

## **PAHSIMEROI FISH HATCHERY**

**2006 Summer Chinook Salmon Brood Year Report**

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## TABLE OF CONTENTS

ABSTRACT .....	5
INTRODUCTION .....	6
OBJECTIVES.....	6
HATCHERY FACILITIES .....	6
WATER SUPPLY .....	7
STAFFING .....	8
TRAPPING.....	8
ADULT AGE CLASS DETERMINATION .....	9
SPECIAL MARKS AND TAGS.....	9
ADULT HANDLING PROCEDURE.....	10
ADULT HOLDING POND RECORD .....	10
ADULT RELEASES .....	11
SPAWNING AND INCUBATION.....	11
CRYOPRESERVATION .....	12
ADULT CARCASS DISPOSITION.....	12
NON-TARGET SPECIES.....	13
FISH PRODUCTION.....	13
SMOLT RELEASES.....	14
FISH HEALTH.....	14
ACKNOWLEDGMENTS .....	14

## LIST OF TABLES

Table 1. BY2006 summer Chinook salmon daily trap record.....	16
Table 2. BY2006 summer Chinook salmon male length frequency.....	19
Table 3. BY2006 summer Chinook salmon female length frequency.....	21
Table 4. BY2006 summer Chinook salmon disposition summary.....	24
Table 5. BY2006 summer Chinook salmon adult disposition summary.....	25
Table 6. BY2006 summer Chinook salmon spawning summary .....	25
Table 7. BY2006 summer Chinook salmon feed summary.....	26

Table 8. BY2006 summer Chinook salmon production costs .....	27
Table 9. BY2006 summer Chinook salmon survival by life stage .....	27

**LIST OF FIGURES**

Figure 1. BY2006 summer Chinook salmon run timing .....	29
Figure 1-A. BY2006 summer Chinook salmon unmarked male run timing .....	30
Figure 1-B. BY2006 summer Chinook salmon unmarked female run timing .....	31
Figure 1-C. BY2006 summer Chinook salmon hatchery origin male run timing .....	32
Figure 1-D. BY2006 summer Chinook salmon hatchery origin female run timing .....	33
Figure 2. BY2006 summer Chinook salmon hatchery origin length frequency .....	34
Figure 3. BY2006 summer Chinook salmon unmarked length frequency .....	35
Figure 4. BY2006 summer Chinook salmon total trapped length frequency .....	36

**LIST OF APPENDICES**

Appendix A. Pahsimeroi Fish Hatchery Chinook salmon stock history .....	38
Appendix B. Pahsimeroi Fish Hatchery summer Chinook smolt release and adult return Information .....	39
Appendix C. Pahsimeroi Brood Year 2006 hatchery summer Chinook genetic sampling .....	40
Appendix D. Pahsimeroi Brood Year 2006 hatchery summer Chinook special marks and tags .....	44

## ABSTRACT

The summer Chinook salmon (*Oncorhynchus Tshawyscha*) program at Pahsimeroi Fish Hatchery (PFH) is part of Idaho Power Company's (IPC) program to mitigate the impacts associated with the construction and operation of the Hells Canyon Dam Complex on the Snake River. The PFH production goal is 1,000,000 summer Chinook salmon smolts annually. Pahsimeroi River summer Chinook salmon were listed as threatened under the Endangered Species Act in 1992, As a result, 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. The program continues to fulfill IPC's mitigation requirements under its current Federal Energy Regulatory Commission operating license.

On June 25, 2006 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 2, 2006. The first fish was trapped on June 26, 2006 and the last on October 2, 2006. A total of 733 (236 marked males, 357 marked females, 43 marked jacks, 42 unmarked males, 47 unmarked females, 8 unmarked jacks) summer Chinook salmon were trapped during the 2006 brood year. The total pre-spawn mortality was 28 (5.0%), which included 19 females and 10 males.

Artificial spawning of summer Chinook salmon commenced on August 28, 2006 and concluded on October 2, 2006. A total of 290 females were spawned of which 12 were culled. A total of 1,349,657 green eggs were collected for production purposes, for an average fecundity of 4,885 eggs per female. The overall eye-up rate was 94.4%. A total of eight egg lots were incubated at PFH and then shipped as eyed eggs to Sawtooth Fish Hatchery (SFH) for incubation and early rearing on pathogen free well water. This transfer limits the exposure of fry to *Myxobolus cerebralis*, which is present in the PFH water source. In October 2007, brood year 2006 (BY2006) pre-smolts were transferred to two rearing ponds at the PFH upper hatchery. They were raised on river water until being released in April, 2008.

The outlet screens for the secondary rearing ponds were removed in a staggered fashion beginning March 31, 2008 to allow volitional release of Chinook salmon smolts into the Pahsimeroi River. A total of 1,037,772 smolts weighing 69,884 pounds were released from the ponds. The fish averaged 14.85 fish per pound and consisted of one group. A total of 14,761 fish were released with PIT tags. These fish were all classified as reserve group listed at the time of release.

## **INTRODUCTION**

PFH, located near the town of Ellis, Idaho, consists of two hatchery facilities. The lower hatchery is located one mile upstream of the confluence of the Pahsimeroi and Salmon rivers. The upper hatchery is located off Downton Lane seven miles further upstream on the Pahsimeroi River. Both hatcheries were constructed in 1967 by IPC and are owned and funded by IPC. The upper hatchery underwent a complete renovation in 2006-07. The project reached substantial completion November 1, 2007. At this point PFH personnel took over day to day operations of the upper facility. This report encompasses the trapping and spawning of adults returning in 2006, egg incubation, fry hatching, juvenile rearing and the release of such juveniles as smolts in late March and early April, 2008.

## **OBJECTIVES**

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

1. Rear one million summer Chinook salmon smolts for release into the Pahsimeroi River.
2. Trap and spawn sufficient numbers of adult summer Chinook salmon 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 IDFG 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**

PFH is comprised of two hatchery facilities. The lower hatchery consists of six buildings, two of which are residences for full-time employees (a 1994 wood frame home and a 1999 manufactured 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 new upper rearing facility reached substantial completion on November 1, 2007 at which point PFH personnel took over day to day operation. PFH personnel will have the ability to incubate and rear juvenile Chinook salmon on specific pathogen free (SPF) well water until a length of 3.5 in. is attained. The walk-in freezer, garage/shop, and storage shed previously on site have been removed. The earthen settling basins previously used for secondary rearing pond effluent have been deemed unnecessary under the new NPDES permit and were removed.

The new upper hatchery features a new incubation and early rearing facility, chilled water system, aeration structure, shop, vehicle storage area, chemical storage room, hospital grade backup generator, electrical room with programmable logic controller to control and monitor operation of production well pumps and chiller, and administration building with office and attached dormitory.

For Brood Year 2006, the fish production facilities included the following:

#### **Lower Hatchery**

- Removable adult weir across the Pahsimeroi River.
- Fish ladder and 3 ponds (each pond measures 70' x 16' x 6'; the two outside ponds are for adult holding, and the center pond is considered the trap). The carrying capacity is approximately 2,000 adult summer Chinook salmon or 5,000 adult A-run steelhead per pond.
- Incubation room with 20, 16-tray stacks of Heath tray vertical flow incubators supplied with pumped spring water.

#### **Upper Hatchery**

- Two 29,400 square foot (210' x 40' x 3.5') concrete secondary rearing ponds each supplied with 10 cubic feet per second (cfs) of water from the Pahsimeroi River. The carrying capacity of each pond is 600,000 smolts at 15 fish per pound with a density index of 0.225 lb/ft<sup>3</sup>/in and a flow index of 1.47 lb/gpm/in.
- A modified intake structure with a fixed screen and 36 in. supply line supplying river water to the concrete secondary rearing ponds.
- A full flow settling basin measuring 95' x 32' x 4' . This basin will receive effluent from the incubation room and early rearing vats.
- Three production wells for incubation and early rearing with a combined output of 12.56 cfs. These wells will be used for incubation of steelhead and incubation as well as early rearing of summer Chinook salmon beginning with Brood Year 2008.

### **WATER SUPPLY**

Currently, incubation water is supplied at the lower hatchery. This 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. Three new production wells discussed above will supply SPF well water for incubation and early rearing at the upper hatchery beginning with Brood Year 2008. These wells are capable of supplying up to 12.56 cfs of 48°F to 50°F SPF well water.

The adult trap and holding ponds at the lower adult facility are supplied with water from the Pahsimeroi River through a 0.25 mile earthen intake canal. This intake structure is equipped with four NOAA Fisheries-approved rotating drum screens to prevent wild Chinook salmon and steelhead from becoming trapped in the hatchery facilities. A water right for 40 cfs held by IPC, allows hatchery personnel to divert water from the Pahsimeroi River for operations at the lower hatchery. This intake is equipped with a broad crested weir measuring device.

River water temperature fluctuates from a seasonal low of 33°F in the winter to a seasonal high 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. IPC's water right for 20 cfs at the upper hatchery allows a flow of 10 cfs per pond. The water flows through two NOAA Fisheries-approved rotating drum screens and then passes through a fixed screen prior to delivery to the ponds via a 36 in. diameter pipe. This intake structure will be equipped with a flow meter to measure and record flow through the pipe. The water enters the ponds through upwellers in the pond floors, and then flows through the ponds prior to discharge back to the Pahsimeroi River. The Pahsimeroi River has a high organic load during winter, but improves during the summer.

### **STAFFING**

PFH is staffed by both permanent and temporary employees. The permanent staff consists of a Hatchery Manager 2 and an Assistant Hatchery Manager and a new Fish Culturist position created in August 2007. The temporary employees provide assistance during the steelhead spawning and throughout all phases of the summer Chinook salmon trapping, spawning and rearing program. They include a year-round Fisheries Technician, two Bio-Aides and one Laborer. At the peak of the steelhead and Chinook salmon spawning seasons, IDFG regional staff, IDFG volunteers, SFH staff, and a Fisheries Technician from IDFG Nampa Fisheries Research also assist with spawning as well as routine hatchery operations.

### **TRAPPING**

In 2006, the trap was operational from June 25, through October 2. The first adult summer Chinook arrived on June 26, 2006 and the last adult arrived on October 2, 2006. Summer Chinook salmon returning in 2006 originated from brood years 2001, 2002, and 2003. 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 number of smolts released from each brood year contributing to the Brood Year 2006 return are as follows:

#### **BY2001-Comprised of two groups of fish.**

Group 1-Hatchery-origin reserve unlisted, 100% adipose fin clipped (ad clipped), no coded wire tags (CWTs). A total of 909,026 smolts were released from this group.

Group 2-Hatchery-origin ISS supplementation listed, 100% CWT and no ad clip. A total of 295,992 smolts from this group were released from secondary rearing pond 2.

