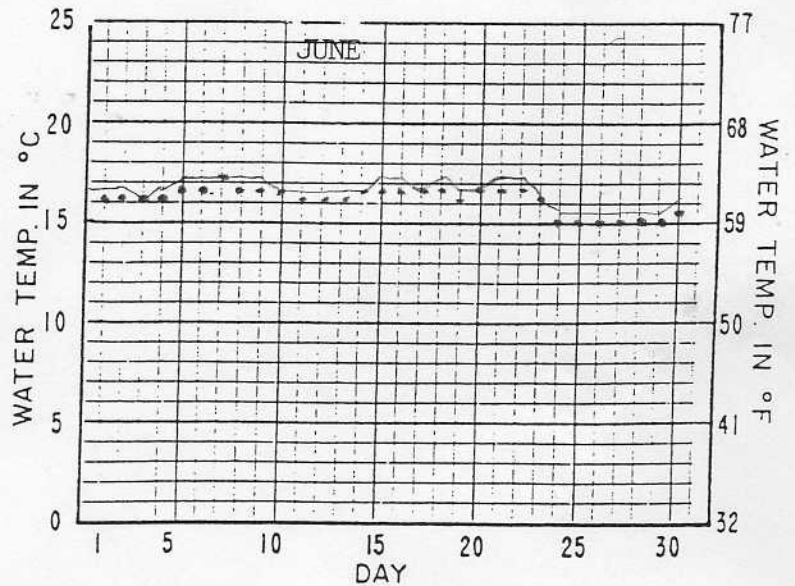
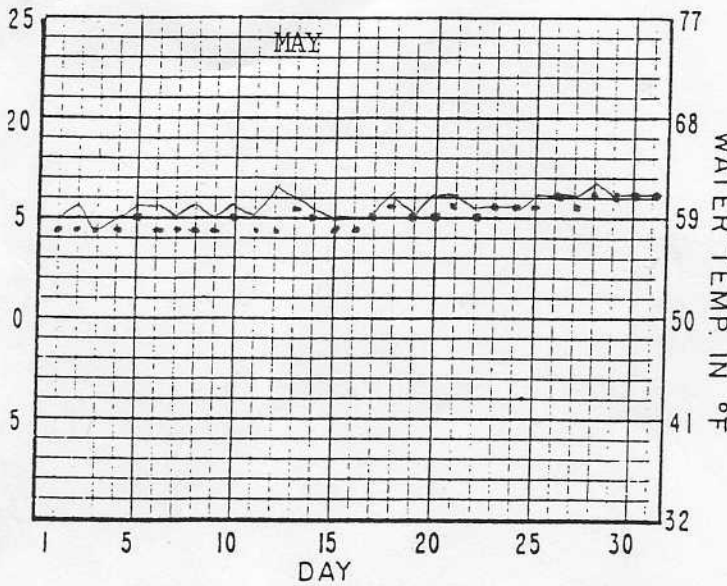
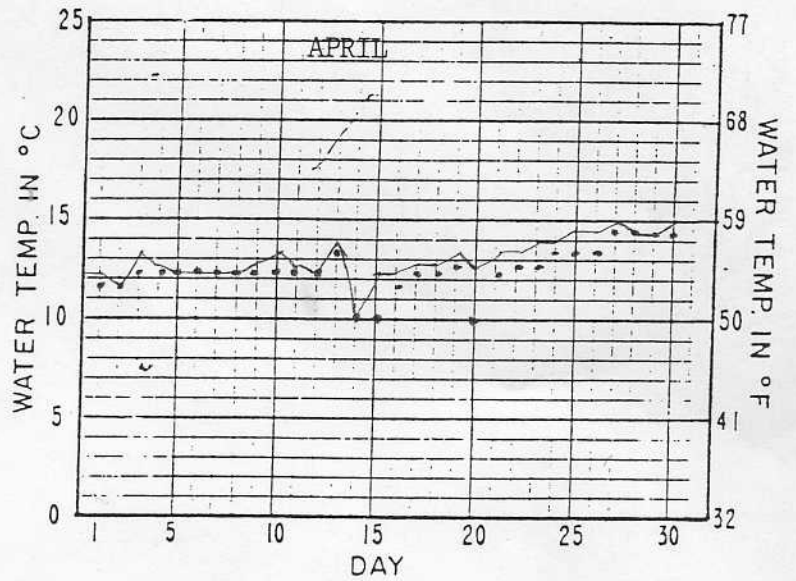
