

## **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 Downton 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<sup>3</sup>/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 multifiliis*) 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    | Hatchery | Natural | Total | Hatchery | Natural | Total   | Total   |
|---------|----------|---------|-------|----------|---------|---------|---------|
| Trapped | Males    | Males   | Males | Females  | Females | Females | 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    | Hatchery | Natural | Total | Hatchery | Natural | Total   | Total   |
|---------|----------|---------|-------|----------|---------|---------|---------|
| Trapped | Males    | Males   | Males | Females  | Females | Females | 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 Pondered |        | AD/CWT Pondered |        | CWT Pondered |        | 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      |

| Total Trapped |        | Ad-Clip Pondered |        | AD/CWT Pondered |        | CWT Pondered |        | 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                | 0      |
| 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.

| FL (cm) | Total Trapped |         | AD-Clip Pondered |         | AD/CWT Pondered |         | CWT Pondered |         | CWT Released |         | Unmarked Released |         |
|---------|---------------|---------|------------------|---------|-----------------|---------|--------------|---------|--------------|---------|-------------------|---------|
|         | Number        | FL (cm) | Number           | FL (cm) | Number          | FL (cm) | Number       | FL (cm) | Number       | FL (cm) | Number            | FL (cm) |
| 55      | 0             | 55      | 0                | 55      | 0               | 55      | 0            | 55      | 0            | 55      | 0                 | 55      |
| 56      | 0             | 56      | 0                | 56      | 0               | 56      | 0            | 56      | 0            | 56      | 0                 | 56      |
| 57      | 0             | 57      | 0                | 57      | 0               | 57      | 0            | 57      | 0            | 57      | 0                 | 57      |
| 58      | 0             | 58      | 0                | 58      | 0               | 58      | 0            | 58      | 0            | 58      | 0                 | 58      |
| 59      | 1             | 59      | 1                | 59      | 0               | 59      | 0            | 59      | 0            | 59      | 0                 | 59      |
| 60      | 0             | 60      | 0                | 60      | 0               | 60      | 0            | 60      | 0            | 60      | 0                 | 60      |
| 61      | 0             | 61      | 0                | 61      | 0               | 61      | 0            | 61      | 0            | 61      | 0                 | 61      |
| 62      | 1             | 62      | 1                | 62      | 0               | 62      | 0            | 62      | 0            | 62      | 0                 | 62      |
| 63      | 0             | 63      | 0                | 63      | 0               | 63      | 0            | 63      | 0            | 63      | 0                 | 63      |
| 64      | 0             | 64      | 0                | 64      | 0               | 64      | 0            | 64      | 0            | 64      | 0                 | 64      |
| 65      | 1             | 65      | 0                | 65      | 1               | 65      | 0            | 65      | 0            | 65      | 0                 | 65      |
| 66      | 1             | 66      | 1                | 66      | 0               | 66      | 0            | 66      | 0            | 66      | 0                 | 66      |
| 67      | 5             | 67      | 4                | 67      | 1               | 67      | 0            | 67      | 0            | 67      | 0                 | 67      |
| 68      | 4             | 68      | 3                | 68      | 1               | 68      | 0            | 68      | 0            | 68      | 0                 | 68      |
| 69      | 13            | 69      | 8                | 69      | 3               | 69      | 0            | 69      | 0            | 69      | 0                 | 69      |
| 70      | 2             | 70      | 1                | 70      | 0               | 70      | 0            | 70      | 0            | 70      | 0                 | 70      |
| 71      | 9             | 71      | 5                | 71      | 3               | 71      | 0            | 71      | 0            | 71      | 0                 | 71      |
| 72      | 14            | 72      | 12               | 72      | 1               | 72      | 0            | 72      | 0            | 72      | 0                 | 72      |
| 73      | 18            | 73      | 13               | 73      | 2               | 73      | 0            | 73      | 0            | 73      | 0                 | 73      |
| 74      | 13            | 74      | 10               | 74      | 1               | 74      | 0            | 74      | 0            | 74      | 0                 | 74      |
| 75      | 16            | 75      | 10               | 75      | 2               | 75      | 0            | 75      | 0            | 75      | 0                 | 75      |
| 76      | 10            | 76      | 8                | 76      | 1               | 76      | 0            | 76      | 0            | 76      | 0                 | 76      |
| 77      | 15            | 77      | 10               | 77      | 1               | 77      | 0            | 77      | 0            | 77      | 0                 | 77      |
| 78      | 15            | 78      | 11               | 78      | 2               | 78      | 0            | 78      | 0            | 78      | 0                 | 78      |
| 79      | 20            | 79      | 10               | 79      | 3               | 79      | 0            | 79      | 0            | 79      | 0                 | 79      |
| 80      | 12            | 80      | 9                | 80      | 1               | 80      | 0            | 80      | 0            | 80      | 0                 | 80      |
| 81      | 7             | 81      | 2                | 81      | 1               | 81      | 0            | 81      | 0            | 81      | 0                 | 81      |
| 82      | 11            | 82      | 9                | 82      | 1               | 82      | 0            | 82      | 0            | 82      | 0                 | 82      |
| 83      | 9             | 83      | 4                | 83      | 2               | 83      | 0            | 83      | 0            | 83      | 0                 | 83      |
| 84      | 14            | 84      | 11               | 84      | 1               | 84      | 0            | 84      | 0            | 84      | 0                 | 84      |
| 85      | 13            | 85      | 7                | 85      | 3               | 85      | 0            | 85      | 0            | 85      | 0                 | 85      |
| 86      | 12            | 86      | 11               | 86      | 0               | 86      | 0            | 86      | 0            | 86      | 0                 | 86      |
| 87      | 16            | 87      | 13               | 87      | 0               | 87      | 0            | 87      | 0            | 87      | 0                 | 87      |
| 88      | 13            | 88      | 8                | 88      | 2               | 88      | 0            | 88      | 0            | 88      | 0                 | 88      |
| 89      | 17            | 89      | 10               | 89      | 1               | 89      | 0            | 89      | 0            | 89      | 0                 | 89      |
| 90      | 6             | 90      | 2                | 90      | 0               | 90      | 0            | 90      | 0            | 90      | 0                 | 90      |
| 91      | 9             | 91      | 5                | 91      | 1               | 91      | 0            | 91      | 0            | 91      | 0                 | 91      |
| 92      | 10            | 92      | 6                | 92      | 0               | 92      | 0            | 92      | 0            | 92      | 0                 | 92      |
| 93      | 0             | 93      | 0                | 93      | 0               | 93      | 0            | 93      | 0            | 93      | 0                 | 93      |

