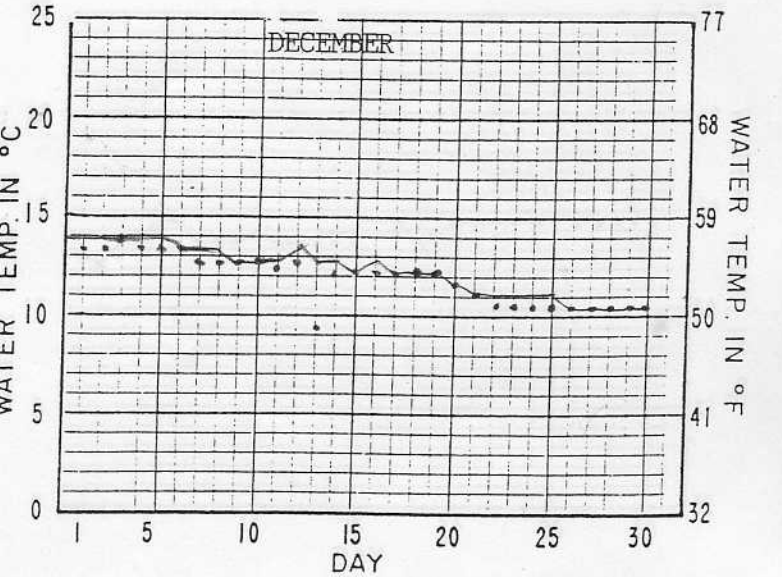
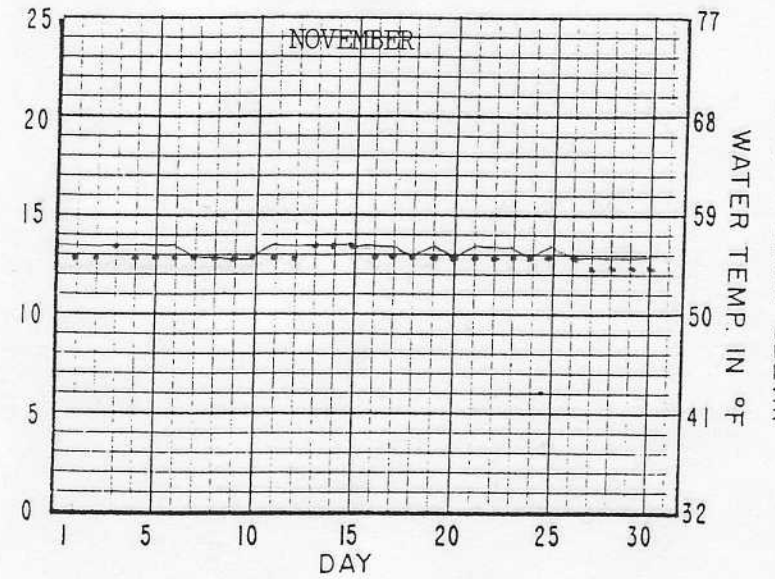
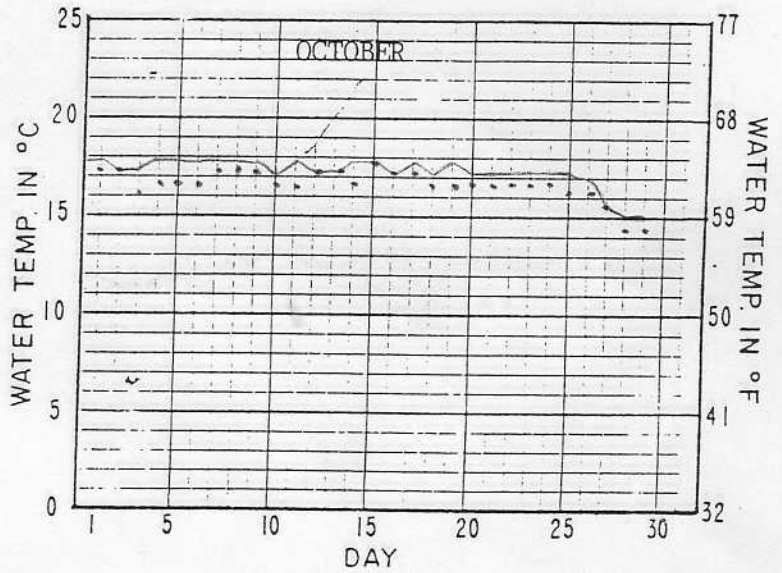
