

REF 90302

MERCED RIVER FISH FACILITY ANNUAL REPORT
1983-84^{1/}

by

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ABSTRACT

This report summarizes the operation of the Merced River Fish Facility from July 1, 1983 through June 30, 1984. The facility was constructed to rehabilitate the fall chinook salmon, Oncorhynchus tshawytscha, run in the Merced River.

A total of 145,657 chinook salmon yearlings (1982 brood year) was produced and released into the San Joaquin River System.

In the fall of 1983, a total of 1,795 (1,617 males, 178 females) entered the facility. An unusually high percentage (88%) of the run was composed of grilse (fish < 22 in. FL). Of the females, 173 were artificially spawned. They yielded 442,656 eggs in 15 spawnings. No adult salmon were released into the channel this year.

^{1/} Anadromous Fisheries Branch Administrative Report 84-12. Submitted September 1984.

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 in 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 permanent hatchery building (21 x 29-ft) has been constructed. The hatchery building houses six double stacks of Heath incubator trays, capable of incubating and hatching approximately 900,000 chinook salmon eggs, and four nursery tanks with a capacity of approximately 40,000 swim-up size chinook salmon each. The adult salmon trapping facility is located in the fish ladder of the spawning channel and 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

On October 14, 1983, the fish trap was installed and chinook salmon began entering it on October 15. Two peaks occurred during the season (October 30 and November 16), with the last fish being trapped on December 15 (Appendix Table 1). Trapping was terminated on December 28.

Since 1970, the total number of chinook salmon returning has ranged from 63 to 1,242, averaging 311; this year, 1,795 fish returned to the hatchery (Table 1, Appendix Table 2).

The facility produced 145,657 yearlings chinook salmon (1982 BY) which were planted into the Merced and San Joaquin rivers and Carquinez Strait in the fall of 1983 (Table 1). Coded wire tags (CWT) were applied to 114,790 of the released yearlings (Table 2).

TABLE 1. Production Summary, Merced River Fish Facility, 1983-84

<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, 1984</u>
Chinook	1,795	173	422,656	0	145,657	19,913	300,000

TABLE 2. Yearling Merced River Strain Chinook Salmon Planted from Merced River Fish Facility, 1984.

<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>
10-01-83	06-46-29	41,143	8,857	7.0	50,000	Merced River
10-03-83	06-46-30	23,488	5,924	7.6	29,412	Carquinez Strait
10-04-83	06-46-31	24,309	7,991	7.6	32,300	San Joaquin River above Old River
10-04-83	06-46-32	25,850	8,095	7.3	33,945	San Joaquin River below Old River
TOTALS		114,790	30,867		145,657	

Hatchery Operation

All fish were reared on a diet of Oregon Moist Pellets (OMP) and Abernathy dry pellets. A total of 26,550 lb of food produced 19,913 lb of fish during fiscal year 1983-84, yielding a conversion rate (pounds of feed required to produce 1 lb of fish) of 1.33.

During the fall of 1983-84 a new hatchery building was constructed and Pond #1 was gunited; Pond #2 was reconditioned.

The facility had 950 visitors in 1983-84. Tours were provided for organized groups and schools.

Chinook Salmon Maintenance Program History of the 1983 Run

The first adult chinook salmon entered the trap on October 15, 1983. Of the 1,795 adult salmon trapped, 178 were females and 1,617 males (including 1,587 grilse or fish under 22 FL). Based on length-frequency analysis, Anadromous Fisheries Branch designated all salmon less than 22 in. FL as grilse because the average size was much smaller than usual due to the 1983 El Nino.

A total of 422,656 eggs was taken from 173 females during 15 spawnings. Average fecundity was 2,443 eggs/female, which is substantially lower than past years. No salmon were allowed to enter the spawning channel this season; all were trapped and artificially spawned.

Marked Chinook Salmon Returns

A total of 334 chinook salmon marked with an adipose clip, indicating the fish had been tagged with a coded wire tag (CWT), was trapped at the facility this season. Heads were collected from all such fish and given to Anadromous Fisheries Branch personnel for tag extraction and decoding, with tag results to be published in the 1983 Central Valley Chinook Salmon Spawning Stock Annual Report.

