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ANNUAL REPORT - LYONS FERRY TROUT HATCHERY
OCTOBER 1, 1991 TO SEPTEMBER 30, 1992
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LYONS FERRY TROUT HATCHERY
STARBUCK, WASHINGTON

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INTRODUCTION

Lyons Ferry Trout Hatchery is part of the Lower Snake River Compensation Plan and has been in operation since 1983. Mitigation goals are: 931,000 summer steelhead with a weight of 116,400 pounds 100,000 legal/catchable and 200,000 sub-legal rainbow with a weight of 40,000 pounds. Two satellite facilities, Dayton and Cottonwood Ponds located on the Touchet and Grande Ronde Rivers respectively, are used to acclimate steelhead smolts for a period of two months prior to release. The Tucannon Trout Hatchery and Curl Lake Pond are also satellites of Lyons Ferry Trout Hatchery with mitigation goals of 153,000 rainbow weighing 46,000 pounds and 120,000 summer steelhead with a weight of 8,000 pounds which are included in mitigation goals of Lyons Ferry Trout Hatchery.

EXECUTIVE SUMMARY

Fiscal Year 1991/92 production of steelhead was 782,460 fish weighing 146,727 pounds. Rainbow Trout production included 98,826 legal size and 389,187 sub-legal size fish with weights of 55,735 pounds and 14,384 pounds respectively.

Adult steelhead returns were similar to previous years. A total of 2,035 adults were trapped in the months of August, September, October and November. On January 10, 1992, we sorted through the adults and returned 791 females and 170 males to the Snake River to spawn naturally (Table 1).

A total of 1,239,055 green eggs were taken with 1,117,628 eggs reaching the eyed stage. A total of 905,438 eyed eggs were retained for rearing.

Adult steelhead returning to Cottonwood Creek were trapped in the months of March and April (Table 3).

A total of 558,437 green eggs were taken with 198,747 eggs reaching the eyed stage. Positive IHN virus test results dictated the destruction of 359,690 eggs. A total of 198,747 eyed eggs were retained for rearing.

LYONS FERRY SUMMER STEELHEAD

1991 BROOD YEAR

At the beginning of the fiscal year, 790,006 fingerling (32.3/lb) weighing 24,458 pounds were on hand. On October 30, 1991, 92,116 fry (26.5/lb) were stocked in Sprague Lake. Between January 20 and 24, 1992, we transferred steelhead fingerlings from rearing lakes to raceways for marking (coded wire tags, freeze brands and ventral fin clip). Four groups of fish were marked (Table 5). By March 5, 1992, 45,629 marked fish (4.8/lb average) weighing 9,506 pounds and 50,000 unmarked fish (5.0/lb) weighing 10,000 pounds had been transferred to Dayton Acclimation Pond. By March 5, 1992, 30,098 marked fish (5.6/lb) weighing 5,350 pounds and 30,000 unmarked fish (5.0/lb) weighing 6,000 pounds had been transferred to Curl Lake Acclimation Pond. A high loss (54.8%) attributed to predation by gulls and terns was discovered during transfer. Approximately 525 gulls and 35 terns were feeding from the lakes during the rearing cycle. Between April 13, and 20, 1992, 357,447 smolts (2.8/lb - 4.2/lb) weighing 92,442 pounds were released into the following waters; Mill Creek, Snake, Tucannon, Touchet and Walla Walla Rivers (Table 7).

1992 BROOD YEAR

We initiated operation of the fish ladder on August 18, 1991, and terminated trapping operation on December 11, 1991. A total of 2,035 adult steelhead (Table 1) were captured. Peak returns occurred between September 16 and 29, 1991 (Table 1).

