

FILE

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State of California  
The Resources Agency  
Department of Fish and Game

ANNUAL REPORT NIMBUS SALMON AND STEELHEAD HATCHERY  
1971-72 FISCAL YEAR<sup>1/</sup>

by

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SUMMARY

The first king salmon (*Oncorhynchus tshawytscha*) of the 1971 fall migration was observed below the fish weir on September 20. The last salmon counted was a dead one picked up in the holding pond on February 1, 1972.

Steelhead (*Salmo gairdnerii gairdnerii*) entered the holding pond with the first salmon migrants and were counted until February 23, 1972.

Production data are as follows:

Species	Number trapped	Number eggs received	Number fingerlings planted	Number yearlings planted	Total pounds	On hand 6-30-72
King salmon						
1970 BY				171,195	19,400	None
1971 BY	9,146	20,532,720*	4,503,495	None	36,534	246,200
Winter-run steelhead						
1971 BY			326,510	581,325	87,060	None
1972 BY	2,256	3,479,545**	595,470	None	541	1,043,700
Summer-run steelhead						
1971 BY				92,240	8,600	None

\* Includes 10,432,720 eyed eggs shipped to Coleman National Fish Hatchery and 2,107,720 to Feather River Hatchery.

\*\* Includes 296,800 eggs shipped to Mokelumne River Fish Installation and 1,026,720 to Coleman National Fish Hatchery.

<sup>1/</sup> Anadromous Fisheries Branch Administrative Report No. 73-8.  
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## INTRODUCTION

This is the 17th annual report of the Nimbus Salmon and Steelhead Hatchery. The hatchery is operated by the California Department of Fish and Game under contract with the United States Bureau of Reclamation. The report summarizes the activities of the hatchery during the fiscal year 1971-72 with particular reference to numbers of fish trapped and spawned, eggs and fish produced, and pertinent weather data.

## KING SALMON MAINTENANCE PROGRAM

### History of the 1971 Salmon Migration

The fish weir racks were installed by Bureau of Reclamation personnel in mid-August, 1971, but pickets were not lowered into place until September 16. An inspection of the structure by USBR divers on August 23 revealed no significant damage or erosion that would allow fish escapement.

Placement of cobbles on the upstream side of the rack was not necessary. There were no high flood releases from Nimbus Dam during the winter months and therefore no shifting of streambed gravels occurred.

The weir remained in place until February 4, 1972. By that time the salmon migration had ended and no more adult steelhead were needed to meet egg requirements.

The fall migration of 1971 brood year king salmon totaled 10,081. Of this number 9,146 were trapped in the holding pond and 935 escaped through the weir. That portion of the run which entered the holding pond was composed of 3,384 large males, 4,493 females, and 1,269 grilse. Included in the count of grilse were 4 small females. Carcasses were counted as they were removed from the weir and included 273 large males, 67 spent females, 11 unspawned females, and 584 grilse. Approximately 80% of the carcasses which became lodged on the weir were recovered.

Of the large females counted in the holding pond 3,571 were spawned, 847 died before spawning, and 68 were too green when killed. Of the females killed prematurely, 29 were due to sorting error and 39 were decapitated when they were caught between the hydraulic gate and the live cage frame. Seven females were released unspawned.

For the season 20,523,720 eggs were produced for an average of 5,747 per female. Egg quality was high with the fertility percentage ranging from 94 to 99. Overall survival from the green to the eyed stage was 91.3%.

Prespawning mortality of adults was higher than usual. The condition of fish entering the holding pond seemed poorer than usual this year. Crowding, disease incidence, and varying ability of fish to withstand repeated anesthetizing are some of the factors involved. During the season 10,432,720 eyed eggs were shipped to Coleman National Fish Hatchery and 2,107,720 eyed eggs were shipped to Feather River Hatchery.

#### Marked King Salmon Recoveries

All king salmon were examined for marks. We took scale samples and recorded fork lengths and sex for all marked fish. A total of 672 marked fish bearing 22 different marks, was recovered. When possible, we assigned origin to marked fish using length frequencies to determine brood year. In some cases we found we could not reliably determine brood year using the lengths. Other sources of error include fin regeneration and fin erosion. For example, many of the LV and RV marks may have been An-LV and An-RV marks with regenerated anal fins. We are not equipped to do the detailed analyses these data require. However, we have presented the numbers recovered (Table 1) and the lengths (Tables 2 and 3).

#### 1971 Brood Year King Salmon Planted

At the beginning of the season plans were formulated to release approximately two thirds of the smolt production in the Sacramento River near Rio Vista and the remaining third in the American River approximately 2 miles downstream from the hatchery. Fingerlings were released into the American River at the hatchery. No king salmon were marked (see following table).

Date	Release site	Smolts	Fingerlings	Pounds
April 1972	American River - Hatchery		553,090	758
May 1972	American River - Hatchery		409,200	833
	Sacramento River -			
May 1972	Rio Vista	905,250		8,600
	American River near			
May 1972	Pacific Coast Aggregates Co.	338,080		3,290
June 1972	American River - Hatchery		41,595	150
	Sacramento River -			
June 1972	Rio Vista	1,407,000		14,250
	American River near			
June 1972	Pacific Coast Aggregates Co.	794,760		8,133
June 1972	American River - Hatchery	54,520		520
TOTALS		3,499,610	1,003,885	36,534

### 1970 Brood Year King Salmon Planted

Fish planted ranged in size from 11.1 to 8.2/lb and were not marked (see following table).

Date	Release site	Number	Pounds
October 1971	Sacramento River - Miller Park	18,840	1,800
November 1971	Sacramento River - Miller Park	152,355	17,600
TOTALS		171,195	19,400

### King Salmon Disease Information

Diseases of bacterial or protozoan origin were of only minor significance for 1971 brood year salmon. Losses were about normal.

A severe outbreak of columnaris type bacteria occurred in August among the 1970 brood year salmon. Losses totaled about 30% of the fish on hand.

Another phenomenon that occurs among salmon at Nimbus during the summer months, though not every year, is a condition that causes kidney deterioration and loss of equilibrium. Losses this year were not severe but were higher than normal. The causative agent has not been determined.

