ANNUAL REPORT

FISCAL YEAR 1998

DWORSHAK NATIONAL FISH HATCHERY

AHSAHKA, IDAHO

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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 Clearwater River. Dworshak Dam was constructed by the Corps of Engineers (COE) in 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 29 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), Dworshak NFH was expanded from its primary function as a steelhead mitigation facility to include spring chinook (*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 larger size. The adult return goal for Dworshak NFH 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 between Mechanical Building I and the main water line from 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 COE. This rehab plan detailed major upgrades and needs of the 28+ 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 Dworshak Fish Health Center and the Idaho Fishery Resource Office are 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, 1997 to September 30, 1998.

PROGRAM HIGHLIGHTS

Fish Production

Brood Year 1997 Steelhead

There were 2.15 million BY97 steelhead smolts released in April, 1998. They averaged 197 mm in total length, slightly under the 200 mm target size due to cold water releases from Dworshak Dam in the summer. The smolts were reared with low numbers of losses to IHNV as only fish in two Burrows ponds were confirmed with the virus (Monthly Inventory Summary-April 1998). There were 353,000 pounds of steelhead produced in 1998.

Brood Year 1998 Steelhead

There were 3,601 steelhead returned to Dworshak NFH in the fall of 1997 and spring of 1998. A total of 2.7 million eyed eggs went into Dworshak's production program. Dworshak provided 710,000 eyed eggs for Clearwater Hatchery (CWH). Also, 1.97 million green eggs were shipped to CWH 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. This is the seventh nursery rearing program that relied entirely on the water supply from Dworshak Reservoir. The 6,400 gpm received is sufficient to allow eggs and fry to be raised in reservoir water. The steelhead in this brood year also made the transition from inside rearing tanks to outside rearing ponds from water from the North Fork of the Clearwater River.

Brood Year 1996 Chinook Salmon

Dworshak NFH released 973,400 spring chinook salmon weighing 46,645 pounds on March 25-26, 1998. All releases were done in the evening hours to assist initial downstream migration.

Brood Year 1997 Chinook Salmon

Adult returns for Brood Year 1997 totaled 4,807 fish to the combined stations. These produced approximately 2.3 million eyed eggs and at the end of FY98 there were 1.1 million BY97 fingerlings at Dworshak Hatchery.

Brood Year 1998 Chinook Salmon

Adult returns for Brood Year 1998 totaled 1323 chinook to the combined stations. These have produced about 1.8 million BY98 eyed eggs after culling for Bacterial Kidney Disease (BKD).

Brood Year 1996 Coho Salmon

Coho salmon are being reared at Dworshak in a cooperative agreement with the Nez Perce Tribe (NPT). On March 17-20, 218,501 BY96 coho were shipped from Dworshak to Kooskia for final rearing and release. These fish were 18 fpp and 137 mm total length at the time of transfer from Dworshak. The NPT are developing a Production Plan for the COS. These fish were released at Kooskia in April 1998.

Brood Year 1997 Coho Salmon

At the end of FY98, there were 251,129 BY97 coho on station. These fish averaged 53 fpp and 96 mm total length.

Brood Year 1997, 1998 Rainbow Trout

There are 6,882 BY97 RBT on station averaging 4.8 fpp and 204 mm total length. These are being reared in Burrows pond 1. There are 4,814 BY98 RBT on station averaging 15 fpp and 140 mm total length. These are being reared in the nursery. Both these groups of fish are being reared for Open House, 1999.

Due to concerns about stocking RBT in Dworshak Reservoir, the following fish exchange is planned: Hagerman NFH will raise 90,000 K1/R1 5" fish, stocked in May at L.Camas Reservoir, 20,000 K1/R1 9" fish, stocked in October at Oxbow Reservoir, and 20,000 K1/R1 9" fish, stocked in October at Hells Canyon Reservoir. Nampa FH will raise 30,000 K1/R1 10-12" fish stocked in May at Dworshak Reservoir.

Cost

Dworshak's FY 98 funding package from the COE, including overhead costs, was $2,000,000. Operating funds, not including support costs, were $1,392,002 (1935 account). Another $18,068 was received from quarters rental reimbursements and regional office quarters account (8610 account) for a total of $1,530,070. Included in this figure was $60,000 budgeted to the Dworshak Fish Health Center (FHC) for their assistance on steelhead fish health issues and $60,000 to Idaho Fishery Resource Office (IFRO) for continuation of their monitoring/evaluation of Dworshak's steelhead smolt production. A special funding package of $300,000, less overhead costs of $72,000, was received from the COE in mid-September.

LSRCP provided $238,500 (4710 account) for production of spring chinook salmon.

Fish marking costs included $49,479 to ad clip 2.35 million steelhead June through August for release in spring of 1999. Fin clipping (1,100,374) and coded wire tagging (142,009) of spring chinook, costing $24,302, was completed in August.

Major expenses included: a Dodge minivan (delivery date, December 1998), $21,000; forklift, $22,537; lawn tractor, $6,809; Copier/Fax machine, $9,665; portable fish tank, $5,284; electric cart, $8,031; four computers for administration and production sections, $7,202; four storage sheds for hatchery housing, $6,687; wood heaters for three hatchery houses, $3,697; heat pump for quarters #2, $3,155; new carpet for quarters #1, $1,036.

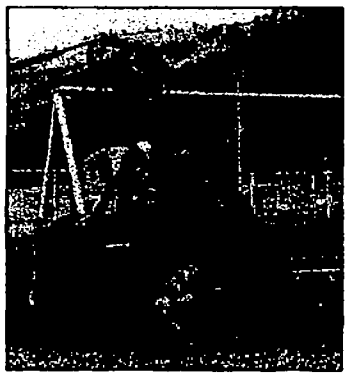
Staffing and Other

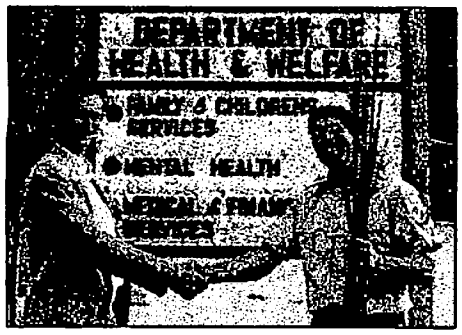
Full time staff years employed by Dworshak NFH were 21.4; permanent employees 19.7 and term/temporary employees 1.7 years. Twenty-nine employees were represented in the staffing during the year. This number does not include six temporary service employees for 2785 hours.

A seven-week Youth Program ended on July 21. The program, staffed with seven enrollees and one crew leader, performed numerous work projects with special attention to buildings and grounds maintenance. Dworshak participated in the YCC program through 1994, then, when it was discontinued, worked with Orofino Joint School District #171, in 1995 and 1996, to provide a program. In the past two years, a JTPA youth program was administered and funded by the State of Idaho.

The eighth annual Open House, again highly successful, was held on Friday, June 12, 1998. The highlight was a free fishing pond attracting 861 children to register and catch two rainbow trout each. Another 1200 adults attended the popular activities in conjunction with National Fishing Week. Gyotaku, the Japanese art of fish printing, was again very popular with visitors.

PROGRAM HIGHLIGHTS - Fiscal Year 1998
Photos and Headlines





Scenes from the past year include, from above right: hatchery workers releasing steelhead smolts; painting the new Production office; the Complex donated rods and reels to the Orofino Foster Kids program; center, young fisherman at annual Kids Fishing Day in June; new heated water line to nursery was installed; front view of hatchery.

How To Breach A Dam

Or, how to change a lake into a river after the river was changed into a lake.

Clearwater anglers will get a last shot at chinook on Friday

Water's for fighting

Power companies zap dam removal

Steelhead are in hot water

officials badmouth drawdowns

Steelhead stage a no-show

Computer studies give bad to ...

Fishing f... feds lesson in arrogance

How do you want your salmon ...

The White House to the West: ...

Chinook season could be limited to one weekend

A sho... the ...

BPA sees millions lost if dams are breached

SAVING SALMON

the Breach?

Opponents of breaching lower Snake River dams decry the potential loss of electricity produced by those dams. They also contend the dams are valuable in that they help prevent downstream flooding.

Today and Monday the Lewiston Tribune's continuing series on endangered fish runs and how to preserve them focuses on those two issues. At the center of the debate is a proposal to breach lower Snake River dams to aid the migration of salmon and steelhead, which has substantial ramifications for the people of this region in decisions about how to best proceed as expected by the end of 1998.

Our next segment of the series, how breaching might affect those who live downriver in the Tri-Cities area, will appear next Sunday.

We welcome your comments.

FISH CULTURE OPERATIONS

Steelhead Trout

Brood Year 1997

At the beginning of October 1997, all of the summer steelhead trout (SST) from brood year 1997 (BY97) were outside in Burrows ponds (BPs), totaling 2.32 million fish. Mortality was 7 percent from October 1, 1997 through April 30, 1998, and the final release number was 2.15 million fish with an average total length of 197 mm (Table 1).

Table 1. Fish inventory summary for BY97 SST on September 30, 1997 and final release summary in April, 1998.

	September 30, 1997			Sept-Apr % Loss	Final Release April 20- April 30, 1998		
Location	Number	Length in	Length mm		Number	Length in.	Length mm
Syst I	742,554	5.16	131	8.5	679,645	7.28	185
Syst II	635,592	4.09	104	2.9	617,056	7.70	196
Syst III	943,550	4.88	124	8.9	860,031	8.14	207
Tot/Ave	2,321,696	4.75	121	7.1	2,156,732	7.76	197

Source: Production- Final Release Summary, May 1998.
Production- Monthly Inventory Summary (MIS), October 1, 1997.

BY97 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 BY97 SST along with a five-year comparison. FY91 was the first year that a direct line from Dworshak Dam to the nursery was available, helping eliminate health problems in the early rearing stages of SST. Water flows in the Clearwater River were below average due to mild winter temperatures and low snowpack conditions brought on by El Nino. There was some pinhead dropout in the reuse systems during the winter months.

Table 2. Survival summary from green eggs to released smolts, BY93 through BY97, for 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
1993	90.6	92.6	87.2	68.9	50.4	55.6	60.1
1994	91.5	89.5	87.4	87.4	62.6	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	50.4	71.4	79.7
5yr Ave	**90.0**	**90.9**	**89.7**	**86.2**	**54.9**	**69.1**	**77.1**
1998 YTD	87.5	90.0	96.6				

Note: Data are only for SST reared entirely at Dworshak NFH.
* Data does not include eggs deliberately culled before enumeration.
** Data includes eggs deliberately culled before enumeration.
Source: Steelhead Spawning Report 1997, 1998
Nursery Loss-nulo98st.wpd

Reuse (heated water) for both Systems II and III was turned on November 19, 1997. Reuse in System II was turned off March 23, 1998. Reuse in System III was turned off March 16.

Research was conducted by the Idaho Fishery Research Office (IFRO) concerning decreasing the number of SST smolts which residualize in the Clearwater River after release. Growth and growth rate were manipulated in SST reared in 10 different BPs in System II. This was done by altering feeds and feeding regimes. Details of the study can be found under the System II heading and by contacting the lead researcher, Ray Jones. Results of the study are still pending.

Tagging and marking of SST continued in FY98. All BY97 SST received at least an adipose fin (AD) clip to identify it as a hatchery fish. Some SST also received coded wire tags (CWTs) and left ventral (LV) clips. Within these study groups, some fish also received freeze brands (FBs). 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. A total of 245,026 SST received CWTs and 42,232 received FBs. See the marking/tagging tables under each System for details.

System I

For BY97 SST, System I's production included 24 BPs. This System had 742,554 SST in it at the start of the fiscal year. The final release number was 679,645 SST at an average total length of 185 mm (Table 3).

Table 3. System I production, BY97 SST, FY98.

First of Month	Year	1st of Month			Growth		% Mortality	Ave Temp °F for month
		Number	fpp	L (mm)	in	mm		
October	97	742,554	20.80	131	0.81	21	0.54	47.6
November	97	738,518	15.40	145	0.54	14	0.12	49.2
December *	97	689,482	12.60	155	0.4	10	0.04	44.2
January	98	689,182	11.50	160	0.19	5	0.12	41.8
February	98	688,354	10.40	165	0.21	5	0.19	41.7
March	98	687,079	9.00	173	0.32	8	0.43	42.5
April	98	684,117	8.00	180	0.27	7	0.65	43.7
Release Apr/May	98	**679,645**	7.41	**185**				

*There were 51,920 SST from System I split to System II during December. These were early-return progeny from Takes 1 & 2.

Source: MIS, Sept 1997-May 1998
Daily Water Temperature Records, Oct-April, 1997-98
Production Narrative, December 1, 1997
Final Release summary, BY97 SST

Steelhead in System I received at least an adipose fin (AD) clip from July 24 through July 31, 1997. Table 4 illustrates additional marks and brands of BY97 SST in System I.

Table 4. Marking and tagging of BY97 SST, System I, FY98.

Date 1997	Burrows pond	Number CWT	Number Freeze brands	Fin Clips	Study	Release Site
10/28	BP 3	21,479	10,474	AD, LV	Sys I Contribution TK 5	DNFH
10/30	BP 29	21,766	0	AD, LV	Offsite Release TK 2	South Fork CWR
11/04	BP 39	22,951	10,711	AD, LV	Early Progeny TK 1	DNFH
	Total	66,196	21,185			

Source: MIS System I, Aug 1997
IFRO Branding, Tagging.DBF.
IFRO MRKLPN98.wk4
IDFG Fish Marking Summary 1997

The entire System was treated with formalin for Ich on October 1 and 2, 1997. On February 26, 27, and March 3, 1998, fish in all BPs of System I were treated with formalin for trichodina.

