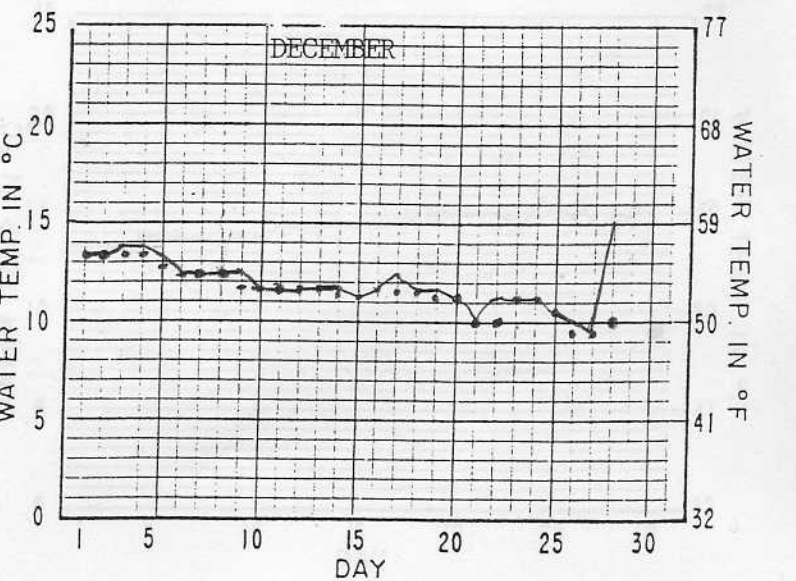
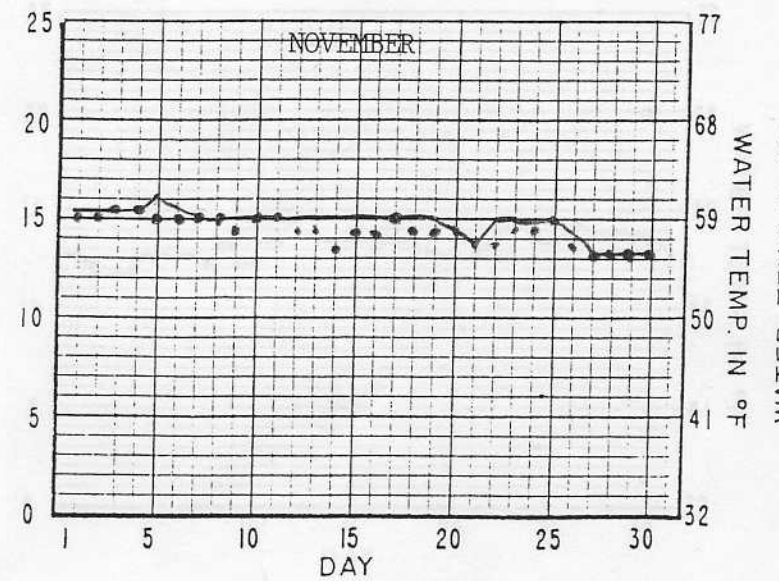
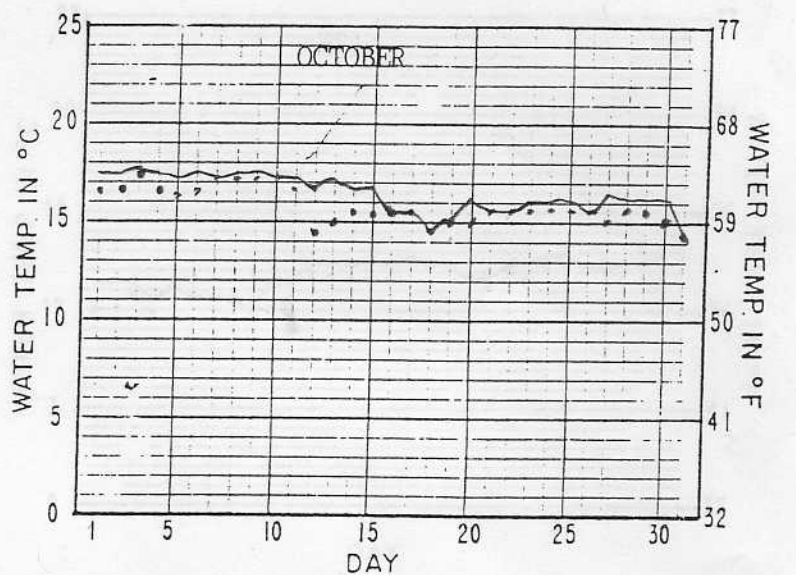