Table 3. Continued.

| Total Trapped |        | AD-Clip Pondered |        | AD/CWT Pondered |        | CWT Pondered |        | 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 |                      |                        |                      |
| 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 4 Males Marked | Age 5 Males Unmarked | Age 5 Males Marked | Age 4 Females Unmarked | Age 4 Females Marked | Age 5 Females Unmarked | Age 5 Females Marked |
| 0                                | 0.0%            | 0              | 8               | 0                             | 0                 | 0                | 9                 | 33                         | 33                 | 34                   | 34                 | 38                     | 38                   | 20                     | 20                   |
| Total                            | 0.0%            | 0.0%           | 100.0%          | 0.0%                          | 0.0%              | 0.0%             | 100.0%            | 42.8%                      | 42.8%              | 44.2%                | 44.2%              | 65.5%                  | 65.5%                | 34.5%                  | 34.5%                |
| %                                |                 |                |                 |                               |                   |                  |                   |                            |                    |                      |                    |                        |                      |                        |                      |
| Ponded for Hatchery Production   |                 |                |                 |                               |                   |                  |                   |                            |                    |                      |                    |                        |                      |                        |                      |
| Hatchery Origin Adult Males      |                 |                |                 | Hatchery Origin Adult Females |                   |                  |                   | Natural Origin Adult Males |                    |                      |                    | Natural Origin Females |                      |                        |                      |
| 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 4 Males Marked | Age 5 Males Unmarked | Age 5 Males Marked | Age 4 Females Unmarked | Age 4 Females Marked | Age 5 Females Unmarked | Age 5 Females Marked |
| 121                              | 0               | 61             | 0               | 181                           | 0                 | 61               | 1                 | 0                          | 0                  | 0                    | 0                  | 0                      | 0                    | 0                      | 0                    |
| Total                            | 66.5%           | 00.0%          | 00.0%           | 74.5%                         | 00.0%             | 25.1%            | 0.4%              | 0.0%                       | 0.0%               | 0.0%                 | 0.0%               | 0.0%                   | 0.0%                 | 0.0%                   | 0.0%                 |
| %                                |                 |                |                 |                               |                   |                  |                   |                            |                    |                      |                    |                        |                      |                        |                      |
| Recycled to Fishery BY 2007      |                 |                |                 |                               |                   |                  |                   |                            |                    |                      |                    |                        |                      |                        |                      |
| Hatchery Origin Adult Males      |                 |                |                 | Hatchery Origin Adult Females |                   |                  |                   | Natural Origin Adult Males |                    |                      |                    | Natural Origin Females |                      |                        |                      |
| 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 4 Males Marked | Age 5 Males Unmarked | Age 5 Males Marked | Age 4 Females Unmarked | Age 4 Females Marked | Age 5 Females Unmarked | Age 5 Females Marked |
| 0                                | 0.0%            | 0              | 0               | 0                             | 0                 | 0                | 0                 | 0                          | 0                  | 0                    | 0                  | 0                      | 0                    | 0                      | 0                    |
| 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%                 |
| %                                |                 |                |                 |                               |                   |                  |                   |                            |                    |                      |                    |                        |                      |                        |                      |
| Trapping Totals                  |                 |                |                 |                               |                   |                  |                   |                            |                    |                      |                    |                        |                      |                        |                      |
| Hatchery Origin Adult Males      |                 |                |                 | Hatchery Origin Adult Females |                   |                  |                   | Natural Origin Adult Males |                    |                      |                    | Natural Origin Females |                      |                        |                      |
| 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 4 Males Marked | Age 5 Males Unmarked | Age 5 Males Marked | Age 4 Females Unmarked | Age 4 Females Marked | Age 5 Females Unmarked | Age 5 Females Marked |
| 121                              | 0               | 61             | 8               | 181                           | 0                 | 61               | 10                | 33                         | 33                 | 34                   | 34                 | 38                     | 38                   | 20                     | 20                   |
| Total                            | 16.9%           | 0.0%           | 8.5%            | 1.1%                          | 25.2%             | 0.0%             | 1.4%              | 4.6%                       | 4.6%               | 4.7%                 | 4.7%               | 5.3%                   | 5.3%                 | 2.8%                   | 2.8%                 |
| %                                |                 |                |                 |                               |                   |                  |                   |                            |                    |                      |                    |                        |                      |                        |                      |
| Trap Totals By Origin for BY2007 |                 |                |                 |                               |                   |                  |                   |                            |                    |                      |                    |                        |                      |                        |                      |
| Hatchery Origin                  |                 |                |                 | Natural Origin                |                   |                  |                   | Total                      |                    |                      |                    |                        |                      |                        |                      |
| Males                            | Females         | Total          | %               | Males                         | Females           | Total            | %                 | Males                      | Females            | Total                | %                  | Males                  | Females              | Total                  | %                    |
| 190                              | 252             | 442            | 26.5%           | 58                            | 125               | 183              | 17.4%             | 248                        | 377                | 625                  | 43.9%              | 136                    | 367                  | 503                    | 19.0%                |
| Total                            | 35.1%           | 61.6%          | 9.3%            | 8.1%                          | 17.4%             | 17.3%            | 1.7%              | 717                        | 717                | 717                  | 100.0%             | 136                    | 367                  | 503                    | 100.0%               |
| %                                |                 |                |                 |                               |                   |                  |                   |                            |                    |                      |                    |                        |                      |                        |                      |