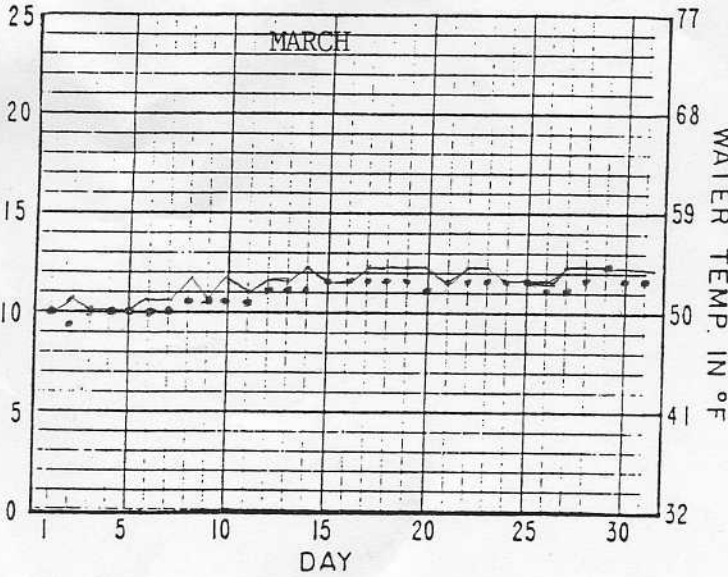
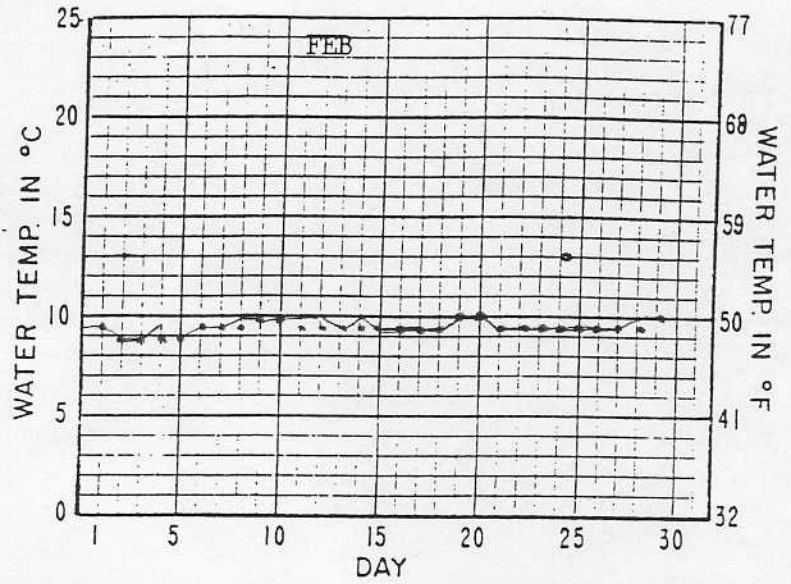
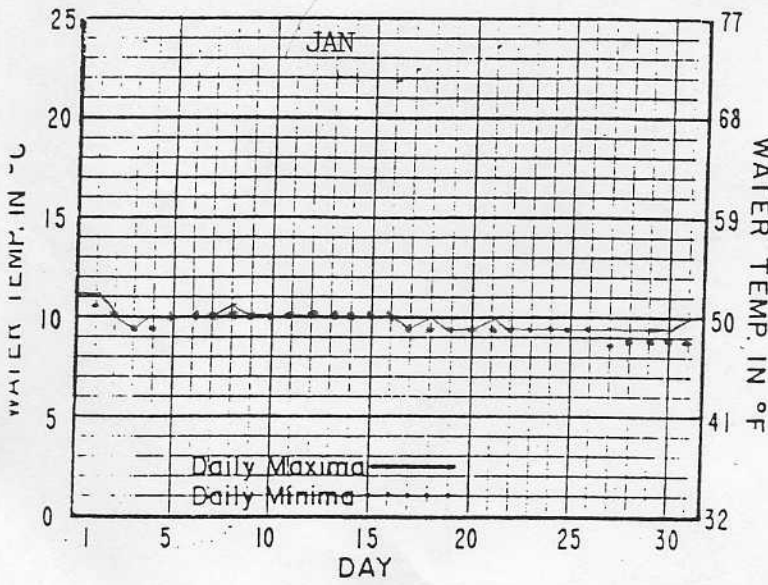