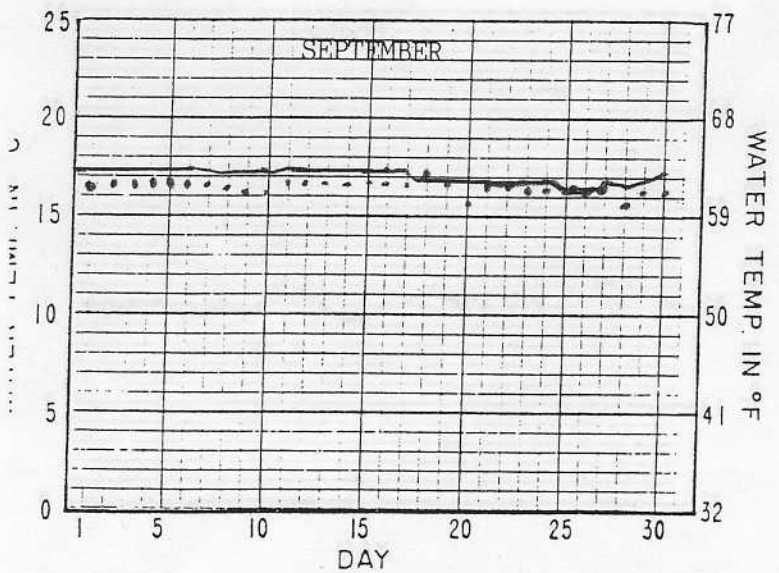
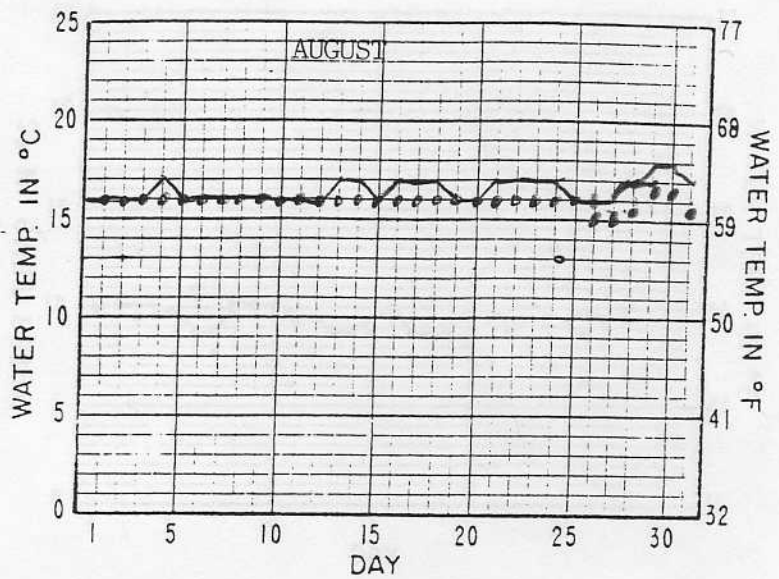
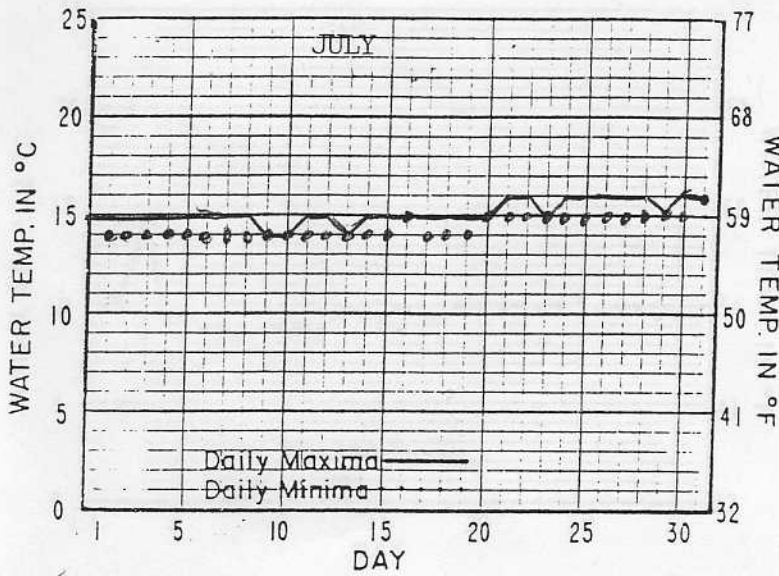


