

Priest Rapids Hatchery Operations and Maintenance Annual Report

Reporting Period July 1, 2011 to June 30, 2012



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 U.S. Army Corps of
Engineers

OPERATIONS AND MAINTENANCE ANNUAL REPORT

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Mike Lewis, Project Leader
Glen Pearson, Hatchery Supervisor

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Introduction

Priest Rapids Hatchery (PRH) was designed as a mitigation facility for fall Chinook salmon after Priest Rapids and Wanapum Dams were constructed, and is principally funded by the Grant County Public Utility District (GCPUD). In addition, some production is funded by the U.S. Army Corp of Engineers (USACE) to meet a portion of their John Day Dam mitigation. PRH has been in continuous operation since September 1963, and is operated by the Washington Department of Fish and Wildlife (WDFW). It is considered 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's mitigation requirement is 5 million smolts at 50 fish per pound (fpp). In the event of a shortfall in numbers, minimum production is 100,000 pounds. All trapping, spawning and rearing takes place at PRH. Up to 15 million eggs are taken annually to meet on-site hatchery goals and to support other programs in the Columbia River drainage. Since 1992, 1.7 million fall Chinook (50 fpp) have been reared and released at PRH as part of the USACE's John Day Dam Mitigation.

Three full-time employees and one 9-month career-seasonal employee staff PRH. In addition, up to three non-permanent fish hatchery technicians are utilized during trapping, spawning, and rearing to handle heavy workloads. The hatchery technicians are required to live in the bunkroom on-site during egg and sac-fry incubation to provide "standby" protection. This allows them to provide immediate response to alarms; necessary because housing for full-time employees on standby is located twenty minutes from the hatchery. A security firm also monitors the adult trap and access channel (Jackson Creek) during the time the fall Chinook come in to prevent fish loss from poaching.

Trapping of returning fall Chinook takes place approximately one mile south of the main hatchery facility. Fish are transported by truck to two channel ponds for holding. Spawning occurs adjacent to the holding ponds, and eggs are transferred by vehicle to the incubation building. After hatching, fish are transferred by truck to intermediate 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.

2011 Brood Fall Chinook

Adult Holding and Egg Take

The 2011 Priest Rapids fall Chinook adult collection at the PRH [Jackson Creek] volunteer trap consisted of 17,176 adults and 3,210 jacks. In addition, this was the second year that we used the Priest Rapids Dam “Off Ladder Adult Fish Trap” (OLAFT) to attempt to integrate more natural-origin (N-O) fish into the PRH broodstock to meet hatchery reform genetic guidelines. The adipose fin intact (N-O and unmarked hatchery fish) component that came from the OLAFT consisted of 298 adults and 12 jacks. The adults retained for spawning from both the volunteer trap and OLAFT were combined in the adult holding ponds (Ponds 2 and 3). A total of 1,675 males, 3,214 females, and 47 jacks were utilized for the season’s egg take. A total of 6,196 males, 3,186 females, and 3,062 jacks were surplused. The total number of marked fish recoveries (coded wire tag) was 1,116. The season’s adult pond mortality totaled 545 males, 2,659 females, and 113 jacks.

Total egg take was 12,693,000. A total of 7,277,000 eyed eggs were retained for Priest Rapids Hatchery. Egg mortality from green-to-eyed eggs totaled 1,127,000 (8.87%).

For the season, 4,288,250 eggs were shipped to other facilities:

- 3,700,000 eyed eggs shipped to Bonneville Hatchery (ODFW) for USACE John Day mitigation (later shipped back to Ringold Hatchery for smolt acclimation and release)
- 16,000 eyed eggs shipped to Pacific Northwest National Laboratory
- 550,000 green eggs shipped to Prosser Hatchery (Yakama Nation for USACE John Day mitigation)
- 19,400 eyed eggs shipped to Yakima Basin Environmental Education Program for the “Salmon-in-the-Classroom” (SC) program
- 2,600 eyed eggs shipped to Franklin County conservation district (SC)
- 250 eyed eggs shipped to Quincy High School (SC)

In 2011, Priest Rapids Hatchery supplied 67 males, 100 females and 33 jacks to the Yakima Basin Environmental Education Program for local school science class anatomy study; the Benton County Conservation District received 106 males and 106 females for the same purpose. Additionally, the Wanapum tribe received 282 males, 204 females and 102 jacks for ceremonial and subsistence purposes.

Prophylactic Treatment of Eggs and Adults

Approximately 2,300 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 4,700 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 4,840 gallons. Formalin was used to prevent fungus on adults and eggs.

