

State of California
The Resources Agency
Department of Fish and Game
Region 2 and Inland Fisheries

REF 90160

ANNUAL REPORT
FEATHER RIVER SALMON AND STEELHEAD HATCHERY
SECOND YEAR OF OPERATION 1968-69^{1/}

by

Frederick Groh^{2/}

SUMMARY

A few spring-run king salmon, Oncorhynchus tshawytscha, were held during the spring and summer of 1968 to determine if they could survive in hatchery facilities. The remainder of the spring-run adults were not allowed in the hatchery until August 22 when the fish ladder was reopened. Spring-run fish entered the hatchery from that date until September 7. All fish received after September 7 were considered fall-run salmon.

Released in the spawning channel this year were 233 male and 266 female king salmon. Estimated outmigrant production is questionable because algae accumulated and collapsed the diversion screen. This season both spawning channel and artificially spawned fish experienced extremely high mortality from Sacramento River Chinook Disease (SRCD).

Steelhead trout, Salmo gairdnerii gairdnerii, first appeared in the hatchery on September 15 and continued to arrive until March 12, 1969.

Several experiments were conducted this year involving means of transmission of SRCD, rearing of Sacramento River winter-run king salmon, downstream trucking of yearling king salmon, and rearing of silver salmon, O. kisutch, and brown trout, Salmo trutta. Results of these studies are presented.

Spawning and production data for fiscal year 1968-69 are presented in the following table:

^{1/} Anadromous Fisheries Branch Administrative Report No. 72-5.
Submitted January, 1971.

^{2/} Frederick Groh died of cancer on July 30, 1971. The Department greatly regrets his loss.

Species	Number taken				Females spawned	Eggs taken	Fish planted		Fish on hand			
	Grilse	Males	Females	Total			Finger.	Yearl.	June 30, 1969			
King salmon												
spring run	n	o	d	a	t	a	171*	60	385,640	0	71,100	19,500
fall run												
artificially spawned	1,992	1,149	2,305	5,446	2,224	13,159,425	437,200+	338,475	710,200			
fall run spawning channel												
		233	266	499	238 ‡	1,100,000	90,640		0		0	0
Steelhead		176	185	361	124	378,285	0		0		296,500	

* Includes 67 fish which entered and were kept in the hatchery before July 1 and are also included in the 1967-68 report.

+ Includes 68,000 fish from eggs received from Nimbus Hatchery.

‡ 18 of these were only partially spawned out.

INTRODUCTION

This is the 6th Annual Report of the Feather River Hatchery; it summarizes the activities from July 1, 1968, through June 30, 1969.

The hatchery is located near the Upper Thermalito Bridge in Oroville, California. This installation 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.

KING SALMON MAINTENANCE PROGRAM

Spring Run

Since it was not known if spring-run king salmon could be successfully held in the hatchery from May to September, it was decided to allow some adults to enter the facility during the spring and early summer. The first fish arrived on May 12, 1968. The ladder was kept open till July 13, by which time 94 salmon had entered. Of these, 27 were returned to the river. The ladder was again opened for a few hours on July 30 and July 31, during which time an additional 23 fish entered, bringing the total kept in the hatchery to 90. These fish were held in four separated area. Only 42 survived to spawn. Survival of the individual groups ranged from zero to 100% (Table 1).

Table 1

Number Spring-Run Fish Received during Spring and Summer of 1968

Dates received	Tank No. 1	Spawning channel	Fish ladder	Tank No. 2	Died		Number spawned
					No.	Dates	
5-12 to 5-31	17				6	6-10 to 6-20	11
6-4 to 6-7		24			16	6-14 to 7-9	8
6-8 to 6-13			26		26	6-27 to 7-12	0
7-30 & 31				23	0	--	23
			TOTALS		48		42

The fish ladder was reopened on August 22 and during the next three days 78 spring-run adults were received. No more fish arrived until September 7 when three entered the hatchery. It is felt that these 81 fish were spring run and came up the river during May, June, and July and congregated at the base of the fish barrier dam. All fish were in excellent condition. Fish arriving after September 7 were considered fall-run salmon.

A total of 60 spring-run females was spawned, yielding 385,640 eggs for an average of 6,427 eggs per female. The resulting 313,700 fingerlings were transferred from the incubators to the ponds for an 81% hatch. Due to mortality from SRCD, only 19,500 remained on hand June 30, 1969.