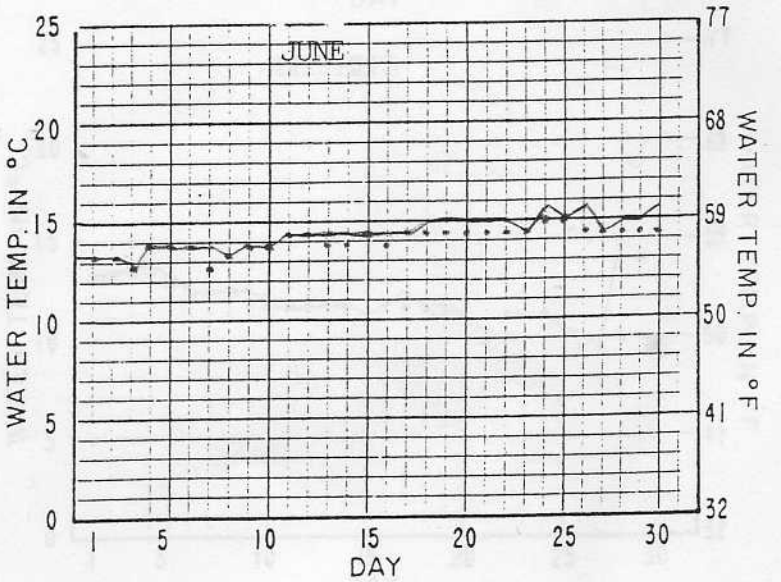
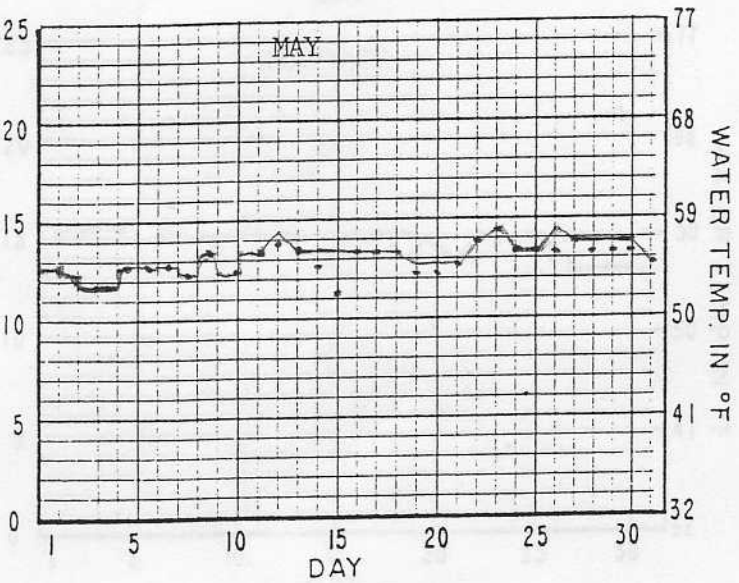
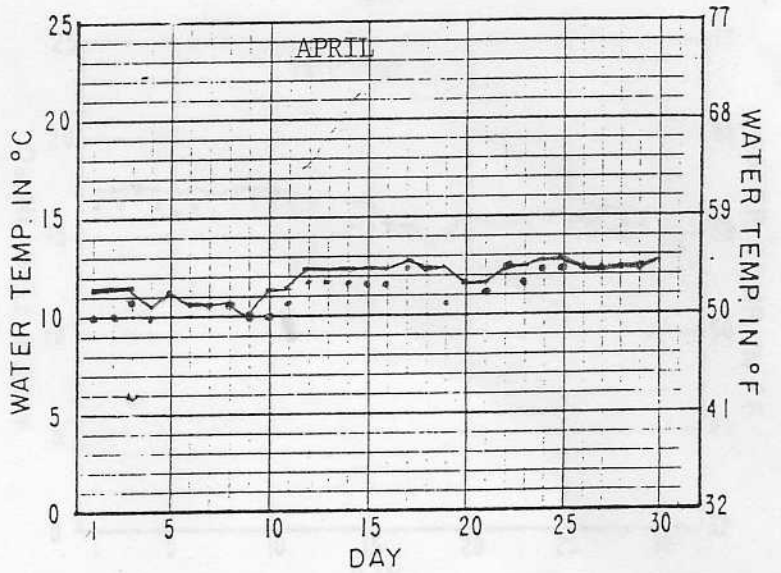
