

## 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 and smolt acclimation. During the summer months, Imnaha Weir is installed across the Imnaha River at this site.

### OBJECTIVES

#### Mitigation Goals

Lookingglass Fish Hatchery is part of the Lower Snake River Compensation Program (LSRCP) and has been in operation since 1982. A satellite facility on the Imnaha River is used for smolt acclimation and adult collection. Mitigation goals are variable according to adult returns and interagency agreements. The anticipated 2001 release of Imnaha stock (2999) smolts from Imnaha Satellite Facility was 119,900 fish. The actual release was 123,014 Imnaha (2999) smolts. The Lookingglass Fish Hatchery allocation of Rapid River (8599) stock smolts was 30,000; a total of 24,201 Rapid River (8599) smolts were actually released in 2001. 29

### CHINOOK

#### Adult Returns

The Imnaha Weir was installed on May 24, 2001, and chinook collection continued through September 19, 2001. A total of 3,501 Imnaha (2901) chinook, 1,297 males, 1,526 females and 678 jacks, returned to Imnaha Satellite Facility in 2001. Of the 678 jacks collected, 480 were released to spawn naturally by special agreement with the National Marine Fisheries Service, and 54 were given to the Nez Perce Tribe. A total of 342 chinook, consisting of 92 males, 109 females and 141 jacks, was collected for broodstock and transported to Lookingglass Fish Hatchery. All surviving fish were

spawned and sperm was collected from wild males and jacks for cryopreservation. Fish collected but not kept for broodstock were opercle punched and released to spawn naturally. In 2001, 1,112 males, 1,273 females and 254 jacks were passed above the weir into the Imnaha River. Forty-six males, 72 females and 136 jacks were outplanted to Lick Creek; and 44 males, 68 females and 90 jacks were outplanted to Big Sheep Creek. A total of 632 Rapid River (8501) chinook, consisting of 309 males, 318 females, two jacks and three subjacks, returned to Lookingglass Fish Hatchery in 2001. Five hundred twenty-eight Rapid River (8501) chinook collected at Lookingglass Fish Hatchery were returned to Lookingglass Creek. The remaining 55 males and 46 females were sacrificed for potential use in a nutrient enrichment study, and 3 subjacks were sacrificed for research.

### Egg Production

*Lack of chilled well water at Lookingglass Fish Hatchery during FY 2001 prevented egg incubation on site. Green eggs and sperm were shipped to either Irrigon or Oxbow fish hatcheries. All mixing of eggs and sperm took place at these facilities.*

During the report period a total of 98 Imnaha stock (2901) females were spawned for an estimated yield of 459,276 green eggs. Irrigon Fish Hatchery received an estimated 189,542 green eggs and Oxbow Fish Hatchery received an estimated 269,734 green eggs.

*The following are conventional chinook broodstock spawned in 2001:*

Eight upper Grande Ronde stock (80W01) females were spawned for an estimated yield of 35,360 green eggs. Irrigon Fish Hatchery received an estimated 4,420 green eggs and Oxbow Fish Hatchery received an estimated 30,940 green eggs.

A total of 36 Lostine stock (200W01) females were spawned for an estimated yield of 160,680 green eggs. Irrigon Fish Hatchery received an estimated 95,954 green eggs and Oxbow Fish Hatchery received an estimated 65,726 green eggs.

Twelve Catherine Creek stock (201W01) females were spawned for an estimated yield of 43,813 green eggs. Irrigon Fish Hatchery received an estimated 30,313 green eggs and Oxbow Fish Hatchery received an estimated 13,500 green eggs.

### Conventional Chinook Program

Upper Grande Ronde collection facility: ten female and eight male upper Grande Ronde River (80W00) adults were transported to Lookingglass Fish Hatchery for use as broodstock.

Catherine Creek collection facility: 15 females, 10 males and one jack of Catherine Creek origin were transported to Lookingglass Fish Hatchery for use as broodstock.