Sacramento River Chinook Disease was a minor problem. Symptoms were observed for about a four week period beginning on March 13, 1972. Out of a total population of about 5,681,000 fingerlings, losses attributable to SRCD amounted to only 44,000. The virus appeared to be affecting fish in only three ponds.

### Disposal of Salmon Carcasses

Approximately 60,500 lb of edible carcasses were given to welfare organizations for distribution to needy families; 16,900 lb were given to state and county institutions and 4,950 lb were given to local zoos. A local rendering plant picked up 12,200 lb of inedible carcasses.

### Other Species of Salmon

During the season covered by this report seven silver salmon (O. kisutch) were enumerated while sorting and counting king salmon.

# STEELHEAD MAINTENANCE PROGRAM

## History of the 1972 Brood Year Steelhead Migration

Several steelhead were observed in the holding pond with the arrival of the first salmon in October. During the salmon spawning season estimates were made of arriving steelhead. Fish were enumerated for the record from the start of steelhead spawning on December 21, 1971 until February 23, 1972 (see following table).

### Counts of Steelhead During Steelhead Spawning Operations

Date	Spawned & released		Released unspawned		Died in pond	
	M	F	M	F	M	F
12/21/71	8	8	45	10	13	10
1/ 4/72	12	19	114	7	5	2
1/11/72	15	31	18	3	1	4
1/18/72	23	73	12	0	14	17
1/25/72	22	73	3	2	2	9
2/ 1/72	27	96	7	1	11	14
2/ 8/72	53	164	0	0	10	11
2/14/72	42	134	0	0	6	9
2/16/72			347	177	8	8
2/17/72			238	169	0	0
2/23/72			92	57	0	0
TOTALS	202	598	876	426	70	84

The 598 females spawned produced 3,479,545 eggs for an average of 5,819 per fish. Fertility ranged from 91 to 98% and overall survival from green to eyed eggs was 95.4%. Spawned fish were returned to the river at the hatchery. On the 16th, 17th, and 23rd of February steelhead were removed from the holding pond and were transported downstream to a release point near Watt Avenue.

A total of 296,800 eggs was shipped to the Mokelumne River Fish Installation and 1,026,720 eggs were shipped to the Coleman National Fish Hatchery.

### Return of Marked Steelhead

All steelhead were examined for marks. Fork lengths and sex for virtually all marked steelhead were recorded. We observed a total of 383 marked steelhead.

Marked steelhead data were analyzed by Jerry Staley, Region 2. The marked fish were arbitrarily assigned to brood year based on length frequency analysis using the following criteria:

- 1) Coleman National Fish Hatchery marked fish, Ad-RP and Ad-LP, were designated as 2 year olds (1970 BY) if they were less than 19.0 inches fork length. The remainder were assigned to the 1969 BY.
- 2) The Nimbus Hatchery and the Mokelumne River Fish Installation marked fish, Ad, Ad-LV, Ad-RV, LV, and RV, were designated as 2 year olds (1970 BY) if they were less than 22.0 inches fork length.

Three year old and older fish could not be separated (Table 4).

#### 1972 Brood Year Steelhead Planted

Fish ranged in size from 2,590 to 400/lb. Releases were made to relieve crowded conditions in the hatchery and when fish had been graded (see following table).

Date	Release site	Number	Pounds
April, 1972	American River - At Hatchery	182,070	77
May, 1972	American River - At Hatchery	366,200	346
June, 1972	American River - At Hatchery	47,200	118
TOTALS		595,470	541

#### 1971 Brood Year Steelhead Planted

Fingerlings were planted from August through mid-October, and yearlings from October 12, 1971 to March 2, 1972. Yearlings ranged in size from 16.2 to 5.2 per pound. Included in the yearling plants were 40,680 marked LP-RV and 40,232 marked RP-LV. The former were offspring from fish which migrated to the hatchery prior to November 23 and the latter were from fish which arrived at the hatchery after November 23. Size of these marked fish ranged from 5.2 to 6.3 per pound and all marked fish were planted from February 22 to February 28, 1972 at Clarksburg (see following table).

Date	Release site	Fingerlings	Yearlings	Pounds
August 1971	American R. - Fish Ladder	137,250		2,550
September	American R. - Near Hatchery	137,500		2,500
October	Sacramento R. - Miller Park	51,760		2,600
October	Sacramento R. - Miller Park		77,700	5,200
January 1972	Sacramento R. - Clarksburg		60,830	7,500
January	Sacramento R. - Miller Park		41,150	5,300
February	Sacramento R. - Clarksburg		295,360	44,500
February	Sacramento R. - Miller Park		76,290	12,275
February	Sacramento R. - Discovery Park		2,665	410
March	Sacramento R. - Clarksburg		27,330	4,225
TOTALS		326,510	581,325	87,060

#### Summer Steelhead Program

The 128,561 summer run steelhead eggs (1971 BY) received in April, 1971 from the Roaring River Hatchery in Oregon resulted in a production of 92,240 fish. They were planted as follows:

Date	Release site	Marked LP	Unmarked	Pounds
12/10/71	American R. - At Hatchery		23,200	1,000
3/20/72	Sacramento R. - Clarksburg	31,640		3,200
3/21/72	Sacramento R. - Clarksburg	18,700		2,200
3/22/72	Sacramento R. - Clarksburg	9,775	8,925	2,200
TOTALS		60,115	32,125	8,600

No summer steelhead eggs were received in 1972.

#### Summer Steelhead Disease

Disease problems, primarily bacterial, were of minor consequence while the fish were still confined in the hatchery building. No problems occurred with the fish once they were ponded.

#### WATER TEMPERATURE CONTROL

In accordance with a plan initiated during the 1970-71 fiscal year, shutters on the power intake structure at Folsom Dam were regulated as follows: number nine shutters were raised on July 30, number eight shutters were raised on September 3, and the lower seven shutters were raised on October 1. On the reverse cycle the lower seven shutters were installed on January 10, 1972, and the number eight and nine shutters were installed on March 16.