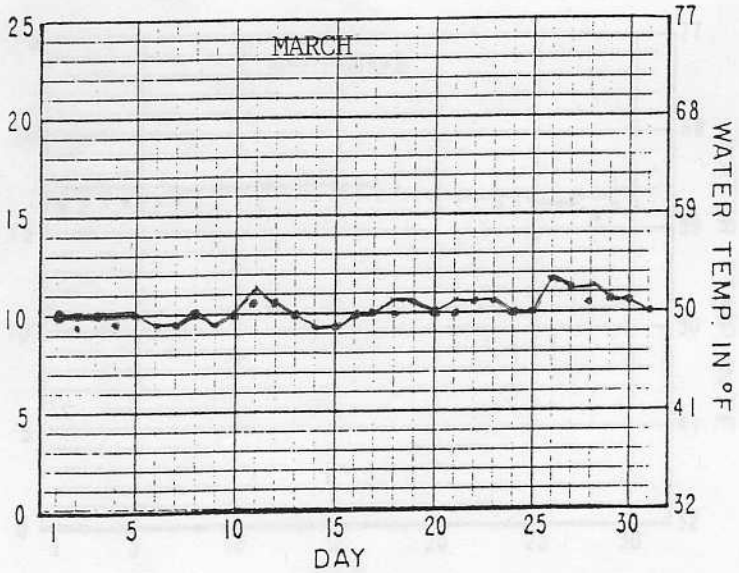
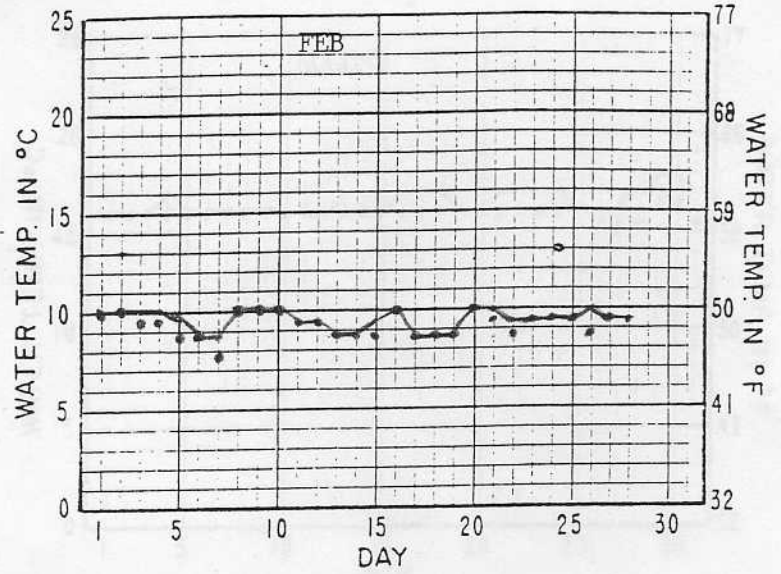
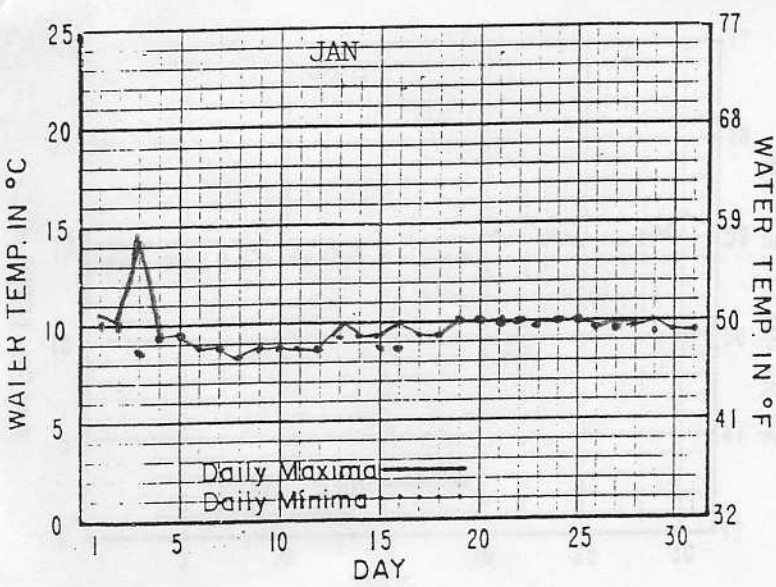
DAILY WATER TEMPERATURES BY MONTH