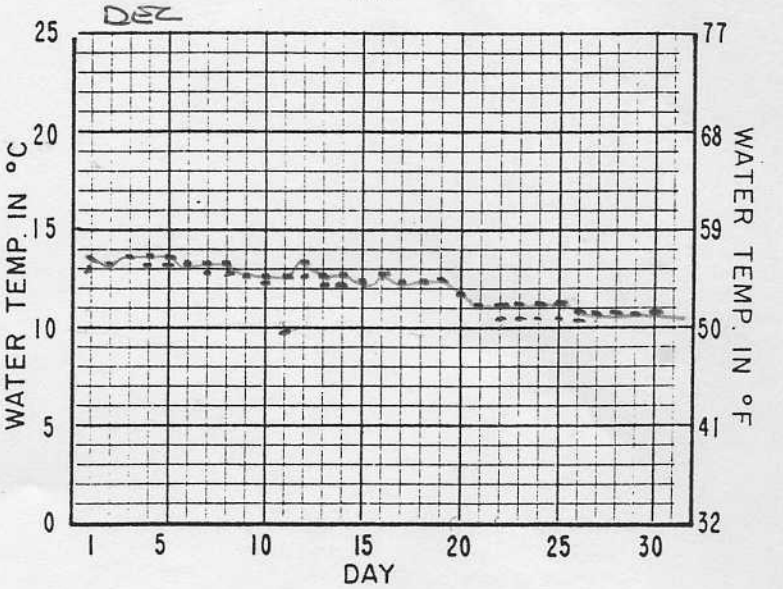
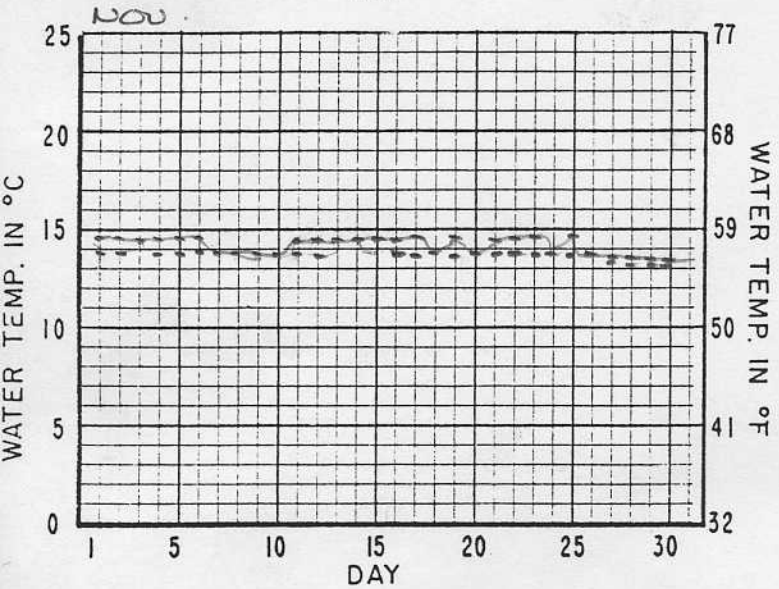
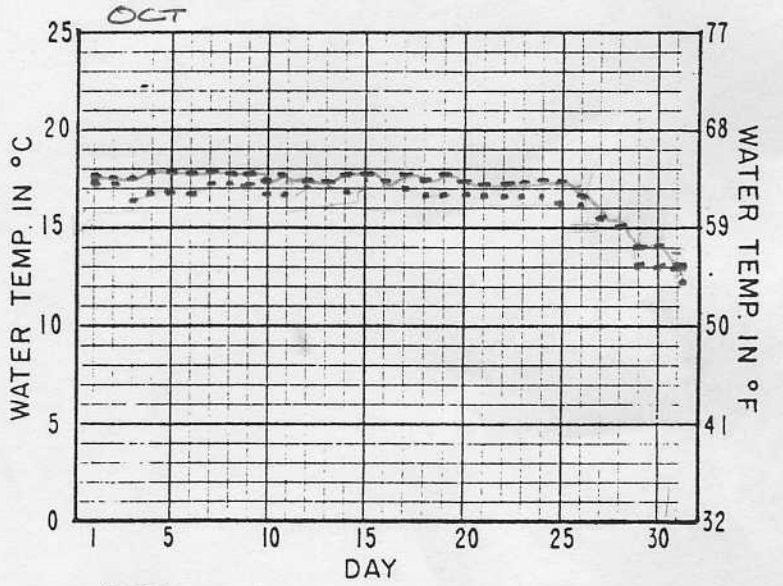
