



PAHSIMEROI FISH HATCHERY

Brood Year 2003 Summer Chinook Report

by

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ABSTRACT

The summer Chinook program at Pahsimeroi Fish Hatchery (PFH) is part of the Idaho Power Company (IPC) mitigation requirement for the Hells Canyon Complex on the Snake River. The decision to shift the program's focus from a harvest augmentation program to a supplementation-conservation program was a management decision made by the Idaho Department of Fish and Game (Department) and the National Oceanographic and Atmospheric Administration (NOAA). This decision was made in 1992 when Pahsimeroi summer Chinook salmon were listed as threatened under the Federal Endangered Species Act of 1973. The program continues to fulfill IPCs mitigation requirements under its current Federal Energy Regulatory Commission operating license.

On June 23, 2003, PFH staff installed the weir on the Pahsimeroi River and began trapping summer Chinook salmon. The weir was left in place until trapping ceased on October 1, 2003. The first fish was trapped on June 24, 2003 and the last on September 29, 2003. A total of 2,747 summer Chinook salmon (*Oncorhynchus tshawytscha*) were trapped during the 2003 brood year. This was the largest summer Chinook run to return to Pahsimeroi Hatchery. The total pre-spawn mortality was 50 (5.9%), which included 28 females and 22 males. The total number of fish retained for spawning was 848.

Artificial spawning of summer Chinook salmon commenced on September 2, 2003, and concluded on September 29, 2003. A total of 346 females were spawned of which 121 were culled. A total of 1,257,180 green eggs were collected for production purposes, for an average fecundity of 5,587 eggs per female. The overall eye-up percentage was 87.4%. A total of nine lots were incubated at PFH and then shipped as eyed eggs to Sawtooth Fish Hatchery (SFH) for hatching and early rearing on well water. This transfer limits the exposure of fry to *Myxobolus cerebralis* (*M. cerebralis*), the causative agent of whirling disease, which is present in the PFH water source. SFH raised lots 1-5 and part of 6 before transporting the pre-smolts back to PFH for final rearing in June 2004. Part of lot 6 and lots 7-9 were shipped back to PFH in January 2004 and reared in the early rearing raceways. In June 2004, both groups of fish were transferred to two rearing ponds at the PFH upper hatchery. They were raised on river water until being released in March of 2005.

The outlet screens for rearing pond 2 were removed on March 22, 2005 and the screens for pond 1 were pulled on March 28, respectively, to allow volitional release of Chinook smolts into the Pahsimeroi River. All smolts had migrated from the ponds by April 4, 2005. A total of 975,252 smolts were released for a combined weight of 53,899 pounds. The fish averaged 18.09 fish per pound and consisted of one group. These fish were all listed as reserve group.

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INTRODUCTION

Pahsimeroi Fish Hatchery is located near the town of Ellis, and consists of two hatchery facilities. The main hatchery is located one mile upstream of the confluence of the Pahsimeroi and Salmon rivers. The second hatchery is located off Dowton Lane seven miles further upstream on the Pahsimeroi River. Both hatcheries were constructed in 1967 by IPC and are owned and funded by IPC. Hatchery operations and management are the responsibility of the Idaho Fish and Game Department (Department). The summer Chinook program is part of IPCs mitigation requirement for anadromous fish losses resulting from the construction and operation of the Hells Canyon Complex on the Snake River. However, due to the 1992 listing of Snake River summer Chinook salmon (*Oncorhynchus tshawytscha*) as threatened under the Federal Endangered Species Act of 1973, PFH has shifted from a harvest augmentation program to a supplementation–conservation program. The number of adult summer Chinook salmon released into the Pahsimeroi River for natural spawning, as well as the number of those kept at the hatchery for artificial propagation depends on marked and unmarked fish returns and their listing status. NOAA Fisheries permits #922 and #903 authorize the direct and incidental take of listed, naturally produced and artificially propagated summer Chinook salmon.

OBJECTIVES

The hatchery's mitigation program goals focus on summer Chinook salmon and A-run Steelhead (*Oncorhynchus mykiss*). The following objectives are designed to help accomplish these goals:

1. Rear one million summer Chinook smolts for release into the Pahsimeroi River.
2. Trap and spawn sufficient numbers of adult summer Chinook returning to PFH to produce 1.5 million green eggs.
3. Trap and spawn sufficient numbers of adult Steelhead returning to PFH to produce 1.5 million steelhead eggs to be shipped to Oxbow Fish Hatchery for later distribution to Niagara Springs Fish Hatchery.
4. Work with Department management, research, and IPC to identify the most effective operating procedures and rearing strategies and develop the facility to enhance survival, fish health, and genetic diversity.

HATCHERY FACILITIES

Pahsimeroi Fish Hatchery is comprised of two hatchery facilities. The main hatchery consists of six buildings, two of which are residences for full-time employees (a 1994 wood-frame home and a 1999 double-wide mobile home). A third building houses a garage, shop, and two-bedroom living quarters for temporary employees. A fourth building contains the office, public restrooms, and an incubation room. A fifth building is used for storage and has two sections: one for chemical and machinery storage and a second for non-chemical

equipment storage. The sixth building is the spawning shed. The upper hatchery consists of a garage/shop, a walk-in freezer, and a 7 x 10 ft. storage shed.

The fish production facilities include the following:

Main Hatchery

- Removable adult weir across the Pahsimeroi River.
- Fish ladder and 3 ponds (each pond measures 70-ft x 1-ft x 6-ft; the two outside ponds are for adult holding, and the center pond is considered the trap).
- Four raceways (100-ft x 4-ft x 3- ft) supplied by river water and limited (200 gpm) spring water.
- Incubation room with twenty 16-tray stacks of Heath tray vertical-flow incubators supplied by pumped spring water.

Upper Hatchery

- Two 300-ft x 40-ft x 5-ft earthen rearing ponds supplied with water from the Pahsimeroi River.
- Two 300-ft x 40-ft x 4-ft earthen settling ponds located directly below the rearing ponds.

Holding capacity for the trap and adult holding ponds is approximately 2,000 adult summer Chinook, and 5,000 adult A-run Steelhead. With 3 cfs of river water, the raceways can hold up to one million 2-inch Chinook fry at a 0.50 density index. At inflows of 20 cfs, holding capacity in the two rearing ponds at the upper hatchery is one million 6.5-inch summer Chinook smolts. Incubation capacity is currently 1.5 million summer Chinook eggs and 6 million A-run Steelhead eggs.

WATER SUPPLY

Incubation water consists of Specific Pathogen-Free (SPF) spring water, which is pumped to a 10,000-gallon holding tank and gravity-fed to the incubators. The spring source can produce up to 200 gpm of 52°F to 56°F water.

The adult trap and holding ponds at the main hatchery are supplied with water from the Pahsimeroi River through a 0.25-mile earthen intake canal. Water from the canal is also used to supply the early rearing raceways. A water right for 40 cfs held by IPC allows hatchery personnel to divert water from the Pahsimeroi River for operations at the main hatchery. Water temperature varies throughout the year with water temperatures fluctuating from seasonal lows of 33°F in the winter to seasonal highs of 72°F in the summer. Daily fluctuations can be as much as 12°F.

Water for the rearing ponds at the upper hatchery also comes from a diversion in the Pahsimeroi River. IPCs water right for 20 cfs at the upper hatchery allows a flow of 10 cfs per pond. The water is diverted down a concrete canal and flows through the ponds and into the settling ponds before being discharged back to the Pahsimeroi River. The Pahsimeroi River has a high organic load during winter, but improves during the summer.

Both intake canals are equipped with NOAA Fisheries-approved rotating drum screens designed to prevent entrapment of wild Chinook and Steelhead from the river into the hatchery facilities.

STAFFING

Pahsimeroi Fish Hatchery is staffed by both permanent and temporary employees. The permanent staff consists of a Hatchery Manager 1 and an Assistant Hatchery Manager. The temporary employees provide assistance during the Steelhead and summer Chinook trapping and spawning seasons and fish rearing. They include a year-round Fisheries Technician, two Bio-Aides and one Laborer.

At the peak of the Steelhead and Chinook spawning seasons, Department regional staff, Department volunteers, SFH staff, and a fisheries technician from Nampa Fisheries Research also assist with spawning as well as routine hatchery operations.

ADULT SUMMER CHINOOK TRAPPING

In 2003, the trap was operational from June 23 through October 5, 2003. The first adult summer Chinook arrived on June 24, 2003 and the last adult arrived on September 29, 2003. Summer Chinook returning in 2003 originated from brood years 1998, 1999, and 2000. By definition, supplementation fish (Idaho Supplementation Studies - ISS) are fish that are derived from natural-origin x natural-origin or natural-origin x hatchery crosses. Reserve group fish are derived from hatchery x hatchery crosses. The listing status, mark type, and the number of smolts released from each Brood Year are as follows:

BY1998-Comprised of one group of fish.

All fish were hatchery-origin ISS supplementation listed, 100% adipose fin clipped and no coded wire tags. The smolt release for this brood year was 53,837 smolts at 10.9 fish per pound (fpp) with an average length of 6.1 inches.

BY1999-Comprised of three groups of fish.

Group 1-Hatchery-origin reserve unlisted, 100% adipose fin clipped and no coded wire tags. A total of 197,124 smolts were released from this group at 8.0 fpp with an average length of 6.8 inches.

Group 2-Hatchery-origin high Bacterial Kidney Disease (BKD) ISS supplementation listed, 100% coded wire tagged with a different tag code from group 3 and no fin clips. A total of 61,196 smolts were released at 8.0 fpp and with an average length of 6.8 inches.

Group 3-Hatchery-origin ISS supplementation listed, 100% coded wire tagged and no fin clips. A total of 24,743 smolts were released at 8.9 fpp with an average length of 6.6 inches.

BY2000-Comprised of two groups of fish.

Group 1-Hatchery-origin reserve listed, 100% adipose fin clipped and no coded wire tags. A total of 418,417 smolts were released at 10.8 fpp with an average length of 6.4 inches.

Group 2-Hatchery-origin ISS supplementation listed, 100% coded wire tagged and no fin clips. A total of 89,923 smolts were released at 10.8 fpp with an average length of 6.4 inches.

A portion of brood year 1998 hatchery origin fish was ponded for spawning while the remainder was released into the Pahsimeroi River to spawn naturally. These fish were identifiable by an adipose fin clip, as well as a fork length greater than 88 centimeters.

The Brood Year 1999 supplementation listed (coded wire tagged) and supplementation listed high BKD groups (coded wire tagged) were both ponded for production and released into the Pahsimeroi River to spawn naturally. The Brood Year 1999 unlisted fish (adipose clipped) were originally supposed to be ponded for production and not released above the weir to spawn naturally. However, due to a length/age adjustment by Nampa Research after the run was complete, it was determined that some of these fish would be released above the weir to spawn naturally. This was because the original length cutoff between age-4 and age-5 fish was 82 centimeters. Fish greater than 82 cm were considered age 5 supplementation. The revised length cutoff was 88 cm. Hence, fish originally designated as age-5 supplementation were actually age-4 reserve group. Fish from these three groups were identifiable by the presence of either a CWT or an adipose fin clip and a fork length between 68 and 88 cm, inclusive.

Most of Brood Year 2000 fish (jacks) were killed and given to the Shoshone-Bannock Tribe (SBT) and local charities. A small portion of these fish were released to spawn naturally and some were ponded for production. Fish from these two groups were identifiable by the presence of either a CWT and a length of less than 68 cm, or an adipose fin clip and a length of less than 68 cm.

Snouts from fish containing coded wire tags that were not released for natural production were collected and sent to the department's lab in Lewiston for tag retrieval.

All natural/wild fish were released for natural reproduction.

A total of 2,747 summer Chinook were trapped in 2003. This was the largest summer Chinook run to return to the Pahsimeroi Hatchery. The run consisted of 1,669 adults and 1,078 jacks which included 9 mini-jacks, with a sex ratio of 626 (38%) adult males to 1,043 (62%) adult females. Of the 626 adult males trapped, 507 (81%) were of hatchery-origin and 119 (19%) were of natural-origin. Of the 1,043 adult females trapped, 872 (84%) were of hatchery-origin and 171 (16%) were of natural-origin (Tables 1-4; Figure 1-4)

Table 1. Pahsimeroi Hatchery Brood Year 2003 summer Chinook salmon run timing.

Date Trapped	Hatchery Males	Natural Males	Total Males	Hatchery Females	Natural Females	Total Females	Total Trapped
24-Jun	0	1	1	2	0	2	3
25-Jun	1	0	1	5	1	6	7
26-Jun	8	2	10	4	3	7	17
27-Jun	6	1	7	7	3	10	17
28-Jun	9	3	12	20	3	23	35
29-Jun	10	2	12	18	5	23	35
30-Jun	14	5	19	15	1	16	35
1-Jul	29	5	34	44	8	52	86
2-Jul	22	2	24	38	2	40	64
3-Jul	14	4	18	38	2	40	58
4-Jul	25	3	28	32	11	43	71
5-Jul	40	6	46	35	6	41	87
6-Jul	27	2	29	36	5	41	70
7-Jul	35	7	42	52	5	57	99
8-Jul	37	13	50	56	11	67	117
9-Jul	41	7	48	51	15	66	114
10-Jul	25	5	30	44	7	51	81
11-Jul	67	5	72	39	4	43	115
12-Jul	54	7	61	46	7	53	114
13-Jul	41	5	46	19	9	28	74
14-Jul	36	0	36	13	0	13	49
15-Jul	25	2	27	27	6	33	60
16-Jul	44	7	51	22	4	26	77
17-Jul	32	1	33	10	1	11	44
18-Jul	35	1	36	12	1	13	49
19-Jul	58	0	58	12	0	12	70
20-Jul	70	4	74	26	8	34	108
21-Jul	54	5	59	19	2	21	80
22-Jul	54	3	57	20	4	24	81
23-Jul	45	3	48	14	3	17	65
24-Jul	35	1	36	6	1	7	43
25-Jul	15	1	16	5	0	5	21
26-Jul	0	0	0	0	0	0	0
27-Jul	0	0	0	0	0	0	0
28-Jul	71	7	78	7	2	9	87
29-Jul	20	0	20	3	1	4	24
30-Jul	28	1	29	0	1	1	30
31-Jul	27	2	29	1	0	1	30
1-Aug	13	0	13	1	0	1	14
2-Aug	11	1	12	1	0	1	13
3-Aug	8	0	8	2	0	2	10
4-Aug	7	1	8	1	0	1	9
5-Aug	5	1	6	2	0	2	8
6-Aug	7	0	7	0	0	0	7
7-Aug	7	0	7	0	0	0	7
8-Aug	6	0	6	0	0	0	6
9-Aug	7	0	7	0	0	0	7
10-Aug	6	0	6	1	0	1	7
11-Aug	8	0	8	0	0	0	8
12-Aug	6	1	7	0	0	0	7
13-Aug	7	0	7	0	0	0	7
14-Aug	5	1	6	0	0	0	6
15-Aug	6	0	6	0	0	0	6
16-Aug	2	0	2	0	0	0	2
17-Aug	1	0	1	0	0	0	1
18-Aug	2	0	2	0	0	0	2

Table 1. Continued.

