



**RESIDENT FISH HATCHERIES
2006 ANNUAL REPORT**

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RESIDENT FISH HATCHERIES

2006 ANNUAL REPORT

Resident fish hatcheries reared and stocked about 25 million fish weighing over a million pounds. More than 2,500 stocking trips were made to plant fish in over 500 waters in the state. There were a total of 18 species and strains raised by the resident hatcheries during 2006.

Resident hatchery program costs were about \$2.3 million for an average cost of \$2.1 per pound or \$0.1 per fish.

Rainbow trout of catchable size (8 to 12 inches) accounted for approximately one-half the program costs at approximately \$1.2 million. All of the catchable sized fish stocked were triploid to minimize the crossing of the hatchery fish with native fish in the wild.

The resident hatcheries cooperated with the states of Wyoming, Montana, Washington, Oregon and British Columbia as well as the US Fish and Wildlife Service to obtain various species of fish to meet management efforts in Idaho. Kokanee eggs were obtained from British Columbia. Lake trout, Brown trout and Bear River Cutthroat were obtained from Wyoming. Westslope cutthroat were obtained from Montana and private sources. Lahontan cutthroat and Coho salmon were obtained from Washington.

Three captive broodstocks were maintained and spawned at the resident hatcheries, producing over 18 million eggs for various resident programs. These stocks include Westslope Cutthroat Trout, Kamloop rainbow trout and Hayspur rainbow trout maintained at Hayspur Hatchery.

The resident hatcheries operated adult fish traps on the Deadwood River and Granite Creek to obtain kokanee salmon eggs.

The Engineering Bureau coordinated construction at the American Falls, Cabinet Gorge, Hagerman and Sandpoint hatcheries this fiscal year. A lot of work was done to the spring water collection system at American Falls. Permitting and construction of raceways to house Westslope Cutthroat broodstock at Cabinet Gorge was begun as well as a new residence at Cabinet Gorge. New furnaces, pump controls and well pump drive units were also installed at

Cabinet Gorge. Hagerman Hatchery experienced a brief but intense tornado during the Spring of 2006. This caused some damage to trees, bird enclosure fencing and signs but no major damage to buildings was incurred. The hatchery staff and regional staff accomplished a lot of work on the Sandpoint Nature center. This center is being developed with volunteer labor and materials and will become an important part of the Sandpoint community.

Idaho Department of Fish and Game
Resident Hatcheries Fish Production
01/01/06 - 12/31/06

Production Hatchery	Put-and-Take Number	Pounds	Put-Grow-and-Take Number	Pounds	Average Fish/pound	Feed Pounds	Feed Costs	Average Length	Total cost	Cost 1,000 fish	Cost/Pound
American Falls	201,692	80,355	267,519	7,499	5.3	87697	\$27676	7.5	\$230,177	\$490.57	\$2.62
Ashton	160,392	38,332	290,458	5,547	10.2	33,801	\$13,965	6.0	\$161,024	\$357.16	\$3.47
Cabinet Gorge			15,269,656	48,593	314.3	39,149	\$25,159	2.0	\$302,036	\$19.78	\$6.22
Grace	130,279	52,399	977,744	33,873	12.8	87,080	\$31,108	5.6	\$215,421	\$194.41	\$2.50
Hagerman	1,193,006	377,101	2,078,048	116,590	6.6	540,506	\$179,840	6.9	\$634,627	\$194.01	\$1.28
Mackay	100,050	52,871	3,492,845	38,565	39.3	100,392	\$36,125	4.1	\$275,600	\$79.70	\$3.01
McCall			220,440	78.7	2800	67.8	\$45	1.1	\$14,700 ¹	\$66.68	\$188.50
Nampa	882,057	269,183	1,316,658	17,060	7.68	294,160	\$95,925	6.6	\$455,674	\$207.25	\$1.59
Sandpoint			89,125	29	3000	32	\$10.00	1	²		
Sawtooth			42,300	15.0	2,850	10 ²		1	\$9,264 ¹	\$219.00	\$617.00
TOTAL	2,926,990	924,869	22,912,943	166,708	137.44	1,172,417	\$408,505	2.64	\$2,302,295	\$100.48	\$2.11

¹ Flight costs only

² Costs included in the redistribution costs.

Total cost for each hatchery is that hatchery's total budget minus capital outlay expenditures

Redistribution of catchables

Hatchery	Put-and-Take Number	Pounds	Average Fish/pound	Feed Pounds	Feed Costs	Average Length	Total cost	Cost 1,000 fish	Cost/Pound	
Clearwater	98,590	37,025	2.7	8,452	5,142	9.5	\$22,191	\$225.08	\$0.59	
McCall	96,280	29,000	3.32	1,450	\$754	9.2	\$11,019 ³	\$114.57	\$0.38	
Mullan	38,084	11,700	3.25	0	0	9.2	\$35,794	\$941.94	\$3.059	
Sandpoint	111,442	34,300	3.25	0	0	9.2	\$64,371	\$577.62	\$1.88	
Sawtooth	50,125	15,328	3.27	350	\$157	9.2	\$5,199 ³	\$103.98	\$0.34	
Hayspur	51,235	14,212	3.6	0	0	9.2	Costs not separated out			

³ Distribution mileage costs only

IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

AMERICAN FALLS FISH HATCHERY

**Steve Wingert, Fish Hatchery Manager
David Billman, Assistant Fish Hatchery Manager
Casey Corrington, Biological Aide**

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 approximately 200,000 catchable sized (10-inch) Rainbow Trout, *Oncorhynchus mykiss*. The AFFH also produced 16 inch catchable Rainbow Trout for Springfield Lake. In addition, fingerling (from 3-inch to 6-inch) Rainbow and Westslope Cutthroat trout, *Oncorhynchus Clarkii lewisi*, are reared as requested. The number and pounds of fingerling produced varies significantly from year to year.

Two permanent employees and eleven months of temporary employee time staffed the AFFH during 2006. Volunteers are utilized for special projects as needed and when available.

Funding for the AFFH operation came from license monies and from the proceeds of mitigation fish stocked into the Gem State Hydropower Project at Idaho Falls from the city of Idaho Falls.

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

Water for the AFFH comes from Rueger Springs, which is located on AFFH property. These springs flowed an average of 19.43 cubic feet per second (cfs) at a water temperature of 54°F to 56°F during 2006.

FISH PRODUCTION

The AFFH raised triploid Hayspur strain Rainbow trout (T9), triploid Troutlodge Kamloops (TT), and Westslope Cutthroat (C2) from the Westslope Trout Co. as well as Conner Lake Westslope Cutthroat trout from the Hayspur Hatchery for the 2006 production year.

The AFFH stocked and transferred 225,279 Westslope Cutthroat trout (4,299 (lbs.) in northern Idaho waters. The AFFH stocked and transferred 201,682 catchable rainbow trout (80,355 lbs.) statewide. In total 42,240 fingerling rainbow trout (3,200 lbs.) were stocked from the AFFH. The AFFH received no triploid rainbow eggs from the Hayspur fish hatchery during the 2006 calendar year and 120,000 triploid eggs from Troutlodge. Total fish stocked and transferred was 469,201 fish, weighing 87,854 pounds (Appendix 1). Net production for the year (lbs. stocked + lbs. on hand 12/31/2006 - lbs. on hand 1/1/2006) was 83,685 pounds. Net number of fish produced, using the same basic formula, was 264,798 fish.

Costs in 2006 for various types and sizes of fish food were \$27,676.69 (Appendix 2). Feed costs for the year were \$0.33 per net pound of fish produced, or \$0.104 per net fish.

Production costs overall were \$2.62 per net pound of fish produced. This cost includes all AFFH personnel and operating costs and the cost of transportation of AFFH fish to stocking waters using fish transports stationed at the Nampa and Hagerman Fish Hatchery during 2006. This figure does not include capital outlay or capital construction/repair costs.

Feed conversion for the year averaged 1.06 pounds of feed per net pound of fish produced.

MAJOR HATCHERY IMPROVEMENTS

- Large cobble was hauled into Rueger Springs to put surface water underground.
- Trees were removed from the spring area to prevent roots from obstructing the flow.
- Hardwood floors in Residence #2 were refinished.
- Nature/bird trail sign was designed and installed.
- Residence #1 garage was repainted.
- The second hatchery pump was rebuilt.
- All locks at the hatchery were re-keyed.

HATCHERY NEEDS

- The garage of residence #1 needs to be replaced.
- The automatic feeding system should be replaced.
- Additional raceways are needed to maximize efficiency and to more fully utilize the available water.

SPRINGFIELD HATCHERY

In 2006 the Fish and Wildlife Foundation acquired the private Crystal Springs Hatchery near Springfield Idaho and has arranged for the Department of Fish and Game to manage the facility. Since January of 2006 the AFFH staff has been actively involved in procurement, cleanup, and management of the Springfield (formerly Crystal Springs) Hatchery. These efforts have taken approximately 266 hours of personnel time by the AFFH staff during the year.

PUBLIC RELATIONS

The AFFH received an estimated 3,500 visitors during this period. Additionally, organized, scheduled tours were given to schools, scouts, and families which consisted of 475 children and approximately 65 adults. AFFH staff also gave presentations at camps, group meetings, zoo events, and school events which were attended by an estimated 500 children and adults. Other visitors include bird-watchers, drop-in visitors, hunters, and fishermen.

VOLUNTEER PROGRAM

Multiple volunteers were used throughout the year to assist in scatter planting catchable fish and hand loading fish onto transport trucks. Volunteer contributions have been documented by the region 5 volunteer coordinator.

ACKNOWLEDGMENTS

During this year employees at AFFH were: Steve Wingert, Hatchery Manager I; David Billman, Assistant Fish Hatchery Manager; Jennifer Evans, Biological Aide, and Casey Corrington, Biological Aide.

APPENDICES

Appendix 1. Swimming Inventory with fish transferred or stocked by month, American Falls Fish Hatchery, 2006.

Month	Fish on hand	Pounds on hand	Fish stocked	Pounds stocked
Dec. 2005	265,697	7,434	0	0
	78,666*	1,431*		
Jan. 2006	257,956	14,293	0	0
	78,290*	1,097*		
Feb. 2006	256,691	23,014	803	315
	78,128*	2,156*		
Mar. 2006	252,486	36,338	0	0
	77,964*	2,603*		
Apr. 2006	240,167	44,674	11,840	4,590
	12,323*	231*	74,812*	3,450*
May 2006	199,343	38,447	42,510	16,657
	6,613*	3*	5,610*	340*
Jun. 2006	149,249	30,332.6	73,567	15,826
	6,303*	13*		
Jul. 2006	289,865	23,794	22,136	8,910
	6,222*	26*		
Aug. 2006	292,007	20,633	21,866	9,145
	6,196*	52*		
Sep. 2006	310,454	26,401	8,047	3,252
	6,174*	87*		
Oct. 2006	97,060	1,967	63,153	24,860
			144,857*	509*
Nov. 2006	120,491	4,406.3	0	0
Dec. 2006	139,960	4,695.9	0	0
Total Rainbow			243,922	83,555
Total Cutthroat			225,279*	4,299*
Grand Total			469,201	87,854

* Denotes cutthroat trout, all others are rainbow trout.

Appendix 2. Fish feed fed during the 2006 production year, American Falls Fish Hatchery.

Source	Size/Type	Pounds	Cost
Rangen Dry	0	29	14.04
Rangen Dry	1	100	48.40
Rangen Dry	2	152	73.57
Rangen Dry	3	296.5	143.51
Rangen Dry	1/16"	257.75	109.80
Rangen Dry	1/8"	1618	514.52
Rangen Dry	2.4mm OTC	427	270.33
Rangen Dry	3 OTC	225	162.63
Silver Cup	00	30.5	14.94
Silver Cup	0	107.5	52.67
Silver Cup	1	240.75	117.96
Silver Cup	2	836.5	346.39
Silver Cup	3	655.5	274.08
Silver Cup	1mm	600	270.00
Silver Cup	2mm	3,889.5	1365.35
Silver Cup	3.5mm	78,232	23,898.50
TOTALS		87,697.5	\$27,676.69

IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

ASHTON FISH HATCHERY

**Mel Sadecki, Fish Hatchery Manager I
Paul Martin, Fish Culturist**

INTRODUCTION

Ashton Fish Hatchery (AFH) is located in Fremont County, approximately two miles southwest of the small community of Ashton. The water source is Black Springs, which has a maximum flow of 5.5 cfs at 50 F. Constructed in 1920, and funded by fishing license dollars, Ashton Hatchery serves as a "specialty station," rearing seven species/strains of trout, char and grayling including rainbow trout *Oncorhynchus mykiss*, cutthroat trout *O. clarkii*, Arctic grayling *Thymallus arcticus*, brook trout *Salvelinus fontinalis*, rainbow x cutthroat hybrid, brown trout *Salmo trutta* and golden trout *O. aquabonita*.

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 450,850 fish (43,879 lbs) were produced at AFH this year, consisting of 290,458 fry and fingerlings (5,547 lbs), and 160,392 catchable sized fish (including holdovers) (38,332 lbs). Total numbers were up although total lbs were down from the previous year (Appendix 1). Production costs (excluding capital outlay) were \$161,024.22 with \$13,964.98 spent on fish feed and the remaining \$147,059.24 spent on general hatchery operations and personnel costs. Fish transportation cost for 2006 was \$8,744.30. The average cost per lb of fish produced (less transportation cost) was \$3.47 (Appendix 1).

All of the fish reared at AFH were received as eyed eggs with the exception of the grayling which were received as green eggs (Appendix 3).

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 was 1.02 and conversion for holdovers was 0.70 in 2006 (Appendix 2). 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 egg to distribution was 78.9%. This is an increase of 12.2% primarily due to relatively good survival of the Grayling this year.

Rainbow Trout

Ashton Fish Hatchery produced and stocked 69,445 9-inch catchable rainbow (26,746 lbs) for distribution into area lakes and streams (Appendix 1). In December 2005, we received 125,000 Hayspur triploid rainbow trout (T9) eggs. From these eggs, 20,467 T9 fingerlings, averaging 2.1 inches, were planted in a number of Upper Snake Region waters. In October 4,079 (1,575 lbs) of 9-inch T9 catchables were received from American Falls to help us meet our requests in 2006. An additional 90,947 (11,586 lbs) of 6-inch T9 holdovers were produced for stocking in 2007.

Golden Trout

In July we received 40,000 Golden Trout eggs from Mt. Whitney Hatchery. From these eggs we produced 39,120 (10.5 lbs) of fry that were transferred for stocking into mountain lakes.

Henrys Lake Cutthroat Trout

No Henrys Lake Cutthroat were reared at Ashton Hatchery during 2006.

Rainbow x Cutthroat Hybrid

We received 29,000 Rainbow x Cutthroat eyed hybrid eggs from Henrys Lake Hatchery in May 2006. From these eggs Ashton Hatchery produced 22,200 Rainbow x Cutthroat hybrids (125.3 lbs.) during 2006.

Arctic Grayling

In May 2006 we received 150,000 green Arctic Grayling eggs from Meadow Lake, Wyoming. From these eggs we produced 64,789 fry weighing a total of 11.83 lbs.

Brook Trout

In October 2005 we received 295,000 eyed triploid eggs from Kootenay Trout Hatchery, British Columbia for stocking as fingerling 2006. These eggs were in very good condition compared to those received during 2004. State fisheries policy allows for stocking approximately 100,000 Brook Trout into Henrys Lake only. We therefore destroyed 152,000 eyed eggs during November 2005 and kept the remaining 143,000 eggs. From these eggs we produced 107,125 fingerling with a total weight of 5,100 lbs. In November 2006 we received 200,000 eyed triploid brook trout eggs for stocking in 2007.

