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ANNUAL REPORT
IRON GATE SALMON AND STEELHEAD HATCHERY, 1990-91

by

Curtis A. Hiser
Region 1, Inland Fisheries

Inland Fisheries
Administrative Report No. 92-2

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ABSTRACT

This report describes the operation of the Hatchery from July 1, 1990 through June 30, 1991. Appendix tables present daily records of water temperatures, weekly numbers of salmonids entering the Hatchery, total numbers of salmonids reared and released, and historical records.

There were 6,719 fall-run adult chinook salmon, Oncorhynchus tshawytscha, trapped, which produced 9,081,093 eggs. No spring-run chinook salmon were taken. The 378 adult coho salmon, O. kitsutch, produced 295,740 eggs. A total of 268 (154 fall-run and 114 spring-run) steelhead trout, O. mykiss, produced 172,873 eggs.

A total of 5,402,659 fingerling and no yearling chinook salmon, 130,000 yearling coho salmon, and 200,000 yearling steelhead was planted/transferred in FY 1990-91.

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Submitted September 1991; Edited by Ken Hashagen,
California Department of Fish and Game, 1416 Ninth Street,
Sacramento, CA 95814

INTRODUCTION

This report covers the 28th year of operation of the trapping facilities at Iron Gate Hatchery. These facilities were completed by the Pacific Power and Light Company in February, 1962 and have been operated by the Department of Fish and Game during the spring and fall of each year.

The Hatchery was constructed by the Pacific Power and Light Company to compensate for spawning and nursery areas blocked by the Iron Gate Project. This is the 24th report since the Hatchery was completed in February 1966. The Department of Fish and Game, under agreement with the Pacific Power and Light Company, began operation of the Hatchery in March 1966. The trapping facilities and Hatchery are located on the Klamath River eight miles east of Hornbrook, Siskiyou County.

PRODUCTION SUMMARY

This report summarizes the numbers of fish trapped and spawned (Table 1 and Figure 1), production of eggs and fish (Table 1), and water temperatures (Appendix Figure 1) from July 1, 1990 through June 30, 1991.

TABLE 1. Production Summary, Iron Gate Salmon and Steelhead Hatchery, 1990-91

	Adults trapped	Eggs taken or received	Eggs transferred	Fingerlings planted and transferred	Yearlings planted	Total pounds planted and transferred
<u>Chinook salmon</u>						
1989 BY						
1990 BY	6,719	9,081,093		5,402,659		30,719
<u>Coho salmon</u>						
1989 BY					130,000	8,125
1990 BY	378	295,740				
<u>Steelhead</u>						
1990 BY					200,000	20,000
1991 BY	268	172,873				

CHINOOK SALMON MAINTENANCE PROGRAM

History of the 1990 Run

Spring-Run, 1990 Brood Year

No spring-run chinook salmon appeared at the trap in 1990.

Fall-Run, 1990 Brood Year

A total of 7,040 fall-run chinook salmon was trapped: 3,051 males, 3,668 females, and 321 grilse (≤ 56 cm or 22 inches FL) (Figure 1). There were 2,706 females spawned; they produced 9,081,093 eggs, for an average of 3,356 eggs per female (Table 1). Twenty-one lots of eggs were taken, with an average fertility of 80%. 5,200,000 chinook salmon fingerlings were released in May 1991.

Approximately 1,018,000 chinook salmon fingerlings were on hand as of June 30, 1991.

Distribution of the 1989 Brood Year Chinook Salmon

There were no 1989 BY chinook salmon held for release as yearlings.

Distribution of the 1990 Brood Year Chinook Salmon

There were 5,200,000 fingerling chinook salmon planted May 28, 1991 averaging 178/lb (Table 2). From May 7 to May 28, 1991, a total of 202,659 fingerling chinook salmon was transferred to the Klamath River Rearing Ponds (Table 2).

Marked Chinook Salmon Recovered

Of the marked chinook salmon trapped during 1990-91 (Appendix Table 1), 157 were Iron Gate marks and the remainder (Ad) were of undetermined origin.

