PAHSIMEROI FISH HATCHERY

2007 Summer Chinook Salmon Brood Year Report

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ABSTRACT

The summer Chinook salmon (*Oncorhynchus tshawytscha)* 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.

The PFH weir was installed on June 16, 2007 and trapping began June 21, 2007. The weir was left in place until trapping ceased on September 28, 2007. The first fish was trapped on June 22, 2007 and the last on September 27, 2007. A total of 717 (190 marked males, 252 marked females, 124 marked jacks, 13 mini-jacks, 67 unmarked males, 58 unmarked females, 12 unmarked jacks, and one mini-jack) summer Chinook salmon were trapped during the 2007 brood year. The total pre-spawn mortality was 38 (7.7%), which included 28 females and 10 males.

Artificial spawning of summer Chinook salmon commenced on August 27, 2007 and concluded on September 27, 2007. A total of 215 females were spawned, of which 12 were culled. A total of 1,007,091 green eggs were collected for production purposes, for an average fecundity of 4,961 eggs per female. The overall eye-up rate was 97.1%. 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, 2008, brood year 2007 pre-smolts were transferred to two rearing ponds at the PFH upper hatchery. They were raised on river water until being released in March and April 2009.

The outlet screens for the secondary rearing ponds were removed in a staggered fashion beginning March 30, 2009 to allow volitional release of Chinook salmon smolts into the Pahsimeroi River. A total of 870,842 smolts weighing 77,150 pounds were released from the ponds. The fish averaged 11.29 fish per pound and consisted of one group. A total of 18,750 fish were released with passive integrated transponder (PIT) tags. These fish were all classified as reserve group listed at the time of release.

INTRODUCTION

Pahsimeroi Fish Hatchery (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 Dowton Lane seven miles further upstream on the Pahsimeroi River. Both hatcheries were constructed in 1967 by Idaho Power Company (IPC) and are owned and funded by IPC. The upper hatchery underwent a complete renovation in 2006-07. BY2007 smolts were the first to be released from the new rearing ponds at the upper facility. This report encompasses the trapping and spawning of adults returning in 2007, egg incubation, fry hatching, juvenile rearing, and the release of such juveniles as smolts in late March and early April 2009.

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. For Brood Year 2008, 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. Brood Year 2008 will be the first year class of fish to be reared through their rearing cycle without leaving the facility. The new upper hatchery features a 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 2007, 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 500,000 smolts at 15 fish per pound with a density index of 0.19 $lb/ft^3/in$ and a flow index of 1.23 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 entering 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 up-wellers 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 IDFG employees. The permanent staff consists of a Hatchery Manager 2, an Assistant Hatchery Manager, and a Fish Culturist. 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 and IDFG volunteers assist with spawning as well as routine hatchery operations. In fall of 2008, Doug Engemann was promoted to the Manager I position at Ashton Fish Hatchery and Lars Alsager, Assistant Manager of Springfield Fish Hatchery transferred to become a part of the Pahsimeroi Fish Hatchery staff.

TRAPPING

In 2007 the weir was installed on June 16, and the trap was operational from June 21 through September 28. The first adult summer Chinook salmon arrived on June 22, 2007 and the last adult arrived on September 27, 2007. Summer Chinook salmon returning in 2007 originated from brood years 2002, 2003, and 2004. 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 2007 return are as follows:

BY2002-Comprised of three groups of fish.

Group 1-Hatchery-origin reserve listed, all fish from this group were adipose fin (ad) clipped with no coded wire tags (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.
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.

BY2004-Comprised of one group of hatchery reserve fish.
A total of 1,073,951 (966,596 ad-clipped only and 107,355 ad-clip and CWT) smolts were released from this group. All smolts from Brood Year 2004 were released in March, 2006.

A total of 717 summer Chinook salmon were trapped in 2007. The hatchery origin component consisted of 124 jacks, 13 mini-jacks, and 442 adults (190 males and 252 females). The natural component consisted of 12 jacks, one mini-jack, and 125 adults (67 males and 58 females). All natural/wild fish were released upstream 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 2007. 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 CWT analysis. Age-class results for Brood Year 2007 are listed in Table 4.

Mini-jacks are defined as fish 44 cm or less in fork length. Dorsal fin ray cross-section analysis from past mini-jack samples did not detect the presence of saltwater annuli. This suggests these fish remain in fresh water for one year prior to returning to the PFH. 14 total mini-jacks were trapped in 2007 (13 hatchery origin, one natural origin).

The age-class criteria based on fork length and mark types for hatchery origin summer Chinook salmon returning in 2007 is as follows: age three fish (jacks) include any fish under 66 cm, fish with fork lengths of 66 cm to 85 cm are classified as age four, and fish with fork lengths greater than 85 cm are classified as age five. The age-class criteria for natural origin fish returning in 2007 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 fork lengths greater than 85 cm are classified as age five. Table 4 includes a breakdown of age-class results.

SPECIAL MARKS/TAGS

Of the 717 Chinook salmon trapped this year; four 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.

A total of 64 snouts containing CWTs were collected this season by hatchery personnel (Table 5). The CWTs from these snouts will be compared against scales collected to determine

the accuracy of using scales for aging. Also, dorsal fin ray samples were collected from reserve group fish with fork lengths of 90 cm or greater. This length was chosen because a 90 cm or greater fork length is clearly indicative of an age five fish. . For specific information regarding fish with special marks and tags, see Appendix D.

ADULT HANDLING PROCEDURES

During the summer Chinook salmon trapping season, the trap was emptied at least three times weekly and all fish were handled in accordance with protocols established by NOAA Fisheries. All Chinook salmon were initially scanned for CWTs. As mentioned previously, fish that were marked with CWTs and not ad-clipped were supplementation group fish. All other fish with ad-clips or ad-clips and CWTs were reserve group fish. No reserve group fish were released for natural spawning. Natural-origin and supplementation salmon were anaesthetized in a solution of MS-222. While anaesthetized, fish were scanned for PIT tags, measured to the nearest centimeter for fork length, and identified by sex. Each fish was also injected with erythromycin at a rate of 20 mg/kg body weight for preemptive bacterial kidney disease (BKD) management. These fish were allowed to recover in freshwater before being ponded or released. The ad-clipped reserve group fish were handled differently than those mentioned above. They were given the same treatment other than the fact that they were usually not anaesthetized. When handling extremely large fish, or study group specimens requiring scale sample collection and Floy/jaw tags (see section below), hatchery personnel elected to anesthetize these fish to minimize the chance of injury to them.

All summer Chinook salmon containing CWTs as well as most ad-clipped fish with fork lengths of 90 cm or greater that were held for spawning were marked with a Floy tag. As a precaution against tag loss, most of these fish also received a jaw tag. Scale samples were collected from these fish. When these known age fish were spawned, hatchery personnel were able to cross reference specific snouts and dorsal fin ray cross sections to the individual Floy tags. This sampling was conducted as part of two small-scale studies utilizing scales from known age hatchery origin fish. The study results were not available for the publication of this document. Contact June Johnson at Nampa Fisheries Research for more information.

ADULT HOLDING POND RECORD

The number of Chinook salmon retained for spawning each year is determined by IDFG fisheries biologists based on the number and origin of returning adults (Table 4).

Beginning June 25, 2007, both the male and female holding ponds were treated three times weekly with a 1-hour, 167 ppm formalin treatment to prevent mortality caused by secondary mycotic infections. Due to the discovery of high levels of ICH (*Ichthyophthirius multifilis*) related mortality at Sawtooth Fish Hatchery (SFH), PFH personnel increased the frequency of the formalin treatments to once every day and one weekend day beginning July 9, 2007. This was done upon recommendation and consultation of Eagle Fish Health Laboratory personnel. Treatment frequency was reduced to every weekday beginning August 17, 2007. Treatments concluded on September 21, 2007.

This year's pre-spawn mortality totaled 28 females and 10 males or 7.7% of the 491 fish held for spawning. There were no trap mortalities this season. No natural fish were held for spawning.

