IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL HATCHERY REPORT

May 2002
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RESIDENT FISH HATCHERIES
2001 ANNUAL REPORT

Resident fish hatcheries reared and stocked over 36,374,568 fish weighing 3,333,299 pounds. More than 2,313 stocking trips were made to plant fish in 632 waters in the state.

Resident hatchery program costs were 2 million dollars for an average cost of $1.93 per pound or $0.09 per fish. Cost varied greatly between the hatcheries. Cabinet Gorge Hatchery had the lowest cost per fish at $0.021 and American Falls Hatchery had the highest at $0.78 per fish. This is due to the great diversity in the resident hatchery system goals. Cabinet Gorge Hatchery produced 17 million kokanee *Oncorhynchus nerka* averaging 1.72 inches in length using a seven-month growing season and American Falls Fish Hatchery used the entire 12 months of fish production and produced an average 10-inch rainbow trout *O. mykiss*.

Rainbow trout of catchable size (8- to 12-inches) composed approximately one-half of the program costs at approximately $1 million.

Three captive broodstocks were maintained at the resident hatcheries producing over 18 million eggs for various resident programs. These stocks include Kamloop and Hayspur rainbow trout maintained and spawned at Hayspur Hatchery and a newly founded Westslope Cutthroat broodstock that is also under development at the Hayspur facility.

The Idaho Department of Fish and Game (Department) Engineering Bureau coordinated major construction at the Grace and Hagerman hatcheries this fiscal year. The large raceways at the Grace Hatchery were replaced. Several hatchery residences were updated with siding, roofing and interior work. In all, nearly $800,000 from three fiscal years was spent on resident hatchery upgrades during 2001.

Idaho Department of Fish and Game
Resident Hatcheries Fish Production
01/01/01 - 12/31/01

Hatchery	Put-and-Take Number	Put-and-Take Pounds	Put-Grow-and-Take Number	Put-Grow-and-Take Pounds	Average Fish per pound	Feed Pounds	Feed Costs	Average Length	Total cost	Cost/ 1,000 fish	Cost/ Pound
American Falls	171,815	100,233	104,960	410	2.75	97,225	$24,262	10.01	$216,382	$781.80	$2.15
Ashton	206,070	46,043	95,314	386	6.49	34,070	$9,631	7.6	$91,110	$302.00	$1.96
Cabinet Gorge			12,463,629	21,552	578	21,255	$9,593	1.72	$265,464	$21.30	$14.68
Clearwater	313,381	39,449	416,645	5,312	16.3	58,944	$15,325	5.35	$19,702[b]	$26.99[b]	$0.44[b]
Grace	141,347	45,625	858,208	13,542	16.89	58,941	$16,417	5.3	$188,473	$188.55	$3.19
Hagerman	970,499	294,093	1,286,463	108,895	5.6	416,490	$110,503	7.9	$538,122	$238.43	$1.33
Mackay	92,268[c]	58,021[c]	3,043,832[c]	58,021[c]	33.7[c]	116,360	$34,480	4.6[c]	$232,296	$74.07[c]	$2.50[c]
McCall			220,755	187	1,180	221	$233	1.4	$79,160	$260.99	$422.55
Nampa	754,641	241,435	1,197,489	15,513	7.6	276,996	$76,041	6.9	$390,917	$200.27	$1.52
TOTAL	2,650,021	824,899	19,687,295	223,818	87.96	1,080,502	296,485	3.35	2,021,616	$90.50	$1.93

a Does not include catchable redistribution costs.
b Does not include personnel costs
c Includes fish stocked only
Total cost for each hatchery is that hatchery's total budget minus capital outlay expenditures.

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

AMERICAN FALLS FISH HATCHERY

Steve Wingert, Fish Hatchery Manager
David Billman, Assistant Fish Hatchery Manager
Paul Martin, Fish Culturist

INTRODUCTION

American Falls Fish Hatchery (AFFH) is a resident fish hatchery located on approximately 120 acres of land on the north bank of the Snake River, one-half mile below the American Falls Reservoir Dam, and two miles by road from the town of American Falls, Idaho. It is owned and operated by the Idaho Department of Fish and Game (Department).

The primary mission of the AFFH is to rear up to 250,000 catchable-sized (9-inch to 12-inch) rainbow trout *Oncorhynchus mykiss*. The AFFH also produces fingerling (3-inch to 6-inch) rainbow trout, as requested. The number and lbs of fingerling produced varies from year to year.

Three permanent employees and one 8-month temporary employee staff the AFFH. Volunteer hatchery hosts are utilized for the spring and summer tourist season.

Funding for the AFFH operation comes from license monies, from interest on an American Falls Irrigation District endowment, and from mitigation funds for the Gem State Hydropower Project at Idaho Falls.

The physical layout of the AFFH consists of ten single-pass 100-ft x 8-ft x 3-ft concrete raceways, ten re-use 100-ft x 8-ft x 3-ft concrete raceways, and a hatchery building containing fourteen 21-ft x 4-ft x 2.5-ft concrete rearing vats.

Water for the AFFH comes from Rueger Springs, which is located on AFFH property. These springs flow an average of 20 cubic feet per second (cfs) at a water temperature of 55^{o}F to 59^{o}F.

FISH PRODUCTION

The AFFH raised triploid Hayspur strain rainbow trout (T9), triploid Troutlodge Kamloops (TT), and Westslope Cutthroat from the Westslope Trout Company for the 2001 production year.

The Mullan facility received a transfer of 10,000 catchables, Sandpoint received 7,500 catchables, the Hayspur hatchery received 10,905 catchables, and the Ashton Hatchery received 7,200 sterile catchable rainbow trout from the AFFH. The AFFH also transferred 104,960 Westslope Cutthroat trout fingerlings (410 lbs) to the Cabinet Gorge Hatchery. The AFFH stocked or transferred 171,815 catchable rainbow trout (100,233 lbs). Total stocked and transferred was 276,775 fish, weighing 100,643 lbs (Appendix 1). Net production for the year (lbs stocked + lbs on hand 12/31/2001 - lbs on hand 1/1/2001) was 97,969 lbs.

Cost in 2001 for various sizes of fish food was $24,262.05. Feed costs for the year were $0.25 per lb of fish produced, or $0.09 per fish. Production costs overall were $2.15 per lb of fish produced, or $0.82 per fish. This cost includes the cost of transportation to stocking waters, and the cost of fish transports stationed at the Nampa Fish Hatchery.

Feed conversion for the year averaged one pound of feed per pound of fish produced. This low conversion rate is possible because of the tremendous numbers of flying insects available from May to October at this hatchery.

HATCHERY IMPROVEMENTS

- Numerous trees that were endangering hatchery buildings and the hatchery host RV pad were trimmed back or cut down.
- New carpet was installed in the living room of Residence #1.
- The wood floor in Residence #1 was refinished.
- Interiors of Residences #2 & #3 were painted.
- Numerous trees were planted on hatchery grounds.

HATCHERY NEEDS

- Residence #2 should be remodeled or replaced.
- Metal siding should be installed on the garage for Residence #1.
- Metal or vinyl siding should be installed on Residence #3.
- The automatic feeding system should be repaired.
- The effluent pond dam needs to be replaced.
- Additional raceways are needed to maximize efficiency and to more fully utilize the available water.
- The residences at AFFH need new heat sources.

PUBLIC RELATIONS

The AFFH received an estimated 5,000 visitors during this period, including public school groups from March through July, and again in October. We also had scout groups, family reunions, bird-watchers, drop-in visitors, hunters and fishermen.

VOLUNTEER PROGRAM

The hatchery host program, begun in 1997, was continued this year. Hosts for the 2001 season were George & Charlotte Costa. They proved to be good workers, and helped the hatchery crew with conducting tours of the grounds, as well as with some general maintenance.

ACKNOWLEDGMENTS

This year employees at AFFH included: Steve Wingert, Hatchery Manager I; Bill Doerr, Hatchery Manager I; David Billman, Assistant Fish Hatchery Manager; Paul Martin, Fish Culturist; Kevin Yelton, Biological Aide; and George & Charlotte Costa, hatchery hosts.

APPENDICES

Appendix 1. Fish transferred or stocked by month, American Falls Fish Hatchery, 2001.

MONTH	SPECIES	NUMBER	POUNDS
February	Triploid Rainbow	805	350
March	Triploid Rainbow	9,430	3,627
April	Triploid Rainbow	26,010	14,286
May	Triploid Rainbow	13,152	5,692
June	Triploid Rainbow	42,161	18,860
July	Triploid Rainbow	10,905	8,727
August	Triploid Rainbow	7,532	4,581
September	Triploid Rainbow	30,190	20,720
October	Triploid Rainbow	7,274	5,360
October	Westslope Cutthroat	104,960	410
November	Triploid Rainbow	23,394	16,780
December	Triploid Rainbow	1,062	1,250
TOTALS		**276,775**	**100,643**

Appendix 2. Fish feed used during the 2001 production year, American Falls Fish Hatchery.

SOURCE	SIZE/TYPE	POUNDS	COST
Rangen Dry	Swim-up/Starter	42	$15.76
Rangen Dry	#1	125	$46.91
Rangen Dry	#2	550.75	$206.70
Rangen Dry	#3	3,250.00	$831.02
Rangen Dry	1/8" Extruded Floating	87,445.25	$20,507.53
Rangen Medicated	1/8" with OTC	4,950	$2304.72
	SUBTOTAL	**96,363**	**$23,912.64**
Rangen Soft-moist	Swim-up/Starter	35	$35.50
Rangen Soft-moist	1/32"	44	$41.73
Rangen Soft-moist	3/64"	88	$80.69
Rangen Soft-moist	1/16"	132	$98.18
Rangen Soft-moist	3/32"	132	$93.31
	SUBTOTAL	**431**	**$349.41**
TOTALS		**97,225**	**$24,262.05**

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

ASHTON FISH HATCHERY

Mel Sadecki, Fish Hatchery Manager I
Damon Keen, Assistant Fish Hatchery Manager

INTRODUCTION

Ashton Fish Hatchery (AFH) is located in Fremont County, ID, approximately two miles southwest of the small community of Ashton. Constructed in 1920, and funded by fishing license dollars, AFH serves as a "specialty station," rearing three species/strains of trout, char and grayling; including rainbow trout *Oncorhynchus mykiss*, cutthroat trout *O. clarki* and Arctic grayling *Thymallus arcticus*.

The majority of fish produced at AFH are fry and fingerling (1-inch to 6-inches) that are distributed throughout Idaho as part of various put-grow-and-take management programs. Catchable-size fish (6-inches to 10-inches) are also reared at AFH and distributed locally in waters managed on a put-and-take basis.

FISH PRODUCTION

General Overview

A total of 301,384 fish (46,430 lbs) were produced at AFH this year, consisting of 95,314 fingerlings (386.31 lbs), and 206,070 catchable-sized fish (including holdovers) (46,043 lbs). Although total numbers were up, total pounds produced were down from the previous year (Appendix 1). The majority of fish requests were met, with the exception of catchable rainbow trout. Production costs (excluding capital outlay) were $91,110.64, with $9,631.08 spent on fish feed and the remaining $81,479.56 spent on general hatchery operations and personnel costs. Fish transportation cost for 2001 was $4,301.58. The average cost per lb of fish produced was $1.24 (Appendix 1).

All of the fish reared at AFH were received as eyed-eggs (Appendix 2).

All fry and fingerlings were fed by automatic belt feeders that dribbled feed into the tanks and raceways 8 to 10 hours per day. Human disturbance was kept to a minimum, and conversions improved over hand-feeding techniques.

Demand feeders were utilized in outdoor raceways for the catchables and holdovers. Feed conversion for catchables and holdovers was 0.89 in 2001 (Appendix 3). Lights over the nursery tanks were adjusted to a moderate intensity, and growth rates were maintained by use of automatic fry feeders and covers when the fish were moved outside to the small raceways.

The average survival for all fish stocked from eyed-egg to distribution was 73.9%. This is an increase of 8.6%, primarily due to improved grayling survival (in 2000 grayling had 0% survival).

Rainbow Trout

Ashton Fish Hatchery produced and stocked 76,763 10-inch catchable rainbows (30,036 lbs) for distribution into area lakes and streams (Appendix 1). In December 2000, we received 201,000 Hayspur triploid rainbow trout (T9) eggs. From these eggs, 41,692 T9 fingerlings, averaging 3-inches, were planted in a number of Upper Snake Region waters. An additional 113,000 (13,994 lbs) of 7-inch T9 holdovers were produced for stocking in 2002.

Henrys Lake Cutthroat Trout

Henrys Lake shipped 20,000 cutthroat trout eggs to AFH in 2001. From these, 18,015 fingerlings (115.25 lbs) were planted in Henrys Lake, Golden Lake, and Blue Creek Reservoir.

An additional group of 25,000 “genetically pure” cutthroat eggs was received in 2000 and the resulting 16,307 fish (2,013 lbs) were stocked into Golden Lake and Henrys Lake during 2001.

Arctic Grayling

Arctic grayling are reared at AFH for statewide mountain lake stocking. In May 2001, a total of 90,000 green eggs were transported to AFH from Meadow Lake, Wyoming. The eggs arrived in very good condition and were placed in five upwelling incubators. Approximately 60% eyed-up, resulting in an estimated 55,200 eyed-eggs. From these eggs 3,187 grayling were stocked into Horseshoe Lake. An additional 32,420 fish were transferred to McCall Hatchery for stocking into mountain lakes statewide.

HATCHERY IMPROVEMENTS

New vinyl siding and windows were installed on the 3-car garage, greatly improving its appearance and longevity. New metal roofing was installed on Residence #2 and an obsolete chimney was removed. A new riding lawnmower was purchased for the hatchery.

Future needs include construction of a large storage area, heated shop/garage east of the Quonset hut; siding for both residences; septic tank/field work will be needed for both residences, as well as a new concrete driveway for Residence #1. Our 15-year-old snow blower will need to be replaced soon.

FISH STOCKED AND TRANSFERRED

The stocking program at AFH remained similar to last year's program, with the exception of the “Super-catchable” study. Approximately 4,000 of the “Super-catchable” study fish were stocked outside of our normal area. As a result, the numbers of catchable rainbow trout on-station were not sufficient to meet requests within our normal stocking area. An additional 7,285 (4,790 lbs) of catchable rainbow (TTK) were transferred in from American Falls Hatchery to complete our stocking requests.

ASHTON FISH SPAWNING

Personnel from AFH traveled to Henrys Lake Hatchery to sort and spawn cutthroat trout and rainbow x cutthroat hybrids.

FISH FEED

A total of 34,070 lbs of fish feed was fed (Appendix 5) to produce 32,600 lbs of gain (Appendix 1), for an average conversion of 1.045. All fish were fed Rangen dry feeds.

PUBLIC RELATIONS

Approximately 1,000 people visited AFH this past year. About 500 elementary school students from as far away as Idaho Falls visited the hatchery during the spring, summer, and fall. Our visitor information center answered questions about the hatchery, fishing and hunting regulations, and various Idaho Department of Fish and Game (Department) policies.

SPECIAL PROJECTS

Regional Efforts

Hatchery personnel assisted with firearms training for Hunter Education in Ashton.

HENRYS LAKE HATCHERY

FISH SPAWNING

The 2001 cutthroat trout run consisted of 7,190 cutthroat and 4,391 hybrid trout totaling 11,581 fish. Cutthroat males numbered 4,587 and cutthroat females numbered 2,603. Hybrid males numbered 1,955 and 2,436 females were counted for a total of 4,391. Average length for male cutthroat was 434 mm and females averaged 442 mm total length. Combined average cutthroat total length was 438 mm. Hybrid trout males averaged 491 mm and females averaged 474 mm. Combined mean length for hybrid trout was 482 mm.

Cutthroat green eggs totaled 2,402,108 from 986 females for an average fecundity of 2,436 eggs per female. Eyed cutthroat trout eggs totaled 1,560,114 for an eye-up of 64.9%.

Hybrid trout green eggs totaled 856,800 from 357 female cutthroats for an average fecundity of 2,400 eggs per female. Eyed hybrid trout eggs totaled 376,662 for an eye-up of 44%. During the 2001 trapping season we produced sterile hybrids in a production mode by our current heat-shocking method of holding the fertilized eggs in a 27°C bath for 20 minutes.

No brook trout were trapped or spawned at Henrys Lake in 2001.

HATCHERY IMPROVEMENTS

Main hatchery improvements this year focused on replacing the roofing on the cabin and the hatchery, updating the spawn shed, painting the helixir shed and outhouse, laying carpet in the dorm, and painting a room in the house.

In addition to hatchery work, the Henrys crew assisted the region with electroshocking, fish plants, gill netting, backcountry patrol, and numerous other activities.

FRY TRAPPING

Fry trapping was not conducted this year as our current schedule allows for fry trapping in even-numbered years only.

Creel Survey

From May 26 through October 31, creel clerks interviewed 1,527 individual anglers. Using the creel program, estimates were made and summarized. Catch rate was estimated at .56 fish/hr and harvest rate was .11 fish/hr. Effort was comprised of 48.67% fly-fishing, 29.51% bait fishing, and 21.82% lure fishing. Catch composition was 58.8% hybrid trout, 34.75% Yellowstone cutthroat trout, and 7.18% brook trout. Types of fishing were summarized as 61.61% boat, 21.42% tube, and 16.98% bank. The average time spent fishing was 3.44 hours.

RIPARIAN FENCING

The riparian sections of Henrys Lake, and Howard, Targhee, Timber, Kelly, and Duck creeks were maintained as in past years. New sections of Duck Creek were targeted for inclusion in the habitat maintenance project and permission was obtained to go ahead with the project during the 2002 work season.

FISH SCREENS

The fish screens on Howard, Targhee and Duck creeks were maintained as in previous years. A number of the screens were noted for repair or possible replacement. Funding was obtained to replace a total of five screens. The five new screens will be fabricated and replaced during the 2002 work period. Perforated plate will be used on all the new structures.

APPENDICES

Appendix 1. Fish production and cost, Ashton Fish Hatchery, 2001

Species	Size	Number Fish	Pounds Planted	Weight Gained In 2001	Cost/lb	Cost/fish	Total Cost
Fingerlings Produced and Stocked							
Hayspur triploid Rainbow	2.7	41,692	240.75	223.55	27.15	.156	6,536.27
Henrys Lake Cutthroat	2.5	18,015	115.25	110.03	24.58	.157	2,832.63
Arctic Grayling	1.3	35,607	30.31	30.26	178.07	.151	5,397.38
Totals/Ave	**2.3**	**95,314**	**386.31**	**363.84**	**38.22**	**.155**	**14,766.28**
Catchables Produced and Stocked							
Hayspur Rainbow	10.0	76,763	30,036	16,902	1.36	.535	41,072.68
Henrys Lake Cutthroat	6.7	16,307	2,013	1,317	2.20	.272	4,437.09
Totals/Ave	**10.5**	**93,070**	**32,049**	**18,219**	**1.42**	**.489**	**45,509.77**
Catchables Produced For 2002							
Hayspur triploid Rainbow	6.7	113,000	0	13,947.6	2.21	.273	30,834.59
Totals/Ave	**6.7**	**113,000**	**0**	**13,947.6**	**2.21**	**.273**	**30,834.59**
GRAND TOTAL		**301,384**	**32,435**	**32,530.44**	**1.96**	**.302**	**$91,110.64**

Appendix 2. Eggs and fish received and transferred, Ashton Fish Hatchery, 2001

Species	Eggs Received	Fish Received	Fish Transferred	Destination
Arctic grayling	55,200	0	32,420	Statewide
Hayspur triploid rainbow	[a]180,000	0	0	Region 6
Henrys Lake cutthroat	20,000	0	0	Region 6
TTK	0	7,285	0	Region 6
Totals	**255,200**	**7,285**	**32,420**	

[a]For stocking in 2002

Appendix 3. Comparative growth rates, feed conversion, and percent survival for all species reared at Ashton Fish Hatchery, 2001.

Species	Average Monthly Length Increase	Average Conversion	Percent Survival
Rainbow (catchables	.492	1.05	64.0
Rainbow (fingerlings)	.399	0.93	77.1
Cutthroat	.390	0.92	90.0
Arctic grayling	.510	0.57	64.5
Holdover for 2002 stocking			
Rainbow	.501	0.72	72.0

Appendix 4. Origin of fish stocked or transferred, Ashton Fish Hatchery, 2001

Species	Source	Eggs	Fish	Destination	Stocked	Transferred	Size (inches)
Hayspur triploid rainbow	Hayspur	[a]201,000	--	Region 6	41,692	--	2.7
Hayspur rainbow	Hayspur	--	--	Region 6	76,763	--	10.0
Henrys Lake Cutthroat	Henrys Lake	20,000 [a]25,000	-- --	Region 6 Region 6	18,015 16,307	--	2.5 6.7
Arctic Grayling	Meadow Lake, WY	55,200	--	Statewide	3,187	32,420	1.3
Total stocked or transferred					**155,964**	**32,420**	

[a]Received prior to 2001

Appendix 5. Feed used, Ashton Fish Hatchery, 2001

Size	Source	Pounds	Cost/lb	Total Cost
Swimup	Rangens	75	0.5616	42.12
#1 Starter	Rangens	250	0.4096	102.40
#2 Starter	Rangens	1,200	0.3309	397.08
#3 Starter	Rangens	2,200	0.2804	616.88
3/32 Pellet	Rangens	3,000	0.2596	778.80
1/8 Pellet	Rangens	27,345	0.2924	7,995.68
TOTALS		**34,070**		**$9,631.08**

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

CABINET GORGE FISH HATCHERY

John Rankin, Fish Hatchery Manager I
Bruce Thompson, Assistant Fish Hatchery Manager

INTRODUCTION

Cabinet Gorge Fish Hatchery (CGFH) is located on the south bank of the Clark Fork River in Bonner County, ID, approximately eight miles southeast of the community of Clark Fork. The hatchery was constructed in 1985 and was co-funded by Avista (formerly Washington Water Power), Bonneville Power Administration (BPA), and the Idaho Department of Fish and Game (Department). The primary goal of CGFH is to produce late-spawning kokanee salmon *Oncorhynchus nerka kennerlyi* fry for release into Idaho's Lake Pend Oreille. Kokanee fry are needed to mitigate for the loss of wild kokanee recruitment caused by hydroelectric power projects in the Pend Oreille watershed. The kokanee fry release is timed to coincide with cycles of zooplankton blooms. Maximum hatchery capacity is 20 million eggs, with fish production of 16 million two-inch fry.

Three permanent employees staff the CGFH. Thirty-three months of temporary labor are available for use during the year. Housing on-station includes two residences for the permanent staff as well as crew quarters for two temporary employees. The newly added fish culturist position is housed at a residence at Clark Fork Hatchery.

Water Supply

Cabinet Gorge Dam is located about one mile upstream from the hatchery. After its completion in 1952, artesian springs began appearing along the Clark Fork River at the present site of the hatchery. The CGFH water supply consists of approximately 4.4 cubic feet per second (cfs) from a spring and approximately 20 cfs from a well field. The temperatures of the lower spring and upper well field vary inversely with each other over a 12-month period. The cooler water from the lower springs (pumps #7 and #8) was utilized to incubate eggs until December 19, 2001. At that time, a mixture of the two water sources allowed incubation and early rearing water temperatures to be maintained around 49°F (range 46.5°F to 49.5°F). Production water ranged from 38°F to 45.5°F.

The hatchery utilizes six pumps to move water to a common headbox. The lower spring and upper well field water serves the 31,000 cubic feet (cuft) of rearing space in the hatchery building and the 1,500 cuft of space in the adult holding ponds.

Rearing Facilities

Rearing facilities at the hatchery include 192 upwelling incubators and 64 concrete raceways. The incubators are 12-inches in diameter by 24-inches high with a maximum capacity of 140,000 kokanee eggs each. In addition, a total of 30 upwelling incubators, which are 6-inches in diameter and 18-inches high, are available. The smaller incubators have a maximum capacity of 30,000 kokanee eggs each. The 64 concrete raceways have a rearing space of 31,000 cuft. The hatchery building encloses approximately one-third of each raceway. The adult kokanee holding area consists of two holding ponds (10-ft x 30-ft each) at the head of the fish ladder. Additional adult holding is available in three holding ponds (10-ft x 30-ft each).

PRODUCTION

Between January 1, 2001 and July 1, 2001, CGFH produced a total of 12,122,367 fish weighing 17,361 lbs (Appendix 1). On January 1, 2002, a total of 6,796,407 Lake Pend Oreille kokanee eggs were on hand (Appendix 2). Cabinet Gorge Hatchery also had 268,104 kokanee eggs and newly hatched fry from Lake Mary Ronan, Montana in incubation units. In addition, 268,549 3-inch to 4-inch Westslope cutthroat and 72,713 fall Chinook fry were also on hand at the end of the year.

A total of 21,225 lbs of feed produced 18,803 lbs of gain for an overall (all species reared) feed conversion of 1.17. Total production cost (less capital outlay) was $265,464, resulting in a cost per lb of fish of $14.68, cost per inch of fish of $0.0124, and cost per thousand fish of $21.30 (Appendix 1).

Lake Pend Oreille Kokanee

General Rearing

Fertilized eggs were brought to CGFH and disinfected in 100-ppm PVP iodine for 10 minutes. After enumeration, the green eggs were placed into upwelling incubators and rolled until eye-up. At eye-up the eggs were shocked, sorted and counted with the Jensorter JHC-114 model sorter. Fry were allowed to volitionally swim out of the incubators into the raceways at 1,500 temperature units (TUs). All fry were thermally mass marked via temperature manipulation in the raceways. Feed training began at 1,700 to 1,720 TUs.