On January 20, 1998, fish in BP49 were confirmed positive for IHN. On February 5, fish in BP 37 were confirmed positive for IHN.

Mortality for the System remained relatively low and ranged between 0.04 to 1.59 percent/month during the rearing cycle.

System I was placed on demand feeders on November 3, 1997.

Release of the fish in System I occurred from April 20-27, 1998. On April 20-22, there were 259,148 SST outplanted from System I. The Corps of Engineers (COE) assisted in outplanting the SST to Clear Creek; the main stem of the Clearwater River at Kamiah; and the South Fork of the Clearwater River at River Mile 8.7, Red House Hole.

Direct release of 420,497 SST from System I took place April 27 into the main stem of the Clearwater River (Final Release Summary, BY97 SST).

System II

System II used 25 BPs for BY97 SST production. This System had 635,592 SST at the start of the fiscal year. The final release number was 617,056 at an average total length of 196 mm (Table 5).

Table 5. System II production, BY97 SST, FY98.

Month	Year	1st of Month			Growth		% Mortality	Ave Temp °F for month
		Number	fpp	L (mm)	in	mm		
October	97	635,592	41.71	104	0.90	23	0.37	47.5
November[1]	97	640,151	26.87	120	0.65	16	0.24	50.8*
December[1]	97	690,439	18.48	136	0.63	16	0.10	52.1*
January	98	689,756	14.34	148	0.47	12	1.53	54.0*
February	98	679,211	11.48	160	0.45	11	6.02	54.0*
March	98	638,292	8.78	175	0.59	15	2.73	51.9*
April	98	620,895	7.00	188	0.54	14	0.62	43.7
Release Apr/May	98	**617,056**	6.26	**196**				

* System under reuse for part or all of month.
[1] Readjusted numbers from marking trailer.

Source: Monthly Inventory Summaries, Sept 1997-May 1998
Final Release summary, BY97 SST,
Production Narratives Sept-May, 1997-98
Daily Water Temperature Records Oct-April, 1997-98

System II was placed on demand feeders on November 18, 1997.

Steelhead in System II received at least an AD clip in July or August, 1997. Table 6 illustrates additional marks and brands of BY97 SST in System II.

Table 6. Marking and tagging of BY97 SST, System I, FY98.

Date 1997	Burrows pond	Number CWT	Number Freeze brands	Fin Clips	Study	Release Site
10/24	BP 2	16,725	5,402	AD, LV	Sys II Contribution TK 14	DNFH
11/05	BP 42	23,285	0	AD, LV	Early Progeny, TK 1	DNFH
10/22	BP 48	17,355	5,189	AD, LV	Sys II Contribution TK 10	DNFH
10/21	BP 50	21,523	0	AD, LV	Offsite Release TK 10	South Fork CWR
	Total	78,888	10,591			

Source: MIS System I, Aug 1997
IFRO Branding, Tagging.DBF
IFRO MRKLPN98.wk4
IDFG Fish Marking Summary 1997

System II was treated with formalin on November 5 as a prophylactic for going on reuse. It was also treated again on November 21, 1997 as both a prophylactic for the System and for Ich which was found in some of System II BPs. The System was treated for Ich on December 16 and 20, and again on January 6 and 22, 1998.

Substantial numbers of small fish died from January into March as it appeared some did not convert to larger feed. Mortality for the System ranged from 0.10 to 6.02 percent/month during the rearing cycle.

Research was done by IFRO to reduce the number of SST which residualize in the Clearwater River. The growth rate in SST reared in BPs 16-22 was reduced by limiting food availability in the winter, and then increasing growth rate in the spring by increasing food availability. This may stimulate smoltification in smaller size SST. Fish in BPs 24-30 were fed a diet including glucans. This ingredient is believed to enhance fish health and growth. Steelhead in BPs 32-34 were fed a diet which contained salt. Salt in the diet may help smolts more readily acclimate to ocean condition. Results of the study are incomplete at the time of this writing.

System II converted to heated reuse water on November 19. Temperature averaged 54.3^{0}F for the remainder of November. Heat from the reuse boilers was turned off March 23, 1998.

Release of fish in System II took place April 22-29. Outplanting of 227,852 SST took place between April 22 and April 24. These fish were stocked into Clear Creek and the South Fork of the Clearwater River at Red House.

Direct release of 389,204 SST took place April 29 into the main stem of the Clearwater River. (Final Release Summary, BY97 SST).

System III

System III used 34 BPs for BY97 SST production. This System had 943,550 SST at the beginning of the fiscal year. Final release numbers were 860,031 fish which averaged 207 mm total length (Table 7).

Table 7. System III production, BY97 SST, FY98.

Month	Year	1st of Month			Growth		% Mortality for month	Ave Temp °F for month
		Number	fpp	L (mm)	in	mm		
October	97	943,550	24.80	124	1.02	26	0.10	47.5
November	97	948,152	19.20	135	0.43	11	0.35	49.7*
December[1]	97	944,869	14.70	147	0.49	13	0.15	54.0*
January	98	943,431	11.60	159	0.48	12	4.13	53.8*
February	98	904,512	9.00	173	0.55	14	3.47	54.2*
March	98	873,138	6.90	189	0.63	16	0.95	50.0
April	98	864,805	5.60	203	0.54	14	0.55	43.7
Release Apr/May	98	**860,031**	5.29	**207**				

* System under reuse part or all of month.
[1] Adjusted inventory numbers from marking crew.
Source: Monthly Inventory Summaries, Sept 1997-May 1998
Final Release summary, BY97 SST
Production Narratives Sept-May, 1997-98
Daily Water Temperature Records, Oct-April, 1997-98

Steelhead in System III received at least an AD clip in either July or August, 1997. Table 8 illustrates additional marks and brands of BY97 SST in System III.

Table 8. Marking and tagging of BY97 SST, System III, FY98.

Date 1997	Burrows pond	Number CWT	Number Freeze brands	Fin Clips	Study	Release Site
10/08	BP 59	17,353	5,140	AD, LV	Sys III Contribution TK 6	DNFH
10/20	BP 62	17,595	5,256	AD, LV	System III Contribution TK 8	DNFH
10/14	BP 83	21,649	0	AD, LV	Offsite Release TK 7	South Fork CWR
10/21	BP 85	22,340	0	AD, LV	Offsite Release TK 7	Clear Creek
	Total	78,937	10,396			

System III was treated with formalin on November 5-7 as a prophylactic for going on reuse and for Ich which was seen on some SST. The System was treated again after reuse on November 24 as a prophylactic and for Ich which was found in some of System III BPs. System III was treated with formalin for Ich on December 22, 1998.

Substantial numbers of small fish died from January into March as it appeared some did not convert to larger feed. Mortality for the System ranged from 0.10 to 4.13 percent/month during the rearing cycle.

All SST in System III were put on demand feeders in October, 1997.

System III was put on heated reuse water on November 19, 1997. Due to the large size of the SST in System III, heat from the reuse boilers was turned off March 16.

Release of fish in System III took place April 20-30, 1998. There were 440,788 steelhead from System III outplanted April 20-24. These went to Clear Creek and the South Fork of the Clearwater River at Red House.

Direct release of 419,243 SST took place April 30 into the main stem of the Clearwater River (Final Release Summary, BY97 SST).

Distribution Summary

Release of BY97 SST began April 20 and ended April 30, 1998 (Table 9).

Table 9. Fish distribution summary by site, BY97 SST, April 20-30, 1998.

Site	Number	Weight	fpp	Length	
				in	mm
Outplants 4/20-4/24					
Main S Clearwater R- Kamiah	30,601	4,372	7.00	7.42	188
S.F. Clearwater R- Red House	606,201	100,232	6.05	7.79	198
Clear Creek	290,986	45,312	6.42	7.63	194
Subtotal	927,788	149,916	6.19	7.73	196
Direct Release 4/27-4/30					
Main Stem Clearwater River	1,228,944	203,048	6.05	7.79	198
Totals/Averages	**2,156,732**	**352,964**	**6.11**	**7.76**	**197**

Source: Final Release Summary, BY97 SST

Brood Year 1998

Adult Collection

Adult summer steelhead trout (SST) for Brood Year 1998 (BY98) were collected in the late fall of 1997 and again in the winter and spring of 1998 to represent the entire run. The ladder was first opened on October 3 and closed December 10, 1997. During this 68-day period there were 320 early-run steelhead collected. The fish ladder was then reopened on February 2 and closed on May 4, 1998. During the February through May operation, 3,281 steelhead were collected for a total of 3,601 fish trapped for the BY98 run. Included are 210 jacks which returned during the BY98 run.

Historically, the male:female return ratio has been 1:2.2. In 1998 the return ratio was 1:1.9 (1,223 males : 2,378 females). Figure 1 illustrates the numbers of returning adults of SST since 1989, the first year that opening the ladder in the fall became the standard operating procedure.

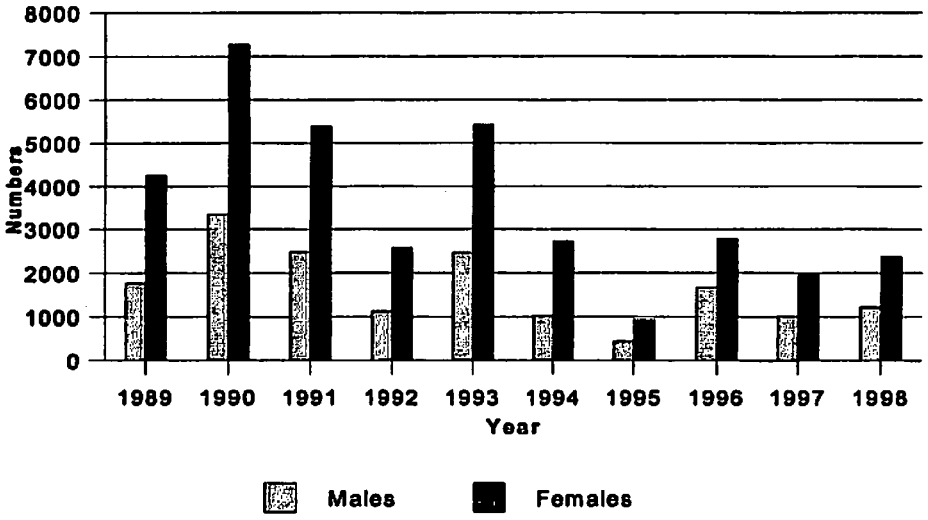


Figure 1. Dworshak adult SST returns 1989-98

Source: PROD- Spawning Report SST BY98
PROD- Spawning/Egg Take Plan SST BY98, ST98ET28.wpd
IFRO- SST Rack Returns, Sth98ent.wk4

There were 23 fish (15 females, 8 males) of the 320 early return adults which died before spawning. One hour formalin bath treatments of 167mg/L began on December 10, 1997, and appeared to control fungus.

Spawning Procedures

Spawning began Tuesday, February 3, 1998 and was conducted each Tuesday until May 5. During the first 10 egg Takes, adult returns from the prior one-to-two weeks were spawned initially, then fish from earlier returns were spawned if needed. After spawning was completed, personnel from the Idaho Fishery Resource Office (IFRO) would then inspect fish for marks, tags, etc., from HP9 (the most recent adult returns). These fish were then placed in a holding pond for spawning the following week. This procedure worked well for both Production and IFRO staff in lessening congestion in the spawning area and reducing actual spawning time. This is a similar procedure used in 1997. River water temperature averaged 2^{0}F warmer than last year, and adults in the holding ponds became ripe much earlier in 1998. For egg Takes 11-14, personnel from both the IFRO and Production concurrently inspected and spawned the most recently returning adults from HP9. If there were not enough fish in this pond to reach spawning targets, fish held in other HPs were then spawned.

Total survival of egg Takes 1-3 were 49, 36, and 53 percent, respectively, far below the expected 80+ percent survival. These were all early-return adults. Take 4, which contained 40 percent early-return females and 70 percent early-return males, had an 86 percent total survival. A difference in spawning procedures during these egg Takes from past years was that the eggs and milt were tempered from the 42^{0}F water that the adults were in to 46^{0}F for egg fertilization and rinsing. The eggs were then placed into 54^{0}F water in the incubation trays. Some of the eggs from Take 6 were tempered while others were not. Results from this experiment proved inconclusive, and the entire Take averaged 90 percent total survival. Egg Takes 5, and 7-14 were not tempered and the average total survival of these eggs at Dworshak was 86 percent.

There were 1.3 million green eggs from Takes 9-12 scheduled to be taken by personnel from Clearwater Hatchery (CWH) and transported green for initial incubation at CWH. Eggs from Takes 9 and 10 taken for Magic Valley Hatchery (MVH) had poor survival. Dworshak spawned 70 extra females for MVH during Takes 11, 12, and 13. The final number of eggs taken for MVH was 1.97 million. Also, Idaho Department of Fish & Game (IDFG) policy called for culling of eggs from IHN high positive females, which resulted in 32 of these females being culled (200,000 eggs). Dworshak has no policy to cull eggs from high IHN SST females. Dworshak incubated eggs from 40 females for MVH taken during Take 13 as CWH did not have space for these eggs.