Fall Run Artificially Spawned

The first fall-run salmon entered the hatchery on September 15 and the last on December 27. The season total was 5,945 fish. A total of 2,224 females was spawned artificially this season and 13,159,425 eggs were taken for an average of 5,917 eggs per female. Egg-to-fry production amounted to 10,442,275, for a 79% hatch.

As a result of a severe outbreak of SRCD during March and April, only 1,079,400 fish of the 1968 brood year remained on hand or were released by June 30, 1969.

Fall Run Spawning Channel

The first salmon was allowed in the artificial spawning channel on October 10 and the last on November 13. Although the channel is designed to accomodate 600 males and 600 females, only 233 males and 266 females were used this first year. A total of 28 females died without spawning, 18 were partially spawned, and the others were completely spawned out. It is estimated that 1,100,000 eggs were deposited in the gravel. The first outmigrants appeared on January 1, 1969. SRCD appeared in the fingerlings by the middle of January and persisted until the end of March. A total of 66,300 dead fish was counted. On May 19 the diversion screen collapsed due to an excessive accumulation of algae from the channel. No further downstream count was possible. It is estimated that 90,640 fish were produced in the spawning channel. This is a maximum estimate, as it is based on the rate of survival of the artificially spawned fish: 79% hatched; 10.3% survived SRCD.

King Salmon Releases

During this report period, totals of 527,840 fingerling and 409,575 yearling king salmon were released in the Feather and Sacramento rivers. Fingerlings of the 1968 brood averaged 95.3/lb when released (not including spawning channel fish), and the yearlings of the 1967 brood.

averaged 14.0/lb. Yearlings were released during winter months, and all of the fingerlings were released during the month of June, except the spawning channel fish which migrated out naturally (Table 2).

A total of 710,200 king salmon of the 1968 brood remained on hand June 30, 1969.

Table 2

Releases of King Salmon from Feather River
Hatchery during Fiscal Year 1968-69

Date	Place	Number	Size	Mark
<u>1967 Brood Year (yearlings)</u>				
Dec. 12-18	Feather R.	71,100 (spring run)	7.9/lb	none
Dec. 12-17	"	231,675	16.8/lb	"
Jan. 28-31	Rio Vista, Sacto. R.	50,400	12.0/lb	Ad-An
"	Hatchery	56,400	12.0/lb	Ad-RP
	TOTAL	409,575	14.0/lb	
<u>1968 Brood Year (fingerlings) - Artificially Spawned</u>				
June 24-26	Rio Vista	108,500	86.8/lb	none
June 4-27	Feather R.	251,100	88.4/lb	"
June 2	Hatchery	9,600	480/lb	"
June 24	Sacto. R.	32,000*	80/lb	"
June 24-25	Feather R.	36,000*	80/lb	"
	TOTAL	437,200	95.3/lb	
<u>1968 Brood Year (fingerlings) - Spawning Channel</u>				
Jan. 1 - June 30	Hatchery	90,640	no data	none

* Fish from eggs received by transfer from Nimbus Hatchery.

STEELHEAD MAINTENANCE PROGRAM

Adult Run--1969 Brood Year

Steelhead started to arrive in mid-September, but, as in the past, attempts to hold these early fish were not successful. All early arrivals were returned to the river until November 17, at which time

the water temperature was 48-50 F. From November 17 to March 12, 361 adults were received and kept in the hatchery for spawning. A total of 124 females was spawned and 378,285 eggs were taken. On June 30, 1969, a total of 284,200 fingerlings remained on hand.

Steelhead Releases

No steelhead were released during this fiscal year. All are being raised for broodstock.

Broodstock Rearing

At the end of the 1969 fiscal year, a total of 12,300 fish of the 1967 and 1968 brood years had survived warm water temperatures and ceratomyxa. These fish are the survivors from the 1967 and 1968 spawnings and are being reared for broodstock. Fish of the 1967 brood (8,750 on hand June 30, 1969) will be ready to spawn in the spring of 1970.

EXPERIMENTS

Transmission of Sacramento River Chinook Disease

An experiment was conducted at Feather River Hatchery during 1969 to determine if SRCD is present in the hatchery water supply, if it is transmitted from fish to fish, and if king salmon from other areas are immune to the disease.