TABLE 2. Iron Gate Hatchery Chinook Salmon Distribution Data, 1990-91

Race and brood year	Date released	Average size/lb	Number released	Release site	Mark (Coded-wire tag number)
Fall-run, 1989	Planted:				
	No chinook salmon were held for release as yearlings				
<hr/>					
Total yearlings					
Fall-run, 1990	Transferred to Klamath River Rearing Ponds:				
	5/7/91	150	41,357	Indian Creek	06 63 24
	5/16/91	150	41,166	Elk Creek	06 63 27
	5/17/91	140	40,040	Indian Creek	
	5/23/91	121	40,028	Bluff Creek	06 63 28
	5/28/91	126	40,068	Bluff Creek	
	Total transferred:		202,659		
	Planted:				
	5/28/91	129	188,595	IGH	0601020105 and 0601020106 and 06 63 26
	5/28/91				
	C SERIES	129	423,078	IGH	
	D SERIES	150	797,665	IGH	
	E SERIES	188	947,665	IGH	
	F SERIES	189	897,665	IGH	
	G SERIES	193	947,665	IGH	
	H SERIES	223	997,667	IGH	
	Total planted:		5,200,000		
Total fingerlings			5,402,659		

COHO SALMON MAINTENANCE PROGRAM

History of the 1990 Run

The first coho salmon entered the trap on October 17, 1990 and the last on December 17, 1990. A total of 421 fish was trapped: 200 males, 178 females, and 43 grilse (≤ 56 cm or 22 inches FL) (Figure 1). The 142 females spawned produced 295,740 eggs for an average of 2,083 eggs per female (Table 1). During FY 1990-91, 1,000 yearling coho were supplied to the University of California at Berkeley for smoltification studies. Approximately 100,000 fingerling coho salmon were held for later release.

Planting 1989 Brood Year Coho Salmon

There were 130,000 coho salmon planted during the 1990-91 season (Table 3).

TABLE 3. Iron Gate Coho Salmon Planting Data, 1990-91

<u>Date</u>	<u>Average size/lb</u>	<u>Number released</u>	<u>Brood year</u>	<u>Release site</u>	<u>Mark (Coded-wire tag number)</u>
3/16/91	16	88,738	1989	IGH	
3/16/91	16	41,262	1989	IGH	06 63 20 and 06 63 23
Total yearlings		130,000			

Marked Coho Salmon Recovered

Of the marked coho salmon recovered in the trap (Appendix Table 1), 66 were from Iron Gate Hatchery and the remainder (Ad) were of undetermined origin.

STEELHEAD TROUT MAINTENANCE PROGRAM

History of the 1990-91 Run

Between September 21 and December 31, 1990, a total of 154 steelhead entered the trap and were held for later spawning. An additional 114 steelhead were trapped between January 1 and March 27, 1991 (Figure 1). The 84 females spawned produced 172,873 eggs for an average of 2,058 eggs per female. Approximately 65,500 steelhead fingerlings from the 1991 brood year were on hand June 30, 1991.

Planting 1990 Brood Year Steelhead

There were 200,000 steelhead yearling planted in 1990-01 (Table 5). Approximately 153,510 steelhead yearlings from the 1990 brood year were held for release as two-year olds in 1992.

TABLE 4. Iron Gate Hatchery Juvenile Steelhead Planting Data, 1990-91

<u>Strain</u>	<u>Brood year</u>	<u>Date released</u>	<u>Average size/lb</u>	<u>Number released</u>	<u>Release site</u>	<u>Mark brand</u>
KR	1990	5/03/91	10	200,000	IGH	
<u>Total</u>				200,000		

Marked Steelhead Trapped

There were no marked steelhead trapped this year at Iron Gate Hatchery.

PUBLIC RELATIONS

During the 1990-91 fiscal year, 3,234 people visited the Hatchery, including 406 people in organized groups.

APPENDIX TABLE 1. Coded-Wire-Tag (CWT) Recoveries for Iron Gate Hatchery (IGH) with Release Data

