

REF 90183

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

ANNUAL REPORT
FEATHER RIVER HATCHERY, 1991-92

by

Donald L. Schlicting
Region 2, Inland Fisheries

Inland Fisheries
Administrative Report No. 93-7

1993

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ABSTRACT

This report summarizes the operation of Feather River Hatchery and its annex from July 1, 1991 through June 30, 1992. Tables present water temperatures, numbers of chinook salmon, Oncorhynchus tshawytscha, and steelhead rainbow trout, O. mykiss, entering the Hatchery, number of eggs taken and received, and numbers of fish released.

We trapped 11,278 chinook salmon and 1,028 steelhead and planted or transferred 15,086,888 chinook fingerlings and 359,995 steelhead yearlings.

^{1/} Inland Fisheries Administrative Report No. 93-7.
Submitted September 1992. Edited by K.A. Hashagen, California
Department of Fish and Game, 1416 Ninth Street, Sacramento,
CA 95814

INTRODUCTION

This report describes activities at the Feather River Hatchery and its annex during its 25th year of operation, July 1, 1991 through June 30, 1992. The Hatchery is located near the upper Thermalito Bridge in Oroville, Butte County. 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 the Oroville Dam. It is operated by the Department of Fish and Game with funds provided by the Department of Water Resources. The Hatchery annex is located along Highway 99, 1 mile south of Oro Dam Boulevard West. Operating expenses for the annex are shared by the Department of Fish and Game (5/6) and Department of Water Resources (1/6).

PRODUCTION SUMMARY

Personnel from Feather River Hatchery trapped 11,278 chinook salmon, Oncorhynchus tshawytscha, and 1,028 steelhead, O. mykiss, during the 1991-92 season (Table 1). Approximately 31,272,606 salmon eggs and 1,805,455 steelhead eggs were taken. We planted 15,086,888 salmon and 359,995 steelhead.

MARKING PROGRAMS

Bay Delta personnel marked a total of 863,855 1989 brood year (BY) fall-run chinook salmon with an adipose (AD) and coded-wire nose tag (CWT). The marked chinook salmon were planted at Mossdale, Georgianna Slough, and Sacramento River at Ryde and Koket. An additional 205,208 spring-run salmon were marked AD and CWT and released in Clear Creek.

CHINOOK SALMON MAINTENANCE PROGRAM

History of the 1991-92 Runs

1991 BY Spring-Run

The fish ladder was opened on September 7, 1991 to allow the spring-run chinook salmon to enter the Hatchery. We received 3,448 fish between September 7 and October 1 (Appendix Table 1). The spring-run were sexed on October 1. At the time, we had on hand 1,802 males, 1,491 females, and 155 grilse. Of the 1,491 females, we successfully spawned 1,264 from September 28 through October 13. The spawning yielded 7,266,394 eggs, for an average of 5,749 eggs per female.

An estimated 5,988,076 fingerlings were transferred to the ponds, for an average egg to fingerling survival rate of 82.4%.

Between December 1991 and June 1992, we planted 2,604,303 1991 BY chinook fingerlings and smolts. A total of 2,960,065 remained on hand June 30.

1991 BY Fall-Run

The first fall-run chinook salmon adults entered the Hatchery on October 1, (Appendix Table 1). The season total was 7,830 fish. We spawned 4,076 females between October 1 and December 2 and took 24,006,212 eggs, for an average of 5,890 eggs per female. Fry production totaled 19,208,507, for an average egg to fry survival of 80%. We planted and transferred a total of 10,779,200 fall run 1991 BY chinook fingerlings. An estimated 4,677,211 remained on hand as of June 30.

Recovery of Marked Chinook Salmon

All chinook salmon entering the Hatchery were examined for marks; a total of 474 was marked (Appendix Table 2).

Chinook Salmon Planting

We planted an estimated 15,086,888 chinook fingerlings (Tables 1 and 2).

TABLE 1. Feather River Hatchery Production Summary, 1991-1992.