Table 5. BY2007 summer Chinook salmon adult disposition summary.

| <b>Disposition</b>   | <b>Males</b> | <b>Females</b> |
|--|--------------|----------------|
| Trap Mortality   | 0            | 0              |
| Ponded-Pre-spawn 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 Spawning-Eyed Eggs Shipped to Sawtooth Hatchery          | 0            | 203            |
| Females Spawning-Eggs Rejected During Spawning or Culled Later   | 0            | 12             |
| Released Above Weir  | 88           | 67             |
| Mini-Jacks- Killed   | 12           | 0              |
| Males Spawning and Killed  | 178          | 0              |
| Males-Died in Holding After 30 percent Spawning Completed        | 60           | 0              |
| <b>Total Chinook Trapped Brood Year 2007 Pahsimeroi Hatchery</b> | <b>407</b>   | <b>310</b>     |

Table 6. BY 2007 summer Chinook salmon spawning summary.

| <b>Lot No.</b> | <b>Spawn Date</b> | <b>Total Females Spawning</b> | <b>Females-Eggs Rejected (BKD)</b> | <b>Females-Eggs Rejected (Quality)</b> | <b>Eyed Eggs Obtained</b> | <b>Dead Eggs</b> | <b>Total Eggs</b> | <b>Percent Eye-Up</b> | <b>Average Fecundity</b> | <b>Comments</b> |
|----------------|-------------------|-------------------------------|------------------------------------|--|---------------------------|------------------|-------------------|-----------------------|--------------------------|-----------------|
| 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                    |                 |
| <b>TOTALS</b>  |                   | <b>215</b>                    | <b>3</b>                           | <b>9</b>                               | <b>977,737</b>            | <b>29,354</b>    | <b>1,007,091</b>  | <b>97.1%</b>          | <b>4,961</b>             |                 |

Table 7. BY2007 summer Chinook salmon feed summary.

| <b>Feed Type/Size</b> | <b>Pounds Fed To Date</b> | <b>Cost per Pound</b> | <b>Total Feed Cost</b> |
|-----------------------|---------------------------|-----------------------|------------------------|
| 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               |
|                       |                           |                       |                        |
| <b>Totals:</b>        | <b>64,942</b>             |                       | <b>\$106,789.46</b>    |

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 Poned            | 954,798   | 94.8%                |
| Fry Mortality        | 9,264     |                      |
| Fingerling Poned     | 945,534   | 93.9%                |
| Fingerling Mortality | 74,692    |                      |
| Smolts Released      | 870,842   | 86.5%                |

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

| <b>Rainbow Trout</b> |            |                    |                    |
|----------------------|------------|--------------------|--------------------|
| <b>Trap Date</b>     | <b>Sex</b> | <b>Length (CM)</b> | <b>Disposition</b> |
| 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           |

| <b>Cutthroat Trout</b> |            |                    |                    |
|------------------------|------------|--------------------|--------------------|
| <b>Trap Date</b>       | <b>Sex</b> | <b>Length (CM)</b> | <b>Disposition</b> |
| July 6                 | Unknown    | 31                 | Released           |

| <b>Bull Trout</b> |            |                    |                    |
|-------------------|------------|--------------------|--------------------|
| <b>Trap Date</b>  | <b>Sex</b> | <b>Length (CM)</b> | <b>Disposition</b> |
| September 17      | Female     | 25                 | Released           |

Figure 1. BY2007 summer Chinook salmon run timing.