Kokanee were feed trained at approximately 46°F to 48.5°F using Rangen's Trout and Salmon starter for 14 days. Feed training continued from the 15th day to the 28th day utilizing a 50:50 mix of Trout and Salmon starter and Trout and Salmon starter #1. On day 29 the fry were placed on Trout and Salmon starter #1 only. The fry remained on Trout and Salmon starter #1 for the duration of rearing.

Due to colder than normal water temperatures available for early rearing, subsequent slower growth rates, and maximized swim-up fry loading rates, some of the kokanee on-station sustained outbreaks of Bacterial Gill Disease (BGD). Chloramine-T was administered as a treatment at 10-ppm for three consecutive days. By the end of May overall fish health had improved and all of the fry were exhibiting favorable recovery signs.

Egg collection lasted over two months, and a cross-section of the run was required for each release strategy. Growth rates to achieve a universally sized 2-inch fry were not manipulated during the 2001 season. The fish were reared using 35 monthly TUs per inch of growth. For the sixth consecutive season, fish were not taken off feed or overfed to attain the average 2-inch size parameter at release. After approximately 4 weeks of feed training, the fry were extended in the raceway, and water temperatures were lowered to emulate natural production in Lake Pend Oreille.

A total of 12,122,367 late kokanee fry were produced at an average length of 1.68 inches and an average weight of 698.3 fish per lb. These fish gained 15,210 lbs from 16,620 lbs of feed, resulting in a conversion rate of 1.09:1.0. Fish production cost was $15.78 per lb, $0.0118 per inch, and $19.81 per thousand.

Survival of green eggs to feeding fry was estimated at 91.9% (2000, 84%). Survival from first feeding to release was estimated at 97.5% (2000, 95.6%), resulting in survival from green egg to release of 89.6% (2000, 80.3%). This was the highest overall survival rate of Lake Pend Oreille kokanee ever recorded in northern Idaho hatcheries.

Fish Marking

To evaluate the success of a kokanee *Oncorhynchus nerka kennerlyi* stocking program in Lake Pend Oreille, an otolith thermal mass-marking (Volk et al. 1990) program was utilized at CGFH. All kokanee fry received a thermally induced otolith pattern. Differential temperature was about 9°F. This resulted in four distinct dark (coldwater) bands, indicative of the BY2000 thermal marking (Tmarking) pattern. These swim-up released fry will be distinguishable from their wild counterparts by examining otolith growth rings for these distinctive bands.

Otolith marking normally occurs between eye-up and button-up stages, but plumbing at CGFH precluded normal procedures due to its inability to accommodate supplying two water sources of different temperatures to the incubating eggs and sac fry. The incubation vessels however, allowed for volitional swim-up of fry into separate rearing raceways that were plumbed to accommodate a Tmarking program. This situation provided the impetus to Tmark fry near the end of button-up.

Analysis of pre-release voucher specimens (Grimm et al. 2000) verified the presence of a recognizable otolith mark on all thermally treated fry. Although there was significant variability in the expression of the Tmark, ambiguous marks could be confirmed by carefully observing incremental patterns at the measured area where the Tmark was expected to occur.

Two factors contributed to the success of the Tmarking and recovery of the Tmarks. The first was the ability to manipulate water sources separately in each raceway without affecting the water in the other raceways. The second was the brief (less than seven days) spread of the egg takes that were done in each raceway. These factors allowed hatchery personnel to thermally treat groups of fry that collectively were at the same developmental stage. That is important because it places the otolith pattern in relatively the same geographic region of the otolith, making examination for, and recovery of the mark, much easier.

Creating and recovering the Tmark for the 1996, 1997, 1998, 1999, and 2000 CGFH kokanee brood was successful. Adjustments to spacing between thermal events will be made to the 2002 brood Tmarking effort to create artificial patterns less similar to natural daily increments patterns.

Trawl surveys in Lake Pend Oreille were conducted during the fall of 2001. Fry were collected from three areas of the lake. A number of the fry collected were sent to the Washington Department of Fish and Wildlife (WDFW) otolith lab for analysis. By examining their otolith (ear stones), they are able to differentiate wild fry from hatchery fry. In addition, all of the adults (except 5+ year-olds) returning in the fall of 2001 will be Tmarked. For the first

time we will be able to determine the true age of the fish and whether it is of hatchery or wild origin. To date, no results have been received from last year's samples or this year's adults.

Fish Liberation

On June 19 and 20, 2001, 8,109,789 late kokanee fry were released into Sullivan Springs. On June 4, 2001, 955,820 late kokanee fry were released into Spring Creek. On June 1, 2001, 1,523,018 late kokanee fry were released from CGFH into the Clark Fork River. Also on June 1, 2001, 1,533,740 late kokanee fry were released into Twin Creek. The Twin Creek site was chosen as a possible future adult trapping location to replace or supplement the erratic adult numbers returning up the fish ladder at CGFH.

Numbers at release were based upon Jensorter counter/sorter inventory numbers at eye-up, minus mortality. All fish were off feed for two full days before inventory pound counts were taken. Pound counts were completed on all raceways one to three days prior to fish being loaded onto the transport vehicles or being released into the Clark Fork River. All raceways of fish were displaced onto the transport trucks during the Sullivan Springs release to double-check inventory numbers. Weight displacements were performed to support current fish inventory numbers on hand at the time of release. Weight displacements were also conducted prior to releasing the fish into the Clark Fork River (at the future hatchery ladder extension site).

The Clark Fork River release groups were liberated from 1030 to 1500 hours. The fish were planted in nine trips utilizing the 1-ton stocking truck from the Sandpoint Fish Hatchery.

The scheduled Sullivan Springs release group was transported in two Department tankers (3,000-gallon capacity). Loading densities of small fish in the tankers were kept below 0.60 lbs per gal. Fish were planted below the bridge on the access road to the Department patrol cabin. Two tankers made four releases during the period of June 19-20, 2001.

Other Species

On January 9, 2002, a total of 72,368 fall Chinook salmon were transferred to Nampa Fish Hatchery. The fish averaged 538 fish per lb and were 1.83 inches in length. The Chinook stock came from Big Creek Hatchery in Astoria, Oregon. Fall Chinook salmon survival of eyed eggs to feeding fry was estimated at 94.3% (2000, 84%). These fish were fed NutraPlus fish feed for 19 days prior to transfer. Survival from first feeding to release was estimated at 98%, resulting in survival from eyed-egg to release of 92.4%. Production costs were negligible as the fry were transferred nineteen days after first feeding (Appendix 1).

On November 6, 2001, 362,764 green fertilized kokanee salmon eggs were received from Flathead Lake Fish Hatchery in Montana. Survival from green egg to eyed-egg was 74.1%. On December 31, 2001 the hatchery had on hand 268,104 eyed-eggs and newly hatched fry. These fish will be stocked in lowland lakes of the Panhandle and Clearwater regions.

On October 10, 2001 the hatchery received 146,070 Westslope cutthroat weighing 810 lbs from American Falls Hatchery, and 104,960 Westslope cutthroat weighing 410 lbs from Grace Hatchery. Later in the month the hatchery received an additional 20,506 Westslope cutthroat weighing 42 lbs from McCall Hatchery. As of December 31, 2001, the hatchery had on hand 268,549 Westslope cutthroat weighing 4,096 lbs and averaging 3.52 inches in length (Appendix 1).

HATCHERY IMPROVEMENTS

Repairs and Improvements

- The seals were replaced on pump #6.
- Disconnects on pumps #7 and #8 were replaced and old transfer switches were removed.
- Large boulders were removed from the hatchery grounds for utilization in fish biologist Chris Downs' local stream rehabilitation projects. The newly cleared ground created additional parking areas for hatchery vehicles and open areas for plowing snow.
- A heavy-duty ¾-ton 4x4 vehicle was acquired as part of the new Department Fleet Management System. This vehicle will be used as a stocking truck for the Sandpoint Hatchery and as a Cabinet Gorge Hatchery plow truck during the winter months. In exchange, an older ½-ton crew cab and a 1-ton pickup were taken to Boise for the state equipment sale.
- A new Kubota tractor equipped with a front loader and an additional snow blower was purchased for use at the Cabinet Gorge facility. The hatchery's older Kubota tractor with loader and snow blower was transferred to Sandpoint Hatchery to replace a breakdown-prone Rhino tractor, which also was taken to Boise for the state equipment sale.
- A pump/generator annual preventative maintenance program was initiated. A local electrician (Bobby Riggins) will check the water supply and electrical back-up system of the hatchery in July at the close of the annual production cycle to spot potential problems before fish and eggs are on station.
- Two new, more efficient propane heaters were installed in the hatchery building.
- Door awnings were constructed and installed over six hatchery building doors
- The hatchery received a new computer from the Information and Technology Bureau.
- The hatchery visitor center display boards were updated and rebuilt.
- Woodsheds were built for both hatchery residences.
- The backyard of the Clark Fork Hatchery Residence #1 was fenced.

- Safety posts were positioned around bulk diesel and propane tanks to provide a safety barricade from vehicular collision and to comply with the state safety inspector's recommendations.

- The hatchery boat received routine maintenance and repairs.

HATCHERY RECOMMENDATIONS

Inadequate amounts of available warm water (50°F) during the production months remains the limiting factor for fish production. Although the upper well field can yield up to 20 cfs, it is too cold during the production cycle. Warmer water from the lower springs must be added to temper the upper well field water. Unfortunately, only 4.4 cfs is available from the lower springs. Modification of existing pumping facilities or drilling additional wells at this location is warranted. The lower springs collect approximately 6 cfs of available water but the means to pump it is unavailable. Additional water at this location is also available for collection. Currently generator #1 backs up a total of 17.2 cfs and a total of 7.2 cfs is backed up by generator #2.

Most of the 64 hatchery raceways are in need of outside concrete wall repairs. In addition, all of the raceways need to be sandblasted (inside and out) and repainted, as their condition is deteriorating rapidly. Increased algae growth in porous walls is becoming more of a problem in kokanee fry rearing in late spring.

Both hatchery residences need metal roofs. The current composite (asphalt shingle) roofs are in need of replacement. Metal roofs are a better choice for this latitude as snow depths routinely exceed ten inches on a daily basis (the maximum recommended snow load for the hatchery houses). Metal roofs will allow the snow to slide off on a regular basis and prevent further roof damage from constant snow shoveling as experienced in the heavy winters of 1996 and 1997.

FISH SPAWNING

Fish Trapping

The Clark Fork River fish trap was in operation from June 21, 2001 to December 15, 2001. The first adult kokanee entered the trap on October 22, 2001 and trapping continued through the middle of December. There were 183 adult kokanee trapped. Trapping records indicated 19% of the spawning run was female (35). From June 21, 2001 to October 22, 2001 the trap was used by Avista Corp personnel to collect and sample bull trout. A total of 29 adult bull trout were trapped, tagged, held, and released. Avista also electro-shocked bull trout that were staged on the spawning beds. Thirty-five adults were trucked around the Cabinet Gorge Dam and released into the mouth of Bull River and other Montana tributaries of the Clark Fork River. These fish were part of a US Fish & Wildlife Service (USFWS) experiment to utilize traditional spawning habitat in Montana, which became inaccessible to the native bull trout stock

when the Cabinet Gorge Dam was completed in 1952. After spawning, three of the out-migrating adults were recaptured and trucked back to the hatchery ladder. Another three adults went through the dam and also returned to the lower Clark Fork River and Pend Oreille Lake watershed.

The Sullivan Springs trap was in operation from October 23, 2001 to December 28, 2001 and collected 56,036 (94,941 in 2000) adult kokanee salmon. Of these, 8,413 (11,345 in 2000) adults were passed above the trap to spawn naturally in Sullivan Springs Creek. Spawn taking records showed that 40.5% (45.7% in 2000) of the run was female (19,299).

The hatchery crew helped install the Wolf Lodge Creek fall chinook trap on August 22, 2001. Few fish were captured and no adults were spawned. The trap weir was removed in late September.

Spawn taking and Eggs Received

No fish were spawned from the Clark Fork River this year. A total of 109 males and 22 females were transported to the main spawning channel of Spring Creek and released to spawn naturally.

A total of 6,796,407 green fertilized kokanee eggs were collected during the 2001-2002 spawning season. These eggs were obtained from 17,759 female kokanee at the Sullivan Springs trap (Appendix 2).

FISH FEED

The fish produced during 2001 were fed a total of 21,225 lbs of feed. Fish feed was acquired from Rangen Inc, except for 100 lbs of enhanced formula feed purchased from Moore-Clarke Inc for fall chinook. The overall conversion was 1.17 pounds of feed to produce 1 pound of fish, not including the weight of mortality (Appendix 1).

PUBLIC RELATIONS

The surrounding communities recognize the CGFH as one of the major contributors of kokanee to the Lake Pend Oreille fishery. The importance of this forage species to the world-class Lake Pend Oreille trophy fishery and the local economy is presently estimated in the millions of dollars. The hatchery has been the focus of many radio, television, and newspaper stories in recent years. With the decline of kokanee numbers, even more attention is focused on the hatchery. Because of the popularity of the lake and its attractions, tourism is a booming business, and we have people from all over the world visiting the hatchery.

A total of 375 people signed our guest registration book this year. An estimated 750 visitors toured the hatchery during the 2000 season. In addition, tours were given to school groups and other organizations.

ACKNOWLEDGMENTS

The CGFH staff would like to thank the Cabinet Gorge Dam and Northern Lights personnel for their continued cooperation with hatchery operations. Thanks also to the Lake Pend Oreille Idaho Club, Bonner County Sportsmen's Association, numerous volunteers, and various Department regional and hatchery personnel for their cooperation during the spawning season. The staff would also like to thank Fish Culturist Mark Olson; CGFH Maintenance Craftsman Dave Heiman; and CGFH Biological Aides Beth Brown, Stacey Taylor, John Suhfras, Corie Kedish, and Steve Lowe for their dedication and hard work in making 2001 a successful year.

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APPENDICES

Appendix 1. Production Summary, All Species, 2001

Species	Number	Pounds	Length	Fish/lb	Feed Fed	Feed Cost[a]	Annual Cost[b]	Cost/lb Of fish	Cost/1,000 Fish	Cost/inch Of fish	Conversion
PdO KL	12,122,367	17,361	1.68	698	16,260	$7,726.64	$240,151.32	$15.78	$19.81	0.0118	1.09
Ore, FC	72,713	95	1.63	765	25	$72.13	$312.68	$10.22	$4.30	0.0026	0.82
WS Cutt.	268,549	4,096	3.52	66	4,580	$1,795.02	$25,000.00	$8.82	$93.09	0.0264	1.62
Totals/Ave.	12,463,629	21,552	1.72	578	21,225	$9,593.79	$265,464.00	$14.68	$21.30	0.0124	1.17

Appendix 2. Lake Pend Oreille kokanee spawn taking summary, 2001

Spawn taking Site	Total Fish	Females Spawned	Green Eggs	Fecundity	Percent Females
Sullivan Springs	56,036	17,759	6.796,407	383	40.5%
Cabinet Gorge	183	0	0	n/a	19.1%
Totals/Ave	**56,219**	**17,759**	**6.796,407**	**383**	**40.4%**

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL RESIDENT REPORT

CLEARWATER FISH HATCHERY

CalLee Davenport, Fish Culturist

INTRODUCTION

The Clearwater Fish Hatchery (CFH) is located in the community of Ahsahka in Clearwater County, ID. Ahsahka is a Native American word meaning, "where two great rivers join", referring to the confluence of the North Fork of the Clearwater River to the main Clearwater River. The hatchery was built by the US Army Corps of Engineers (USACE) under the United States Fish and Wildlife Service (USFWS) Lower Snake River Compensation Plan (LSRCP), and was completed in 1991. Funding is provided by the USFWS. The hatchery is operated by the Idaho Department of Fish and Game (Department).

The primary purpose for CFH is mitigation for anadromous fish losses caused by hydroelectric dams. Anadromous fish production has yet to reach full capacity; therefore, the facility can use excess rearing containers for rainbow trout *Oncorhynchus mykiss* production.

The Department funded the resident trout program with funds to cover the cost of feed and operations, plus salary for two temporary employees for 3.5 months. A total of $22,442.44 was available for feed/operations January 1, 2001 to June 30, 2001 (FY 2000-2001), and $34,400 was allocated to the program on July 1, 2001 (FY 2001-2002). Permanent staff salaries were funded by the LSRCP project.

The hatchery water source is a double pipeline from Dworshak Dam, which can supply over 83 cubic feet per second (cfs) of reservoir water to the facility. Two intakes are located at the dam. The primary intake is adjustable from 5 ft to 50 ft to collect surface water; the secondary intake is about 200 ft below full pool level. This design allows mixing of water to target a specific temperature. About 15% of the rearing capacity was used for rainbow trout (RBT) production.

FISH PRODUCTION

Release Year 2001

Catchable Rainbow Trout

Clearwater Fish Hatchery produced 313,381 catchable-sized rainbow trout, averaging 2.87 fish per pound (fpp), which were transferred/released in 2001 (Appendix 1). Of this total, 53,889 fish were sterile rainbow trout (T9) utilized for all flowing water plants in the region and northern Idaho allocations; 132,302 were Kamloops rainbow trout (K1) for northern Idaho allocations, and 127,190 were Hayspur stock rainbow trout (R9).

Because of fish health concerns regarding the water source at Clark Fork Hatchery, the 2001 catchable rainbow trout allocations for Panhandle Region waters were reared at Clearwater Fish Hatchery. When space was available at Sandpoint and Mullan hatcheries, fish were transferred to them for reallocation (Appendix 1).

Fingerling Rainbow Trout

Eyed eggs were purchased from Troutlodge in Sumner, Washington and were received on June 27, 2001. We ordered 450,000 eggs and received 516,667 eggs. These eggs were purchased at a cost of $11,250 (Appendix 2). Hayspur Hatchery did not have enough sterile Kamloops RBT eggs available to meet the northern Idaho egg request, so eggs were purchased using CFH resident project funds.

Survival from egg receipt to ponding was 95%. Fry were ponded into five rearing vats on July 18, 2001. Higher than normal survival of these fry in early rearing (85% survival, ponding to release) resulted in excess number of fingerlings available for release.

FISH FEED

Catchable Rainbow Trout

A total of 54,909 lbs of feed was fed to rainbow trout in 2001 (Appendix 3). Bulk feed was purchased from Rangen Inc of Buhl, ID at an average cost of $0.26 per lb. Feed conversion for the year was estimated at 1.39. Of the total lbs of feed fed for the year, 16,880 lbs of feed was on hand on January 1, 2001, and 32,420 lbs were purchased during the year with CFH funds. An additional 5,609 lbs of surplus feed were transferred to this project at no cost (leftover steelhead feed from CFH and leftover feed from Dworshak NFH).

Fingerling Rainbow Trout

No feed was purchased for the fingerling rainbow trout program. Leftover Rangen starter feed from Clark Fork Hatchery and leftover steelhead feed from CFH was utilized for the program (Appendix 3).

FISH STOCKED AND TRANSFERRED

Catchable Rainbow Trout

Personnel at CFH stocked 211,413 catchable rainbow trout in streams and reservoirs of the Clearwater Region in 2001 (Appendix 1). These rainbows averaged 2.7 fpp, weighed 78,425 lbs, and averaged 10 inches in length. A total of 100 fish plants were done at 26 different plant sites. Personnel from Clark Fork and Cabinet Gorge hatcheries transferred 101,968 (30,850 lbs/3.31 fpp) fish to Sandpoint and Mullan hatcheries in April, May, and June for redistribution in northern Idaho waters (Appendix 4).

An additional 1,740 rainbow trout reared at Dworshak and Kooskia National Fish hatcheries were stocked into four additional plant sites. These rainbows averaged 1.5 lbs per fish, weighed 2,636 lbs, and averaged 14 inches in length.

A total of 153 adult-size fish, ranging in weight from three lbs to eight lbs, were recovered from the settling pond. The crew supplemented 14 fish stocking trips to nine different sites with these large fish.

High water delayed some of the stream stocking until late-May. High temperatures in August and September prevented stocking in Lewiston's Levee Pond and Powell Pond. A portion of the northern Idaho allocation was reallocated to Clearwater Region sites per Fisheries Bureau and Regional fisheries personnel recommendations. Flexibility in release dates and fish numbers was imperative for successful stocking. This flexibility would not have been possible without the cooperation of regional fisheries biologists, Ed Schriever and Tim Cochnauer.

Fingerling Rainbow Trout

Personnel from CFH along with Clark Fork and Cabinet Gorge Fish Hatchery personnel stocked a total of 416,645 fingerling-sized rainbows. Of this total, 352,699 fingerlings were stocked into four different sites in Panhandle Region waters on September 27, 2001 and from October 17 through October 22, 2001; 63,946 were stocked into Clearwater Region waters on October 16 and 17, 2001. These fingerling rainbows averaged 78.4 fpp, weighed 5,312 lbs, and averaged 3.5 inches in length (Appendix 1).

This year, CFH raised a portion of the fingerling allocations for the Salmon and Clearwater rivers that typically are raised by Lyons Ferry Fish Hatchery in Washington. These fish were raised to 60.7 fpp, fin-clipped, and then distributed. The Salmon River allocations

(49,931 fish) were adipose and left ventral fin-clipped, and released into three different sites in the Salmon River. The Clearwater River allocation (14,015 fish), were left ventral fin-clipped, and released from the Lenore boat ramp on the Clearwater River. Due to fish health problems at Lyons Ferry, they were only able to raise and release approximately 36,000 fingerlings into the Clearwater River.

PUBLIC RELATIONS

Clearwater Hatchery and its satellites were open to visitors during the year. Tours at the main hatchery were given to various groups, including a group of teachers with the Sustainable Forest group. We had visitors from many states, as well as other countries.

1. Brad George, Theresa Elliott, and two summer youth employees assisted Dworshak Hatchery during their annual Open House on June 8.

2. Ron Hopper hauled 300 catchable rainbow (1.31 fpp) and ten trophy-size trout to Orofino Creek near Pierce, ID for their annual 1860 Days Celebration.

SPECIAL PROJECTS

1. A total of 153 adult size fish, ranging in weight from three lbs to eight lbs, were recovered from the settling pond. The crew supplemented 14 fish stocking trips to nine different sites with these large fish.

2. As a stop on the Department's New Employees Tour, CFH hosted the new employees at a barbecue and settling pond trophy fish recovery.

3. The Idaho Department Fish and Game Commission meeting for May was held at CFH on May 18, 2001. The hatchery hosted a barbecue, and meeting attendees participated in settling pond trophy fish recovery.

FISH HEALTH

In general, the fish health of the rainbow trout at CFH was good. We did experience low-level chronic mortality as a result of the temporary high densities in the catchable RBT. Fish did reach higher densities (.54) than usual ($\leq$0.3) in March, at which time we thinned out the fish by beginning fish plants. Fish were monitored monthly by CFH staff for any signs of fish health problems.

Fingerling RBT showed no indications of adverse fish health during rearing. Fish were monitored monthly by CFH staff for any signs of fish health problems.

See Fish Health Section of Resident Rainbow Trout Report for pathology reports from Eagle Fish Health Laboratory.

APPENDICES

Appendix 1. Clearwater Hatchery resident fish production, January 1 - December 31, 2001.

2001 Catchable Rainbow Trout

	Number of Fish	Weight (lbs)
2001 catchable RBT on hand 1/1/01	305,253	69,826
2001 catchable RBT transferred to N. Idaho	101,968	30,850
2001 catchable RBT liberated 1/1-12/31/01 from CFH	211,413	78,425
2001 catchable RBT on hand 12/31/01	0	0
2001 Production sub-total*	313,381	39,449

2001 Fingerling Rainbow Trout

	Number of Fish	Weight (lbs)
2001 fingerling RBT on hand 1/1/01	0	0
2001 fingerling RBT liberated 9/27/01	272,505	2,715
2001 fingerling RBT liberated 10/16/01-10/22/01	144,140	2,597
2001 fingerling RBT on hand 12/31/01	0	0
2001 Production sub-total	416,645	5,312

TOTAL PRODUCTION**

Number of Fish	Weight (lbs)	Feed Fed	Conversion	Cost/per lb	Cost/1000 fish
730,026	44,761	58,944	1.32	$0.44	$26.99

Estimated costs include 50% of the FY-01 and FY-02 budgets and do not include permanent salaries.
Due to egg enumeration and volumetric displacement discrepancies throughout the rearing cycle of the catchable RBT, the number of fish liberated is greater than fish start number.
*****Catchable production subtotal equals weight of fish liberated or transferred in 2001 minus weight on hand 1/1/01.
******Total production equals total catchable rainbow trout, and fingerling rainbow trout liberated/transferred between 1/1 and 12/31/01 minus starting number of fish and weight on 1/1/01.
******Conversion equals total lbs of feed fed divided by total lbs of fish produced, 1/1/01-12/31/01.
******Cost/lb equals total budget divided by total lbs produced, 1/1/01-12/31/01.
******Cost/1000 fish equals total budget divided by total number of fish produced times 1000.

Appendix 2. Rainbow trout budget, January 1 through December 31, 2001. *

Date	Description	Amount
1/1/2001	Beginning 2001 balance	22,442.44
3/6/2001	Fish feed purchase	8,455.13
6/27/2001	Fish egg purchase	11,250.00
6/30/2001	End FY 2000-2001 balance	2,737.31
7/1/2001	Begin FY 2001-2002 balance	34,400.00
12/31/2001	End 2001 balance	34,400.00

*Costs do not include salary/benefits of two 3.5-month temporary employees.