Group 1 and Group 2 release numbers from BY2001 total 1,205,018. All smolts from Brood Year 2001 were released in April, 2003.

#### **BY2002-Comprised of three groups of fish.**

Group 1-Hatchery-origin reserve listed, all fish from this group were ad clipped with no CWTs. A total of 904,887 smolts were released from this group.

Group 2-Hatchery-origin ISS supplementation listed, all fish from this group received CWTs with no ad clips. A total of 127,800 smolts were released from this group.

Group 3- Hatchery –origin reserve study group listed, all fish from this group received an ad clip and a CWT. A total of 103,145 smolts were released from this group.

Group 1, 2, and 3 release numbers from BY2002 total 1,135,832. All smolts from Brood Year 2002 were released in April, 2004.

**BY2003-Comprised of one group of hatchery reserve fish.**

All of these fish were marked with either an ad clip or ad clip and CWT. No fish in this brood year were designated as ISS fish. A total of 975,252 (866,134 ad clip only and 109,118 ad clip and CWT) smolts were released from this group. All smolts from Brood Year 2003 were released in March, 2005.

A total of 733 summer Chinook salmon were trapped in 2006. The hatchery origin component consisted of 43 jacks, and 593 adults (236 males and 357 females). The natural component consisted of 8 jacks, and 89 adults (42 males and 47 females). All natural/wild fish were released up-stream of the weir for natural reproduction. None were retained for spawning. (Tables 1–4; Figure 1–4).

**ADULT AGE CLASS DETERMINATION**

Two sets of criteria were used to determine the age classes of summer Chinook salmon that returned to PFH in 2006. The ages of hatchery origin summer Chinook salmon were determined by a combination of mark types and fork length, while the natural origin summer Chinook salmon were aged by fork length alone. It should be noted that regardless of criteria used to determine age classes of returning fish, Nampa Fisheries Research personnel continue to assess and revise age/length relationships through coded wire tag analysis. Age class results reported in Table 4 are therefore subject to change prior to the publication of this report.

Mini-jacks are defined as fish 44cm or less in fork length. Dorsal fin ray cross-section analysis from past mini-jack samples did not detect the presence of salt-water annuli. This suggests these fish remain in fresh water prior to returning to the PFH. No mini-jacks were trapped in 2006.

The age class criteria based on fork length and mark types for hatchery origin summer Chinook salmon returning in 2006 is as follows: age three fish (jacks) include any fish under 66 cm; fish with the fork lengths of 66 cm to 85 cm are classified as age four; fish with fork lengths greater than 85 cm are classified as age five. The age class criteria for natural origin fish returning in 2006 is as follows: summer Chinook salmon with fork lengths of 65 cm and less are considered age three (jacks); summer Chinook salmon with fork lengths of 66 cm to 85 cm are classified as age four; and Chinook salmon with forklengths greater than 85 cm are classified as age five. Table 4 includes a breakdown of age class results.

**SPECIAL MARKS/TAGS**

Of the 733 Chinook salmon trapped this year; three fish were found to have radio transmitters. All fish were scanned for CWTs and PIT tags. The fish containing radio transmitters were part of a study being conducted by the University of Idaho. Five fish contained PIT tags. One fish, a hatchery origin “Jill” was jaw tagged. It was determined that she was a stray from the captive rearing program Yankee Fork project. Due to the potential of

## **ADULT RELEASES**

All natural origin fish were released upstream of the weir to spawn naturally in the Pahsimeroi River. The number of natural origin fish released totaled 97 (47 females, 42 males, and 8 jacks). The total number of ISS fish released for natural reproduction was 76 (40 females, 36 males, no jacks) (Tables 4, 6). Scale samples and pelvic fin samples (for genetic sampling) were collected from all released fish.

For an overview of the smolt releases and adult returns throughout PFH's history, please see Appendices A, B.

## **SPAWNING AND INCUBATION**

Female Chinook salmon were spawned for the first time on August 28, 2006. Spawning concluded on October 2, 2006. Each ripe female was killed and then spawned by the incision method. Prior to incision, a 1cc sample of ovarian fluid was collected from sixty fish throughout the spawning season to test for Infectious Hematopoietic Necrosis (IHN) and Infectious Pancreatic Necrosis (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. Eggs from fish that tested high positive for BKD were culled. Normally, PFH culls eggs from fish that have an Enzyme Linked Immunosorbent Assay (ELISA) optical density of 0.25 or greater. This year, only one female tested high ELISA.

As in previous years the "Dry Method" was used in spawning. However, this year only 2 measured cups of well water were added to activate the milt just prior to swirling the egg/milt mixture in each spawn bucket. Previously, well water was added "by eye" from a garden hose to each bucket prior to mixing. We feel that this change may well have been a major factor responsible for the highest eye-up survival rate in the history of the Pahsimeroi summer Chinook salmon program.

A small piece of tissue sample was collected from each fish (for parentage based analysis purposes) that were released above the weir to spawn naturally. These DNA samples were collected as part of a study being conducted by IDFG Nampa Fisheries Research Biologist, Brian Leth. His goal is to determine the relative contribution hatchery origin and natural origin fish are making to the natural population. Collecting DNA samples from spawning adults and out-migrating juvenile salmon will allow Brian to determine genetically which group of fish is most reproductively successful.

Additionally, two hundred tissue samples were collected from hatchery origin males and females utilized for spawning (Table 8). These DNA samples were collected as part of a study being conducted by IDFG Geneticist Matt Powell. This sampling as well as the sampling mentioned above will allow us to potentially address the following types of questions:

- 1). What is the comparative reproductive success of hatchery compared to wild salmon released above the weir? (Juvenile sampling required)
- 2). What is the individual reproductive success of hatchery fish released above the weir? (Juvenile sampling required)

3). How genetically similar/dissimilar is the hatchery population compared to the wild population, and does this change over time depending on management decisions such as more or less hatchery fish released above the weir?

4). What is the genetic diversity and effective population size of the hatchery population over time, and how does it compare to other hatchery and wild populations?

All eggs were incubated to eye-up at PFH. Most incubator trays were loaded at the rate of one female per tray. A few trays contained eggs from two females. From 48 hours after spawning until eye-up, eggs at PFH were treated three times a week with a 1,667-ppm formalin treatment to prevent fungal growth on the eggs, and three times a week with a 100-ppm Argentyne treatment to prevent soft shell disease, a disease caused by a bacterium that result in increased egg mortality and pre-mature hatching. At eye-up (approximately 450 Fahrenheit temperature units (FTUs)), the eggs were shocked twice by dropping them into a bucket of water from a height of approximately 16 inches.

Dead eggs were picked and enumerated with a Jensorter electronic counter/picker. The number of dead eggs and eyed-eggs were added together to obtain the total number of green eggs. By dividing the number of eyed-eggs by the number of green eggs, the overall eye-up percentage per female was determined (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-flow incubators.

A total of 290 females were initially spawned, however, green eggs from the female that tested high for BKD and eleven females with poor egg quality were discarded without enumeration. Later, surplus eggs from an additional 24 females were discarded with enumeration leaving the eggs from 255 females to be shipped to SFH for incubation and early rearing (Table 6). The enumerated eggs from all females totaled 1,349,657 green eggs. Fecundity averaged 4,855 eggs per female and the overall eye-up percentage was 94.4% resulting in a yield of 1,274,218 eyed eggs (Table 7). This is the highest eye-up percentage rate in the program's history. The culled eyed eggs numbered 118,544, leaving 1,155,674 eyed eggs shipped to SFH for incubation and early rearing. All viral samples tested negative for IPN and IHN.

### **CRYOPRESERVATION**

This year no cryopreservation was conducted.

### **ADULT CARCASS DISPOSITION**

During the spawning season all carcasses not donated to charity were placed into 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**

During trapping of BY2006 summer Chinook there were three rainbow trout trapped. One female with a length of 41 and two males with the lengths of 42 cm and 39 cm respectively. We also trapped one male cutthroat trout measuring 28 cm. All non targets trapped were released to the river.

## **FISH PRODUCTION**

Starting September 11, 2007 BY2006 Pahsimeroi summer Chinook were transferred to PFH by Niel Ring Trucking, Inc. Two IPC tankers hauled 1,042,638 fish (37,855 lbs) making eight trips. A total of 525,665 fish were transferred from SFH raceways three, four, and five to PFH outdoor rearing pond one. The remaining 516,973 fish from SFH raceways six, seven, and eight were placed in PFH outdoor rearing pond two. Of these fish, 166,372 were marked AD/CWT, all of which came from SFH raceway eight. The fish averaged 28 fish per pound upon arrival, with an average length of 4.94.

Due to the previous outbreak of "ICH" at SFH, the fish were treated shortly after arrival with formalin by PFH staff. From September 12 to September 16, 2007, pond two was treated four times with a one hour 167ppm flow through treatment. From September 14 to September 16, 2007, pond one was treated three times with the same one hour 167ppm flow through treatment. Fish in both ponds were also started on BKD preemptive medicated feed. A total of 9,284 ponds of medicated feed were fed to the fish between September 14 and September 30, 2007. At the end of September, there were a total of 2,792 mortalities, which were mainly hauling mortalities (2,421 clipped only; 371 clipped and CWT) bringing the total number of fish in holding to 1,039,846 (524,549 in pond one; 515,297 in pond two).

BY2006 smolts were fed a total of 72,644 pounds of feed during their rearing cycle, resulting in a conversion of 1.0 (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 cannot be quantified, and therefore this conversion rate should be considered a best case estimate.

Feed costs are summarized in Table 8, production costs are summarized in table 9, and survival percentages by life stage are summarized in table 10.

## **SMOLT RELEASES**

Pahsimeroi BY2006 smolts were released volitionally from the secondary rearing ponds from March 31, 2008 to April 18, 2008. To reduce the chance of large numbers of fish entering the intake canal at the lower facility, the smolt release was as follows: screens were removed on both ponds, fish migration was then monitored via the ISS program screw trap. With migration of smolts being slow and steady, dam boards were then removed starting April 5, 2008, two sets of dam boards were removed from both ponds. The flow in rearing ponds was also reduced to 7 cfs per pond. Two additional sets of dam boards were removed on April 9,

2008 followed on April 17, 2008 with the removal of remaining dam boards. On April 18, 2008 regional fisheries personnel assisted PFH with electro-fishing remaining smolts, an estimated 300 fish from the rearing ponds.

A total of 523,172 smolts were released from pond one. This total consisted of 508,411 fish that were ad clipped and 14,761 fish that were ad clipped and PIT tagged. Pond one smolts averaged 14.8 fish per pound at the time of release.

A total of 348,763 ad clipped smolts and 165,837 ad clipped CWT marked smolts were released from pond two for a total of 514,600 fish. Pond two smolts averaged 14.9 fish per pound at the time of release.

