0	10.0							
27			10.0	10.0	Rain						
28			10.0	10.0	Rain						
29			10.0	9.4	Cloudy					9	7
30			10.0	9.4	Clear						
31			10.0	10.0							
Total						78				33	21
Cumulative total						8274	513	194		33	21

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January 1978	Temperature (C°)				Weather	Chinook salmon				Fish trapped	Steelhead	
	Air		Water			Late fall run		Spring run			M	F
	Maximum	Minimum	Maximum	Minimum		Adults	Grilse	Adults	Grilse			
1			10.0	9.4	Rain							
2			9.4	9.4	Rain							
3			9.4	9.4	Rain							
4			9.4	9.4	Rain			10	1			
5	14.0	11.0	9.4	8.3	Rain							
6	15.0	6.0	8.3	7.8	Rain							
7	14.0	9.0	7.8	7.8	Clear							
8	15.0	11.0	8.3	7.8	Rain							
9	12.0	6.0	8.9	8.3	Rain							
10	15.0	9.5	8.9	8.3	Clear						5	5
11	13.0	11.0	8.9	8.3	Rain							
12			8.9	8.9	Rain							
13			9.4	8.9	Rain							
14			9.4	8.3	Rain						15	13
15			9.4	8.9	Rain							
16			9.4	8.9	Rain							
17			9.4	9.4	Rain						3	7
18			9.4	9.4	Rain							
19			10.0	9.4	Rain							
20			10.0	10.0	Cloudy							
21			10.0	10.0	Clear							
22			10.0	10.0	Clear							
23	9.0	4.5	10.0	10.0	Clear							
24	14.0	4.5	10.0	9.4	Clear			62			2	2
25	12.0	4.0	9.4	9.4	Clear							
26	14.0	4.0	9.4	8.9	Clear			4			4	2
27	13.0	4.5	8.9	8.9	Fog							
28	14.0	4.0	8.9	8.9	Fog							
29	7.0	4.5	8.9	8.9	Fog							
30	6.5	6.0	8.9	8.9	Pt. Cloudy							
31	7.0	6.0	8.9	8.9	Cloudy							
Total								76	1		29	29
Cumulative total								8350	514	194	62	50



Appendix Table 2 (Continued)

February 1978	Temperatures (C°)				Weather	Fish trapped				Steelhead	
	Air		Water			Chinook salmon		Spring run		M	F
	Maximum	Minimum	Maximum	Minimum		Late fall run Adults	Grilse	Adults	Grilse		
1	9.0	8.0	8.9	8.9		23				4	7
2	15.0	6.0	8.3	8.3							
3	15.0	6.5	8.3	8.3							
4	12.0	9.5	8.9	8.3							
5			8.3	8.3							
6	14.0	11.0	8.9	8.3	Rain						
7	14.0	6.5	8.9	8.3	Rain						
8	12.5	8.5	8.9	8.9	Rain	5					1
9	13.0	4.5	8.9	8.9	Clear						
10	10.0	4.0	8.9	8.9	Clear						
11	12.5	6.0	8.9	8.3	Clear						
12	8.0	7.0	8.3	8.3	Rain						
13	11.0	3.0	8.3	8.3	Cloudy						
14	12.5	5.0	8.3	8.3	Clear						
15	13.5	6.0	8.9	8.3	Clear						
16	10.0	5.0	8.3	8.3	Cloudy						2
17	11.0	6.0	8.3	8.3	Cloudy	23					
18	21.5	6.0	8.9	8.3	Clear						
19	17.5	6.5	8.9	8.3	Clear						
20	16.0	7.0	8.9	8.3	Clear						
21	20.0	7.0	8.9	8.9	Clear						
22	23.0	10.0	8.9	8.9	Clear						
23	14.5	10.0	8.9	8.9	Clear						
24	13.5	10.0	9.4	8.9	Clear	21				1	
25	16.0	6.0	9.4	8.9	Clear						
26	15.6		10.0	9.4							
27	16.0	10.0	10.0	9.4							
28	14.0	10.0	9.4	8.9							
Total						72				5	10
Cumulative total						8422	514	194		67	60



Appendix Table 2 (Continued)