CWT code	Egg source	Brood year	Release data				Recovery data				
			Date	Number	#/lb	Site	Year	CWT Recoveries actual	expanded	Mean PL (cm) male	female
<u>FALL CHIN</u>											
06 59 29	IGH	85	11/20/86	99,060	7.3	IGH	90-91	2			
06 63 04 ^{a/} &											
06 63 05 ^{a/} IGH	IGH	85	11/12-19/86	39,600	10	IGH	90-91	3			
06 63 06 ^{a/} &											
06 63 07 ^{a/} IGH	IGH	85	11/12-19/86	49,905	10	IGH	90-91	2			
06 63 08 ^{a/} &											
06 63 09 ^{a/} IGH	IGH	85	11/12-19/86	42,400	10	IGH	90-91	4			
06 59 42	IGH	86	11/20/87	100,000	12	IGH	90-91	17			
06 59 50	IGH	85	6/26/87	200,000	87	IGH	90-91	4			
06 63 32 ^{b/} IGH	IGH	86	11/20-21/87	25,153	12	IGH	90-91	45			
06 59 36 &											
06 59 37	IGH	87	10/19-26/88	100,000	8	IGH	90-91	76			
86 02 01	IGH	87	5/16/88	185,000	129	IGH	90-91	2			
06 59 62	IGH	88	11/13-15/89	98,283	8	IGH	90-91	2			
10 00 00 ^{c/}	---	--	---	---	---	---	90-91	50			
20 00 00 ^{d/}	---	--	---	---	---	---	90-91	7			
40 00 00 ^{e/}	---	--	---	---	---	---	90-91	1			

APPENDIX TABLE 1. Coded-Wire-Tag (CWT) Recoveries for Iron Gate Hatchery (IGH) with Release Data

CWT code	Egg source	Brood year	Release data			Recovery data			Mean FL (cm)			
			Date	Number	#/lb	Site	Year	actual		expanded	male	female
<u>COHO</u>												
06 59 38	IGH	87	3/15/89	42,096	13	IGH	90-91	57				
06 53 22	IGH	88	3/6/90	46,030	14	IGH	90-91	9				
10 00 00 ^{c/}	---	--	---	---	---	---	90-91	6				
20 00 00 ^{d/}	---	--	---	---	---	---	90-91	2				

a/ Fall Creek Hatchery fish.
 b/ Soft-moist feed group.
 c/ 10 00 00 = No CWT in head of Ad-marked fish.
 d/ 20 00 00 = CWT lost in head dissection.
 e/ 40 00 00 = CWT unreadable.

APPENDIX TABLE 2. Summary of Chinook Salmon Runs to Iron Gate Salmon and Steeihead Hatchery

Season	Fall-trapped Spring-run ^{1/}		Fall-run				Spring-trapped Spring-run ^{1/}		
	Adult	Grilse	Males	Females	Total adult	Grilse	Total fall run	Adults	Grilse
1962-63	2/						1,339		
1963-64					1,723	448	2,171		
1964-65			337	1,551	2,488	110	2,598		
1965-66			141	224	365	313	678		
1966-67			1,129	1,510	2,739	325	3,064		
1967-68			550	1,275	2,125	562	2,687		
1968-69			946	1,690	2,636	72	2,708	53	6
1969-70	8	3	515	436	954	1,914	2,868	51	0
1970-71	2	0	2,839	7,395	10,284	219	10,503	10	0
1971-72	16	0	4,412	6,031	10,443	326	10,769	80	0
1972-73	37	4	1,126	1,397	3,023	476	3,499	49	0
1973-74	18	5	3,273	4,135	7,408	1,294	8,702	4	0
1974-75	19	3	4,024	5,371	9,395	410	9,805	3	0
1975-76	25	28	3,131	4,571	7,702	3,425	11,127	0	0
1976-77	13	0	4,604	7,991	12,595	1,130	13,725	0	0
1977-78	0	0	1,514	2,799	4,313	520	4,833	0	0
1978-79	17	0	3,027	3,918	6,945	925	7,870	0	0
1979-80	0	0	1,003	1,298	2,301	257	2,558	0	0
1980-81	0	0	348	1,464	2,412	451	2,863	0	0
1981-82	0	0	904	1,151	2,055	540	2,595	0	0
1982-83	0	0	3,805	4,548	8,353	1,333	10,186	0	0
1983-84	0	0	3,927	4,444	8,371	514	8,885	0	0
1984-85	0	0	2,484	2,846	5,330	764	6,094	0	0
1985-86	0	0	10,073	9,878	19,951	2,159	22,110	0	0
1986-87	0	0	9,093	3,003	17,096	1,461	18,557	0	0
1987-88	0	0	7,451	7,738	15,189	1,825	17,014	0	0
1988-89	0	0	6,967	3,139	16,106	609	16,715	0	0
1989-90	0	0	5,370	5,789	10,859	831	11,690	0	0
1990-91	0	0	3,051	3,668	6,719	321	7,040	0	0

^{1/} Fall-trapped spring-run chinook salmon are the same brood year as the spring-trapped spring-run salmon of the preceding reporting period. Spring run not differentiated from fall run prior to 1968-69.