King salmon fry from Green River Hatchery, Washington, and from Trinity River Hatchery were received on February 17 and the experiment was started March 3. Each group was divided in half. The controls were placed in hatchery water, upstream from any other fish. The experimental fish were placed in live cars (Table 3). The live cars were kept in a pond containing Feather River fall-run fingerlings which were known to be infected with SRCD. On April 24, all fish in the experiment were inspected. The controls were disease free. The experimental fish were infected with SRCD and ceratomyxa. This part of the experiment was terminated May 20. It had been demonstrated that SRCD can be transmitted from fish to fish and that neither Trinity River nor Green River fish were immune to it, but the Green River fish showed less than 6% mortality and the Trinity River fish more than 42% (Table 4 and Table A-1). The controls were inspected again on July 15 and 16. Ceratomyxa was present in the Green River fish, but not in the Trinity River fish. No SRCD was found in either control group. Ceratomyxa was primarily responsible for the death of over 17% of the Green River controls during June and July while only 1.06% of the Trinity River fish died during the same period. These fish are being held for further study.

Table 3

Disposition and Sizes of Green River and Trinity River
King Salmon Used in Sacramento River Chinook Disease
Transmission Experiment

	Green River	Trinity River
Date received	February 17	February 17
Date experiment started	March 3	March 3
Number received	10,000	10,000
Number per live car	1,258	1,248
Total fish in four cars	5,032	4,992
Total fish in controls	4,968	5,008
Size at start	34/oz	52/oz
Size on July 31	23/lb	29/lb

Table 4

Results of Green River and Trinity River King Salmon
Sacramento River Chinook Disease Transmission Experiment

	Green River		Trinity River	
	Experimental	Controls	Experimental	Controls
Number started with:	5,032	4,968	4,992	5,008
Mortality				
March 3 to May 20	287	4	2,143	7
May 21 to July 31	experiment ended	873	experiment ended	56

King Salmon Winter Run Experiment

As an experiment, it was decided to try to spawn and rear Sacramento River winter-run king salmon at Feather River Hatchery. Adult fish were hauled from the Bureau of Sport Fisheries and Wildlife, Tehama-Colusa Fish Facility near Red Bluff and the Anderson-Cottonwood Irrigation District Dam at Redding, California. The first fish arrived at the hatchery by truck on April 23 and the last on May 23. All adults were in excellent condition and 1,398,900 eggs were taken. High water temperatures during incubation caused an egg loss of 662,000 while white spot disease caused a loss of 323,200 alevins in the incubation trays. The remaining 413,700 fry were transferred to the ponds. Since SRCD was known to be in the Sacramento River and since time and space were available at Feather River Hatchery, the eggs of each female were placed in a separate incubator tray. A sample of body cavity fluid was taken from each female and sent to the Fish and Game Disease Laboratory in Sacramento for identification of SRCD. After it was determined whether the female was negative or positive for SRCD, the information was noted on the tray with the matching eggs. Of the 277 females spawned, 113 were positive and 164 were negative for SRCD. The positive and negative groups of fish were kept in separate ponds, but the negative fish became infected by the virus during the summer. Totals of 12,000 fish from the negative and 3,600 fish from the positive females were planted.

King Salmon Trucking

A total of 106,800 fall-run king salmon yearlings were marked during December and January. Approximately half of these were planted at Rio Vista and half were released at the hatchery (Table 2). This experiment is to determine which release site contributes most to the fisheries and to the river and hatchery populations.

Silver Salmon Experiment

To determine if silver salmon could be raised successfully at Feather River Hatchery, a total of 41,500 Klaskanine silver salmon were raised and planted in February, 1969, in Oroville Reservoir, and 54,600 were planted in April, 1969, in Lake Almanor. An additional 1,200 were planted in April in Oroville Reservoir (Table 5).

Brown Trout Experiment

A similar experiment was conducted with brown trout. Here again no significant difficulties were encountered (Table 6). These fish were received from American River Hatchery.

VISITORS

A total of 110,000 people visited the Feather River Hatchery. Among this number were various tours which were shown around by hatchery and Department of Water Resources employees.