1998



DAILY WATER TEMPERATURES BY MONTH

1999



ANNUAL REPORT
NIMBUS SALMON AND STEELHEAD HATCHERY 1998-99

by

Terrance L. West
Region 2, Inland Fisheries

ABSTRACT

This report describes the operation of Nimbus Salmon and Steelhead Hatchery from July 1, 1998 through June 30, 1999. Tables represent numbers of fish trapped, eggs taken, fish reared and released, and water temperatures. There were 11,794 chinook salmon, Oncorhynchus tshawytscha, trapped, which produced 12,055,059 eggs. There were 1,409 winter-run steelhead, O. mykiss, trapped, from which 2,080,534 eggs were taken.

During the year hatchery personnel planted or transferred a total of 873,150 fingerlings and 4,598,208 advanced fingerling chinook salmon, 125,761 fingerlings and 400,060 yearling steelhead trout.

INTRODUCTION

This is the 44th 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 1998-99, with particular reference to numbers of fish trapped, spawned, and released, eggs taken and fish produced, and other pertinent information.

PRODUCTION SUMMARY

During 1998-99, hatchery personnel took 14,135,593 eggs and planted or transferred 6,074,054 chinook salmon and steelhead trout (Table 1).

Table 1. Production Summary, Nimbus Salmon and Steelhead Hatchery, 1998-99

Species	Eggs Taken or Received	Eggs or Fish Transferred	Fingerlings Planted	Advanced Fingerlings or Yearlings Planted	Total Weight Planted (lb)
CHIN					
1997 BY	0	0	0	0	0
1998 BY	12,055,059	1,003,096	672,470	4,598,208	99,421
SH					
1998 BY		36,975	39,900	400,060	125,985
1999 BY	2,080,534	125,761	0	0	441

HATCHERY OPERATIONS

The weir was installed September 09, 1998, by the Bureau of Reclamation. The weir pickets were lowered and capped on September 10, 1998. The lower gate in the ladder was removed and the holding pond was opened October 15, 1998. Water temperature was 60 degrees F. The ladder was closed March 25, 1999.

Water Temperature Control

Shutters on units 1&2 were raised on October 12, and Water temperature at the Nimbus Fish Hatchery on October 16, 1998 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 84,400 lbs edible and 19,200 lbs inedible.

Public Relations

An estimated 1,188,352 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 was the peak month, with an estimated 342,354 visitors.

CHINOOK SALMON MAINTENANCE PROGRAM

Chinook Salmon Counts

The fish ladder was opened October 15, 1998 and the first spawning took place on October 16, 1998. A total of 11,794 salmon entered the holding pond this season, including 4,980 males, 4,961 females and 1,853 grilse. Grilse were fish 60 cm (23.6 inches) fork length or smaller (Appendix Table 1). A total of 9,988 carcasses were removed from the weir: 3,315 males, 4,533 females and 2,140 grilse.

Sorting and Spawning

Of the females counted, 2,701 Adults and 849 Jills were spawned, 2,260 died in the ponds. The spawning season, which began October 16, 1998 and ended December 18, 1998 produced a total of 12,055,059 eggs, for an average of 3,396 eggs per female. Fertility, determined by the difference between green eggs taken and the total eggs eyed, ranged from 14% to 99%, with an average of 66.4% and **none of the adipose adult Chinooks were used in spawning.**

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 (see Appendix Table 2 for tag recovery results).

Chinook Salmon Planting

1997 Brood Year

There were not any 97 **BY** Chinook salmon on hand July 1, 1997

1998 Brood Year

We released 5,270,678 fingerlings and advanced fingerlings (Table 2). None of the fish released were coded-wire tagged. We also transferred 200,680 fingerlings, 717,040 eyed eggs to Mokelumne River Hatchery and 85,376 eyed eggs to Silverado Fisheries Base.

