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Title: 2008 Annual Report-Grande Ronde endemic spring Chinook project - ODFW

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Introduction

Core activities of the Grande Ronde Endemic Spring Chinook Supplementation Program (GRESOSP) are funded through the authority of the Lower Snake River Fish and Wildlife Compensation Plan (LSRCP). The LSRCP program was approved by the Water Resources Development Act of 1976, PL 94-587, Section 102, 94th Congress substantially in accordance with the Special Report, LSRCP, June 1975 on file with the Chief of Engineers. The LSRCP was prepared and submitted in compliance with the Fish and Wildlife Coordination Act of 1958, PL 85-624, 85th Congress, August 12, 1958 to mitigate for the losses of fish and wildlife caused by the construction of dams on lower Snake River.

The GRESOSP is an artificial propagation program that was initiated by Bonneville Power Administration's Fish and Wildlife program in the mid 1990's. The intent of this program was to change the mitigation aspect of the LSRCP program (harvest mitigation) to an integrated supplementation program; inasmuch as, hatchery produced fish could be experimentally used as a recovery tool and fish surplus to mitigation would be available for in-place and in-kind harvest. Fish production is still authorized by the LSRCP with the original mitigation return goal of 5,860 adult spring Chinook to the project area. The GRESOSP was developed with two primary components: 1) conventional broodstock (projects 199800702; 199800703; 199800704) and 2) captive brood (projects 199801001; 199801006). The GRESOSP relies on cooperative M&E efforts from the LSRCP including setting aside the Wenaha and Minam tributaries as natural production reserves components used for reference streams.

The GRESOSP, coordinated with federal and tribal partners, identifies production levels for both propagation components and weir management strategies for each of the three supplemented tributary areas within the Grande Ronde Sub-basin. The three supplemented areas are Catherine Creek, Lostine River, and upper Grande Ronde River. Lookingglass Creek, an extirpated area, will be stocked (smolts and adults) with Catherine Creek origin salmon to initiate natural production in unseeded habitat, and to initiate future harvest opportunities. The current production levels have been incorporated into the *U.S. v. Oregon* Interim Management Agreement.

The purpose of this contract is to integrate Bonneville Power Administration (BPA) efforts with the Lower Snake River Compensation Plan (LSRCP) program utilizing

Lookingglass Hatchery as the primary rearing facility. BPA constructed an adult holding and spawning structure on the hatchery grounds; however, maintenance of this infrastructure was discontinued due to funding limitation and transferred to the LSRCP program in 2007. These integrated efforts focus on holding and spawning adults, rearing juveniles, fish health, and monitoring natural production (Redd counts) for Catherine Creek, Lostine River, and Upper Grande Ronde stocks.

Coordination

ODFW assembled tribal and federal cooperators to discuss Grande Ronde spring Chinook 2007 operations on December 18, 2007 and January 24, 2008. Draft documents and operations were discussed, which resulted in Annual Operation Plans (AOP) for 2008 document that was disseminated to co managers February 10, 2008.

Discussion for the 2009 AOP started December xx, 2008. Dialog highlighted potential issues and coordination efforts. Second meeting is scheduled for January 2009.

In brief, the 2008 AOP coordinated transfer schedules for spring Chinook Brood Year (BY) 2006 smolts reared at Lookingglass Hatchery and transferred to Catherine Creek, Lostine, and Upper Grande Ronde acclimation facilities providing release dates, rearing guidelines for BY07 smolts, and weir management guidelines for keeping broodstock and passing fish for natural production (BY08).

Fish Culture Efforts

Fish culture activities are primarily reported in LSRCP annuals. However, this contract provides additional funding to assist with the implementation of the GRBSCSP for fish health, adult holding, spawning, and incubation. Please note that fish transfer milestone was eliminated in 2007 due to funding shortfalls. This task will be LSRCP responsibility.

A. Fish Health

Fish health examination results for spring Chinook BY06 (2008 release) are reported in Table 1. There were no significant losses due to pathogens during rearing or at release.

Table 1. Fish pathogens detected during rearing at Lookingglass Hatchery for spring Chinook released in the Lostine River, Catherine Creek, and Upper Grande Ronde-brood year 2006 released in 2008.			
	Catherine Creek	Lostine River	U. Grande Ronde
IHN Virus	No	No	No
EIBS Virus	No	No	No
<i>Aeromonas salmonicida</i>	No	No	No
<i>Aeromonas/Pseudomonas</i>	Yes	Yes	Yes
<i>Flavobacterium psychrophilum</i> (CWD)	No	Yes	Yes
<i>Fl. columnare</i>	No	No	No
<i>Renibacterium salmoninarum</i>	Yes	Yes	Yes
<i>Yersinia ruckeri</i>	Yes	Yes	Yes
<i>Carnobacterium sp.</i>	No	No	No