Brown Trout

In November 2005 we received 40,000 Brown Trout eggs from Auburn Hatchery, Wyoming. This resulted in 36,757 (124.75 lbs). Fingerling that were transferred to Hagerman Hatchery for stocking in Region 4. In November 2006 we received 25,000 brown trout eggs from Auburn Hatchery, Wyoming and an additional 75,000 eggs from Glenwood Springs, Colorado for stocking during 2007 in Region 4.

HATCHERY IMPROVEMENTS

No major hatchery improvements were undertaken this year.

Future needs include installing collection pipes and covering the recently purchased spring area. We also need to improve the existing spring collection area, which has become overgrown resulting in flooding and reducing the quality and quantity of water available for fish rearing.

FISH STOCKED AND TRANSFERRED

The stocking program at AFH remained similar to last year's program. The numbers of catchable rainbow trout on-station were not sufficient to meet our requests for 2006. Additional fish were received from American Falls Hatchery and stocked by Ashton Hatchery. Grace Hatchery also stocked catchables into Ashton Reservoir to help us meet our 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 33,801 lbs of fish feed were fed (Appendix 4) to produce 34,367 lbs of gain (Appendix 1), for an average conversion of 0.98.

PUBLIC RELATIONS

Approximately 1,000 people visited AFH this past year. About 100 elementary students from as far away as Idaho Falls visited the hatchery during the spring, summer, and fall for tours. During 2006 Paul Martin gave a presentation at Ashton Elementary School on cutthroat trout. Staff also gave a presentation and answered questions regarding Ashton Hatchery Operations to the local Rotary Club.

SPECIAL PROJECTS

No special projects were undertaken this year.

APPENDICES

Appendix 1. Fish production and cost, Ashton Fish Hatchery, 2006

Species	Size	Number Fish	Pounds Planted or transf.	Weight Gained In 2005	Cost/lb	Cost/fish	Total Cost
Fry and Fingerlings Produced and Stocked							
Hayspur triploid Rainbow	2.7	20,467	174.5	166.9	21.46	0.183	3,746.08
Rainbow x Cutthroat hybrid	2.4	22,200	125.3	117.2	31.60	0.178	3,959.28
Brown Trout	2.0	36,757	124.7	108.7	51.28	0.174	6,395.75
Brook Trout Triploids	5.1	107,125	5,100.0	5,050.3	5.28	0.251	26,938.31
Grayling	1.2	64,789	11.8	8.2	928.52	0.169	10,956.54
Golden Trout	1.0	39,120	10.5	1.0	630.15	0.169	6,616.56
Totals/Ave	3.4	290,458	5,546.8	5,452.3	10.56	0.202	58,612.52
Catchables Produced and Stocked							
Hayspur triploid Rainbow	9.9	69,445	26,746	17,348	2.17	0.838	58,209.02
Totals/Ave	9.9	69,445	26,746	17,348	2.17	0.838	58,209.02
Catchables Produced For 2006							
Hayspur triploid Rainbow	6.8	90,947	(11,586) On hand	11,536.4	3.06	0.389	35,458.38
Totals/Ave	6.8	90,947	11,586	11,536.4	3.06	0.389	35,458.38
GRAND TOTAL *		450,850	43,878.8	34,336.7	3.47	0.337	152,279.92

* Includes fish on hand

Appendix 2. Comparative growth rates, feed conversion, and percent survival for all species reared at Ashton Fish Hatchery, 2006.

Species	Average Monthly Length Increase	Average Conversion	Percent Survival
Brown Trout	.399	.630	91.9
Brook Trout Triploid	.504	.770	74.9
Golden Trout	n/a	n/a	97.8
Rainbow (catchables) Hayspur	.438	1.04	68.7
Rainbow (fingerlings)	.432	0.70	89.1
Rainbow x Cutthroat	.492	0.79	76.5
Grayling	.470	2.77	43.2
Holdover for 2006 stocking			
Rainbow	.510	0.91	89.1

Appendix 3. Origin of eggs and fish stocked or transferred, Ashton Fish Hatchery, 2006

Species	Source	Eggs	Fish	Destination	Stocked	Transferred	Size (inches)
Brown Trout	Auburn, WY	^a 40,000		Region 4		36,757	2.0
Brown Trout	Auburn, WY	^b 25,000		Region 4			eggs
Brown Trout	Glenwood Sprgs, CO	^b 75,000		Region 4			eggs
Brook Trout Triploid	Kootenay, BC	^a 143,000		Henry's Lake	107,125		5.1
Brook Trout Triploid	Kootenay, BC	^b 200,000		Henry's Lake			eggs
Rainbow x Cutthroat		29,000		Region 6	22,200		2.4
Grayling	Henry's Lake	150,000		Statewide	10,229	54,560	1.0
Golden Trout	Meadow Lake, WY Mt. Whitney, CA	40,000		Statewide		39,120	1.0
Hayspur triploid rainbow	Hayspur	^a 135,000	--	Region 6	69,445	--	9.9
Hayspur Triploid rainbow	Hayspur	125,000	--	Region 6	20,467	--	2.7
Hayspur Triploid Rainbow	Hayspur	^b 125,000		Region 6			eggs
Total stocked or transferred					229,466	130,437	

^aReceived prior to 2006

^bFor stocking in 2007

Appendix 4. Feed use, Ashton Fish Hatchery, 2006

Size	Source	Pounds	Cost/lb	Total Cost
Swimup	Rangens	157	0.4857	76.26
#1 Starter	Rangens	300	0.4840	145.20
#2 Starter	Rangens	2,000	0.4840	968.00
#3 Starter	Rangens	1,000	0.3480	348.00
3/32 pellet	Rangens	4,000	0.3380	1,352.00
3/32 TM	Rangens	500	0.5507	275.35
1/8 pellet	Rangens	25,800	0.3096	7,988.20
1 Bio-Diet	Bio-Products	44	1.06	46.64
Shipping				2,765.33
Total		33,801	0.413	13,964.98

IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT 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, 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 Idaho Department of Fish and Game (Department). The primary purpose for Cabinet Gorge Hatchery 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 releases are timed to coincide with cycles of zooplankton blooms. Maximum hatchery capacity is 20 million eggs, with fish production of 16 million two-inch fry.

The CGFH is staffed with three permanent employees. Thirty-one months of temporary labor are available for use during the year. Housing accommodations on station include two residences for the permanent staff and crew quarters for two temporary employees. The fish culturist is housed at a residence at the 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 5.4 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 (pump #7 and #8) was utilized for the entire kokanee incubation and early rearing period. Incubation and early-rearing water temperatures were maintained around 49°F (range 45.0°F to 52.0°F). Production water ranged from 37.0° to 46.0°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 of rearing space in the hatchery building and the 1,500 cubic feet of space in the adult holding ponds.

Rearing Facilities

Rearing facilities at the hatchery include 128 upwelling incubators and 64 concrete raceways. The incubators are 12 inches in diameter by 24 inches high with a maximum capacity of 150,000 kokanee eggs each. In addition, a total of 30 upwelling incubators, which are 6 inches in diameter and eighteen inches high, are available. The smaller incubators have a maximum capacity of 30,000 kokanee eggs each. The 64 concrete raceways have 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

Cabinet Gorge Hatchery produced a total of 15,269,656 fish in 2006 weighing 48,593 lbs (Appendix 2). On January 1, 2007, an estimated total of 11,654,800 Lake Pend Oreille kokanee eggs were on hand (Appendix 1). In addition 144,000 westslope cutthroat fingerling and 2,500,000 early-spawning kokanee alevin were on hand at the end of the year.

A total of 39,149 lbs of feed produced 45,348 lbs of weight gain for an overall (all species reared) feed conversion of 0.86. Total production cost (including Nampa's transportation costs) was \$302,036, resulting in a cost per pound of fish of \$6.66, cost per inch of fish of \$0.0091, and \$19.78 per thousand fish (Appendix 2).

Lake Pend Oreille Kokanee

General Rearing

Fertilized eggs were brought to the CGFH and disinfected in 100-PPM 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 Jentsort JHC-114 model sorter and Jentsort JX-42 model sorter (on loan from Clearwater Hatchery). Fry were allowed to volitionally swim out of the incubators into the raceways at 1,450 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.

Initial early rearing loading rates averaged 250,000 swim-up fry per raceway. With the new rearing protocols and lower rearing densities, kokanee growth rates were equivalent to 29 monthly temperature units per inch of growth (MTUs), (2005, 29 MTUs). Fish health was excellent throughout rearing and no Bacterial Gill Disease was encountered in 2006.

Kokanee were feed trained at approximately 49 to 52°F using Skretting (formerly Moore-Clark) Nutra Plus #0 starter for 10 days. Feed training continued from the day 11 to day 28 utilizing a 50:50 mix of Skretting Nutra Plus and Rangen Trout and Salmon starter diets in sizes from swim-up to starter #1. On day 18, raceways were extended to full length and on day 25 the fry were placed on Rangen Trout and Salmon starter #1 only. On day 29, water temperatures were lowered to emulate natural production in LPO. The fry remained on Rangen Trout and Salmon starter #1 for the duration of rearing. This was the same rearing protocol that was initiated on brood year 2002 with very favorable results.

A total of 13,961,145 late kokanee fry were produced at an average length of 2.17 inches and an average weight of 326 fish per pound (fpp). These fish gained 40,350 lbs from 34,159 lbs of feed, resulting in a conversion rate of 0.85: 1.0. Fish production cost was \$6.53 per pound, \$0.0087 per inch, and \$18.88 per thousand (Appendix 2).

Survival of Lake Pend Oreille green eggs to feeding fry was estimated at 82.8% (2005, 79.4%). Survival from first feeding to release was estimated at 96.6% (2005, 98.8%), resulting in survival from green egg to release of 80.0% (2005, 78.4%).

A total of 1,117,394 early kokanee fry were produced at an average length of 2.16 inches and an average weight of 332 fpp. These fish gained 3,168 lbs from 3,264 lbs of feed, resulting in a conversion rate of 1.03: 1.0. Fish production cost was \$7.95 per pound, \$0.0104

per inch and \$22.54 per thousand. Of these 1,105,299 (3,330 pounds) were stocked into Lake Pend Oreille (Appendix 2).

Survival of early kokanee eyed eggs to feeding fry was estimated at 95.5% (2005, 98.6%). Survival from first feeding to release was estimated at 97.5% (2005, 99.6%), resulting in survival from eyed egg to release of 93.1% (2005, 98.3%).

Fish Marking

To evaluate the success of a kokanee (*O. nerka kennerlyi*) stocking program in Lake Pend Oreille, an otolith thermal mass-marking (Volk, et al, 1990) program was utilized at Cabinet Gorge Hatchery. All kokanee fry received a thermally induced otolith pattern at the eye-up to swim up stage of development. Differential temperature was about 9°F. These fish will be distinguishable from their wild counterparts, as well as other hatchery year classes, by examining otolith growth rings for these distinctive bands, which are unique each year.

Analysis of pre-release fish specimens (Grimm et. al. 2006) verified the presence of a recognizable otolith mark on all thermally treated fry.

Two factors contributed to the success of the t-marking and recovery of the t-marks. 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 short (less than seven days) spread of the egg takes that were 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.

All of the adults that returned to the Sullivan Springs kokanee trap in the fall of 2005 were t-marked. With results from the Washington Department of Fish and Wildlife (WDFW) otolith lab in Olympia, Washington, Idaho fisheries biologists were able to determine the age of the fish and whether it was of hatchery or wild origin. Based on 60 fish sampled from the 2005 kokanee spawning run 22% were hatchery four-year-olds (BY2000), 40.6% were hatchery three-year-olds (BY2001), 5.1% were hatchery two-year-olds (BY2002), and 32.2% were four-year-olds of wild origin. To date, no results have been received from the 2006 spawning adults.

Fish Liberation

On May 31, 2006, 1,105,299 early kokanee fry and 195,284 late kokanee fry were released into Sullivan Springs. From June 13 through 15, 7,884,424 late kokanee fry were released into Sullivan Springs. On June 26, 2006, 1,021,932 late kokanee fry were released into Spring Creek and 1,020,365 late kokanee fry were released into Twin Creek.

In a continuing effort to encourage pioneering of kokanee into unused traditional lake-shore spawning gravels, late kokanee fry were also released into locations along the northern and western shores of Lake Pend Oreille. On June 6 and 7, 2006, 911,114 late kokanee fry were released at Talache Landing. On June 15, 2006, 1,014,454 late kokanee fry were released from Trestle Creek to Ellisport Bay. From June 17 to June 21, 2006, 503,788 were released into Garfield Bay, and 940,337 were released into Camp Bay. On June 27, 2006, the last of the hatchery kokanee 445,311 were released directly into the river through the lower hatchery ladder.

Numbers at release were based upon Jensorter counter/sorter inventory numbers at eye-up minus mortality. All fish were off feed one day 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. All raceways of fish were displaced onto the transport trucks for all of the releases to double check inventory numbers.

The early kokanee fry release group was transported in two 3,000-gallon capacity Department tankers. One trip was made to Sullivan Springs on May 31, 2006 (which included 530 pounds of late kokanee- "to top off the load").

The Sullivan Springs release group was transported in two Department tankers (3,000-gallon capacity) and the 2-ton stocking truck from Sandpoint Hatchery. Loading densities of small fish in all of the tankers was kept below 0.60 pounds per gallon. Fish were planted below the bridge on the access road to the Department's patrol cabin. Two tankers made six releases each on June 13, 14, and 15, 2006. Five additional releases were made with the two-ton stocking truck from Sandpoint Hatchery.

The Trestle Creek and Ellisport Bay releases were made with the two 3,000-gallon capacity Department tankers. All of the other late kokanee fry releases (excluding ladder release) were accomplished utilizing the one and 2-ton stocking trucks from Sandpoint and Mullan hatcheries.

Other Species

On October 5, 2006, the Cabinet Gorge Hatchery received 139,552 westslope cutthroat weighing 455 lbs and 5,335 Connor Lake strain westslope cutthroat weighing 62 lbs from American Falls Hatchery. On December 31, 2006, the hatchery had on hand 139,130 westslope cutthroat and 5,260 Connor Lake strain westslope cutthroat weighing 2,064 and 231 lbs, respectively (Appendix 2).

During the month of May 2006, a total of 12,095 early spawning kokanee were released into four lowland lakes in Regions 1 and 2. These fish averaged 336 fpp and had attained a length of 2.15 inches at release.

On December 31, 2006 the hatchery had 2,500,000 early spawning kokanee sac-fry on hand. This stock came from Deadwood Reservoir. These fish will be used to start a run of early spawners in Sullivan Springs, supplement shoreline spawning in the Trestle Creek area on Lake Pend Oreille, and also stock lowland lakes in Regions 1 and 2.

HATCHERY IMPROVEMENTS

Repairs and Improvements

- New propane furnaces and ducting were installed in residence #1 and #2.
- A new control board was installed on the main hatchery generator.
- Large rocks were removed from the west end of the hatchery building.
- A new frequency drive was installed on pump #3.

- Pump #3 was pulled and a new shaft, casing and pump head were installed.
- The IDFG engineering crew installed a new pipeline from pump #3 to the new cutthroat raceways.
- The 480v electrical wire to pumps 7 and 8 was re-routed.
- The IDFG engineering crew did the dirt work preparation for the new cutthroat raceways.
- The main entrance sign to the hatchery was repaired.
- A new satellite dish was installed.

HATCHERY RECOMMENDATIONS

An inadequate amount 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 5.4 cfs is available from the lower springs. Modification of existing water collection and pumping facilities or drilling additional wells at this location is warranted. The lower springs collects approximately 6 cfs of available water but the means to pump it is unavailable. Additional water at this location is also available for collection.

All of the 64 raceways (inside and out) need to be sandblasted 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.

The catwalk structure and the stream anchors for the lower weir at the Granite Cr. trap are made of wood and need replaced. Metal framework and concrete anchors are needed.

A third residence, for the Fish Culturist who currently lives at the Clark Fork Hatchery, needs to be built at CGH. This would make the Fish Culturist available for alarm duty as well as be more accessible during kokanee spawning and egg incubation.