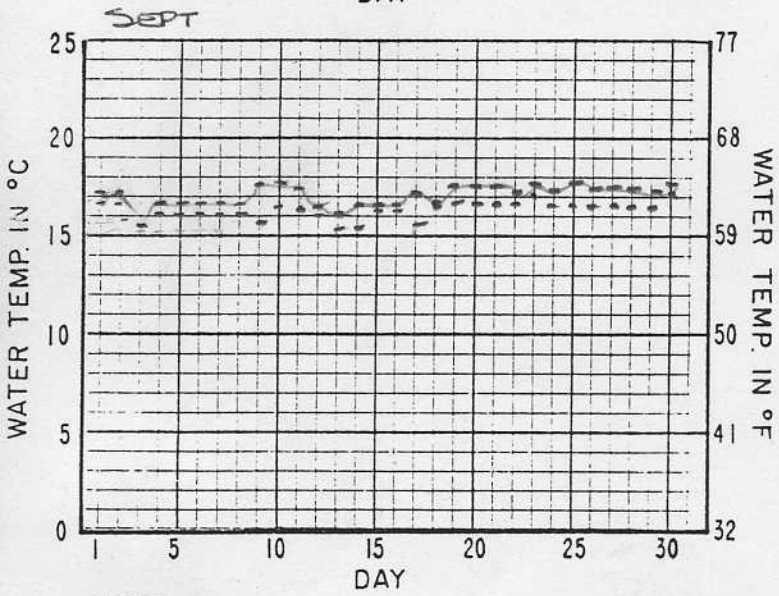
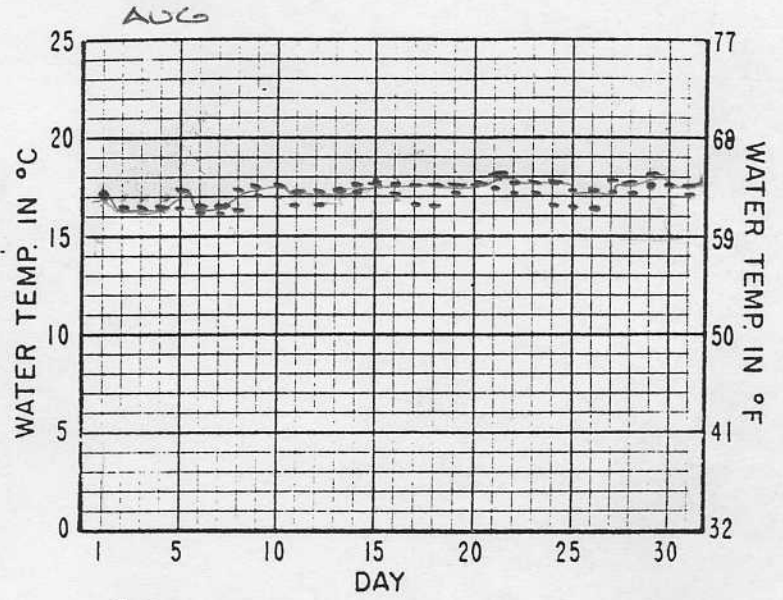
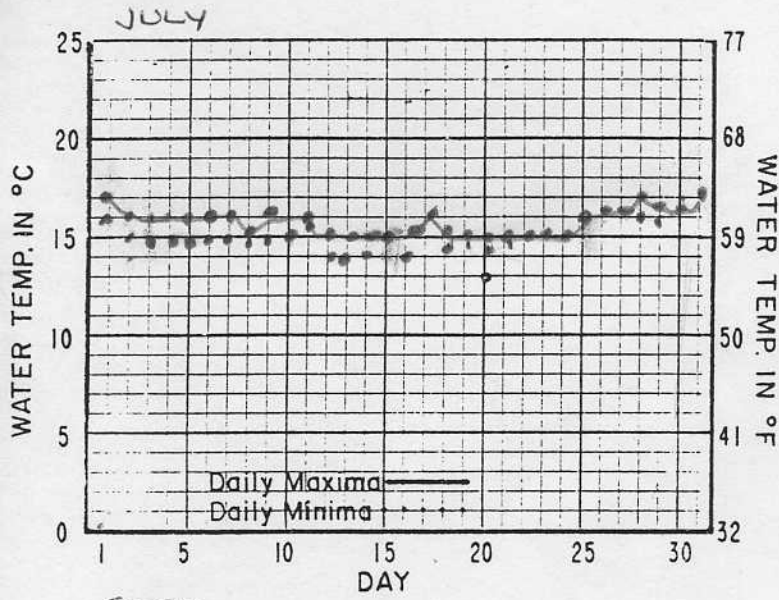
DAILY WATER TEMPERATURES BY MONTH

