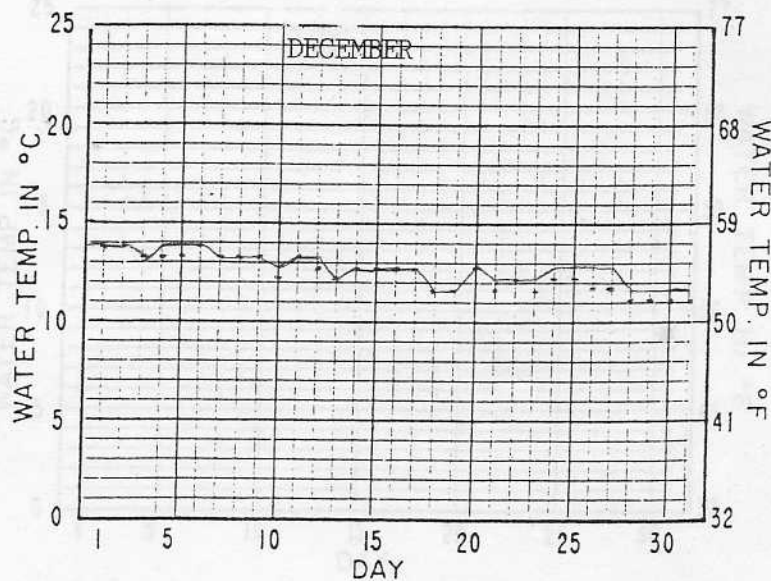
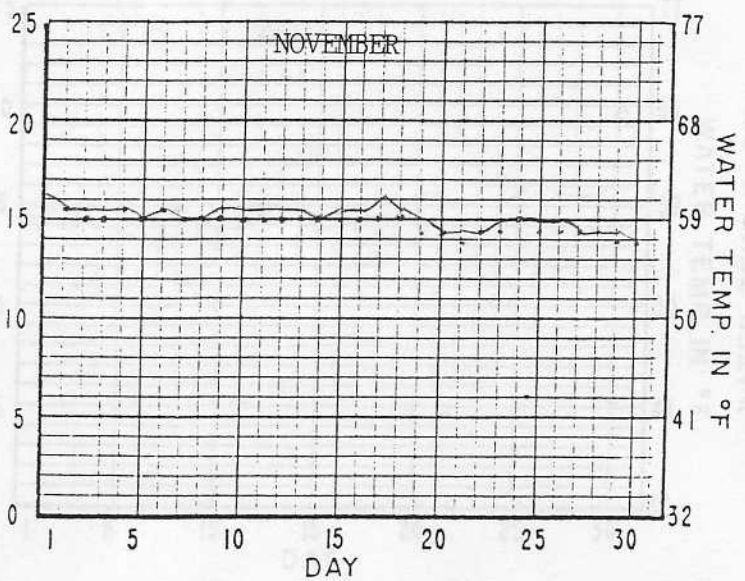
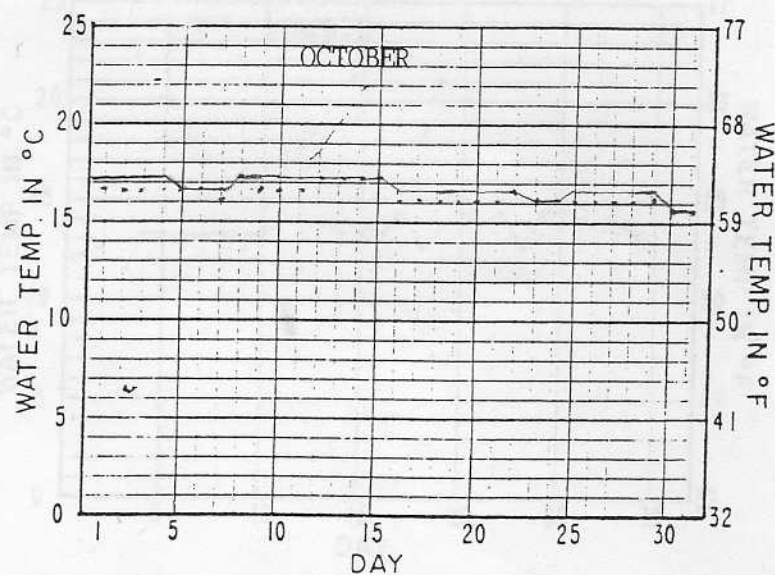