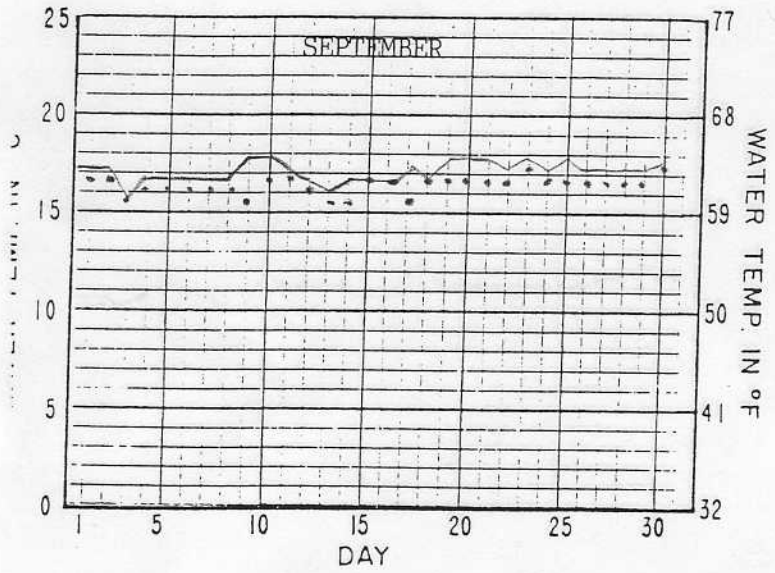
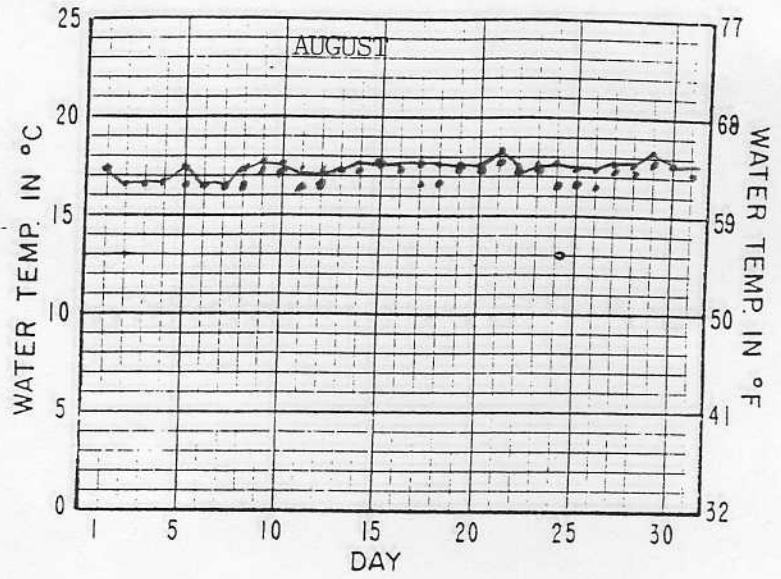
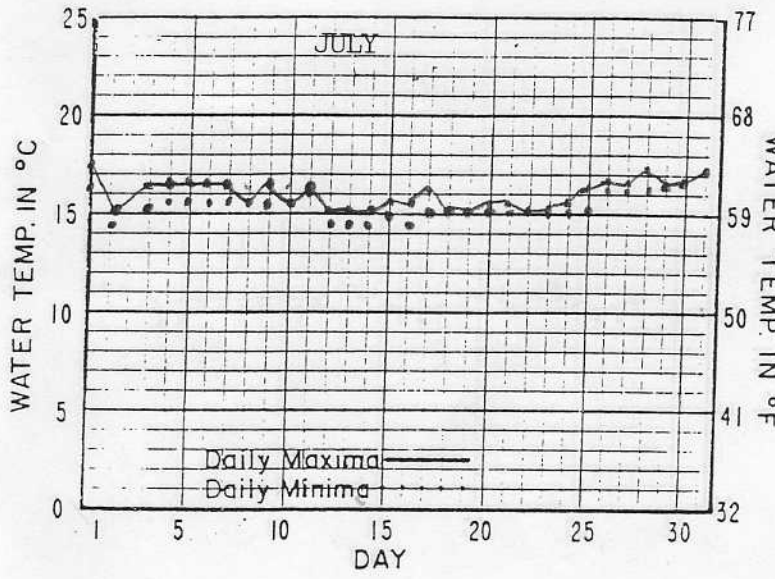
