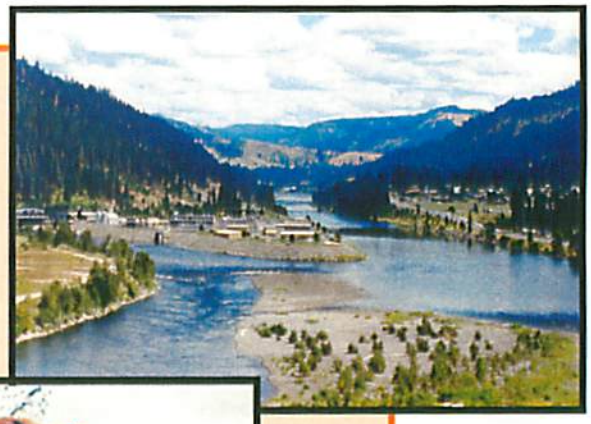
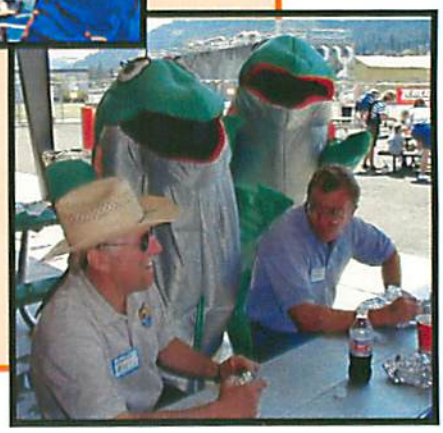
Annual Report for

Dworshak National Fish Hatchery

Ahsahka, Idaho

Fiscal Year 2001





William H. Miller

Complex Manager

January 15, 2002

Date

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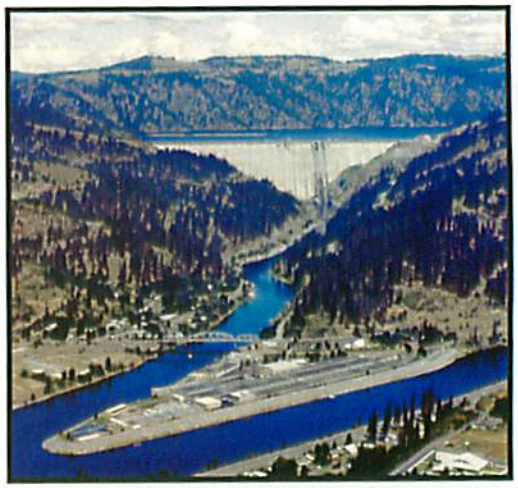
Introduction

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



Dworshak National Fish Hatchery at the confluence of the North Fork and main stem of the Clearwater River, below Dworshak Dam.

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

DNFH 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 1980s, the target size for steelhead smolts was changed to 200 mm, based on data developed by FWS.

During the mid-1970s, with DNFH not meeting either production or 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 1980s 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 1980s, an additional thirty 8'×80' raceways were constructed under the LSRCP to provide production facilities for spring chinook salmon. Additionally in the 1980s, 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 into November, when desired temperatures can be obtained through selector gates at Dworshak Dam. A pump station on the North Fork Clearwater River, one mile down river 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. Temperatures in each of the three outside steelhead rearing systems can be controlled independently 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 then 20 year old hatchery. 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. This year, the COE started the contract process to repair the System I reuse and bring the reservoir water lines into Mechanical Building I. This work is expected to be done in the fall of 2002.

Future projects we are asking the COE to undertake include converting Burrows ponds to raceways, structural work on the Main Hatchery Building and replacing the Nursery Building roof.

Kooskia National Fish Hatchery (KNFH), 35 miles upriver from Dworshak on the Clearwater River, has operated as a Complex with Dworshak since 1978 to restore the spring chinook fishery in the Clearwater. The administrative headquarters for the Dworshak-Kooskia Complex

is located at the Dworshak hatchery. The Idaho Fishery Resource Office (IFRO) is also included in the Dworshak Complex. The Idaho Fish Health Center (IFHC) is a separate entity functioning on DNFH grounds.

DNFH has the capacity to produce 2.3 million steelhead smolts at 6 fpp (200 mm in length); 1.05 million yearling chinook salmon smolts at 18 to 20 fpp (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 goals to the Clearwater River are 20,000 returning adult steelhead and 9,135 adult spring chinook. Steelhead goals are being satisfied in some years but were not in 2000. Spring chinook adult returns have historically been well below mitigation but were met this year.

Rainbow mitigation for Dworshak Reservoir is in an interim phase, with fish exchange with IDFG and use of production at Hagerman NFH. The IDFG now stock catchable size, sterile rainbow in reduced numbers because of fish health and species interaction concerns with native cutthroat trout, while the FWS produce replacement fish to stock other Idaho managed waters.

This report covers the period of hatchery activities from October 1, 2000, to September 30, 2001.

Cover photos: Top, a view of the Clearwater River valley at Ahsahka, Idaho, with the hatchery on the point. Center, a successful steelhead catch. Bottom, Dworshak Fisheries Complex Manager Miller and Assistant Hatchery Manager Semple being visited by Frank and Francis fish at the Dworshak's Open House and Kids' Fishing Day.

Highlights

Fish Culture Operations

Brood Year 2000 Summer Steelhead Trout

There were 2.2 million BY00 steelhead smolts released from DNFH in April, 2001. The steelhead at release averaged 196 mm in total length. Fish health and condition were good throughout the rearing cycle as water temperature was kept about 2°F lower in the reuse systems than normal (52°F rather than 54°F). The reuse system effects growth in about 2/3 of the steelhead on station. The smolts were outplanted to the South Fork of the Clearwater River the third week of April and direct released from DNFH the following week. There were 353,794 pounds of BY00 steelhead produced at DNFH. There were a total of 114K BY00 SST which received no external mark to designate them as hatchery fish in accordance with the Harvest Settlement Agreement between Federal Agencies and the Columbia River Tribes.

Brood Year 2001 Summer Steelhead Trout

There were 6,411 adult steelhead returned to DNFH in the fall of 2000 and spring of 2001. A total of 2.7 million eyed eggs went into DNFH's production program. DNFH provided 1.1 million eyed eggs for the Clearwater Fish Hatchery. Also, 1.63 million green eggs and 800K eyed eggs were taken for Magic Valley Hatchery and another 15,000 eyed eggs for Potlatch Pulp & Paper school projects. The production program at DNFH completed another early rearing phase in the hatchery's nursery without any problems with the IHN virus, largely due to a program that relied entirely on the water supply from Dworshak Reservoir rather than the North Fork of the Clearwater River. At the end of FY 2001 there were 2.27 million BY01 SST on station. Approximately 100K SST will be released with no external mark designating them as hatchery fish as part of the Harvest Settlement Agreement.

Brood Year 1999 Spring Chinook Salmon

DNFH released 333,120 BY99 spring chinook salmon weighing 16,905 pounds. The fish were 20 fpp and 140 mm total length. The chinook were released in the evening of March 28, 2001.

Brood Year 2000 Spring Chinook Salmon

Adult returns of BY00 SCS to DNFH consisted of 3,202 chinook adults. A total of 342 males and 439 females were spawned, producing approximately 1.1 million eyed eggs for DNFH. Fish spawned at DNFH for KNFH included 266 males and 278 females for a total of 668K eyed eggs. All BY00 SCS were early-reared at KNFH to take advantage of cooler water temperatures. Dworshak stock SCS were returned to DNFH in April/May 2001 for final rearing. At the end of the FY 2001 there were 1.0 million BY00 SCS at DNFH averaging 70 fpp and 92 mm total length.

Brood Year 2001 Spring Chinook Salmon

During FY 2001 there were 4,018 BY01 SCS returned to DNFH and 2,261 returned to KNFH. Of those returning to KNFH, 728 were transferred to DNFH for spawning and 90 were passed above the weir at Clear Creek. There were 489 Dworshak females and 304 Kooskia females spawned. All eggs were being incubated at DNFH at the end of FY 2001. There were 3,011 Dworshak stock adult SCS and 102 Kooskia stock adult SCS outplanted from DNFH.

Brood Year 1999 Coho Salmon

The coho salmon (COS) at DNFH are being reared in a cooperative program with the Nez Perce Tribe (NPT). There were 200–300K BY00 COS produced at DNFH. No written data concerning these fish was reported to DNFH personnel. These fish were transferred to KNFH on April 4–9, 2001.

Brood Year 2000 Coho Salmon

Adult coho were trapped at DNFH and various tributaries on the Clearwater River. Personnel from the NPT conducted the spawning at DNFH with assistance from DNFH staff. The eggs were incubated at DNFH. Coho from Lyons Ferry Hatchery were also transported to DNFH and mixed with coho adults trapped from the Clearwater River basin. There were approximately 185 females spawned which produced approximately 500,000 green eggs.

On January 4, 2001, DNFH received an unknown number of eyed COS eggs from Lyons Ferry Hatchery, Washington. There were approximately 200K–300K BY00 COS on station at DNFH at the end of the fiscal year. No written data was reported to DNFH personnel from the NPT concerning these fish. The Service has currently given office space at DNFH for a NPT biologist to oversee the COS program

Brood Year 2001 Coho Salmon

Coho were trapped in the Clearwater River basin. Personnel from the NPT will conduct the spawning at DNFH with assistance from DNFH staff. The eggs will be incubated at DNFH.

Rainbow Trout for Open House

DNFH raised approximately 14,000 BY00 RBT for Open House. There were 10,000 stocked into a fishing pond at DNFH for Open House on June 15, 2001, and about 3,400 shipped to KNFH for their Open House. The remaining RBT were then stocked into ponds for public fishing and tribal waters. There are approximately 14,000 BY01 RBT on station for the Dworshak 2002 Open House and Kids' Fishing Day. DNFH receives its RBT eggs from Ennis NFH in Montana.

Rainbow Trout For Dworshak Reservoir

Due to concerns about stocking RBT in Dworshak Reservoir, the following fish exchange is planned: Hagerman NFH will raise approximately 145,000 10" Arlee and Shasta strain RBT to be stocked in September and October into several locations including; L. Camas, Oxbow, Hells Canyon, Lucky Peak, and C.J. Strike reservoirs.

IDFG's Hayspur Hatchery will raise approximately 130,000 10–12" sterile RBT for stocking into Dworshak Reservoir in March, April and May 2002.

Administration

Staffing

Full-time staff years employed by DNFH were 26.2; permanent employees 24.5 and temporary employees 1.7 staff years. Twenty-eight permanent and temporary employees were represented in the staffing during the year.

Outreach & Visitor Activities

Overall hatchery visitation declined for the third year in a row. However, more guided tours were provided to approximately the same number of visitors as last year due to the offering of regularly scheduled weekend tours during the summer months. The 11th annual Open House and Kids' Fishing Day event saw an increase in attendance, setting a new attendance record of 893 children, 12 years and under.

Off-site programs declined from last year. Several county and community career days, environmental awareness and natural resource events at schools were canceled, which partially contributed to the decline. Overall contacts at staffed off-site events increased slightly, with the fall partner programs in Boise, Spring Creek NFH and Leavenworth NFH, and the local county fair accounting for more than half the total number of off-site contacts. Once again, the "*Hatchery in the Classroom*" programs were in place in two elementary schools, and hatchery I/E staff provided support during these projects.

Weekend tours continued to be popular and will be offered again in FY 2002 summer season. A new cultural history interpretive program was offered in July, using the history of Lewis and Clark in the Canoe Camp area as a theme, but from the perspective of Captain Lewis's mother. The program was well received and will be offered again in FY 2002 for the National Bicentennial Convention in Lewiston, the Orofino Festival of Discovery and Old Fashioned Sunday, as well as part of the regular weekend tour schedule.

Summer Steelhead Trout

Brood Year 2000

At the beginning of October 2000, all summer steelhead trout (SST) from Brood Year 2000 (BY00) were outside in Burrows ponds (BPs), totaling 2.3 million fish. Overall mortality from October 1, 2000, through final release on April 27, 2001, was about 4.4 percent. The final release number was 2.2 million SST smolts with an average total length of 196 mm (Table 1).

Table 1. Fish inventory summary for BY00 SST on October 1, 2000, and final release summary in April, 2001.

	October 1, 2000			Sept-May	Final Release April 16–27, 2001		
Location	Number[1]	Length in	Length mm	% Loss[1]	Number	Length in.	Length mm
Syst I	708,593	5.8	147	0.8	681,104	7.8	199
Syst II	638,572	4.9	124	7.0	614,594	7.9	200
Syst III	950,534	4.1	104	5.3	900,470	7.5	191
Tot/Ave	**2,297,699**	**4.8**	**122**	**4.4**	**2,196,168**	**7.7**	**196**

[1]On November 15 there were 22,127 SST from BP49 (System I) moved to BP50 (System II)
Source: DNFH - Final Release Summary, May 2001
Monthly Inventory Summary (MIS), October 1, 2000
Production Narrative, April, 2001

BY00 SST were reared entirely in BPs. Table 2 illustrates the survival rates of various stages of development for BY00 SST along with a five-year comparison.

This year, SST from Takes 6–8 and part of Take 9 were stocked into System II; the remainder of Take 9 and Takes 10–14 were stocked into System III. This was the second year of stocking the middle and later egg Takes in this fashion. Last year this was done due to the construction of an aluminum release channel in System III during the summer of 2000; however, it proved to be a better ponding strategy for the marking crews, so it was repeated this year with good results.

Table 2. Survival summary from green eggs to released smolts, BY96 through BY00 SST reared at DNFH.

	% 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
1996	88.5	91.1	86.3	97.2	51.0	75.2	83.5
1997	88.6	91.7	92.3	87.4	45.2	73.4	80.0
1998	87.5	90.0	96.6	89.5	49.1	77.7	86.4
1999	91.9	94.9	93.2	94.3	50.3	83.0	87.9
2000[1]	90.7	90.0	91.3	95.6	61.1	80.7	84.6
5yr Ave	**89.4**	**91.5**	**91.9**	**92.8**	**51.3**	**78.0**	**84.5**
2001YTD	87.6	91.2	92.8				

Note: Data are only for SST reared entirely at DNFH
[1]Due to malfunction with egg picker, numbers are estimated
* % Survival Green to eyed = Enum eyed eggs / Enum eyed eggs + enum dead eggs. i.e. survival after culling bad trays.
** Green eggs to smolt = Total green eggs (including those from females culled during enum) - Magic Valley grn eggs - Clearwater Hatchery eggs. (This calculation method beginning in 1997)
Source: DNFH - Egg Enumeration and Disposition Summary - EgEnumST01.wk4
Nursery Loss-nulo01st.wpd
Spawning/Egg Take Plan, BY01 SST

Water reuse and heated water were turned on November 16, 2000, for System III and on November 21 for System II. An outbreak of *Ichthyophthirius* (ICH) occurred during the winter. Formalin treatments were applied to control the ICH and each of the two reuse systems was turned off for about a two-week period during January to drop the water temperature. System III boilers broke down on March 2, 2001. System II went off heated water on March 15 and off reuse on March 19. On this same day, the boilers for System II were switched to System III; they remained on until April 11. See details of the water reuse strategy under each specific system below.

