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ANNUAL REPORT
NIMBUS SALMON AND STEELHEAD HATCHERY, 1985-86 1/

by

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ABSTRACT

This report describes the operation of Nimbus Salmon and Steelhead Hatchery from July 1, 1985 through June 30, 1986. Tables present numbers of fish trapped, eggs taken, fish reared and released, and water temperatures. There were 9,093 chinook salmon, Oncorhynchus tshawytscha, trapped which produced 17,769,220 eggs. There were 1,193 winter-run steelhead, Salmo gairdneri, trapped from which 1,440,770 eggs were taken.

During the year we planted or transferred a total of 5,366,920 fingerling and 4,015,840 advanced fingerling chinook salmon and 218,525 fingerling and 497,565 yearling steelhead.

1/ Inland Fisheries Administrative Report No. 87-11
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INTRODUCTION

This is the 31st annual report for Nimbus Salmon and Steelhead Hatchery. The hatchery is located on the American River near the base of Nimbus Dam and is operated by the California Department of Fish and Game under contract with the United States Bureau of Reclamation. This report summarizes the hatchery activities during 1985-86, with particular reference to numbers of fish trapped, spawned and released, eggs taken and fish produced, and other pertinent information.

PRODUCTION SUMMARY

During 1985-86 we took 19,209,990 eggs and planted or transferred 10,098,850 chinook salmon and steelhead and 233,300 steelhead eggs (Table 1).

TABLE 1. Production Summary, Nimbus Salmon and Steelhead Hatchery, 1985-86

Species	Number of fish trapped	Eggs taken or received	Eggs or fish transferred	Fingerlings planted	Adv. fgl. or yearling planted	Total weight planted(lb)
Chinook salmon						
1984 BY			(fish)		876,600	17,010
1985 BY	9,093	17,769,220	125,900	5,241,020	3,139,240	75,973
Steelhead						
1985 BY			(eggs)		497,565	148,370
1986 BY	1,193	1,440,770	233,300	218,525		609

HATCHERY OPERATIONS

The Weir

The weir was installed September 11 and 12, 1985 by the Bureau of Reclamation. The pickets were lowered and capped on September 17, 1985. The lower gate in the ladder was removed and the holding pond was opened October 31, 1985. Water temperature was 61°F.

Water Temperature Control

Shutters #8 and #9 were pulled July 3, 1985 when hatchery water temperature reached 60°F. Shutters #1-#7 were removed on October 28, 1985. Water temperature in Nimbus ponds was in the 61-63°F range on October 28. After shutters were removed, pond temperature lowered to a constant 61°F.

Disposal of Salmon Carcasses

Edible carcasses were given to State and County institutions, community action groups and groups or councils representing the local Indians. Local zoos received carcasses of questionable quality and all inedible carcasses went to a local rendering plant. The total dispensed was 70,400 lb. edible, 1,600 lb. animal food and 16,800 lb. inedible.

Public Relations

An estimated 454,688 persons visited Nimbus Hatchery this year. This number was arrived at by an automatic car counter installed at the parking lot entrance and employee counts of bus passengers and bicyclists. October was the peak month with 80,972 visitors.

CHINOOK SALMON MAINTENANCE PROGRAM

Chinook Salmon Counts

The fish ladder was opened October 31, 1985 and the first spawning took place on November 1, 1985. A total of 9,093 salmon entered the holding pond this season, including 3,349 males, 4,439 females, and 1,305 grilse. (Appendix Table 1). Grilse are fish 60 cm (23.6 in.) FL or under. A total of 828 carcasses was removed from the weir: 299 males, 303 females and 226 grilse.

Sorting and Spawning

Of the females counted, 3,303 were spawned, 387 died in the pond and 749 were accidentally killed or released.

The spawning season, which began November 1, 1985 and ended November 25, 1985, produced a total of 17,769,220 eggs, for an average of 5,380 eggs per female. Fertility, as determined by the difference between green eggs taken and the total eggs eyed, ranged from 52.6% to 79.4% with an average of 66%.

Marked Chinook Salmon Recoveries

All fish were examined for marks as they were processed or removed dead from the pond. Heads were removed from all adipose fin-clipped fish for recovery of coded-wire tags by the District Biologist.