### PUMPING HATCHERY WATER SUPPLY

Several earth and rock slides in the Folsom powerhouse tail race channel restricted the discharge and flow of water to such a degree that power generation efficiency was reduced. The debris had to be removed and in order to accomplish this task it was necessary to draw down Natoma Lake to a surface elevation of 114 ft. Since the mid-point elevation on the hatchery intake at Nimbus Dam is 111 ft, and the normal minimum operating level is 118 ft, special procedures were necessary to supply adequate water to the hatchery.

Bureau of Reclamation and Department of Fish and Game personnel decided the best means of accomplishing the objective was to pump water into a modified intake structure.

Pumping commenced on March 27 and continued until May 8, 1972. Fish in the upper ponds and incubators at the American River Trout Hatchery were affected adversely by the nitrogen super saturated water supplied by the pumps. Above normal losses were incurred until the intake structure was modified to dissipate the gas.

On two occasions, mechanical and electrical problems developed with the pumps but the conditions were corrected without damage or loss to equipment or fish.

### PUBLIC RELATIONS

It is estimated that 142,325 persons visited the hatchery this past season. Many school groups were seen at the facility during the salmon migration, primarily in November. On one peak day in November, 21 school buses were parked on the grounds at one time. Only groups with special interests in wildlife or fisheries, mostly at the college level, were conducted on tours of the installation.



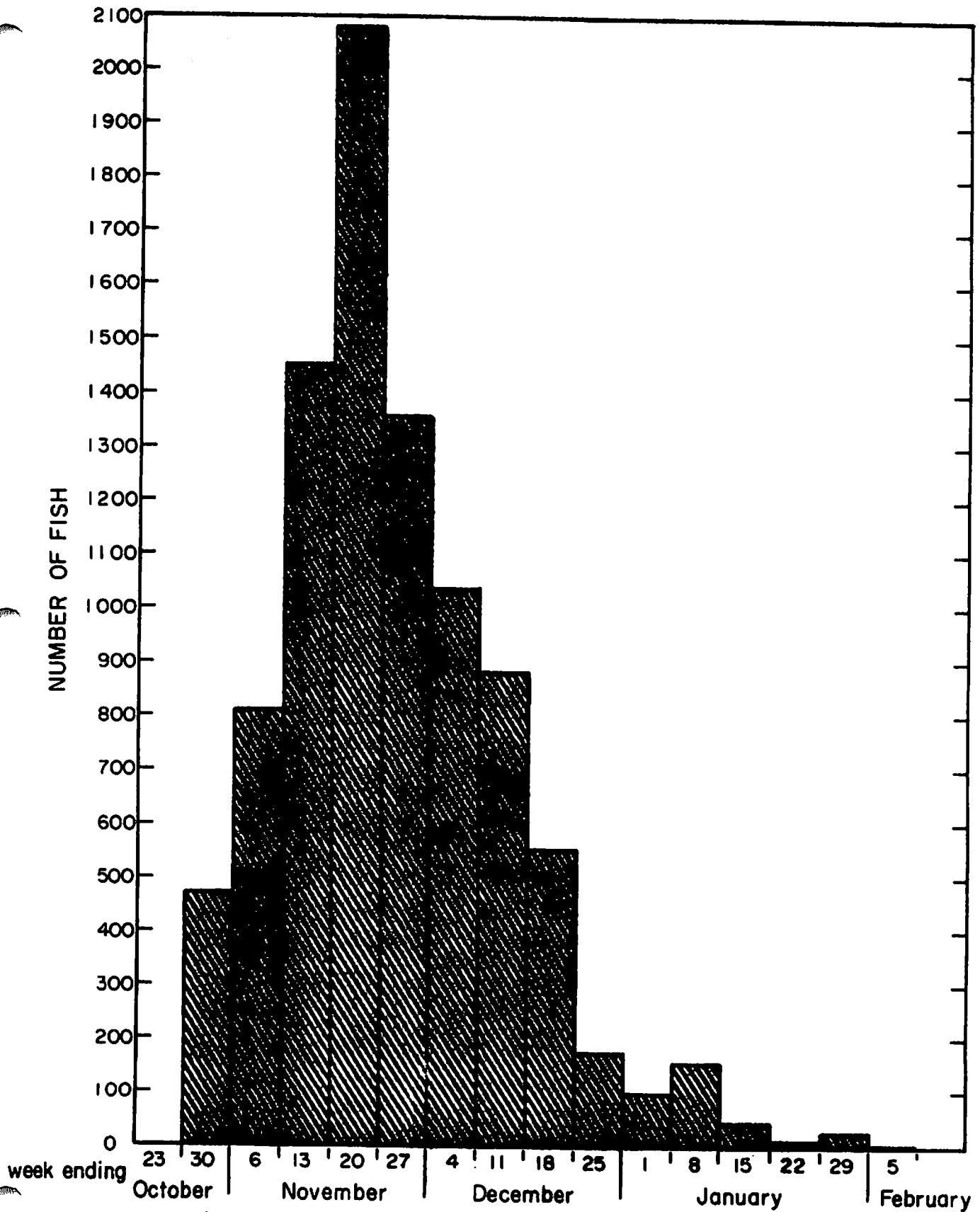


Figure 1. King salmon counts taken at Nimbus Hatchery during spawning operations from October, 1971 - February, 1972.

