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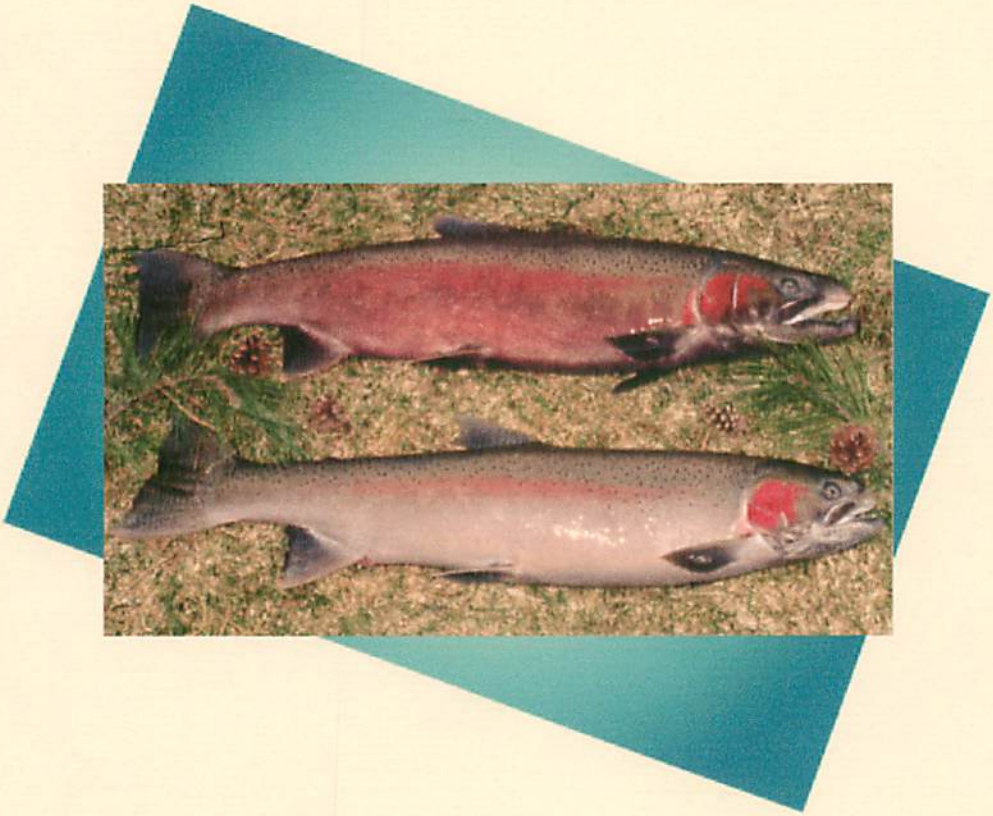

DWORSHAK NATIONAL FISH HATCHERY

AHSAHKA, IDAHO

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Complex Manager

12/29/99
Date

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INTRODUCTION

Dworshak National Fish Hatchery (DNFH) is located in north central Idaho down river from Dworshak Dam, at the confluence of the North Fork and the main stem of the Clearwater River. Dworshak Dam was constructed by the Corps of Engineers (COE) between 1966-70. Operation of the hatchery by the Fish and Wildlife Service (FWS) was authorized by a 1969 COE Memorandum of Understanding. The hatchery has since served primarily as a mitigation hatchery for steelhead trout (*Oncorhynchus mykiss)*; a unique run of the North Fork "B" strain threatened by the construction of Dworshak Dam. The FWS has endeavored, over the past 30 years, to meet the "mitigation goal" of providing 20,000 adult steelhead to the Clearwater River and maintain the unique genetics of the stock.

In June 1982, under the Lower Snake River Compensation Plan (LSRCP), DNFH was expanded from its primary function as a steelhead mitigation facility to include spring chinook salmon (*Oncorhynchus tshawytscha*) trapping, spawning and rearing. The new facilities were designed to rear 70,000 pounds of spring chinook to 20 fpp for a total of 1.4 million smolts. Smolt numbers have since been reduced to 1.05 million because of reduced densities and rearing to a large size. The adult return goal for DNFH is 9,135 spring chinook (calculated using the 15 fpp size, total rearing capacity, and 0.87 percent return rate guideline).

Dworshak NFH consists of a mechanical, electrical, water reuse and reconditioning system employing filtration, biological nitrification, pollution control and monitoring facilities, alarm system, water chillers, heaters, and numerous pumps. Initial construction at DNFH included 84 Burrows ponds, 64 nursery tanks, and 9 adult holding ponds. Twenty-five Burrows ponds (System I) were operated on a heated recycle water flow, for rearing steelhead smolts to the initial target size of 180 mm in only one year. In 1973, System II (25 ponds) and System III (34 ponds) were converted from single-pass, 2-year rearing cycle, to water reuse and heating for accelerated production growth. This second phase construction, with added mechanical systems (biological filters, electric grid, sand filters, U.V. lamps, chillers, and boilers), increased production capacity and allowed all three water systems to be environmentally controlled. In the late 1980's the target size for steelhead smolts was changed to 200 mm, based on data developed by the Fish and Wildlife Service.

During the mid-1970's, with DNFH not meeting production goals nor meeting mitigation goals, major operational changes were made. Review and studies of the reuse systems, water temperature regime, water quality, and fish culture techniques were done by hatchery staff and university scientists. Corrective measures followed which removed the computerized pneumatic feed system, eliminated the ultraviolet treatment of water reuse, redesigned the water flows to maximize single-pass use and a return to a more hands-on basic fish culture. Selecting cooler water temperatures from Dworshak Reservoir during the summer, adding minerals (sodium chloride and potassium chloride) to a soft water supply, removing supersaturated nitrogen gas, along with other designed mechanical changes, and more involvement of hatchery staff in monitoring fish culture, all contributed positively towards improving the hatchery's program.

Further construction in the early 1980's added 18,000 square feet of nursery building, doubling the number of inside rearing tanks to 128. A new concept of biological filtration, known as a fluidized sand filter, replaced the oyster shell media in System I. This filtration system has proven to be unworkable and the ability to operate reuse in System I is no longer available. We are presently working with COE to rehab this system. Also in the 1980's, an additional thirty 8'x80' raceways were constructed under the LSRCP to provide production facilities for spring chinook salmon. Also in the 1980's, 5 of the 9 adult holding ponds were converted to raceways for needed rainbow trout mitigation for Dworshak Reservoir.

The uniqueness of DNFH's water systems provides several options for egg incubation and rearing. Three temperature options are available for egg development through the incubators. Different temperature regimes are also available to the nursery tanks with ozone treated water to 32 of the 128 inside tanks. The outside steelhead ponds are furnished single-pass river water from May through November when desired temperatures can be obtained through selector gates at Dworshak Dam. A pump station on the North Fork River, one mile downriver from the Dam, is capable of providing 92,500 gpm of water. In Systems II and III, water reuse and heating is used during the colder months of November through March enabling the hatchery to get the desired fish growth. During reuse, 10 percent new water enters the system to make up for loss. Each of the three outside ponding systems is independent of each other for temperatures when reuse and heated water are available. Beginning in 1992, the hatchery was supplied with an additional 6400 gpm of gravity flow Dworshak Reservoir water directly by pipeline. This "clean" water furnishing egg incubators and nursery rearing has afforded disease protection from Infectious Hematopoietic Necrosis (IHN) virus in the early production stages. During 1998, a water line was completed from the main reservoir supply line to the large boilers in Mechanical Building II. This line now enables us to heat all the nursery reservoir water for better steelhead production.

A Dworshak National Fish Hatchery Rehab Plan was prepared in 1990-91 by the Corps of Engineers (COE). This rehab plan detailed major upgrades and needs of the 30 year old hatchery. It seems that the status of this Dworshak rehab plan now is no longer active. The hatchery continues to work with the COE on line items identified in the rehab plan. We are trying to accomplish some of the rehab project items through O&M funding. Larger items will need to be funded directly by the COE.

Future projects we are asking the COE to undertake include converting Burrows ponds to raceways, System I reuse modifications, structural work on the main hatchery building and replacing nursery building roof.

The Kooskia hatchery, 35 miles upriver from Dworshak on the Clearwater River, has operated as a Complex with Dworshak since 1978 to restore the spring chinook fishery in the Clearwater. The administrative headquarters for the Dworshak-Kooskia Complex is located at the Dworshak hatchery. The Idaho Fishery Resource Office is also included in the Dworshak Complex.

Dworshak Hatchery has the capacity to produce 2.3 million steelhead smolts at 6 fish per pound (200 mm in length); 1.05 million yearling chinook salmon smolts at 18 to 20 fish per pound (140 to 145 mm in length); and 200,000 sub-catchable rainbow trout for stocking Dworshak Reservoir. The hatchery's annual production capacity exceeds 550,000 pounds. Mitigation adult fish goals to the Clearwater River are 20,000 returning steelhead and 9,135 spring chinook. Steelhead goals are being satisfied in some years but were not in 1996. Spring chinook adult returns remain well below mitigation levels.

This report covers the period of hatchery activities from October 1, 1998, to September 30, 1999.

High count of young chinook could mean big run next year

State wants Dworshak filled, Tunnel vision

■ Trout Unlimited-funded review says fish have just 18 years left until extinction

INSIDE OUTDOORS

Chinook progeny of '95 run return, with predicted low counts

Saving Salmon: Into the Breach?

A CONTINUING SERIES

Are fish hatcheries threat to the survival salmon and steelhead or are they part of the tion?

INSIDE OUTDOORS

Salmon spawning set to start Tuesday at Dworshak hatchery

Dworshak's dirt walls re

Orofino Chamber leaders madde

Dams are the difference

The fishing is great!

Kid's Day at Fish Hatchery is Friday, June 11

Federal salmon talks

Time running out for chinook

Juvenile salmon migration feasibility study delayed

Steelhead critical habitat designation is downplayed

Who wants D

EPA Suit s

■ Groups say Lewis mill could do much better for salmon and steelhead runs

Breaching foes go on offensive

Tribe's fish hatchery plan fails test

American Fisheries Society says Snake River dams must go

■ Resolution to save salmon synonymous with one chapter passed last mo

By ERIC BARKER
OF THE TRIBUNE

MOSCOW — The western division of the American Fisheries Soci-

Panel exploring fish rescue plans on track

said, dams cannot be

some in the broader societal debate contend society can choose to enjoy all the benefits, (fish and dams)," she said. "The science says the probability of that

■ **Dworshak hatchery to mark its 30th anniversary Tuesday**

AHSAHKA — Dworshak National Fish Hatchery will celebrate its 30th birthday Tuesday. The hatchery staff will hold an in- tion from 9 a.m. to rate.

nts will be served f will give guided y also will be the pawning for spring the hatchery. The public is invited to observe the spawning, which should last into early afte

The hatchery ed to offset the loss of natu habitat when Dworshak Da built near the mouth of the Nort Fork of the Clearwater River.

Let's find solution

PROGRAM HIGHLIGHTS

Production Summary

Brood Year 1998 Steelhead

There were 2.1 million steelhead smolts released from Dworshak in April, 1999. The steelhead at release averaged 192 mm in total length, slightly under the 200 mm target size. An outbreak of ICH occurred during the winter months and required lowering the water temperature in the two reuse systems, along with various disease treatments, thus reducing growth in about 2/3 of the steelhead on station. The smolts were reared with low numbers of losses to IHNV as only fish in two Burrows ponds were confirmed with the virus (MIS-April 1999). There were 318,340 pounds of steelhead produced in1999.

Brood Year 1999 Steelhead

There were 5,419 adult steelhead that returned to Dworshak NFH in the fall of 1998 and spring of 1999. A total of 2.5 million eyed eggs went into Dworshak's production program. Dworshak provided 890,000 eyed eggs for the Clearwater Hatchery. Also, 1.8 million green eggs were taken for Magic Valley Hatchery. The production program at Dworshak completed another early rearing phase in the hatchery's nursery without any problems with the IHN virus, largely due to a program that relied entirely on the water supply from Dworshak Reservoir rather than the North Fork of the Clearwater River. At the end of FY99 there were 2.2 million BY99 SST on station.

Brood Year 1997 Chinook Salmon

Dworshak NFH released 1,044,511 BY97 spring chinook salmon weighing 49,787 pounds on March 29 and April 7 & 8, 1999.

Brood Year 1998 Chinook Salmon

There were 1,323 SCS that returned to the Complex in the summer of 1998, 408 returning to Kooskia and 915 to Dworshak. Twenty-seven of the Kooskia fish were passed over the weir into Clear Creek. The adult returns for BY98 SCS yielded 80 percent (728) III-ocean adults. Since 1984, records indicate III-ocean returns averaged 24 percent of the run. These fish produced approximately 2.0 million eyed eggs. There were 151,000 eyed eggs from Dworshak stock transferred to Clearwater Hatchery. Also 274,000 unmarked fingerlings were transferred from Dworshak stock to the Nez Perce Tribe for outplanting during July and August of 1999.

At the end of FY99 there were 941,186 Dworshak stock BY98 SCS on station and 101,161 of Kooskia stock. These fish averaged 63 fpp and 96 mm (3.7 inches) total length. Kooskia also has 100,000 BY98 SCS of Dworshak stock which will be transferred to Dworshak in the spring of 2000.

Brood Year 1999 Chinook Salmon

Adult returns of Brood Year 1999 SCS totaled 800 chinook adults to Dworshak. However, there were 670 jacks (84 percent) in the run, far above the 12 percent average over the past 15 years. Kooskia had 157 fish return, 20 of which were passed over the weir as ISS fish, and 137 transferred to Dworshak for spawning. These adults produced approximately 230,000 eyed eggs of Dworshak stock and 100,000 eyed eggs of Kooskia stock. In addition to eggs from Kooskia and Dworshak stock, eyed eggs from 40 females (approximately 150,000 eggs) were transferred from Rapid River stock to Kooskia for initial incubation. These Rapid River stock fish will later be transferred to Dworshak for final rearing and release.

Brood Year 1997 Coho Salmon

The coho salmon (COS) at Dworshak are being reared in a cooperative program with the Nez Perce Tribe. There were 239,438 BY97 smolts produced at Dworshak, 28,195 released into Clear Creek at the beginning of April and 211,243 transferred to Kooskia on April 20 & 21, 1999. These fish were 17 fpp and 140 mm (5.5 inches) total length at the time of transfer.