Spawning occurred over a period of five weeks commencing on February 4, 1992, and ending on March 3, 1992, a total of 1,239,055 green eggs were taken (Table 2). We retained 905,438 eyed eggs for rearing. Hatching of the eggs was completed on March 26, 1992, resulting in 838,726 fry with 7.36 percent egg loss from eyed stage to sack-fry. Fry (378,257) from egg takes 2 and 4 suffered an IHN virus epizootic in April and had to be destroyed. By May 11, 1992, 412,501 fry (298/lb - 720/lb) had been transferred to intermediate tanks and raceways.

Adipose fin clip marking commenced on August 25, and was completed September 1, 1992, with 369,202 fingerling (50/lb) weighing 7,384 pounds transferred to production lake 2. On September 30, 1992, 369,202 fingerling (26/lb average) weighing 14,200 pounds were on hand.

HELLS CANYON "A" STRAIN SUMMER STEELHEAD

1992 BROOD YEAR

On May 15, 1992, we received 400,000 button-up fry from Idaho Fish & Game (Oxbow Hatchery). By June 24, 1992, 388,477 fry (508/lb - 526/lb) weighing 755 pounds were transferred to outside raceways. Adipose fin clip marking commenced on August 25 and was completed September 1, 1992, with 325,810 fry (110/lb) weighing 2,962 pounds transferred to production lake 1. An excess of 69,300 fry (99/lb) weighing 700 pounds were released into Sprague Lake on September 14, 1992. By September 30, 1992, 325,761 fingerling (52.5/lb) weighing 6,206 pounds were on hand.

Table 1. Adult Returns to Lyons Ferry Hatchery and Adults Shipped.

LYONS FERRY SUMMER STEELHEAD

Date of first return.....	8-19-91
Date of last return.....	12-11-91
Number of females returning.....	1,348
Number of males returning.....	687
Dates of peak returns.....	9-16-91 to 9-29-91
Number of females and males released to spawn naturally.....	961
Mortality of all adult returns.....	783
Number of adults shipped.....	1

Table 2. Spawning Records for 1992 Lyons Ferry Stock Summer Steelhead.

<i>DATES SPAWNED</i>	<i>NUMBER EGGS TAKEN</i>	<i>NUMBER FEMALES</i>	<i>NUMBER MALES</i>
2-04-92	239,536	47	96
2-11-92	256,768	49	100
2-18-92	245,807	48	104
2-25-92	237,405	48	99
3-03-92	259,539	48	100

Total number of females spawned.....240
 Total number of males spawned.....499
 Total number of green eggs.....1,239,055
 Total number of eyed eggs.....1,117,628
 Number of eggs retained for rearing.....905,438
 Number of eggs shipped.....-0-

WALLOWA SUMMER STEELHEAD

1991 BROOD YEAR

On October 1, 1991, 334,910 fingerling (40/lb) weighing 8,373 pounds were being reared in production lake 3. Between February 21 and March 3, 1992, 219,360 pre-smolt fingerling (6.6/lb) weighing 33,450 pounds were transferred to Cottonwood Acclimation Pond. By April 30, 1992, 213,622 smolts (5.4/lb average) weighing 39,560 pounds were released into the Grande Ronde River (Table 6).

1992 BROOD YEAR

Initiated operation of Cottonwood Creek adult trap on March 16, 1992, and terminated trapping on April 12, 1992. A total of 397 adult steelhead were captured. Peak returns occurred between March 30 and April 7, 1992 (Table 3).

Spawning occurred over a period of three weeks, commencing on March 3, 1992, and ending on April 13, 1992, resulting in 558,437 green eggs (Table 4). We destroyed 359,690 eggs from adults that tested positive for IHN Virus and retained 198,747 eyed eggs for rearing. Hatching of the eggs was completed on May 1, 1992, resulting in 192,452 fry (3.17 percent loss from eyed egg to sack-fry). By June 9, 1992, 134,498 fry (906/lb - 1,203/lb) had been transferred to intermediate tanks. On June 26, 1992, we received 182,962 fry (454/lb) weighing 403 pounds from Tucannon Hatchery. Adipose fin clip marking commenced on September 4, 1992 and was completed on September 9, 1992, with 369,202 fingerling (88/lb) weighing 4,195 pounds transferred to production lake 3. On September 30, 1992, 369,000 fingerling (72.9/lb) weighing 5,062 pounds were on hand.