The individual pond release numbers above bring the total BY2006 smolt release to 1,037,772. The fish size for both ponds combined averages 14.85 fish per pound for a total weight of 69,884 pounds. All fish were classified as Reserve group listed status.

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

### **FISH HEALTH**

While being reared at SFH, these fish became infested with ICH. These fish were treated 3 times per week with formalin at 167 ppm for one hour until signs of infestation ceased. This infestation was caught and treated successfully before mortalities commenced.

These fish received 2 erythromycin medicated feed treatments as a preemptive treatment for BKD (one at SFH and one at PFH). The target dose was 100 mg/kg/day for 28 days. Pre-liberation sampling did not detect pathogens in the 20 fish sampled. Neither acute nor chronic losses were experienced by this program at either SFH or PFH. A cooperative effort between IDFG and IPC to renovate PFH is now complete. This project reduces exposure of young fish to *M.cerebralis* during the most susceptible period.

### **ACKNOWLEDGEMENTS**

We would also like to thank the crew at SFH for all their help with the incubation and early rearing of BY2006. They did a great job of keeping us informed on issues facing BY2006 Summer Chinook and their cooperation is greatly appreciated.

## **Tables**

Table 1. BY2006 summer Chinook salmon daily trap record.

Date Trapped	Hatchery Males	Natural Males	Total Males	Hatchery Females	Natural Females	Total Females	Total Trapped
26-Jun	1	0	1	3	1	4	5
27-Jun	0	0	0	4	0	4	4
28-Jun	1	0	1	1	0	1	2
29-Jun	5	1	6	8	0	8	14
30-Jun	5	1	6	8	2	10	16
1-Jul	7	0	7	5	2	7	14
2-Jul	5	1	6	10	4	14	20
3-Jul	0	0	0	0	0	0	0
4-Jul	0	0	0	0	0	0	0
5-Jul	26	6	32	36	3	39	71
6-Jul	1	1	2	16	0	16	18
7-Jul	10	2	12	16	3	19	31
8-Jul	0	0	0	0	0	0	0
9-Jul	13	3	16	21	2	23	39
10-Jul	0	0	0	0	0	0	0
11-Jul	22	3	25	23	6	29	54
12-Jul	9	3	12	10	0	10	22
13-Jul	13	0	13	16	3	19	32
14-Jul	6	0	6	10	0	10	16
15-Jul	0	0	0	0	0	0	0
16-Jul	0	0	0	0	0	0	0
17-Jul	25	0	25	28	5	33	58
18-Jul	7	1	8	9	2	11	19
19-Jul	7	0	7	15	0	15	22
20-Jul	0	0	0	0	0	0	0
21-Jul	4	1	5	7	0	7	12
22-Jul	0	0	0	0	0	0	0
23-Jul	0	0	0	0	0	0	0
24-Jul	14	2	16	11	1	12	28
25-Jul	0	0	0	0	0	0	0
26-Jul	3	0	3	4	1	5	8
27-Jul	0	0	0	0	0	0	0
28-Jul	2	1	3	1	0	1	4
29-Jul	0	0	0	0	0	0	0
30-Jul	0	0	0	0	0	0	0
31-Jul	7	1	8	5	0	5	13
1-Aug	0	0	0	0	0	0	0
2-Aug	0	0	0	1	0	1	1
3-Aug	0	0	0	0	0	0	0
4-Aug	0	0	0	2	1	3	3

5-Aug	0	0	0	0	0	0	0
6-Aug	0	0	0	0	0	0	0
7-Aug	4	0	4	2	0	2	6
8-Aug	0	0	0	0	0	0	0
9-Aug	0	0	0	0	0	0	0
10-Aug	0	0	0	0	0	0	0
11-Aug	0	0	0	0	0	0	0
12-Aug	10	2	12	4	1	5	17
13-Aug	0	0	0	0	0	0	0
14-Aug	0	0	0	0	0	0	0
15-Aug	8	0	8	7	0	7	15
16-Aug	0	0	0	0	0	0	0
17-Aug	0	0	1	3	0	3	4
18-Aug	1	0	3	2	1	3	6
19-Aug	3	0	0	0	0	0	0
20-Aug	0	0	0	0	0	0	0
21-Aug	0	0	0	0	0	5	17
22-Aug	8	4	12	5	0	0	0
23-Aug	0	0	0	0	0	0	0
24-Aug	4	1	5	6	1	7	12
25-Aug	0	0	0	0	0	0	0
26-Aug	0	0	0	0	0	0	0
27-Aug	0	0	0	0	0	6	13
28-Aug	7	0	7	6	0	0	0
29-Aug	0	0	0	0	0	0	0
30-Aug	5	0	5	4	1	5	10
31-Aug	0	0	0	0	0	0	0
1-Sep	0	0	0	0	0	0	0
2-Sep	0	0	0	0	0	0	0
3-Sep	0	0	0	0	0	0	0
4-Sep	0	0	0	0	0	0	0
5-Sep	0	0	0	0	0	0	0
6-Sep	17	2	19	14	2	16	35
7-Sep	0	0	0	0	0	0	0
8-Sep	0	0	0	0	0	0	0
9-Sep	0	0	0	0	0	0	0
10-Sep	0	0	0	0	0	0	0
11-Sep	11	4	15	9	1	10	25
12-Sep	0	0	0	0	0	0	0
13-Sep	0	0	0	0	0	0	0
14-Sep	0	0	0	0	0	0	0
15-Sep	2	2	4	10	2	12	16
16-Sep	0	0	0	0	0	0	0
17-Sep	0	0	0	0	0	0	0
18-Sep	0	0	0	0	0	0	0
19-Sep	0	0	0	0	0	0	0
20-Sep	0	0	0	0	0	0	0
21-Sep	0	0	0	0	0	0	0
22-Sep	0	0	0	0	0	0	0



Table 2. BY2006 male summer Chinook salmon length frequency.

MALES									
FORK LENGTH (CM)	AD-CLIP PONDED	AD-CLIP RELEASED	ADCWT PONDED	ADCWT RELEASED	CWT PONDED	CWT RELEASED	UNMARKED PONDED	UNMARKED RELEASED	TOTAL TRAPPED
41	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0
45	1	0	0	0	0	0	0	0	1
46	1	0	0	0	0	0	0	0	1
47	2	0	0	0	0	0	0	0	2
48	2	0	0	0	0	0	0	0	2
49	2	0	0	0	0	0	0	1	3
50	0	0	0	0	0	0	0	0	0
51	1	0	1	0	0	0	0	0	2
52	2	0	0	0	0	1	0	0	3
53	1	0	0	0	0	0	0	1	2
54	1	0	0	0	0	0	0	0	1
55	3	0	0	0	0	0	0	1	4
56	3	0	0	0	0	1	0	0	4
57	2	0	0	0	2	0	0	0	4
58	0	0	0	0	0	0	0	0	0
59	2	0	0	0	0	0	0	0	2
60	3	0	0	0	1	0	0	0	4
61	0	0	0	0	1	1	0	2	4
62	4	0	0	0	1	1	0	0	6
63	5	0	1	0	2	1	0	0	9
64	3	0	0	0	0	0	0	1	4
65	3	0	0	0	0	0	0	2	5
66	2	0	0	0	0	1	0	0	3
67	0	0	0	0	0	1	0	1	2
68	2	0	1	0	0	0	0	1	4
69	5	0	1	0	0	1	0	0	7

70	12	0	1	0	2	2	0	0	18
71	4	0	1	0	0	0	0	0	10
72	6	0	0	1	0	0	0	0	9
73	14	0	1	0	0	0	0	0	21
74	9	0	0	1	3	0	0	0	14
75	8	0	0	0	0	0	0	0	9
76	6	0	0	1	2	0	0	0	10
77	14	0	0	0	0	0	0	0	16
78	3	0	0	0	2	0	0	0	8
79	2	0	0	2	2	0	0	0	8
80	7	0	0	2	2	0	0	0	11
81	11	0	0	2	2	0	0	0	15
82	3	0	0	1	0	0	0	0	8
83	6	0	1	1	2	0	0	0	11
84	4	0	0	1	1	0	0	0	8
85	5	0	0	1	1	0	0	0	8
86	3	0	0	1	0	0	0	0	4
87	1	0	0	0	0	0	0	0	2
88	5	0	0	0	0	0	0	0	6
89	6	0	0	0	0	0	0	0	6
90	7	0	0	0	1	0	0	0	8
91	8	0	0	0	0	0	0	0	8
92	7	0	0	0	0	0	0	0	8
93	4	0	0	0	0	0	0	0	5
94	1	0	0	0	0	0	0	0	1
95	2	0	0	1	0	0	0	0	3
96	3	0	0	0	0	0	0	0	3
97	3	0	0	0	0	0	0	0	4
98	2	0	0	0	0	0	0	0	3
99	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0
101	0	0	0	0	0	0	0	0	1
102	0	0	0	0	0	0	0	0	0
103	1	0	0	0	0	0	0	0	1
104	0	0	0	0	0	0	0	0	0

105	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	0	0	0
107	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0
109	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0
111	0	0	0	0	0	0	0	0	0
TOTALS:	217	0	8	0	18	36	0	50	329

Table 3. BY2006 female summer Chinook salmon length frequency.

FORK LENGTH (CM)	AD-CLIP PONDED	AD-CLIP RELEASED	ADCWT PONDED	ADCWT RELEASED	CWT PONDED	CWT RELEASED	UNMARKED PONDED	UNMARKED RELEASED	TOTAL TRAPPED
55*	1	0	0	0	0	0	0	0	1
56	0	0	0	0	0	0	0	0	0
57	1	0	0	0	0	0	0	0	1
58	1	0	0	0	0	0	0	0	1
59	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0
61	0	0	0	0	0	0	0	0	0
62	0	0	0	0	0	0	0	1	1
63	1	0	0	0	1	0	0	0	2
64	3	0	1	0	0	0	0	0	4
65	2	0	0	0	0	0	0	0	2
66	2	0	0	0	0	0	0	1	3
67	2	0	0	0	0	0	0	1	3
68	1	0	1	0	1	0	0	3	6
69	6	0	1	0	0	0	0	3	10
70	9	0	3	0	1	3	0	1	17
71	14	0	2	0	1	1	0	2	20

102	0	0	0	0	0	0	0	0	0
103	0	0	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	0	0	0
107	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0
TOTALS:	272	0	19	0	26	40	0	47	404

\* This female is actually a 44 cm "Jill" from the Eagle Captive Rearing Program.

Table 4. BY2006 summer Chinook salmon trap disposition summary.