Species brood year	Fish trapped or received	Females spawned	Eggs taken	Fish planted		Estimated Number on hand 6/30/92
				fingerlings	yearlings	
Chinook salmon Spring-run 1990 BY				1,462,450		
Chinook salmon Spring-run 1991 BY 4 ^{a/}	3,448 2,604,303	1,264	7,266,39 2,960,065			
Chinook salmon Fall-run 1990 BY				240,935		
Chinook salmon Fall-run 1991 BY	7,830	4,076	24,006,212 ^{b/}	10,779,200 ^{c/}		4,677,211
Steelhead 1991 BY					359,995	
Steelhead 1992 BY	1,028	363	1,805,455			1,528,986

a/ Includes 323,285 eggs shipped to Yountville for Inland Program

b/ Includes 1,513,645 eggs shipped to Mokelumne Hatchery

c/ Includes 1,521,560 shipped to Merced Fish Facility and 1,489,150 sent to Mokelumne Hatchery

TABLE 2. Chinook Salmon Planting Summary, Feather River Hatchery, 1991-92.

Race	Month of release	Average size (G)	Number released	Mark	Release site	
Chinook salmon Spring-run 1990 BY	July	20.3	1,202,300		Benicia	
	August	26.3	260,150		Benicia	
	TOTAL			1,462,450		
Chinook salmon Spring-run 1991 BY	February	2.1	201,020		Chico Creek	
	March	3.0	105,233	6-1-12-1-1		
				6-1-12-1-2		
	March	3.5	99,975		Clear Creek	
	May	7.9	597,475		Clear Creek	
	June	7.7	1,600,600		Benicia	
TOTAL			2,604,303			
Chinook salmon all-run 1990 BY	July	21.3	1,245,850		Benicia	
	August	29.8	1,235,085		Benicia	
	TOTAL			2,480,935		
Chinook salmon Fall-run 1991 BY	January	.28	1,400,000		Feather River	
	January	.68	1,521,560		Merced Fish Facility	
	February	1.8	1,489,150		Mokelumne Hatchery	
	March	3.19	1,655,440		Feather River	
	April	4.9	53,187	06-01-14-02-10	Georgianna Slough	
	April	5.0	54,326	06-01-14-02-11	San Joaquin River (Mossdale)	
	April	5.1	55,718	06-01-14-02-12	San Joaquin River	
	April	5.1	54,077	06-01-14-02-13	San Joaquin River	
	April	4.4	768,995		Feather River	
	April	5.9	55,664	06-01-14-02-14	San Joaquin (Mossdale)	
	April	5.9	56,184	06-01-14-02-15	San Joaquin (Mossdale)	
	April	6.3	53,585	06-01-14-03-01	Sacramento River-Ryde	
	April	5.8	53,213	06-01-14-03-02	Georgianna Slough	
	April	5.8	52,628	06-01-14-03-04	Mossdale	
	April	6.2	53,997	06-01-14-03-03	Mossdale	
	April	5.6	53,695	06-31-29	Sacramento-Koket	
	April	5.8	53,158	06-31-30	Georgianna Slough	
	April	6.3	35,000		Monterey Holding Facility	

(Continued)

TABLE 2. Chinook Salmon Planting Summary, Feather River Hatchery, 1991-92.

<u>Race</u>	<u>Month of release</u>	<u>Average size (G)</u>	<u>Number released</u>	<u>Mark</u>	<u>Release site</u>
	May	7.1	59,850		Santa Cruz Holding Facility
	May	7.1	54,363	06-31-31	San Joaquin River (Mossdale)
	May	6.0	52,164	06-31-32	San Joaquin River (Mossdale)
	May	8.9	465,500		Benicia
	May	7.8	53,880	06-31-33	San Joaquin River (Mossdale)
	May	7.5	54,036	06-31-34	San Joaquin River (Mossdale)
	May	8.4	26,500		Avila Beach
	May	9.7	4,600		Ventura-Cage Culture
	May	8.4	1,173,850		Benicia
	June	10.1	1,314,900		Benicia
	TOTAL		10,779,200		

STEELHEAD MAINTENANCE PROGRAM

History of the 1991-92 Production

Steelhead were not counted until December 1. We trapped a total of 1,028 males and females. Marks and measurements of steelhead were recorded by Region 2 personnel. Of the total run of 1,028 fish, there were 490 males and 538 females. We successfully spawned 363 females (Table 3) and took a total of 1,805,455 eggs (4,974 eggs/female). From these eggs, 1,256,880 fish were transferred to the ponds for an overall survival rate of 69.6%. We had an estimated 1,528,986 on hand June 30.