There were 700,000 eyed eggs from Takes 7-9 scheduled to be taken for CWH, incubated and enumerated at Dworshak, and then transferred to CWH. Fourteen of the 50 females spawned for CWH during Take 7 tested high for IHN and were culled by Dworshak personnel as per IDFG policy. Nine of the 43 females spawned for CWH during Take 9 were also culled for this reason. Based on the occurrence of IHN from Take 7, an extra 20 females were spawned for CWH during Take 10. Survival of eggs from Take 8 was 95 percent and helped provide enough eggs to meet the CWH egg request. Subsequently, the eggs from the 20 extra females taken during Take 10 were culled. Dworshak also provided 11,000 eyed eggs from Takes 7-9 for IDFG and

Potlatch Pulp & Paper Mill school outreach program.

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. 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 is more stressful on the fish than MS-222, these carcasses can be used for human consumption. Oxygen was provided at a rate of one L/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.

This year there was a separate table for males and females on the spawning room floor. This eliminated having to carry the male adults across the spawning room floor and also aided in keeping water from splashing up from the female table and activating the milt. 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 6,500 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 vertical disease transmission. The egg trays were then pushed into the incubator. Water flow rate was approximately five gallons/minute and temperature averaged approximately 54^{0}F.

Upon eye-up (approximately 16 days after fertilization at 54^{0}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 4-6 were placed into 2.5 gallon hatching jars (16,000 eggs per jar) in the nursery. Due to mechanical failures with boilers and construction involving nursery waterlines, water temperatures varied greatly in the nursery. Eggs from Takes 1-3 and 7-14 were enumerated and returned to Heath trays (6000 per tray) and hatched in the warmer incubator water. 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. Eggs which hatched out in the incubator room were transferred out to the nursery in the incubator trays.

Dworshak Fish Health Center Disease Sampling

About 12 percent (32 out of 277 females) of the females spawned for Magic Valley Hatchery (Takes 9-13) tested high positive for IHN and were culled. This testing was done by personnel from Dworshak Fish Health Center (DFHC). All disease testing on eggs for Clearwater Hatchery was done by IDFG's Eagle Creek Laboratory. Fourteen percent (20 out of 143 SST

spawned during Takes 7-9 for CWH) tested high positive for IHN. A complete summary of findings regarding disease sampling is being prepared by DFHC.

Spawning Summary

We had a total of 14 egg Takes this spawning season, beginning on February 3 and ending on May 5. There were 1105 females spawned of which 107 were culled due to disease status, dead egg trays, etc. The average fecundity of all SST enumerated at Dworshak was 6,490 eggs/female. Early-returning adults were spawned in Takes 1 through 3, and partially in Take 4. Later returning adults were spawned from Takes 4 through 14.

Egg Disposition

Idaho Department of Fish & Game requested 700,000 eyed eggs for its Clearwater Hatchery program and 15,000 green eggs for the Potlatch Pulp & Paper Mill school project. Dworshak incubated and enumerated 711,000 eyed eggs for CWH from Takes 7-9. Out of the 50 females spawned for CWH during Take 7, 11 tested high for IHN. Because IDFG policy calls for culling eggs from high positive IHN females, Dworshak also took an additional 135,000 eggs during Take 10 for CWH. High survival of eggs from Takes 8 and 9 made up for the loss in Take 7, and these 135,000 eggs from Take 10 were subsequently culled.

Idaho Department of Fish & Game also requested 1.3 million green eggs for MVH. Information provided by CWH personnel indicated that green eggs taken for MVH had poor survival from egg Takes 9 and 10. A possible cause may have been high water temperature (two degrees higher than normal), resulting in overripe adults. Because adults were ripening faster than normal, fish that most recently returned to the hatchery were spawned first for Takes 11-14. When spawning requirements were not met using these SST, the "older" fish were then spawned. Compounding the poor survival of eggs from Takes 9 and 10 for MVH, 32 females which tested positive for IHN were also culled as IDFG policy. Extra eggs were taken during Takes 11,12, and 13 for Magic Valley to help make up for these prior losses. Dworshak personnel took a total of 1.97 million green eggs for MVH . Eggs from 40 females from Take 13 for MVH were incubated at Dworshak because CWH had no room in their incubator stacks. Eggs from 13 of these 40 females were culled due to testing high positive for IHN. Eyed eggs from the remaining 27 females were transferred to CWH for enumeration.

After shipping eggs for Clearwater Hatchery (CWH) and Magic Valley Hatchery (MVH), and culling both green and eyed eggs, Dworshak put 2.7 million eyed SST eggs into either incubation trays or hatching jars for its production program.

Milt Motility and Viability Study

This is the second year that Dworshak has provided milt and eggs to the University of Idaho for sperm quality and fertilizing capability studies in correlation with the stored ATP content of the sperm. Semen samples are maintained at 2^0C under different oxygen concentrations (ranging from 0% to 100% oxygen) while measuring sperm ATP levels. Because males were in short supply, Dworshak provided a portion of milt from 27 males and eggs from 14 females for the study. All eggs and milt given for research to the University of Idaho were partial lots shared with Dworshak production and included in Dworshak's spawning numbers. The contact person is Rolf Ingermann

Androgenesis Study

Dworshak provided eggs from three SST for researchers from Washington State University for androgenesis experiments (an embryo with only male chromosomes) and genetic smoltification experiments. The contact person is Gary Thorgaard.

Adult Disposition

There were 391 adult outplants to the South Fork of the Clearwater River from Dworshak during the return run of BY98 steelhead. Table 1 illustrates the adult disposal of BY98 SST.

Table 1. Adult disposition of BY98 SST from Dworshak.

LOCATION	NUMBER	COMMENTS
Landfill	0	
WSU & Idaho Bear Program	834	
Bureau of Prisons	2376	
Outplanted	391	5 returned (3 jacks)
Total	3601	

Source: PRD-Spawning Activity Report BY98 SST, Take 14
PRD-Spawning and Run Summary, BY98 SST
FRO-Adult steelhead outplanting 1998

Nursery and Early Rearing

Warm water to half the nursery, C & D banks, was established on April 22, 1998. Because of this, fry from Takes 1-7 and 11-14 were put into the nursery tanks at final nursery rearing densities, a maximum of 16,500 fish/tank. Only Takes 8-10 were double loaded and had to later be split. These were double loaded due to space constraints in the nursery. This was the first time that the majority of SST fry could be loaded into the nursery and eliminate handling due to

splitting. For the second year, entire Takes were put into the nursery in banks of four or eight tanks, with lots of either 132,000 or 264,000 fish/Take. Takes 1-3 and 7-14 were incubated in Heath trays and taken to the nursery after hatching. Eggs from Takes 4-6 were placed into incubator jars over the tanks. When approximately 70 percent of the fry had hatched, the remaining fry were poured into the tank. Dead eggs and fry were picked and enumerated from each tank and tray. Mortalities up through two days after swim-up were subtracted from initial loading, resulting in "adjusted initial loading" numbers (fish-on-feed). There was a 90.0 percent survival from the eyed eggs/fry into the nursery to fish-on-feed for BY98.

Fish were moved from the nursery to outside BPs when they grew to approximately 90 fpp. Take 1 was transported to BPs beginning on June 2, 1998, with subsequent Takes moved out approximately one-two weeks after this. The final Take, Take 14, was moved out of the nursery on August 26. Careful coordination with the marking crew from IDFG allowed for BY98 SST from Take 6 through Take 14 to go directly from the nursery to the marking trailer and subsequently stocked at final densities into BPs. This reduced stress on the fish by eliminating a handling session and also reduced manpower needed for crowding and netting fish from BPs.

Feed

Nine different feed sizes are used in the production of SST at Dworshak (Table 2). 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. For BY98, floating heat- extruded feed is used for the larger fish. Advantages of this food appear to be greater palatability, less waste, and better conversion.

Table 2. Feed changeover table for BY98 SST.

Feed No	Feed Type	Feed Name	Abbrev	Start fpp	End fpp
1	Biodiet Starter	BDS 1	BDS 1	2500	1500
2	Biodiet Starter	BDS 2	BDS 2	1500	700
3	Biodiet Starter	BDS 3	BDS 3	700	400
4	Biomoist Grower	BMG 1.0	BG10	400	300
5	Biomoist Grower	BMG 1.3	BG13	300	200
6	Biomoist Grower	BMG 1.5	BG15	200	100
7	Biomoist Feed	BMF 2.5	BG25	100	20
8	Extruded Floating	RGF 3/32	EF1	20	13
9	Extruded Floating	RGF 1/8	EF2	13	1

Source: Annual Report 1997

Historical losses indicate a projected release number of approximately 2.2 million SST in the spring of 1999. Table 3 illustrates the steelhead on station at the end of FY98 and projected release numbers.

Table 3. BY98 SST on station and projected release summary, (9/30/98).

As of September 30, 1998					Projected to release - May 1999		
System	Number	Weight (lbs)	fpp	L (mm)	Proj % Loss to Release	Proj Release Number	Proj Size at Release (mm)*
Sys I	634,890	22,015	28.8	118	5	603,146	185
Sys II	689,297	11,504	59.9	92	5	654,832	194
Sys III	1,012,459	23,697	42.7	103	5	961,836	209
Total/ average	**2,336,646**	57,216	44.0	104	**5**	**2,219,814**	**198**

*Projected length based on Systems II & III going on reuse Mid-November and off reuse on April 1.
Source: MIS data, October 1, 1998
Production Narrative, September, 1998

System I

System I received 640,571 BY98 SST. Steelhead in System I were moved out of the nursery beginning with Take 1 on June 2,1998 and ending with Take 6 on July 14. Fish from Takes 1-5 were loaded from the nursery to the BPs. Fish from Take 6 were loaded directly from the nursery to the AD clipping trailer and then stocked out of the trailer into the BPs at final rearing densities.

No IHN had been confirmed in System I by September 30, 1998.

System II

System II received 691,639 SST during August, 1998. SST in System II were move out of the nursery beginning with Take 10 on August 10 and ending with Take 14 on August 26. As with fish from Take 6 in System I, SST from Takes 10-14 were loaded from the nursery into a transport tank and moved directly to the marking trailer. From the trailer, fish were marked and stocked at final densities to the outside BPs. Three BPs in System II were loaded with early return progeny. Ponds 46, 48, and 50 received SST from Takes 3, 2, and 1, respectively.

No IHN had been confirmed in System II by September 30, 1998.

System III

System III received 1,022,021 SST from Takes 6 through 10 beginning with Take 6 on July 15 and ending with Take 10 on August 10. These fish were loaded directly from the nursery to the marking trailer and then stocked at final rearing densities into System III BPs.

There were fish in two ponds, BP55 and BP57, that were confirmed to have IHN by the end of FY98.

Spring Chinook Salmon
Brood Year 1996

On October 1, 1997, there were 786,667 BY96 spring chinook salmon (SCS) on station at Dworshak. There were 17 raceways (RWs) of low BKD status fish, five RWs of medium, and two of high (one was from Kooskia stock). On October 28, 1997, this RW of Kooskia stock SCS was transferred to Kooskia.

All BY96 SCS were adipose fin (AD) clipped between August 7-23, 1997. There were 143,677 SCS coded wire tagged (CWTd) and adipose fin (AD) clipped from August 7-13. Information from this tagging will help determine contributions to various fisheries. During March, 1998, the IFRO checked for CWT retention and noted that tag retention was 98.7 percent.

Beginning on February 11, 1998, until March 9, there were 47,740 SCS PIT tagged by IFRO. Information from these tags will help determine smolt travel time, interrogation rate to the dams, and adult survival. See the IFRO Annual Report for details.

On February 22, 1998, a 21-day erythromycin treatment was started on fish in RWs 29 and 30 (59,600 fish). These fish were from high BKD status females.

On March 25 & 26, 1998, there were 973,400 BY96 SCS released from Dworshak. These were of low, medium, and high BKD status. The fish were released between 5:00 to 6:30 PM both evenings. High flows of 4000-6000 cfs were secured from the Corps of Engineers from 4:00 PM until 6:00 AM the days of release. It appeared the fish migrated from the hatchery area by the following morning. Final release numbers of BY96 are in Table 1.

Table 1. BY96 SCS in System I Raceways, 9/30/97, and release data, 03/26/98.

September 30, 1997				% Loss 9/30/97 to 3/26/98	Final Release March 25-26, 1998			
Number	Weight lbs	fpp	Length mm		Number	Weight lbs	fpp	Length mm
786,667	15,775	49.9	103	0.56	973,400*	46,645	20.9	138

* There were an additional 199,295 BY96 Dworshak stock SCS transferred from Kooskia to Dworshak on February 4, 1998.
Source: Oct 1, 1997 MIS, Mar 1, 1998 MIS.
Production Narrative, Feb, 1998.
SCS Final Release Summary, 1998

BY96 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, BY91-96 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
1991	89.0	96.1	99.3	96.9	82.3	92.5	96.2
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	90.3	94.3
5yr Ave	**86.7**	**94.5**	**95.6**	**97.8**	**78.8**	**91.8**	**95.8**
1996	87.2	98.6	98.1	97.4	73.0	94.1	95.5
1997	90.8	98.2	96.8				
1998	91.1						

*Data does not include eggs deliberately culled before enumeration.

** Data does include eggs deliberately culled before enumeration beginning in 1995.

Source: Annual Report 1997
Spawning Report BY96 SCS
Production Narrative, Mar. 1998
Inmosc97.wk4
MIS May 97

Brood Year 1997

There were 4,807 BY97 SCS adults returned to the Complex in the summer of 1997, 1,657 returning to Kooskia and 3,150 to Dworshak. One hundred twenty-seven of the Kooskia fish were passed over the weir. Adults spawned and eggs produced are represented in Table 1.

Table 1. Dworshak and Kooskia adult spawners and both green & eyed egg numbers, BY97 SCS.