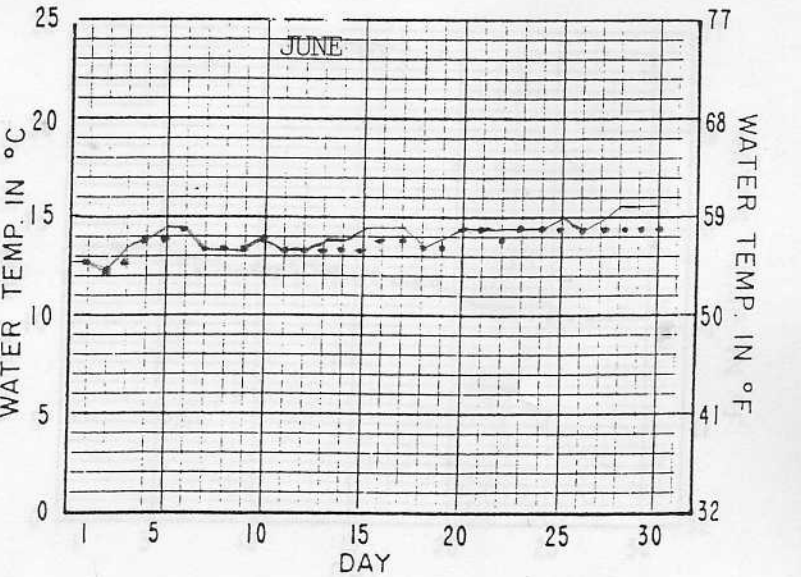
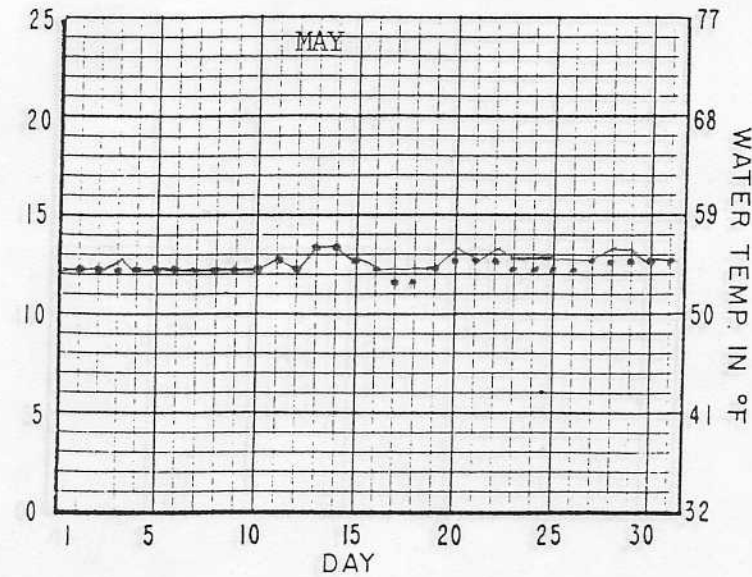
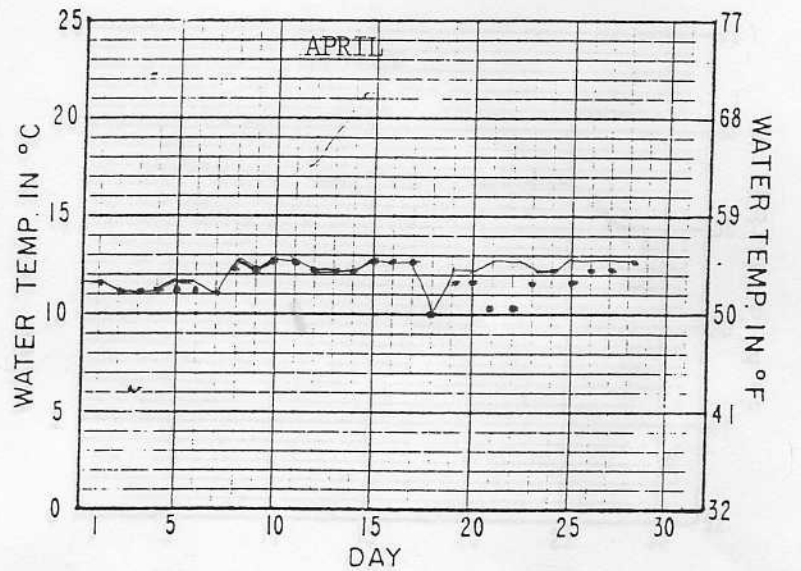