Table 1

## Marked King Salmon Recoveries, Nimbus Hatchery, 1971-72

Mark	Brood year	Number recovered	Area released	Size	Date(s)	Number released	Origin
Ad	1968	} 118	American River at Nimbus Hatchery	1,200/lb	March, 1969	250,560	Fall run - Nimbus Hatchery
Ad	1969		American River at Nimbus Hatchery	Swim-up	?	257,900	Fall run - Nimbus Hatchery
Ad-An	1967	36	Sacramento River at Rio Vista	12/lb	January, 1969	50,000	Fall run - Feather River Hatchery
Ad-An-LV	?	2	?	?	?	?	?
Ad-An-RV	1968	30	Mouth of American River	77/lb	June, 1969	250,299	Fall run - Nimbus Hatchery
Ad-An-RP	?	1	?	?	?	?	?
Ad-LV	1968	} 4	Coleman Hatchery (Battle Creek)	90/lb	April-August, 1969	295,000	Fall run - CNFH
Ad-LV	1969		Coleman Hatchery (Battle Creek)	90/lb	May, 1970	327,000	Fall run - CNFH
Ad-RV	1968	} 123	Sacramento River at Rio Vista	90/lb	April-August, 1969	321,000	Fall run - CNFH
Ad-RV	1969		Sacramento River at Rio Vista	90/lb	May, 1970	327,000	Fall run - CNFH
Ad-RV-LP	1969	8	Mouth of American River	90/lb	?	258,819	Fall run - Nimbus Hatchery
Ad-LP	1969	2	Sacramento River at Red Bluff	37 mm	October, 1969	302,000	Winter run wild fish
Ad-RP	1967	2	Feather River Hatchery	6 inch	January, 1969	50,000	?
An	?	5	?	?	?	?	?
An-LV	1968	52	American River at Nimbus Hatchery	77/lb	June, 1969	250,265	Fall run - Nimbus Hatchery
An-RV	1968	119	Sacramento River at Rio Vista	79/lb	June, 1969	252,904	Fall run - Nimbus Hatchery
An LP	1969	32	$\frac{1}{2}$ at Feather River Hatchery, $\frac{1}{2}$ at Rio Vista	?	?	?	Fall run - Feather River Hatchery
An-RP	1969	2	?	?	?	?	?
LV	?	18	?	?	?	?	?
LV-RV	?	1	?	?	?	?	?
LV-RP	1969	4	American River at Nimbus Hatchery	?	?	258,976	Fall run - Nimbus Hatchery
RV	?	59					
RV-LP	1969	41	Sacramento River at Rio Vista	?	?	263,331	Fall run - Nimbus Hatchery
LP	?	9	?	?	?	?	?
RP	?	2	?	?	?	?	?

Table 2

Length Frequencies of the Most Common King Salmon  
Marks Recovered at Nimbus Hatchery 1971-72 Season

Fork lengths	Ad		Ad-An		Ad-An-RV		Ad-RV		An-LV		An-RV		An-LP		LV		RV		RV-LP		Fork lengths
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	
14	1													1					1		14
15														1					1		15
16														1					1		16
17														1				1	1		17
18														1							18
19														1					1		19
20														1							20
21														1							21
22														1							22
23														1							23
24														1							24
25														1							25
26														1							26
27														1							27
28														1							28
29														1							29
30														1							30
31														1							31
32														1							32
33														1							33
34														1							34
35														1							35
36														1							36
37														1							37
38														1							38
39														1							39
40														1							40
41														1							41
46	1																				46
Unmeasured																					
TOTALS	59	59	12	24	17	13	77	46	21	31	44	75	32	0	10	8	40	19	41	0	

Table 3

Lengths of Miscellaneous Marked King Salmon

Mark	Fork length	Sex	Mark	Fork length	Sex
Ad-An-LV	30	M	An-RP	16	M
"	34	M	"	29	F
Ad-An-RP	25	F			
Ad-LV	19	M	LV-RV	28	M
"	23	M			
"	29	F	LV-RP	22	M
"	30	M	"	25	M
"	33	F	"	26	M
"	34	M	"	28	M
Ad-RV-LP	19	M	LP	14	M
"	21	M	"	16	M
"	24	M	"	19	F
"	24	M	"	21	M
"	24	M	"	33	M
"	24	M	"	35	M
"	25	M	"	36	M
"	25	M	"	?	M
			"	?	M
Ad-LP	15	M			
"	27	M	RP	26	M
			"	26	M
Ad-RP	25	M			
"	32	M			
An	33	M			
"	33	F			
"	35	M			
"	35	F			
"	39	M			

Table 4

## Marked Steelhead Recoveries, Nimbus Hatchery, 1971-72

Mark	Brood year	Number recovered	Area released	Size	Date(s)	Number released	Origin
Ad	1967	18	Sacramento River at Clarksburg	6.1-8.6/lb	March, 1968	209,840	Nimbus Hatchery
Ad	1968		Three-Mile Slough - Brannon Is.	6.7/lb	March, 1969	22,579	Mokelumne River Fish Installation
Ad	1970		Feather River - Gridley Bar	8.0/lb	March, 1971	50,200	Feather River Hatchery
Ad-LV	1969	125	Sacramento River at Clarksburg	6.3/lb	March, 1970	25,200	Nimbus Hatchery
Ad-LV	1969		Three-Mile Slough - Brannon Is.	5.0/lb	March, 1970	980	Mokelumne River Fish Installation
Ad-LV	1970		Three-Mile Slough - Brannon Is.	8.0/lb	November, 1970	9,000	Mokelumne River Fish Installation
Ad-LV-RV	?	1	?	?	?	?	?
Ad-LV-LP	?	1	?	?	?	?	?
Ad-RV	1969	121	Sacramento River at Rio Vista	6.0/lb	March, 1970	25,000	Nimbus Hatchery
Ad-RV	1969		Mokelumne River - New Hope Land.	5.0/lb	March, 1970	980	Mokelumne River Fish Installation
Ad-RV	1970		Mokelumne River - New Hope Land.	8.0/lb	November, 1970	6,000	Mokelumne River Fish Installation
Ad-LP	1969	9*	Battle Creek	7.4/lb	Feb. Apr., 1970	119,036	Coleman National Fish Hatchery
Ad-LP	1970	0*	Battle Creek	7.6/lb	Feb.-Apr., 1971	213,698	Coleman National Fish Hatchery
Ad-RP	1969	28*	Sacramento River at Rio Vista	7.7/lb	Feb.-Apr., 1970	118,186	Coleman National Fish Hatchery
Ad-RP	1970	3*	Sacramento River at Rio Vista	7.9/lb	Feb.-Mar., 1971	211,653	Coleman National Fish Hatchery
An	?	1	?	?	?	?	?
LV	1968	38	Three Mile Slough - Brannon Is.	6.8-9.5/lb	March, 1969	40,951	Mokelumne River Fish Installation
LV	1969		Three Mile Slough - Brannon Is.	5.5/lb	March, 1970	42,972	Mokelumne River Fish Installation
LV	1970		Three Mile Slough - Brannon Is.	4.7-7.5/lb	Jan.-Mar., 1971	46,452	Mokelumne River Fish Installation
LV	1970		Feather River - Gridley Bar	15/lb	March, 1971	49,500	Feather River Hatchery
LV-RV	?	5	?	?	?	?	?
LV-RV-RP	?	1	?	?	?	?	?
RV	1968	6	Mokelumne River - New Hope Land.	6.8-9.4/lb	March, 1969	37,674	Mokelumne River Fish Installation
RV	1969		Mokelumne River - New Hope Land.	5.1/lb	March, 1970	42,840	Mokelumne River Fish Installation
RV	1970		Mokelumne River - New Hope Land.	4.7-6.7/lb	Jan.-Mar., 1971	46,420	Mokelumne River Fish Installation
RV	1970		Feather River - Gridley Bar	8.0-15.0/lb	March, 1971	49,900	Feather River Hatchery
RV-LP	?	2	?	?	?	?	?
RV-RP	?	1	?	?	?	?	?
LP	1969	2*	Sacramento River at Clarksburg	8.5/lb	March, 1970	18,700	Nimbus Hatchery
LP	1970	2*	Sacramento River at Clarksburg	7.5/lb	April, 1971	60,170	Nimbus Hatchery
LP-RP	?	2	?	?	?	?	?
RP	1969	8	American & Sacramento Rivers	3.2/lb	June, July, 1970	12,780	Nimbus Hatchery
D	?	1	?	?	?	?	?

