

Priest Rapids Complex Operations and Maintenance Annual Report Reporting Period July 1, 2012 to June 30, 2013



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Washington Department of
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PRIEST RAPIDS HATCHERY
Funded by Grant County Public Utility District
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OPERATIONS AND MAINTENANCE ANNUAL REPORT

Reporting Period July 1, 2012 to June 30, 2013



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Introduction

Priest Rapids Hatchery (PRH) was designed as a mitigation facility for fall Chinook after Priest Rapids and Wanapum Dams were constructed, and is funded by the Grant County Public Utility District (GCPUD) and by the U.S. Army Corps of Engineers (USACE) for the John Day Mitigation (JDM) portion of the production. It has been in continuous operation since September 1963, and is operated by the Washington Department of Fish and Wildlife (WDFW). It is part of the WDFW's Priest Rapids Hatchery Complex, which also includes the Ringold, Meseberg, Naches and Columbia Basin hatcheries.

The annual release goal for GCPUD in 2013 is 5.0 million sub-yearling smolts (at a target size of 50 fish per pound) or 100,000 pounds. All of the trapping, spawning and rearing take place at Priest Rapids Hatchery. Beginning in 1992, 1.7 million sub-yearling fall Chinook smolts have also been reared and released at Priest Rapids Hatchery (50 fish per pound) as part of USACE John Day Mitigation. Up to 15 million eggs are taken annually to meet all PRH production goals and for other programs, including the 3.5 million sub-yearling smolt release program at Ringold Hatchery.

PRH is staffed with three full-time hatchery specialists, one career-seasonal (9-month) hatchery specialist, and three career-seasonal hatchery technicians (see attached organization chart). The seasonal staff are utilized during trapping, spawning, and rearing to handle heavy workloads. These seasonal employees are also required to live in the PRH bunkroom during egg and sac-fry incubation when assigned to emergency standby. This allows them to provide an immediate response to alarms, as housing for full-time employees on standby is located twenty minutes from the hatchery. Temporary security positions are also filled annually during the time when fall Chinook are coming into the trap.

Trapping of returning fall Chinook salmon takes place approximately one mile south of the main facility, and fish are transported by truck to two of five channel ponds for holding. Spawning occurs adjacent to the holding ponds, and eggs are transferred by vehicle to be incubated in the main hatchery building. After hatch, fish are transferred by truck to vinyl raceways, where they are introduced to feed. Ten to fourteen days later they are transferred to the five channel ponds for final rearing culminating in a June release.

In addition to the incubation room, the main building is comprised of two offices, a bathroom and kitchen, boot room, storage room, and bunkroom. Other buildings on station include a walk-in freezer and utility room for feed storage, a large shop with two semi-open covered bays for storage and enclosed shop area, six wells providing 6,650 gallons per minute of pathogen-free well water, a river-water intake, three degassing towers, and a multitude of other plumbing and electrical buildings. Eight raceways and two holding areas used by the PUD for rearing of study fish in the base of the old adult holding pond may possibly be utilized by WDFW in the future.

2012 Brood Fall Chinook

Adult Holding and Egg Take

The 2012 Priest Rapids fall Chinook adult collection at the PRH [Jackson Creek] volunteer trap consisted of 18,903 adults and 9,155 jacks. In addition, this was the third year that we used the Priest Rapids Dam “Off Ladder Adult Fish Trap” (OLAFT) and the first year to collect unmarked adults from the Angler Caught Brood Program (ACBP) to attempt to integrate more natural origin (NOR) fish into the PRH broodstock to meet hatchery reform genetic guidelines. The adipose fin intact (NOR and unmarked hatchery fish) that came from the OLAFT and ACBP consisted of 540 adults and 50 jacks. The adults retained for spawning from the volunteer trap were held in ponds 2 and 3 while the fish collected from the OLAFT and ACBP were combined into adult holding pond 4. A total of 1,698 males, 3,234 females, and 34 jacks were utilized for the seasons egg take. A total of 11,190 males, 682 females, and 9,094 jacks were surplus. The total number of marked fish recoveries (coded wire tag) was 4,025. The season’s adult pond mortality totaled 593 males, 2,046 females, and 77 jacks.

Total green egg take was 12,398,389. Egg mortality from green to eyed stage totaled 1,584,465 (12.8%). A total of 7,074,174 eyed eggs were retained for PRH programs (GCPUD and USACE). A total of 3,739,750 eyed eggs were shipped to other facilities:

- 3,700,000 eyed eggs shipped to Bonneville Hatchery (ODFW) for USACOE John Day mitigation (later shipped back to Ringold Hatchery for acclimation and release)
- 15,000 eyed eggs shipped to Pacific Northwest National Laboratory
- 500 eyed eggs shipped to Pasco High School for the “Salmon-in-the-Classroom” (SC) program
- 19,400 eyed eggs shipped to Yakima Basin Environmental Education (SC)
- 4,600 eyed eggs shipped to Franklin County conservation district (SC)
- 250 eyed eggs shipped to Quincy High School (SC)

In 2012, PRH supplied 120 male and 120 female chinook carcasses to the Yakima Basin Environmental Education Program for local school science class anatomy study; the Benton and Franklin County Conservation Districts received 109 males and 109 females for the same purpose.

Prophylactic Treatment of Eggs and Adults

Approximately 2,000 early arriving adults selected for spawning were injected with Liquamycin (LA-200), prior to transfer to holding ponds. The injection dose was 0.5 cc per 10 lbs. of fish. Total use of Liquamycin was 4,200 milliliters for the season. This treatment was for the prevention of Columnaris and Furunculosis bacterial disease. Total use of Formalin on adults and eggs totaled 6,639 gallons. Formalin was used to prevent fungus on adults and eggs.