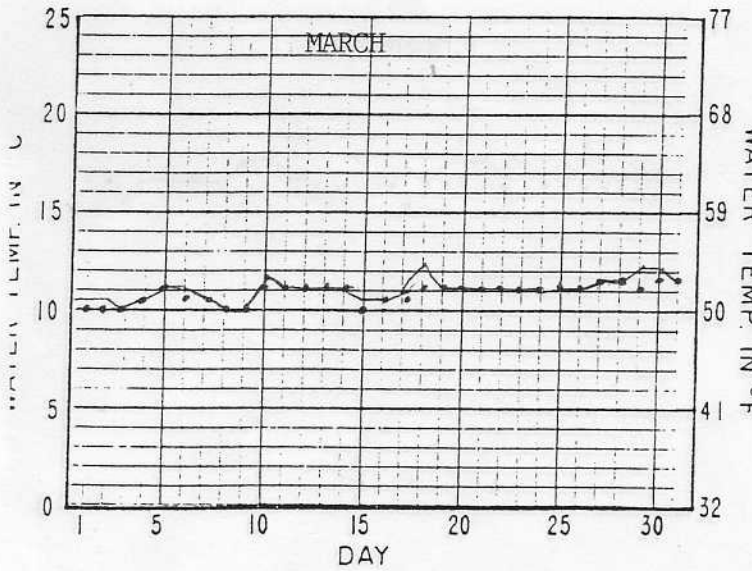
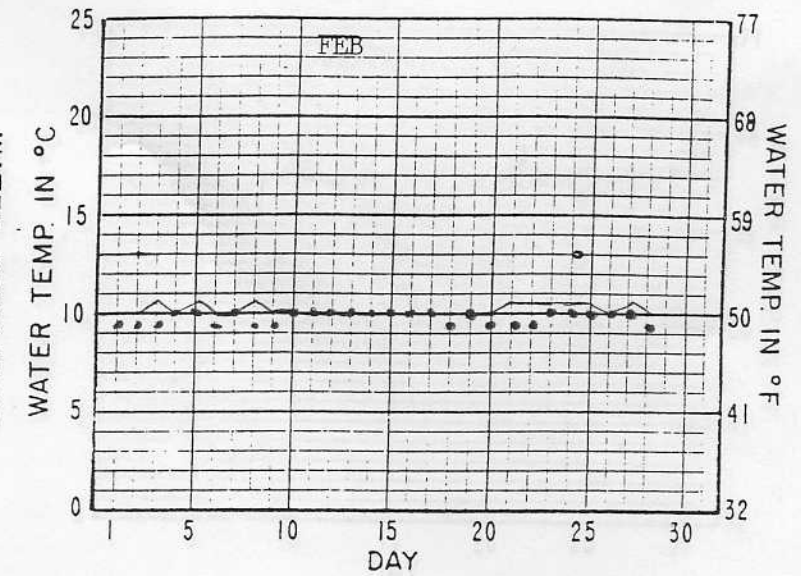
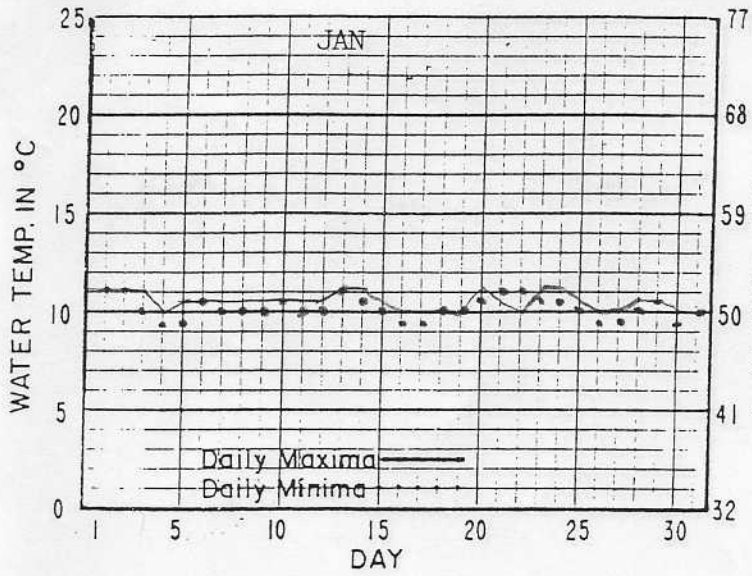