Planting 1982 Broodyear Chinook Salmon

A total of 145,657 1982 BY chinook salmon yearlings was produced and released into the San Joaquin River system (Table 2).

Planting 1983 Broodyear Chinook Salmon

No 1983 BY fingerlings were planted. Approximately 300,000 chinook salmon fingerlings are being held at the facility for release in the fall of 1984.

APPENDIX TABLE 1. Merced River Fish Facility Air, Water, Weather, Flow, and Fish Trapping Data from July 1, 1983 to June 30, 1984.

July	Air (°F)		Water (°F)		Weather	Flow (CFS)	Fish trapped			
	Max.	Min.	Max.	Min.			Adults Male	Adults Female	Grilse Male	Grilse Female
1	84	54	55	54	P. Cloudy	6132				
2	83	59	56	55	"	6047				
3	90	56	56	54	Clear	6008				
4	98	58	56	55	"	6068				
5	100	61	55	54	P. Cloudy	6140				
6	88	54	55	54	Clear	6132				
7	79	50	55	54	P. Cloudy	6167				
8	84	50	55	54	Clear	6153				
9	90	52	56	54	"	6051				
10	100	59	55	55	"	6047				
11	104	59	56	54	"	6128				
12	105	61	56	55	"	5808				
13	106	62	56	55	"	5059				
14	99	57	55	55	"	4995				
15	92	54	57	55	"	3978				
16	90	54	57	55	"	2079				
17	84	52	58	55	"	1633				
18	85	53	57	56	"	1344				
19	88	58	58	55	"	1409				
20	94	54	58	56	"	1041				
21	94	57	58	56	"	1072				
22	93	56	59	55	"	1145				
23	93	57	58	56	"	1091				
24	88	56	58	56	"	1134				
25	87	54	59	56	"	1142				
26	92	54	58	56	"	973				
27	92	58	59	56	"	948				
28	93	58	59	56	"	1057				
29	95	60	59	56	"	1034				
30	97	61	59	56	"	993				
31	98	61	59	56	P. Cloudy	985				

APPENDIX TABLE 1. (Continued)

Aug.	Air (°F)		Water (°F)		Weather	Flow (CFS)	Fish trapped			
	Max.	Min.	Max.	Min.			Adults Male	Adults Female	Grilse Male	Grilse Female
1	100	61	59	56	Clear	979				
2	100	64	59	57	"	989				
3	98	62	59	57	"	1041				
4	97	61	59	56	"	1020				
5	95	57	59	56	"	1020				
6	99	62	60	56	P. Cloudy	989				
7	104	70	61	57	"	1078				
8	104	70	59	56	"	1072				
9	99	67	59	56	Clear	1064				
10	98	66	58	56	Cloudy	1082				
11	94	60	59	56	Clear	1130				
12	99	60	59	57	"	1180				
13	99	65	59	57	P. Cloudy	1097				
14	100	72	58	57	Showers	1112				
15	96	67	59	57	Clear	1134				
16	100	66	60	57	"	1141				
17	100	65	59	57	P. Cloudy	1173				
18	97	64	58	56	"	1202				
19	88	64	58	56	Cloudy	1235				
20	85	61	58	56	Rain	1214				
21	82	60	58	56	"	1204				
22	86	56	58	56	P. Cloudy	1225				
23	89	57	59	56	Haze	1221				
24	89	59	59	56	Clear	1246				
25	88	55	59	56	"	1256				
26	93	55	59	56	"	1307				
27	74	59	59	56	P. Cloudy	1305				
28	92	57	59	56	"	1312				
29	92	58	58	56	Clear	1322				
30	89	63	58	56	P. Cloudy	1387				
31	89	59	59	56	Showers	1411				

APPENDIX TABLE 1. (Continued)