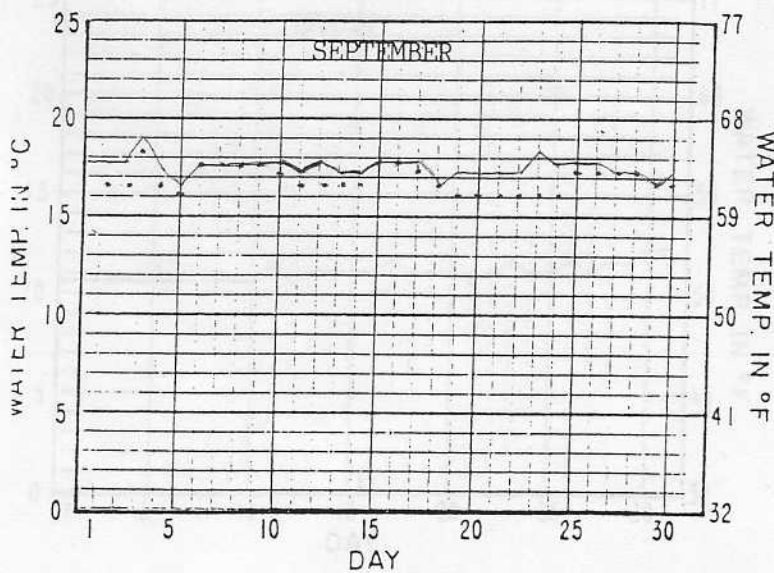
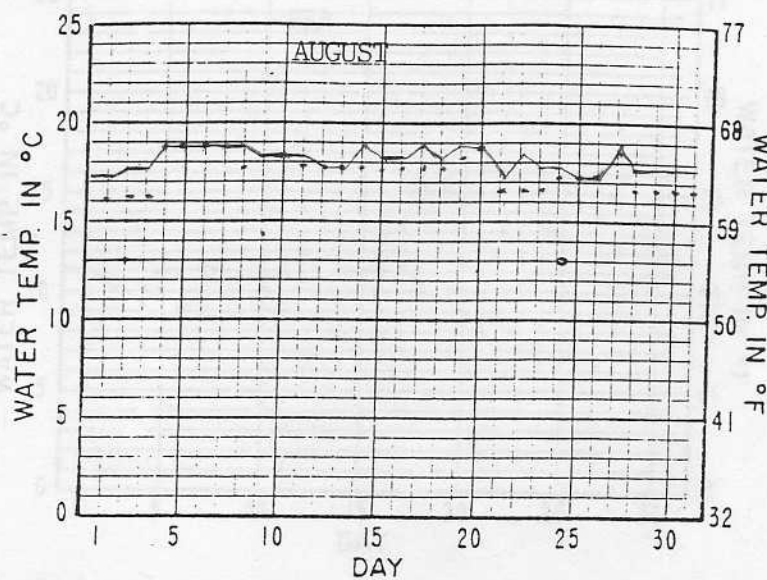
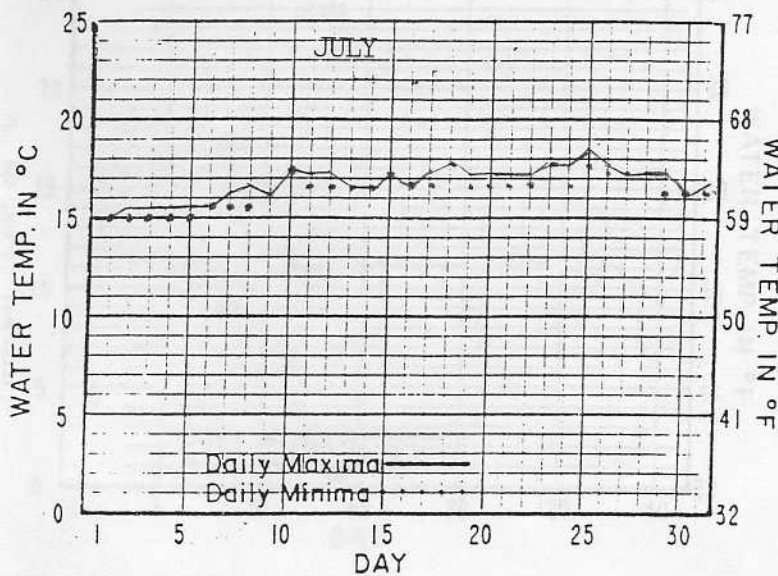