2002

DAILY WATER TEMPERATURES BY MONTH



DAILY WATER TEMPERATURES BY MONTH



ANNUAL REPORT
NIMBUS SALMON AND STEELHEAD HATCHERY 2002-03

by

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Region 2, Inland Fisheries

ABSTRACT

This report describes the operation of Nimbus Salmon and Steelhead Hatchery from July 1, 2002 through June 30, 2003. Tables represent numbers of fish trapped, eggs taken, fish reared and released, and water temperatures. There were 9,817 chinook salmon, Oncorhynchus tshawytscha, trapped, which produced 11,244,062 eggs. There were 883 winter-run steelhead, O. mykiss, trapped, from which 1,060,490 eggs were taken.

During the year hatchery personnel planted, 3,367,000 advanced fingerling, 2,731,150 fingerling, chinook salmon, 419,160 yearling steelhead trout.

INTRODUCTION

This is the 48th 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 2002-2003, with particular reference to numbers of fish trapped, spawned, and released, eggs taken and fish produced, and other pertinent information.

PRODUCTION SUMMARY

During 2002-2003, hatchery personnel took 12,304,552 eggs and planted 6,517,310 chinook salmon and steelhead trout (Table 1).

Table 1. Production Summary, Nimbus Salmon and Steelhead Hatchery, 2002-2003

Species	Eggs Taken or Received	Eggs or Fish Transferred	Fingerlings Planted	Advanced Fingerlings or Yearlings Planted	Total Weight Planted (lb)
CHIN					
2001 BY	0	0	1,736,850	0	26,250
2002 BY	11,244,062	0	994,300	3,367,000	72,600
SH					
2002 BY	0	0	0	0	0
2003 BY	1,060,490	0	0	419,160	102,700

HATCHERY OPERATIONS

The weir was installed September 11, 2002, by the Bureau of Reclamation. The weir pickets were lowered and capped on September 16, 2002. The lower gate in the ladder was removed and the holding pond was opened October 30, 2002. Water temperature was 59 degrees F. The ladder was closed April 9, 2003.

Water Temperature Control

Lower shutters on units 1&2 were raised on October 25, Water temperature at the Nimbus Fish Hatchery on October 30, 2002 was 59 degrees F.

Disposal of Salmon Carcasses

Edible salmon carcasses were given to the American Canadian Fisheries company to be processed, filleted, frozen and sent back to the California Emergency Foodlink in Sacramento California to be distributed to nonprofit organizations. All inedible carcasses went to a local rendering plant. The total dispensed was 144,500 lbs edible and 10,400 lbs inedible.

Public Relations

An estimated 1,059,848 people visited Nimbus Hatchery this year. This number was determined by an automatic car counter installed at the parking lot entrance, and employee counts of bus passengers and bicyclists. October and November was the peak months, with an estimated 238,264 visitors.

CHINOOK SALMON MAINTENANCE PROGRAM

Chinook Salmon Counts

The fish ladder was opened October 30, 2002 and the first spawning took place on October 31, 2002. A total of 9,817 salmon entered the holding pond this season, including 3,752 males, 2,479 females and 3,586 grilse. Grilse were fish 60 cm (23.6 inches) fork length or smaller (Appendix Table 1). A total of 6,091 carcasses were removed from the weir: 604 males, 927 females and 4,560 grilse.

Sorting and Spawning

Of the females counted, 2,103 were spawned, 376 died in the ponds. The spawning season, which began October 31, 2002 and ended December 18, 2002 produced a total of 11,244,062 eggs, for an average of 5,346 eggs per female. Fertility, determined by the difference between green eggs taken and the total eggs eyed, ranged from 28% to 94%, with an average of 77%.