Location Adult Return	Males spwnd	Fmls spwnd	No eggs/ fmle	Estimated Number of green eggs	%Survl Grn to Eyed	No eyed eggs after BKD cull	%Surv to tank	%Surv to Pond
Dworshak	435	542	3,724	2,018,408	90.9	1,569,237	98.2	97.4
Kooskia	274	316	3,545	1,120,220	89.2	732,875		
Total/ Average	709	858	3,658	3,138,628	90.3	2,302,112		

Source: Spawning Activity Report, BY97 SCS
BY97 SCS Spawning Report
Dworshak Annual Report, 1997

There were 1,120,000 fry put into Dworshak's nursery. There were also 370,000 eyed eggs from Dworshak stock provided to the Nez Perce Tribe (NPT) for either planting into Meadow Creek (a tributary to the Selway River), or transferred to Sweetwater Hatchery for further rearing. Members from the NPT also spawned 108 Dworshak females (approximately 400,000 green eggs) which were incubated at Kooskia.

For BY97 SCS, fish culling was at the 0.40 BKD level and above for Dworshak's eggs (13.3 percent) and at the 0.50 BKD level and above for Kooskia eggs (23.4 percent).

During the week of April 6, 1998 there were 1,148,000 BY97 SCS moved from the nursery to outside RWs.

On August 5-26, 1998, all BY97 SCS at Dworshak were AD clipped and 142,009 were coded wire tagged.

By the end of FY98 there were 1,098,522 BY97 SCS at Dworshak. These fish averaged 41 fpp and 110 mm total length (4.3 inches). Of this number, 51,506 fish are of Kooskia stock and will be transferred to Kooskia in December, 1998 (Table 2).

Table 2. Dworshak stock BY97 SCS at end of FY97 and projected release from Dworshak, April, 1999.

As of September 30, 1998					Projected to release - April 1999			
Stock	Number	Weight (lbs)	fpp	L (mm)	Proj % Loss to Release	Proj Release Number	Proj Size at Release fpp	Proj Size at Release (mm)
Dworshak	1,047,016	25,768	40.6	110	2	1,026,076	18	145
Kooskia	51,506	1,305	39.5	111				
Total/ average	**1,098,522**	27,073	40.6	110	**2**	**1,026,076**	18	**145**

Source: Dworshak MIS-October 1998

Brood Year 1998

Fish traps at both Dworshak and Kooskia were operated to collect BY98 SCS. The fish ladder at Dworshak was opened May 21, 1998 and closed September 16. There were 915 SCS returned to Dworshak and 408 SCS returned to Kooskia by the end of the spawning season (Table 1).

Table 1. Adult returns, BY98 SCS. (09/30/98)

AGE	NUMBER/DWORSHAK	NUMBER/KOOSKIA	TOTAL
I-OCEAN	11	1	12
II-OCEAN	176	200	376
III-OCEAN	728	207	935
UNKNOWN	0	0	0
TOTAL	915	408*	1323

*27 of these fish were passed over weir into Clear Creek.
Source: Dworshak/Kooskia Complex SCS News-1998 Edition, rev 10/1/98.

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.

Figure 1 illustrated adult returns for BY98 SCS compared to recent returns.

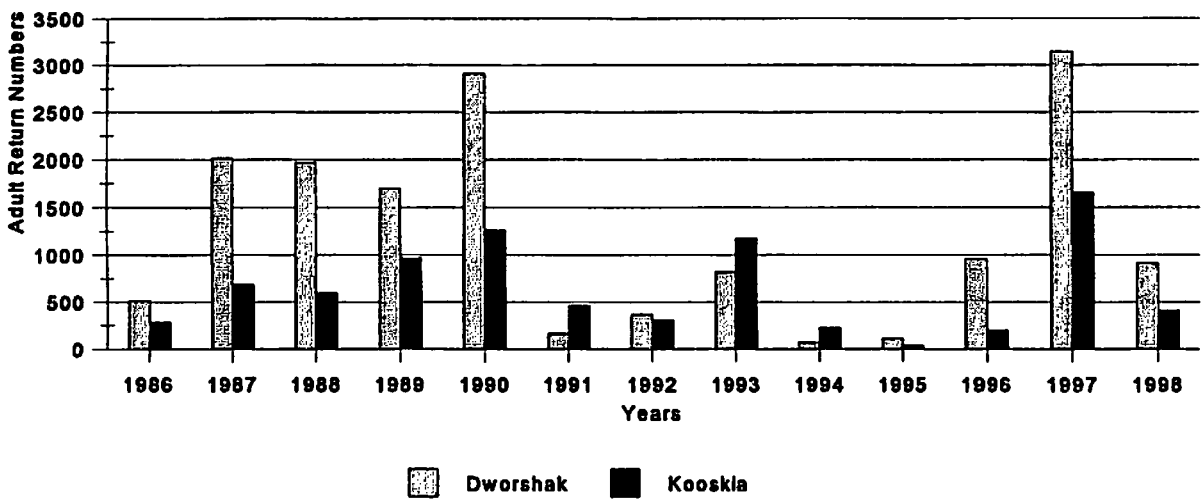


Figure 2. SCS returns to Dworshak/Kooskia 1986-98
Source: IFRO SCS rack returns

Adult Holding

Dworshak stock was kept in holding pond (HP) 1 and 2, Kooskia stock was held in HP3. Kooskia transported 377 adults to Dworshak as spawning stock. Kooskia stock received a left opercule punch in order to distinguish between the two stocks. Formalin treatments were administered to the adults in order to retard fungus infection. The formalin treatments began on May 29, 1998 and ended on September 2. There were 73 treatments averaging three treatments per week at 200 mg/l for one hour treatments. On July 23, 1998, all SCS females were injected with erythromycin at a dosage of 20 mg/kg body weight as a preventative against vertical transmission of BKD.

Adult Mortality

Prespawning mortality (mortality before the first spawning on August 18) of BY98 adult chinook was 3.2% for Dworshak stock and 13.4% for Kooskia stock. During spawning, losses were 5.4% for Dworshak stock and 4.2% for Kooskia stock (Table 2).

Table 2. Mortality of BY98 SCS adults held from 6/24/98 until 9/22/98.

Time of Mortality	Dworshak		Kooskia		Total	
	Number	Percent	Number	Percent	Number	Percent
Prespawn	29	3.2	51	13.4	80	6.2
Spawning	49	5.4	16	4.2	65	5.0
Total	78	8.6	67	18.6	145	11.2

Source: Production- Adult Mortality records BY98 SCS

Spawning Season

The BY98 Dworshak/Kooskia SCS spawning season began August 18, 1998, approximately one week earlier than 1997. Spawning ended on September 22, one week later than in 1997, although only one fish was spawned that week. Dworshak adults were held in holding ponds (HP) 1 and 2, Kooskia's stock held in HP3. Fish from each HP were sorted and spawned once/week along with new fish coming up the ladder into HP9.

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 L/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 4,000 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 44.0^{0}F.

Fish from each HP were sorted and spawned once/week. Altogether there were 588 females and 426 males spawned (1:1.4 ratio) with an average of 4,153 eggs/female for Dworshak stock and 3,726 eggs/female for Kooskia stock. Dworshak spawned 434 females of Dworshak stock, producing 1.5 million eyed eggs. There were 1.37 million eyed eggs shipped to Kooskia for incubation in chilled water. IDFG collected 151,000 excess eggs and transferred them to CWH on November 4, 1998.

There were 154 females spawned of Kooskia stock, producing 467,243 eyed eggs for the Kooskia program.

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 egg numbers, BY 98 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	311	434	30	4,153	1,665,474	91.1	1,517,820
Kooskia	115	154	2	3,726	544,044	85.9	467,243
Total/ Average	426	588	32	4,041	2,209,518	89.8	1,985,063

Source: Spawning Activity Report BY98 SCS
BY98 SCS Spawning Report

Dworshak Fish Health Center (DFHC)

Kidneys were sampled for BKD from all females spawned and from a representative sample of males. The DFHC also took ovarian fluid from all females spawned for viral inspection. The adult females tested 6.9 percent high (30 females) BKD (ELISA >1.0) for Dworshak and 5.8 percent (9 females) for Kooskia. Final culling was at 1.0 ELISA and above for Dworshak. Due to the low number of females spawned for Kooskia, eggs from only two of the nine females testing above 1.0 ELISA were culled (1.3 percent).

Cryopreservation Study/University of Idaho

Dworshak continued to coordinate with researchers from the University of Idaho in cryopreservation of salmonid gametes. Rolf Ingermann and David Bencic are studying the relationship between ATP content regarding the motility and viability of the sperm. Dworshak provided 15 ml milt from 16 males and approximately 400 eggs from 11 females from excess spawning requirements.

Idaho Supplementation Study (ISS)

There were 23 females and 15 males collected from the Kooskia trap which were spawned for the ISS program. These fish yielded 99,104 green eggs which had a 86 percent survival for a total of 85,602 eyed eggs. These eggs were isolated from other eggs during initial incubation at Dworshak and were transferred to Kooskia in October, 1998 for final incubation and rearing.

Erythromycin Study

On September 1, 1998, Ron Pascho from the Western Fisheries Research Center, USGS, Seattle, took ovarian fluid and kidney samples from 100 females and kidney samples from 78 males. This research will continue investigation on the relationship between levels of *Renibacterium salmoninarum* in the brood fish and the probability that the progeny will survive without mortality from BKD or another disease. Ron's staff returned to Dworshak on October 19 to take eyed egg samples from 22 females. A total of 14,200 eggs were taken.

Adult Disposition

Twenty one days before the first spawning date, erythromycin injections were given to the females. Due to these injections, and the deteriorated condition of the adults after spawning, carcasses were unfit for human consumption and were subsequently transferred to the landfill.

Return/Spawning Summary

BY98 SCS adult return numbers consisted of approximately 80 percent III-ocean fish, well above the average 24 percent historical average. Fish averaged over 4,000 eggs/female, about 500

above the historical average at Dworshak. Dworshak had about 380K more eggs than needed for a full program at its facility. Kooskia will have approximately 450K for its program. There were 151K eyed eggs distributed from excess Dworshak stock to CWH. The remaining 220K eggs will be incubated at Kooskia and initially reared at Dworshak. There were 1.37 million eyed eggs from Dworshak stock and 467K eyed eggs from Kooskia stock transferred from Dworshak to Kooskia for incubation on chilled water.

Coho Salmon
Brood Year 1996

On March 17-20, 1998, there were 218,501 BY96 coho salmon (COS) transferred from Dworshak to Kooskia for final rearing and release. At the time of transfer, the COS were 18 fpp and 137 mm (5.4 inches) total length. These COS were being rearing in RWs in C-bank in a cooperative program with the Nez Perce Tribe (NPT). The NPT is currently developing a COS Production Plan.

Coho Salmon
Brood Year 1997

Eyed eggs were incubated at Dworshak from December, 1997 until January, 1998. On January 28-29, 1998, there were 455K BY97 coho transferred from the incubation room to the nursery. On March 2-3, 1998, there were 447K coho transferred from the nursery to C- bank RWs. These fish were approximately 850 fpp at the time of outside stocking.

On May 8, 1998, the COS were split from two RWs to six RWs in C-bank. It was determined that approximately 122K COS escaped around the tail screen in RW12. The screen was subsequently fixed to prevent further loss.

On September 30, 1998, there were 251,129 BY97 COS in C-bank RWs averaging 53 fpp and 96 mm (3.8 inches) total length (Table 1).

Table 1. Fish inventory summary, C-bank raceways, BY97 COS (09/30/98).

Rearing Unit	Number	Wt(lb)	fpp	L in	L mm	Lgth/mm Gain/mo	Wt(lb) Gain/mo
Raceway-C Bank	251,129	4,773	53	3.8	96	6	867

Source: MIS October 1, 1998

Rainbow Trout
Brood Year 1996

On June 12, 1998, Dworshak held its annual Open House, which was attended by a record 861 youth. All RBT were supplied by Dworshak hatchery. About 2,000 RBT were harvested for the Open House by children 12 years and younger. The remaining RBT were either transferred to Kooskia for their Open House on June 17, or stocked out to various lakes and reservoirs in Idaho (Table 1).

Table 1. Outplanting of BY96 RBT from Dworshak, FY98.

Destination	Approx Number	Weight (Lbs)
Var. Lks. Coeur d' Alene Tribe	1,538	1,538
Nez Perce Tribe Various Lakes	644	644
Spring Valley Res	2,911	2,911
Kooskia Open House	6,000	6,000
Total	11,093	11,093

Source:Fish and Egg Fiscal Year 1998 Distribution Summary.

Brood Year 1997

On September 16, 1998, the BY97 rainbow trout (RBT) to be used for Dworshak's Open House 1999 were moved from the nursery to Burrows pond (BP) 1. Inventory numbers showed there were 6,882 BY97 RBT averaging 4.8 fpp and 204 mm (8.1 inches total length).

Brood Year 1998

On September 30, 1998, there were 4,814 BY98 RBT in the nursery averaging 15 fpp and 140 mm (5.5 inches). These RBT are for Open House 1999 and will be kept in the heated nursery as long as possible before BY99 steelhead are loaded in the nursery.

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 River and low catch rate by fishermen.

Because of these concerns, and because we are awaiting a mitigation report of the fishery from the University of Idaho, we are assuming the following fish exchange with IDFG for BY98 RBT:

Hagerman NFH will raise

90,000 K1/R1 5" fish, stocked in May at L. Camas Reservoir
20,000 K1/R1 9" fish, stocked in October at Oxbow Reservoir
20,000 K1/R1 9" fish, stocked in October at Hells Canyon Reservoir

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, Hayspur Hatchery will provide the eggs.