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 138 (58 females, 67 males, 12 jacks, and one mini-jack). The total number of ISS fish released for natural reproduction was 17 (8 females, 9 males) (Tables 4). 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 27, 2007. Spawning concluded on September 27, 2007. Each ripe female was killed and then spawned by the incision method. Prior to incision, a 1 cc sample of ovarian fluid was collected from 60 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 (*Myxobolus cerebralis*). 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, and two measured cups of well water were added to activate the milt just prior to swirling the egg/milt mixture in each spawn bucket. 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, 200 tissue samples were collected from hatchery origin males and females utilized for spawning. Tissue samples were also taken on all natural origin fish released above the weir. These DNA samples were collected as part of a study being conducted by IDFG Geneticist Matt Campbell. 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. Due to space limitations, 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 results in increased egg mortality and premature 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 6). 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 215 females were initially spawned; however, green eggs from three females that tested high for BKD and nine females with poor egg quality were discarded without enumeration, leaving the eggs from 203 females to be shipped to SFH for incubation and early rearing (Table 6). The enumerated green eggs from all females totaled 1,007,091. Fecundity averaged 4,961 eggs per female and the overall eye-up rate was 97.1%, yielding 977,737 eyed eggs (Table 9). This is the highest eye-up percentage rate in the program's history. Eyed eggs were 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

A total of 59 fish were distributed for charitable purposes. 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, Idaho. The disposition of all adult carcasses is summarized in Table 5.

NONTARGET SPECIES

During trapping of BY2007 summer Chinook salmon there were 19 rainbow trout (*O. mykiss*), one cutthroat trout (*O. clarkii*), and one bull trout (*Salvelinus confluentus*) trapped (Table 10). All non-target species trapped were released to the river.

FISH PRODUCTION

Starting May 28, 2008, BY2007 Pahsimeroi summer Chinook salmon were transferred to PFH by Niel Ring Trucking, Inc. Two IPC tankers hauled 934,485 fish (10,993 lbs). A total of 53,538 fish were marked with an ad-clip and a CWT. The remaining 880,947 were marked with just an ad-clip. The fish were ponded into the two newly remodeled outside rearing ponds with 491,350 ad-clipped fish in Pond 1 and 443,135 ad-clipped and AD/CWT fish in Pond 2.

Due to the previous outbreak of ICH at SFH, the fish were treated shortly after arrival with formalin by PFH staff. From May 30, 2008 to June 1, 2008, each pond was treated with a one-hour 167 ppm flow-through treatment. Fish in both ponds were also given a 28 day BKD preemptive medicated feed treatment. A total of 8,360 lbs. of medicated feed were fed to the fish between June 20, 2008 and July 17, 2008.

BY2007 smolts were fed a total of 64,942 pounds of feed during their rearing cycle, resulting in a conversion of 0.85. 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 7, production costs are summarized in Table 8, and survival percentages by life stage are summarized in Table 9.

SMOLT RELEASES

Pahsimeroi BY2007 smolts were released volitionally from the secondary rearing ponds from March 30, 2009 to April 10, 2009. 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, two sets of dam boards were removed from each pond starting April 3, 2009. The flow in rearing ponds was also reduced to 7 cfs per pond. Two additional sets of dam boards were removed on April 6, 2009, followed on April 8, 2009 with the removal of remaining dam boards. On April 10, 2008, regional fisheries personnel assisted PFH with electro-fishing an estimated 500 remaining smolts from the rearing ponds.

A total of 870,842 smolts were released from the rearing ponds. This total included 53,178 fish marked with an AD/CWT and 18,750 fish that were ad-clipped and PIT tagged. Smolts released from the rearing ponds averaged 11.29 fish per pound at the time of release. 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

Beginning June 30, 2008, a biweekly preemptive treatment regimen for ICH was initiated using a one-hour flow-through treatment of formalin at 167 ppm. During the month of August 2008, BY2007 juveniles had an outbreak of ICH and treatments were increased to a seven-day-a-week at the same concentration. In addition to the daily treatment, Doug Munson also prescribed an extra label dosage of a daily 60 ppm flow-through treatment of formalin for six hours. High amounts (62,330) of mortalities were observed during this outbreak. Measures to prevent future outbreaks are being considered for BY2008.

These fish received two 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. Preliberation 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 BY2007. They did a great job of keeping us informed on issues facing BY2007 Summer Chinook salmon and their cooperation is greatly appreciated.

Table 1. BY2007 summer Chinook salmon daily trap record.

Date Trapped	Hatchery Males	Natural Males	Total Males	Hatchery Females	Natural Females	Total Females	Total Trapped
22-Jun	17	3	20	21	2	23	43
23-Jun	0	0	0	0	0	0	0
24-Jun	0	0	0	0	0	0	0
25-Jun	22	2	24	30	7	37	61
26-Jun	0	0	0	0	0	0	0
27-Jun	11	3	14	17	0	17	31
28-Jun	12	1	13	5	1	6	19
29-Jun	9	2	11	8	1	9	20
30-Jun	0	0	0	0	0	0	0
1-Jul	0	0	0	0	0	0	0
2-Jul	25	8	33	30	4	34	67
3-Jul	7	1	8	4	4	8	16
4-Jul	0	0	0	0	0	0	0
5-Jul	20	4	24	22	3	25	49
6-Jul	9	3	12	13	3	16	28
7-Jul	0	0	0	0	0	0	0
8-Jul	0	0	0	0	0	0	0
9-Jul	21	2	23	10	4	14	37
10-Jul	2	2	4	4	2	6	10
11-Jul	9	3	12	3	1	4	16
12-Jul	0	0	0	0	0	0	0
13-Jul	6	6	12	9	6	15	27
14-Jul	0	0	0	0	0	0	0
15-Jul	0	0	0	0	0	0	0
16-Jul	11	3	14	7	2	9	23
17-Jul	6	0	6	3	0	3	9
18-Jul	0	0	0	0	0	0	0
19-Jul	8	1	9	11	3	14	23
20-Jul	0	0	0	0	0	0	0
21-Jul	0	0	0	0	0	0	0
22-Jul	0	0	0	0	0	0	0
23-Jul	12	3	15	11	1	12	27
24-Jul	0	0	0	0	0	0	0
25-Jul	5	2	7	5	1	6	13
26-Jul	0	0	0	2	0	2	2
27-Jul	1	0	1	0	0	0	1
28-Jul	0	0	0	0	0	0	0
29-Jul	0	0	0	0	0	0	0
30-Jul	0	0	0	0	0	0	0
31-Jul	0	0	0	0	0	0	0
1-Aug	6	0	6	2	0	2	8
2-Aug	0	0	0	0	0	0	0
3-Aug	4	1	5	0	0	0	5
4-Aug	0	0	0	0	0	0	0
5-Aug	0	0	0	0	0	0	0
6-Aug	10	0	10	4	1	5	15
7-Aug	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0