Marked Chinook Salmon Recoveries

All fish were examined for marks as they were processed or removed dead from the holding ponds. Heads were removed from all adipose fin-clipped fish for recovery of coded-wire tags **and were used in the spawning population.** (see Appendix Table 2 for tag recovery results).

Chinook Salmon Planting

2001 Brood Year

There were 1,736,850 **2001 BY** Chinook salmon on hand July 1, 2002

2002 Brood Year

We released 3,367,000 advanced fingerlings and 994,300 fingerlings (Table 2). We did not transfer any eggs or fingerlings to Mokelumne River Hatchery.

Table 2. Planting Data for 2001 Brood Year Chinook Salmon

Month	Release Site	Fingerlings	Advanced Fingerlings	Average size/lb	Weight (lb)
<u>2001 BY</u>	0	0	0	0	0
July 2002	Wickland	512,000	0	64	8000
	Wickland Net Pens	1,224,850	0	67	18,250
<u>2002 BY</u>					
May 2003	Wickland	0	480,000	60	8,000
June	Wickland	994,300	0	64	15,500
	Wickland	0	2,384,700	58.9	40,440
	Treasure Inland U.S.C.G. Station	0	502,300	58	8,660
Total		2,731,150	3,367,000		98,850

History of the 2003 Winter Run

All steelhead entering the holding pond were spawned as winter-run steelhead (Table 3). All fish were examined for marks as they were processed or removed dead from the ponds and 27 fish were unmarked and all other fish were adiposid clipped.

Table 3. Counts of Winter-Run Steelhead, Nimbus Salmon and Steelhead Hatchery, 2002-2003.

Date	Spawned and Released		Pre-spawning Mortality		Released Unspawned		Total Un *
	Males	Females	Males	Females	Males	Females	
Nov 27	0	0	0	0	7	10	17
Dec 04	0	0	0	0	25	26	51
Dec 11	1	1	1	1	12	12	87
Dec 18	6	6	0	0	23	33	109
Dec 24	5	5	0	0	30	28	100
Dec 31	38	38	5	1	21	9	138
Jan 08	23	23	9	9	29	13	128
Jan 15	24	24	2	4	0	9	31
Jan 22	28	28	0	0	0	2	56
Jan 29	15	15	2	4	0	13	36
Feb 05	7	7	0	1	21	8	44
Feb 13	3	3	0	0	15	11	32
Feb 19	4	4	0	0	15	7	30
Feb 26	6	6	0	0	32	0	44
Mar 05	3	3	0	0	32	11	55
Mar 12	3	3	0	0	11	4	21
Mar 19	1	1	0	0	10	4	16
Mar 26	0	0	0	0	10	2	12
Apr 02	3	3	0	0	0	0	6
Apr 09	0	0	0	0	0	0	0
Total	170	170	19	19	293	202	873

Spawning Data 2002 Brood Year

The 170 females spawned produced 1,060,490 eggs, for an average of 6,238 eggs per female. Survival of green eggs to eyed eggs ranged from 69% to 96%, with an average of 89%.

Winter-run Steelhead Planted

2002 Brood Year

Table 4. Planting and Transfer Data, 2002 and 2003 Brood Year Winter-run Steelhead, Nimbus Salmon and Steelhead Hatchery.

<u>Nimbus Steelhead Planted & Transferred</u>					
Month	Release Site	Number of Fingerlings	Number of Yearlings	Average Size/lb	Weight (lb)
Jan	Broderick Boat Ramp	0	11,700	3.9	3000
Jan	Garcia Bend	0	353,800	4.1	86,000
Feb	Garcia Bend	0	53,660	3.9	13,700

2003 Brood Year

No fingerlings were released into the American River at the foot of the ladder; nor were there any fingerlings transferred to Mokelumne River Hatchery. On June 30, 2003, approximately 476,081 2003 BY American River steelhead fingerlings were on hand. Approximately 430,000 of these will be released as yearlings in late January and February of 2004. There were not any eyed eggs transferred to Mokelumne River Hatchery, and all of BY 2003 Steelhead were adiposed fin clipped before planting.

Steelhead Disease Information

2003 Brood Year

Minor outbreaks of Columnaris, Ich and Costia were controlled using salt, Potassium Permanganate, Hydrogen Peroxide and Terramycin milled or mixed into the fish food.