Appendix 3. Fish feed purchased and costs for the Clearwater Hatchery rainbow programs, January 1 through December 31, 2001.

2001 Catchables

DATE	BRAND	FEED TYPE	WEIGHT	COST PER LB	TOTAL
3/6/2001	Rangen	1/8"	32,420	**$0.2608**	**$8,455.13**
		Total Purchased This Year	**32,420**		
1/1/2001	Rangen	1/8"	*16,880	**On hand, 1/1/2001**	
Extra NPT feed	BioOregon	3.0mm	**3,344	**Surplus Feed**	
Extra bulk feed	Rangen	1/8"	***2,265	**Surplus Feed**	
Total Feed Fed This Year			**54,909**		**$8,455.13**

*Feed on hand, 1/1/2001
**3,344 lbs of leftover BioOregon feed (Nez Perce Tribe) was transferred to CFH from Dworshak NFH.
***2,265 lbs of Rangen Exsl 450 bulk fish feed was surplus feed from steelhead rearing.

2001 Fingerlings

Surplus from:	BRAND	FEED TYPE	WEIGHT	COST PER LB	TOTAL
Clark Fork H.	Rangen	Swim up starter	*1,110	**Surplus Feed**	
Clark Fork H.	Rangen	#1 Starter	*928	**Surplus Feed**	
Extra sthd. feed	Rangen	#3 Starter	**1,146	**Surplus Feed**	
Extra sthd. feed	Moore/Clark	#3 Starter	**698	**Surplus Feed**	
Extra sthd. feed	Moore/Clark	1.5mm	**131	**Surplus Feed**	
TOTAL FEED FED			**4,013**		**$0.00**

*Surplus feed transferred to CFH from Clark Fork Hatchery.
**Surplus feed left over from Brood Year 2001 Steelhead program.

Appendix 4. Fish transferred for redistribution to northern Idaho from Clearwater Fish Hatchery, 2001.

SANDPOINT HATCHERY

Date	Fish	Pounds	Fish/pound	Type of fish
4/04/2001	18,000	4,500	4.0	K1
4/17/2001	15,800	3,950	4.0	K1
5/10/2001	12,800	4,000	3.2	K1
5/31/2001	12,400	4,000	3.1	K1
6/18/2001	8,640	3,200	2.7	K1
6/26/2001	3,200	1,000	3.2	K1
Total	**70,840**	**20,650**	**3.43**	

MULLAN HATCHERY

Date	Fish	Pounds	Fish/pound	Type of fish
4/17/2001	11,880	3,600	3.3	K1
4/17/2001	9,600	3,000	3.2	T9
5/31/2001	9,648	3,600	2.68	K1
Total	**31,128**	**10,200**	**3.05**	

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

GRACE FISH HATCHERY

Dwight Aplanalp, Hatchery Manager I
Jarrett Page, Fish Culturist

INTRODUCTION

Grace Fish Hatchery (GFH) is located in Caribou County, ID approximately seven miles south of the community of Grace. The GFH was acquired in 1946 and is owned and operated by the Idaho Department of Fish and Game (Department). Funding is received from revenue generated by fishing license sales.

The mission of GFH is to produce quality catchable and fingerling rainbow trout *Oncorhynchus mykiss* for stocking waters in the Southeast Region. Catchable-size trout (6- to 10-inches) are distributed locally on a put-and-take basis. Fingerling trout (3- to 6-inches) are distributed in area waters as part of various put-grow-and-take management programs. The GFH also produces specialty trout species of various sizes to meet statewide requests.

The GFH is staffed with a Fish Hatchery Manager I, an Assistant Fish Hatchery Manager, and a Fish Culturist. Two temporary employees may be hired to assist with hatchery operations.

Water for the GFH is supplied by gravity flow from the Middle and West Whiskey Creek springs located on private property owned by Robert Harris. Flow was down approximately 539 gallons per minute (gpm) from 2000, with an annual average of 13.8 cubic feet per second (cfs). There is a natural fluctuation in water quantity basically opposite that from run-off and GFH biomass. Flows are at a minimum during May and June and peak in October and November. The GFH biomass is at a maximum in May and at minimum in October. Water temperature is a constant 52^{o}F.

Fish rearing space consists of sixteen (3-ft x 1.5-ft x 13-ft) single pass GFH building vats, sixteen (4-ft x 3.5-ft x 40-ft) single pass small raceways, four (4-ft x 3.5-ft x 100-ft) single pass medium raceways, and two (12-ft x 3.5-ft x 300-ft), eight (5-ft x 3.5-ft x 75-ft), and four (12-ft x 3.5-ft. x 200-ft) large raceways. The water for the large raceways is second-use water from the vats and small raceways that is mixed with fresh water from the middle spring. All water exiting GFH flows through a settling pond before being discharged into Whiskey Creek.

During 2001 the large raceway complex was demolished and replaced with new concrete runs with a somewhat new design. A cleanout line was retrofitted and installed out of the medium raceways. During this construction it was necessary to dry up two large raceways at a time. In order to maintain statewide fish production capabilities, the GFH produced and planted catchable fish from the 5th and 6th large raceways during the time the first four large raceways were being replaced. This enabled the GFH crew to meet and maintain regular fish planting schedules. After the fish plants were completed for the year, the 5th and 6th raceways were replaced.

FISH PRODUCTION

The GFH cultured Westslope strain cutthroat trout (C2), Yellowstone strain Henrys Lake cutthroat trout (C3), Henrys Lake rainbow x cutthroat hybrids (RC), Hayspur strain rainbow trout (R9), sterile Hayspur strain rainbow (T9), Hayspur Kamloops trout (K1), Trout Lodge Kamloops x steelhead (KS), Troutlodge triploid (TT), and lake trout (LT) from Story, Wyoming.

The GFH began the 2001 calendar year with 146,508 fish weighing 23,540 lbs. A total of 251,491 fingerlings at 3,109 lbs were transferred in from two other state hatcheries and reared at GFH. Due to construction and as a result of fish transfers with other hatcheries, the number, lbs, and cost of fish produced and planted reflect only the lbs produced and fish produced and stocked by GFH (Appendices 1 and 3). A total of 1,146,063 fish weighing 59,167 lbs were reared and planted by GFH in BY2001. At the end of the year there were 342,931 fish weighing 25,092 lbs on hand. This accounts for a total production of 1,146,063 fish and 59,167 lbs (Appendices 1 and 3).

GFH received eyed-eggs from various state and private hatcheries in 2001. During BY2001, 1,120,480 eyed-eggs of various species were received (Appendix 2).

Rainbow trout (fingerlings and catchables combined) accounted for 89.5% of the total lbs produced and 88.8% of total cost, or $3.10 per lb. Specialty species account for the remaining 10.5% of the lbs produced and 11.2% of total cost, or $3.32 per lb. Production costs, excluding capital outlay and transport cost, were $184,961 (Appendix 3).

Production costs were calculated for pond-side and streamside amounts. Pond-side cost is total budget minus capitol outlay minus transportation; streamside includes transportation costs (Appendix 4). These are bottom line figures and are not broken out by species.

There were 822,150 fish requested and 804,139 planted for 98% achieved. See Appendix 5 for a breakdown by species.

Catchable Rainbow Trout

During 2001, the GFH continued planting tributaries of the Bear River watershed with sterile or triploid (T9) catchable rainbow trout. Sterile rainbows were stocked to prevent hybridization with the native Bear River cutthroat trout.

The GFH started out this calendar year with 91,420 diploid catchable trout and 46,636 triploid catchable trout. Over the course of the year, 93,773 (35,331 lbs) of diploid catchable trout were planted into area waters along with 43,769 (16,944 lbs) of triploids. The GFH produced 93,773 diploid catchable rainbows weighing 20,461 lbs, and 185,630 triploids weighing 25,164 lbs. On December 31, 141,861 triploid (16,856 lbs) fish remain on-station for future planting. Four different strains of rainbow were planted: Hayspur (R9), sterile Hayspur (T9), Hayspur Kamloops (K1), and Troutlodge Kamloop x steelhead (KS). These fish converted 48,326 lbs of fish food at a rate of 1.06 to produce 45,625 lbs of flesh. The total cost of production was $141,649.

Rainbow Trout Fingerlings

During 2001, 520,589 (7,314 lbs) rainbow trout fingerlings were planted. All were Hayspur strain sterile (T9). At the end of the year there were 15,270 fish (38 lbs) of T9 fingerlings on hand. These fish converted 6,445 lbs of food at a rate of 0.86 to produce 7,318 lbs of flesh. Triploid fingerlings were stocked into Daniels, Treasureton, Twenty-Four Mile, and Blackfoot reservoirs.

Westslope Cutthroat

In 2001 the GFH acquired 320,000 Westslope cutthroat trout *O. clarki ssp. (C2)* eyed-eggs to rear for northern Idaho's Panhandle Region waters. The eggs produced 145,000 3-inch fish at (986 lbs) which were transferred to Cabinet Gorge Hatchery In October.

Bear River Cutthroat

The GFH usually receives Bear River cutthroat trout *O. clarki ssp. (C7)* eggs from Daniels Fish Hatchery in Wyoming; however, fish pathology tests returned positive preventing our acquisition of Bear River cutthroat eggs in 2001. To fulfill annual Bear River cutthroat requests there is a need to explore other options for obtaining disease-free Bear River cutthroat eggs. One option is to develop a brood stock on-station at the GFH.

Lake Trout

Lake trout *Salvelinus namaycush* (LT) eggs were received in December 2000 from Story Fish Hatchery in Wyoming. The lake trout are scheduled to be released into Payette Lake sometime during May 2002. There were 17,739 nine-inch lake trout weighing 3,215 lbs on-station December 31, 2001. This group converted 3,468 lbs of fish food (soft-moist diet) at a rate of 1.08.

In addition to the above lake trout, GFH is involved in the development of a reproductive sterile (triploid) lake trout to be planted into Bear Lake. On October 30, 2001, GFH received the first group of experimental (triploid) lake trout eggs from Egan Hatchery in Utah. On December 4, 2001 a second group was received from Saratoga National Hatchery. Both groups will be tested for triploid induction and cultured at the GFH.

Yellowstone Cutthroat and Rainbow X Cutthroat Hybrids

In October, GFH received 126,044 (1,865 lbs) of three-inch Yellowstone cutthroat trout *O. clarki ssp. (C3),* and 44,370 (900 lbs) of three-inch rainbow x cutthroat hybrids (RC). These fish were transferred to GFH from Mackay Fish Hatchery to hold over-winter due to the low water levels causing concerns that Henrys Lake may not sustain them over-winter.

Repairs and improvements

- Replaced large raceway complex.
- Installed controlling inlet valves to the large raceways.
- Installed a cleaning line on the medium raceways similar to that on the small raceways.

- Insulated half of the 4-stall garage and installed a heater.
- Installed an underground irrigation system in center lawn.
- Replaced domestic water lines and added a pressure tank in Residence #2.
- Replaced old carpet in office and dorm.
- Constructed a new fence on property boundary at Whiskey Creek fishing access site.
- Replaced linoleum in Residences #2 and #3.
- Finished room in basement of Residence #2.
- Painted interior of Residence #2.
- Replaced footbridge at settling pond.
- Used extra concrete from the construction project to build wash pads and parking pads.
- Replaced worn-out snowplow with a new actuating snowplow.
- Replaced a 1990 ¾-ton truck with a new 2001 ¾-ton work truck.
- There was $42,002.27 of capital purchases.

NEEDED RENOVATIONS

- Replace one of the residences.
- Install an auxiliary water supply pipe from the main supply line to the small raceway header to increase flow.
- Replace domestic water lines in Residences #1 and #3.
- Install a new main line from the spring to a head box with new lines going to the vats, small, and medium raceways.
- Install baffles or extend air cleaning to the medium raceways.
- Install an underground irrigation system to all lawns.
- Rewire Residences #2 and #3.
- Improve the visitor's information site.

FISH FEED

Rangen was the only brand of feed fed this year. A total of 56,183 lbs of dry feed was fed at a cost of $14,468. A total of 2,758 lbs of soft-moist feed at a cost of $1,949 was fed to the specialty species (Appendix 6).

PUBLIC RELATIONS

The GFH staff gave several scheduled tours to local area schools as well as numerous informal tours to interested general public visiting the facility. Staff also participated in the Governor's Idaho Corps of Discovery program by providing information and serving as a passport stamp point of service. The GFH staff conducted a Free Fishing Day Clinic at the hatchery. During Free Fishing Day, kids 14 and under, and handicapped individuals were allowed to fish the escapement pond.

ACKNOWLEDGEMENTS

During 2001, the Grace Fish Hatchery crew included: Steve Wingert, Hatchery Manager I, Dwight Aplanalp, Hatchery Manager I, Jarrett Page, Fish Culturist, and Noe Martinez, Biological Aide. Steve Wingert transferred to the American Falls Fish Hatchery in November, and Dwight Aplanalp was promoted from Assistant Hatchery Manager to Hatchery Manager in December.

APPENDICES

Appendix 1. Number and pounds of fish produced, reared, and stocked by Grace Fish Hatchery, 2001

Species/Strain Lot #	Number (lbs) On-hand 01/01/01	Number Reared and Planted (lbs)	Number (lbs) On-hand 12/31/01	Pounds Produced	Conversion
Triploid Rainbow Catchables	46,636 (8,636)	43,769 (16,944)	141,861 (16,856	25,164	1.04
Triploid Rainbow Fingerlings	8,452 34	520,590 (7,314)	15,270 (38)	7,318	0.86
Diploid Rainbow Catchables	91,420 (14,870)	93,773 (35,331)	0 0	20,461	1.09
Lake Trout (LT)	0 0	0 0	17,739 3,225	3,215	1.08
Cutthroat x Rainbow Hybrid Henrys Lake	0 0	0 0	44,146 1,936	1,040	0.6
Yellowstone Cutthroat Henrys Lake	0 0	0 0	123,915 3,037	1,067	0.97
Cutthroat / Westslope Fingerlings	0 0	145,000 (986)	0 0	902	0.93
	146,508	**803,132**	**342,931**		**1.0**
TOTAL	**(23,540)**	**(60,575)**	**(25,092)**	**59,167**	

Appendix 2. Eyed eggs received at Grace Fish Hatchery, 2001

Species/strain	Source	Number Received	Date Received
Sterile rainbow trout (T9)	IDFG Hayspur	256,500	1/2/2001
Sterile rainbow trout (T9)	IDFG Hayspur	19,624	1/9/2001
Sterile rainbow trout (T9)	IDFG Hayspur	46,000	1/16/2001
Sterile rainbow trout (T9)	IDFG Hayspur	70,100	4/2/2001
Sterile rainbow trout (T9)	IDFG Hayspur	80,000	4/24/2001
Westslope cutthroat trout (C2)	WDFW Chelan, WA	200,000	6/12/2001
Westslope cutthroat trout (C2)	Westslope trout CO.	120,000	7/2/2001
Sterile kamloops rainbow (KT)	IDFG Hayspur	20,000	10/29/2001
Experimental Lake Trout (LT)	UDONR Egan, UT	23,663	10/30/2001
Experimental Lake Trout (LT)	USFWS Saratoga, WY	35,876	12/04/2001
Sterile rainbow trout (T9)	IDFG Hayspur	248,717	12/31/2001
TOTAL		**1,120,480**	

Appendix 3. Fish production costs, 2001

Species	Size inches	Number produced	Pounds produced	Production cost	Cost /1,000	Cost/lb
Triploid Rbt. Catchables	10	185,630	25,164	$78,077	$421	$3.10
Triploid Rbt. Fingerlings	3-6	535,860	7,318	$22,665	$42	$3.09
Diploid Rbt. Catchables	10	93,773	20,461	$63,572	$678	$3.11
Lake Trout	10	17,739	3,215	$11,288	$636	$3.51
Westslope Cutthroat	3	145,000	902	$2,961	$20	$3.28
Cutthroat X Rainbow Hyb.	6	44,146	1,040	$3,098	$70	$2.98
Yellowstone Cutthroat	6	123,915	1,067	$3,300	$27	$3.09
TOTAL		**1,146,063**	**59,167**	**$184,961**	**$161**	**$3.12**
Rainbow		815,263	52,943	$164,314	$201	$3.10
Specialty species		330,800	6,224	$20,647	$62	$3.32

Appendix 4. Pond-side and streamside production costs at Grace Fish Hatchery, 2001

Pounds Produced	Pond-side Cost	Pond-side Cost/lb	Streamside Cost	Streamside Cost/lb
59,167	$177,445.66	$3.00	$188,473.75	$3.19

Appendix 5. Fish requested and planted by Grace Fish Hatchery, 2001

Species	Number Requested	Number Planted		Percent Achieved
Catchable rainbow trout	120,200	137,542		114%
(Diploids)	46,700	93,773		200%
(Triploids)	73,500	43,769		60%
Fingerling rainbow trout				
(Triploids)	518,750	520,589		100.4%
Bear Lake cutthroat	3,200	0	(None available)	0%
Bear River cutthroat	2,000	0	(None available)	0%
Fine spotted cutthroat	2,000	1,008		50.4%
Westslope cutthroat*	176,000	145,000*		82.4%
TOTAL	**822,150**	**804,139**		**98%**
*Transferred to Cabinet Gorge Fish Hatchery.				

Appendix 6. Fish food fed and cost, Grace Fish Hatchery, 2001

Source	Diet	Size	Cost/lb	Pounds	Total Cost
Rangens	Dry	00	$0.3753	5.5	$2.06
Rangens	Dry	Starter	$0.3753	877	$329.14
Rangens	Dry	#1	$0.3753	1,496.87	$561.78
Rangens	Dry	#2	$0.3753	2,051.75	$770.02
Rangens	Dry	#3	$0.2557	3,100	$792.67
Rangens	Dry	#4	$0.2557	4,250	$1,086.73
Rangens	Extr. 450 sack	3/32	$0.2544	3,165	$805.18
Rangens	Ext. 450 sack	1/8	$0.2544	4,250	$1,081.20
Rangens	Ext. 450 Bulk	1/8	$0.2444	36,992	$9,040.84
Sub-total				**56,182.63**	**$14,467.55**
Rangens	Medicated	#1	$0.5392	39.90	$21.51
Sub-total				**39.90**	**$21.51**
Rangens	Soft-moist	3/32	$0.7069	308	$217.72
Rangens	Soft-moist	1/8	$0.7069	2,449.70	$1,731.69
Sub-total				**2,757.70**	**$1,949.41**
GRAND TOTAL				**58,980.23**	**$16,438.47**

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

HAGERMAN FISH HATCHERY

Joe Chapman, Fish Hatchery Manager II
Walt Rast, Fish Hatchery Manager I
Kevin Price, Fish Culturist
Bill Stutz, Fish Culturist
Ken Taylor, Transport Operator

INTRODUCTION

Hagerman Fish Hatchery (HFH) is a state-owned resident trout production facility. The HFH raises several strains of rainbow trout *Oncorhynchus mykiss* and various specialty species for statewide distribution. The HFH is the Idaho Department of Fish and Game's (Department) largest resident trout production facility. Built in 1947, it is located approximately 30 miles west of Twin Falls on the Snake River.

Funding is provided primarily through Department license money. The HFH used approximately $538,122 this year: $472,427 from Hagerman's budget, $7,971 from Dworshak mitigation monies, $4,150 from the Bureau of Reclamation (BOR) mitigation for Lake Walcott, and $53,574 from the fish transportation budget, to rear and stock fish in the 2001 production year, not including capital outlay expenditures (Appendix 1).

The HFH is staffed with a Hatchery Manager II (Joe Chapman), Hatchery Manager I (Walt Rast), two Fish Culturists (Kevin Price and Bill Stutz), and a fish transport operator (Ken Taylor). Approximately 19 months of temporary labor is available from the Hagerman budget for use during the year.

The HFH water supply consists of approximately 52 cubic feet per second (cfs) from Tucker Springs during the winter and 47 cfs during the irrigation season. An additional 69 cfs is supplied from Riley Creek, although the quantity and quality fluctuates seasonally. The Tucker Springs water serves the 2,045 cubic feet (cuft) of rearing space in the HFH building, 10,530 cuft of rearing space in the fingerling ponds, and up to 138,000 cuft of rearing space in the large production raceways. Riley Creek water supplies the 165,600 cubic feet of rearing space available in eight additional raceways. The Tucker Springs water is a constant 59^{o}F year-round while Riley Creek fluctuates from 50^{o}F to 67^{o}F annually.

HATCHERY PRODUCTION

During 2001, HFH stocked 2,646,760 fish weighing 366,551 lbs. Of these, 1,093,197 were stocked 6-inches long and longer, and 1,553,563 were stocked smaller than 6-inches long (Appendix 1). In the past, the break between small and large fish was at eight inches. This year, it was switched to six inches. About 50.9% of the total fish stocked occurred in the Magic Valley Region waters (Appendix 2). The majority of the larger trout were Kamloops rainbows from Troutlodge Inc., with the balance from Hayspur Fish Hatchery. Coho salmon comprised about one-third of this group of larger fish. The 4-inch to 6-inch fish consisted of rainbow trout, Kamloops trout, and steelhead (Appendix 1). Many of the original stocking request numbers were eliminated or modified to compensate for water shortages in area reservoirs due to the drought.

Fish transport operator Ken Taylor, logged 22,222 miles delivering fish to state waters, while the rest of the crew logged 15,403 miles. This amounted to a total of 37,625 miles and 270 stocking trips during 2001.

The 366,551 lbs stocked included 313,301 lbs of put-and-take fish averaging 8.73 inches, and 53,250 lbs of fingerlings that averaged 4.24 inches. The cost of planting the average 7.2 fpp (6.8 inches) was approximately $0.97 per lb, or $134.79 per 1,000 fish (Appendix 1).

In addition to the fish reared and planted, 1,727,614 fish (118,659 lbs) were on hand at the HFH on December 31, 2001. These were comprised of 1,187,752 fish (117,364 lbs, average 10.12 fpp, or 6 inches) in the large raceways and 539,862 fingerlings (1,295 lbs, average 417 fpp, or 1.75 inches) in the west raceways. The cost of producing the larger fish was $1.36 per lb or $134.85 per 1,000, and $16.38 per lb or $39.29 per 1,000 for the fingerlings (Appendix 1).

On hand January 1, 2001 were 1,231,262 fish (75,780 lbs). The HFH also received 886,150 fish (6,442 lbs) of fish from other hatcheries. Consequently, these subtractions yielded a net production for 2001 of 2,256,963 fish (402,988 lbs), mortality excluded (Appendix 1).

A total of 9,349,506 eggs and fry were acquired to yield the fish produced. About 2,635,397 eggs were purchased, and the balance was acquired from government sources at no cost (Appendix 4). Of the 8,463,356 eggs received, 4,515,272 were received for the fish planted, and the balance was used for 2001 production. Eggs were sent to Magic Valley Hatchery to alleviate overcrowded conditions here and were then transferred to Hagerman Hatchery when they were about 129.4 fpp (2.6 inches). Because of the success last year, eggs were again shipped to Magic Valley Hatchery for early rearing and will be transferred here in February 2002.

The overall survival rate was 49%, down from 64% survival last year. Some of this difference can be attributed to poorer survival of the triploid eggs. Also, losses to Infectious Hematopoietic Necrosis Virus (IHNV) were higher than the prior year, while treatments for coldwater disease (CWD) decreased (Appendix 3). Historically, mortality from IHNV is significantly higher than losses from CWD.

In addition to the requests from the regions, the HFH crew also made 26 trips to 13 locations to haul and stock 1,110,711 fish weighing 49,012 lbs from other sources (Appendix 7). These included 478,586 excess steelhead from Niagara Springs Hatchery, 132,572 excess rainbow trout from Clear Springs Hatchery; 835 excess male rainbow trout from Pisces Hatchery; 9,496 golden rainbow trout from Idaho Trout Processors; 342 excess trout from the University of Idaho Hagerman Fish Culture Station; 8,172 trout from Hagerman National Hatchery; 7,200 trout from American Falls Hatchery; and 473,508 trout from Grace Hatchery.

FISH FEED

The fish produced during 2001 were fed a total of 416,490 lbs of feed from Rangen Inc and Moore-Clark (Appendix 5). The net weight gained during 2001 was 402,988 lbs, which resulted in an overall conversion of 1.03 lbs of feed to produce one lb of fish, not including the weight of the mortalities (Appendix 5).

HATCHERY IMPROVEMENTS

Numerous HFH improvements were completed this year and are listed below:

- The domestic line under Riley Creek was replaced.
- The interior of the shop was painted.
- Carpeting was installed in the basement of Residence #3, sheetrock was installed, and the walls were painted.
- One-inch mesh plastic bird netting was installed around the perimeter of the raceways.
- Heat pumps were installed in Residences #1 and #2, and in the office.
- A deck was installed on Residence #2.
- New toilets were installed in Residences #1 and #3, and in the visitor's bathroom.
- A lift system was developed for the flowmeter on Riley Creek.
- A snow-blade was constructed for the loader on the John Deere tractor.
- A new roof was installed on the shop building.
- Air lines on the large raceways were replaced.
- The Quonset hut was modified to allow parking for the fish truck.
- Motion sensor lights were installed at the Riley Creek intake, shop, and show pond for security purposes.
- A new gas and diesel fuel tank was installed at the shop, and the bulk heating oil tank for the shop furnace was moved outside.