An additional 14 doors need to be purchased to replace the existing rusted out doors on the hatchery building.

Residence's #1 and #2 at the old Clark Fork Hatchery are in need of new roofs and furnaces. They are both 30 plus years old.

The main back-up generator and control panel as well as the alarm system for the hatchery is over 20 yrs old and needs replaced.

FISH SPAWNING

Fish Trapping

The Clark Fork River fish trap was in operation from July 24, 2006 to November 21, 2006. The first adult kokanee entered the trap on October 24, 2006. From October 24 to

November 21, 2006, a total of 300 adult kokanee were trapped. These fish were released back into the river on November 21, 2006 and the ladder was subsequently shut down. No eggs were taken. From July 24, 2006 to October 29, 2006 the trap was used by Avista Corp. personnel to collect and sample bull trout. A total of 22 adult bull trout were trapped, tagged, held for genetic results, and released. Avista also installed and operated a baited cod trap, electroshocked, and hook-and-lined bull trout from the Clark Fork River that were staged on the spawning beds. The baited cod trap was unsuccessful at capturing any bull trout. Electroshocking yielded 28 adult bull trout over a four month period. Nineteen adults (5 from the hatchery ladder) 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 USFW 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, the out-migrating adults were recaptured and trucked back to the hatchery ladder and released.

The Sullivan Springs trap was in operation from October 24, 2006 to December 21, 2006. The Sullivan Springs trap collected 64,382 (138,812 in 2005) adult kokanee salmon. Of these, 10,683 (27,363 in 2005) adults were passed above the trap to spawn naturally in Sullivan Springs Creek. Spawntaking records showed that 45.0% (37.7% in 2005) of the run was female (23,598).

Spawntaking and Eggs Received

An estimated total of 11,654,800 green fertilized kokanee eggs were collected during the 2006 spawning season. Of the 23,650 total females trapped, 21,234 female kokanee were spawned at the Sullivan Springs trap and none were spawned at the hatchery ladder trap (Appendix 1).

A total of 3,548,850 green fertilized early spawning kokanee eggs were received from Deadwood Reservoir on September 12 through 26, 2006.

FISH FEED

The fish produced during 2006 were fed a total of 39,149 lbs of feed. Fish feed was acquired from Rangen's Inc. and Skretting USA, Inc. (formerly Moore-Clark USA, Inc.) The overall conversion was 0.86 lbs of feed to produce 1 lb of fish, not including the weight of mortality (Appendix 2).

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 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 in recent years, 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 200 people signed our guest registration book this year. An estimated 500 visitors toured the hatchery during the 2006 season. In addition, six hatchery tours were given to local school groups.

The CGH staff was also involved with the Living Stream in the classroom program. A total of seven local schools received eyed eggs (kokanee) or fish (kokanee) for their classroom tanks. An educational presentation was given to each class at the time of delivery.

The CGFH staff assisted with the local Free Fishing Day event in Clark Fork. There were approximately 30 children and adults that participated.

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 regional and hatchery Department personnel for their cooperation during the spawning season. The staff would also like to thank Zach Olson- Fish Culturist, CGFH Maintenance Craftsman- John Suhfras, Mullan Hatchery Fisheries Technician- Mary Van Broeke and CGFH Biological Aides- Tyler Long, Beth Brown, Laura Censky, Rauno Raiha (Bonner County Sheriff's boat operator), Clint Parrish, Jessica Shaw, and Amarisa Fish for their dedication and hard work in making 2006 a successful year.

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Appendix 1. Lake Pend Oreille kokanee spawntaking summary, 2006.

Spawntaking Site	Total Fish	Females Spawned	Females Unspawned	Green Eggs	Fecundity	Percent Females *
Sullivan Sps.	64,382	21,234	2,932	11,654,800	549	45.0%
Cabinet Gorge	300	0	n/a	n/a **	n/a	
Totals/Ave:	64,682	21,234	2,932	11,654,800	549	45.0%

* includes male/female prespawn mortality
(not recorded for hatchery ladder)

** Note: all adults were released back into the river on November 21, 2006 when the ladder was shut down.

Appendix 2. Production summary, all species, 2006

Species	Number	Pounds	Length	Fish/lb	Feed Fed	Feed Cost (b)	Annual Cost (c)	Cost/lb Of fish	Cost/1,000 fish	Cost/inch of Fish	Conversion
Pdo KL	13,961,145	42,843	2.17	326	34,159	\$21,591.29	\$263,537.96	\$6.51	\$18.00	\$0.0087	0.85
Can. KE	1,117,394	3,366	2.16	332	3,264	\$2,063.12	\$25,181.88	\$7.95	\$22.54	\$0.0104	1.03
N.D. FC	46,727	89	1.85	525	33	\$43.59	\$254.60	\$4.98	\$5.45	\$0.0029	0.64
06-WS Cutt (a)	139,130	2,064	3.48	67	1,496	\$1,343.22	\$11,541.70	\$7.17	\$82.96	\$0.0238	0.93
06-WS Cutt. (C.L.) (d)	5,260	231	5.00	23	197	\$118.20	\$1,519.86	\$9.00	\$288.95	\$0.0578	1.17
Totals/ave.	15,269,656	48,593	2.18	314	39,149	\$25,159.41	\$302,036.00	\$6.66	\$19.78	\$0.0091	0.86

IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

CLEARWATER FISH HATCHERY

**Cassie Sundquist, Fish Culturist
Holly Stanton Smith, Fisheries Technician**

INTRODUCTION

The Clearwater Fish Hatchery (CFH) is located in the community of Ahsahka in Clearwater County. 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. Hatchery construction was completed in 1991 by the US Army Corps of Engineers (USACE) under the United States Fish and Wildlife Service's (USFWS) Lower Snake River Compensation Plan (LSRCP). The CFH is owned by the USFWS and operated by Idaho Department of Fish Game (Department) staff. Mitigated funding is provided by the LSRCP.

The primary purpose for CFH is mitigation for anadromous fish losses caused by hydroelectric dams. Anadromous fish production occupies all available rearing space leaving no excess rearing space for catchable rainbow trout *Oncorhynchus mykiss* production.

The CFH receives water through two supply pipelines from Dworshak Reservoir; the primary pipeline which can supply 70.7 cubic feet per second (cfs) of warm water and the secondary pipeline which can supply 9.1 cfs of cool water. The primary intake is raised and lowered manually with a winch to maintain 56°F for as long as possible throughout the year. The secondary intake is stationary at an elevation of 1,357 ft. This design allows mixing of water to target a specific temperature.

FISH PRODUCTION

Release Year 2006

Catchable Rainbow Trout

The CFH did not produce catchables in 2006 because spring Chinook and steelhead trout occupied all available rearing space. The CFH was strictly a redistribution center for Nampa State Fish Hatchery (NSFH) reared rainbow trout catchables in 2006.

FISH STOCKED AND TRANSFERRED

Catchable Rainbow Trout

The CFH redistributed 98,590 Troutlodge triploid rainbow trout during 2006 which were reared at NSFH (Appendix 1). They averaged 2.66 fish per pound (fpp) for a total weight of 37,025 lbs. A total of 62 fish plants were administered to 28 different plant sites. Included in this total were 2,049 (Shasta strain) rainbow trout that were reared at Dworshak and Kooskia National fish hatcheries for their annual open house. These surplus fish were stocked by CFH personnel into Spring Valley Reservoir, Powell and Fenn Ponds.

FISH FEED

Catchable Rainbow Trout

The CFH redistributed catchable rainbow trout into Region 2 waters during 2006. These fish were stocked in local waters as fast as they arrived; therefore, little supplemental feed was needed to maintain overall health and size of the fish.

A total of 8,452 lbs of Bio-Oregon Semi-Moist Grower and Bio-Dry 3000 feed was fed to the rainbows through the summer of 2006 as a maintenance diet (Appendix 2). This food was surplus feed from the CFH Chinook and steelhead programs.

PUBLIC RELATIONS

The CFH and its satellites were open to visitors during the year. Tours at the main hatchery were given to various groups. We had visitors from many states, as well as other countries.

On June 1, 2006, Kelsi Leach and Holly Stanton Smith planted 523 catchable rainbow trout (3.0 fpp) into Camp Grizzly Pond. Camp Grizzly Pond was stocked again on June 22, 2006 by Kelsi Leach with 699 catchable rainbow trout (2.33 fpp).

On June 9, 2006, two summer youth employees assisted Dworshak Hatchery during their annual open house.

On July 12, 2006, Kelsi Leach and Fred Hough planted 490 catchable rainbow trout (2.8 fpp) into Jaype Mill Pond for a sixth grade 4-H Forestry Tour.

On August 4, 2006, Randy Hutzenbiler planted 490 catchable rainbow trout (2.8 fpp) into Orofino Creek near Pierce, Idaho for their annual 1860 Days Celebration.

SPECIAL PROJECTS

A total of 30 adult size fish, ranging in weight from 3 to 8 lbs, were recovered from CFH total flow pond. The planting crew supplemented three different sites with these large fish.

FISH HEALTH

In general, the fish health at CFH was good this year. The catchable rainbow trout were transferred from NSFH to CFH and these fish were, in most cases, immediately stocked out into regional waters. These fish showed no signs of poor health. All fish at CFH were monitored daily by personnel to detect any early signs of fish health problems.

NEW ZEALAND MUD SNAIL INFORMATION

All fish at CFH came from the 100 and 200-ft sections of C Bank at NSFH where no New Zealand mud snails were found.

ACKNOWLEDGEMENTS

The Clearwater Fish Hatchery would like to thank the Nampa State Fish Hatchery crew for raising the rainbows and also Dick Bittick and Gary Ady for transporting the rainbows to Clearwater Fish Hatchery for distribution. Bio-Aides that aided in rainbow distribution included Kelsi Leach, Jenny Hole, Nichole Madrid, Steve Duty, Max Baush, Theresa Elliot, Jeff Jenni, Rebekah Waltmann, Brandon Filloon, Matt Wilson and Morgan Fife; Fishery Technician, Chad Hensen and Holly Stanton Smith; Maintenance Craftsman, Fred Hough; and 2 youths involved in the Clearwater Youth Program.

Appendix 1. Clearwater Fish Hatchery resident fish redistribution, January 1 - December 31, 2006.

2006 Catchable Rainbow Trout			Number of Fish	Weight (lbs.)
2006 catchable RBT on hand 1/1/06			0	0
2006 catchable RBT on hand 12/31/06			0	0
Date	Number released	Pounds	Fish per Pound	Type of Fish
4/1-4/30	1,080	275	3.9	Troutlodge TT
5/1-5/31	39,331	14,500	2.7	Troutlodge TT
6/1-6/30	37,614	14,475	2.6	Troutlodge TT
7/1-7/31	1,475	500	3.0	Troutlodge TT
8/1-8/31	15,190	5,075	2.8	Troutlodge TT
9/1-9/30	500	200	2.5	Troutlodge TT
10/1-10/31	3,400	2,000	1.7	Troutlodge TT
Totals	98,590*	37,025*	Average fpp 2.66*	

*Includes 2,049 Shasta strain rainbow trout at 1.3 fish per pound raised at Dworshak and Kooskia National Fish Hatcheries.

Appendix 2. Fish feed costs and amount fed for the CFH resident rainbow programs, January 1 - December 31, 2006.

2006 Catchable Rainbow Trout

DATE	BRAND	FEED TYPE	WEIGHT (lbs)	COST PER LB	TOTAL
4/1/06 to 6/30/06	Bio-Oregon	3.0 mm Bio-Dry 3000	6,400	\$.54	\$3,456.00
7/1/06 to 7/15/06	Bio-Oregon	2.5mm Semi-Moist Grower	352	\$.82	\$288.00
7/16/06 to 9/11/06	Bio-Oregon	2.5 mm Semi-Moist Grower EIBS	1,200	\$.905	\$1,086.00
9/12/06 to 10/31/06	Bio-Oregon	3.0 mm Bio-Dry 3000 EIBS	500	\$.625	\$312.50
					\$5,142.50

Total Summary of Catchable Rainbow Trout Redistributed.

NUMBER OF FISH	WEIGHT (lbs)	FEED FED (lbs)	CONVERSION	COST PER LB FOR REDISTRIBUTION	COST PER 1,000 FISH FOR REDISTRIBUTION
98,590	37,025	8,452	1.0	\$0.60*	\$225.09**

Estimated costs include 50% of the FY05 & FY06 budgets and do not include permanent salaries or feed cost @ NSFH. Redistribution expenditure by CFH \$14,843.23.

* Cost/lb equals total budget divided by total lbs produced, 1/1/06-12/31/06.

** Cost/1000 fish equals total budget (minus feed cost @ NSFH) divided by total number of fish produced times 1000.

1/1/06 to 12/31/06	Cost for Rearing @ NSFH and Redistribution @ CFH	\$14,843.23
	Transport cost to deliver fish from NSFH to CFH	<u>\$7,348.00</u>
	Total cost	\$22,191.23

IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

GRACE FISH HATCHERY

**Dwight Aplanalp, Hatchery Manager I
Travis Brown, Assistant Manager
Jeff Houck, Fish Culturist**

INTRODUCTION

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

The primary mission of GFH is to produce quality catchable and fingerling rainbow trout *Oncorhynchus mykiss*, for stocking waters in the Southeast Region. Catchable size trout (from 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 sterile lake trout *Salvelinus namaycush* to meet the Bear Lake request.

A Fish Hatchery Manager I, an Assistant Fish Hatchery Manager, and a Fish Culturist staff the GFH. One 8-month temporary employee is hired to assist with hatchery operations.

Water for GFH is supplied by gravity flow from Middle and West Whiskey Creek springs located on private property owned by Robert Harris. Flow for 2006 was an average of 16.88 cubic feet per second (cfs), 125% of the ten year average. There is a natural fluctuation in water quantity basically opposite of run-off and GFH biomass. Flows are at a minimum during April and May and peak in October and November. The GFH biomass is at a maximum in April and at a minimum in October. Water temperature fluctuates from 52°F to 54°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 six (12-ft x 3.5-ft x 300-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.

FISH PRODUCTION

The GFH raised sterile Hayspur strain rainbow (T9), Sterile Kamloop rainbow (KT), Troutlodge Triploid rainbow (TT), and sterile lake trout (LT) in 2006.

The GFH began the 2006 calendar year with 577,793 fish weighing 32,414 lbs. A total of 1,159,755 fish at a weight of 98,310 lbs were reared and planted by GFH in the year 2006. There were 204,868 fish at a weight of 19,728 lbs on hand December 31, 2006. This accounts for a total production of 786,830 fish and 85,624 lbs (Appendix 1).

The GFH received eyed eggs from various state and private hatcheries in 2006. During the year a total of 1,000,532 eyed-eggs of various species were received (Appendix 2).

Production costs at GFH for 2006, excluding capital outlay, were \$215,421 (Appendix 3). Production costs were calculated for pond side and streamside amounts. Pond side cost is total budget minus capital outlay minus transportation. Streamside cost includes transportation.

Rainbow trout (fingerlings and catchables combined) accounted for 97.3% of the total pounds produced and 96.4% of total cost. The average cost to produce a rainbow trout at GFH in 2006 was \$2.52 per lb or \$.28 per fish (\$276.89 per 1,000 fish). Triploid lake trout accounted for the remaining 2.7% of the pounds produced and 3.6% of total cost (Appendix 4).

Catchable Rainbow Trout

During 2006, the GFH planted tributaries of the Bear River and Snake River watersheds with sterile catchable rainbow trout. Sterile Hayspur rainbow (T9), Sterile Kamloop rainbow (KT), and Troutlodge Triploid rainbow (TT) were the strains of rainbow catchables planted. Sterile rainbows were planted in the Bear River Watershed to prevent hybridization with the native Bear River cutthroat trout. The GFH achieved 142% of the 2006 catchable request. Surplus catchables were planted state wide with priority given to high use regions.

