

*Washington Department of Fisheries
Lyons Ferry Salmon Hatchery
Funded by the U.S. Fish and Wildlife Service*

OPERATION AND MAINTENANCE ANNUAL REPORT



Reporting Period October 1, 1991 to September 30, 1992

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INTRODUCTION

OPERATIONS

Lyons Ferry Salmon Hatchery is part of the Lower Snake River Compensation Plan and has been in operation since September 1984. Mitigation goals are 1,152 adult Tucannon spring chinook and 18,300 adult Snake River fall chinook. A satellite pond located at the Tucannon Wildlife Hatchery is used for trapping, and final rearing of spring chinook salmon.

This past year we acquired a chiller from Lookingglass Hatchery. The chiller was installed by Bud Robinson of the WDF maintenance crew. The chiller lowers approximately 40 gpm of incubation water to 44 degrees F. We began using the chilled water in November 1991 to slow down and consolidate the ponding dates. We were able to treat all the spring chinook eggs and a portion of the fall chinook eggs in this way. This chilled water is welcome, and confirms our belief that we could use additional chilled incubation water.

On April 22, 1992 the National Marine Fisheries Service (NMFS) issued a final determination that the Snake River spring/summer chinook salmon and Snake River fall chinook salmon are "evolutionarily significant units" (ESU's) or "species" under the Endangered Species Act and should be listed as "threatened".

Because of this ruling, any "taking" of these fish must be applied for and approved by NMFS. This includes everything from direct collection of the stock, such as for broodstock in the hatchery, to possible harassment of spawning adults while conducting spawning ground surveys. Applications to "take" Snake River spring and fall chinook were submitted in March 1992, and are pending at this time. Efforts continue at the Lyons Ferry Hatchery to sustain and

protect the Tucannon River spring chinook and Snake River fall chinook.

SPRING CHINOOK:

Hatchery production of 1990 brood Tucannon spring chinook yearlings was 85,797 - a total of 7,800 pounds. The fish were 11 fish per pound, and were released into the Tucannon River from March 30 through April 10, 1992. All fish were adipose clipped and coded wire tagged, with most fish also cheek tagged to distinguish between hatchery and wild progeny.

In September 1992 all BY91 fish (74,852 total) were adipose fin clipped and coded wire tagged. In addition, the fish with hatchery origin parents (17,739 total) had colored tags placed on the right side behind the eye and the fish with wild origin parents (57,113 total) had the same tag placed on the left side. These fish are scheduled to be trucked to the Tucannon Hatchery release pond in November 1992 for release in March and April 1993.

The 1992 Tucannon spring chinook adult return was above average this year, with a total of 509 adults and 38 jacks returned to the rack. Of these, 410 adults and 29 jacks were put upstream to spawn naturally (plus 11 fish died in the trap). We spawned a total of 46 females (one was spawned out), 37 males and 8 jacks. We had a pond mortality of only 2 males (both hatchery origin) and 4 females (all wild origin). This year the adult fish were trucked directly from the trap to Lyons Ferry Hatchery raceways that had been modified for adult holding and spawning. The adults were held in cooler (pathogen free) water and pre-spawning mortality was significantly reduced.

We continued our spawning protocol of spawning on a wild to wild and hatchery to hatchery basis (all hatchery origin fish are identifiable by adipose clip).

Ringold Hatchery, located on the Mid-Columbia River near Hanford Reach, has returning spring chinook adults but no adult holding, spawning or incubating facilities at this time. With no impact to Lyons Ferry hatchery operations, we were able to hold and spawn these fish for that facility. A total of 385 adults and 49 jacks were trucked in from the Ringold adult trap. We had a pre-spawning mortality of 3 males, 1 female and 5 jacks. We spawned 110 males, 271 females and 3 jacks. This program gave us valuable experience holding and spawning adult spring chinook in our raceways, and we were able to help out the Mitchell Act station with some of their egg take needs. The eggs will be incubated at Lyons Ferry and resulting fry will be shipped out to Ringold Hatchery.

