

# Priest Rapids Hatchery Operations and Maintenance Annual Report

Reporting Period July 1, 2010 to June 30, 2011



by Mike Lewis and Glen Pearson



Washington Department of  
**FISH AND WILDLIFE**  
Fish Program  
Hatcheries Division



Washington Department of Fish & Wildlife  
**PRIEST RAPIDS HATCHERY**  
Funded by Grant County Public Utility District and Army Core of Engineers

# **OPERATIONS AND MAINTENANCE ANNUAL REPORT**

Reporting Period July 1, 2010 to June 30, 2011



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# Introduction

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Priest Rapids Hatchery 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 and by Army Corp of Engineers for the John Day portion of the fish. It has been in continuous operation since September 1963, and is operated by the Washington Department of Fish and Wildlife. It is part of the WDFW's Priest Rapids Hatchery Complex, which also includes the Ringold, Meseberg, Naches and Columbia Basin hatcheries.

Annual release goal for Grant County PUD is 5 million smolts at 50 fish per pound. All trapping, spawning and rearing take place at Priest Rapids Hatchery. Up to 15 million eggs are taken annually to meet hatchery goals and for other programs in the Columbia River drainage. Beginning in 1992, 1.7 million Fall Chinook have also been reared and released at Priest Rapids Hatchery at 50 fish per pound, as part of John Day Mitigation. The Army Corp of Engineers funds this portion, and eggs are taken at Priest Rapids.

Three full time employees and one career seasonal employee staff Priest Rapids Hatchery. In addition, up to three temporary employees are utilized during trapping, spawning, and rearing to handle heavy workloads. These temporary employees are required to live in the bunkroom on-site during egg and sac-fry incubation. 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 the Fall Chinook come up 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 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 and 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.

# 2010 Brood Fall Chinook

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## Adult Holding And Egg Take

The 2010 Priest Rapids Fall Chinook adult collection at the volunteer trap consisted of 16,548 adults and 2,686 jacks. This was the first year that we used the off ladder adult fish trap to attempt to start a segregated run of wild fish to the Priest Rapids already hatchery component. The wild component that came from the off ladder adult fish trap consisted of 162 adults and 7 jacks. The adults retained for spawning from both the volunteer trap and off ladder trap were combined in the adult holding ponds. 1,756 males, 3,485 females, and 64 jacks were utilized for the seasons egg take. A total of 9,430 males, 421 females, and 2,564 jacks were surplus. The total number of marked fish recoveries (coded wire tag) was 512. Trapping of adults occurred at the lower trap (Jackson Creek). Fish were held in channel ponds two and three. The season's adult pond mortality totaled 570 males, 1,048 females, and 58 jacks.

Total egg take was 12,899,721. A total of 6,955,965 eyed eggs were retained for Priest Rapids Hatchery. Egg mortality from green to eyed eggs totaled 1,118,161(8.67%).

For the season, 4,248,700 eggs were shipped to other facilities:

- 3,700,000 eyed eggs shipped to Bonneville Hatchery (ODFW) for ACOE John Day mitigation (later shipped back to Ringold Hatchery for acclimation and release).
- 19,000 eyed eggs shipped to Pacific Northwest National Laboratory.
- 6,650 green eggs shipped to Pacific Northwest national Laboratory
- 500,000 eyed eggs shipped to Prosser Hatchery
- 20,000 eyed eggs shipped to Yakima Basin Environmental Education.
- 2,800 eyed eggs shipped to Franklin County conservation district.
- 250 eyed eggs shipped to Quincy High School.

In 2010, Priest Rapids Hatchery supplied 120 males and 120 females to the Yakima Basin Environmental Education Program. The Benton County Conservation District received 104 males, 106 females and 2 jacks for use with the Salmon in the Classroom Program. Additionally, the Wanapum tribe received 5 males and 3 jacks for ceremonial and subsistence purposes.

## **Prophylactic Treatment of Eggs and Adults**

Approximately 1,500 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 2,200 milliliters for the season. This treatment was for the prevention of Columnaris and Furunculosis. Total use of Formalin on adults and eggs totals 2,860 gallons. Formalin was used to prevent fungus on adults and eggs.

## **Rearing and Release**

Hatchery production of Zero-Age 2010 brood Priest Rapids Fall Chinook for Grant County PUD mitigation was 108,340 pounds. A total of 5,081,184 fish were released from Channel Ponds 2-6 with an average size of 46.9 fish per pound (refer to chart on page 8).

Release into the Columbia River occurred between June 15 and June 23, 2011. Prior to the time of release, 605,000 of the Priest Rapids Fall Chinook were adipose clipped and coded wire tagged, 1,110,000 were coded wire tagged only. In addition, 999 fish from C-6 and 994 fish from C-4 were pit tagged by United States Fish and Wildlife Service (USFWS) for fish migration studies. A total of 3,363,190 fish were released with no marks or tags.