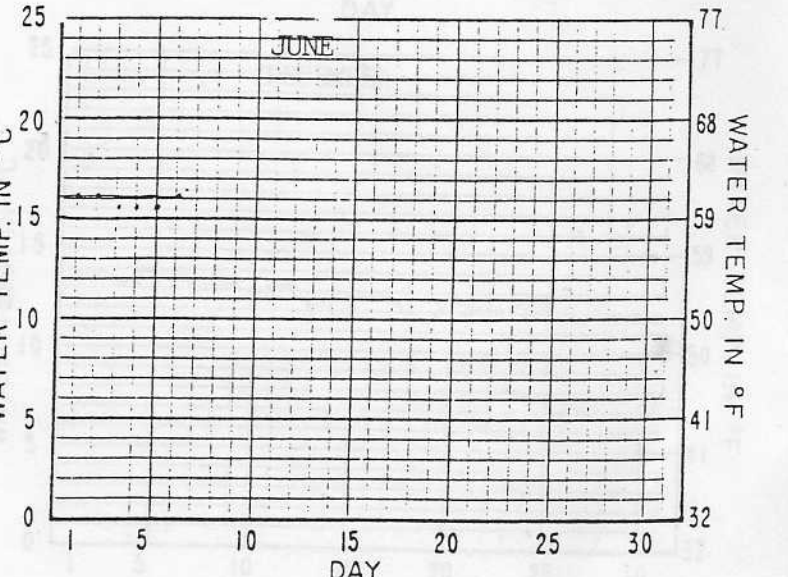
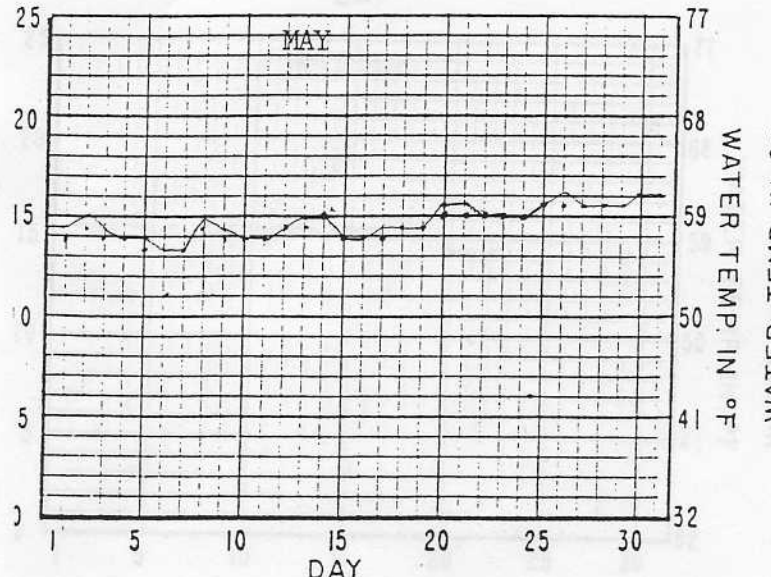
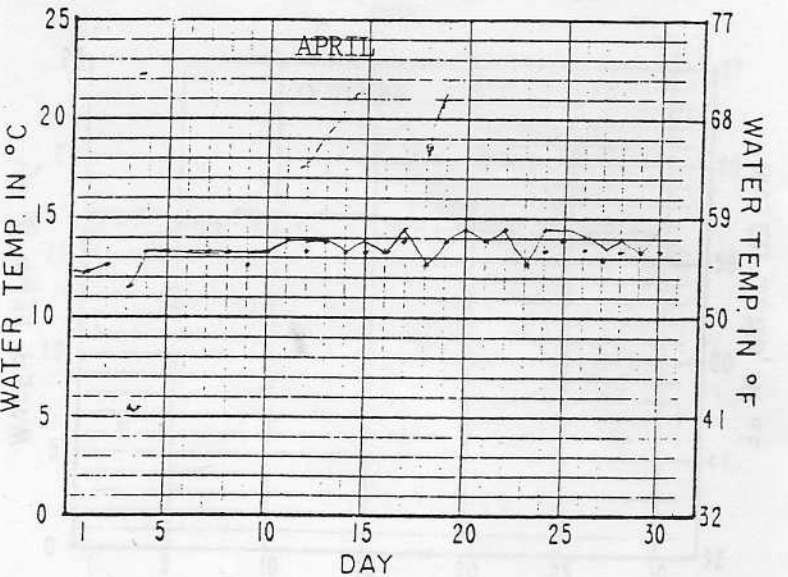