STEELHEAD PLANTING

We planted an estimated 359,995 steelhead during the 1991-92 season (Table 4).

VISITOR USE

During the 1991-92 fiscal year, an estimated 38,107 people visited the installation.

TABLE 3. Steelhead Spawning Data, 1991-92

Date	Fish spawned		
	M	F	
December 16	5	9	
December 23	11	10	
December 30	11	36	
January 6	15	37	
January 13	23	58	
January 21	23	54	
January 27	24	46	
February 3	13	41	
February 11	26	36	
February 18	20	23	
February 24	7	11	
March 2	4	2	
TOTAL		182	363

TABLE 4. Steelhead Planting Summary, 1991-1992

Date	Strain	Release site	Average size(G)	Number released
January	Feather River	Feather River	130.0	182,160
February	Feather River	Feather River	130.5	177,835
TOTAL				359,995

APPENDIX TABLE 1. Weekly Adult Salmon and Steelhead Trapping Data, Feather River Hatchery, 1991-1992

Week	<u>Chinook salmon</u> <u>fall run</u>		<u>Chinook salmon</u> <u>spring run</u>		<u>Steelhead trout</u>	
	Adults	Grilse	Adults	Grilse	Males	Females
Sept. 7- Oct. 1			3,293	155		
Oct. 1-7	1,403	170				
Oct. 8-15	2,604	395				
Oct. 16-18	1,433	334				
Oct. 19-25	1,362	392				
Oct. 26 to Nov. 1	850	375				
Nov. 6-12	97	5				
Nov. 13 to Dec. 2	81	1				
Dec. 1-16					153	158
Dec. 17-23					63	51
Dec. 23-30					55	55
Jan. 1-6					109	126
Jan. 7-13					45	42
Jan. 14-21					8	14
Jan. 22-27					7	19
Jan. 27 to Feb. 3					17	19
Feb. 4-11					21	40
Feb. 12-18					11	10
Feb. 19-24					1	4
TOTALS	7,830	1,672	3,293	155	490	538

APPENDIX TABLE 2. Fork Length (to Nearest Centimeter) of Adipose Marked Chinook Salmon Trapped at Feather River Hatchery, 1991-1992

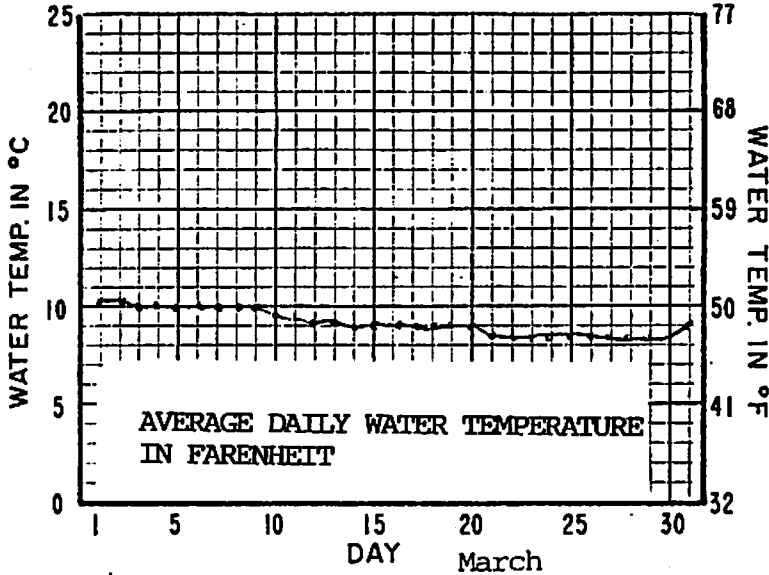
FL	Males	Females	FL	Males	Females
50	1		85	6	15
51			86	10	14
52			87	8	7
53	2		88	11	10
54	2		89	10	4
55	1		90	9	6
56	2		91	11	1
57	3		92	6	3
58	2		93	7	1
59	4		94	2	1
60	1		95	7	1
61	3		96	3	
62	2		97	2	1
63	2		98	1	
64	1	1	99		
65	1	1	100	1	
66	1	2	101	4	
67	2	2	102		
68	1	5	103		
69	1	7	104		
70	1	4	105		
71		6	106	2	
72	4	8			
73	4	10	TOTAL	211	263
74	5	12			
75	8	9			
76	11	20			
77	2	12			
78	6	13			
79	6	15			
80	4	16			
81	2	20			
82	8	10			
83	6	9			
84	12	17			

