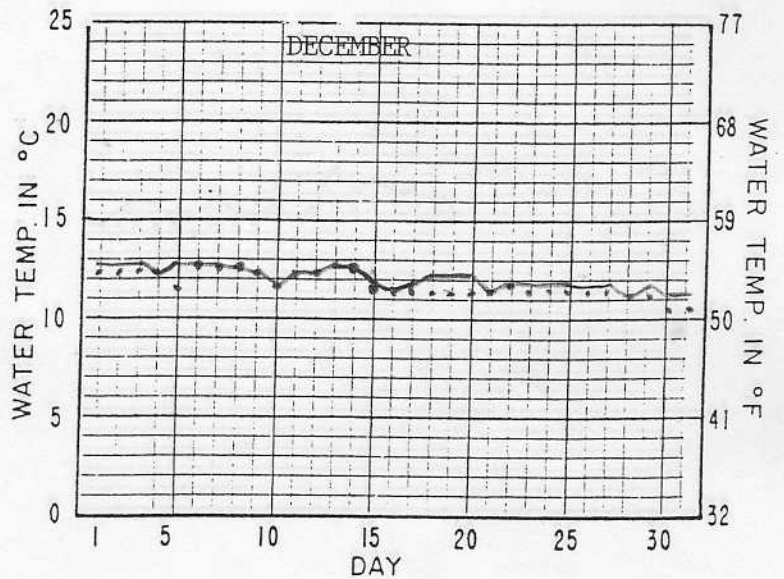
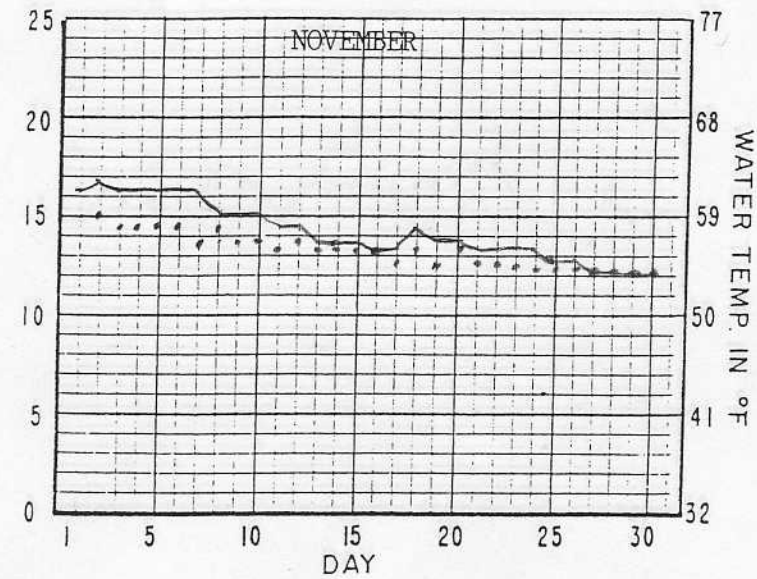
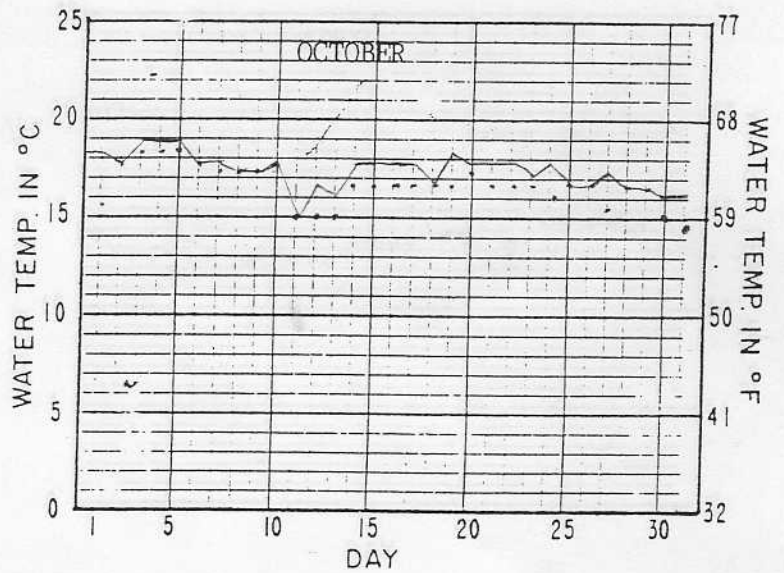