Rainbow trout reared at Dworshak (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).

Hatchery Production Summary FY98

Brood Year 1997 Steelhead

There were 2.15 million BY97 steelhead smolts released in April, 1998. They averaged 197 mm in total length, slightly under the 200 mm target size due to cold water releases from Dworshak Dam in the summer. 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 1998). There were 353,000 pounds of steelhead produced in 1998.

Brood Year 1998 Steelhead

There were 3,601 steelhead returned to Dworshak NFH in the fall of 1997 and the spring of 1998. A total of 2.7 million eyed eggs went into Dworshak's production program. Dworshak provided 710,000 eyed eggs for Clearwater Hatchery. Also, 1.97 million green eggs were shipped to CWH for Magic Valley Hatchery. The production program at Dworshak completed another early phase in the hatchery's nursery without any problems with the IHN virus. This is the seventh nursery rearing program that relied entirely on the water supply from Dworshak Reservoir. The 6,400 gpm received is sufficient to allow eggs and fry to be raised in reservoir water.

Brood Year 1996 Chinook Salmon

Dworshak NFH released 973,400 spring chinook salmon weighing 46,645 pounds on March 25-26, 1998. All releases were done in the evening hours to assist initial downstream migration.

Brood Year 1997 Chinook Salmon

Adult returns of Brood Year 1997 produced 4,807 fish to the combined stations. These produced approximately 2.3 million eyed eggs and at the end of FY98, there were 1.1 million fingerlings at Dworshak Hatchery.

Brood Year 1998 Chinook Salmon

Adult returns of Brood Year 1998 produced 1,323 chinook to the combined stations. These have produced about 1.8 million eyed eggs after culling for BKD.

Brood Year 1996 Coho Salmon

Coho salmon are being reared at Dworshak in a cooperative agreement with the Nez Perce Tribe (NPT). On March 17-20, 218,501 BY96 coho were shipped from Dworshak to Kooskia for final rearing and release. These fish were 18 fpp and 137 mm total length at the time of transfer from Dworshak. The NPT are developing a Production Plan for the COS.

Dworshak. The NPT are developing a Production Plan for the COS.

Brood Year 1997 Coho Salmon

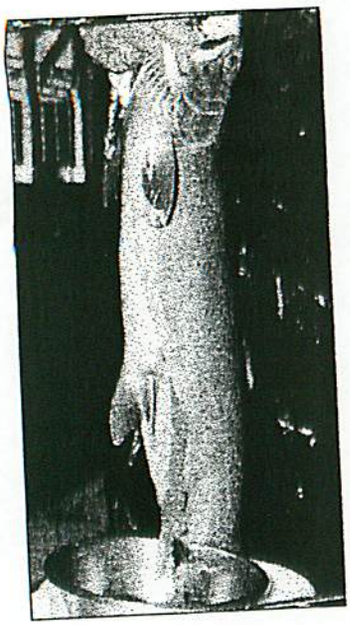
At the end of FY98, there were 251,129 BY97 coho on station. These fish averaged 53 fpp and 96 mm total length.

Brood Year 1997, 1998 Rainbow Trout

There are 6,882 BY97 RBT on station averaging 4.8 fpp and 204 mm total length. These are being reared in Burrows pond 1. There are 4,814 BY98 RBT on station averaging 15 fpp and 140 mm total length. These are being reared in the nursery. Both these groups of fish are being reared for Open House 1999.

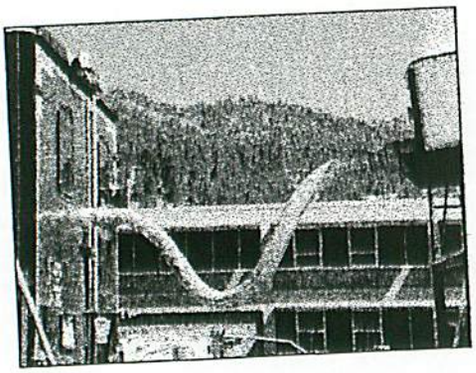
Due to concerns about stocking RBT in Dworshak Reservoir, the following fish exchange is planned: Hagerman NFH will raise 90,000 K1/R1 5" fish, stocked in May at L. Camas Reservoir, 20,000 K1/R1 9" fish, stocked in October at Oxbow Reservoir, and 20,000 K1/R1 9" fish, stocked in October at Hells Canyon Reservoir. Nampa FH will raise 30,000 K1/R1 10-12" fish stocked in May at Dworshak Reservoir.

FISH CULTURE OPERATIONS
Photos



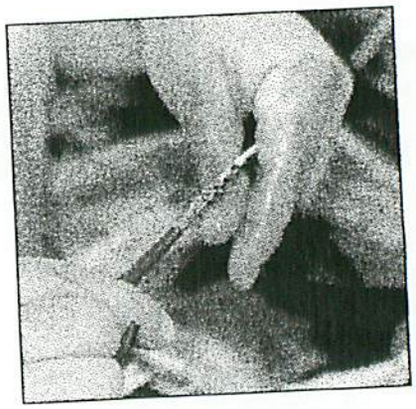
Steelhead spawning, left, was successful, with over 7 million eggs collected and an adult return of over 3600 fish. A ripe female steelhead produces an average of 6500 eggs.

In April, nearly 1 million BY97 steelhead smolts were direct-released from the hatchery Burrows ponds. Fishery biologist Adam Izbicki, below, monitors the water flow from one of the ponds as young fish are flushed to the Clearwater River. Another 1.2 million smolts were trucked to off-site release points upriver.

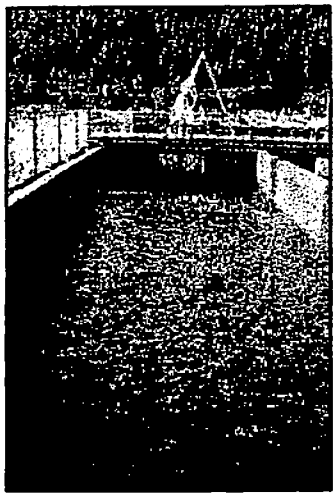


At left, the Dworshak fish transport tank delivers steelhead fry to the new and larger Idaho Fish & Game marking trailer.

Below, the marking crew adipose-clipped over 2 million fish during the summer.

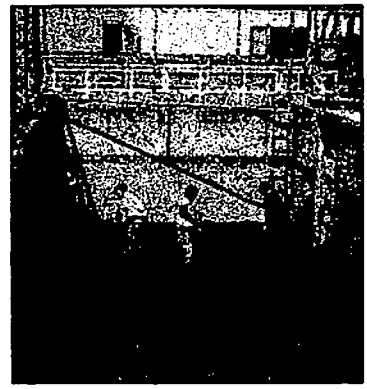


FISH CULTURE OPERATIONS - con't.



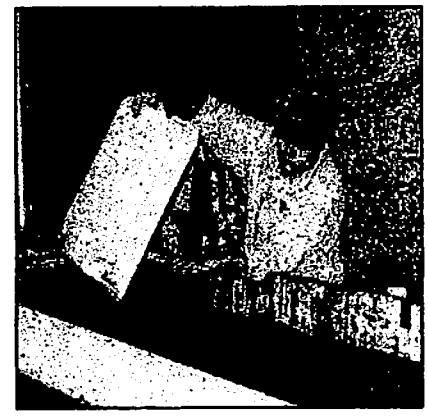
Over 1200 adult Spring Chinook salmon were spawned between August and September, 1998. This included fish trapped at Kooskia hatchery. Many of the unripe females were injected with LHRH hormone prior to spawning. Approximately 2 million eggs were collected, and all fish carcasses were disposed of in the local landfill.

Upon completion of spawning, the holding ponds were drained and cleaned (below) and refilled for next years' steelhead return.



Left: Excess rainbow trout were outplanted in July to area lakes and ponds, after the Open House event.

Right: Hatchery production staff assisted the Nez Perce Tribe with the Coho salmon rearing program. Fry were incubated in trays, moved to nursery tanks, then finally to outdoor raceways.



FACILITIES MAINTENANCE

I. Housing Repairs and maintenance for the year included:

- New wood-burning stoves purchased for Housing 2, 3, 4.
- Installed photo cell and security light on Residence #3.
- Fabricated wood storage units for hatchery residences 1-4.
- Installed ceiling fans for hatchery residences 1-4.

II. OSHA upgrading and repairs included:

- Built restroom stall extension pieces for handicap access.
- Started walkway light fixture upgrade by modifying old aluminum posts to accept new fixtures.
- Installed the new exterior lighting fixtures for the Complex visitor parking lot and the roadway in front of the Admin entrance.
- Boxed mercury vapor lamps from maintenance shop lamp change out and all old lamps from the outside lighting fixture rehab for disposal.

III. Vehicle maintenance included:

- Installed new rheostat drive in Cushman electric cart #3.
- Rear end work on #6 cart, repaired axle bearings, rear brakes, king pins and bushings. Speed control replaced on Hubert Sims' cart. Replaced batteries and tires on several carts.
- Fabricated diamond plate step and installed on CustomWeld boat for IFRO.
- Moved all electrical components for electrical cart charging room from the previous cart storage area to Mechanical I.
- Repacked wheel bearings and put used tires on old shocker boat for travel to Walla Walla, Washington for surplus (COE).
- Welded new spring bracket for Custom Weld trailer.

- Replaced ignition switch and fabricated shifter mole in Dodge 4x4.

- Replaced left side exhaust manifold studs on the Dodge 4x4; replaced transmission fluid in FHC's white blazer; replaced gear bearings in the gear box on cart #1. Monthly inspection for service lube and repairs of electrical cart #'s 4, 5, 10 and 11. Solenoid installed in cart #6.

- Completed installation of cart shed, re-wired battery charger drop cords from outlets to extend to floor level allowing the removal of the long, cart-mounted battery charger cords.

IV. Reuse maintenance included:

- Repaired #10 reuse pump and installed in System III (spare).

- Cut and welded new drain system and cut asphalt for System II and III reuse.

- Built aluminum fittings for reuse chamber make-up water over/low system and bolt bland flanges.

- Prep of Systems II and III reuse for season. Complete rebuild and configuring of System II variable speed channel pump control system.

- Re-wired #4 makeup pump and #10 reuse pump.

- Removed wiring from Mechanical I - HCQ3 that had been used for chillers. Installed plugs in open conduit.

- Installed under roadway pipes (14") for Systems II and III reuse for system balancing.

- Finished construction on pipeline job done by Apollo Construction.

- Prepared reuse Systems II and III for upgrade to thermocouple control input.

V. Repair or work on fish production equipment included:

- Knight Construction installed a 30" tee by System II channel pumps.

- Maintenance completed the modifications to the overflow piping in Systems II and III biofilters.

- Tightened lugs on Mechanical I boilers and started up for building and System I heat.

- Fabricated steel framework for production office.
- Installed a 480V - 100 Amp service on pond wall by Mechanical II.
- Repaired and rebuilt System II channel pump control system.
- Installed low water alarms in the nursery.
- Fabricated snout nose cutter (Coleman NFH design) for adult fish.
- Repaired belt on Nielson fish pump, repaired outer septum to spawning table and helped with fish pumping.
- Removed sand filtration components in Mechanical Building II.
- Fabricated 10 cleaning plates for Burrows ponds.
- Replaced 28 bottoms and 22 top handles on Burrows ponds.
- Built screen frames and screens for A bank, repaired air leak in holding pond #1, replaced cables and drive chains on big crowder and fabricated frames for Nez Perce Tribe for their holding ponds.
- Replaced coil for air valve for diverter gates in spawning room.
- Removed incubation chiller pump for repair and incubation #3 removed for repair.
- Built sprinkler system for holding ponds 2 & 3.
- Set up and energized fish tagging trailers.
- Fabricated safety catwalk for fish tank used to bring fish from nursery room to tagging trailer.
- Removed spawning room basket cables to measure for replacement.

VI. Work or repair to structures, buildings, or basic equipment included:

- Replaced coupling Mechanical I hot water pump.
- Mechanical I pipe insulation repaired and pipes painted.
- Replaced drain pan on cool room condenser unit.

- Replaced piping for System I heat bio reactor.
- Extended air compressor intake piping in Mechanical I.
- Assisted Stoddard Electric with temperature controllers, modified and calibrated new Honeywell valves and controllers in Mechanical Building II.
- Fabricated and hung lifting beam, pulled #3 incubator motor pump, and removed 14" pipe from roof in Mechanical Building I.
- Replaced HVAC chiller system with river water cooling for main building. Modified main building air conditioning to Fire/Maintenance water.
- Repaired #2 Fire and Maintenance strainer stud.
- Pro-Cut Concrete cut production office window openings, System II and III 12" holes and 2" holes in Mechanical II.
- Piping removed in Mechanical I.
- Installed three conduit runs in the Maintenance shop for the new plasma arc, new metal belt sander and the fuel pump/oil storage building fuel leak detection monitor.
- Installed conduit, pulled wire and connected power for new production office space. Assisted with sheet rocking.
- Installed new overhead phone line for LAN and printer use and several new phone and fax lines to the various office spaces in the FRO trailer.
- Trim out, heat and lighting system and completed work on new production office.
- Cut window frame into new production office steel door, laid out and roughed in electrical wiring.
- Put new shop oil (waste) furnace together.
- Refit the Fish Health Center's back room (wet lab) with 8 new light fixtures, H.O. 8 foot doubles and installed a new phone line.
- Connected power and assisted with CPU power supply to office modules in new production office.
- Fabricated aluminum tables for distilled water tank in the lab.

- Built and installed bracket for HVAC unit, fabricated aluminum covers for holes in the concrete walls, and installed conduit wire in the new production office.