APPENDIX FIGURE 1. Daily Water Temperatures for Feather River Salmon and Steelhead Hatchery from July 1, 1991 thru June 30, 1992

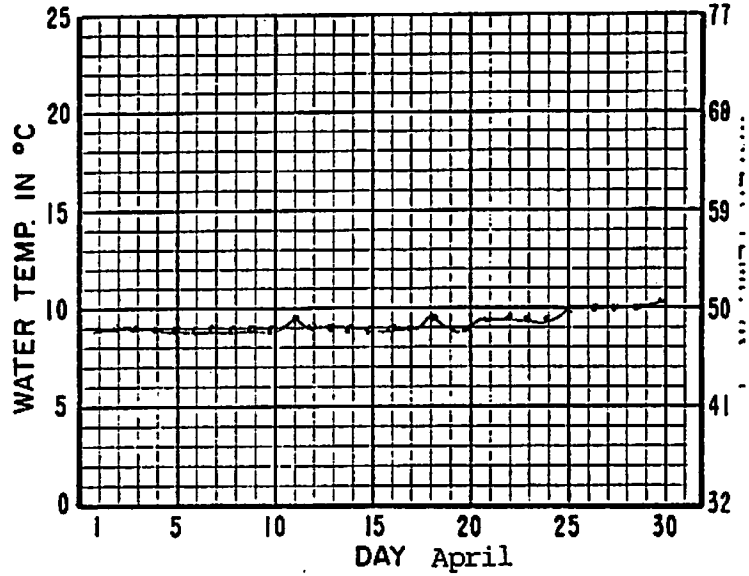
-10-

DAILY WATER TEMPERATURES BY MONTH

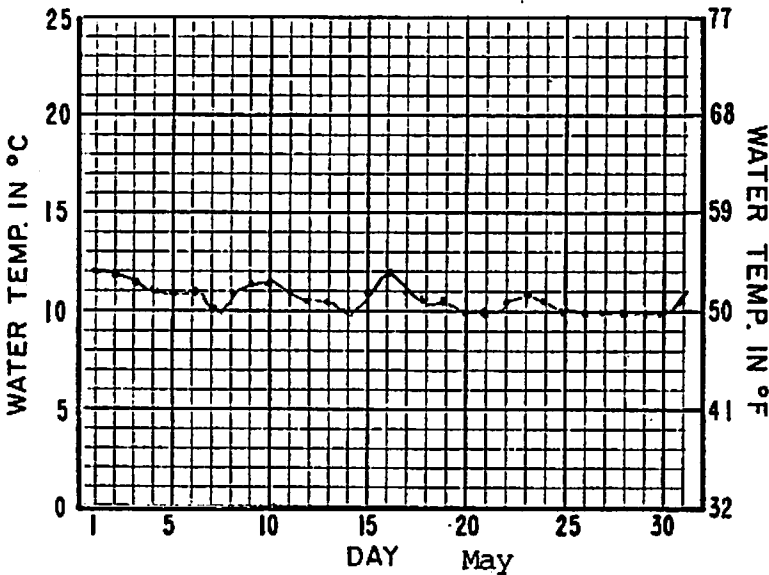