Brood Year 1998 Coho Salmon

On December 6, 1998, Dworshak received approximately 330,000 BY98 COS eyed eggs from Eagle Creek NFH. On July 8, 1999, there were 23,828 BY98 COS outplanted by the NPT to the Selway River. On September 30, 1999, there were 284,046 BY98 COS on station at 47 fpp and 100 mm (3.9 inches) total length.

Rainbow Trout - Open House

Dworshak raised approximately 9,000 BY97 & BY98 RBT which were stocked into a fishing pond at Dworshak for Open House in June 1999. There were 711 participants at the Open House that harvested an estimated 1,400 of these fish. The remaining RBT were stocked into ponds at Kooskia for its Open House along with stocking in Talmak Lake, a Nez Perce Tribal fishing area. There are approximately 14,000 BY99 RBT on station for Open House 2000.

Rainbow Trout - Dworshak Reservoir Stocking

Due to disease concerns about stocking RBT in Dworshak Reservoir from Dworshak and Kooskia NFHs, the following fish exchange is planned: Hagerman NFH will raise 95,000 nine-inch RBT stocked in September at L.Camas Reservoir; 11,000 10-inch RBT stocked in October at Oxbow Reservoir, Hells Canyon Reservoir, and C.J. Strike Reservoir; and 11,000 9-inch RBT stocked in September at Lucky Peak Reservoir. Nampa FH will raise 30,000 K1/R1 10-12 inch fish stocked in May in Dworshak Reservoir.

Administration

Funding for hatchery operations included $1,711,950 from COE, $356,200 from LSRCP and $10,00 quarters reimbursement.

Fish marking costs included $56,000 to clip steelhead adipose fins from October 1 through December 1, 1998, and again in August 1999. Marking of spring chinook cost $31,000 for coded-wire tagging and adipose fin clipping. Maintenance projects included installation of a new chemical storage building near Mechanical Building II, renovation of portions of the Feed Building, construction of an aluminum trough, replacement of circular tanks in the Incubation Room and painting of floors and doors in several buildings.

Full-time staff years employed by Dworshak NFH were 23; permanent employees 22.7 and temporary employees 0.3 years. Twenty-five employees were represented in the staffing during the year.

Outreach and Visitor Activities

The ninth annual Open House and Kids Fishing Day was held June 11, 1999, and was highly successful again . The highlight was a free fishing pond attracting 711 children to register and catch two rainbow trout each. Another 1700 visitors attended the popular activities in conjunction with National Fishing Week.

A six week summer youth program through the Idaho Job Service ran from June 7 - July 22. The program, JTPA, included four enrollees from Orofino and two through the Nez Perce Tribe TERO program. Dworshak hatchery hired a seasonal supervisory crew leader, who performed additional work for buildings and grounds maintenance.

FISH CULTURE OPERATIONS

Steelhead Trout
Brood Year 1998

At the beginning of October 1998, all of the summer steelhead trout (SST) from brood year 1998 (BY98) were outside in Burrows ponds (BPs), totaling 2.3 million fish. There was an outbreak of Ichthyopthirius (ICH) over the winter which caused heavy mortality for fish in Systems II and III. The outbreak first appeared in December and peaked in January. Mortality was 9 percent from October 1, 1998, through April 30, 1999, and the final release number was 2.1 million fish with an average total length of 192 mm (Table 1).

Table 1. Fish inventory summary for BY98 SST on October 1, 1998, and final release summary in April, 1999.

	October 1, 1998			Sept-Apr % Loss	Final Release April 20 - April 30, 1999		
Location	Number	Length in	Length mm		Number	Length in.	Length mm
Syst I	631,254	5.28	134	1.0	624,964	7.44	189
Syst II	687,265	4.19	106	11.5	608,042	7.44	189
Syst III	1,000,410	4.63	118	12.7	873,384	7.72	196
Tot/Ave	2,318,929	4.68	119	9.2	2,106,390	7.56	192

Source: Production - Final Release Summary, May 1999
Production - Monthly Inventory Summary (MIS), October 1, 1998
Production - Production Narrative, April, 1999

The BY98 SST were reared entirely in BPs since the raceways (RWs) were loaded with chinook salmon. Table 2 illustrates the survival rates of various stages of development for BY98 SST along with a five-year comparison. FY91 was the first year that a direct waterline from Dworshak Dam to the incubators and nursery was available, helping reduce health problems in the early rearing stages of SST.

Table 2. Survival summary from green eggs to released smolts, BY94 through BY98 SST reared at Dworshak NFH.

	% Surviving from previous stage				Cumulative % Survival		
Brood Year	(Green to) Eyed Egg*	Tanked Fry	Ponded Finger-lings	Smolt Release	Green Egg to Smolt**	Eyed Egg to Smolt	Tanked Fry to Smolt
1994	91.5	89.5	87.4	87.4	55.8	68.4	76.4
1995	90.7	89.5	95.4	90.1	60.0	74.9	85.9
1996	88.5	91.1	86.3	97.2	51.0	75.2	83.5
1997	88.6	91.7	92.3	87.4	45.2	73.4	80.0
1998	87.5	90.0	96.6	89.5	49.1	77.7	86.4
5yr Ave	**89.4**	**90.4**	**91.6**	**90.3**	**52.2**	**73.9**	**82.4**
1999 YTD	91.9	94.9	93.2				

Note: Data are only for SST reared entirely at Dworshak NFH
* % Survival Green to eyed = Enum eyed eggs / Enum eyed eggs + enum dead eggs, i.e. survival after culling bad trays, females
** Green eggs to smolt = Total green eggs (including those from females culled before enum) - Magic Valley Hatchery grn eggs - Clearwater Hatchery eyed eggs. (This calculation method beginning in 1997)
Source: Production - Steelhead Spawning Report 1998, 1999
Production - Nursery Loss-nulo99st.wpd
Production - Spawning/Egg Take Plan, BY99 SST

Reuse (heated water) was turned on November 30, 1998, for System II and December 1 for System III, resulting in approximately 54°F water. Due to the ICH outbreak, temperature in the two reuse Systems was reduced over the winter. This reduction in temperature, along with formalin treatments and flushing the Systems to the river, resulted in control of the ICH outbreak and reduction in mortality. See the narrative under each System for details.

Personnel from Idaho Fisheries Resource Office (IFRO) attempted to experiment with SST in System II. This test was similar to the one done on selected SST in BY97 when IFRO observed compensatory growth in the spring after reduced growth during the winter. The intent was to stimulate the smaller fish to have a faster growth rate in the spring and possibly stimulate them to smolt. Fish in ponds 20 and 22 were subjected to reduced food to reduce growth beginning on November 18, 1998. However, because of the severe outbreak of ICH over the winter, the fish suffered severe physiological stress to the point that the experiment would not have meaningful results if carried to the end. The experiment was abandoned on February 8, 1999, and full rations for these fish resumed on February 9.

All SST received adipose (AD) fin clips to signify a hatchery fish. Some SST in all Systems also received coded wire tags (CWTs) and left ventral (LV) fin clips. Within these study groups, some fish also received freeze brands (FBs). Some fish also received PIT tags. The various marks and brands are used for studies concerning system contribution of these fish to later adult returns, offsite release contribution, broodstock evaluations, and early-run predictions at Lower Granite Dam. Fish which received PIT tags will be monitored for an IFRO residual study and to monitor smolt passage downstream. A total of 243,000 SST received CWTs, 44,000 received FBs and 5,500 received PIT tags. See the marking/tagging tables under each System for details.

System I

For BY98 SST, System I production included 24 BPs. This System had 631,254 SST in it at the start of the fiscal year and 624,964 at release (Table 3).

Table 3. System I production, BY98 SST, FY99.

Month	Year	1st of Month			Growth		% Mortality for Month	Ave Temp °F for Month
		Number	fpp	L (mm)	in	mm		
October	98	631,254	19.46	134	0.49	12	0.26	47.0
November	98	629,609	14.91	146	0.49	12	0.10	50.2
December	98	629,001	11.85	158	0.5	12	0.03	45.4
January	99	628,784	10.80	163	0.20	5	0.09	41.5
February	99	628,222	9.17	172	0.36	9	0.11	40.0
March	99	627,542	8.28	178	0.23	6	0.25	40.2
April	99	625,968	7.31	186	0.30	8	0.16	41.1
Release Tot/Ave	99	**624,964**	6.99	**189**			1.0	43.6

Source: Production - MIS, Sept 1998-May 1999
Production - Daily Water Temperature Records, Oct-April, 1998-99
Production - Production Narrative, December 1, 1998
Production - Final Release summary, BY98 SST

Adipose fins were clipped on BY98 SST in System I from July 15-27, 1998. Other marking of BY98 SST in System I is summarized in Table 4.

Table 4. System I Marking and Tagging of BY98 SST, FY99.

Date	Burrows pond	Number CWT	Number Freeze Brands	Number PIT tags	Fin Clips	Study	Release Site
9/08/98 (4/14/99 PIT)	BP 13	22,487	11,124	251	AD, LV	Sys I Contribution Outmigration Residual	Dworshak
9/04/98	BP 15	21,500	0	0	AD, LV	Offsite Release	South Fork CWR
4/18/99	BP 21	0	0	300	AD	Residual	South Fork CWR
4/18/99	BP 27	0	0	300	AD	Residual	Kooskia
4/15/99	BP 39	0	0	302	AD	Residual	Dworshak
4/15/99	BP 43	0	0	301	AD	Residual	Dworshak
9/4/98 (4/14/99 PIT)	BP 45	22,075	10,597	300	AD, LV	Early Progeny Outmigration Residual	Dworshak
Total		66,062	21,721	1,754			

Source: Production - MIS System I, Sept 1998
IFRO - Branding, Tagging.DBF
IFRO - MRKLPN98.wk4
IDFG - Fish Marking Summary 1998

There were 80,303 SST from System I split into BPs 46, 48, and 50 (System II) during July, 1998. These were early-return progeny from Takes 1-3.

Fish in seven BPs in System I were treated for ICH with formalin in October, 1998. From October 2-12, all fish in System I were treated for Bacterial Cold-Water disease with Oxytetracycline feed. On October 19, all fish were treated for *Trichodina Sp* with formalin. On October 26, fish in BP47 were treated for *Epistylis* with formalin.

On January 21-22, 1999, all fish in System I were treated for *Epistylis* with formalin. On April 7, fish in the entire System were treated for parasites with formalin.

Mortality for the System remained relatively low and ranged between 0.03 to 0.26 %/month during the rearing cycle. Total mortality in System I for FY99 was 1.0 %.

Release of the fish in System I occurred from April 19-26, 1999. On April 19-20, there were 230,915 SST outplanted from System I. The Corps of Engineers (COE) assisted in outplanting the SST to Clear Creek and the South Fork of the Clearwater River at River Mile 8.7, Red House hole.

Direct release of 394,049 SST from System I took place on April 26 into the mainstem of the Clearwater River. The total release from System I was 624,964 BY98 SST (Final Release Summary, BY98 SST).

System II

For BY98 SST, System II production included 25 BPs. This System had 687,265 SST in it at the start of the fiscal year and 608,042 at release (Table 5).

Table 5. System II production, BY98 SST, FY99.

Month	Year	1st of Month			Growth		% Mortality	Ave Temp °F for Month
		Number	fpp	L (mm)	in	mm		
October	98	687,265	38.76	107	0.57	14	0.20	47.3
November	98	685,863	27.66	119	0.50	13	0.82	50.2*
December	98	680,228	19.55	134	0.58	15	1.21	54.2*
January	99	671,970	15.27	145	0.45	11	7.19	46.8*
February	99	623,675	12.69	155	0.36	9	1.68	47.5*
March	99	613,206	10.26	166	0.45	11	0.66	53.6*
April	99	609,144	7.50	184	0.72	18	0.18	42.0
Release Tot/Ave	99	**608,042**	6.88	**189**			11.5	48.8

* System under reuse for part or all of month
Source: Production - MIS Sept 1998-May 1999
Production - Final Release summary, BY98 SST, Production Narratives Sept 1998-May 1999
Production - Daily Water Temperature Records Oct-April, 1998-99

In July there were 80,303 SST from System I transferred to System II (see System I for details).

Adipose fin clipping was done on BY98 SST in System II from August 10-27, 1998. Other marking of BY98 SST in System II is summarized in Table 6.

Table 6. System II Marking and Tagging of BY98 SST, FY99.

Date	Burrows pond	Number CWT	Number Freeze Brands	Number PIT tags	Fin Clips	Study	Release Site
9/03/98	BP 4	22,460	5,701	0	AD LV	Sys II Contribution Outmigration	Dworshak
4/14/99	BP 6	0	0	250	AD	Residual	Dworshak
4/15/99	BP 18	0	0	300	AD	Residual	Dworshak
4/18/99	BP 26	0	0	299	AD	Residual	Kooskia
4/18/99	BP 28	0	0	298	AD	Residual	South Fork CWR
9/01/98 9/02/98	BP 34	21,544	0	0	AD LV	Offsite Release	South Fork CWR
9/02/98 9/03/98 (4/14/99 PIT)	BP 36	21,871	5,654	252	AD, LV	Sys II Contribution Outmigration Residual	Dworshak
4/15/99	BP 46	0	0	300	AD	Residual	Dworshak
4/15/99	BP 48	0	0	301	AD	Residual	Dworshak
8/31/98 (4/15/99 PIT)	BP 50	22,119	0	301	AD	Early Progeny Outmigration Residual	Dworshak
Total		87,994	11,355	2,301			

Source: Production - MIS System II, Aug 1998
IFRO - Branding, Tagging.DBF
IFRO - MRKLPN98.wk4
IDFG - Dworshak Fish Marking Summary 1998

During November 13 and 16, all fish in System II were treated for *Trichodina* with formalin.

System II converted to reuse on November 30. On December 1, a 12-hour prophylactic formalin treatment was administered to System II. Throughout the month, fish in various BPs were treated for ICH with formalin. On January 1, temperature was reduced in System II to 46°F as the ICH outbreak continued. Formalin treatments were continued and reuse was turned off completely and the System flushed with river water (40°F) on January 26. The combination of temperature reduction, formalin treatments, and flushing were effective in reducing the ICH. System II was put back on reuse February 8 and taken off reuse the final time on April 1, 1999. Mortality for System II ranged between 0.20 to 7.19 percent/month during the rearing cycle.