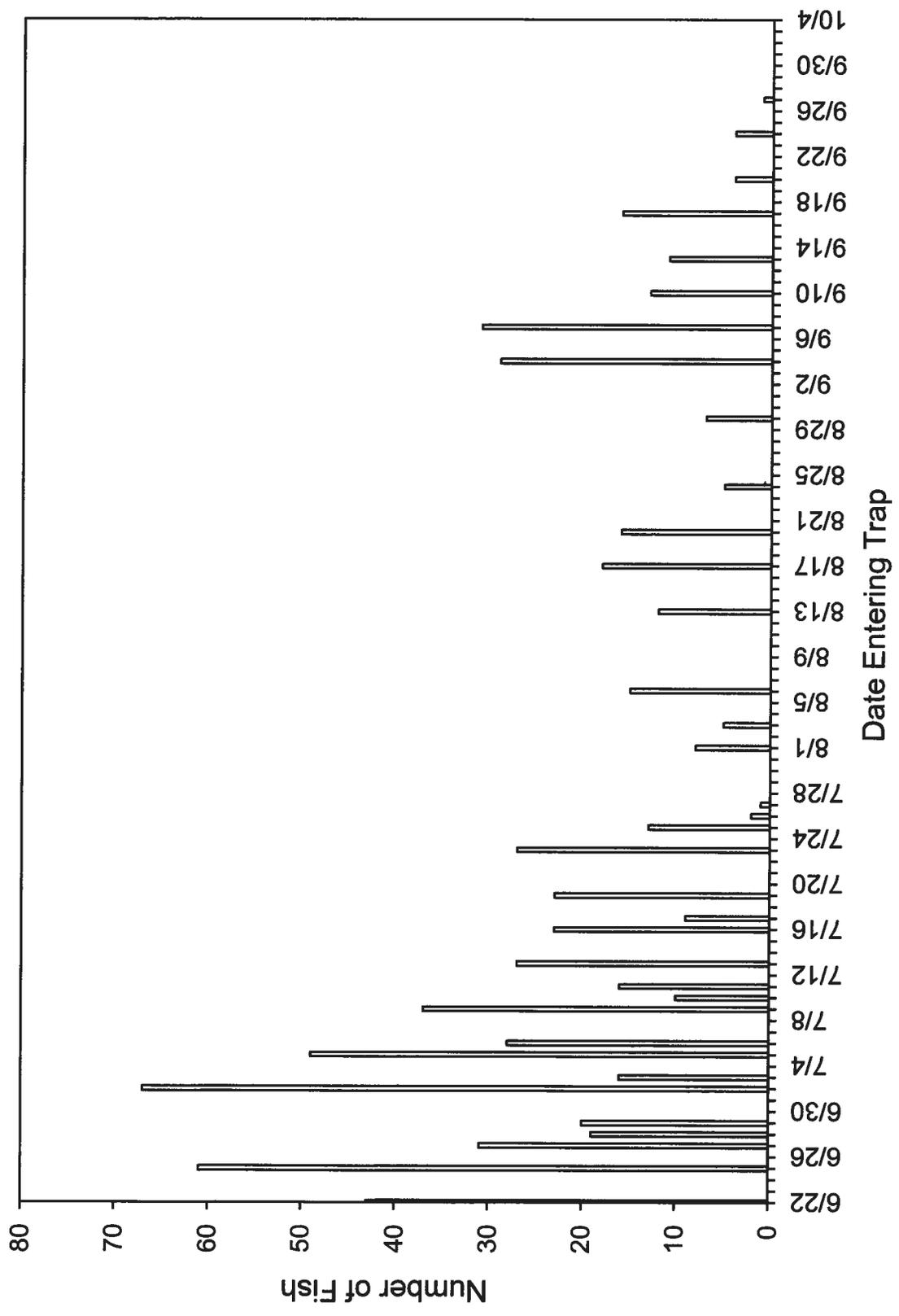


Figure 1-A. BY2007 summer Chinook salmon unmarked male run timing.