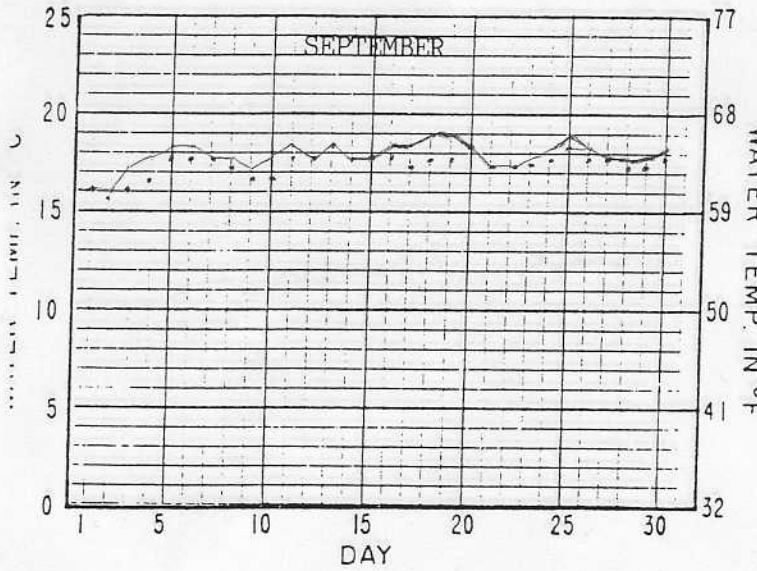
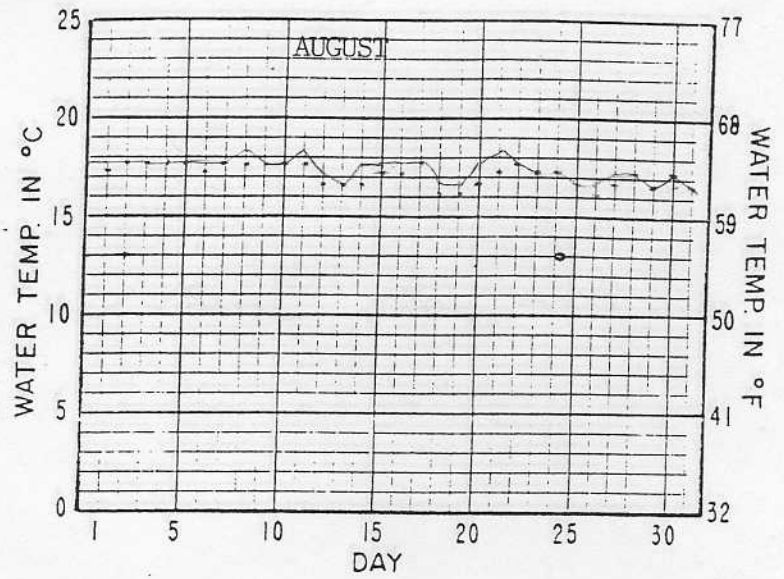
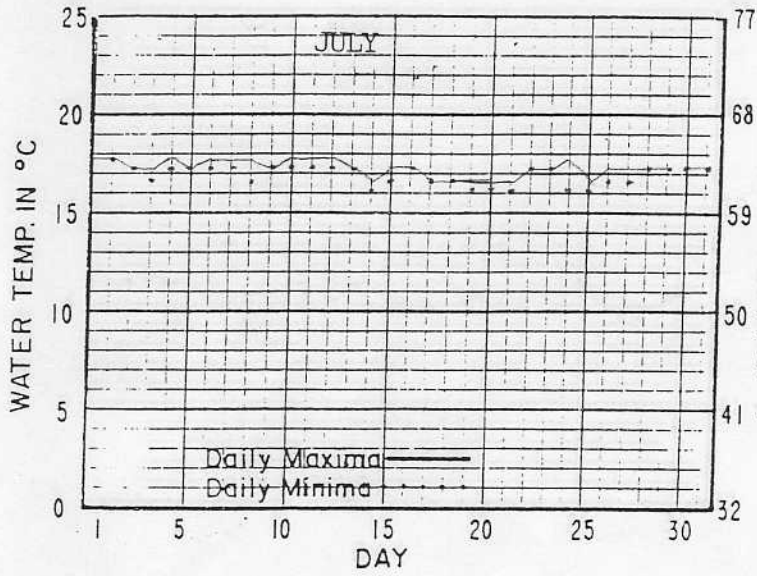