\* One LP, one Ad-LP, and two Ad-RP were not measured, and are not included in the numbers by mark.

Appendix 1  
Nimbus Salmon and Steelhead Hatchery  
Weather and Water Data for  
July, 1971

Date	TEMPERATURES				Weather	American River Flow at Hatchery C.F.S.
	AIR		WATER			
	Maximum	Minimum	Maximum	Minimum		
1	93	53	60	56	Clear	4483
2	93	60	60	57	Clear	4470
3	92	74	60	53	Clear	4473
4	93	72	60	58	Clear	4491
5	102	71	60	59	Clear	4489
6	100	61	61	57	Clear	4495
7	94	59	59	57	Clear	4542
8	94	56	59	57	Clear	4506
9	86	56	60	58	Clear	4505
10	93	56	60	53	Clear	4530
11	102	56	61	58	Clear	4486
12	101	68	61	58	Clear	4474
13	104	68	61	58	Clear	4454
14	106	64	60	58	Clear	4453
15	104	62	60	58	Clear	4537
16	105	59	61	59	Clear	4521
17	102	63	61	58	Partly Cloudy	4517
18	104	73	61	58	Partly Cloudy	4521
19	108	63	62	59	Clear	4519
20	105	60	64	60	Clear	4550
21	105	60	62	60	Clear	4456
22	105	65	61	60	Clear	4484
23	102	62	62	60	Clear	4439
24	96	62	62	58	Clear	4494
25	96	56	62	58	Clear	4555
26	102	58	62	60	Clear	4554
27	101	60	63	60	Clear	4553
28	98	64	62	60	Clear	3903
29	97	57	62	60	Clear	3524
30	98	60	63	60	Partly Cloudy	2739
31	102	66	63	62	Clear	2431

Appendix 2  
Nimbus Salmon and Steelhead Hatchery  
Weather and Water Data for  
August, 1971

Date	TEMPERATURES				Weather	American River Flow at Hatchery C.F.S.
	AIR		WATER			
	Maximum	Minimum	Maximum	Minimum		
1	106	66	63	61	Clear	1322
2	106	69	62	61	Clear	1531
3	98	61	63	60	Clear	1535
4	100	64	64	61	Clear	1618
5	100	64	63	62	Clear	2600
6	100	64	63	62	Clear	3476
7	102	62	64	61	Clear	3531
8	105	69	63	61	Clear	3596
9	108	68	63	62	Clear	3999
10	112	68	63	61	Clear	4027
11	102	70	62	61	Partly Cloudy	3980
12	102	64	63	61	Clear	3975
13	97	60	63	61	Clear	3978
14	99	61	63	61	Clear	3989
15	99	61	62	61	Partly Cloudy	3986
16	100	60	63	61	Clear	3993
17	98	61	64	61	Clear	4042
18	100	58	63	61	Clear	4076
19	96	62	63	61	Clear	4059
20	92	57	64	61	Clear	3979
21	92	62	64	62	Clear	3431
22	94	62	64	61	Clear	2910
23	100	64	66	62	Partly Cloudy	1379
24	95	64	66	63	Partly Cloudy	2999
25	100	67	66	62	Partly Cloudy	3951
26	98	66	64	62	Partly Cloudy	4029
27	94	60	64	62	Partly Cloudy	4040
28	94	60	64	62	Partly Cloudy	4052
29	87	60	64	62	Partly Cloudy	4040
30	89	56	64	61	Partly Cloudy	4065
31	86	62	64	62	Clear	4009

Appendix 3  
Wimbus Salmon and Steelhead Hatchery  
Weather and Water Data for  
September, 1971

Date	TEMPERATURES				Weather	American River Flow at Hatchery C.F.S.
	AIR		WATER			
	Maximum	Minimum	Maximum	Minimum		
1	92	62	64	62	Clear	4018
2	95	60	65	62	Clear	4020
3	93	56	65	62	Clear	4121
4	93	59	64	63	Clear	4069
5	95	60	64	62	Partly Cloudy	4061
6	84	58	64	62	Clear	4051
7	93	53	64	62	Clear	4043
8	93	60	64	62	Clear	4038
9	93	59	64	62	Clear	4016
10	96	58	64	62	Clear	3987
11	93	64	64	63	Clear	4066
12	102	62	64	63	Clear	4038
13	104	62	64	64	Clear	3550
14	102	66	65	63	Clear	3036
15	103	64	65	63	Clear	2611
16	102	64	65	63	Clear	1946
17	94	52	67	62	Clear	3458
18	92	52	65	62	Clear	3499
19	93	53	65	62	Clear	3508
20	88	55	64	62	Clear	3535
21	90	52	65	62	Clear	3531
22	88	55	64	62	Clear	3488
23	90	54	64	62	Clear	3500
24	78	54	64	62	Clear	3516
25	76	54	63	62	Partly Cloudy	3494
26	69	52	62	62	Partly Cloudy	3015
27	75	46	61	61	Clear	2499
28	75	50	61	62	Partly Cloudy	1645
29	74	51	63	61	Rain	1515
30	70	46	64	61	Partly Cloudy	1501