2004



DAILY WATER TEMPERATURES BY MONTH

03



ANNUAL REPORT
NIMBUS SALMON AND STEELHEAD HATCHERY 2003-04

by

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Region 2, Inland Fisheries

ABSTRACT

This report describes the operation of Nimbus Salmon and Steelhead Hatchery from July 1, 2003 through June 30, 2004. Tables represent numbers of fish trapped, eggs taken, fish reared and released, and water temperatures. There were 14,887 chinook salmon, Oncorhynchus tshawytscha, trapped, which produced 15,537,842 eggs. There were 1766 winter-run steelhead, O. mykiss, trapped, from which 1,000,120 eggs were taken.

During the year hatchery personnel planted, 634,000 advanced fingerling, 4,059,466 fingerling, chinook salmon, 455,140 yearling steelhead trout.

INTRODUCTION

This is the 49th 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 2003-2004, with particular reference to numbers of fish trapped, spawned, and released, eggs taken and fish produced, and other pertinent information.

PRODUCTION SUMMARY

During 2003-2004, hatchery personnel took 16,537,962 eggs and planted 5,148,606 chinook salmon and steelhead trout (Table 1).

Table 1. Production Summary, Nimbus Salmon and Steelhead Hatchery, 2003-2004

Species	Eggs Taken or Received	Eggs or Fish Transferred	Fingerlings Planted	Advanced Fingerlings or Yearlings Planted	Total Weight Planted (lb)
CHIN					
2002 BY	0	0	0	0	0
2003 BY	15,537,842	0	4,059,466	634,000	67,216
SH					
2002 BY	0	0	0	0	0
2003 BY	1,000,120	0	0	455,140	94,200

HATCHERY OPERATIONS

The weir was installed September 11, 2003, by the Bureau of Reclamation. The weir pickets were lowered and capped on September 17, 2003. The lower gate in the ladder was removed and the holding pond was opened November 5, 2003. Water temperature was 59 degrees F. The last spawning took place on April 7, 2004.