FALL CHINOOK:

Hatchery production of 1990 brood Snake River fall chinook was 689,601 fish at 9 fpp - 81,677 pounds total. Most fish were adipose clipped and coded wire tagged. In addition, roughly half had a colored tag placed behind the left eye and the other half a blank wire tag placed on the left side of the fish's head.*

On April 15, 1992 364,022 of these fish were planted into the Snake River at the hatchery. The remaining 325,579 fish were put on a fish transportation barge for release below Ice Harbor Dam on April 17,1992.

**10,337 fish released on station have no adipose clip or coded wire tag, but do have either a colored eyelid tag or a half blank wire cheek tag. This was the result of these fish escaping through a crowder into a larger pond of fish which had already been tagged.*

The 1991 brood fall chinook returns consisted of fish trapped at Ice Harbor Dam, Lower Granite Dam and fish that volunteered up the fish ladder at the hatchery. We trucked in 361 adults and 71 jacks from Ice Harbor Dam and 37 adults from Lower Granite Dam. In addition we had 960 adults and 593 jacks that returned to the hatchery ladder. This gave a total of 1,358 adults and 664 jacks.

On the day of spawning all coded wire tagged fish had the tag removed and read before it was spawned. Lyons Ferry females were spawned with Lyons Ferry males, strays from other origins were spawned in another group and the unmarked fish were spawned by week of arrival. We kept track of the week of arrival by wrapping a colored electrical tie on the caudal peduncle of new arrivals every Monday morning.

As it turned out, there was no correlation between date of arrival or point of origin for the unmarked fish and Lyons Ferry tagged fish. This meant that none of the eggs from unmarked adults could be utilized for rearing on station. All eggs from strays and unmarked fish were shipped to Klickitat Hatchery to be planted as part of their up river bright fall chinook program.

At spawning, all females were sampled and tested by ELISA for prevalence and level of BKD antigen. Results showed two females with high and three with moderate levels of BKD antigen. The progeny of these fish will be reared separately for as long as possible.

The 1991 brood Snake River fall chinook were ponded from February 14, 1992 to March 3, 1992. The number ponded was 807,685. Early rearing was uneventful, with the exception of a nagging Hexamita problem which resulted in some size variation and dropouts.

EQUIPMENT PURCHASES

The major items purchased this year were a new one ton flat bed truck and a new 300 gallon fiberglass planting tank. The new truck and tank are for the Tucannon spring chinook program and for hauling fall chinook adults from Lower Granite dam.

CONSTRUCTION PROJECTS

The crew made modifications to the spawning building to facilitate all the tag reading and sampling that occurs. We also spent some time repairing the truck loading tower. At WDF and USFWS request, the U.S. Army Corps of Engineers had the adult holding ponds split from two to four ponds. The ponds are now 20' X 150' X 5'. This decreases the number of fish we need to crowd into the fall back channel when we spawn, and gives us the ability to separate fish which are new arrivals from those that have been handled previously. This will cut down on stress for adult fish, and eliminate the need to tag fish when we handle them.

PERSONNEL CHANGES

We have had quite a few personnel changes this year. In December, Stan McMahan transferred to a Fish Culturist II position at Puyallup Hatchery and Jim Dills was hired as the new Hatchery Manager I for the Tucannon spring chinook program. In January, Wendy Campbell transferred to a Fish Culturist I position at Grays River Hatchery. In February, Ruth Gates was promoted from the to the Fish Culturist II position and Shane McEneny was hired as a new Fish Culturist I.

ADULT RETURNS TO HATCHERY Oct. 1,1991 - Sept. 30,1992

	<u>Fall Chinook</u> <u>(BY91)</u>	<u>Spring Chinook</u> <u>(BY92)</u>
<i>Date of first return--</i>	9/4/91	5/4/92
<i>Date of last return--</i>	12/4/91	9/22/92
<i>No. males and females returning--</i>	960	509
<i>No. males and females trucked in-</i>	398	0
<i>No. of jacks returning--</i>	593	38
<i>Date of peak returns--</i>	9/28/91	6/2/92
<i>No. of males and females released to spawn naturally--</i>	0	410 plus 11 that died in the trap
 <i>Mortality of all adult returns--</i>	 201	 17

Note: BY92 fall chinook returns at 444 as of 9/30/92

ADULTS TRAPPED OFF STATION AND TRUCKED TO HATCHERY

Fall Chinook (BY91)

