

*Ed Crateau*

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CRATEAU	
HERRIG	
KRAKKER	
NEUNABER	
RECTOR	

**LOOKINGGLASS HATCHERY**  
**OPERATION AND MAINTENANCE**  
**ANNUAL REPORT**

**October 1, 1994 - September 30, 1995**

*FY 1995*

by: **Debra L. Eddy**  
**Fish Propagation Staff Assistant**

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## INTRODUCTION

### Location

Lookingglass 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 acclimation. During the summer months, Gumboot Weir is installed across the Imnaha River at this site.

Lower Granite Dam is located on the Snake River, 107.5 miles upstream from the mouth.

## OBJECTIVES

### Mitigation Goals

Lookingglass Fish Hatchery is part of the Lower Snake River Compensation Plan Program and has been in operation since 1982. A satellite station on the Imnaha River (Gumboot Weir) is used for smolt acclimation and collection and holding of adults. Mitigation goals are variable according to adult returns and interagency agreements, but generally average about 1.4 million spring chinook smolts annually. Carson River stock has been used in past years when Rapid River stock chinook were below production levels; this occurred most recently in broodyear 1989. No Carson River stock adults returned to Lookingglass in 1995, and none are expected to return in the future.

## SPRING CHINOOK SALMON

### Lower Granite Dam

The first returning Rapid River chinook of 1995 was captured at Lower Granite Dam on April 27. Trapping of Rapid River stock chinook continued through August 9, 1995, for a total of 105 days. During this period 139 fish - 68 males, 33 females, 45 jacks and 6 subjacks - were trapped and transported to Lookingglass Hatchery. All chinook trapped were marked with a circle-shaped opercle punch before transport. These fish were mixed with swim-in returns to Lookingglass Hatchery at spawning.

101  
59

### Lookingglass Hatchery

The Mitsubishi weir at Lookingglass Hatchery was installed on June 2, 1995, and remained in place until September 7, 1995. During the 98 days of operation, 72 Rapid River stock Chinook returned to the hatchery. Thirty-six males, 23 females and 13 jacks were collected and marked with a diamond-shaped opercle punch to indicate site of return. These swim-ins were mixed with fish transported from Lower Granite Dam at spawning. No adults were released above the hatchery into Lookingglass Creek. No adults were transferred, outplanted or given away to other programs and all surviving adults were spawned. A total of 52 females produced 209,359 eggs. After eye-up and shock loss 198,924 eggs remained, with an eye-up of 95.02%. Of these, 35,000 have been set aside for early outplanting per agreement with the Confederated Tribes of the Umatilla Indian Reservation.

### Imnaha Facility (Gumboot Weir)

Gumboot Weir was installed on July 26, 1995, and chinook collection continued through September 7, 1995. Broodyear 1995 returns of Imnaha River spring chinook are the lowest on record; high river conditions prevented placement of the weir until late July, contributing to the low number collected. A total of 68 spring chinook, 32 adults and 36 jacks, returned during 43 days of operation. Of these, 17 adults and 21 jacks were unmarked, and 15 adults and 15 jacks were marked. No adults or jacks were released into the Imnaha River above Gumboot Weir. All fish collected were transferred to Lookingglass Hatchery. No adults were transferred, outplanted or given away to other programs, and all surviving chinook were spawned. Sperm samples from 41 males and jacks were successfully cryopreserved. Fifteen females were spawned, producing 68,121 eggs. After eye-up and shock loss 52,850 eggs remained, for an eye-up of 77.29%.

### Captive Brood Program

The Captive Brood Program is new to Lookingglass Hatchery in 1995. Juvenile spring chinook from the Lostine River, Catherine Creek, and Upper Grande Ronde River systems were collected by seine and transported to Lookingglass Hatchery. The goal of the program is to rear these fish to spawning adults and release their progeny as smolts. A total of 500 Lostine River fish was collected but these fish sustained an early mortality of 56. Troughs were modified to prevent further mortalities, leaving 444 survivors. Four hundred and ninety-eight Catherine Creek fish were collected and 4 succumbed, leaving 494 on hand. The Upper Grande Ronde fish proved most difficult to locate, with a total of 110 collected and 108 surviving.