Chinook Salmon Planting

1984 Brood Year

There was an estimated 876,600 chinook salmon on hand July 1, 1985.

1985 Brood Year

We released 9,251,860 fingerlings and advanced fingerlings (Table 2). 113,520 of the fish released were coded-wire tagged. We also transferred 125,900 Chinook salmon weighing 550 lb to Mokelumne River Fish Installation on April 11, 1986. On June 30, 1986 there were approximately 1,717,270 chinook salmon on hand to be released in July 1986.

TABLE 2. Planting Data for 1984 and 1985 Brood Year Chinook Salmon

Month	Release site	Fingerlings	Advanced fingerlings	Average size/lb	Weight (lb)
1984 BY					
7-85	Maritime Academy		846,100	53	16,160
7-85	Berkley Boat Ramp		25,500	30	850
1985 BY					
1-86	Garcia Bend	386,700		1,289	300
1-86	Discovery Park	452,915		1,248	363
2-86	Discovery Park	3,668,925		1,229	2,985
3-86	Garcia Bend	523,180		404	1,295
5-86	Benicia Boat Ramp	209,300		65	3,200
5-86	Benicia Boat Ramp		288,490	57	5,030
6-86	Benicia Boat Ramp		2,850,750	46	62,250
Totals		5,241,020	4,010,840		

WINTER-RUN STEELHEAD MAINTENANCE PROGRAM

History of the 1986 Winter-Run

All steelhead entering the holding pond were spawned as late-run steelhead (Table 3). All fish were examined for marks as they were processed or removed dead from the pond. Heads were removed from all adipose fin-clipped fish for recovery of coded-wire tags by the District Biologist.

TABLE 3. Counts of Winter-Run Steelhead
Nimbus Salmon and Steelhead Hatchery, 1985-86

Date	<u>Spawned and released</u>		<u>Pre-spawning mortality</u>		<u>Released unspawned</u>		Total
	M	F	M	F	M	F	
1-10	34	52	5	4	24	11	130
1-15	57	62	3	2	83	29	236
1-21	55	49	9	7	140	20	280
1-28	47	54	7	2	63	16	189
2-3	0	0	23	10	179	146	358
Totals	193	217	47	25	489	222	1,193

Spawning Data 1986 Brood Year

The 217 females spawned produced 1,440,770 eggs for an average of 6,639 eggs per female. Survival of green eggs to eyed eggs ranged from 68% to 93% with an average of 81%.

Winter-run Steelhead Planted

1985 Brood Year

From January 6, 1986 through March 19, 1986 a total of 497,565 yearling steelhead was planted (Table 4). Of those planted, 157,040 were early-run and 340,525 late-run steelhead. No tagged fish were released this year.

TABLE 4. Planting Data, 1985 Brood Year Winter-run Steelhead, Nimbus Salmon and Steelhead Hatchery, 1985-86

Month	Release site	Number of yearlings	Average size/lb	Weight (lb)
January	Rio Vista	220,790	3.5	62,500
February	Rio Vista	153,215	2.8	53,770
March	Rio Vista	123,560	3.8	32,100
Totals		497,565		148,370

1986 Brood Year

Prior to June 30, 1986, 218,525 fingerlings were released into the American River at the base of the fish ladder (Table 5). On July 1, 1986 approximately 535,000 Nimbus fingerlings were on hand; approximately 430,000 will be released in January and March 1987.

TABLE 5. Planting Data, 1986 Brood Year Nimbus Salmon and Steelhead Hatchery, 1986

Month	Release site	Number of fingerlings	Average size/lb	Weight (lb)
May	Foot of Ladder	178,625	448	399
June	Foot of Ladder	39,900	190	210
Totals		218,525		609