<i>Where trapped--</i>	<i>Ice Harbor Dam</i>	<i>L. Granite</i>
<i>Dates trapped--</i>	<i>9/4/91--10/31/91</i>	<i>9/16--11/7/91</i>
<i>No. of males and females trapped--</i>	<i>361</i>	<i>37</i>
<i>No. of jacks trapped--</i>	<i>71</i>	<i>0</i>

Fall Chinook (BY92)

<i>Where trapped--</i>	<i>Ice Harbor Dam</i>	<i>L. Granite</i>
<i>Dates trapped--</i>	<i>9/1/92--continuing</i>	<i>9/10--continuing</i>
<i>No. of males and females trapped--</i>	<i>220</i>	<i>106</i>
<i>No. of jacks trapped--</i>	<i>44</i>	<i>8</i>

Ringold Spring Chinook (BY92)

<i>Where trapped--</i>	<i>Ringold Hatchery</i>
<i>Dates trapped--</i>	<i>5/7/92--7/16/92</i>
<i>No. of males and females trapped--</i>	<i>385</i>
<i>No. of jacks trapped--</i>	<i>49</i>

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SPAWNING RECORD

LYONS FERRY FALL CHINOOK (BY91)

<u>Dates spawned</u>	<u>No. of eggs taken in a spawning period</u>	<u>No. of males and females used in a spawning period</u>	
		<u>Males</u>	<u>Females</u>
10/15/91	30,745	1	6
10/22/91	161,951	9	37
10/29/91	427,313	28	96
11/5/91	753,449	49	172
11/12/91	777,476*	113	196
11/19/91	437,184	75	117
11/26/91	256,445	73	80
12/3/91	126,275	48	34
12/10/91	23,838	17	6
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TOTALS	3,003,676 **	413	744***

Total no. of eyed eggs-- 2,994,676
No. of eggs retained for rearing-- 828,514
No. of eggs shipped out-- 1,926,215
Date of last spawning-- 12/10/91

* 9,000 shipped to Washington State University as green eggs

** adjusted egg-take total after picking

*** includes 13 green fish killed

TUCANNON RIVER SPRING CHINOOK (BY92)

<u>Dates spawned</u>	<u>No. of eggs taken in spawning period</u>	<u>No. of males and females used in spawning period</u>	
		<u>males</u>	<u>females</u>
8/25/92	2,593	(live spawn)	1
9/1/92	9,164	(live spawn)	3
9/8/92	74,418	(live spawn)	21
9/15/92	58,859	22	18*
9/22/92	11,325	15	3
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TOTALS	156,359	37	46

Total no. of eyed eggs-- 153,594
 No. of eggs retained for rearing-- 153,594 **
 No. of eggs shipped out-- 0
 Date of last spawning-- 9/22/92

* 1 was spawned out in pond

** 85,067 from hatchery X hatchery crosses, 68,527 from wild X wild crosses

RINGOLD SPRING CHINOOK (BY92)

<u>Dates spawned</u>	<u>No. of eggs taken in spawning period</u>	<u>No. of males and females used in spawning period</u>	
		<i>males</i>	<i>females</i>
8/18/92	6,276	(live spawn) 2	
8/25/92	101,910	(live spawn) 36	
9/1/92	327,064	(live spawn) 109	
9/8/92	360,500	72	103
9/15/92	70,000	38	21
TOTALS	865,750	110	271

Total no. of eyed eggs-- 865,750
No. of eggs retained for rearing-- 865,750
No. of eggs shipped out-- 0
Date of last spawning-- 9/15/92

PLANTING

SPRING CHINOOK

Total no. and wt. of yearlings planted-- 85,797 fish = 7,798 lbs.

Date	Location	Number	Weight	No.fish/lb
4/10/92	Tucannon R.	85,797	7,798	11

FALL CHINOOK

Total no. and wt. of fingerlings planted-- NONE PLANTED THIS YEAR

Total no. and wt. of yearlings planted-- 689,601 fish = 81,677 lbs.

Date	Location	Number	Weight	No.fish/lb.
4/15/92	Snake River	364,022	45,503	8
4/17/92	Snake River**	325,579	36,175	9

**below Ice Harbor dam