Date Trapped	Hatchery Males	Natural Males	Total Males	Hatchery Females	Natural Females	Total Females	Total Trapped
13-Aug	7	2	9	3	0	3	12
14-Aug	0	0	0	0	0	0	0
15-Aug	0	0	0	0	0	0	0
16-Aug	0	0	0	0	0	0	0
17-Aug	12	4	16	2	0	2	18
18-Aug	0	0	0	0	0	0	0
19-Aug	0	0	0	0	0	0	0
20-Aug	10	1	11	4	1	5	16
21-Aug	0	0	0	0	0	0	0
22-Aug	0	0	0	0	0	0	0
23-Aug	0	0	0	0	0	0	0
24-Aug	2	1	3	1	1	2	5
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	0	0
28-Aug	0	0	0	0	0	0	0
29-Aug	0	0	0	0	0	0	0
30-Aug	4	2	6	1	0	1	7
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	22	3	25	4	0	4	29
5-Sep	0	0	0	0	0	0	0
6-Sep	0	0	0	0	0	0	0
7-Sep	15	11	26	5	0	5	31
8-Sep	0	0	0	0	0	0	0
9-Sep	0	0	0	0	0	0	0
10-Sep	8	2	10	1	2	3	13
11-Sep	0	0	0	0	0	0	0
12-Sep	0	0	0	0	0	0	0
13-Sep	6	0	6	3	2	5	11
14-Sep	0	0	0	0	0	0	0
15-Sep	0	0	0	0	0	0	0
16-Sep	0	0	0	0	0	0	0
17-Sep	5	3	8	5	3	8	16
18-Sep	0	0	0	0	0	0	0
19-Sep	0	0	0	0	0	0	0
20-Sep	2	0	2	1	1	2	4
21-Sep	0	0	0	0	0	0	0
22-Sep	0	0	0	0	0	0	0
23-Sep	0	0	0	0	0	0	0
24-Sep	1	1	2	1	1	2	4
25-Sep	0	0	0	0	0	0	0
26-Sep	0	0	0	0	0	0	0
27-Sep	0	0	0	0	1	1	1
TOTAL:	327	80	407	252	58	310	717

Table 2. BY2007 male summer Chinook salmon length frequency.

Total Trapped		Ad-Clip Ponded		AD/CWT Ponded		CWT Ponded		CWT Released		Unmarked Released	
FL (cm)	Number	FL (cm)	Number	FL (cm)	Number	FL (cm)	Number	FL (cm)	Number	FL (cm)	Number
41	2	41	2	41	0	41	0	41	0	41	0
42	3	42	3	42	0	42	0	42	0	42	0
43	4	43	3	43	1	43	0	43	0	43	0
44	1	44	0	44	1	44	0	44	0	44	0
45	4	45	3	45	0	45	0	45	0	45	1
46	2	46	1	46	0	46	0	46	0	46	1
47	15	47	13	47	2	47	0	47	0	47	0
48	6	48	6	48	0	48	0	48	0	48	0
49	11	49	11	49	0	49	0	49	0	49	0
50	10	50	8	50	0	50	0	50	0	50	2
51	9	51	9	51	0	51	0	51	0	51	0
52	8	52	8	52	0	52	0	52	0	52	0
53	7	53	6	53	0	53	0	53	0	53	1
54	12	54	9	54	3	54	0	54	0	54	0
55	9	55	9	55	0	55	0	55	0	55	0
56	4	56	2	56	0	56	0	56	0	56	2
57	8	57	6	57	1	57	0	57	0	57	1
58	10	58	8	58	2	58	0	58	0	58	0
59	4	59	3	59	0	59	0	59	0	59	1
60	5	60	2	60	2	60	0	60	0	60	1
61	1	61	1	61	0	61	0	61	0	61	0
62	5	62	4	62	0	62	0	62	0	62	1
63	6	63	4	63	0	63	0	63	0	63	2
64	0	64	0	64	0	64	0	64	0	64	0
65	4	65	4	65	0	65	0	65	0	65	0
66	0	66	0	66	0	66	0	66	0	66	0
67	3	67	3	67	0	67	0	67	0	67	0
68	3	68	3	68	0	68	0	68	0	68	0
69	8	69	6	69	1	69	0	69	0	69	1
70	6	70	5	70	1	70	0	70	0	70	0
71	13	71	8	71	2	71	0	71	0	71	3
72	13	72	7	72	0	72	0	72	0	72	6
73	11	73	7	73	0	73	0	73	0	73	4
74	12	74	12	74	0	74	0	74	0	74	0
75	13	75	7	75	1	75	0	75	0	75	5
76	16	76	14	76	1	76	0	76	0	76	1
77	14	77	8	77	2	77	0	77	0	77	4
78	7	78	5	78	1	78	0	78	0	78	1
79	8	79	7	79	0	79	0	79	0	79	1
80	8	80	5	80	0	80	0	80	0	80	3

Table 2. Continued.											
Total Trapped		**Ad-Clip Ponded**		**AD/CWT Ponded**		**CWT Ponded**		**CWT Released**		**Unmarked Released**	
FL (cm)	**Number**	**FL (cm)**	**Number**	**FL (cm)**	**Number**	**FL (cm)**	**Number**	**FL (cm)**	**Number**	**FL (cm)**	**Number**
81	7	81	7	81	0	81	0	81	0	81	0
82	3	82	0	82	0	82	0	82	0	82	3
83	4	83	2	83	0	83	0	83	2	83	0
84	3	84	2	84	0	84	0	84	0	84	1
85	5	85	3	85	1	85	0	85	1	85	0
86	7	86	5	86	0	86	0	86	0	86	2
87	9	87	4	87	1	87	0	87	0	87	4
88	3	88	2	88	0	88	0	88	0	88	1
89	4	89	3	89	0	89	0	89	0	89	1
90	8	90	3	90	1	90	0	90	1	90	3
91	10	91	8	91	0	91	0	91	0	91	2
92	3	92	2	92	0	92	0	92	1	92	0
93	12	93	6	93	2	93	0	93	1	93	3
94	11	94	1	94	1	94	0	94	0	94	9
95	7	95	3	95	0	95	0	95	0	95	4
96	7	96	5	96	0	96	0	96	0	96	2
97	8	97	4	97	0	97	0	97	2	97	2
98	2	98	2	98	0	98	0	98	0	98	0
99	4	99	4	99	0	99	0	99	0	99	0
100	3	100	1	100	1	100	0	100	0	100	1
101	2	101	2	101	0	101	0	101	0	101	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
104	0	104	0	104	0	104	0	104	0	104	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
107	0	107	0	107	0	107	0	107	0	107	0
108	0	108	0	108	0	108	0	108	0	108	0
109	0	109	0	109	0	109	0	109	0	109	0
110	0	110	0	110	0	110	0	110	0	110	0
111	0	111	0	111	0	111	0	111	0	111	0
TOTALS:	407		291		28		0		8		80

Table 3. BY2007 female summer Chinook salmon length frequency.

Total Trapped		AD-Clip Ponded		AD/CWT Ponded		CWT Ponded		CWT Released		Unmarked Released	
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
56	0	56	0	56	0	56	0	56	0	56	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
59	1	59	1	59	0	59	0	59	0	59	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
62	1	62	1	62	0	62	0	62	0	62	0
63	0	63	0	63	0	63	0	63	0	63	0
64	0	64	0	64	0	64	0	64	0	64	0
65	1	65	0	65	1	65	0	65	0	65	0
66	1	66	1	66	0	66	0	66	0	66	0
67	5	67	4	67	1	67	0	67	0	67	0
68	4	68	3	68	1	68	0	68	0	68	0
69	13	69	8	69	3	69	0	69	0	69	2
70	2	70	1	70	0	70	0	70	0	70	1
71	9	71	5	71	3	71	0	71	0	71	1
72	14	72	12	72	1	72	0	72	0	72	1
73	18	73	13	73	2	73	0	73	0	73	3
74	13	74	10	74	1	74	0	74	0	74	2
75	16	75	10	75	2	75	0	75	0	75	4
76	10	76	8	76	1	76	0	76	0	76	1
77	15	77	10	77	1	77	0	77	0	77	4
78	15	78	11	78	2	78	0	78	0	78	2
79	20	79	10	79	3	79	0	79	0	79	7
80	12	80	9	80	1	80	0	80	2	80	0
81	7	81	2	81	1	81	0	81	1	81	3
82	11	82	9	82	1	82	0	82	0	82	1
83	9	83	4	83	2	83	0	83	0	83	3
84	14	84	11	84	1	84	0	84	2	84	0
85	13	85	7	85	3	85	0	85	0	85	3
86	12	86	11	86	0	86	0	86	0	86	1
87	16	87	13	87	0	87	1	87	0	87	2
88	13	88	8	88	2	88	0	88	0	88	3
89	17	89	10	89	1	89	0	89	2	89	4
90	6	90	2	90	0	90	0	90	1	90	3
91	9	91	5	91	1	91	0	91	0	91	3
92	10	92	6	92	0	92	0	92	0	92	4
93	0	93	0	93	0	93	0	93	0	93	0

Table 3. Continued.