Steelhead Disease Information

1985 Brood Year

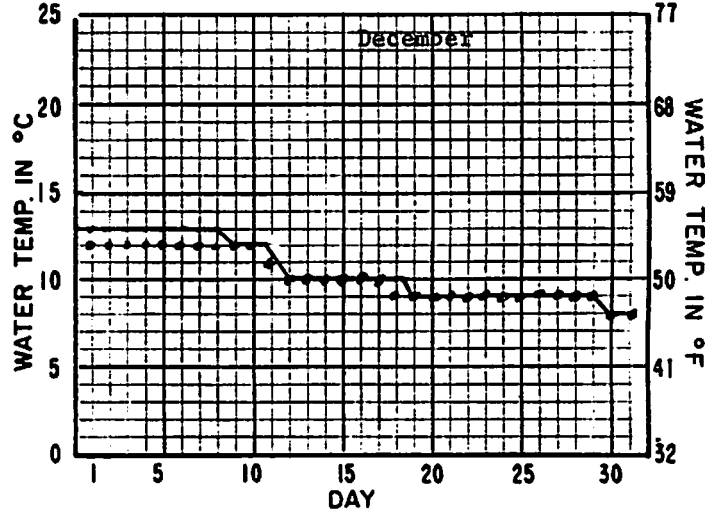
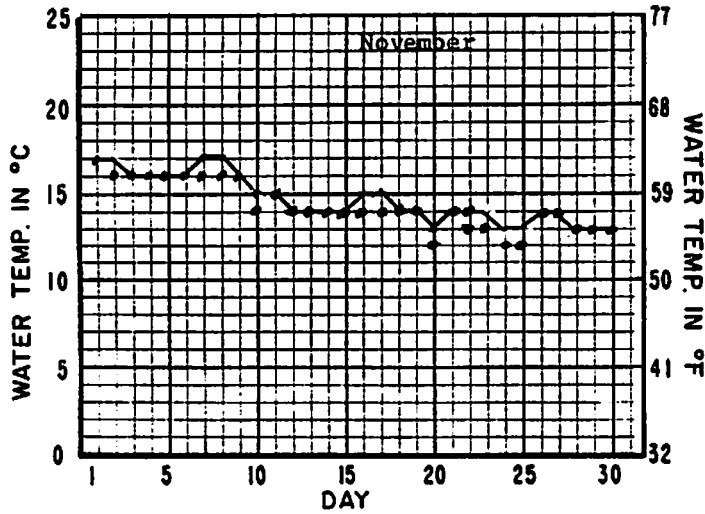
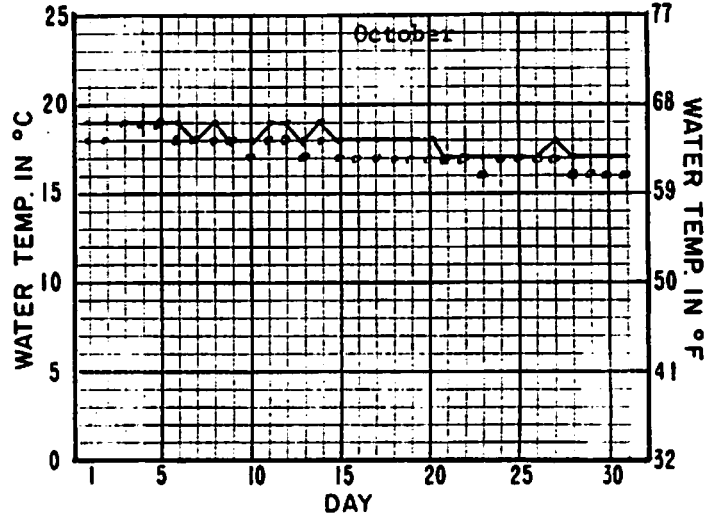
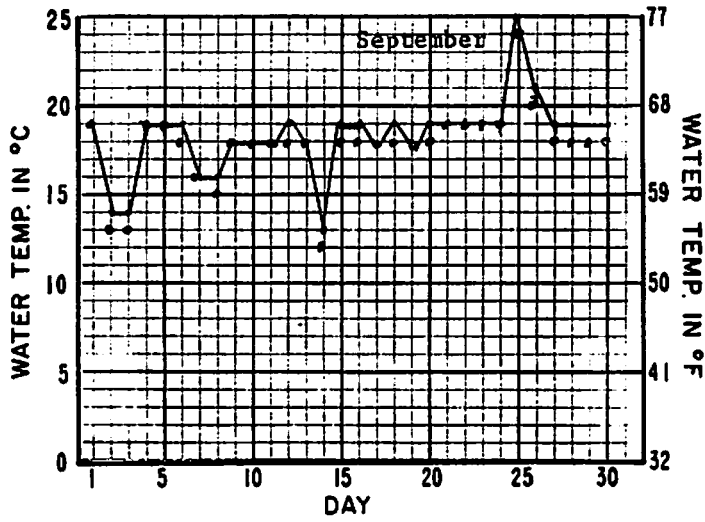
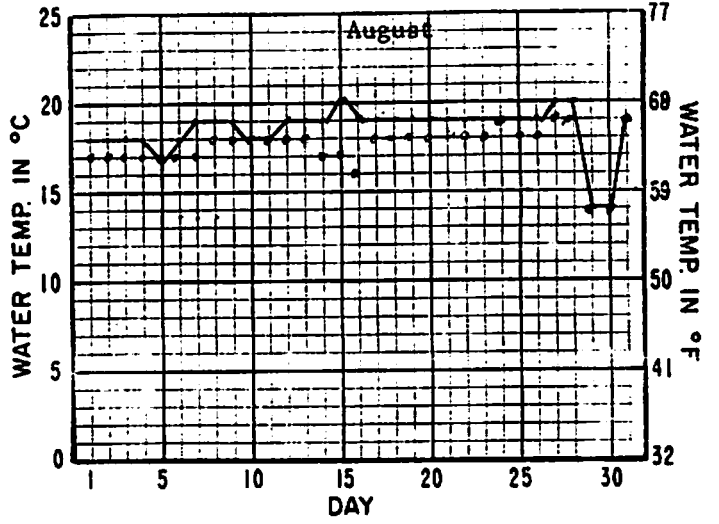
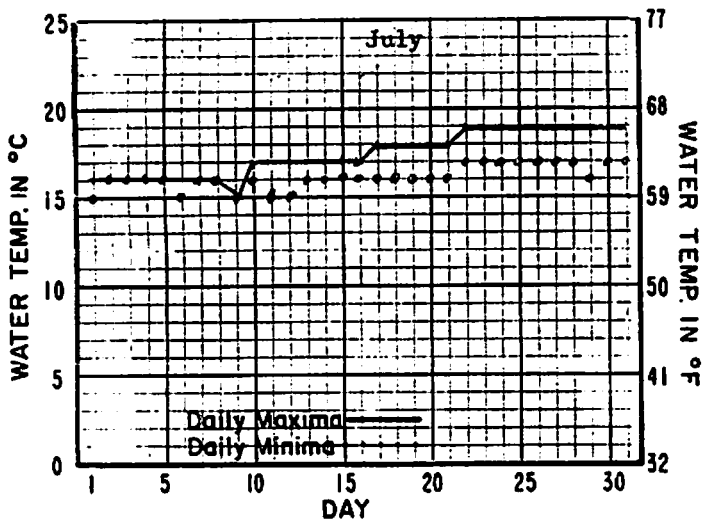
Three minor outbreaks of Columnaris were controlled by feeding Terramycin milled into the feed and drip treatments using Copper Sulfate.

APPENDIX TABLE 1 Weekly Adult Salmon and Steelhead Trapping Data
For Nimbus Hatchery, 1985-86

<u>Week</u>	<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>Males</u>	<u>Females</u>
Oct. 27-Nov. 2	159	95				
Nov. 3-9	2,241	481				
Nov. 10-16	1,636	439				
Nov. 17-23	1,912	240				
Nov. 24-30	1,580	43				
Dec. 22-28	250	7			5	4
Jan. 5-11	10				58	63
Jan. 12-18					143	93
Jan. 19-25					204	76
Jan. 26-Feb. 1					117	72
Feb. 2-8					202	156
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Season Totals	7,788	1,305			729	464

Appendix Figure 1. Daily Water Temperatures for Nimbus Salmon and Steelhead Hatchery from July 1, 1985 through June 30, 1986.

DAILY WATER TEMPERATURES BY MONTH



DAILY WATER TEMPERATURES BY MONTH

