

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

MERCED RIVER FISH FACILITY ANNUAL REPORT
1982-83

by

Sidney D. Poe
Region 4, Inland Fisheries

Anadromous Fisheries Branch
Administrative Report No. 83-10

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ABSTRACT

This report summarizes the operation of the Merced River Fish Facility from July 1, 1982 through June 30, 1983. The facility was constructed to rehabilitate the fall-run chinook salmon, Oncorhynchus tshawytscha, in the Merced River.

The total of 251,915 chinook salmon yearlings (1981 brood year) was produced and released into the San Joaquin River system.

In the fall of 1982, 189 adults (122 males, 67 females) entered the facility. Of the females, 55 were artificially spawned. They yielded 282,745 eggs, an average of 5,141 eggs/female. No adult salmon were released into the channel this year.

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INTRODUCTION

The Merced River Fish Facility is located immediately downstream from Crocker-Huffman Dam on the Merced River (a tributary to the San Joaquin River) about 15 miles northeast of Merced. It is the terminal point for salmon spawning on the Merced River.

The facility was built by the Merced Irrigation District (MID) with Davis-Grunsky Act funds. Operations began in the fall of 1970.

The facility is comprised of a 4,372-ft long spawning channel (the Reuben E. Schmidt Spawning Channel), three 275-x 30-ft rearing ponds and one effluent settling basin. In addition to the channel and ponds, a temporary hatchery shed has six double stacks of Heath incubator trays, capable of incubating and hatching approximately 900,000 chinook salmon eggs. Four temporary nursery tanks adjoin the hatchery shed. The tanks have a capacity of approximately 40,000 "swim-up" chinook salmon each. The adult salmon trapping facility is located in the fish ladder of the spawning channel. The trap consists of a "fyke" trap entrance, two basket hoists, anesthetic tank, sorting table, and holding pen. The installation is operated by the California Department of Fish and Game with operating assistance and partial funding of maintenance costs provided by MID.

PRODUCTION SUMMARY

The fish trap was installed and chinook salmon began entering the trap on October 11. Although no true peak occurred during the season, fish continued to straggle in throughout the trapping operation; trapping terminated on December 6.

The total number of chinook salmon returning during previous runs has ranged from 63 to 1,242; this year 221 fish returned to the hatchery (Table 1, Appendix Table 2).

The facility produced 251,915 yearling chinook salmon (1981 BY) which were planted into the Merced, Stanislaus, and San Joaquin rivers in the fall of 1982. Coded wire tags (CWT) were applied to 106,364 of the released yearlings (Table 2).

TABLE 1. Production Summary, Merced River Fish Facility, 1982-83

<u>Species</u>	<u>Number trapped</u>	<u>Number females spawned</u>	<u>Eggs taken</u>	<u>Number fingerlings planted</u>	<u>Number yearlings planted</u>	<u>Total pounds planted</u>	<u>On hand June 30, 1983</u>
Chinook	189	55	282,745	0	251,915	41,822	160,000

TABLE 2. Yearling Merced River-strain Chinook Salmon Planted from Merced River Fish Facility, 1982-83

<u>Date released</u>	<u>CWT code</u>	<u>Number tagged</u>	<u>Number untagged</u>	<u>Average size/lb</u>	<u>Total released</u>	<u>Location</u>
11-10-82	6-46-26 6-46-27	48,879	61,121	6.0	110,000	Merced River
11-10-82		0	50,730	5.7	50,730	Stanislaus River
11-12-82	6-46-19	29,182	5,303	5.7	34,485	San Joaquin above Old River
11-15-82	6-46-18	<u>28,303</u>	<u>28,397</u>	7.0	<u>56,700</u>	San Joaquin below Old River
TOTALS		106,364	145,551		251,915	

HATCHERY OPERATION

All fish were reared on a diet of Oregon Moist Pellets (OMP) and Abernathy dry pellets. A total of 59,720 lb of feed produced 41,822 lb of fish during fiscal year 1982-83, yielding a conversion rate (pounds of feed required to produce 1 lb of fish) of 1.43.

During the winter of 1982-83, new concrete dividers and pond inlet structures were constructed in ponds #1 and #2. Guniting of ponds #1 and #2 will be completed in the fall of 1983.

The facility had 737 visitors in 1982-83. Tours were provided for organized groups and schools.