Total Trapped		AD-Clip Ponded		AD/CWT Ponded		CWT Ponded		CWT Released		Unmarked Released	
FL (cm)	**Number**	**FL (cm)**	**Number**	**FL (cm)**	**Number**	**FL (cm)**	**Number**	**FL (cm)**	**Number**	**FL (cm)**	**Number**
94	1	94	1	94	0	94	0	94	0	94	0
95	0	95	0	95	0	95	0	95	0	95	0
96	1	96	1	96	0	96	0	96	0	96	0
97	0	97	0	97	0	97	0	97	0	97	0
98	1	98	0	98	0	98	0	98	1	98	0
99	0	99	0	99	0	99	0	99	0	99	0
100	0	100	0	100	0	100	0	100	0	100	0
101	0	101	0	101	0	101	0	101	0	101	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
104	0	104	0	104	0	104	0	104	0	104	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
107	0	107	0	107	0	107	0	107	0	107	0
108	0	108	0	108	0	108	0	108	0	108	0
TOTALS:	310		207		35		1		9		58

Table 4. BY2007 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 AD	Age 4 Males CWT	Age 5 Males AD	Age 5 Males CWT	Age 4 Females AD	Age 4 Females CWT	Age 5 Females AD	Age 5 Females CWT	Age 4 Males Unmarked	Age 5 Males Unmarked	Age 4 Females Unmarked	Age 5 Females Unmarked	Natural Origin Unmarked	Hatchery Origin AD
Total	0	0	0	8	0	0	0	9	33	34	38	20	12	0
%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	42.8%	44.2%	65.5%	34.5%	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 AD	Age 4 Males CWT	Age 5 Males AD	Age 5 Males CWT	Age 4 Females AD	Age 4 Females CWT	Age 5 Females AD	Age 5 Females CWT	Age 4 Males Unmarked	Age 5 Males Unmarked	Age 4 Females Unmarked	Age 5 Females Unmarked	Natural Origin Unmarked	Hatchery Origin AD
Total	121	0	61	0	181	0	61	1	0	0	0	0	0	13
%	66.5%	00.0%	33.5%	00.0%	74.5%	00.0%	25.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Recycled to Fishery BY 2007

	Hatchery Origin Adult Males				Hatchery Origin Adult Females				Natural Origin Adult Males		Natural Origin Females		Jacks	
	Age 4 Males AD	Age 4 Males CWT	Age 5 Males AD	Age 5 Males CWT	Age 4 Females AD	Age 4 Females CWT	Age 5 Females AD	Age 5 Females CWT	Age 4 Males Unmarked	Age 5 Males Unmarked	Age 4 Females Unmarked	Age 5 Females Unmarked	Natural Origin Unmarked	Hatchery Origin 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 AD	Age 4 Males CWT	Age 5 Males AD	Age 5 Males CWT	Age 4 Females AD	Age 4 Females CWT	Age 5 Females AD	Age 5 Females CWT	Age 4 Males Unmarked	Age 5 Males Unmarked	Age 4 Females Unmarked	Age 5 Females Unmarked	Natural Origin Unmarked	Hatchery Origin AD
Total	121	0	61	8	181	0	61	10	33	34	38	20	12	124
%	16.9%	0.0%	8.5%	1.1%	25.2%	0.0%	8.5%	1.4%	4.6%	4.7%	5.3%	2.8%	1.7%	17.3%

Trap Totals By Origin for BY2007

	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	190	252	442	67	58	125	124	12	136	717
%	26.5%	35.1%	61.6%	9.3%	8.1%	17.4%	17.3%	1.7%	19.0%	100.0%

Table 5. BY2007 summer Chinook salmon adult disposition summary.

Disposition	Males	Females
Trap Mortality	0	0
Ponded-Prespawn Mortality	10	28
Recycled to Fishery	0	0
Surplus Jacks-Killed for Charities and Tribes*	59	0
Surplus Females in Holding-Killed Without Spawning	0	0
Females Spawned-Eyed Eggs Shipped to Sawtooth Hatchery	0	203
Females Spawned-Eggs Rejected During Spawning or Culled Later	0	12
Released Above Weir	88	67
Mini-Jacks- Killed	12	0
Males Spawned and Killed	178	0
Males-Died in Holding After 30 percent Spawning Completed	60	0
Total Chinook Trapped Brood Year 2007 Pahsimeroi Hatchery	407	310

Table 6. BY 2007 summer Chinook salmon spawning summary.

Lot No.	Spawn Date	Total Females Spawned	Females-Eggs Rejected (BKD)	Females-Eggs Rejected (Quality)	Eyed Eggs Obtained	Dead Eggs	Total Eggs	Percent Eye-Up	Average Fecundity	Comments
1	8/27/07	1	0	0	3,894	261	4,155	93.7%	4,155	
2	8/30/07	8	0	2	21,942	1,652	23,594	93.0%	3,932	
3	9/4/07	23	1	2	92,523	3,140	95,663	96.7%	4,783	
4	9/7/07	23	0	1	108,053	3,918	111,971	96.5%	5,090	
5	9/10/07	38	0	2	174,955	3,606	178,561	98.0%	4,960	
6	9/13/07	46	0	1	210,407	4,979	215,386	97.7%	4,786	
7	9/17/07	39	0	1	197,501	4,538	202,039	97.8%	5,317	
8	9/20/07	12	1	4	47,477	2,645	50,122	94.7%	4,557	
9	9/24/07	21	0	0	107,259	3,162	110,421	97.1%	5,258	
10	9/27/09	4	1	1	13,726	1,453	15,179	90.4%	5,060	
TOTALS		**215**	**3**	**9**	**977,737**	**29,354**	**1,007,091**	**97.1%**	**4,961**	

Table 7. BY2007 summer Chinook salmon feed summary.

Feed Type/Size	Pounds Fed To Date	Cost per Pound	Total Feed Cost
Bio-Vita			
Starter #0	968	$1.32	$1,277.76
Bio-Vita			
Starter #1	1,232	$1.32	$1,626.24
Bio-Vita			
Starter #2	3,476	$1.32	$4,588.32
Bio-Vita			
Fry 1.2 mm	6,730	$1.23	$8,277.90
Bio-Vita			
Fry 1.5 mm	6,688	$1.21	$8,092.48
Bio-Vita			
Fry 2.0 mm	6,666	$0.97	$6,466.02
Bio-Olympic Fry			
1.5 mm Aqua-100	3,520	$2.02	$7,110.40
Bio-Olympic Fry			
2.0 mm Aqua-100	7,260	$2.08	$15,100.80
Bio-Olympic			
Fry 2.5 mm	24,552	$2.02	$49,595.04
Rangen			
TM-MED 3/32	3,400	$1.14	$3,876.00
Rangen			
Slow Sink	450	$1.73	$778.50
Totals:	64,942		$106,789.46

Table 8. BY2007 summer Chinook salmon production costs.

Number of Fish	Pounds of Feed	Cost of Feed	Pounds of Fish	Conversion	Total Budget	Cost per Thousand Fish	Cost per Pound of Fish
870,842	**64,942**	**$106,789.46**	**77,150**	**0.85**	**$1,552,107.30**	**$20,118.04**	**$20.11**

*Does not include capital outlay

Table 9. BY2007 summer Chinook salmon smolt survival by life stage.

Life Stages	Numbers	Survival Percentages
Green Eggs	1,007,091	
Egg Pickoff	29,354	
Eyed Eggs	977,737	**97.1%**
Eggs Shipped To SFH	977,737	
Alevin Pickoff	22,939	
Fry Ponded	954,798	**94.8%**
Fry Mortality	9,264	
Fingerling Ponded	945,534	**93.9%**
Fingerling Mortality	74,692	
Smolts Released	870,842	**86.5%**

Table 10. BY2007 summer Chinook non-target species trapped.