Table 5

Silver Salmon Experiment--Klaskanine Stock

Date rec.	Number rec.	Size	Pounds rec.	Number planted	Size	Date planted	Pounds planted	Net lbs. gained	Lbs. food fed	Lbs. food fed/ lbs. fish gained	Cost/lb fish gained
				41,500	14/lb	2-4-69	2,925				
				54,600	7/lb	4-2-69	7,800				
				1,200	6/lb	4-24-69	200				
6-17-68	110,400	16/oz.	431	97,300			10,925	10,494	26,480	2.52	\$0.23

Table 6

Brown Trout Experiment--Massachusetts stock

Date rec.	Number rec.	Size	Pounds rec.	Number planted	Size	Date planted	Pounds planted	Net lbs. gained	Lbs. food fed	Lbs. food fed/ lbs. fish gained	Cost/lb fish gained
8-15-68	43,296	35/lb.	1,230	42,500	8.5/lb.	12-9-68	5,000	3,770	6,050	1.60	\$0.15

Green River and Trinity River King Salmon Sacramento River Chinook Disease Transmission Experiment--Daily Mortality Table

[illegible]

Table A-2

Feather River Salmon and Steelhead Hatchery
 weather, water and fish Data Report
 July, 1968

Temperatures (degrees F)						Fish Trapped			
Date	Air		Water		Weather	(C.F.S.) River Flow	King Salmon		Steelhead
	Max.	Min.	Max.	Min.			Fall Run Adults Grilse	Spring Run Adults Grilse	
1	92	64	65	63	Clear	400			
2	88	61	64	62	Clear				
3	92	58	65	62	Clear				
4	95	62	65	62	Clear				
5	102	73	65	63	Clear				
6	100	69	66	63	Clear				
7	96	63	66	62	Clear				
8	90	62	66	62	Clear				
9	90	62	66	62	Clear				
10	92	60	66	64	Clear				
11	94	64	66	64	Clear				
12	89	62	66	64	Clear				
13	86	60	66	64	Clear				
14	84	60	66	63	Clear				
15	86	59	67	64	Clear				
16	87	60	57	64	Clear				
17	94	61	68	65	Clear				
18	98	67	66	62	Clear				
19	98	68	62	60	Clear				
20	95	65	62	58	Clear				
21	94	58	62	58	Clear				
22	96	53	62	58	Clear				
23	94	55	62	58	Clear				
24	94	54	62	58	Clear				
25	92	56	62	58	Clear				
26	98	62	62	58	Clear				
27	99	64	62	58	Clear				
28	96	64	62	58	P. Cloudy				
29	96	68	62	60	P. Cloudy				
30	94	67	62	60	P. Cloudy				14
31	82	61	62	60	Clear				9
Total									23

Table A

Feather River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
August, 1968

Temperatures (degree F)						Fish Trapped			
Air		Water		(C.F.S.) River Flow	Weather	King Salmon		Steelhead	
Date	Max.	Min.	Max.	Min.		Fall Run Adults Grilse	Spring Run Adults Grilse		
1	90	62	62	60	Clear				
2	92	60	63	60	Clear				
3	91	60	63	60	Clear				
4	91	58	64	60	Clear				
5	90	56	64	60	Clear				
6	96	57	64	61	Clear				
7	93	68	64	62	Clear				
8	92	65	63	60	Clear				
9	92	58	64	60	Clear				
10	94	62	64	61	Clear				
11	92	60	64	61	P. Cloudy				
12	80	59	63	60	P. Cloudy				
13	74	54	63	61	P. Cloudy				
14	78	60	64	62	P. Cloudy				
15	84	59	65	62	Clear				
16	79	62	64	62	P. Cloudy				
17	82	57	62	58	P. Cloudy				
18	75	62	60	57	Cloudy				
19	69	58	60	58	Cloudy				
20	66	56	61	60	Rain				
21	72	53	64	60	Cloudy				
22	80	54	62	60	Clear		48		
23	85	57	62	60	Clear		24		
24	87	60	62	59	Clear		6		
25	92	58	64	58	Cloudy				
26	83	61	62	59	Clear				
27	84	60	62	60	Clear				
28	94	60	62	60	Clear				
29	97	61	64	60	Clear				
30	94	60	64	60	Clear				
31	85	56	64	60	Clear				
Total							78		