Table 3. Adult Returns to Cottonwood Creek Acclimation Pond

Date of first return.....	3-16-92
Date of last return.....	4-12-92
Number of females returning.....	169
Number of males returning.....	228
Dates of peak returns.....	3-30-92 to 4-07-92
Number of females and males released to spawn naturally.....	0-
Mortality of all adult returns.....	397
Number of adults shipped.....	0-

Table 4. Spawning Records for 1992 Wallowa Stock Summer Steelhead.

<i>DATES SPAWNED</i>	<i>NUMBER EGGS TAKEN</i>	<i>NUMBER FEMALES</i>	<i>NUMBER MALES</i>
3-30-92	187,062	36	80
4-06-92	209,387	44	79
4-13-92	161,988	33	66

Total number of females spawned.....	113
Total number of males spawned.....	225
Total number of green eggs.....	558,437
Total number of eyed eggs.....	371,375
Number of eggs retained for rearing.....	198,747
Number of eggs destroyed (IHNV positive).....	359,690

Table 5. Marked Groups of Steelhead for 1992 Release.

<u>NUMBER OF FISH</u>	<u>BRAND</u>	<u>TAG CODE</u>	<u>FIN CLIP</u>
<u>Curl Lake</u>			
30,098	RA-S-1	63-42/63	AD/LV
<u>Dayton Acclimation Pond</u>			
45,628	RA-IY-1	63-59/47-R3	AD/LV
<u>Tucannon River at Curl Lake</u>			
30,096	RA-S-2	63-42/63	AD/LV
<u>Tucannon River at Marengo</u>			
29,888	LA-S-1	63-43/01	AD/LV

GOLDENDALE STOCK RAINBOW TROUT

1990 BROOD YEAR

On October 1, 1991, 19,996 fingerling (8.0/lb) weighing 1,910 pounds were on hand. On October 28, 1991, we received 27,600 fingerling (24/lb) weighing 1,150 pounds from Arlington Trout Hatchery. On November 25, 1991, we stocked 13,776 fingerling (16.4/lb) weighing 840 pounds in Adams County (Table 8). In March 1992, 19,942 legal size fish (1.7/lb - 2.0/lb) weighing 10,760 pounds were released into area lakes (Table 8). In April 1992, 15,332 legal size fish (1.1/lb - 2.7/lb) weighing 6,393 pounds were released into area lakes (Table 8). Mortality throughout the rearing cycle was 12,322 (25.9%).

SPOKANE STOCK RAINBOW TROUT

1990 BROOD YEAR

On October 1, 1991, 96,135 fingerling (7.9/lb) with a weight of 12,194 pounds were on hand. We transferred 48,200 fingerling (16.6/lb) weighing 2,896 pounds to Idaho Fish and Game on October 17, 1991 (Table 8). On November 26, 1991, we received 12,584 fingerling (10.4/lb) weighing 1,210 pounds from Tucannon Trout Hatchery. In the month of February 1992, 31,478 legal size fish (1.7/lb - 2.0/lb) weighing 17,777 pounds were released into local lowland lakes (Table 8). In March 1992, 23,123 legal size fish (1.2/lb - 2.5/lb) weighing 15,125 pounds were released into area lakes (Table 8). While stocking in March 1992, a 6,117 fish overrun was realized. In April 1992, 2,203 legal size fish (1.1/lb) weighing 2,002 pounds were released into area lakes (Table 8). In May 1992, 6,748 legal size fish (1.8/lb - 1.9/lb) weighing 3,678 pounds were released into area lakes (Table 8). Mortality from October 1, 1991, to stocking was 3,084 fish (2.69%).