Water Temperature Control

Lower shutters on units 1&2 were raised on November 2, Water temperature at the Nimbus Fish Hatchery on November 5, 2004 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 181,000 lbs edible and 4,000 lbs inedible.

Public Relations

An estimated 914,272 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 were the peak months, with an estimated 323,196 visitors.

CHINOOK SALMON MAINTENANCE PROGRAM

Chinook Salmon Counts

The fish ladder was opened November 5, 2003 and the first spawning took place on November 6, 2003. A total of 14,887 salmon entered the holding pond this season, including 6,868 males, 5,007 females and 3,012 grilse. Grilse were fish 60 cm (23.6 inches) fork length or smaller (Appendix Table 1). A total of 5,501 carcasses were removed from the weir: 432 males, 745 females and 4,024 grilse.

Sorting and Spawning

Of the females counted, 3,215 were spawned, 1,892 died in the ponds. The spawning season, which began November 6, 2003 and ended December 29, 2003 produced a total of 15,537,842 eggs, for an average of 4,832 eggs per female. Fertility, determined by the difference between green eggs taken and the total eggs eyed, ranged from 53% to 97%, with an average of 86.8%.

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

2003 Brood Year

We released 634,000 advanced fingerlings and 4,059,466 fingerlings (Table 2). We did not transfer any eggs or fingerlings to Mokelumne River Hatchery.

Table 2. Planting Data for 2003 Brood Year Chinook Salmon

Month	Release Site	Fingerlings	Advanced Fingerlings	Average size/lb	Weight (lb)
<u>2003 BY</u>					
May 2003	Brown's Ravine	100,878	0	51	1,978
June	Lake Valley	14,188	0	42	338
	Wickland	3,944,400	0	74	53,200
	Wickland	0	634,000	54	11,700
.					
Total		4,059,466	634,000		67,216

WINTER-RUN STEELHEAD MAINTENANCE PROGRAM

History of the 2004 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 17 fish

were unmarked and all other fish were adiposed clipped.

Table 3. Counts of Winter-Run Steelhead, Nimbus Salmon and Steelhead Hatchery, 2003-2004.

Date	Spawned and Released		Pre-spawning Mortality		Released Unspawned		Total Un *
	Males	Females	Males	Females	Males	Females	
Nov 18	0	0	0	0	1	1	2
Nov 19	0	0	0	0	2	0	2
Dec 4	0	0	0	0	2	1	3
Dec 9	0	0	0	0	6	5	11
Dec 11	0	0	0	0	28	10	38
Dec 16	2	2	1	1	57	47	110
Dec 18	7	7	0	2	83	66	165
Dec 22	9	9	2	3	128	86	237
Dec 23	3	3	1	1	129	112	249
Dec 29	30	30	3	4	175	144	386
Dec 31	15	15	9	5	40	51	135
Jan 7	8	8	0	0	26	16	58
Jan 14	18	18	0	0	15	7	30
Jan 21	6	6	0	0	65	60	137
Jan 28	7	7	0	0	17	17	48
Feb 4	31	31	0	0	76	64	202
Feb 11	10	10	0	0	34	30	84
Feb 18	8	8	0	0	25	23	64
Feb 25	4	4	0	0	26	12	46
Mar 3	3	3	0	0	9	4	19
Mar 10	1	1	0	0	2	2	6
Mar 17	0	0	0	0	6	0	6
Mar 24	1	1	0	0	5	2	9
Total	163	163	15	16	965	776	2,098

Spawning Data 2004 Brood Year

The 163 females spawned produced 1,000,120 eggs, for an average of 6,135 eggs per female. Survival of green eggs to eyed eggs ranged from 40% to 99%, with an average of 77%.