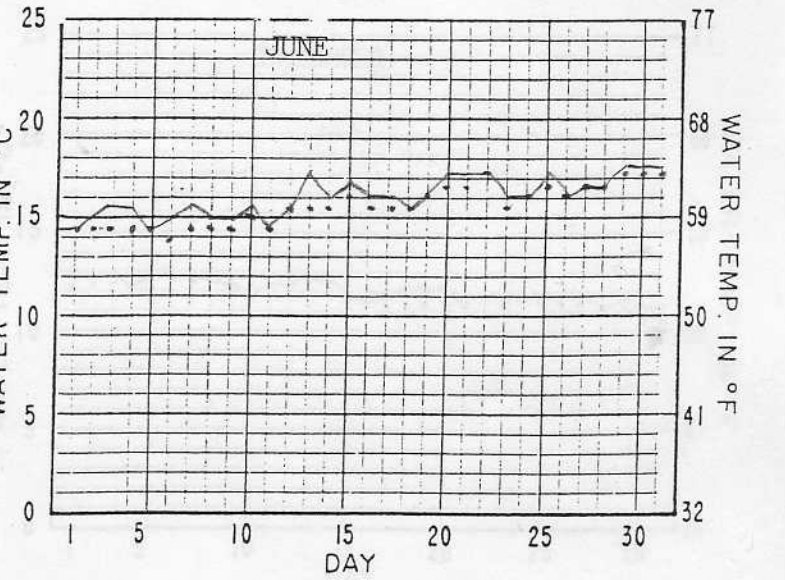
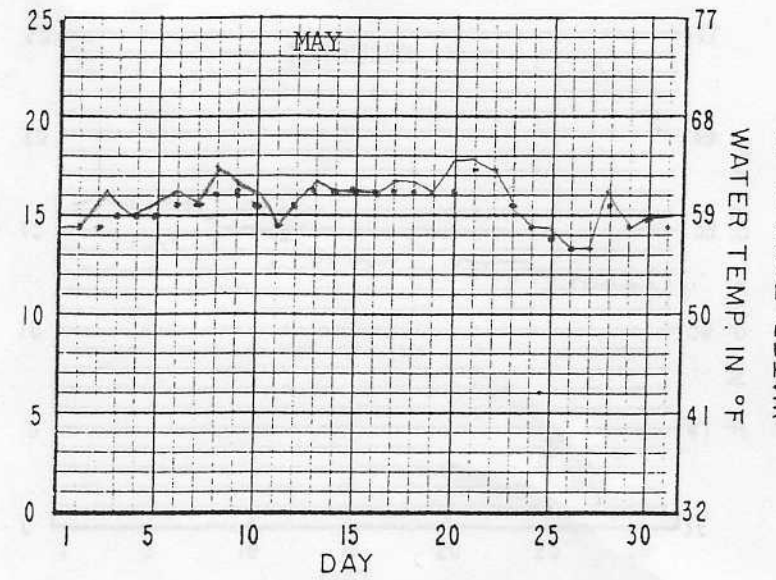
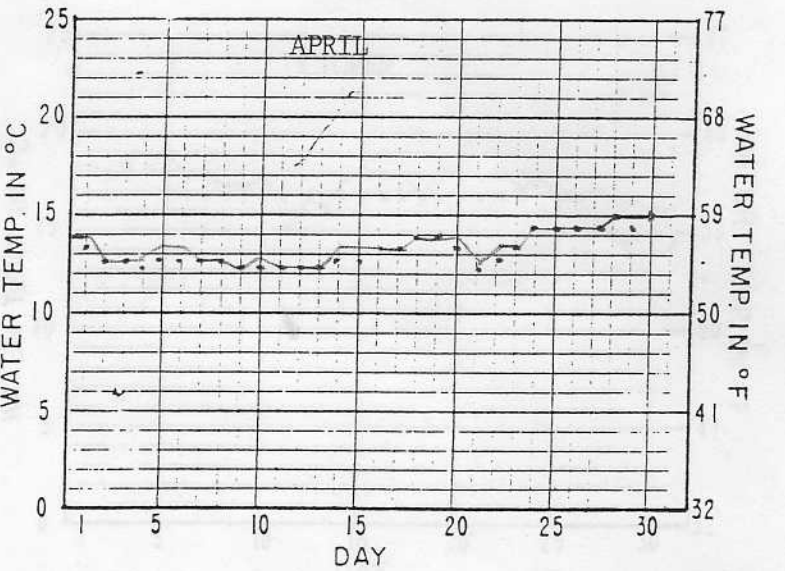