Table A-4

Feather River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
September, 1968

Temperatures (degrees F)									
Date	Air		Water		Weather	(C.F.S.S.) River Flow: 400	Fish Trapped		
	Max.	Min.	Max.	Min.			King Salmon Fall Run Adults	Salmon Spring Run Adults	Steelhead
1	90	59	60	56	Clear				
2	88	57	58	56	Clear				
3	90	58	57	54	Clear				
4	87	58	58	54	Clear				
5	90	58	58	54	Clear				
6	90	60	58	56	Clear				
7	93	57	58	56	Clear				
8	90	58	59	57	Clear				
9	88	56	58	56	Clear				
10	87	60	58	56	Clear				
11	87	56	58	56	Clear				
12	88	57	58	56	Clear				
13	84	58	60	57	Clear				
14	80	60	60	58	Clear				
15	84	57	61	58	Clear				
16	88	60	62	58	Clear				
17	94	62	62	58	Clear				
18	90	64	62	58	Clear				
19	76	58	58	56	Clear				
20	72	48	56	54	Clear				
21	74	46	56	54	Clear				
22	84	54	58	54	Clear				
23	90	54	56	54	Clear				
24	90	54	56	54	Clear				
25	92	56	56	52	Clear				
26	90	60	56	52	Clear				
27	92	65	56	54	Clear				
28	92	56	56	52	Clear				
29	83	68	55	52	Clear				
30	76	50	54	52	Clear				
Totals						380	99	3	27

Returned to river

Returned to river →

Table

Feather River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
October, 1968

Temperatures (degrees F)										
Date	Air		Water		Weather	(C.F.S.) River Flow	Fish Trapped			
	Max.	Min.	Max.	Min.			Fall Run Adults	King Salmon Grilse	Spring Run Adults	Steelhead Grilse
1	76	52	53	52	Clear	400	8	6		3
2	78	52	53	52	Clear		10	10		2
3	76	54	53	52	Clear		10	7		3
4	74	52	53	52	Clear		6	7		3
5	75	52	53	52	Clear		66	20		5
6	77	50	54	52	Clear		47	15		2
7	74	47	55	52	Clear		79	72		22
8	77	44	54	50	Clear		122	49		12
9	76	48	54	52	Clear		174	86		3
10	76	50	53	52	Clear		69	27		9
11	66	54	53	51	Rain		104	78		9
12	59	53	52	51	Rain		243	93		7
13	74	54	52	50	Rain		245	142		8
14	80	48	50	48	Cloudy		344	126		15
15	74	50	52	48	Clear		267	107		14
16	78	46	53	50	Clear		56	30		15
17	78	50	52	50	Clear		37	34		18
18	74	46	54	50	Clear		72	52		27
19	76	46	53	50	Clear		69	24		7
20	82	50	54	50	Clear		55	35		12
21	73	47	54	50	Clear		16	21		11
22	78	50	53	51	Clear		110	62		3
23	79	49	53	51	Clear		57	38		8
24	80	50	53	51	Clear		76	54		9
25	82	50	54	51	Clear		90	39		12
26	82	51	54	52	Clear		92	48		29
27	77	50	53	52	Clear		86	40		22
28	74	55	54	52	Clear		106	68		45
29	56	53	53	52	Clear		110	90		46
30	61	48	53	52	Rain		150	111		24
31	61	48	52	51	Cloudy		32	48		11
Totals						3,008	1,639			400
Returned to river										

Returned to river

Table A-6

Feather River Salmon and Steelhead Hatchery
weather, Water and Fish Data Report
November, 1968