^{2/} Blanks indicate data not available.

APPENDIX TABLE 3. Summary of Coho Salmon and Steelhead Trout Runs to Iron Gate Salmon and Steelhead Hatchery

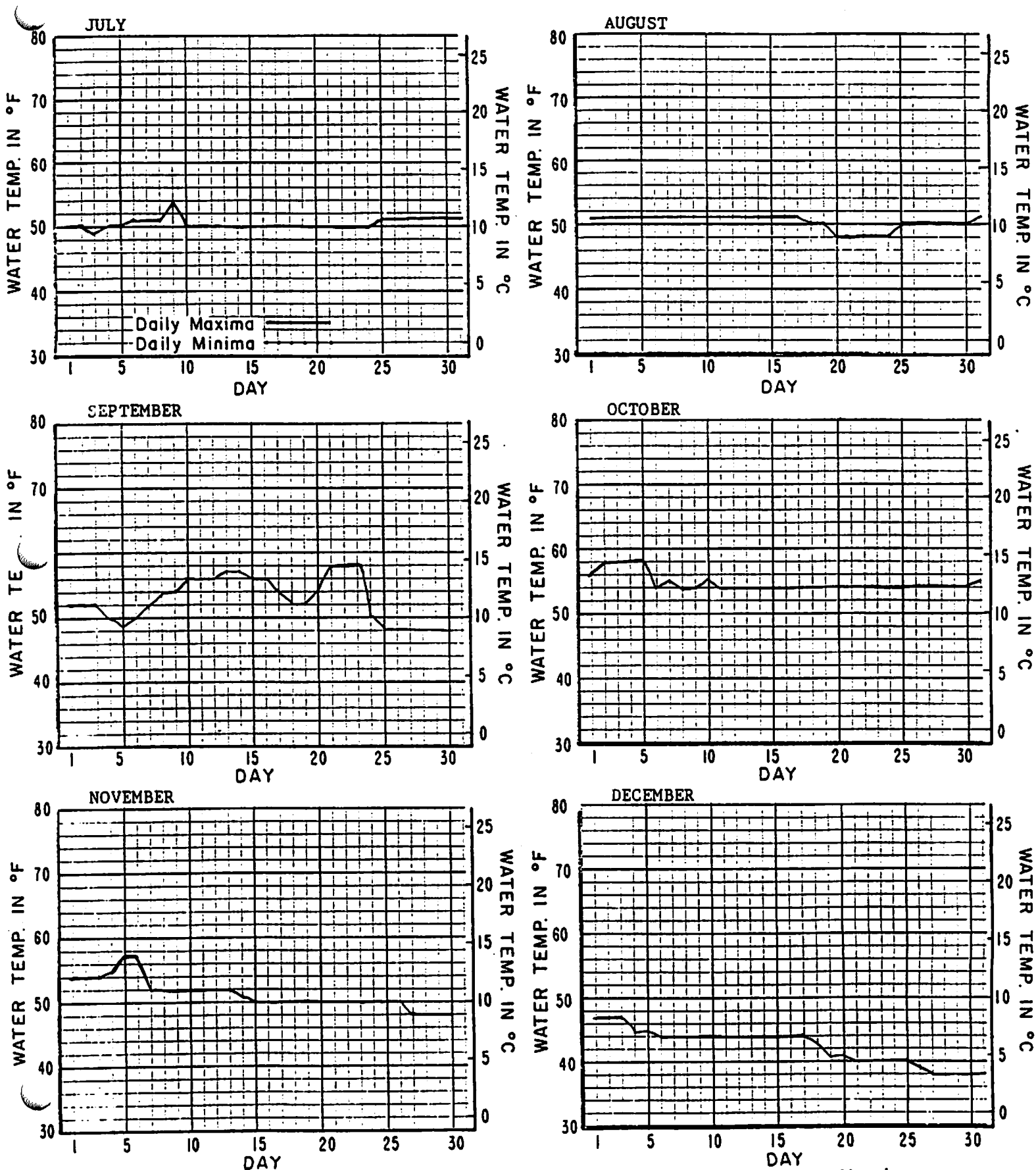
Season	Coho salmon					Steelhead ^{1/}		Total
	Males	Females	Adults	Grilse	Total	Fall-trapped early run	Spring-trapped late run	
1963-64	31	95	176	14	190			1,542
1964-65	0	0	0	0	0			1,065
1965-66	2	0	2	0	2			227
1966-67	2	2	4	0	4			299
1967-68	27	24	51	28	79			984
1968-69	14	10	24	333	357			370
1969-70	34	118	202	749	951	381	813	1,194
1970-71	716	671	1,337	236	1,623	292	2,073	2,365
1971-72	74	52	126	21	147	174	3,583	3,757
1972-73	38	18	56	35	91	226	1,060	1,286
1973-74	201	212	413	428	841	665	1,200	1,965
1974-75	193	263	456	41	497	1,062	2,165	3,227
1975-76	45	37	82	478	560	423	1,100	1,523
1976-77	581	795	1,376	381	1,757	695	1,246	1,941
1977-78	92	159	251	375	626	3,197	1,214	4,411
1978-79	263	236	499	250	749	812	1,267	2,079
1979-80	213	282	495	1,906	2,401	505	1,152	1,657
1980-81	580	1,220	1,800	251	2,051	359	888	1,247
1981-82	402	502	904	93	997	1,903	358	2,261
1982-83	499	634	1,133	496	1,629	1,267	1,436	2,703
1983-84	128	90	218	71	289	470	362	332
1984-85	444	350	794	211	1,005	373	1,012	1,335
1985-86	1,041	1,228	2,269	408	2,677	1,286	1,879	3,165
1986-87	315	422	737	288	1,025	1,347	1,437	2,834
1987-88	1,343	1,238	2,581	312	2,893	2,771	999	3,770
1988-89	669	700	1,369	323	1,692	1,604	1,739	3,343
1989-90	459	451	910	61	971	286	473	759
1990-91	300	173	378	43	421	154	114	258