Some SST in all Systems 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, off-site release contribution, broodstock evaluations, and early-run predictions at Lower Granite Dam. Fish which received PIT tags will be monitored for residual studies and fish passage center studies. A total of 295,000 SST received CWTs; 45,000 received FBs; and 6,000 received PIT tags. See the marking/tagging tables under each System for details.

There were a total of 114K BY00 SST from System III which received a CWT but no adipose fin (AD) clip. These were the second group of SST released from DNFH since 1984 without an external mark to designate them as a hatchery fish. This is being done under the Harvest Settlement Agreement between Federal Agencies and the Columbia River Tribes.

System I

System I production included 25 BPs. At the beginning of the fiscal year, System I held 708,593 BY00 SST. On November 15, 2000, there were 22,127 fish from BP49 split into BP50 (System II); these were early-return progeny from Take 1. Final release numbers were 681,104 fish which averaged 199 mm total length (Table 3).

Table 3. System I BP production, BY00 SST, FY 2001.

Month	Year	1st of Month			Growth		% Mortality	Ave Temp °F for Month
		Number	fpp	L (mm)	in	mm		
October	00	708,593	14.97	146	0.61	15	0.12	49.4
November	00	707,775	11.10	162	0.60	15	0.33	48.8
December[1]	00	683,209	9.09	173	0.4	11	0.06	43.5
January	01	682,833	8.01	180	0.29	7	0.06	41.2
February	01	682,415	7.38	185	0.20	5	0.06	40.3
March	01	682,013	6.92	189	0.16	4	0.08	41.3
April	01	681,476	6.34	195	0.22	6	0.05	43.7
Release Tot/Ave		**681,104**	**5.95**	**199**			0.76	44.0

[1]22,127 fish in BP 49 split to System II (BP50) on November 15, 2000.

Source: DNFH - MIS, Sept 2000–May 2001
Final Release summary, BY00 SST
Production Narratives Sept–May, 2000–2001
Daily Water Temperature Records, Oct–April, 2000–2001

Adipose fins were clipped on BY00 SST in System I from May 31, 2000, until July 19, 2000. Other markings for these fish are summarized in Table 4.

Table 4. Marking and tagging of BY00 SST, System I, FY 2001.

Rel from BP #	Date	Number CWT	Number Freeze Brands	Number PIT tags	Fin Clips	Study	Release Site
BP 9	4/05/01			300	AD	Residual	South Fork CWR
BP 15	4/09/01			250	AD	Fish Passage Center	Dworshak
BP 15	11/20/00	21,504	11,000		AD LV	System Contribution	Dworshak
BP 25	4/12/01			300	AD	Residual	Dworshak
BP 37	4/12/01			300	AD	Residual	Dworshak
BP 41	4/05/01			300	AD	Residual	Clear Creek
BP 47	4/12/01			306	AD	Residual	Dworshak
BP 49	4/09/00			250	AD	Fish Passage Center	Dworshak
BP 49	11/17/00	22,098	10,678		AD LV	Early Return Progeny	Dworshak
Total		**43,602**	**21,678**	**2,006**			

Source: DNFH - MIS System I, Sept 2000
IFRO - Branding, Tagging.DBF
IFRO - MRKLPN01.wk4
IDFG - Fish Marking Summary 2000

During the 10-month outside rearing cycle of fish in System I, SST were treated for small outbreaks of both *Pseudomonas* infection and *Trichodina*. Mortality for fish in System I from October 1, 2000, until final release in April 2001 was approximately 0.8 percent.

On April 16–18, 2001, there were 269,510 SST outplanted from System I. The Corps of Engineers (COE) provided the trucks and drivers to outplant the SST to Clear Creek and the South Fork of the Clearwater River at River Mile 8.7, Red House Hole. Direct release of 411,594 SST from System I into the mainstem of the Clearwater River took place on April 26. The total release from System I was 681,104 BY00 SST (Final Release Summary, BY00 SST).

System II

System II production included 25 BPs. This System held 638,572 BY00 SST at the beginning of the fiscal year. There were 22,127 SST from BP49 (System I) split into BP50 on November 15, 2000. These were early-return progeny from Take 1 which were split when the CWT marking crew from IDFG tagged these fish. Final release numbers were 614,594 fish which averaged 200 mm total length (Table 5).

Table 5. System II BP production, BY00 SST, FY 2001.

Month	Year	1st of Month			Growth		% Mortality	Ave Temp °F for Month
		Number	fpp	L (mm)	in	mm		
October	00	638,572	25.07	123	0.71	18	1.17	49.4
November	00	631,078	17.33	139	0.64	16	0.29	47.6*
December[1]	00	653,237	12.80	154	0.58	15	2.40	52.1*
January	01	637,592	11.13	161	0.29	7	3.22	47.3*
February	01	617,051	9.37	171	0.38	10	0.28	52.3*
March	01	615,352	7.54	184	0.51	13	0.09	47.0*
April	01	614,803	6.31	195	0.44	11	0.03	43.5
Release Tot/Ave		**614,594**	**5.88**	**200**			7.0	48.5

* System under heated reuse water for part or all of month.
[1]On November 15 there were 22,127 fish split from BP 49 (System I) into BP50
Source: DNFH - MIS, Sept 2000–May 2001
Final Release summary, BY00 SST
Production Narratives Sept–May, 2000–2001
Daily Water Temperature Records, Oct-April, 2000–2001

Adipose fin clipping of BY00 SST in System II was done from July 24 through August 9, 2000. Other markings for these fish are summarized in Table 6.

Table 6. Marking and tagging of BY00 SST, System II, FY 2001.

Rel from BP #	Date	Number CWT	Number Freeze Brands	Number PIT tags	Fin Clips	Study	Release Site
BP 16	4/09/01			250	AD	Fish Passage Center	Dworshak
BP 16	11/27/00	22,578	6,017		AD LV	System II Contribution	Dworshak
BP 20	4/05/01			300	AD	Residual	South Fork CWR
BP 22	4/05/01			300	AD	Residual	Clear Creek
BP 24	4/12/01			300	AD	Residual	Dworshak
BP 34	4/09/01			250	AD	Fish Passage Center	Dworshak
BP 34	11/29/00	22,749	5,998		AD LV	System II Contribution	Dworshak
BP 46	4/12/01			300	AD	Residual	Dworshak
BP 48	4/12/01			300	AD	Residual	Dworshak
BP 50	4/12/01			300	AD	Residual	Dworshak
BP 50	11/16/00	22,127			AD LV	Early Progeny	Dworshak
Total		**67,454**	**12,015**	**2,300**			

Source: DNFH - MIS System II, August 2000
IFRO - Branding, Tagging.DBF
IFRO - MRKLPN01.wk4
IDFG - Fish Marking Summary 2000

Fish in System II were treated with formalin several times over the winter to help control an outbreak of ICH. Control of ICH was accomplished using formalin treatments and keeping the water temperature in the reuse system near 52°F rather than the usual 54°F. Mortality was approximately 7.0 percent from October 1, 2000, until release in April 2001.

System II was converted to reuse and heated water on November 21, 2000. Due to the ICH outbreak, System II reuse was turned off January 3, 2001, and was turned back on January 17. This resulted in a temperature drop from 52°F to 41°F. The temperature drop, along with the formalin treatments, resulted in a drastic reduction in SST mortality. System II went off heated water on March 15, 2001, and off reuse on March 19. On the same day the boilers for System II were switched to heated water in System III.

On April 18–20, 2001, there were 249,153 SST outplanted from System II. The COE provided the trucks and drivers to outplant the SST into Clear Creek and the South Fork of the Clearwater River at River Mile 8.7, Red House Hole. Direct release of 365,441 SST from System II into the mainstem of the Clearwater River took place on April 25. The total release from System II was 614,594 BY00 SST (Final Release Summary, BY00 SST).

System III

System III production included 34 BPs. This system held 950,534 BY00 SST at the beginning of the fiscal year. Final release numbers were 900,470 fish which averaged 191 mm total length (Table 7).

Table 7. System III BP production, BY00 SST, FY 2001.

Month	Year	1st of Month			Growth		% Mortality	Ave Temp °F for Month
		Number	fpp	L (mm)	in	mm		
October	00	950,534	42.0	104	0.57	14	1.66	49.4
November	00	934,730	26.0	122	0.71	18	0.18	51.2*
December	00	933,062	18.2	137	0.60	15	0.29	51.9*
January[1]	01	941,201	14.4	148	0.44	11	3.81	46.2*
February	01	905,371	12.1	157	0.35	9	0.37	50.8*
March	01	901,977	9.2	172	0.59	15	0.12	46.1*
April	01	900,853	7.3	186	0.54	14	0.04	46.5*
Release Tot/Ave		**900,470**	**6.7**	**191**			5.3	48.9

* System under reuse part or all of month.
[1]Numbers adjusted due to marking inventory
Source: DNFH - MIS, Sept 2000–May 2001
Final Release summary, BY00 SST
Production Narratives Sept–May, 2000–2001
Daily Water Temperature Records, Oct–April, 2000–2001

Adipose fin clipping was done on BY00 SST in System III from July 7 until August 30, 2000. Other markings for these fish are summarized in Table 8.

Table 8. Marking and tagging of BY00 SST, System III, FY 2001.

Rel from BP #	Date	CWT	Freeze Brands	PIT Tags	Fin Clips	Study/Comments	Release Site
BP 61	12/12/00	31,803			No AD No LV	NPT - No AD clip/ No marks to indicate hatchery fish	Dworshak
BP 63	12/11/00	31,856			No AD No LV	NPT - No AD clip/ No marks to indicate hatchery fish	Dworshak
BP 70	4/05/01			300	AD	Residual	South Fork CWR
BP 73	12/08/00	24,993			No AD No LV	NPT - No AD clip/ No marks to indicate hatchery fish	Dworshak
BP 75	12/07/00	27,251			No AD No LV	NPT - No AD clip/ No marks to indicate hatchery fish	Dworshak
BP 76	4/05/01			300	AD	Residual	Clear Creek
BP 76	12/04/00	22,924			AD LV	Off-Site Contribution	Clear Creek
BP 77	4/09/01			250	AD	Fish Passage Center	Dworshak
BP 77	12/06/00	22,672	5,446		AD LV	System III Contribution	Dworshak
BP 78	4/09/01			250	AD	Fish Passage Center	Dworshak
BP 78	12/01/00	22,658	6,002		AD LV	System III Contribution	Dworshak
BP 79	4/12/01			300	AD	Residual	Dworshak
BP 81	4/12/01			300	AD	Residual	Dworshak
	Total	**184,157**	**11,448**	**1,700**			

Source: DNFH - MIS System III, Sept 2000
IFRO - Branding, Tagging.DBF; IFRO - MRKLPN01.wk4
IDFG - Fish Marking Summary 2000

There were a total of 114K SST in BPs 61, 63, 73, and 75 which received a CWT but no AD clip to designate them as hatchery fish. This is the second group of un-clipped SST to be released from DNFH under the Harvest Settlement Agreement between Federal Agencies and the Columbia River Tribes and only the second release of un-clipped fish since 1984.

There was an infection of ICH over the winter for fish in System III. Control of the parasite was accomplished using formalin treatments and keeping the water temperature in the reuse system near 52°F rather than the usual 54°F. Reuse was also turned off for two weeks in January to help

control the ICH. Cumulative mortality in System III was approximately 5.3 percent from October 1, 2000, until release in May, 2001.

System III was converted to reuse and heated water on November 16, 2000. Due to the ICH outbreak, System III reuse temperature was turned down from 52°F to 49.5°F on January 5, 2001, and turned off January 18, resulting in 41°F water temperature. The heat was turned back up on January 31. System III boilers went out on March 2. The reuse boilers for System II were converted over to System III on March 19. The temperature drop along with the formalin treatments resulted in a drastic reduction in SST mortality. The reuse system was turned completely off in System III on April 11, 2001. Because of the ICH infection and the boiler problem, fish in this system did not reach the target fish size at release. Fish averaged 191 mm at release; target size was 200 mm.

On April 16–20, there were 429,955 SST outplanted from System III. The COE assisted in outplanting the SST to Clear Creek and the South Fork of the Clearwater River at River Mile 8.7, Red House Hole. Direct release of 470,515 SST from System III took place on April 23–27 into the mainstem of the Clearwater River. The total release from System III was 900,470 BY00 SST (Final Release Summary, BY00 SST).

Distribution Summary

Release of BY00 SST began April 16 and ended April 27, 2001. Final release numbers are illustrated in Table 9.

Table 9. Fish distribution summary by site, BY00 SST, April 16 to April 27, 2001.

Site	Number	Weight	fpp	Length	
				in	mm
Outplants 4/16–4/20					
Clearwater R. - Red House Hole	645,863	101,670	6.35	7.7	195
Clear Creek	302,755	46,637	6.49	7.6	193
Subtotal	948,618	148,307	6.40	7.6	194
Direct Release 4/23–5/27					
Main Stem of the Clearwater River	1,247,550	205,487	6.07	7.8	198
Totals/Averages	**2,196,168**	**353,794**	**6.21**	**7.7**	**196**

Source: Final Release Summary, BY00SST

Fin Marking Study

While there is increasing pressure to mark all hatchery fish, there is also increasing pressure to release non-AD clipped fish for run-rebuilding efforts. Fish with adipose fins would not be available for sport fisheries upon their return as adults, which theoretically increases the probability they will return to spawn naturally. Idaho Fishery Resource Office (IFRO) staff conducted a test, in which small V-notches were made through the primary ray in a variety of fins, to determine if there is a simple way to apply a mark that would be distinguishable over

time and still not diminish the survival or other performance factors of the fish. This small-scale test was also to determine whether an expanded study would be worthwhile.

On February 7, 2001, there were 54 steelhead from BP47 V-notched with scissors or a V-notcher (for caudal clips). The clips were as follows:10 dorsal, 10 left pectoral, 10 left ventral, 10 anal, 10 upper caudal, and 4 lower caudal. The small notches were made close to the base of the fin, just large enough to cut through the first few rays. The study fish were put into the upper ⅓ of chinook raceway 21, B-bank.

On April 24, 2001, the fish were examined for marking signs, then released with the other fish in System I on April 26, 2001. Generally, the clips averaged 80–90 percent distinguishable. The easiest marks to distinguish and apply were the caudal notches. Based on these results, a larger-scale clipping test—with CWTs, to look at the clips through adult returns—may be initiated. It may be possible to develop an additional clip which will not affect the long-term survival of the fish. This would appear to be useful for fisheries management throughout the Snake River Basin.