Chinook Salmon Maintenance Program

History of the 1982 Run

The first adult chinook salmon entered the trap on October 11, 1982. Of the 189 adult salmon trapped, 67 were females and 122 males (including 32 grilse or fish under 21 inches in length). Anadromous Fisheries Branch designated fish 21 inches in total length (or less) as grilse during the 1982 season (Merced and Tuolumne rivers).

A total of 282,745 eggs was taken from 55 females during 11 spawnings. Average fecundity was 5,141 eggs/female. No natural spawning took place in the channel during the 1982 season.

Marked Chinook Salmon Returns

Twenty-one chinook salmon marked with an adipose clip, indicating the fish had been tagged with a coded wire tag (CWT), were trapped at the facility

during the 1982 season. The tags were collected by Anadromous Fisheries Branch personnel and are currently being analyzed; results will be published in a separate report.

Planting 1981 Brood Year Chinook Salmon

A total of 251,915 1981 BY chinook salmon yearlings was produced and released into the San Joaquin River system (Table 2).

Planting 1982 Brood Year Chinook Salmon

No 1982 BY fingerlings were planted. Approximately 160,000 chinook salmon fingerlings are being held at the facility for release as yearlings in the fall of 1983.

APPENDIX TABLE 1. Merced River Fish Facility, Weather, Water Data, and Fish Counts during Spawning Season July 1, 1982 through June 30, 1983

Date	Temperature °F				Weather	Flow (cfs)	Fish trapped	
	Air		Water				Adults	Grilse
	Maximum	Minimum	Maximum	Minimum				
July 1	81	55	55	54	partly cloudy	3,020		
2	83	55	57	54	cloudy	1,780		
3	77	57	56	54	partly cloudy	1,220		
4	79	52	56	54	partly cloudy	1,110		
5	84	53	58	54	partly cloudy	996		
6	90	59	58	55	partly cloudy	975		
7	88	63	58	55	clear	969		
8	86	58	57	55	partly cloudy	976		
9	90	57	58	55	clear	859		
10	90	60	59	54	clear	803		
11	94	63	59	54	clear	786		
12	98	63	59	55	clear	750		
13	97	65	59	55	clear	716		
14	95	65	58	55	clear	700		
15	98	67	58	56	clear	644		
16	90	61	59	55	clear	524		
17	92	55	58	55	clear	538		
18	91	56	58	54	clear	539		
19	97	59	58	54	clear	544		
20	95	61	58	54	clear	540		
21	97	56	57	54	clear	531		
22	102	60	58	54	partly cloudy	535		
23	97	63	58	54	partly cloudy	508		
24	94	64	59	56	cloudy	471		
25	95	58	59	56	clear	491		
26	96	61	59	55	clear	523		
27	98	63	60	56	clear	501		
28	100	65	60	56	clear	471		
29	102	63	--	56	clear	447		
30	102	63	--	--	clear	418		
31	100	61	60	54	clear	422		
Aug. 1	94	58	58	54	clear	419		
2	90	55	59	56	clear	415		
3	84	53	59	55	clear	366		
4	87	55	60	55	clear	314		
5	91	59	60	55	clear	304		
6	97	63	61	55	clear	316		
7	92	72	59	55	partly cloudy	314		
8	97	66	59	55	clear	312		
9	97	62	59	55	clear	334		
10	87	55	59	55	clear	371		
11	84	59	60	54	clear	369		
12	92	57	60	55	clear	354		

APPENDIX TABLE 1. (continued)