Appendix 4  
 Nimbus Salmon and Steelhead Hatchery  
 Weather and Water Data for  
 October, 1971

Date	TEMPERATURES				Weather	American River	Salmon	Steelhead*
	AIR		WATER			Flow		
	Maximum	Minimum	Maximum	Minimum		at Hatchery C.F.S.		
1	72	43	64	60	Clear	1619	-	-
2	73	45	63	61	Clear	2992	-	-
3	74	43	59	59	Clear	3024	-	-
4	82	50	59	57	Clear	3014	-	-
5	83	54	59	57	Clear	3020	-	-
6	89	54	59	57	Clear	3016	-	-
7	92	56	53	57	Clear	3032	-	-
8	93	56	59	58	Clear	3032	-	-
9	92	57	60	58	Clear	2971	-	-
10	84	54	59	53	Clear	3002	-	-
11	86	52	59	58	Clear	2995	-	-
12	84	52	59	57	Clear	3006	-	-
13	90	55	60	58	Clear	3014	-	-
14	80	54	61	58	Partly Cloudy	2980	-	-
15	68	43	59	58	Partly Cloudy	2515	-	-
16	64	45	58	57	Cloudy & Rain	2460	-	-
17	66	40	57	53	Cloudy	2501	-	-
18	68	40	59	56	Clear	2500	-	-
19	70	44	59	57	Partly Cloudy	2502	-	-
20	66	56	53	58	Partly Cloudy	2500	-	-
21	72	44	59	57	Partly Cloudy	2497	-	-
22	71	48	60	58	Partly Cloudy	2506	-	-
23	68	43	59	58	Partly Cloudy	2497	-	-
24	66	40	60	58	Clear	2505	-	-
25	67	39	60	53	Clear	2507	-	-
26	70	40	60	53	Partly Cloudy	2503	258	21
27	60	46	59	58	Partly Cloudy	2509	-	-
28	53	40	57	57	Clear	2497	-	-
29	62	34	57	55	Clear	2505	214	4
30	62	34	57	56	Cloudy	2507	-	-
31	62	36	58	56	Clear	2530	-	-

\* Steelhead numbers before December 21 are estimates of fish entering holding ponds. See page 5 for actual counts.

Appendix 5  
Nimbus Salmon and Steelhead Hatchery  
Weather and Water Data for  
November, 1971

Date	TEMPERATURES				Weather	American River Flow at Hatchery C.F.S.	Salmon	Steelhead*
	AIR		WATER					
	Maximum	Minimum	Maximum	Minimum				
1	64	34	59	56	Clear	2521	410	-
2	64	34	59	57	Clear	2527	-	-
3	68	34	59	56	Clear	2526	-	-
4	70	46	59	56	Partly Cloudy	2533	402	16
5	73	37	59	56	Clear	2550	-	-
6	72	40	58	56	Clear	2540	-	-
7	63	39	56	56	Cloudy & Rain	2557	-	-
8	62	40	56	55	Clear	2548	600	18
9	64	46	57	55	Partly Cloudy	2531	-	-
10	62	44	56	55	Cloudy	2497	-	-
11	58	54	55	55	Cloudy & Rain	2263	851	8
12	63	43	56	55	Cloudy & Rain	2263	-	-
13	62	50	55	54	Cloudy & Rain	2266	-	-
14	56	54	55	53	Clear and Windy	2249	-	-
15	61	36	55	53	Clear and Windy	2260	1311	27
16	63	42	55	53	Clear and Windy	2248	-	-
17	57	38	56	53	Partly Cloudy	2241	-	-
18	63	38	55	54	Partly Cloudy	2274	770	9
19	64	40	55	53	Clear	2249	-	-
20	64	38	56	53	Clear	2273	-	-
21	58	38	55	54	Clear	2259	-	-
22	54	38	54	53	Clear	2283	687	39
23	58	40	54	53	Partly Cloudy	2263	-	-
24	57	43	53	53	Cloudy & Rain	2260	-	-
25	58	40	53	53	Partly Cloudy	2261	-	-
26	57	42	52	52	Cloudy & Rain	2252	668	41
27	62	42	53	51	Cloudy	2255	-	-
28	54	46	52	52	Cloudy & Rain	2257	-	-
29	56	47	53	52	Partly Cloudy & Rain	2254	479	51
30	58	36	54	52	Clear	2256	-	-

\* Steelhead numbers before December 21 are estimates of fish entering holding ponds. See page 5 for actual counts.

Appendix 6  
Himbus Salmon and Steelhead Hatchery  
Weather and Water Data for  
December, 1971

Date	TEMPERATURES				Weather	American River Flow at Hatchery C.F.S.	Salmon	Steelhead*
	AIR		WATER					
	Maximum	Minimum	Maximum	Minimum				
1	52	34	52	52	Partly Cloudy	2253	-	-
2	51	45	51	51	Cloudy & Rain	2250	562	42
3	48	38	51	51	Cloudy & Rain	2246	-	-
4	56	35	51	50	Clear	2247	-	-
5	54	40	52	50	Partly Cloudy	2249	-	-
6	56	46	52	51	Partly Cloudy	2213	551	81
7	50	36	51	50	Clear & Windy	2219	-	-
8	48	34	49	49	Partly Cloudy	2294	-	-
9	46	34	49	49	Cloudy & Rain	2255	335	79
10	51	36	50	49	Cloudy & Rain	2263	-	-
11	46	37	50	49	Partly Cloudy	2259	-	-
12	44	32	48	48	Cloudy & Rain	2258	-	-
13	47	36	48	47	Partly Cloudy & Fog	2215	319	102
14	44	42	48	48	Cloudy & Rain	2273	-	-
15	44	38	48	48	Partly Cloudy	2274	-	-
16	50	23	48	47	Clear	2256	231	67
17	54	30	49	47	Clear	2250	-	-
18	56	30	49	47	Partly Cloudy & Fog	2250	-	-
19	48	30	48	47	Clear & Fog	2240	-	-
20	44	30	48	47	Clear	2272	177	-
21	44	27	47	47	Cloudy, Fog & Rain	2275	-	94
22	54	42	47	47	Cloudy & Rain	2266	-	-
23	55	40	48	47	Partly Cloudy	2356	-	-
24	50	47	48	47	Cloudy & Rain	2269	-	-
25	53	47	47	46	Cloudy & Rain	2254	-	-
26	56	40	47	46	Cloudy	2226	-	-
27	51	47	46	46	Cloudy & Rain	2769	98	-
28	56	42	48	46	Partly Cloudy	5010	-	-
29	52	38	47	46	Partly Cloudy	5000	-	-
30	54	34	47	45	Clear	4992	-	-
31	58	32	47	45	Cloudy	5002	-	-