Brood Year 2001

Adult Collection

Adult BY01 SST were collected in the fall of 2000 and again in the winter and spring of 2001, to represent the entire run. The ladder was first opened on October 3, 2000, and was closed October 27. During this 24-day period there were 533 early-run SST collected. The fish ladder was reopened on February 14, 2001, and closed on April 30. During the February–April operation, there were 5,878 SST collected, for a total of 6,411 fish returned to DNFH for the BY01 run. There were 1,971 males and 4,440 females trapped. This number includes 492 jacks.

The ladder was opened and closed several times in November 2000 for the collection of coho salmon for the NPT. During this time there were 75 SST trapped and anesthetized with carbon dioxide. These SST were transported back to the Clearwater River downstream of DNFH.

Figure 1 illustrates the numbers of returning SST adults since 1989, the first year that opening the ladder in the fall became standard operating procedure for DNFH.

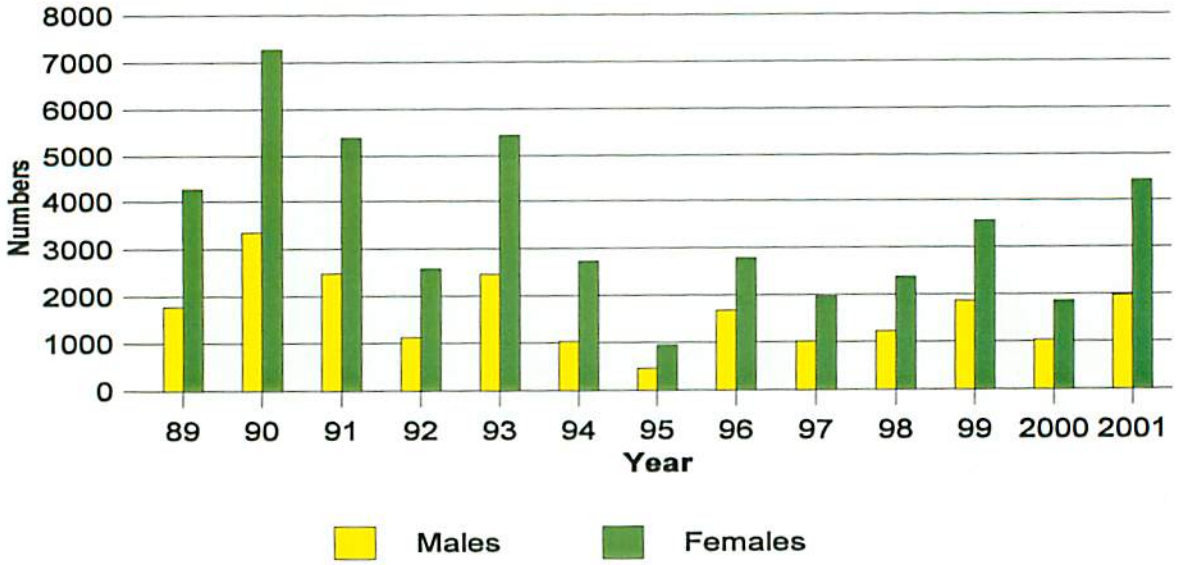


Figure 1. Dworshak adult SST returns 1989–2001

Source: DNFH - Spawning Report SST BY01
Spawning/Egg Take Plan SST BY01, ST01EgTk.wk4
IFRO - SST Rack Returns, Sth01ent.wk4

Twenty-three adults died before spawning began. Formalin bath treatments of 167mg/l were administered 3 days per week beginning in December of 2000; the treatments appeared to successfully control fungus.

Spawning Numbers/Ratio

There were 1,979 SST spawned over the BY01 season, including 858 males and 1,121 females. Because females have always outnumbered males in returns at DNFH, the goal of a 1:1 male:female spawning ratio is difficult to achieve. While the male:female return ratio was 1:2.3 for BY01 SST, the spawning ratio was reduced to 1:1.3. There were 185 jacks spawned during the season. Green and surplus males and unripe females were returned to HPs 1 or 2 to be re-examined later. Some surplus, over-ripe or spent fish went to HP3 to be outplanted. Figure 2 illustrates the total male:female spawning numbers by Take for BY01 SST. These include eggs taken for DNFH, Clearwater Fish Hatchery (CFH), and Magic Valley State Fish Hatchery (MVH).

Idaho Fish Health Center Disease Sampling

Twenty-five early-return males were injected with LHRH hormone on January 18, 2001, to ensure enough ripe males the first day of spawning. All of these males were ripe on January 30 for the first egg Take.

Approximately 13 percent (47 out of 352) of the females spawned for MVH (Takes 7–13) tested positive for *infectious hematopoietic necrosis* (IHN). Testing was done by personnel from Idaho Fish Health Center (IFHC). Approximately 3.7 percent (8 out of 217) of the females from Takes 6–8 for CFH tested positive for IHN. All eggs taken for either MVH or CFH which tested positive for IHN were discarded. Disease testing on eggs for CFH was done by the Idaho Fish and Game (IDFG) Eagle Creek Laboratory.

There were 7.7 percent (12 out of 156) of both males and females sampled for DNFH which tested positive for IHN. DNFH does not cull eggs which may test positive for IHNV in its production program.

Spawning Summary

A total of 14 egg Takes occurred this season, beginning on January 30, 2001, and ending on May 1. There were 1,121 females and 858 males spawned; the average fecundity of all SST enumerated at DNFH was 6,972 eggs/female. Early-returning adults (October) were spawned during Takes 1–3 and later-returning adults (February–May) were spawned during Takes 4–14.

Egg Disposition

There were 1.63 million green eggs and 804,640 eyed SST eggs taken for MVH. These were collected by personnel from DNFH and CFH from 352 females during Takes 7–13. The green eggs were transported to CFH on spawning day for initial incubation. The eyed eggs were incubated at DNFH until eye-up, at which time personnel from CFH shocked and transported the eggs to CFH for enumeration. Eggs from Take 10 were incubated at 43°F and eggs from Takes 12 and 13 were incubated at 54°F. The policy for IDFG calls for culling of eggs from IHN positive females; consequently, eggs taken from the 47 IHN positive females spawned for MVH were discarded.

There were 1.1 million eyed eggs from Takes 6–8 taken for CFH, incubated and enumerated at DNFH, then transferred to CFH. There were eight females taken for CFH which tested positive for IHN this year, and the eyed eggs from these eight females were discarded as per IDFG policy. DNFH also provided 15,000 eyed eggs for IDFG and Potlatch Pulp & Paper Mill school outreach program. These eggs were also incubated and enumerated at DNFH and transferred to CFH.

After shipping eggs for CFH, MVH, and Potlatch, DNFH put an estimated 2.7 million eyed eggs into either hatching jars or incubator trays for its production.

Performance/Cryopreservation Studies

University of Idaho. This is the fifth year that DNFH has provided excess SST milt and eggs to the University of Idaho (U of I). Experiments are testing the effects of carbon dioxide and oxygen on sperm motility and fertility. Some of the eggs provided were used in these studies along with research on ATP levels and egg viability studies. DNFH provided 456 ml of milt from 57 males and 38,100 eggs from 51 females for the season-long study. All eggs and milt given for research to the U of I were partial lots shared with DNFH and included in DNFH's spawning numbers. DNFH also provided 545 ml blood from 65 carcasses. The blood samples, along with some of the milt samples, will be used to examine the buffering capacity of seminal

plasma and blood plasma. All gametes given to research were in excess of DNFH spawning needs.

On April 10, DNFH also provided two carcasses to Aki Koyama from the Forestry Department at the U of I for research concerning nutrient exchange from aquatic to terrestrial systems.

Nez Perce Tribe Research. The Nez Perce Tribe (NPT) was funded in 1999 by the Bonneville Power Administration (BPA) to coordinate gene banking of male gametes from fish listed under the Endangered Species Act. This Act lists steelhead in the Snake River Basin. Although Dworshak stock SST are part of the Endangered Species ESU, they are classified as not essential for recovery. Dworshak stock are unique and represent the genetic stock of the North Fork of the Clearwater basin. DNFH provided milt and tissue samples from SST for cryopreservation to the NPT over five egg-Takes. DNFH provided the Tribe with 295 ml of milt from a total of 82 males, along with tissue samples for DNA analysis from 39 adult fish. All gametes given to research were in excess of DNFH's spawning needs.

Adult Disposition

There were 2,276 hatchery adults outplanted from DNFH during the return run of BY01 SST. This outplanting was coordinated by staff from Dworshak Fisheries Complex, the IDFG and NPT. Table 11 illustrates the dates, number of fish, and location of the outplantings.

Table 11. Brood Year 2001 adult steelhead outplanted from DNFH.

Date 2001	Male	Female	Jack	Total	Location
2/28	53	134	11	198	Newsome Creek, SF Clearwater R.
3/01	39	116	23	178	Newsome Creek, SF Clearwater R.
3/14	91	485	43	619	Lolo Creek, Mainstem Clearwater R.
3/30	53	336	23	412	Lolo Creek, Mainstem Clearwater R.
4/5	28	367	9	404	Lolo Creek, Mainstem Clearwater R.
4/5	13	190	8	211	Newsome Creek, SF Clearwater R.
4/19	26	217	11	254	Newsome Creek, SF Clearwater R.
Total	**303**	**1,845**	**128**	**2,276**	

Source: DNFH - Spawning Activity Report, BY01 SST.
Spawning and Run Summary, BY01 SST

Usable fish carcasses from spawning and culling activities were provided to a processor to be packaged for human consumption under a program with the Federal Bureau of Prisons. Complete adult disposition is illustrated in Table 12.

Table 12. Adult disposition of BY01 SST from DNFH.

Location	Number	Comments
Idaho Bear Program	1,702	IDFG bear capture/marking program
Fed Bureau of Prisons	2,196	Latham Processing
Outplanted	2,276	See Table 2 above for outplant details
Landfill	229	Carcasses deteriorated beyond use
Mainstem, Clearwater R.	8	Wild - returned to river
Total	6,411	

Source: DNFH - Spawning Activity Report BY01 SST, Dworshak Take 14
Spawning and Run Summary, BY01 SST.

Nursery and Early Rearing

The first three egg-Takes are from early-return adults. Due to problems with the boiler system, eggs from Takes 1–2 and 7–8 had to be enumerated and returned to egg trays rather than put into hatching jars in the nursery.

Eggs were put into hatching jars in the nursery at an average rate of 16,500 eggs/jar for Takes 3–6 and 11–12. Takes 8–10 were double loaded at a density of 34,000/jar due to lack of nursery tanks. These fish were split into tanks formerly holding fry from egg Takes 2–4 as these early fish were moved outside the nursery into BPs. Once approximately 70 percent of the fry had hatched, the remaining fry were poured from the jars into the tank.

Due to lack of nursery space, Takes 13–14 were hatched in Heath trays (5,000 per tray). These were later moved into tanks which were vacated once Take 1 was transferred outside. Dead eggs and fry were picked and enumerated from each tank and tray. There was a 91 percent survival from the eyed-egg stage to feeding fry for BY01 SST.

This year the fry from the nursery averaged 81 fish per pound (fpp) when moved out of the nursery into BPs. Fish which will not receive a CWT were transferred from the nursery directly to the AD clipping trailer. From the trailer, fish were then distributed to the appropriate BP. Steelhead which will receive a CWT went directly from the nursery to a BP and will be tagged later in November 2001. Idaho Department of Fish and Game provided the trailer and AD clipping crew.

A total of 2.29 million BY01 SST were moved from the nursery to the BPs beginning with Take 1 on May 30 and ending with Take 14 on August 31.

Feed

All steelhead in the nursery were fed Moore-Clark feed for the second straight year. A feed study involving belt feeders and the comparison of Moore-Clark and BioOregon feed was conducted on Take 11 SST in the nursery. Results are pending at the time of this writing.

Projected Release

Historical losses indicate a projected release number of 2.2 million SST in the Spring of 2002. Table 13 illustrates the steelhead on station at the end of FY 2001 and projected release numbers.

Table 13. BY01 SST on station and projected release summary (9/30/2001).

As of September 30, 2001					Projected to release - April/May 2002		
System	Number	Weight (lbs)	fpp	L (mm)	Proj % Loss to Release	Proj Release Number	Proj Size at Release (mm)*
Sys I	679,656	57,149	11.9	158	3	659,266	200
Sys II	644,756	29,692	21.7	129	3	625,413	209
Sys III	944,150	21,497	43.9	102	3	915,826	190
Total/ Average	**2,268,562**	108,338	28.0	127	**3.0**	**2,200,505**	**198**

*Projected length based on Systems II & III going on reuse end of November through March 1.
Source: Production - MIS data, October 1, 2000
Production - Production Narrative, September, 2000

System I. System I received 742,000 BY01 SST (approximately 85,000 of the early-return progeny were split into System II during the fall of 2001, once System II was chlorinated). Steelhead in System I were moved out of the nursery beginning with Take 1 on May 30, 2001, and ending with Take 6 on July 12. A small marking trailer from IDFG was set up at the end of May, and personnel handled all fish out of the nursery with the exception of fish which will receive CWTs. Fish in BPs 9 and 47 will be AD clipped and receive CWTs in November/December 2001.

No fish in System I were confirmed positive for IHN, and no medical or chemical treatments were administered to the fish by the end of FY 2001.

System II. System II received 595,000 SST during July and August 2001 (approximately 85,000 of the early-return progeny were split from System I into System II during the fall of 2001, once System II was chlorinated). Fish in System II were moved out of the nursery beginning with Take 7 on July 16, 2001, and ending with a portion of Take 9 on August 3. With the exception of fish which will receive CWTs, steelhead from Takes 7–9 were loaded from the nursery into a transport tank and moved directly to the AD clipping trailer. From the trailer, fish were marked and stocked at final densities to the outside BPs. Steelhead in BPs 16, 18, and 50 will be CWTed and AD clipped in November/December 2001.

Steelhead in two BPs were confirmed IHN positive in System II. There were no medical or chemical treatments administered to the fish by the end of FY 2001.

System III. System III received 948,000 SST from Takes 9–14, beginning with a portion of Take 9 on July 30, 2001, and ending with Take 14 on August 31. These fish were loaded directly from the nursery to the marking trailer and then stocked at final rearing densities into System III BPs, with the exception of fish in BPs 52, 77, and 82, which will be coded-wire tagged and AD clipped in November 2001.

Fish in BPs 73, 74, 75, and 76 (approximately 100,000 fish) will be CWTed but will receive no external mark to indicate a hatchery fish. This is the third time since 1984 that DNFH will release hatchery fish without an AD clip. This is being done through the Harvest Settlement Agreement between Federal Agencies and the Columbia River Tribes.