January



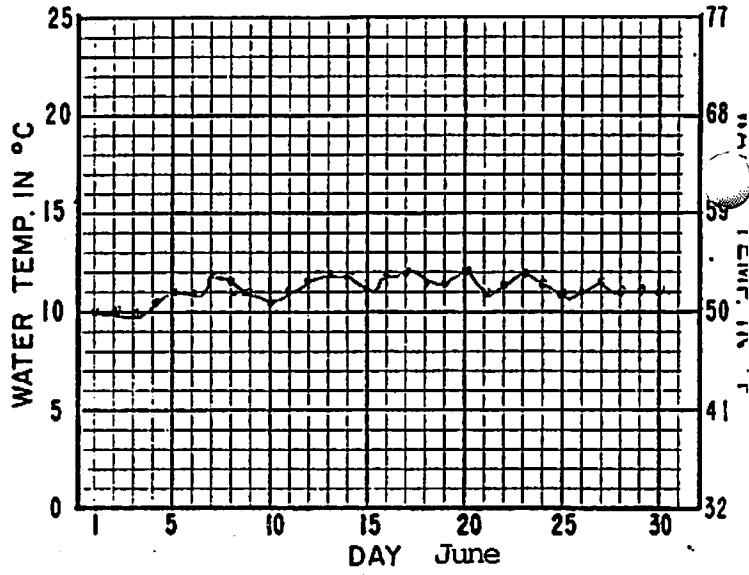
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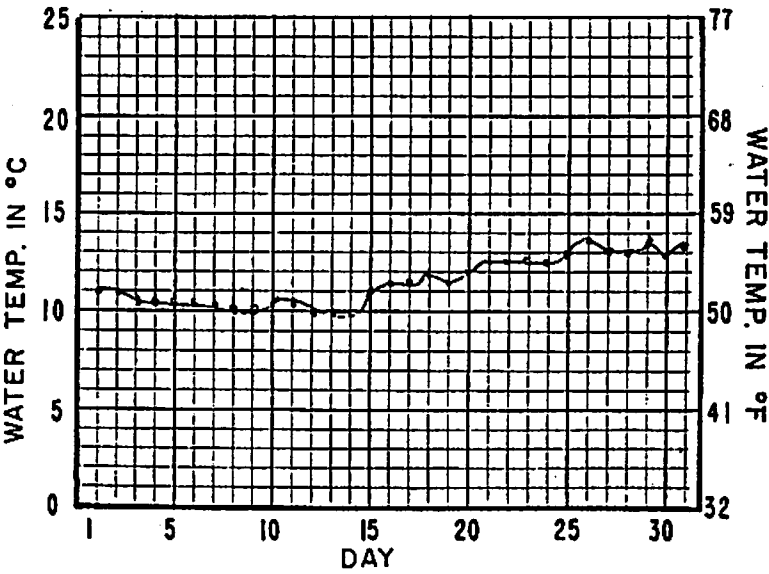
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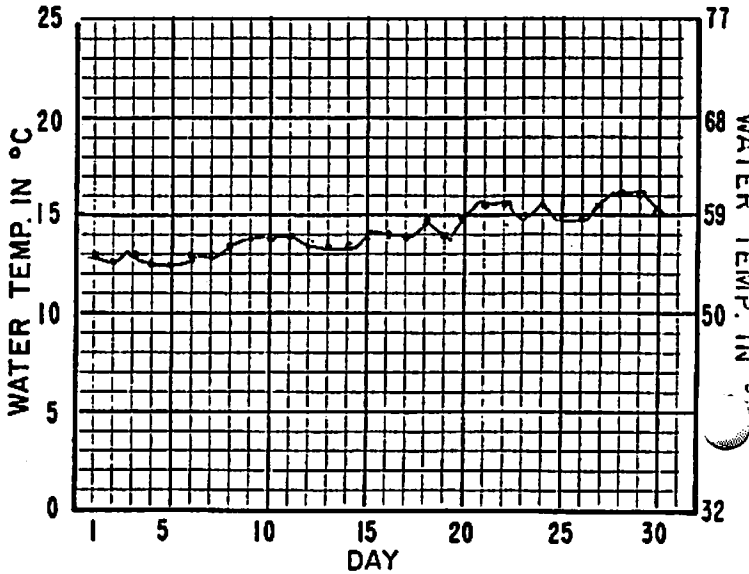
April