Total mortality in System II for FY99 was 11.5 percent.

During April 6-14, fish in various BPs in System II were treated for bacterial gill disease with Chloromine T.

Release of fish in System II took place April 21-28, 1999. Outplanting of 131,177 SST took place April 21-22. These fish were stocked into Clear Creek and the South Fork of the Clearwater River at Red House.

Direct release of 476,865 SST from System II took place April 28 into the mainstem of the Clearwater River. The total release from System II was 608,042 BY98 SST (Final Release Summary, BY98 SST).

System III

System III has 34 BPs. This System had 1,000,410 SST at the beginning of the fiscal year. Final release numbers were 873,384 fish which averaged 196 mm total length (Table 7).

Table 7. System III production, BY98 SST, FY99.

Month	Year	1st of Month			Growth		% Mortality	Ave Temp °F for month
		Number	fpp	L (mm)	in	mm		
October	98	1,000,410	28.7	118	0.70	17	0.55	47.4
November	98	994,920	20.8	131	0.53	13	0.23	50.2
December	98	992,648	14.8	147	0.62	16	1.66	53.6*
January	99	976,136	12.4	156	0.35	9	9.78	45.3*
February	99	880,672	9.7	169	0.52	13	0.56	48.6*
March	99	875,771	7.9	181	0.47	12	0.17	47.5*
April	99	874,252	6.5	193	0.48	12	0.10	41.3
Release Tot/Ave	99	**873,384**	6.2	**196**			12.7	47.7

* System under reuse part or all of month

Source: Production - MIS, Sept 1998-May 1999
Production - Final Release summary, BY98 SST
Production - Production Narratives Sept 1998-May 1999
Production - Daily Water Temperature Records, Oct 1998-April 1999

Adipose fin clipping was done on BY98 SST in System III from July 13 until August 10, 1998. Other marking of BY98 SST in System III is summarized in Table 8.

Table 8. System III Marking and Tagging of BY98 SST, FY99.

Date	Burrows pond	Number CWT	Number Freeze Brands	Number PIT tags	Fin Clips	Study	Release Site
4/15/99	BP 53	0	0	303	AD	Residual	Dworshak
9/09/98	BP 57	22,744	5,498	250	AD LV	Offsite Release Outmigration Residual	South Fork CWR
9/09/98	BP 60	21,836	0	0	AD LV	Offsite Release	South Fork CWR
4/18/99	BP 62	0	0	300	AD	Residual	South Fork CWR
4/18/99	BP 63	0	0	300	AD	Residual	Kooskia
9/09/98 9/03/98 (4/14/99 PIT)	BP 73	22,455	5,455	301	AD LV	Sys III Contribution Outmigration Residual	Dworshak
08/31/98	BP78	22,244	0	0	AD LV	Offsite Release	South Fork CWR
Total		89,279	10,953	1,454			

Source: Production - MIS System II, Aug 1998
IFRO - Branding, Tagging.DBF
IFRO - MRKLPN98.wk4
IDFG - Dworshak Fish Marking Summary 1998

System III was converted to reuse on December 1. On December 3, a 12 hour prophylactic formalin treatment was administered to System III. Due to the ICH outbreaks, formalin treatments were administered to the entire System on December 29 and 31 and several additional times in January. On January 8 the reuse was shut off and water flushed to the river due to high mortalities from ICH. The combination of temperature reduction, formalin treatments, and flushing were effective in reducing the ICH. System III was put back on reuse January 25 and taken off the final time on March 29, 1999.

Release of fish in System III took place April 19-30. There were 496,215 steelhead from System III outplanted April 19-23. These fish went to Clear Creek and the South Fork of the Clearwater River, Mile 8.7, Red House Hole.

Direct release of 377,169 SST from System III took place April 29-30 into the mainstem of the Clearwater River. The total release for System III was 873,384 (Final Release Summary, BY98 SST).

Distribution Summary

Release of BY98 SST began April 19 and ended April 30, 1999. On April 19-23 there were 858,307 SST outplanted to two locations along the Clearwater River. On April 26-30 there were 1,248,083 SST direct released from Dworshak hatchery into the Clearwater River (Table 9).

Table 9. Fish distribution summary by site, BY98 SST, April 19-30, 1999.

Site	Number	Weight	Ave fpp	Ave Length	
				in	mm
Outplants 4/19-4/23					
Clearwater R. - Red House Hole	625,773	93,800	6.67	7.54	191
Clear Creek	232,534	35,126	6.62	7.56	192
Subtotal	858,307	128,926	6.66	7.54	192
Direct Release 4/26-4/30					
Main Stem Clearwater River	1,248,083	189,414	6.59	7.57	192
Totals/Averages	**2,106,390**	**318,340**	**6.62**	**7.56**	**192**

Source: Production - Final Release Summary, BY98 SST

Steelhead Trout
Brood Year 1999

Adult Collection

Adult summer steelhead trout (SST) for Brood Year 1999 (BY99) were collected in the late fall of 1998 and again in the winter and spring of 1999 to represent the entire run. The ladder was first opened on October 5 and closed November 19, 1998. During this period there were 500 early-run steelhead collected. The fish ladder was then reopened on February 16 and closed May 4, 1999. During the February through May operation, 4,919 steelhead were collected for a total of 5,419 fish trapped for the BY99 run. Figure 1 illustrates the numbers of returning SST adults since 1989, the first year that opening the ladder in the fall became the standard operating procedure for Dworshak NFH.

Sixteen of the 500 early return adults died before spawning. One hour formalin bath treatments of 167mg/l began on November 23, 1998, and appeared to control fungus. These treatments were continued three days/week.

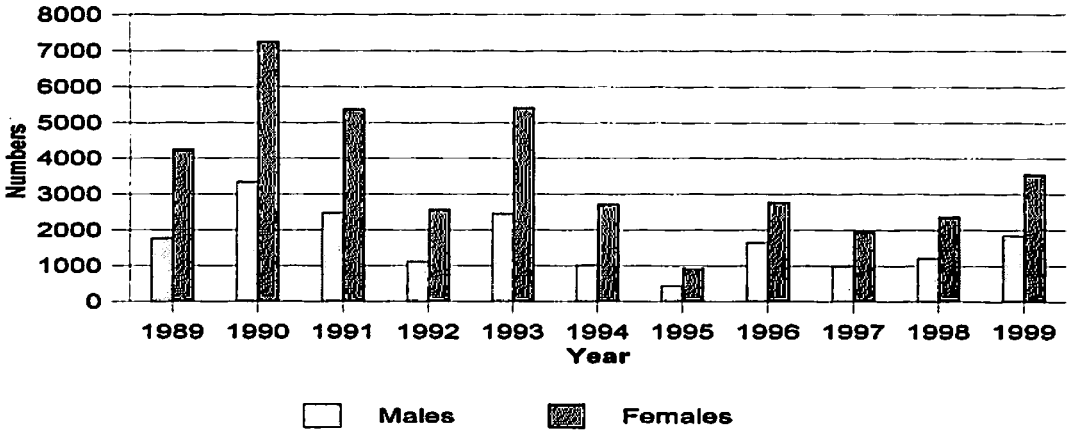

Figure 1. Dworshak adult SST returns 1989-99
Source:. Production - Spawning Report SST BY99
Production - Spawning/Egg Take Plan SST BY99, ST99ET1.wpd
IFRO - SST Rack Returns, Sth99ent.wk4

Spawning numbers/ratio

There were 1,791 SST spawned over the BY99 season. This number does not include the 16 males and 80 females used by the USGS Biological Resource Division (BRD). Of these 80 females, Dworshak will use 30,000 eyed eggs in its production program, or about 5 females. Historically, females have always outnumbered males in returns and have made the goal of a 1:1 male:female spawning ratio difficult to achieve at Dworshak. In 1999, the male:female return ratio was 1:1.9 and the spawning ratio was 1:1.3. This spawning ratio also does not include the 16 males and 80 females spawned by BRD, since this study did not use all available males for spawning. There were 85 jacks spawned during the season. Green and surplus males and females were returned to holding ponds (HPs) 1, 2 or 3 to be spawned later or outplanted.

Spawning Procedures

Spawning began Tuesday, February 2, 1999, and was conducted each Tuesday until May 4. Early return fish were spawned during Takes 1-3. Beginning with egg Take 4, personnel from both Production and the Idaho Fishery Resource Office (IFRO) concurrently inspected and spawned the most recently returning adults from HP9. Excess fish collected were held in one of three additional HPs. If, on spawning day, there were not enough fish in HP9 to reach egg collection targets, fish held in other HPs were then spawned.

Adults were crowded from HP9 into a crowding channel, moved into a channel basket, and placed into an anesthetic bin. Adults were anesthetized with carbon dioxide at a rate of 400 to 1000 mg/l solution buffered with 8 to 10 pounds of sodium bicarbonate. Although carbon dioxide appears to be more stressful on the fish than MS-222, carcasses anesthetized with CO_2 can be used for human consumption. Oxygen was provided at a rate of one liter/minute. Spinal columns of ripe females were severed using a pneumatic knife. The females were then placed on a table for 1-20 minutes for blood drainage. The ventral side was then cut open using a spawning knife and eggs were collected in disinfected colanders. After ovarian fluid was drained, the eggs were poured into a clean bucket.

Milt from ripe males was stripped into Styrofoam cups, and a one-percent saline solution was added to assist in milt motility. The milt solution was poured onto the eggs and swirled for more complete fertilization. After sufficient time had elapsed for fertilization to take place (one to two minutes), the eggs were rinsed of sperm, blood, and other organic matter.

After rinsing, eggs were placed in Heath incubator trays at approximately 6,620 eggs per tray (1 female). In the tray was a 75 mg/l iodophor solution buffered with sodium bicarbonate. Eggs were maintained in this solution for approximately 30 minutes as a precaution against vertical disease transmission. The egg trays were then pushed into the incubator, flushing the iodine. Water flow rate was approximately five gallons/minute and incubation temperature averaged approximately 54°F.

Upon eye-up (approximately 16 days after fertilization at 54°F), the eggs were shocked. The next day the eggs were enumerated and sorted using an electronic egg picker and counter (Van Gaalen Model N-100). Eggs from Takes 1-12 were placed into 2.5 gallon hatching jars (16,500 eggs per jar for most Takes) in the nursery. Due to space constraints in the nursery, eggs from Takes 8-10 were enumerated and double-loaded into jars (33,000 eggs/jar). In June, fish from these Takes were split into tanks which initially held earlier egg Takes. Eggs from Takes 13 and 14 were enumerated and returned to Heath trays (5,500 per tray) and hatched in the trays. Takes 13 and 14 were later transferred to nursery tanks which were occupied at the time of their egg enumeration by Takes 1 and 2. The water flow was approximately 5 gpm in both the trays and jars. The hatching jars drained into 670 gallon rectangular nursery tanks. As the fry swam up, they flowed into these tanks for initial rearing.

Idaho Fish Health Center Disease Sampling

Twenty early-return males were injected with LHRH hormone on January 21, 1999, to insure enough ripe males the first day of spawning on February 2. All 20 of these males were ripe and spawned on February 2. These carcasses were disposed of in a landfill.

Approximately 5.5 percent of the females spawned for Magic Valley Hatchery (Takes 7-11) tested positive for IHN. Testing was done by personnel from Idaho Fish Health Center (IFHC). Disease testing on eggs for Clearwater Hatchery (CWH) was done by IDFG's Eagle Creek Laboratory. All 167 females from Takes 6-9 for CWH tested negative for IHN. There were 7.8% (37 out of 472) of the fish sampled for Dworshak which tested positive for IHN.

Spawning Summary

A total of 14 egg Takes were spawned, beginning on February 2 and ending on May 4. There were 998 females spawned excluding the 80 spawned for BRD. The average fecundity of all SST enumerated at Dworshak was 6,620 eggs/female. Early-returning adults were spawned during Takes 1-3 and later returning adults were spawned during Takes 4-14.

Egg Disposition

After shipping eggs for Clearwater Hatchery (CWH) and Magic Valley Hatchery (MVH), and culling both green and eyed eggs, Dworshak put 2,523,000 eyed SST eggs into its nursery for rearing.

CWH received 889,100 eyed eggs for incubation for their program. These eggs were from Takes 6-9. Dworshak also provided CWH personnel with 1.8 million green eggs for MVH from Takes 7-11. Dworshak also provided 15,500 eyed eggs from Take 8 for IDFG and Potlatch Pulp & Paper Mill school outreach program.

Performance/Cryopreservation Studies

This is the seventh year in which Dworshak has cooperated with a team from the U.S. Geological Survey, Biological Resource Division (BRD) formerly National Biological Survey (NBS) being led by Steve Rubin. The cooperative part of the study involves the holding and spawning of hatchery adult steelhead and the incubation and rearing of approximately 30,000 SST until release. The study seeks to examine the growth and survival of SST in natural streams and the hatchery environment using SST from different sized eggs. The study used 80 females, 75 from Take 10 and five from Take 14.

This is the third year that Dworshak has provided small amounts of excess SST milt and eggs to University of Idaho (U of I) Associate Professor Rolf Ingermann. Rolf is testing the effects of CO_2 on sperm motility and fertility. Thus far tests show that CO_2 reduces both motility and fertility but that these effects are reversible and do not compromise sperm viability. Buffering capacity of seminal plasma and blood plasma are also being studied. Some of the eggs provided were used in these studies along with research on ATP levels and egg viability studies. Dworshak provided a portion of milt from 45 males and eggs from 44 females for the study. All eggs and milt given for research to the U of I were partial lots shared with Dworshak production and included in Dworshak's spawning numbers.

Dworshak also provided testes from 7 males after the final SST spawning on May 4 to U of I professor Joe Cloud. These gonads were from spawned-out males. They were transported to the U of I at 5°C and examined under a light microscope. Very few sperm cells were retrieved and none were motile when activated with fluid.

Nez Perce Tribe Research

The NPT was funded in 1999 by the Bonneville Power Administration (BPA) to coordinate gene banking of male gametes from Endangered Species Act listed steelhead in the Snake River Basin. Although Dworshak SST are not listed, Dworshak provided milt from SST for cryopreservation to Robyn Armstrong for the NPT during Takes 2, 4, 7, 11, & 14. Milt from a total of 62 males was provided by Dworshak to the Tribe, along with tissue samples for DNA analysis from 168 adult fish.