Rearing and Release

Production of brood year 2011 Age 0 fall Chinook smolts for GCPUD mitigation was 106,672 pounds. A total of 5,271,247 fish were released from Channel Ponds 2-6 with an average size of 49.4 fish per pound (refer to chart on page 8).

Release into the Columbia River occurred between June 12 and June 20, 2012. Prior to release, 605,293 of the smolts were adipose clipped and coded wire tagged, 605,295 were coded wire tagged only and 1,000,000 were adipose clipped only. In addition, 39,959 were PIT-tagged by GCPUD and 2,994 were PIT-tagged by the U.S. Fish and Wildlife Service (USFWS) for fish migration studies. A total of 3,017,706 fish were released with no marks or tags.

In addition to GCPUD mitigation production, 1,785,701 fish were reared and released from Channel Pond 3 & 6 on June 12 and 18 for the USACE to fulfill a portion of their John Day Mitigation obligation. These fish averaged 48.2 fpp for a total of 36,263 pounds planted. All (100%) of the USACE fish were mass-marked (adipose fin clipped) prior to release.

The fish released at Priest Rapids are also 100 percent otolith-marked prior to ponding. This is accomplished at the 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	09/6/11
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Date of last trapping	11/30/11
Number of males trapped	8,415
Number of females trapped	8,883
Number of jacks trapped	3,222
Peak date of return	10/10/11
Total adult mortality	3,204

Summary of Adults Surplused

WEEK	MALES	FEMALES	JACKS
9/6/11 – 9/11/11	0	0	0
9/12/11 – 9/18/11	455	0	320
9/19/11 – 9/25/11	311	24	332
9/26/11 – 10/2/11	974	155	447
10/3/11 – 10/9/11	970	197	658
10/10/11 – 10/16/11	826	106	442
10/17/11 – 10/23/11	622	69	299
10/24/11 – 10/30/11	1,072	957	319
10/31/11 – 11/6/11	428	715	58
11/7/11 – 11/13/11	289	539	176
11/14/11 – 11/20/11	35	148	2
11/21/11 – 11/30/11	213	276	9
TOTAL	6,195	3,186	3,062

Spawning Summary

DATE SPAWNED	NUMBER OF EGGS TAKEN	NUMBER OF MALES	NUMBER OF FEMALES	NUMBER OF JACKS
10/24/11	777,000	101	207	0
10/31/11	2,880,000	382	704	6
11/7/11	2,675,000	343	696	12
11/8/11	1,978,500	255	513	10
11/14/11	2,832,000	398	793	8
11/21/11	1,000,500	196	301	11
TOTAL	12,693,000	1,675	3,214	47

NOTE: 176 non-viable females are included in this chart.

Egg Shipment Summary

NUMBER OF EGGS	RECEIVED BY
3,700,000	Bonneville Hatchery (ODFW)
550,000	Prosser Hatchery
16,000	Pacific Northwest National Laboratory
250	Quincy High School
19,400	Yakima Basin Environmental Education
2,600	Franklin Conservation District
4,288,250	TOTAL

Brood Year 2011 Priest Rapids Fall Chinook (Grant County PUD and John Day Mitigation Combined)

Egg Handling Record

Number of eggs retained for rearing	7,277,000
Number of eggs shipped	4,288,250
Total egg mortality	1,127,000
Total number of eggs (adjusted egg take)	12,693,000

Breakdown of Therapeutics Used

Total Formalin used	4,840 gallons
Total Liquamycin (LA-200) used on adults	4,700 milliliters

Spawn to Fry Stage

Percent survival from green to eyed egg	91.92
Percent survival eyed egg to ponding	98.5
Total number of fry ponded	7,168,089
Total pounds of fry ponded	7,168 lbs.

Rearing to Fingerling Stage

Number of fingerlings planted	7,056,948
Total pounds of fingerlings planted	142,935
Percent survival from ponding to plant	96.9
Average size (fish/lb) of fingerlings planted	49.3

Food Fed and Weight Gain

Total pounds of food fed	84,392
Conversion rate	.62 to 1
Total pounds of gain	135,767

Length Frequency Data (Average)

Mean (mm.)	92.44
Standard Deviation	6.63
Coefficient of Variation	7.08

Stream Planting - All Brood Year 2011 Fall Chinook

POND	DATE	LOCATION	NUMBER	WEIGHT	FISH / LB.
C6	6/12/12	Columbia R.	1,567,406	31,411	49.9
C5	6/14/12	Columbia R	1,067,453	21,740	49.1
C4	6/16/12	Columbia R.	1,108,078	22,340	49.6
C3	6/18/12	Columbia R.	1,583,216	32,049	49.4
C2	6/20/12	Columbia R.	1,730,795	35,395	48.9
	TOTALS		7,056,948	142,935	49.4