

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, 1992 to September 30, 1993

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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 facility located at the Tucannon Wildlife Hatchery is used for trapping adults and final rearing of juvenile spring chinook salmon.

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. Tucannon spring chinook began entering our trap at Tucannon on May 17, 1993 but we were unable to retain any adults until we received our permit on May 27, 1993. In those ten days we passed upstream 66 hatchery and 18 wild springers. We were also delayed in releasing our 1991 brood fall chinook and Tucannon spring chinook. The 1992 brood releases we anticipate being on schedule.

SPRING CHINOOK:

Hatchery production of 1991 brood Tucannon spring chinook yearlings was 74,058 - a total of 4,937 pounds. The fish were 15 fish per pound, and were released into the Tucannon River on April 12, 1993. 56,506 had a red elastomer tag behind the left eye and 17,552 had a red elastomer behind the right eye. (Elastomer tag loss was not calculated.)

In September 1993, all BY92 fish (143,638 total) were adipose fin clipped and coded wire tagged. In addition, the fish with hatchery origin parents (65,264 total) had elastomer tags placed on the right side behind the eye and the fish with wild origin parents (61,970 total) had elastomer tags placed on the left side. 16,404 hatchery origin fish were not elastomer tagged. Approximately 86,000 will be trucked to the Tucannon hatchery release pond in November 1993 for release in March 1994. The remainder will be outplanted in October 1993.

The 1993 Tucannon spring chinook adult return was down from last year, with a total of 429 adults and 19 jacks returned to the rack. Of these, 335 adults and 16 jacks were put upstream to spawn naturally. We spawned a total of 50 females (one was green), 37 males and 2 jacks. We had a pond mortality of only 4 males (1 hatchery-3 wild), 3 females (1 hatchery-2 wild) and 1 hatchery jack. 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 cool, pathogen free water and pre-spawning mortality was minimal.

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 805 adults were trucked in from the Ringold adult trap. We had a pre-spawning mortality of 10 males, 22 females. We spawned 299 males and 474 females. 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 1991 brood Snake River fall chinook was 760,018 fish at 11.2 fpp - 67,790 pounds total. All fish were adipose clipped and coded wire tagged. In addition, 189,712 had a monofilament eye lid tag placed behind the left eye.

On April 12, 1993 414,997 of these fish were planted into the Snake River at the hatchery. The remaining 345,021 fish were put on a fish transportation barge for release below Ice Harbor Dam on April 19, 1993.

The 1992 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 322 adults and 40 jacks from Ice Harbor Dam and 166 adults and 38 jacks from Lower Granite Dam. In addition we had 823 adults and 150 jacks that returned to the hatchery ladder. This gave a total of 1,311 adults and 228 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. 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 no females with moderate to high levels of BKD antigen.

The 1992 brood Snake River fall chinook were ponded from February 19, 1993 to February 24, 1993. The number ponded was 835,171. Early rearing was uneventful.

A portion of these fish (slightly over 200,000) were adipose clipped and coded wire tagged for sub-yearling release to satisfy part of the Columbia River Management Agreement. A total of 206,775 fish at 61 fish per pound were released into the Snake River at the hatchery site on June 24, 1993.

EQUIPMENT PURCHASES

Major items purchased this year were a new Nissan Pathfinder 4X4 with seating capacity of 5 passengers. 1 of 2 freezer units broke down this summer and was replaced. The other unit will be replaced in 1994.

CONSTRUCTION PROJECTS

The hatchery crew installed a new formalin drip system in the incubation room and the adult holding ponds to prevent fungus problems on adults and eggs. The chiller building

was insulated to keep from freezing. The crew painted the residences adding a needed insecticide to the paint. We also had new carpets installed in the residences.

At Tucannon rearing pond we purchased a submersible pump and installed a sprinkler system to keep the adult spring chinook at ease in the trap until we could pick them up for transport to Lyons Ferry Hatchery.

PERSONNEL CHANGES

On August 1, 1993 Carl Ross retired as Hatchery Manager IV and Robert Allan promoted to the position. Ruth (Gates) Dedloff vacated residence II creating a timely opening for Rob and his family to move in. During the interim time between Carl's health problems and subsequent retirement Ted Parks filled in as acting Hatchery Manager IV and Ruth Dedloff filled in as acting Hatchery Manager I.