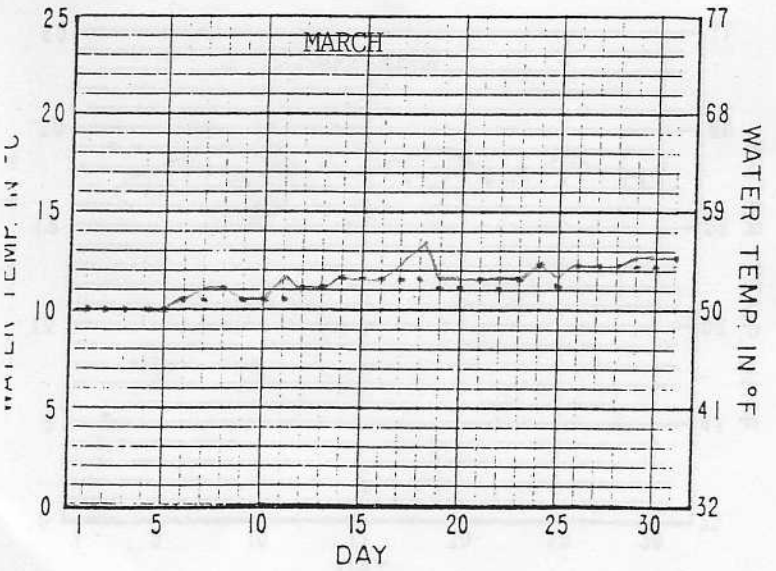
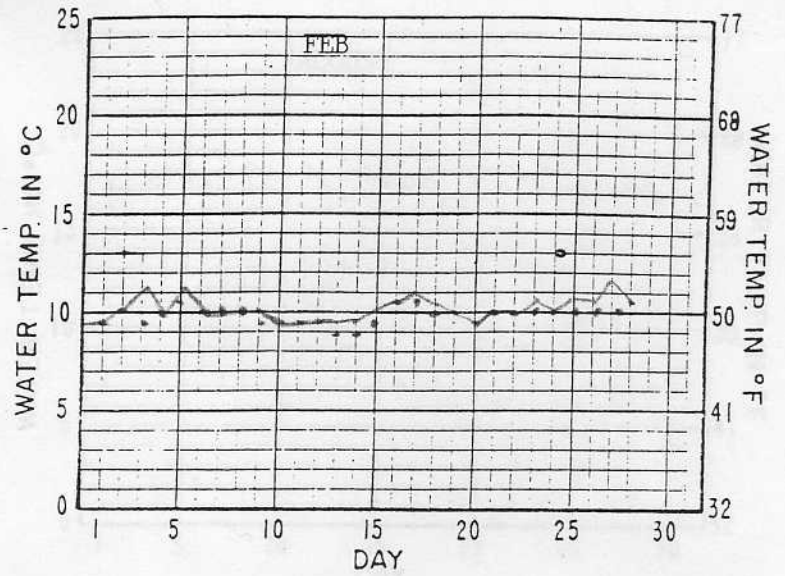
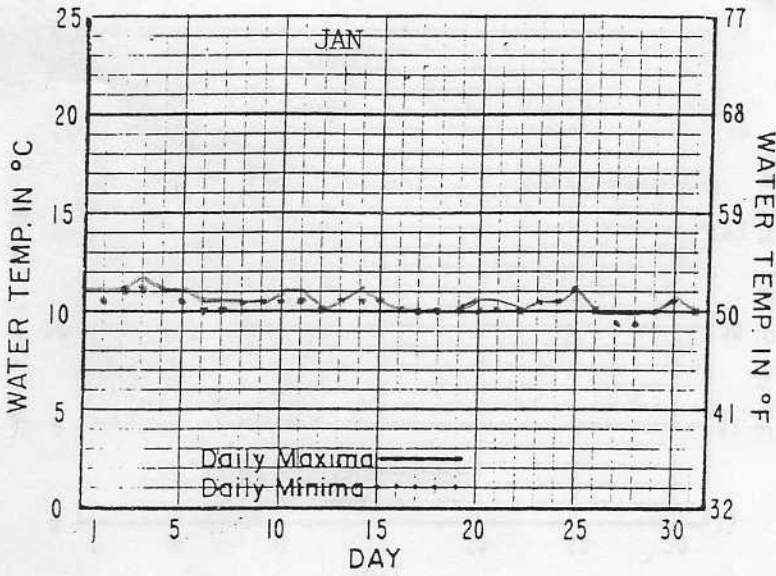
DAILY WATER TEMPERATURES BY MONTH