<i>Ichthyobodo</i>	Yes	Yes	Yes
<i>Gyrodactylus</i>	No	No	No
<i>Ichthyophthirius multifiliis</i>	No	No	Yes
<i>Epistylis</i>	Yes	Yes	Yes
<i>Ambiphrya (Scyphidia)</i>	Yes	Yes	No
Trichodinids	No	No	No
Gill Copepods	No	No	No
Coagulated Yolk Disease	Yes	Yes	Yes
External Fungi	Yes	Yes	Yes
Internal Fungi	Yes	Yes	Yes
<i>Myxobolus cerebralis</i> ^b	No	No	No
<i>Ceratomyxa shasta</i> ^c	No	No	No
Note: a "Yes" indicates detection of the pathogen but in many cases no disease or fish loss was associated with presence of the pathogen. "No" indicates the pathogen was not detected in that stock during the examination.			
^b Innaha BY2006 conventional smolts tested prior to transfer to acclimation were negative for <i>Myxobolus cerebralis</i> . No other stocks were tested.			
^c Fish Health did not test for <i>Ceratomyxa shasta</i> .			

Overall statement for BY2006: All samples collected for virus were negative and overall fish health was good. However, it should be noted that there were some BKD mortalities in all conventional stocks at Lookingglass Hatchery in the months just prior to transfer to acclimation, though losses were at normal levels through to release. Of mortalities examined from these three acclimation sites, only the Catherine Creek conventional stock had some ongoing low level BKD indicating that this stock did have a slight problem at release.

For BY2007 (2009 releases)-A prophylactic feed treatment of Aquamycin (100mg/kg) was administered for 28 days in mid-July through mid-August 2008 to reduce fish mortality due to Bacterial Kidney Disease (BKD). This contract provided funding for approximately half this treatment.

B. Spawn Fish, Incubated Eggs, and BKD screening results

Lookingglass Hatchery staff operated the Endemic adult holding building from May through October 1, 2008. Three stocks were held, Catherine Creek, Lostine Creek, and Upper Grande Ronde. The first fish collected for brood stock was May 27 for Catherine Creek, June 23 Upper Grande Ronde stocks, and the week of July 6 from the Lostine stock. Overall, 100 of 103 (97.0%) females collected survived to produce viable eggs (Table 2). A total of 407,337-eyed embryos (eggs) were produced (Table 3).

Table 2. Females collected and spawned from three Grande Ronde endemic stocks spring Chinook in 2008.				
Stock	Females collected	Females Spawned	Percent Survival	Average Fecundity
Catherine Creek	32	32	100.0	3,885
Lostine River	59	56	94.9	4,783
U. Grande Ronde	12	12	100.0	3,950

Fish were spawned using a 1x1, 2x2, 1x3, and 3x3 factorial mating. The extent of factorial was based on the number of ripe fish on that specific spawn day. Within each factorial, at least one natural fish was used. Natural origin female contribution to smolt production was estimated at: Catherine Creek 34.4%, Lostine River 33.9%, and Upper Grande Ronde 33.34% (Appendix 1).

Table 3. Incubation and survival of embryos spawned from three Grande Ronde endemic stocks of spring Chinook in 2008.

Stock	Green Eggs	Fry/Eyed Eggs	Green Eggs to fry survival
Catherine Creek	124,317	117,605	94.6%
Lostine River	267,834	247,274	92.3%
U. Grande Ronde	47,402	42,458	89.6%

Fish Health-BKD screening

All spawned females were screened for Bacterial Kidney Disease (BKD) and results are summarized in Table 4. BKD groups are classified based on (*R. Salmoninarum*) antigen levels of the maternal parent. Antigen levels are determined by enzyme-linked immunosorbent assay (ELISA). The following Optical Density ranges categorize eggs/female:

- ≤ 0.199 =Low
- 0.2 - 0.399 = Moderate/Low
- 0.4 - 0.799 = Moderate/High
- ≥ 0.800 = Clinical

Table 4. Catherine Creek, Lostine, and Upper Grande Ronde ELISA results for females spawned in 2008.

Stock	BKD titer categories			
	Low	Moderate/Low	Moderate/High	Clinical
Catherine Creek	32	0	0	0
Lostine River	56	0	0	0
U. Grande Ronde	12	0	0	0

Research/Redd Count Surveys

The intent of the work element 157 is to coordinate ground survey activities with tribal co-managers, Oregon district biologists, and LSRCP biologist and to assist with data collection. The surveys include a long-term index area, an expanded survey area, and repeated supplemental surveys throughout the spawning season. The generalized results show the number of miles in each survey, the number of surveys, and the total number of redds (Table 5). Comprehensive analysis is reported in Oregon's LSRCP M&E report.