April 1978	Temperature (C°)				Weather	Fish trapped				Steelhead
	Air		Water			Chinook salmon				
	Maximum	Minimum	Maximum	Minimum		Fall run		Spring run		
						Adults	Grilse	Adults	Grilse	
1			10.0	9.4	Rain					
2			10.0	9.4						
3			10.0	10.0	Clear					
4			10.0	9.4	Rain					
5	27.5	4.5	10.0	9.4	Clear					
6			10.0	10.0	Rain					
7			10.0	10.0	Clear					
8			10.6	10.0	Clear					
9			11.1	10.6	Clear					
10			11.1	10.6	Clear					
11			11.1	11.1	Clear					
12	26.0	5.0	11.1	10.6	Clear					
13			11.1	10.6	Cloudy					
14			10.6	10.0	Cloudy					
15			10.0	10.0	Rain					
16			10.0	10.0						
17			10.6	10.0	Clear					
18			11.1	10.6	Clear					
19	26.5	4.5	11.1	11.1	Rain					
20			11.1	10.6	Rain					
21			10.6	9.4	Clear					
22			11.1	10.6						
23			11.7	11.1	Clear					
24			11.7	11.1	Rain					
25			11.1	10.6	Rain					
26	28.0	4.0	11.1	10.6	Clear					
27			11.1	11.1	Clear					
28			11.7	11.1	Clear					
29			11.7	11.1	Clear					
30			11.7	11.1	Rain					

## Appendix Table 2 (Continued)

May 1978	Temperature (C°)				Weather	Chinook salmon				Fish trapped		Steelhead
	Air		Water			Fall run		Spring run		M	F	
	Maximum	Minimum	Maximum	Minimum		Adults	Grilse	Adults	Grilse			
1		12.2	11.1		Clear							
2		12.2	12.2		Clear							
3		28.5	6.5		Clear							
4			12.2	11.7	Clear							
5			13.3	12.2	Clear							
6			13.3	12.2	Clear							
7			12.8	12.2	Clear							
8			12.8	12.2	Clear							
9		30.0	12.8	11.7	Clear							
10			12.2	11.1	Clear							
11			12.2	11.7	Clear							
12			13.3	12.2								
13			13.3	12.8	Clear							
14			13.3	12.8	Clear							
15			13.3	11.1	Clear							
16			12.8	10.6	Clear							
17	36.0	4.0	13.9	12.2	Clear							
18			13.9	13.3	Clear							
19			13.9	13.3	Clear							
20			13.3	12.8	Clear							
21			13.3	13.3	Clear							
22			13.9	13.3	Clear							
23			13.3	12.8	Rain							
24	35.0	8.0	12.8	12.2	Rain							
25			13.3	12.8	Clear							
26			13.3	12.8	Clear							
27			13.3	12.8	Clear							
28			13.9	13.3	Clear							
29			14.4	13.3								
30			15.0	13.3	Clear							
31			14.4	13.9	Clear							



Appendix Table 2 (Continued)

June 1978	Temperature (C°)					Fish trapped				Steelhead	
	Air		Water		Weather	Chinook salmon					
	Maximum	Minimum	Maximum	Minimum		Fall run	Spring run	M	F		
						Adults	Grilse			Adults	Grilse
1			15.0	13.9	Clear						
2			13.9	13.3	Clear						
3			13.9	13.9	Clear						
4			14.4	13.3	Clear						
5			15.0	13.9	Clear						
6			14.4	14.4	Clear						
7	36.0	12.0	14.4	13.9	Clear						
8			14.4	13.3	Clear						
9			13.9	13.9	Clear						
10			13.9	13.3	Clear						
11			14.4	13.3	Clear						
12			13.9	12.8	Clear						
13			14.4	13.3	Clear						
14	28.5		14.4	13.9	Clear						
15	26.0	13.5	14.4	13.9	Clear						
16	26.0	13.5	14.4	13.9	Clear						
17	26.0	13.5	14.4	13.9	Cloudy						
18	28.0	12.0	14.4	13.9	Clear						
19	28.0	15.0	14.4	13.9	Clear						
20	27.0	13.0	14.4	14.4	Clear						
21	27.0	16.0	15.0	14.4	Clear						
22	28.0	13.0	15.0	14.4	Clear						
23	28.5	12.0	14.4	13.9	Clear						
24	32.0	14.0	14.4	13.9							
25	29.0	11.0	15.0	14.4							
26	28.0	15.0	15.0	13.9	Clear						
27	30.5	12.0	15.0	14.4	Clear						
28	26.0	13.0	15.0	14.4	Clear						
29	29.0	14.0	15.0	15.0	Clear						
30	29.0	13.0	15.6	15.0	Clear						