The GFH freeze-branded fish destined for sections of the Bear River in 2006. The freeze-branded fish were marked with a "T" brand on the left side of the fish between the dorsal fin and the lateral line. Triploid catchable rainbows stocked in the Bear River at the Black Canyon access site had a T1 brand, or upright T. Fish planted in the Bear River directly below Alexander Reservoir had a T3 brand (T rotated 180-degrees). Fish planted in the Bear River below the Grace Dam had a T4 brand (T rotated 270-degrees). The freeze branded fish will be evaluated by fisheries management biologists to track upstream and downstream migrations of catchables after stocking.

The GFH started out this calendar year with 207,600 triploid catchable trout. Over the course of the year 182,011 (64,437 lbs) triploid catchable trout averaging 9.5-inches were planted. On December 31, 155,868 (19,176 lbs) fish remain on the station for future planting. Total produced for the year is 130,279 triploid catchable rainbows at a weight of 52,399 pounds. These fish converted 56,437 pounds of fish food at a feed conversion of 1.07. The average cost to plant a 9.5-inch catchable was \$0.76 per lb or \$.27 per fish (\$270.49 per 1,000 fish) (Appendices 1, 4).

Lake Trout

The GFH has a cooperative agreement with the Utah Department of Wildlife Resources (UDWR) to stock 50,000 triploid LT over three-year periods into Bear Lake. Research biologists and hatchery personnel developed a successful recipe for making triploid lake trout using hydrostatic pressure. In 2006 the GFH moved from the experimental phase to the hatchery production phase in making and rearing triploid LT. The GFH and Story Fish Hatchery personnel with the Wyoming Game and Fish Department (WGFD) produced the triploid LT that were stocked into Bear Lake in 2006.

During 2006, a total of 29,312 (2,290 lbs) were planted as 6.8-inch triploid LT into Bear Lake. These fish were confirmed as triploid by Paul Wheeler at the Wyoming State University School of Biology and received an adipose and right ventral fin clip prior to stocking. The average cost of planting a 6.8-inch triploid LT was \$2.48 per lb, or \$.19 per fish (\$193.62 per 1,000). Triploid LT converted 2,735 lbs of food at a feed conversion of 1.19 (Appendices 1, 4).

Rainbow Trout Fingerlings

During 2006, a total of 948,432 triploid fingerlings weighing 31,583 lbs at an average length of 4.8 inches were planted in Idaho waters. Triploid fingerling cost of \$4.10 per pound or \$.14 per fish (\$136.67 per 1,000 fish) (Appendix 4). These fish were planted in north Idaho's Hayden Lake, Cocololla Lake and for redistribution by the Sandpoint Hatchery. Southeastern Idaho locations included: Chesterfield Reservoir, Daniels Reservoir, Treasureton Reservoir, Twentyfour Mile Reservoir, Bloomington Lake, and Blackfoot Reservoir. Triploid rainbow fingerlings converted 30,642 lbs of food at a feed conversion of 0.99 (Appendix 1).

FISH FEED

The fish produced during 2006 were fed a total of 86,953 lbs of feed from Rangen Inc. (Appendix 5). The net weight gained during 2006 was 85,625 lbs, which resulted in an overall conversion of 1.02 lbs of feed to produce one lb of fish (Appendix 1).

REPAIRS AND IMPROVEMENTS

- We fenced out the bulls at the spring house with a pipe structure similar to the existing one at the intake spring
- Modified our fish pump to help stabilize while pumping fish. We also added a fixed screen to lesson the amount of fish that get behind the pump.
- We worked on cleaning up the bone yard and we removed a lot of old pipe and trash.
- Repaired the roof on the spring house
- Paint interior of Residence #3 and clean carpets
- Paint interior of Residence #2 and clean carpets
- Cut brush and removed debris on East Spring of Whiskey Creek.
- The vat room now has an interior primer coat of paint
- The head box that was retrofitted to increase head capacity before overflowing
- We constructed a new walkway and cover over the head box that was retrofitted.
- A new work bench was built in the shop.
- Installed domestic water pressure tank in residence #3.

NEEDED RENOVATIONS

- Install an auxiliary water supply pipe from the main supply line to a head box with new line going to the small raceways.
- Dredge existing settling pond and build new concrete settling pond with a sump basin that will service the vats, small raceways, medium raceways and large raceways.
- Build a doublewide garage and storage area for 2-ton, snowplow, and feeding tractor.
- Rebuild hatchery driveway and place Geotech Fabric to maintain stability.
- Build a French drain at residence 1 entry door.
- New kitchen linoleum in residence 2
- Remodel kitchen in residence 3

PUBLIC RELATIONS

The GFH staff gave 4 scheduled tours to local area schools totaling 200 kids and teachers. The GFH staff also gave formal tours to Boy Scout troops and interested public visiting the facility to an additional 100 people. Self-guided tour signs and informative trifold packets are available to the public at our visitor kiosk. It is estimated about 1,000 people took self-guided tours around the hatchery in 2006. 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. An estimated 200 kids, 14 and under, fished the escapement pond on Free Fishing Day. Staff at GFH also answered many questions from personal contacts and phone calls.

ACKNOWLEDGEMENTS

During 2006, the Grace Fish Hatchery crew included: Dwight Aplanalp, Hatchery Manager I, Travis Brown, Assistant Hatchery Manager, Jeff Houck, Fish Culturist, and Grey Pino, Biological Aide. The GFH would like to give special thanks to Terri Bergmeier, Region 5 volunteer coordinator, for coordinating all volunteer efforts at GFH this year. Volunteers helped with the fin clipping of the lake trout, fish stocking, and free fishing day activities.

APPENDICES

Appendix 1. Number and pounds of fish produced, reared and stocked by Grace Fish Hatchery, 2006.

Species/Strain	Number Lbs On Hand 01/01/06	Number Lbs Reared & Planted	Number Lbs On Hand 12/31/06	Number Lbs Produced	Feed Conversion
Triploid Rainbow Catchables	207,600 fish	182,011 fish	155,868 fish		1.07
	31,214 lbs	64,437 lbs	19,176 lbs	52,399 lbs	
Triploid Rainbow Fingerlings	370,193 fish	948,432 fish	49,000 fish		0.99
	1200 lbs	31,583 lbs	552 lbs	30,936 lbs	
Lake Trout	0 fish	29,312 fish	0 fish		1.19
	0 fish	2,290 lbs	0 lbs	2,290 lbs	
Total fish	577,793 fish	1,159,755 fish	204,868 fish		1.02
Total pounds	32,414 lbs	98,311 lbs	19,728 lbs	85,625 lbs	

Appendix 2. Eyed eggs received at Grace Fish Hatchery 2006.

Species/Strain	Source	Number Received	Date Received
Sterile Rainbow Trout (KT/T9)	IDFG Hayspur	619,162	1/5/06
Sterile Rainbow Trout (KT/T9)	IDFG Hayspur	53,125	4/11/06
Sterile Rainbow Trout (KT/T9)	IDFG Hayspur	45,066	4/18/06
Sterile Rainbow Trout (KT/T9)	IDFG Hayspur	18,691	4/25/06
Sterile Rainbow Trout (KT/T9)	IDFG Hayspur	36,533	5/2/06
Sterile Rainbow Trout (KT/T9)	IDFG Hayspur	22,628	5/9/06
Sterile Rainbow Trout (KT/T9)	IDFG Hayspur	121,327	5/16/06
Troutlodge Triploid Rainbow (TT)	Troutlodge	75,000	9/15/06
Triploid Lake Trout (LT)	WGFD Story	9,000	12/15/06
Total		1,000,532	

Appendix 3. Pond side and streamside production cost at Grace Fish Hatchery, 2006. Streamside cost includes \$6,097.48 of Nampa and Hagerman's transportation costs.

Pounds Produced	Production Cost	Pond side Cost	Pond side Cost/lb	Stream side Cost	Stream side Cost/lb
85,625	\$215,421	\$204,923	\$2.39	\$221,518	\$2.59

Appendix 4. Costs of fish produced at Grace Fish Hatchery, 2006.

Species/Strain	length/inches	Number Produced	Weight Pounds	Costs produce and plant	Cost/1000	Cost/lb
Fish on Hand Jan 1, 2006						
Triploid Fingerlings (TT)		370,193	31,214			
Triploid Catchables (TT)		207,600	1,200			
Triploid lake trout (LT)		0	0			
TOTAL		577,793	32,414			
Fish Planted						
Triploid Lake Trout (LT)	6.8	29,312	2,290	\$5,675.29	\$193.62	\$2.48
SUBTOTAL		29,312	2,290	\$5,675.29	\$193.62	\$2.48
Triploid Catchables (KT,T9,TT)	9.5	182,011	64,437	\$49,232.84	\$270.49	\$0.76
Triploid Fingerlings (KT,T9,TT)	4.8	948,432	31,583	\$129,622.71	\$136.67	\$4.10
SUBTOTAL		1,130,443	96,020	\$178,855.56	\$158.22	\$1.86
TOTAL		1,159,755	98,310	\$184,530.85	\$159.11	\$1.88
Fish on Hand Dec 31, '06						
Triploid Fingerlings (TT)	3.04	49,000	552.4	\$4,241.34	\$86.56	\$7.68
Triploid Catchables (TT)	3.04	56,709	639.3	\$4,908.62	\$86.56	\$7.68
Triploid Catchables (T9)	7.92	27,140	5,395.63	\$6,120.24	\$225.51	\$1.13
Triploid Catchables (TT)	10.0	855	342	\$243.44	\$284.73	\$0.71
Triploid Catchables (KT/T9)	6.20	14,944	1,439.69	\$2,638.11	\$176.53	\$1.83
Triploid Catchables (TT)	7.78	27,713	5,228.87	\$6,598.96	\$231.49	\$1.08
Triploid Catchables (TT)	8.13	28,507	6,130.54	\$6,138.99	\$221.52	\$1.17
TOTAL	5.19	204,868	19,728	\$30,889.71	\$150.78	\$1.57
GRAND TOTAL						
Planted in 2006		1,159,755	98,310	\$184,530.85	\$159.11	\$1.88
(+)On Hand Dec. 31, 2006		204,868	19,728	\$30,889.71	\$150.78	\$1.57
TOTAL		1,364,623	118,038	\$215,420.56	\$157.86	\$1.83
(-)On Hand Jan. 1, 2006		577,793	32,414			
TOTAL GAINED		786,830	85,624	\$215,420.56	\$273.78	\$2.52

Appendix 5. Fish food received and cost, Grace Hatchery, 2006.

Source	Diet	Size	Cost/lb.	Pounds	Total Cost
Rangens	Dry	00	\$0.484	375	\$181.50
Rangens	Dry	# 0	\$0.484	512	\$247.81
Rangens	Dry	#1	\$0.484	1,100	\$532.40
Rangens	Dry	#2	\$0.484	1,400	\$677.60
Rangens	Dry	#3	\$0.484	9,125	\$4,416.50
Rangens	Dry	#4	\$0.348	8,305	\$2,890.14
Rangens	450 prod.	3/32 sack	\$0.3227	900	\$290.43
Rangens	Extr. 450	3/32 sack	\$0.349	650	\$226.85
Rangens	Extr. 450XXvit	3/32 sink	\$0.348	18,300	\$6,368.40
Rangens	T.M.	#3	\$0.615	850	\$523.09
Rangens	T.M.	#4	\$0.515	250	\$128.85
Rangens	T.M.	3/32 sack	\$0.534	1000	\$533.60
Rangens	Extr. 450XXvit	1/8 bulk float	\$0.318	44,313	\$14,091.53
TOTAL				87,080	\$31,108.70

IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

HAGERMAN FISH HATCHERY

**Joe Chapman, Hatchery Manager II
David May, Assistant Hatchery Manager I
Darlene Snyder, Fish Culturist
Ken Felty, 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 largest resident trout production facility of the Idaho Department of Fish and Game (Department). 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 \$634,627 this year: \$333,101 from Hagerman's budget, \$244,048 from Dingell-Johnson (DJ) monies, and \$57,472 from the fish transportation budget, to rear and stock fish in the 2006 production year, not including capital outlay expenditures (Appendix 1).

The HFH is staffed with a Hatchery Manager II, Hatchery Manager I, two Fish Culturists, and a Fish Transport Operator. One of the fish culturists, Brian Thompson, was promoted to Hayspur Hatchery, and was replaced by Ken Felty. Approximately 19 months of temporary labor is available from the DJ 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. Water from Riley Creek supplies the 165,600 cuft of rearing space available in eight additional raceways. The Tucker Springs water is a constant 59°F year-round while Riley Creek fluctuates from 50 to 67°F annually.

HATCHERY PRODUCTION

During 2006, the HFH reared and stocked 3,219,695 fish weighing 445,365 lbs. Of these, 1,223,294 were stocked 6-inches or longer and 1,996,401 were stocked smaller than 6-inches (Appendix 1). About 40.2% of the total fish were stocked in 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. Approximately 161,470 steelhead and 221,350 Coho salmon were also stocked. The 3-inch to 6-inch fish consisted of rainbow trout and Kamloops trout from Hayspur and Troutlodge Inc., and Coho salmon (Appendix 1).

The 445,365 lbs stocked included 383,941 lbs of put-and-take fish averaging 9.0 inches, and 61,424 lbs of fingerlings that averaged 4.1 inches. The cost of planting the average 7.2 fish per pound (fpp) (6.8 inches) fish was approximately \$1.06 per lb, or \$146.95 per 1,000 fish (Appendix 1).

In addition to the fish reared and planted, 1,817,704 fish (83,894 lbs) were on hand at the HFH on December 31, 2006. These consisted of 898,164 fish (83,894 lbs, average 10.7 fpp, or 6.0 inches) in the large raceways and 919,540 fingerlings (2,083 lbs, average 441 fpp, or 1.7 inches) in the west raceways. The cost of producing the larger fish was \$1.50 per lb or \$140.7 per 1,000, and \$16.85 per lb or \$38.17 per 1,000 for the fingerlings (Appendix 1).

On hand January 1, 2006 were 1,759,061 fish (164,830 lbs). The HFH also received 821,239 fish (8,461 lbs) of fish from other hatcheries. Consequently, these subtractions yielded a net production for 2006 of 2,456,699 fish (358,051 lbs), mortality excluded (Appendix 1). The cost of producing the net production of 358,051 lbs was \$1.77 per lb.

A total of 9,352,047 eggs and fry were acquired to yield the fish produced. Approximately 3,470,139 eggs were purchased and the balance was acquired from government sources at no cost (Appendix 4). Of the eggs and fry received, 6,178,402 were received for the fish planted and the balance was used for 2007 production. Some eggs were sent to Magic Valley Fish Hatchery (MVFH) to alleviate overcrowded conditions here. They were then transferred to Hagerman Fish Hatchery (HFH) when they were about 101 fpp (2.8-inches). Because of continued success, eggs were again shipped to MVFH for early rearing and will be transferred here in February 2007.

The overall survival rate of fish stocked was 52%, down from 58% survival last year (Appendix 3). Most of this difference can be attributed to Columnaris disease and an outbreak of IHN among the subcatchables. Mortality due to IHNV *Infectious Hematopoietic Necrosis Virus* decreased overall, but still impacted larger fish that hadn't obtained the disease earlier in life. Contrary to the previous year, losses to Ichthyophthirius (ICH) in 2006 were very small due to an aggressive treatment program when the pathogen was initially detected.

Fish transport operator Ken Taylor logged 23,299 miles delivering fish to state waters, while the rest of the crew logged 14,530 miles. This amounted to a total of 37,829 miles and 321 stocking trips during 2006, and included 23 trips for the private sector and Department hatcheries.