Dworshak also provided two adult SST to the Tribe researchers after Take 7.

Adult Disposition

There were 2,475 adults outplanted from Dworshak during the return run of BY99 steelhead. This outplanting was coordinated by staff from Dworshak Fisheries Complex, the IDFG and NPT. Table 1 illustrates the dates, number of fish, and location of the outplantings.

Table 1. Returning adult steelhead outplanted from Dworshak NFH in 1999.

Date	Male	Female	Jack	Total	Location
3/4	2	403	0	405	Manns Lake
3/10	43	146	11	200	American River
3/11	62	79	9	150	Mill Ck
3/17	64	124	12	200	Newsome Ck/Mill Ck
3/24	35	78	7	120	Newsome Ck
3/25	26	86	8	120	Newsome Ck
4/01	99	218	23	340	American River
4/02	94	193	13	300	Lolo Creek
4/08	49	96	5	150	Lolo Creek
4/09	23	65	12	100	Lolo Creek
4/14	31	149	20	200	Lolo Creek
4/15	0	112	3	115	Lolo Creek
4/29	12	61	2	75	Lolo Creek
Total	540	1810	125	2475	

Source: Production - Spawning Activity Report, BY99 SST

Usable fish carcasses from spawning and culling activities were provided to a processor to be packaged for human consumption under a program with the Federal Bureau of Prisons. Complete adult disposition is illustrated in Table 2.

Table 2. Adult disposition of BY99 SST from Dworshak.

LOCATION	NUMBER	COMMENTS
WSU & Idaho Bear Program	388	WSU captive bear & eagle prog. IDFG bear program
Fed Bureau of Prisons	2204	Latham Processing
Nez Perce Tribe (NPT) Coeur d'Alene Tribe (CDA)	102	48 Male, 52 Females to CDA Tribe, 2 NPT Research
Outplanted	2475	(1 return) See Table 6 for outplant details
Landfill	250	Majority were early fish prior to bear program agreement
Total	5419	

Source: Production - Spawning Activity Report BY99 SST, Dworshak Take 14
Production - Spawning and Run Summary, BY99 SST

Nursery and Early Rearing

Eyed eggs were put into the nursery at a rate of 16,500 eggs/tank for Takes 1-7 and 11-14. Takes 8-10 were double loaded at a density of 33,000/tank due to lack of nursery tanks. These fish were later split into tanks from egg Takes 4-6 once these early fish were moved outside the nursery into BPs. Eyed eggs from all of Takes 1-12 were placed into incubator jars over the tanks. When approximately 70 percent of the fry had swam-up, the remaining fry were poured into the tank. Due to lack of nursery space, Takes 13-14 were hatched in Heath trays (5,500 per tray). These were moved as fry from the incubation trays into tanks vacated once Takes 1-2 were transferred outside. Dead eggs and fry were picked and enumerated from each tank and tray. There was a 95 percent survival from the eyed-egg stage to feeding fry for BY99 SST.

This year the fry from the nursery averaged 89 fish per pound (fpp) when moved out of the nursery into BPs. Fish which did not receive a coded-wire-tag (CWT) were transferred from the nursery directly to the adipose fin (AD) clipping trailer. From the trailer, fish were then distributed to the appropriate BP. Steelhead which will receive a CWT went directly from the nursery to a BP and will be tagged later in November 1999. Idaho Department of Fish & Game (IDFG) provided the trailer and AD clipping crew. See rearing description under each System for details.

A total of 2.23 million BY99 SST were moved from the nursery to the BPs beginning with Take 1 on June 2 and ending with Take 14 on August 27.

On August 3 there were 43,000 excess BY99 SST transferred to Dworshak from Clearwater Hatchery. These fish were placed into BPs 64 & 66 within System III. These fish, combined with those transferred outside from the nursery, totaled 2.27 million BY99 SST stocked into BPs.

Feed

A feed study was conducted on 12 tanks of fish from Take 7 while they were in the nursery. Tanks were separated into three groups of four tanks for each trial diet. The control group of fish were fed Bio Oregon Starter. The second group of fish were fed Bio Oregon Flake diet, and the final group were fed Moore-Clark Nutra Starter diet. Each tank had approximately 17,500 fish as an initial stocking density. Fish were fed all test diets from swim-up until approximately 300 fpp. The normal routine of eight feeds/day to satiation was followed. Results of the study are pending at the time of this writing. If one of the experimental feeds proves to provide better fish performance than what is currently being used, the following feed chart will be adjusted accordingly for BY2000 SST.

Nine different feed sizes are used in the production of SST at Dworshak (Table 3). The variety of feed sizes provide the growing fish the proper sized feed at various stages, eliminating the need to mix feeds when changing to a larger size.

Table 3. Feed changeover table for BY99 SST.

Feed Number	Feed Type	Feed Name	Abbrev	Start FPP	End FPP
1	Bio Diet Starter	BDS 1	BDS 1	2500	1500
2	Bio Diet Starter	BDS 2	BDS 2	1500	700
3	Bio Diet Starter	BDS 3	BDS 3	700	400
4	Bio Moist Grower	BMG 1.0 MM	BG 10	400	300
5	Bio Moist Grower	BMG 1.3 MM	BG 13	300	200
6	Bio Moist Grower	BMG 1.5 MM	BG 15	200	100
7	Bio Moist Feed	BMF 2.5 MM	BF 25	100	20
8	Extruded Floating	RGF 3/32	EF 1	20	13
9	Extruded Floating	RGF 1/8	EF 2	13	1

Source: Production - Annual Report 1998

Projected Release

Historical losses indicate a projected release number between 2.1 and 2.2 million SST in the Spring of 2000. Table 4 illustrates the steelhead on station at the end of FY99 and projected release numbers.

Table 4. BY99 SST on station and projected release summary, (9/30/99).

As of September 30, 1999					Projected to release - April/May 2000		
System	Number	Weight (lbs)	fpp	L (mm)	Proj % Loss to Release	Proj Release Number	Proj Size at Release (mm)*
Sys I	614,980	38,015	16.2	143	5	584,231	190
Sys II	632,590	26,830	23.6	126	5	600,961	219
Sys III	971,249	24,499	39.6	106	5	922,687	186
Total/ Average	**2,218,819**	89,344	28.6	122	**5.0**	**2,107,878**	**197**

*Projected length based on Systems II & III going on reuse end of November through March 1
Source: Production - MIS data, October 1, 1999
Production - Production Narrative, September, 1999

Tagging and marking of SST continued in FY99. All BY99 SST received at least an adipose fin (AD) clip to identify it as a hatchery fish, except for 100,000 fish. These 100,000 were not AD clipped to signify a hatchery fish. They will receive a coded wire tag (CWT). These fish will be released into the South Fork of the Clearwater River as supplementation fish. This is part of a 1998 harvest settlement agreement with the Nez Perce Tribe (NPT).

System I

System I received 626,000 BY99 SST. Steelhead in System I were moved out of the nursery beginning with Take 1 on June 2,1999, and ending with Take 6 on July 15. Steelhead from Takes 1, 2, and 6 were loaded directly from the nursery to the AD fin clipping trailer and then transferred out of the trailer into the appropriate BP at final rearing densities. Because the marking trailer was not available at the time, fish from Takes 3-5 were loaded from the nursery to the BPs and later crowded and taken through the marking trailer for AD clipping. Fish in BPs 11, 17, 19, 21, and 49 will be AD clipped and receive a CWT in November 1999.

At the end of FY99, no fish in System I had been confirmed positive for IHN, and SST in three BPs had been treated for Bacterial Cold-Water disease with TM100 (oxytetracycline) medicated feed.

System II

System II received 664,000 SST during July 1999. Fish in System II were move out of the nursery beginning with Take 6 on July 15 and ending with Take 9 on July 28. Steelhead from Takes 6-9 were loaded from the nursery into a transport tank and moved directly to the AD clipping trailer. From the trailer, fish were marked and stocked at final densities to the outside BPs. Steelhead in BPs 22, 24, and 50 will be CWTed and AD clipped in November 1999.

On September 18, SST in BP14 were confirmed IHN positive in System II.

On September 17-21, SST in BPs 2-38 were treated for Bacterial Cold-Water infection with TM100 (oxytetracycline) medicated feed.

System III

System III received 986,000 SST from Takes 9 through 14 beginning with Take 9 on July 28 and ending with Take 14 on August 27. These fish were loaded directly from the nursery to the marking trailer and then stocked at final rearing densities into System III BPs. Fish in BPs 62, 63, and 68 will be coded wire tagged and AD clipped in November 1999.

Fish in BPs 57, 59, 81, and 83 (approximately 100,000 fish) will be CWTed, but will receive no external mark to indicate a hatchery fish. This is the first time since 1984 that Dworshak will release hatchery fish without an AD clip. This is part of a 1998 harvest settlement agreement with the Nez Perce Tribe.

On August 31, SST in BP60 were treated for Bacterial Cold-Water infection with TM100 (oxytetracycline) medicated feed.

Steelhead in BPs 58 and 60 were confirmed IHN positive by the end of FY99.

Spring Chinook Salmon
Brood Year 1997

On October 1, 1998, there were 1,099,066 BY97 spring chinook salmon (SCS) on station at Dworshak. These fish were of low and medium BKD status. On December 15, 1998, there were 51,441 BY97 Kooskia stock SCS transferred from Dworshak to Kooskia for final rearing. These had been initially reared at Dworshak due to space and water constraints at Kooskia.

Beginning on August 5, 1998, all BY97 SCS were adipose (AD) clipped and enumerated by FWS personnel. Included were 142,000 SCS which received a coded wire tag (CWT) for contribution studies. All marking was completed by August 26. On February 26 and March 12, 1999, the Idaho Fisheries Resource Office (IFRO) checked for CWT retention and recorded that tag retention was 99.3 percent.

During February and March 1999 IFRO PIT tagged a total of 48,000 BY97 SCS. Information from these tags will help determine smolt travel time, interrogation rate at the dams, and adult survival. See the IFRO 1999 Annual Report for details.

On March 29, 1999, there were 35,843 BY97 SCS smolts released into the North Fork Clearwater River from RW11 to make room for 223,000 BY98 Dworshak stock SCS fry being transferred from Kooskia to Dworshak.

On April 7-8, 1999, there were 1,008,668 BY97 SCS released from Dworshak into the North Fork of the Clearwater River. These fish, along with those released in March, resulted in a total release of 1,044,511 BY97 SCS (Table 1). The release was performed late in the day to assist the smolts with predator avoidance. High water flow due to heavy rains also assisted in downstream migration.

Table 1. BY97 SCS in System I Raceways, 9/30/98, and release data, 3/29, 4/07 & 4/08/99.

September 30, 1998				% Loss 9/30/98 to 4/08/99	Final Release March 29, April 7 - 8, 1999			
Number	Weight lbs	fpp	Length mm		Number	Weight lbs	fpp	Length mm
1,099,066*	20,456	54.0	101	0.34	1,044,511*	49,787	21.0	138

*There were an additional 51,000 BY97 Kooskia stock SCS transferred from Dworshak to Kooskia on December 15, 1998 included in the September 30 numbers

Source: Production - MIS, Oct 1, 1998
Production - Production Narrative, April, 1999
Production - Final Release Summary, BY97 SCS

Brood Year 97 SCS had a cumulative survival from green egg to smolt of about 73 percent (Table 2).

Table 2. Survival summary from green egg to smolt, BY92-97 SCS reared at Dworshak.

	% Surviving from previous stage				Cumulative % Survival		
Brood Year	(Green to)Eyed Egg*	Tanked Fry	Ponded Finger lings	Smolt Release	Green Egg to Smolt**	Eyed Egg to Smolt	Tanked Fry to Smolt
1992	96.4	95.1	96.1	98.0	86.3	89.6	94.2
1993	87.2	95.9	99.4	97.7	81.2	93.1	97.1
1994	89.2	89.5	87.4	98.0	82.3	93.4	97.0
1995	71.5	96.0	96.0	98.3	61.8	90.8	94.4
1996	87.2	98.6	98.1	97.4	73.0	94.1	95.5
5yr Ave	**86.3**	**95.0**	**95.4**	**97.9**	**76.9**	**92.2**	**95.6**
1997	90.8	98.2	99.6	91.2	73.3	87.1	90.8
1998	91.1	N/A	N/A				N/A
1999	92.9						

* Data does not include eggs deliberately culled before enumeration
** Data does include eggs deliberately culled before enumeration beginning in 1995
N/A = all eggs incubated at Kooskia due to availability of chilled incubation water
Source: Production - Annual Report 1998
Production - Survival of green to eyed eggs BY97 SCS - inmosc97.wk4
Production - Spawning Report BY97 SCS
Production - Production Narrative, May 1999

Current research from the Idaho Fish Health Center indicates little or no increased survival of smolts when treated with erythromycin prior to release. Unlike previous years, there was no INAD investigation study for using erythromycin against bacterial kidney disease done with the BY97 SCS.

Spring Chinook Salmon
Brood Year 1998

There were 1,323 SCS adults returned to the complex in the summer of 1998, 408 returning to Kooskia and 915 to Dworshak. Twenty-seven of the Kooskia fish were passed over the weir into Clear Creek as Idaho Supplementation Study (ISS) fish. The adult returns for BY98 SCS yielded 80 percent (728) III-ocean adults. Since 1984, records indicate III-ocean returns averaged only 24 percent of the run. Adults spawned and eggs produced from BY98 SCS are represented in Table 1.

Table 1. Dworshak and Kooskia adult spawners and both green & eyed egg numbers, BY98 SCS.

Location Adult Return	Males spwnd	Fmls spwnd	Fmls Culled BKD	Dead egg trays culled	No eggs/ fmle	No green eggs after Culling	%Survl Enum Eye-up	No eyed eggs
Dworshak	311	434	30	3	4,153	1,665,474	91.1	1,517,820
Kooskia	115	154	2	6	3,726	544,044	85.9	467,243
Total/ Average	426	588	32	9	4,041	2,209,518	89.8	1,985,063

Source: Production - Final BY98 SCS Enumeration and % Survival of Eggs. SC98EGEN.wk4
Production - BY98 SCS Spawning Report
Production - Dworshak Annual Report, 1998

For large-scale incubation, the water temperature in the incubation stacks at Dworshak can be reduced to approximately 44°F. The incubation temperature at Kooskia can be maintained at approximately 39°F. It was recommended by the Dworshak Hatchery Evaluation Team (HET) that all BY98 SCS eggs be shipped to Kooskia for incubation after eye-up and enumeration at Dworshak. This should effectively delay hatching by approximately three months and assists in reaching the desired 20 fish per pound (fpp) size at release in the spring of the year 2000.