PUBLIC RELATIONS

The HFH received a large number of visitors and sportsmen throughout the year. An estimated 25,000 visitors toured the facility and used the surrounding public grounds this year. The 37 acres of HFH property is surrounded by 880 acres of the Hagerman Wildlife Management Area (WMA). The WMA provides a large variety of outdoor experiences, including fishing and hunting, wildlife viewing, and family picnic uses.

Hatchery personnel were called upon to give numerous school tours during the spring and fall, and several talks were presented to regional personnel and civic groups. The hatchery

also had a display at the Gooding County Fair. The hatchery sponsored a Free Fishing Day clinic here for about 400 participants. The Magic Valley Bassmasters, Hagerman Boy Scouts, Hagerman National Hatchery personnel, and personnel from the Department assisted. Pepsi, Falls Brand Meats, SouthBend Sporting Goods, Eagle Claw, Wal-Mart, and Trader Jack's Sporting Goods in Hagerman contributed to the event.

Again this year, a monthly article was contributed to the Hagerman newspaper, the "Fish Wrap", to keep local anglers informed about fishing hot spots, tips, and miscellaneous fishing adventures.

Also this year, the "Trout in the Classroom" program continued at Hagerman Elementary School for fifth-graders. Three lessons were given which included delivery of eggs, habitat needs, spawning, and fish anatomy.

FISH TAGGING OPERATIONS

The HFH crew participated in two tagging operations during the year in which fish were marked (Appendix 6). About 36,654 ad-clipped catchables were stocked into Blackfoot Reservoir in the fall. The purpose of the clipping was to determine the difference in return-to-creel between catchable and fingerling stocking.

ACKNOWLEDGMENTS

Thanks to the permanent HFH staff of Walt Rast, Kevin Price, and Bill Stutz; to transport operator Ken Taylor; and to temporaries Larry Miller, Warden Hawkins, and Kelly and Andrea Buhler.

Regional fisheries and enforcement personnel Fred Partridge, Doug Megargle, Richard Holman, and Gary Hompland also deserve our gratitude. Thanks also to Niagara Springs and Magic Valley hatcheries personnel for their cooperation this year.

APPENDICES

Appendix 1. Costs of fish produced at Hagerman Fish Hatchery 2001. Costs reflect all costs budgeted except capital outlay, and include $53,574 of the fish transportation budget.

Species/Strain	Length/ Inches	Number Produced	Weight/ Pounds	Cost to produce and plant	Cost/ 1,000
FISH ON HAND JANUARY 1, 2001					
Kamloops rainbow trout (KM, Hayspur)	1.74	263,963	622		
Kamloops rainbow trout (TT,Troutlodge)	5.74	472,286	40,217		
Kamloops rainbow trout (KM, Hayspur)	7.12	66,243	10,772		
Kamloops rainbow trout (KM, Hayspur)	9.90	30,191	12,580		
Kamloops rainbow trout (KT, Hayspur)	1.70	325,785	724		
Rainbow trout (T9, Hayspur)	6.90	72,794	10,865		
Totals	**5.15**	**1,231,262**	**75,780**		
FISH PLANTED					
Hayspur rainbow trout (T9)	9.72	46,506	17,964	$10,191.59	$219.15
Kamloops rainbow trout (TL,TT)	10.00	459,946	192,326	$103,698.75	$225.46
Kamloops rainbow trout, (KT)	6.38	55,580	6,500	$7,994.77	$143.84
Kamloops rainbow trout, (KM)	**8.82**	**171,455**	**53,011**	**$34,094.58**	**$198.85**
Coho salmon (OR)	**6.70**	**359,710**	**43,500**	**$54,336.79**	**$151.06**
Subtotals	**8.73**	**1,093,197**	**313,301**	**$210,316.48**	**$192.39**
Hayspur rainbow trout (T9)	4.44	588,610	23,250	$58,921.97	$100.10
Hayspur rainbow trout (R9)	4.00	58,395	1,700	$5,266.26	$90.18
Kamloops rainbow trout (KT)	4.35	706,680	26,175	$69,307.26	$98.07
Steelhead (SA)	2.87	199,878	2,125	$12,933.42	$64.71
Subtotals Average	**4.24**	**1,553,563**	**53,250**	**$146,428.91**	**$94.25**
Total Planted Average	**6.8**	**2,646,760**	**366,551**	**$356,745.39**	**$134.79**
FISH ON HAND DECEMBER 31, 2001					
Hayspur rainbow trout (T9)	9.0	46,530	15,009	$9,441.53	$202.91
Kamloops rainbow trout (TL, TT)	5.9	1,026,996	94,458	$136,611.55	$133.02
Steelhead (Saw)	5.48	114,226	7,897	$14,112.77	$123.55
Hayspur rainbow trout (T9)	1.44	59,326	79	$1,926.08	$32.47
Kamloops rainbow trout (KT, Hayspur)	1.78	480,536	1,216	$19,284.69	$40.13
Totals		1,727,614	118,659	181,376.61	$104.99
TOTAL FISH PRODUCED					
Planted in 2001		2,646,761	366,551		
On Hand December 31, 2001		1,727,614	118,659		
Totals		**4,374,375**	**485,210**	**$538,122.00**	**$123.02**
From other hatcheries		886,150	6,442		
On Hand January 1, 2001		1,231,262	75,780		
Total gained		**2,256,963**	**402,988**		

Appendix 2. Fish distribution from Hagerman Fish Hatchery, 2001.

Percent of number planted by Region									
	Number	**Pounds**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Catchables >6 inches									
Hayspur rainbow trout (T9)	46,506	17,964	-	-	13.1	80.0	6.9	-	-
Kamloops rainbow trout (TT)	459,946	192,326	-	-	39.2	29.9	25.7	5.2	-
Kamloops rainbow trout (KT)	55,580	6,500	-	-	34.7	-	65.2	-	-
Hayspur Kamloops rbt (KM)	171,455	53,011	-	-	5.8	56.3	37.9		
Coho Salmon	359,710	43,500	-	-	100.	-	-	-	-
Subtotal	**1,093,198**	**313,301**	-	-	**52.6**	**24.8**	**20.4**	**2.2**	-
Fingerlings <6 inches									
Hayspur rainbow trout (R9)	58,395	1,700	-	-	-	100	-	-	-
Kamloops rainbow trout (KT)	706,680	26,175	-	-	31.9	38.4	23.7	6.0	-
Rainbow trout (T9)	588,610	23,250	-	-	3.0	44.4	24.9	27.7	-
Steelhead	199,878	2125	-	-	-	100.0	-	-	-
Subtotal	**1,553,563**	**53,250**	**0.0**	**0.0**	**15.6**	**50.9**	**20.2**	**13.3**	**0.0**
TOTAL	**2,646,761**	**366,551**	**0.0**	**0.0**	**30.9**	**40.1**	**20.3**	**8.7**	**0.0**

Appendix 3. Fish survival from eyed-egg to stocking, 2001.

Species/Strain	Number Stocked	Eggs and Fry Received	Percent Survival
Rainbow trout, Hayspur (R1)	58,395	71,000	82.25
Rainbow trout, Hayspur (T9)	635,116	979,658	64.83
Kamloops, Hayspur (KM)	171,455	360,416	47.57
Kamloops, Troutlodge (TT)	459,946	1,031,835	44.58
Kamloops, Hayspur (KT)	762,260	2,044,105	37.30
Steelhead (SA)	199,878	249,848	80.00
Coho Salmon (WA.)	359,710	664,560	54.13
TOTAL	**2,646,760**	**5,401,422**	**49.00**

Appendix 4. Number of eyed-eggs and fry received, species, and source for fish produced in 2001.

	Eggs/Fry received		
Species/Strain	**For Fish**	**For fish on hand**	
	Planted	**December 31, 2001**	**Source**
Received as eggs			
Rainbow/Kamloops (KM)	360,416	0	Troutlodge, WA
Rainbow/Kamloops (KT)	1,533,105	1,221,818	IDFG Hayspur
Rainbow/Hayspur (T9)	675,508	269,775	IDFG Hayspur
Rainbow/sterile Troutlodge (TT)	1,031,835	1,603,562	Troutlodge, WA
Steelhead	249,848	142,929	IDFG Hayspur
Coho	664,560	710,000	Eagle Creek Hatchery
			Wash. Dept. of Wildlife
Subtotal eggs	**4,515,272**	**3,948,084**	
Received as fry			
Rainbow/R9 from Magic Valley (T9)	304,150	-	IDFG Hayspur
Kamloops (Hayspur)from Magic Valley (KT)	511,000	-	IDFG Hayspur
Rainbow/R1 from Hayspur	71,000	-	IDFG Hayspur
Subtotal fry	**886,150**		
TOTAL	**5,401,422**	**3,948,084**	

Appendix 5. Fish feed used during Brood Year 2001 at Hagerman Fish Hatchery.

Size	Source	Pounds	Cost/pound	Cost
Str	Rangen	600	$0.37	$220.50
#1	Rangen	3,950	$0.37	$1,451.63
#1 TM	Rangen	50	$0.54	$26.85
#2	Rangen	27,200	$0.37	$9,996.00
#2 TM	Rangen	200	$0.54	$107.30
#3	Rangen	51,300	$0.25	$12,717.27
#3 TM	Rangen	900	$0.54	$482.85
Str. Soft moist	Rangen	88	$1.00	$87.96
1/32 soft moist	Rangen	704	$0.93	$657.25
3/64 soft moist	Rangen	308	$0.90	$277.82
3/32 in, EXT450Float	Rangen	100,040	$0.24	$23,669.46
3/32 in, TM	Rangen	3,050	$0.46	$1,396.29
5/32 in, EXT450Float	Rangen	210,610	$0.24	$49,830.33
5/32 in, TM	Rangen	4,000	$0.46	$1,831.20
5/32 in, Romet 30	Rangen	2,050	$0.74	$1,530.74
Subtotal		**405,050**	**$0.26**	**$104,283.45**
#0	Moore-Clark	440	$0.92	$404.80
#1	Moore-Clark	220	$0.91	$200.20
#1 proActive	Moore-Clark	704	$0.98	$689.92
#2	Moore-Clark	528	$0.86	$454.08
1.2 proActive	Moore-Clark	1,892	$0.68	$1,286.56
1.5	Moore-Clark	1,672	$0.47	$785.84
1.5 Trout AB	Moore-Clark	1,144	$0.44	$503.36
2.0 Trout AB	Moore-Clark	792	$0.40	$316.80
2.5 Trout AB proActive	Moore-Clark	4,048	$0.39	$1,578.72
Subtotal		**11,440**	**$0.54**	**$6,220.28**
TOTAL		**416,490**	**$0.27**	**$110,503.73**

Appendix 6. Summary of fish marked at Hagerman Fish Hatchery in 2001.

Date Stocked	Species	Water	Number	Pounds	Clip
14-May	TT	Blackfoot Reservoir	18,290	6,200	Adipose
05-Oct	TT	Blackfoot Reservoir	14,525	7,000	Adipose
09-Oct	TT	Blackfoot Reservoir	3,839	1,850	Adipose
TOTALS			**36,654**	**15,050**	

Appendix 7. Fish stocked by Hagerman Hatchery from other sources, 2001

Date	Species	Number	Pounds	Length	Source	Destination
12-Oct-01	SA	62,613	810	3.3	Niagara Springs	Salmon Falls Crk. Res.
16-Oct-01	SA	331,013	4,550	3.4	Niagara Springs	American Falls Res.
24-Oct-01	SA	84,960	1,600	3.8	Niagara Springs	Snake R.-Bell Rapids
		478,586	**6,960**			
04-Jan-01	R4	104	416	21.0	Pisces Hatchery	Balanced Rock Park
04-Jan-01	R4	65	260	21.0	Pisces Hatchery	Frank Oster #3
04-Jan-01	R4	160	640	21.0	Pisces Hatchery	Dierkes Lake
04-Jan-01	R4	206	824	21.0	Pisces Hatchery	Riley Creek Pond
19-Dec-01	R1	300	1,300	21.7	Pisces Hatchery	Snake R.-Bell Rapids
		835	**3,440**			
26-Jun-01	R1	280	400	15.0	Golden Rainbows from ITP	Riley Creek Pond
26-Jun-01	R1	350	500	15.0	Golden Rainbows from ITP	Frank Oster #1
07-Jun-01	R4	1,003	1,700	16.0	Golden Rainbows from ITP	Frank Oster #1
07-Jun-01	R4	472	800	16.0	Golden Rainbows from ITP	Riley Creek Pond
07-Jun-01	R4	1,560	3,000	16.5	Golden Rainbows from ITP	Riley Creek Pond
07-Jun-01	R4	260	500	16.5	Golden Rainbows from ITP	Frank Oster #2
07-Jun-01	R4	364	700	16.5	Golden Rainbows from ITP	Frank Oster #3
07-Jun-01	R4	364	700	16.5	Golden Rainbows from ITP	Frank Oster #4
07-Jun-01	R4	104	200	16.5	Golden Rainbows from ITP	Riley Creek Pond
19-Jun-01	R1	1,404	1,800	14.5	Golden Rainbows from ITP	Frank Oster #1
19-Jun-01	R1	702	900	14.5	Golden Rainbows from ITP	Riley Creek Pond
19-Jun-01	R1	234	300	14.5	Golden Rainbows from ITP	Frank Oster #3
19-Jun-01	R1	268	400	15.1	Golden Rainbows from ITP	Balanced Rock Park
19-Jun-01	R1	871	1,300	15.1	Golden Rainbows from ITP	Dierkes Lake
26-Jun-01	R1	1,260	1,800	15.0	Golden Rainbows from ITP	Emerald Lake
TOTALS		**9,496**	**15,000**			

Appendix 7. Continued

Date	Species	Number	Pounds	Length	Source	Destination
17-Oct-01	R1	13,582	614	4.7	Clear Springs	Snake R.-Centennial Park
31-Oct-01	R1	13,941	450	4.2	Clear Springs	Dog Creek Res.
05-Nov-01	R1	40,077	4,700	6.4	Clear Springs	Snake R.-Bell Rapids
11-Nov-01	R1	19,872	900	4.6	Clear Springs	Snake R.-Centennial Park
16-Nov-01	R1	28,300	1,000	4.3	Clear Springs	Salmon Falls Crk. Res.
08-Nov-01	R1	16,800	800	4.7	Clear Springs	Blair Trail Res.
		132,572	**8,464**			
30-Oct-01	R1	42	168	21.0	Hagerman Fish Culture Station	Dierkes Lake
19-Dec-01	R1	300	1,300	21.7	Hagerman Fish Culture Station	Riley Creek Pond
		342	**1,468**			
31-May-01	RA	**8,172**	**1,135**	6.8	Hagerman National Hatchery	C.J. Strike Res.
30-Apr-01	T9	462,364	**4,900**	**3.0**	Grace Hatchery	Blackfoot Res.
01-May-01	R1	11,144	**3,980**	**10.0**	Grace Hatchery	Twin Lakes
		473,508	**8,880**			
11-Sep-01	TT	**7,200**	**4,800**	**12.0**	American Falls Hatchery	Ashton Hatchery
TOTALS		**1,110,711**	**49,012**			

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

HAYSPUR FISH HATCHERY

Bob Esselman, Fish Hatchery Manager II
Roger Elmore, Assistant Fish Hatchery Manager
Russ Wood, Fish Culturist

INTRODUCTION

Hayspur Fish Hatchery (HSFH) is a license-funded resident salmonid broodstock facility. The mission of the HSFH is production of eyed eggs that are made sterile or triploid by heat shocking technique. Two captive rainbow trout *Oncorhynchus mykiss* broodstocks and one Westslope cutthroat *O. clarki lewisi* broodstock are maintained on-station. These are the Hayspur strain, Kamloops strain, and Westslope cutthroat trout strain from Conner Lake, British Columbia, Canada. The personnel of HSFH maintain an on-site public campground, a general season pond fishery, and a trophy stream fishery.

The HSFH is located in Blaine County, approximately 40 miles south of Sun Valley on Loving Creek. The HSFH property is an odd-shaped 105.12-acre parcel. Fish culture facilities include an incubation building, vertical incubator stacks, isolation incubators, and egg picking apparatus. The HSFH has 20 early rearing tanks; 12 covered 24-ft circular ponds, 6 small raceways, and 6 large production raceways.

Water sources include the covered Hayspur spring that supplies 3.0 to 5.5 cubic feet per second (cfs) at 52^{o}F, three pumped artesian wells producing 5 cfs at 48^{o}F to 52^{o}F, and 7.4 cfs to 18 cfs of Loving Creek water at 33^{o}F to 73^{o}F. The spring and well water are both considered specific pathogen free (SPF) water supplies.

Three permanent employees (Fish Hatchery Manager II, Assistant Fish Hatchery Manager, and Fish Culturist) plus 16 months of temporary biological aide time are assigned to the HSFH.

RAINBOW AND KAMLOOPS EYED EGG PRODUCTION

The 2001 spawning season was a ten-month project, beginning in September and ending in June, with an egg take of 15,060,832 green eggs from 4,039 females during the year (Appendix 1). Photoperiod manipulation, or light control, has expanded "normal" spawn timing to more closely match egg production with eyed-egg requests. Only 3-year-old and older rainbows and Kamloops were manipulated. We have found that 2-year-olds respond poorly to photoperiod manipulation. Hayspur rainbow trout diploid eyed-egg production totaled 210,290; triploid eyed-egg production totaled 3,845,775. Kamloops triploid eyed-egg production totaled 4,812,873. American Falls, Ashton, Grace, Hagerman, Mackay, Magic Valley, McCall, and Nampa hatcheries were shipped eggs per their requests. Magic Valley Fish Hatchery received trout eggs destined for Hagerman. Excess eggs were stocked into the Big Wood River. Value to the Idaho Department of Fish and Game (Department), at the current contract price of $15.00/1,000 for regular eggs and $25.00/1,000 for sterile eggs, equates to $3,155 and $216,466, respectively (Appendix 2).

In 2001, almost all eggs produced were heat shocked and made sterile. This is the first year of full production using the heat shock method refined during the previous four years of research. Washington State University performed induction rate sampling on eight randomly selected lots of eggs. After the eggs had hatched and fish reached approximately three inches in length, blood samples were sent to the lab. A total of 239 individuals were sampled. Sample results indicated that 230 out of 239 were verified as being triploid. The overall induction rate was 96.2%.

Representatives from the Oregon Department of Fish and Wildlife (ODFW) and from the Colville Indian Tribe in Washington came to observe our heat shocking technique.

RE-DISTRIBUTION OF CATCHABLES

Fish requested for the Big and Little Wood drainages were reared at Nampa Fish Hatchery and American Falls Hatchery, hauled to HSFH, and stocked by HSFH personnel. Semi-tank and trailer loads were hauled as needed to complete our requests. A total of 39 stocking trips into 11 different bodies of water were stocked with 51,054 catchable-sized rainbow trout (Appendix 3).

FISH FEED

Rangen Inc provided the 1/4-inch brood feed. This food was ordered with 150-g/ton canthaxathin red additive to enhance egg color and other possible health benefits. Rangen Inc was the source of early rearing feeds, the food for catchables, and for replacement broodstock feeds. Moore-Clark fish feed was fed to the Westslope cutthroat trout on a recommendation from Peter Brown at the Kootenay Trout Hatchery, Ft. Steele, British Columbia (Appendix 4).

HATCHERY IMPROVEMENTS AND NEEDS

Improvements to the HSFH during 2001 included:

- A new four-wheel drive pickup replaced an eleven-year-old two-wheel drive pickup.
- A new furnace was installed for the office and crew quarters and a heater was put in the workshop.
- All campground picnic tables were belt-sanded and a fresh coat of stain was applied. Stabilizers were attached to the legs of the tables to prevent them from tipping over.
- Residence #1 had an oven, entryway door, and some electrical wiring replaced.
- Three headbox covers on the round ponds were replaced.
- An area approximately 120-ft x 30-ft located next to the round ponds was bladed off, covered with dirt, and planted with grass and trees.
- Items purchased included new fire extinguishers, a weighing scale for sample counts, an ice-making machine, and a combination copier/fax/scanner/printer.
- The hatchery operations manual was re-written to bring it up to date and include triploid induction techniques.

- The telephone modem, A-drive, and CD-ROM drive in the hatchery computer were all replaced.

Needs of the HSFH, listed in order of priority, are:

- Build an extension to the crew quarters to accommodate more people and provide housing for both genders.
- Replace open headbox in the hatchery building with a pipe and valves.
- Replace bird and mammal exclosure on the small raceways.
- Replace the roof on Residence #1.
- Construct a small building to house all spawning equipment and waders.
- Replace all degassing towers and media.

BROODSTOCK MANAGEMENT

The Hayspur rainbow trout (R9) broodstock replacement population is being perpetuated by using year-class crosses. Using one male with one female, crosses were made with 200 pairs of fish. These adult fish were either sacrificed for disease analysis or adipose clipped. Marked fish are used for production egg lots, but not used again for development of a replacement population.

Hayspur's Kamloops (K1) broodstock replacement population in 2001 is being perpetuated by using 4-year-old females crossed with 2-year-old males. Using one male with one female, crosses were made with 130 pairs of fish. These adult fish were either sacrificed for disease analysis or adipose clipped. Marked fish are used for production egg lots, but not used again for development of a replacement population.

Isolation incubators are used to separate individual families. Eggs are culled upon positive results from virology or bacteriological lab testing of the parental adult fish. The trend is very encouraging in that numbers of culled families continue to be low. In 2001, all families tested negative.

Westslope cutthroat eyed eggs from Conner Lake, British Columbia were obtained from the Kootenay Trout Hatchery on July 6, 2000. These fish will be the start of an adfluvial broodstock to provide fry for the high mountain lake program. At the end of 2001, the cutthroats were 18 months old and averaged 7.5 inches in length.

Cutthroat eggs will be available in even years from Conner Lake. Four more groups will be obtained to provide a reasonable amount of genetic material from the Conner Lake population.

PUBLIC RELATIONS

Many people used the Hayspur campground as well as the popular fishing pond Gaver Lagoon during the spring and summer period. The HSFH campground benefited from the efforts of volunteer Camp Hosts Ken and Blondy Robbins who volunteered time to answer questions, give directions, clarify regulations, tidy outhouses, clean up litter, provide fishing tips, and generally enhance the image of the Department.

Hayspur campground hosted the annual meeting of the Blaine County Resource Conservation and Development chapter. Organizations attending included: Idaho Department of Water Resources, US Forest Service, BLM, Wood River Land Trust, Department of Environmental Quality, Blaine County Recreation District, and local ranchers. A tour of the hatchery, Loving Creek, and area land and water management projects highlighted the meeting.

Tours were provided for area schools. Bellevue Elementary, Burley Elementary, Hailey Elementary, and Hemingway School (Ketchum), were exposed to the life cycle of trout, shown a spawning demonstration, followed by a question and answer period.

The following schools received eyed eggs: Naples, Wood River Middle School, Fairfield High School, and Boise School District. Some of the resultant fry were stocked into Adopt-A-Stream projects. Salmon region biologists used ripe adults for spawning demonstrations and anatomy lessons at Challis High School, Leadore, and Brooklyn Elementary.

MISCELLANEOUS

The HSFH personnel assisted Magic Valley regional staff with fish salvage operations on the Big Wood River and Richfield Canal and assisted with electroshocking of Stalker Creek, a tributary to Silver Creek. In addition, HSFH staff helped construct buck and rail fence for riparian protection along Silver Creek.

Manager Bob Esselman attended the NWFCC and gave a presentation on triploid induction techniques used at Hayspur. Bob also attended the annual hatchery managers meeting. All permanent staff went to ISTS.

Sperm from Kamloop trout were pooled, three males per bag, and used at Henrys Lake to generate hybrids via delayed fertilization. Also, some green Kamloop eggs were sent to be fertilized by Henrys Lake cutthroat males as an experiment.

The hatchery received notification from the US Environmental Protection Agency (EPA) that under the current low level of production, the hatchery is not required to have a permit from EPA to discharge to the receiving water. The hatchery is considered a "nonpoint source" of pollution and will have to comply with any provisions of the load allocation provided by the Idaho Department of Environmental Quality (IDEQ) to aquaculture facilities producing less than 20,000 pounds in the Big Wood Subbasin.

Hayspur Hatchery experimented with the use of hormone pellets to accelerate the reproductive readiness of males. Specifically, gonadotropin-releasing hormones (GnRHa) were implanted in 50 males seven to ten days prior to spawning. Prior to the implants none of the males were producing sperm. After implantation, 40 males could be used for spawning. Hayspur staff found this to be an especially helpful tool when there is a lack of males available for spawning purposes and hope to pursue this in the future.

ACKNOWLEDGMENTS

In 2001, Hayspur Fish Hatchery benefited from the capable assistance of biological aides Jeff Williams, Wade Johnson, Jed Lauters, DeAnna Byington, and Mike Zahradka. The HSFH would like to thank Wade Symons, Kurt Schilling, Steve Kammeyer, Joe Kozfkay, Jono Wilson, and Jakob Shull for helping out during the spawning season.

APPENDICES

Appendix 1. Egg production summary of Hayspur Fish Hatchery, 2001.

Species	[a]Eggs Taken	Eggs Shipped
Kamloops rainbow trout	0	0
Hayspur rainbow trout	212,814	210,290
T9s (R9s 3N)	5,728,915	3,845,775
KTs (K1s 3N)	8,993,373	4,812,873
Broodstock replacement	125,730	0
Totals	**15,060,832**	**8,868,938**

[a]Total is displaced (volumetric) of both good and bad eggs taken in 2001.

Appendix 2. Eyed egg shipment summary from Hayspur Fish Hatchery, 2001.

