

# LOOKINGGLASS FISH HATCHERY

## INTRODUCTION

### Location

Lookingglass Fish Hatchery is located on the left bank of Lookingglass Creek at river mile 2.2, approximately 85 miles upstream from the mouth of the Grande Ronde River and 324 miles upstream from the mouth of the Columbia River.

Imnaha Satellite Facility is located at river mile 46 on the Imnaha River. This facility is used for adult collection, holding and acclimation. During the summer months, Imnaha Weir is installed across the Imnaha River at this site.

## OBJECTIVES

### Mitigation

Lookingglass Fish Hatchery is part of the Lower Snake River Compensation Program (LSRCP) and has been in operation since 1982. A satellite station on the Imnaha River is used for smolt acclimation, and collection and holding of adults. Mitigation goals are variable according to adult returns and interagency agreements. The anticipated 1999 release of Imnaha stock (2998) smolts from Imnaha Satellite Facility was 180,050 fish. The actual release was 179,797 Imnaha (2998) smolts at an average weight of 19.1 fish per pound. The 2000 Lookingglass Fish Hatchery allocation of Rapid River (8599) stock smolts was 30,000. A total of 24,201 Rapid River (8599) smolts were released at an average weight of 71.4 fish per pound.

## CHINOOK

### Adult Returns

The Imnaha Weir was installed on June 28, 2000, and chinook collection continued through September 12, 2000. A total of 1,106 Imnaha stock (2900) chinook returned to Imnaha Satellite Facility. Returns included 236 males, 197 females, 671 jacks and two subjacks. Of these, 76 males, 67 females and 445 jacks were collected for broodstock and returned to Lookingglass Fish Hatchery. A total of 457 Imnaha (2900) chinook, consisting of 161 males, 128 females, 168 jacks and two subjacks, were opercle punched and released back into the Imnaha River to spawn naturally. Fifty hatchery-origin jacks were outplanted to Lick Creek and 250 hatchery-origin jacks were outplanted to Big Sheep Creek. All surviving broodstock were spawned or cryopreserved.

A total of 238 Rapid River stock (8500) chinook were collected at Lookingglass Fish Hatchery in 2000. Returns included 113 males, 107 females and 18 jacks. All were released back into Lookingglass Creek to spawn naturally.

## **Eyed Egg Production**

During the report period a total of 67 Imnaha stock (2900) females were spawned for a yield of 333,824 green eggs. Due to lack of chilled well water at Lookingglass Fish Hatchery, unfertilized eggs and sperm were transferred to Irrigon and Oxbow fish hatcheries by van. Actual mixing of sperm and eggs took place at these facilities. Irrigon received 41,453 green eggs and Oxbow received 292,371 green eggs. Currently 311,430 eyed eggs are at Oxbow Fish Hatchery and 4,056 are at Irrigon Fish Hatchery. The overall loss from viable to eyed stage was 5.5%.

## **Conventional Chinook Program**

Of the three conventional chinook facilities, two were unable to obtain adequate broodstock to allow a program in 2000.

Grande Ronde collection facility: four female and two male Upper Grande Ronde River (80W00) adults were transported to Lookingglass Fish Hatchery during the reporting period. All six fish were returned to the Upper Grande Ronde River on 31 July 2000.

Catherine Creek collection facility: three female and four male Catherine Creek (CC) adults were transported to Lookingglass Fish Hatchery. One female died at the hatchery; the remaining six fish were returned to Catherine Creek on 31 July 2000.

The Lostine River collection facility was able to obtain adequate chinook for the program: eight females, 13 males, and 14 jacks of Lostine River (LR) origin were transported to Lookingglass Fish Hatchery. All fish were spawned or cryopreserved, resulting in a viable egg take of 34,630 for stock 200W00. Survival to the eyed stage was 96.9%, leaving 33,546 eyed eggs at Oxbow Fish Hatchery.

## **Captive Broodstock Chinook Program (F<sub>1</sub>'s)**

The first progeny from the captive broodstock chinook program were acclimated and released in early 2000 after rearing at Lookingglass Fish Hatchery.

Upper Grande Ronde River (80F98) chinook were transported to the Grande Ronde acclimation facility on 28 February 2000. The 1,508 smolts were released On 14 March 2000.

Catherine Creek (201F98) chinook were transported to the Catherine Creek acclimation facility on 28 February 2000. The 37,980 smolts were released on 18 April 2000.

Lostine River (200F98) chinook were transported to the Lostine River acclimation facility 29 February - 1 March 2000. The 34,987 smolts were released on 18 April 2000.