In addition to the annual requests by regional fisheries managers, the HFH crew made 23 trips to haul and stock 913,272 fish weighing 86,630 lbs from other sources (Appendix 7). These included six trips for the American Falls Fish Hatchery (AFFH) to stock 138,518 trout weighing 41,900 lbs; three trips to stock 30,188 channel catfish weighing 8,249 lbs; six trips to stock 5,412 brown trout weighing 4,100 lbs, 450 rainbow trout weighing 2,240 lbs, and 30,706 rainbow x cutthroat hybrids from the University of Idaho Fish Culture Station; two trips for Grace Fish Hatchery (GFH) to stock 413,920 rainbow trout weighing 20,800 lbs; three trips for Magic Valley Hatchery to stock 249,900 steelhead weighing 1,966 lbs; and three trips for several commercial hatcheries to stock 44,178 rainbow trout weighing 6,600 lbs.

FISH FEED

The fish produced during 2006 were fed a total of 540,506 lbs of feed from Rangen Inc (Appendix 5). The net weight gained during 2006 was 358,051 lbs, which resulted in an overall conversion of 1.51 lbs of feed to produce one lb of fish, not including the weight of the mortalities.

HATCHERY IMPROVEMENTS

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

- Replaced the water pump and sprayer bar assembly on the traveling screen.
- Installed a concrete walkway at the show pond and replaced the chicken wire over the top with chain-link fence to prevent vandalism.
- Installed copper strips at the tail end of the west raceways and Riley Creek raceways to minimize the impact of the New Zealand Mud Snail.
- Installed a concrete retaining wall at the head of the show pond.
- Installed an access ramp and metal siding at the new equipment storage building.
- Repaired the chicken wire enclosure around the chiller building and perimeter of hatchery.
- Removed 23 large downed trees and cleaned up the damage from the tornado. Had a private company repair the damage to the bird enclosure, buildings, and fences.
- Patched and filled sinkholes in Riley Creek raceways.
- New lighting installed in the kitchen of residence #3 and installed 3-prong outlets in the basement.
- Repaired the pipeline in the west raceways and chlorinated the small pipeline.
- Repaired areas where tourist vehicles ran into bird enclosure.
- Removed the chain link fencing at the head of the Riley Creek raceways to facilitate fish transport.
- Replaced the west raceway wooden dam boards with aluminum ones. Also replaced some raceway dam boards in the large raceway system.

PUBLIC RELATIONS

The HFH received a large number of visitors and sportsmen throughout the year. An estimated 30,000 visitors toured the facility and used the surrounding public grounds this year. The 37 acres of HFH property are 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 areas.

Hatchery personnel were called upon to give 21 tours to 676 school kids during the spring and fall, 3 tours for area scouts, and 3 tours to other large groups of adults. In addition, a hatchery presentation was given to the Gooding Rotary Club and two professional organizations. The hatchery sponsored the second annual "Pickup for Fish" day in which local cub scouts from the Magic Valley area picked up litter, then learned how to fish. The hatchery also hosted a Free Fishing Day clinic here for about 350 participants. The Hagerman Boy Scouts, Hagerman National Hatchery personnel, and personnel from the Magic Valley Bassmasters and the Department assisted. Pepsi-Cola, Falls Brand Meats, Sportsman's Warehouse, 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 and hunting adventures. Hatchery personnel also participated in regional activities, such as fawn-trapping, spawning fish, and working the county fair.

Also this year, the "Trout in the Classroom" program continued for fifth-graders at Hagerman, Castleford, Bliss, Wendell, and Murtaugh Elementary schools. Three sessions were given which included delivery of eggs, discussion of habitat needs, spawning, fish anatomy, and stewardship. At the end of the school year, the students were given a hatchery tour and learned how to fish on the Hagerman WMA.

FISH TAGGING OPERATIONS

The HFH crew participated in several tagging operations during the year in which 28,395 trout weighing 8,867 lbs were marked and stocked into Chesterfield, Cascade, Lake Walcott, and Lucky Peak reservoirs (Appendix 6). In addition, 6,858 channel catfish were marked for Lake Lowell, and 30,706 rainbow x cutthroat hybrids weighing 775 lbs were marked for Salmon Falls Creek Reservoir.

ACKNOWLEDGMENTS

Thanks to the permanent HFH staff of Dave May, Darlene Snyder, and Ken Felty; to transport operator Ken Taylor; and to temporaries Paul Gaulin, Deskin Waters, Stephanie Hendrix and Lionel Gonzales.

Regional personnel Doug Megargle, Rob Ryan, Richard Holman, Josh Royce, Dean Grissom, and Gary Hompland also deserve our gratitude. Thanks also to personnel from Niagara Springs, Hayspur, and Magic Valley hatcheries for their cooperation this year.

APPENDICES

Appendix 1. Costs of fish produced at Hagerman Fish Hatchery 2006. Costs reflect all costs budgeted, except capital outlay, and include \$57,472 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, 2006					
Rainbow trout, yellow (YT,SP,03)	13.2	8,580	8,580		
Kamloops rainbow trout (KT)	10.4	59,297	28,237		
Steelhead (SA)	6.5	204,431	24,386		
Kamloops rainbow trout (TL,TT)	6.2	985,471	102,103		
Kamloops rainbow trout (KT)	1.9	491,368	1,482		
Rainbow trout, yellow (YT,CL,05)	<u>2.1</u>	<u>9,914</u>	<u>42</u>		
Totals	6.0	1,759,061	164,830		
FISH PLANTED					
Rainbow trout, yellow (YT,SP,01)	14.6	10,433	14,075	\$3,856.13	\$369.61
Kamloops rainbow trout (KT)	11.6	65,652	43,470	\$19,291.42	\$293.84
Kamloops rainbow trout (TL,TT)	9.4	761,725	261,155	\$179,735.53	\$235.96
Steelhead (SA)	8.6	161,470	40,450	\$34,879.17	\$216.01
Coho salmon	6.5	221,350	23,900	\$36,117.51	\$163.17
Tiger muskie	11.02	<u>2,664</u>	<u>891</u>	<u>\$741.12</u>	<u>\$278.20</u>
Subtotals	9.0	1,223,294	383,941	\$274,620.87	\$224.49
Hayspur rainbow trout (T9)	4.3	793,435	27,770	\$85,509.45	\$107.77
Kamloops rainbow trout (KT)	4.5	719,610	28,450	\$80,768.15	\$112.24
Kamloops rainbow trout (TL,TT)	2.0	290,156	1,004	\$14,459.29	\$49.83
Coho salmon (CO)	3.6	<u>193,200</u>	<u>4,200</u>	<u>\$17,765.16</u>	<u>\$91.95</u>
Subtotals	Average	<u>4.1</u>	<u>1,996,401</u>	<u>61,424</u>	<u>\$198,502.05</u>
Total Planted	Average	6.9	3,219,695	445,365	\$473,122.93
FISH ON HAND DECEMBER 31, 2006					
Rainbow trout, yellow (YT,CL,04)	13.3	7,875	7,875	\$2,634.19	\$334.50
Kamloops rainbow trout (KT)	12.0	29,714	22,102	\$0,005.63	\$303.08
Steelhead (SA)	5.6	80,191	5,648	\$11,347.86	\$141.51
Kamloops rainbow trout (TL,TT)	5.2	773,100	47,435	\$101,996.68	\$131.93
Kamloops rainbow trout (KT)	1.8	672,619	1,690	\$30,127.03	\$44.79
Hayspur rainbow trout (T9)	1.6	120,281	238	\$4,975.14	\$41.36
Hayspur mix (KT, T9)	1.4	<u>126,640</u>	<u>155</u>	<u>\$4,463.13</u>	<u>\$35.24</u>
Totals	4.8	1,817,704	85,977	\$161,504.07	\$88.85
TOTAL FISH PRODUCED					
Planted in 2006		3,219,695	445,365		
On Hand December 31, 2006		<u>1,817,704</u>	<u>85,977</u>		
Totals		5,037,399	531,342	\$634,627.00	\$125.98
From other hatcheries		821,239	8,461		
On Hand January 1, 2006		<u>1,759,061</u>	<u>164,830</u>		
TOTAL GAINED		2,457,099	358,051		

Appendix 2. Fish distribution from Hagerman Fish Hatchery, 2006.

Percent of number planted by Region

	Number	Lbs	1	2	3	4	5	6	7
Catchables ≥6 inches									
Rainbow trout, yellow	10,433	14,075				100.0			
Kamloops rainbow trout (TT)	761,725	261,155	-	17.9	19.6	42.7	14.0	5.8	-
Kamloops rainbow trout (KT)	65,652	43,470		-	20.7	79.3	-	-	
Steelhead (SA)	161,470	40,450	-	-	77.4	22.6	-	-	-
Coho salmon	221,350	23,900			100.0				
Tiger muskie	2,664	891	19.2		18.9	11.5	16.9	29.6	3.9
Subtotal	1,223,294	383,941	0.04	11.2	41.6	34.7	8.8	3.7	0.01
Fingerlings <6 inches									
Hayspur rainbow trout (T9)	793,435	27,770	-	-	-	47.1	38.1	14.9	-
Kamloops rainbow trout (KT)	719,610	28,450	-	-	-	28.8	46.6	24.6	-
Kamloops rainbow trout (TT)	290,156	1,004	-	-	-	100.0	-	-	-
Coho salmon	193,200	4,200			100.0	-	-	-	-
Subtotal	1,996,401	61,424	0.0	0.0	9.7	43.6	31.9	14.8	0.0
TOTAL	3,219,695	445,365	0.02	4.2	21.8	40.2	23.1	10.6	0.003

Appendix 3. Fish survival from eyed-egg to stocking, 2006.

Species/Strain	Number Stocked	Eggs and Fry Received	Percent Survival
Rainbow trout, Yellow	10,433	22,120	47.17
Rainbow trout, Hayspur (T9)	793,435	1,405,564	56.45
Kamloops, Troutlodge (TT)	1,051,881	2,015,429	52.19
Kamloops, Hayspur (KT)	785,262	1,716,061	45.76
Steelhead (SA)	161,470	309,825	52.16
Coho salmon	414,550	705,658	58.75
Tiger muskie	2,664	3,745	71.13
TOTAL	3,219,695	6,178,402	52.11

Appendix 4. Number of eyed-eggs and fry received, species, and source for fish produced in 2006.

Species/Strain	Eggs/Fry received		
	For Fish	For fish on hand	Source
	Planted	December 31, 2005	
Received as eggs			
Rainbow/Yellow (YR)	22,120	20,280	Clear Lakes (ITP)
Rainbow/Kamloops (KT)	1,465,391	1,266,078	IDFG Hayspur
Rainbow/Hayspur (T9)	843,521	244,800	IDFG Hayspur
Rainbow/sterile Troutlodge (TT)	2,015,429	1,454,710	Troutlodge, WA
Steelhead	309,825	179,251	IDFG Pahsimeroi, Oxbow
Coho Salmon (CO)	705,658	0	Eagle Creek Nat'l Hatchery
Subtotal eggs	5,361,944	3,165,119	
Received as fry			
Rainbow from Magic Valley (T9)	562,043	0	IDFG Hayspur
Kamloops (Hayspur) from Magic Valley (KT)	250,670	0	IDFG Hayspur
Tiger Muskies (fingerling)	3,745	8,526	Pennsylvania Fish & Boat
Subtotal fry	816,458	8,526	
TOTAL	6,178,402	3,173,645	

Appendix 5. Fish feed used during 2006 at Hagerman Fish Hatchery.

Size	Source	Pounds	Cost/pound	Cost
Str	Rangen	450	\$0.52	\$235.35
#1	Rangen	4,700	\$0.52	\$2,458.10
#1 TM	Rangen	200	\$0.62	\$123.08
#2	Rangen	13,700	\$0.52	\$ 7,165.10
#2 TM	Rangen	300	\$0.65	\$193.41
#3	Rangen	33,650	\$0.37	\$12,315.90
#3 TM	Rangen	650	\$0.55	\$357.96
1/16 EXT450Float	Rangen	750	\$0.47	\$355.50
3/32 in, EXT450Float	Rangen	114,580	\$0.34	\$38,842.62
3/32 in, TM	Rangen	7,500	\$0.33	\$2,460.00
1/8 in, SM	Rangen	44	\$0.89	\$39.04
1/8 in.	Rangen	13,000	N/C	N/C
5/32 in, EXT450Float	Rangen	335,940	\$0.31	\$103,805.46
5/32 in, TM	Rangen	12,200	\$0.53	\$6,5009.92
5/32 in, Romet 30	Rangen	2,050	\$0.86	\$1,766.90
5/32 in, SM	Rangen	132	\$0.79	\$104.40
#0 Nutraplus	Skretting	500	N/C	N/C
#1 Nutraplus	Skretting	160	N/C	N/C
Subtotal		540,506	\$0.33	\$176,732.73
Freight charges				\$2,702.53
Fuel Surcharge				\$405.38
Total cost				\$179,840.64

Appendix 6. Summary of fish marked at Hagerman Fish Hatchery in 2006.

Date Stocked	Species	Water	Number	Pounds	Mark
04/20	TT	Lucky Peak Res.	500	167	Floy tag
05/18	TT	Chesterfield Res.	25,595	7,315	Ad-clip
05/18	TT	Chesterfield Res.	300	85	Floy-tag
05/25	KT	Lake Walcott	500	500	Floy-tag
06/19	KT	Cascade Res.	500	400	Floy-tag
07/19	CC	Lake Lowell	6,858	1,524	Ad-clip
09/29	KT	Lake Walcott	1,000	400	Floy-tag
09/29	RC	Salmon Falls Creek Res.	30,706	775	Ad-clip
TOTALS			65,959	11,166	

Appendix 7. Fish stocked by Hagerman Fish Hatchery from other sources, 2006.

Hatchery Stocking	Species	Number	Pounds	Source	Destination
Hagerman	TT,T9	138,518	41,900	American Falls Hatchery (Department)	Am. Falls Res., Little Wood R., Blackfoot Res., Devil's Creek Res., Lower Deep Creek Res., Boise R., Sandpoint Hatchery
Hagerman	T9	413,920	20,800	Grace Fish Hatchery (Department)	Blackfoot Res.
Hagerman	BN	5,412	4,100	U of ID-Idaho Springs	Billingsley Creek
Hagerman	R1	250	1,500	U of ID-Idaho Springs	Riley Creek
Hagerman	RC	30,706	775	U of ID-Idaho Springs	Salmon Falls Creek Res.
Hagerman	CC	30,188	8,249	Fish Processors, Buhl, ID	Dog Creek Res., Lake Lowell, Alexander Res.
Hagerman	R1	200	740	U of ID	Riley Creek
Hagerman	SA	52,029	423	Magic Valley Hatchery (Department)	Salmon Falls Creek Res.
Hagerman	SB	197,871	1,543	Magic Valley Hatchery (Department)	Salmon Falls Creek Res.
Hagerman	R1	28,818	3,600	Bill Jones' Hatchery	Lucky Peak Res., Salmon Falls Creek Res.
Hagerman	R1	15,360	3,000	ITP-RimView	Sand Creek WMA 1-4, Blue Creek Res., Roberts Gravel P
TOTAL:		913,272	86,630		

IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

HAYSPUR FISH HATCHERY

Bradford W. Dredge, Fish Hatchery Manager II
Brian L. Thompson, Assistant Fish Hatchery Manager
Robert W. Becker, 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 or pressure shocking technique. Two captive rainbow trout *Oncorhynchus mykiss* broodstocks and one Westslope cutthroat *O. clarkii lewisi* broodstock are maintained on station. These are the Hayspur strain rainbow trout, Kamloops strain rainbow trout and Westslope cutthroat strain trout from Connors Lake, British Columbia, Canada. The HSFH personnel maintain an on-site public campground, family fishing water (Gavers Lagoon), and a trophy stream fishery.

The HSFH is located in Blaine County, approximately 30 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 with 23 vertical 8-tray Heath type incubator stacks for trout eggs, a hatchery building with 20 early rearing vats, 15 covered 24-foot circular ponds, 4 small raceways, and 6 large production raceways. Other buildings include a fish spawning equipment storage building, two generator buildings, three residences for permanent employees, an office building, shop, a three bay garage, a barn, and dormitory for temporary employees.