Hatchery	[a]Species	Total eggs shipped	[b]Estimated value
American Falls	T9	131,000	$3,275.00
			$0.00
Ashton	T9	200,000	$5,000.00
			$0.00
Grace	T9	650,959	$16,273.98
	KT	90,100	$2,252.50
			$0.00
Hagerman	T9	937,813	$23,445.33
	KT	2,098,018	$52,450.45
			$0.00
Mackay	T9	150,910	$3,772.75
Magic Valley	T9	509,000	$12,725.00
	KT	743,000	$18,575.00
McCall	T9	37,255	$931.38
	KT	92,001	$2,300.03
	R9	185,282	$2,779.23
			$0.00
Nampa	T9	891,923	$22,298.08
	KT	1,067,765	$26,694.13
Big Wood River	T9	316,000	$7,900.00
	KT	632,146	$15,803.65
	R9	25,008	$375.12
[c]Other	T9	20,915	$522.88
	KT	89,843	$2,246.08
Totals		**8,868,938**	**$219,621**

[a]R9=Hayspur rainbow trout, K1=Kamloops rainbow trout, T9=sterile R9, KT=sterile Kamloops

[b]At contract value of $15.00/1,000 eggs, and $25.00/1,000 sterile eggs.

[c]Eggs used for trout in the classroom programs, exchanged for laboratory work, out of state hatcheries, and research purposes.

Appendix 3. Hayspur Fish Hatchery stocking summary, 2001.

Fish size	Number of fish	Pounds of fish
Catchables	51,054	19,412
Total	**51,054**	**19,412**

Appendix 4. Hayspur Fish Hatchery Feed Summary, 2001.

		Rangen	
Date	**Size**	**Amount /pounds**	**Cost**
2/14/2001	1/4 in. Brood pellet	11,640	$3,064.81
4/27/2001	1/4 in. Brood pellet	12,560	$3,307.05
6/28/2001	1/4 in. Brood pellet	12,300	$3,238.59
9/25/2001	1/4 in. Brood pellet	13,920	$3,665.13
Total		**50,420**	**$13,275.58**

		Rangen		
Date	**Size**	**Amount /pounds**		**Cost**
1/4/2001	Extruded 450 floating 3/16	800	$	197.28
	Trout/Salmon starter #2	50	$	18.38
1/16/2001	Trout/Salmon starter #1	50	$	18.38
	Idaho #3 Grower	100	$	24.79
1/29/2001	Extruded 450 floating 3/16	850	$	209.61
2/12/2001	Trout/Salmon starter #2	50	$	18.38
2/14/2001	Extruded 450 floating 3/16	600	$	147.96
3/8/2001	Extruded 450 floating 1/16	50	$	17.96
	Idaho #3 Grower	50	$	12.40
3/30/2001	Extruded 450 floating 1/16	50	$	17.96
4/13/2001	Extruded 450 floating 5/32	500	$	123.30
4/27/2001	Extruded 450 floating 3/32	150	$	36.99
	Extruded 450 floating 1/8	50	$	12.33
5/11/2001	Extruded 450 floating 5/32	600	$	147.96
	Extruded 450 floating 3/32	150	$	36.99
	Extruded 450 floating 1/16	50	$	17.96
5/31/2001	Extruded 450 floating 5/32	700	$	172.62
6/26/2001	Extruded 450 floating 5/32	300	$	73.98
	Extruded 450 floating 1/8	150	$	36.99
	Extruded 450 floating 3/32	100	$	24.66
7/23/2001	Extruded 450 floating 5/32	150	$	36.99
	Extruded 450 floating 1/8	250	$	61.65
8/13/2001	Extruded 450 floating 5/32	500	$	123.30
	Extruded 450 floating 1/8	100	$	24.66
9/25/2001	Extruded 450 floating 5/32	350	$	86.31
	Extruded 450 floating 3/16	150	$	36.99
11/13/2001	Extruded 450 floating 3/16	400	$	98.64
	Trout/Salmon starter #1	50	$	18.38
	Trout/Salmon starter #2	50	$	18.38

Appendix 4. Continued

11/19/2001	TM Medicated 5/32	100	$	45.78
12/6/2001	Extruded 450 floating 3/16	500	$	123.30
Totals		**8,000**	**$**	**2,041.26**

		Moore Clark		
Date	**Size**	**Amount /pounds**		**Cost**
4/6/2001	Nutra Fry 1.5	44	$	25.58
4/6/2001	Nutra Fry 2.0	44	$	24.64
7/5/2001	Nutra Fry 3.5	88	$	46.64
10/11/2001	Nutra Fry 3.5	44	$	23.32
Totals		**220**	**$**	**120.18**

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

MACKAY FISH HATCHERY

Phil Coonts, Fish Hatchery Manager I
Robert Hoover, Assistant Fish Hatchery Manager
Douglas Young, Fish Culturist

INTRODUCTION

The Mackay Fish Hatchery (MFH) is a specialty fish production facility located approximately 16 miles north of Mackay, in Custer County, ID. The hatchery produces salmonids of various species and strains, from 1-inch to 16-inches in length, for statewide distribution. Funding was obtained under contract from the Dingall-Johnson Act for wages for part of the year and from state license monies for fish feed, operational costs, and wages the rest of the year.

The hatchery has three full-time and two part-time employees. The part-time employees share 16 months of temporary time. Wages, including benefits, cost $150,500 for the permanent employees and $30,796 for the temporary employees. The operating budget for the calendar year January through December 2000, was $51,000. Included in the year's production were 21 lots of fish, comprised of 6 species and 15 different strains.

Rainbow trout *Oncorhynchus mykiss*
- Arlee (Ennis NFH, MT) 3 year-classes
- Eagle Lake (Ennis NFH, MT)
- Fish Lake (Ennis NFH, MT)
- Hayspur steriles (Hayspur SFH) (2 year-classes)
- Kamloops (Troutlodge, WA)

Cutthroat trout *O. clarki*
- Henrys Lake (Henrys Lk. SFH)
- Yellowstone (Jackson NFH, WY) 3 year-classes

Rainbow x Cutthroat trout hybrids
- Henrys Lake cutthroat females x Hayspur SFH rainbow males

Kokanee salmon *O. nerka kennerlyi*
- Early (Deadwood Res) 2 year-classes
- Early (Payette Lk)
- Early (New Fork, WY)
- Early (Strawberry Res, UT)
- October (Blue Mesa, CO)
- October (Flathead Lk, MT)

Grayling *Thymallus arcticus*

WATER SUPPLY

Water for hatchery production is provided by three collection springs in an artesian area at the hatchery. The area was fenced off, dug out, and then filled with cobblestones. The water volume available for hatchery production remained consistent with previous years. Flows ranged from 18 to 24 cubic feet per second (cfs). Lowest flows occurred during February, while highest flows occurred during July. Since the 1983 earthquake, temperatures have varied between the three different springs supplying the hatchery: one at 50°F, one at 51°F, and one at 54°F. Incubation temperature is 51°F.

HATCHERY IMPROVEMENTS

Some of the improvements made around the hatchery include:

- A new roof was installed on the storage barn.
- Shade covers were installed over the headrace screens.
- Sunshade cover hold-downs were designed and construction was started.
- The leak in the tail of small raceway #8 was found and repaired.
- The ladder to the tank of the GMC was modified to allow easier and safer access.
- Repairs were continued on the large raceway walls during the extended fall weather.

HATCHERY NEEDS

- Residence #3 needs new siding, windows, and roofing installed. It also needs a new garage built.
- Residence #2 needs the garage either rebuilt or improved and also needs new siding installed.
- A fish-proof screen needs to be installed at the exit of the large raceway tailrace to keep feral fish out of the tailrace.
- A cement pad should be installed in front of the shop in order to perform vehicle maintenance work.

FISH STOCKED

Fingerlings of various species and strains were stocked in seven regions of the state (Appendix 1). These put-grow-and-take fish numbered 3,014,032 fish and weighed 42,498 lbs.

Catchable rainbow trout (10+ inches) were stocked in the Upper Snake and Salmon regions. These put-and-take fish numbered 90,838 and weighed 57,021 lbs. Catchable Yellowstone cutthroat, numbering 1,430 fish and weighing 1,000 lbs were planted into Region 7.

The hatchery also reared 16,000 cutthroat, 7,800 sterile rainbow, and 6,000 grayling fry for planting into forty-five high mountain lakes in Regions 4 and 6. Four-wheelers, pack-stock, and foot travel were used to plant these fish.

The fish transport trucks assigned to MFH made 83 separate fish stocking trips during the year, planting 28 different waters and traveling 24,400 miles. Transport tankers assigned to Nampa Fish Hatchery hauled eight trucks of fish to six different waters for the hatchery during the year.

FISH FEED

A total of 116,360 lbs of fish feed was used during the year at a cost of $34,480. Feed conversion averaged 1.04 lbs of feed fed for every lb of fish produced. Conversions ranged from a high of 1.4 for the 99 C4s to a low of 0.86 for the 01 Arlee rainbows. Naturally occurring foods supplement hatchery foods, enabling the low conversions to occur. Average feed cost per lb of fish produced was $0.348. Feed cost of each fingerling produced was $0.0035 and $0.23 for each catchable.

Rangen dry feeds were used exclusively throughout the year. Fish health and performance showed no ill effects from the Rangen brand. All feed sizes and amounts used are shown in Appendix 3.

FISH MARKING

Of the 973,400 cutthroats planted into Henrys Lake, 100,350 were adipose fin-clipped prior to stocking. This clipping is a never-ending study of natural vs. hatchery fish returning to the creel and ladder.

PUBLIC RELATIONS

Approximately 800 people toured the hatchery during the year. Most visitors come to fish in the diversion pond below the hatchery. Scheduled tours were given to Mackay and Arco elementary classes, Boy Scout troops, and FFA groups. The hatchery is assisting Mackay High School in an aquaculture program. The hatchery crew and the local conservation officer participated in Idaho's "Adopt-A-Highway" litter control program. Six miles of Highway 93 along Mackay Reservoir are cleaned bi-annually. The hatchery became a “Passport Stamping Station” in the tourism promotion program.

ACKNOWLEDGEMENTS

At various times during 2000, the Mackay Hatchery crew included Bio-Aides Bob Evans, Jaquoy Vadnais, and Carren Morgan. Without their excellent assistance, we could not have accomplished all that we did during the year. Their care and concern enabled the hatchery to produce the quality of fish we do. Doug Young, Fish Culturist, Mick Hoover, Assistant Hatchery Manager, and Phil Coonts, Hatchery Manager, round out the hatchery's personnel.

APPENDICES

Appendix 1. Fish Production at Mackay Fish Hatchery, January 1 to December 31, 2001.

Species/strain	Lot	Source	Received as	Fish Number Received or Carried Into 01	Pounds Received or Carried Into 01	Number Planted	Pounds Planted	Destination
Arlee rainbow trout	9-EN-RA	Ennis NFH	eyed eggs	760	1,500	745	1,517	01 catchables
Arlee rainbow trout	0-EN-RA	Ennis NFH	eyed eggs	111,679	53,569	90,093	55,504	01 catchables
Arlee rainbow trout	1-EN-RA	Ennis NFH	eyed eggs	159,700	eggs	0	0	02 catchables
Hayspur rainbow sterile	1-R9-T9	Hayspur SFH	eyed eggs	34,700	eggs	0	0	02 catchables
Hayspur rainbow sterile	2-R9-T9	Hayspur SFH	eyed eggs	143,922	eggs	0	0	03 catchables
Kamloops rainbow	01-WA-K1	TroutlodgeWA	eyed eggs	19,517	eggs	7,800	7.5	01 mtn lk
Fish Lake rainbow	01-RF	Ennis NFH	eyed eggs	96,200	eggs	70,000	1,217	01 fingerlings
Eagle Lake rainbow	01-R7	Ennis NFH	eyed eggs	319,744	eggs	176,744	3,073	01 fingerlings
Meadow Lk grayling	01-WY-GR	Ashton SFH	eyed eggs	7,500	1.0	6,000	5	01 mtn lk
Henry's Lk cutthroat	01-ID-C3	Henry's Lk H	eyed eggs	1,341,422	eggs	977,625 126,577 16,000	7,732 1,800 15	01 fingerlings Grace SFH 01 mtn lk
Rainbow/cutthroat hybrid sterile	01-ID-RC	Henry's Lk H Hayspur H.	eyed eggs	368,100	eggs	145,360 49,300	1,700 1,000	01 Henry's Lk Grace SFH
Yellowstone cutthroat	99-C4	Jackson NFH	eyed eggs	1,493	743	1,430	1,000	01 catchables
Yellowstone cutthroat	00-C4	Jackson NFH	eyed eggs	13,032	121	10,000	1,250	01 fingerlings
Yellowstone cutthroat	01-C4	Jackson NFH	eyed eggs	50,000	eggs	0	0	03 catchables
Deadwood Kokanee	00-ID-KE	Deadwood	green eggs	848,761	fry	549,304	8,307	01 fingerlings
Strawberry Res Kokanee	00-UT-KE	Strawberry Res	green and eyed eggs	1,100,000	eggs	831,749	9,462	01 fingerlings
Blue Mesa Kokanee	00-CO-KO	Roaring Judy, CO	eyed eggs	300,000	fry	263,250	2,025	01 fingerlings
Deadwood Kokanee	01-ID-KE	Deadwood	green eggs	549,539	fry	0	0	02 fingerlings
Payette Lk Kokanee	01-ID-KE	Payette Lk	green eggs	770,845	fry	0	0	02 fingerlings
New Fork Kokanee	02-WY-KE	Dubois, WY	eyed eggs	185,105	eggs	0	0	02 fingerlings
Flathead Lk Kokanee	02-MT-KE	Somers SFH	eyed eggs	626,256	eggs	0	0	02 fingerlings

Appendix 2. Mackay Fish Hatchery Stocking Summary, 2001

Lot Number	# Planted	Pounds Planted	Size Planted
99-EN-RA	745	1,517	Catchable
00-EN-RA	90,093	55,504	Catchable
99-C4	1,430	1,000	Catchable
00-C4	10,000	1,250	Fingerling
01-RF	70,000	1,217	Fingerling
01-R7	176,744	3,073	Fingerling
01-C3	977,625	7,732	Fingerling
01-C3	16,000	15	Mtn lk fry
01-RC	145,360	1,700	Fingerling
01-K1	7,800	7.5	Mtn lk fry
01-GR	6,000	4.7	Mtn lk fry
00-ID-KE	539,304	8,307	Fingerling
00-UT-KE	831,749	9,462	Fingerling
00-CO-KO	263,250	2,025	Fingerling

Total Fish Planted

	Numbers	Pounds
High Mtn. Fry	29,800	27
Fingerlings	3,014,032	42,498
Total catchables	92,268	58,021
Rainbow	90,838	57,021
Cutthroat	1,430	1,000
Totals	**3,228,368**	**158,567**

TOTAL POUNDS FISH PRODUCED, YEAR 2001

Pounds Fish Planted	92,814
Pounds on Hand, 12/31/01	48,186
Pounds Transferred	2,870
Pounds Produced, 2001	143,870
Minus Pounds on Hand, 1/1/01	41,870
Net Pounds Produced, 2001	102,000

Appendix 3. Mackay Fish Hatchery Feed Used January 1, 2000 through December 31, 2000

	Pounds Used		Feed Cost
Rangen Fish Feeds			
00 swim-up	50		21
0 swim-up	1,100		451
# 1	5,650		2,314
# 2	13,500		5,530
# 3	3,300		874
Extruded 450 Pellets			
Ext 1/16	10,750		4,000
Ext 3/32	11,500		2,985
Ext 5/32	70,510		18,305
Total Pounds	**116,360**	**Total Cost**	**$ 34,480**

Appendix 4. Fish Transferred To Grace SFH

Lot	Number	Pounds
01-C3	126,577	1,870
01-RC	49,300	1,000

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

MCCALL FISH HATCHERY

Steven T. Kammeyer, Assistant Fish Hatchery Manager

INTRODUCTION

McCall Summer Chinook Fish Hatchery (MFH) is located within the city limits of McCall, approximately ¼-mile downstream of Payette Lake, adjacent to the North Fork of the Payette River. The MFH facility underwent a complete renovation by the US Army Corps of Engineers (USACE) in 1979. The primary goal for this facility is to produce one million summer chinook salmon *Oncorhynchus tshawytscha* smolts annually. Anadromous funding is provided through the Lower Snake River Compensation Program (LSRCP). Secondary hatchery objectives pertain to resident programs. Funding for the resident fisheries program (April 1 to September 30) is provided through Idaho Department of Fish and Game (Department) license sales revenue.

Gravity flow from Payette Lake provides all of MFH water needs. Two water intakes are available which provide limited water temperature control through mixing. The surface intake is located at Lardo Dam at the outlet of Payette Lake. The subsurface intake extends approximately ¼-mile into Payette Lake at a depth of 50 feet. A 2-foot diameter constriction in the 3-foot diameter mainline limits maximum flow capacity to 20 cubic feet per second (cfs).

Incubation capacity consists of 26 eight-tray Heath-style incubation stacks. Additional incubators may be plumbed into six of the early rearing vats if more incubation space is required. Rearing of resident fry is accomplished utilizing several of the 14 indoor vats. Each early rearing vat is 40-ft x 4-ft. Outside rearing space consists of two concrete ponds 196-ft x 101-ft x 4-ft, which are used exclusively for rearing summer chinook salmon. Outdoor ponds are joined to a common collection basin (101-ft x 15-ft x 4-ft) that is used to hold catchable-size rainbow trout for redistribution in the summer.

Major resident program objectives:

- Hatch and rear Westslope cutthroat trout *O. Clarki lewisi*, domestic Kamloop rainbow trout *O. Mykiss*, golden trout *O. Aquabonita* and rear grayling *Thymallus arcticus* fry for stocking into high mountain lakes in Regions 1, 2, 3B, 3M.

- Redistribute up to 80,000 catchable-size rainbow trout.

- Maintain and provide technical assistance for Payette Lake net pens.

- Maintain the statewide high mountain lakes stocking request database.

- Provide assistance to McCall sub-Regional personnel as needed and available.

FISH PRODUCTION

High Mountain Lake Stocking

A total of 202 lakes were stocked with 187,920 fry in 2001 (Appendix 1). Of these, 199 lakes were stocked using fixed-winged aircraft at a cost of $7,440 in flight time. To meet requests, a total of 15 flights were flown during the period August 8 to September 14, 2001. One flight was aborted in progress, due to adverse wind conditions that made low altitude flight unsafe. The average cost in flight time to stock a mountain lake in 2001 was $37.39 and ranged from $28.33 to $71.11 for individual regions. Volunteers stocked three lakes in the McCall area, saving the Department approximately $75.00 in comparable flight time. Mountain lake requests were met in 2001 with extra grayling and golden trout being provided to Regions 3M, 6, and 7. Feed cost for resident fry reared at McCall Hatchery totaled $232.57 (Appendix 2).

Beginning September 14th, Westslope cutthroat obtained from the Westslope Cutthroat Trout Company were fed a 10-day medicated feed treatment of Oxytetracycline. Fish pathologist Douglas Burton had confirmed these fish were infected with bacterial coldwater disease (*Flexibacter psychrophilum*). The treatment was effective and the elevated mortalities experienced had subsided by its end. No other groups of resident fry were affected by this outbreak of coldwater disease.

On October 17, 2001 Westslope cutthroat trout that had been treated were transferred to Cabinet Gorge Hatchery. Numbering 20,850 these fry were in excess of the mountain lake stocking needs.

Catchable Trout Redistribution

From May 15 to September 18, 2001 a total of 82,030 sterile Trout Lodge rainbow trout triploids were stocked into 37 water bodies in the McCall vicinity. These fish were reared at Nampa Hatchery and then transferred to McCall Hatchery. Transport costs to bring fish from Nampa Hatchery totaled $4,274. Hatchery personnel drove approximately 3,050 miles on 73 stocking trips to complete requests at an approximate cost of $2,806. Combined transport distribution cost was $86.31 for each 1,000 fish stocked.

Hatchery personnel assisted in the collection of 517 smallmouth bass captured in Hells Canyon by Trout Unlimited members and McCall sub-Regional fishery biologists. These fish were transported and released into Little Payette Lake to generate more diversity for sport anglers.

Fish Lake Brood Stock

Fish Lake is located approximately seven miles west of McCall on Little Creek, a tributary to the Little Salmon River. The satellite facility consists of two 6-ft x 22-ft x 4-ft concrete holding ponds, a 4-ft x 12-ft x 4-ft fish trap, and a velocity barrier.

This was the last year for operation of the Fish Lake trap. Fishery management personnel have attributed poor water quality factors and elevated water temperatures during the summer as the primary causes of the continuing decline and effective collapse of this population. Fish Lake was opened for sport angling, with no special restrictions, on January 1, 2002. This lake will be managed for the harvest of put-and-take rainbow trout and will be stocked as part of the MFH catchable trout redistribution program.

Trapping of Westslope cutthroat trout occurred from April 6 to May 10, 2001. During this period a total of 144 Westslope cutthroat trout were collected. Of these, 81 (56.3%) were males and 63 (43.7%) were females. Average total lengths for males and females collected were 352 mm and 322.7 mm, respectively.

McCall sub-Regional fisheries management requested spawning operations be conducted to provide for a third year-class of Fish Lake Westslope cutthroat fry to be outplanted into Brundage Reservoir. To meet this request, a total of 40 females were spawned, producing a green egg take of 35,160 eggs (Appendix 3). Average fecundity was 879 eggs per female with an eye-up of 90.8%.

Fish Lake was stocked with 2,000 catchable rainbow trout (TT) on September 18, 2001. Also stocked were excess Hayspur strain rainbow trout not needed for a mountain lake research study. These included 3,170 diploid R9 (ad-clipped with green grit) and 1,630 triploid T9 (ad-clipped with red grit).

Payette Lake Net Pens

Rainbow trout rearing in the Payette Lake net pens did not occur in 2001. Shifting ice on April 23 snapped several lake pilings and damaged the dock leading out into the lake. Budget constraints prevented McCall city officials from making needed repairs that would allow for net pen placement.

Special Projects

A portion of the mountain lake stocking program was completed in support of a draft proposal outlined by Nampa Research staff for "Evaluating the Performance of Sterile Rainbow Trout in High Mountain Lakes." This project ultimately called for stocking 16 lakes with paired groups of 300 diploid and 300 triploid Hayspur strain rainbow trout (of equal size), ad-clipped and then differentially grit marked for future identification. Using a fluorescent grit dye mark necessitated producing fish much larger then typically stocked. As a result, a maximum of four test lakes could be flown on any given flight. Following the completion of flights, 150 fish from each group were transferred to the Eagle Fish Health Wet Lab for continued monitoring and subsequent triploid analysis.

Hatchery/ Program Improvements

In order to meet standards outlined in the Department low altitude flight policy the following items were obtained to ensure compliance during mountain lake stocking flights including:

- Satellite phone, external antennae and hand set for ground communications.
- Two orange Nomex flight suits.
- Two personal emergency locator beacons.
- An improved lightweight survival kit.

Nampa Research provided MFH with a Garmin 12 XL GPS unit that proved to be a helpful aid in the identification of mountain lakes.

Public Relations

McCall Fish Hatchery staff assisted members of Trout Unlimited and Department biologists in the collection and transfer of smallmouth bass collected in Hells Canyon Reservoir to Little Payette Lake. Assistance was provided to an Eagle Scout candidate who organized the stocking of three mountain lakes in the McCall area by his scout troop. Numerous hatchery tours were given to visitors and to several school groups.

ACKNOWLEDGEMENTS

Resident program tasks during a record adult salmon return year in 2001 would not have been possible without the support and cooperation of the entire staff at McCall Summer Chinook Hatchery. I wish to thank Gene McPherson, MFH Fish Manager II, for his advice and assistance on various resident projects, as well as for generously allowing anadromous-funded personnel to work on resident projects. Individuals assisting on resident endeavors at MFH in 2001 included: Joel Patterson (MFH Fish Culturist) and seasonal employees Jerry Harris, Chris Schneider, Nathan Parker, Rick Gorsline, Bud Forsythe, Jeff Thurston, and Gary Duke.

APPENDICES

Appendix 1. Species stocked out by region as part of the high mountain lake program, 2001.

	Panhandle	Clearwater	Southwest Nampa – 3B	Southwest McCall – 3M	Upper Snake	Salmon	Species Subtotal
Arctic Grayling (Mdw Lake, WY)	9,500		1,500	10,965	1,000	4,600	27,565
Golden Trout (Mt Whitney, CA)	2,100		1,000	300	1,200	4,115	8,715
Kamloop Triploid (Hayspur – KT)	9,130						9,130
Rainbow Triploid (Hayspur – T9)	8,370	2,000	5,750	10,322		2,500	28,942
Rainbow Triploid (Hayspur – T9)[a]			1,500	3,700	600		5,800
Rainbow Diploid (Hayspur - R9)[a]			1,500	2,868	600	3,100	8,068
Westslope Cutthroat (Fish Lake)		2,500	500	16,750			19,750
Westslope Cutthroat (Trout Company)	22,700	16,500	35,000	5,750			79,950
Region Subtotal	51,800	21,000	46,750	50,655	3,400	14,315	187,920
Total Lakes Stocked	19	23	65	60	6	29	202
Approximate Cost Per Lake Stocked[b]	$68.42	$28.33	$30.07	$29.21[c]	$71.11	$49.72	$37.39[c]

[a] Segregated fry primarily for a research project.
[b] Costs partitioned on individual flights; total flight costs were $7,440.
[c] Calculations do not include three lakes stocked by volunteers in McCall sub-region.