ADULT RETURNS TO HATCHERY Oct. 1,1992 - Sept. 30,1993

| | Fall Chinook <u>(BY92)</u> | Spring Chinook <u>(BY93)</u> |
|---|-------------------------------|---------------------------------|
| Date of first return-- | 9/1/92 | 5/17/93 |
| Date of last return-- | 12/7/9 | 9/20/93 (1 jack 9/27) |
| No. males and females returning-- | 823 | 429 |
| No. males and females trucked in- | 488 | 94 |
| No. of jacks returning-- | 228 | 19 |
| Date of peak returns-- | 10/19/92 | 6/2/92 |
| No. of males and females released to spawn naturally-- | 0 | 335 |
| Mortality of all adult returns-- | 105 | 7 |

Note: BY93 fall chinook returns at 395 as of 9/30/93

ADULTS TRAPPED OFF STATION AND TRUCKED TO HATCHERY

Fall Chinook (BY92)

| | | |
|------------------------------------|-------------------|---------------|
| Where trapped-- | Ice Harbor Dam | L. Granite |
| Dates trapped-- | 8/31/92--10/31/92 | 9/10--12/2/92 |
| No. of males and females trapped-- | 322 | 166 |
| No. of jacks trapped-- | 40 | 38 |

Fall Chinook (BY93)

| | | |
|------------------------------------|--------------------|------------------|
| Where trapped-- | Ice Harbor Dam | L. Granite |
| Dates trapped-- | 8/7/93--continuing | 8/10--continuing |
| No. of males and females trapped-- | 107 | 156 |
| No. of jacks trapped-- | 0 | 0 |

Ringold Spring Chinook (BY93)

| | |
|------------------------------------|------------------|
| Where trapped-- | Ringold Hatchery |
| Dates trapped-- | 5/18/93--6/23/93 |
| No. of males and females trapped-- | 805 |
| No. of jacks trapped-- | 0 |

SPAWNING RECORD

LYONS FERRY FALL CHINOOK (BY92)

| <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-killed</u> | <u>Females</u> |
| 10/20/92 | 29,539 | 1 | 7 |
| 10/28/92 | 257,909 | 28 | 67 |
| 11/3/92 | 469,316 | 34 | 120 |
| 11/9/92 | 561,985 | 69 | 160 |
| 11/17/92 | 601,348 | 136 | 180 |
| 11/24/92 | 176,262 | 107 | 54 |
| 12/1/92 | 139,381 | 104 | 42 |
| 12/8/92 | 38,817* | | |
| <hr/> TOTALS | 2,274,557** | 557 | 647*** |

Unmarked males were live spawned and returned to the pond as needed. Coded wire tagged males were all killed prior to spawning.

| | |
|------------------------------------|-----------|
| Total no. of eyed eggs-- | 2,092,230 |
| No. of eggs retained for rearing-- | 855,577 |
| No. of eggs shipped out-- | 1,245,653 |
| Date of last spawning-- | 12/8/92 |

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

** adjusted egg-take total after picking

*** includes 8 green and 3 spawned out fish killed

TUCANNON RIVER SPRING CHINOOK (BY93)

| <u>Dates spawned</u> | <u>No. of eggs taken in spawning period</u> | <u>No. of males and females used in spawning period</u> | | |
|----------------------|---|---|------------|----------|
| | | males-killed | females | jacks |
| 8/24/93 | 1,928 | (2 live sp.) | 1 | |
| 8/31/93 | 8,640 | (4 live sp.) | 4 | |
| 9/7/93 | 50,970 | (16 live sp.) | 15 | |
| 9/13/93 | 57,668 | (16 live sp.) | 15 | |
| 9/20/93 | 49,160 | 37 | 15 | 2 |
| TOTALS | 168,366 | 37 | 50* | 2 |

Live spawned males were identified before being returned to the pond to track mating crosses.

| | |
|------------------------------------|------------|
| Total no. of eyed eggs-- | 152,884 |
| No. of eggs retained for rearing-- | 152,884 ** |
| No. of eggs shipped out-- | 0 |
| Date of last spawning-- | 9/20/93 |