Lostine River collection facility: 42 females, 38 males, and one jack of Lostine River origin were transported to Lookingglass Fish Hatchery for use as broodstock.

### Captive Brood Program

A separate annual report covers the operation of this program.

### Miscellaneous

PIT-tagging was completed on the BY 1999 Imnaha, Lostine, Catherine Creek and upper Grande Ronde River stocks of chinook during October 2000.

## **CONSTRUCTION AND MAINTENANCE**

### Maintenance projects accomplished by the hatchery crew

- Built three new storage lockers.
- Repaired the air release valve in tempering well #2 building.
- Updated the safety equipment in all vehicles.
- Repaired holes in dip nets.
- Fixed snow chains for trucks.
- Cleaned rocks out of intake.
- Repaired handle on electric jack.
- Repaired the Imnaha jump panels.
- Constructed a slide gate for the smolt release channel by the fish ladder entrance.
- Inventoried, organized, and color-coded the intake building tools.
- Painted the crew room.
- Stripped and waxed hatchery floors.
- Checked and serviced all pressure washers.
- Serviced and inspected the JD 310B backhoe.
- Completed maintenance on the Cushman feed cart.
- Replaced a hydraulic hose on the backhoe.
- Pressure washed and fire-hosed hatchery grounds to remove gravel and debris.
- Inspected and serviced all power washers.
- Serviced snow chains.
- Performed annual maintenance on the automatic feeders.
- Replaced screen door on Imnaha Facility residence.
- Repaired roof leak and repaired trailer tailgate on the Imnaha van.
- Installed shorter standpipes in the endemic circulars to regulate and stabilize flows.
- Repaired fish weir barrier
- Installed boards on three endemic circulars to prevent jump-outs.
- Designed and mounted a permanent sprinkler system for the adult channel.
- Repainted the porch, metal doors and weir hoist support at Imnaha Facility.
- Repainted the Kohler generator.
- Built and mounted a permanent box for the electric fencer.
- Repaired and replaced electrical wires for the fencer.

- Installed metal ladders in both sides of the intake vault at Imnaha.
- Cleaned and UV protected the visitors' signs.
- Conducted fire plan activities to minimize wild fires in areas adjacent to buildings.
- Repaired and rebuilt pond screens at Imnaha Facility.
- Repaired spawn building doors at Imnaha Facility.
- Spot painted the buildings at Imnaha Facility.
- Fabricated two new picnic tables.
- Replaced the dryer vent in Imnaha Facility residence.

Maintenance projects accomplished by contractors

**Rogers Asphalt** - Layed asphalt around valves that were installed last summer.

**Barnes Diesel** - Serviced backup generators. Serviced an electrical problem on the backhoe and repaired the blade gearbox on the road grader.

**Ray Dusenberry's Satellite** - Replaced older C-band satellite systems at the hatchery with digital mini dishes (parts for the old systems were costly and scarce, and necessitated replacement).

**The Door Guy** - Replaced damaged garage doors on three hatchery houses.

**GCT Construction** - Replaced damaged concrete steps leading from the hatchery to the raceways.

**S and G MACHINERY** - Repaired and serviced backhoe.

**Becker Construction** - Cleaned out intake.

**Elkhorn Electric, Inc.** - Repaired fluorescent light over chillers. Installed motion lights in hatchery residences. Repaired grizzly hoist motor in the intake. Troubleshoot breaker tripping problem in hatchery residences.

**Lin-Tec Machine** - Replaced bearings in bench grinder. Wired in the tank on the liberation truck. Repaired automatic raceway feeders (were not throwing feed properly). Repaired rear seal and leaking valve gate on the adult transportation tank. Repaired an air compressor in the spawning room.