Appendix 2. Feed usage and conversion data, McCall Fish Hatchery, 2001.

	Number Stocked/ Transferred	Feed Used (lbs)	Weight Gained (lbs)	Conversion	Cost per Lb Gain	Cost per 1,000 fish	Total Feed Cost
Arctic Grayling (Mdw Lake, WY)	27,565	15.1	14.36	1.05	$ 1.10	$ 0.58	$ 15.86
Golden Trout (Mt Whitney, CA)	8,715	2.7	1.08	2.50	$ 2.63	$ 0.33	$ 2.84
Kamloop Triploid (Hayspur – KT)	9,130	5.6	4.75	1.18	$ 1.24	$ 0.64	$ 5.88
Rainbow Triploid (Hayspur – T9)	28,942	11.6	9.51	1.22	$ 1.28	$ 0.42	$ 12.18
Rainbow Triploid (Hayspur – T9)[a]	7,580	54.8	43.99	1.25	$ 1.31	$ 7.59	$ 57.54
Rainbow Diploid (Hayspur - R9)[a]	11,388	72.6	60.80	1.19	$ 1.25	$ 6.69	$ 76.23
Westslope Cutthroat (Fish Lake)	26,635	31.6	27.82	1.14	$ 1.19	$ 1.25	$ 33.18
Westslope Cutthroat (W C Trout Co.)	100,800	26.9	25.03	1.07	$ 1.15	$ 0.29	$ 28.86
Total	220,755	220.9	187.34	1.18	$ 1.24	$ 1.05	$232.57

Appendix 3. Westslope cutthroat trout spawn take results, Fish Lake, 2001.

Females Spawned	Green Eggs Taken	Percent Eye-up	Eyed Eggs Available	Average Fecundity
40	35,160	90.8	31,930	879.0

Appendix 4. Total production and distribution at McCall Fish Hatchery, 2001.

Species	Eyed eggs/ Fish Received	Fish Stocked Out	Pounds Gained	Cost per Pound Gained	Cost per 1,000 fish Stocked/ produced
High Mountain Lake Fry Redistribution					
Arctic Grayling (Mdw Lake, WY)	29,100 fry	27,565	14.36		
Golden Trout (Mt Whitney, CA)	10,150 eyed	8,715	1.08		
Kamloop Triploid (Hayspur – KT)	96,730 green	9,130	4.75		
Rainbow Triploid (Hayspur – T9)	63,925 green 15,000 eyed (3 Lots)	28,942	9.51		
Rainbow Triploid (Hayspur – T9)	14,900 eyed	5,800	31.83		
Rainbow Diploid (Hayspur – R9)	17,500 eyed	8,068	38.43		
Westslope Cutthroat (Fish Lake)	35,160 green	19,750[a]	15.35		
Westslope Cutthroat (W C Trout Co.)	125,000 eyed	79,950	9.63		
Subtotal	N/a	187,920[a]	124.94	$ 59.55	$ 39.59
Note: Cost based on flight time expenses of $7,440. [a] Includes 2,000 fry stocked into 3 lakes by volunteers.					
Additional Fry Redistribution/ Transfers					
Rainbow Triploid (Hayspur - T9)	Included in Mountain Lake Program Above	1,780	12.16	$ 8.63	$ 58.99 [a]
Rainbow Diploid (Hayspur - R9)		3,320	22.37	$ 4.69	$ 31.63 [a]
Westslope Cutthroat (Fish Lake)		6,885	12.47	$ 1.60	$ 2.90 [b]
Westslope Cutthroat (W C Trout Co.)		20,850	15.40	$ 24.68	$ 18.22 [c]
Subtotal		32,835	62.40	$ 9.78	$ 18.58
Note: Cost based on approximate transport mileage expense [a] $105, [b] $20, [c] $380.					
Catchable Size Redistributions					
Smallmouth Bass (Hells Canyon)	517	517			$493.23[a]
Rainbow Triploid (Trout Lodge – TT)	85,490	82,030			$ 86.31[b]
Subtotal	86,007	82,547			$ 88.86
Note: [a] Cost based on transport expense of $255. [b] Cost based on transport expense of $7,080 (McCall Hatchery $2,806; Nampa Hatchery $4,274).					
TOTAL	**N/A**	**303,302**	**187.34**	**$ 422.55**	**$ 260.99**
Note: Cost calculated using FY01 Resident budget of $79,160.					

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

MULLAN FISH HATCHERY

Mary Van Broeke, Bio-Aide

INTRODUCTION

The Mullan Fish Hatchery (MUFH) is a resident species redistribution station located four miles east of Mullan, ID. The Shoshone County Sportsmen's Association owns the MUFH, and Shoshone County provides funds to maintain the physical plant. The Idaho Department of Fish and Game (Department) provides funds for personnel costs, production costs, and equipment from fishing and hunting license fee revenue. The manager at Cabinet Gorge Fish Hatchery supervises operations and provides additional labor and equipment if needed. There is one temporary employee on station year-round.

The hatchery receives water from the South Fork of the Coeur d'Alene River and the LNF of the Cd'A River. Two 6-ft x 65-ft concrete raceways, one 12-ft x 65-ft concrete raceway, and three 30-ft x 100-ft dirt ponds, are used to hold fish prior to stocking into the Coeur d'Alene and St. Joe river drainages. One of the dirt ponds has been developed as a show pond complete with a visitor's access deck, information board, and a feed dispenser.

The Mullan facility plays a vital role in supporting the put-and-take rainbow trout *Oncorhynchus mykiss* fishery. From this location, daily trips are made from May to September to the Coeur d'Alene and St. Joe rivers providing the frequent stocking service needed to support such a fishery. The close proximity to a Shoshone County park encourages the highest visitor attendance rate of any hatchery in the Panhandle Region.

In 2001, MUFH personnel were also involved with the Kokanee spawning operation at Granite Creek and the fall Chinook trapping at Wolf Lodge Creek.

HATCHERY IMPROVEMENTS

Hatchery improvements during 2001 included:

- Installation of a new septic system.
- The Shoshone County work crew helped unplug the main water line that supplies the raceways and vats in the hatchery.
- Main outlet screens were replaced in Ponds #2 and #3.
- The domestic reservoir was drained and silt was removed. The intake screen was also replaced.

FISH STOCKED OR TRANSFERRED

A total of 49,352 rainbow trout (9-inches long) were released into the waters of the Coeur d'Alene, St. Joe, and St. Maries river drainages from May to September to support a put-and-take fishery. All stocking sites with free flowing water received sterile rainbow trout. Trout were released from the MUFH as follows: 21,201 K1s and 9,114 T9s from the Clearwater Hatchery, 9,638 KTs from the Nampa Hatchery, and 9,399 TTs from American Falls Hatchery.

Hatchery personnel loaded the fish into a 500-gallon pickup truck-mounted tank and delivered them to hundreds of miles of stream, and numerous lakes and ponds. The distribution schedule requires 8-hour to 10-hour trips, four or five days each week during the summer season. While lake stocking is usually accomplished with single large releases, river stocking is much more labor intensive. Even relatively small numbers of fish require multiple stops to distribute the fish effectively for sportsmen's access.

PUBLIC RELATIONS

The MUFH is located adjacent to a popular Shoshone County "day-use" park. As a direct result, the hatchery receives a much higher visitor level than would be expected in this remote location. The hatchery serves the highest number of visitors of any hatchery in the Panhandle Region, with over 12,000 people touring the grounds in 2001. The hatchery also hosted the Chrysler/Jeep Jamboree and the Silver Valley Good Samaritan RV rally. People from across the nation attended these functions. Many groups of local school children also toured the hatchery.

The hatchery maintains a covered visitor information center that has a map of stocking areas and information about the special harvest regulations in the Coeur d'Alene River and St. Joe River drainage.

On June 9, one of the dirt rearing ponds at the hatchery was stocked with rainbow trout to provide fishing for a Free Fishing Day clinic. Personnel from the Panhandle Region and the Shoshone County Sportsmen's Association provided training and advice to more than 100 participants that day, with every angler catching their two-fish limit of rainbow trout. The location is particularly beneficial in providing access for persons with limited mobility. As usual, the Fishing Clinic received good reviews in the local newspaper and boosted the Department's image in the Silver Valley.

SPECIAL PROJECTS

Water Quality Studies

For the sixth and final year, the MUFH assisted in a rearing and survival assessment for Westslope cutthroat trout *O. clarki lewisi* and rainbow trout in South Fork Coeur d'Alene River waters. This work is part of a major research project evaluating toxicity and water quality degradation following mining activity in the Silver Valley. Personnel from Environmental Services for Industry and Government (EVS) conducted the study. Fish for the study were obtained from wild, adult cutthroat caught by local sportsman from the Coeur d'Alene River. The fish were spawned, the eggs were incubated, and the resulting fry were used in the study. The study was completed in the summer of 2001.

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

NAMPA FISH HATCHERY

Rick Alsager, Fish Hatchery Manager II
Dan Baker, Assistant Fish Hatchery Manager
Bob Turik, Fish Culturist

INTRODUCTION

Nampa Fish Hatchery (NFH) is a resident trout rearing facility located one mile south of Nampa. Water for the NFH is supplied by eight pump-assisted artesian wells. A maximum flow of 40 cubic feet per second (cfs) of 59^{o}F water is available for fish production. Built in 1975 and purchased by the Idaho Department of Fish and Game (Department) in 1982, fish rearing facilities consist of a hatchery building/dorm containing 4 early rearing vats and a feed storage room. Outside rearing tanks include 16 fry raceways, 3 fingerling/broodstock raceways, and 10 production raceways. Sixteen upwelling incubators are available for use in the fry raceways for eyed-egg incubation. A settling pond treats flows from the production units before discharge into Wilson Springs Ponds and Wilson Springs Drain.

FISH PRODUCTION

The NFH produced 1,952,130 fish weighing 256,948 lbs during the 2001 fish year. Fish transferred to other hatcheries are included in the total number and lbs produced. Kamloops and rainbow trout *Oncorhynchus mykiss* comprised 89.8% of the fish stocked or transferred from NFH. In addition, Lahontan cutthroat trout *O. clarki henshawi* were produced at NFH during 2001 (Appendix 1). Another 1,000 fish weighing 100 lbs were produced at NFH and given to schools for dissection and to department personnel for various research programs. These fish were not included in overall production numbers.

The total number of fry (Appendix 2), fingerlings (Appendix 3), and catchables (Appendix 4) stocked or transferred by NFH are listed by species/strain in each table. A total of 3,694,759 eyed-eggs were received during the 2001 fish year (Appendix 5).

FISH STOCKED/TRANSFERRED

The NFH personnel stocked or transferred 1,791,994 fish weighing 262,973.25 lbs, during the 2001 fish year. A total of 346 stocking trips were made by NFH during 2001.

A total of 261,667 catchable trout (83,820 lbs) were transferred to other hatcheries throughout the state (Appendix 4). No broodstock fish were reared at NFH during the 2001 season.

FISH TRANSPORTATION

Fish transport operators stationed at NFH stocked waters in all regions throughout the state of Idaho and transferred fish to and from 20 different state and national fish hatcheries. Channel catfish *Ictalurus punctatus* fingerlings were purchased from Fish Breeders of Idaho; a private hatchery located near Buhl, Idaho. These fingerlings were stocked in the Panhandle Region (2,250 fish, 500 lbs). The transport operators stationed at NFH made 125 trips totaling 54,000 miles during 2001.

The NFH transport operators stocked rainbow trout fingerlings from Lyons Ferry Fish Hatchery (189,391 fish, 3,398 lbs) into Clearwater Region waters. They also stocked chinook salmon and B-run steelhead smolts from Clearwater Fish Hatchery and assisted with the transportation of chinook salmon smolts from McCall Fish Hatchery. Adult chinook salmon were transported and stocked in the Boise River and Panther Creek. Gary Ady and Dick Bittick assisted in transporting and stocking 1,375 chinook from Rapid River Hatchery to Boise River and 900 chinook from McCall Hatchery (South Fork Trap) to Panther Creek. This fall, our drivers assisted in transporting and stocking surplus A-run adult steelhead from Oxbow Fish Hatchery; one-thousand steelhead were released into the Boise River and 300 steelhead were transported and released in the Little Salmon River.

NFH transport operators also assisted the engineering department with one personnel move. Dick Bittick also assisted Bob Belveal with preparing anadromous trucks for hauling smolts.

LAHONTAN CUTTHROAT TROUT

During the 2001 fish year, NFH stocked 198,781 Lahontan cutthroat trout into lakes and reservoirs located in the Southwest and Upper Snake regions. All Lahontan cutthroat eggs were received from Omak Fish Hatchery in Washington. Southwest Region and Upper Snake Region fish were stocked as fry (Appendix 2). Estimated survival from eyed-egg to stocking was 51.6%. Due to past shipping and handling problems, the cutthroat eyed-eggs were picked up by NFH personnel from Omak personnel at Pendleton, OR.

SPECIAL STUDIES

The NFH assisted resident research biologists with a heritability study. Joe Kozfkay is heading this project, which is in the second year of stocking catchable trout. Ashton Fish Hatchery reared the catchables the first year for stocking in the Upper Snake Region. The study is set up to compare tag returns of catchable trout from two groups. The first group is a control, which models our current rearing practices. The second group is from a stock of Hayspur broodstock, which was determined to be more “catchable” through fishing and tagging. The offspring from the more catchable broodstock will make up the test group in this study. Results from this study and further information can be obtained from Joe Kozfkay at the Resident Research Office in Nampa.

FISH FEED

A total of 276,996 lbs of feed was fed during 2001 at a cost of $76,041 (Appendix 6). The average cost per pound of feed was 27.45 cents. Rangen Inc made up 97.95% of the feed purchased by weight (Appendix 6). An additional 5,268 lbs of feed was received from other hatcheries and fed throughout the year. The overall feed conversion was 1.10 lbs of feed fed to produce one lb of fish.

Moore-Clark feed has outperformed other starter feeds and continues to be used for starting fry on feed. Rangen continues to carry the feed contract and is used throughout the remainder of the rearing cycle. Moore-Clark feed was used throughout the rearing cycle of the Lahontan cutthroat trout. The cutthroat were stocked as fry this year and were only on feed about three weeks before stocking.

FISH SPAWNING

Early Kokanee

The NFH continues to operate the early kokanee salmon *O. nerka kennerlyi* trapping and spawning project. Numbers of kokanee at Deadwood Reservoir are still on the rebound. The fish size was split between two sizes of KE. The larger group was averaging about 16-inches and the smaller group was averaging about 14-inches. Egg take goals for 2001 were 1.85 million green eggs for Mackay Fish Hatchery.

The Kokanee population continues to slowly increase, but has not reached a number to meet both escapement goals and egg-take goals. The Southwest Region requested an escapement of 2,000 KE pairs for natural production in the Deadwood River and 500 KE pairs released above the Trail Creek weir. The main weir across the Deadwood River was installed on August 9. With the low water year, Deadwood Reservoir was at 44% capacity when the weir was installed about 200 yards below Wild Buck Creek. The reservoir was another 300 yards below the weir. The reservoir continued to drop, and by September, the reservoir was one and half miles below the weir. This created a natural barrier the KE would not move across. The KE run started almost two weeks earlier than normal and fish were also ripe earlier. Our first spawn date was August 21, 2001. We released 600 adults for natural reproduction. The run stopped suddenly after about 10 days into the run due to a natural barrier and low water flows in the Deadwood River. We estimated flows to be less than 20 cubic feet per second (cfs).

The operation moved to the North Fork Payette River to take additional green eggs. The weir on the NF Payette River was installed on September 7. Again, we monitored natural escapement to insure adequate numbers of spawning KE. The Southwest Region requested 20,000 spawning KE above the weir. Regional fishery biologists walked the spawning grounds to determine approximate numbers. A total of 2,362 females were spawned achieving a total egg take of 1,320,403 green eggs; average fecundity was 559 eggs per female (Appendix 8).

Deadwood Reservoir continues to be a popular fishing spot during the kokanee run. With the run starting earlier and a smaller number of kokanee in the run, fishing pressure was down from previous years. Information signs were installed around the weir to inform the public about the kokanee operation. No problems occurred this season. Matt Erickson also took an active roll in enforcement operations on the river. The weirs on Deadwood River were checked often throughout the day while the weir across Trail Creek was checked every other day.

The Morrison Knudsen Nature Center received 50 adult kokanee for viewing at the Nature Center ponds. Salmon and Steelhead days received 30 pair of spawned-out Kokanee for educational purposes.

All fish were spawned at the trap site. A green egg yield of 1,320,403 eggs was taken from 2,362 females for a fecundity rate of 559 eggs/female (Appendix 8). Average total length of kokanee females was 323 mm, with males averaging 338 mm (Appendix 9).

Eggs were shipped to Mackay Hatchery via fixed-wing aircraft. Shipping techniques were similar to those used during previous years. The Department contracted the flying service with McCall Air Taxi.

HATCHERY IMPROVEMENTS

Several important improvements were implemented at NFH during 2001:

- Installed ABC seamless steel siding on Residences #2 & #3.
- Installed a new metal roof on Residence #3.
- Replaced the wood headrace covers with metal frames and covers.
- Improved the landscaping around the office and Residence #3.

NFH improvements scheduled for 2002 include:

- Budget for new screens and dam boards.
- Replace tank on Ady's truck with new tank and move old tank to Ady's trailer.
- Continue updating visitor information center.
- Increase tank openings in Bittick's truck and trailer.
- Replace the windows in Residence #2.
- Install a garage door in lower shop.
- Replace the garage doors in upper shop.

PUBLIC RELATIONS

As in past years, NFH was a focal point for many visitors, tours, and special groups. An estimated 5,000 tourists visited the NFH in 2001. Most visits came through the late spring and summer months although with year-round schooling, tours were scheduled spring, summer and fall. A total of 65 guided tours were given to area school, church, and Boy Scout groups. NFH participated in two job shadows during 2001. Four slide show presentations were

presented to area schools and churches. Groups of disabled veterans were allowed to fish the settling pond five times during the summer months. Eight other disabled groups from the Nampa area were allowed to fish the settling pond through the summer. The settling pond was also opened to fishing on Free Fishing Day. The NFH, with the help of regional personnel and two reservists, hosted the Free Fishing Day clinic, which saw 700 visitors/fishermen, with an estimated 900 fish caught. The largest fish caught was a five-pound rainbow trout with several more weighing over three pounds. The Free Fishing Day at NFH was again a big success and will be continued in the future. We felt the "kids only" session from 0800 to 1200 was very popular and successful. The Gem State Fly Fishing Group continues to hold a 3-day fly-fishing instructional class (no hooks allowed) at the hatchery. Assistance on fish culture programs was provided to many area schools. Fry and fingerlings were provided for living streams and catchables were provided for dissection in several classes.

ACKNOWLEDGEMENTS

The NFH staff for 2001 included Rick Alsager, Fish Hatchery Manager II; Dan Baker, Assistant Fish Hatchery Manager; Bob Turik, Fish Culturist; Gary Ady and Dick Bittick, Fish Transport Operators. Bio-aides for 2001 included Chad Knee, Greg Kollmann, Randy Hutzenbiler, James Johnston, and Ken Felty. Chuck Kiester assisted with the Kokanee spawning operation. Six area students assisted with fin clipping projects during 2001. One high school student assisted hatchery personnel through a work-study program. Volunteers have also helped on a number of projects throughout the year, donating over 466 hours of time.

APPENDICES

Appendix 1. Fish requested and produced at Nampa Fish Hatchery, 2001.

Species/Strain	Size	Production goal	Actual production	% of goal achieved
Triploid Kamloops X steelhead trout (TT)	1-3 inches	60,000	60,720	101.20%
Lahontan cutthroat trout (C6)	1-3 inches	180,000	198,781	110.43%
Triploid rainbow trout (T9)	3-5 inches	340,000	279,525	82.21%
Triploid Kamloops trout (KT)	3-5 inches	485,000	491,688	101.38%
Kamloops X steelhead trout (KS)	8-12 inches	16,660	16,663	100.02%
Triploid Kamloops X steelhead trout (TT)	8-12 inches	734,540	744,617	101.37%
rainbow trout (R9)	8-12 inches	75,000	78,657	104.88%
Totals		**1,831,200**	**1,870,651**	**102.15%**

Appendix 2. Fry production at Nampa Fish Hatchery, 2001.

Species/Strain	Source and Date Received	Number Received	Yield Number	Yield Pounds	% Survival Egg to plant	Destination
Lahontan cutthroat trout	Omak 5/01	239,762	123,884	304.25	51.7%	Southwest Region
Lahontan cutthroat trout	Omak 5/01	145,150	74,897	264.00	51.6%	Southeast Region
Totals		**384,912**	**198,781**	**568.25**	**51.6%**	

Appendix 3. Fingerling production at Nampa Fish Hatchery, 2001

.

Species/Strain	Source	Date Received	Number received	Yield number	Yield pounds	% Survival egg to plant	Destination
Triploid Kamloop trout	Hayspur	12/00 & 1/01	284,163	164,103	4,050	57.75%	Southwest Region
Triploid rainbow trout	Hayspur	12/00 & 1/01	373,095	204,555	5,065	54.83%	Southwest Region
Triploid rainbow trout	Hayspur	2/01	275,400	147,415	1,960	53.53%	Magic Valley Region
							Panhandle Region
							Southwest Region
Triploid rainbow trout	Hayspur	3/01	40,350	25,000	260	61.96%	Panhandle Region
Triploid Kamloop trout	Hayspur	3/01	46,710	28,626	290	61.28%	Panhandle Region
							Southwest Region
Triploid Kamloops x Steelhead trout	Trout Lodge	6/01	248,855	187,890	2,005	75.50%	Southeast Region
Triploid Kamloop trout	Hayspur	6/01	19,170	13,240	145	69.07%	Southeast Region
Triploid Kamloop trout	Trout Lodge	6/01	83,270	60,720	400	72.92%	Grace Hatchery
Totals			**1,287,743**	**831,549**	**14,175**	**64.57%**	

Appendix 4. Catchable production at Nampa Fish Hatchery, 2001.

Species/Strain	Source	Date	Number received	Yield number	Yield pounds	% Survival egg to plant	Destination
Kamloops x steelhead trout	Troutlodge	9/99	20,180	16,663	6,825	82.6%	Southwest Region
triploid rainbow trout	Hayspur	5/00	63,475	30,047	10,220	47.3%	Southwest Region
triploid Kamloops x steelhead trout	Troutlodge	6/00-9/00	908,290	651,410	214,335	71.7%	Southwest Region
							Panhandle Region
							Transfer to Sandpoint
							Transfer to Hayspur
							Transfer to Mullen
							Transfer to McCall
triploid rainbow trout	Hayspur	10/00	103,250	48,610	11,900	47.1%	Transfer to Sawtooth
triploid Kamloops trout	Hayspur	10/00	25,000	14,550	4,850	58.2%	Transfer to Sandpoint
							Transfer to Hayspur
Totals			**1,120,195**	**761,280**	**248,130**	**68.0%**	

Appendix 5. Eyed eggs received at Nampa Hatchery, January 1, 2001 to December 31, 2001.

Date Received	Species/ strain	Source	Number	Destination	Expected Yield	Cost/1,000 fish
1/9/2001	triploid Kamloops trout	Hayspur	124,803	SW Reg	70,000	NC
1/16/2001	triploid rainbow trout	Hayspur	148,295	SW Reg	80,000	NC
2/12/2001	triploid rainbow trout	Hayspur	85,000	SW Reg & MV Reg	45,000	NC
2/26/2001	triploid rainbow trout	Hayspur	190,400	MV Reg, P Reg & SW Reg	100,000	NC
3/19/2001	triploid Kamloops trout	Hayspur	46,710	SW Reg	27,000	NC
3/26/2001	triploid rainbow trout	Hayspur	40,350	P Reg	26,000	NC
5/3/2001	Lahotan cutthroat trout	Omak	384,912	SW Reg & US Reg	180,000	NC
6/4/2001	triploid rainbow trout	Hayspur	32,285	SW Reg	15,000	NC
6/4/2001	triploid rainbow trout	Hayspur	47,122	SW Reg	25,000	NC
6/4/2001	triploid Kamloops trout	Hayspur	66,679	SW Reg & SE Reg	50,000	NC
6/14/2001	triploid Kamloops x steelhead	Troutlodge	248,855	SE Reg	180,000	$25.00
6/18/2001	triploid rainbow trout	Hayspur	50,073	SFH	25,000	NC
6/29/2001	triploid Kamloops x steelhead	Troutlodge	826,110	SW Reg, P Reg, C Reg, CFH-Mullen, HSFH & MCFH	550,000	$25.00
9/27/2001	triploid Kamloops x steelhead	Troutlodge	243,475	SW Reg	150,000	$25.00
11/5/2001	triploid rainbow trout	Hayspur	36,345	SFH	18,000	NC
11/19/2001	triploid rainbow trout	Hayspur	77,718	SW Reg	35,000	NC
11/28/2001	triploid Kamloops trout	Hayspur	395,020	SW Reg	200,000	NC
12/24/2001	triploid Kamloops trout	Hayspur	434,937	SW Reg	200,000	NC
12/31/2001	triploid Kamloops trout	Hayspur	215,670	SW Reg	100,000	NC

Destination Key	
C Reg	Clearwater Region
CFH	Clearwater Fish Hatchery
HSFH	Hayspur Fish Hatchery
MV Reg	Magic Valley Region
MCFH	McCall Fish Hatchery
P Reg	Panhandle Region
SE Reg	Southeast Region
SFH	Sawtooth Fish Hatchery
SW Reg	Southwest Region

Appendix 6. Nampa Fish Hatchery feed costs, 2001.