Temperatures (degrees F)						Fish Trapped					
Date	Air		Water		Weather	(C.F.S.) River Flow	King Salmon		Steelhead		
	Max.	Min.	Max.	Min.			Fall Run		Spring Run		
							Adults	Grilse	Adults	Grilse	
1	57	47	52	51	Cloudy	400	106	51		10	↑ Returned to river ↓
2	54	51	52	51	Rain		130	53		6	
3	54	51	52	51	Rain		115	40		13	
4	53	44	52	50	Cloudy		21	21		14	
5	64	48	52	51	Cloudy		22	13		8	
6	64	47	52	50	Cloudy		20	9		14	
7	72	45	52	50	Cloudy		11			22	
8	63	44	52	50	Cloudy		13	5		6	
9	72	45	53	51	Cloudy		26	21		9	
10	68	48	53	51	Cloudy		7	5		8	
11	61	49	52	51	Rain		18			5	
12	59	42	52	50	Cloudy		13			8	
13	61	40	52	48	Clear		14	13		7	
14	48	41	50	48	Rain		3	3			
15	50	41	50	48	Cloudy						
16	54	44	50	49	Cloudy						
17	58	42	50	48	Cloudy					21	
18	54	46	50	48	Rain		10	12		31	
19	63	44	51	48	Cloudy						
20	50	46	50	48	Cloudy						
21	51	46	50	49	Cloudy						
22	50	44	50	48	Rain		2	2		8	
23	54	42	50	48	Cloudy						
24	53	44	49	48	Cloudy						
25	57	40	50	48	Clear		2	5		14	
26	62	40	50	47	Clear						
27	62	42	50	48	Clear						
28	55	38	50	46	Cloudy					12	
29	53	38	50	46	Cloudy		5	1			
30	46	42	48	47	Cloudy						
31											
Totals							538	254	130 returned 86 kept		

Table

Feather River Salmon and Steelhead Hatchery
 Weather, Water and Fish Data Report
 December, 1968

Temperatures (degrees F)						Fish Trapped			
Date	Air		Water		Weather	(C.F.S.) River Flow	King Salmon		Steelhead
	Max.	Min.	Max.	Min.			Fall Run Adults Grilse	Spring Run Adults Grilse	
1	53	44	49	48	Cloudy	400			
2	54	38	49	46	Clear				
3	54	38	48	46	Clear				4
4	54	34	48	44	Clear				
5	56	38	48	46	Cloudy				
6	46	36	48	44	Cloudy				
7	47	37	48	45	Cloudy				
8	51	45	48	47	Cloudy				
9	56	46	48	47	Cloudy		4		10
10	56	46	49	47	Rain		4		
11	50	41	48	46	Cloudy		6		
12	46	48	48	46	Cloudy				
13	50	36	48	44	Cloudy				
14	50	45	48	46	Rain				
15	50	47	46	45	Rain				
16	46	38	46	42	Clear				
17	52	36	47	43	Clear		8		7
18	45	38	46	44	Cloudy				
19	47	34	46	42	Clear				
20	44	29	45	40	Clear				
21	43	30	46	40	Clear				
22	42	34	44	42	Cloudy				
23	50	38	45	42	Rain				2
24	48	44	44	43	Rain	3,700			
25	48	42	44	42	Cloudy	3,700			
26	48	39	44	41	Cloudy	2,400			
27	43	38	43	42	Cloudy	2,400	5		13
28	44	42	43	42	Rain	2,400			
29	46	36	42	41	Cloudy	1,200			
30	47	34	44	40	Clear	1,200			
31	44	34	43	40	Cloudy	400			
Totals							27		36

Table A-8

Feather River Salmon and Steelhead Hatchery
 Weather, water and Fish Data Report
 January, 1969

Temperatures (degrees F)						Fish Trapped			
Date	Air		Water		Weather	(C.F.S.) River Flow	King Salmon		Steelhead
	Max.	Min.	Max.	Min.			Fall Run Adults	Spring Run Grilse	Grilse
1	50	38	44	40	Clear	400			
2	42	38	42	40	Cloudy				
3	43	41	42	41	Cloudy				3
4	43	41	42	41	Cloudy				
5	52	38	42	41	Cloudy				12
6	52	34	41	40	Cloudy				
7	50	34	42	41	Cloudy				
8	50	35	44	40	Clear				
9	44	36	42	40	Clear				
10	44	38	42	40	Cloudy				
11	48	38	43	40	Rain				
12	50	40	40	38	Rain				
13	44	36	40	38	Rain	5,475			21
14	46	38	42	40	Cloudy	30,875			16
15	48	40	44	40	Clear	42,515			21
16	46	41	43	40	Clear	49,495			6
17	43	34	41	38	Clear	49,495			
18	48	38	44	40	Rain	49,495			2
19	54	42	44	40	Rain	45,755			17
20	55	53	46	44	Rain	14,500			31
21	54	48	46	44	Rain	22,000			16
22	45	40	45	42	Cloudy	42,000			9
23	44	38	44	42	Cloudy	54,000			3
24	44	38	44	41	Rain	57,000			13
25	48	40	46	42	Rain	53,000			1
26	50	42	43	42	Rain	53,000			
27	45	39	42	40	Cloudy	45,000			7
28	46	33	42	38	Cloudy	35,000			
29	42	32	42	38	Cloudy	35,000			4
30	44	32	42	38	Cloudy	12,500			
31	46	30	42	38	Clear	2,500			3
Total									185