Date Trapped	Hatchery Males	Natural Males	Total Males	Hatchery Females	Natural Females	Total Females	Total Trapped
19-Aug	1	0	1	1	0	1	2
20-Aug	2	0	2	0	0	0	2
21-Aug	3	0	3	0	0	0	3
22-Aug	4	0	4	0	0	0	4
23-Aug	5	0	5	0	0	0	5
24-Aug	6	0	6	0	0	0	6
25-Aug	8	0	8	0	0	0	8
26-Aug	11	1	12	0	0	0	12
27-Aug	11	0	11	0	0	0	11
28-Aug	10	1	11	0	0	0	11
29-Aug	6	0	6	0	0	0	6
30-Aug	7	0	7	0	0	0	7
31-Aug	4	0	4	2	0	2	6
1-Sep	5	1	6	0	0	0	6
2-Sep	2	2	4	3	0	3	7
3-Sep	1	0	1	1	0	1	2
4-Sep	4	0	4	2	0	2	6
5-Sep	16	2	18	6	1	7	25
6-Sep	4	1	5	2	0	2	7
7-Sep	3	2	5	3	0	3	8
8-Sep	4	1	5	0	0	0	5
9-Sep	8	0	8	0	0	0	8
10-Sep	11	0	11	2	0	2	13
11-Sep	40	4	44	4	2	6	50
12-Sep	24	3	27	6	2	8	35
13-Sep	7	1	8	5	1	6	14
14-Sep	10	3	13	5	2	7	20
15-Sep	5	0	5	5	4	9	14
16-Sep	5	2	7	8	5	13	20
17-Sep	9	4	13	2	6	8	21
18-Sep	7	0	7	3	1	4	11
19-Sep	7	0	7	2	0	2	9
20-Sep	4	1	5	1	3	4	9
21-Sep	6	0	6	1	2	3	9
22-Sep	4	0	4	1	0	1	5
23-Sep	4	0	4	0	0	0	4
24-Sep	4	1	5	0	0	0	5
25-Sep	0	0	0	0	0	0	0
26-Sep	1	0	1	1	0	1	2
27-Sep	1	0	1	0	0	0	1
28-Sep	3	0	3	0	0	0	3
29-Sep	1	0	1	0	0	0	1
30-Sep	0	0	0	0	0	0	0
TOTAL:	1546	158	1704	872	171	1043	2,747

Table 2. Length frequency of male summer Chinook for Pahsimeroi Fish Hatchery, 2003.

MALES

TOTAL TRAPPED		AD-CLIP PONDED		AD-CLIP RELEASED		CWT PONDED		CWT RELEASED		UNMARKED PONDED		UNMARKED RELEASED	
FL(CM)	NUMBER	FL(CM)	NUMBER	FL(CM)	NUMBER	FL(CM)	NUMBER	FL(CM)	NUMBER	FL(CM)	NUMBER	FL(CM)	NUMBER
41	2	41	1	41	0	41	1	41	0	41	0	41	0
42	1	42	0	42	0	42	1	42	0	42	0	42	0
43	3	43	3	43	0	43	0	43	0	43	0	43	0
44	3	44	3	44	0	44	0	44	0	44	0	44	0
45	6	45	5	45	0	45	1	45	0	45	0	45	0
46	7	46	7	46	0	46	0	46	0	46	0	46	0
47	17	47	16	47	0	47	0	47	0	47	0	47	1
48	12	48	10	48	0	48	1	48	1	48	0	48	0
49	26	49	20	49	0	49	5	49	0	49	0	49	1
50	40	50	33	50	0	50	3	50	2	50	0	50	2
51	40	51	36	51	0	51	3	51	0	51	0	51	1
52	60	52	53	52	0	52	5	52	0	52	0	52	2
53	67	53	61	53	0	53	2	53	1	53	0	53	3
54	75	54	63	54	0	54	8	54	1	54	0	54	3
55	94	55	80	55	0	55	7	55	4	55	0	55	3
56	114	56	103	56	0	56	11	56	0	56	0	56	0
57	105	57	82	57	0	57	20	57	0	57	0	57	3
58	94	58	81	58	0	58	9	58	1	58	0	58	3
59	93	59	75	59	0	59	13	59	1	59	0	59	4
60	75	60	60	60	0	60	11	60	0	60	0	60	4
61	40	61	33	61	0	61	6	61	0	61	0	61	1
62	27	62	21	62	0	62	4	62	2	62	0	62	0
63	31	63	17	63	0	63	6	63	3	63	0	63	5
64	20	64	17	64	0	64	0	64	3	64	0	64	0
65	11	65	8	65	0	65	0	65	1	65	0	65	2
66	11	66	9	66	0	66	1	66	0	66	0	66	1
67	4	67	3	67	0	67	1	67	0	67	0	67	0
68	5	68	5	68	0	68	0	68	0	68	0	68	0
69	2	69	2	69	0	69	0	69	0	69	0	69	0
70	11	70	6	70	0	70	0	70	2	70	0	70	3
71	8	71	4	71	0	71	1	71	1	71	0	71	2
72	6	72	3	72	0	72	0	72	1	72	0	72	2
73	9	73	5	73	0	73	0	73	0	73	0	73	4
74	9	74	6	74	0	74	0	74	2	74	0	74	1
75	17	75	10	75	0	75	1	75	2	75	0	75	4
76	35	76	23	76	0	76	1	76	7	76	0	76	4
77	33	77	18	77	0	77	0	77	8	77	0	77	7
78	44	78	26	78	0	78	3	78	10	78	0	78	5
79	47	79	28	79	0	79	3	79	7	79	0	79	9
80	51	80	35	80	0	80	2	80	5	80	0	80	9
81	51	81	39	81	0	81	1	81	6	81	0	81	5
82	44	82	39	82	0	82	0	82	3	82	0	82	2
83	38	83	16	83	15	83	0	83	1	83	0	83	6
84	38	84	11	84	18	84	1	84	0	84	0	84	8
85	27	85	5	85	16	85	0	85	5	85	0	85	1
86	25	86	7	86	13	86	0	86	0	86	0	86	5
87	16	87	4	87	6	87	1	87	0	87	0	87	5
88	14	88	3	88	8	88	0	88	1	88	0	88	2
89	7	89	2	89	3	89	0	89	0	89	0	89	2
90	4	90	0	90	3	90	0	90	0	90	0	90	1
91	5	91	0	91	5	91	0	91	0	91	0	91	0
92	10	92	3	92	3	92	0	92	0	92	0	92	4
93	8	93	2	93	3	93	0	93	0	93	0	93	3
94	7	94	1	94	2	94	0	94	0	94	0	94	4
95	8	95	1	95	5	95	0	95	1	95	0	95	1
96	8	96	1	96	3	96	0	96	0	96	0	96	4
97	4	97	1	97	1	97	0	97	0	97	0	97	2
98	7	98	2	98	3	98	0	98	0	98	0	98	2
99	4	99	2	99	1	99	0	99	0	99	0	99	1
100	10	100	3	100	3	100	0	100	0	100	1	100	3
101	4	101	1	101	2	101	0	101	0	101	0	101	1
102	1	102	0	102	0	102	0	102	0	102	0	102	1
103	3	103	0	103	1	103	0	103	0	103	0	103	2
104	3	104	0	104	1	104	0	104	0	104	0	104	2
105	0	105	0	105	0	105	0	105	0	105	0	105	0
106	2	106	0	106	1	106	1	106	0	106	0	106	0
107	1	107	0	107	0	107	0	107	0	107	0	107	1
108	0	108	0	108	0	108	0	108	0	108	0	108	0
TOTALS:	1,704		1,214		116		134		82		1		157

Table 3. Length frequency of female summer Chinook for Pahsimeroi Fish Hatchery, 2003.

FEMALES

TOTAL TRAPPED		AD-CLIP PONDED		AD-CLIP RELEASED		CWT PONDED		CWT RELEASED		UNMARKED PONDED		UNMARKED RELEASED	
FL(CM)	NUMBER	FL(CM)	NUMBER	FL(CM)	NUMBER	FL(CM)	NUMBER	FL(CM)	NUMBER	FL(CM)	NUMBER	FL(CM)	NUMBER
55	0	55	0	55	0	55	0	55	0	55	0	55	0
56	0	56	0	56	0	56	0	56	0	56	0	56	0
57	0	57	0	57	0	57	0	57	0	57	0	57	0
58	0	58	0	58	0	58	0	58	0	58	0	58	0
59	0	59	0	59	0	59	0	59	0	59	0	59	0
60	0	60	0	60	0	60	0	60	0	60	0	60	0
61	0	61	0	61	0	61	0	61	0	61	0	61	0
62	0	62	0	62	0	62	0	62	0	62	0	62	0
63	0	63	0	63	0	63	0	63	0	63	0	63	0
64	1	64	1	64	0	64	0	64	0	64	0	64	0
65	1	65	0	65	0	65	0	65	1	65	0	65	0
66	1	66	1	66	0	66	0	66	0	66	0	66	0
67	5	67	3	67	0	67	0	67	2	67	0	67	0
68	0	68	0	68	0	68	0	68	0	68	0	68	0
69	2	69	1	69	0	69	0	69	1	69	0	69	0
70	4	70	3	70	0	70	0	70	0	70	0	70	1
71	9	71	4	71	0	71	2	71	1	71	0	71	2
72	7	72	5	72	0	72	1	72	0	72	0	72	1
73	15	73	11	73	0	73	1	73	0	73	0	73	3
74	31	74	19	74	0	74	3	74	7	74	0	74	2
75	34	75	15	75	0	75	4	75	5	75	0	75	10
76	40	76	25	76	0	76	3	76	6	76	0	76	6
77	65	77	36	77	0	77	12	77	9	77	0	77	8
78	96	78	57	78	0	78	12	78	20	78	0	78	7
79	108	79	70	79	0	79	7	79	16	79	0	79	15
80	118	80	88	80	0	80	8	80	8	80	0	80	14
81	77	81	51	81	0	81	8	81	12	81	0	81	6
82	87	82	57	82	1	82	4	82	11	82	0	82	14
83	66	83	22	83	24	83	8	83	7	83	0	83	5
84	49	84	19	84	17	84	1	84	5	84	0	84	7
85	46	85	19	85	15	85	5	85	4	85	0	85	3
86	24	86	8	86	11	86	0	86	2	86	0	86	3
87	17	87	4	87	6	87	1	87	1	87	0	87	5
88	21	88	4	88	6	88	0	88	3	88	0	88	8
89	8	89	1	89	4	89	0	89	0	89	0	89	3
90	12	90	4	90	5	90	0	90	0	90	0	90	3
91	9	91	2	91	3	91	0	91	0	91	0	91	4
92	18	92	6	92	6	92	0	92	1	92	0	92	5
93	16	93	1	93	5	93	0	93	0	93	0	93	10
94	21	94	8	94	4	94	0	94	0	94	0	94	9
95	14	95	4	95	2	95	0	95	0	95	0	95	8
96	5	96	1	96	2	96	0	96	0	96	0	96	2
97	5	97	2	97	0	97	0	97	0	97	0	97	3
98	3	98	1	98	2	98	0	98	0	98	0	98	0
99	2	99	0	99	1	99	0	99	0	99	0	99	1
100	3	100	0	100	1	100	0	100	0	100	0	100	2
101	2	101	1	101	0	101	0	101	0	101	0	101	1
102	0	102	0	102	0	102	0	102	0	102	0	102	0
103	0	103	0	103	0	103	0	103	0	103	0	103	0
104	1	104	1	104	0	104	0	104	0	104	0	104	0
105	0	105	0	105	0	105	0	105	0	105	0	105	0
106	0	106	0	106	0	106	0	106	0	106	0	106	0
107	0	107	0	107	0	107	0	107	0	107	0	107	0
108	0	108	0	108	0	108	0	108	0	108	0	108	0
TOTALS:	1,043		555		115		80		122		0		171

Table 4. Pahsimeroi Fish Hatchery summer Chinook disposition summary, Brood Year 2003.