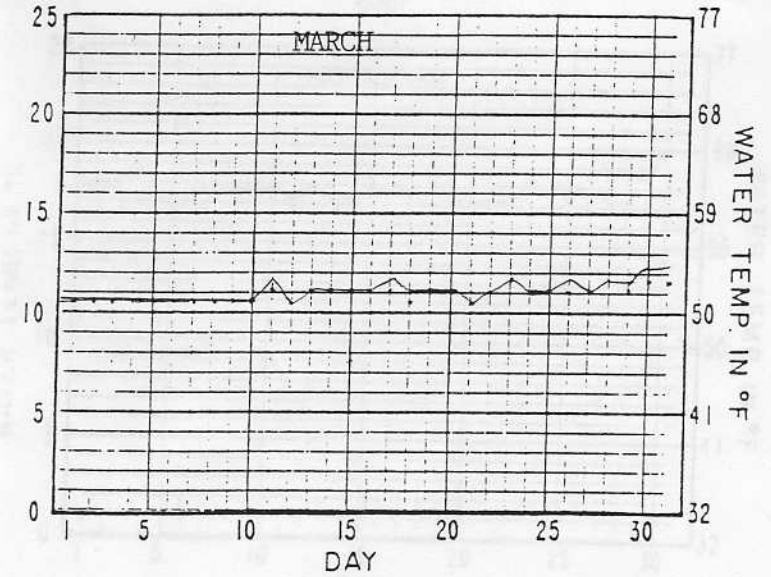
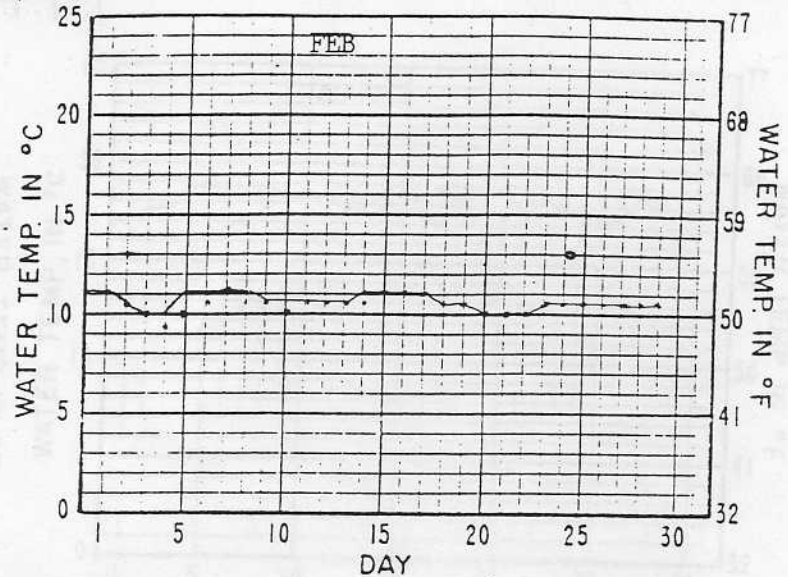
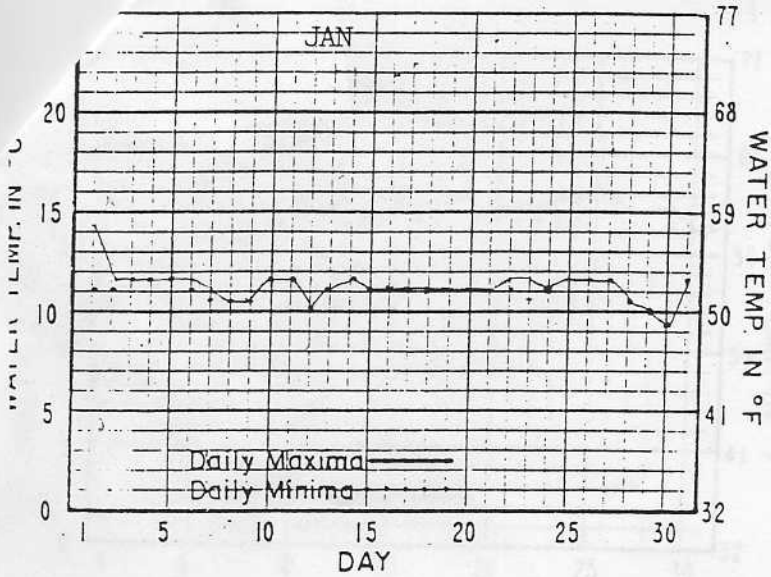