BY99 captive broodstock progeny were transferred from Irrigon Fish Hatchery to Lookingglass Fish Hatchery in April 2000. They will be reared at Lookingglass Fish Hatchery until ready for acclimation in early 2001.

## **Miscellaneous**

PIT tagging was completed on the BY98 Imnaha, Lostine, Catherine Creek and Upper Grande Ronde River stocks of chinook during October 1999.

## **CONSTRUCTION AND MAINTENANCE**

### **Maintenance projects accomplished by the hatchery crew**

- Built and painted a new cover for the fill spout pump.
- Repaired/replaced all pond brooms and dip nets.
- Constructed new dam boards for the smolt channel.
- Painted walls and ceilings in the visitor center, the visitor center restrooms, the bunk house bedrooms and restroom, and the employees restroom.
- Installed and tested nine emergency lights around key areas.
- Cleaned, disinfected and repaired all troughs and equipment following transfer of broodyear 98 captive broodstock chinook.
- Designed and fabricated new Formalin treatment delivery tanks and stands for the raceways, holding ponds, and circulars.
- Replaced rubber seals around the raceway crowders.
- Disassembled, inspected, pressure washed, disinfected, and reassembled all 18 raceways, making them ready to receive new stocks of fish.
- The Enterprise Screen Shop repaired the Imnaha weir. A section of rail that was torn away from the concrete sill was reinstalled.
- Inspected and serviced the adult crowder and fish hoist at Lookingglass Fish Hatchery.
- Nez Perce Tribal Fisheries staff replaced the insulation under the residence at the Imnaha satellite facility.
- Fabricated new storage racks for mortality nets and screen brushes and installed them at the tail end of each raceway.
- Numbered and attached spawning tube floats to the spawning tubes
- Serviced the electric adult crowder at Imnaha.
- Inspected the hoist at Imnaha satellite facility.
- Built new storage lockers for fish culture gear.
- Repaired the air release valve in the tempering well #2 building.
- Installed new toolboxes in all pickup trucks. Updated and inventoried the safety equipment in all the vehicles.
- Installed snow blowers on all the small tractors. Set up snow poles along the hatchery road and cones over valves.
- Cleared brush along the hatchery road for snow plowing this winter

### **Maintenance projects accomplished by contractors**

**J.B. Bane Electric** - Replaced the carburetor on the Onan generator at Imnaha.

**EC Power** - Repaired the hatchery generator.

## **Maintenance projects accomplished by contractors**

**Barnes Diesel** - Inspected the diesel engine on the hatchery generator. Inspected and serviced the road grader. Serviced the dump truck and repaired the dump truck snowplow. Re-ground the teeth on the pony motor ring gear and replaced the water pump on the road grader. They also replaced the pressure switch on the compressor in the equipment building.

**Lintec Machine** - Fabricated a hitch fork for our forklift that will be used to move the marking van and other heavy equipment. Repaired and upgraded the automatic feeders for the rearing ponds. Serviced the Hyster forklift, repaired the leak in the fork tilt mechanism, and repaired an input shaft problem on the forklift. Lintec also repaired an over-heating problem with our fish pump. Designed and built an enclosed Formalin delivery system in the endemic building.

**Tony's Heating & Air Conditioning** – Tony's completed service inspections and maintenance on the heat pumps in all hatchery residences, including installation of programmable thermostats in each house. Also repaired the furnace in residence house #1.

**Dan Lewis (American Construction)** - Finished the alarm voltage problem in the hatch house head tank and assisted with trouble shooting the VFD problem. Installed a new Motorola alarm system for the hatchery and visited the facility to make repairs on the low water alarm for the intake. Wired in the air compressor at the intake.

**Mike Becker General Contractor** - Cleared rocks and debris from in front of the intake and leveled the rock and debris buildup in Lookingglass Creek across from our intake structure. Removed the rock build-up from the fish ladder at the intake. Completed the raceway valve replacement project and removed debris from around the traveling screens in the intake building.

**Gary Moore, Wilde Electric** - Installed the repaired VFD and a new RTU unit for tempering well #2. Further testing of the chiller system is continuing. Wired in alarms for the chillers.

**Liquid Gas Co.** - Serviced the propane heaters at the Imnaha facility.

**Mitrac Construction** - Installed new pressure spray nozzles for the traveling water screen at the intake and removed debris and boulders from the intake channel.

**Johnson Electric** - Replaced pressure switch on screen spray pump motor #1 at the intake.

**M. Cutter** - Made an emergency service call to inspect and repair our traveling water screens.

**A.C. Electric** - Wired new intake screen motor.

**Pursewell Pumps, Hermiston** - Were on site to repair traveling water screen wash pump. Also installed the pump motor for well number 2.