**Elkhorn Electric, Inc.** - Repaired switches on #1 and #2 grizzlies at the intake. Repaired two infra-red heaters for the traveling water screens. Repaired fish attraction lights at the intake. Replaced the clock motor for the outside facility lights. Troubleshoot the battery charger on the electric pallet jack. Replaced electrical cords on the drill press and belt sander. Replaced a ballast in a light in the equipment building. Finished installing the RV outlet for the Imnaha Van Trailer.

**Joey Vanleuven** - Installed shelves in the hatchery and cabinets in the residences.

**J. B. Bane Electric** - Repaired the Onan generator. Repaired and serviced the Kohler and serviced the Onan generators at the Imnaha Facility.

**Miller Plumbing & Supply** - Repaired leaking valves at the Imnaha Facility.

**MITrac Construction, Inc.** – Cleared debris buildup in front of the return channels and intake. Completed fill and removal work (cleared rock and gravel from the mouth of the Lookingglass Creek intake building).

**McGowan Construction, Richland, WA** - Serviced, repaired and balanced chillers. Sorted out electrical problems and compliance issues addressed with ancillary equipment.

**Racom** - Installed radiophone at Imnaha Facility.

**Wilde Electric** - Performed service on the RTU unit for tempering well #2.

**Crane Pro Services** - Completed crane and hoist inspections at both Lookingglass Fish Hatchery and Imnaha Facility.

**Harlan Menton, Locksmith** - Replaced the locks on three doors at Imnaha Facility.

**MAJOR EXPENSES**

Repair & maintenance of buildings and grounds	\$ 46,902.00
Fish food	46,552.00
Repairs and maintenance to equipment	34,360.00
Temporary services	27,054.00
Supplies	20,400.00
Communication services	16,651.00
Utilities	14,800.00
Chemicals	4,206.00
Office supplies	<u>2,495.17</u>
 Total:	 \$ 213,420.00

### Adult Returns to Hatchery

#### Chinook Rapid River Stock BY01

##### Lookingglass Fish Hatchery

Date of first return:	May 9, 2001
Date of last return:	September 10, 2001
Number of females returning:	318
Number of males returning:	314
Date of peak returns:	May 23, 2001
Number of females released to spawn naturally:	271*
Number of males released to spawn naturally:	253*
Mortality of all adult returns:	1 female; 3 males

*\*Fifty-five males and 46 females were sacrificed for potential use in a nutrient enrichment study and 3 subjacks were sacrificed for research. After receiving disease clearance, nutrient enrichment carcasses will be placed along streams, flagged, and examined for utilization several weeks after placement.*

*A sport fishery was held on Lookingglass Creek May 26 - July 1, 2001. Observed angler harvest was 428 AdLV clipped chinook (unexpanded). These fish were taken within 2 1/2 miles of the hatchery trap. A tribal fishery was also held in Lookingglass Creek above the hatchery; angler harvest figures are not available.*

### Adults Trapped Off Hatchery and Transported to Hatchery

#### Chinook Imnaha Stock BY01

##### Lookingglass Fish Hatchery

Where trapped:	Imnaha Satellite Facility
Date weir installed:	May 24, 2000
Dates trapped:	June 5 - Sept 19, 2001
Number of females returning:	1,526
Number of males returning:	1,975
Date of peak returns:	July 6, 2001
Number of females released to spawn naturally:	1,413
Number of males released to spawn naturally:	1,682
Mortality of all adult returns:	24 females, 64 males

*A total of 678 males were jacks. Of these, 480 jacks were released to spawn naturally by special agreement with National Marine Fisheries Service. In addition, 54 jacks were given to the Nez Perce Tribe. Disposition of fish released to spawn naturally: 1,112 males, 1,273 females and 254 jacks were released in the Imnaha River; 46 males, 72 females and 136 jacks went to Lick Creek; 44 males, 68 females and 90 jacks went to Big Sheep Creek.*