Steelhead in one BP were confirmed IHN positive in System III. There were no medical or chemical treatments administered to the fish by the end of FY 2001.

Spring Chinook Salmon

Brood Year 1999

On October 1, 2000, there were 424,182 Brood Year 1999 (BY99) spring chinook salmon (SCS) on station at DNFH. All of these fish were low Bacterial Kidney Disease (BKD) status. Included in these numbers are 208,320 Dworshak stock, 127,595 Rapid River stock, and 88,267 Kooskia stock. The Kooskia fish were inventoried and transferred to Kooskia NFH (KNFH) on October 2–3, 2000.

The coded wire tag retention rate for BY99 SCS averaged 97.1 percent. Fish were sampled for retention in March 2001.

There were 55,297 BY99 SCS which received PIT tags and 55,142 which were released. This study is for a survival comparison of barging vs. trucking of smolts in the Columbia Basin.

DNFH continued to work with researchers outside the facility. On March 21, 2001, staff working under University of Idaho (U of I) professor Jim Congleton sampled 60 BY99 SCS for indices of fish conditioning; body lipid levels, blood glucose concentrations, cholesterol, triglycerides, total protein and activities of various enzymes involved in metabolism. These parameters are used to help determine the effects of fish condition concerning migration through the Snake and Columbia River hydropower system. Fish will also be examined at Lower Granite and John Day dams.

Release of BY99 SCS occurred the evening of March 28, 2001. There were 333,120 BY99 SCS released from DNFH into the main stem of the Clearwater River (Table 1). The release was performed late in the day to assist the smolts with predator avoidance. Chinook smolts from DNFH are normally released by gravity flow from the hatchery into the North Fork of the Clearwater River. Due to very low water flow in the North Fork, the 12 raceways of BY99 SCS were pumped out of the raceways into the release trough for System III Burrows ponds (steelhead rearing) and released into the main stem of the Clearwater River. A Neilson pump was used in moving the fish to the System III trough.

Table 1. BY99 SCS in System I Raceways, 9/30/00, and release data, 03/28/01.

36,798					% Loss 9/30/00 to 3/28/01	Release March 28, 2001			
Stock	Number	Weight lbs	fpp	Length mm		Number	Weight lbs	fpp	Length mm
DW	208,320	4,293	48.5	104	(1.5)[1]	211,496	10,192	20.8	138
KK	88,267	3,493	25.3	129	N/A	Transferred to KK[2]			
RR	127,595	3,154	40.5	111	4.7	121,624	6,713	18.1	145
Tot/Ave	**424,182**	**10,940**	**38.8**	**112**	**0.8**	**333,120**	**16,905**	**19.7**	**140**

[1]Increase in numbers during marking inventory.
[2]Sept 30 numbers before inventory. There were 85,673 of Kooskia stock BY99 inventoried and transferred from DNFH to KNFH on October 2–3, 2000.
Source: DNFH- MIS, Nov 1, 2000
Final Release Summary, BY99 SCS

Brood Year 1999 SCS had an enumerated survival of green egg to eyed egg of 92.9 percent. All Dworshak and Kooskia SCS eggs were shipped to KNFH in the fall as enumerated eyed eggs to take advantage of the colder incubation water at KNFH. Fry were then shipped back to DNFH in the spring and placed directly into outside rearing ponds. Because of this, no precise data is available for percent survival to other life stages.

Current research from the Idaho Fish Health Center (IFHC) indicates little or no increased survival of smolts when treated with erythromycin prior to release. Unlike previous years, there was no INAD investigation study for using erythromycin against bacterial kidney disease done with the BY97– BY99 SCS.

Brood Year 2000

There were 4,783 SCS adults returned to DNFH in the summer of 2000. There were 3,202 adults returning to DNFH and 1,581 returning to KNFH. Adults spawned and eggs produced from BY00 SCS are represented in Table 2.

Table 2. Dworshak and Kooskia adult spawners and percent egg eyed-up, BY00 SCS.

Location Adult Return	Males spwnd	Females spwnd	Females Culled BKD	Dead egg trays culled	Number eggs/ female	Total eggs enumerated	Number eyed eggs enumerated	% Survl Enum Eye-up
Dworshak	342	439	116	13	3,782	1,172,404	1,115,448	95.1
Kooskia	266	278	73	5	3,555	710,972	668,555	94.0
Total/ Average	608	717	189	18	3,694	1,883,376	1,784,003	94.7

Source: DNFH - Final BY00 SCS Enumeration and % Survival of Eggs. SC00EGEN.wk4
BY00 SCS Spawning Report

For large-scale incubation, the water temperature in the incubation stacks at DNFH can be reduced to approximately 44°F. The incubation temperature at KNFH can be maintained at approximately 39°F. As was done with BY99 SCS, all BY00 SCS eggs were shipped to KNFH for incubation after eye-up and enumeration at DNFH. This delays hatching by approximately three months and will assist production in reaching the desired 20 fish per pound (fpp) size at release goal for the spring of 2002.

Kidneys from all females spawned were sampled for BKD. No males were sampled for this brood year. The IFHC also took ovarian fluid from all females spawned for viral inspection. The adult females tested 0.9 percent (4 out of 439) high BKD (ELISA >1.0) for Dworshak and 5.4 percent (15 out of 279) for Kooskia. Culling of Dworshak stock was at the 0.080 level for Takes 1–2 and 0.100 level for Takes 3–8. Culling of Kooskia stock was at the 0.125 level for Take 3; 0.110 level for Take 4, and 0.100 level for Takes 1, 2 and 5.

After eye-up and enumeration, there were 1,115,448 BY00 SCS eyed eggs of Dworshak stock shipped to KNFH during October/November 2000. There were a total of 668,555 eyed eggs from Kooskia stock also shipped during this time.

On October 13, 2000, there were 105,000 BY00 SCS eggs of Rapid River stock transferred from Lyons Ferry Hatchery to DNFH by the Nez Perce Tribe (NPT). There were also 275,000 of these

eyed eggs shipped to KNFH for this same program. On January 4, 2001, there were 98,000 BY00 Rapid River SCS sac-fry transferred from DNFH incubators to outside raceways. On January 12, there were 75,000 Rapid River sac-fry transferred from KNFH to DNFH and an additional 38,000 transferred on January 26. The majority of these Rapid River fish (approximately 181,000) were outplanted by the NPT as parr on July 30–31, 2001; these fish went to the upper Selway River. On August 1, the remaining SCS (approximately 7,000 fish) were outplanted to lower Selway River by the NPT.

From April 10 to May 10, 2001, there were five shipments of BY00 SCS sac-fry from KNFH to DNFH, totaling 1,070,014 fish. These are all Dworshak stock SCS.

The USFWS fish marking trailer from the Columbia River began coded wire tagging CWTing) the Rapid River BY00 SCS on July 10 and ended on July 13, 2001. The crew began marking Dworshak stock SCS on July 17 and ended August 3. There were a total of 120,000 fish tagged during this time. The tagging is being done for contribution research. Personnel from the marking trailer also clipped adipose (AD) fins on all BY00 SCS and split fish into several raceways during the tagging operation. Marking trailer personnel discovered a shortfall of approximately 60,000 fish. On September 13 & 14, 2001, there were 30,000 BY01 SCS of Rapid River stock transferred from Clearwater Fish Hatchery to DNFH.

By the end of FY 2001, there were 1,008,151 BY00 SCS at DNFH. Table 3 illustrates the size and number of BY00 SCS on station at the end of the fiscal year and projected release numbers.

Table 3. BY00 SCS at the end of FY 2001 and projected release from DNFH, April 2002.

September 30, 2001					Projected Release - April 2002			
Stock	Number	Wt(lb)	fpp	L mm	Proj % loss to Release	Proj Release Number	Proj Size at Release fpp	Proj Size at Release (mm)
Rapid River	29,982	472	63.5	95.1	1	29,682	20	145
Dworshak	978,169	13,907	70.3	91.9	1	968,387	20	145
Total/Ave	1,008,151	14,379	70.1	92.0	1	998,069	20	145

Source: DNFH - MIS, October 2001
DNFH - Production Narrative, September 2001.

Brood Year 2001

Fish traps at both DNFH and KNFH were operated to collect BY01 SCS. The DNFH fish ladder was opened and closed several times over the adult collection period in an attempt to manage the large number of returns. In some instances the ladder was opened and closed numerous times before the fish in the receiving pond were examined. There were a total of 4,018 BY01 SCS returned to DNFH and 2,261 returned to KNFH by the end of the spawning season (Table 4). Of those returning to KNFH, 728 were transferred to DNFH for spawning, and 90 were passed above the weir at Clear Creek.

Table 4. Adult returns, BY01 SCS. (09/30/01).

Age	Number/DNFH	Number/KNFH*	Total
I-Ocean	36	28	64
II-Ocean	3,235	2,137	5,372
III-Ocean	747	96	843
Unknown	0	0	0
Total	**4,018**	**2,261**	**6,279**

*90 of these fish were passed over weir into Clear Creek - ISS fish
Source: IFRO - Dworshak/Kooskia Complex SCS News - 2001 Edition
DNFH - Spawning Activity Report BY01 SCS

The number of adult SCS returns to DNFH have varied greatly over the past several years. Figure 1 displays the SCS returns to DNFH since 1987. There were sport fishing seasons and harvest in the North Fork in 1990, 1997, 1998, 2000 and 2001.

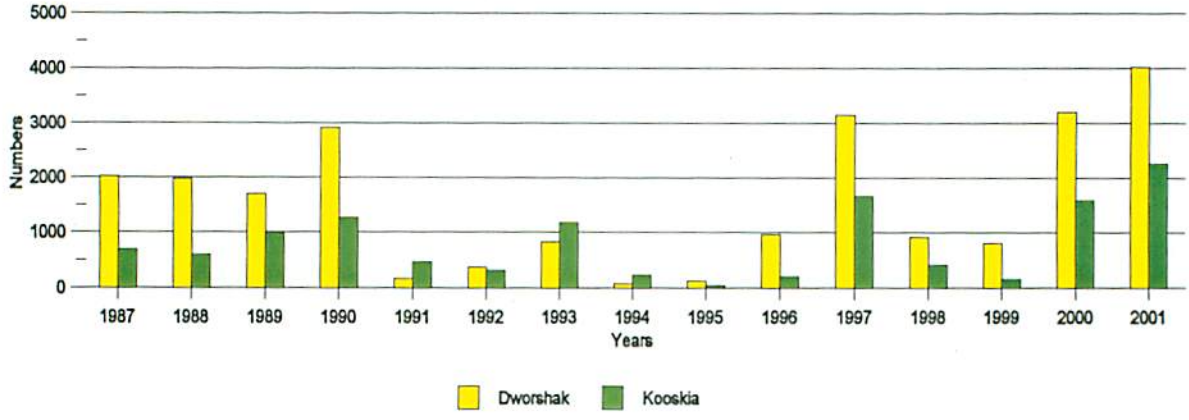


Figure 1. SCS returns to Dworshak/Kooskia 1987–2001
Source: IFRO SCS rack returns
DNFH BY01 SCS Spawning Activity Report - Final

Adult returns for BY01 SCS were enough to meet the production requirements for DNFH and KNFH. A sport fishery and tribal harvest took place along the Clearwater River in the spring and summer of 2001. The sport harvest on the Clearwater River is estimated to have been 3,039 by the Idaho Department of Fish and Game (IDFG). The Tribal harvest at the DNFH fish ladder as reported to the Idaho Fishery Resource Office (IFRO) by the Nez Perce Tribe was 32 chinook.

Adult Holding

Dworshak stock were kept in holding pond (HP) 2 and 9, Kooskia stock were held in HP3. KNFH transported 728 adults to DNFH for spawning. Kooskia stock received an opercule V-notch in order to distinguish between the two stocks. Formalin treatments were administered to the adults in order to retard fungus infection. Incoming females were also injected with erythromycin at a dosage of 20 mg/kg body weight as a preventative against vertical transmission of BKD. Chinook transferred into HP1 were outplanted by the NPT for supplementation purposes (see Adult Disposition section).

Adult Mortality

Prespawning mortality (mortality before the first spawning on August 21) of BY01 adult chinook was 4.2 percent for Dworshak stock and 3.1 percent for Kooskia stock. During spawning, losses were 2.6 percent for Dworshak stock and 0.7 percent for Kooskia stock (Table 5).

Table 5. Mortality of adult BY01 SCS held at DNFH.

	DNFH		KNFH	
Mortality	Number	Percent of total run at DNFH	Number	Percent of run transferred to DNFH
Prespawning	167	4.2	71	3.1
During Spawning	105	2.6	15	0.7
Total	272	6.8	86	3.8

Source: DNFH - Spawning Activity Report, BY01 SCS

Adult Disposition

There were 3,011 adult SCS returning to DNFH that were excess to spawning needs which were outplanted. There were also 102 Kooskia stock SCS from the 758 fish which were transferred from KNFH to DNFH which were excess to spawning needs and also outplanted from DNFH. (This total of 3,113 adult SCS outplants does not include the 1,464 adult SCS outplanted from KNFH.) DNFH and NPT personnel sorted and loaded NPT trucks for transport to various sites in the Clearwater River basin. The outplanting was for supplementation purposes. Table 6 illustrates details of the outplants.

Table 6. Adult BY01 SCS outplants of Dworshak Stock.

Date	Site	Adults	Jacks	Total Number
07/24	Selway-McGruder	400	0	400
08/02	Selway-McGruder	393	7	400
08/14	Lolo Creek	402	1	403
08/15	Newsome Creek	297	6	303
08/23	Lower Selway	468	1	469
08/27	Lower Selway	510	4	514
09/13	Lower Selway	337	2	339
09/18	Lower Selway	281	4	285*
Total		**3,088**	**25**	**3,113***

*102 of these fish were of Kooskia stock, 3,011 were Dworshak stock
Source: DNFH - BY01 SCS Spawning Activity Reports

Tables 7 and 8 illustrate BY01 SCS adult disposition from both Dworshak and Kooskia stock.

Table 7. Dworshak stock SCS BY01 adult disposition

Location	Number	Comments
Outplant	3,011	See Table 3
Outside Research	0	NMFS, Univ of Idaho
Washington State Univ	153	Captive Bear & Eagle Rehab
Landfill	854	Carcasses deteriorated
Total	**4,018**	

Source: DNFH - BY01 SCS Spawning Activity Report

Table 8. Kooskia stock SCS BY01 adult disposition (out of DNFH only—KNFH adult transfers are on Kooskia's reporting).