**MAJOR EXPENSES**

Fish food	\$18,000.00
Hatchery supplies	18,316.00
Repairs to buildings and grounds	51,854.00
Repairs/Maintenance to Equipment	41,706.00
Electrical maintenance to facility	2,362.17
Training	<u>3,035.00</u>

Total \$135,273.17

## Adult Returns to Hatchery

### Chinook Rapid River Stock BY00

#### Lookingglass Fish Hatchery

Date of first return:	May 22, 2000
Date of last return:	September 1, 2000
Number of females returning:	107
Number of males returning:	131
Date of peak returns:	May 24, 2000
Number of females released to spawn naturally:	104
Number of males released to spawn naturally:	120
Mortality of all adult returns:	0 females; 0 males

*Except for a give-away of 14 dispatched fish to members of the Confederated Tribes of the Umatilla Indian Reservation, all returning Rapid River stock chinook were released into Lookingglass Creek to spawn naturally.*

## Adults Trapped Off Hatchery and Transported to Hatchery

### Chinook Imnaha Stock BY00

#### Lookingglass Fish Hatchery

Where trapped:	Imnaha Satellite Facility
Date weir installed:	June 28, 2000
Dates trapped:	June 28 - Sept 12, 2000
Number of females returning:	197
Number of males returning:	909
Date of peak returns:	July 14, 2000
Number of females released to spawn naturally:	128
Number of males released to spawn naturally:	631
Mortality of all adult returns:	2 females, 10 males

*Of the 909 total males, 671 were jacks and two were subjacks. A total of 468 jacks and two subjacks were released to spawn naturally. Of these, 168 jacks were released into the Imnaha River, 50 jacks were released into Lick Creek and 250 jacks were released into Big Sheep Creek. The subjacks were released into the Imnaha River. Nine of the ten male mortalities were jacks.*

## Adults Trapped Off Hatchery and Transported to Hatchery

### Conventional Chinook Program Grande Ronde River Stock BY00

#### Lookingglass Fish Hatchery

Where trapped:	Upper Grande Ronde Weir
Dates trapped:	March 24 - July 31, 2000
Number of adults trapped:	17, sex unknown
Number of adults released to spawn naturally:	9, sex unknown
Number of adults transported to hatchery:	6, sex unknown
Mortality of all adults trapped:	2, sex unknown
Number of adults released back to river from hatchery:	6, sex unknown

*The six chinook held at Lookingglass Fish Hatchery were returned to the upper Grande Ronde River on 7/31/2000, since the program's broodstock goal was not met.*

### Conventional Chinook Program Catherine Creek Stock BY00

#### Lookingglass Fish Hatchery

Where trapped:	Catherine Creek Weir
Dates trapped:	March 30 - July 31, 2000
Number of adults trapped:	24 unknown; 3 jacks
Number of adults released to spawn naturally:	17 unknown; 3 jacks
Number of adults transported to hatchery:	7, sex unknown
Mortality of all adults trapped:	1, sex unknown
Number of adults released back to creek from hatchery:	6, sex unknown

*The six chinook held at Lookingglass Fish Hatchery were returned to Catherine Creek on 7/31/2000, since the program's broodstock goal was not met.*

### Conventional Chinook Program Lostine River Stock BY00

#### Lookingglass Fish Hatchery

Where trapped:	Lostine River Weir
Dates trapped:	May 19 - Sept 30, 2000
Number of adults trapped:	21 females; 70 males
Number of adults released to spawn naturally:	13 females; 45 males
Number of adults transported to hatchery:	8 females; 25 males
Mortality of all adults trapped:	0 females; 0 males
Number of adults released back to river from hatchery:	0 females; 0 males
Number of adults spawned at hatchery:	8 females; 25 males

*Of the 70 males trapped, 37 were jacks. Of these, 24 jacks were released to spawn naturally, and 13 jacks were transported to the hatchery and subsequently spawned there.*

## Spawning Record

**Chinook  
Imnaha Stock BY00**

Lookingglass Fish Hatchery

Date Spawned	Number of Eggs Taken	Females Spawned	Males Spawned
8/09/00	5,069	1	3
8/16/00	15,180	3	6
8/23/00	40,228	8	60
8/30/00	136,626	28	91
9/06/00	115,517	23	67
9/13/00	21,204	4	39

*Imnaha stock chinook eggs and sperm were combined according to matrices. Hatchery jacks were pooled. Wild jacks and all other adults were spawned one to a matrix cell.*