DAILY WATER TEMPERATURES BY MONTH

1999



DAILY WATER TEMPERATURES BY MONTH



ANNUAL REPORT
NIMBUS SALMON AND STEELHEAD HATCHERY 1999-00

by

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ABSTRACT

This report describes the operation of Nimbus Salmon and Steelhead Hatchery from July 1, 1999 through June 30, 2000.. Tables represent numbers of fish trapped, eggs taken, fish reared and released, and water temperatures. There were 9,760 chinook salmon, Oncorhynchus tshawytscha, trapped, which produced 7,874,238 eggs. There were 1,656 winter-run steelhead, O. mykiss, trapped, from which 2,636,954 eggs were taken.

During the year hatchery personnel planted or transferred a total of 384,137 eyed Salmon and Steelhead eggs and 3,851,700 advanced fingerling chinook salmon, and 402,300 yearling steelhead trout.

INTRODUCTION

This is the 45th 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 1999-2000, with particular reference to numbers of fish trapped, spawned, and released, eggs taken and fish produced, and other pertinent information.

PRODUCTION SUMMARY

During 1999-2000, hatchery personnel took 10,511,192 eggs and planted or transferred 4,254,000 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					
1998 BY	0	0	0	0	0
1999 BY	7,874,238	259,170	0	3,851,700	69,200
SH					
1999 BY	0	0	0	402,300	116,650
2000 BY	2,636,954	124,967	0	0	0

HATCHERY OPERATIONS

The weir was installed September 18, 1999, by the Bureau of Reclamation. The weir pickets were lowered and capped on September 19, 1999. The lower gate in the ladder was removed and the holding pond was opened November 02, 1999. Water temperature was 60 degrees F. The ladder was closed April 05, 2000.

Water Temperature Control

Shutters on units 1&3 were raised on October 28, and 30th, Water temperature at the Nimbus Fish Hatchery on November 01, 1999 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 52,200 lbs edible and 30,500 lbs inedible.

Public Relations

An estimated 840,304 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 130,800 visitors.