Table 2. Planting Data for 1997 Brood Year Chinook Salmon

Month	Release Site	Fingerlings	Advanced Fingerlings	Average size/lb	Weight (lb)
<u>1997 BY</u>		0	0	0	0
<u>1998 BY</u>					
April	Coon Creek	118,400	0	370	320
	Dry Creek	321,720	0	196.77	1635
	Auburn Ravine	100,750	0	130	775
May	Monterey Bay	61,600	0	77	800
	Monterey Bay		60,200	43	1,400
	Benicia		120,000	50	2,400
	Wickland Oil		896,900	54	14,500
June	Avila Beach	70,000	0	70	1,000
	Tiberon		52,008	33	1,576
	SF.Bay		217,500	43.5	5,000
	Benicia		509,208	60	8,493.3
	Wickland Oil		2,741,792	54	50,774
	Wickland Oil Net Pens				
Total		672,470	4,598,208		

WINTER-RUN STEELHEAD MAINTENANCE PROGRAM

History of the 1999 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. No marked fish were seen.

Table 3. Counts of Winter-Run Steelhead, Nimbus Salmon and Steelhead Hatchery, 1998-99.

Date	Spawned and Released		Pre-spawning Mortality		Released Unspawned		Total
	Males	Females	Males	Females	Males	Females	
Dec 06	0	0	0	0	45	33	78
Dec 15	5	5	4	1	69	44	128
Dec 23	19	14	8	4	23	34	102
Dec 30	43	34	6	4	0	2	87
Jan 06	24	23	2	0	0	2	51
Jan 13	39	36	1	0	0	0	76
Jan 20	87	82	0	0	0	0	169
Jan 27	124	116	0	0	0	0	240
Feb 03	17	17	0	0	0	0	34
Feb 10	21	21	2	0	38	27	109
Feb 17	20	19	0	0	16	7	62
Feb 24	10	10	0	0	25	0	45
Mar 03	3	3	0	0	24	17	47
Mar 10	5	5	2	1	15	14	42
Mar 17	2	2	2	2	5	3	16
Mar 24	2	2	0	0	3	1	8
Total	421	389	27	10	263	184	1294

Spawning Data 1999 Brood Year

The 389 females spawned produced 2,080,534 eggs, for an average of 5,348 eggs per female. Survival of green eggs to eyed eggs ranged from 23% to 99%, with an average of 96%.

Winter-run Steelhead Planted

1998 Brood Year

Table 4. Planting and Transfer Data, 1998 Brood Year Winter-run Steelhead, Nimbus Salmon and Steelhead Hatchery, 1998-99

<u>Nimbus Steelhead Planted & Transferred</u>					
Month	Release Site	Number of Fingerlings	Number of Yearlings	Average Size/lb	Weight (lb)
July	Tulloch Lake	39,900	0	133.0	300
July	MRH	36,975	0	487.0	425
Jan	Garcia Bend	130,000		3.35	38,800
Jan	Rio Vista		132,870	4.15	32,000
Feb	Garcia Bend		91,410	4.21	21,700
Feb	Rio Vista		45,780	<u>4.36</u>	<u>10,500</u>

1999 Brood Year

No fingerlings were released into the American River at the foot of the ladder; and there were 125,761 fingerlings transferred to Mokelumne River Hatchery. On June 30, 1999, approximately 553,000 99 BY American River steelhead fingerlings were on hand. Approximately 430,000 of these will be released as yearlings in January and February of 2000. There were not any eyed eggs transferred to Mokelumne River Hatchery, and all of BY 1999 Steelhead were adiposed clipped before planting.

Steelhead Disease Information

1998 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, 1998-99.

Week	Year	Chinook Salmon		Steelhead Trout		Half pounders
		Adults	Grilse	Males	Females	
Oct 11-17	1998	542	47	0	0	0
Oct 18-24	1998	228	1	0	0	0
Oct 25-31	1998	1601	68	0	0	0
Nov 1-7	1998	2267	66	0	0	0
Nov 8-14	1998	318	171	0	0	0
Nov 15-21	1998	1766	209	0	0	0
Nov 22-28	1998	2180	641	0	0	0
Nov 29-Dec5	1998	809	366	0	0	0
Dec 6- 12	1998	212	278	45	33	0
Dec 13- 19	1998	18	6	78	50	16
Dec 20- 26	1998	0	0	58	52	5
Dec 27-Jan2	1999	0	0	63	40	6
Jan 3-9	1999	0	0	53	37	5
Jan 10-16	1999	0	0	47	36	9
Jan 17-23	1999	0	0	87	83	17
Jan 24-30	1999	0	0	127	82	4
Jan 31-Feb6	1999	0	0	68	108	2
Feb 7-13	1999	0	0	17	17	4
Feb 14-20	1999	0	0	61	48	3
Feb 21-27	1999	0	0	36	29	0
Feb 28-Mar6	1999	0	0	27	20	3
Mar 7-13	1999	0	0	24	12	35
Mar 14-20	1999	0	0	9	7	6
Mar 21-27	1999	0	0	5	3	0
Total		9941	1853	713	581	115

Half Pounders = < 22 in.