Total number of females spawned: 67  
 Total number of males spawned: 266  
 Total number of green eggs: 333,824  
 Total number of eyed eggs: 311,430  
 Number of eggs retained for rearing: 0  
 Number of eggs shipped: 333,824\*  
 Date of last spawning: 9/13/00

*\*Due to lack of chilled well water at Lookingglass Fish Hatchery, Imnaha stock eggs were shipped to either Irrigon or Oxbow fish hatcheries with the appropriate sperm. Mixing of eggs and sperm took place at these facilities. Eggs are incubating as follows:  
 Green eggs shipped to Oxbow Fish Hatchery: 292,371.  
 Green eggs shipped to Irrigon Fish Hatchery: 41,453.  
 All eyed eggs will be reared at Oxbow Fish Hatchery.*

## Spawning Record

### Conventional Chinook Program Lostine Stock BY00

Lookingglass Fish Hatchery

Date Spawned	Number of Eggs Taken	Females Spawned	Males Spawned
9/07/00	28,000	7	17
9/14/00	4,000	1	7

*Lostine stock chinook were spawned by matrices, depending on available mature broodstock.*

Total number of females spawned: 8  
Total number of males spawned: 24  
Total number of green eggs: 32,000  
Total number of eyed eggs: N/A  
Number of eggs retained for rearing: 0  
Number of eggs shipped: 32,000\*  
Date of last spawning: 9/14/00

*\*Due to lack of chilled well water at Lookingglass Fish Hatchery, all Lostine stock eggs were shipped to Irrigon Fish Hatchery for incubation and rearing.*

### Rearing to Fingerling Stage Only

**Chinook  
Rapid River Stock BY99**

Number of fingerlings produced:	24,201
Weight of fingerlings produced (lbs.):	338.95
Percent mortality to stocking:	2.9%
Average number/pound of fingerlings produced:	71.40
Conversion rate:	1.10

*Adults were spawned at South Fork Walla Walla Facility. Eggs were incubated at Irrigon Fish Hatchery and fish were transferred to Lookingglass Fish Hatchery on 4/05/2000. Fish were released into Lookingglass Creek on 6/29/2000. Pounds produced at Lookingglass Fish Hatchery totaled 221.20.*

### Rearing to Smolt Stage Only

**Chinook  
Imnaha Stock BY98**

Number of smolts produced:	179,716
Weight of smolts produced (lbs.):	9,394.45
Percent mortality to stocking:	1.2%
Average number/pound of smolts produced:	19.13
Conversion rate:	1.20

*Smolts were transferred from Lookingglass Fish Hatchery to Imnaha Satellite Facility for acclimation 3/02-3/03/2000. Fish were released from Imnaha Satellite Facility on 4/18/2000.*

**Captive Broodstock Chinook (F<sub>1</sub>'s)  
Upper Grande Ronde River Stock BY98**

Number of smolts produced:	1,508
Weight of smolts produced (lbs.):	77.53
Percent mortality to stocking:	5.4%
Average number/pound of smolts produced:	19.45
Conversion rate:	1.26

*These captive broodstock progeny were reared at Lookingglass Fish Hatchery and transferred to Upper Grande Ronde River Acclimation Pond on 2/28/2000. They were released from the acclimation site on 3/14/2000. Upper Grande Ronde River Acclimation Pond is operated by the CTUIR. Facility operations are BPA funded. Fish feed is provided by the LSRCP.*

## Rearing to Smolt Stage Only

### **Captive Broodstock Chinook (F<sub>1</sub>'s) Catherine Creek Stock BY98**

Number of smolts produced:	37,980
Weight of smolts produced (lbs.):	1,691.00
Percent mortality to stocking:	2.1%
Average number/pound of smolts produced:	22.46
Conversion rate:	1.23

*These captive broodstock progeny were reared at Lookingglass Fish Hatchery and transferred to Catherine Creek Acclimation Pond on 2/28/2000. They were released from the acclimation site on 4/18/2000. Catherine Creek Acclimation Pond is operated by the CTUIR. Facility operations are BPA funded. Fish feed is provided by the LSRCP.*

### **Captive Broodstock Chinook (F<sub>1</sub>'s) Lostine River Stock BY98**

Number of smolts produced:	34,987
Weight of smolts produced (lbs.):	1,668.40
Percent mortality to stocking:	1.5%
Average number/pound of smolts produced:	20.97
Conversion rate:	1.19