Compliance with permit requirements has been undertaken. Examples of operational modifications to the conventional program are:

- Isolation of entire captive brood troughs in the hatch house to minimize human contact.
- Lighting controlled by diurnal schedule that matches the natal riverbody.
- Feeding to occur during the dusk-to-dawn period.
- Water temperature to follow a generalized model of natal riverbody.
- Plans have been drawn up for an ozone treatment plant to supply pathogen-free Lookingglass Creek water.
- Additional facility modifications will be necessary to accommodate the Captive Brood Program.

### **CONSTRUCTION AND MAINTENANCE**

- Replaced front and back porches, as well as walkways, at hatchery residences.
- Added handicapped parking space and handicapped access ramp with hand rails for A.D.A. compliance.
- Remodeled existing restrooms to comply with A.D.A. specifications.
- Installed Variable Frequency Drive on the incubation well system.
- Installed computerized automated building control system to control/monitor all critical facility systems.

- Modified cyclone fencing on adult holding ponds to prevent jump-outs. Installed cyclone fencing around the Innaha facility.
- Replaced front wheel spindle on backhoe.
- Obtained surplus portable generator for use as back-up unit at Innaha facility. Converted generator to propane fuel.
- Overhauled Innaha stationary generator.
- Installed Norstar telephone system.
- Replaced fan assembly in the walk-in cool room.
- Changed refrigerant in the walk-in freezer system.
- Installed emergency eye-wash station and shower.
- Replaced two space heaters in the incubation room.
- Replaced well water chiller system.
- Corrected major electrical deficiencies.
- Repaired dumptruck after removing from ditch.
- Repaired blown head gasket on backhoe.
- Completed overhaul of electric motor of well #2; scrubbed and flushed well column; and replaced back-up diesel engine.
- Installed new hatchery entrance sign.

**IMNAHA STOCK CHINOOK ADULT RETURNS TO LOOKINGGLASS  
SATELLITE FACILITIES, 1995**

		Imnaha (Gumboot Weir)
Date of first return		August 2
Date of last return		August 30
Number of females returning		16
Number of males returning		14
Number of jacks returning		38
Date of peak returns		August 23
Number released to spawn naturally	Males Females	0 0
Mortality		14

**RAPID RIVER STOCK CHINOOK ADULT  
SWIM-INS TO LOOKINGGLASS HATCHERY, 1995**

Date of first return		June 2
Date of last return		September 7
Number of females returning		23
Number of males returning		36
Number of jacks returning		13
Date of peak returns		June 27
Number released to spawn naturally	Males Females	0 0
Mortality		7

**RAPID RIVER STOCK CHINOOK ADULTS TRAPPED OFF HATCHERY  
AND TRANSPORTED TO LOOKINGGLASS HATCHERY, 1995**

		Lower Granite Dam Trap
Date of first return		April 27
Date of last return		August 9
Number of females trapped		33
Number of males trapped		68
Number of jacks trapped		38
Number released to spawn naturally	Males Females	0 0
Mortality		9

## 1985 CAPTIVE BROOD PROGRAM

SPRING CHINOOK CAPTURED FROM LOSTINE RIVER AND  
TRANSPORTED TO LOOKINGGLASS HATCHERY

Dates & numbers captured	August 14	206
	August 15	93
	August 16	180
	August 17	20
Total handling mortality		1
No. transported to hatchery		499
Mortality at hatchery		56
Captive brood on hand		444

SPRING CHINOOK CAPTURED FROM CATHERINE CREEK AND  
TRANSPORTED TO LOOKINGGLASS HATCHERY

Dates & numbers captured	August 28	181
	August 29	146
	August 30	78
	August 31	93
Total handling mortality		0
No. transported to hatchery		498
Mortality at hatchery		4
Captive brood on hand		494