Date	Temperature °F				Weather	Flow (cfs)	Fish trapped	
	Air		Water				Adults	Grilse
	Maximum	Minimum	Maximum	Minimum				
Aug. 13	88	61	60	55	clear	313		
14	88	54	59	55	clear	312		
15	90	56	61	56	partly cloudy	337		
16	92	59	61	55	partly cloudy	345		
17	94	61	61	55	haze	330		
18	96	64	61	55	partly cloudy	310		
19	91	61	61	55	showers	318		
20	94	63	60	56	clear	316		
21	98	65	61	55	partly cloudy	316		
22	99	68	61	56	partly cloudy	315		
23	97	66	61	56	partly cloudy	332		
24	92	62	60	55	partly cloudy	347		
25	89	60	60	56	clear	349		
26	88	56	60	55	partly cloudy	353		
27	88	55	60	55	partly cloudy	362		
28	90	64	60	55	showers	362		
29	85	63	60	55	clear	405		
30	87	56	60	56	clear	432		
31	89	57	60	56	clear	432		
Sept. 1	87	56	60	56	cloudy	435		
2	91	60	59	55	cloudy	439		
3	90	61	59	55	partly cloudy	437		
4	88	59	59	54	partly cloudy	439		
5	91	58	61	55	partly cloudy	444		
6	93	60	60	56	partly cloudy	443		
7	93	62	60	55	clear	444		
8	96	61	60	56	clear	439		
9	90	65	60	55	clear	400		
10	82	60	59	56	clear	387		
11	84	54	59	55	clear	437		
12	83	53	60	55	clear	443		
13	84	58	60	56	clear	449		
14	80	55	60	55	clear	492		
15	70	57	56	55	showers	517		
16	69	55	56	54	showers	528		
17	74	56	56	54	cloudy	526		
18	79	58	59	55	cloudy	531		
19	77	55	60	55	cloudy	542		
20	79	53	60	55	clear	561		
21	85	50	60	54	clear	605		
22	87	53	59	55	clear	656		
23	63	55	57	56	rain	767		
24	75	63	57	55	showers	840		
25	67	63	56	55	rain	816		
26	65	51	57	55	partly cloudy	789		
27	72	52	58	55	partly cloudy	918		
28	74	48	58	55	partly cloudy	1,040		
29	70	49	57	54	partly cloudy	1,160		
30	70	41	57	54	clear	1,240		

APPENDIX TABLE 1. (continued)

Date	Temperature °F				Weather	Flow (cfs)	Fish trapped	
	Air		Water				Adults	Grilse
	Maximum	Minimum	Maximum	Minimum				
Oct. 1	74	43	57	54	clear	1,280		
2	79	47	57	55	clear	1,270		
3	78	49	59	56	clear	1,260		
4	75	48	57	55	clear	1,260		
5	78	49	59	56	clear	1,310		
6	73	44	57	55	partly cloudy	1,360		
7	66	48	57	54	rain	1,380		
8	71	43	57	54	clear	1,390		
9	76	44	--	55	clear	1,400		
10	81	43	58	55	clear	1,400		
11	81	46	57	54	---	1,400		
12	80	48	57	54	clear	1,390		
13	80	49	59	55	partly cloudy	1,390	2	1
14	89	54	--	--	---	1,400		
15	82	50	57	55	clear	1,400		2
16	78	49	59	55	clear	1,400		
17	73	51	58	55	clear	1,410		
18	82	45	57	55	clear	1,420	2	
19	78	55	57	55	cloudy	1,480		
20	74	51	57	55	cloudy	1,710	1	
21	69	53	57	55	showers	1,900	2	1
22	68	59	55	54	showers	1,940	3	1
23	80	60	58	56	showers	1,980		
24	79	60	58	56	partly cloudy	1,950		
25	66	60	56	55	showers	1,990	4	1
26	62	51	57	--	partly cloudy	2,010		
27	63	44	57	55	partly cloudy	2,000		
28	--	40	56	54	clear	1,900		
29	64	47	57	54	cloudy	1,950		
30	56	49	57	55	rain	2,000		
31	70	48	57	56	fog	2,600		
					Totals		14	6
					Cumulative Totals		14	6
Nov. 1	70	44	--	55	partly cloudy	2,800	24	5
2	71	47	57	55	fog	2,800	1	
3	77	42	57	56	clear	2,800	2	
4	73	40	57	--	clear	2,820		
5	73	39	57	55	clear	2,820		
6	71	40	59	57	clear	2,810	3	
7	62	41	59	57	cloudy	2,820		
8	58	35	--	--	rain	1,370		
9	50	36	--	56	rain	217	28	10
10	57	44	--	53	rain	193		
11	58	34	--	--	clear	180	14	3
12	58	37	56	53	fog	193		
13	48	40	--	--	fog	202		

APPENDIX TABLE 1. (continued)