Sept.	Air (°F)		Water (°F)		Weather	Flow (CFS)	Fish trapped			
	Max.	Min.	Max.	Min.			Adults Male	Adults Female	Grilse Male	Grilse Female
1	85	61	59	56	Cloudy	1583				
2	87	59	58	56	P. Cloudy	1636				
3	90	56	58	56	Clear	1646				
4	96	59	59	56	"	1646				
5	99	61	59	56	"	1660				
6	100	61	59	56	"	1678				
7	100	61	59	56	"	1689				
8	88	54	58	56	"	1678				
9	88	54	58	56	"	1689				
10	93	53	58	56	"	1692				
11	98	56	59	56	"	1667				
12	103	60	59	56	"	1719				
13	103	61	59	56	Cloudy	1741				
14	102	59	59	56	P. Cloudy	1807				
15	101	60	59	56	Clear	1799				
16	94	61	59	56	P. Cloudy	1810				
17	92	57	59	56	Clear	1795				
18	90	58	59	56	"	1852				
19	99	56	59	56	"	1842				
20	87	56	59	56	"	1866				
21	88	56	58	57	Rain	1947				
22	79	56	57	56	Cloudy	1947				
23	79	61	58	56	"	1977				
24	87	57	58	56	Clear	1998				
25	88	57	59	57	P. Cloudy	1998				
26	81	60	58	57	"	2012				
27	80	54	58	56	P. Cloudy	2062				
28	83	54	58	56	Haze	2073				
29	71	55	58	56	Sprinkles	2094				
30	67	55	58	56	Cloudy	2218				

APPENDIX TABLE 1. (Continued)

Oct.	Air (°F)		Water (°F)		Weather	Flow (CFS)	Fish trapped		Male	Female	Male	Female
	Max.	Min.	Max.	Min.			Adults	Grilse				
1	72	56	58	56	Rain	2238						
2	78	54		56	P. Cloudy	2238						
3	80	53	58	56	Clear	2293						
4	83	52	58	56	"	2278						
5	85	54	58	56	"	2350						
6	83	55	58	56	"	2339						
7	84	54	58	56	P. Cloudy	2339						
8	-	-	-	-		2258						
9	76	54	-	-	P. Cloudy	2383						
10	79	52	59	56	Haze	2413						
11	82	55	59	56	"	2316						
12	82	54	58	56	P. Cloudy	2454						
13	76	51	59	56	"	2591						
14	78	48	59	56	Clear	2580						
15	78	48	58	55	"	2602	2			3		
16	80	47		56	"	2578				1		
17	78	49	58	56	"	2613						
18	81	47	58	56	"	2633				2		
19	82	50	58	56	"	3350				1		
20	82	50	58	56	"	3350				1		
21	83	50	59	56	"	3351						
22	84	50	59	56	"	3361				2		
23	82	51	59	55	Cloudy	3328				1		
24	84	53	58	55	Clear	3339	2	1		2	1	
25	80	51	58	55	"	3350				4		
26	85	50	58	56	"	3317	1			7		
27	83	48	58	56	"	3328	1			7		
28	83	52	58	56	Haze	3300				14		
29	73	53	58	56	Sprinkles	2977	2			12		
30	75	59	58	56	Cloudy	775	1			3		
31	72	59	58	56	Rain	154	14			98		
Monthly Totals							23	1		158	1	
Season Totals							23	1		158	1	

APPENDIX TABLE 1. (Continued)

Nov.	Air (°F)		Water (°F)		Weather	Flow (CFS)	Fish trapped			
	Max.	Min.	Max.	Min.			Adults		Grilse	
							Male	Female	Male	Female
1	70	57	-	56	Cloudy	153	2	1	77	2
2	75	50	-	56	P. Cloudy	202	3		23	
3	78	48	58	56	Clear	210	1		37	
4	75	50		56	P. Cloudy	192	11	4	36	11
5	75	50	58	56	"	207			47	
6	77	45	58	56	"	204			34	
7	66	54	56	56	Cloudy	201	10	8	64	5
8	66	35	57	55	Clear	201			24	
9	65	38	57	55	Cloudy	201	7		32	9
10	70	50	-	55	Sprinkles	198	11		44	
11	57	-	58	56	Rain	190	21	3	58	9
12	58	41	59	57	"	219	2		97	
13	58	44	59	57	"	219	3		103	
14	62	42	58	56	P. Cloudy	216	26	5	45	27
15	-	42	57	55	"	210			28	
16	68	44	58	55	Sprinkles	216	5	5	27	13
17	61	57	58	56	Rain	204			76	
18	59	42	55	56	Cloudy	484	5	5	83	10
19	59	46	58	56	Rain	493	1		58	
20	57	50	59	57	"	502			28	
21	56	39	-	53	P. Cloudy	508	12	4	25	9
22	50	35	56	54	Clear	1011			9	
23	58	45	-	54	Sprinkles	1017	9		32	11
24	60	47	57	55	Rain	987			34	
25	-	39	-	55	Clear	1209	4		36	8
26	56	33	55	54	"	1019			16	
27	60	37	55	53	"	1017			10	
28	60	35	55	54	Haze	990	1	1	15	5
29	57	36	55	53	Over Cast	971			12	
30	60	44	54	54	Sprinkles	1002	4	1	13	3
Monthly Totals							138	37	1223	122
Season Totals							161	38	1381	123