SPRING CHINOOK CAPTURED FROM UPPER GRANDE RONDE RIVER AND  
TRANSPORTED TO LOOKINGGLASS HATCHERY

Dates & numbers captured	September 18	21
	September 19	17
	September 21	61
	September 22	11
Total handling mortality		0
No. transported to hatchery		110
Mortality at hatchery		3
Captive brood on hand		108

**IMNAHA STOCK SPRING CHINOOK SPAWNING RECORD, BROODYEAR 1994**

Spawn date	Green eggs	Eyed eggs	Ponding date	Number ponded	Eggs shipped
8/24/94	37,254	29,250	1/12/95	29,116	--
8/31/95	21,361	20,125	1/12/95	19,996	--
9/08/94	50,129	46,800	1/12/95	46,622	--
9/09/94	3,050	0	--	--	--

**RAPID RIVER STOCK CHINOOK SPAWNING RECORD, BROODYEAR 1994**

Spawn date	Green eggs	Eyed eggs	Ponding date	Number ponded	Eggs shipped
8/24/94	9,840	7,250	1/13/95	6,614	--
8/31/94	13,937	12,011	1/13/95	11,973	--
9/08/94	39,693	38,500	1/13/95	38,267	--
9/14/94	107,363	94,350	1/13/95	93,835	--
9/21/94	1,125	1,065	1/16/95	1,017	--

**IMNAHA STOCK SPRING CHINOOK SPAWNING RECORD, BROODYEAR 1995**

Spawn date	Green eggs	Number females	Number males*†	Eyed eggs	Eggs ponded	Eggs shipped
8/17/95	4,585	1	2	0	--	--
8/24/95	18,508	4	5	16,150	--	--
8/31/95	40,159	9	29	31,750	--	--
9/07/95	4,869	1	39	4,750	--	--

\*34 males were live spawned and recycled.

†41 spawned males had sperm successfully cryopreserved.

**RAPID RIVER STOCK CHINOOK SPAWNING RECORD, BROODYEAR 1995**

Spawn date	Green eggs	Number females	Number males	Eyed eggs	Eggs ponded	Eggs shipped
8/24/95	7,794	2	4	7,673	--	--
8/31/95	84,674	20	60	80,917	--	--
9/07/95	88,047	22	44	82,834	--	--
9/14/95	22,237	6	21	21,250	--	--
9/21/95	6,607	2	6	6,250	--	--

**LOOKINGGLASS SPRING CHINOOK  
REARING TO FRY STAGE ONLY**

	Imnaha Stock	Rapid River Stock
Hatched from eyed eggs	N/A	N/A
Percent hatched - eyed to fry	N/A	N/A
Percent mortality to stocking	N/A	N/A
Total number of fry stocked	N/A	N/A
Total weight of fry stocked	N/A	N/A
Average number/lb of fry	N/A	N/A
Conversion rate	N/A	N/A

**LOOKINGGLASS SPRING CHINOOK  
REARING TO FINGERLING STAGE ONLY**

	Imnaha Stock	Rapid River Stock
Fingerlings produced	556,420*	658,230
Weight of fingerlings in lbs	27,055	30,078
Average no/lb of fingerlings	20.57	21.90
Percent mortality to stocking	7.70	2.66
Conversion rate	2.15	1.68

\*Includes 52,110 fingerlings (2,481 lbs) destroyed due to disease.

**LOOKINGGLASS SPRING CHINOOK  
REARING TO SMOLT STAGE ONLY**

	Imnaha Stock	Rapid River Stock
Smolts produced	89,049	N/A
Weight of smolts in lbs	5,928	N/A
Average no/lb of smolts	15.00	N/A
Percent mortality to stocking	7.70	N/A
Conversion rate	2.01	1.68

**LOOKINGGLASS HATCHERY  
DIRECT STREAM LIBERATIONS**

	Imnaha Stock Chinook	Rapid River Stock Chinook
No. of distribution trips	1	0
Number of fry stocked	0	0
Weight of fry stocked	0	0
Number of fingerlings stocked	77,269	658,230
Weight of fingerlings stocked	3,611	30,079
Number of smolts stocked	40,218	0
Weight of smolts stocked	2,871	0