Location	Number	Comments
Outplant	102	Adults Outplanted from DNFH
Washington State Univ	323	Captive Bear & Eagle Rehab
Landfill	303	Carcasses deteriorated
Total	728	

Source: BY01 SCS Spawning Activity Report

Adult Spawning Numbers/Ratio

The BY01 DNFH/KNFH SCS spawning season began August 21, 2001, and ended on September 11. Dworshak adults were held in HP1 and HP2, Kooskia's stock were held in HP3. Fish from each HP were sorted and spawned once/week along with new fish coming up the ladder into HP9. Adults being held were treated with formalin three times/week to help control fungus. Treatments were recorded in the BY01 SCS BroodYear Book.

There were 288 males and 409 females of Dworshak stock spawned during the season for a 1:1.4 male:female spawning ratio. There were 212 males and 304 females of Kooskia stock spawned during the season for a 1:1.4 male:female spawning ratio. Included in the KNFH numbers are 52 ISS females and 42 ISS males.

Spawning Procedures

The spawning procedure was similar to past years except for the anesthetics used. Initially, Aqui-S, a derivative of clove oil, was tried. This proved unsatisfactory, as a relatively high mortality resulted when using a dose needed to immobilize the adult fish for handling (80 ppm). A lower dose of Aqui-S was tried, but the knock-out time extended too long to be practical. Clove oil was used at a concentration of 80 ppm last year with little or no mortality observed. Clove oil was once again used this year for outplanting of adults into areas where fishing is prohibited. Tricanine methanesulfonate (MS-222) was used for spawning purposes for the easiest handling of the fish.

Adults were crowded from the holding ponds into a crowding channel, moved into a channel basket, and placed into an anesthetic bin. Pro-Polyaqua was added (250 ml per bin) to reduce stress and susceptibility to infection. Oxygen was provided at a rate of 1.5 L/minute. Spinal columns of ripe females were severed using a pneumatic knife. The females were then placed on a table for approximately 3–10 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 from one female were placed in Heath incubator trays. In the tray was a 75 mg/l iodophor solution buffered with sodium bicarbonate. Eggs were maintained in this solution for approximately 30 minutes as a precaution against disease transmission. The trays were then pushed into the incubator with a water-flow rate of approximately five gallons/minute. Eggs in A/B bank were incubated with chilled water from the secondary line from Dworshak Reservoir, and temperatures averaged 40°F. Eggs in C/D bank were incubated with no chiller on this same intake line, and temperatures averaged 42°F during incubation.

For BY01 SCS spawned at DNFH, females averaged 4,158 eggs/female. The number of adult spawners, eggs produced, and survival are illustrated in Table 9.

Table 9. Dworshak and Kooskia adult spawners and percent egg eye-up, BY01 SCS.

Location of Broodstock Return	Males spwnd	Fmls spwnd	Fmls Culled BKD	Number eggs /female	Total number of eggs enumerated	Percent Enum Eye-up	Number eyed eggs
Dworshak	288	489	92	4,180	1,195,486	97.4	1,163,838
Kooskia	212	304	74	4,128	829,648	92.8	770,079
Total/ Average	500	793	166	4,158	2,025,134	95.6	1,933,917

Source: DNFH - Spawning Activity Report BY01 SCS
DNFH - BY01 SCS Spawning Report

Idaho Fish Health Center

Kidneys from all females spawned were sampled for BKD. The IFHC also took ovarian fluid from all females spawned for viral inspection. A different test was used for BKD detection for BY01 SCS at DNFH than was used in previous years. No longer was a base-line test done to compare all samples to a given ELISA reading.

This year fish were tested relative to all others within the test group only. Within the group, individual fish were sorted relative to each other, from low to high. The adult females tested 13.2% high (54 out of 409) for Dworshak and 10.9% high (33 out of 304) for Kooskia. Eggs from all females which tested high were culled. (For BY00, 0.9% of Dworshak stock and 5.4% of Kooskia stock tested high using ELISA testing.)

On July 31 and August 1, 2001, personnel from IFHC injected all Dworshak and Kooskia stock females on station with erythromycin. This was done to help prevent vertical disease transmission to the egg. Late arriving females were injected up until one week before spawning began on August 21.

University of Idaho/Washington State University Studies

Rolf Ingermann, U of I professor, is studying the relationship between fertility and oxygen consumption of the unfertilized egg. He is also studying the contribution of sperm to the buffering capacity of the semen. DNFH provided a total of 126 ml milt from 12 Kooskia males. DNFH also provided a total of 15,100 eggs from 19 Kooskia females along with 7.5L ovarian fluid from multiple females. All samples were from excess spawning requirements at DNFH.

Gary Thorgaard, Professor at the School of Biological Science, Washington State University, collected 150 ml of milt and 3,000 eggs from adult SCS. The samples were taken as the fish were being outplanted by the NPT on September 13, 2001. This research is related to domestication behavior of chinook.

Idaho Supplementation Study (ISS)

There were 52 females and 42 males of ISS fish spawned this year at DNFH. Forty-three of these pairs will be incorporated into KNFH production. There were 90 ISS fish passed over the weir at KNFH. A total of 194 ISS fish returned this year to KNFH, along with 60 unmarked fish.

Spawning Summary

The 6,279 BY01 SCS adult return numbers to Dworshak Fisheries Complex were more than adequate to fulfil DNFH and KNFH production goals. Projected release of BY01 smolts in the year 2003 is approximately 1.05 million smolts of Dworshak stock and 625,000 of Kooskia stock.

There were 3,011 adults of Dworshak stock and 102 of Kooskia stock outplanted from DNFH for supplementation purposes by the NPT.

Coho Salmon

Brood Year 1999

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

There were approximately 200K–300K Brood Year 1999 (BY99) COS on station at the beginning of the fiscal year. No written data concerning these COS was reported to DNFH personnel. On April 4–9, 2001, the BY99 COS from DNFH were transferred to KNFH by the NPT with help from DNFH staff.

Brood Year 2000

BY00 COS were trapped at DNFH, Clear Creek, Potlatch, Lolo, Eldorado and Lapwai creeks in the Clearwater Basin. As was done the prior year, adult coho from Lyons Ferry Hatchery in Washington were also transported to DNFH and mixed with the spawning coho adults trapped from the Clearwater River basin. Personnel from the NPT conducted the spawning at DNFH with assistance from DNFH staff. The eggs were incubated at DNFH.

Spawning of BY00 COS began on October 17, 2000. At the end of the month there were 100 females spawned for an estimated 270,000 green eggs taken. Approximately 75 females were spawned in November, producing an estimated 480,000 green eggs. Program goals at DNFH call for 320,000 eggs to produce 280,000 smolts. Coho spawning ended on December 5 with a reported 185 females spawned, producing an estimated 500,000 eggs.

During January 2001 an unreported number of coho eggs were brought in from Lyons Ferry Hatchery for incubation.

Coho were transferred from the egg trays to the DNFH nursery during February and March 2001. Due to boiler problems, which kept BY01 steelhead from being loaded into the nursery at the optimal time, BY00 COS were able to remain in the nursery until April 18. At this time they were transferred to C-bank raceways. No written information was reported to DNFH personnel from the NPT concerning this transfer.

There were an estimated 200K–300K BY00 COS on station at DNFH at the end of the fiscal year. No written data was reported to DNFH personnel from the NPT concerning these fish. The Service has currently given office space at DNFH for a NPT biologist to oversee the COS program.

Rainbow Trout

Brood Year 2000

There were 14,000 Brood Year 2000 (BY00) rainbow trout (RBT) in B-bank raceways at the beginning of FY 2001. On June 6, 2001, there were approximately 10,000 BY00 RBT moved to the hatchery settling pond for the annual Open House held on June 15. Approximately 1,800 were caught by the 893 youth who took part in the activities. On June 14 there were 3,368 BY00 RBT transferred to KNFH for their annual Open House.

Table 1 illustrates outplanting of BY00 RBT from the Open House fishing pond at DNFH.

Table 1. BY00 RBT Distribution from DNFH.

Date 2001	Number	Fish/lb	Weight	Harvest/ReleaseSite	Comments
6/14	3,368	0.6	5,524	Kooskia	Open House
6/26	1,467	0.7	2,223	Worley Pond	Coeur d' Alene Tribe
6/26	1,201	0.7	1,820	Mud Springs Lake	Nez Perce Tribe
6/27	495	0.7	750	Fenn Pond	Public Water
6/27	1,997	0.7	3,026	Talmak Lake	Nez Perce Tribe
6/29	231	0.7	350	Burling Pond	Public Water
7/3	792	0.7	1,200	Mud Springs Lake	Nez Perce Tribe
7/5	264	0.7	400	Dixie	Public Water
7/9	1,188	0.7	1,800	Worley Pond	Coeur d' Alene Tribe
7/11	750	0.7	1,136	Campbells Pond	Public Water
Total/Ave	**11,753**	**0.7**	**18,229**		

Source: DNFH - RBT MIS, July 2001; Production Narrative, June–July 2001.
DNFH - Fish and Egg Fiscal Year 2001 Distribution Summary
IFRO - Rainbow Trout Planting, Dworshak and Kooskia. RBTPLN01.wk4

Brood Year 2001

Rainbow Trout for Open House

On January 2, 2001, DNFH received approximately 16,000 Shasta strain RBT eyed eggs from Ennis NFH to be used for the Dworshak 2002 Open House and Kids' Fishing Day. For ease of record keeping at DNFH, these RBT were recorded as BY01.

These eggs were incubated on chilled water (40°F). On April 6, approximately 15,000 RBT fry were moved from the incubation trays to circular tanks in the incubation room. Cold water from a small chiller in the incubation room was plumbed into the circular tanks, and temperature was maintained at approximately 47°F. On June 28, 2001, these fish were moved from the circular tanks to Burrows pond 49.

Keeping the RBT on chilled water for early-rearing effectively reduced growth by 6–7 weeks from the previous year. This should reduce or eliminate the need to use a fasting regime in the spring of 2002 on these fish and still reach our target size of 15–16 inch RBT for the June event.

At the end of FY 2001 there were 14,366 RBT averaging 17 fpp and 134 mm (5.3 inches total length) on station.

Rainbow Trout for Outplanting

The current RBT program commitment at DNFH is to provide fish for stocking into Dworshak Reservoir. KNFH raised RBT for this program in 1991, '92, '93, and '95. The 1995 RBT from KNFH were never stocked into Dworshak Reservoir. Rainbow trout reared at DNFH (river water) have not been stocked into the reservoir since 1984. There are several concerns with the stocking of these fish into Dworshak Reservoir, including disease introduction into DNFH's and Clearwater Fish Hatchery's water supply, RBT crossbreeding with cutthroat in the North Fork, low catch rate by fishermen, etc. Therefore, the following agreement has been made with the state of Idaho.

Hagerman NFH will raise approximately 145,000 10" Arlee and Shasta RBT to be stocked in September and October into several locations including; L. Camas, Oxbow, Hells Canyon, Lucky Peak, and C.J. Strike reservoirs.

IDFG's Nampa hatchery will raise approximately 130,000 10–12" sterile RBT for stocking into Dworshak Reservoir in March, April, and May 2002.

Service biologists and cooperative program staff sort and check tags on adult spring chinook salmon, summer 2001.

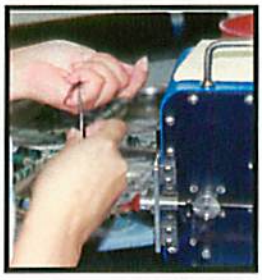
Biologist Thomas Trock holds an adult male steelhead next to the new milt collection cup holder.

Steelhead fry hatching in an egg jar, spring 2001.

Biologist Mark Bright places fertilized steelhead eggs in an incubation tray, spring 2001.

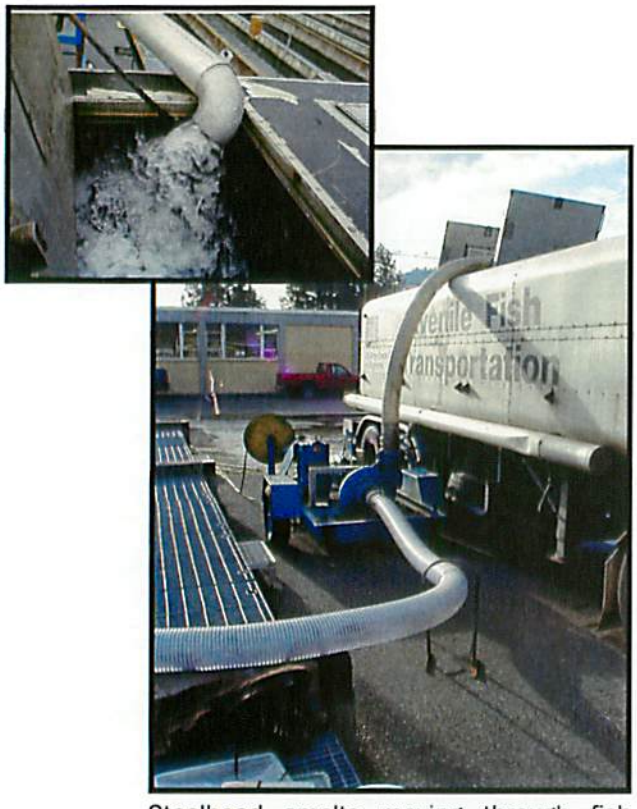
Biologist Adam Izbicki pours salt into Burrows ponds to treat steelhead fingerlings for parasite infection.

Visitors look on as IDFG fin clipping staff mark steelhead fingerlings, summer 2001. Above, left: clipping steelhead adipose fin and above right, injecting coded wire tag in snout.

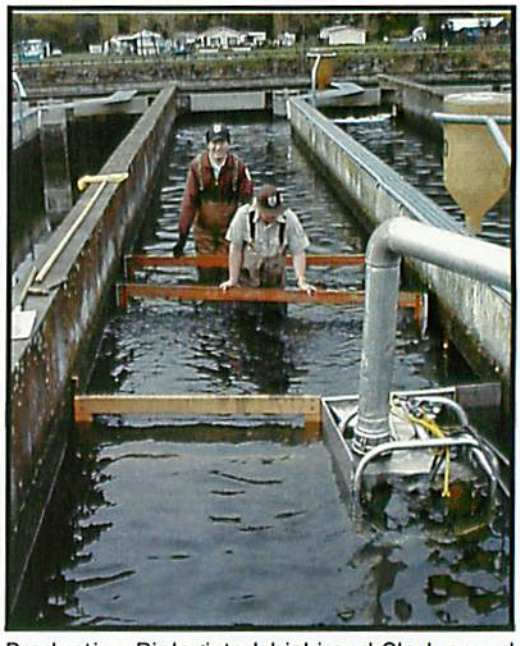


Adipose fin clipping.

Injecting a coded-wire tag.



Steelhead smolts moving through fish pumps into top-loading transport truck compartments. Each truck is temperature and oxygen controlled for the 2-hour journey.



Production Biologists Izbicki and Clark crowd steelhead smolts towards the fish pump for loading into transport trucks, left and below, to release smolts into the Clearwater River, spring 2001.