Released For Natural Spawning

	Hatchery Origin Adult Males			Hatchery Origin Adult Females			Natural Origin Adult Males		Natural Origin
	Age 4 Males Adipose Marked (u)	Age 4 Males CWT (L)	Age 5 Males Adipose Marked (L)	Age 4 Females Adipose Marked (u)	Age 4 Females CWT (L)	Age 5 Females Adipose Marked (L)	Age 4 Males Unmarked (L)	Age 5 Males Unmarked(L)	Age 4 Females Unmarked (L)
Total	76	62	40	80	122	35	84	34	120
% of Total Rel.	20.5%	80.5%	67.8%	13.3%	60.4%	52.2%	100.0%	97.1%	100.0%

Ponded For Hatchery Production*

	Hatchery Origin Adult Males			Hatchery Origin Adult Females			Natural Origin Adult Males		Natural Origin
	Age 4 Males Adipose Marked (u)	Age 4 Males CWT (L)	Age 5 Males Adipose Marked (L)	Age 4 Females Adipose Marked (u)	Age 4 Females CWT (L)	Age 5 Females Adipose Marked (L)	Age 4 Males Unmarked (L)	Age 5 Males Unmarked(L)	Age 4 Females Unmarked (L)
Total	295	15	19	523	80	32	0	1	0
% of Total Pnd.	79.5%	19.5%	32.2%	86.7%	39.6%	47.8%	0.0%	2.9%	0.0%

Trapping Totals by Gender, Year Class, and Origin for Brood Year 2003

	Hatchery Origin Adult Males			Hatchery Origin Adult Females			Natural Origin Adult Males		Natural Origin
	Age 4 Males Adipose Marked (u)	Age 4 Males CWT (L)	Age 5 Males Adipose Marked (L)	Age 4 Females Adipose Marked (u)	Age 4 Females CWT (L)	Age 5 Females Adipose Marked (L)	Age 4 Males Unmarked (L)	Age 5 Males Unmarked(L)	Age 4 Females Unmarked (L)
Total	371	77	59	603	202	67	84	35	120
% of Total Trpd.	13.5%	2.8%	2.1%	22.0%	7.4%	2.4%	3.1%	1.3%	4.4%

Trap Totals by Origin for Brood Year 2003

	Hatchery Adult Males	Hatchery Adult Females	Total Hatchery Adults	Natural Origin Adult Males	Natural Origin Adult Females	Total Natural Origin Adults	Hatchery Origin Jacks	Natural Origin Jacks	Total Jacks
Total	507	872	1379	119	171	290	1039	39	1078
% of Total Trpd.	18.5%	31.7%	50.2%	4.3%	6.2%	10.6%	37.8%	1.4%	39.2%

Figure 1. Brood Year 2003 summer Chinook salmon run timing for Pahsimeroi Fish Hatchery.

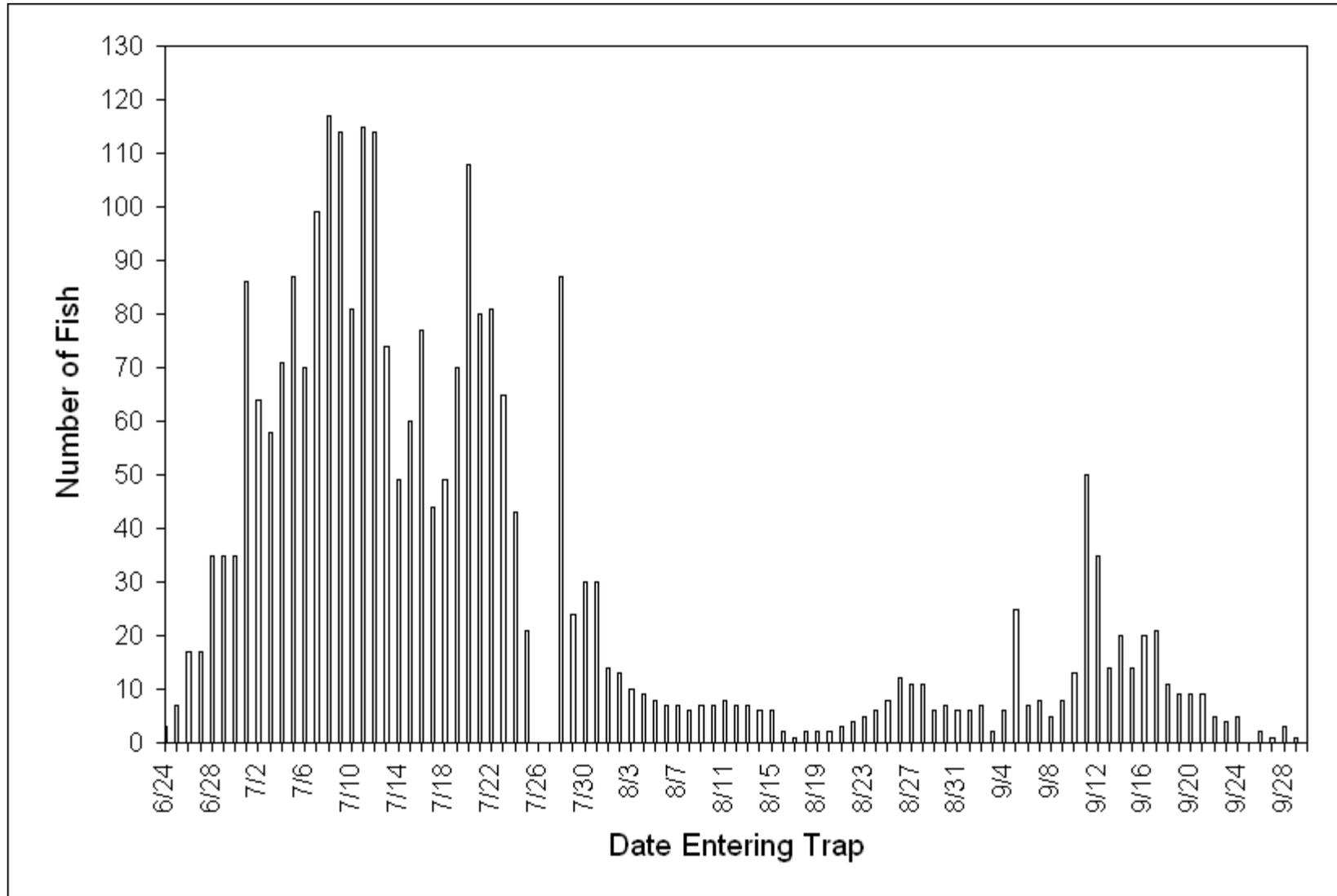


Figure 1-B. Brood Year 2003 natural origin female summer Chinook run timing for Pahsimeroi Fish Hatchery.

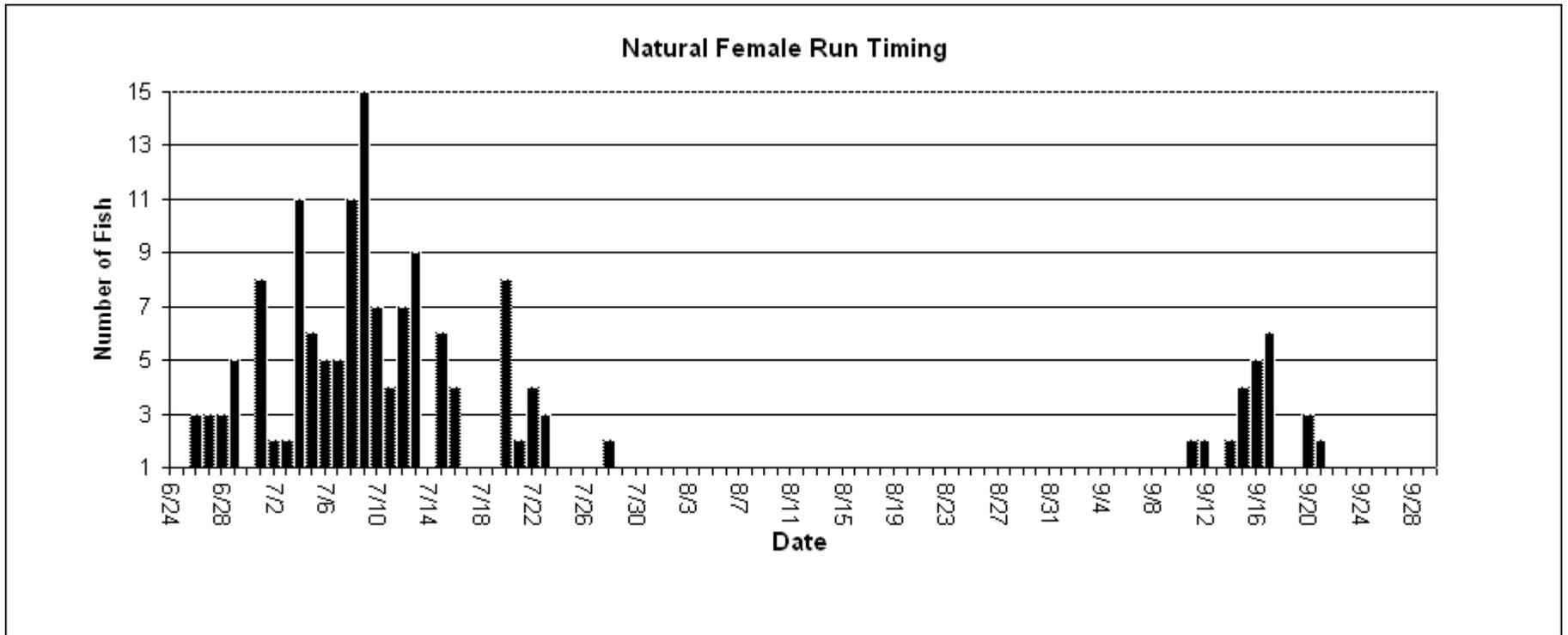
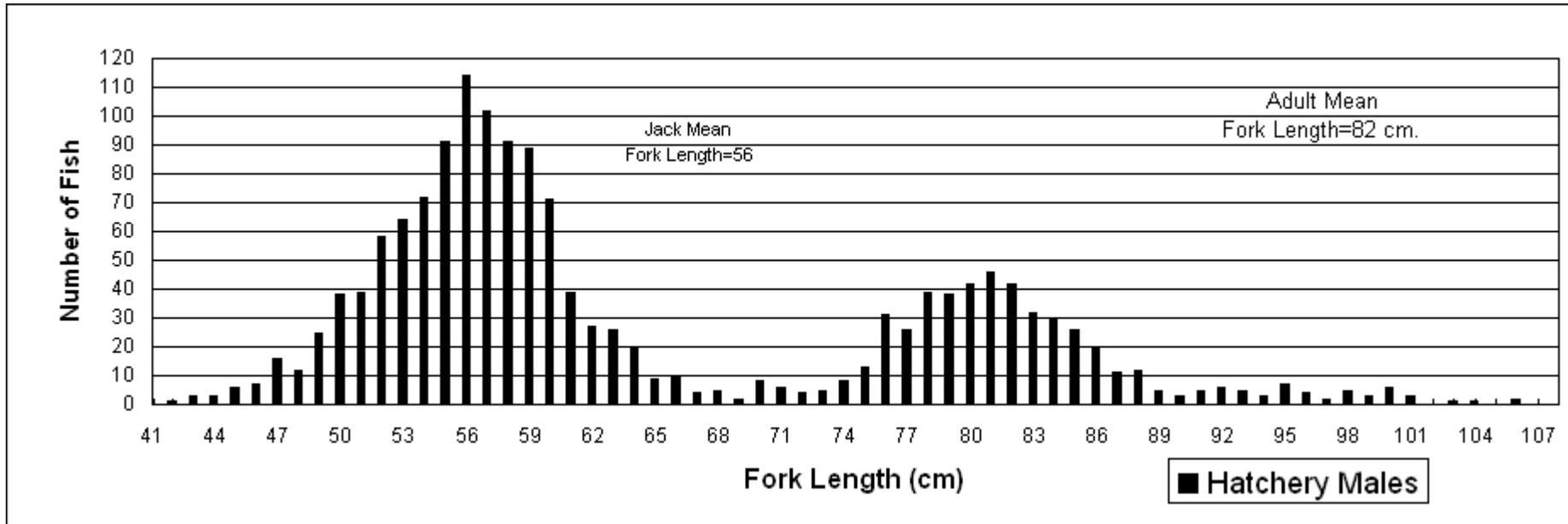


Figure 2. Length frequency of hatchery-origin summer Chinook salmon, Brood Year 2003.



* 41 cm. length category includes a 39 cm. "mini-jack"
 ** All fish 44 cm. and less considered "mini-jack" category.

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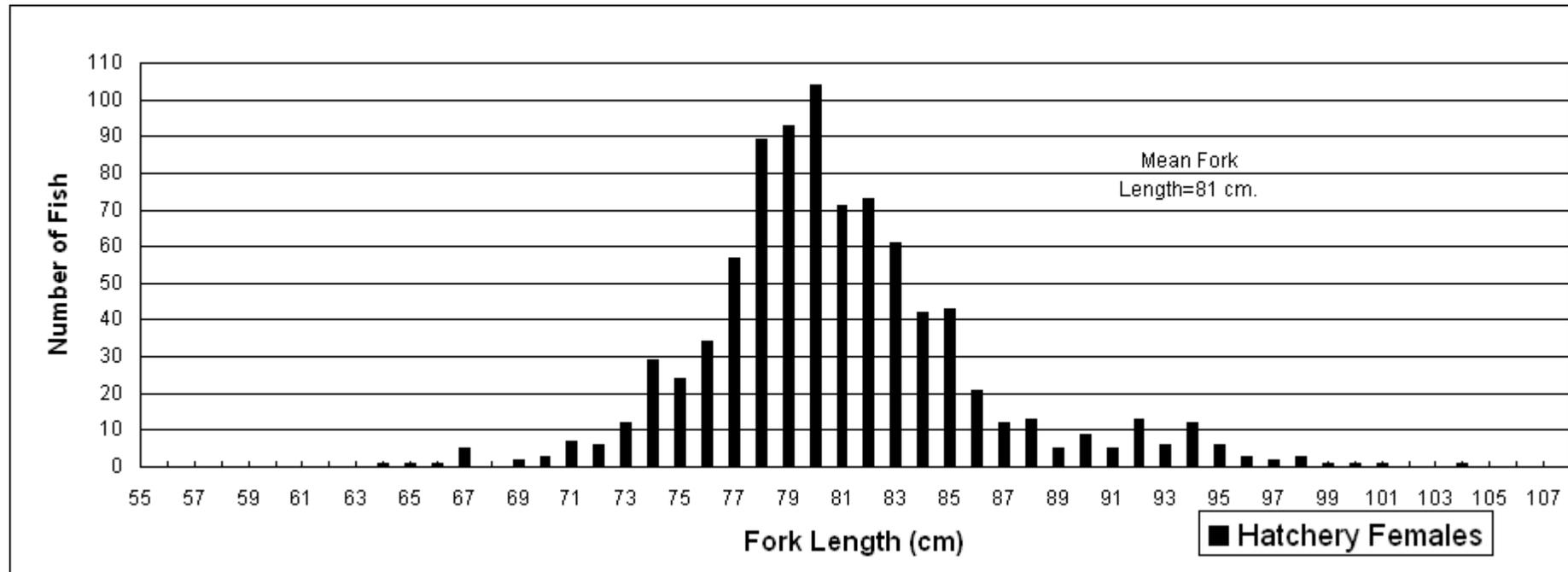


Figure 3. Length frequency of natural-origin summer Chinook salmon, Brood Year 2003.