There were 151,000 eyed eggs distributed from Dworshak to Idaho Fish & Game (IDFG) at Clearwater Hatchery on November 4, 1998. These eggs consisted of 100,000 from Take 6, 25,000 from Take 7, and 26,000 from Take 8. All of these were excess eggs from Dworshak stock.

On July 28 and August 3 and 4, 1999, there were 274,000 excess BY98 SCS fingerlings transferred to the NPT for outplanting. The Columbia River FRO put coded wire tags (CWTs) in these fish, but with no external mark. On July 28, the NPT outplanted 110,220 BY98 SCS fingerlings into Mill and Newsome creeks. On August 3-4, the NPT outplanted 163,780 BY98 SCS into Meadow Creek by helicopter.

Personnel from Idaho Fish Health Center (IFHC) sampled all female SCS for Bacterial Kidney Disease (BKD). All eggs from females with an ELISA reading of greater than 1.0 were culled from Dworshak stock (30 females). There were 9 females of Kooskia stock with ELISA

readings higher than 1.0, but only two were culled due to the low numbers of Kooskia eggs taken for BY98 SCS. Personnel from IFHC recommended that low and medium BKD status eggs be grouped together as no apparent difference in survival/BKD occurrence has been noted in the past. Fish health personnel also tested females for other bacteria and IHN virus.

After eye-up and enumeration, there were 1.37 million BY98 SCS eyed eggs of Dworshak stock shipped to Kooskia during October/November 1998. There were a total of 467,000 eyed eggs from Kooskia stock also shipped to Kooskia during this time (Table 2).

Table 2. BY98 SCS eyed egg shipments from Dworshak to Kooskia and Clearwater Hatchery in October/November 1998. All low or medium BKD status eggs.

Date Shipped 1998	TAKE	EYED EGGS TO KOOSKIA- Dworshak Broodstock	EYED EGGS TO KOOSKIA- Kooskia Broodstock	EYED EGGS TO CWH- Dworshak Broodstock	TOTAL
Oct 7	1	151,088	39,273		190,361
Oct 15	2	293,830	87,616		381,446
Oct 16	3	231,286	21,654		252,940
Oct 22	4	424,985	127,379		552,364
Oct 23	5	92,041	15,210		107,251
Oct 28	6	97,226	88,350	100,000*	285,576
Oct 28	7	49,128	41,209	25,000*	115,337
Nov 3	8	25,000	46,552	26,000*	97,552
Nov 10	9	2,236	0		2,236
Total		1,366,820	467,243	151,000	1,985,063

* Eggs shipped to Clearwater Hatchery on November 4, 1998
Source: Production - Final BY98 SCS Enumeration and % Survival of Eggs SC98EGEN.wk4

On March 26, 30, and April 2, 1999, there were 21,000 high BKD BY98 SCS of Kooskia stock transferred from Kooskia to circular tanks in the Dworshak incubation room. On April 12, these fish were moved from the circular tanks to raceway (RW) B30.

On March 31 and April 1-2, 1999, there were 233,906 BY98 SCS unfed fry of Dworshak stock moved from Kooskia to RW A11 at Dworshak. These fish were moved about six weeks earlier than the majority of BY98 SCS due to space constraints at Kooskia.

From May 13-27, 1999, there were 1,041,451 BY98 SCS Dworshak stock transferred from Kooskia to Dworshak.

During August 1999 the Columbia River FRO clipped adipose (AD) fins of the BY98 SCS (excluding the 274,000 transferred to the NPT). There were also 136,400 SCS from four RWs which also received a CWT for contribution research. At this time inventory numbers were approximately 51,000 fish short of stocking numbers received in May.

By the end of FY99, there were 941,186 BY98 Dworshak stock SCS at Dworshak. These fish averaged 66 fpp and 94 mm total length (3.7 inches). The 101,161 Dworshak stock SCS at Kooskia will be transferred to Dworshak in February 2000 (Table 3).

Table 3. Dworshak stock BY98 SCS at end of FY99 and projected release from Dworshak, April 2000.

As of September 30, 1999					Projected to release - April 2000			
Location	Number	Weight (lbs)	fpp	L (mm)	Proj % Loss to Release	Proj Release Number	Proj Size at Release fpp	Proj Size at Release (mm)
Dworshak	941,186	14,273	66	94	2	922,362	18	145
Kooskia	101,161	3,018	34	118	2	99,138	18	145
Total/ Average	**1,042,347**	17,291	63	96	**2**	**1,021,500**	**18**	**145**

Source: Production - MIS, October 1999
Kooskia - Production Narrative, October 1, 1999

Spring Chinook Salmon
Brood Year 1999

Fish traps at both Dworshak and Kooskia were operated to collect BY99 SCS. The fish ladder at Dworshak was opened June 4, 1999, and closed September 21. There were 800 SCS that returned to Dworshak and 157 SCS that returned to Kooskia by the end of the spawning season (Table 1).

Table 1. Adult returns, BY99 SCS (09/30/99).

Age	Number/Dworshak	Number/Kooskia	Total
I-Ocean	670	72	742
II-Ocean	78	28	106
III-Ocean	52	57	109
Unknown	0	0	0
Total	800	157*	957

*20 of these fish were passed over weir into Clear Creek - ISS fish
Source: IFRO - Dworshak/Kooskia Complex SCS News-1999 Edition

Dworshak adult returns for BY99 SCS consisted of 84 percent (670) jacks. Since 1984, records indicate I-ocean SCS returns average only 12 percent of the run. Figure 1 displays the SCS returns to Dworshak since 1986.

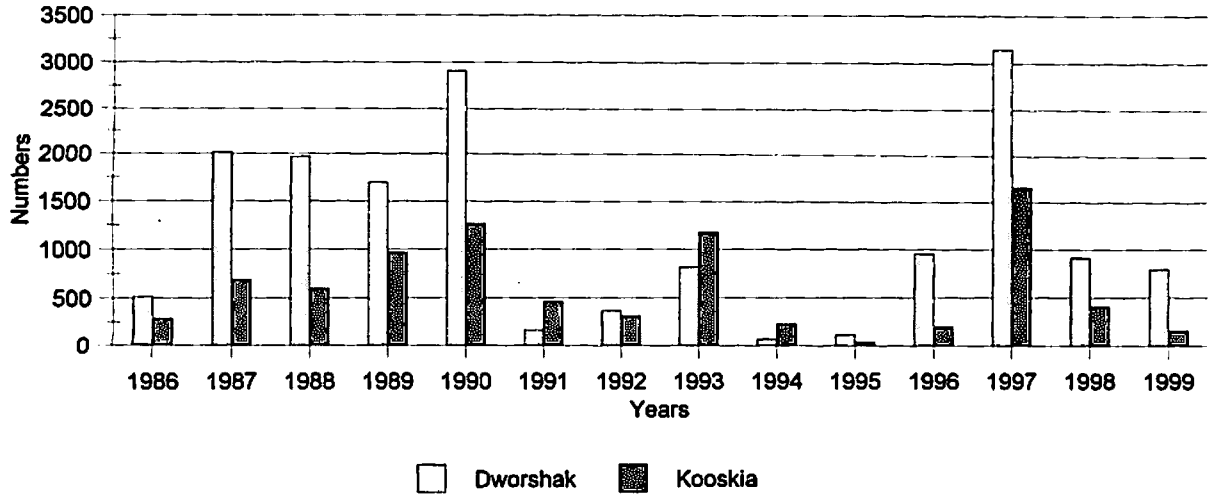

Figure 1. SCS returns to Dworshak/Kooskia 1986-99
Source: IFRO - SCS rack returns

Adult returns for BY99 SCS were not enough to meet the production requirements for Dworshak or Kooskia. A tribal harvest (36 adults, 57 jacks) took place along the Clearwater River in the spring and summer of 1999. The Tribe also harvested one adult from Clear Creek. During September/October 1999, the NPT transferred eggs from 40 females (approx 150,000 eggs) of Rapid River stock to Kooskia for incubation. These are to be final reared at Dworshak and released in the spring of 2001.

Adult Holding

Dworshak stock was kept in holding ponds (HPs) 1 and 2, Kooskia stock was held in HP3. Kooskia transported 137 adults to Dworshak as spawning stock. Kooskia stock received an opercule punch in order to distinguish between the two stocks. Formalin treatments were administered to the adults in order to retard fungus infection. Incoming females were also injected with erythromycin at a dosage of 20 mg/kg body weight as a preventative against vertical transmission of bacterial kidney disease (BKD).

Adult Mortality

Prespawning mortality (mortality before the first spawning on August 17) of BY99 adult chinook was 3.0 percent for Dworshak stock and 9.5 percent for Kooskia stock. During spawning, losses were 17.1 percent for Dworshak stock and 15.3 percent for Kooskia stock (Table 2).

Table 2. Mortality of BY99 SCS adults held from 6/99 until 9/21/99.

Time of Mortality	Dworshak		Kooskia		Total	
	Number	Percent	Number	Percent	Number	Percent
Prespawn	24	3.0	13	9.5	37	3.9
Spawning	137	17.1	21	15.3	158	16.9
Total	161	20.1	34	24.8	195	20.8

Source: Production - SCS BY99 Spawning Report
Production - Spawning Activity Reports, BY99 SCS

Twenty-one days before the first spawning date, erythromycin injections were given to the female SCS. Due to these injections, the use of MS222 for anesthetic, and the deteriorated condition of the adults after spawning, carcasses were unfit for human consumption and the majority were subsequently transferred to the landfill.

On August 17 there were 20 SCS carcasses donated to the Washington State University bear program.

On August 17 there were 105 BY99 SCS jacks transferred to the NPT. These were anaesthetized with carbon dioxide and not MS222 and did not receive any erythromycin injections.

On August 19 there were 273 jacks donated to the Elk River Food bank. These were anaesthetized with carbon dioxide and not MS222 and did not receive any erythromycin injections.

Spawning numbers/ratio

The BY99 Dworshak/Kooskia SCS spawning season began August 17, 1999. On September 14, one remaining green female of Dworshak stock was injected with LHRH. Spawning ended on September 21 as this lone female was spawned. Fish from each HP were sorted and spawned once/week along with new fish coming up the ladder into HP9.

Combining both Dworshak and Kooskia, there were 79 males and 89 females spawned (1:1.3 ratio). The fecundity was 4,180, up from the usual 3,500 eggs/female expected from Dworshak return SCS.

Dworshak spawned 63 females of Dworshak stock which, after culling 1 female for high BKD and one for dead egg trays, yielded 233,000 eyed eggs for its program.

There were 26 females spawned of Kooskia stock, providing 104,000 eyed eggs for the Kooskia program.

Spawning Procedures

The spawning procedure was similar to past years: adults were crowded from the holding ponds into a crowding channel, moved into a channel basket, and placed into an anesthetic bin. Each anesthetic bin was prepared with 130 grams/bin of Tricanine methanesulfonate (MS-222). Pro-Polyaqua was added (250 ml per bin) to reduce stress and susceptibility to infection. Oxygen was provided at a rate of one liter/minute. Spinal columns of ripe females were severed using a pneumatic knife. The females were then placed on a table for 3-20 minutes for blood drainage. The ventral side was then cut open using a spawning knife and eggs were collected in disinfected colanders. After ovarian fluid was drained, the eggs were poured into a clean bucket. Milt from ripe males was stripped into Styrofoam cups and a one-percent saline solution was added to assist in milt motility. The milt solution was poured onto the eggs and swirled for more complete fertilization. After sufficient time had elapsed for fertilization to take place (one to two minutes), the eggs were rinsed of sperm, blood, and other organic matter.

After fertilization, eggs were placed in Heath incubator trays at approximately 4,180 eggs per tray (1 female). In the tray was a 75 mg/l iodophor solution buffered with sodium bicarbonate. Eggs were maintained in this solution for approximately 30 minutes. This was done as a precaution against disease transmission. The egg trays were then pushed into the incubator. Water flow rate was approximately five gallons/minute and temperature averaged 41°F.

The number of adult spawners, eggs produced, and survival are illustrated in Table 3.

Table 3. Dworshak and Kooskia adult spawners and both green & eyed eggs, BY99 SCS.

Location of Broodstock Return	Males spwnd	Fmls spwnd	Fmls Culled BKD	No eggs /female	No green eggs after culling	Percent Enum Eye-up	No eyed eggs
Dworshak	56	63	1	4,094	249,726	93.3	232,990
Kooskia	23	26	0	4,378	113,827	92.1	104,867
Total/ Average	79	89	1	4,180	363,553	92.9	337,857

Source: Production - Spawning Activity Report BY99 SCS
Production - BY99 SCS Spawning Report

Idaho Fish Health Center (IFHC)

Kidneys were sampled for BKD from all females spawned. No males were sampled this year. The IFHC also took ovarian fluid from all females spawned for viral inspection. The adult females tested 1.6 percent (1 out of 63) high BKD (ELISA >1.0) for Dworshak and 0.0 percent (0 out of 23) for Kooskia. The one high BKD tray of eggs was culled to eliminate the risk of spreading the disease to the other SCS.

On July 26 personnel from IFHC injected all Dworshak and Kooskia stock females on station with erythromycin. All adult females which were collected after this date were also injected before spawning. This was done to help prevent parental disease transmission to the egg. As stated earlier, one remaining green female was injected with LHRH on September 14 and spawned on September 21.

Cryopreservation Study/University of Idaho

Dworshak continued to coordinate with researchers from the University of Idaho (U of I) in the cryopreservation of salmonid gametes. Rolf Ingermann and David Bencic are studying the relationship between carbon dioxide (CO_2) and the motility and viability of the sperm along with the adenosine triphosphate content of the sperm after exposure to the CO_2. Dworshak provided 75 ml milt from 10 Dworshak and 4 Kooskia jacks. Dworshak also provided 160 ml milt from 12 Dworshak and 7 Kooskia adult males. These gametes were from excess spawning requirements at Dworshak. Due to the low number of female returns, no SCS eggs were provided to the U of I research this year.