Water sources include the covered spring that supplies 5.5 cubic feet per second (cfs) at 52°F, and three pumped artesian wells producing 2.5 cfs at 48 to 52°F. The spring and well water are both considered specific pathogen free (SPF) water supplies.

Three permanent employees (Fish Hatchery Manager II, Fish Hatchery Assistant Manager, and Fish Culturist) and 20.95 months of temporary time are assigned to the HSFH.

RAINBOW AND KAMLOOPS EYED EGG PRODUCTION

The 2006 rainbow trout spawning season was a nine-month project, beginning in August and ending in May with an egg take of 11,063,498 green eggs from 4,015 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. One two-year-old round pond (experimental), two three-year-old round ponds, and two four-year-old round ponds of Hayspur rainbows and Kamloops rainbows were manipulated. Hayspur rainbow trout triploid eyed egg production totaled 3,251,586 with 2,020 females spawned. Kamloop triploid-eyed egg production totaled 3,659,963 with 1,995 females spawned. All eggs produced, except for broodstock replacement eggs, were pressure shocked for triploidy. Ashton, Cabinet Gorge (Sandpoint), Eagle, Grace, Hagerman, Hagerman National, Magic Valley, McCall, Nampa, and Tucannon National hatcheries were shipped eggs as per their requests. Value to the Department, at the current contract price of \$28.00/1,000 for sterile triploid rainbow trout eggs and \$38.00/1000 for Westslope trout eggs, equates to \$193,990.54 (Appendix 2).

In 2006, all rainbow trout eggs produced for shipping were pressure shocked and made sterile. Replacement broodstock eggs were not pressure shocked and were utilized exclusively at HSFH for replacement broodstock needs. This was the sixth year of full production using the heat or pressure shock method refined during the previous seven years of research. Washington State University performed induction rate sampling on eleven randomly selected lots of eggs reared at the Eagle Fish Health Lab (EFHL). After the eggs had hatched and fish reached approximately three inches in length, blood samples were sent to the lab. A total of 521 individuals were

sampled. Sample results indicated that 518 out of 521 were verified as being triploid. The overall induction rate was 99.4%, up from 95.5% the previous year.

WESTSLOPE CUTTHROAT TROUT EYED EGG PRODUCTION

The 2006 spawning season was a two-month project beginning on March 3 and ending on April 28. A total of 17 egg collections resulted in 1,342 females (BY2000, BY2002, and BY2004) being spawned. Average fecundity was 249 eggs per female. The overall eye-up rate was 3.67% (down from 25.41% in 2005). A total of 335,182 green eggs were collected and eyed egg production equaled 12,294 (Appendix 1). Of the eyed eggs produced, 12,294 were shipped to American Falls Hatchery.

FISH LIBERATIONS

Fish requested for the Big Wood and Little Wood drainages were reared at Nampa Fish Hatchery (NFH) and transported to HSFH for redistribution by HSFH personnel. Semi tank and trailer loads were hauled as needed to complete HSFH 2006 plant request. A total of 76 stocking trips into the Big Wood and Little Wood drainages were stocked with 51,235 catchable sized rainbow trout (Appendix 3). In addition, a total of 12,185 surplus diploid rainbow trout fingerlings were stocked into Salmon Falls Creek Reservoir during 3 stocking trips. Gaver's Lagoon received a total of 2,669 surplus broodstock. In all, 66,384 fish were distributed during the season.

FISH FEED

Rangen's provided the 1/4-in brood feed. This food was ordered with 150 grams per ton of canthaxathin red additive to enhance egg color and other possible health benefits. Rangen's was the source of early rearing feeds. Rangen's was the primary food source utilized for catchables and for replacement broodstock retained on station (Appendix 4). The Westslope cutthroat trout were fed Rangen's during the season.

HATCHERY IMPROVEMENTS AND NEEDS

Improvements to the HSFH during 2006 included:

- Large willow trees were trimmed.
- Residence #1 and #3 were painted and cleaned.
- New gravel was spread on the Hayspur Fish Hatchery campground road and the Gaver's Lagoon access road.
- A new sink and eye-wash station was installed in the shop to comply with State of Idaho safety requests.
- All of the Jensorter egg sorting machines were serviced and new electrical safety items were internally installed on each.
- All of the hatchery fire extinguishers were serviced.
- The ceiling in the three-stall garage was removed to comply with State of Idaho safety requirements.

- The carpets in all of the residences and the dormitory were professionally cleaned in the spring and summer.
- The hallway bathroom in Residence #1 had the bathtub walls repaneled and caulked. In addition, two water line access panels were refinished.
- Vegetation was removed from large raceways A through F.
- Russian Olive trees were pruned in the campground.
- Predator covers over the small raceways were repaired as needed during the season.
- Genplus, a division of Cummins Intermountain Generator Service, serviced both generators in November.
- The boiler was repaired and new thermostats installed in the office, shop, and dormitory. In addition, the heaters in the incubation building were serviced and new thermostats were installed.
- Round Pond crowd racks were repaired as needed.
- The electrical panel adjacent to the campground host was repaired and replaced.
- The garage in Residence #3 had insulation installed in the walls and the walls were sheeted with plywood.
- The park restrooms were painted and the toilet paper holders modified. In addition, both campground restrooms were pumped and serviced.
- Three old, abandoned outhouses were removed and the ground leveled and restored.
- Minor repairs were made to the Residence #2 screen doors.
- An additional access door was constructed and installed on the West side of the incubation building.
- The garage stall adjacent to the shop was framed to partition it from the rest of the room.
- Six new trout egg incubators were purchased from Flex-A-Lite Consolidated with capitol outlay funding.
- A new John Deere riding lawn mower was approved and purchased with capitol outlay funding.
- The small raceway water supply line was repaired and replaced. The water control valve to Round Pond #9 was excavated and repaired. In addition, new water control valves were installed on the four small raceways.
- The hatchery building had new exterior siding installed and new windows installed.

Needs of the HSFH are:

- Replace the roof on Residence #2.
- Replace the carpeting in the living room and hallway of Residence #3.
- Remove several willows between Residence #1 and Residence #2.
- Repair and/or replace numerous concrete areas around the HSFH.
- Replace the sewage lift station electrical panel and associated electrical components.
- Replace and enlarge the Gavers Lagoon outlet pipe.
- Resurface the HSFH entrance road and re-do the asphalt in front of the office building.
- Repair the flapper valve associated with Pump #4.
- Repair the broken spring on the Pump #3 flapper valve.
- Replace the linoleum in the bathrooms of Residence #1 and #2, and replace the linoleum in the kitchen and dining room of Residence #1 and #2.

BROODSTOCK MANAGEMENT

The Hayspur rainbow trout (R9) replacement population is perpetuated by using year-class crosses. Using one male with one female, 180 pairs of fish were crossed. The adult fish used in the replacement program were adipose clipped. Marked fish are generally used for production egg lots, rarely are they used again for development of a replacement population.

Hayspur Kamloops rainbow (K1) broodstock replacement population is perpetuated by using year-class crosses. Using one male with one female, 142 pairs of fish were crossed. The adult fish utilized were adipose clipped. Marked fish are generally used for production egg lots, rarely are they used again for development of a replacement population.

Isolation incubators were used to separate individual families. In 2006, eight R9 and two K1 families tested positive for Bacterial Kidney Disease (BKD) and were culled. Isolation trays, constructed of disinfectable metal and plastic, were tested and used as isolation incubators. Each stainless steel tray was capable of holding ten families segregated from one another. Each plastic tray was capable of holding one family. Trays were placed in Heath stacks and eggs were added for isolation incubation. Similar results occurred regardless of the method used.

A total of 3,440 BY2004 Westslope cutthroat trout and 3,944 BY2005 Westslope cutthroat trout were available as an adfluvial broodstock at the end of December 2006. No additional Cutthroat eggs were received from Conners Lake, British Columbia, Canada during 2006.

PUBLIC RELATIONS

Many people used Hayspur campground and the popular fishing pond, Gavers Lagoon, during the spring, summer, and fall period. The HSFH campground benefited from the efforts of volunteer Camp Hosts. Kenneth and Mary Robbins 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 and HSFH.

Tours were provided to area schools and local groups. The Blaine County Recreation District, Blaine County Soil & Water Conservation, Valley Elementary School, Idaho Falls Holy Rosery School, Sun Valley Adaptive Sports Group, Mountain Adventures of Sun Valley, Burley High School, Wisdom Ranch School, Katie Notingham, and the Wood River Middle School were exposed to the history of the hatchery, the life cycle of trout, water sources and water treatment, followed up by a question and answer period (Appendix 5).

MISCELLANEOUS

Ken Overturf received 2,000 surplus diploid eggs on January 4.

On January 31 and February 14 Tom Frew received 1,900-eyed eggs and 200-eyed eggs for TIC programs, the MK Nature Center received 500-eyed eggs on the 31st, and Sawtooth Fish Hatchery was given 100-eyed eggs on the 31st.

Steve Seiler received eggs from 4 females and milt from 8 males for research experimentation at Idaho State University in February. Steve also received additional eggs and milt on April 4.

Keith Johnson, Eagle Fish Health Lab, received 3,000-eyed eggs on the 14th of February 2,000-eyed eggs on April 13, and 2,000-eyed eggs on June 5.

The Hayspur staff collected milt for use at Henry's Lake Fish Hatchery on February 24 and on February 28. The milt was used to generate cutthroat/rainbow hybrids via delayed fertilization.

Brian Thompson attended a Fish Hatchery Manager's meeting in Wyoming the week of April 17.

Matt Campbell assisted with genetic tissue sampling on the of July 25. A total of 100 fish from the Hayspur strain rainbow trout and 100 fish from the Kamloop strain rainbow trout were sacrificed for analysis.

The State of Idaho facility inspection was performed on June 13 and the boiler inspection was completed on July 15.

Kelton Hatch received 700-eyed eggs for TIC programs on December 11.

Brad Dredge delivered 100-eyed eggs to the Wood River Middle School on December 20.

Hayspur Hatchery experimented with the use of hormone injections to accelerate the reproductive readiness of Westslope cutthroat trout males. Specifically, gonadotropin-releasing hormone (GnRHa) were injected into 30 males seven to ten days prior to spawning. Prior to the injections, none of the males were producing sperm. After injection, some of the 30 males could be used for spawning 10 days after the injection.

ACKNOWLEDGMENTS

In 2006, Hayspur Hatchery benefited from the capable assistance of Fishery Technician, Travis Sadecki and Biological Aides Brian Walker, Timothy Berk, Garrod Forbes, Beau Gunter, Richard Park, and Celina Moreno. The HSFH would like to thank IDFG employees who helped out during the spawning season: John Lambert and Steve England from Mackay Fish Hatchery, Kevin Yelton, Alissa Bosscher, and Eric Kvale from Niagara Springs Hatchery, and Jeff Walker. Special thanks go to Gary Ady and Dick Bittick for transporting catchables to HSFH from Nampa FH during 2006.

Appendix 1. Egg production summary of Hayspur Fish Hatchery, 2006.

Species	^a Eggs Taken	^b Eggs Shipped
T9's & KT's (Triploids)	11,063,498	6,193,864
C2's	335,182	12,294
Totals	11,398,680	6,206,158

^aTotal is displaced (gram weight) of both good and bad eggs taken in 2006.

^bTotal is displaced (gram weight) of eyed eggs available for shipping in 2006.

Appendix 2. Eyed egg shipment summary from Hayspur Fish Hatchery, 2006.

Hatchery	^a Species	Total eggs shipped	^b Estimated value
American Falls	T9	-	\$0.00
	**C2	12,294	\$467.17
Ashton	T9	125,733	\$3,520.52
Cabinet Gorge	T9	-	\$0.00
	KT	-	\$0.00
Grace	T9 & KT	912,044	\$25,537.23
		-	\$0.00
Hagerman	T9 & KT	2,917,854	\$81,699.91
Mackay		-	\$0.00
		-	\$0.00
Magic Valley	T9 & KT	982,595	\$27,512.66
		-	\$0.00
McCall	T9 & KT	115,023	\$3,220.64
		-	\$0.00
Nampa	T9 & KT	817,917	\$22,901.68
		-	\$0.00
Sandpoint	T9	83,202	\$2,329.66
		-	\$0.00
^c Other	T9 & KT	717,685	\$20,095.18
		-	\$0.00
Hagerman NFH	T9 & KT	169,496	\$4,745.89
Tucannon NFH	KT	70,000	\$1,960.00
Totals		6,923,843	\$193,990.54

^aT9=sterile R9, KT=sterile Kamloops

^bAt contract value of \$28.00/1,000 sterile rainbow trout eggs.

**At contract value of \$38.00/1,000 westslope cutthroat trout eggs.

Appendix 3. Hayspur Fish Hatchery stocking summary, 2006.

Fish size	Number of fish	Pounds of fish	Fish per pound
3N Catchables	51,235	14,212	3.61
3N Adults	295	590	0.50
2N Rainbow fingerlings	12,185	406	30.01
2N Broodfish Extras to Gaver Lagoon	2,669	7,161	0.37
Total	66,384	22,369	

Appendix 4. Hayspur Fish Hatchery Feed Summary, 2006.

Rangens			
Date	Size	Amount /pounds	Cost
1/19/2006	1/4 in. Brood pellet	10,280	\$ 3,873.77
4/27/2006	1/4 in. Brood pellet	10,200	\$ 3,853.45
7/11/2006	1/4 in. Brood pellet	9,220	\$ 3,507.08
9/8/2006	1/4 in. Brood pellet	16,460	\$ 6,282.20
Totals		46,160	\$ 17,516.50

Rangens			
Date	Size	Amount /pounds	Cost
3/7/2006	Trout/Salmon Starter #2	50	\$ 24.20
	Trout Grower #4	100	\$ 34.80
5/2/2006	Trout Grower #4	500	\$ 174.00
	Extruded 450 1/8"	750	\$ 231.00
	Extruded 450 3/32"	350	\$ 118.30
9/13/2006	Extruded 450 1/8"	600	\$ 191.40
	Extruded 450 5/32"	1000	\$ 319.00
10/6/2006	TM Medicated 3/32"	150	\$ 82.61
11/30/2006	Trout/Salmon Starter #0	50	\$ 26.15
	Trout/Salmon Starter #1	50	\$ 26.15
12/14/2006	Extruded 450 5/32"	1500	\$ 478.50
Totals		5,100	\$ 1,706.11

Appendix 5. Hayspur Fish Hatchery Tour Group Summary, 2006.

Month	Name of Tour Group	Grade/Age	Number in Group
May	Blaine County Soil & Water Conservation	5th	50
June	Blaine County Recreation District	6-13 yrs.	40
	Free Fishing Day Event	5-15 yrs.	50
	Wisdom Ranch School	5-15 yrs.	5
	Sun Valley Adaptive Sports Group		21
	Katie Notingham-Carey, Idaho	3-6 yrs.	5
	Mountain Adventures of Sun Valley		10
July	4th of July		50
October	Valley Elementary	4th	50
	Burley High School	9th-12th	25
Jan - Dec	General Visitors/Campers		1,000

IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

HENRYS LAKE FISH HATCHERY

Damon Keen, Assistant Hatchery Manager

ABSTRACT

The 2006 spawning operations at Henrys Lake produced 1,639,515-eyed Yellowstone cutthroat trout eggs and 520,161-eyed hybrid trout eggs. Yellowstone cutthroat trout in the Hatchery Creek run showed a mean length of 456 mm, the hybrid trout mean was 572 mm. The percentages of adipose fin clipped Yellowstone cutthroat returning to the ladder were recorded daily throughout the 2006 spawning run and ranged from 5.0% to 56.3%.

Henrys Lake production hybrids were evaluated for sterility induction success. Induction for 2006 was 99.1% successful for the triploid condition.