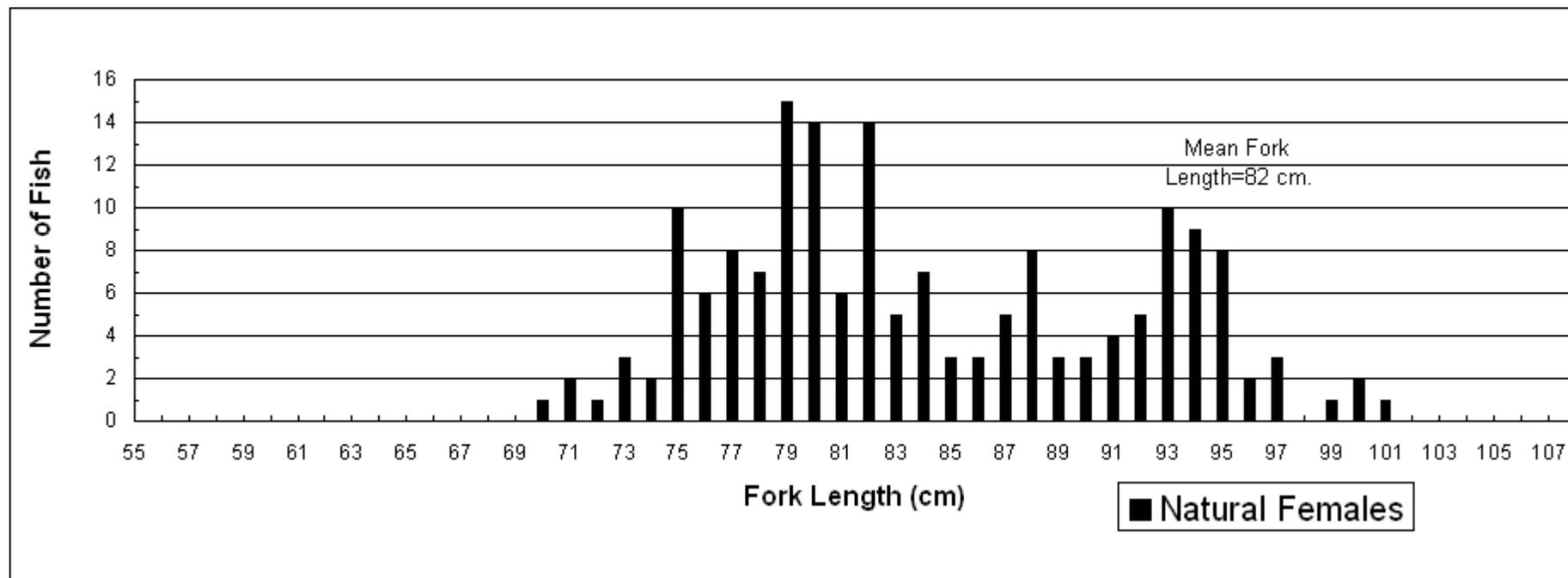
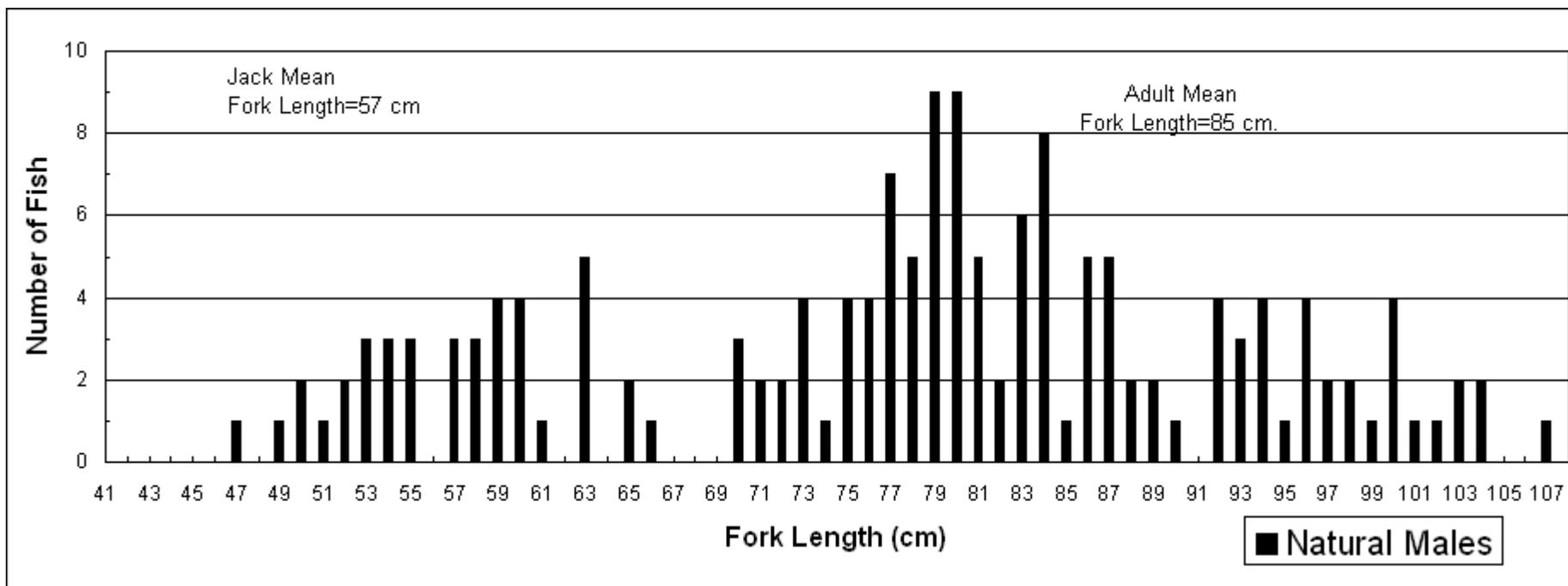
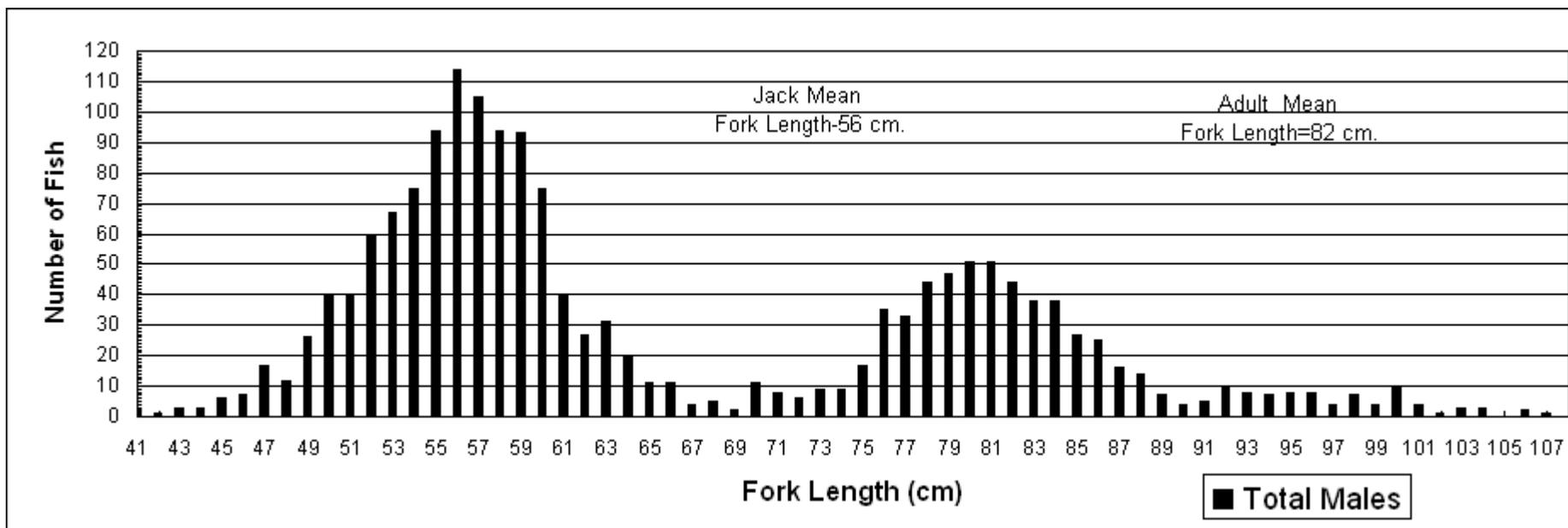
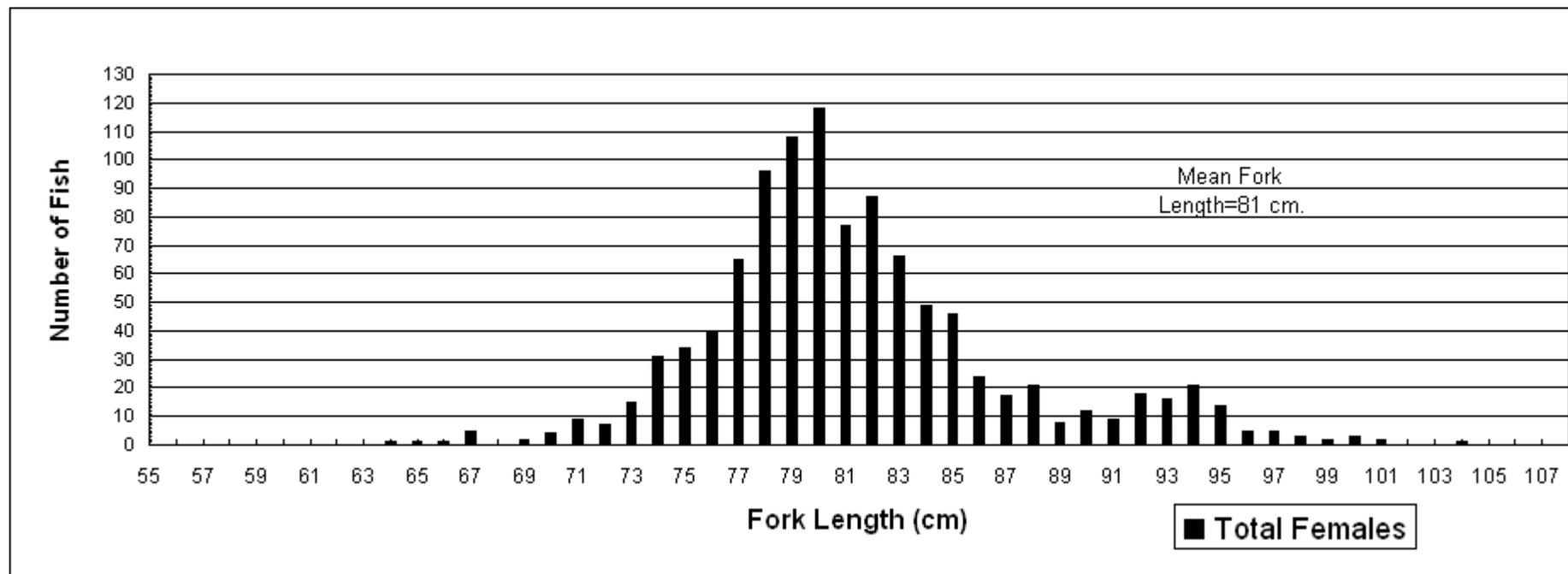


Figure 4. Length frequency of all summer Chinook salmon trapped, Brood Year 2003.



*41 cm. length category includes a 39 cm. "mini-jack"
 ** All fish 44 cm. and less considered "mini-jack" category.



ADULT AGE CLASS DETERMINATION

Two sets of criteria were used to determine age class in 2003. The age of hatchery-origin summer Chinook was determined by mark type and fork length, while the natural-origin summer Chinook were aged by fork length only. Hatchery-origin summer Chinook with an adipose fin clip or coded wire tag and a fork length of less than 68 cm were classified as three years old (jacks). Mini-jacks are defined as fish equal to or less than 44 cm in fork length. Dorsal fin ray cross-section analysis determined the absence of salt-water annuli. This suggests these fish remained in fresh water for one year prior to returning to the Pahsimeroi Hatchery.

Hatchery-origin summer Chinook with an adipose fin clip, coded wire tagged and a fork length greater than 68 cm are classified as four years old. Hatchery-origin summer Chinook with an adipose fin clip as, well as a fork length greater than 88 cm were classified as five years old. The age class criteria for natural-origin (unmarked) fish is as follows:

- Chinook with fork lengths greater than 88 cm were classified as five years old.
- Chinook with fork lengths between 68 cm and 88 cm inclusive were classified as four years old.
- Chinook with a fork length less than 68 cm were classified as jacks.
- Chinook with a fork length up to, and inclusive of, 44 cm were classified as mini-jacks.

Table 4 includes a breakdown of age class results, Mini-jacks are included in the jack category.

Snouts from fish containing coded wire tags that were not released for natural production were collected and sent to the department's lab in Lewiston, ID for tag retrieval.

All natural/wild fish were released for natural reproduction.

SPECIAL MARKS/TAGS

Of the 2,747 Chinook trapped this year, 8 fish were found to have specialty tags. All of the fish were of hatchery-origin. All fish were scanned for PIT tags and coded wire tags. Fish that contained radio tags were part of a study being conducted by the University of Idaho. Fish that contained PIT tags are used to determine downstream survival of juvenile fish through the dams. PIT tags were also used to determine run timing of adults through the Columbia and Snake River corridors and to the hatchery. Five fish were found to have jaw tags as well as PIT tags. A total of 418 fish had coded wire tags. However, some of these fish were released to spawn naturally and therefore the snouts were not collected. A total of 205 snouts containing coded wire tags were collected this season from brood year 2003 (Table 5).

Table 5. Pahsimeroi summer Chinook coded wire tag summary, Brood Year 2003.