1991 BROOD YEAR

On January, 1992, we received 377,000 eyed eggs from Spokane Trout Hatchery. Upon disinfecting and measuring eggs to set out in troughs, an overrun of 16,820 eggs was realized. Hatching of the eggs was completed on January 15, 1992, resulting in 385,285 fry (2,501/lb) with a weight of 154 pounds. Egg loss was 8,535 (2.17%). By April 3, 1992, the fish averaged 235/lb and were transferred to raceways. On May 27, 1992, 154,805 fingerling were marked with an Adipose fin clip for Idaho Fish and Game. Between June 5 and 9, 1992, 154,283 fingerling (32.0/lb - 34.0/lb) weighing 4,680 pounds were transferred to Idaho Fish and Game for stocking in Elk Creek Reservoir, Mann's Lake, Soldiers Meadows Reservoir, Spring Valley and Winchester Lakes (Table 8). On June 17 and 18, 1992, we stocked 57,824 fingerling (26/lb) weighing 2,224 pounds into Sprague Lake in Adams County (Table 8). On August 26, 1992, we received 59,070 fry (27.5/lb) weighing 2,150 pounds from Tucannon Trout Hatchery. On September 9, 1992, 57,818 fingerling were marked with a Right Ventral fin clip for Idaho Fish and Game. On September 30, 1992, 57,280 fingerling (15.3/lb) weighing 3,744 pounds were transferred to Idaho Fish and Game for stocking into the Clearwater River (Table 8).

By September, 30, 1992, 111,505 fingerling (6.6/lb average) with a weight of 17,015 pounds were on hand. Mortality to the present stage of rearing is 64,463 fish (14.4%).

OPERATIONS & MAINTENANCE

Engineering Projects

Malfunctions with the 14,000 volt underground electrical system and problems with other electrical equipment continue to plague the facility. On January 13, 1992, the Army Corps of Engineers (COE) installed equipment to monitor voltage spikes from the incoming power line in an effort to solve these problems. Inland Power and Light is in the process of updating their equipment which should resolve the problem.

The COE issued a contract for modifications to the pollution abatement pond to bring it up to the requirements of the Department of Ecology. The modifications were complete in June 1992.

On February 13, 1992, pump #6 quit without warning. Upon pulling and inspection of the pump, deterioration of the pump bowl and excessive wear on the impellers was found. Additionally, the pump shaft had twisted and broken in three places tearing out the spider bearings and damaging three sections of the water column pipe. The shaft was replaced with 416 stainless steel and specially designed spider bearings were installed. Both the pump bowl and impellers were refurbished and two coats of epoxy were applied. The 200 HP electrical motor was repaired (Baked moisture from stator windings, replaced lower guide bearings, upper thrust bearings and painted). Total cost for the repairs was \$23,406.15, which is substantially less than purchasing new pumps (approximate cost - \$58,500 with a delivery time of 6 to 9 months).

On April 28, 1992, the U.S.D.A./APHIS - Animal Damage Control Section began installation of predator wires over our three large production lakes. The project was completed on May 7, 1992. Hopefully, the wires will diminish predation of steelhead fingerlings reared in the lakes by gulls and terns.

While installing new phone lines on May 26, 1992, at 4:15 PM Pacific Telecom Inc. ripped through and severed our 3-Phase 14,400 volt underground electrical line. Temporary repairs, made by Inland Power and Light, were completed that same day at 10:00 PM. Permanent repairs (replacement of 1,200 feet of power line) were completed on June 8, 1992.

Maintenance and Construction Projects

The hatchery crew was involved in a variety of projects during the year to enhance hatchery operations and to repair or replace damaged or faulty equipment.