Winter-run Steelhead Planted

2003 Brood Year

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

Nimbus Steelhead <u>Planted & Transferred</u>					
Month	Release Site	Number of Fingerlings	Number of Yearlings	Average Size/lb	Weight (lb)
Jan	Garcia Bend	0	154,440	4.9	31,000
Feb	Garcia Bend	0	300,700	4.7	63,200

2004 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, 2004, approximately 569,484 2004 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 adiposid fin clipped before planting.

Steelhead Disease Information

2004 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, 2003-2004.

Week	Year	Chinook Salmon		Steelhead Trout		Half-pounders
		Adults	Grilse	Males	Females	
Non 6-8	2003	771	211	0	0	0
Nov 9-15	2003	2174	820	0	0	0
Nov 16-22	2003	2305	610	3	1	0
Nov 23-29	2003	1553	574	0	0	0
Nov 30-Dec6	2003	731	264	5	2	0
Dec 7-13	2003	1697	266	34	15	0
Dec 14-20	2003	1041	98	140	113	0
Dec 21-27	2003	1273	176	257	198	0
Dec 28-Jan 3	2003	330	33	215	195	0
Jan 4-10	2004	0	0	26	16	0
Jan 11-17	2004	0	0	65	60	0
Jan 18-24	2004	0	0	23	23	0
Jan 25-31	2004	0	0	17	17	0
Jan 26-31	2003	0	0	13	17	1
Feb 1-7	2004	0	0	76	64	5
Feb 8-14	2004	0	0	34	30	6
Feb15-21	2004	0	0	25	23	4
Feb 22-28	2004	0	0	26	12	8
Feb 29-Mar 6	2004	0	0	9	4	0
Mar 7-13	2004	0	0	2	2	1
Mar14-20	2004	0	0	6	0	0
Mar21-27	2004	0	0	5	2	0
Mar29-Apr 3	2004	0	0		0	0
Apr 4-10	2004	0	0	0	0	0
Total		11,875	3,012	965	776	25

Half Pounders = < 22 in.
Appendix Table 2.

Chinook Salmon Coded-Wire Tag Recoveries.
Preliminary Data, Nimbus Hatchery, 2003-04

CWT	Number Recovered	Brood Year	Hatchery of Origin	Release Site
0501040302	1	2001	Coleman	Clarksburg
050479	1	2000	Coleman	Walnut Grove
050480	2	2000	Coleman	Walnut Grove
050482	4	2000	Coleman	Walnut Grove
050696	2	2001	Coleman	Walnut Grove
050697	1	2001	Coleman	Walnut Grove
052698	1	2001	Coleman	Walnut Grove
050767	24	2001	Coleman	Ryde-Koket
050768	30	2001	Colman	Port Chicago
050776	9	2001	Coleman	Georgianna Slough
054110	3	2000	Coleman	Steamboat Slough
054115	1	2001	Coleman	unknown
055113	1	2001	Mokelumne	N.F.Mokelumne Riv
055129	1	2000	Coleman	Sutter Slough
055137	1	2000	Coleman	Walnut Grove
055138	1	2002	Coleman	W. Sacramento
0601061002	1	1999	Merced	Jersey Point
060245	1	2001	Mokelumne	N.F.Mokelumne Riv
060246	2	2001	Mokelumne	N.F.Mokelumne Riv
060248	1	1998	Mokelumne	Sherman Inland
060250	1	1999	Mokelumne	Wickland Net Pens
060251	4	1999	Mokelumne	Wickland Net Pens
060253	1	1999	Mokelumne	Sherman Island
060254	2	1999	Mokelumne	Sherman Island
060256	2	1999	Mokelumne	New Hope Landing
060258	2	1999	Mokelumne	New Hope Landing
060260	1	2001	Mokelumne	N.F.Mokelumne Riv
060262	1	2001	Mokelumne	N.F.Mokelumne Riv
060264	1	2000	Mokelumne	New Hope Landing
060265	2	2000	Mokelumne	New Hope Landing
060266	3	2000	Mokelumne	S.F.Mokelumne
060267	1	2000	Mokelumne	S.F.Mokelumne Riv
060268	3	2000	Mokelumne	N.F. Mokelumne Riv
060270	11	2000	Mokelumne	Jersey Point
060271	11	2000	Mokelumne	Jersey Point
060272	2	2001	Mokelumne	New Hope Landing
060273	2	2001	Mokelumne	New Hope Landing
060274	1	2001	Mokelumne	New Hope Landing
060275	1	2001	Mokelumne	New Hope Landing