DATE COLLECTED	SEX	FLOY TAG	FL(CM)	CLIPS OR MARKS	SNOUT BAG NUMBER	COMMENTS
28-Jun	f	n/a	72	cwt	03IS277	Snout collected 14 Sept 03
5-Jul	m	n/a	50	cwt	03IS175	not floy tagged-killed immediately upon arrival
6-Jul	m	n/a	50	cwt	03IS176	not floy tagged-killed immediately upon arrival
6-Jul	f	n/a	79	cwt	03IS177	Trap Mort
7-Jul	m	n/a	50	cwt	03IS183	not floy tagged-killed immediately upon arrival
7-Jul	m	n/a	53	cwt	03IS184	not floy tagged-killed immediately upon arrival
8-Jul	m	n/a	54	cwt	03IS182	not floy tagged-killed immediately upon arrival
8-Jul	m	n/a	57	cwt	03IS181	not floy tagged-killed immediately upon arrival
8-Jul	m	n/a	57	cwt	03IS180	not floy tagged-killed immediately upon arrival
8-Jul	m	n/a	58	cwt	03IS179	not floy tagged-killed immediately upon arrival
8-Jul	m	n/a	55	cwt	03IS178	not floy tagged-killed immediately upon arrival
9-Jul	m	n/a	57	cwt	03IS185	not floy tagged-killed immediately upon arrival
9-Jul	f	594	82	cwt	03IS203	
9-Jul	m	n/a	49	cwt	03IS186	not floy tagged-killed immediately upon arrival
11-Jul	m	n/a	49	cwt	03IS189	not floy tagged-killed immediately upon arrival
11-Jul	m	n/a	54	cwt	03IS188	not floy tagged-killed immediately upon arrival
11-Jul	m	n/a	59	cwt	03IS187	not floy tagged-killed immediately upon arrival
11-Jul	m	n/a	59	cwt	03IS190	not floy tagged-killed immediately upon arrival
11-Jul	f	677	79	cwt	03IS205	
11-Jul	f	680	78	cwt	03is204	
12-Jul	m	n/a	51	cwt	03IS193	not floy tagged-killed immediately upon arrival
12-Jul	m	n/a	57	cwt	03IS192	not floy tagged-killed immediately upon arrival
12-Jul	f	747	78	cwt	03IS201	
12-Jul	f	748	80	cwt	03IS199	
12-Jul	m	n/a	51	cwt	03IS191	not floy tagged-killed immediately upon arrival
12-Jul	f	749	80	cwt	03IS202	
13-Jul	m	n/a	60	cwt	03IS198	not floy tagged-killed immediately upon arrival
13-Jul	m	n/a	57	cwt	03IS197	not floy tagged-killed immediately upon arrival
13-Jul	m	n/a	55	cwt	03IS196	not floy tagged-killed immediately upon arrival
13-Jul	m	n/a	57	cwt	03IS195	not floy tagged-killed immediately upon arrival
13-Jul	m	n/a	56	cwt	03Is194	not floy tagged-killed immediately upon arrival
15-Jul	m	n/a	58	cwt	03IS207	not floy tagged-killed immediately upon arrival
15-Jul	m	n/a	58	cwt	03IS208	not floy tagged-killed immediately upon arrival
15-Jul	m	n/a	58	cwt	03IS206	not floy tagged-killed immediately upon arrival
15-Jul	m	n/a	56	cwt	03IS209	not floy tagged-killed immediately upon arrival
15-Jul	m	n/a	60	cwt	03IS210	not floy tagged-killed immediately upon arrival
15-Jul	f	816	81	cwt	03IS246	
17-Jul	m	n/a	62	cwt	03IS213	not floy tagged-killed immediately upon arrival
17-Jul	m	n/a	56	cwt	03IS212	not floy tagged-killed immediately upon arrival
17-Jul	m	n/a	58	cwt	03IS214	not floy tagged-killed immediately upon arrival
17-Jul	m	n/a	60	cwt	03IS211	not floy tagged-killed immediately upon arrival
17-Jul	m	854	78	cwt	03IS239	
18-Jul	f	n/a	81	cwt	03IS243	not floy tagged-killed immediately upon arrival
20-Jul	m	n/a	55	cwt	03IS226	not floy tagged-killed immediately upon arrival
20-Jul	m	n/a	54	cwt	03IS215	not floy tagged-killed immediately upon arrival
20-Jul	f	901	83	cwt	03IS238	
20-Jul	m	n/a	59	cwt	03IS225	not floy tagged-killed immediately upon arrival
20-Jul	m	n/a	48	cwt	03IS220	not floy tagged-killed immediately upon arrival
20-Jul	m	n/a	59	cwt	03IS227	not floy tagged-killed immediately upon arrival
20-Jul	m	n/a	53	cwt	03IS222	not floy tagged-killed immediately upon arrival
20-Jul	m	n/a	79	cwt	03IS237	not floy tagged-killed immediately upon arrival
20-Jul	m	n/a	57	cwt	03IS216	not floy tagged-killed immediately upon arrival
20-Jul	m	n/a	57	cwt	03IS219	not floy tagged-killed immediately upon arrival

Table 5. Continued

DATE COLLECTED	SEX	FLOY TAG	FL(CM)	CLIPS OR MARKS	SNOUT BAG NUMBER	COMMENTS
20-Jul	m	n/a	63	cwt	03IS223	not floy tagged-killed immediately upon arrival
20-Jul	m	n/a	80	cwt	03IS248	not floy tagged-killed immediately upon arrival
20-Jul	m	n/a	67	cwt	03IS245	not floy tagged-killed immediately upon arrival
20-Jul	m	missing	57	cwt	03is218	
20-Jul	m	n/a	60	cwt	03IS217	not floy tagged-killed immediately upon arrival
20-Jul	m	n/a	59	cwt	03IS224	not floy tagged-killed immediately upon arrival
20-Jul	f	908	78	cwt	03IS249	
20-Jul	m	910	63	cwt	03IS242	
20-Jul	m	n/a	60	cwt	03IS221	not floy tagged-killed immediately upon arrival
21-Jul	f	n/a	79	cwt	03IS241	not floy tagged-killed immediately upon arrival
21-Jul	f	942	71	cwt	03IS240	
21-Jul	f	943	83	cwt	03IS247	
22-Jul	m	n/a	56	cwt	03IS228	not floy tagged-killed immediately upon arrival
22-Jul	m	970	63	cwt	03IS270	
22-Jul	m	n/a	56	cwt	03IS229	not floy tagged-killed immediately upon arrival
22-Jul	m	n/a	60	cwt	03IS231	not floy tagged-killed immediately upon arrival
22-Jul	m	n/a	55	cwt	03IS232	not floy tagged-killed immediately upon arrival
23-Jul	m	987	62	cwt	03IS250	
23-Jul	m	n/a	57	cwt	03IS234	not floy tagged-killed immediately upon arrival
23-Jul	m	n/a	60	cwt	03IS230	not floy tagged-killed immediately upon arrival
23-Jul	f	988	77	cwt	03IS244	
23-Jul	m	n/a	55	cwt	03IS233	not floy tagged-killed immediately upon arrival
24-Jul	m	n/a	52	cwt	03IS236	not floy tagged-killed immediately upon arrival
24-Jul	m	n/a	55	cwt	03IS235	not floy tagged-killed immediately upon arrival
25-Jul	m	n/a	61	cwt	03IS251	not floy tagged-killed immediately upon arrival
29-Jul	m	n/a	60	cwt	03IS254	not floy tagged-killed immediately upon arrival
29-Jul	f	n/a	80	cwt	03IS255	not floy tagged-killed immediately upon arrival
29-Jul	m	n/a	60	cwt	03IS253	not floy tagged-killed immediately upon arrival
29-Jul	m	n/a	56	cwt	03IS252	not floy tagged-killed immediately upon arrival
29-Jul	m	n/a	41	cwt	03IS256	not floy tagged-killed immediately upon arrival
30-Jul	m	n/a	54	cwt	03IS257	not floy tagged-killed immediately upon arrival
31-Jul	m	n/a	52	cwt	03IS258	not floy tagged-killed immediately upon arrival
31-Jul	m	n/a	54	cwt	03IS259	not floy tagged-killed immediately upon arrival
31-Jul	f	n/a	77	cwt	03IS260	not floy tagged-killed immediately upon arrival
1-Aug	f	missing	76	cwt	09is261	
2-Aug	m	n/a	54	cwt	03IS262	not floy tagged-killed immediately upon arrival
3-Aug	m	n/a	57	cwt	03IS263	not floy tagged-killed immediately upon arrival
3-Aug	m	n/a	61	cwt	03IS264	not floy tagged-killed immediately upon arrival
4-Aug	m	n/a	56	cwt	03IS265	not floy tagged-killed immediately upon arrival
5-Aug	M	n/a	59	cwt	03IS266	not floy tagged-killed immediately upon arrival
6-Aug	M	n/a	57	cwt	03IS267	not floy tagged-killed immediately upon arrival
6-Aug	M	n/a	57	cwt	03IS268	not floy tagged-killed immediately upon arrival
17-Aug	m	n/a	45	cwt	03IS269	not floy tagged-killed immediately upon arrival
22-Aug	m	n/a	49	cwt	03IS378	not floy tagged-killed immediately upon arrival
22-Aug	m	n/a	59	cwt	03IS381	not floy tagged-killed immediately upon arrival
24-Aug	m	n/a	49	cwt	03IS383	not floy tagged-killed immediately upon arrival
24-Aug	m	n/a	61	cwt	03IS384	not floy tagged-killed immediately upon arrival
25-Aug	m	n/a	59	cwt	03IS382	not floy tagged-killed immediately upon arrival
25-Aug	m	n/a	56	cwt	03IS379	not floy tagged-killed immediately upon arrival
26-Aug	m	n/a	55	cwt	03IS380	not floy tagged-killed immediately upon arrival
27-Aug	m	n/a	58	cwt	03IS386	not floy tagged-killed immediately upon arrival

Table 5. (Continued).

DATE COLLECTED	SEX	FLOY TAG	FL(CM)	CLIPS OR MARKS	SNOUT BAG NUMBER	COMMENTS
28-Aug	m	n/a	61	cwt	03IS385	not floy tagged-killed immediately upon arrival
29-Aug	M	n/a	62	cwt	03IS307	not floy tagged-killed immediately upon arrival
2-Sep	m	311	49	cwt	03IS387	
2-Sep	f	487	77	cwt	03is388	
4-Sep	M	n/a	57	cwt	03IS306	not floy tagged-killed immediately upon arrival
5-Sep	m	n/a	58	cwt	03IS308	not floy tagged-killed immediately upon arrival
5-Sep	m	n/a	60	cwt	03IS314	not floy tagged-killed immediately upon arrival
5-Sep	f	101	78	cwt	03is304	
5-Sep	f	257	75	cwt	03is303	
5-Sep	m	98	81	cwt	03is302	
8-Sep	f	596	77	cwt	03is364	
8-Sep	f	273	77	cwt	03is365	
8-Sep	f	missing	78	cwt	03is366	pre-spawn mortality
8-Sep	f	317	81	cwt	03is367	
8-Sep	f	224	76	cwt	03is368	
8-Sep	f	547	79	cwt	03is370	
8-Sep	f	129	77	cwt	03is315	
8-Sep	m	1016	87	cwt	03is369	
8-Sep	m	357	52	cwt	03is371	
8-Sep	m	1026	65	cwt	03is316	
9-Sep	m	n/a	62	cwt	03IS318	not floy tagged-killed immediately upon arrival
11-Sep	m	n/a	57	cwt	03IS317	not floy tagged-killed immediately upon arrival
11-Sep	m	missing	82	cwt	03IS328	
11-Sep	m	998	56	cwt	03IS320	
11-Sep	m	678	63	cwt	03IS319	
11-Sep	m	1006	51	cwt	03IS322	
11-Sep	f	545	81	cwt	03is331	
11-Sep	f	632	74	cwt	03is330	
11-Sep	f	679	77	cwt	03is329	
11-Sep	f	941	80	cwt	03is327	
11-Sep	f	673	77	cwt	03is325	
11-Sep	f	175	75	cwt	03is323	
11-Sep	f	302	83	cwt	03is324	
11-Sep	f	1076	84	cwt	03is321	
11-Sep	f	595	83	cwt	03is326	
12-Sep	m	n/a	57	cwt	03IS275	not floy tagged-killed immediately upon arrival
12-Sep	m	n/a	57	cwt	03IS276	not floy tagged-killed immediately upon arrival
15-Sep	m	999	60	cwt	03is282	
15-Sep	m	743	59	cwt	03is272	
15-Sep	m	676	75	cwt	03is294	
15-Sep	f	140	80	cwt	03is278	
15-Sep	f	missing	84	cwt	03is279	
15-Sep	f	missing	82	cwt	03is280	
15-Sep	f	144	78	cwt	03is283	
15-Sep	f	489	84	cwt	03is284	
15-Sep	f	909	82	cwt	03is285	
15-Sep	f	675	83	cwt	03is286	
15-Sep	f	198	74	cwt	03is287	
15-Sep	f	127	78	cwt	03is288	
15-Sep	f	missing	78	cwt	03is289	
15-Sep	f	251	85	cwt	03is293	
15-Sep	f	771	71	cwt	03is271	
15-Sep	f	107	85	cwt	03is273	

Table 5. Continued.