- Installed equipment in the wet lab.

- Installation of electrical components throughout the Complex.

- Old Mechanical I chillers pumped down, Freon removed and sent to Thermol Supply in Spokane, Washington. Refrigeration oil removed and Mike's Refrigeration of Lewiston, Idaho disposed of the used oil.

- Joey Vaughn, contract welder, and the maintenance crew removed pipe and filter from Mechanical I and II buildings.

- Fabricated replacement pieces for grating in Mechanical Building I and removed chillers and wiring for chillers in Mechanical Buildings I and II.

- Replaced make-up pump and pump gland packing of #2 Boiler in Mechanical Building II.

- Assisted with the removal of equipment and piping in Mechanical Buildings I and II.

- Worked on Main Pump #6 problems - vibrations and overloads.

- Removed Main Pump #2; surveyed damage.

- Replaced block heater fitting #3 generator set.

- Replaced water regulator valve for food service refrigerator compressors.

- Repaired clogged valve in Mechanical II.

- Re-energized and disconnected Mechanical I and II (5 units) and stored for scrap. WASCO used 25 ton crane for removal and the COE furnished the lowboy and tractor to haul.

- Fabricated wall mounted H_2O distiller shelf and raised the distiller to a higher position to facilitate gravity flow of distilled H_2O to new 50 gallon distilled water tank.

- Electrical and sheet rock completed and access hole drilled in new production office for HVAC (heating and air-conditioning unit), fabricated mount and installed outside portion of unit.

- Removed and cleaned all contacts on System I channel pump MCC's; cleaned enclosure and sealed with expanding foam insulation.

- Vacuumed, cleaned and greased all of the pivot points (coils for contactors) and inspected for cracks, etc. on Systems I and II MCC's. Cleaned and vacuumed CQ1 (enclosure adjoining System II MCC).

- Fabricated a cooling system in the furnace room HVAC.

- Completed ozone compressor room.

- Number 1 and 2 boilers were dismantled for broken load shields and cleanup. Recirculation pump sent to Idaho Machine for seal repair.

- Removed and cleaned sludge basin aerator, dismantled for bearing replacement and replaced with spare aerator.

- Assist with installation and set up of new building air conditioning compressor.

- Opened louvers in main pump house for cooling.

- Repaired all main pumps, air compressor and outside radiator for Generator main pump house. Replaced Kim Hot Start left side on Generator #1.

- Fabricated work bench in Mechanical I for production staff.

- Installed photo-cell for outside light at pumphouse permitting auto lighting switch for night conditions.

VII. I/E and other maintenance projects included:

- Erected and dismantled annual Christmas lighting on hatchery grounds.

- Assisted Clearwater Power Company with testing of supply transformer and associated gear relating to meltdown of #1 Boiler in Mechanical I. Conference with CAM industries regarding meltdown and testing.

- Prepared rock and mounted plaque for Griff Walker memorial.

- Assisted Stoddard Electric with temperature controller circuitry in Mechanical II.

- Helped Nez Perce Tribe repair church located near the visitor parking area. The manlift was used to help with roofing.

- Relocated weather sensor for N.O.A.A. The new system will be on line in the near future.

VIII. New Projects

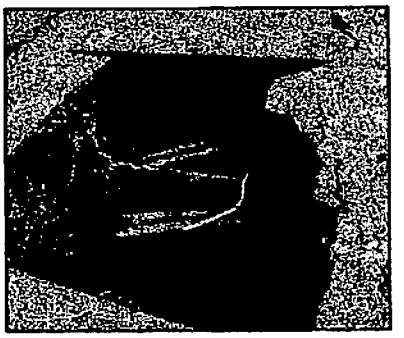
- Construction pre-startup meetings. Assisted Apollo Construction in locating conduit, etc.
- Concrete block work started for erecting an enclosure for the ozone compressor.
- Construction on nursery room piping and heating system to assist Apollo Construction.

FACILITIES MAINTENANCE
Photos

During the summer, the office air conditioning system broke down and had to be repaired, left; upstairs temperatures reached the high 80's for over two weeks.

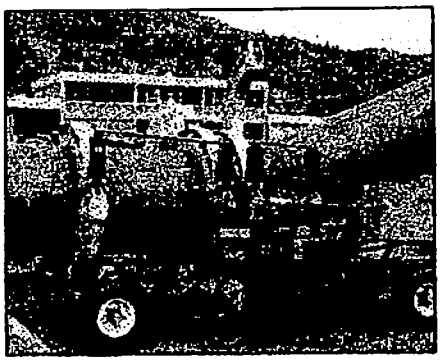
Above, Ben Greene guides one of the old chiller units which was removed. The units were bid out for scrap after many years of use on the Complex.

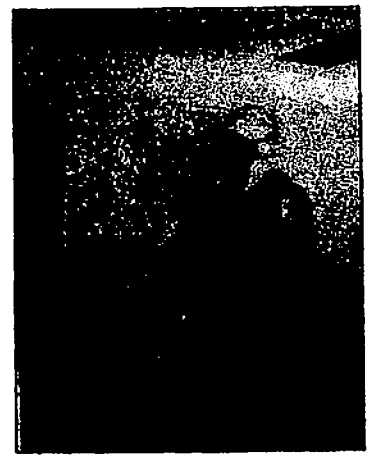
During water line construction, left, unsurveyed conduit and water lines were excavated accidentally (right). The new heated water line had to be rerouted around these existing lines.

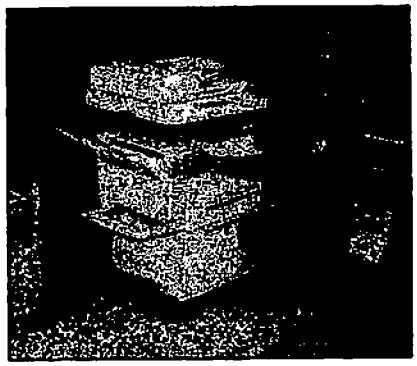


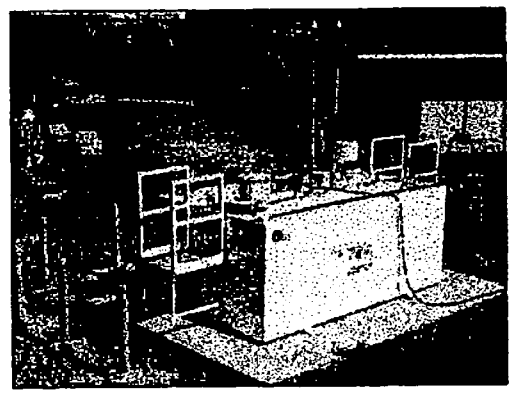
Maintenance worker Ray Rosales repairs the hatchery hydrant line used to fill fish transport trucks.

FACILITIES MAINTENANCE - continued









Additional facilities improvement projects included (clockwise, from top right): the new Production office next to the spawning room was painted, carpeted and furnished; above-ground fuel tanks were installed after removing the old underground tanks; the office purchased a new FAX/copy machine; automatic pipe cutter/welder fusing sections of new heated water line prior to placement in trench.

ADMINISTRATIVE ACTIVITIES

Meetings

During the month of October, Complex Manager Miller met with Corps of Engineers (COE) personnel Wayne John, Charlie Krahenbuhl and Brian Miller to discuss budget and rehab items. The meeting was held at Dworshak NFH on October 1 and was also attended by Deputy Complex Manager Owsley and Mary Lou Galloway. Miller attended an Ecosystem evaluation meeting in Portland on October 3. Miller, along with Owsley met with COE, Clearwater Power (CWP) and the Idaho Department of Transportation (IDT) on October 8 regarding the Ahsahka bridge construction. Miller, Bob Semple, Craig Eaton, Kathy Clemens and Kip Bottomley traveled to Pendleton, Oregon to attend the Hatchery Manager's meeting on October 23.

Deputy Complex Manager Owsley attended several meetings during the month of October. On October 1, he met with the COE and Knight Construction representative regarding the reservoir supply contract line. October 2, Owsley and Dave Clifford met with the COE and Tom Sunday, E.P. Johnson Construction, on the upgrade of the Underground Storage Tank (UST). Owsley met with the COE and Stoddard Electric on October 3 for a preconstruction meeting for the electrical portion of the reservoir supply line. Owsley and Clifford again met with COE personnel on October 6 to discuss the bridge site for the new Ahsahka bridge construction. On October 8, Owsley, along with Dave Clifford and Ben Greene, met with Columbia Electric Supply regarding the upgrading of channel pumps for reuse systems I and II. A meeting between Owsley, the Nez Perce Tribe and EPA was held on October 9 to discuss a Hazardous Waste Inspection. Owsley, who is a technical advisor and serves on the Research Committee, attended the WRAC meeting in Reno, Nevada during the period of October 19-22. Owsley, along with Mary Lou Galloway and Jill Olson, met with Lewis-Clark State College personnel to discuss a health program for the Complex. Owsley met again with the COE and several contractors on a bid and pre-construction meeting regarding the new reservoir supply line and then met with the
to discuss a UST inspection.

ey traveled to Richland, WA on November 2 an 3 to conduct a site visit and
of several surplus mobile offices to replace the existing leased IFRO mobile office.
ber 5-7, Owsley traveled to Bonners Ferry, Idaho to assist the Kootenai Tribe on
nsulting engineering firm to design and upgrade the existing sturgeon facility. J.U.B.
of Coeur d'Alene, Idaho was selected to work on the project.

worshak Coordination meeting was held at the hatchery on November 18.

Manager Miller, Owsley, Bob Semple and Thomas Trock attended the Northwest Fish
onference at Salishan Lodge in Gleneden Beach, Oregon the week of December 1-5.

sley and Dave Clifford met with Dan Forge, COE, on the upcoming new reservoir
contract. On January 7, they again met with COE engineers from the Walla Walla

District on the completion of the underground storage tank upgrade. Later the same day, Owsley and Clifford met with COE engineers and representatives from Apollo Construction on the new reservoir supply line. On January 22, Dave Owsley participated in the HET meeting at Kooskia NFH concerning the new weir. Owsley and Clifford met on January 23 with the COE engineers to discuss the hatchery rehab plan. Clifford and Owsley met with Rick Steenhoven from the COE to discuss surplus and excess property on January 27.

Bill Miller, Dave Owsley and Bob Semple attended the Project Leader's meeting in Reno, Nevada January 12-16.

Dave Owsley traveled to California on February 3 to attend a meeting on the Ozone system at Coleman NFH. While in California, Owsley also attended the dedication of the Service's newest hatchery at Shasta Dam. On February 12, Owsley worked with John McKern of the Corps of Engineers, Walla Walla District on the Dworshak rehab project.

Complex Manager Miller, Dave Owsley, Dave Clifford and the crew from Apollo Construction met for a pre-construction meeting regarding the new reservoir supply line project. Meetings were held on February 13, 20 and 27.

Deputy Complex Manager Owsley met with Dave Clifford and Rick Steenhoven, COE Walla Walla District on excess and surplus property on March 11. On March 13, Dave Owsley and Dave Clifford met with COE representatives and Apollo Construction to discuss the pipeline construction. Dave Owsley, Bill Miller and Kathy Clemens met with Gary Blefgen and Gary Moore from the Regional Office regarding the extension to the Fish Health Center. They met later that afternoon with Ray Jones of the Idaho Fishery Resource Office regarding the Kooskia weir. At the end of the month, Dave Owsley traveled to New Mexico to conduct site visits at Mora, Dexter and Mescalero fish hatcheries to advise and assist them on water issues. This trip continued through April 3.

The Spring Coordination meeting was held on March 26. Representatives from Dworshak NFH, Kooskia NFH, Dworshak FHC, Idaho FRO, Idaho Department of Fish and Game, the Corps of Engineers and the Nez Perce Tribe attended the meeting.

On April 8 and 9, Dave Owsley attended a government quarters meeting in the Regional Office.

Deputy Complex Manager Owsley traveled to Michigan to assist the Michigan DNR. Owsley and three other engineers conducted site visits at all six of the Michigan state hatcheries. A report was generated to advise the Michigan DNR on how to spend the 18.3 million dollars allotted for state hatcheries.

Sam Buzbee, Regional Finance Officer, met with Supervisory Administrative Support Assistant Galloway and Budget Assistant Praest on May 28. The meeting explained the corporate account established with Global Travel in Boise, Idaho for the purchase and billing of airline tickets.

Complex Manager Miller and Deputy Complex Manager Owsley met with the Corps of Engineers, Lower Snake River Compensation Plan and Idaho Department of Fish and Game personnel regarding the COE turning the Clearwater Hatchery over to the USFWS.

On June 4 and 5, Dave Owsley and Dave Clifford assisted a private contractor with an ERGO (OSHA) inspection of the Dworshak Complex. On June 19, Owsley, along with Budget Assistant Praest, met with Renee Hedricks of Idaho Department of Fish and Game and Mrs. Carter who is the remedial teacher for the JTPA program.

On July 1, Dave Owsley met with Jesus Barrios, structural engineer from COE, on the main building structural problems and repair concerns. Owsley met with Judy Summers about the JTPA program on July 8. Owsley attended the Ahsahka Water and Sewer board meeting in regard to the hatchery wastewater held on July 14. On July 16, Owsley attended the Clearwater Management Council meeting at Myrtle Beach, Idaho. Owsley met with COE on July 29 for an on-site asphalt inspection for the DNFH rehab project.

Complex Manager Miller attended a meeting with CRITFC, NMFS and FWS on negotiations for fall chinook tribal harvest and steelhead harvest in Zone 6 fisheries. Hatchery steelhead releases, fish marking, and Dworshak steelhead broodstock were topics included in the negotiations.