Table 5. Date summary of new redds counted during spring chinook salmon spawning ground surveys in the Grande Ronde Subbasin in 2008.			
Stream	Total miles each survey	Number of surveys	Redds
Lostine River	17.4	4	293
Bear Creek	12.2	2	23
Hurricane	3.2	2	45
Wallowa River	7.1 ^a	2	67
Catherine Creek	19.8	3	101
U. Grande Ronde ^b	16.1	3	32
Minam ^c	11.9	3	157
Wenaha	22.8	2	108

^a Includes sections includes Joseph to Dorrance Lane, Dorrance to Eggleston Bridge and Eggleston Bridge to Hatchery Intake.

^b Vey Meadow not surveyed

^c Include Little Minam

Lookingglass Endemic Building Maintenance

Due to funding shortfalls in the program, the Endemic building (adult holding and spawning building) could not be maintained within the existing budget. Therefore, the building was transferred to the LSRCP program and the responsibility to maintain it. The Maintenance Work Element was discontinued in 2008.

Appendix 1. Catherine Creek, Upper Grande Ronde, and Lostine River fish culture production metrics summarized for Grande Ronde sub-basin Chinook stocks.

Catherine Creek spring Chinook salmon spawning data 2001-08

Brood Year	Marked Females Spawned	Unmarked Females Spawned	% Un-marked	Spawning Ratio F/M	Average Fecundity	Egg Take	Eyed Egg/ fry Poned	Smolt releases
2001	0	12	100%	1.71:1	3,651	43,813	26,426	24,392
2002	0	20	100%	1.18:1	4,096	81,926	71,750	70,959
2003*	0	28	100%	1.47:1	4,639	129,888	123,394	120,753
2004	0	9	100%	1.50:1	2,912	26,204	24,465	23,216
2005	9	8	47.1%	1.42:1	3,149	53,533	49,222	49,696
2006	28	8	22.2%	1.24:1	3,642	131,139	121,868	116,882
2007	30	15	33.3%	1.45:1	3,801	171,065	146,207	139,000
2008	21	11	31.3%	1.6:1	3,885	124,317	117,605	
	88	111	55.8%		3,829	761,885	680,937	544,898

*Inventory correction; Since 2004, eggs have been electronically counted
Numbers in blue current inventory
2001-07 brood, estimate survival from green egg to smolt at 85.5%

U Grande Ronde spring Chinook salmon spawning data 2001-08

Brood Year	Marked Females Spawned	Unmarked Females Spawned	% Un-marked	Spawning Ratio F/M	Average Fecundity	Egg Take	Eyed Egg/ fry Poned	Smolt releases
2001	0	8	100%	1.00:1	4,420	35,360	25,339	26,923
2002	0	25	100%	1.09:1	3,454	86,355	70,250	70,088
2003	0	23	100%	1.10:1	5,249	120,733	105,374	104,347
2004	0	7	100%	1.00:1	2,979	20,850	19,057	18,901
2005	37	3	7.5%	1.54:1	3,877	155,080	119,963	118,803
2006	71	13	15.5%	1.45:1	3,539	297,244	269,439	259,932
2007	25	6	19.4%	1.14:1	3,960	122,750	99,136	102,346
2008	8	4	33.3%	1:1	3,950	47,402	42,458	
	141	89	38.7%		3,830	885,774	751,016	701,340

*Inventory correction; In 2004, eggs have been electronically counted
Numbers in blue current inventory
2001-06 brood, estimate survival from green egg to smolt at 83.7%.

Lostine River spring Chinook salmon spawning data, 1997-2008

Brood Year	Marked Females Spawned	Unmarked Females Spawned	% Un-marked	Spawning Ratio F/M	Average Fecundity	Egg Take	Eyed Egg/ fry Poned	Fish releases
1997	0	4	100%	0.92:1	4,496	17,000	12,000	11,871
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	8	100%	0.66:1	4,329	34,630	32,000	31,490
2001	11	25	69%	1.06:1	4,463	*160,680	105,000	101,012
2002	1	27	96%	1.03:1	4,766	133,444	130,000	116,370
2003	0	21	100%	1.31:1	5,078	106,646	103,000	102,557
2004	29	22	43%	1.30:1	4,351	221,888	206,421	199,716
2005	39	17	30%	1.37:1	4,182	234,192	207,291	205,000
2006	45	12	21%	1.26:1	4,393	241,715	206,313	194,745
2007	41	20	32.8%	1.13:1	4,290	261,719	227,838	**228,397
2008	37	19	33.9%	0.95:1	4,783	267,834	247,274	
	203	175	46.3%		4,444	1,679,748		1,191,158

*Inventory correction due to large losses with egg shipment;

**Includes 41,997 parr released in the Lostine River Km 21 June 25, 2008

In 2004, eggs have been electronically counted

Numbers in blue current inventory

2001-07 brood, estimate survival from green egg to smolt at 84.4%