Appendix Table 1. Weekly Adult Salmon and Steelhead Trapping Data for Nimbus Hatchery, 2002-2003.

Week	Year	Chinook Salmon		Steelhead Trout		Half-pounders
		Adults	Grilse	Males	Females	
Oct 31-Nov2	2002	812	303	0	0	0
Nov 3- 9	2002	1595	663	0	0	0
Nov 10-16	2002	600	595	0	0	0
Nov 17-23	2002	1604	804	0	0	0
Nov 24-30	2002	899	649	14	17	0
Dec 01-07	2002	256	266	33	38	0
Dec 08-14	2002	333	246	61	69	0
Dec 15-21	2002	132	60	90	80	0
Dec 22-28	2002	0	0	53	31	0
Dec 29-Jan4	2003	0	0	8	8	2
Jan 05-11	2003	0	0	4	2	3
Jan 12-18	2003	0	0	18	35	2
Jan 19-25	2003	0	0	12	13	1
Jan 26-Feb1	2003	0	0	13	17	1
Feb 02-08	2003	0	0	28	16	1
Feb 09-15	2003	0	0	18	14	0
Feb16- 22	2003	0	0	19	11	0
Feb23-Mar1	2003	0	0	34	6	0
Mar 02-08	2003	0	0	38	17	0
Mar 09-15	2003	0	0	14	7	0
Mar16-22	2003	0	0	11	5	0
Mar23-29	2003	0	0	10	5	0
Mar30-Apr5	2003	0	0	6	0	0
Apr06-12	2003	0	0	0	0	0
Total		6,231	3,586	482	391	10

Half Pounders = < 22 in.

Appendix Table 2.

Chinook Salmon Coded-Wire Tag Recoveries.
Preliminary Data, Nimbus Hatchery, 2002-03

CWT	Number Recovered	Brood Year	Hatchery of Origin	Release Site
050479	5	2000	Coleman	Walnut Grove
050480	9	2000	Coleman	Walnut Grove
050481	4	2000	Coleman	Walnut Grove
050482	6	2000	Coleman	Walnut Grove
050767	3	2001	Coleman	Ryde
050768	5	2001	Coleman	Port Chicago
052308	2	1998	Coleman	Georgianna Slough
054110	10	2000	Coleman	Steamboat Slough
054410	1	2000	Warm Springs	Warm Spring River
055129	4	2000	Coleman	Sutter Slough
055131	10	1999	Coleman	Georgianna Slough
055132	5	1999	Coleman	Ryle
055133	3	1999	Coleman	Ryle
055134	4	1999	Coleman	Port Chicago
055137	10	2000	Coleman	Walnut Grove
0601061001	4	1999	Merced	Jersey Point
0601061002	2	1999	Merced	Jersey Point
060242	1	1998	Mokelumne	Woodbridge
060247	2	1998	Mokelumne	Sherman Inland
060248	5	1998	Mokelumne	Sherman Inland
060249	3	1999	Mokelumne	New Hope Landing
060250	7	1999	Mokelumne	Wickland Net Pens
060251	4	1999	Mokelumne	Wickland Net Pens
060252	5	1999	Mokelumne	New Hope Landing
060253	9	1999	Mokelumne	Sherman Inland
060254	20	1999	Mokelumne	Sherman Inland
060255	6	1999	Mokelumne	New Hope Landing
060256	1	1999	Mokelumne	New Hope Landing
060257	30	1999	Mokelumne	New Hope Landing
060258	37	1999	Mokelumne	New Hope Landing
060264	4	2000	Mokelumne	New Hope Landing
060265	2	2000	Mokelumne	New Hope Landing
060266	2	2000	Mokelumne	S.F. Mokelumne Riv
060267	1	2000	Mokelumne	S.F. Mokelumne Riv
060269	2	2000	Mokelumne	N.F. Mokelumne Riv
060270	3	2000	Mokelumne	Jersey Point
060271	9	2000	Mokelumne	Jersey Point