Released for Natural Spawning

		Hatchery Origin Adult Males				Hatchery Origin Adult Females				Natural Origin Adult Males		Natural Origin Females		Jacks	
		Age 4 Males	Age 4 Males	Age 5 Males	Age 5 Males	Age 4 Females	Age 4 Females	Age 5 Females	Age 5 Females	Age 4 Males	Age 5 Males	Age 4 Females	Age 5 Females	Natural Origin	Hatchery Origin
		AD	CWT	AD	CWT	AD	CWT	AD	CWT	Un-Marked	Un-Marked	Un-Marked	Un-Marked	Un-Marked	AD
Total		0	33	0	3	0	35	0	5	33	9	39	8	8	0
%		0.0%	66.0%	0.0%	75.0%	0.0%	62.5%	0.0%	50.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%

Ponded for hatchery production

		Hatchery Origin Adult Males				Hatchery Origin Adult Females				Natural Origin Adult Males		Natural Origin Females		Jacks	
		Age 4 Males	Age 4 Males	Age 5 Males	Age 5 Males	Age 4 Females	Age 4 Females	Age 5 Females	Age 5 Females	Age 4 Males	Age 5 Males	Age 4 Females	Age 5 Females	Natural Origin	Hatchery Origin
		AD	CWT	AD	CWT	AD	CWT	AD	CWT	Un-Marked	Un-Marked	Un-Marked	Un-Marked	Un-Marked	AD
Total		129	17	53	1	234	21	57	5	0	0	0	0	0	43
%		100.0%	34.0%	100.0%	25.0%	100.0%	37.5%	100.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Recycled to fishery

		Hatchery Origin Adult Males				Hatchery Origin Adult Females				Natural Origin Adult Males		Natural Origin Females		Jacks	
		Age 4 Males	Age 4 Males	Age 5 Males	Age 5 Males	Age 4 Females	Age 4 Females	Age 5 Females	Age 5 Females	Age 4 Males	Age 5 Males	Age 4 Females	Age 5 Females	Natural Origin	Hatchery Origin
		AD	CWT	AD	CWT	AD	CWT	AD	CWT	Un-Marked	Un-Marked	Un-Marked	Un-Marked	Un-Marked	AD
Total		0	0	0	0	0	0	0	0	0	0	0	0	0	0
%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Trapping Totals

		Hatchery Origin Adult Males				Hatchery Origin Adult Females				Natural Origin Adult Males		Natural Origin Females		Jacks	
		Age 4 Males	Age 4 Males	Age 5 Males	Age 5 Males	Age 4 Females	Age 4 Females	Age 5 Females	Age 5 Females	Age 4 Males	Age 5 Males	Age 4 Females	Age 5 Females	Natural Origin	Hatchery Origin
		AD	CWT	AD	CWT	AD	CWT	AD	CWT	Un-Marked	Un-Marked	Un-Marked	Un-Marked	Un-Marked	AD
Total		129	50	53	4	234	56	57	10	33	9	39	8	8	43
%		17.6%	6.8%	7.2%	0.5%	31.9%	7.6%	7.8%	1.4%	4.5%	1.2%	5.3%	1.1%	1.1%	5.9%

Trap totals by origin for BY2006

		Hatchery Males	Hatchery Females	Hatchery Total	Natural Origin Males	Natural Origin Females	Natural Origin Total	Hatchery Jacks	Natural Origin Jacks	Total Jacks	Total Trapped
Total		236	357	593	42	47	89	43	8	51	733
%		32.2%	48.7%	80.9%	5.7%	6.4%	12.1%	5.9%	1.1%	7.0%	100.0%

Table 5. BY2006 summer Chinook salmon adult disposition summary.

Disposition	Males	Females
Trap Mortality	1	1
Ponded-Pre-Spawn Mortality	11	19
Recycled for Fishery	0	0
Surplus-Killed for Charities and Tribes*	0	0
Surplus Females in Holding-Killed Without Spawning	0	7
Females Spawmed-Eyed Eggs Shipped to Sawtooth Hatchery	0	255
Females Spawmed-Eggs Rejected During Spawning or Culled Later	0	35
Released Above Weir	86	87
Mini-Jacks- Killed	0	0
Males Spawmed and Killed	212	0
Males- Died in Holding After 30 percent Spawning Completed	19	0
Total Chinook Trapped Brood Year 2006 Pahsimeroi Hatchery	329	404

Table 6. Brood Year 2006 summer Chinook salmon spawning summary.

LOT NO.	SPAWN DATE	TOTAL FEMALES SPAWNED	FEMALES- EGGS REJECTED (BKD)	FEMALES- EGGS REJECTED (QUALITY)	EYED EGGS SHIPPED	EYED EGGS OBTAINED	DEAD EGGS	TOTAL EGGS	PERCENT EYE-UP	AVERAGE FECUNDITY	COMMENTS
1	8/28/06	3	0	1	4,475	4,475	1,440	5,915	75.7%	2,958	1 "JILL" SIZE FEMALE
2	9/5/06	33	0	2	111,961	111,961	23,055	135,016	82.9%	4,355	
3	9/8/06	24	1	0	102,975	102,975	9,018	111,993	91.9%	4,869	
4	9/11/06	40	0	1	172,535	172,535	15,060	187,595	92.0%	4,810	
5	9/14/06	51	0	1	227,900	227,900	5,294	233,194	97.7%	4,664	
6	9/18/06	30	0	0	148,502	148,502	2,194	150,696	98.5%	5,023	1 "JILL" SIZE FEMALE
7	9/21/06	50	0	1	226,276	226,276	13,006	239,282	94.6%	4,883	
8	9/25/06	35	0	4	161,050	161,050	2,844	163,894	98.3%	5,287	
9	9/28/06	15	0	0	0	82,633	1,572	84,205	98.1%	5,614	ALL EGGS CULLED
10	10/2/06	9	0	1	0	35,911	1,956	37,867	94.8%	4,733	ALL EGGS CULLED
<b>TOTALS</b>		<b>290</b>	<b>1</b>	<b>11</b>	<b>1,155,674</b>	<b>1,274,218</b>	<b>75,439</b>	<b>1,349,657</b>	<b>94.4%</b>	<b>4,855</b>	

Table 7. BY2006 summer Chinook salmon feed summary.

Feed Type/Size	Pounds Fed This Month	Pounds Fed To Date	Cost per Pound	Total Feed Cost
Bio-Vita Starter #0		1056	\$1.13	\$1,193.28
Bio-Vita Starter #1		2024	\$1.13	\$2,287.12
Bio-Vita Starter #2		3828	\$1.13	\$4,325.64
MD Aqua 100 1.2 mm 2.25%		4840	\$1.31	\$6,340.40
Bio-Diet Grower 1.2 mm		176	\$1.14	\$200.64
Bio-Diet Grower 1.5 mm		6248	\$0.99	\$6,185.52
Bio-Diet Grower 2.5 mm		16,192.0	\$0.92	\$14,896.64
Bio-Vita Aqua 100 Grower 2.0 mm 2.25%		8,800.0	\$1.71	\$15,048.00
Bio-Vita Aqua 100 Grower 2.0 mm 3%		8,184.0	\$1.84	\$15,058.56
Rangen Soft Moist 6% TM-100	3,784.0	3,784.0	N/A	
Bio-Olympic Fry 2.0 mm Pro-Active	4,180.0	17,512.0	\$0.98	\$17,126.74
<b>Totals:</b>	<b>7,964.0</b>	<b>72,644.0</b>		<b>\$82,662.54</b>

## FIGURES

Figure 1. BY2006 summer Chinook salmon run timing.

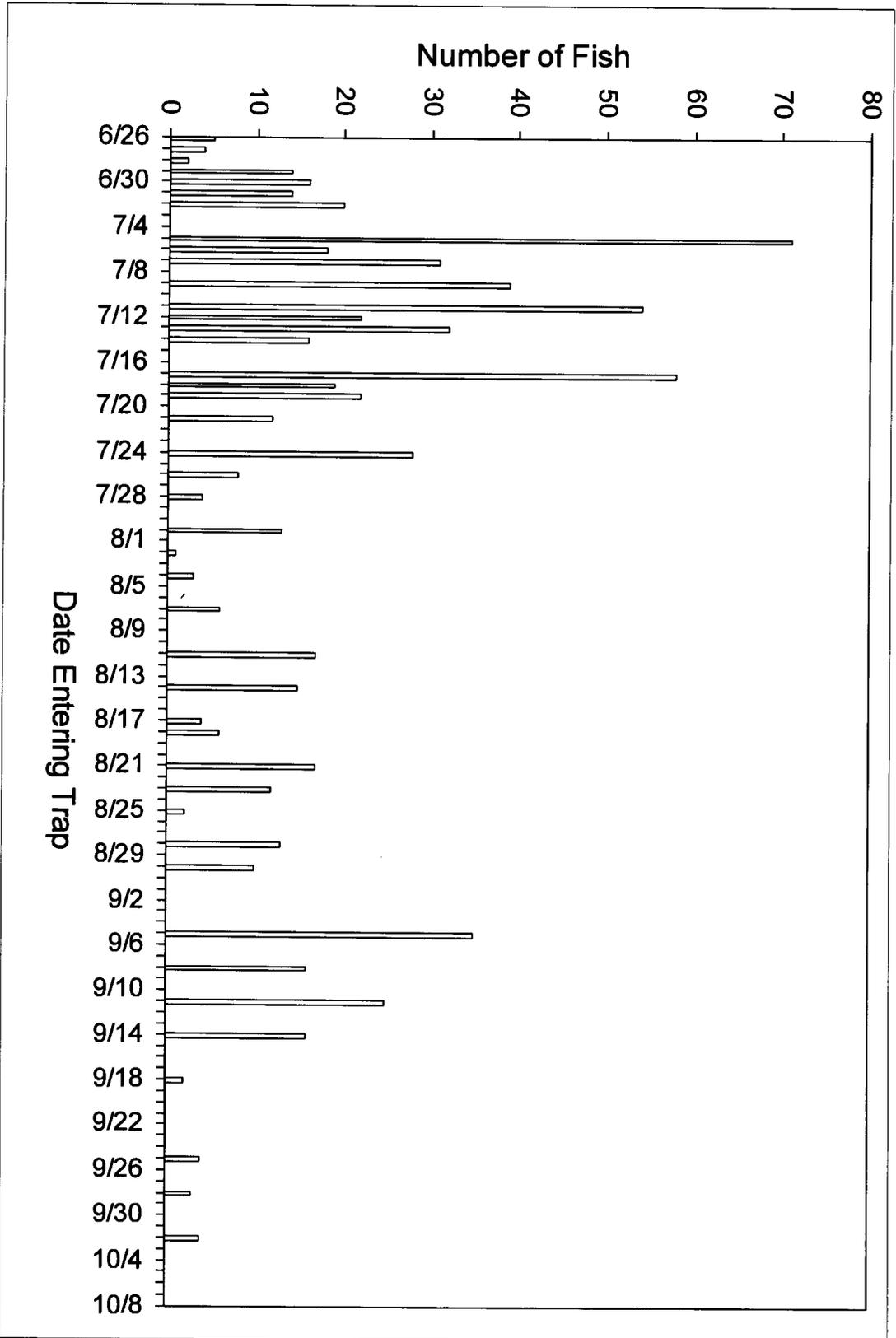


Figure 1-A. BY2006 summer Chinook salmon unmarked male run timing.