Dworshak also provided James Nagler from the U of I with tissue samples from 50 male and 50 female adult SCS. These samples are for research on Columbia Basin SCS comparing the genetic sex with their expressed phenotype. All samples taken were from either spawned out adults or jacks excess to Dworshak spawning requirements.

Idaho Supplementation Study (ISS)

Due to low adult returns to Kooskia, there were not enough ISS fish to transport to Dworshak for spawning. There were 20 ISS fish passed over the weir at Kooskia.

Spawning Summary

BY99 SCS adult return numbers were too low to adequately fulfill Dworshak's production goals. Projected release of BY99 smolts in the year 2001 is approximately 210,000 Dworshak stock and 125,000 Rapid River stock SCS reared at Dworshak.

Coho Salmon
Brood Year 1997

These coho salmon (COS) are being reared in RWs in C-bank in a cooperative program with the Nez Perce Tribe (NPT).

On April 1, 1999, there were 28,195 BY97 COS stocked into Clear Creek by the NPT. This was done to make room for BY99 COS. On April 20 and 21, 1999, there were 211,243 BY97 COS transferred from Dworshak to Kooskia. At the time of transfer the BY97 COS were 17 fpp and 140 mm (5.5 inches) total length. These fish were later released from Kooskia (See Kooskia Annual Report). The total BY99 COS raised at Dworshak was 239,438. The NPT is currently developing a COS Production Plan.

Coho Salmon
Brood Year 1998

On July 8, 1999, there were 23,828 BY98 COS outplanted by the NPT to the Selway River.

On October 1, 1999, there were 284,046 BY98 COS on station at 47 fpp and 100 mm (3.9 inches) total length.

Coho Salmon
Brood Year 1999

Brood Year 1999 coho (BY99 COS) are being trapped at Dworshak hatchery, Clear Creek, Potlatch, Lolo, Eldorado and Lapwai creeks. Personnel from the NPT are conducting the spawning at Dworshak with assistance from Dworshak staff. The eggs will be incubated at Dworshak.

Coho from Lyons Ferry Hatchery will also be transported to Dworshak by the NPT and mixed with coho adults trapped from the Clearwater River basin.

Rainbow Trout
Brood Year 1997 & 1998

On June 3, 1999, both BY97 and BY98 rainbow trout (RBT) were moved from BPs 1 & 3 and RW 15 to the settling pond for Open House on June 11.

On June 11, approximately 1,422 RBT were caught by 711 participants at the Open House.

Table 1 illustrates outplanting both BY97 and BY98 RBT from the Open House fishing pond.

Table 1. BY97 & BY98 RBT Distribution from Dworshak 1999.

Date 1999	Number	Fish/lb	Harvest/ReleaseSite	Comments
6/11	1,422	1	Dworshak	Open House
6/14	2,000	1	Kooskia	Open House
6/15	2,260	1	Kooskia	Open House
6/25	1,000	1	Talmak Lake	NPT transport
6/28	2,123	1	Talmak Lake	NPT transport
Total/Ave	8,805	1		

Source: Production - Production Narrative, June 1999
Production - Fish and Egg Fiscal Year 1999 Distribution Summary

Rainbow Trout
Brood Year 1999

Rainbow Trout from BY99 will be used for Open House Fishing Day 2000.

On January 5, 1999, Dworshak received approximately 15,750 Shasta strain RBT eyed eggs from Ennis NFH. For ease of record keeping at Dworshak, these RBT will be recorded as BY99. On February 25, approximately 14,750 of the RBT were moved from the incubation trays to the nursery. On June 8, 1999, these fish were moved from the nursery to BP1. At the end of FY99 there were 14,176 RBT averaging 4.6 fpp and 207 mm (8.2 inches total length) on station.

Rainbow Trout for Outplanting

Dworshak's current RBT program commitment is to provide 200,000 five-inch fish for stocking Dworshak Reservoir. Kooskia raised RBT for this program in 1991, 92, and 95. Concerns have been expressed regarding the stocking of these fish into Dworshak's and Clearwater Fish Hatchery's water supply (Dworshak Reservoir). There are also concerns about RBT crossbreeding with cutthroat in the North Fork of the Clearwater River and low catch rate by fishermen.

Because of these concerns, and because the USFWS is awaiting a mitigation report of the fishery from the University of Idaho, we are assuming the following fish exchange with IDFG:

Hagerman NFH will raise

95,000 K1/R1 9" fish, stocked in May at L. Camas Reservoir
11,000 K1/R1 10" fish stocked in October at C.J. Strike Reservoir
11,000 K1/R1 9" fish stocked in September at Lucky Peak Reservoir
11,000 K1/R1 10" fish, stocked in October at Oxbow Reservoir
12,000 K1/R1 10" fish, stocked in October at Hells Canyon Reservoir

IDFG's Nampa FH will raise

30,000 K1/R1 10-12" fish stocked in May at Dworshak Reservoir

Nampa will provide the fish transportation. If eggs are not available from Ennis NFH in December for Hagerman, the IDFG's Hayspur Hatchery will provide the eggs.

Rainbow trout reared at Dworshak NFH (river water) have not been stocked into the reservoir since 1984. Fish reared at Kooskia (well water) have not been stocked into the reservoir since 1993 (IFRO).

FACILITIES MAINTENANCE

Housing

Light switches in Residence #1 were repaired and/or replaced, as were the smoke detectors, and new air conditioners were installed in Residences #1 and #3.

OSHA Upgrades

- Hand rails for steps to the new fuel tank at the Main Pump House were fabricated
- Overhead over-height warning cable between System III and chinook raceways was replaced.
- Holes in the grating of the Mechanical Building I were patched to comply with safety requirements.
- Guard rails at the main entrance were repaired, and a new stop sign was installed. The lane divider at the main entrance was painted yellow.

Vehicle Maintenance

Electrical Carts. A new leaf spring was installed in electric cart #10. Assembled one new electric cart. Replaced solenoid on cart #5. Replaced tires on cart #4. Cart #6 battery charger was moved to Mechanical Building I. Potentiometers in carts #6 and #11 were removed. Roll pin for the selection switch on cart #4 was replaced. Batteries and master cylinder were replaced in Hubert's cart. Two cable posts and 3 cable ends were rebuilt for cart #5.

Vehicles. Arm rests, control switch and blade on the Dodge 4x4 were repaired. The clutch in the Ford pickup was replaced and a new fish tank installed. The trailer hitch was installed on the Ford Aerostar. The throttle cable on the Chevy S-10 pickup was replaced.

Heavy Equipment. A new front end protector was fabricated for the John Deere tractor. Points in the Komatsu forklift were replaced. The carburetor on the Kooskia distribution truck was repaired. The drive control and air filter were replaced in the lawn mower.

Production Equipment

Air line #2 in the holding pond was repaired. A section of the floor grate in pond 9 was repaired.

System II and III variable speed pumps were removed and taken to Idaho Machine for modification for new installation of frequency drive units. Pumps were subsequently re-installed. In December, new conduit was installed for the upgrade.

Broken conduit for pump #9 in System II was repaired, and a break in the 10" water supply line was mended. Ten-inch aluminum drain lines for System II and III reuse were installed, requiring 224 feet of pipe.

Drive chain on the front channel crowder was repaired. The chain guard and gear box for the drive on the channel crowder were pulled and replaced. A new lift motor was installed for the pond crowder. The beam and battery on the crowder was replaced after being damaged.

Cables on the #2 fish lift in the spawning room were replaced. A new ladder was fabricated for the spawning room basement to access pumps and valves in flooding situations. Also temporary heat was installed in the spawning room basement.

Two new heater motors were installed in the incubation room. Troughs and fittings were removed for the circular tanks in the incubation room in February. New circular tanks were plumbed and placed in the incubation room in March; a device had to be fabricated to assist in the removal of standpipe. Egg picker pump was replaced. The #3 incubator pump in Mechanical Building I was removed and replaced again after repairs were completed by Idaho Machine in Lewiston, Idaho.

Electronic monitoring equipment on the back side of the aeration chamber was removed and cleaned. GFCI and receptacle box on the biofilter wall by the aeration chamber was installed.

An aluminum work bench was constructed and placed in Mechanical Building I for production net repair, and an aluminum plate was placed on the wall near the net disinfection area for spill containment. Seven pond cleaning brush heads were fabricated for production in February. Nine pond broom heads were repaired in August. Ten more aluminum pond cleaning brushes heads were fabricated in September.

Screens with smaller mesh for the A-bank chinook raceway were built. The hydrant at the corner of B-bank of the chinook raceways was replaced. Handles on the Burrows ponds stand pipes were replaced. Aluminum step for Burrows pond #48 was repaired.

Temporary stop logs were fabricated and installed for System II in June. Aluminum stop logs were cut and installed for the chinook raceways in September. Rubber side seals were replaced on the steel stop logs for the Main Pump House intake, and rubber side seals on the intake screens were replaced, as well.

Fish pumps for release of fish were serviced. Fish planting trough was installed. Aluminum fish planting channel was constructed and installed in System III.

Buildings, Structures and Basic Equipment

Under-counter keyboard trays were installed in the Idaho Fish Health Center, and power was connected for the new office modules.

Flood damaged carpets were removed from the IFRO temporary office in the Feed Building, and the area was cleaned up. In May, new carpet was laid, new windows installed, and the electrical and telephone lines were upgraded. Also, a new landing and new steel steps were built, and a new steel exit door was installed.

In July, a concrete slab was poured near Mechanical Building II in preparation for installation of a new chemical storage building. The building was then painted. In August, a crew from WASCO lifted the new storage unit onto the slab.

Patching preparation was completed for asphalt repair. Asphalt chunks and concrete were hauled to WASCO's disposal site across the bridge. Herco Asphalt patched several areas around the hatchery.

New phone lines were installed in the copy room and lamp room to facilitate the new fax/copy machine and new weather station monitoring equipment. New power cord plugs and connectors were installed for equipment on the hatchery complex.

Floors were painted in the Main Pump House in December. The floors in Mechanical Building I were painted in February. Nursery room exterior access and roll-up doors were painted in August and September.

In Mechanical Building I, two new motors were installed to replace two burned-out motors, power and lights were run to the new work bench, and a net rack was built and installed. Also, conduit, wire, a light fixture, switch box and switch were replaced in the pipe gallery under Mechanical Building I.

In Mechanical Building II, the hydraulic cylinder on #2 boiler located in Mechanical Building II was replaced. The shaft for the circulation pump for boiler #2 was too long and was sent to Idaho Machine for repairs. The low water probe on #1 boiler was drained and repaired, and the air vent was replaced. The sand filter from Mechanical Building II was removed, including tanks, piping and tops.

New Chromalox heaters were installed in Mechanical Buildings I and II. A third heater will be used as a mobile heating unit. Spill response kits were assembled and installed in the Main Pump House, Mechanical Building I and II, and the oil shed.

The turbidity meter and conduit was removed from the Main Pump House, labeled and stored, and the kerosene heater was repaired, refueled and moved into storage.

A vibration monitor was installed in the Main Pump House. Conduit, breakers, conductors and eight high-output flourescent lights and four electrical power outlets were installed in the electrical shop. A new motor for the chemical building metering pumps was installed. The pulley on the furnace room air compressor was replaced as was the zone II water pump. A new heater was installed in the bathroom of the carpenter shop.

A new basement heater was installed. A domestic water flow meter was installed, and water throughout the hatchery was disinfected

For 6 days, beginning May 26, 6 to 8 inmates from the Idaho Corrections Institution in Orofino performed work removing the redwood trough from the release channels and doing general cleanup of the grounds.

Electrical monitoring specialist Dave Shirley of Avista Utilities installed a data analog recorder on the hatchery's incoming electrical supply. Incoming power will be monitored for fluctuation and consistence. Avista responded to our request for a more reliable power supply by initiating a power monitoring schedule. Additional monitoring and review of the station's power usage is scheduled.

New Projects

- A new door was ordered to replace the worn out door which provides access to the spawning room. A replacement door was ordered for the Main Pump House, as well, to rectify unsafe conditions. Dalton Door will be replacing these doors.

- Bids were received for roofing Mechanical Building I and the generator room. Cook Construction was awarded the job.

- Quality Heating and Air began installation of new Mitsubishi HVAC units September 27. Work will continue into October.

- Ryerson Steel will be manufacturing aluminum stop logs for chinook A & B raceways.

- Vaughn Custom Welding is the low bidder for fabricating and installing 55 more steps for the steelhead Burrows ponds. Work will commence in FY 2000.

- Strom (WASCO) began work on the brine tank contract in September.

ADMINISTRATION

Budget

Dworshak's FY99 total funding package from the COE, including overhead costs, was $2,153,633. Operating funds, not including support costs, were $1,711,950 (1935 account). Another $14,000 was received from quarters rental reimbursements (8610 account) for a total of $1,725,950 funding. Included in this figure was $65,000 budgeted to the Idaho Fish Health Center (IFHC) for their assistance on steelhead fish health issues and $65,000 to the Idaho Fishery Resource Office (IFRO) for continuation of their monitoring/evaluation of Dworshak's steelhead smolt production. LSRCP provided $356,200 (4710 account) for production of spring chinook salmon.

Major purchases included: a Dodge pickup truck (delivery date, February 2000), $21,795; chemical storage building, $11,228; incubator trays, $8,724; egg sorter, $4,532; circular and rectangular fish tanks, $4,819; electric cart, $5,390; aluminum steps for System 3, $5,390; office furniture, storage units and shelving for two offices (Production Supervisor and I&E), $8,850; Laptop computer, $1,662; four desktop computers, $7,200; draperies for the conference room, $1,527.34; HVAC units for three hatchery houses, $10,264; paving in the quarters area, $2,717.

FY 99 closed out with all accounts within 1 percent of allocations. Year end purchases for Dworshak NFH included a chemical storage building, aluminum steps for remainder of ponds, egg sorter, roof repair for a mechanical building, and heating/air conditioning units for the Administration Office.

Meetings

Deputy Complex Manager Owsley assisted Mike Silverman with the annual EPA inspection for the hatchery NPDES permit on October 1. On October 8, he assisted Julia Acabal with the DEQ mapping (GIS) of the NPDES discharge points at Dworshak NFH. July 13-14 Owsley assisted EPA and DEQ on the annual NPDES inspection/sampling for Dworshak NFH.

On October 6, Owsley attended a partnering meeting with the COE and E.P. Johnson Construction on the Underground Storage Tank (UST). Owsley met again with COE and E.P. Johnson Construction as well as DEQ and EPA regarding problems with the UST removal. One location had a tank that leaked.