060279	2	2001	Mokelumne	unknown
062090	11	2001	Feather River	Wickland Net Pens
062091	6	2001	Feather River	Wickland Net Pens
062653	1	1999	Feather River	West Sacramento
062654	1	1999	Feather River	West Sacramento
062662	1	1999	Mokelumne	Mokelumne Riv
062664	34	2000	Feather River	Wickland Net Pens
062665	15	2000	Reather River	Wicklnd Net Pens
062666	8	2001	Nimbus	Wickland Net Pens
062667	14	2001	Nimbus	Wickland Net Pens
062668	7	2001	Nimbus	Wickland Net Pens
062669	1	2000	Feather River	Rodeo Minor Port
062671	3	2000	Feather River	Rodeo Minor Port
062672	1	2000	Feather River	Rodeo Minor Port
062673	2	2000	Feather River	Rodeo Minor Port
062675	1	2000	Feather River	Rodeo Minor Port
062676	3	2000	Feather Riveer	Rodeo Minor Port
062677	1	2000	Feather River	Rodeo Minor Port
062680	1	2000	Feather River	Rodeo Minor Port
062681	2	2000	Feather River	Rodeo Minor Port
062682	1	2000	Feather River	Rodeo Minor Port
062706	4	2000	Mokelumne	Benicia
062707	6	2000	Mokelumne	Benicia
062708	3	2000	Mokelumne	West Sacramento
062709	4	2000	Mokelumne	West Sacramento
062714	7	2000	Mokelumne	West Sacramento
062715	8	2000	Mokelumne	West Sacramento
062716	7	2000	Mokelumne	West Sacramento
062717	6	2000	Mokelumne	West Sacramento
062722	6	2001	Mokelumne	Jersey Point
062723	9	2001	Mokelumne	Jersey Point
062735	1	2001	Feather River	Wickland Net Pen
062737	1	2001	Feather River	Wickland Net Pens
062738	1	2001	Feather River	Wicjland Net Pens
062941	2	2000	Tiburon Ney Pens	Tiburon Net Pens
064410	1	1999	Merced River	Stanislaus River
064434	3	2000	Merced River	Jersey Point
064435	5	2000	Merced River	Jersey Point

064441	3	2000	Merced River	Jersey Point
064442	3	2000	Merced River	Jersey Point
064453	6	2001	Mokelumne River	Jersey Point
064458	1	2001	Merced River	Mossdale
064459	2	2001	Merced River	Jersey Point
064460	1	2001	Merced River	Jersey Point
064480	5	2001	Merced River	Jersey Point
064481	7	2001	Merced River	Jersey Point
064548	1	2001	Merced River	Hatfield State Area
064920	1	1998	Mokelumne River	Sherman Island Op
064921	1	1998	Mokelumne River	Sherman Island Op
064924	2	2001	Mokelumne River	unknown
064928	12	2001	Mokelumne River	Sherman Island Op
064929	1	2001	Mokelumne River	Sherman Island Op
064930	4	2001	Mokelumne River	Sherman Island Op
064931	7	2001	Mokelumne River	Sherman Island Op
065455	103	2000	Nimbus	Wickland Net Pens
065456	115	2000	Nimbus	Wickland Net Pens
065457	145	2000	Nimbus	Wickland Net Pens
065458	123	2000	Nimbus	Wickland Net Pens
065459	127	2000	Nimbus	Wickland Net Pens
065460	213	2000	Nimbus	Wickland Net Pens
065863	11	2001	Mokelumne River	Jersey Point
Total	1293			

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
2003-2004	6,868	5,007	3,012	1,766

* Included in adult male