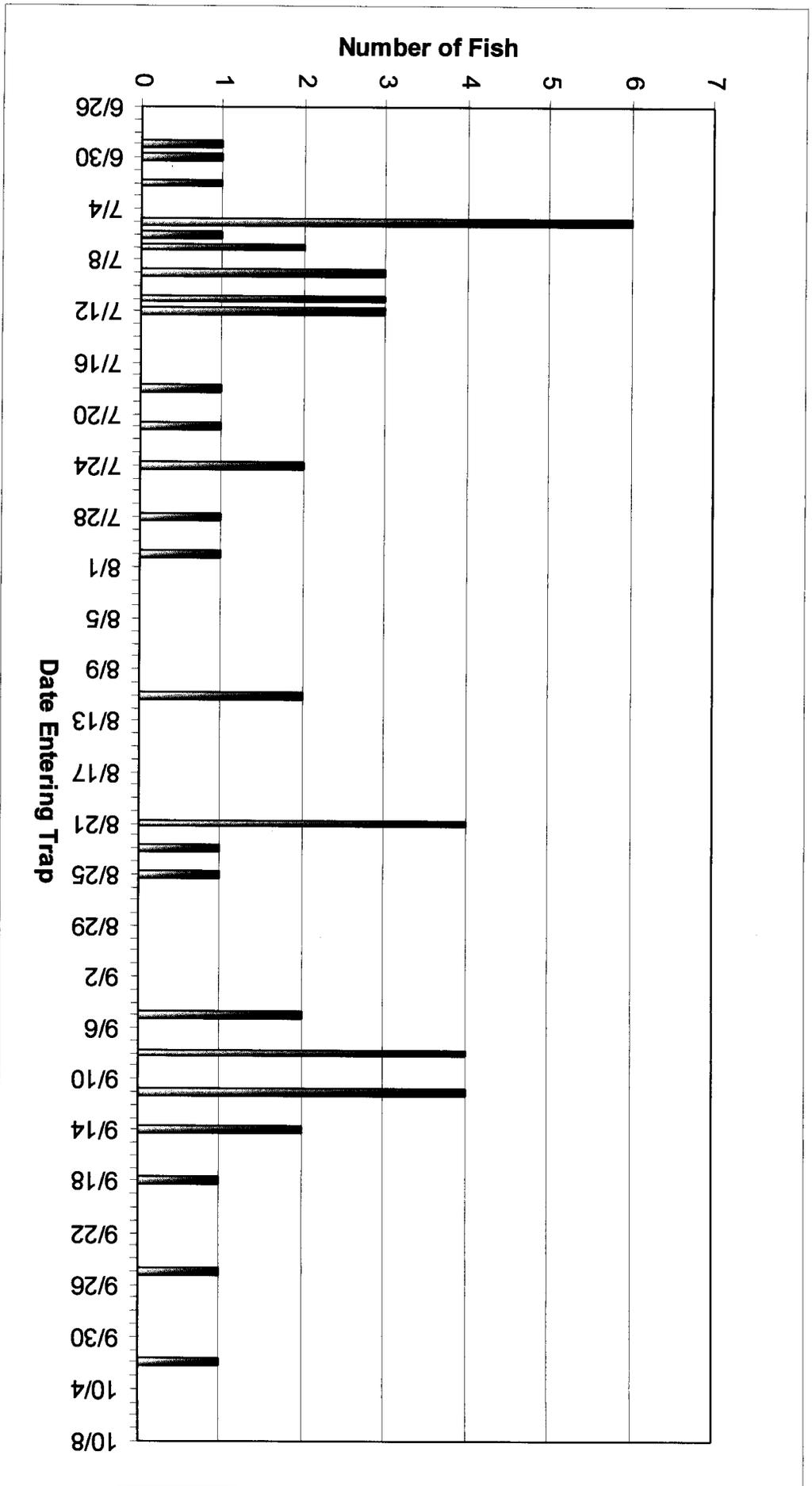


Figure 1-B. BY2006 summer Chihnook salmon unmarked female run timing.

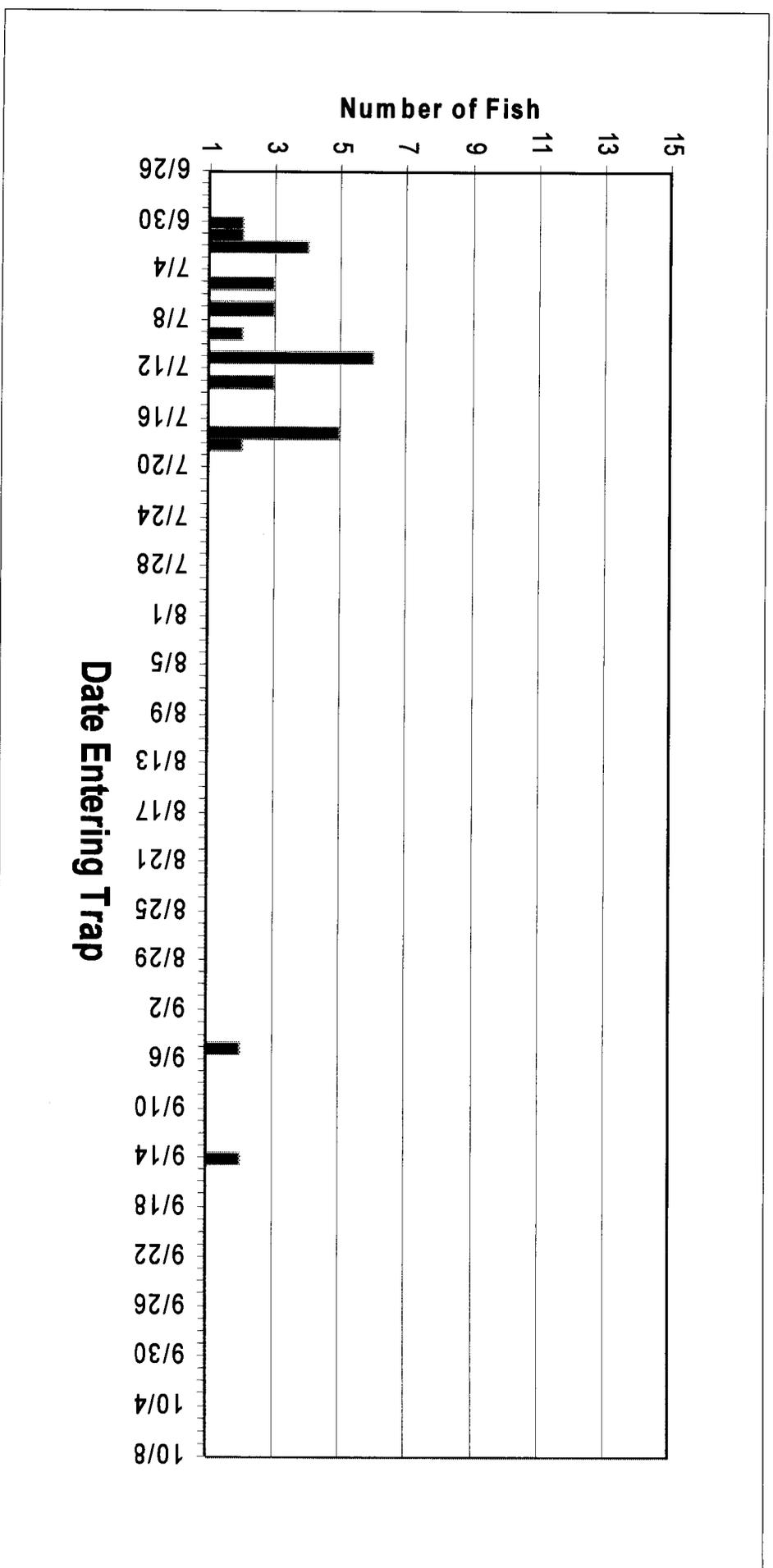


Figure 1-C. BY2006 summer Chinook salmon hatchery origin male run timing.