Appendix Table 2.

Chinook Salmon Coded-Wire Tag Recoveries.
Preliminary Data, Nimbus Hatchery, 1998-99

CWT	Number Recovered	Brood Year	Hatchery of Origin	Release Site
060219	52	1995	Mokelumne	Jersey Point
062938	21	1995	Feather	Rodeo
060218	53	1995	Mokelumne	Jersey Point

060216	6	1995	Mokelumne	Thornton
060217	12	1995	Mokelumne	Thornton
060230	6	1996	Mokelumne	Rodeo
060229	34	1995	Mokelumne	Rodeo
060228	34	1995	Mokelumne	Rodeo
062933	11	1994	Feather	Rodeo
060240	2	1997	Mokelumne	Carquinez
062517	1	1993	Feather	Benicia
060208	4	1994	Mokelumne	Crockett
065761	2	1994	Mokelumne	Woodbridge
060231	1	1996	Mokelumne	Rodeo
062937	16	1995	Feather	Rodeo
060211	4	1994	Mokelumne	Thornton
060223	1	1996	Mokelumne	Woodbridge
0601140415	1	1994	Feather	Crockett
0601140506	4	1995	Feather	Benicia
0601060108	4	1995	Feather	Miller Park
06011060103	1	1995	Feather	Feather River
0601140510	1	1995	Feather	Rodeo
0601140507	2	1995	Feather	Robeo
0601140509	2	1995	Feather	Rodeo
0601060113	2	1995	Feather	Jersey Point
0601140501	1	1994	Feather	Stewart Rd
0601110501	8	1995	Merced	Jersey Point
064801	1	1993	Mokelumne	Thornton
064910	2	1996	Mokelumne	Thornton
060209	5	1994	Mokelumne	Croctett
060212	5	1994	Mokelumne	Thornton
062932	4	1994	Feather	Rodeo
062936	1	1995	Feather	Moss Landing
060214	2	1994	Mokelumne	Thornton
064910	1	1996	Mokelumne	Thornton
064912	16	1996	Mokelumne	Jersey Point
064913	18	1996	Mokelumne	Jersey Point
060214	4	1994	Mokelumne	Thornton
060207	2	1994	Mokelumne	Crockett
062935	2	1995	Feather	Monterey Bay
062547	5	1996	Merced	Jersey Point
060213	4	1994	Mokelumne	Thornton
062932	1	1994	Feather	Rodeo
0601140410	2	1994	Feather	Crockett
0601060108	1	1995	Feather	Miller Park

0601140411	1	1994	Feather	Crockett
0601060313	1	1996	Feather	Rodeo
0601060212	1	1996	Feather	Miller Park
0601110313	1	1994	Merced	LaGrange
0601060202	1	1995	Feather	Miller Park
0601060207	1	1996	Feather	Jersey Point
0601060205	1	1995	Feather	Stuart Rd
0601140508	1	1995	Feather	Rodeo
0601110406	1	1994	Merced	Hatfeild state Area
064915	1	1996	Mokelumne	Woodbridge
054229	3	1996	Coleman	Benicia
055061	2	1997	Colman	Port Chicago
055062	2	1997	Colman	Ryde
055060	1	1997	Colman	Ryde
055049	1	1997	Colman	Georgianna Slough
054231	1	1996	Colman	Miller Park
062546	1	1996	Merced	Dos Reis Rd
062519	1	1993	Feather	Benicia
060239	2	1997	Mokelumne	New Hope
060241	2	1997	Mokelumne	Carquinez Straint
060214	1	1994	Mokelumne	Thornton
060221	1	1995	Mokelumne	Thornton
064911	2	1996	Mokelumne	Rodeo
0601140604	1	1995	Feather	Yuba City
0601060214	1	1996	Feather	Miller Park
0601140512	1	1995	Feather	Rodeo
1000000 b/	49	0	0	0
Total	445			

a/Feather 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	4,980	4,961	1,853	1,409

* Included in adult male.