APPENDIX TABLE 1. (Continued)

Dec.	Air (°F)		Water (°F)		Weather	Flow (CFS)	Fish trapped			
	Max.	Min.	Max.	Min.			Adults Male	Adults Female	Grilse Male	Grilse Female
1	63	43	54	53	Fog	1453			8	
2	64	49	54	53	Over cast	1484	2		13	4
3	59	49	55	54	Rain	1469			12	
4	57	40	54	53	Clear	1545			7	
5	57	33	54	53	P. Cloudy	1971	1	4	8	6
6	59	41	54	51	Cloudy	1995			2	
7	61	37	53	52	Clear	2021			3	
8	67	39	53	53	Over cast	2030			1	
9	60	53	54	54	Rain	1997	1		8	3
10	57	50	53	51	"	1997			2	
11	61	52	54	53	"	1997			2	
12	59	39	53	52	Cloudy	2023				
13	58	44	53	52	"	1980			1	
14	57	42	54	52	Fog	1969	1		2	
15	57	52	54	52	"	1943			1	
16	58	50	54	53	Over cast	1960				
17	62	49	54	53	P. Cloudy	1934				
18	61	44	54	53	Fog	1934				
19	55	42	52	52	"	1985				
20	56	41	53	52	Sprinkles	1959				
21	55	32	53	52	P. Cloudy	2038				
22	48	43	-	52	Rain	1958				
23	54	43	53	52	"	1994				
24	60	53	53	52	"	2136				
25	60	54	54	52	"	2154				
26	56	54	53	52	"	3001				
27	59	54	54	52	Cloudy	3017				
28	52	48	53	52	Fog	4473	(Fish trap closed)			
29	62	45	53	52	Over cast	4498				
30	52	44	53	52	Rain	4483				
31	58	52	53	52	"	4459				
Monthly Totals							5	4	70	13
Season Totals							166	42	1451	136

APPENDIX TABLE 1. (Continued)

Jan.	Air (°F)		Water (°F)		Weather	Flow (CFS)	Fish trapped			
	Max.	Min.	Max.	Min.			Adults	Grilse	Male	Female
1	61	40	54	52	Fog	4433				
2	60	38	54	52	"	4457				
3	54	42	53	52	"	4444				
4	57	45	53	51	"	4405				
5	48	42	53	52	"	4406				
6	49	44	53	52	"	4443				
7	48	44	53	52	"	4430				
8	45	44	53	52	"	4469				
9	48	44	52	52	"	4456				
10	58	43	52	51	"	4434				
11	50	42	52	51	"	4460				
12	51	36	52	51	Cloudy	4423				
13	42	34	52	51	Fog	3368				
14	51	34	53	51	Clear	3346				
15	52	34	52	51	P. Cloudy	3379				
16	58	40	52	51	Rain	3358				
17	57	41	52	51	Cloudy	3328				
18	56	35	52	51	Clear	2420				
19	52	38	52	51	Fog	2459				
20	53	34	52	50	P. Cloudy	1937				
21	52	45	52	50	Fog	2013				
22	56	43	53	51	P. Cloudy	1911				
23	56	38	52	50	Cloudy	1433				
24	62	37	52	50	Clear	1053				
25	64	37	52	50	"	1047				
26	62	40	51	50	Fog	1034				
27	62	36	51	50	"	1028				
28	66	36	52	50	Haze	1053				
29	67	38	51	50	"	1047				
30	70	38	52	50	Clear	1040				
31	64	39	53	52	"	1040				

APPENDIX TABLE 1. (Continued)