*These captive broodstock progeny were reared at Lookingglass Fish Hatchery and transferred to Lostine River Acclimation Pond from 2/29 - 3/01/2000. They were released from the acclimation site on 4/18/2000. Lostine River Acclimation Pond is operated by the Nez Perce Tribe. Facility operations are BPA funded. Fish feed is provided by the LSRCP.*

## Food Fed and Weight Gain

### **Chinook Rapid River Stock BY99**

Lookingglass Fish Hatchery

Total pounds of food fed	243.68
Conversion rate	1.10
Total weight gain (lbs.) - all sizes produced	220.95

## Food Fed and Weight Gain

### **Chinook Imnaha Stock BY98**

Lookingglass Fish Hatchery	
Total pounds of food fed	11,089.32
Conversion rate	1.20
Total weight gain (lbs.) - all sizes produced	9,247.66

### **Chinook Imnaha Stock BY99**

Lookingglass Fish Hatchery	
Total pounds of food fed	5,818.51
Conversion rate	1.00
Total weight gain (lbs.) - all sizes produced	5,807.45

### **Captive Broodstock Chinook (F<sub>1</sub>'s) Upper Grande Ronde River Stock BY98**

Lookingglass Fish Hatchery	
Total pounds of food fed	89.03
Conversion rate	1.26
Total weight gain (lbs.) - all sizes produced	70.57

### **Captive Broodstock Chinook (F<sub>1</sub>'s) Upper Grande Ronde River Stock BY99**

Lookingglass Fish Hatchery	
Total pounds of food fed	152.50
Conversion rate	1.07
Total weight gain (lbs.) - all sizes produced	142.37

## Food Fed and Weight Gain

### **Captive Broodstock Chinook (F<sub>1</sub>'s) Catherine Creek River Stock BY98**

Lookingglass Fish Hatchery	
Total pounds of food fed	1,919.49
Conversion rate	1.23
Total weight gain (lbs.) - all sizes produced	1,555.26

### **Captive Broodstock Chinook (F<sub>1</sub>'s) Catherine Creek Stock BY99**

Lookingglass Fish Hatchery	
Total pounds of food fed	6,360.84
Conversion rate	1.13
Total weight gain (lbs.) - all sizes produced	5,630.24

### **Captive Broodstock Chinook (F<sub>1</sub>'s) Lostine River Stock BY98**

Lookingglass Fish Hatchery	
Total pounds of food fed	1,807.84
Conversion rate	1.19
Total weight gain (lbs.) - all sizes produced	1,523.92

### **Captive Broodstock Chinook (F<sub>1</sub>'s) Lostine River Stock BY99**

Lookingglass Fish Hatchery	
Total pounds of food fed	5,686.78
Conversion rate	1.14
Total weight gain (lbs.) - all sizes produced	4,983.69

### FY00 Stocking

Total number of distribution trips:	7
Number of fry stocked:	0
Weight of fry stocked:	0 lbs
Number of fingerlings stocked:	24,201
Weight of fingerlings stocked:	338.95 lbs
Number of smolts stocked:	254,191
Weight of smolts stocked:	12,831.38 lbs
Number of legal trout stocked:	0
Weight of legal trout stocked:	0 lbs
Date, location, number and weight at each stocking:	See Attached

**Stocking Records for Lookingglass Fish Hatchery and  
Associated Satellite Facilities  
October 1, 1999 through September 30, 2000**

<b>FACILITY</b>	<b>SPECIES</b>	<b>LOT</b>	<b>DATE</b>	<b>WATERBODY</b>	<b>NO/ LB</b>	<b>POUNDS LOADED</b>	<b>NUMBER LOADED</b>	<b>MORTS</b>	<b>POUNDS STOCKED</b>	<b>NUMBER STOCKED</b>
CATHERINE CR ACC PD	SPRING CHINOOK	201F98	4/18/2000	CATHERINE AT ACC PD	22.46	1691.00	37,980	0	1691.00	37,980
GRANDE RONDE RIVER ACC PD	SPRING CHINOOK	080F98	3/14/2000	GR RONDE AT ACC POND	19.45	77.53	1,508	0	77.53	1,508
IMNAHA ACC PD	SPRING CHINOOK	029 98	4/18/2000	IMNAHA R	19.13	9394.45	179,716	0	9394.45	179,716
LOSTINE RIVER ACC PD	SPRING CHINOOK	200F98	4/18/2000	LOSTINE R	20.97	1668.40	34,987	0	1668.40	34,987
LOOKINGGLASS HATCHERY	SPRING CHINOOK	085 99	6/29/2000	LOOKINGGLASS CR	71.40	338.95	24,201	0	338.95	24,201