DATE COLLECTED	SEX	FLOY TAG	FL(CM)	CLIPS OR MARKS	SNOUT BAG NUMBER	COMMENTS
15-Sep	f	176	80	cwt	03is274	
15-Sep	f	84	72	cwt	03is281	
15-Sep	f	271	75	cwt	03is295	
15-Sep	f	745	75	cwt	03is296	
17-Sep	m	n/a	56	cwt	03is291	not floy tagged-killed immediately upon arrival
18-Sep	m	541	71	cwt	03is292	
18-Sep	m	138	79	cwt	03is301	
18-Sep	m	missing	82	cwt	03is313	
18-Sep	m	93	78	cwt	03is312	
18-Sep	m	1008	57	cwt	03is338	
18-Sep	f	770	81	cwt	03is298	
18-Sep	f	672	79	cwt	03is297	
18-Sep	f	223	85	cwt	03is299	
18-Sep	f	853	81	cwt	03is300	
18-Sep	f	751	83	cwt	03is305	
18-Sep	f	237	81	cwt	03is309	
18-Sep	f	340	79	cwt	03is310	
18-Sep	f	631	85	cwt	03is311	
18-Sep	f	674	79	cwt	03is332	
18-Sep	f	180	76	cwt	03is333	
18-Sep	f	1100	83	cwt	03is334	
18-Sep	f	256	77	cwt	03is335	
18-Sep	f	135	74	cwt	03is336	
18-Sep	f	911	82	cwt	03is337	
18-Sep	f	28	80	cwt	03is339	
20-Sep	m	n/a	54	cwt	03is340	not floy tagged-killed immediately upon arrival
21-Sep	m	n/a	63	cwt	03is342	not floy tagged-killed immediately upon arrival
21-Sep	m	n/a	59	cwt	03is341	not floy tagged-killed immediately upon arrival
22-Sep	m	missing	56	cwt	03is344	died in holding-not spawned
22-Sep	m	missing	52	cwt	03is343	died in holding-not spawned
22-Sep	m	1014	56	cwt	03is345	
22-Sep	m	1121	57	cwt	03is346	
22-Sep	f	544	78	cwt	03is347	
23-Sep	m	n/a	61	cwt	03is348	not floy tagged-killed immediately upon arrival
23-Sep	m	n/a	61	cwt	03is349	not floy tagged-killed immediately upon arrival
25-Sep	f	304	78	cwt	03is350	
25-Sep	f	236	77	cwt	03is351	
29-Sep	m	missing	78	CWT	03is352	
29-Sep	m	missing	59	CWT	03is353	
29-Sep	m	missing	49	CWT	03is354	
29-Sep	m	missing	60	CWT	03is355	
29-Sep	m	missing	59	CWT	03is356	
29-Sep	m	missing	66	cwt	03is360	
29-Sep	m	1125	52	cwt	03is357	
29-Sep	m	1132	66	cwt	03is363	
29-Sep	f	969	78	cwt	03is359	
29-Sep	f	1007	78	cwt	03is358	
29-Sep	f	971	78	cwt	03is361	
29-Sep	f	989	77	cwt	03is362	

Specific information on these fish with special marks and tags are as follows:

Trap Date	Sex	Fork Length (CM)	Unmarked	Clips or Marks	Jaw Tag #	Pit Tag #	Radio Tag #
6/26	F	83	NO	AD/JT/PIT	WDFW7620X/black tag	3D9.1BF1B351F9	NONE
7/1	M	84	NO	AD/JT/PIT	WDFE05657X/red tag	3D9.1BF1B3A331	NONE
7/2	F	78	NO	AD/PIT	NONE	3D9.1BF183BBD8	NONE
7/4	M	85	NO	AD/JT/PIT	WDFW8010X/black tag	3D9.1B1FB45610	NONE
7/5	F	95	NO	AD/JT/PIT	WDFW7616X/black tag	3D9.1BF1B31048	NONE
7/5	M	78	NO	AD/JT/PIT	WDFW8084X/black tag	3D9.1BF1B3340B	NONE
7/9	F	84	NO	AD/PIT/RAD	NONE	3D9.1BF1903474	CHANNEL 12, CODE 060
7/12	F	73	NO	AD/PIT/RAD	NONE	3D9.1BF18B634E	CHANNEL 13, CODE 122

AD = ADIPOSE CLIPPED, PIT = PIT TAGGED, JT=JAW TAGGED, RAD= RADIO TAGGED, UNMARKED = NO FIN CLIPS

ADULT HANDLING PROCEDURES

During the summer Chinook trapping season, the trap was checked daily and all fish were handled in accordance with protocols established by NOAA Fisheries. All salmon were anesthetized in a solution of MS-222. While anaesthetized, fish were examined for fin clips, measured to the nearest centimeter for fork length, and identified by sex. Each fish was also intraperitoneally injected with erythromycin at a rate of 20 mg/kg body weight for BKD management. All fish were allowed to recover in a freshwater recovery tank before being ponded or released.

All summer Chinook held for spawning were marked with a floy tag. Floy tagging each salmon during trapping makes the tracking of these fish easier during spawning season.

ADULT HOLDING POND RECORD

The number of Chinook retained for spawning each year is dictated to hatchery personnel by Department biologists based on the number and origin of returning adults. Fish that were held for ponding were not to exceed 60% hatchery-origin unlisted fish and 40% hatchery-origin listed fish. Fish that were held for ponding equated to 61.9% hatchery-origin unlisted and 38.1% hatchery-origin listed fish. Surplus hatchery-origin listed or hatchery-origin unlisted fish were killed and given to the Shoshone-Bannock Tribe (SBT) and local charities. A breakdown

of the disposition of all fish and their listing status can be found in Table 4. Fish that were killed and given to the SBT and local charities can be found in Table 6.

Beginning on July 1 and continuing through September 15 both the male and female holding ponds were treated 3 times weekly with a 1-hour, 167 ppm formalin treatment to prevent mortality caused by secondary mycotic infections. Female Chinook were sorted for ripeness for the first time on August 28.

This year's pre-spawn mortality equated to 5.9% of the 848 fish held for spawning. Female pre-spawn mortality totaled 28 fish and male pre-spawn mortality totaled 22 fish all of which were of hatchery-origin. The total number of trap mortalities was 4 and all fish were of hatchery-origin. No naturally produced fish were ponded for spawning.

ADULT RELEASES

This year's goal was to release up to 60% hatchery-origin listed fish and 40% natural-origin fish into the Pahsimeroi River for natural reproduction. This decision was made by Department research personnel in an attempt to reduce the number of surplus hatchery-origin fish killed. In non-surplus fish years, the goal is to release 50% hatchery-origin fish and 50% natural-origin fish. Out of the 763 fish that were released for natural reproduction 57% were hatchery-origin listed fish and 43% were natural-origin fish. For a disposition summary refer to Table 4.

SUMMER CHINOOK SPAWNING AND INCUBATION

Spawning began on September 2 and concluded on September 29, 2003. Each ripe female was killed and then spawned by incision method. Prior to incision, a 1-cc sample of ovarian fluid was collected from sixty fish throughout the spawning season to test for IHN/IPN. After egg collection and fertilization, kidney samples were collected from all females to test for BKD and 20 head wedges were collected to test for whirling disease. All samples were sent to the Eagle Fish Health Laboratory (EFHL). In 2003, PFH culled eggs from female fish that had an ELISA optical density of 0.25 or greater for BKD. Only 3 females had optical densities of 0.25 or greater.

This year only one group of fish was created from broodstock retained at PFH. This was dictated to hatchery personnel through the Department Fisheries Bureau. This was because the ISS study which required hatchery personnel to create multiple groups of fish (reserve and ISS) ended in 2002. The Fisheries Bureau has been working with NOAA and believes that NOAA will approve a new Section 10 permit that allows fishing to remove "surplus" listed broodstock or that the progeny derived from a broodstock with less than 50% listed hatchery fish would not be considered listed (personal communication from Sharon Kiefer). NOAA has assured IDFG that they can craft a new Section 10 broodstock permit that allows "fishing" as a broodstock management technique for listed and unlisted Pahsimeroi summer Chinook salmon.

Table 6. Pahsimeroi summer Chinook disposition summary, Brood Year 2003.

Disposition	Males	Females
Trap Mortality	2	2
Ponded-Pre-Spawn Mortality	22	28
Surplus-Killed for Operation Help/Shoshone Bannock*	915	221
Surplus Females in Holding-Killed Without Spawning	0	36
Females Spawnd-Green Eggs Collected for Nez Perce Study	0	2
Spawnd-Eyed Eggs Shipped to Sawtooth Hatchery	0	225
Females Spawnd-Eggs Culled	0	121
Released Above Weir	355	408
Males Spawnd and Killed	275	0
Males- Died in Holding After 30 percent Spawning Completed	135	0
Total Chinook Trapped Brood Year 2003 Pahsimeroi Hatchery	1,704	1,043

*All other carcasses stored in refrigerated trailer and taken to rendering plant.

Hatchery-origin listed and hatchery-origin unlisted fish were used to create Brood Year 2003 progeny. Eggs from each female were placed into a separate bucket. Males were selected at random and each male was spawned directly into the bucket. Well water was then added to activate the sperm and allowed to fertilize the eggs for 3 to 5 minutes. Consequently, some males were spawned more than once due to the fact that the males ripened earlier than normal this season and died before hatchery personnel had the chance to spawn them. After fertilization well water was then used to rinse the eggs. The eggs were water hardened in a 100 ppm solution of Argentyne and allowed to sit for 60 minutes. Finally, eggs were poured directly into vertical stack incubator trays at PFH.

All eggs were incubated to eye-up at PFH. The incubator trays were loaded at the rate of one female's eggs per tray. From 48 hours after spawning until eye up, eggs were treated three times a week with a 1,667-ppm formalin treatment at Pahsimeroi. At eye-up, approximately 450 temperature units (TUs), the eggs were shocked twice by dropping them into a bucket of water from a height of approximately 16 inches.

The dead eggs were picked and enumerated by the use of a Jensorter electronic counter/picker. The number of dead eggs was added to the eyed-egg number to obtain the total number of green eggs per female. The eyed-egg number was divided by the green egg number to determine the overall eye-up percentage (Table 7). Once the eggs reached the eyed stage, they were placed in coolers of water and transported to SFH for final incubation and early rearing. Prior to transport, ice was placed in the coolers to chill the water and eggs. Upon arrival at SFH, all eggs were tempered and disinfected with argentyne before being placed in standard vertical stack incubators.

A total of 346 females were spawned; however, the eggs from 121 females were later culled without enumeration. These eggs were culled in both the green as well as eyed stages of development. Only eggs designated for shipment to Sawtooth Hatchery were enumerated with the Jensorter counter/picker discussed above. Fecundity averaged 5,587 eggs per female, and the overall eye-up percentage was 87.4% (Table 7). Viral samples tested negative for IPN/IHN. Kidney sample test results ranged from negative to high positive for BKD. The fish that were released above the weir to spawn naturally were sampled for DNA as part of a study being conducted by Nampa Research Technician, Brian Leth. His goal is to determine what contribution hatchery fish are making to the natural population verses wild fish. Collecting DNA samples from spawning adults and out-migrating juvenile salmon will allow Brian to determine genetically which group of fish makes the most contribution.

CRYOPRESERVATION

With the future projection of few returning adult summer Chinook salmon to the PFH, the Nez Perce Tribe (NPT) has initiated a cryopreservation program. During the spawning season, personnel from the NPT collected milt from naturally produced and artificially propagated adult male summer Chinook salmon. The milt was tested for motility prior to freezing and is currently being stored in repositories at the University of Idaho and Washington State University (Table 8).

Table 7. Brood Year 2003 summer Chinook egg incubation record for Pahsimeroi Fish Hatchery.

LOT NO.	SPAWN DATE	TOTAL FEMALES SHIPPED	EYED EGGS SHIPPED	# LIST. EGGS SHIPPED	% LIST. EGGS SHIPPED	# UNLISTED EGGS SHIPPED	% UNLISTED EGGS SHIPPED	EYED EGGS	BAD EGGS	GREEN EGGS	PERCENT EYE-UP	AVERAGE FECUNDITY
1	9/2	26	115,046	18,431	16.0%	96,615	84.0%	115,046	14,167	129,213	89.0%	4,970
2	9/5	20	81,218	14,569	17.9%	66,649	82.1%	81,218	11,932	93,150	87.2%	4,658
3	9/8	37	170,150	58,517	34.4%	111,633	65.6%	170,150	16,395	186,545	91.2%	5,042
4	9/11	33	157,521	58,449	37.1%	99,072	62.9%	157,521	12,181	169,702	92.8%	5,142
5	9/15	36	185,749	87,946	47.3%	97,803	52.7%	185,749	22,403	208,152	89.2%	5,782
6	9/18	48	249,800	140,130	56.1%	109,670	43.9%	249,800	24,876	274,676	90.9%	5,722
7	9/22	8	47,172	21,000	44.5%	26,172	55.5%	47,172	21,960	69,132	68.2%	8,642
8	9/25	8	44,025	40,935	93.0%	3,090	7.0%	44,025	20,071	64,096	68.7%	8,012
9	9/29	9	48,150	11,556	24.0%	36,594	76.0%	48,150	14,364	62,514	77.0%	6,946
TOTALS		225*	1,098,831	451,533	41.1%	647,298	58.9%	1,098,831	158,349	1,257,180	87.4%	5,587

* An additional 121 females were spawned-the resulting eggs were discarded without enumeration-both eyed and green.

Table 8. Brood Year 2003 summer Chinook cryopreservation summary.

Collection Date	Sample Number	Fork Length(mm)	Tissue Sample Collected	Hatchery ID	ID Type	Fin Clip (Type)	Remarks	Gene Bank Number	WSU Motility of .5 ml straws	WSU #	UI Motility of .5 ml straws	UI #	Total # of .5 ml straws
9/22/2003	NPT-300-03	-	y	549	floy	ad	2 bags	395	0		80	20	20
9/22/2003	NPT-301-03	-	y	463	floy	ad	2 bags	396	50	20	80	18	38
9/22/2003	NPT-302-03	-	y	644	floy	ad	2 bags	397	0		30	20	20
9/22/2003	NPT-303-03	640	y		no tag	ad	1 bag	398			90	20	20
9/22/2003	NPT-304-03	-	y	1058	floy	ad	1 bag	399	70	20			20
9/22/2003	NPT-305-03	-	y	1010	floy	ad	2 bags	110	90	20	20	20	40
9/22/2003	NPT-306-03	-	y	1114	floy	ad	2 bags	111	90	20	50	20	40
9/22/2003	NPT-307-03	-	y	773	floy	ad	2 bags	112	70	20	90	20	40
9/22/2003	NPT-308-03	-	y	1106	floy	ad	2 bags	113	40	20	90	20	40
9/22/2003	NPT-309-03	-	y	1117	floy	ad	1 bag	114			50	14	14
9/22/2003	NPT-310-03	815	y		no tag	ad	2 bags	115			100	20	20
9/22/2003	NPT-311-03	-	y	1104	floy	ad	2 bags	116			100	20	20
9/22/2003	NPT-313-03	-	y	1111	floy	ad	1 bag	117					No Cryo
9/22/2003	NPT-314-03	-	y	1118	floy	ad	1 bag	118			70	20	20
9/22/2003	NPT-315-03	-	y	1089	floy	ad	2 bags	119			90	20	20
9/22/2003	NPT-316-03	-	y	1121	floy	ad	2 bags	120					No Cryo
9/22/2003	NPT-317-03	570	y		no tag	ad	2 bags	121			90	10	10

ADULT CARCASS DISPOSITION

During the spawning season all carcasses not donated to charity were placed in a refrigeration unit and frozen. At the conclusion of the spawning season, the frozen carcasses were transported to a rendering plant in Kuna, ID.