\* Steelhead numbers before December 21 are estimates of fish entering holding ponds. See page 5 for actual counts.

Appendix 7  
Nimbus Salmon and Steelhead Hatchery  
Weather and Water Data for  
January, 1972

Date	TEMPERATURES				Weather	American River	Salmon	Steelhead
	Maximum	AIR	Maximum	WATER		Flow		
		Minimum		Minimum		at Hatchery		
						C.F.S.		
1	52	34	47	45	Partly Cloudy	5019	-	-
2	46	38	45	45	Fog	4997	-	-
3	44	34	45	45	Clear	4909	-	-
4	50	22	47	45	Partly Cloudy	3982	152	159
5	52	30	46	45	Clear	3037	-	-
6	52	32	47	45	Clear	3001	-	-
7	56	30	47	45	Clear	3012	-	-
8	54	30	46	45	Clear	3008	-	-
9	46	30	46	45	Partly Cloudy	3007	-	-
10	42	36	45	45	Fog	3025	-	-
11	46	33	45	45	Cloudy	3060	47	72
12	41	36	45	45	Cloudy & Fog	3011	-	-
13	48	36	46	45	Partly Cloudy	3034	-	-
14	52	36	46	45	Partly Cloudy	2982	-	-
15	52	32	47	45	Fog & Clear	2502	-	-
16	50	42	46	45	Fog & Clear	2480	-	-
17	48	45	46	45	Fog	2514	-	-
18	50	38	46	45	Fog	2511	6	139
19	52	33	46	45	Cloudy & Fog	2529	-	-
20	60	46	46	45	Partly Cloudy	2513	-	-
21	61	46	47	45	Cloudy	2518	-	-
22	63	48	47	46	Cloudy	2520	-	-
23	58	44	47	45	Partly Cloudy	2526	-	-
24	56	31	46	46	Partly Cloudy	2493	-	-
25	54	44	45	45	Cloudy & Rain	2509	17	111
26	50	34	45	45	Partly Cloudy	2509	-	-
27	52	36	45	45	Cloudy & Rain	2575	-	-
28	54	38	46	45	Cloudy	3496	-	-
29	52	30	46	45	Clear	4526	-	-
30	52	30	46	45	Clear	4496	-	-
31	47	28	46	45	Clear & Fog	4506	-	-

Appendix 8  
Nimbus Salmon and Steelhead Hatchery  
Weather and Water Data for  
February, 1972

Date	TEMPERATURES				Weather	American River	Salmon	Steelhead
	AIR		WATER			Flow		
	Maximum	Minimum	Maximum	Minimum		at Hatchery		
						C.F.S.		
1	50	34	46	45	Fog & Clear	4522	-	156
2	53	26	45	44	Clear	4499	1	-
3	53	30	45	44	Clear	4504	-	-
4	59	37	45	44	Cloudy	4516	-	-
5	56	40	45	45	Rain	4496	-	-
6	62	43	46	45	Partly Cloudy	4493	-	-
7	60	35	47	45	Clear	4499	-	-
8	64	38	47	45	Partly Cloudy	4485	-	238
9	65	42	48	45	Clear	4498	-	-
10	64	33	48	45	Clear	4496	-	-
11	68	39	47	45	Partly Cloudy	4460	-	-
12	68	39	47	46	Clear	3547	-	-
13	68	40	48	45	Clear	3520	-	-
14	68	39	49	47	Clear	3511	-	191
15	64	38	49	47	Clear	3517	-	-
16	62	40	49	46	Clear	3523	-	540
17	71	40	48	46	Partly Cloudy	3514	-	407
18	75	39	49	46	Cloudy	3481	-	-
19	67	44	49	46	Clear	3002	-	-
20	68	44	48	46	Clear	2961	-	-
21	68	44	48	46	Cloudy	2973	-	-
22	63	42	47	46	Cloudy	2959	-	-
23	60	50	47	47	Cloudy & Rain	2509	-	149
24	52	50	45	45	Cloudy & Rain	2501	-	-
25	68	50	47	45	Rain	2504	-	-
26	58	44	49	46	Cloudy	2501	-	-
27	68	42	50	47	Clear	2511	-	-
28	70	43	49	47	Cloudy & Rain	2489	-	-
29	69	46	50	47	Partly Cloudy	2491	-	-

Appendix 9  
Nimbus Salmon and Steelhead Hatchery  
Weather and Water Data for  
March, 1972

Date	TEMPERATURES				Weather	American River	Salmon	Steelhead
	AIR		WATER			Flow		
	Maximum	Minimum	Maximum	Minimum		at Hatchery C.F.S.		
1	69	40	49	47	Partly Cloudy	2518		
2	68	42	48	46	Cloudy	2591		
3	72	46	49	48	Cloudy	4447		
4	75	54	52	47	Clear	4529		
5	73	46	50	47	Clear	4518		
6	73	45	51	48	Clear	4523		
7	78	48	51	48	Clear	4515		
8	70	48	50	48	Clear	4516		
9	79	42	50	48	Partly Cloudy	4523		
10	74	44	51	49	Partly Cloudy	4514		
11	72	42	52	48	Clear	4505		
12	73	48	51	49	Clear	4508		
13	76	43	52	48	Clear	4409		
14	78	44	53	49	Clear	3579		
15	81	48	52	49	Clear	3464		
16	85	50	52	49	Clear	2536		
17	84	50	53	50	Clear	2456		
18	86	46	57	52	Clear	2517		
19	84	42	55	52	Partly Cloudy	2522		
20	82	44	54	52	Clear	2512		
21	76	48	54	52	Partly Cloudy	2499		
22	66	52	53	52	Rain	2489		
23	66	42	53	51	Clear	2026		
24	73	43	53	49	Partly Cloudy	2002		
25	64	46	54	50	Clear	1989		
26	62	34	53	51	Clear	1989		
27	66	34	54	51	Clear	1526		
28	70	36	54	52	Clear	1549		
29	70	39	56	52	Clear	1531		
30	76	38	54	52	Clear	1484		
31	76	44	54	52	Partly Cloudy	1520		