^{1/} Fall-trapped steelhead not differentiated from spring-trapped prior to 1969-70.

APPENDIX TABLE 4. Weekly Adult Salmon and Steelhead Trapping Data for Iron Gate Salmon and Steelhead Hatchery, 1990-91

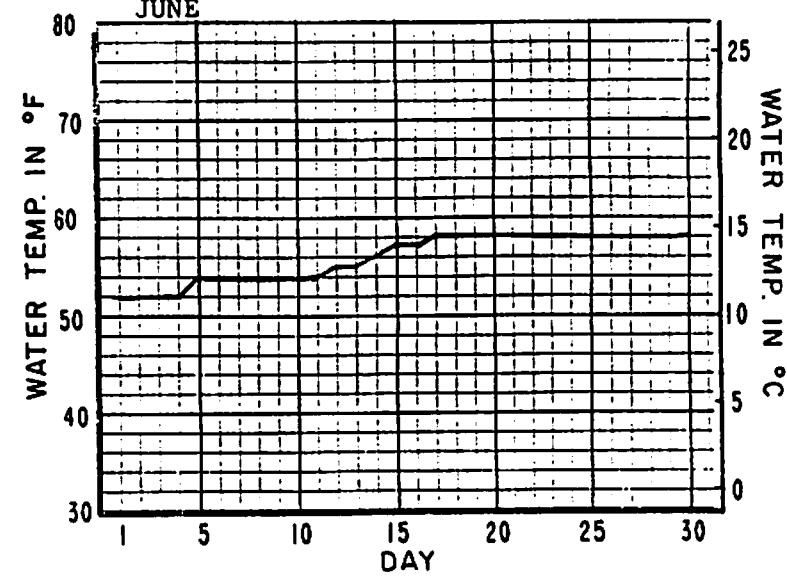
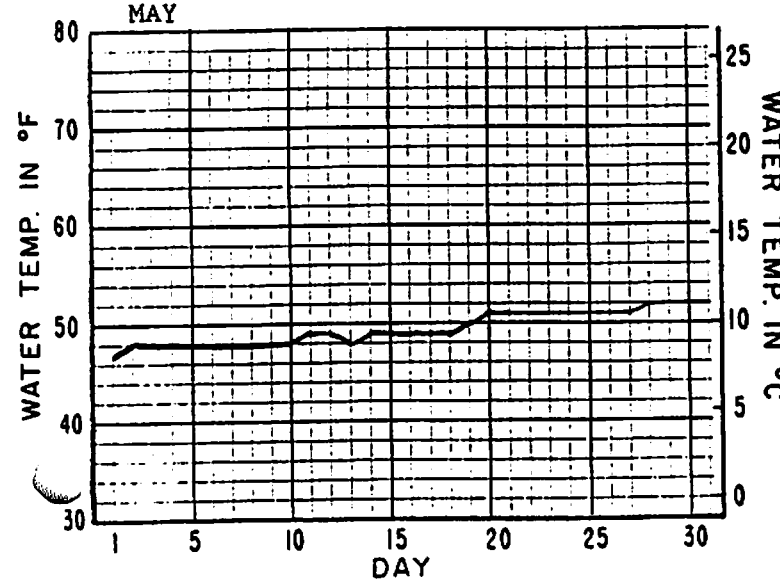
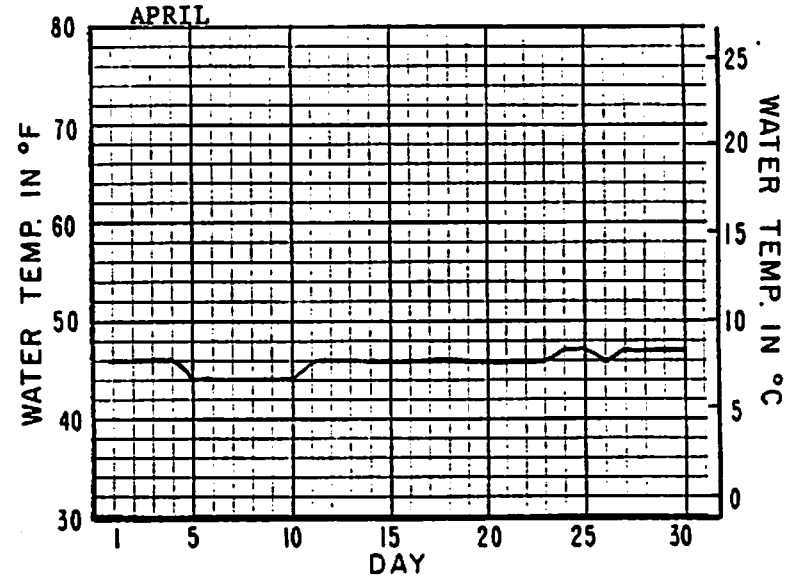
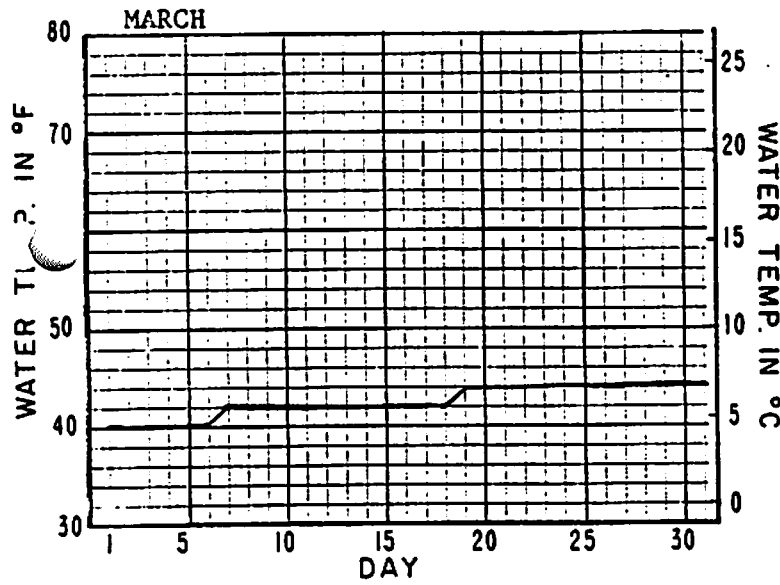
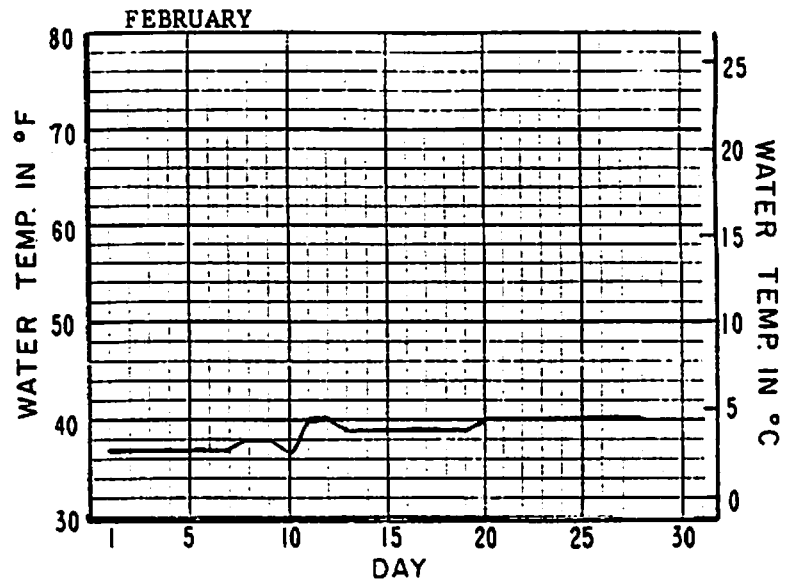
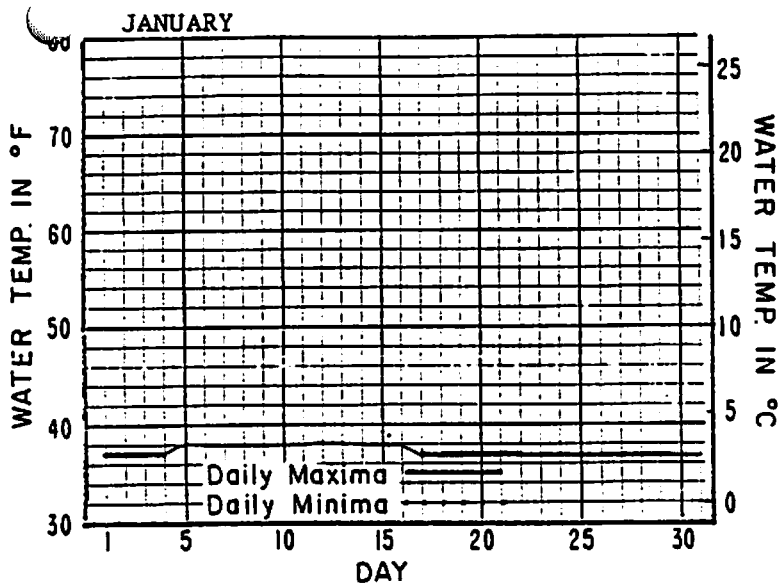