060401	1	1999	Merced	Durham Ferry
062647	1	1998	Merced	Dos Reis Road
062662	5	1999	Mokelumne	Mokelumne R. Mouth
062663	5	1999	Mokelumne	Mokelumne R. Mouth
062664	11	2000	Feather	Wickland Net Pens
062706	5	2000	Mokelumne	Benicia
062707	3	2000	Mokelumne	Bericia
062708	2	2000	Mokelumne	West Sacramento
062709	4	2000	Mokelumne	West Sacramento
062714	11	2000	Mokelumne	West Sacramento
062715	8	2000	Mokelumne	West Sacramento
062716	7	2000	Mokelumne	West Sacramento
062717	4	2000	Mokelumne	West Sacramento
062941	1	2000	Feather	Tiburon Net Pens
064403	4	1999	Merced	Jersey Point
064404	7	1999	Merced	Jersey Point
064431	1	2000	Merced	Durham Ferry
064434	1	2000	Merced	Jersey Point
064435	5	2000	Merced	Jersey Point
064441	1	2000	Merced	Jersey Point
064442	2	2000	Merced	Jersey Point
064553	1	1999	Merced	Hatfield State Area
064916	1	1998	Mokelumne	New Hope Landing
064919	1	1998	Mokelumne	New Hope Landing
064920	4	1998	Mokelumne	Sherman Inland
064921	3	1998	Mokelumne	Sherman Inland
064922	2	1998	Mokelumne	Sherman Inland
065455	47	2000	Nimbus	Wickland Net Pens
065456	24	2000	Nimbus	Wickland Net Pens
065457	36	2000	Nimbus	Wickland Net Pens
065458	42	2000	Nimbus	Wickland Net Pens
065459	44	2000	Nimbus	Wickland Net Pens
065460	31	2000	Nimbus	Wickland Net Pens
Total	606			

a/Feathe River Hatchery stock.

b/No CWT.

* No tag

Appendix Table 3. Summary of Fish Runs to Nimbus Salmon and Steelhead Hatchery

<u>Year</u>	<u>Chinook Salmon</u>		<u>Grilse</u>	<u>Steelhead</u>
	<u>Males</u>	<u>Females</u>		
1955-56	4,427	3,012	*	110
1956-57	267	502	774	115
1957-58	297	341	252	51
1958-59	2,655	638	1,538	102
1959-60	3,003	7,366	2,866	778
1960-61	13,455	6,487	9,331	316
1961-62	3,446	9,257	1,638	137
1962-63	5,088	4,138	3,442	2,141
1963-64	1,213	1,215	813	1,216
1964-65	7,209	8,799	4,534	778
1965-66	5,295	7,595	786	874
1966-67	2,434	5,098	573	642
1967-68	2,022	2,392	733	1,183
1968-69	1,318	2,740	1,175	2,449
1969-70	1,488	1,061	521	1,733
1970-71	3,027	4,827	770	3,033
1971-72	3,384	4,493	1,269	2,256
1972-73	2,195	3,252	1,659	2,506
1973-74	5,155	5,704	1,676	3,157
1974-75	2,762	4,746	671	2,295
1975-76	2,734	3,833	846	2,262
1976-77	2,002	2,340	894	1,307
1977-78	3,496	2,874	498	619
1978-79	2,348	3,767	2,047	680
1979-80	4,779	2,394	3,067	1,310
1980-81	6,122	7,553	2,068	836
1981-82	10,497	7,286	2,805	3,190
1982-83	4,535	3,813	2,576	1,003
1983-84	3,081	3,486	2,514	5,155
1984-85	4,548	5,748	1,953	910
1985-86	3,349	4,439	1,305	1,193
1986-87	2,168	2,617	910	1,431
1987-88	1,759	1,586	2,913	705
1988-89	3,777	4,187	661	289
1989-90	4,105	5,125	511	594
1990-91	1,773	2,251	823	223
1991-92	3,245	3,524	359	1,359
1992-93	2,458	2,649	1,349	241
1993-94	3,181	4,162	3,313	504
1994-95	3,408	4,267	892	3,805
1995-96	2,950	2,224	1,324	2,257
1996-97	3,554	3,622	475	1,353
1997-98	2,997	2,332	321	649
1998-99	4,980	4,961	1,847	1,480
1999-2000	3,923	2,280	3,557	1,656
2000-2001	6,211	4,108	841	2,894
2001-2002	6,569	3,222	1,959	1,469
2002-2003	3,752	2,479	3,586	883

* Included in adult male

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