Table

Feather River Salmon and Steelhead Hatchery
 Weather, Water and Fish Data Report
 February, 1969

Temperatures (degrees F)						Fish Trapped			
Date	Air		Water		Weather	(C.F.S.) River Flow	King Salmon		Steelhead
	Max.	Min.	Max.	Min			Fall Run Adults Grilse	Spring Run Adults Grilse	
1	48	42	42	40	Cloudy	400			5
2	55	40	43	40	Clear				9
3	54	36	42	38	Clear				
4	47	34	42	38	Clear				3
5	46	42	47	45	Overcast				3
6	48	37	47	44	Cloudy				3
7	49	35	47	45	Cloudy				
8	51	42	47	44	Rain				
9	51	46	46	43	Rain				
10	58	35	46	44	Rain				
11	46	35	47	43	Rain				
12	46	41	46	43	Cloudy				8
13	48	39	46	44	Clear				
14	50	41	46	43	Rain				
15	50	41	47	44	Rain				
16	50	45	46	42	Cloudy				
17	55	40	48	44	Clear				5
18	46	44	47	46	Cloudy				
19	46	44	46	45	Rain				
20	45	41	46	44	Overcast				3
21	46	38	47	44	Overcast				
22	48	34	47	42	Rain				
23	48	35	46	42	Rain				
24	45	42	46	45	Rain				
25	47	41	46	44	Rain				2
26	47	40	47	44	Cloudy				
27	52	42	47	44	Rain				
28	49	40	46	44	Rain				
29									
30									
31									
Total									41

Table A-10

Feather River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
March, 1969

Temperatures (degrees F)						Fish Trapped		
Air		Water		Weather	(C.F.S.) River Flow	King Salmon	Steelhead	
Date	Max.	Min.	Max.	Min.		Fall Run Adults Grilse	Spring Run Adults Grilse	
1	54	39	47	44	Cloudy	400		
2	50	39	47	43	Rain			
3	53	36	46	42	Cloudy			
4	62	39	48	43	Clear			
5	58	40	47	42	Cloudy			3
6	59	40	47	42	Clear			5
7	56	41	46	42	Cloudy			
8	35	56	42	45	Clear			3
9	50	40	44	42	Cloudy			
10	55	53	43	38	Clear			
11	53	40	44	40	Cloudy			
12	52	37	44	40	Cloudy			2
13	62	32	46	40	Clear			
14	68	36	46	40	Clear			
15	62	42	46	42	Clear			
16	61	38	48	40	Cloudy			
17	56	46	44	42	Cloudy			
18	62	48	46	43	Cloudy			
19	66	38	46	42	Clear			
20	54	45	46	44	Cloudy			
21	57	42	46	42	Cloudy			
22	64	42	48	44	Clear			
23	71	46	53	44	Clear			
24	76	47	49	45	Clear			
25	74	46	48	46	Clear			
26	75	43	49	44	Clear			
27	76	51	51	46	Clear			
28	78	53	52	48	Clear			
29	72	52	53	44	Clear			
30	73	46	54	45	Clear			
31	68	48	54	50	Clear			
TOTAL								13