Rainbow Trout

Trap Date	Sex	Length (CM)	Disposition
July 11	Female	27	Released
July 19	Male	43	Released
July 19	Female	30	Released
July 19	Male	43	Released
July 25	Male	38	Released
July 25	Female	28	Released
August 1	Unknown	28	Released
August 6	Female	39	Released
August 6	Male	39	Released
August 24	Female	31	Released
September 4	Male	34	Released
September 7	Male	42	Released
September 10	Female	34	Released
September 10	Male	37	Released
September 10	Female	28	Released
September 10	Female	25	Released
September 13	Female	38	Released
September 17	Female	30	Released
September 17	Female	35	Released

Cutthroat Trout

Trap Date	Sex	Length (CM)	Disposition
July 6	Unknown	31	Released

Bull Trout

Trap Date	Sex	Length (CM)	Disposition
September 17	Female	25	Released

Figure 1. BY2007 summer Chinook salmon run timing.

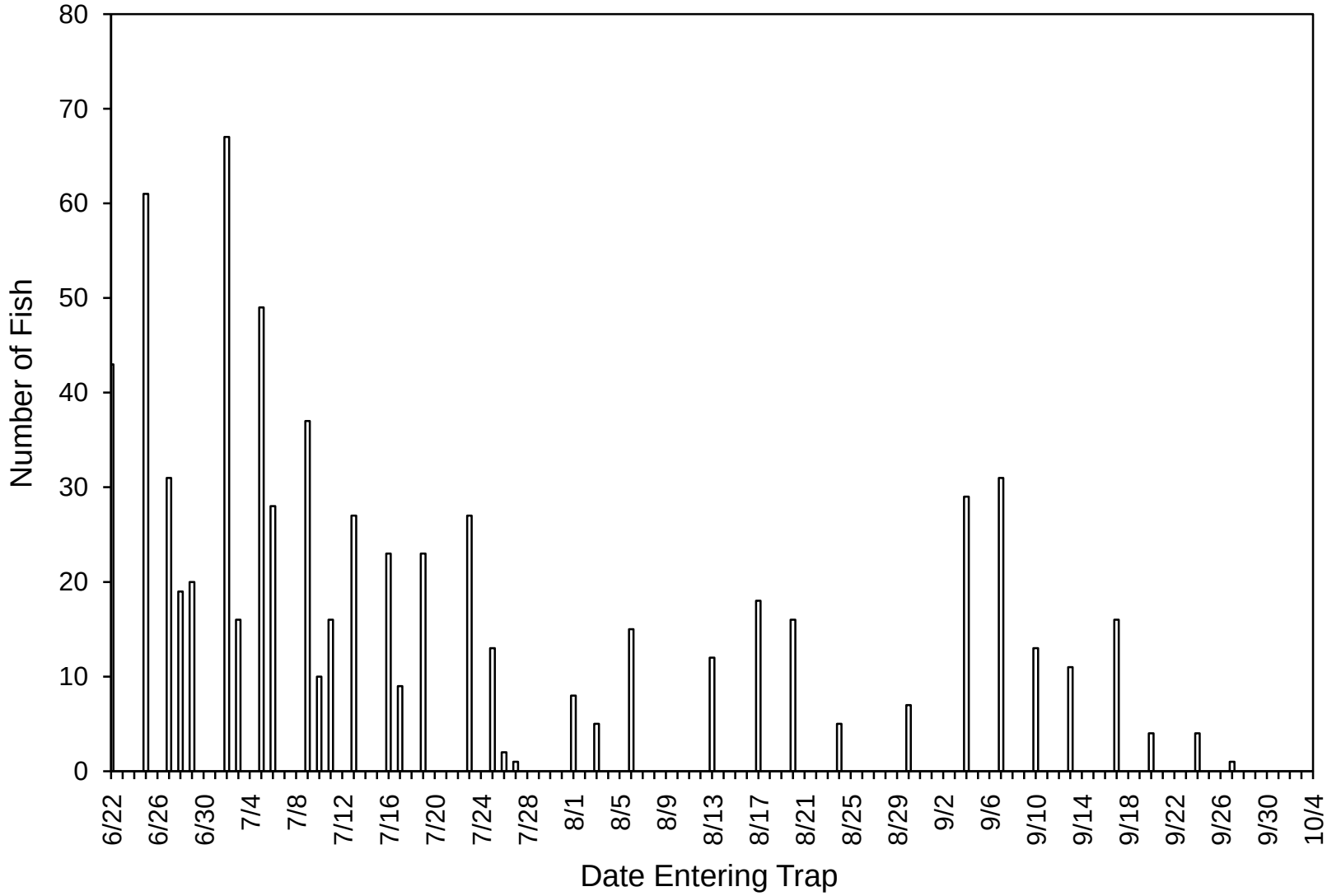


Figure 1-A. BY2007 summer Chinook salmon unmarked male run timing.

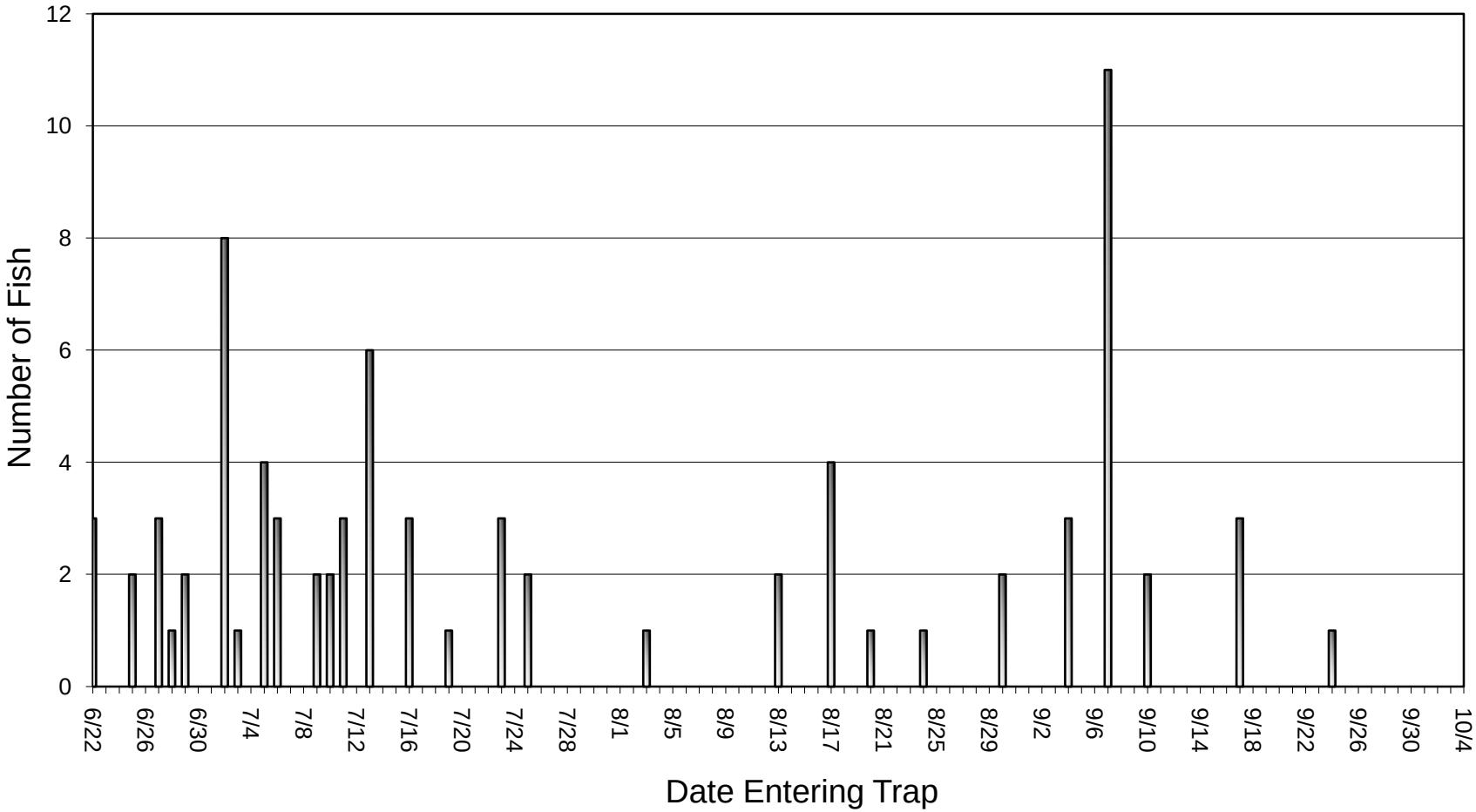


Figure 1-B. BY2007 summer Chinook salmon unmarked female run timing.