Date	Temperature °F				Weather	Flow (cfs)	Fish trapped	
	Air		Water				Adults	Grilse
	Maximum	Minimum	Maximum	Minimum				
Nov. 14	51	41	--	--	fog	192		
15	45	40	56	53	fog	198		
16	47	41	--	53	fog	199	26	1
17	48	42	--	53	fog	198		
18	54	45	54	52	rain	228		
19	61	46	--	53	partly cloudy	232		
20	60	38	--	--	clear	202	18	3
21	59	35	--	--	---	195		
22	53	47	--	--	rain	201		
23	54	46	55	53	rain	195		
24	58	47	54	53	fog	187	1	1
25	53	43	--	--	---	185		
26	56	39	--	--	---	182	7	1
27	56	41	--	--	rain	180		
28	58	44	--	--	rain	187		
29	55	50	54	53	rain	246	7	1
30	56	48	54	54	rain	371	5	
					Totals		136	25
					Cumulative Totals		150	31
Dec. 1	55	37	53	52	cloudy	220		1
2	52	36	52	52	rain	190	2	
3	58	35	53	51	cloudy	183		
4	50	34	--	--	fog	181		
5	55	40	--	--	fog	472		
6	49	40	--	52	fog	1,720	5	
7	53	42	--	52	fog	3,370		
8	52	38	--	50	clear	4,250		
9	54	31	--	50	fog	4,050		
10	58	32	52	51	fog	3,580		
11	60	31	--	--	fog	3,520		
12	55	35	--	--	fog	3,520		
13	56	35	52	51	clear	3,520		
14	45	39	52	52	fog	3,040		
15	53	41	52	52	fog	2,630		
16	55	33	52	52	fog	2,610		
17	59	41	52	51	clear	2,580		
18	55	32	54	52	fog	2,560		
19	44	37	53	51	fog	2,530		
20	55	41	52	51	rain	2,510		
21	53	49	52	52	rain	1,470		
22	55	51	53	52	rain	3,130		
23	52	42	53	52	cloudy	2,940		
24	53	34	53	50	---	2,880		
25	50	27	53	51	---	2,890		
26	52	36	54	51	---	3,090		
27	51	35	--	51	---	3,300		

APPENDIX TABLE 1. (continued)

Date	Temperature °F				Weather	Flow (cfs)	Fish trapped	
	Air		Water				Adults	Grilse
	Maximum	Minimum	Maximum	Minimum				
Dec. 28	52	34	52	51	fog	3,280		
29	50	39	51	51	fog	2,470		
30	47	33	52	51	fog	3,030		
31	39	28	49	48	fog	3,180		
					Totals		7	1
					Cumulative totals		157	32
Jan. 1	38	33	49	48	fog	3,160		
2	37	32	50	49	fog	3,140		
3	38	33	50	49	fog	3,040		
4	40	35	51	49	fog	2,810		
5	43	34	49	48	fog	2,800		
6	40	35	49	48	fog	2,780		
7	41	37	49	48	fog	2,460		
8	40	34	49	49	fog	2,280		
9	43	35	49	49	fog	2,280		
10	43	35	49	48	fog	1,950		
11	41	36	50	48	fog	1,530		
12	41	34	49	49	fog	1,210		
13	41	33	49	49	fog	1,080		
14	39	33	49	48	fog	1,030		
15	48	34	49	48	fog	983		
16	56	41	50	49	rain	967		
17	45	41	48	48	fog	965		
18	51	41	50	49	rain	980		
19	54	37	50	49	cloudy	1,250		
20	52	33	50	48	fog	1,050		
21	48	34	49	49	rain	1,110		
22	55	41	50	49	rain	1,390		
23	62	44	50	49	rain	1,510		
24	61	52	52	49	rain	2,180		
25	60	39	51	50	cloudy	2,580		
26	62	50	50	50	cloudy	2,780		
27	57	49	50	50	rain	4,590		
28	56	44	50	49	cloudy	3,160		
29	57	42	50	49	cloudy	3,350		
30	59	40	51	49	cloudy	3,060		
31	59	34	51	50	haze	3,010		
					Totals		0	0
					Cumulative Totals		157	32
Feb. 1	57	34	50	49	haze	2,980		
2	56	39	50	49	cloudy	2,960		
3	60	41	51	49	cloudy	2,950		
4	60	36	51	49	haze	2,940		
5	50	45	50	50	rain	2,940		

APPENDIX TABLE 1. (continued)