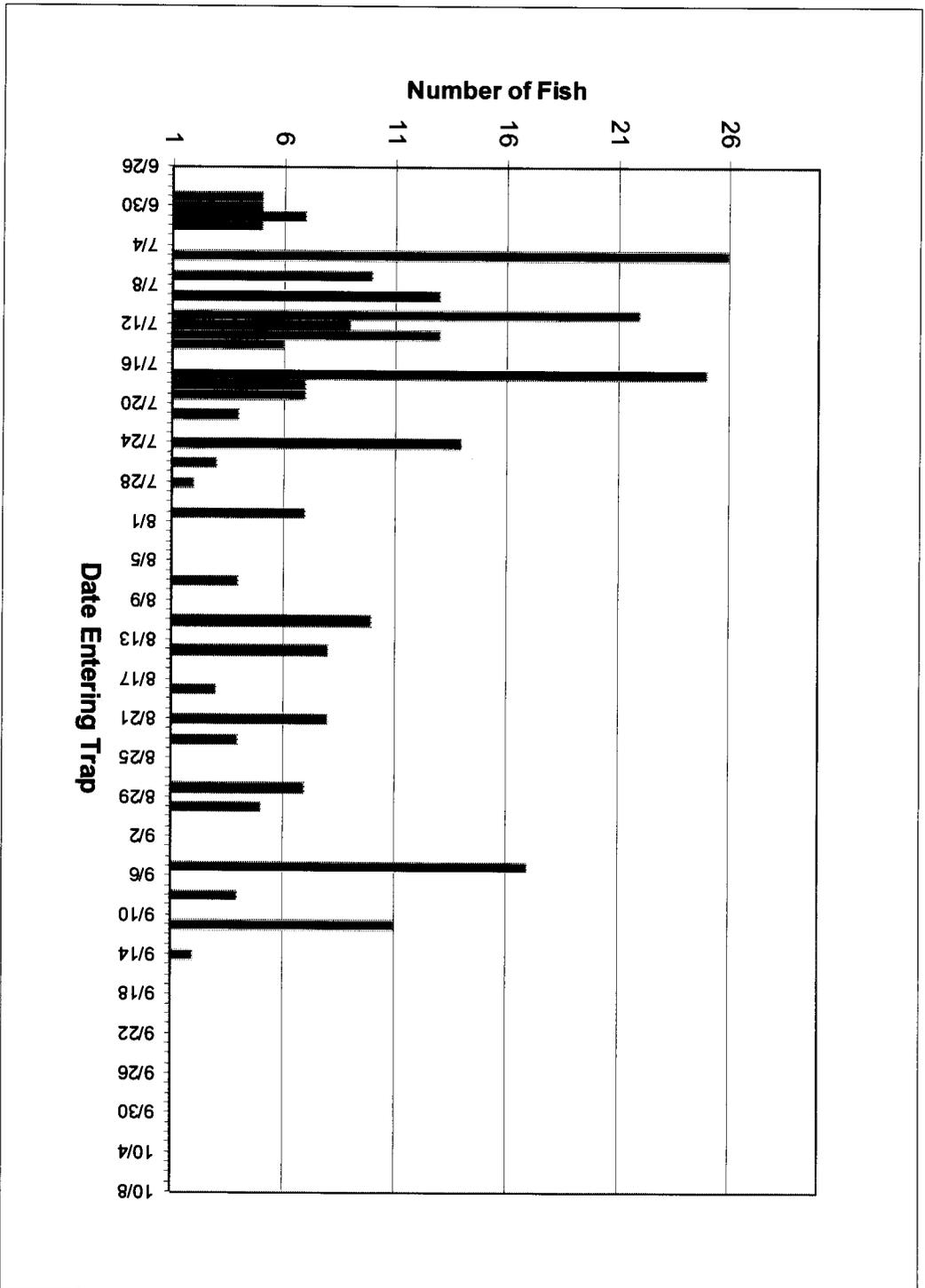


Figure 1-D. BY2006 summer Chinook salmon hatchery origin female run timing.

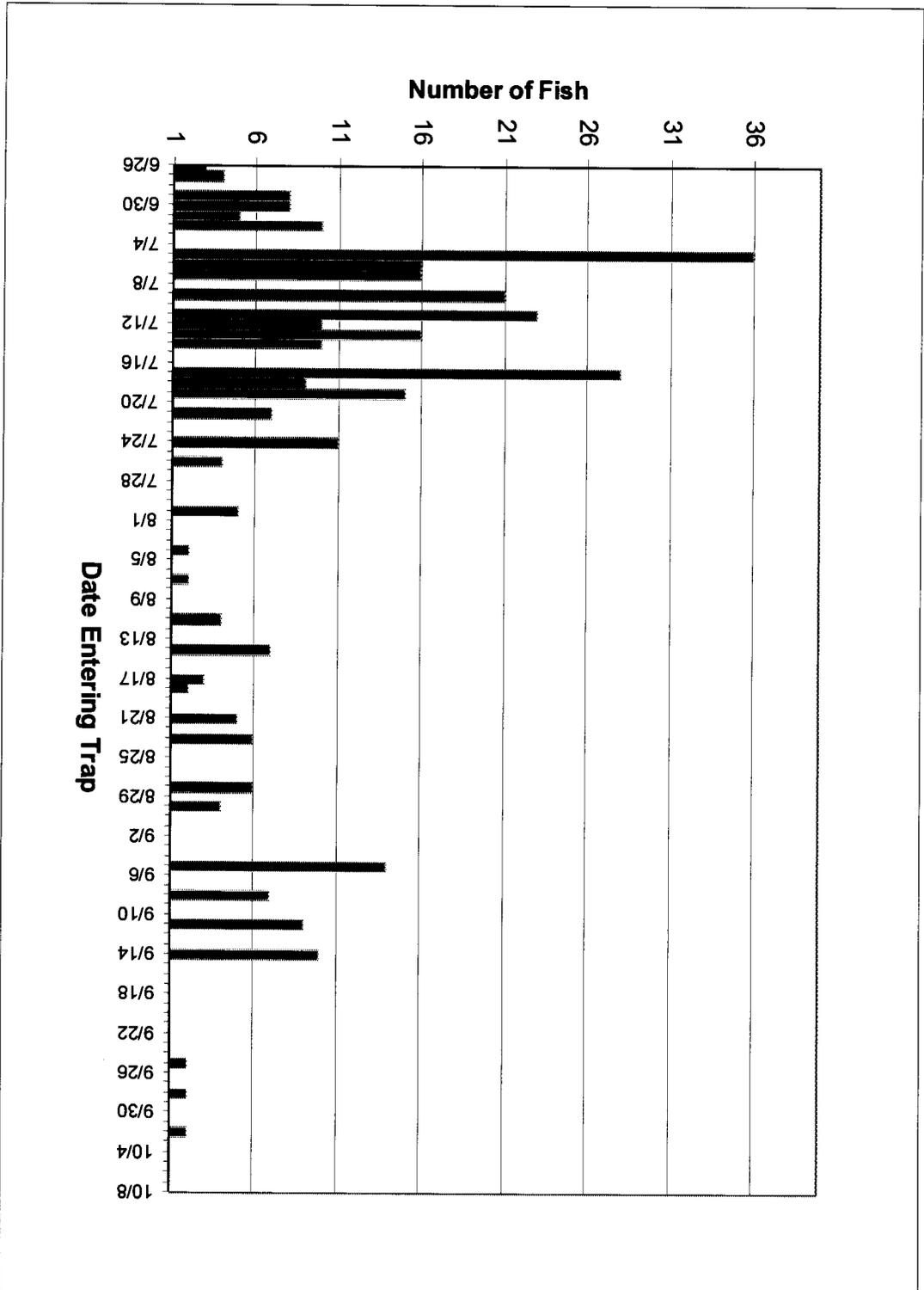


Figure 2. BY2006 summer Chinook salmon hatchery origin length frequency.

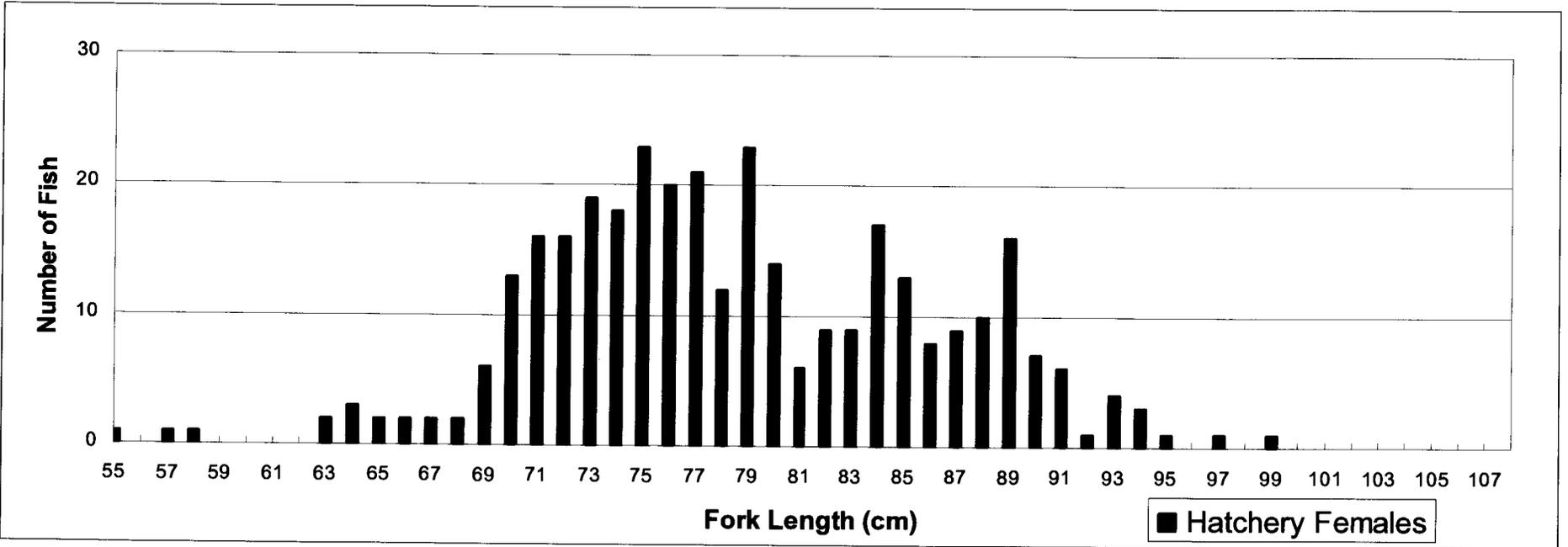
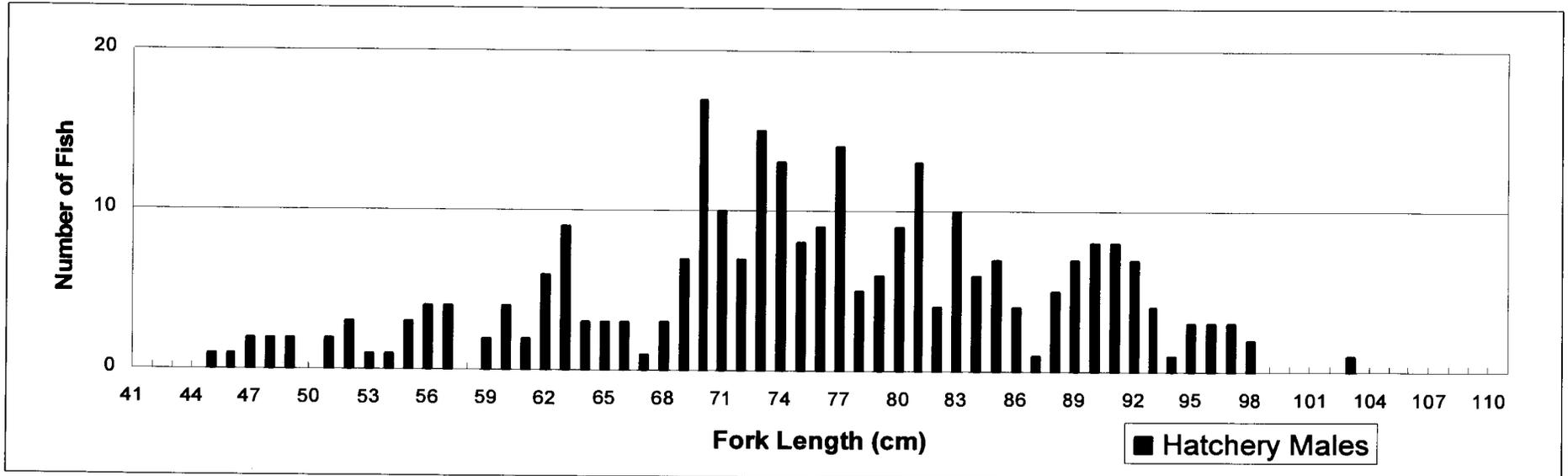


Figure 3. BY2006 summer Chinook salmon unmarked length frequency.