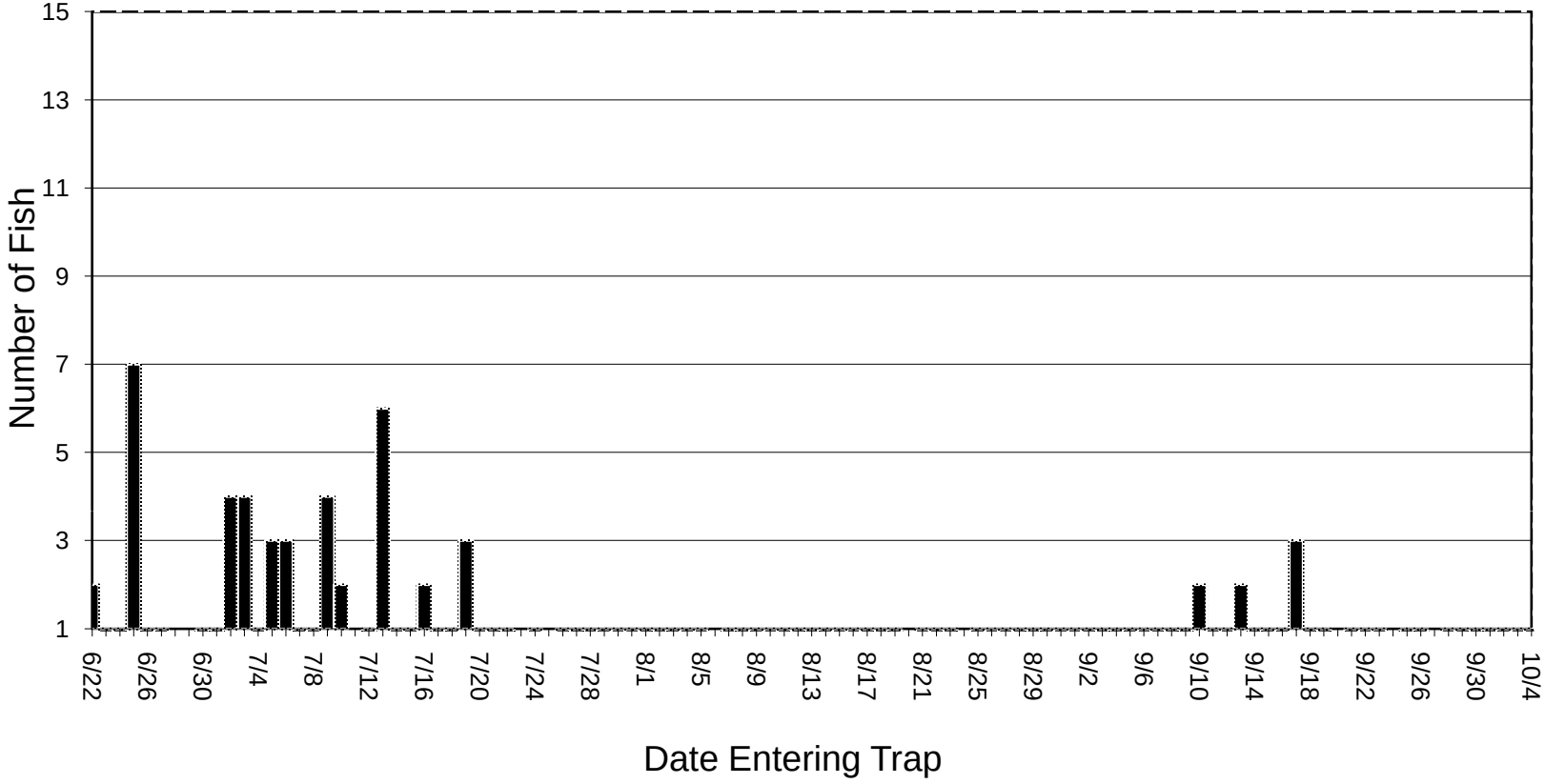


Figure 1-C. BY2007 summer Chinook salmon hatchery origin male run timing.

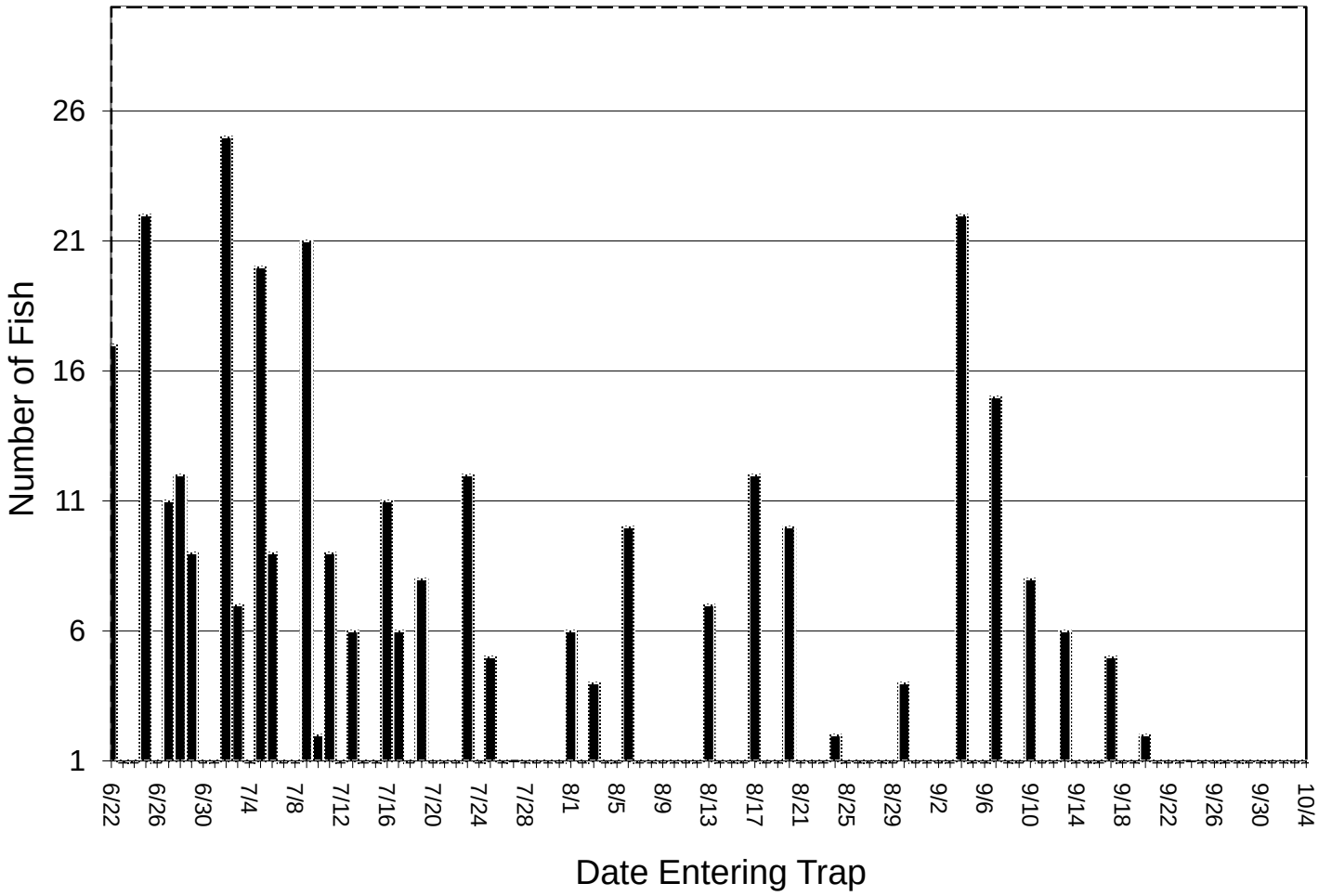


Figure 1-D. BY2007 summer Chinook salmon hatchery origin female run timing.