Pathology reports for viral or bacterial presence detected positive results from six families of Yellowstone cutthroat eggs. All positive lots were subsequently destroyed.

Fishery management activities included a minor creel survey, adult spawner counts, redd counts, and tributary fry monitoring. A minor creel survey was conducted on Henrys Lake from May 27 through November 30. Tributaries were monitored for adult spawning activity from April to July. Tributary fry monitoring was conducted from June to October.

Riparian fencing, fish diversion structures, and screening were maintained on the tributaries and other fragile areas surrounding Henrys Lake. Tributaries maintained were Howard Creek, Targhee Creek, Duck Creek, and Timber Creek. Fencing was also maintained on the south and north side of the county boat dock.

Late winter dissolved oxygen concentrations were assessed at established sampling sites. Oxygen concentrations were monitored to establish oxygen depletion rates and predict possible hazardous oxygen levels for fish in the lake. Dissolved oxygen data was evaluated and oxygen levels were predicted to remain above the area of concern. Therefore, aeration was not deployed.

Author:

Damon Keen
Assistant Hatchery Manager

INTRODUCTION

Henry's Lake Hatchery is a license and federal funded resident station located in the northern Island Park area of Fremont County in east central Idaho. The hatchery was established in 1924 as an egg taking facility to offset the potential loss of spawning habitat due to the construction of a dam at the lake outlet in 1922 (Idaho Fish and Game 1924).

The hatchery continues to function as an egg taking station and ships eyed eggs of Yellowstone cutthroat trout *Oncorhynchus Clarkii*, sterile rainbow trout *O. mykiss* x Yellowstone cutthroat trout *O. clarkii* hybrids, and sterile brook trout *Salvelinus fontinalis* to statewide hatcheries.

The current hatchery building was completed in 1949 and remodeled in 1989. The building consists of 10 double stacks of Heath tray incubators. Hatchery water is supplied via gravity flow from Hatchery springs at 1.5 cfs for domestic and egg incubation use. Unused water flows into Hatchery Creek, through the spawning/trapping facility, and then finally into Henry's Lake via a 150-foot long fish ladder. The spawning/trapping facility was rebuilt in its entirety in 2003.

The hatchery is staffed with one permanent Fish Hatchery Assistant Manager, one five-month temporary employee, and one three-month temporary employee.

METHODS

Spawning Operation

The Hatchery Creek fish ladder was initially opened for the spring run on February 22 and remained in operation until May 10. Fish ascending the ladder were identified as Yellowstone cutthroat or hybrid trout and enumerated. Sub-samples of approximately 10% of each group were measured (total length - mm) on a random basis. Additionally, all of the Yellowstone cutthroat were examined to detect the presence or lack thereof, of adipose fins. Yellowstone cutthroat trout were produced using ripe females spawned into seven-fish pools and fertilized with pooled milt from seven males. Hybrid trout were produced with Yellowstone cutthroat trout eggs from the Henry's Lake run and rainbow trout milt obtained from Hayspur Hatchery. The hybrid contribution was sterilized by inducing a triploid condition by pressure shocking the eggs post fertilization. Hybrid eggs were placed in the pressure treatment machine 47 minutes and 45 seconds post fertilization at 10,000 psi and held at this level of pressure for 5 minutes. Random samples of the hybrid eggs were sent to the Eagle Fish Health Lab (EFHL) to test induction rates of sterilization. Samples were taken from families of eggs. Hybrid production eggs were shipped to Mackay and Ashton hatcheries, and the U of I facility at Hagerman for hatching, rearing, and subsequent release back into Henry's Lake and other waters. Yellowstone cutthroat eggs were shipped to Mackay for hatching, rearing, and release back into Henry's Lake.

Disease samples were taken from samples in the spring spawning run. Ovarian samples were taken from the egg pools of females to detect bacterial disease presence. All female egg pools were tested. Viral samples were taken randomly from 25 seven-female egg pools. A mixed-sex group of 60 adult Yellowstone cutthroat trout during the spring run were sacrificed for disease testing. All samples were sent to the EFHL.

Riparian Fencing and Fish Screening

Electric fencing has been in place at Henrys Lake since the early 1990s. Fencing was stretched and solar panels, batteries, and connections were installed in May 2006 at ten sites on the tributaries of Henrys Lake as established in routine maintenance guidelines. Fencing was checked routinely during the summer and fall months for proper voltage and function. Voltage was checked using a voltmeter at each of the ten sites.

Fish diversion screens are located at nine sites on the tributaries of Henrys Lake. Screens were maintained, cleaned and checked for proper operation on a routine basis during the summer and fall months of 2006.

Creel Survey

From May 27 through November 30, a creel survey was conducted on Henrys Lake. Anglers were interviewed on a spot check basis to monitor compliance and to evaluate catch rates. A more intensive survey was initiated during November to evaluate the new season extension and to determine the biological and social impact of a possible ice fishery resulting from the season extension. Anglers were asked method of fishing, length of fishing time for each method, number of fish caught and harvested, numbers of fish caught and released, and species of fish caught. Time of interview was also recorded. All ice fishing anglers were counted.

Adult Spawner Counts

Adult spawner counts and redd counts were initiated on eight tributaries of Henrys Lake in 2006. The eight tributaries were walked in their entirety along the known spawning habitat and evaluated using physical observation with the help of polarized sunglasses. Numbers and species were recorded, as well as observations and counts of redds. The tributaries evaluated during 2006 were: Targhee, Duck, Howard, Pittsburgh, Wild Rose, Timber, Kelly, and Gillian.

Fry Trapping

Fry trapping was initiated at three tributaries of Henrys Lake; Targhee, Howard, and Duck creeks. The traps were installed at historical locations in close proximity to the mouths of the mentioned tributaries, except in the case of the Howard creek trap. The Howard Creek trap was placed in its historical location in close proximity to the border of the Salisbury and State of Idaho property.

Krey Meekin traps were installed at the aforementioned sites during the early summer months to approximate time of swim up and subsequent migration from the tributaries to the lake. The traps were installed initially within the main flow of the channel of the respective tributaries to capture the majority of the fry. Additionally, channel flow bypassing the traps was blocked and diverted into the traps. A flow of ¼" to 1" was maintained over the trap to

functionally trap the fry in the holding box and to minimize mortality or escapement. The fry traps were normally checked, cleaned, and maintained daily during the duration of the respective trapping timeframe. Yellowstone cutthroat, brook trout, hybrid trout, and nongame species numbers were recorded and sample length data tabulated. Additional information in regards to trap function and efficiency was likewise recorded.

Water Quality

Winter (December 2005, January, February, and March 2006) dissolved oxygen concentrations; snow depth, ice thickness, and water temperatures were taken at established sampling sites. Sites were located using GPS readings from historical sampling sites. Holes in the ice were drilled prior to sampling using a gas powered ice auger. Dissolved oxygen samples were taken using a YSI model 550A oxygen probe. Samples were taken at each site at ice bottom and a subsequent one-meter interval until the bottom of the lake was incurred. Total g/m² of oxygen was calculated for each site.

RESULTS AND DISCUSSION

Spawning Operation

2,685 Yellowstone cutthroat trout ascended the spawning ladder between February 22 and May 10, with 1,262 males (Figure 1) and 1,423 females (Figure 2) enumerated. Yellowstone cutthroat trout male and female total length averaged 452 and 460 mm, respectively (Figure 5). Combined mean Yellowstone cutthroat trout length was 456 mm.

506 hybrid trout ascended the spawning ladder between February 22 and May 10, with 301 males (Figure 3) and 205 females (Figure 4) enumerated. Hybrid trout males and females averaged 566 mm and 578 mm, respectively (Figure 6). Combined mean hybrid trout length was 572 mm.

Species/sex ratio at the Henrys Lake trap during 2006 included: YCT females 45%, YCT males 40%, hybrid males 9%, and hybrid females 6% (Figure 7).

Historical species/sex ratio at Henrys Lake for the years 2001-2006 were evaluated (Figure 8). The hybrid component (both male and female) of the Henrys Lake fish capture continues to decrease, probably relative to the increased success with the sterility program for hybrid trout in Henrys Lake.

Yellowstone cutthroat green eggs totaled 2,665,000 from 1,035 females for a mean fecundity of 2,575 eggs per female (Table 1). Eyed Yellowstone cutthroat eggs totaled 1,639,515 for an overall eye-up rate of 61.5% (Table 1). YCT eye-up varied throughout the spawn season from a low of 23.2% in lot 13 to a high of 78.7% in lot 5 (Figure 9). Eye-up was significantly reduced in lots 9 and 12 due to the positive disease sampling results from 6 trays and the subsequent destruction of those families of eggs. Additionally, lot 14 was destroyed due to poor eye up. All of the production of eyed Yellowstone cutthroat eggs was shipped to the Mackay facility where they were hatched, reared, and subsequently released back into Henrys Lake in the fall of 2006. A total of eleven spawn days during this year's spring run were devoted to Yellowstone cutthroat spawning.

Hybrid trout green eggs totaled 1,001,000 from 385 females for a mean fecundity of 2,600 eggs per female (Table 2). Eyed hybrid trout eggs totaled 520,161 for an overall eye-up rate of 52.0 % (Table 2). Hybrid eye-up varied throughout the spawn season from a low of 37.2% in lot 11 (sterile) to a high of 74.9% in lot 2 fertile (Figure 10). 271,774 of the hybrid eggs were shipped to Mackay (Table 3) for hatching, rearing, and subsequent release into Henrys Lake and 29,032 of the hybrid production eggs were shipped to Ashton (Table 3) for hatching, rearing, and subsequent release into local waters. Both the Mackay shipments and the Ashton shipment were treated to induce the triploid condition. Additionally, 219,355 fertile hybrid eggs were shipped to U of I Hagerman (Table 3) for hatching, rearing, and release into Salmon Falls Reservoir. A total of three spawn days were devoted to production of hybrid eggs during this year's spawn. Sterilization induction rates for the sterile hybrid production indicated 99.1% (116/117) success for the triploid condition.

Sub-samples of the identified Yellowstone cutthroat trout were inspected for the presence or lack of an adipose fin. The purpose of this was to collect data on run timing relative to spawn timing. For the last several years, 10% of the Henrys Lake cutthroat fry have had an adipose fin removed to estimate hatchery contribution to the total lake population. This information is obtained during routine creel checks. However, the 10% total has been taken solely from the earliest spawned fry. Therefore, a correlation between spawn timing and run timing at adult stage might be established by examining adults' clips at the ladder. Therefore, over the last three years, adipose clips have also been recorded at the ladder. Results of the data (Figure 11) indicated a slight decrease in percentage of adipose clipped fish as the run progressed, but still indicated a higher than expected component throughout the run. Given this data, no correlation between spawn timing and timing relative to a return to the ladder as adults has been established. Additionally, increased survival of the earlier spawned fish might be indicated by this data. Additional data will be gathered in the future in attempts to further quantify this relationship. Further analysis can be found in the Upper Snake Region Fisheries Management Report..

Disease sampling was completed on adult spawning fish during the spring and fall runs. Results and discussion are included in the resident fisheries pathologist report.

Bacterial disease sampling taken during spawning from ovarian fluid was positive for lot 9; trays 6 through 10 and lot 12, tray 10 of the YCT take. All positive corresponding families were subsequently destroyed. Additional analysis and results are available in the resident fisheries pathology report.

Riparian Fencing and Fish Screening

Electric fencing functioned well during the year. Voltages remained high throughout the season and riparian infringements by cattle were rare. Fish screens functioned well on Targhee, Duck, and Howard creeks.

A conservation agreement with landowners along Duck and Kelly creeks has been initiated to provide fencing along previously unfenced areas of said tributaries. The new agreements provide for riparian enhancements and off site livestock water troughs, as well as consideration of approved crossings to facilitate vehicle movement without damage to riparian areas.

Adult Spawner Counts

Adult spawner counts were taken on the aforementioned tributaries during the estimated time of ascension. Adult spawner counts vary from year to year depending upon the runoff and resulting visibility, year class strength, lake level, and other environmental factors. Throughout the 1990s and early 2000s, fry were historically planted in the major tributaries of Henrys Lake. Due to concerns over competition between natural fry and hatchery fry, the practice of planting hatchery fry within the tributaries of Henrys Lake is no longer taking place. Additionally, a historically long and unfettered drought has ensued within the Henrys Lake watershed. Therefore, adult spawner counts may fluctuate and/or diminish, but current established planting protocol has been followed during the last five yearly planting events. Additional interpretation and results, analysis, and corresponding graphs and charts are included in the regional fisheries management report.

Fry Trapping

Fry trapping was initiated at Henrys during the 2006 season. Trapping began on Duck creek June 19, Howard creek June 8, and on Targhee creek June 24. Fry were enumerated at the three sites until the end of the seasonal migration was determined or due to weather constraints. Estimated Yellowstone cutthroat fry numbers were: Targhee-11,020, Duck Creek-1,300 and Howard Creek-2,907. Traps functioned poorly throughout most of the season due to high water flows. The high flows of 2006 had been preceded by several years of low flows. Therefore, as the flows returned to historical normal flows, a great deal of debris was transported down the tributaries. Higher flows laden with debris plugs the Krey-Meekin traps and renders them inoperable. The percentage of days the traps did not function proficiently during the trapping timeframe was: Targhee 23.9 %, Duck 22.5 % and Howard 43.3 %.

Creel Survey

From May 27 through November 30, a creel survey was conducted on Henrys Lake. The creel survey was conducted only to spot check for most of the year, but a concentrated effort was made to evaluate the social and biological impacts of the extended season and the implications of 24-hour fishing as opposed to the old regulations that prohibited fishing between the hours of 9:00 pm and 5:00 am.

The 24 hour fishing pressure was determined to not have any significant impact on either the overall fishing effort or the catch rate. Therefore, no biological impact was discerned. Nighttime fishing was seldom observed or reported and therefore, social implications were not realized due to the increased fishing day.

Upon analysis, it was also determined that the extended season (through November) did not have a biological impact on the fish population. A total of 124 ice-fishing anglers were counted for the entire season, no citations were issued, and no biological impact was realized. Some social concerns were realized, mainly revolving around private property trespass issues.

The overall catch rate continues to show improvement at Henrys Lake. The improved catch rate can be attributed to increased survival of hatchery plantings, probably due to better water conditions and increased size of fingerlings planted. Further analysis can be found in the Upper Snake Region Fisheries Management Report.

Water Quality

Oxygen profiles for December 2005 and January 2006 were recorded for the five sites (Pittsburgh Creek, County boat dock, Wild Rose, the Outlet, and the Hatchery). Total oxygen diminished from 46.65g/m² to 32.65g/m² at the Pittsburgh site, 43.45 g/m² to 36.1 g/m² at the County dock, 50.6 g/m² to 34.05 g/m² at the Wild Rose site, 26.35 g/m² to 22.2 g/m² at the Outlet site, and 46.65 g/m² to 36.5 g/m² at the hatchery site.

Historically, the level of concern of oxygen levels has been established at 10g/m². However, that level of concern is somewhat arbitrary due to the lack of a full understanding of critical dissolved oxygen levels in this environment in relation to the Yellowstone cutthroat species. Regardless, the oxygen levels of the 2005-2006 remained above the level of concern and therefore, aeration was not deployed. Additionally, as improved analysis of the aeration system and protocol is gained through practical application and experience, a better understanding of the relationship between aeration deployment and enhanced oxygen profiles will be gained.

ACKNOWLEDGEMENTS

Henrys Lake Fish Hatchery continues to operate with assistance from a wide variety of sources. Acknowledgement is at least a minimal thank you for people going out of their way to contribute to the success of the Henrys program. Department personnel from around the state, as well as entire Department programs including: Mackay Fish Hatchery, Ashton Fish Hatchery, Nampa Fish Hatchery, and the Hayspur Fish Hatchery, assisted in spawning, rearing, and/or transportation. Additionally, several hundred hours of volunteer time were devoted to the Henrys program, mostly during the spawning cycle. Of special consideration is Jo Cobb, volunteer coordinator from the Idaho Falls office, who organized numerous volunteer trips to Henrys Lake to assist in several projects. Special thanks are given to the other volunteers and employees who venture to the site in the name of resource benefit.