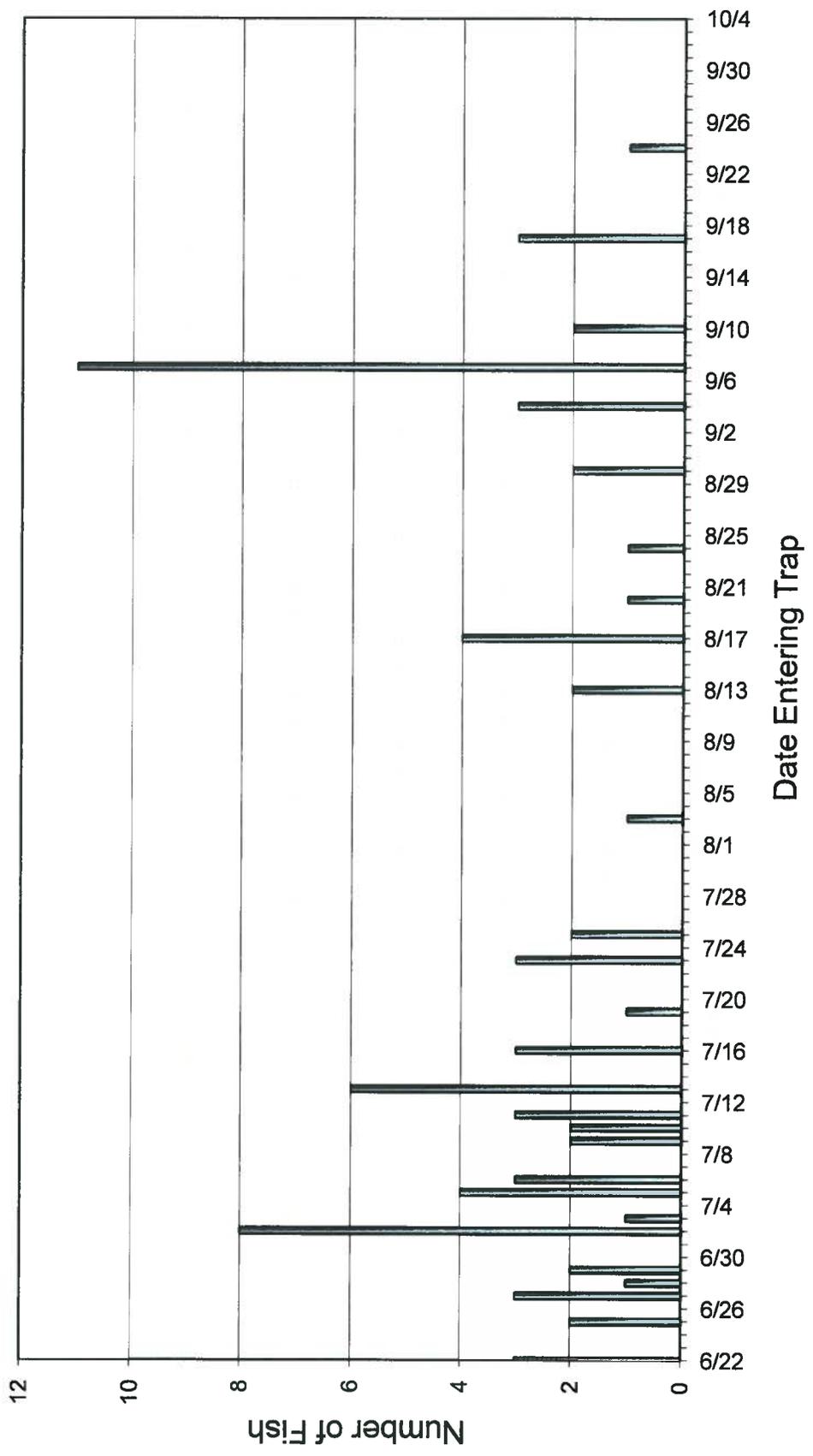


Figure 1-B. BY2007 summer Chinook salmon unmarked female run timing.

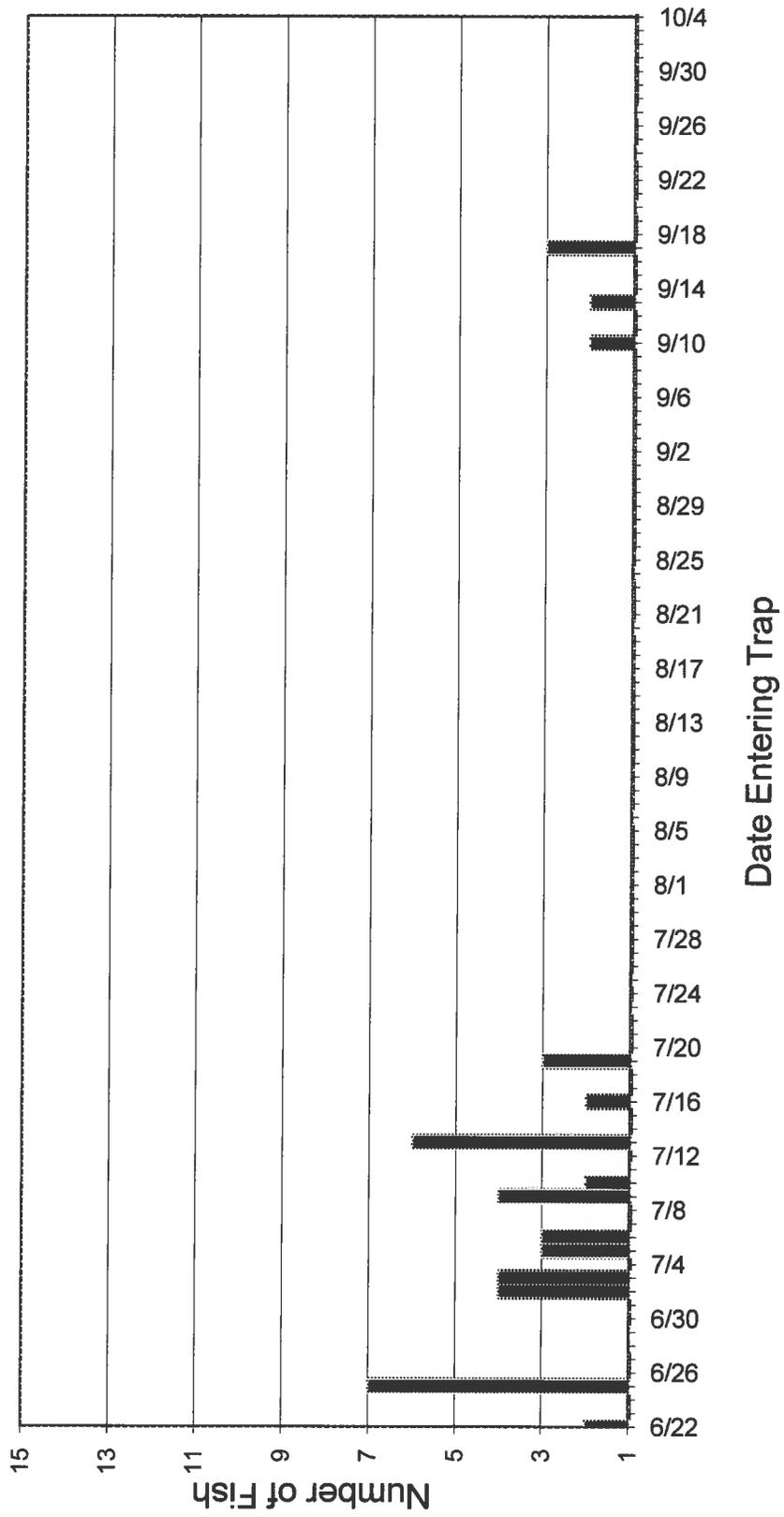


Figure 1-C. BY2007 summer Chinook salmon hatchery origin male run timing.