Complex Manager Miller, Dave Owsley and IDFG Clearwater Hatchery Manager Jerry McGehee met on August 7 to discuss the Memorandum of Understanding for the operation of the reservoir water supply system. Miller and Owsley met with Lt. Colonel Bill Bulen, Jr. of the COE when he visited the facility on August 12. On August 18, Miller attended a bridge construction public meeting. The bridge replacement is going to impact the Complex employees and also the mail service. Mr. Miller traveled to Boise, Idaho to attend a field briefing held by Director Clark and Regional Directory Badgley.

Owsley met with Rick Steenhoven, COE, to discuss excess property on August 5. On August 10, Owsley, along with Dave Clifford, met with COE and the contractor for the underground storage tank (UST) upgrade. Seven UST will be removed and upgraded. Owsley attended the Ahsahka Bridge replacement meeting at the contractor's office on August 11. On August 13, Owsley attended a pre-construction/partnering meeting in Walla Walla regarding the UST project. Another UST meeting was held on August 18, between Owsley, E.P. Johnson Construction and COE. Deputy Owsley participated in a 3-hour conference call with NOAH and USFWS, D.C. on August 17. The call was to discuss projects for treatment of ballast water in ships. On August 27, Owsley met with Ed Cryer of Montgomery Watson Engineers on the small hydro project for the reservoir supply lines.

During the month of September, Dave Owsley met with COE and E.P. Johnson Construction on the underground storage tank project at Dworshak. There was also a meeting with COE to conduct the annual railroad overpass inspection. A supervisor's meeting was held on September 29. Complex Manager Miller and Dave Owsley met with Montgomery Watson Engineers, Idaho

Water Resources and Jerry McGehee, Idaho Department of Fish and Game, to discuss the small hydro project that is going to commence. The small hydro project will put turbines on the reservoir supply lines.

Training

Mary Lou Galloway and Diane Praest attended Budget Tracking System (Version 3) training in Portland October 6-10.

A Complex-wide fire drill was conducted on October 16.

Joan Sperber attended VISA Purchase training in Portland on October 27.

Craig Eaton, Joan Sperber and Laura Kessel (FHC) attended New Employee Orientation at the Regional Office in Portland from October 27-31.

Ben Greene, electrician, attended the 1996 National Electric Code Motors and Controls class that was held in Moscow, Idaho on December 6.

Joan Sperber and Dave Owsley traveled to Spokane, Washington on December 9 to attend a GSA training course.

Diane Praest attended Administrative Training at the Regional Office February 24-26.

Complex Manager Miller and Deputy Complex Manager Owsley, along with 20 Complex employees attended EEO Workforce Diversity Training in Boise, Idaho on March 2 and 3. The remainder of Complex employees attended on April 15-16 in Spokane, Washington.

Dave Owsley and Diane Praest attended a Simplified Acquisition class at the Regional Office on March 24-26. Joan Sperber attended Simplified Acquisition training plus Pre-Printed Forms System training on the same dates.

Sharon Sciacqua of GSA presented a one-day training class in the Complex conference room. Attendees included Complex employees involved in procurement and people from Dworshak Dam and the U.S. Forest Service. The on-site training on small purchasing was coordinated by Joan Sperber.

Hatchery Manager Miller and four Complex employees attended a fish genetics course, sponsored by the NCTC, in Boise, ID the week of July 13-17.

Dave Owsley and Dave Clifford attended OSHA training in Boise, Idaho from July 20 through the 23rd.

Kim Smathers attended Federal Travel Regulation training August 3-7 in Seattle, Washington.

Safety & Wellness

On October 30, a health and safety forum was conducted in the Complex conference room. John Garrison, a local physical therapist, discussed back and neck related injuries and the prevention/treatment methods recommended.

Clearwater Valley Hospital and Clinic presented a "Health Matters" forum to Complex employees on December 4. Dr. Richard M. Allen, a local podiatrist, gave a 45-minute program entitled "Foot and Ankle Problems".

Two health forums were held in January. The first was presented by Dr. Peter Crecelius on January 6 and related to wilderness medicine. Information dealt with hypothermia, toxic ingestions, wound care, dehydration, fractures and sprains. Dr. Michael Meza explained diagnosis, impact and management of arthritis in the second forum which was presented on January 27.

A new safety committee was appointed in February. Dave Owsley met with the new committee to discuss procedures, meeting schedules and other areas of the safety program. New members are: Kim Smathers, Jill Olson, Marilyn Blair, Ben Greene, and Scott Dunmire.

An all-employee safety meeting was held on March 31. Complex employees watched two short videos on the use of fire extinguishers. After the videos, there was a "hands-on" demonstration on the proper use of fire extinguishers. The class was presented by Advanced Fire Protection of Lewiston, Idaho and was attended by two members of the Orofino Volunteer Fire Department, as well.

A safety meeting presented by Clearwater Power Company was presented on April 29. Thirty Complex employees were in attendance. There was a short video presentation about the dangers of downed power lines and other electrical situations. The representatives also had a model which demonstrated the effects of coming into contact with power lines or if a power line is down.

Eight Complex employees attended a CPR/First Aid recertification training session held on May 13.

A safety meeting was held on June 25. Fifteen Complex employees and seven JTPA workers watched a video relating to "Slips, Trips, and Falls".

A series of safety meetings were held on three consecutive Thursday mornings from July 16 through July 30. A three part video series entitled "Humor, Risk and Change" was shown, on section per meeting. There was a lot of positive feedback from the employees about the series.

A health forum was presented by the Clearwater Valley Hospital and Clinic on September 22. The forum, conducted by Dr. Riley, was entitled "Headaches; Help, Hope, and Hype".

Other

Dave Owsley gave an interview and tour to Trisha Knoblich (COE tour guide) for a school project on October 15.

A farewell lunchtime potluck was held on October 24 in the Complex conference room for Rocky Greenland who is transferring to Eagle Creek NFH.

The Combined Federal Campaign donation from the Complex totaled $1,516.80. This includes annual payroll allotments and over $400 raised from a car wash, chili and cornbread luncheon and an Indian taco feed. All four stations participated in the activities.

A Christmas party for Complex employees and spouses was held on December 19, at the Idaho Department of Parks and Recreation building at Big Eddy Marina on Dworshak Reservoir.

Dave Owsley completed the annual COE property inventory on January 9.

Griff Walker, Social Services Assistant, passed away suddenly on May 2

Complex employees enjoyed the annual Cinco de Mayo potluck held in the Complex conference room on, of course, the 5th of May.

A post release party and potluck was held on Saturday, May 16 at the hatchery housing area to celebrate the successful release of BY97 steelhead smolts into the Clearwater River.

Awards were presented to several employees for outstanding contributions. Those receiving monetary recognition for work on the new production office remodeling project were: Dave Clifford, Ben Greene, Ray Rosales, Diane Praest and Randy Bowen. Other monetary awards were presented to those who gave extra effort during the release of SST and SCS smolts. They were: Bob Semple, Ralph Roseberg, Thomas Trock, Adam Izbicki, Terry Weeks, Craig Eaton, John Vargas and Ben Wright. Non-monetary awards, in the form of Pacific Region T-shirts, were presented to Susan Sawyer, Kim Smathers and Craig Eaton for their assistance with the annual combined agency Earth Day program at Big Eddy Marina.

Dave Owsley interviewed with KLER Radio about the upcoming Hunter Safety Class scheduled for September.

A new Xerox digital copy machine with fax attachment was delivered in September. This replaces a 5-year old copy machine and a 7-year old fax machine.

Fiscal 1998 spending and adjustments were wrapped up on September 29. Expenditures for the four stations of the Complex were all within .25 percent of office fund targets.

Personnel Actions

Scott Dunmire, Fishery Biologist, GS-0482-5, EOD January 5.

Mary Lou Galloway, promotion to Supervisory Administrative Support Assistant, GS-0303-08, effective February 15.

Joan Sperber, promotion to Purchasing Agent, GS-1105-05, effective February 15.

Scott Dunmire, resignation effective March 14.

Dennis Ochszner, Animal Caretaker, EOD March 15.

Kim Smathers, Office Automation Clerk, GS-0326-04, EOD March 15.

Griffin H. Walker, Social Services Assistant, EOD April 13.

Robert Clark, Fishery Biologist, GS-0482-05, EOD April 26.

Griffin H. Walker, Social Services Assistant, death May 2.

Diane Praest, accretion of duties promotion to Budget Assistant, GS-0561-07, effective June 21.

Clifford L. Walker, Social Services Assistant, EOD June 23.

Mark Bright, Laborer, WG-3502-02, EOD July 5.

Dworshak Employees
-FY 98-

Name	Position Title	Period of Employment	Status
Bright, Mark G.	Laborer	07/05/97 09/30/98	Permanent
Clark, Robert W.	Fishery Biologist	04/26/98 09/30/98	Permanent
Clifford, David E.	Maintenance Supervisor	10/01/97 09/30/98	Permanent
Eaton, Craig A.	Fishery Biologist	10/01/97 09/30/98	Permanent
Galloway, Mary Lou	Supv. Admin. Support Asst.	10/01/97 09/30/98	Permanent
Greene, Benny C.	Electrician	10/01/97 09/30/98	Permanent
Izbicki, Adam H.	Fishery Biologist	10/01/97 09/30/98	Permanent
King, Rick A.	Maintenance Worker	05/10/97 09/30/98	Permanent
Miller, William H.	Complex Manager	10/01/97 09/30/98	Permanent
Niles, James R.	Animal Caretaker	10/12/97 09/30/98	Permanent
Ochszner, Dennis J.	Animal Caretaker	03/15/97 09/30/98	Permanent
Owsley, David E.	Environmental Engineer/ Assistant Complex Manager	10/01/97 09/30/98	Permanent
Praest, Diane E.	Budget Assistant	10/01/97 09/30/98	Permanent
Rosales, Raymundo A.	Maintenance Worker	10/01/97 09/30/98	Permanent
Sawyer, Susan E.	Information/Education Specialist	10/01/97 09/30/98	Permanent
Seldon, Kimberly K.	Biological Science Aid	05/27/98 09/30/98	Temporary
Semple, Robert A.	Supv. Fishery Biologist	10/01/97 09/30/98	Permanent
Sims, Hubert M.	Maintenance Mechanic	10/01/97 09/30/98	Permanent

...hers, Kimberly A.	Office Automation Clerk	03/15/98 09/30/98	Permanent
Sperber, Joan, M.	Purchasing Agent	10/01/97 09/30/98	Permanent
Trainor, David A.	Maintenance Worker	10/01/97 09/30/98	Permanent
Trock, Thomas J.	Fishery Biologist	10/01/97 09/30/98	Permanent
Vargas, John J.	Animal Caretaker Leader	10/01/97 09/30/98	Permanent
Walker, Cliff L.	Social Services Assistant	06/23/98 08/17/98	Temporary
Walker, Griffin H.	Social Services Assistant	04/13/98 05/02/98	Temporary
Weeks, Terry C.	Maintenance Worker	10/01/97 09/30/98	Permanent
Wright, Benjamin A.	Animal Caretaker	10/01/97 09/30/98	Permanent

Other Staffing
FY98

Summer Youth Program (JTPA)

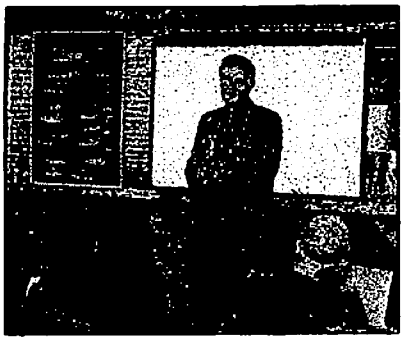
Gumfory, LeeAnn	Student Worker	06/08/98 07/21/98
Gustin, Stevie	Student Worker	06/08/98 07/21/98
Jones, Josh	Student Worker	06/08/98 07/21/98
Knoblich, Josh	Student Worker	06/08/98 07/21/98
Smith, Cody	Student Worker	06/08/98 07/21/98
Strawn, Ben	Student Worker	06/08/98 07/21/98
Wilson, Vicky	Student Worker	06/08/98 07/21/98

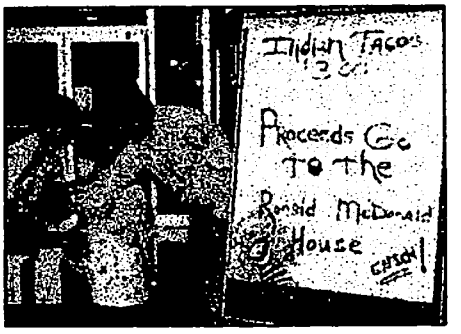
Express Personnel Employees

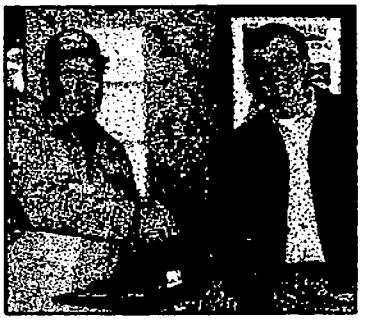
Bradbury, Steve	Biological Science Tech	03/16/98 09/30/98

Burns, Mike	Laborer	06/14/98 07/19/98
Elwood, Rick	Laborer	09/13/98 09/30/98
Gill, Scott	Laborer	05/17/98 06/28/98
Moulton, Harold	Laborer	05/12/98 05/12/98
Payton, Dannette	Laborer	03/08/98 06/14/98
Smathers, Kimberly A.	Clerk	10/01/97 03/14/98
Summers, Stephanie	Bio Science Aid	10/01/97 04/26/98
Tanner, Eric	Laborer	03/29/98 05/10/98

ADMINISTRATIVE ACTIVITIES
Photos







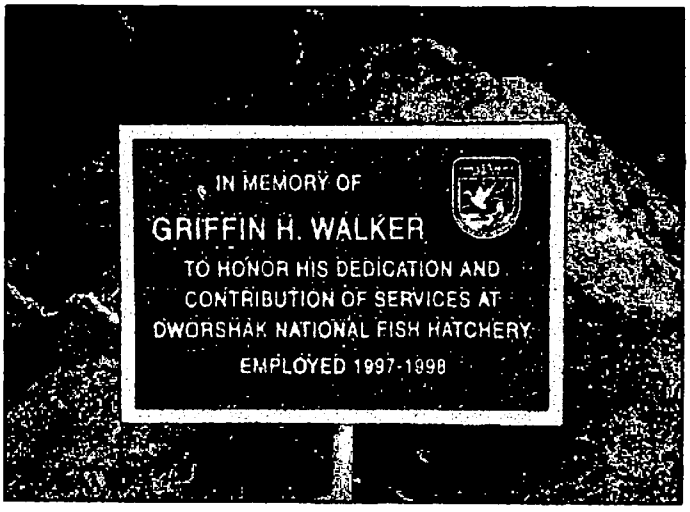
Administrative highlights included, from top right, clockwise: Indian Taco fund raising for Combined Federal Campaign; high voltage safety demonstration by Clearwater Power; flu and tetanus shots for staff through hatchery Wellness Program; Fish Culturist Rocky Greenland, center, at his going-away potluck after 10 years in Production; volunteer Bill Anderson received an award for his contribution to the spawning program; Dr. Will LePage, Winchester Wolf Research Center director, gave a talk to Complex staff.