Date	Temperature °F				Weather	Flow (cfs)	Fish trapped		
	Air		Water				Adults	Grilse	
	Maximum	Minimum	Maximum	Minimum					
Feb. 6	52	45	50	50	rain	3,030			
7	59	48	51	50	rain	3,590			
8	57	45	50	50	rain	3,400			
9	57	42	50	49	cloudy	3,320			
10	66	44	51	49	cloudy	4,420			
11	66	46	51	49	haze	4,340			
12	60	50	51	50	rain	3,070			
13	60	45	51	50	rain	3,130			
14	61	38	50	49	cloudy	3,600			
15	59	43	50	49	cloudy	4,510			
16	64	43	50	49	cloudy	4,520			
17	65	38	50	49	fog	4,520			
18	63	49	50	49	rain	4,540			
19	62	40	50	50	clear	4,520			
20	64	41	51	50	haze	4,520			
21	65	42	50	49	haze	4,510			
22	54	46	50	49	fog	4,520			
23	65	47	50	49	fog	4,560			
24	58	46	50	49	fog	4,610			
25	54	43	50	49	rain	4,680			
26	64	46	51	50	cloudy	4,730			
27	61	45	51	50	rain	5,030			
28	59	49	51	50	rain	4,760			
Totals								0	0
Cumulative Totals								157	32
Mar. 1	59	52	51	50	rain	3,726			
2	57	52	52	51	rain	3,552			
3	63	46	51	50	cloudy	3,495			
4	67	46	51	50	cloudy	3,927			
5	62	44	51	50	rain	4,526			
6	65	45	51	51	haze	4,578			
7	65	52	52	52	cloudy	4,951			
8	72	50	52	51	cloudy	4,937			
9	70	48	52	51	cloudy	4,951			
10	67	50	52	50	fog	5,005			
11	68	48	53	51	fog	4,964			
12	63	50	51	50	rain	5,564			
13	60	55	51	50	rain	3,518			
14	62	46	53	52	cloudy	4,978			
15	63	42	53	51	cloudy	4,951			
16	63	45	51	51	rain	4,949			
17	61	43	52	51	cloudy	4,949			
18	58	45	52	51	rain	5,003			
19	65	37	52	51	cloudy	4,935			
20	63	43	51	50	rain	5,124			
21	62	44	52	50	cloudy	4,987			
22	52	43	51	50	rain	5,016			

APPENDIX TABLE 1. (continued)

Date	Temperature °F				Weather	Flow (cfs)	Fish trapped	
	Air		Water				Adults	Grilse
	Maximum	Minimum	Maximum	Minimum				
Mar. 23	55	38	51	50	cloudy	5,070		
24	56	44	51	50	rain	5,057		
25	60	44	52	50	cloudy	5,016		
26	60	38	52	50	cloudy	5,002		
27	62	48	51	50	rain	4,988		
28	62	41	52	50	cloudy	5,462		
29	67	48	52	51	cloudy	5,460		
30	74	44	52	51	clear	5,488		
31	69	53	52	51	cloudy	5,474		
					Totals		0	0
					Cumulative Totals		157	32
Apr. 1	72	46	52	51	clear	5,488		
2	65	51	51	50	clear	5,459		
3	61	41	52	50	clear	5,473		
4	67	40	52	50	cloudy	5,459		
5	64	40	52	50	cloudy	5,459		
6	66	39	52	50	clear	5,459		
7	71	41	52	50	clear	5,487		
8	66	43	52	50	clear	5,459		
9	65	43	52	50	cloudy	5,444		
10	57	41	52	50	cloudy	5,444		
11	60	43	51	50	cloudy	5,459		
12	60	37	52	50	cloudy	5,458		
13	63	36	52	51	cloudy	5,289		
14	67	39	52	51	cloudy	5,332		
15	73	42	52	51	haze	4,935		
16	81	45	53	51	clear	4,631		
17	69	48	52	51	cloudy	4,996		
18	66	53	52	50	rain	4,652		
19	71	49	53	51	cloudy	4,822		
20	70	51	54	52	cloudy	4,838		
21	70	48	52	52	cloudy	4,822		
22	67	49	52	52	cloudy	4,796		
23	63	50	52	52	rain	4,780		
24	66	43	53	52	rain	4,430		
25	65	44	52	51	cloudy	4,406		
26	64	45	52	51	cloudy	4,374		
27	65	50	52	51	rain	4,605		
28	69	52	52	51	rain	4,761		
29	68	53	51	51	rain	4,661		
30	63	47	52	51	rain	4,707		
					Totals		0	0
					Cumulative Totals		157	32

APPENDIX TABLE 1. (continued)