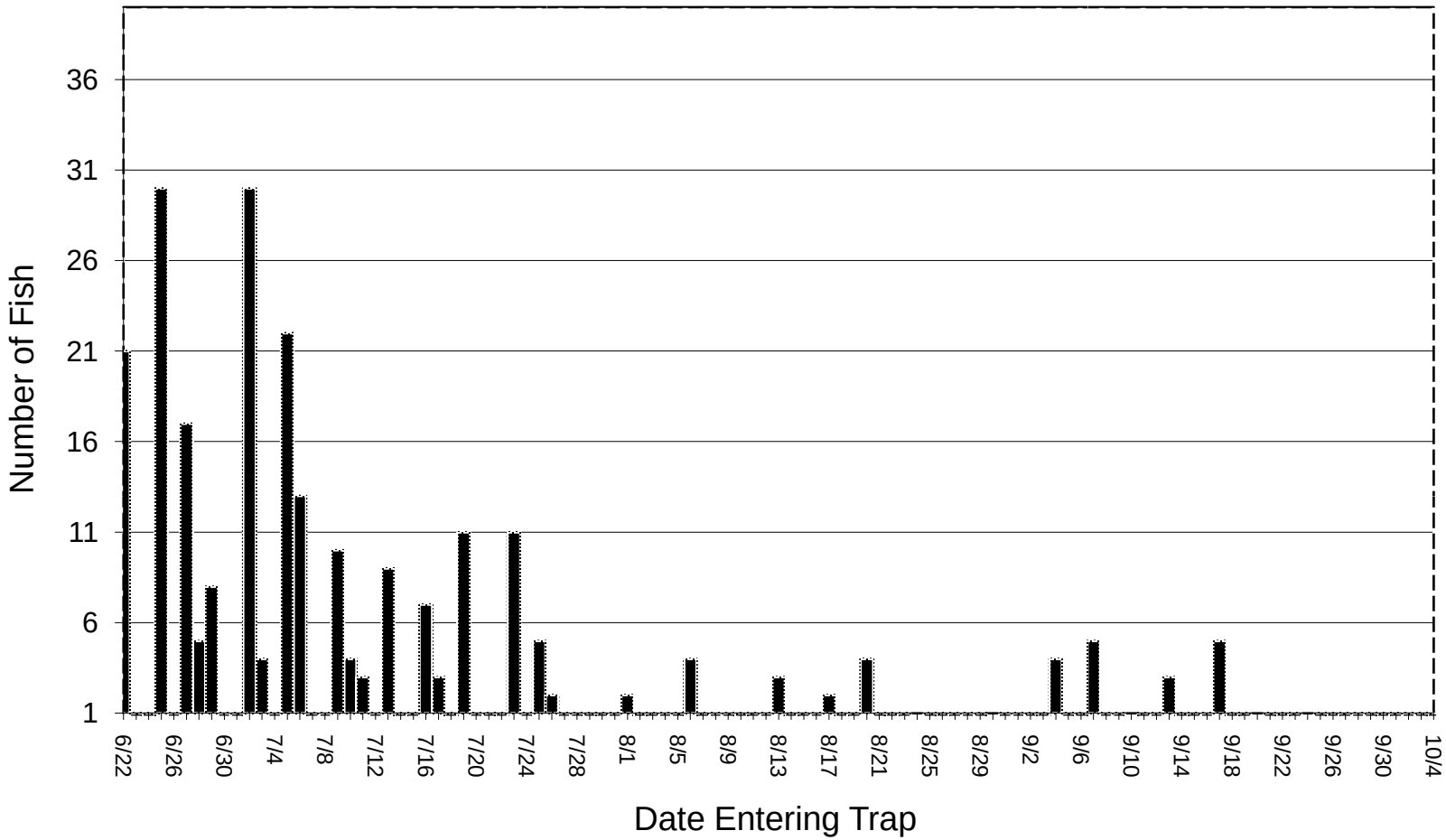
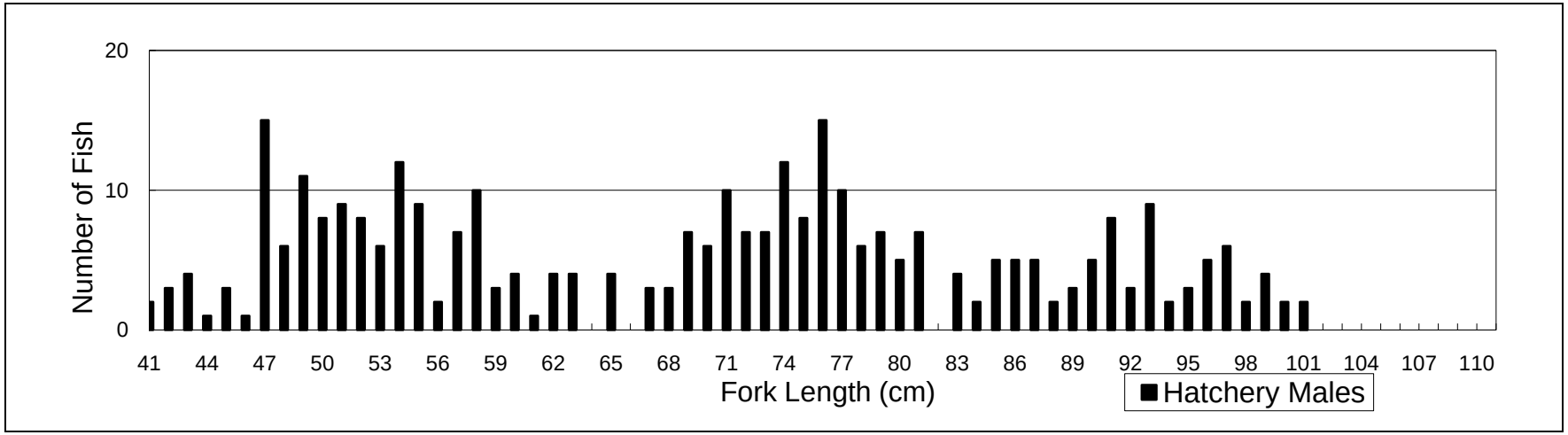


Figure 2. BY2007 summer Chinook salmon hatchery origin length frequency.