* 1 green moribund green female

** 64,475 hatchery crosses, 64,164 wild crosses, 17,303 mixed crosses, and 6,942 stray male crosses.

RINGOLD SPRING CHINOOK (BY93)

| <u>Dates spawned</u> | <u>No. of eggs taken in spawning period</u> | <u>No. of males and females used in spawning period</u> | |
|----------------------|---|---|-----------|
| | | males | females |
| 8/17/93 | 27,300 | 9 | 10 |
| 8/24/93 | 152,700 | 48 | 48 |
| 8/31/93 | 443,400 | (140 live sp.) | 140 |
| 9/7/93 | 661,500 | 139 | 210 |
| 9/13/93 | 189,500 | 103 | 66 |
| <hr/> TOTALS | <hr/> 1,474,500 | <hr/> 299 | <hr/> 474 |

| | |
|------------------------------------|-----------|
| Total no. of eyed eggs-- | 1,423,500 |
| No. of eggs retained for rearing-- | 1,423,500 |
| No. of eggs shipped out-- | 0 |
| Date of last spawning-- | 9/13/93 |

REARING TO FRY STAGE ONLY

| | Spring Chinook <u>(BY92)</u> | Fall Chinook <u>(BY92)</u> |
|----------------------------------|---------------------------------|-------------------------------|
| **Hatched from eyed eggs-- | 153,594 | 855,577 |
| **Percent hatched-- | 98.2% | 97.6% |
| **Percent mortality to ponding-- | 1.2% | 2.3% |
| **Total no. of fry ponded-- | 151,727 | 835,171 |
| **Total weight of fry ponded-- | 106 | 738 lbs. |

REARING TO FINGERLING STAGE ONLY

| | Fall Chinook <u>(BY92)</u> |
|---|-------------------------------|
| **No. of fingerlings planted-- | 206,775 |
| **Weight of fingerlings planted-- | 3390 lbs. |
| **Percent mortality from ponding to plant-- | 1.30 % |
| **Average number/lb. fingerlings planted-- | 61 fpp |
| **Conversion rate-- | 1.15 |

YEARLINGS REARED

| | Spring Chinook <u>(BY91)</u> | Fall Chinook <u>(BY91)</u> |
|---|---------------------------------|-------------------------------|
| **No. of yearlings planted-- | 74,058 | 760,018 |
| **Weight of yearlings planted-- | 4,937 | 67,790 |
| **Average fpp of yearlings planted-- | 15 fpp | 11 fpp |
| **Percent mortality from ponding to plant-- | 4.1% | 5.90% |
| **Conversion rate-- | 1.7 | 1.23 |

FOOD FED AND WEIGHT GAIN

SPRING CHINOOK

| | <u>BY91</u> | <u>BY92</u> |
|-----------------------|-------------|-------------|
| **Lbs. of food fed-- | 8,310 | 4,985 |
| **Conversion rate-- | 1.70 | 1.47 |
| **Total weight gain-- | 7735 | 3,394 |

FALL CHINOOK

| | <u>BY91</u> | <u>BY92</u> |
|-----------------------|-------------|-------------|
| **Lbs. of food fed-- | 82,832 | 21,312 |
| **Conversion rate-- | 1.24 | 1.51 |
| **Total weight gain-- | 67,019 | 14,062 |

PLANTING

SPRING CHINOOK

Total no. and wt. of yearlings planted-- 74,058 fish = 4,937 lbs.

| Date | Location | Number | Weight | No.fish/lb |
|---------|-------------|--------|--------|------------|
| 4/12/93 | Tucannon R. | 74,058 | 4,937 | 15 |

FALL CHINOOK

Total no. and wt. of fingerlings planted-- 206,775 fish = 3390 lbs.

Total no. and wt. of yearlings planted-- 760,018 fish = 67,790 lbs.

| Date | Location | Number | Weight | No.fish/lb. |
|---------|---------------|---------|--------|-------------|
| 4/12/93 | Snake River | 414,997 | 37,727 | 11 |
| 4/19/93 | Snake River** | 345,021 | 30,063 | 11.5 |
| 6/24/93 | Snake River | 206,775 | 3390 | 61 |

**below Ice Harbor dam