Week	<u>Chinook salmon</u>		<u>Coho salmon</u>		<u>Steelhead trout</u>	
	<u>adults</u>	<u>grilse</u>	<u>adults</u>	<u>grilse</u>	<u>fall</u>	<u>spring</u>
9/16-22	147	3			1	
9/23-29	598	14			6	
9/30-10//6	1040	48			24	
10/7-13	1810	79			11	
10/14-20	1917	100	3		17	
10/21-27	777	53	30	4	11	
10/28-11/3	304	13	59	6	31	
11/4-10	81	6	60	9	10	
11/11-17	30	5	107	6	16	
11/18-24	3		48	5	11	
11/25-12/1	10		41	9	4	
12/2-8			13	3		
12/9-15	2		4	1	3	
12/16-22			13		3	
12/23-29					6	
12/30-1/5						
1/6-12						
1/13-19						
1/20-26						1
1/27-2/2						4
2/3-9						6
2/10-16						
2/17-23						14
2/24-3/2						15
3/3-9						39
3/10-16						19
3/17-23						11
3/24-30						5
Season Totals	6719	321	378	43	154	114

DAILY WATER TEMPERATURES BY MONTH



APPENDIX TABLE 1. Daily Water Temperatures for Iron Gate Salmon and Steelhead Hatchery, 1990-91.

DAILY WATER TEMPERATURES BY MONTH



APPENDIX FIGURE 1. (Cont'd)