Fish are released through a pipe attached to the bottom of the tanks.

Administration

Meetings

- Supervisor's Meeting were held October 5, November 2, January 4, February 1, March 9, July 18 and August 13. The February meeting was followed by an all-staff meeting in which the 2001 Safety Committee was introduced, procedures for filling out accident reports were discussed, and On-The-Spot awards were presented to Fishery Biologist Trock, I/E Specialist Sawyer and OAC Gardner for their combined efforts in putting together the FY 2000 Annual Report.
- Dworshak Coordination Meetings were held November 28 and March 14.
- Budget
  - Complex Manager Miller and Deputy Complex Manager Owsley met with COE and BPA staff regarding hatchery operation and funding (December).
  - Complex Manager Miller, Deputy Complex Manager Owsley, Admin Support Assistant Galloway, and Budget Assistant Praest met with Nancy Greene and Jean Gomsrud, COE staff, regarding the new budget requirements procedures and the FY 2001, 2002 and 2003 budgets (February).
  - Complex Manager Miller and Deputy Complex Manager Owsley met with COE and BPA staff regarding hatchery operation and funding (December).
  - Deputy Complex Manager Owsley, Admin Support Assistant Galloway and Budget Assistant Praest met together to discuss the COE budget for FY 2003 (January).
  - Complex Manager Miller met with Regional Office staff in Portland regarding budget, personnel and other items (March). Kooskia's FY2001 budget shortfall and Kooskia Energy Saving Agreements were key topics.
  - Deputy Complex Manager Owsley, Budget Assistant Praest, Purchasing Agent Sperber and IFHC Project Leader Clemens participated in a Regional Office conference call for year-end close-out for spending (August).
- Inspections and Reviews
  - Deputy Complex Manager Owsley, Maintenance Mechanic Helper Weeks and Liz Steiner, IFHC, met with DEQ staff George Dekan and Lynn Ray for the annual sanitary survey of the Domestic Water System (February).
  - Deputy Complex Manager Owsley met with Mike Remington, COE, Walla Walla, and assisted with lead and asbestos testing on the Complex(August).
  - Deputy Complex Manager Owsley met with Russ Thornton, COE, Walla Walla, on a seismic study for the main hatchery building (August).
  - Complex Manager Miller gave a tour of the hatchery to a number of COE engineers and others from the Portland area. The tour was primarily to review hydropower, but a few hours were spent at the hatchery observing chinook spawning and reviewing the System I reuse rehab project. Visitors included: Cathy Hlebechuk, Sean Rose, Cindy Meyer, Mary Karen Scullion, and Karl Kanbergs, of COE-NWD, Portland; Dennis Mekkers and Amy Reese, COE-NWS, Seattle; Ken Barnhart, BPA, Portland; Tony Norris, USBR, Portland; Kath Bowie, BC Hydro, Vanouver, B.C.; and David Wills, USFWS, Vancouver, Washington (September).

- Brian Cates and Judy Gordon, part of the assessment team conducting interviews with fisheries offices throughout the Region, visited Dworshak to conduct a FRO Programmatic Review.

- Deputy Complex Manager Owsley was named the Region 1 Uniform Coordinator. Owsley attended the national Uniform Committee meeting in Reno, Nevada, in October and conference calls January 11, March 19, May 15 and August 7.
- Meetings were held throughout the FY 2001 regarding the System I reuse rehabilitation project. Complex Manager Miller, Deputy Complex Manager Owsley, Maintenance Supervisor Clifford, and Assistant Hatchery Manager Semple met with COE engineers Brian Miller, Kevin Renshaw, Dan Katz and Dan Hurson and engineers from R.W. Beck, A-1 Aquaculture, Rexnard and U.S. Filters on design issues. Bids for the project are expected to be accepted in November 2001.
- Deputy Complex Manager Owsley met in June with Kevin Shenefield, Structural Engineer, COE Walla Walla, regarding construction of a bird exclosure the Burrows ponds (Systems I, II and III). Owsley met with Shenefield and Bruce Collison in September to further work on the design.
- Deputy Complex Manager Owsley and Maintenance Supervisor Clifford met with Russ Thornton and Dan Forge, COE, and roofing contractor Craig Peters on the progress of roofing on Mechanical Building I and the Generator Building in November. The project was inspected and completed in December 2000.
- Fisheries/Hatcheries Meetings/Conferences
  - A Fisheries meeting on regional fishery issues of HGMPs, Sub-basin Planning and summer flows/Dworshak releases was held at DNFH. In attendance were: Dan Herrig and Joe Krakker, LSRCP; Howard Schaller, Marv Yoshinaka and Paul Wilson, Vancouver FRO; Dan Diggs, Fred Olney and Chuck Dunn, Regional Office; Howard Burge, Mike Faler, Billy Connor and Ray Jones for Idaho FRO; and Bill Miller, Bob Semple and Thomas Trock from Dworshak NFH (October).
  - Complex Manager Miller, Assistant Hatchery Managers Semple and Eaton, IFRO Project Leader Burge and Fishery Biologist Trock attended a Hatchery Managers Workshop in Richland, Washington (October).
  - Complex Manager Miller attended the Smolt Workshop in Boise (October).
  - Deputy Complex Manager Owsley, Fishery Biologist Trock and Animal Caretaker Leader Vargas attended the 51st annual Northwest Fish Culture Conference in Sacramento, California (December).
  - Complex Manager Miller and Assistant Hatchery Manager Semple attended the annual meeting of the Idaho Chapter, American Fisheries Society in Boise, Idaho (February).
  - Complex Manager Miller and Assistant Hatchery Manager Semple attended the spring chinook workshop in Vancouver, Washington (February).
  - Complex Manager Miller attended an AFS meeting in Phoenix, Arizona (August).
- Water Issues
  - Deputy Complex Manager Owsley attended eight Regional Drinking Water meetings during the year.
  - Deputy Complex Manager Owsley met with engineers from CH_2M Hill and gave them a tour of the Dworshak Complex domestic drinking water system (October). Deputy

Complex Manager Owsley met COE and BPA staff at the tribal church located on the hatchery to discuss domestic water supply concerns (December).
  - Deputy Complex Manager Owsley attended an EPA workshop in Twin Falls, Idaho, for the new EPA NPDES discharge permits (November).
  - Deputy Complex Manager Owsley attended the annual Idaho Rural Water Association meeting in Boise, Idaho (March).
  - Deputy Complex Manager Owsley attended the DEQ Drinking Water Workshop held in the Dworshak Conference Room (April).
  - Deputy Complex Manager Owsley and Maintenance Supervisor Clifford met with Carl Brenneise, Mechanical Design Engineer, COE, Walla Walla, on a design for extending the cold reservoir supply line to the nursery and incubation areas (February). Owsley also met with COE engineers Tom Moritz and Mike Fredrick on the design (May).
  - Complex Manager Miller and Deputy Complex Manager Owsley participated in a conference call with Dan Herrig, LSRCP; Kevin Renshaw, COE; Jerry McGehee, IDFG; and Tom Smiley, USFWS Region 1, regarding problems with the distribution box and reservoir supply lines (April). Owsley met with COE, IDFG, LSRCP and Ameron representatives regarding the problems and followed through with another conference call with Tom Smiley, R.O. Engineering; Dan Herrig, LSRCP; Dan Wilson, R.O. Safety; and Jerry McGehee, IDFG Clearwater Hatchery (May). Deputy Complex Manager Owsley met with John Billingsley and Roger Goodall, Bureau of Reclamations, and Phil Rasler regarding repairs (June).
- Deputy Complex Manager Owsley and Maintenance Worker King assisted the IDFG Clearwater Hatchery personnel on the annual valve exercise for the reservoir supply lines (May).
- Complex Manager Miller attended meetings of the Clearwater Policy Advisory Committee from November 2000 through May 2001. Miller is appointed by Region One to be the Service's representative on this committee. The committee oversees the development of the NWPPC Subbasin Planning for the Clearwater Basin.
- Deputy Complex Manager Owsley attended a Hunter Education Workshop in Lewiston at the IDFG office (April) and the International Hunter Education Association annual meeting in Missoula, Montana (June). Mr. Owsley was a facilitator for part of the Missoula meeting.
- Deputy Complex Manager Owsley and Purchasing Agent Sperber attended a COE Property meeting at the Dworshak Dam with Betty Asbjornsen from the Corps of Engineer District Office in Walla Walla, Washington (June).
- Deputy Complex Manager Owsley, visited Warm Springs NFH and Chattahoochee Forest NFH in Atlanta, Georgia to assist with hatchery upgrades (June).
- Deputy Complex Manager Owsley, along with Greg Kindachi from the Bozeman Fish Technology Center, conducted a water use evaluation of Dale Hollow NFH and Wolf Creek NFH in Nashville, Tennessee (July).
- Deputy Complex Manager Owsley taught a Water Quality and Water Treatment class at the NCTC Coldwater Fish Culture Course in Traverse City, Michigan (September).
- Comprehensive Hatchery Management Plan
  - Assistant Hatchery Manager Semple attended the Comprehensive Hatchery Management Plan (CHMP) Steering Committee meeting in Portland, Oregon, in January.

- Assistant Hatchery Manager Semple and Fishery Biologist Trock attended the CHMP Plan Team meeting in Portland in February.

- Complex Manager Miller attended a briefing for Idaho State legislators held at the COE Dworshak Dam Visitor Center. State and Federal agency personnel answered questions from the legislators (November).
- Complex Manager Miller met with Nez Perce Tribe personnel to finalize the 2001 MOA for assisting the tribe in production of coho salmon (January).
- A group meeting was held with Ray Brunson, Supervisory Fishery Biologist from USFWS Olympia Fish Health Center, regarding the wild fish disease survey (February).
- Complex Manager Miller participated in a COE Open House at the Dworshak Dam Visitor Center. The COE was reviewing their Resource Management Master Plan for the Dworshak Project (March).
- Complex Manager Miller accompanied ARD Diggs, Region 1, and LSRCP Manager Herrig on a briefing on FWS fishery topics for congressional staff in Boise, Idaho (March).
- Deputy Complex Manager Owsley attended the Clearwater Management Council meeting at the IDFG office at Myrtle Beach (March).
- Complex Manager Miller attended the Clearwater Management Council meeting (April/June).
- Ann Gannam visited DNFH 4 to demonstrate how to take fish feed samples for her quality checking program at the Abernathy Fish Technology Center (April).
- Complex Manager Miller met with Nez Perce tribal staff Dave Johnson and Paul Kucera on the Snake River Basin water adjudication negotiations. The meeting was held in the Nez Perce tribal offices in Lapwai (May).
- Complex Manager Miller, Assistant Hatchery Manager Semple and FRO Project Leader Burge met with Idaho Fish Health Center Project Leader Kathy Clemens to discuss coordination and communication issues (May).
- Complex Manager Miller met with Jason Doolittle from the Denver office of the Department of Transportation. Mr. Doolittle was looking at access roads and parking areas of USFWS facilities. Information was provided regarding LSRCP hatcheries overseen by FWS (June).
- Dan Herrig and Chris Starr, LSRCP, met with Complex Manager Miller, Assistant Hatchery Manager Semple (DNFH) and Hatchery Manager Eaton (KNFH) discuss Performance Indicators and review how the indicators should be handled under the BPA criteria (June).
- Complex Manager Miller attended a project review meeting on the Fish and Wildlife projects proposed under the BPA's Fish and Wildlife Program for the Clearwater Basin. The meeting was held at the Dworshak Dam (August).
- Scott Eckert, Region 1 IRM, met with Computer Specialist Bowen (IFRO), I/E Specialist Sawyer, Office Automation Clerk Gardner, and Laura Kessel (IFHC) regarding web design software and Region 1 web design standards (August).

Training

- Budget Assistant Praest and Purchasing Agent Sperber attended a Prime Vendor procurement demonstration at Dworshak Dam.
- Maintenance Mechanic Sims attended *Troubleshooting and Maintaining Diesel Engine* training in Spokane, Washington, through Cummings NW.
- Maintenance Worker Weeks attended *Domestic Water Treatment* class.
- DNFH personnel attended EEO training hosted by Idaho State Hospital North.
- Deputy Complex Manager Owsley, Budget Assistant Praest, and Animal Caretaker Leader Vargas attended *Performance Evaluation Training* in Spokane.
- Maintenance Mechanic Sims attended an Oxarc Welding Seminar in Lewiston.
- Purchasing Agent Sperber and Assistant Hatchery Manager Eaton attended *Admin Training* at the Regional Office.
- Purchasing Agent Sperber, Maintenance Worker King and Maintenance Laborer Stretsbery attended *FERS Retirement Training* in Reno, Nevada.
- Budget Assistant Praest attended the *Simplified Acquisitions Procedures* refresher course in Portland, Oregon.
- Deputy Complex Manager Owsley and Purchasing Agent Sperber attended an *OWCP* course in Boise, Idaho.
- Maintenance Worker Weeks attended *Pre-Retirement Training* in San Diego, California.

Safety

Safety Committee

Dave Owsley, Deputy Complex Manager, is the Complex Safety Officer. Members of the Safety Committee selected for calendar year 2001 were Kelly Gardner (Chairman), Dworshak Administration; Dennis Ochszner, Dworshak Production; Hubert Sims, Dworshak Maintenance; Chris Larsen, Idaho Fisheries Resource Office, and Laura Kessel, Idaho Fish Health Center.

Safety Training

- DNFH staff Mark Bright, Bob Clark, Wayne Hamilton, Adam Izbicki, Dennis Ochszner, Kim Seldon, Thomas Trock, John Vargas and Ben Wright received Forklift Safety Certification training (November/December).
- DNFH staff Mark Bright, Bob Clark, James Garrison, Wayne Hamilton, Dennis Ochszner, Raymond Rosales, Kim Seldon, Bob Semple, Hubert Sims, Thomas Trock, John Vargas and Ben Wright underwent Pulmonary Function Testing, medical evaluations and received Respirator Fit Testing/Training (November).
- Dworshak Fisheries Complex staff meetings:
  - *Maxman, Defender of Hearing* video (November).
  - J.J. Keller *Foot Safety* video (February).
  - Hunter Safety video and discussion led by Dave Owsley (March).
  - Home Fire Safety presentation by Captain Pete Morgan, Orofino Volunteer Fire Department (April).
  - Foot and Eye Safety video presentation and discussion led by Shaun Endsley, Oxarc, Spokane (May).

- Open House Safety handout and discussion led by Chairman Gardner (June).
- Knot Tying demonstration by Regional Boat Safety Instructor Aaron Garcia (August).
- Spider Bites, Snake Bites and Bee Stings handouts and discussion led by Chairman Gardner (September).