On October 27, Complex Manager Miller met with COE Project Manager for Dworshak, Charlie Krahenbuhl, Tom Murphy from BPA, and Brad George, Idaho Department of Fish and Game, Clearwater Hatchery, to go over the small hydro plans for the Reservoir water supply line. Tom Murphy, BPA, needed to see and review the small hydro project that Idaho Resources is planning. On November 5, Owsley and the maintenance staff met with Clearwater Power about the small hydro project. Owsley met with Montgomery Watson and Idaho Fish & Game on the

small hydro project review in April. In May, Deputy Complex Manager Owsley met with a group from Idaho Water Resources, COE, on the project. Deputy Complex Manager Owsley attended another small hydro preconstruction meeting held in the hatchery conference room September 13.

On the afternoon of October 27, a meeting was held at Dworshak NFH with Vince Spisak of the Idaho Department of Transportation, COE personnel, Clearwater Power and the Ahsahka Water and Sewer District to discuss issues associated with the Highway 7 bridge construction and highway improvement. The plans for Highway 7 improvement to the new bridge call for excavation around some electrical and drainage pipes for the hatchery and also call for piping drainage ditch water from the COE A-road and Highway 7 back to North Fork Clearwater River to be dumped just above the hatchery intake. There is a concern here with water supply, highway spill accidents and digging around electrical and other piping. A follow-up meeting was attended by Deputy Complex Manager Owsley and Maintenance Supervisor Clifford with DOT and WASCO staff in April. Owsley attended the monthly Ahsahka bridge meeting on December 15.

On February 8, Complex Manager Miller, Deputy Complex Manager Owsley and Maintenance Supervisor Clifford met with the Department of Transportation engineers and the COE on the issue of the discharge of surface run-off water above the hatchery intake. It was recommended, and accepted, to tie into the existing hatchery storm drain system.

The Fall Coordination meeting was held in the hatchery conference room on November 12.

In December, Complex Manager Miller met with Dave Johnson of the Nez Perce Tribe and Jerry McGehee of Clearwater State Hatchery on the BY99 steelhead program for the Tribe. The meeting determined the steelhead egg taking protocol for tribal eggs.

Deputy Complex Manager Owsley and Purchasing Agent Sperber completed the annual Corps of Engineers property inventory in January.

On January 7, Deputy Complex Manager Owsley met with Kooskia NFH staff and Fish Culturist Niles regarding the power outage which occurred at Kooskia NFH on December 24, 1998, causing a loss of water for several hours.

Complex Manager Miller and Deputy Complex Manager Owsley met with Ray Kunicki, Department of Interior, Washington, D.C., on February 17 regarding safety issues in the field. Mr. Kunicki later sent a safety report on his field work to Dworshak.

On February 17, the Nez Perce Tribe, Idaho Department of Fish & Game, and hatchery staff held an outplanting subcommittee meeting in the hatchery conference room. This year's outplanting of fry, fingerling, smolts and adults was discussed. A decision to plant excess adult steelhead returning to Dworshak into area fishing ponds was made. The first outplanting of adults will be Thursday, March 4.

Complex Manager Miller attended a Clearwater Management Council meeting February 18 and another in March. Some discussions took place on improving direct boat access at the Kooskia hatchery property. In May, Miller met with Sam McNeil of Idaho Fish & Game to review area for a non-motorized boat ramp at Kooskia NFH.

Information & Education Specialist Sawyer attended *Discover a Watershed: The Columbia* workshop held in Richland, Washington, February 18-20.

Complex Manager Miller and Supervisory Fishery Biologist Semple attended the Idaho Chapter AFS meeting in Boise, Idaho, March 4-5. Also in March, Miller gave a classroom lecture at Washington State University on hatchery management to students in aquaculture; Miller also gave a talk to the University of Idaho Fishery students on Dworshak B-run steelhead. Deputy Complex Manager Owsley gave a tour of the hatchery to Dr. Sandra Ristow and 18 W.S.U. graduate students

March 17 the Dworshak Spring Coordination Meeting was held with State, Nez Perce Tribe, COE and USGS representatives in attendance. Plans for this spring's releases and fish production were reviewed.

In April, Complex Manager Miller gave a luncheon talk to the National Association of Retired Federal Employees (NARFE) about the current and expected operations of Dworshak NFH. Miller also attended a NMFS meeting in Lewiston, Idaho, regarding their recently released A Appendix of the Corps of Engineers Draft EIS on Lower Snake River Juvenile Salmon Migration Feasibility Study. It was a public meeting where NMFS explained their conclusions to date on dam breaching vs. transportation.

Owsley met in April with Mike VanStone, COE, Walla Walla, in regard to fixing the chemical storage bins for Systems II and III. They met again in May to discuss the repair of the salt tanks for the same systems.

Deputy Complex Manager Owsley also gave a talk at the noon lunch for Kiwanis in April. In May, Deputy Complex Manager Owsley met with Brian Miller, COE, Walla Walla, and a contractor from Houston, Texas, on repair of the traveling water screens at the main intake.

Complex Manager Miller gave a tour of the hatchery to John McKern, Lisa Heatherman, Jim Athern and Rudd Turn from COE, Walla Walla, and talked about hatchery rehabilitation needs. Miller, Deputy Complex Manager Owsley and Admin Support Assistant Galloway met with staff from COE, Walla Walla, Clarkston and Dworshak Dam on August 16 in the conference room to discuss rehabilitation projects and the FY 2000 and 2001 budgets.

September 13, Complex Manager Miller, Deputy Complex Manager Owsley and Maintenance Supervisor Clifford met with Brian Miller, COE, Walla Walla, on the rehabilitation items for Dworshak NFH.

In June, Complex Manager Miller traveled to Boise and met with GAO personnel on hatchery review. Deputy Complex Manager Owsley and Maintenance Supervisor Clifford met with Ray DeRuwe on weed control for the hatchery in conjunction with the COE contract for the dam. A plan was worked out where Dworshak would be covered under the COE contract.

Deputy Complex Manager Owsley attended the preconstruction meeting on the new fish weir at Kooskia NFH on July 7. Complex Manager Miller attended a construction meeting on September 1. The project is on schedule, and adult trapping could be impacted in the next couple of months. A monthly progress meeting to discuss construction activities on the Clear Creek weir project was held September 28. In attendance were Bill Strom, WASCO INC., John Farver, Bureau of Reclamation, Gary Blefgen, US Fish and Wildlife, Reece Voskuilen, SVERDRUP INC., and Assistant Hatchery Manager Bottomley, Kooskia NFH.

An OPM test was held July 8 for the position of Office Automation Clerk at Dworshak NFH. August 16 Deputy Complex Manager Owsley and Admin Support Assistant Galloway interviewed seven candidates for the position.

On August 2, Complex Manager Miller, Deputy Complex Manager Owsley and Maintenance Mechanic Clifford met with JTPA crew leaders Cliff Walker and Rick Aldinger regarding the summer youth programs at Dworshak and Kooskia.

September 2, Complex Manager Miller and Deputy Complex Manager Clifford attended a preconstruction meeting for the addition to the Idaho Fish health Center. The schedule and parking disruptions were outlined.

Miller met with Si Whitman, Nez Perce Tribe, on September 7 to discuss the Memorandum of Understanding the Tribe is seeking on fish culture training. Miller gave a special hatchery tour to Dutch Meir, Chief of Public Affairs, COE, Walla Walla, and Paul Johnson, chief of Public Affairs, COE, Omaha, Nebraska, on September 14.

Deputy Complex Manager Owsley gave a tour to the members of the Idaho Board of Health and Welfare, September 9. Owsley met and assisted with the Idaho Fish & Game Department with the new EPA discharge permit for the Clearwater Hatchery, September 13.

Deputy Complex Manager Owsley assisted the Idaho Fish & Game Department in developing a range/trail walk for the local Hunter Education Program, September 10 and 14. Owsley was the lead instructor for the fall Hunter Education Course in Orofino, September 13-25. Thirty-nine students participated in the two week course.

On September 20 Complex Manager Miller, Assistant Hatchery Manager Semple and Production Biologist Trock met with Nez Perce Tribe to coordinate plans for tribal coho production at Dworshak for FY 2000. Complex Manager Miller attended a Tribal subbasin meeting in Portland on September 23 with NMFS and Regional Office personnel. Miller and Maintenance

Supervisor Clifford met with COE and WASCO for a preconstruction meeting on the brine tank repair job, September 27.

Supervisor's Meetings were held December 10, January 20, February 4, May 6, and July 21.

Training

Deputy Complex Manager Owsley attended *Contracting Officer Technical Representative* (COTR) training in the Regional Office in Portland, Oregon, October 26-30

Diane Praest attended *Paradox Refresher* training at the Regional Office, December 2-4.

Mark Bright, Bob Clark, Rick King, James Niles, Dennis Ochszner and Kim Smathers attended *New Employee Orientation* in Portland, Oregon, October 26-30

Information & Education Specialist Sawyer attended *Fundamentals of Effective Program Management* and *Assertive Communication Skills for Women* February 1-5. Susan also visited Turnbull NWR while in the Spokane area.

Admin Support Assistant Galloway attended *Procurement Procedures for Administrative Professionals* at NCTC February 8-12.

Computer Specialist Bowen attended *Advanced Windows NT* training at NCTC campus February 8-12.

Electrician Ben Greene attended the *National Electrical Code Update* class held at Lewis-Clark State College in Lewiston, Idaho, February 13.

Dave Trainor, Rick King, Dworshak, and Gerry Fogleman, Kooskia, attended a *Mackey Pump School* course in Post Falls, Idaho, February 17-18.

Terry Weeks attended *A Very Small Water Systems Certification Review* workshop held at the University of Idaho February 25. Terry also began a semester-long course in Woodworking that is being held in the evenings at Orofino High School.

Admin Support Assistant Galloway attended *Administrative Training* in Portland, Oregon, March 23-25.

Purchasing Agent Sperber attended *Federal Financial System* (FFS) and *Remote Data Entry* (RDE) training at the Regional Office in Portland, Oregon, March 15-18.

Bob Clark attended *Cold Water Fish Training* in Bozeman, Montana, March 14-26.

Admin Support Assistant Galloway attended *Managing Performance and Conduct* training presented by NCTC in Salt Lake City, Utah, April 25-30.

Maintenance Supervisor Clifford attended *Heavy Equipment Examiner* training at Leavenworth NFH May 9-14.

Raymond Rosales attended *Heavy Equipment* training in Klammath Falls, Oregon, May 2-14.

Diane Praest and John Vargas attended *Management Skills for Non-Supervisors* at NCTC May 11-13.

Voice mail training was held on July 27 for Dworshak NFH staff.

Diane Praest, Bob Semple, Thomas Trock, Joan Sperber and John Vargas attended *How to Deal with Difficult People* in Lewiston July 20.

Terry Weeks tested and passed the *Drinking Water Operator* examination.

Electrician Ben Greene attended a half-day PLC training seminar in Lewiston September 28.

As part of a learning/training assignment, Tad Kasak spent three days working at the hatchery and assisted by compiling data and completing a few work projects. Tad was sent to us from the Snake River Basin Field Office and is a COOP student for the FWS.

Safety & Wellness

Safety Committee Chairman Smathers met with Tim Heacock of the American Red Cross, Lewis-Clark Chapter, in January to discuss implementation of training plans to form a hatchery "disaster response" team. The COE, USDA Forest Service, Clearwater State Hatchery and other local agencies have been contacted to encourage their participation in the training.

Clearwater Power conducted a "follow-up" safety meeting on October 20. The representatives from Clearwater Power presented a video and short demonstration on the effects and range of electricity and how to react/respond if you are in an emergency situation that includes downed power lines.

Also on October 20, Complex personnel received flu shots provided by the North Central District Health Department

A safety meeting was held on November 16. Tim Heacock of the Lewis-Clark Chapter of the American Red Cross gave a presentation regarding disaster services provided by the Red Cros and training that is available through that organization.

January's safety meeting was held on the 20th in the conference room. The health forum "Food, Fit, Fat & Fun" was presented by Clearwater Valley Hospital. Dr. Deborah Aaron presented the forum discussing the issues of good nutrition, the importance of exercise, and other important health aspects of maintaining a healthy weight.

Dr. Beah, Physician's Assistant from Clearwater Valley Hospital, presented a program on "Wheezes and Sneezes" addressing allergies and other respiratory problems on May 27.

Dr. Meza, Physician from Clearwater Valley Hospital presented a program on prostrate cancer to Dworshak NFH staff on June 24.

Social Activities

Production staff put on a chili-feed fund raiser on November 3. The event was well attended and raised $125.00 for the complex employee Sunshine Fund.

There was a holiday get-together for Dworshak Fisheries Complex employees on December 15, and the Complex employee Christmas party was held on December 19 at Big Eddy Marina at Dworshak Reservoir.

A Cinco de Mayo going away potluck honoring Craig Eaton was held May 6.

There was a noon barbeque for employees held July 28, and IFHC sponsored a hot dog feed for all Complex employees July 29.

Personnel Actions

James Niles and Dennis Ochszner promoted from WG-4 to WG-5 effective October 11, 1998.

Dave Owsley - title change from Environmental Engineer to Supervisory Environmental Engineer/Assistant Complex Manager, effective November 29.

Kim Seldon was promoted to Animal Caretaker, WG-4 effective March 14.

Kim Smathers, GS-4 OAC, transferred with promotion to OSHA, Gillete, Wyoming, effective March 28.

Ben Greene was promoted to WG-11, Electronics Mechanic, effective May 9.

Robert Clark was promoted to GS-7, Fishery Biologist effective May 9.

Craig Eaton, GS-9 Fishery Biologist, transferred with promotion to Mescalero NFH, Mescalaro, New Mexico, effective May 23.

Cliff Walker was hired as crew leader for JTPA effective May 16.

Connie Grant was hired as Information and Education Assistant, GS-5, effective July 4.

Mark Bright was promoted to Fishery Biologist, GS-0482-5, effective August 1.

Cliff Walker, Social Services Assistant, GS-0186-5, resigned effective August 14.

James Niles reassigned to Kooskia NFH as Animal Caretaker, WG-5049-5, effective August 15.

Kelly J. Gardner hired as Office Automation Clerk, GS-0326-3, effective August 29.