Supplier/Source	Size/Type	# Boxes/Bags	Pounds	Price/lb	Feed charge
Moore- Clark					
Nutra Plus	Mash	13 sacks	572	0.93	$531.96
Nutra Plus	starter #1	13 sacks	572	0.92	$524.52
Nutra Plus	starter #2	32 sacks	1,408	0.86	$1,210.88
Nutra 2000	starter #0	5 sacks	220	1.02	$224.40
Nutra 2000	starter #2	10 sacks	440	0.97	$426.80
Nutra 2000	grower 1.2	26 sacks	1,144	0.87	$995.28
Clark's Fry	grower 1.5	30 sacks	1,320	0.54	$710.42
		Totals	**5,676**		**$4,624.27**
Rangen					
Dry Crumble	Swimup	3 sacks	150	0.38	$57.30
Dry Crumble	Starter #1	18 sacks	900	0.38	$343.80
Dry Crumble	Starter #2	88 sacks	4,400	0.38	$1,680.80
Dry Crumble	Grower #3	210 sacks	10,500	0.26	$2,755.20
450 floating	1/16-in pellet	290 sacks	14,500	0.37	$5,417.20
450 floating	3/32-in pellet	191 sacks	9,550	0.26	$2,493.51
450 floating	1/8-in. pellet	250 sacks	12,500	0.26	$3,263.75
450 floating	3/32-in pellet	bulk	19,320	0.25	$4,851.25
450 floating	1/8-in pellet	bulk	197,700	0.25	$49,642.47
450 floating med	3/32-in pellet	39 sacks	1,950	0.47	$911.63
		Totals	**271,320**		**$71,416.90**
		Grand Total:	**276,996**		**$ 76,041.17**

Appendix 7. Total net fish production at Nampa Fish Hatchery, 1994 through 2001.

	Put-and-Take		Put-grow-and-take		Total	Total	Feed		Feed
Year	Number	Pounds	Number	Pounds	Number	Pounds	Pounds	Costs	Conversion
1994	308,023	146,978	793,065	55,014	1,101,088	201,992	220,544	$ 72,340	1.09
1995	567,147	193,309	783,772	42,336	1,350,869	235,645	261,589	$ 76,793	1.11
1996	694,659	212,011	950,412	34,271	1,645,071	246,282	262,902	$ 91,893	1.07
1997	556,718	188,208	693,859	19,006	1,250,577	296,214	240,149	$ 94,502	1.12
1998	692,706	228,006	2,172,695	22,901	2,865,363	250,907	267,782	$ 96,338	1.07
1999	1,077,110	336,841	348,962	26,677	1,426,072	363,518	345,288	$112,003	0.95
2000	864,603	250,976	1,100,585	18,197	1,965,198	269,173	281,264	$ 81,862	1.04
2001	754,641	241,435	1,197,489	15,513	1,962,130	256,948	282,264	$75,737*	1.10

*Feed cost does not include feed donated from other hatcheries, but is included in feed fed and feed conversion.

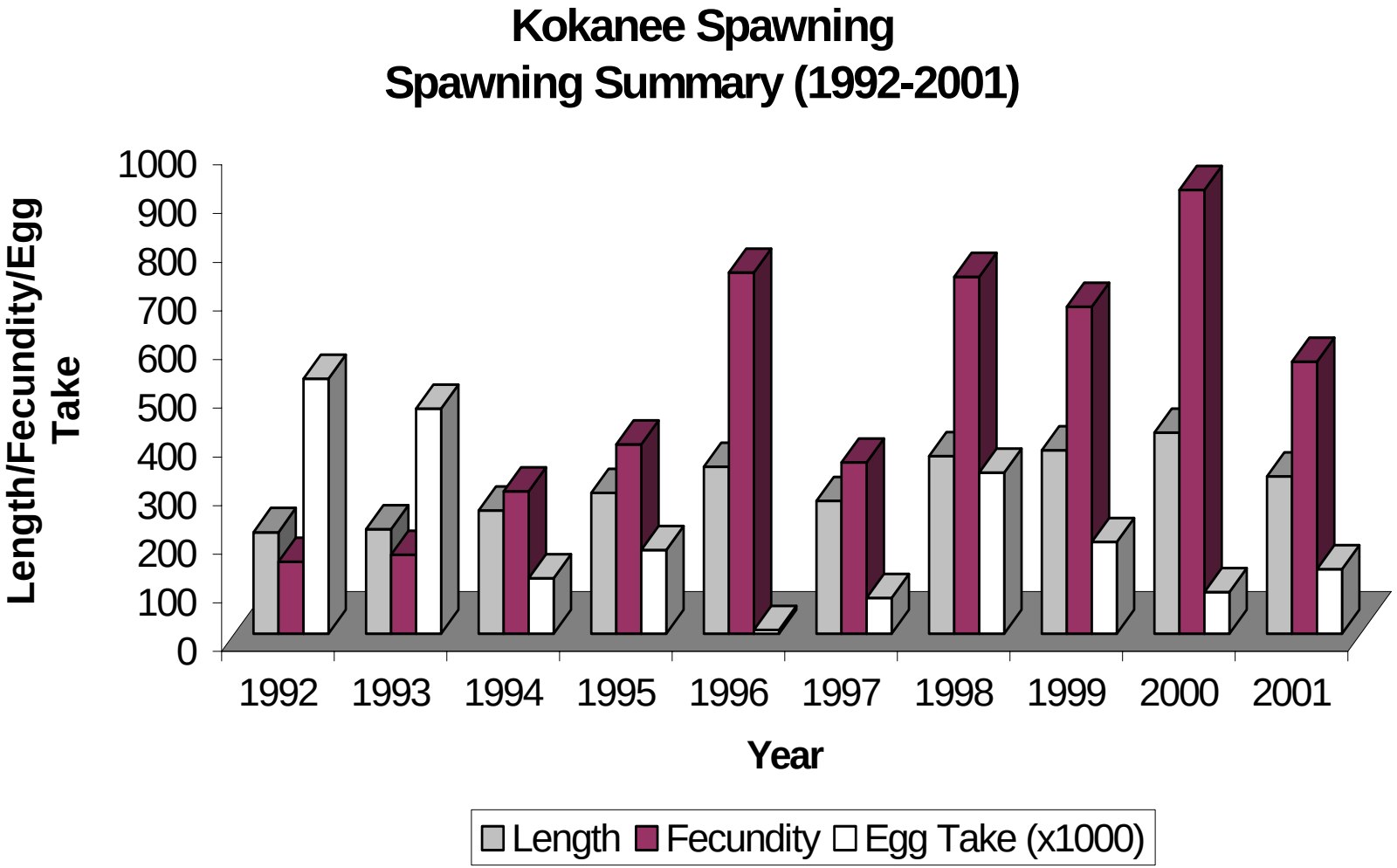
Appendix 8. Total cost of net fish production at Nampa Fish Hatchery, 1994 through 2001.

	Total cost through grow - out				Mean	Total cost through stocking			
Year	Total Cost	Cost/1000 Fish	Cost/ Pound	Cost/ Inch	Length in inches	Total Cost	Cost/1000 Fish	Cost/ Pound	Cost/ Inch
1994	$258,010	$234.32	$1.28	$0.029	8.06	$291,650	$264.87	$1.44	$0.028
1995	$271,156	$200.77	$1.15	$0.033	7.93	$304,695	$225.30	$1.29	$0.037
1996	$274,072	$166.60	$1.11	$0.027	7.50	$310,851	$188.96	$1.26	$0.031
1997	$308,979	$247.07	$1.49	$0.043	7.79	$342,063	$273.52	$1.65	$0.048
1998	$279,045	$97.39	$1.11	$0.023	7.30	$329,161	$114.88	$1.31	$0.027
1999	$363,623	$255.00	$1.00	$0.025	10.12	$428,624	$300.58	$1.18	$0.030
2000	$353,747	$180.02	$1.31	$0.032	5.59	$411,497	$209.41	$1.53	$0.037
2001	$338,998	$173.67	$1.32	$0.031	5.64	$390,917	$200.27	$1.52	$0.036

Appendix 9. Kokanee egg takes at Deadwood Reservoir and Payette Lake, Nampa Fish Hatchery, 2001.

Lot Number	Spawn date	Female spawned	Green eggs	Eyed Eggs	% eye-up
Deadwood Res					
1	21-Aug-01	418	276,572	211,854	76.60%
2	24-Aug-01	255	189,742	149,137	78.60%
3	28-Aug-01	112	83,225	61,919	74.40%
	Total:	**785**	**549,539**	**422,911**	**76.96%**
Payette Lake					
4	18-Sep-01	1,200	572,257	454,372	79.40%
5	21-Sep-01	377	198,607	169,610	85.40%
	Total:	**1,577**	**770,864**	**623,982**	**80.95%**

Appendix 10. Kokanee spawning length, fecundity, and egg take (x1000), Nampa Fish Hatchery, 1992 – 2001.



IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

SANDPOINT FISH HATCHERY

Mark Olson, Fish Culturist

INTRODUCTION

The Sandpoint Fish Hatchery (SPFH) is located two miles west of the town of Sandpoint on the south side of the Pend Oreille River in Bonner County, ID. The SPFH was constructed in 1908 by the Idaho Department of Fish and Game (Department), with additional funding provided by the Bonner County Sportsman's Club. The hatchery is owned and operated by the Department and funded by revenues generated from hunting and fishing license sales.

Duties at SPFH include organizing and executing the redistribution of rainbow trout *Oncorhynchus mykiss* for the put-and-take stocking program in the northern section of Region 1. The SPFH has taken over this stocking program since the closing of Clark Fork Fish Hatchery in 2000. In even-numbered years the stocking of high mountain lakes is the responsibility of SPFH. This includes receiving eyed-eggs, incubating, hatching, and stocking. Volunteers are organized to backpack the fish to 31 lakes in Region 1. The fish used in high mountain lake stocking are rainbow trout, cutthroat trout *O. clarki*, Arctic grayling *Thymallus arcticus*, and Golden trout *O. aguabonita.* There is also a great deal of yard maintenance at SPFH that needs to be completed on a regular basis due to its location in a residential neighborhood.

The staffing at the hatchery consists of a fish culturist from the Cabinet Gorge Fish Hatchery (CGFH). This position is responsible for operating SPFH from late March to October and returns to CGFH for the remainder of the year. The Manager l position at CGFH oversees operations at SPFH and supplies additional labor when needed.

WATER SUPPLY

The hatchery receives water from Murphy's Spring, which is an open collection basin that flows into a pipeline located a quarter-mile southwest of the hatchery. The spring supplies the hatchery with 500-600 gallons per minute (gpm) and ranges in temperature from 44°F to 48°F throughout the seasonal use of the facility.

There are water flow control valves located at the spring intake box and at the entrance of the hatchery. These valves are adjusted to allow the water level in the spring to remain full and still provide the maximum flow to the hatchery. The valves at the hatchery entrance can also divert the flow between the indoor vats in the hatchery building and the outdoor raceways.

REARING FACILITIES

The hatchery rearing facilities include eight Heath incubators (8-tray), 18 cement vats (15-ft x 2.5-ft x 3-ft) inside the hatchery building, as well as two outdoor concrete raceways (100-ft x 5-ft x 2-ft). The carrying capacity of the outdoor raceways where the rainbows are held for redistribution is 25,500 10-inch fish. In 2001, the hatchery personnel maximized its holding capacity at 15,000 10-inch fish and did not attempt to push the limit of the calculated capacity.

FISH STOCKED

Catchable-size rainbow trout (~9.1 inches) were stocked in the Kootenai, Pend Oreille, and Spokane river drainages to support a put-and-take fishery in the lakes and reservoirs of the northern panhandle (Region 1). The SPFH was supplied with fish for redistribution from three other hatcheries: Clearwater, American Falls, and Nampa. All the fish stocked from SPFH were supplied to the hatchery at stockable size and there was no production or fish fed. A total of 114,265 fish weighing 36,859 lbs were stocked in 21 different bodies of water. It took 72 individual trips over 54 days to complete the stocking requests. The cost of stocking fish from SPFH, based only on employee wages and vehicle mileage rate, was $17,090.16 (Appendix 1). Redistribution cost from SPFH was $0.1495 per fish at the streamside (Appendix 2).

HATCHERY IMPROVEMENTS

Hatchery improvements in 2001 included:

- Replacing the domestic water pump.

1. Building a new road to access the outside raceways with fish transport equipment.

- Constructing a six-foot chain link security fence around the outside raceways.
- Refurbishing a 1960s vintage belt fish loader for easier one-man fish loading.
- Purchasing a new hatchery computer.

HATCHERY NEEDS

- Cover spring intake for hatchery water supply, scheduled for late summer 2002.
- Paint exterior of hatchery building.
- Expand parking lot and raceway access road to accommodate larger trucks.

PUBLIC RELATIONS

The hatchery receives a fair number of visitors because of its proximity to Sandpoint. A kiosk built by the Lake Pend Oreille Idaho Club (LPOIC) serves as an information center for self-guided tours. The SPFH is a fish distribution station manned by one person and there is not a great deal of public interaction due to lack of time actually spent at the hatchery. When available, hatchery personnel conduct tours and provide information to the public. Hatchery personnel have more contacts with the public during fish plants and use that opportunity for positive interaction. In addition, hatchery personnel attend meetings with LPOIC and other sportsmen's club meetings to communicate hatchery information and issues to them.

APPENDICES

Appendix 1. Cost of rainbow trout redistribution from Sandpoint Fish Hatchery, based on employee wages and vehicle mileage rate only.

	Cost per Mile	Miles Driven	Totals
1-ton Truck	.288	3,490	$ 1,005.12
2-ton Truck	.396	2,740	$ 1,085.04
Employee Wages			$15,000.00
Total Cost			**$17,090.16**

Appendix 2. Cost of redistribution per fish from Sandpoint Fish Hatchery.

Redistribution Cost	# Fish Stocked	Cost per Fish At Streamside
$17,090.16	114,265	$0.1495

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

SAWTOOTH FISH HATCHERY

Mel Hughes, Fish Culturist

INTRODUCTION

Sawtooth Fish Hatchery (SFH) is a US Fish and Wildlife Service (USFWS) Lower Snake River Compensation Plan (LSRCP) hatchery and has been in operation since 1985. The Idaho Department of Fish and Game (Department) operates this facility. The primary goal of SFH is to trap, spawn, rear, and release spring chinook salmon *Oncorhynchus tshawytscha*. Adult steelhead are also trapped and spawned, with the eyed-eggs and fry being sent to other hatcheries for hatching and rearing. In 1990, a program to stock rainbow trout *O. mykiss* into surrounding area waters for improved angling opportunities began. For the sixth year SFH personnel stocked high mountain lakes with westslope cutthroat trout *O. clarki lewisi*, using fixed-wing aircraft.

FISH STOCKING

Sawtooth Fish Hatchery met its stocking request for 2001. In addition, SFH personnel stocked 2,500 extra fish into Stanley Lake. Because of elevated water temperatures, the Salmon Region canceled Grouse Lake from the 2001 request. Several other ponds were reduced in stocking numbers due to low water conditions.

Nampa Fish Hatchery (NFH) supplied SFH with rainbow trout (sterile Hayspur rainbow triploids) for stocking. A total of 84,458 fish were received at SFH on two shipping days in May and June 2001. Based on 21 sample counts and 82 fish plants, SFH personnel stocked a total of 83,708 fish in lakes and streams in the area. In addition to what was stocked, SFH picked 750 fish as mortality (0.8%) throughout the course of the summer. Dick Bittick, Transport Operator, stocked a surplus of 7,350 fish in the Hayden Creek Ponds.

National Marine Fisheries Service (NMFS) permit #1188, which expires December 31, 2004, replaced permit #908 for resident rainbow trout releases in anadromous waters in the Salmon River drainage. Permit #1188 dictates that hatchery-reared rainbow trout released in rivers, streams, and lakes with ESA-listed fish, have an average length no greater than 250 mm and that no individual exceed 300 mm in total length. The 250 mm size restriction would include fish planted in the Salmon River, Valley Creek, and Yankee Fork Dredge Ponds. Based on 50 fish plants from SFH to the Salmon River, Valley Creek, and Yankee Fork Dredge Ponds, fish averaged 3 fish per pound (fpp) and 9.37 inches (238 mm) in total length. The permit also dictates fish in the upper Salmon River cannot be stocked until after June 15 and should have an adipose fin clip. Only fish with the adipose fin clip may be kept, thereby protecting wild rainbow trout and anadromous smolts. All the R9 strain rainbows received at SFH in 2001 were adipose clipped by personnel at NFH and delivered to SFH 21 days later to allow for withdrawal of MS-222 so fish would be safe for human consumption. Pettit Lake fish were marked with an adipose fin clip as its mark for 2001.

The catchable rainbow trout were fed a maintenance diet throughout the summer. Fish feed was purchased from Rangen Inc. A total of 3,150 lbs of Rangen 1/8-inch extruded pellets was fed. Total cost for fish feed for 2001 catchable rainbow trout was $817.74.

For the third consecutive year fish were stocked in Blue Mountain Meadow Pond, located on the Challis Golf Course located in Challis, ID. The pond was built as a cooperative effort between the Department and the City of Challis as a children's fishing pond. Over a four-

month period Sawtooth Fish Hatchery personnel stocked 750 fish into Blue Mountain Meadow Pond.

Weekly notices informing the public of the whereabouts of the latest stocking locations are distributed to local businesses and are posted at SFH. A repeating message containing stocking information and current news about SFH can be heard over the local radio transmitter. Stocking information is available by dialing the 1-800-ASK-FISH phone number as well as at the Department website www.state.id.us/fishgame/fishgame.

The *Fishing Sawtooth Valley* brochure is distributed from the SFH visitor center and surrounding businesses. The brochures provide information about where to catch fish in the area as well as color pictures to educate the public about protected species such as bull trout. A short narrative describing the plight of anadromous fish is included. The back of the brochure has a map indicating where SFH stocks fish. This helpful brochure serves the approximately one million visitors that visit the Sawtooth National Recreation Area each year.

Sawtooth Fish Hatchery sponsored another Kid's Fishing Day at the Sawtooth Display Pond on Free Fishing Day, June 9, 2001. The warm, sunny weather saw 34 kids trying their luck. The fishing was good and most kids caught fish. Fishing poles, bait, and lures were provided by Salmon Region I&E. The USFS set up a fish tent and provided staff to assist. The Free Fishing Day account was used to provide snacks and drinks for the kids. Mel Hughes, Lisa Ashby, and Jono Wilson of the Sawtooth Hatchery staff helped out. Gary Gadwa, a local Conservation Officer from the Salmon Region, provided assistance. Judy Griswold from Nampa Fish Research also assisted. Special thanks to Vicki Runnoe for providing funds from the Free Fishing Day account and to Tom Curet for assuring the arrival of the Region fishing poles.

Mountain Lake Stocking

Sawtooth Hatchery personnel stocked high mountain lakes in the Salmon Region using fixed-wing aircraft in 2001. A total of 32 lakes were stocked with 24,340 Westslope cutthroat trout. Cost of stocking with two flights by McCall Air Taxi was $1,324.00 or $45.65 per lake. Cutthroat numbers were less then the original request due to changes by Salmon Regional Fisheries staff dropping some requested lakes.

PLANS FOR 2002

Due to a full production year for BY01 Chinook, SFH will only plant flowing water sites in 2002. Additionally, mountain lake stocking will be shifted to other hatcheries in 2002.

The SFH Internet web page is complete and can be accessed through the Department's web site. Current stocking information and answers to frequently asked questions will be upgraded each week on the Department's Home Page.

A new hatchery database using Access will be utilized in 2002, making it easier to enter stocking records into the computer.

The SFH plans to participate in the Free Fishing Day program again.

ACKNOWLEDGEMENTS

The SFH would like to thank Rick Alsager and the Nampa Fish Hatchery crew for their cooperation in making 2001 a successful year. Special thanks go to Dick Bittick and Gary Ady for transporting fish from Nampa. Cassie Rohrbacher, Bio Aide, developed the stocking schedule, performed the daily stocking, and entered the weekly data for SFH in a manner that exceeded expectations.

IDAHO DEPARTMENT OF FISH AND GAME

2001 ANNUAL REPORT

RESIDENT HATCHERIES

FISH HEALTH REPORT

Douglas R. Burton, Resident Hatchery Pathologist

INTRODUCTION

The Resident Hatchery Pathologist's (RHP) primary duties are to provide fish health inspection and diagnostic services to the Idaho Department of Fish and Game (Department) resident fish hatcheries and to assist hatchery personnel in maintaining good health in cultured resident fish. These same services are provided to Department fishery managers and biologists and occasionally to private individuals or companies when the information or relationship is of benefit to the Department. The author, Douglas R. Burton, held the RHP position for calendar year 2001. The RHP and his Anadromous Hatchery counterpart (A. Douglas Munson) work closely together, often assisting each other in their respective programs and coordinating efforts when those programs overlap. The American Fisheries Society (AFS) certifies both individuals as Fish Health Inspectors. Both pathologists work out of the Eagle Fish Health Laboratory (EFHL) and are supported by the personnel and facilities there.

The RHP is the Investigational New Animal Drug (INAD) monitor for the Department resident hatcheries. This is the process by which the US Food and Drug Administration (USFDA) will allow the limited use of certain drugs and chemicals not currently labeled for a specific use in food fish, while accumulating data to support adding such use to the label. The Department joined the US Fish and Wildlife Service's (USFWS) INAD program in 1998. Two chemicals used by resident hatcheries under this program during 2001 were Chloramine-T (Chlor-T) and Oxytetracycline (OTC). Chlor-T is used as a bath to treat bacterial infections on the gills (external), and OTC is used to treat systemic bacterial infections. Statewide, the most significant diseases in Department resident hatchery fish are bacterial coldwater disease (CWD), caused by *Flavobacterium psychrophilum*, and motile aeromonad septicemia (MAS), caused by several species of both *Aeromonas* and *Pseudomonas* bacteria. These are all motile, gram-negative bacteria that are usually susceptible to OTC. A significant difference is that MAS can be treated under the existing drug label, while treatment of CWD always requires an INAD protocol. The total number of INAD protocols to use OTC at resident hatcheries in 2001 was less than in 2000 (12 vs. 22).

A new assignment for the RHP in 2001 was to issue import permits for all the resident programs that brought eggs or fish into the state. This also involved collecting fish health inspection information from various sources prior to issuing the permits, to be sure that imported fish or eggs were not exposed to pathogens of concern. There have been rare instances in the past where Department personnel have imported fish or eggs into Idaho without sufficient enquiry into the disease history of those fish, eggs, or the population of origin. By establishing the requirement of a written permit for our own personnel, we should eliminate the chance of such mistakes in the future.

The RHP and EFHL personnel examined 67 cases for Department resident hatchery programs during 2001 (13 routine hatchery inspections, 19 inspections of feral brood stock, and 35 diagnostic cases). In addition, one diagnostic and one certification were done for private individuals; one inspection was done for Rangen's Aquaculture (fish purchased by Idaho Power Company [IPC] for release in American Falls Reservoir); four research cases were examined (three for the Department and one for the Shoshone-Bannock Tribe); one diagnostic was done on wild yellow perch from the Panhandle Region; and 24 wild salmonid inspections were done for various Department programs around the state.

A summary of the work done for each Department hatchery, as well as the results of all sampling done at those hatcheries, is as follows:

AMERICAN FALLS HATCHERY

Three of four diagnostic examinations documented CWD as the single significant clinical disease at American Falls Hatchery in 2001 (Appendix A). These episodes were unusual in that the fish showing clinical signs were older and larger than is typical, and the signs included numerous large, sub-dermal furuncles, randomly distributed over the body. Mortality rates in all cases were elevated but not devastating. The fish were treated with OTC under INAD protocols at the standard dosage and duration. Response to the treatments was good.

ASHTON HATCHERY

The RFP visited the hatchery once in 2001 without sampling any fish for laboratory tests. The hatchery manager reports that infestations of the external parasite *Gyrodactylus* continue to be the only significant disease problem on the station. Ashton continues to be a hatchery at risk for *Myxobolus cerebralis* (MC) contamination, the causative parasite of Whirling Disease (WHD). As more bodies of water in the vicinity are shown positive for the parasite, the greater the probability that the spring and stream above the hatchery intake may become contaminated.

CABINET GORGE HATCHERY

Two diagnostic examinations were made on kokanee fry from Cabinet Gorge Hatchery in early 2001 (Appendix B). The samples were taken by hatchery personnel and shipped overnight to the EFHL. This has proven to be an effective way to examine fish from this hatchery without two long days of travel by the RFP. No definitive diagnosis could be made from the first fish sample, as the fish were too small to do any tests on other than virology (which was negative). Gross examination was also inconclusive. The second set of samples was diagnosed with Bacterial Gill Disease (BGD), both from obvious gross signs and the isolation of *Pseudomonas* and fungus from the gills. Several individual raceways of fish were treated with Chlor-T under INAD protocol. Success was generally good, but two raceways required a second course of treatment.