Feb.	Air (°F)		Water (°F)		Weather Flow (CFS)		Fish trapped			
	Max.	Min.	Max.	Min.			Adults		Grilse	
							Male	Female	Male	Female
1	62	38	52	50	Over cast	1061				
2	64	39	52	50	"	1051				
3	65	40	52	51	Cloudy	1032				
4	70	38	53	52	Clear	1071				
5	64	38	52	51	"	1053				
6	64	40	53	51	Haze	1036				
7	64	37	52	52	Cloudy	1061				
8	66	37	52	51	"	1061				
9	64	37	52	51	Rain	1068				
10	57	38	52	52	Fog	1046				
11	53	35	52	51	Cloudy	1065				
12	59	34	53	51	"	1065				
13	54	38	53	52	Rain	967				
14	60	35	52	51	Cloudy	951				
15	57	36	51	51	Rain	961				
16	54	44	51	51	Cloudy	946				
17	57	35	51	50	P. Cloudy	987				
18	51	35	53	51	Clear	990				
19	62	36	53	51	"	990				
20	64	40	53	52	P. Cloudy	1025				
21	55	38	51	51	Rain	944				
22	56	34	53	51	Clear	996				
23	62	34	53	50	P. Cloudy	1009				
24	62	34	52	51	"	999				
25	61	35	52	51	Clear	993				
26	62	34	51	50	"	999				
27	66	38	53	50	Cloudy	1016				
28	67	38	54	51	"	987				
29	64	37	53	51	P. Cloudy	975				

APPENDIX TABLE 1. (Continued)

Mar.	Air (°F)		Water (°F)		Weather	Flow (CFS)	Fish trapped			
	Max.	Min.	Max.	Min.			Adults	Grilse	Male	Female
1	65	37	53	51	P. Cloudy	836				
2	62	40	53	51	"	720				
3	69	40	53	51	Clear	296				
4	68	42	53	51	"	321				
5	-	41	53	51	"	284				
6	68	40	53	51	"	265				
7	72	44	53	51	Over cast	479				
8	74	43	53	51	Haze	454				
9	72	43	53	51	P. Cloudy	453				
10	74	46	53	51	Haze	453				
11	70	42	53	51	P. Cloudy	484				
12	72	44	53	51	Cloudy	328				
13	-	43	51	50	Rain	341				
14	64	46	53	51	Cloudy	408				
15	61	39	53	51	Rain	370				
16	63	39	52	51	Over cast	363				
17	62	40	52	50	Cloudy	376				
18	64	39	52	50	P. Cloudy	356				
19	72	44	52	50	Clear	345				
20	79	46	52	50	"	348				
21	66	45	52	51	"	267				
22	69	36	53	50	"	382				
23	75	44	55	50	"	388				
24	70	45	54	51	P. Cloudy	413				
25	70	43	54	50	"	334				
26	68	50	54	50	Cloudy	359				
27	72	42	54	51	Clear	405				
28	76	44	53	50	Cloudy	362				
29	70	43	54	50	Clear	384				
30	70	44	54	49	Cloudy	410				
31	61	43	51	50	Rain	396				

APPENDIX TABLE 1. (Continued)

April	Air (°F)		Water (°F)		Weather	Flow (CFS)	Fish trapped			
	Max.	Min.	Max.	Min.			Male	Female	Male	Female
1	59	39	51	50	Over cast	356				
2	70	45	54	51	P. Cloudy	349				
3	74	41	54	51	Clear	371				
4	69	44	53	51	Over cast	382				
5	64	43	53	51	Cloudy	359				
6	70	45	53	51	Over cast	355				
7	75	40	53	49	Clear	355				
8	65	39	53	50	Over cast	352				
9	69	39	53	49	Clear	348				
10	48	46	53	51	Cloudy	348				
11	64	41	53	51	P. Cloudy	333				
12	73	39	53	51	Clear	319				
13	80	43	54	51	"	362				
14	92	48	56	51	"	327				
15	82	50	55	52	"	301				
16	69	53	56	52	Rain	316				
17	73	43	55	50	P. Cloudy	319				
18	63	42	54	50	Rain	316				
19	64	45	54	51	Cloudy	357				
20	70	41	54	51	"	357				
21	75	40	54	51	Clear	346				
22	82	47	54	50	"	316				
23	84	50	55	53	"	304				
24	77	46	55	52	Haze	350				
25	65	43	54	51	P. Cloudy	336				
26	66	54	54	50	"	369				
27	70	36	54	50	Clear	320				
28	70	38	54	50	"	328				
29	78	42	54	49	"	353				
30	74	44	54	49	"	333				