CHINOOK SALMON MAINTENANCE PROGRAM

Chinook Salmon Counts

The fish ladder was opened November 02, 1999 and the first spawning took place on November 03, 1999. A total of 9,760 salmon entered the holding pond this season, including 3923 males, 2280 females and 3,557 grilse. Grilse were fish 60 cm (23.6 inches) fork length or smaller (Appendix Table 1). A total of 5,878 carcasses were removed from the weir: 1,958 males, 1,930 females and 1,990 grilse.

Sorting and Spawning

Of the females counted, 1,787 were spawned, 619 died in the ponds. The spawning season, which began November 03, 1999 and ended December 16, 1999 produced a total of 7,874,238 eggs, for an average of 4,406 eggs per female. Fertility, determined by the difference between green eggs taken and the total eggs eyed, ranged from 28% to 100%, 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 not used in the spawning population. (see Appendix Table 2 for tag recovery results).

Chinook Salmon Planting

1998 Brood Year

There were not any 98 **BY** Chinook salmon on hand July 1, 1999

1999 Brood Year

We released 3,851,700 advanced fingerlings (Table 2). None of the fish released were coded-wire tagged. We did not transferred any 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>1998 BY</u>		0	0	0	0
<u>1999 BY</u>					
May	Benicia		356,200	53.9	6,600
	Wickland		129,600	54.0	2,400
	Wickland Net Pen		1,605,900	52.6	30,500
June	Wickland	0	144,000	60	2,400
	Wickland Net Pen		1,616,000	59.1	27,300
Total		0	3,851,700		69,200

WINTER-RUN STEELHEAD MAINTENANCE PROGRAM

History of the 2000 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, 1999-2000.

Date	Spawned and Released		Pre-spawning Mortality		Released Unspawned		Total
	Males	Females	Males	Females	Males	Females	
Dec 13	5	4	0	2	0	0	72
Dec 22	3	2	0	0	0	0	42
Dec 29	4	4	4	0	0	0	58
Jan 05	16	13	2	1	2	2	29
Jan 12	83	48	2	5	0	0	98
Jan 19	86	55	0	2	0	0	81
Jan 26	84	66	0	1	0	0	203
Jan 27	23	23	1	2	0	0	NA
Feb 02	37	37	1	0	0	0	123
Feb 09	62	61	1	1	50	42	205
Feb 16	34	34	1	0	0	0	173
Feb 23	42	42	0	0	0	0	142
Mar 01	20	20	0	0	0	0	85
Mar 08	27	25	0	0	0	0	100
Mar 15	7	7	2	0	0	0	57
Mar 22	8	8	0	0	0	0	25
Mar 29	9	6	0	0	0	0	15
Apr 05	0	0	0	0	2	0	2

Spawning Data 2000 Brood Year

The 544 females spawned produced 2,636,954 eggs, for an average of 4,847 eggs per female. Survival of green eggs to eyed eggs ranged from 39% to 100%, with an average of 84%.

Winter-run Steelhead Planted

1999 Brood Year

Table 4. Planting and Transfer Data, 1999 Brood Year Winter-run Steelhead, Nimbus Salmon and Steelhead Hatchery, 1999-2000

<u>Nimbus Steelhead Planted & Transferred</u>					
Month	Release Site	Number of Fingerlings	Number of Yearlings	Average Size/lb	Weight (lb)
Jan	Garcia Bend	0	212,710	3.33	63,700
Jan	Rio Vista	0	61,700	3.62	17,000
Feb	Garcia Bend	0	127,890	3.55	127,890
<u>2000 Brood Year</u>					

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, 2000, approximately 598,000 2000 BY American River steelhead fingerlings were on hand. Approximately 430,000 of these will be released as yearlings in January and February of 2001. There were 124,967 eyed eggs transferred to Mokelumne River Hatchery, and all of BY 2000 Steelhead are to be adiposed clipped before planting.

Steelhead Disease Information

2000 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, 1999-2000.