2000



DAILY WATER TEMPERATURES BY MONTH

2001



ANNUAL REPORT
NIMBUS SALMON AND STEELHEAD HATCHERY 2000-01

by

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Region 2, Inland Fisheries

ABSTRACT

This report describes the operation of Nimbus Salmon and Steelhead Hatchery from July 1, 2000 through June 30, 20001. Tables represent numbers of fish trapped, eggs taken, fish reared and released, and water temperatures. There were 11,160 chinook salmon, Oncorhynchus tshawytscha, trapped, which produced 12,561,539 eggs. There were 2,894 winter-run steelhead, O. mykiss, trapped, from which 2,043,545 eggs were taken.

During the year hatchery personnel planted, 101,856 advanced fingerling, 4,273,950 fingerling, chinook salmon, 467,023 yearling steelhead trout and 133,114 BY 2001 steelhead fingerling trout.

INTRODUCTION

This is the 46th 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 2000-2001, with particular reference to numbers of fish trapped, spawned, and released, eggs taken and fish produced, and other pertinent information.

PRODUCTION SUMMARY

During 2000-2001, hatchery personnel took 14,605,084 eggs and planted 4,975,943 chinook salmon and steelhead trout (Table 1).

Table 1. Production Summary, Nimbus Salmon and Steelhead Hatchery, 1999-2000

Species	Eggs Taken or Received	Eggs or Fish Transferred	Fingerlings Planted	Advanced Fingerlings or Yearlings Planted	Total Weight Planted (lb)
CHIN					
1999 BY	0	0	0	0	0
2000 BY	12,561,539	0	4,273,950	101,856	61,050
SH					
2000 BY	0	0	0	467,023	147,500
2001 BY	2,043,545	0	133,114	0	3,102

HATCHERY OPERATIONS

The weir was installed September 19, 2000, by the Bureau of Reclamation. The weir pickets were lowered and capped on September 13, 2000. The lower gate in the ladder was removed and the holding pond was opened November 06, 2000. Water temperature was 60 degrees F. The ladder was closed April 04, 2001.

Water Temperature Control

Shutters on units 1&2 were raised on November 01, Water temperature at the Nimbus Fish Hatchery on November 03, 2000 was 60 degrees F.

Disposal of Salmon Carcasses

Edible salmon carcasses were given to State and County institutions, community action groups, or councils representing local Indians. All inedible carcasses went to a local rendering plant. The total dispensed was 117,940 lbs edible and 59,900 lbs inedible.

Public Relations

An estimated 861,474 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. November was the peak month, with an estimated 140,146 visitors.

CHINOOK SALMON MAINTENANCE PROGRAM

Chinook Salmon Counts

The fish ladder was opened November 06, 2000 and the first spawning took place on November 07, 2000. A total of 11,160 salmon entered the holding pond this season, including 6,211 males, 4,108 females and 841 grilse. Grilse were fish 60 cm (23.6 inches) fork length or smaller (Appendix Table 1). A total of 1,793 carcasses were removed from the weir: 312 males, 436 females and 1,045 grilse.

Sorting and Spawning

Of the females counted, 3,043 were spawned, 997 died in the ponds. The spawning season, which began November 07, 2000 and ended December 28, 2000 produced a total of 12,561,539 eggs, for an average of 4,128 eggs per female. Fertility, determined by the difference between green eggs taken and the total eggs eyed, ranged from 33% to 100%, with an average of 82%.

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 not used in the spawning population.** (see Appendix Table 2 for tag recovery results).