APPENDIX TABLE 1. (Continued)

May	Air (°F)		Water (°F)		Weather	Flow (CFS)	Fish trapped			
	Max.	Min.	Max.	Min.			Adults Male	Adults Female	Grilse Male	Grilse Female
1	73	49	55	50	Over cast	337				
2	78	51	55	52	Clear	339				
3	81	39	56	51	"	333				
4	77	40	55	52	"	350				
5	78	45	54	51	P. Cloudy	317				
6	82	48	54	51	Clear	325				
7	90	48	55	51	"	347				
8	95	50	55	51	"	351				
9	92	44	55	50	"	347				
10	80	48	55	50	"	347				
11	87	47	56	51	"	351				
12	92	48	57	52	"	305				
13	92	47	57	52	"	322				
14	79	54	55	50	"	339				
15	74	48	56	52	"	314				
16	81	43	57	52	"	330				
17	82	53	56	51	"	322				
18	88	46	56	51	"	303				
19	94	43	56	51	"	291				
20	90	52	56	51	"	287				
21	90	51	56	51	"	349				
22	94	56	56	51	"	303				
23	90	58	57	51	"	314				
24	84	52	57	51	"	289				
25	92	55	57	52	"	376				
26	93	60	58	53	"	406				
27	100	57	58	53	"	363				
28	106	58	58	52	"	368				
29	102	60	58	52	"	310				
30	101	63	58	52	"	296				
31	101	58	58	52	"	321				

APPENDIX TABLE 1. (Continued)

June	Air (°F)		Water (°F)		Weather	Flow (CFS)	Fish trapped			
	Max.	Min.	Max.	Min.			Adults Male	Adults Female	Grilse Male	Grilse Female
1	45	53	58	52	Clear	325				
2	92	55	58	52	"	325				
3	88	50	58	52	"	303				
4	64	60	54	52	Rain	433				
5	80	52	54	52	Cloudy	327				
6	65	55	55	52	Over cast	334				
7	79	51	55	52	P. Cloudy	366				
8	83	51	56	52	"	379				
9	86	59	57	52	Clear	359				
10	-	48	-	52	"	295				
11	88	51	58	53	Haze	367				
12	85	56	58	53	P. Cloudy	341				
13	89	55	57	53	Clear	305				
14	92	55	56	52	P. Cloudy	273				
15	92	56	57	52	Clear	320				
16	96	56	58	52	"	260				
17	100	57	58	52	"	285				
18	98	56	-	52	"	303				
19	89	56	57	52	Haze	294				
20	87	52	57	52	Clear	285				
21	89	51	58	52	"	243				
22	94	52	58	53	"	256				
23	100	56	58	53	"	285				
24	102	55	58	53	"	311				
25	103	56	58	53	"	350				
26	103	56	58	53	"	285				
27	103	57	58	53	Haze	277				
28	101	59	58	53	Clear	260				
29	92	56	58	53	"	305				
30	97	54	-	54	"	282				

APPENDIX TABLE 2. Summary of Chinook Salmon Runs to Merced River Fish Facility.^{a/}

<u>Fiscal Year</u>	<u>Males</u>	<u>Females</u>	<u>Grilse</u>
1970-71	59	40	<u>b/</u>
1971-72	54	94	<u>b/</u>
1972-73	14	51	<u>b/</u>
1973-74	13	150	<u>b/</u>
1974-75	24	400	<u>b/</u>
1975-76	99	300	<u>b/</u>
1976-77	86	260	<u>b/</u>
1977-78	44	200	<u>b/</u>
1978-79	14	45	2
1979-80	143	86	120
1980-81	43	106	8
1981-82	326	278	319
1982-83	90	67	32
1983-84	30	178	1,587

^{a/} From 1970-71 to 1978-79, 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. Beginning in 1979-80, an adult fish trap was operated at the facility throughout each spawning season and actual counts were made.

^{b/} No estimate.