NON-TARGET SPECIES

Below is a list of non-target species that were trapped throughout the trapping season. Due to the large number of returning adult salmon not all non-target species were accounted for. No bull trout were trapped this year.

RAINBOW TROUT

Trap Date	Sex	Length (CM)	Disposition
7/16	m	40	Released
7/21	f	39	Released
7/28	f	37	Released
8/13	m	39	Released
8/13	f	29	Released

Cutthroat Trout

Trap Date	Sex	Length (CM)	Disposition
7/23	f	33	Released

FISH PRODUCTION

Because Chinook salmon are more susceptible to whirling disease when they are less than 3.5 inches in length, it is recommended that they be reared on Specific-Pathogen-Free (SPF) water until attaining that size. Once the salmon have reached 3.5 inches, whirling disease symptoms become less overt, so the fish can be transferred to outside raceways supplied with river water.

In January 2004, SFH personnel transferred 744,420 PFH summer Chinook salmon fry from indoor vertical-flow incubators to eight indoor vats. Also, in January, a total of 297,743 fry were transferred to PFH and ponded in the early rearing raceways due to lack of space and water at SFH. The SFH reared the remaining summer Chinook salmon (reserve group) according to Integrated Hatcheries Operation Team (IHOT) guidelines for density and flow indices. In February, 357,318 fry were transferred from the indoor vats to outdoor large raceways 9 and 11. In March, the remainder of the fry (378,812 reserve group) were

transferred to outdoor large raceways 10 and 12. On May 17, the fish marking crew marked the fish in all raceways. After marking, these fish were treated with a 167-ppm formalin flow through drip treatment for 3 days to reduce secondary mycotic infections. The marking inventory at SFH was 733,640 fish. Department fish transport personnel transferred these fish back to PFH on June 7 and 8, 2004.

From May 18 through May 21, 2004 fish marking personnel with the MATS unit marked the fingerling at PFH. They marked a total of 278,434 fish, which was 4.15% (12,067 fish) less than Pahsimeroi's inventory. Also, out of this total, 33,563 fish were coded wired tagged. Pahsimeroi Hatchery personnel used the marking inventory for the remainder of the rearing cycle.

To control BKD, fish are normally administered two prophylactic-medicated feed treatments. The first medicated feed treatment at PFH took place in June 2003, but was terminated seven days into a twenty-eight day treatment due to increased fish mortality. Doug Munson (EFHL pathologist) diagnosed the fish with erythromycin toxicity (tetany). Apparently, there was too much erythromycin in the feed and this feed was later transferred to Clearwater Hatchery. The second medicated feed treatment was administered in September 2003 for 28 days and erythromycin toxicity was not observed during this treatment.

Brood Year 2003 smolts were fed 76,070 lbs of feed during their rearing cycle, resulting in a feed conversion of 1.4 (Table 11). The conversion rate was calculated using the original number of summer Chinook minus the number of mortalities observed. It should be noted, however, that predation by river otters and various bird species was observed, therefore many mortalities cannot be quantified. Attempts to live-trap otters in the past were unsuccessful and predation of fish by otters is becoming a yearly occurrence.

Common mergansers also invade the ponds in March and April when the fish are beginning to smolt. An attempt was made to obtain a kill permit from the U.S. Fish and Wildlife Service in 2002, but was unsuccessful since no attempt had been made to install bird screens around the ponds. Idaho Power Company was made aware of this problem and it will be addressed when construction of the new upper facility hatchery begins in 2006.

Pre-release organosomatic indices can be found in Table 9, feed costs are summarized in Table 10, and production costs are summarized in Table 11. Survival percentages by life stage are summarized in Table 12.

SMOLT RELEASES

A total of 975,252 smolts were volitionally released from pond 2 on March 22, 2005 through March 29, 2005. The outlet screens for pond 1 were pulled on March 28, 2005 and all smolts migrated out of the ponds by April 4, 2005. Sets of dam boards were pulled each day until all fish had migrated from the ponds. This year three groups of fish were released: reserve group (866,134 adipose clipped only), and reserve study group (from SFH: 76,013 adipose clipped and coded wire tagged) and reserve group study group from PFH: 33,105 adipose clipped and coded wire tagged).

For an overview of the brood stock history and smolt releases throughout PFH's history, see Appendix A.

Table 9. Pathology fish health report.

SUMMARY OF FISH AUTOPSY

ACCESSION NO:	05-053	LOCATION:	Pahsimeroi Hatchery
SPECIES:	Chinook Summer	AUTOPSY DATE:	3/3/2005
STRAIN:	Pahsimeroi	AGE:	Juv
UNIT:	P1,P2	SAMPLE SIZE:	20
REASON FOR AUTOPSY:	prelib.		
INVESTIGATOR(S):	Munson		
REMARKS:			

	MEAN	STANDARD DEVIATION	COEFFICIENT OF VARIATION
LENGTH	0.00	0.00	0.00
WEIGHT	0.00	0.00	0.00
KTL*:	0.00	0.00	0.00
CTL:**	0.00	0.00	0.00
HEMATOCRIT:	39.40	3.96	0.1
LEUCOCRIT:	0.00	0.00	0.00
SERUM PROTEIN:	8.45	0.66	0.08

*EXPRESSED AT KTL TIMES 10 TO THE FIFTH POWER
 **CONVERTED FROM KTL;EXPRESSED AS CTL TIMES 10 TO THE FOURTH POWER

EYES		GILLS		PSEUDO BRANCHES		THYMUS		FAT		SPLEEN		HIND GUT		KIDNEY		LIVER		BILE	
N	20	N	20	N	20	0	20	0	5	B	0	0	20	N	20	A	0	0	20
B1	0	F	0	S	0	1	0	1	11	R	20	1	0	S	0	B	19	1	0
B2	0	C	0	L	0	2	0	2	2	G	0	2	0	M	0	C	1	2	0
E1	0	M	0	S&L	0			3	2	NO	0			G	0	D	0	3	0
E2	0	P	0	I	0			4	0	E	0			U	0	E	0		
H1	0	OT	0	OT	0	Mean=0.00				OT	0	Mean=0.00		T	0	F	0		
H2	0			O	0			Mean=0.95								OT	0	Mean=0.00	
M1	0																		
M2	0																		
OT	0																		
SUMMARY OF NORMALS																			
20		20		20		20		20		20		20		20		20		20	

SEX M:0 F:0 U:0

GENERAL REMARKS

FINS: GONADS:
 SKIN: OTHER: FISH AT 20 FPP

Table 10. Brood Year 2003 feed summary for Pahsimeroi Fish Hatchery.

Feed Type/Size	Pounds Fed To Date	Cost per Pound	Total Feed Cost
Bio-Diet Starter #2	616	\$1.14	\$702.24
Bio-Diet Starter #3	2,112	\$1.14	\$2,407.68
Bio-Diet Grower 1.0 mm	924	\$0.95	\$877.80
Bio-Diet Grower 1.3 mm	2,728	\$0.93	\$2,537.04
Skretting Nutra Fry Pro-Active 1.2 mm	616	\$0.91	\$560.56
Skretting Nutra Fry ProActive 1.5 mm	396	\$0.77	\$304.92
Bio-Diet Grower 1.5mm	4,884	\$0.85	\$4,151.40
Bio-Diet Grower 1.5 mm AQM-100	1,584	\$1.92	\$3,041.28
Bio-Diet Grower 2.0 mm	3,168	\$0.81	\$2,566.08
Bio-Diet 2.0 mm AQM-100	8,096	\$1.94	\$15,706.24
Bio-Diet Grower 2.5 mm	4,400	\$0.80	\$3,498.00
Bio-Diet Grower 3.0 mm	17,750	\$0.77	\$13,667.50
Bio-Diet Grower 3.0 mm AQM-100	10,956	\$2.35	\$25,746.60
Bio-Diet Grower 6%TM-100	4,620	\$1.58	\$7,299.60
Rangen 1/8 Soft-Moist 6% TM-100	12,100	\$1.29	\$15,609.00
Rangen 1/8 Soft-Moist	1,120	\$0.84	\$940.80
Totals:	76,070		\$99,616.74

Table 11. Brood Year 2003 production costs by life stage, Pahsimeroi Fish Hatchery.

Number of fish	Pounds of feed	Cost of Feed	Pounds of Fish	Conversion	Total Budget	Cost per Thousand Fish	Cost per Pound of Fish
975,252	76,070	\$99,616.74	53,899	1.4	\$915,998.43	\$939.24	\$16.99

*Does not include capital outlay

Table 12. Brood Year 2003 smolt survival by life stage, Pahsimeroi Fish Hatchery.

Life Stages		Numbers		Survival Percentages From Eyed Eggs
Green Eggs		1,257,180		
Egg Pickoff		158,349		
Eyed Eggs		1,098,831		N/A
Alevin Pickoff		61,885		
Fry Poned		1,036,946		94.4
Fry Mortality		24,872		
Fingerling Poned		1,012,074		92.1
Fingerling Mortality		36,822		
Smolts Released		975,252		88.8

PAHSIMEROI FISH HEALTH SECTION

Diseases Encountered and Treatments. Several disease outbreaks occurred while rearing Brood Year 2003 summer Chinook salmon at this facility. Approximately 20,000 salmon were killed by an infestation of *Ichthyophthirius multifiliis*. This parasite was controlled by 167-ppm formalin treatments three times per week. These treatments began immediately after diagnosis (27 July 2004) and continued until the river water cooled in September 2004. During January 2005 elevated mortalities were noticed and fresh mortalities were sent to the EFHL for diagnosis. Infectious Hematopoietic Necrosis Virus (IHNV) was identified. *Renibacterium salmoninarum* (the causative agent of BKD) was also isolated via DFAT technology. These fish were fed a high dose of oxytetracycline medicated feed (10 g/100 lbs for 14 days). This treatment was allowed under INAD 9332-05-5 and applied during February and March 2005.

Acute Losses. Losses from *Ichthyophthirius multifiliis* peaked at approximately a 1,000 fish per day and killed a total of nearly 20,000 salmon. Losses to IHN and BKD ranged from 50 fish per day to almost 150 fish per day.

Other Assessments. The Department and IPC are cooperating to renovate Pahsimeroi Hatchery. This renovation is projected to provide a SPF water source and early rearing raceways. This renovation will provide the Pahsimeroi staff with management options that will help circumvent WD until the fish reach approximately 9.0 cm. Currently, meetings between IPC staff, contractors, and Department staff are being held to finalize construction plans.

Throughout the Pacific Northwest, IHN outbreaks have been experienced by many agencies rearing salmonids in water containing naturally spawning anadromous salmonids. Pahsimeroi Hatchery released 481 mature returning summer Chinook salmon into the hatchery's water source during the summer of 2004. We suspect that at least one of the naturally spawning Chinook was also carrying IHN and *Renibacterium*. Although hatchery renovation will lessen the prevalence and intensity of *Myxobolus cerebralis* infection, it will do little to stop horizontal transmission of pathogens from adult Chinook released above the weir. Hatchery and management personnel should see if there are management options to lessen jeopardy involved with excess Chinook and steelhead adults.

On August 17, 2004, Lawson Creek experienced a microburst thunderstorm which sent torrents of mud, rocks and silt into the Pahsimeroi River above the water intake for the upper facility. Approximately 6,000 salmon were killed during this event. Once in place, the renovated upper facility would be able to send well water into the ponds to lessen the effect of an event like this.

At the time of preliberation sampling, an organosomatic index demonstrated the lack of energy reserves stored in these fish. This condition was due to cold nightly temperatures keeping ice on the ponds at the upper facility. This ice prevented normal feeding of the Chinook salmon reared in these ponds. The hatchery staff aware of the fish condition in their ponds is using the last month of rearing to feed as much as possible in order to put some fat in storage on these fish before release.

Organosomatic Index See Table 9.

FISH MARKING

From May 18 through May 21, 2004 fish marking personnel with the MATS unit marked the fingerling at PFH. All fish were designated hatchery reserve group listed fish. They marked a total of 278,434 fish, which was 4.15% (12,067 fish) less than Pahsimeroi's inventory. Also, out of this total, 33,563 fish were coded wired tagged. Pahsimeroi Hatchery personnel used the marking inventory for the remainder of the rearing cycle.

Pahsimeroi summer Chinook at SFH were marked by hand clippers in May 2004 and marking was completed on May 25, 2004. All BY03 fish were designated as hatchery reserve group listed fish. The total number of fish marked was 737,978, which was 0.07% more fish than SFH had on their inventory. The breakdown of marked fish is as follows: 658,436 adipose clipped only and 79,542 adipose clipped and coded wire tagged. Nampa Research personnel are evaluating return rates of fish reared at PFH vs. fish reared at SFH. These fish were transferred to PFH rearing ponds on June 8 and June 9, 2004. Additionally, a total of 500 fish from Pond 1 were PIT-tagged on February 23, 2005.

HATCHERY IMPROVEMENTS

- Tim Wilkins installed additional storage cabinets in the master bathroom in residence 1.
- Paul Hightree from Salmon, ID trimmed the trees on the hatchery grounds to keep the limbs from rubbing and causing damage to residence 1 and the hatchery buildings.
- Robinson Electric re-routed the electrical wire to the head screens on pond 1 and pond 2 since the electrical wire was under water. This was recommended by the State Safety Inspector.
- Ray's Heating and Cooling replaced the attic fan in residence 2.
- Tim Wilkins replaced the spawning shed doors with new metal doors that were painted with automotive paint.
- Tim Wilkins built and installed a new literature box on the hatchery office exterior wall.
- The maintenance crew from IPC repaired the incubation supply pump relay and the alarm system.
- Robinson Electric repaired and electric heater thermostat in the chemical storage building and installed an emergency shut-off valve for the bulk fuel tank gasoline pump.
- A 105-gallon diesel gas tank and toolbox were purchased for the 1995 1-ton dually. The diesel is used to fuel the refrigeration unit for storing spawned out salmon and steelhead carcasses.
- New incubation tray plugs were purchased to replace the old plugs, which required the use of bungee cords to keep them in place.
- A new baffle holder was built for hanging and storing baffles in the bone yard.
- Fish and Game screen shop personnel installed 6" and 10" orifice plates at the entrance to the 12" fish bypass pipe at the upper hatchery. They also modified the roller screens at the head end of each pond by placing a rubber seal at the bottom and ground down the uneven concrete floor between the keyways. This allowed the roller screens to seal better preventing Chinook fingerling from escaping into the intake canal.
- The garage door seal was replaced at the upper hatchery shop.