\*348,213 fingerlings were volitionally released between 9 PM 4/05/95 and 4 AM 4/06/95; 309,017 were volitionally released at approx. 8:30 AM on 4/06/95; and 1,000 were volitionally released for a screw trap efficiency study (500 each at 3 PM on 4/10/95 and 3:30 PM on 4/16/95)

**LOOKINGGLASS HATCHERY  
FISH ACCLIMATED AT IMNAHA POND**

	Imnaha Stock Chinook	Rapid River Stock Chinook
Number of distribution trips	8	0
Number of fry acclimated	0	0
Weight of fry acclimated	0	0
Number of fingerlings acclimated	426,041	0
Weight of fingerlings acclimated	20,920	0
Number of smolts acclimated	48,831	0
Weight of smolts acclimated	3,058	0

**LOOKINGGLASS HATCHERY  
RELEASES OF ACCLIMATED FISH FROM IMNAHA POND**

	Imnaha Stock Chinook	Rapid River Stock Chinook
Total number of releases	5	0
Number of fry released	0	0
Weight of fry released	0	0
Number of fingerlings released	424,714	0
Weight of fingerlings released	20,920	0
Number of smolts released	48,831	0
Weight of smolts released	3,058	0

**LOOKINGGLASS HATCHERY SPRING CHINOOK  
FOOD FED AND WEIGHT GAINED**

	Imnaha BY 93	Imnaha BY 94	Rapid River BY 93	Rapid River BY 94	Total
Period Fed	10/94 - 9/95	10/94 - 9/95	10/94 - 9/95	10/94 - 9/95	--
Feed Used (lbs)	23,934	6,040	21,943	7,992	59,909
Weight gain (lbs)	8,594	3,775	9,809	4,967	27,504
Conversion	2.67	1.60	2.247	1.62	--

**LOOKINGGLASS HATCHERY SPRING CHINOOK  
CAPTIVE BROOD PROGRAM  
FOOD FED AND WEIGHT GAINED**

	Lostine River BY 95	Catherine Creek BY 95	Upper Grande Ronde BY 95	Total
Period Fed	8/14 - 9/30/95	8/28 - 9/30/95	9/18 - 9/30/95	--
Feed Used (lbs)	11.20	5.60	0.5	17.30
Weight gain (lbs)	7.31	3.71	0.0	11.02
Conversion	1.53	1.51	--	--

**ANADROMOUS STOCKING REPORT  
LOOKINGGLASS HATCHERY**

Stock	Brood Year	Release Site	Release Date	Number Released	Size No/lb	Pounds	Marks	Marks Released
Imnaha	93	Imnaha R.	3/28/95	77,269	21.4	3,611	AD 70748	77,269
Imnaha	93	Imnaha R.	5/05/95	39,255	14.0	2,804	LV	39,255
Rapid R.	93	Lookingglass Cr.	4/05/95	88,189	22.4	3,937	ADRV 70829	88,189
Rapid R.	93	Lookingglass Cr.	4/05/95	87,745	21.6	4,062	ADRV 70828	87,745
Rapid R.	93	Lookingglass Cr.	4/05/95	86,299	20.9	4,129	ADRV 70825	86,299
Rapid R.	93	Lookingglass Cr.	4/05/95	85,980	22.6	3,804	ADRV 70824	85,980
Rapid R.	93	Lookingglass Cr.	4/06/95	87,097	22.3	3,906	ADRV 70827	87,097
Rapid R.	93	Lookingglass Cr.	4/06/95	66,204	21.3	3,108	ADRV 70826	66,204
Rapid R.	93	Lookingglass Cr.	4/06/95	86,934	22.9	3,796	ADRV 70823	86,934
Rapid R.	93	Lookingglass Cr.	4/08/95	68,782	20.9	3,291	ADRV 70822	68,782
Rapid R.	93	Lookingglass Cr.	4/10/95	500	22.3	22.42	ADRV 70827	500
Rapid R.	93	Lookingglass Cr.	4/16/95	500	22.3	22.42	ADRV 70827	500