Appendix 10  
Nimbus Salmon and Steelhead Hatchery  
Weather and Water Data for  
April, 1972

Date	TEMPERATURES				Weather	American River	Salmon	Steelhead
	AIR		WATER			Flow		
	Maximum	Minimum	Maximum	Minimum		at Hatchery C.F.S.		
1	72	46	53	52	Partly Cloudy	1499		
2	70	44	54	52	Partly Cloudy	1467		
3	84	44	54	52	Clear	1472		
4	72	56	55	53	Rain & Partly Cloudy	1502		
5	82	56	53	53	Rain	1597		
6	76	52	53	52	Partly Cloudy	1503		
7	76	42	54	52	Clear	1507		
8	73	42	54	52	Partly Cloudy	1512		
9	77	42	54	52	Clear	1604		
10	72	48	55	52	Partly Cloudy	1742		
11	66	47	53	52	Rain	1498		
12	62	47	56	52	Rain	1535		
13	62	35	53	50	Clear	1499		
14	65	41	56	51	Clear	1497		
15	76	44	50	53	Clear	1502		
16	73	43	54	52	Clear	1516		
17	73	44	55	52	Clear	1512		
18	68	45	55	52	Clear	1524		
19	74	44	54	53	Clear	1522		
20	76	44	54	54	Clear	1502		
21	80	47	55	53	Clear	1493		
22	84	46	54	52	Partly Cloudy	1510		
23	60	46	54	52	Clear	1535		
24	74	51	55	51	Partly Cloudy	1491		
25	74	44	58	53	Clear	1496		
26	83	46	55	53	Clear	1493		
27	91	52	55	52	Clear	1546		
28	76	43	56	56	Clear	1455		
29	76	42	57	54	Clear	1486		
30	70	41	56	52	Clear	1519		

Appendix 11  
Nimbus Salmon and Steelhead Hatchery  
Weather and Water Data for  
May, 1972

Date	TEMPERATURES				Weather	American River	Salmon	Steelhead
	Maximum	AIR	Maximum	WATER		Flow		
		Minimum		Minimum		at Hatchery		
						C.F.S.		
1	90	47	55	53	Clear	1501		
2	94	51	56	53	Clear	1482		
3	94	52	56	53	Clear	1471		
4	76	50	55	53	Partly Cloudy	1477		
5	72	52	55	53	Partly Cloudy	1507		
6	58	50	54	52	Partly Cloudy	1506		
7	62	46	53	52	Cloudy	1544		
8	77	44	55	52	Partly Cloudy	1511		
9	82	46	55	52	Clear	1497		
10	87	43	56	52	Clear	1500		
11	94	43	56	54	Clear	1512		
12	100	54	57	55	Clear	1508		
13	101	56	57	55	Clear	1499		
14	101	60	57	55	Clear	1490		
15	97	58	57	55	Clear	1488		
16	86	46	58	55	Partly Cloudy	1523		
17	80	50	60	55	Clear	1522		
18	82	50	60	55	Partly Cloudy	1511		
19	70	50	59	55	Cloudy & Rain	1498		
20	67	50	57	56	Rain	1509		
21	78	50	58	56	Partly Cloudy	1487		
22	82	51	58	55	Clear	1491		
23	84	50	59	56	Clear	1498		
24	85	48	60	55	Clear	1495		
25	90	48	60	57	Clear	1498		
26	92	52	60	56	Clear	1496		
27	96	52	60	57	Clear	1500		
28	98	56	60	57	Clear	1496		
29	100	59	61	58	Clear	1492		
30	98	61	61	58	Clear	1543		
31	100	56	62	57	Clear	2049		



**Appendix 12**  
**Nimbus Salmon and Steelhead Hatchery**  
**Weather and Water Data for**  
**June, 1972**

Date	TEMPERATURES				Weather	American River Flow at Hatchery C.F.S.	Salmon	Steelhead
	AIR		WATER					
	Maximum	Minimum	Maximum	Minimum				
1	93	56	61	59	Clear	2521		
2	96	62	59	57	Partly Cloudy	3023		
3	93	57	59	57	Partly Cloudy	3016		
4	104	53	60	56	Partly Cloudy	3028		
5	103	64	60	57	Clear	2965		
6	105	66	60	53	Cloudy	2452		
7	94	64	60	53	Partly Cloudy	2047		
8	83	56	60	56	Partly Cloudy	1985		
9	82	54	60	59	Cloudy	1994		
10	80	48	61	57	Partly Cloudy	2002		
11	86	48	62	58	Clear	2012		
12	94	56	61	57	Clear	1980		
13	100	56	61	58	Clear	1493		
14	94	58	61	57	Clear	1430		
15	96	53	62	58	Clear	1495		
16	92	53	61	59	Clear	1520		
17	104	56	63	60	Clear	1971		
18	100	52	63	59	Clear	2493		
19	92	56	62	59	Clear	2497		
20	100	56	63	59	Clear	2501		
21	96	57	62	59	Clear	2042		
22	80	56	60	59	Partly Cloudy	2942		
23	80	56	61	59	Partly Cloudy	3001		
24	88	50	61	58	Clear	3013		
25	94	52	61	58	Clear	3006		
26	97	58	61	59	Clear	3031		
27	102	60	62	59	Clear	3236		
28	104	64	61	59	Clear	4973		
29	110	62	61	59	Clear	5025		
30	116	64	61	60	Clear	4909		