#### Conventional Chinook Program Grande Ronde River Stock BY01

##### Lookingglass Fish Hatchery

Where trapped:	Upper Grande Ronde Weir
Dates trapped:	March 31 - July 30, 2001*
Number of adults trapped:	17 females, 33 males
Date of peak returns:	June 1, 2001
Number of adults released to spawn naturally:	7 females, 22 males
Number of adults transported to hatchery:	10 females, 11 males
Mortality of all adults trapped:	2 females, 3 males

*\*The weir was removed on 7/13/2001. The last six fish were seined from the upper Grande Ronde River on 7/30/2001 in the vicinity of the weir.*

**Conventional Chinook Program  
Catherine Creek Stock BY01**

Lookingglass Fish Hatchery

Where trapped:	Catherine Creek Weir
Dates trapped:	March 20 - Sept 4, 2001
Number of adults trapped:	42 females, 69 males
Number of adults released to spawn naturally:	27 females, 31 males
Number of adults transported to hatchery:	15 females, 9 males
Mortality of all adults trapped:	0 females, 1 male

*Thirty-seven of the 69 males collected were jacks. Of these, 28 hatchery jacks were dispatched at the trap site and donated to the Union County Salvation Army food share program.*

**Conventional Chinook Program  
Lostine River Stock BY01**

Lookingglass Fish Hatchery

Where trapped:	Lostine River Weir
Dates trapped:	April 27 - October 1, 2001
Number of adults trapped:	177 females, 267 males
Number of adults released to spawn naturally:	141 females, 215 males
Number of adults transported to hatchery:	42 females, 39 males
Mortality of all adults trapped:	0 females, 1 male

*Of the chinook transported to Lookingglass Fish Hatchery, four adipose, right ventral-clipped strays (two females and two males) were killed and sampled for coded-wire tag recovery. Five adipose-clipped jacks, progeny of captive brood, were killed and sampled for coded-wire tags.*

### Spawning Record

#### Chinook Imnaha Stock BY01

Lookingglass Fish Hatchery

Date Spawned	Number of Eggs Taken	Females Spawned	Males Spawned
8/14/01	4,341	1	1
8/21/01	27,600	6	7
8/28/01	153,345	33	52
9/07/01	255,343	54	92
9/11/01	14,391	3	17
9/18/01	4,256	1	2

*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:	98
Total number of males spawned:	165 (six were used twice)
Total number of green eggs:	459,276
Total number of eyed eggs:	278,849
Number of eggs retained for rearing:	0
Number of eggs shipped:	275,257*
Date of last spawning:	9/18/01

*\*Due to lack of chilled well water at Lookingglass Fish Hatchery, Imnaha stock gametes were shipped to either Irrigon or Oxbow fish hatchery. Mixing of eggs and sperm took place at these facilities. Eggs are incubating as follows:*

<i>Green eggs shipped to Oxbow Fish Hatchery:</i>	<i>269,734</i>
<i>Green eggs shipped to Irrigon Fish Hatchery:</i>	<i>189,542</i>

*All eyed eggs will be incubated and reared at Oxbow Fish Hatchery.*

## Spawning Record

### Conventional Chinook Program Upper Grande Ronde Stock BY01

Lookingglass Fish Hatchery

Date Spawned	Number of Eggs Taken	Females Spawned	Males Spawned
8/30/01	4,420	1	2
9/05/01	13,260	3	3
9/11/01	17,680	4	4

*Upper Grande Ronde stock chinook were spawned by matrices, depending on available mature broodstock.*

Total number of females spawned:	8
Total number of males spawned:	8 (one was used twice)
Total number of green eggs:	35,360
Total number of eyed eggs:	25,339
Number of eggs retained for rearing:	0
Number of eggs shipped:	35,360
Date of last spawning:	9/11/01

*Due to lack of chilled well water at Lookingglass Fish Hatchery, upper Grande Ronde stock gametes were shipped to either Irrigon or Oxbow fish hatchery. Mixing of eggs and sperm took place at these facilities. Eggs are incubating as follows:*