- New stop logs were purchased and installed for the lower hatchery diversion to improve fish passage through the thalweg.
- A satellite internet connection was installed by Fish and Game IT personnel to increase data transfer rates.
- Two additional 20" wells were drilled to provide SPF water for the new hatchery incubation and early rearing building.
- Summit excavation renovated the lower hatchery intake canal with new slide gates and a broad crested weir that included a new staff gauge to measure water through the intake canal. They also removed the Parshall flume, installed a new smolt bypass pipe, replaced the sidewalks around the office building with French drains to divert precipitation and ground water.
- New microwave ovens were purchased and installed in both residences by hatchery personnel.

RECOMMENDATIONS

Recommendations for PFH by Department personnel include developing a (SPF) water source to provide pathogen-free water for use in rearing juvenile fish. Due to the presence of whirling disease at PFH, all Chinook eggs are currently sent eyed to SFH for incubation and early rearing. A minimum of 10 cfs of SPF water will be needed to raise one million Chinook to a size of 3.5 inches prior to exposure to river water containing *M. cerebralis*, the causative agent of whirling disease. Complete renovation of the upper hatchery will begin in the spring of 2006.

ACKNOWLEDGEMENTS

We would like to thank Paul Abbott and the staff at IPC for their continued support. We would also like to thank the crew at SFH for all their help with the incubation and early rearing of our fish.

APPENDICES

Appendix A. Pahsimeroi Fish Hatchery Chinook salmon stock history.

Brood Year	Egg Source	No. Eggs	Genetic Stock	Release Year	Smolts Released	Release Site
1981	Hayden Creek	<500,000	Spring Chinook	1983	437,332	Pahsimeroi River
1981	Pahsimeroi	<25,000	Summer Chinook	1983	13,700	Pahsimeroi River
1982	Pahsimeroi	75,402	Summer Chinook	1984	55,800	Pahsimeroi River
1982	Hayden Creek	107,234	Spring Chinook	1984	99,750	Pahsimeroi River
1982	Sawtooth	451,902	Spring Chinook	1984	420,400	Pahsimeroi River
1982	Rapid River	669,500	Spring Chinook	1984	622,850	Pahsimeroi River
1983	Pahsimeroi	261,188	Summer Chinook	1985	209,105	Pahsimeroi River
1983	Hayden Creek	279,398	Spring Chinook	1985	178,800	Pahsimeroi River
1984	Pahsimeroi	23,999	Summer Chinook	1986	12,100	Pahsimeroi River
1984	Hayden Creek	145,341	Spring Chinook	1986	81,000	Pahsimeroi River
1985	Pahsimeroi	2,602,404	Spring Chinook	1987	1,200,000	Hayden Creek and Yankee Fork
1985	Pahsimeroi	200,448	Summer Chinook	1987	158,007	Pahsimeroi River
1985	Pahsimeroi	127,332	Summer Chinook	1987	100,593	Pahsimeroi River
1987	Pahsimeroi	2,128,750	Spring Chinook	1989	1,128,750	Sawtooth Hatchery
1987	Pahsimeroi	696,004	Summer Chinook	1989	536,500	Pahsimeroi River
1987	McCall	605,091	Summer Chinook	1989	479,800	Pahsimeroi River
1988	Pahsimeroi	1,053,536	Summer Chinook	1990	808,536	Pahsimeroi River
1988	McCall	317,272	Summer Chinook	1990	245,000	Pahsimeroi River
1989	Pahsimeroi	294,893	Summer Chinook	1991	227,500	Pahsimeroi River
1990	Pahsimeroi	662,641	Summer Chinook	1992	605,900	Pahsimeroi River
1991	Pahsimeroi	22,235	Spring Chinook	1993	15,000	Rapid River
1991	Pahsimeroi	437,157	Summer Chinook	1993	375,000	Pahsimeroi River
1992	Pahsimeroi	172,139	Summer Chinook	1994	130,510	Pahsimeroi River
1993	Pahsimeroi	167,200	Summer Chinook	1995	147,429	Pahsimeroi River
1994	Pahsimeroi	0	Summer Chinook	1996	0	Pahsimeroi River
1995	Pahsimeroi	157,938	Summer Chinook	1997	122,017	Pahsimeroi River
1996	Pahsimeroi	85,660	Summer Chinook	1998	65,648	Pahsimeroi River
1997	Pahsimeroi	171,836	Summer Chinook	1999	135,669	Pahsimeroi River
1998	Pahsimeroi	74,105	Summer Chinook	2000	53,837	Pahsimeroi River
1999	Pahsimeroi	371,354	Summer Chinook	2001	283,063	Pahsimeroi River
2000	Pahsimeroi	633,906	Summer Chinook	2002	508,340	Pahsimeroi River
2001	Pahsimeroi	1,700,097	Summer Chinook	2003	1,205,918	Pahsimeroi River
2002	Pahsimeroi	1,293,123	Summer Chinook	2004*	1,108,028	Pahsimeroi River
2003	Pahsimeroi	1,587,310	Summer Chinook	2005	975,252	Pahsimeroi River

* Smolt Release Number an estimate due to fish kill during outmigration

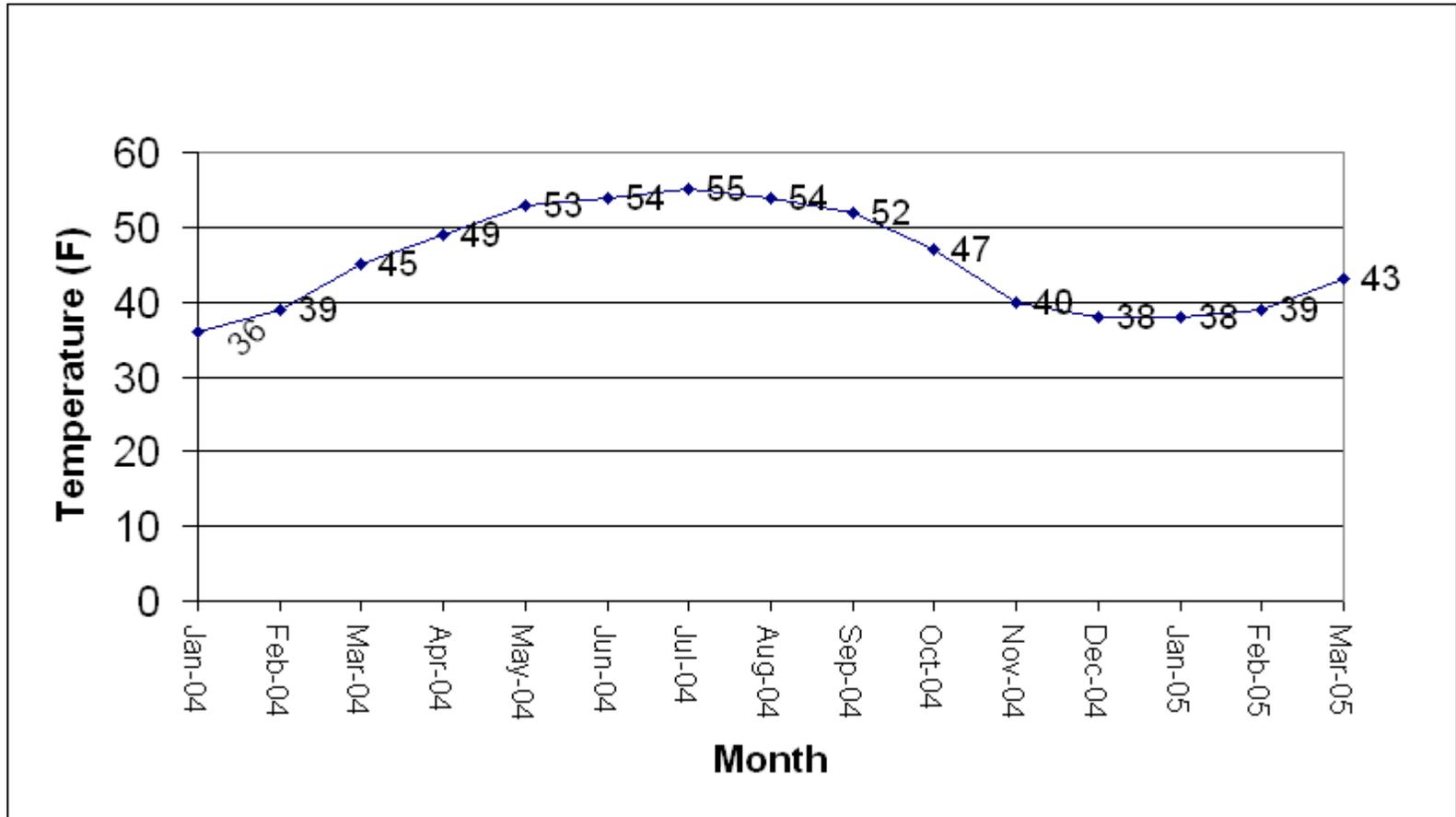
Appendix B. Pahsimeroi Fish Hatchery summer Chinook smolt release and adult return information.

RELEASE DATE	NUMBER	3-YRS	4-YRS	5-YRS	TOTAL	RETURN YEARS	% RETURN
May-70	300,000	89	N/A	101	N/A	71,72,73	N/A
May-71	250,000	40	425	14	479	72,73,74	0.192%
May-72	250,000	20	138	76	234	73,74,75	0.094%
May-73	347,000	1	5	32	38	74,75,76	0.011%
May-74	330,000	8	189	436	633	75,76,77	0.192%
May-75	114,000	53	115	X	X	76,77,78	N/A
May-76	121,000	7	X	32	X	77,78,79	N/A
May-77	235,000	X	O	4	X	78,79,80	N/A
May-78	218,000	1	29	13	43	79,80,81	0.020%
Mar-83	13,690	11	72	30	113	84,85,86	0.825%
Apr-84	55,800	27	278	52	357	85,86,87	0.640%
Apr-85	209,155	37	408	716	1,161	86,87,88	0.555%
Mar-86	12,095	13	47	31	91	87,88,89	0.752%
Mar-87	258,600	75	180	42	297	88,89,90	0.115%
Mar-88	598,500	135	389	79	603	89,90,91	0.101%
Mar-89	1,016,300	39	139	27	205	90,91,92	0.020%
Mar-90	1,058,000	20	98	119	237	91,92,93	0.022%
Mar-91	227,500	6	37	1	44	92,93,94	0.019%
Mar-92	605,900	13	26	0	39	93,94,95	0.006%
Apr-93	375,000	7	73	8	88	94,95,96	0.023%
Apr-94	130,510	7	27	9	43	95,96,97	0.033%
Apr-95	147,429	5	60	34	99	96,97,98	0.067%
Apr-96	0	n/a	n/a	n/a	n/a	97,98,99	n/a
Apr-97	122,017	18	207	32	257	98,99,00	0.210%
Apr-98	65,648	78	259	308	645	99,00,01	0.980%
Apr-99	135,669	73	515	256	844	00,01,02	0.622%
Apr-00	53,837	28	360	403	791	01,02,03	1.47%
Apr-01	283,063	308	1,072	n/a	n/a	02,03,04	n/a
Apr-02	508,340	932	n/a	n/a	n/a	03,04,05	n/a
Mar-03	1,205,918	n/a	n/a	n/a	n/a	04,05,06	n/a

Appendix B. Continued.

RELEASE DATE	NUMBER	3-YRS	4-YRS	5-YRS	TOTAL	RETURN YEARS	% RETURN
May-70	300,000	89	N/A	101	N/A	71,72,73	N/A
May-71	250,000	40	425	14	479	72,73,74	0.192%
May-72	250,000	20	138	76	234	73,74,75	0.094%
May-73	347,000	1	5	32	38	74,75,76	0.011%
May-74	330,000	8	189	436	633	75,76,77	0.192%
May-75	114,000	53	115	X	X	76,77,78	N/A
May-76	121,000	7	X	32	X	77,78,79	N/A
May-77	235,000	X	O	4	X	78,79,80	N/A
May-78	218,000	1	29	13	43	79,80,81	0.020%
Mar-83	13,690	11	72	30	113	84,85,86	0.825%
Apr-84	55,800	27	278	52	357	85,86,87	0.640%
Apr-85	209,155	37	408	716	1,161	86,87,88	0.555%
Mar-86	12,095	13	47	31	91	87,88,89	0.752%
Mar-87	258,600	75	180	42	297	88,89,90	0.115%
Mar-88	598,500	135	389	79	603	89,90,91	0.101%
Mar-89	1,016,300	39	139	27	205	90,91,92	0.020%
Mar-90	1,058,000	20	98	119	237	91,92,93	0.022%
Mar-91	227,500	6	37	1	44	92,93,94	0.019%
Mar-92	605,900	13	26	0	39	93,94,95	0.006%
Apr-93	375,000	7	73	8	88	94,95,96	0.023%
Apr-94	130,510	7	27	9	43	95,96,97	0.033%
Apr-95	147,429	5	60	34	99	96,97,98	0.067%
Apr-96	0	n/a	n/a	n/a	n/a	97,98,99	n/a
Apr-97	122,017	18	207	32	257	98,99,00	0.210%
Apr-98	65,648	78	259	308	645	99,00,01	0.980%
Apr-99	135,669	73	515	256	844	00,01,02	0.622%
Apr-00	53,837	28	360	403	791	01,02,03	1.47%
Apr-01	283,063	308	1,072	n/a	n/a	02,03,04	n/a
Apr-02	508,340	932	n/a	n/a	n/a	03,04,05	n/a
Mar-03	1,205,918	n/a	n/a	n/a	n/a	04,05,06	n/a

Appendix C. Brood Year 2003 Water Temperature Profiles Pahsimeroi Hatchery.



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