IN MEMORY OF GRIFFIN H. WALKER

Employed at Dworshak National Fish Hatchery 1997 - 1998

Griff Walker was hired in 1997 as the Social Services Assistant, responsible for supervising the summer youth work crew. Griff's experience as an educator in the field of natural sciences allowed him to teach the crew about the world around them while performing a variety of grounds keeping and maintenance tasks. After the season ended, Griff worked on several garden projects around the main hatchery building.

In May of 1998, shortly after being re-hired for the summer season, Griff Walker passed away suddenly at home. This past summer, a plaque was installed and dedicated to Griff, and lies in a small rose garden he planted near the nursery and lab buildings.



OUTREACH AND VISITOR ACTIVITIES

The Information and Education program at Dworshak Fisheries Complex experienced another successful year in generating increased public awareness through expanded community outreach efforts and on-site school group visits. The Complex was present at several off-site natural resource education events which generated support for the site and agency. The 8th annual Open House and Kids Fishing Day was held on a weekday for the first time, and a new attendance record was set.

Partnerships for natural resource education programs gained momentum with external agencies again this year. They 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 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 from three area colleges took part in hatchery programs, earning classroom credit for their work. Over 40 people provided more than 1200 hours of volunteer assistance during the year.

Highlights for outreach and educational activities for the year follow:

Information:

On-site projects - Temporary signs for tour route detour and spawning information were posted around the hatchery.

The hatchery self-guided brochure was designed by the summer JTPA student worker. The tour route was redirected and painted by the JTPA crew.

Hatchery information appeared in several travel/tour publications, and the US West phone directory.

Off-site projects - A briefing packet was designed for elected officials, with the first handed to Congresswoman Helen Chenoweth at a public meeting in Orofino.

Text and photos of the hatchery were included in an informational sign panel in front of the Clearwater National Forest main office in Orofino. At the request of Dworshak State Parks, I/E Specialist Sawyer wrote sign text about the effects of reservoir drawdowns on migrating steelhead and salmon. The signs are in place at two locations on Dworshak Reservoir.

Temporary exhibits on the Endangered Species Act and Federal Aid to Sport Fish Restoration were received and displayed in the hatchery building through late spring.

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.

Education: A new student intern program was initiated with participants from Lewis-Clark State College, Lewiston; University of Idaho - Moscow, and Washington State University - Pullman, performing work projects for fish culture and outreach.

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

Earth Week was celebrated for the fourth year with eight agencies sponsoring interactive lessons for 300 fourth graders over a three day period at Dworshak Reservoir.

The Complex was represented at natural resource education and career events for the following: Kiwanis in Orofino; the Latah Soil and Water Conservation District at Spring Valley Reservoir; North-Central Idaho Career Fair; Clearwater County Sixth Grade Forestry tour; Juliaetta Career Fair, and Clearwater National Forest Lolo Creek program.

Dworshak hatchery provided a learning site for the Orofino Students in Business, Pre-vocation Occupational Student Training and the Partners-in-Education program through Orofino High School.

Orofino Jr. High held a science fair at the hatchery for 90 students, with learning stations on fish health, water quality and hatchery operations.

Guided tours were given to 58 school groups for a total of 1867 students touring this year.

Outreach Programs: 8th annual Open House and Kids Fishing Day was held on Friday, June 12, with a new record 861 children attending.

Hatchery staff assisted with Idaho Salmon and Steelhead Days in Boise, with 3000 4th grade students participating. Information/Education Specialist Sawyer co-chaired Gyotaku, Japanese style fish printing, and staff volunteered as group tour guides for the 3-day event.

Informational exhibits were displayed at: annual Kiwanis Kids Fair, Clearwater County Fair and Lumberjack Days (third place award); University of Idaho Natural Resource Day.

Hatchery staff provided a tour and after-hours cook-out for Russian fisheries biologists' group, along with FWS Regional and Idaho Fish and Game staff.

American Wildlife Calendars owner visited the hatchery, and was provided with a pair of steelhead and rainbow trout to photograph for the 1999 and 2000 calendars.

The hatchery took possession of a large mobile fish exhibit from the Regional office; it was used at the Open House and the county fair booth.

Dworshak hatchery again worked with the Paperworkers Union and Idaho Fish and Game by donating eyed steelhead eggs to the Instream Incubation project for five area high schools.

The Wolf Education and Research Center in Winchester presented a talk on the Sawtooth wolf pack, as part of Native American Heritage month activities at the hatchery, which included an Indian Taco lunch.

Production of the Complex web site started, with page design, text and photos assembled. The site was sent to Region for deployment on the Internet in FY99.

The Complex collected and donated used fishing equipment to the Orofino Foster Kids program.

Volunteer and Student Intern Programs:
The MOU with Retired Senior Volunteer Program was renewed. Two new volunteers were signed on as Hatchery Hosts. The four senior volunteers contributed over **300 hours** to school tours and public contact duties this year.

A graduate student in Natural Resource Education from University of Idaho started work on educational outreach projects for classroom credit and practical experience. She designed and researched information for a new "Wheel of Fish Fortune" game for the hatchery lobby and offsite programs.

A junior at Lewis-Clark State College worked part-time during the spring semester at the hatchery, rotating through Fish Health, IFRO and Production sections as part of her fishery biology course. She received an 'A' in the course, and contributed to several Complex projects.

The Clearwater County Juvenile Probation Department provided 8 youth offenders for the annual Open House events in June. They assisted with fish painting and the kid's trout pond.

A total of 41 volunteers contributed 1234 hours to the various programs and projects at Dworshak National Fish Hatchery during FY98.

Special Projects and Activities:
Dworshak National Fish Hatchery applied for and received a National Fishing Week Grant for $650, to purchase supplies and equipment for the Kids Fishing Day event.

Idaho Community Foundation awarded the hatchery a grant of $850 to develop two fishery education projects, including the "Wheel of Fish Fortune" and a set of 'discovery boxes' for the visitor lobby. These tools will be portable for off-site program use, and designed for younger students.

Visitor Use Statistics
Dworshak National Fish Hatchery - Fiscal Year 1998

Type of Program		# of contacts	% change from FY97
ON-SITE			
Visitors to Hatchery (Register sign-ins and self-guided tour)		**8150**	(-30%)
Guided Tours -		**58**	(-5%)
Tour Visitors -		**1867**	(-.85%)
Open House -	[children 12 & under only]	**861**	**+3.5%**
Others -		**1802**	**+6%**
Total On-Site contacts -		**12680**	
OFF-SITE			
Programs/Displays/Events -		**29**	**+107%**
# of Contacts -		**6949**	**+66%**
Total Programs for FY98 --		**87**	
Total Contacts for FY98 --		**19,629**	(-15%)

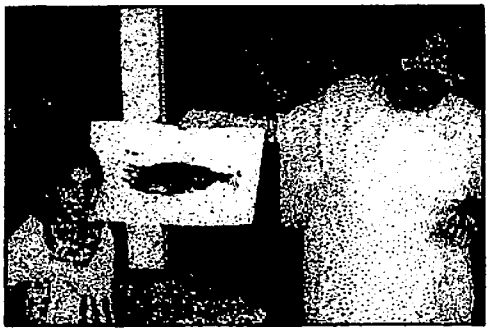
SUMMARY OF FY-98 VISITOR STATISTICS

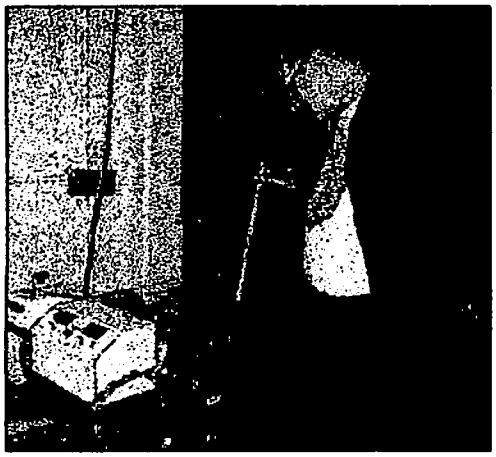
Hatchery visitation decreased by 30%, which was probably due to heavy and lengthy construction on the Ahsahka access road, with traffic delays up to 30 minutes throughout the day. However, this same construction regulated the visitor flow on Open House day, held on a Friday. There were no waiting lines for the fishing pond or other activities, and even though attendance exceeded last years', it was unnoticeable due to the well-timed visitor flow provided by the construction flaggers.

Off-site outreach contacts improved markedly, with twice as many programs offered to schools and groups in the area. Nearly 7000 people, mostly elementary school students, were contacted as a result of hatchery presence at these events. The outreach programs would not have been possible without the assistance of Hatchery Hosts and other volunteers to conduct tours and related on-site tasks for the Information/Education program.

Dworshak Fisheries Complex is known for providing quality educational programs for area schools and groups, and has helped to improve the public image of the Fish and Wildlife Service within those schools and communities.

OUTREACH AND VISITOR ACTIVITIES





Additional highlights included (clockwise, top right): Boise Salmon and Steelhead Days for 3000 4th graders; Holly Stanton (right) student intern, records data for fish biologist; Orofino High School biology teacher Jon Gestner assists Production with egg counting; junior fisher-person wins a gold hook for catching a gold steelhead at Kids Fishing Day; artist and volunteer with a Gyotaku print at Salmon/Steelhead Days in Boise.

OUTREACH AND VISITOR ACTIVITIES
Photos

Some of the highlights for the outreach program include clockwise, from top right: JTPA youth crew paints the self-guided tour route; Kids Fishing Day crowd; calendar photographer at the trout ponds; Open House poster contest winner Mike Dietrich; special tour of Winchester wolf center; hatchery display at North Central Idaho Career Fair.

COOPERATIVE PROGRAMS

Dworshak Fisheries Complex personnel (Dworshak National Fish Hatchery, Kooskia National Fish Hatchery, Idaho Fish Health Center, and Idaho Fisheries Resource Office) worked closelywith 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 Reseach Unit

Tribal Entities:

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

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
-Latah County Soil Conservation District
-Joint School District #171
-Orofino Chamber of Commerce

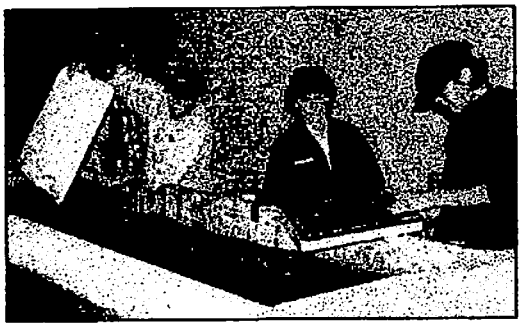
Special Interest Groups:

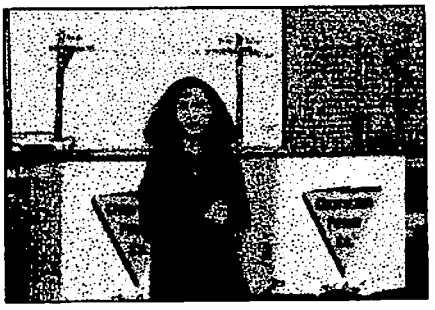
-Idaho Community Foundation
Northern Region Grant Program
-Idaho Food Commodity Program
-Pulp and Paperworkers Resource Council (PPRC)
-Retired Senior Volunteer Program (RSVP)

Other:

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

COOPERATIVE PROGRAMS
Photos





Cooperative projects with outside agencies and groups included, from top right: Clearwater Power provided safety talks and electrical service assistance to the hatchery; Orofino High School 'Students in Business' occupational program; JTPA youth summer work crew; Idaho Fish & Game stored road kill game in the cooler for wolf program; Nez Perce tribal fisheries workers reared Coho salmon with hatchery production help.