<i>Green eggs shipped to Oxbow Fish Hatchery:</i>	<i>30,940</i>
<i>Green eggs shipped to Irrigon Fish Hatchery:</i>	<i>4,420</i>

*All eyed eggs will be incubated and reared at Irrigon Fish Hatchery.*

**Conventional Chinook Program  
Lostine Stock BY01**

Lookingglass Fish Hatchery

Date Spawned	Number of Eggs Taken	Females Spawned	Males Spawned
8/16/01	3,816	1	2
8/23/01	14,904	4	4
8/30/01	66,320	13	12
9/05/01	52,411	13	12
9/11/01	13,315	3	2
9/18/01	9,914	2	3

*Lostine stock chinook were spawned by matrices, depending on available mature broodstock. Female #7 was partially spawned out.*

Total number of females spawned:	36
Total number of males spawned:	33 <i>(two were used twice)</i>
Total number of green eggs:	160,680
Total number of eyed eggs:	97,493
Number of eggs retained for rearing:	0
Number of eggs shipped:	160,680*
Date of last spawning:	9/18/01

*Due to lack of chilled well water at Lookingglass Fish Hatchery, Lostine stock gametes were shipped to either Irrigon or Oxbow fish hatchery. Mixing of eggs and sperm took place at these facilities. Eggs are incubating as follows:*

*Green eggs shipped to Oxbow Fish Hatchery: 65,726*

*Green eggs shipped to Irrigon Fish Hatchery: 94,954*

*All eyed eggs will be incubated and reared at Oxbow Fish Hatchery.*

**Conventional Chinook Program  
Catherine Creek Stock BY01**

Lookingglass Fish Hatchery

Date Spawned	Number of Eggs Taken	Females Spawned	Males Spawned
8/23/01	10,112	3	3
8/30/01	20,201	6	3
9/05/01	13,500	3	7

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

Total number of females spawned: 12  
 Total number of males spawned: 7 (six were used more than once)  
 Total number of green eggs: 43,813  
 Total number of eyed eggs: 26,426  
 Number of eggs retained for rearing: 0  
 Number of eggs shipped: 43,813  
 Date of last spawning: 9/05/01

*Due to lack of chilled well water at Lookingglass Fish Hatchery, Catherine Creek stock gametes were shipped to either Irrigon or Oxbow fish hatchery. Mixing of eggs and sperm took place at these facilities. Eggs are incubating as follows:*

*Green eggs shipped to Oxbow Fish Hatchery: 13,500  
 Green eggs shipped to Irrigon Fish Hatchery: 30,313  
 All eyed eggs will be incubated and reared at Irrigon Fish Hatchery.*

### Rearing to Parr Stage Only

**Chinook  
Catherine Creek Stock BY00**

Number of parr produced:	51,864
Weight of parr produced (lbs):	2,116.90
Percent mortality to stocking:	3.65%
Average number/pound of parr produced:	24.50
Conversion rate:	1.05

*These captive broodstock parr were released early to reduce densities at Lookingglass Fish Hatchery. Adults were spawned at Bonneville Fish Hatchery. Eyed eggs were incubated at Irrigon Fish Hatchery and parr were transferred to Lookingglass Fish Hatchery March, 2001. Parr were released into Lookingglass Creek on 9/24/2001.*

**Chinook  
Imnaha Stock BY99**

Number of smolts produced:	123,014
Weight of smolts produced (lbs.):	7,994.20
Percent mortality to stocking:	1.31%
Average number/pound of smolts produced:	16.04
Conversion rate:	1.24

*Smolts were transferred from Lookingglass Fish Hatchery to Imnaha Satellite Facility for acclimation 2/27-2/28/2001. Fish were released from Imnaha Satellite Facility on 4/16/2001.*

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

Number of smolts produced:	2,560
Weight of smolts produced (lbs.):	184.66
Percent mortality to stocking:	5.19%
Average number/pound of smolts produced:	13.88
Conversion rate:	1.16