**Feather River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
April, 1969**

Temperatures (degrees F)					(C.F.S.) River Flow	Weather	Fish Trapped			
Air		Water		Fall Run Adults Grilse			Spring Run Adults Grilse	Steelhead		
Date	Max.	Min.	Max.						Min.	
1	62	44	50	48	400	Clear	1			
2	56	44	50	48		Rain				
3	56	46	50	48		Cloudy				
4	62	44	52	48		Cloudy	2			
5	50	43	49	47		Rain				
6	54	42	50	46		Rain				
7	64	39	52	46		Clear				
8	64	46	52	48		cloudy				
9	66	48	52	49		cloudy				
10	75	43	53	47		Clear	1			
11	72	45	54	50		Clear				
12	63	49	52	48		cloudy				
13	64	40	50	44		Clear				
14	62	47	50	46		Rain	1			
15	70	44	52	48		Clear				
16	76	50	52	46		Cloudy				
17	66	50	52	46		Clear				
18	68	46	50	46		Clear				
19	72	50	52	46		Clear	2			
20	68	48	52	46		Clear	1			
21	57	45	52	46		Clear				
22	66	52	53	48		Cloudy				
23	55	46	47	44		Rain	4			
24	60	44	46	42		Clear				
25	66	42	52	46		Clear				
26	74	44	52	48		Clear				
27	65	54	52	50		Clear				
28	78	56	53	50		Clear				
29	76	50	53	48		Clear				
30	70	46	52	48		Clear				
31	68	46	52	48		Clear				
TOTAL							12			

Table A-12

Feather River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
May, 1969

Temperatures (degrees F)						Fish Trapped		
Air		Water		Weather	(C.F.S.) River Flow	King Salmon		Steelhead
Date	Max.	Min.	Max.			Fall Run Adults Grilse	Spring Run Adults Grilse	
1	68	46	52	48	Clear	400		
2	68	50	50	48	Clear		3	
3	72	49	51	48	Cloudy		2	
4	79	46	53	48	Clear		9	
5	90	56	54	51	Clear		4	
6	93	57	55	51	Clear		8	
7	74	51	52	51	Clear		21	
8	78	48	52	49	Clear		4	
9	83	53	53	49	Clear			
10	86	57	54	50	Clear		2	
11	85	56	54	50	Clear			
12	75	52	52	49	Clear		3	
13	67	51	51	49	Clear		1	
14	71	48	52	48	Clear		1	
15	80	50	55	50	Clear		4	
16	85	54	56	51	Clear		4	
17	86	62	56	52	Clear		7	
18	77	54	54	50	Clear		10	
19	78	51	54	50	Clear		9	
20	84	52	56	52	Clear		8	
21	86	56	57	52	Cloudy			
22	86	56	56	52	Clear			
23	80	55	56	52	Clear			
24	80	51	54	52	Clear			
25	74	58	55	52	Clear			
26	72	56	52	50	Cloudy			
27	25	52	52	51	Clear			
28	91	50	57	52	Clear			
29	96	59	57	54	Clear			
30	93	61	57	54	Clear			
31	96	60	57	54	Clear			
TOTAL							100	

Table A-13

Feather River Salmon and Steelhead Hatchery
Weather, Water and Fish Data Report
June, 1969

Temperatures (degrees F)									
Air				Water		Fish Trapped			
Date	Max.	Min.	Max.	Min.	Weather	(C.F.S.)		King Salmon	
						River Flow	400	Fall Run	Spring Run
						Adults	Grilse	Adults	Grilse
1	84	56	56	51	Clear				
2	84	55	55	53	Clear				
3	82	56	55	53	Clear				
4	82	56	55	53	Clear				
5	80	55	55	53	Clear				
6	82	56	55	53	Clear				
7	88	55	55	53	Clear				
8	68	56	54	52	Cloudy				
9	70	56	55	53	Cloudy				
10	73	55	55	54	Cloudy				
11	72	56	55	54	Cloudy				
12	78	56	55	53	Cloudy				
13	82	57	55	53	Cloudy				
14	84	58	56	54	Clear				
15	95	61	60	57	Clear				
16	90	63	59	56	Clear				
17	79	59	57	55	Clear				
18	79	61	57	56	Cloudy				
19	84	58	58	56	Clear				
20	79	56	58	56	Clear				
21	82	56	59	57	Clear				
22	88	59	59	55	Clear				
23	85	64	60	57	Clear				
24	84	56	59	58	Clear				
25	79	56	60	58	Clear				
26	78	58	59	58	Clear				
27	76	54	59	57	Clear				
28	81	53	59	58	Clear				
29	87	53	60	57	Clear				
30	91	64	60	58	Clear				
31	91	60	58	58	Clear				
GRAND TOTALS						3,953	1,992	216	
						557 returned 361 kept			