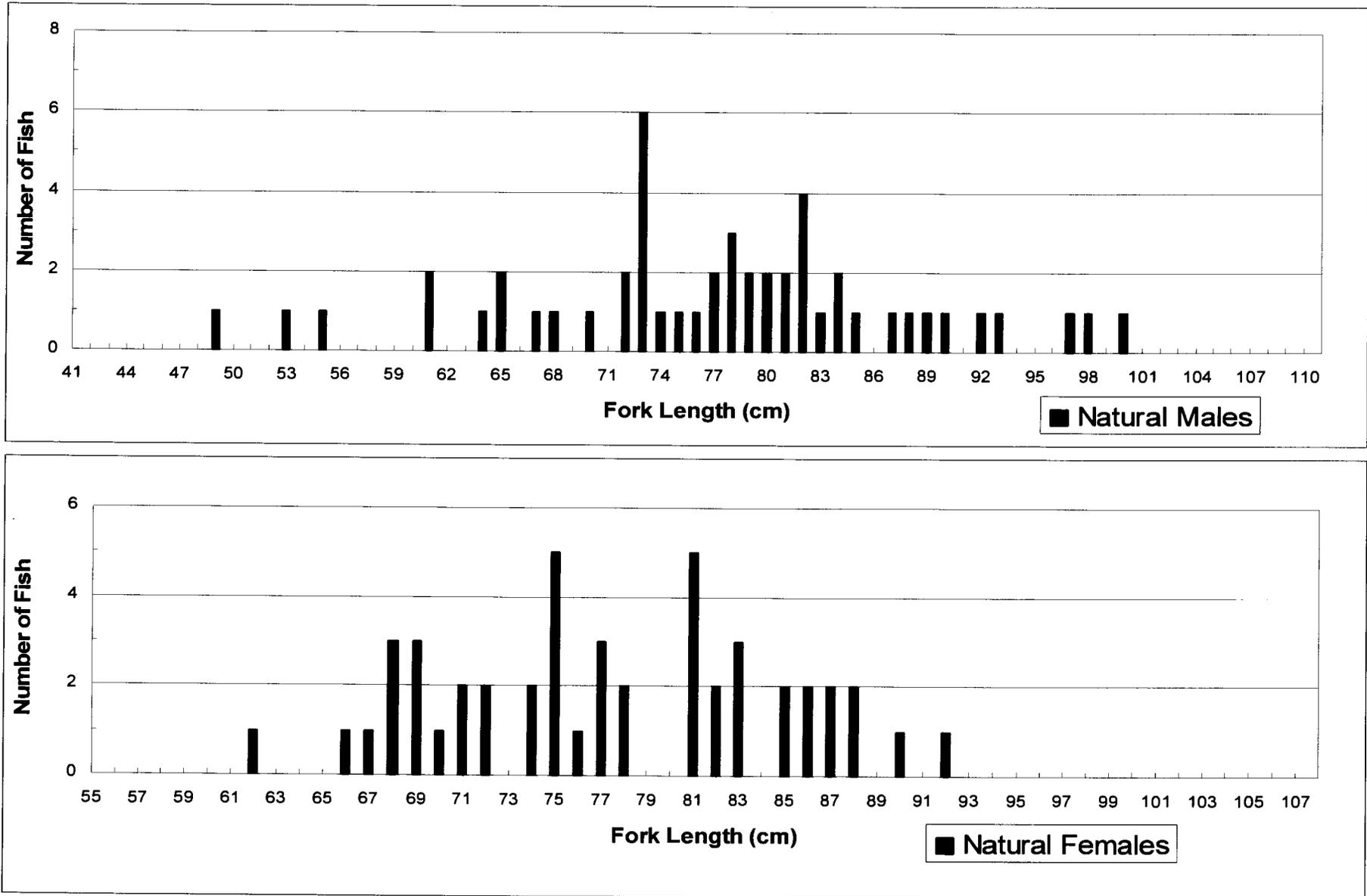
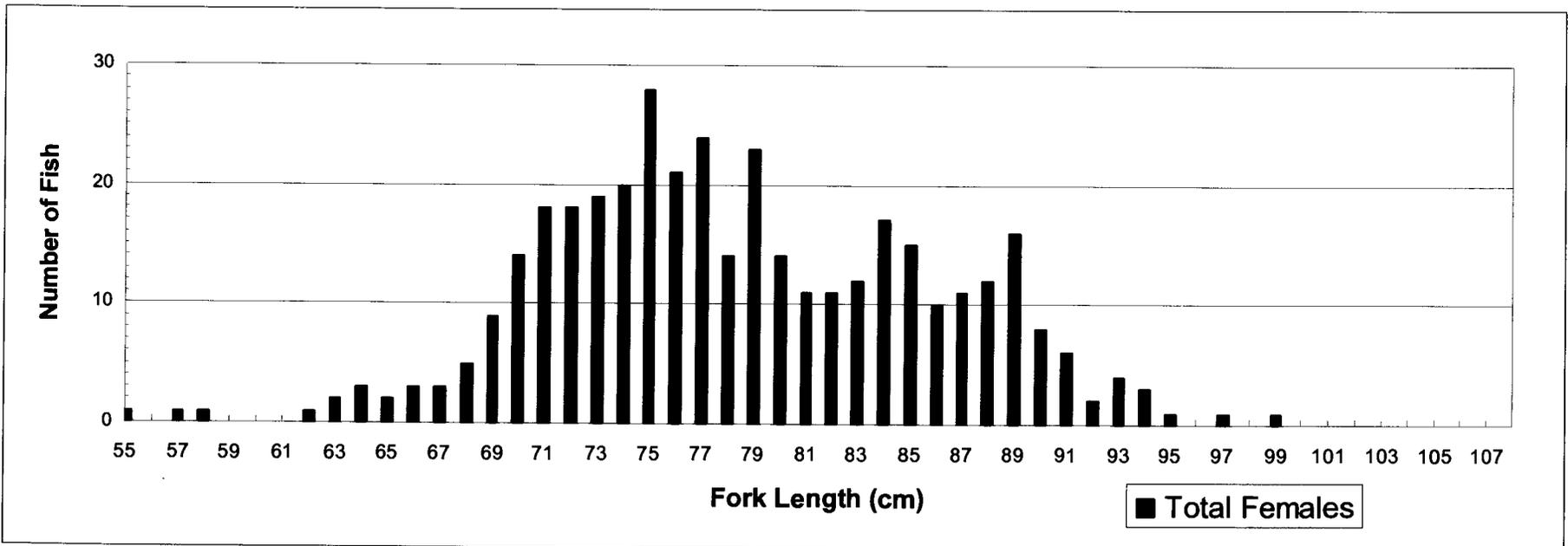
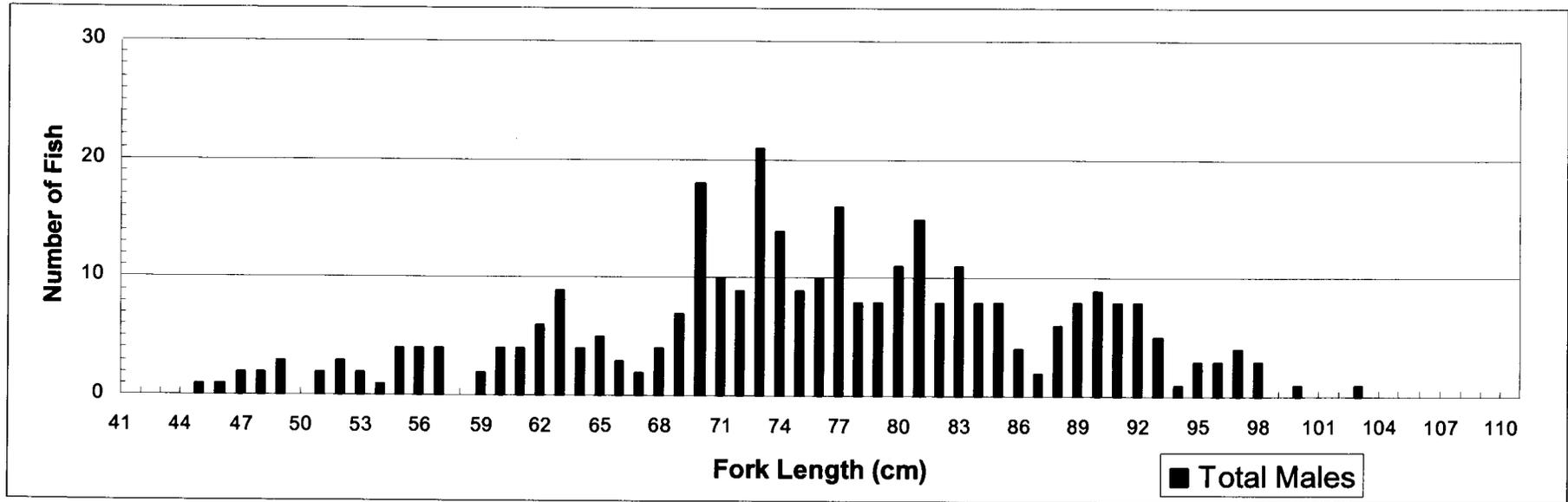


Figure 4. BY2006 summer Chinook salmon total trapped length frequency.



## **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
2004	Pahsimeroi	1,620,513	Summer Chinook	2006	1,073,951	Pahsimeroi River
2005	Pahsimeroi	1,335,191	Summer Chinook	2007	987,460	Pahsimeroi River
2006	Pahsimeroi	1,349,657	Summer Chinook	2008	1,037,772	Pahsimeroi River

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	284	1,664	02,03,04	0.59%
Apr-02	508,340	1,039	2,668	142	3,849	03,04,05	0.757%
Mar-03	1,205,918	385	1,629	124	2,138	04,05,06	0.177%
Apr-04	1,108,028	69	469	122	760	05,06,07	.07%
Mar-05	975,252	43	302	47	392	06,07,08	.04%
Mar-06	1,073,951	124	1099	n/a	n/a	07,08,09	n/a

Appendix C. Pahsimeroi Brood Year 2006 hatchery summer Chinook genetic sampling.