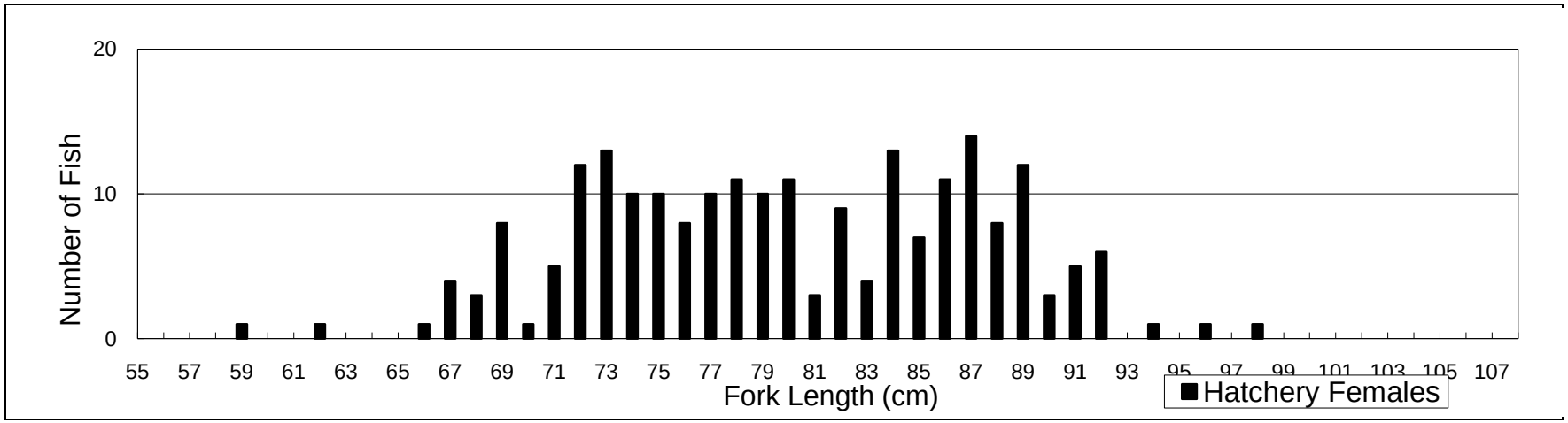
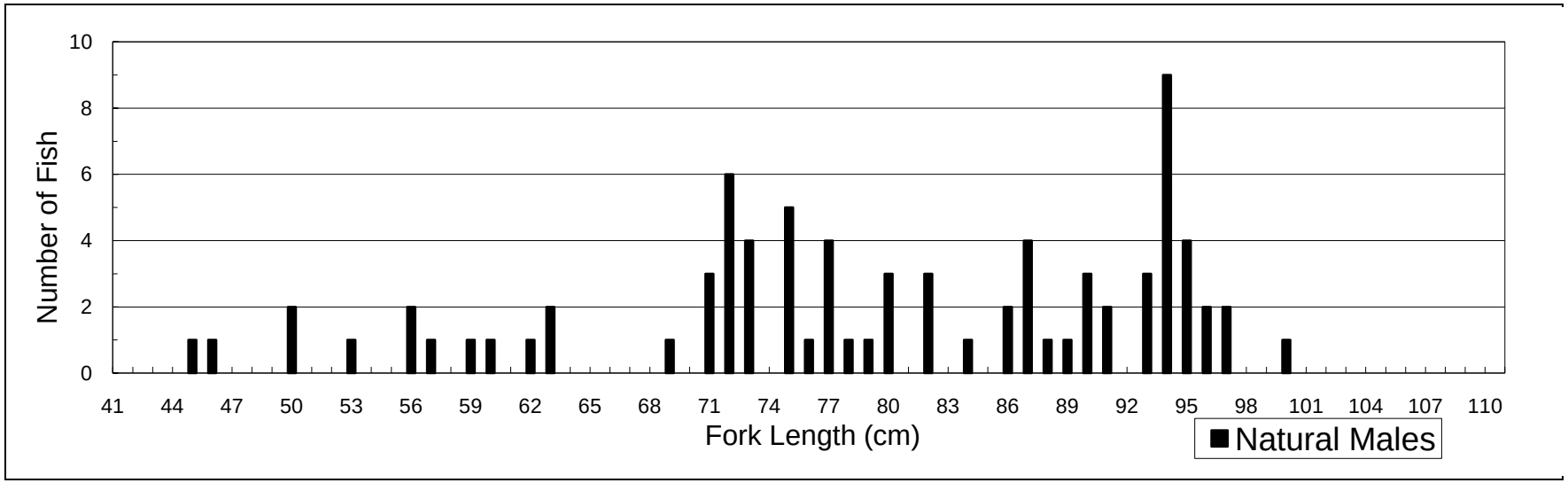
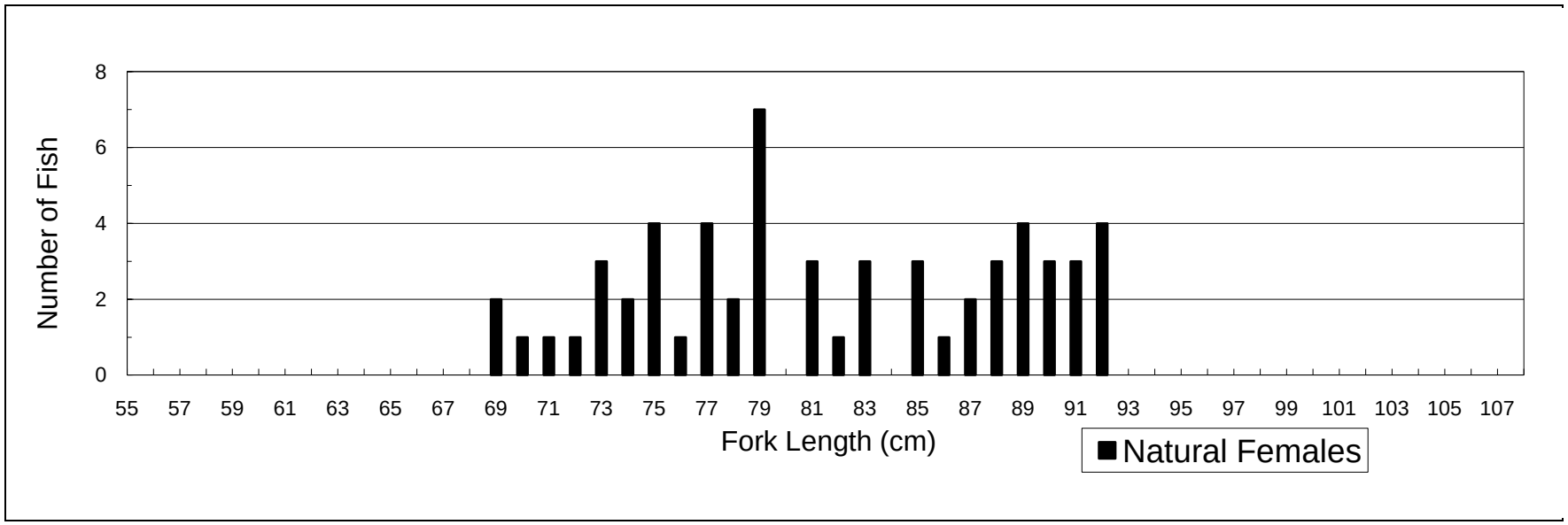


Figure 3. BY2007 summer Chinook salmon unmarked length frequency.





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 salmon 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 Fish Hatchery BY 2007 summer Chinook salmon 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			

Appendix C. Continued.

Sample Number	Vial Number	Sample Date	Fork Length	Sex	Mark Type	Floy Number	Jaw Number	Comments
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			

Appendix C. Continued.								
Sample Number	**Vial Number**	**Sample Date**	**Fork Length**	**Sex**	**Mark Type**	**Floy Number**	**Jaw Number**	**Comments**
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			prespawn 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			

Appendix C. Continued.								
Sample Number	**Vial Number**	**Sample Date**	**Fork Length**	**Sex**	**Mark Type**	**Floy Number**	**Jaw Number**	**Comments**
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 BY 2007 hatchery summer Chinook salmon 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.

Prepared by:

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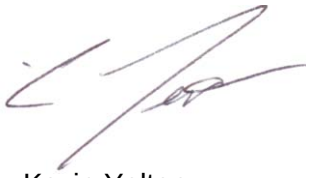

Kevin Yelton
Fish Culturist

Approved by:

IDAHO DEPARTMENT OF FISH AND GAME

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Edward B. Schriever, Chief
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Tom Rogers
Hatchery Supervisor