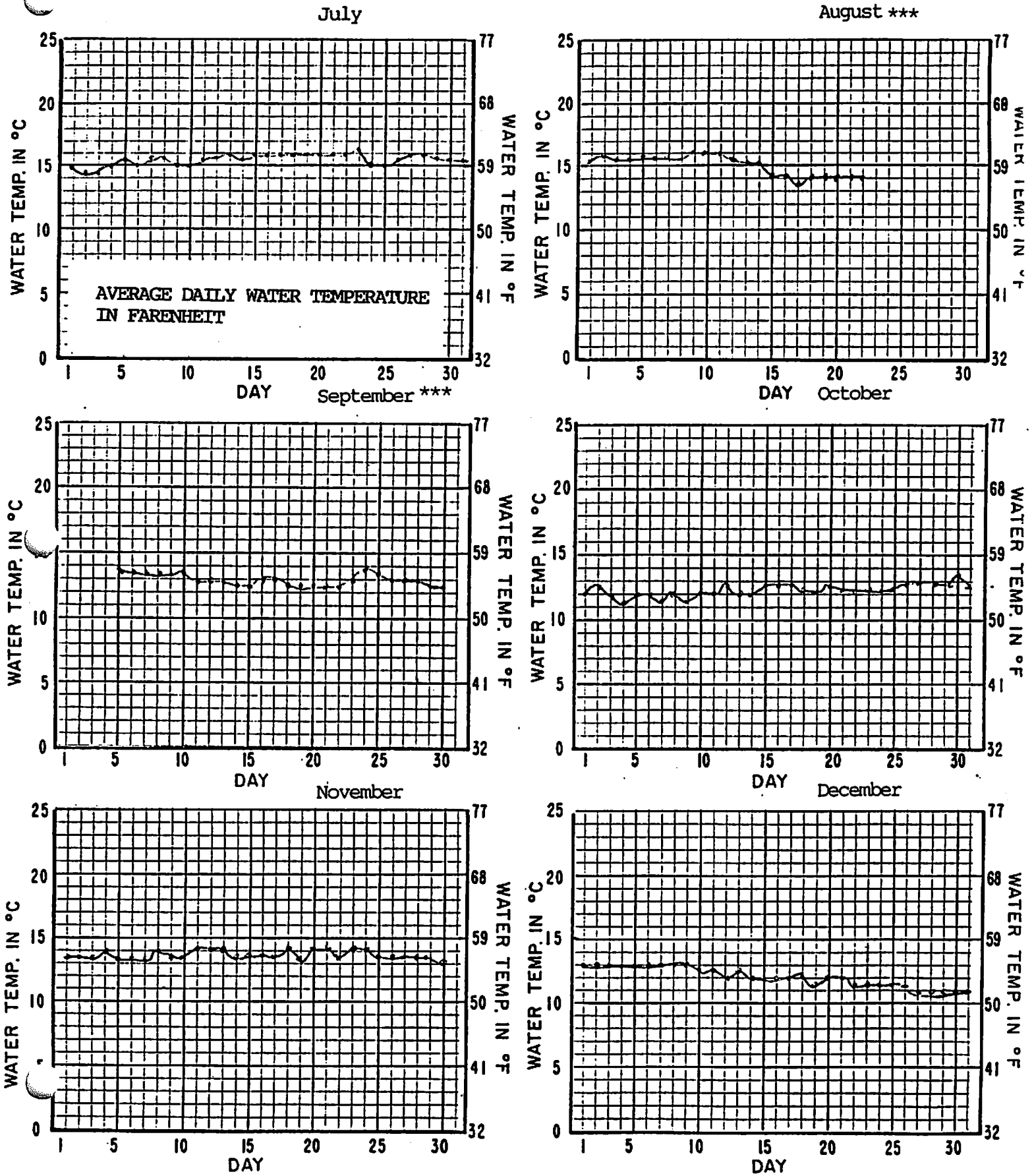
May



June



DAILY WATER TEMPERATURES BY MONTH



*Fish Hatchery pipeline shutdown at 11:45 on 8/23/91 to 2:30 pm on 9/4/91