Date	Temperature °F				Weather	Flow (cfs)	Fish trapped		
	Air		Water				Adults	Grilse	
	Maximum	Minimum	Maximum	Minimum					
May 1	66	46	52	51	cloudy	4,661			
2	69	46	54	52	clear	4,619			
3	73	47	54	52	clear	4,633			
4	62	50	52	52	cloudy	4,605			
5	64	48	52	52	rain	4,230			
6	68	45	54	52	clear	4,176			
7	70	48	54	52	clear	4,244			
8	68	47	54	52	clear	4,162			
9	68	44	54	52	clear	3,994			
10	69	44	54	52	rain	3,981			
11	73	46	54	52	clear	3,956			
12	74	49	55	52	cloudy	3,865			
13	75	47	55	52	cloudy	3,746			
14	82	50	55	53	haze	3,622			
15	79	51	55	53	clear	3,652			
16	77	52	55	53	clear	3,633			
17	83	50	55	53	clear	3,636			
18	85	52	55	54	haze	3,636			
19	87	57	55	53	clear	3,475			
20	93	57	56	53	clear	3,443			
21	94	60	55	54	clear	3,468			
22	90	57	55	53	clear	3,382			
23	89	57	56	54	clear	3,350			
24	88	58	56	54	clear	3,432			
25	91	56	56	54	clear	3,248			
26	94	60	56	54	haze	4,246			
27	95	59	55	54	clear	4,209			
28	92	62	55	54	clear	4,213			
29	82	52	55	54	clear	4,257			
30	86	52	56	54	clear	4,282			
31	77	53	55	54	clear	4,316			
Totals								0	0
Cumulative Totals								157	32
June 1	73	52	55	54	clear	4,276			
2	75	52	54	54	cloudy	4,376			
3	83	54	54	54	cloudy	4,376			
4	85	54	54	54	clear	4,297			
5	92	61	55	54	haze	4,405			
6	94	63	55	54	haze	4,301			
7	93	69	55	54	haze	4,582			
8	86	58	55	54	clear	4,659			
9	87	57	55	54	clear	4,705			
10	87	55	55	54	clear	5,225			
11	78	51	55	54	cloudy	5,305			
12	84	53	55	54	clear	5,241			
13	93	57	56	54	clear	5,697			
14	94	60	55	54	clear	5,668			

APPENDIX TABLE 1. (continued)

Date	Temperature °F				Weather	Flow (cfs)	Fish trapped		
	Air		Water				Adults	Grilse	
	Maximum	Minimum	Maximum	Minimum					
June 15	87	60	55	54	cloudy	5,668			
16	95	61	55	54	clear	5,709			
17	89	64	55	54	clear	5,775			
18	82	53	55	54	clear	5,693			
19	86	56	55	54	clear	5,581			
20	86	58	55	54	clear	5,894			
21	87	57	55	54	clear	5,945			
22	91	59	55	54	clear	5,894			
23	85	58	55	54	clear	6,171			
24	86	54	55	54	clear	6,094			
25	92	57	55	54	clear	6,132			
26	90	59	55	54	clear	6,077			
27	81	54	55	54	clear	6,128			
28	83	53	55	54	clear	6,128			
29	83	55	55	54	clear	6,128			
30	82	54	55	54	cloudy	6,167			
Totals								0	0
Cumulative Totals								157	32

APPENDIX TABLE 2. Summary of Fish Runs to Merced River Fish Facility

<u>Fiscal Year</u>	<u>Males</u>	<u>Females</u>	<u>Grilse*</u>
1970-71	59	40	
1971-72	54	94	
1972-73	14	51	
1973-74	13	150	
1974-75	24	400	
1975-76	99	300	
1976-77	86	260	
1977-78	44	200	
1978-79	16	45	2
1979-80	263	86	120
1980-81	51	106	8
1981-82	645	278	319
1982-83	122	67	32

* Grilse counts included in "Males" column; e.g., in 1982-83, of the 122 males trapped, 32 were grilse (less than 21 inches long) and the remaining 90 adult males.

Until fiscal year 1979-80, the annual run of adult female chinook salmon was estimated by using redd counts and carcass recoveries in the spawning channel. The number of male chinook salmon shown each year are actual counts of recovered carcasses (1970-79). Beginning fiscal year 1979-80, an adult fish trap was operated at the facility throughout each spawning season and actual counts made (Table 2). There are no records of numbers of grilse from 1970-78.