Week	Year	Chinook Salmon		Steelhead Trout		Half-pounds
		Adults	Grilse	Males	Females	
Oct 31-Nov 6	1999	794	519	0	0	0
Nov 07-13	1999	1244	826	0	0	0
Nov 14-20	1999	1634	550	0	0	0
Nov 21-27	1999	878	845	0	0	0
Nov 28-Dec 04	1999	1351	521	0	0	0
Dec 05-11	1999	232	235	0	0	0
Dec 12-18	1999	70	12	43	27	0
Dec 19-25	1999	0	0	24	18	0
Dec 26 Jan 01	2000	0	0	33	25	2
Jan 02- 08	2000	0	0	16	13	0
Jan 09- 15	2000	0	0	58	40	0
Jan 16-22	2000	0	0	35	46	4
Jan 23-29	2000	0	0	94	109	7
Jan 30 Feb 05	2000	0	0	64	59	1
Feb 06-12	2000	0	0	112	93	43
Feb 13-19	2000	0	0	103	70	67
Feb 20-26	2000	0	0	72	70	9
Feb 27 Mar 04	2000	0	0	41	44	3
Mar 05-11	2000	0	0	57	43	0
Mar 12-18	2000	0	0	36	21	4
Mar 19-24	2000	0	0	14	11	5
Mar 25 Apr 01	2000	0	0	9	6	5
Mar 02-08	2000	0	0	2	0	0
Total		3923	2280	813	695	148

Half Pounds = < 22 in.

Appendix Table 2.

Chinook Salmon Coded-Wire Tag Recoveries.
Preliminary Data, Nimbus Hatchery, 1999-2000

CWT	Number Recovered	Brood Year	Hatchery of Origin	Release Site
052320	4	1998	Coleman	Ryde
052321	1	1998	Coleman	Ryde
052322	3	1998	Coleman	Port Chicago
054229	8	1996	Coleman	Benecia
054230	2	1996	Coleman	Miller Park
054231	1	1996	Coleman	Miller Park
055049	27	1997	Coleman	Georgianna Slough
055050	2	1997	Coleman	Georgianna Slough
055060	11	1997	Coleman	Ryde
055061	21	1997	Coleman	Port Chicago
055062	40	1997	Coleman	Ryde

0601060212	1	1996	Feather River	Miller Park
0601060214	1	1996	Feather River	Miller Park
0601060314	1	1996	Feather River	San Francisco Maj Pt
0601060315	1	1996	Feather River	San Francisco Maj Pt
0601110602	1	1996	Merced	Hatfield state Area
0601130115	1	1997	Mokelumne	Woodbridge
0601130201	1	1997	Mokelumne	Woodbridge
0601130202	2	1997	Mokelumne	Woodbridge
060219	2	1995	Mokelumne	Jersey Pt
060220	1	1995	Mokelumne	Thornton
060230	3	1996	Mokelumne	Rodeo
060233	1	1997	Mokelumne	New Hope Landing
060234	3	1997	Mokelumne	Jersey Pt
060235	4	1997	Mokelumne	Jersey Pt
060238	3	1997	Mokelumne	New Hope Landing
060239	3	1997	Mokelumne	New Hope Landing
060240	33	1997	Mokelumne	Carquinez Strait
060241	42	1997	Mokelumne	Carquinez Strait
062545	2	1996	Merced	Dos Reis Rd
062547	9	1996	Merced	Jersey Point
062549	5	1996	Merced	Jersey Point
062550	2	1996	Merced	Dos Reis Rd
062935	1	1995	Feather	Monterey Net Pens
062937	1	1995	Feather	Rodeo
064908	1	1996	Mokelumne	Thornton
064910	3	1996	Mokelumne	Thornton
064911	4	1996	Mokelumne	Thornton
064912	16	1996	Mokelumne	Jersey Point
064913	14	1996	Mokelumne	Jersey Point
064914	2	1996	Mokelumne	Woodbridge
064915	2	1996	Mokelumne	Woodbridge
Total:	326			

a/Feathe River Hatchery stock.

b/No CWT.

* No tag

<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

* Included in adult male