Dworshak Staffing

Dworshak Employees

Name	Position Title	Period of Employment	Status
Bright, Mark G.	Fishery Biologist	10/01/98 - 09/30/99	Permanent
Clark, Robert W.	Fishery Biologist	10/01/98 - 09/30/99	Permanent
Clifford, David E.	Maintenance Supervisor	10/01/98 - 09/30/99	Permanent
Eaton, Craig A.	Fishery Biologist	10/01/98 - 05/23/99	Permanent
Galloway, Mary Lou	Supv. Admin. Support Asst.	10/01/98 - 09/30/99	Permanent
Gardner, Kelly J.	Office Automation Clerk	08/30/99 - 09/30/99	Permanent
Grant, Connie	Information/Education Assistant	07/04/99 - 09/30/99	Temporary
Greene, Benny C.	Electronics Mechanic	10/01/98 - 09/30/99	Permanent
Izbicki, Adam H.	Fishery Biologist	10/01/98 - 09/30/99	Permanent
King, Rick A.	Maintenance Worker	10/01/98 - 09/30/99	Permanent
Miller, William H.	Complex Manager	10/01/98 - 09/30/99	Permanent
Niles, James R.	Animal Caretaker	10/01/98 - 08/15/99	Permanent
Ochszner, Dennis J.	Animal Caretaker	10/01/98 - 09/30/99	Permanent
Owsley, David E.	Environmental Engineer/ Assistant Complex Manager	10/01/98 - 09/30/99	Permanent
Praest, Diane E.	Budget Assistant	10/01/98 - 09/30/99	Permanent
Rosales, Raymundo A.	Maintenance Worker	10/01/98 - 09/30/99	Permanent
Sawyer, Susan E.	Information/Education Specialist	10/01/98 - 09/30/99	Permanent
Seldon, Kimberly K.	Animal Caretaker	10/01/98 - 09/30/99	Permanent
Semple, Robert A.	Supv. Fishery Biologist	10/01/98 - 09/30/99	Permanent
Sims, Hubert M.	Maintenance Mechanic	10/01/98 - 09/30/99	Permanent
Smathers, Kimberly A.	Office Automation Clerk	10/01/98 - 03/28/99	Permanent
Sperber, Joan, M.	Purchasing Agent	10/01/98 - 09/30/99	Permanent
Trainor, David A.	Electrician Helper	10/01/98 - 09/30/99	Permanent
Trock, Thomas J.	Fishery Biologist	10/01/98 - 09/30/99	Permanent
Vargas, John J.	Animal Caretaker Leader	10/01/98 - 09/30/99	Permanent
Walker, Cliff L.	Social Services Assistant	06/01/99 - 08/14/99	Temporary
Weeks, Terry C.	Maintenance Worker	10/01/98 - 09/30/99	Permanent
Wright, Benjamin A.	Animal Caretaker	10/01/98 - 09/30/99	Permanent

Other Staffing

Summer Youth Program (JTPA)

Roby, Dustin	Student Worker	06/07/99 - 07/20/99
Freeman, Matt	Student Worker	06/07/99 - 07/20/99
Lougee, Aaron	Student Worker	06/07/99 - 07/20/99
Ramey, Alex	Student Worker	06/07/99 - 07/20/99

Nez Perce Tribe (TERO/JTPA)

Miller, Beverly	Student Worker	06/07/99 - 07/20/99
Samuels, Joe	Student Worker	06/07/99 - 07/20/99

Temporary Service Employees

Burns, Mike	Laborer	08/17/99 - 09/30/99
Elwood, Rick	Laborer	09/22/98 - 11/09/98
Hamilton, Wayne	Laborer	03/29/99 - 09/30/99
Lange, Frances	Clerk	04/12/99 - 08/22/99
Straub, Angela	Clerk	04/05/99 - 04/11/99
Tipton, Randall	Laborer	07/22/99 - 09/30/99

OUTREACH AND VISITOR ACTIVITIES

Overview

The Dworshak Fisheries Complex Information and Education program experienced another successful year in generating public awareness through community outreach and on-site school group visits. The Complex was represented at local and regional natural resource education events, generating support for the site and agency. The 9th Annual Open House and Kids Fishing Day was again held on a Friday with near-record attendance.

Partnerships with external agencies continued working for natural resource education programs. Agencies included Army Corps of Engineers - Dworshak Dam visitor services; National Park Service - Nez Perce National Historical Park; U.S. Forest Service - Clearwater National Forest; and the Nez Perce Tribe. Area media continued strong support of hatchery programs by providing public service announcements, news stories and photos.

Volunteers and a part-time assistant were key to the success of the outreach program this year, as well as for other duties relating to fish culture and monitoring. Student interns also took part in hatchery programs, earning classroom credit for their work.

Information

Highlights for outreach and educational activities for the year follow:

On-site projects: A new position, Information/Education Assistant, was filled from June through the end of the year. Prior to her hiring, Connie Grant worked as a graduate-student intern from the University of Idaho, Moscow. Several key outreach projects were accomplished by her during the summer and fall seasons.
They included:

- designing self-guided tour route signs and hatchery spawning information sheets
- devising the hatchery self-guided brochure
- researching and constructing educational tools like the "Fish Wheel of Fortune," Fin Bin lesson plans,
- preparing and presenting evening summer programs for Dworshak state park
- developing spawning tour scripts for volunteer hosts

Off-site projects: Hagerman NFH requested the assistance of the I/E Specialist in designing a visitor information kiosk, through a cooperative agreement with University of Idaho Aquaculture Research Institute. Graphics, photos and text were compiled and the entire system was completed and delivered to Hagerman NFH for final installation.

Education

I/E Specialist Sawyer facilitated 2 Project WET teacher workshops for 30 educators.

National Wildlife Refuge Week was celebrated in Orofino, Kooskia and Kamiah schools, with middle school classes receiving posters and bookmarks on the refuge system.

Earth Week was celebrated at Big Eddy Marina - Dworshak Reservoir for the fifth year. Eight agencies sponsored interactive learning stations for 300 fourth graders over a three day period.

The Complex participated in natural resource education and career events including:

- Spring Valley Reservoir "Environmental Awareness Days"
- North-Central Idaho Career Fair, Nez Perce County Fairgrounds
- Clearwater County Sixth Grade Forestry tour - Lolo Creek
- Clearwater County Fair and Lumber Jack Days
- University of Idaho - Natural Resource Field Day
- Spokane Interstate Fair

Dworshak hatchery provided a learning site for the Orofino Students in Business and the Partners-in-Education program through Orofino High School.

Outreach Programs

National Fishing Week was celebrated at the 9th Annual Open House and Kids Fishing Day on Friday, June 11 with 711 children attending.

Hatchery staff assisted at the 3rd annual Idaho Salmon and Steelhead Days in Boise in September, with over 3000 4th grade students attending. Information/Education Specialist Sawyer co-chaired Gyotaku, Japanese style fish printing, while I/E Assistant Grant guided school groups during the 3-day event.

The Complex website was deployed on the Internet in January 1999. Links to Service-wide and regional programs are offered, as well as information and photos of Dworshak projects and programs. Counters on the main pages indicated over 1200 hits in the first six months. In addition, several on-line information requests were received from web surfers from as far away as Argentina!

Project ideas and hatchery improvements were submitted for the FY2001 congressional budget, targeting Lewis/Clark Bicentennial (LCB) events and anticipated traffic. This will be an area of increased involvement within the next few years. Dworshak NFH is one of two FWS sites on the travel corridor for the LCB years.

The Complex donated over 100 lbs of old uniform components to the international 'Leg Up' program, to be used by Russian wildlife officers.

Volunteers, Interns, and Other Helper Programs

The cooperative agreement with Retired Senior Volunteer Program (RSVP) was renewed. Three senior volunteers contributed 160 hours to school tours and public contact duties this year. Three other volunteers also contributed over 100 hours to hatchery operations, and all received recognition awards.

The Clearwater County Juvenile Probation Department provided three youth offenders for the annual Open House events in June. They assisted with fish painting and the kid's trout pond. A total of 18 volunteers contributed 145 hours to the Open House event in June.

Special Projects and Activities

Idaho Community Foundation awarded the hatchery a grant of $3300 to develop a "Hatchery in the Classroom" egg incubation project for two area schools. Proposals will go out late Fall of 1999, with the project beginning in Spring 2000.

The Nez Perce National Historic Trail committee held their annual meeting at the hatchery in October 1998, discussing upcoming LCB event plans and associated resource impacts.

Hatchery staff contributed funds, clothing, toys and food items to the local food bank, and an "adopted family" in the community during the Holiday season.

Dworshak hatchery celebrated its 30th anniversary in August 1999 with a public open house, special chinook spawning tours, refreshments and videos. Over 100 visitors and local agency employees attended.

Outreach and Visitor Activities – Photos

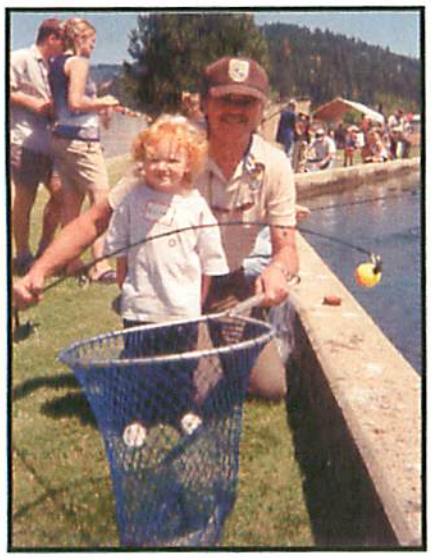

Photo descriptions, top left: The hatchery celebrated its 30th Anniversary in August with over 100 people attending an Open House reception; Top right: Children play the 'Wheel of Fish Fortune" salmon life cycle game at the Clearwater County Fair; Above left: The 9th annual Kids Fishing Day was a success with 711 children catching 2 rainbow trout each; Above right: Students take the "Hooks and Ladders" challenge at the 5th annual Earth Day celebration at Big Eddy Marina;;.

Outreach and Visitor Activities – Photos Continued

The 3rd annual Kids Fishing Day Poster Contest was held for local 4th grade students - prizes were awarded to the top 4 winners. Shown are judges Gloria Schloss, local artist, and Orofino City Manger Rick Laam.

Young artist at hatchery Open House displays her wearable art with *Gyotaku* fish print.

Students from local schools toured the hatchery during steelhead spawning season. Here they observe the process from the viewing balcony.

Students from Boise schools participate in the Salmon and Steelhead Days event, and painted salmon cutouts in front of the Fish & Game headquarters as one of many activity stations. Hatchery staff assisted during the 3 day event.

Visitor Use Statistics

Type of Program	# of contacts	% change from FY98
On-Site		
Visitors to Hatchery -	**8058**	(-1%)
Guided Tours -	**83**	**+48%**
Tour Visitors -	**1386**	(-25%)
Open House (children 12 & under) -	**711**	(-17.5%)
Others -	**1756**	(-2.5%)
Total On-Site Contacts -	**11,758**	(-7%)
Off-Site		
Programs/Displays/Events -	**34**	**+15%**
# of Contacts -	**7537**	**+8.5%**
Total Programs for FY99 -	**117**	**+26%**
Total Contacts for FY99 -	**19,395**	(-1%)

Statistics Summary

More hatchery guided tours were given to fewer people this year; however, overall hatchery visitation remained the same. This is due to the new schedule of weekend tours offered during the summer but relatively low attendance. Off-site outreach events and contacts increased this year because availability of staff to attend more events was made possible by the hiring of a part-time assistant to cover on-site programs.

Total programs offered increased by 25% and were attended by virtually the same number of people as last year. The radius of programs offered extended from Boise to Spokane, reaching a far broader audience than in previous years. The addition of a hatchery website also improved outreach contacts–nearly 1200 people visited the pages since the counters were added 2 months after the site deployed.

COOPERATIVE PROGRAMS

Dworshak Fisheries Complex personnel (Dworshak National Fish Hatchery, Kooskia National Fish Hatchery, Idaho Fish Health Center, and Idaho Fisheries Resource Office) worked closely with the following agencies and groups to accomplish various activities throughout the year.

Federal Agencies:

- -Federal Emergency Management Administration (FEMA)
- -National Marine Fisheries Service (NMFS)
- -National Park Service (NPS)
  - Nez Perce National Historical Park
- -Natural Resource Conservation Service (NRCS)
- -United States Department of Agriculture (USDA)
  - Clearwater National Forest
  - Clearwater County Extension Office
  - Nez Perce County Extension Office
- -United States Army Corps of Engineers (COE)
  - Walla Walla District
  - Dworshak Dam and Reservoir Project
- -United States Geological Survey (USGS)
  - Biological Services Division
  - Seattle Research Center
  - Columbia River Research Laboratory
- -United States Fish & Wildlife Service (USFWS)
  - Hagerman National Fish Hatchery

State Of Idaho:

- -Idaho Department of Employment
  - Job Training Partnership Act (JTPA)
  - Job Service - Orofino
- -Idaho Department of Fish & Game (IDFG)
  - Boise Headquarters Office
  - Lewiston Office
  - Salmon Office
  - Clearwater State Hatchery
- -Idaho Parks and Recreation Department
  - Dworshak State Park
- -Idaho State Historical Preservation Office (SHPO)
- -Lewis-Clark State College
- -University of Idaho (U of I)
  - Cooperative Fishery Research Unit (CFRO)
  - School of Forestry, Wildlife and Range Sciences
  - Aquaculture Research Center

State of Washington:

-Washington State University (WSU)
Bear and Eagle Research Unit

Tribal Entities:

-Coeur d'Alene Tribe
-Kootenai Tribal Fisheries
-Nez Perce Tribal Fisheries

Public Utilities:

-Bonneville Power Administration (BPA)
-Clearwater Power Company (CPC)
-Idaho Power

Local Government:

-Clearwater County Sheriff's Office (CCSO)
-Clearwater County Soil Conservation District
-Joint School District #171
-Latah County Soil Conservation District
-Orofino Chamber of Commerce

Special Interest Groups:

-Idaho Community Foundation
Northern Region Grant Program
-Idaho Food Commodity Program
-Pulp and Paperworkers Resource Council (PPRC)
-Retired Senior Volunteer Program (RSVP)

Other:

-Latham's Meats
-Lewis-Clark Recyclers
-NADL Recycling