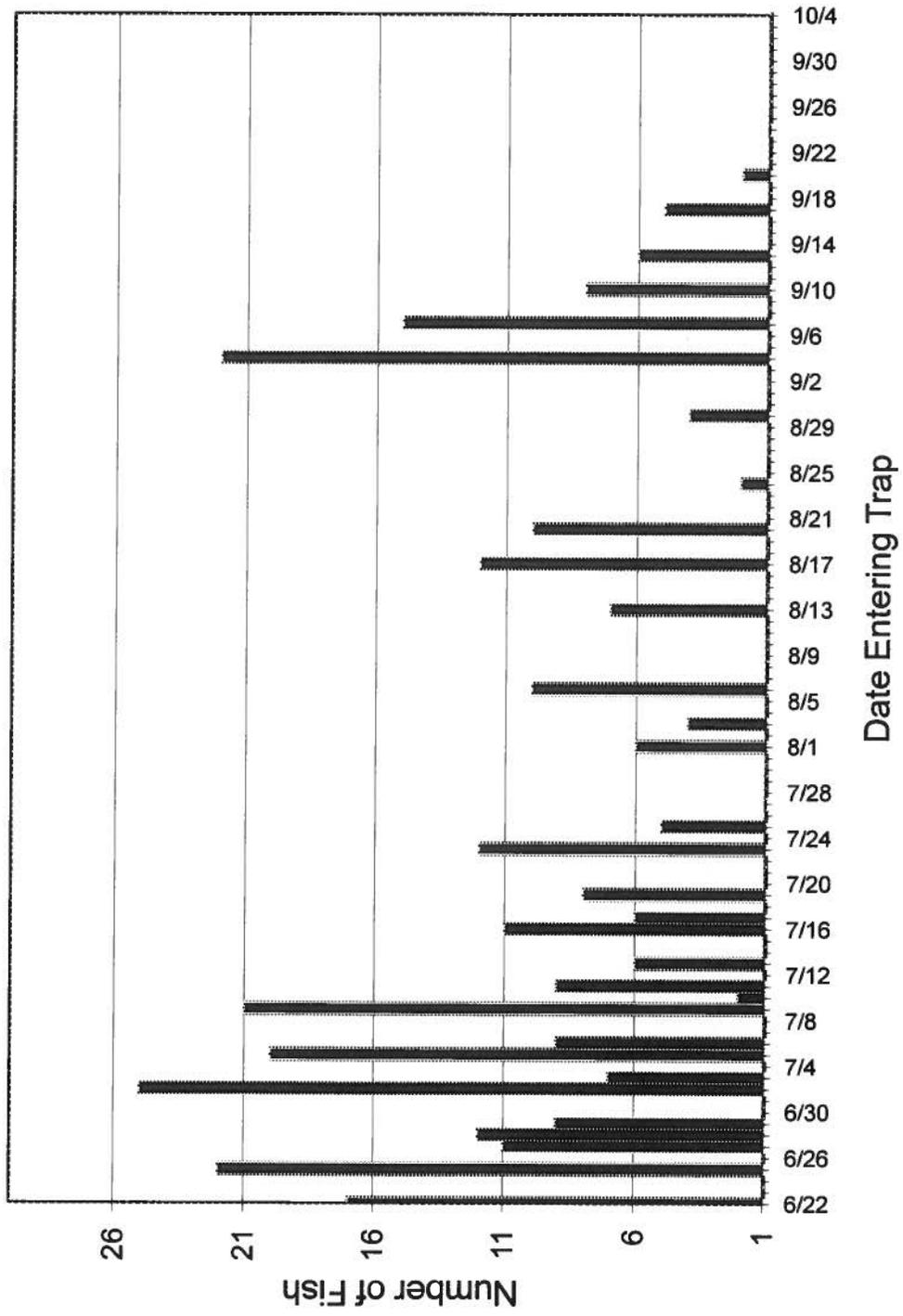


Figure 1-D. BY2007 summer Chinook salmon hatchery origin female run timing.