Rearing and Release

Production of brood year 2012 age 0 fall Chinook smolts for GCPUD mitigation was 109,503 pounds. A total of 5,091,902 fish were released from Channel Ponds 2-6 with an average size of 46.5 fish per pound (refer to chart on page 8). The numerical target of 5.0 million smolts was exceeded by only 1.8 percent, but the 100,000 lbs. target was exceeded by 9.5 percent due to better growth and larger average size at release.

Release into the Columbia River occurred between June 12 and June 16, 2013. Prior to release, 606,020 of the smolts were adipose clipped and coded wire tagged, 606,020 were coded wire tagged only and 1,000,000 were adipose clipped only. In addition, 41,091 were pit tagged by GCPUD and 2,992 were PIT-tagged by United States Fish and Wildlife Service (USFWS) for fish migration studies. A total of 2,835,779 fish were released with no marks or tags.

In addition to GCPUD mitigation production, 1,730,959 fish were reared and released from Channel Pond 2 & 3 on June 15 & 16 for the USACE to fulfill a portion of their John Day Mitigation obligation. They averaged 46.6 fish per pound, for a total of 37,145 pounds planted. All (100%) of the USACE fish were mass-marked (adipose fin clipped) prior to release.

The fish released at PRH are also 100 percent otolith-marked prior to ponding. This is accomplished at the green egg-to-eyed egg stage by warming and cooling the water in the incubators.

Predation from birds was higher this year, with hazing efforts doing little to deter aggressive feeding behavior. Fish loss due to bird predation was estimated at 50,000.

Summary of Adult Returns

Date of first trapping	09/10/12
Date of last trapping	11/25/12
Number of males trapped	13,117
Number of females trapped	5,786
Number of jacks trapped	9,155
Peak date of return	10/9/12
Total adult mortality	2,639

Summary of Adults Surplused

WEEK	MALES	FEMALES	JACKS
9/10/12 – 9/16/12	516	0	691
9/17/12 – 9/23/12	1087	8	1052
9/24/12 – 9/30/12	1383	9	1495
10/1/12 – 10/7/12	2318	11	1381
10/8/12 – 10/14/12	1303	6	1512
10/15/12 – 10/21/12	1755	23	968
10/22/12 – 10/28/12	1610	157	540
10/29/12 – 11/4/12	582	204	628
11/5/12 – 11/11/12	360	85	577
11/12/12 – 11/18/12	72	61	238
11/19/12 – 11/25/12	0	0	0
11/26/12 – 11/30/12	204	118	12
TOTAL	11,190	682	9,094

Spawning Summary

DATE SPAWNED	NUMBER OF EGGS TAKEN	NUMBER OF MALES	NUMBER OF FEMALES	NUMBER OF JACKS
10/22/12	710,900	193	193	0
10/29/12	2,909,500	386	738	1
11/5/12	2,263,132	266	570	1
11/6/12	1,831,000	249	476	0
11/13/12	2,971,500	372	775	28
11/19/12	1,192,607	163	333	2
11/26/12	490,300	66	142	2
12/3/12	29,450	3	7	0
TOTAL	12,398,389	1,698	3,234	34

NOTE: 181 non-viable females are included in this chart.

Egg Shipment Summary

NUMBER OF EGGS	RECEIVED BY
3,700,000	Bonneville Hatchery (ODFW)
500	Prosser High School
15,000	Pacific Northwest National Laboratory
250	Quincy High School
19,400	Yakima Basin Environmental Education
4,600	Franklin Conservation District
3,739,750	TOTAL

2012 Priest Rapids Fall Chinook (Grant County PUD and John Day Mitigation Combined)

Egg Handling Record

Number of eggs retained for rearing	7,074,174
Number of eggs shipped	3,739,750
Total egg mortality	1,584,465
Total number of eggs (adjusted egg take)	12,398,389

Breakdown of Therapeutics Used

Total Formalin used	6,639 gallons
Total Liquamycin (LA-200) used on adults	4,200 milliliters

Spawn to Fry Stage

Percent survival from green to eyed egg	87.2
Percent survival eyed egg to ponding	98.5
Total number of fry ponded	6,967,645
Total pounds of fry ponded	6,967 lbs.

Rearing to Fingerling Stage

Number of fingerlings planted	6,822,861
Total pounds of fingerlings planted	146,567
Percent survival from ponding to plant	97.9
Average size (fish/lb) of fingerlings planted	46.5

Food Fed and Weight Gain

Total pounds of food fed	86,592
Conversion rate	.62 to 1
Total pounds of gain	139,600

Length Frequency Data (at release)

Mean (mm)	94.5
Standard Deviation (mm)	7.26
Coefficient of Variation	7.60

Stream Planting - All Brood Year 2012 Fall Chinook

POND	DATE	LOCATION	NUMBER	WEIGHT	FISH / LB.
C6	6/12/13	Columbia R.	1,543,229	31,113	49.6
C5	6/13/13	Columbia R	688,840	15,799	43.6
C4	6/14/13	Columbia R.	1,482,305	32,940	45.0
C3	6/15/13	Columbia R.	1,505,063	32,159	46.8
C2	6/16/13	Columbia R.	1,603,424	34,556	46.4
	TOTALS		6,822,861	146,567	46.5



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