The ceilings, walls and door frames in the hatchery quarters were washed and painted. Constructed egg shipping boxes for transporting green eggs from Cottonwood Creek site to Lyons Ferry. In October 1991, the iron pipe spray system on the adult holding raceways was replaced with a PVC pipe system. Additionally, the alarm shafts on these raceways were lengthened and replaced. The adult trap hoist motor malfunctioned and was repaired for proper crowder operation. We fabricated screens for raceways intake cannisters, a stand for the egg sorter, and parts for the Touchet River trap and weir. We replaced stop-logs behind the revolving screens in all three production lakes in August. During July and August, cracks in asphalt areas were sealed. Additionally, the road to the Marmes pumping site was improved. Gravel was applied, graded and rolled. On December 12, 1991, the pipeline marker buoys were removed with assistance from Ray Leroue, U.S. Army Corps of Engineers. The hatchery outfall rack was repaired in February. The hatchery heatpump compressor had to be replaced in May 1992. Construction of additional office began in the month of June.

Numerous problems were encountered with the 14,000 volt underground electrical system throughout the year. The elbow connectors or three point junction boxes would burn, creating a "power outage". S&S Electric and Inland Power & Light were called in to make repairs as we have neither the expertise nor the equipment to attempt such repairs.

The Telemetry/Alarm System continued to malfunction at irregular intervals. The C.O.E. issued a contract for a new computerized alarm/monitoring system. This system will be installed in late 1992.

EQUIPMENT PURCHASES

Equipment purchases for the fiscal year include; new batteries for the Uninterrupted Power Supply units, a Xerox 5018 Copier, Honda riding lawn mower, 4-wheel drive Ford tractor with backblade and a GMC 1-ton flatbed truck. Additionally, the COE supplied the hatchery with a 23' Utility Roustabout work boat for installation and removal of the pipeline marker buoys.

N.P.D.E.S. PERMITS

Expenditures for the National Pollutant Discharge Elimination System (N.P.D.E.S.) Permits for Lyons Ferry Hatchery, Dayton and Cottonwood Acclimation Ponds amounted to \$7,150.50 (\$2,383.50 per facility). Permit fees will increase again next year.

PERSONNEL

Floyd Schriener and Harald von Fischer-Benzon were employed as temporary Assistant Managers to operate the Cottonwood and Dayton Acclimation Ponds. Both did an outstanding job and we are hopeful they will assume these duties in 1993.

Ruth Gates and Steve Jones completed promotional exams. On February 29, 1992, Ruth Gates was promoted to the Fish Culturist II position at Lyons Ferry with the Department of Fisheries. Jeanie Robanske was hired on February 26, 1992, to fill the vacated Culturist I position. Gary Griffen and Harold Harty completed the Pesticide Applicators Training and exam course on January 16, 1992 and recieved their license. Over the course of the year, the hatchery crew recieved training on Defensive Driving, Basic First Aid and Infectious Diseases.

In January, Harold Harty traveled to Olympia to meet with Lori Arden, Cooperative Agreement Assistant/U.S. Fish & Wildlife Service and Department of Wildlife accountants on billing and accounting procedures for Lyons Ferry and Tucannon Hatcheries.

In March, Lyle Leslie, Fish Culturist I at Tucannon Hatchery injured his shoulder. Steve Jones was sent to Tucannon Hatchery to assist the hatchery during his absence.

On October 11, 1992, personnel from U.S.D.A. - Animal Damage Control Section began hazing seagulls from our production lakes.

In October 1991, and again in September 1992, agents from Washington's Department of Fisheries and Department of Wildlife utilized the quarters while executing an "Emphasis Patrol" during the fishing and hunting seasons.

We continued with the Youth Conservation Corps Program again this year. Jamie Dills, Jeromie Leroue and Andria Maxwell were hired to fill our allotted positions.

Table 6. Food Fed and Weight Gain for all Fish Species at Lyons Ferry Hatchery.