*These captive broodstock progeny were reared at Lookingglass Fish Hatchery and transferred to Upper Grande Ronde River Acclimation Pond on 2/27/2001. They were released from the acclimation pond on 3/26/2001. 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 BY99**

Number of smolts produced:	136,833
Weight of smolts produced (lbs.):	6,956.43
Percent mortality to stocking:	10.86%
Average number/pound of smolts produced:	19.67
Conversion rate:	1.34

*These captive broodstock progeny were reared at Lookingglass Fish Hatchery and transferred to Catherine Creek Acclimation Pond 3/8-3/9/2001. They were released from the acclimation pond on 4/16/2001. 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:	133,883
Weight of smolts produced (lbs.):	6,830.77
Percent mortality to stocking:	9.25%
Average number/pound of smolts produced:	19.60
Conversion rate:	1.19

*These captive broodstock progeny were reared at Lookingglass Fish Hatchery and transferred to Lostine River Acclimation Pond on 2/26/2001. They were released from the acclimation site on 3/29/2001. 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  
Imnaha Stock BY99**

Lookingglass Fish Hatchery	
Total pounds of food fed	7,702.24
Conversion rate	1.24

Total weight gain (lbs.) - all sizes produced	6,266.31
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**Food Fed and Weight Gain**

**Chinook  
Imnaha Stock BY00**

Lookingglass Fish Hatchery	
Total pounds of food fed	17,943.75
Conversion rate	1.06
Total weight gain (lbs.) - all sizes produced	16,859.54

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

Lookingglass Fish Hatchery	
Total pounds of food fed	201.36
Conversion rate	1.16
Total weight gain (lbs.) - all sizes produced	173.89

**Captive Broodstock Chinook (F<sub>1</sub>'s)  
Upper Grande Ronde River Stock BY00**

Lookingglass Fish Hatchery	
Total pounds of food fed	13,055.80
Conversion rate	1.08
Total weight gain (lbs.) - all sizes produced	12,047.61

**Captive Broodstock Chinook (F<sub>1</sub>'s)  
Upper Grande Ronde River Stock BY00**

Lookingglass Fish Hatchery	
Total pounds of food fed	13,055.80
Conversion rate	1.08
Total weight gain (lbs.) - all sizes produced	12,047.61

### Food Fed and Weight Gain

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

Lookingglass Fish Hatchery	
Total pounds of food fed	8,703.55
Conversion rate	1.34
Total weight gain (lbs.) - all sizes produced	6,495.92

**Captive Broodstock Chinook (F<sub>1</sub>'s)  
Catherine Creek Stock BY00**

Lookingglass Fish Hatchery	
Total pounds of food fed	10,141.50
Conversion rate	1.05
Total weight gain (lbs.) - all sizes produced	9,641.04

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

Lookingglass Fish Hatchery	
Total pounds of food fed	7,611.26
Conversion rate	0.59
Total weight gain (lbs.) - all sizes produced	12,980.32

**Captive Broodstock Chinook (F<sub>1</sub>'s)  
Lostine River Stock BY00**

Lookingglass Fish Hatchery	
Total pounds of food fed	4,150.65
Conversion rate	1.26
Total weight gain (lbs.) - all sizes produced	3,289.32

**Food Fed and Weight Gain**

**Conventional Broodstock Chinook  
Lostine River Stock BY00**

Lookingglass Fish Hatchery	
Total pounds of food fed	1,611.65
Conversion rate	1.09
Total weight gain (lbs.) - all sizes produced	1,484.64

**FY01 Stocking**

Total number of distribution trips:	7
Number of fry stocked:	0
Weight of fry stocked:	0 lbs
Number of parr stocked:	51,864
Weight of parr stocked:	2,116.90 lbs
Number of smolts stocked:	395,490
Weight of smolts stocked:	21,640.86 lbs
Number of legal trout stocked:	0
Weight of legal trout stocked:	0 lbs
Date, location, number and weight at each stocking:	See Attached