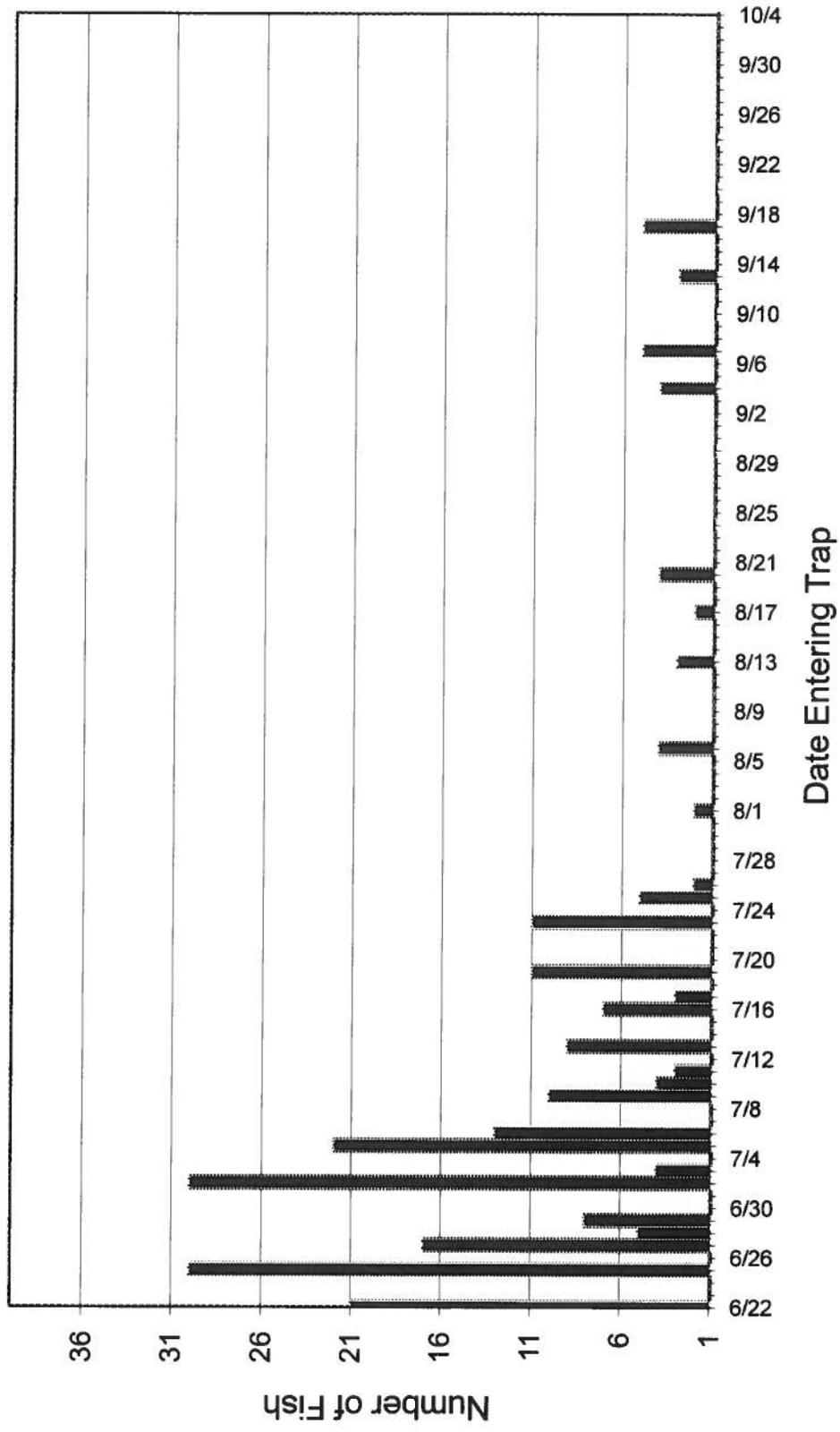


Figure 2. BY2007 summer Chinook salmon hatchery origin length frequency.