In addition to Grant PUD hatchery production, 1,717,206 fish were reared and released from Channel Pond 2 & 6 on June 19 & 23 under John Day Mitigation, as part of the 1994 Management Agreement of Upper Columbia Fall Chinook. They averaged 48.2 fish per pound, for a total of 35,627 pounds planted. These fish were adipose clipped and 998 fish were PIT tagged by USFWS prior to release. Funding for the John Day Mitigation fish was paid for federally by the Army Corp of Engineers.

The fish released at Priest Rapids are also 100 percent otolith marked in the hatchery prior to ponding. This is done by warming and cooling the water in the incubators. Only the fish that are to be released at Priest Rapids are otolith marked.

Predation from birds was average this year, with hazing efforts doing little to deter aggressive feeding behavior. Fish loss due to bird predation was estimated at 30,000.

## Summary of Adult Returns

Date of first trapping	09/8/10
Date of last trapping	11/30/10
Number of males trapped	11,756
Number of females trapped	4,811
Number of jacks trapped	2,686
Peak date of return	10/16/09
Total adult mortality	1,618

## Summary of Adults Surplused

WEEK	MALES	FEMALES	JACKS
9/8/09 – 9/12/09	0	0	0
9/13/09 – 9/19/09	822	0	335
9/20/09 – 9/26/09	911	0	361
9/27/09 – 10/3/09	1,566	0	396
10/4/09 – 10/10/09	1,684	0	623
10/11/09 – 10/17/09	1,451	0	359
10/18/08 – 10/24/09	1,488	0	356
10/25/09 – 10/31/09	676	0	27
11/1/09 – 11/7/09	625	99	89
11/8/09 – 11/14/09	0	0	0
11/15/09 – 11/21/09	0	0	0
11/22/09 – 11/30/08	207	322	18
<b>TOTAL</b>	<b>9,430</b>	<b>421</b>	<b>2,564</b>

## Spawning Summary

DATE SPAWNED	NUMBER OF EGGS TAKEN	NUMBER OF MALES	NUMBER OF FEMALES	NUMBER OF JACKS
10/25/10	288,565	86	83	1
11/1/10	1,334,849	186	356	5
11/8/10	2,015,686	266	526	2
11/9/10	2,405,697	320	636	7
11/15/10	3,362,900	400	889	14
11/16/10	565,042	45	153	3
11/22/10	2,605,589	359	746	26
11/30/10	321,393	94	94	6
<b>TOTAL</b>	<b>12,899,721</b>	<b>1,756</b>	<b>3,485</b>	<b>64</b>

NOTE: 143 non-viable females are included in this chart.

## Egg Shipment Summary

NUMBER OF EGGS	RECEIVED BY
3,700,000	Bonneville Hatchery (ODFW)
500,000	Prosser Hatchery
25,650	Pacific Northwest National Laboratory
250	Quincy High School
20,000	Yakima Basin Environmental Education
2,800	Franklin Conservation District
4,248,700	<b>TOTAL</b>

## **2010 Priest Rapids Fall Chinook (Grant County Pud and John Day Mitigation Combined)**

### **Egg Handling Record**

Number of eggs retained for rearing	6,955,965
Number of eggs shipped	4,248,700
Total egg mortality	1,118,161
Total number of eggs (adjusted egg take)	12,899,721

### **Breakdown of Therapeutants Used**

Total Formalin used	2,860 gallons
Total Liquamycin (LA-200) used on adults	2,200 milliliters

### **Spawn to Fry Stage**

Percent survival from green to eyed egg	91.3
Total number of fry ponded	6,955,965
Total pounds of fry ponded	6,955 lbs.

### **Rearing to Fingerling Stage**

Number of fingerlings planted	6,798,390
Total pounds of fingerlings planted	143,946
Percent survival from ponding to plant	97.7
Average size (fish/lb) of fingerlings planted	46.9

### **Food Fed and Weight Gain**

Total pounds of food fed	79,508
Conversion rate	.58 to 1
Total pounds of gain	136,991

## Length Frequency Data (Average)

Mean (mm.)	92.44
Standard Deviation	8.43
Coefficient of Variation	9.13

## Stream Planting - All 2010 Fall Chinook

POND	DATE	LOCATION	NUMBER	WEIGHT	FISH / LB.
C6	6/15/10	Columbia R.	1,572,800	32,903	47.8
C5	6/17/10	Columbia R	1,083,117	23,857	45.4
C4	6/19/10	Columbia R.	1,251,433	27,087	46.2
C3	6/21/10	Columbia R.	1,402,960	30,236	46.4
C2	6/23/10	Columbia R.	1,488,080	23,682	48.5
	<b>TOTALS</b>		<b>6,798,390</b>	<b>137,765</b>	<b>46.6</b>



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