SAMPLE NUMBER	VIAL NUMBER	SAMPLE DATE	FORK LENGTH	SEX	MARK TYPE	FLOY NUMBER	JAW NUMBER	COMMENTS
1	pah1	28-Aug	74	f	adcwt	53	38	
2	pah2	28-Aug	64	f	adcwt	1343		
3	pah3	28-Aug	75	f	ad			
4	pah4	5-Sep	77	f	ad			
5	pah5	5-Sep	84	f	cwt	61	None	Arrived Ripe
6	pah6	5-Sep	87	f	ad			
7	pah7	5-Sep	75	f	adcwt	1342	None	
8	pah8	5-Sep	74	f	ad			
9	pah9	5-Sep	78	f	ad			
10	pah10	5-Sep	74	f	ad			
11	pah11	5-Sep	72	f	ad			
12	pah12	5-Sep	73	f	adcwt	1346	None	
13	pah13	5-Sep	80	f	cwt	36	23	
14	pah14	5-Sep	73	f	ad			
15	pah15	5-Sep	86	f	ad			
16	pah16	5-Sep	71	f	ad			
17	pah17	5-Sep	73	f	cwt	62	None	Arrived ripe
18	pah18	5-Sep	67	f	ad			
19	pah19	5-Sep	78	f	ad			
20	pah20	5-Sep	85	f	ad			
21	pah21	5-Sep	58	f	ad			
22	pah22	5-Sep	74	f	ad			
23	pah23	5-Sep	77	f	ad			
24	pah24	8-Sep	74	f	ad			
25	pah25	8-Sep	75	f	ad			
26	pah26	8-Sep	86	f	ad			
27	pah27	8-Sep	77	f	ad			
28	pah28	8-Sep	72	f	ad			
29	pah29	8-Sep	86	f	cwt			
30	pah30	8-Sep	84	f	ad			
31	pah31	8-Sep	84	f	ad			
32	pah32	8-Sep	79	f	ad			
33	pah33	8-Sep	86	f	ad			
34	pah34	8-Sep	80	f	ad			
35	pah35	8-Sep	66	f	ad			
36	pah36	8-Sep	89	f	ad			
37	pah37	8-Sep	76	f	ad			
38	pah38	11-Sep	76	f	ad			
39	pah39	11-Sep	68	f	ad			
40	pah40	11-Sep	81	f	ad			
41	pah41	11-Sep	74	f	ad			
42	pah42	11-Sep	66	f	ad			
43	pah43	11-Sep	92	f	ad			
44	pah44	11-Sep	88	f	ad			
45	pah45	11-Sep	72	f	cwt	1351	None	

46	pah46	11-Sep	83	f	ad			
47	pah47	11-Sep	74	f	ad			
48	pah48	11-Sep	45	m	ad			
49	pah49	11-Sep	92	m	ad	54	39	
50	pah50	11-Sep	88	m	ad			
51	pah51	11-Sep	79	m	ad			
52	pah52	11-Sep	56	m	ad			
53	pah53	11-Sep	51	m	adcwt	14	9	
54	pah54	11-Sep	88	m	ad			
55	pah55	11-Sep	99	m	ad			shed tag
56	pah56	11-Sep	71	m	ad			
57	pah57	11-Sep	92	m	ad	29	20	
58	pah58	11-Sep	93	m	ad			
59	pah59	11-Sep	82	m	ad			
60	pah60	11-Sep	53	m	ad			
61	pah61	11-Sep	55	m	ad			
62	pah62	11-Sep	73	m	ad			
63	pah63	11-Sep	78	m	ad			
64	pah64	11-Sep	69	m	adcwt	1370	None	
65	pah65	11-Sep	83	m	cwt	1330	None	
66	pah66	11-Sep	77	m	ad			
67	pah67	11-Sep	69	m	ad			
68	pah68	11-Sep	69	m	ad			
69	pah69	11-Sep	70	m	ad			
70	pah70	11-Sep	79	m	ad			
71	pah71	11-Sep	79	m	cwt	45	31	
72	pah72	11-Sep	73	m	ad			
73	pah73	11-Sep	81	m	ad			
74	pah74	11-Sep	86	m	ad			
75	pah75	11-Sep	70	m	ad			
76	pah76	11-Sep	66	m	ad			
77	pah77	11-Sep	64	m	ad			
78	pah78	14-Sep	74	f	ad			
79	pah79	14-Sep	71	f	adcwt			
80	pah80	14-Sep	76	f	ad			
81	pah81	14-Sep	91	f	cwt			
82	pah82	14-Sep	85	f	ad			
83	pah83	14-Sep	73	f	ad			
84	pah84	14-Sep	74	f	ad			
85	pah85	14-Sep	86	f	ad			
86	pah86	14-Sep	74	f	ad			
87	pah87	14-Sep	91	f	ad			
88	pah88	14-Sep	90	f	ad			
89	pah89	14-Sep	71	f	ad			
90	pah90	14-Sep	74	f	ad			
91	pah91	14-Sep	73	f	ad			
92	pah92	14-Sep	88	f	ad			
93	pah93	14-Sep	78	f	ad			
94	pah94	14-Sep	84	f	cwt			

95	pah95	14-Sep	78	f	ad		
96	pah96	14-Sep	80	f	cwt		
97	pah97	14-Sep	70	f	ad		
98	pah98	14-Sep	77	m	ad		
99	pah99	14-Sep	82	m	ad		
100	pah100	14-Sep	82	m	ad		
101	pah101	14-Sep	75	m	ad		
102	pah102	14-Sep	62	m	ad		
103	pah103	14-Sep	90	m	ad		
104	pah104	14-Sep	90	m	ad		
105	pah105	14-Sep	74	m	ad		
106	pah106	14-Sep	77	m	ad		
107	pah107	14-Sep	82	m	ad		
108	pah108	14-Sep	82	m	ad		
109	pah109	14-Sep	89	m	ad		
110	pah110	14-Sep	82	m	cwt	37	24
111	pah111	14-Sep	92	m	ad	1360	None
112	pah112	14-Sep	82	f	ad		
113	pah113	14-Sep	70	f	ad		
114	pah114	14-Sep	84	f	cwt	66	None
115	pah115	14-Sep	71	m	ad		
116	pah116	14-Sep	71	m	ad		
117	pah117	14-Sep	71	m	ad		
118	pah118	14-Sep	72	m	ad		
119	pah119	14-Sep	68	m	ad		
120	pah120	14-Sep	58	m	ad		
121	pah121	14-Sep	79	m	ad		
122	pah122	14-Sep	73	m	ad		
123	pah123	14-Sep	77	m	ad		
124	pah124	14-Sep	83	m	ad		
125	pah125	18-Sep	71	f	cwt	1344	None
126	pah126	18-Sep	79	f	ad		
127	pah127	18-Sep	76	f	ad		
128	pah128	18-Sep	76	f	ad		
129	pah129	18-Sep	70	f	ad		
130	pah130	18-Sep	75	f	ad		
131	pah131	18-Sep	75	f	ad		
132	pah132	18-Sep	87	f	ad		
133	pah133	18-Sep	71	f	ad		
134	pah134	18-Sep	77	f	ad		
135	pah135	18-Sep	78	f	ad		
136	pah136	18-Sep	78	f	ad		
137	pah137	18-Sep	87	f	ad		
138	pah138	18-Sep	76	f	adcwt		
139	pah139	18-Sep	73	f	ad		
140	pah140	18-Sep	84	f	ad		
141	pah141	18-Sep	88	f	ad		
142	pah142	18-Sep	72	f	ad		
143	pah143	18-Sep	78	f	ad		

144	pah144	18-Sep	77	f	ad			
145	pah145	18-Sep	71	m	ad			pre-spawn mort
146	pah146	21-Sep	78	f	ad			
147	pah147	21-Sep	76	f	ad			
148	pah148	21-Sep	75	f	ad			
149	pah149	21-Sep	76	f	ad			
150	pah150	21-Sep	70	f	ad			
151	pah151	21-Sep	78	f	ad			
152	pah152	21-Sep	74	f	ad			
153	pah153	21-Sep	87	f	cwt	1333	None	
154	pah154	21-Sep	78	f	ad			
155	pah155	21-Sep	91	f	ad			
156	pah156	28-Sep	68	m	ad			
157	pah157	28-Sep	75	m	ad			
158	pah158	28-Sep	77	m	ad			
159	pah159	28-Sep	75	m	ad			
160	pah160	28-Sep	82	m	ad			
161	pah161	28-Sep	76	m	ad			
162	pah162	28-Sep	55	m	ad			
163	pah163	28-Sep	70	m	ad			
164	pah164	28-Sep	61	m	ad			
165	pah165	28-Sep	56	m	ad			
166	pah166	28-Sep	45	m	ad			
167	pah167	28-Sep	58	m	ad			
168	pah168	28-Sep	62	m	ad			
169	pah169	28-Sep	69	m	ad			
170	pah170	28-Sep	72	m	ad			
171	pah171	28-Sep	69	m	ad			
172	pah172	28-Sep	89	m	ad			
173	pah173	28-Sep	97	m	ad			
174	pah174	28-Sep	76	m	cwt			
175	pah175	28-Sep	92	m	cwt	49	33	
176	pah176	28-Sep	75	m	ad			
177	pah177	28-Sep	62	m	cwt	1376	None	
178	pah178	2-Oct	86	m	ad			
179	pah179	2-Oct	72	m	ad			
180	pah180	2-Oct	81	m	ad			
181	pah181	2-Oct	49	m	ad			
182	pah182	2-Oct	75	m	ad			
183	pah183	2-Oct	75	m	ad			
184	pah184	2-Oct	84	m	ad			
185	pah185	2-Oct	95	m	ad	11	6	
186	pah186	2-Oct	84	m	ad			
187	pah187	2-Oct	63	m	ad			
188	pah188	2-Oct	56	m	cwt			
189	pah189	2-Oct	74	m	ad			
190	pah190	2-Oct	91	m	ad			
191	pah191	2-Oct	92	m	ad			

192	pah192	2-Oct	82	m	ad			
193	pah193	2-Oct	82	m	adcwt			
194	pah194	2-Oct	76	m	ad			
195	pah195	2-Oct	94	m	ad			
196	pah196	2-Oct	84	m	ad			
197	pah197	2-Oct	83	m	ad			
198	pah198	2-Oct	83	m	ad			
199	pah199	2-Oct	78	m	ad			
200	pah200	2-Oct	80	m	ad			

Appendix D. Pahsimeroi Brood Year 2006 hatchery summer Chinook special marks and tags.

Trap Date	Sex	Fork Length (CM)	Clips or Marks	Origin	Pit Tag or Other Specialty Tag #	Radio Transmitter #
July 2	F	68	None	N	985120008605199	Channel 19, code 85
July 9	M	53	None	N	985120014193067	None
July 9	F	68	None	N	985120019048019	None
July 13	F	85	None	N	985120013017577	None
July 17	F	82	CWT	H	None	Channel 12, code 205
July 18	F	89	CWT	H	985120016801975	Channel 12, code 204
August 11	F	44	ADJT	H	JT# IDFG00179	None

CLIPS OR MARKS: AD = ADIPOSE CLIPPED, CWT = CODED WIRE TAGGED, JT=JAW TAGGED, NONE=UNMARKED; ORIGIN: H= HATCHERY, N = NATURAL

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