The RFP sampled spawning kokanee adults at the Sullivan Springs trap on December 3. The condition of those fish appeared very good, with an observed occurrence of encysted cestodes in the pyloric cecae similar to past years, but no nematodes were noted in the swim bladders. There have never been any gross signs indicating that these parasites cause significant adverse effects on the fish. Historically, *Renibacterium salmoninarum* (RS) bacterial antigen has been detected in this population using the enzyme-linked immunosorbent assay (ELISA), but the presence of viable organisms has never been demonstrated by the fluorescent antibody test (FAT). Only FAT was used this year due to a shortage of good reagents for ELISA at EFHL. No RS organisms or replicating viruses were detected. The fish were also tested for the presence of MC. This parasite has never been demonstrated in the vicinity of Lake Pend Oreille, but is known to be present in the upper portions of the Clark Fork River in Montana. For the first time since testing began in 1988 a spore was detected in a Sullivan Springs adult kokanee. Specifically, a single spore was seen in the pepsin/trypsin digest test (PTD) from 1 of 12 five-fish pools. Pepsin/trypsin digest is a relatively quick and easy test, but it only detects

spores without identifying their species. Since species of *Myxobolus* other than *M. cerebralis* have been confirmed in a number of locations in Idaho, only half-heads are used for PTD while the other halves are routinely saved for more definitive tests. Portions of the remaining kokanee half-heads from the positive pool were examined by histology, but no spores of any type were detected. The remaining tissues will be archived for polymerase chain reaction testing (PCR), a definitive test that would confirm the presence or absence of MC genetic material.

CLEARWATER HATCHERY

One diagnostic case was examined on resident Hayspur-strain rainbow trout at Clearwater Hatchery (Appendix C). The diagnosis was chronic CWD. This lot of fish had been treated with OTC in 2000 with poor results. it was recommended that no additional treatment be applied. The production facilities at Clearwater will be full of anadromous fish for the next few years, so there will likely be no resident fish on station.

GRACE HATCHERY

Grace Hatchery was visited in August to diagnose the cause of losses in fry-size Westslope cutthroat trout (Appendix D). Fish from eggs from the same private source were also experiencing losses at McCall Hatchery, but not at American Falls Hatchery. Both *F. Psychrophilum* and *A. hydrophila* were isolated from the fish. A treatment of OTC-medicated feed was applied under the existing label with good success.

Production was reduced at Grace for part of the year due to reconstruction of the large raceway system. Improved rearing conditions and flow patterns should help maintain good fish health in the new raceways.

HAGERMAN STATE HATCHERY

A total of 18 diagnostic cases from Hagerman State Fish Hatchery were examined in 2001 (compared to 26 in 2000; Appendix E). The reduction in cases was primarily due to a reduced number of CWD epizootics.

Losses from rainbow/Kamloops lots in the outside raceways frequently involved a combination of pathogens. Infectious hematopoietic necrosis virus (IHNV) was detected five times, each time in combination with one or more bacterial pathogens (*F. psychrophilum*, *F. columnare,* or an *Aeromonas*). The hatchery manager reported observing several additional IHNV episodes without calling on the EFHL for diagnostic confirmation. Several bacterial infections, primarily Columnaris Disease (COL), CWD, and/or MAS, were diagnosed without the complication of virus. These episodes were treated with OTC-medicated feed, using the existing label or an INAD protocol; whichever was appropriate for the situation. Most of the treatments were successful. Eight INAD protocols were used to treat CWD or COL, a reduction from 14 in 2000.

Aeromonas salmonicida, the causative bacteria of furunculosis, was again detected at Hagerman State Hatchery. This pathogen has been detected at Hagerman for three of the last four years (1998, 2000, and 2001). The epizootic was treated successfully with Romet-30 incorporated in feed under the existing label for the drug.

HAYSPUR HATCHERY

The RHP's work at Hayspur Hatchery involved considerable effort to inspect broodstock and broodstock replacement lots. The BY99 replacement rainbow (R9) and Kamloops (K1) populations were inspected in August (Appendix F). No viruses, *Myxobolus* spores, or significant bacteria were detected. In past years, similar populations of fish have tested positive for RS antigen at low levels by ELISA. However, due to a critical shortage of good ELISA reagents at EFHL, this year's fish were tested by FAT only. No RS was detected.

All BY99 replacement R9s and K1s were given a bath vaccination, using an autogenous *F. Psychrophilum* bacterin, when fish ranged from 1.0 to 7.2 grams in size. Half of the R9s received a booster bath about five months later. Aqua Health Ltd. (Charlottetown, P.E.I., Canada) produced the bacterin from a bacteria isolate taken at Hayspur in 1998. None of the fish showed any signs of bacterial disease before being incorporated into the broodstock population. The small amount of remaining bacterin was used to vaccinate half of the Westslope cutthroat that were still inside the hatchery building. No signs of CWD have been observed in either the vaccinated or unvaccinated cutthroat. Since neither of these trials was conclusive, the benefit of the treatment is not yet absolutely proven. However, this is a direction for CWD control that will receive much more attention in 2002. An isolate of the bacterium has already been prepared for the production of more bacterin.

Both populations of BY2000 replacement fish were diagnosed with clinical CWD in November or December, and were treated with OTC-medicated feed. Neither population had been vaccinated as described above.

Intensive sampling of the replacement broodstock pairings continued to be the health priority at Hayspur Hatchery. Ovarian fluids were collected from every female used in the pairings for virology and for RS analysis using the ovarian cell pellet fluorescent antibody test (OCP-FAT). A portion of the females from each set of pairings was sacrificed for tissue virology, direct FAT on kidney smears, and for ELISA. Eggs from individual females were held in isolation until the test results were available. Established protocol dictated that if a parent female should test positive for any virus or for RS by either FAT procedure, the resulting group of eggs was to be culled. Historically, eggs were also culled from any fish whose ELISA optical density (OD) was $\geq$0.110. But this year, all ELISA samples were archived due to the shortage of good reagents for the test. As a result, no RS was detected in either population, and no eggs were culled. There has been a trend of lower and lower ELISA prevalence and OD levels, so it was felt that failing to cull by this test for one year did not present an exceptional risk of amplifying the pathogen in the populations. It is hoped that the reagent supply dilemma will be solved before the next spawning season.

Details of the spawn sample results for each population are as follows:

Hayspur Rainbow

The R9 brood stock replacement spawning began on October 17 and ended December 27. Ovarian fluids from 200 females were tested for viruses and RS; 60 of those same females were sacrificed for FAT, ELISA, and tissue virology. No viruses were detected from either ovarian fluids or tissues, nor was any fish found positive for RS by either FAT or OCP-FAT. Kidney samples for ELISA were archived. No eggs were culled.

Hayspur Kamloops

Kamloops broodstock replacement spawning ran from October 10 to November 7. Ovarian fluids from 130 females were tested for viruses and RS, with 30 sacrificed for FAT, ELISA, and tissue virology. No viruses were detected from either ovarian fluids or tissues, and no RS was detected by FAT or OCP-FAT. Kidney samples for ELISA were archived. No eggs were culled.

HENRYS LAKE HATCHERY

Fish health inspection samples were taken from spawning cutthroat trout at Henrys Lake Hatchery from March 5 through April 25, 2001 (Appendix G). Ovarian fluids were collected by hatchery personnel and shipped to EFHL where they were tested for viruses (175 females in 25 seven-fish pools) and RS by OCP-FAT (1,344 females in 192 seven-fish pools). A group of 60 fish (both males and females) were sacrificed for kidney FAT, tissue virology, bacteriology (16 fish), and *Myxobolus* tests. No viruses were detected in any of the tissue or ovarian fluid samples. None of the ovarian fluids tested positive for RS by OCP-FAT. As a result, no eggs were discarded in 2001. One of 60 kidney FAT samples contained a single fluorescing bacterium of the right morphology for RS, but there was no record of whether that individual fish was a male or female. No tissues were tested for RS by ELISA due to a shortage of good reagents at the laboratory. Bacteriology samples showed a carrier-level infection of a *Pseudomonas* species in one fish, but no other bacterial pathogens were detected. *Myxobolus cerebralis* spores were not detected by the PTD method this year, although the population has been confirmed positive in the past.

In past years, the ovarian fluid samples taken by hatchery personnel have contained significant amounts of fluorescing debris, as well as fluorescing bacteria that did not usually have the right morphology for RS (probably *Pseudomonas fluorescens*). However, there has always been some question when a few of the bacteria in such samples were close to the right size and shape for RS. In such cases, the sample was called RS-positive and culled in order to err on the side of safety. Damon Keene, the new hatchery manager, asked the RHP to critique his spawning protocol prior to the season, and some practices that probably contributed to sample contamination were identified. Corrections were made and no fluorescing contamination was observed in this year's samples.

MACKAY HATCHERY

No significant clinical disease or fish losses occurred at Mackay Hatchery in 2001. The RFP visited the hatchery in October to sample fingerling Henrys Lake rainbow x cutthroat hybrids and the older lot (BY2000) Snake River cutthroat from Jackson National Fish Hatchery (Appendix H). No replicating viruses, bacteria, RS, or *Myxobolus* spores were detected. The hatchery remains at risk for MC contamination due to the very close proximity of positive fish in the outflow stream and settling pond. However, the probability of detecting such contamination is extremely low due to the design of the hatchery and the extremely low levels of prevalence and intensity that are likely. An extensive challenge trial using small fish placed in live-boxes around the facility will be done in 2002.

Mackay Hatchery received green eggs from the early-spawning kokanee in Deadwood Reservoir and Payette Lake. The spawning population from the former was inspected on September 5, and from the latter on September 11 (spawning on September 11 was disrupted because the McCall airport was closed in response to the attacks on the World Trade Center and Pentagon). No viruses, RS, or *Myxobolus* spores were detected in samples from either population.

MCCALL HATCHERY RESIDENT PROGRAM

Westslope cutthroat fry were diagnosed with CWD shortly after first feeding (Appendix I). These originated as eggs from the Westslope Trout Company in Montana (see the Grace Hatchery section, above). This is the second consecutive year that this has occurred in these fish, in three out of four groups at two of three hatcheries. Treatment with OTC under INAD protocol was again successful. Investigations will be made in 2002 into the possibility of bath treatments with OTC or Penicillin G while the fry are still in the incubators.

MULLAN HATCHERY

For the first time in many years, fish from the Mullan (Hale) Hatchery were tested at the EFHL (Appendix J). Catchable-size Kamloops that had been transferred from American Falls Hatchery were tested and diagnosed with CWD. This was no surprise, in that fish still at American Falls were undergoing an episode at the same time. Mullan was not covered under an INAD permit, and it was decided that the cost and delay of obtaining such a permit were not justified. So the fish were not treated before stocking.

NAMPA HATCHERY

Bacterial CWD and MAS continue to be the most common diseases diagnosed in Kamloops or rainbow trout at Nampa Hatchery (Appendix K). As usual, the outbreaks of both diseases were most common in winter and spring, when the hatchery was at full production and fish were at the most susceptible life stage. One group of fish was treated with OTC-medicated

feed under an INAD protocol, and another group was treated under the existing label. In all, this was a good year for fish health at Nampa.

A routine inspection of triploid Kamloops trout done in May detected no viruses, RS, significant bacteria, *Ceratomyxa shasta,* or MC.

ACKNOWLEDGMENTS

I wish to acknowledge my anadromous counterpart, Doug Munson, and my supervisor, Keith Johnson, for their assistance in the field and for sharing their considerable knowledge with me. The efforts of fishery technologists Carla Hogge, Sharon Landin, and Roberta Scott are greatly appreciated. Their timely and accurate results from the laboratory are essential in diagnosing and treating fish health problems in the field. Doug Marsters, utility craftsman, was a great help in keeping EFHL's physical plant operating and in keeping my Dodge pickup on the road. The lab secretary, Elaine Cavenaugh, contributed her computer skills and kept the mounds of paperwork moving. Finally, I wish to acknowledge the hatchery managers and personnel with whom I work. Their cooperation is greatly appreciated, and I sincerely hope my efforts have been a benefit to their programs.

APPENDICES

Appendix A. Summary report of Eagle Fish Health Laboratory results for American Falls Hatchery, January 1 – December 31, 2001.

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
2000	Trout Lodge	Kamloops trout--3N	01-164	-	-			-	-	+	-			DX: CWD; VIRO 0/5, *Flavobacterium psychrophilum* 8/8, *Pasteurella multocida* 1/4
2000	Troutlodge	Kamloops trout--3N	01-248					-	-	+	-			DX: CWD; *F. psychrophilum* 2/6
2001	Hayspur	Rainbow trout--3N	01-249					-	-	-	-			DX: NO PATHOGENS DETECTED; BACTE 0/4
2001	Troutlodge	Kamloops trout--3N	01-290					-	-	+	+			DX: CWD, MAS; *F. psychrophilum* 3/8, *Sphingomonas paucimobilis* 5/8

Appendix B. Summary report of Eagle Fish Health Laboratory results for Cabinet Gorge Hatchery, January 1 – December 31, 2001.

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
2001	Sullivan Springs	Kokanee	01-032	-	-									DX: NPD; VIRO 0/42, *HISTO CANCELLED*
2001	Sullivan Springs	Kokanee	01-111	-	-			-	-	-	-			DX: BGD; VIRO 0/5, *Pseudomonas dimunata* 4/4 (gills), Fungus from gills 4/4
Brood	Sullivan Springs	Kokanee	01-584	-	-		-					-		IX: MYXOBOLUS; VIRO 0/60, FAT 0/60 *Myxobolus* species 1/12(x5) by PTD, HISTO--no spores detected, PCR pending

Appendix C. Summary report of Eagle Fish Health Laboratory results for Clearwater Hatchery Resident Program, January 1 - December 31, 2001

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Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
1999	Hayspur	Rainbow trout	01-038	-	-			-	-	+	-			DX: CWD; VIRO 0/10, *Flavobacterium psychrophilum* 4/8

Appendix D. Summary report of Eagle Fish Health Laboratory results for Grace Hatchery, January 1 – December 31, 2001.

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
2001	Westslope	Cutthroat trout	01-336	-	-			-	-	+	+			DX: CWD, MAS; VIRO 0/5, *Flavobacterium psychrophilum* 4/4, *Aeromonas hydrophila* 4/4

Appendix E. Summary report of Eagle Fish Health Laboratory results for Hagerman State Hatchery, January 1 – December 31, 2001.

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
2000	Troutlodge	Kamloops trout--3N	01-056	-	-	-		-	-	+	-			DX: CWD; VIRO 0/10, *Flavobacterium psychrophilum* 5/8
2001	Hayspur	Rainbow trout--3N	01-057	-	-	-		-	-	+	+			DX: CWD, MAS; VIRO 0/10, *F. psychrophilum* 7/8, *Aeromonas caviae* 2/8
1999	Hayspur	Kamloops trout--3N	01-083	+	-			-	-	-	-			DX: IHNV, COL; IHNV 1/1(x4), IPNV 0/4, *Flavobacterium columnare* 4/4
2000	Troutlodge	Kamloops trout--3N	01-084	-	-			+	-	-	+			DX: FUR, MAS; VIRO 0/5, *Aeromonas salmonicida* 2/4, *A. hydrophila* ¾
2000	Hayspur	Kamloops trout--3N	01-116	+	-			-	-	-	-			DX: IHNV, COL, BGD; IHNV 1/1(x4), IPNV 0/4, *F. columnare* 4/4, *A. hydrophila* (gills) 4/4
2000	Troutlodge	Kamloops trout--3N	01-117	+	-			-	-	+	-			DX: IHNV, CWD; IHNV 1/1(x3), IPNV 0/3, *F. psychrophilum* 2/3

Appendix E. Continued

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
2000	Troutlodge	Kamloops trout--3N	01-149	+	-			-	-	-	-			DX: IHNV, COL, BGD; IHNV 1/1(x5), IPNV 0/5, *F. columnare* 4/4(gills) 3/4 (internal), *A. caviae* 4/4 (gills), *Pseudomonas fluorescens* 4/4 (gills)
2001	Hayspur	Kamloops trout--3N	01-211	-	-			-	-	+	-			DX: CWD; VIRO 0/5, *F. psychrophilum* 3/5
2001	Hayspur	Rainbow trout--3N	01-212	-	-			-	-	+	-			DX: CWD; VIRO 0/5, *F. psychrophilum* 3/5
2001	Hayspur	Rainbow trout--3N	01-213	-	-			-	-	+	-			DX: CWD; VIRO 0/5, *F. psychrophilum* 2/5
2000	Eagle Cr.	Coho salmon	01-334	-	-			-	-	-	-			DX: NPD; VIRO 0/4, BACTE 0/4 Suspect losses due to smolting stress.
2001	Hayspur	Kamloops trout--3N	01-335	-	-			-	-	+	-			DX: CWD; VIRO 0/5, *F. psychrophilum* 4/4

Appendix E. Continued

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
2001	Troutlodge	Kamloops trout--3N	01-499	-	-			-	-	-	+			DX: COL, MAS; VIRO 0/5 IHNV 3/3(x2), IPNV 0/6, *F. columnare* 3/4
2001	Troutlodge	Kamloops trout--3N	01-500					-	-	+	-			DX: CWD; F. *psychrophilum* 3/4
2001	Hayspur	Kamloops trout-3N	01-598					-	-	+	+			DX: CWD, MAS; *F. psychrophilum* 4/4, *A. caviae* 4/4
2001	Troutlodge	Kamloops trout-3N	01-599	+	-			-	-	+	-			DX: IHNV, CWD; IHNV 1/1(x3), IPNV 0/3, *F. psychrophilum* 2/3
2001	Troutlodge	Kamloops trout-3N	01-600	-	-			-	-	+	+			DX: CWD, MAS; VIRO 0/4, *F. psychrophilum* 4/4 *A. hydrophila* 1/4, *Pseudomonas* sp. 1/4

Appendix E. Continued

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
2001	Hayspur	Kamloops trout-3N	01-620	-	-			-	-	+	+			DX: CWD, MAS; VIRO 0/8, *F. psychrophilum* 8/8, *A. hydrophila* 4/8

Appendix F. Summary report of Eagle Fish Health Laboratory results for Hayspur Hatchery, January 1 – December 31, 2001.

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
1999	Hayspur	Kamloops trout	01-312	-	-		-	-	-	-	-	-		IX: NPD; VIRO 0/60, FAT 0/60, BACTE 0/12, WHD-DIGEST 0/60
1999	Hayspur	Rainbow trout	01-313	-	-		-	-	-	-	-	-		IX: NPD; VIRO 0/60, FAT 0/60, BACTE 0/12, WHD-DIGEST 0/60
Brood	Hayspur	Kamloops trout	01-488	-	-	-	-							IX: NPD; VIRO 0/30, FAT 0/10, OCP-FAT 0/30, ELISA ARCHIVED
Brood	Hayspur	Rainbow trout	01-498	-	-		-							IX: NPD; VIRO 0/20, FAT 0/10, OCP-FAT 0/20, ELISA ARCHIVED
Brood	Hayspur	Kamloops trout	01-511	-	-	-	-							IX: NPD; VIRO 0/50, FAT 0/10, OCP-FAT 0/50, ELISA ARCHIVED
Brood	Hayspur	Rainbow trout	01-526	-	-	-	-							IX: NPD; VIRO 0/30, FAT 0/10, OCP-FAT 0/30, ELISA ARCHIVED
Brood	Hayspur	Kamloops trout	01-546	-	-	-	-							IX: NPD; VIRO 0/50, FAT 0/10, OCP-FAT 0/50, ELISA ARCHIVED

Appendix F. Continued

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
Brood	Hayspur	Rainbow trout	01-562	-	-	-	-							IX: NPD; VIRO 0/50, FAT 0/10, OCP-FAT 0/50, ELISA ARCHIVED
2000	Hayspur	Rainbow trout	01-563					-	-	+	-			DX: CWD; *Flavobacterium psychrophilum* 3/4
Brood	Hayspur	Rainbow trout	01-580	-	-		-							IX: NPD; VIRO 0/50, OCP-FAT 0/50
Brood	Hayspur	Rainbow trout	01-596	-	-	-	-							IX: NPD; VIRO 0/30, FAT 0/10, OCP-FAT 0/30, ELISA ARCHIVED
2000	Hayspur	Kamloops trout	01-597					-	-	+	-			DX: CWD; *Flavobacterium psychrophilum* 2/2
Brood	Hayspur	Rainbow trout	01-623	-	-	-	-							IX: NPD; VIRO 0/20, FAT 0/20, OCP-FAT 0/19, ELISA ARCHIVED

Appendix G. Summary report of Eagle Fish Health Laboratory results for Henrys Lake Hatchery, January 1 – December 31, 2001.

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
Brood	Henrys Lake	Cutthroat trout	01-044				-							IX: NPD; OCP-FAT 0/105
Brood	Henrys Lake	Cutthroat trout	01-050	-	-		-							IX: NPD; VIRO 0/7, OCP-FAT 0/105
Brood	Henrys Lake	Cutthroat trout	01-051				-							IX: NPD; OCP-FAT 0/105
Brood	Henrys Lake	Cutthroat trout	01-062	-	-		-							IX: NPD; VIRO 0/14, OCP-FAT 0/126
Brood	Henrys Lake	Cutthroat trout	01-063	-	-		-							IX: NPD; VIRO 0/21, OCP-FAT 0/126
Brood	Henrys Lake	Cutthroat trout	01-074	-	-		-							IX: NPD; VIRO 0/14, OCP-FAT 0/84
Brood	Henrys Lake	Cutthroat trout	01-075	-	-	-	-							IX: NPD; VIRO 0/21, NAVHS 0/7, OCP-FAT 0/105

Appendix G. Continued

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
Brood	Henrys Lake	Cutthroat trout	01-076	-	-		-							IX: NPD; VIRO 0/21, OCP-FAT 0/105
Brood	Henrys Lake	Cutthroat trout	01-077	-	-	-	+	-	-	-	+	-		IX: RS, MAS; VIRO 0/60, NAVHS 0/10 FAT 1/60, *Pseudomonas* spp. 1/16, WHD-DIGEST 0/60
Brood	Henrys Lake	Cutthroat trout	01-095	-	-	-	-							IX: NPD; VIRO 0/14, NAVHS 0/14, OCP-FAT 0/147
Brood	Henrys Lake	Cutthroat trout	01-096	-	-	-	-							IX: NPD; VIRO 0/7, NAVHS 0/7, OCP-FAT 0/49
Brood	Henrys Lake	Cutthroat trout	01-097	-	-	-	-							IX: NPD; VIRO 0/21, NAVHS 0/7, OCP-FAT 0/84
Brood	Henrys Lake	Cutthroat trout	01-107	-	-		-							IX: NPD; VIRO 0/21, OCP-FAT 0/105

Appendix G. Continued

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
Brood	Henrys Lake	Cutthroat trout	01-108	-	-		-							IX: NPD; VIRO 0/14, OCP-FAT 0/77
Brood	Henrys	Cutthroat trout	01-125				-							IX: NPD; OCP-FAT 0/21

Appendix H. Summary report of Eagle Fish Health Laboratory results for Mackay Hatchery, January 1 – December 31, 2001.

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
Brood	Deadwood Reservoir	Kokanee salmon	01-387	-	-		-					-		IX: NPD; VIRO 0/32, FAT 0/32, WHD-DIGEST 0/32
Brood	Payette Lake	Kokanee salmon	01-414	-	-		-					-		IX: NPD; VIRO 0/60, FAT 0/60, BACTE 0/8, WHD-DIGEST 0/60
2001	Henrys Lake	Rainbow X Cutthroat hybrids	01-489	-	-		-	-	-	-	-	-		IX: NPD; VIRO 0/60, FAT 0/60, BACTE 0/8, WHD-DIGEST 0/60
2000	Jackson NFH	Snake R. Finespot Cutthroat	01-490	-	-		-	-	-	-	-	-		IX: MAS; VIRO 0/60, FAT 0/60 BACTE 0/8, WHD-DIGEST 0/60

Appendix I. Summary report of Eagle Fish Health Laboratory results for McCall Hatchery Resident Program, January 1 – December 31, 2001

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
2001	Westslope Trout Co.	Cutthroat trout	01-408					-	-	+	-			DX: CWD; *Flavobacterium psychrophilum* 8/8

Appendix J. Summary report of Eagle Fish Health Laboratory results for Mullan Hatchery, January 1 – December 31, 2001.

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
2000	Troutlodge	Kamloops trout--3N	01-214					-	-	+	-			DX: CWD; Flavobacterium *psychrophilum* 6/6
2001	Westslope	Cutthroat trout	01-370	-	-			-	-	-	-			DX: NPD; VIRO 0/1, BACTE 0/4

Appendix K. Summary report of Eagle Fish Health Laboratory results for Nampa Hatchery, January 1 – December 31, 2001.

Brood Year	Stock	Species	Accession	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	CSH	Diagnoses
2000	Hayspur	Rainbow trout	01-010	-	-			-	-	+	-			DX: CWD; VIRO 0/8, *Flavobacterium psychrophilum 8/8*
2000	Troutlodge	Kamloops trout	01-039	-	-			-	-	+	-			DX: BACTEREMIA, CWD; VIRO 0/4, *Pasteurella spp.* 2/4, *F. psychrophilum* 1/4
2000	Hayspur	Rainbow trout--3N	01-040					-	-	+	+			DX: MAS, CWD; *Aeromonas hydrophila 2*/4, *F. psychrophilum* 2/4
2000	Hayspur	Kamloops trout	01-041	-	-			-	-	+	+			DX: CWD, MAS, EXTERMAL MYCOSIS; VIRO 0/5, *F. psychrophilum* 4/4, *A. hydrophila* 2/4, *Pseudomonas alcaligenes* 4/4
2000	Troutlodge	Kamloops trout--3N	01-159	-	-		-	-	-	-	-	-	-	IX: NPD; VIRO 0/60, FAT 0/60, BACTE 0/30, CSH 0/60, WHD-DIGEST 0/60

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