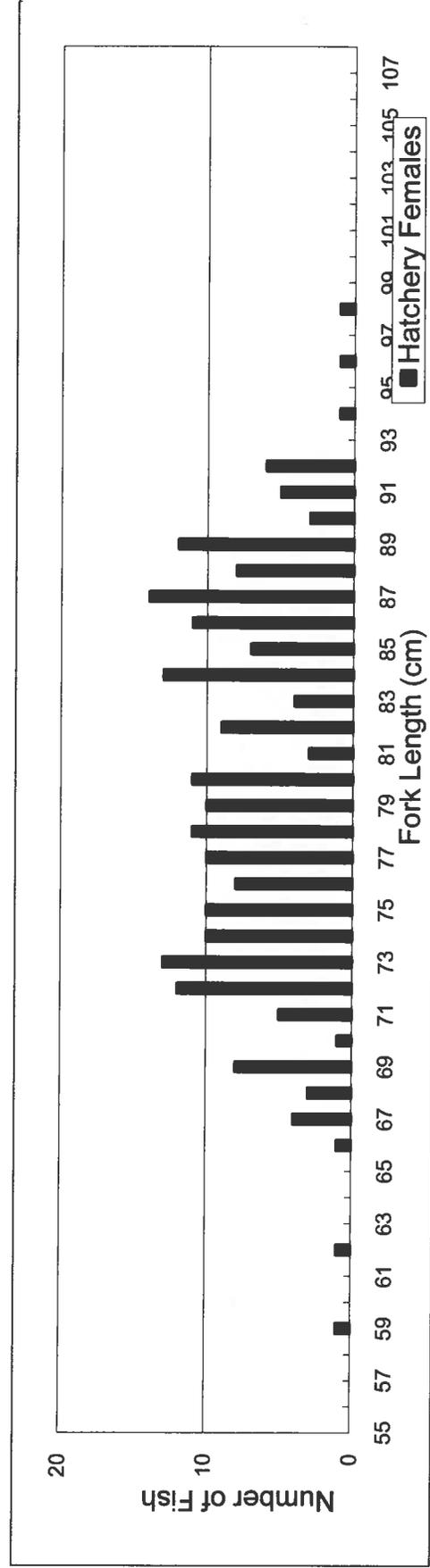
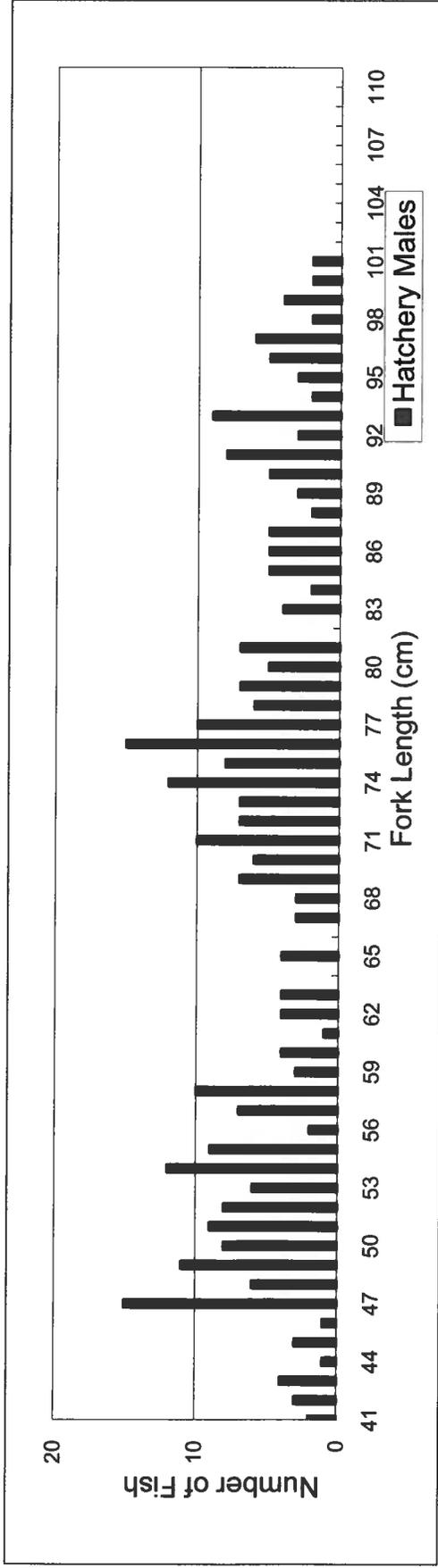
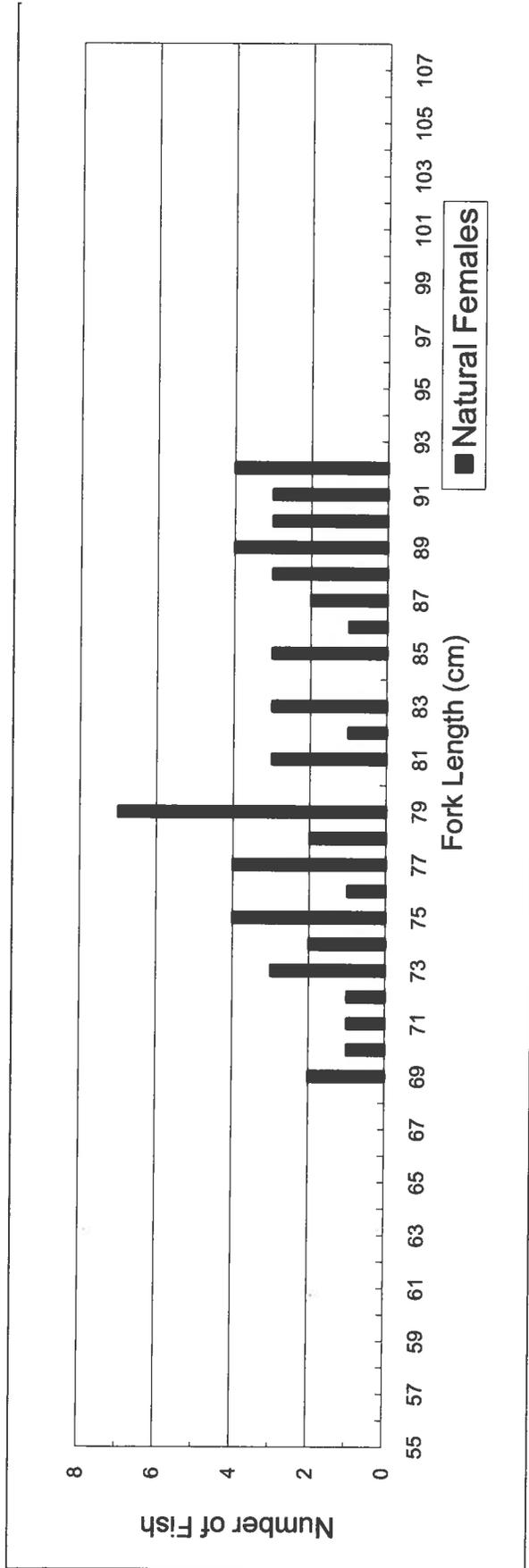
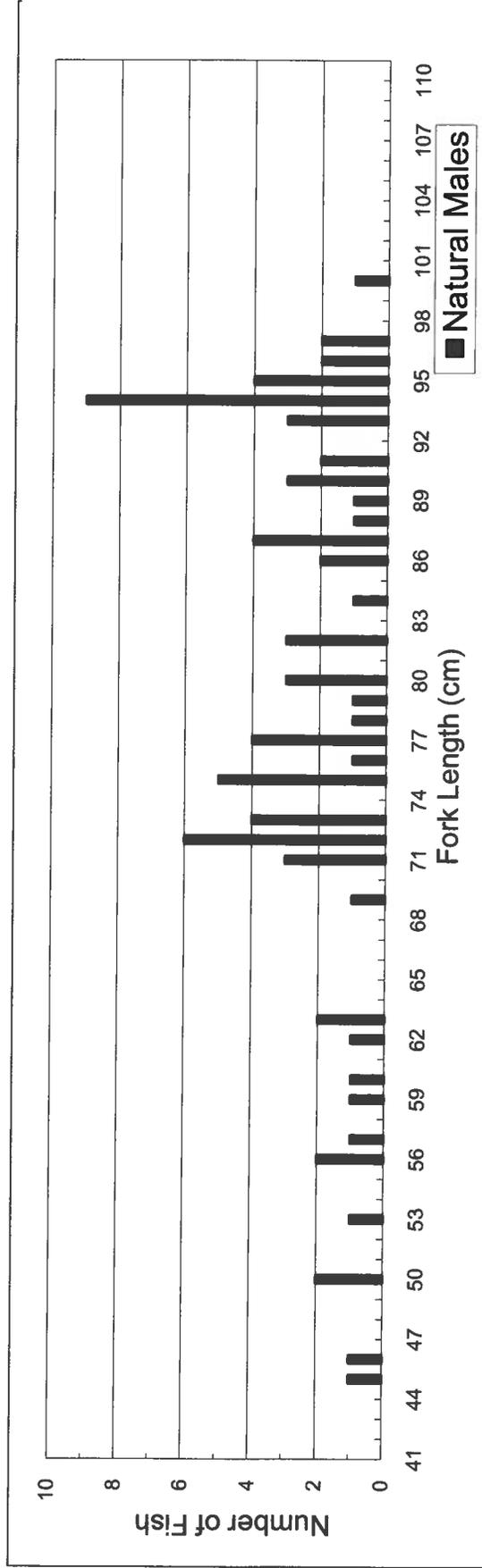


Figure 3. BY2007 summer Chinook salmon unmarked length frequency.



## **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.

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