Chinook Salmon Planting

1999 Brood Year

There were not any 99 **BY** Chinook salmon on hand July 1, 2000

2000 Brood Year

We released 101,856 advanced fingerlings and 4,273,950 fingerlings (Table 2). A total of 603,505 Chinook fingerlings were released with coded-wire tags into S.F. Bay. We did not transfer any eggs or fingerlings to Mokelumne River Hatchery.

Table 2. Planting Data for 1998 Brood Year Chinook Salmon

Month	Release Site	Fingerlings	Advanced Fingerlings	Average size/lb	Weight (lb)
<u>1999 BY</u>		0	0	0	0
<u>2000 BY</u>					
May	Folsom Lake		101,856	48	2,122
	Avila Beach	142,200	0	80	1,800
	Wickland Net Pen. (cwt)	1,510,950	0	70.9	21,305
June	Wickland (cwt)	162,000		81	2000
	Wickland Net Pen. (cwt)	2,458,800	0	73.1	33,823
Total		4,273,950	101,856		61,050

WINTER-RUN STEELHEAD MAINTENANCE PROGRAM

History of the 2001 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 64 fish were unmarked and all other fish were adipose clipped.

Table 3. Counts of Winter-Run Steelhead, Nimbus Salmon and Steelhead Hatchery, 2000-2001.

Date	Spawned and Released		Pre-spawning Mortality		Released Unspawned		Total Un *
	Males	Females	Males	Females	Males	Females	
Nov10	0	0	0	0	3	6	9
Nov 16	0	0	0	0	8	5	13
Nov 23	0	0	0	0	14	12	26
Nov 30	0	0	0	0	14	12	26
Dec 08	1	1	0	0	70	40	112
Dec 15	2	2	0	0	137	101	242
Dec 22	17	17	0	0	342	250	626
Dec 29	39	39	2	3	95	136	318
Jan 03	37	37	2	6	58	96	236
Jan 10	50	50	0	0	91	119	310
Jan 17	39	42	2	3	38	70	194
Jan 24	48	48	0	0	16	51	163
Jan 31	49	49	0	0	10	46	154
Feb 07	39	39	0	0	17	11	106
Feb14	27	27	0	0	47	39	140
Feb21	32	32	2	0	5	6	77
Feb28	23	23	0	0	4	7	57
Mar07	7	7	0	0	9	7	30
Mar14	8	8	0	0	3	0	19
Mar21	1	1	0	0	5	4	11
Mar28	1	1	0	0	6	1	9
Apr04	0	0	0	0	0	0	0
Total	430	431	8	12	1412	1465	2877

Spawning Data 2001 Brood Year

The 431 females spawned produced 2,043,545 eggs, for an average of 4,741 eggs per female. Survival of green eggs to eyed eggs ranged from 67% to 93%, with an average of 83%.

Winter-run Steelhead Planted

2000 Brood Year

Table 4. Planting and Transfer Data, 2000 and 2001 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	Tracy Fish Facility	0	1,023	3.3	310
Jan	Garcia Bend	0	240,750	3.4	70,690
Feb	Garcia Bend	0	193,250	3.24	59,500
Mar	Garcia Bend	0	32,000	1.8	17,000
Jun	Garcia Bend	133,114	0	42.9	3,102

2001 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. From June 20th through June 28th 2001 133,114 BY 2001 Steelhead were planted at Garcia Bend of predicted high water temperatures over 70 degrees through out the summer months. On June 30, 2001, approximately 315,000 2001 BY American River steelhead fingerlings were on hand. Approximately 300,000 of these will be released as yearlings in January and February of 2001. There were not any eyed eggs transferred to Mokelumne River Hatchery, and all of BY 2001 Steelhead were adipose fin clipped before planting.

Steelhead Disease Information

2001 Brood Year

Minor outbreaks of Columnaris, Ich and Costia were controlled using Formaldehyde flushes, 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, 2000-2001.