SUMMER STEELHEAD

<u>SPECIES</u>	<u>BROOD YEAR</u>	<u>LBS FOOD FED</u>	<u>GAIN</u>	<u>CONVERSION</u>
Lyons Ferry	1991	122,464	71,460	1.71
Lyons Ferry	1992	16,663	14,200	1.17
Wallowa	1991	57,765	41,736	1.38
Wallowa	1992	8,340	5,062	1.65
Hells Canyon "A" Strain	1992	8,695	6,046	1.44
TOTAL (All Steelhead 90-91)		205,232	138,504	1.48

RAINBOW TROUT

Spokane	1990	32,539	28,074	1.16
Spokane	1991	25,424	25,513	0.996
Goldendale	1990	13,904	14,933	0.93
TOTAL (All Rainbow 90-91)		71,867	68,520	1.05
TOTAL ALL SPECIES		277,099	207,024	1.34

1991/92 STOCKING DATA FOR LYONS FERRY TROUT HATCHERY

Table 7.

SUMMER-RUN STEELHEAD SMOLTS

<u>LOCATION</u>	<u>BROOD YEAR</u>	<u>NUMBER of TRIPS</u>	<u>NUMBER of FISH</u>	<u>WEIGHT of FISH</u>
<u>LYONS FERRY</u>				
Snake R.	1991	3	66,688	18,460
Tucannon R.	1991	3	59,984	16,442
Curl Lk (Transferred)	1991	3	60,098	11,350
Touchet R. (Dayton P.)	1991	4	95,517	27,290
Walla Walla R.	1991	5	75,210	18,900
SUB TOTAL		18	357,497	92,442
(SUB-SMOLTS)				
Sprague Lake	1991	1	92,116	3,476
<u>WALLOWA'S</u>				
Cottonwood Pond	1991	8	213,622	39,559
Wildcat Cr.	1991	2	49,925	10,550
SUB TOTAL		10	263,547	50,109
HELLS CANYON "A" STRAIN				
(SUB-SMOLTS)				
Sprague Lake	1992	1	69,300	700
TOTAL (BROOD YEAR 1991-92)		30	782,460	146,727

Table 8.

RAINBOW TROUT (LEGAL SIZE)

<u>LOCATION</u>	<u>BROOD YEAR</u>	<u>NUMBER of TRIPS</u>	<u>NUMBER of FISH</u>	<u>WEIGHT of FISH</u>
SPOKANE RAINBOW				
Beaver Lake	1990	1	1,001	556
Big Four	1990	1	3,052	1,795
Blue Lake	1990	1	2,508	1,475
Dalton Pond	1990	2	4,986	2,493
Dam Pond	1990	2	1,502	1,365
Dayton Juvenile Pond	1990	1	1,034	608
Deer Lake	1990	2	4,031	2,371
Marmes Pond	1990	1	517	304
Mill Cr Reservoir	1990	3	10,968	7,740
Pampa Pond	1990	3	6,748	3,678
Quarry Pond	1990	3	14,753	8,720
Rainbow Lake	1990	2	4,991	2,936
Riparia Pond	1990	2	1,218	941
Spring Lake	1990	2	4,031	2,371
Watson Lake	1990	1	2,212	1,229
SUB TOTAL		27	63,552	38,582
SPOKANE RAINBOW (SUB-LEGAL SIZE)				
Idaho F & G (transfer)	1990	1	48,200	2,896
Idaho F & G (transfer)	1991	2	211,563	8,424
Sprague Lake	1991	1	57,824	2,224
SUB TOTAL		4	317,587	13,544
GOLDENDALE RAINBOW				
Mill Cr Reservoir	1990	3	18,392	8,760
Orchard Pond	1990	1	1,202	1,093
Pampa Pond	1990	1	4,680	1,800
Quarry Pond	1990	1	11,000	5,500
SUB TOTAL		6	35,274	17,153
GOLDENDALE RAINBOW (SUB-LEGAL SIZE)				
Sprague Lake	1990	1	13,776	840
TOTAL (BROOD YEAR 1990-1991)		38	430,189	70,119