Special Projects

- Formalin storage units received proper hazard labeling.
- An eye wash and deluge station was installed in Mechanical Building I.
- One-half of the Burrows ponds were fitted with the new 18" grip strut to meet OSHA standards. The second half will be completed in the spring of 2002.
- Purchased J.J. Keller's *5-Minute Safety Talks* and safety training tracking software.

Safety Committee Recommendations

- Changes in the path of the self-guided tour to lead visitors away from dangerous areas and changed. Included in the recommendations were adding signs to promote safety, including a welcoming sign at the hatchery entrance.
- Acquire a defibrillator for use on the Complex and train personnel in proper use.
- Some committee member should serve overlapping 2-year terms to preserve continuity and follow-through.
- Purchase a flammable storage cabinet for Mechanical Building I for the denatured alcohol used by the PIT tagging crew and provide training on handling.

Staffing

DNFH Employees, FY 2001.

Name	Position Title	Period of Employment	Status
Bright, Mark G.	Fishery Biologist	10/01/00–09/30/01	Permanent
Clark, Robert W.	Fishery Biologist	10/01/00–09/30/01	Permanent
Clifford, David E.	Maintenance Supervisor	10/01/00–09/30/01	Permanent
Galloway, Mary Lou	Supv. Admin. Support Asst.	10/01/00–05/04/01	Full-Time/ Retired
Gardner, Kelly J.	Office Automation Clerk	10/01/00–09/30/01	Permanent
Garrison, James	Animal Caretaker	10/01/00–06/16/01	Full-Time/ Temporary
Grant, Connie	Information/Education Assistant	10/01/00–09/30/01	Part-Time/ Seasonal
Greene, Benny C.	Electronics Mechanic	10/01/00–09/30/01	Permanent
Hamilton, William W.	Animal Caretaker	10/01/00–09/30/01	Permanent
Izbicki, Adam H.	Fishery Biologist	10/01/00–09/30/01	Permanent

Name	Position Title	Period of Employment	Status
King, Rick A.	Maintenance Worker	10/01/00–09/30/01	Permanent
Miller, William H.	Complex Manager	10/01/00–09/30/01	Permanent
Ochszner, Dennis J.	Animal Caretaker	10/01/00–09/30/01	Permanent
Owsley, David E.	Environmental Engineer/Deputy Complex Manager	10/01/00–09/30/01	Permanent
Praest, Diane E.	Budget Assistant	10/01/00–09/30/01	Permanent
Rosales, Raymundo A.	Maintenance Worker	10/01/00–09/30/01	Permanent
Sawyer, Susan D.	Information/Education Specialist	10/01/00–09/30/01	Permanent
Seldon, Kimberly K.	Animal Caretaker	10/01/00–09/30/01	Permanent
Semple, Robert A.	Supv. Fishery Biologist	10/01/00–09/30/01	Permanent
Sims, Hubert M.	Maintenance Mechanic	10/01/00–09/30/01	Permanent
Sperber, Joan M.	Purchasing Agent	10/01/00–09/30/01	Permanent
Stretsbery, Gerald	Laborer	10/01/00–09/30/01	Permanent
Trainor, David A.	Maintenance Worker	10/01/00–09/30/01	Permanent
Trock, Thomas J.	Fishery Biologist	10/01/00–09/30/01	Permanent
Vargas, John J.	Animal Caretaker Leader	10/01/00–09/30/01	Permanent
Walker, Cliff L.	Social Services Assistant	10/01/00–09/30/01	Permanent/ Seasonal
Weeks, Terry C.	Maintenance Worker	10/01/00–09/30/01	Permanent
Wright, Benjamin A.	Animal Caretaker	10/01/00–09/30/01	Permanent

Personnel Actions

- Connie R. Grant, Information/Education Assistant, GS-1001-5 permanent/seasonal, effective February 26.
- Susan Sawyer, I/E Specialist, promoted to GS-11, effective March 25.
- Gerald Stretsbery, Laborer, promoted to WG-4, effective March 25.
- John Vargas, promoted from Animal Caretaker Leader to Supervisory Fish Culturist, WS-5048-3, effective April 22.
- Mary Lou Galloway, retired from federal service, effective May 4.

Deputy Complex Manager Owsley traveled to Dale Hollow, Tennessee, for a hatchery evaluation.

Supervisory Admin. Support Assistant Mary Lou Galloway retired in May; here, husband Calvin helps her celebrate at her retirement party in April.

COE staff from Walla Walla District toured Dworshak with Complex Manager Miller (2nd left) and Deputy Manager Owsley (left).

OAC Gardner wraps Secret Santa gifts for two underprivileged children as part of the annual Hospital Wishing Tree program, which the Complex supports.

Facilities Maintenance

The DNFH Maintenance Crew is responsible for upkeep of the grounds, buildings, machinery and other equipment, fire & maintenance lines, plumbing, electrical systems and vehicles for DNFH and the Idaho Fishery Resource Office. At times they are also called upon to assist with work at KNFH, a satellite facility of Dworshak Fisheries Complex, and the Idaho Fish Health Center, which has offices on the Complex grounds.

Maintenance Shop Renovation. The maintenance office was fitted with a number of improvements this year. Beginning in November, interior and exterior walls were modified to accommodate new furniture, ordered through UNICOR. Furniture components, including desks, chairs and cabinets, were received and installed over a period of several weeks in April and May, creating 4 seating areas. Two new computers were installed by Computer Specialist Bowen (IFRO) to include maintenance staff in the email system and USFWS portal and website, and to assist them with their efforts to request bids and purchase supplies.

Traveling Water Screens. Repairs to the #1 and #2 traveling water screens were made during June and July of FY2000; however, sand from broken sand bags penetrated the system during the project and fouled the bearings in one of the pumps. This delayed the project, and Metal Benders, who was contracted for the repair job, was forced to reschedule the remaining work for a later date. A crew from Metal Benders returned in November and completed repairs to the #3 traveling water screen in early December.

Hatchery Alarm System. The hatchery alarm system was replaced during the month of July. A new battery had been required for the alarm call-back system in December, and the power supply unit failed in February and was sent to S/W Electronics in Spokane for emergency repair. However, the 10-year old alarm system failed completely in June. The bid for the new project was won by SCADATA, and the new system, with all new equipment and computers, was installed over a period of several days. The new system is more compact than the old, so a new cabinet was not required.

Heating and Air. B&F Power Vac Service cleaned the duct work for the 20-year-old HVAC units throughout the Main Hatchery Building and the Feed Building in January. A crew returned for one Saturday in February to clean the old HVAC units themselves in the Main Hatchery Building. Additionally, the compressor in the HVAC unit in the IFHC building failed, and Guardian Refrigeration completed the installation of a new unit. The boom truck was used to lift the old HVAC unit from the IFHC building roof and lift the new unit in place.

Ergonomics Inspection. Dan Forney, R.O. Safety, presented Dworshak with findings from and Ergonomics inspection, and several repairs and modifications were made to buildings and systems on the Dworshak Complex. The most intricate of these projects was the relocating of an existing storm drain. Drain piping, located underground near the Maintenance Shop, was dug up, removed and replaced, sloping into the oil/water separator. The old line was then plugged, and the new pipe was sand-packed in place and the hold backfilled to the grade of the existing asphalt. Art Sutton, contractor, performed the work of removing asphalt and dirt in preparation

for this project, while Herco, Inc., Lewiston, patched asphalt areas around the Maintenance Shop when the work was completed.

Storage Relocation. Spare pipe fittings were sorted and moved from the welding shop to a storage area in Mechanical Building I, where cubbies were designed and labeled for easier sorting. Storage racks were built nearby for the spare light bulbs and PVC pipe. New storage units were fabricated for all cable and nylon lifting straps in Mechanical Building II, and a new rack was fabricated for threaded pipe storage in the welding shop.

Boiler and Pump Repairs. In March, problems occurred with the electric boiler in Mechanical Building II. After considerable troubleshooting, it was determined that the cause was broken porcelain on the B-phase of three electrodes. The electrodes were shipped to and repaired by CAM Fabricated Systems in Kent, Washington.

In July, the elements on the electric boilers in Mechanical Building I were replaced. All components were checked, and the wire contacts were all re-tongued. In September, additional elements in the electric boilers in Mechanical Building I were replaced.

In July and August, all six main pumps were serviced and received oil changes. The number three main pump was re-assembled following repairs from a seized bearing in the upper shaft. The number one main pump was removed for repairs to the impeller and shaft. Repairs were completed by Idaho Machine, Lewiston, Idaho, and the pump was re-installed.

Grip Struts. Following the release of BY00 SST in the spring, work was begun to replace the 9"-wide grip struts on the Burrows pond walkways with 18" grip strut material. This procedure is being undertaken to improve safety conditions for members of the Production crew while they feed juvenile fish and clean ponds. This project was expected to take 3 years to complete; however, with additional supplies purchased by COE, it will be possible to finish the work in just two years. By the end of June 2001, work was completed on 42 of the 84 Burrows ponds, and the remaining half will be completed following the smolt release in the spring of 2002.

Production Equipment Maintenance. New vent fans were set on all main pumps; the pumps had experienced overheating problems due to extended low flows in the North Fork Clearwater River causing more lift for water to the mixing chamber. Following the final spawning day, May 1, holding ponds were dewatered and repaired. Grates, valves and valve covers were replaced as necessary. Also, a new sprinkler system for shade was fabricated and installed for the wall between HP2 and HP3. Aluminum packed columns were fabricated for the nursery. Aluminum steps were fabricated for the head-end of the B-bank chinook raceways, and welding repairs were made to the mud valves for A- and B-bank raceways.

In July and August, the hinges on the west diverter gate in the spawning room were repaired, and the guide wheels on the east spawning lift basket were replaced. The front cables on the rear channel crowder were replaced, as well. The pin for the gear drive on A-bank chinook raceway #5 was replaced. The belts on the spawning room air supply compressor were replaced, and the air restrictor for the spawning room diverter gates were cleaned. Broken bolts on the south basket gear box were replaced. New steps for easier and safer access to A-bank raceways were fabricated.

The oil was changed in all of System II & III reuse circulation pumps. The #2 sludge scraper gear box was removed and replaced. The #3 gear box was rebuilt and re-installed, as well. The sight glass for the level indicator on the #8 reuse pump was cleaned. The System I reuse pump house and pipe chase were cleaned. The blower for System I reuse was cleaned and inspected, and adjustments were made to the belt. Oil and operational checks were also performed on System I reuse pumps.

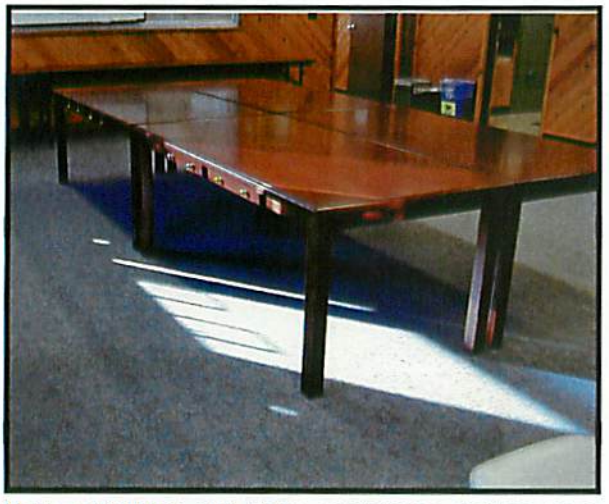
In September, the sump pump for the System I digester pump pit was replaced and cleaned. Also, the digester drawoff pumps were re-installed following bearing and seal repairs done by Idaho Machine, Lewiston.

Domestic Water System. On February 5, a complete Domestic Water System disinfection was completed. Repairs to the system were also made, including changing of the duplex strainer. All hot water heaters on the Complex were cleaned and inspected and were tagged upon completion.

Vehicles. The broken front spring on Cart #1 was replaced, and the selector switch on Cart #4 was repaired. A new trailer hitch was installed and wired for lights on the Lab's Chevy 4x4 pickup. The L-9000 was taken to Western States equipment for water pump and air conditioning repair. Repair was done on the wheels and rims of the lawn tractor trailer. In September, Repairs were made to the seals on the drive wheel of the electric forklift used in the Feed Building.

Quarters. Bids were received for the installation of vinyl siding on Quarters #1 and #3 in July, and work was completed by month's end. In September, The sprinkler system in the back yard of Quarters #1 experienced problems during the month of September causing flooding of the basement; the basement was de-watered by CleanLine and the basement area dried.

Two views (above and below) of the newly remodeled Maintenance shop, now with meeting area, work stations and computer access.



New carpeting and four conference tables were installed in the Main Hatchery Building meeting room; new carpet was also installed in the mail room.

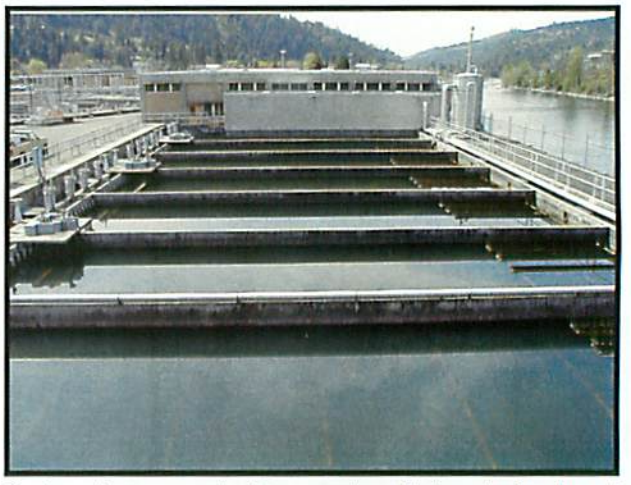
Purchasing Agent work area remodel, with new desk and file cabinets. Overhead storage was also installed this year.

All Complex HVAC units were serviced and cleaned, spring 2001.

Pond crowder was repainted; other crowders were serviced and repaired during the year.

Stainless steel pond release channels were completed and first used for Spring 2001 steelhead release. Also, one-half of the pond walkway grip strut refit was completed.

Hatchery-owned single-wide trailer, which had been on loan to IDFG, became surplus property. No offers were received, so the trailer was donated to the local ski patrol to serve as a first aid shack.



System I re-use sludge ponds will be drained and refitted during the rehab of System I reuse beginning in FY 2002

Outreach & Visitor Activities

Statistics

Dworshak NFH Visitor Use Statistics, FY2001.

Program Type	# of Contacts	Change From FY2000
On-site		
Hatchery Visitors (Register and self-guided tour)	6,485*	-18%
Guided Tours	101	+9%
Tour Visitors	1,805*	no change
Open House (children 12 & under)	893* (new record)	+4%
Open House (other visitors)	1969*	+4%
Total On-Site Contacts (total*)	11,147	-9%
Off-site		
Programs/Displays/Events	51	-13%
Total Off-Site Contacts (**)	15,569**	+0.5%
Total FY2001 Programs	152	+8%
Total FY2001 Contacts (* + **)	26,716	-4%

Table Summary

Overall hatchery visitation declined for the third year in a row (20% overall decrease since 1998), making the sharpest drop yet at 18% below last year. However, more guided tours were provided to approximately the same number of visitors as last year due to the offering of regularly scheduled weekend tours during the summer months. The 11th anniversary Open House and Kids' Fishing Day event saw an increase in attendance by 4%, setting a new attendance record of 893 for children, 12 years and under.