Week	Year	Chinook Salmon		Steelhead Trout		Half-pounds
		Adults	Grilse	Males	Females	
Nov 05- 11	2000	2419	239	3	6	0
Nov 12-18	2000	2571	234	8	5	0
Nov 19-25	2000	1242	95	14	12	0
Nov 26-Dec 02	2000	1072	130	14	12	0
Dec 03-09	2000	670	22	71	41	0
Dec 10-16	2000	914	50	139	103	2
Dec17-23	2000	1302	55	359	267	3
Dec24-30	2000	129	16	129	189	1
Dec 31-Jan 06	2001	0	0	97	139	0
Jan 07- 13	2001	0	0	141	169	1
Jan 14- 20	2001	0	0	79	115	0
Jan 21-27	2001	0	0	64	99	0
Jan 28-Feb 03	2001	0	0	59	95	0
Feb04-10	2001	0	0	56	50	0
Feb 11-17	2001	0	0	74	66	0
Feb 18-24	2001	0	0	39	38	10
Feb 25-Mar 03	2001	0	0	27	30	0
Mar 04-10	2001	0	0	16	14	0
Mar 11-17	2001	0	0	11	8	0
Mar 18-24	2001	0	0	6	5	0
Mar 25-31	2001	0	0	7	2	0
Mar 01-04	2001	0	0	0	0	0
Total		10,319	841	1412	1465	17

Half Pounds = < 22 in.

Appendix Table 2.

Chinook Salmon Coded-Wire Tag Recoveries.
Preliminary Data, Nimbus Hatchery, 2000-01

CWT	Number Recovered	Brood Year	Hatchery of Origin	Release Site
0501020802	1	1998	Feather	Georgiana Slough
052308	4	1998	Coleman	Georgiana Slough
052310	1	1998	Coleman	Coleman

052312	4	1998	Coleman	Georgiana Slough
052320	7	1998	Coleman	Ryde
052321	10	1998	Coleman	Ryde
052322	12	1998	Colman	Port Chicago
052325	1	1998	Feather	West Sacramento
055049	5	1997	Coleman	Georgiana Slough
055060	1	1997	Coleman	Ryde
055061	2	1997	Coleman	Port Chicago
055062	2	1997	Coleman	Ryde
055131	1	1999	Coleman	Georgiana Slough
055132	1	1999	Coleman	Ryde
055134	4	1999	Coleman	Port Chicago
0601060214	1	1996	Feather	Miller Park
0601060509	1	1997	Feather	West Sacramento
0601110707	1	1997	Merced	Mouth Tuolumne
0601110809	1	1997	Merced	Mossdale
0601110815	3	1998	Merced	Jersey Point
0601130115	3	1997	Mokelumne	WoodBridge
060215	11	1999	Mokelumne	Crockett
060233	1	1997	Mokelumne	New Hope Landing
060235	1	1997	Mokelumne	Jersey Point
060238	6	1997	Mokelumne	New Hope Landing
060239	3	1997	Mokelumne	New Hope Landing
060240	31	1997	Mokelumne	Carquinez Strait
060241	16	1997	Mokelumne	Carquinez Strait
060247	9	1998	Mokelumne	Sherman Inland
060248	8	1998	Mokelumne	Sherman Inland
060249	1	1997	Mokelumne	Carquinez Strait
062547	1	1996	Merced	Jersey Point
062549	1	1996	Merced	Jersey Point
062631	1	1998	Feather	Crockett
062634	2	1998	Feather	Crockett
062645	1	1998	Merced	Dos Reis Rd
062647	1	1998	merced	Dos Reis Rd
062939	12	1998	Nimbus	Tiburon Net Pens
064532	1	1998	Merced	Hatfeild State Area
06912	1	1996	Mokelumne	Jersey Point
06913	1	1996	Mokelumne	Jersey Point
064916	5	1998	Mokelumne	New Hope Landing
064917	3	1998	Mokelumne	New Hope Landing

064918	1	1998	Mokelumne	New Hope Landing
064920	5	1998	Mokelumne	Sherman Inland
064921	6	1998	Mokelumne	Sherman Inland
064922	9	1998	Mokelumne	Sherman Inland
064923	5	1998	Mokelumne	Sherman Inland
062932	12	1998	Nimbus	Tiburon Net Pens
100000	9	2000	No Tag Found	
200000	1	2000	Tag Lost	
Total:	231			

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	2,937	2,178	1,324	2,257
1996-97	3,520	3,777	505	1,353
1997-98	3,253	2,566	323	649
1998-99	4,602	4,297	1,679	1,480
1999-2000	3,923	2,280	3,557	1,656
2000-2001	6,211	4,108	841	2,894

* Included in adult male