Off-site programs declined by 13% from last year. Several county and community career days, environmental awareness and natural resource events at schools were cancelled, which partially contributed to the decline. Overall contacts at staffed off-site events increased slightly, with the fall partner programs in Boise, Spring Creek NFH and Leavenworth NFH, and the local county fair accounting for more than half the total number of off-site contacts.

Information

On-Site Activities

- Information for annual phone books and guides was submitted to the US West Phone Book, Discover Idaho's Northwest Passage, Orofino Chamber of Commerce, and the 2002 Qwest phone directory.
- News releases were distributed to area media to announce
  - final chinook numbers and spawning update
  - tribal coho spawning dates and times
  - steelhead spawning production schedule, reports and final results
  - Open House.
- A Web Review Team was established to provide oversight of the DNFH website. Members include Computer Specialist Randy Bowen, I/E Specialist Susan Sawyer, I/E Assistant Connie Grant and Office Automation Clerk Kelly Gardner.
- Regional Web Manager Scott Eckert met with the Team in August to install the new Dreamweaver web publishing software and to discuss interpretive webpage development with Outreach staff. Computer Specialist Bowen and OAC Gardner overhauled the design, and the Dworshak NFH site is currently a model site for many field stations in the region.
- The annual Hatchery Highlights information sheet and combined spawning results for both SST and SCS at Dworshak was distributed (November) .
- Sign boards at the Highway 7 hatchery entrance announced chinook spawning times and were effective in drawing in additional visitors (August).
- I/E Assistant Grant offered three guided tours on Saturdays from Memorial Day.
- I/E staff prepared graphic design and visual aid materials for staff biologists as part of formal presentations on several projects.
- Dworshak NFH was featured in the December 2000 issue of the regional outreach newsletter *Out & About* for its cooperative efforts with the Nez Perce tribe in outplanting surplus chinook salmon last summer.
- Staff from two local papers visited the hatchery during steelhead spawning in March, taking photos and interviewing staff. Both published feature articles on the successful hatchery steelhead spawning and sport fishing season.

Off-site Activities

- Fishery Biologist Roseberg presented a slide show to 21 members of the Kelly Creek Flycaster Club in Lewiston, Idaho. Topics were salmon species identification, recovery efforts for Snake River salmon, and the difference between A- and B-run steelhead (October).
- A news release and information sheet similar to Dworshak's was designed for Hagerman NFH; I/E Specialist Sawyer, Hagerman Hatchery Manager Bryan Kenworthy and Pocatello IDFG outreach staff also wrote a feature story for southeast Idaho newspapers (February).
- I/E Assistant Grant staffed a booth at the annual Kiwanis Kids Fair in Orofino (April).
- A display was designed for the Governor's Conference on Travel and Tourism, featuring a history of the fishery from the Lewis/Clark era to the modern hatchery facility as a tourist attraction. Over 800 people attended the conference held in Lewiston (May).
- I/E Assistant Grant presented 2 off-site programs to 25 visitors at Dworshak State Park campground (June).

- I/E Assistant Grant and OAC Gardner designed a thematic display for the Clearwater County Fair and Lumberjack Days, taking a blue ribbon for the Salmon Coloring Contest booth. Four division prizes and one grand prize were awarded (September).
- I/E Assistant Grant hosted an informational tour stop for over 650 visitors at the Spring Creek NFH Centennial Celebration (September).

Education

On-site Activities

- A total of 101 on-site tours were given to 1,805 visitors.

Off-site Activities

- DNFH I/E staff coordinated and co-facilitated the Project WET teacher workshop on the University of Idaho campus for 23 area educators (October).
- *Hatchery in the Classroom* (HIC) projects were awarded to two area schools. DNFH provides 50-gallon fish tanks, set-up assistance, instructions, food and eyed eggs to participating schools.
  - Tank #1 went to Spirit Lake Elementary School, where students raised kokanee salmon supplied by Idaho Department of Fish & Game. Fry were released into Spirit Lake in May.
  - Tank #2 was awarded to Highland Elementary in Craigmont. The students raised steelhead to the fry stage, releasing in June. I/E staff gave educational support to each school. Both projects were very successful with an egg-to-fish-release survival rate of 70%. Reports were prepared by the schools following the projects outlining the highlights of their incubation experience.
  - DNFH also provided steelhead eggs and technical support to three other school programs in the Clearwater basin.
- Approximately 230 fourth grade students participated in the 7th annual Earth Week at Big Eddy Marina. The staff hosted one of six interactive learning stations (April).
- The Hooks and Ladders salmon migration game was presented to 250+ sixth graders during the 2-day Spring Valley Environmental Awareness Days in Latah County (May).
- Hooks and Ladders was presented to 350+ sixth graders at the Hells Gate Environmental Awareness Days in Nez Perce County (May).
- A water quality/stream-walk activity was conducted for the Orofino Junior High School Outdoor Science Day (May).
- I/E Assistant Grant co-facilitated the annual Northern IDAH$_2$O Water Camp was held at Lewis-Clark State College. This week-long course was sponsored by USFWS and the Idaho Water Resource and Research Institute (June).
- Two off-site activities were conducted for the annual Sixth Grade Forestry Tour regarding water quality and predator/prey relationships. Over 60 kids plus chaperones and teen leaders participated (July).
- I/E Specialist Sawyer co-chaired the Gyotaku activity with Idaho Power biologist Phil Groves at the 5th annual Idaho Salmon and Steelhead Days in Boise. Over 3,000 fourth graders and 800 general public attended over 3 days (September).
- I/E staff hosted the Gyotaku activity for over 1,300 kids and 1,000 general public at Leavenworth NFH's annual 4-day Salmonfest event (September).

Other Activities

- Software Outfitters received the revised contract for the *Salmon Sense CD-ROM* project. Funding is provided by the Region 1 Small Outreach Grant of $1,000 and the balance of the 2001 Idaho Community Foundation Grant funds ($5,500). Projected completion date for this project is Spring 2002.

Special Programs

- Hatchery volunteers contributed 296 hours to public outreach activities. Joe Davis, retired Air Force pilot and Human Relations instructor, joined the hatchery volunteer corps, which included Gordon Thiessen, Jesse Lyda, Bill Anderson and Doug Williams. All were treated to an end-of-season trip to Lower Granite Dam and Locks, enjoying a tour of the power-house and fish passage center. Lunch and awards were provided at the marina.
- Walla Walla Community College provided two student interns to work with DNFH production and IFRO staff. They worked a total of 44 hours, assisting with spawning activities and tag retention studies.
- The Lewis-Clark Bicentennial (LCB) commemoration runs from 2004 through 2006. In preparation for the event, I/E staff:
  - met with Clearwater-Snake Regional LCB Planner to discuss potential projects at Dworshak and funding through outside sources.
  - met with Idaho LCB Coordinator regarding community grant application procedures.
  - participated in monthly meetings of the Orofino LCB Committee regarding grants, hatchery projects, summer weekend hatchery tours and a possible fall LCB event.
  - met with Hells Gate Visitor Center Planning Team regarding the development of an interactive display and an off-site fish/history exhibit at DNFH connecting the Lewis-Clark journey and the Clearwater River fishery.
  - I/E Assistant Grant developed a *living history* segment into the summer weekend tour program, acting the part of Lucy Marks, Captain Merriweather Lewis's mother. This program will be regularly scheduled throughout the LCB years. Grant also performed the monologue at the Orofino Old Fashioned Sunday event in July and will appear at future events.
- Grants
  - A TEA-21 Federal Scenic Byway proposal for Dworshak visitor orientation off State Route 7 was submitted to Idaho Transportation Department in February. The request for $187,000 was denied for this year, but will be re-submitted next year.
  - A $10,000 National Park Service Challenge Cost Share grant was awarded to Dworshak through Hells Gate State Park for the off-site fish/history exhibit at Dworshak NFH as part of the Lewis-Clark exhibit.
  - Dworshak received a grant for $18,500 from the Governor's LCB Committee for a cultural history visitor information kiosk in the main hatchery parking lot. The award was announced in September by Governor Dirk Kempthorne.
- Outreach Training
  - I/E staff traveled to Richland, Washington, in March 2001 for a *Region 1 Fisheries Outreach Meeting* and workshop by Regional Office External Affairs staff.
  - I/E Specialist Sawyer attended a week-long training through the National Park Service on developing and integrating curriculum programs into schools.

- I/E Specialist Sawyer attended the *Columbia Basin Environmental Education Initiative* workshop in Lewiston in August. Sawyer will be a team leader representing USFWS over the next 2 years.
- I/E Assistant Grant attended an *Educational Trunk Development* seminar and a *Communications for Women* workshop.

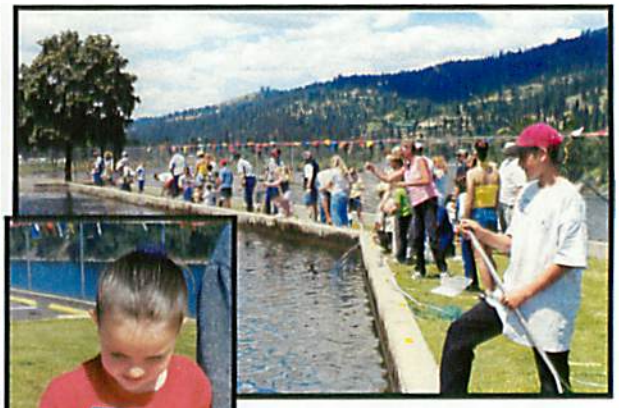
- A record 893 children, 12 years and under, participated in the 11th annual Open House and Kids' Fishing Day event at Dworshak NFH, each going home with two big rainbow trout, a door prize and a balloon. The fish were larger this year than in previous years. Displays and activities included "*Gyotaku*" fish painting, fish mobiles sponsored by Clearwater National Forest, Frank and Francis Fish (costumed characters), coloring contest sponsored by COE, concessions provided by the Orofino Maniac Boosters and a local 4-H group.

The hatchery provided an exhibit for the annual Kiwanis Kids Day Fair, April 2001.

A new fish marking exhibit was produced and installed for public display.

Outreach staff designed a fishery history display for the Governor's Travel and Tourism Conference in May.

I/E Assistant Grant staffs a thematic booth display for the annual Clearwater County Fair in September. The booth took first place in its division, and four coloring contest winners were awarded prizes for their salmon artwork entries.



The 11th annual Open House and Kids' Fishing Day set a new record of 893 children fishing at the pond.

Over 100 guided tours were given at the hatchery, most during spawning seasons (above). I/E Assistant Grant conducted many of the tours and several off-site activities (right).

Two Hatchery in the Classroom projects were successful this year, with the release of steelhead fry into 2 small lakes in Northern Idaho. Both classes had over a 70% survival rate from eyed eggs to release day.

Cooperative Programs

Highlights

Tribal Coho Program. Through a Memorandum of Understanding between the Nez Perce Tribe and USFWS, tribal fisheries staff spawn and raise coho salmon at DNFH. Tribal staff provide labor for spawning and production while using the spawning, incubation, nursery and ponding facilities on station. The tribal coho program supervisor has also been provided with an office.

Foreign Exchange Program. Dworshak Complex sponsored Jose Azcona, an aquaculture major from Universidad Autonoma de Guadalajara, Mexico, through an 8-week International Internship program sponsored by Idaho Panhandle National Forest in Coeur d'Alene, Idaho. Jose assisted the production crews at both DNFH and KNFH to learn about current FWS fish culture methods.

Clearwater River Youth Program (CRYP). The CRYP program is designed to give local youth a first work experience and an introduction to federal service. Selected projects on-site included painting, cleaning, feeding fish, weeding, repairing netting, clerical work (folding brochures, typing, proofreading) and helping with Open House events for DNFH and KNFH. Off-site, participants were taken on fish outplants with the Clearwater hatchery, electrofishing and redd counting with the Idaho Fishery Resource Office and to satellite hatcheries to weed, clean and repair creek beds.

This year's participants included:

Dworshak NFH
- Travis Beck
- Brian Fritchman
- John Huston
- Spring Smeltz
- Maryann Spence
- Erin Stobie

Clearwater FH
- Travis Gochnaur
- Soren Newman
- Stacey Ray/Kelly Burge

Agency List

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

Federal Agencies

- Federal Emergency Management Administration (FEMA)
- National Marine Fisheries Service (NMFS)
- National Park Service (NPS)
  - Nez Perce National Historical Park
- National Weather Service

- 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 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 (CFRU)
  - School of Forestry, Wildlife and Range Sciences
  - Aquaculture Research Center

State of Washington

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

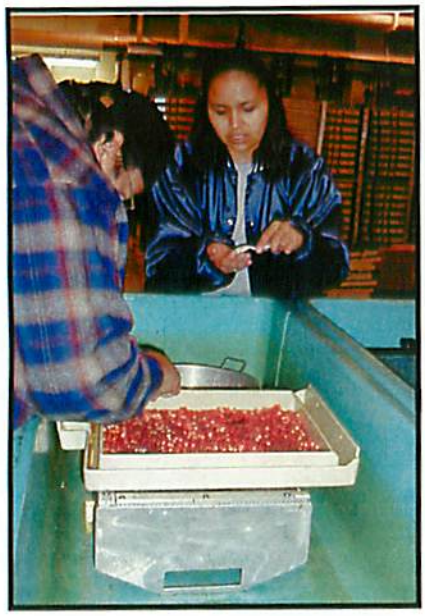
- Clearwater County Sheriff's Office (CCSO)
- Clearwater County Soil Conservation District
- Latah County Soil Conservation District
- Joint School District #171
- Orofino Chamber of Commerce

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



Nez Perce Tribal workers pick through coho salmon eggs (left); Supervisor Aaron Penney monitors the egg counter/sorter for coho eggs (above), winter 2000.

Dworshak Complex works with several Lewis/Clark Bicentennial committees and groups in planning activities for the 2004–06 event.

Nez Perce Tribal staff crowd coho salmon smolts (above) for loading into transport truck (right) for trip to Kooskia NFH.

Youth in the summer work program load rainbow trout for transfer to the fishing pond for the annual Kids' Fishing Day.

Clearwater River Youth Program summer crew 2001, final work day recognition. Back row: Travis Gochnaur, John Huston, Brian Fritchman and Crew Leader Cliff Walker. Front row Soren Newman, Maryanne Spence, Travis Beck and Erin Stobie.