Likewise, a special acknowledgement is given to the Henrys Lake Foundation. For many years, the foundation has given unselfishly in the form of donated time and funds, to maintain this important fishery.

The Henrys Lake facility remains an important avenue for disseminating information to the public. Hundreds of fisherwomen and fishermen, as well as the general public, stop by the facility to ask questions or to help with the processes of collecting data and spawning fish. It is acknowledged that one of the most important tasks the Department faces is relaying the state of the resource to the interested public and to further promote the cooperative atmosphere that is so important in resource management.

LITERATURE CITED

Idaho Department of Fish and Game. 1924. Fish and Game Warden. 10th Biennial Report. 10:113-114.

APPENDICES

Table 1. 2006 Henrys Lake Spring Yellowstone Cutthroat Spring Spawning Summary

<u>Spawn Date</u>	<u>Lot Number</u>	<u>Females Spawned</u>	<u>Number of Green Eggs</u>	<u>Mean Fecundity</u>	<u>Number eyed Eggs</u>	<u>Disease Status</u>	<u>Percentage Eye-up</u>
3/2/2006	3	139	361,400	2,600	275,000	Neg.	76.1%
3/6/2006	4	161	418,600	2,600	318,548	Neg.	76.1%
3/9/2006	5	168	436,800	2,600	343,548	Neg.	78.7%
3/13/2006	6	104	270,400	2,600	201,613	Neg.	64.6%
3/16/2006	7	105	273,000	2,600	206,452	Neg.	75.6%
3/20/2006	8	60	156,000	2,600	87,097	Neg.	55.8%
3/27/2006	9	60	156,000	2,600	43,548	Pos. 6-10	27.9%
3/30/2006	10	78	202,800	2,600	89,516	Neg.	44.1%
4/6/2006	12	60	150,000	2,500	41,935	Pos. 10	28.0%
4/13/2006	13	58	139,200	2,400	32,250	Neg.	23.2%
4/24/2006	14	42	100,800	2,400	0	Neg.	0.0%
TOTALS		1,035	2,665,000	2,575	1,639,515		61.5%

Table 2. 2006 Henrys Lake Hybrid Spring Spawning Summary

<u>Spawn Date</u>	<u>Lot Number</u>	<u>Females Spawned</u>	<u>Number of Green Eggs</u>	<u>Mean Fecundity</u>	<u>Number Eyed Eggs</u>	<u>Disease Status</u>	<u>Percentage Eye-up</u>
2/24/2006	1 Sterile	161	418,600	2,600	201,613	Neg.	48.2%
2/28/2006	2 Sterile	70	182,000	2,600	100,000	Neg.	54.9%
2/28/2006	2 Fertile	70	182,000	2,600	136,290	Neg.	74.9%
4/3/2006	11 Sterile	30	78,000	2,600	29,032	Neg.	37.2%
4/3/2006	11 Fertile	54	140,400	2,600	53,226	Neg.	37.9%
TOTALS		385	1,001,000	2,600	520,161		52.0%

Table 3. 2006 Henrys Lake Egg Shipment Summary

<u>DATE</u>	<u>LOT</u>	<u>STOCK</u>	<u>EGG SIZE</u>	<u>ML</u>	<u>EGGS</u>	<u>TU'S</u>	<u>DESTINATION</u>
27-Mar-06	1	Hybrids	3.1	12,500	201,613	418.5	Mackay
31-Mar-06	2	Hybrids	3.1	10,300	166,129	405	U of I
4-Apr-06	2	Hybrids	3.1	4,350	70,161	472.5	Mackay
4-Apr-06	3	YCT	3.1	17,050	275,000	445.5	Mackay
10-Apr-06	4	YCT	3.1	19,750	318,548	473	Mackay
11-Apr-06	5	YCT	3.1	21,300	343,548	445.5	Mackay
18-Apr-06	6	YCT	3.1	12,500	201,613	486	Mackay
18-Apr-06	7	YCT	3.1	12,800	206,452	445.5	Mackay
25-Apr-06	8	YCT	3.1	5,400	87,097	486	Mackay
3-May-06	9	YCT	3.1	2,700	43,548	499.5	Mackay
3-May-06	10	YCT	3.1	5,550	89,516	459	Mackay
3-May-06	11	Hybrids	3.1	3,300	53,226	405	U of I
5-May-06	11	Hybrids	3.1	1,800	29,032	432	Ashton
12-May-06	12	YCT	3.1	2,600	41,935	486	Mackay
12-May-06	13	YCT	3.1	2,000	32,258	392	Mackay
	14	YCT					

Figure 1. Henrys Lake 2006 Run Timing of Male Yellowstone Cutthroat Trout

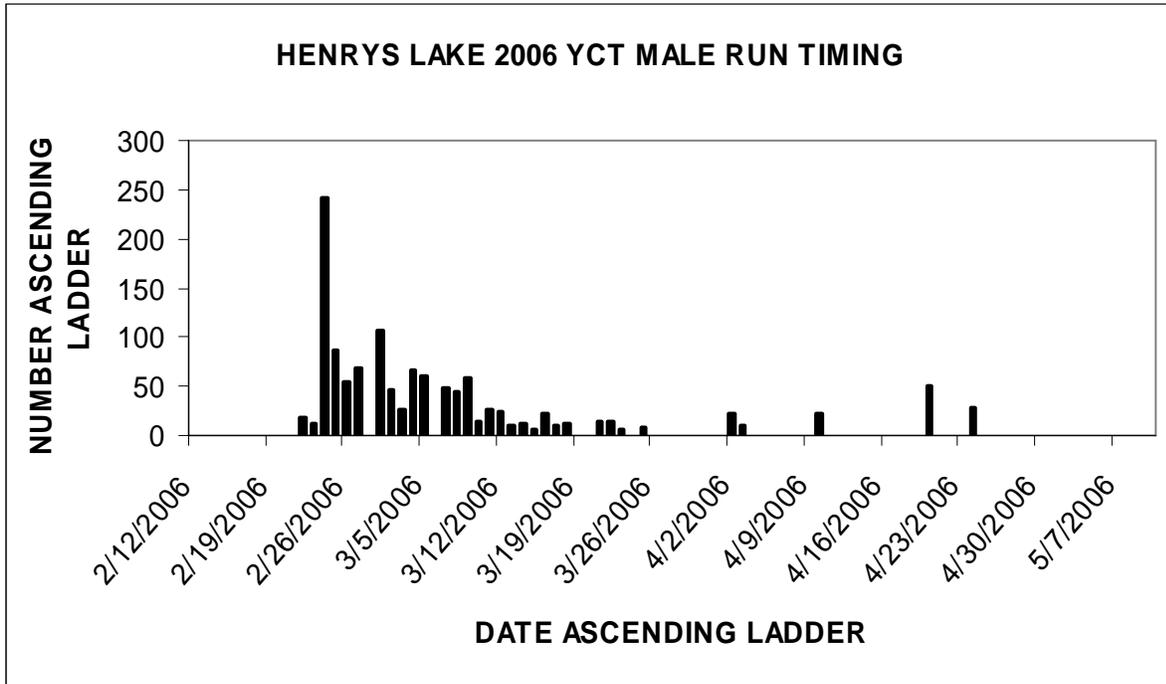


Figure 2. Henrys Lake 2006 Run Timing of Female Yellowstone Cutthroat Trout

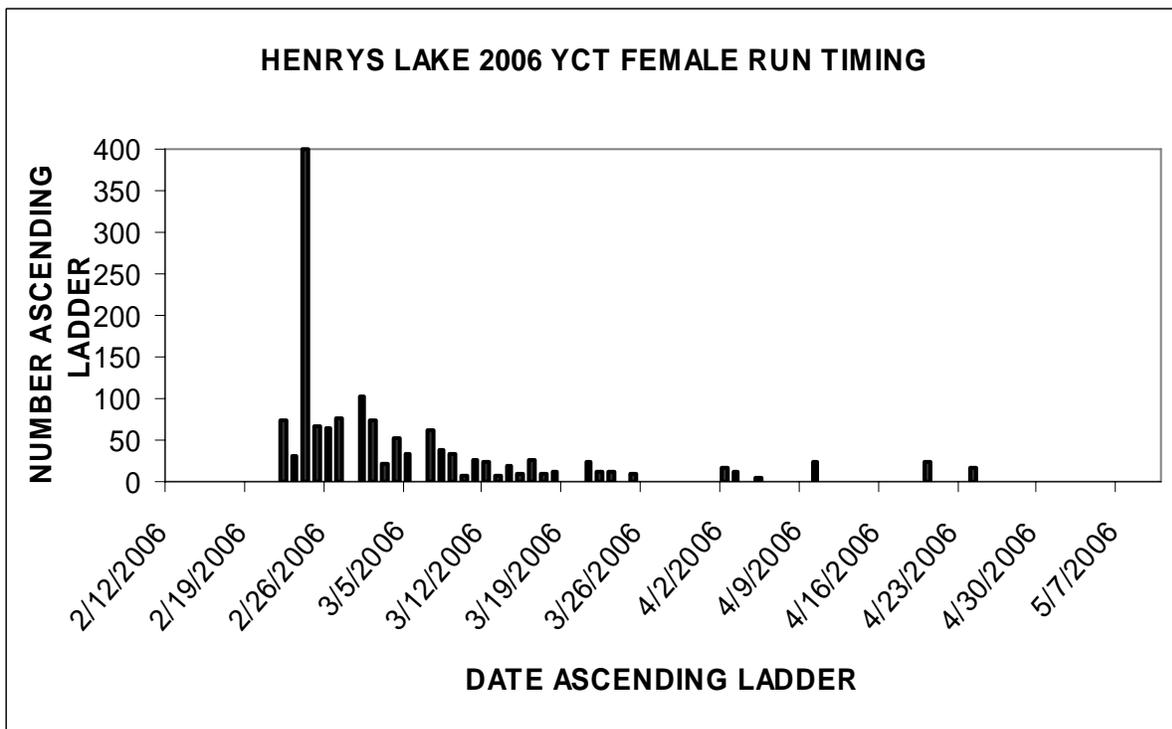


Figure 3. Henrys Lake 2006 Run Timing of Male Hybrid Trout

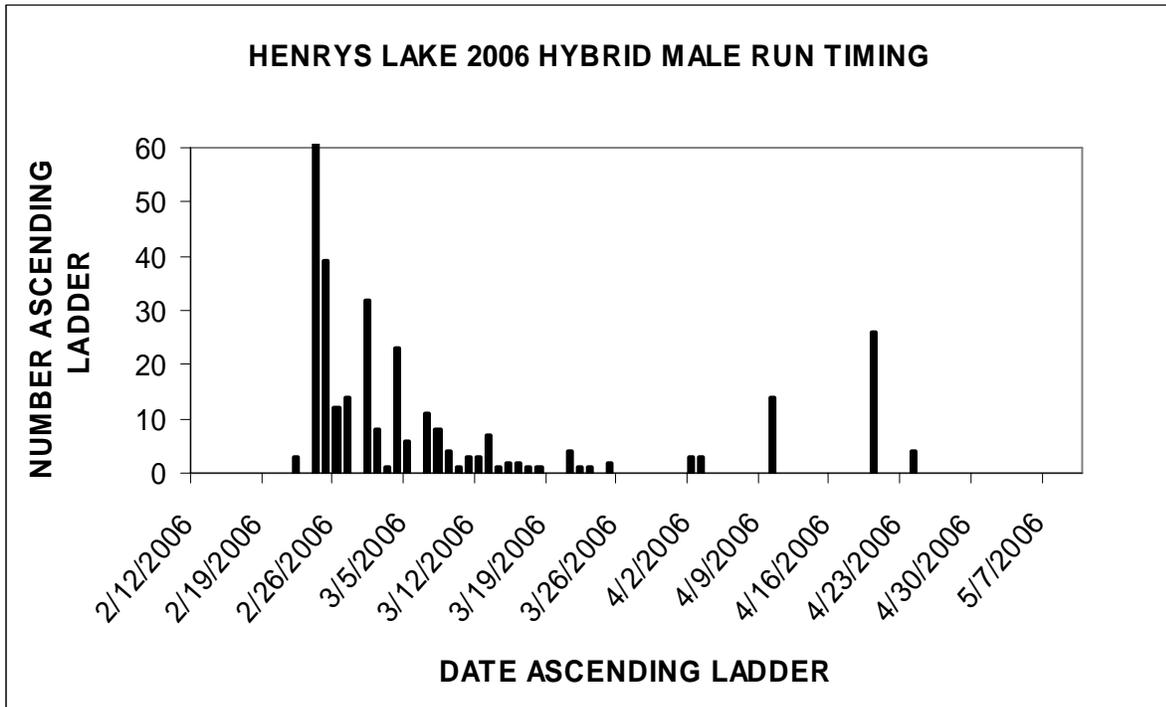


Figure 4. Henrys Lake 2006 Run Timing of Female Hybrid Trout

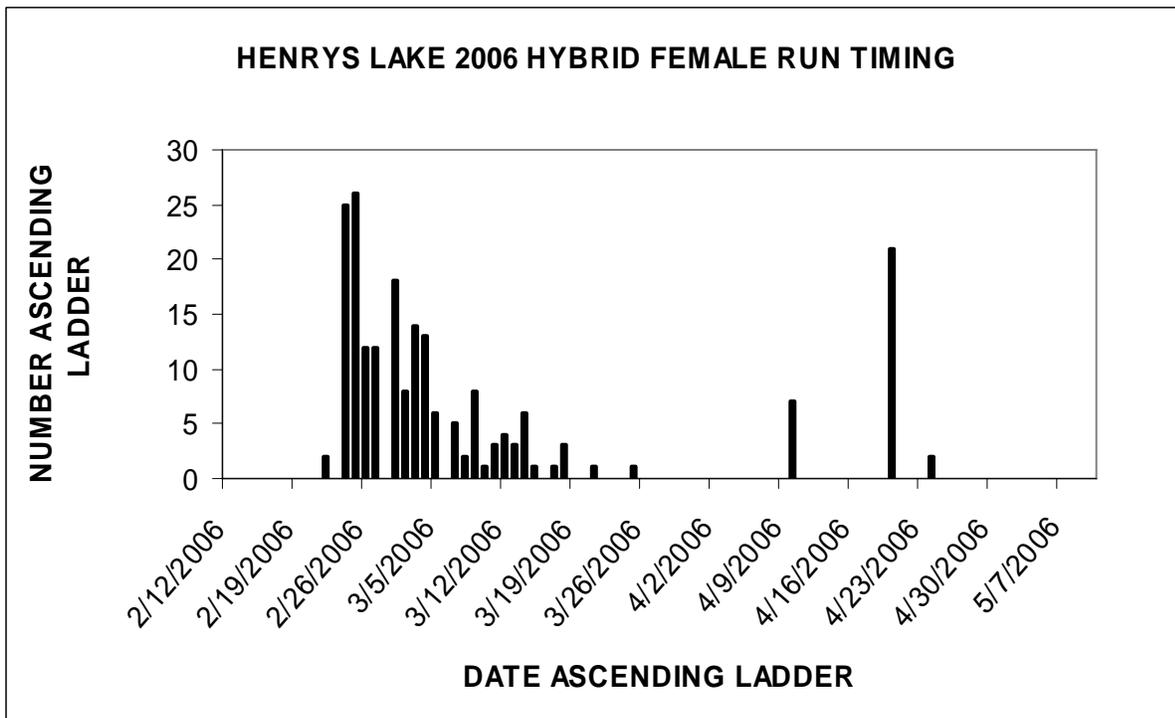


Figure 5. Henrys Lake 2006 Length Frequencies of YCT Spawning Run

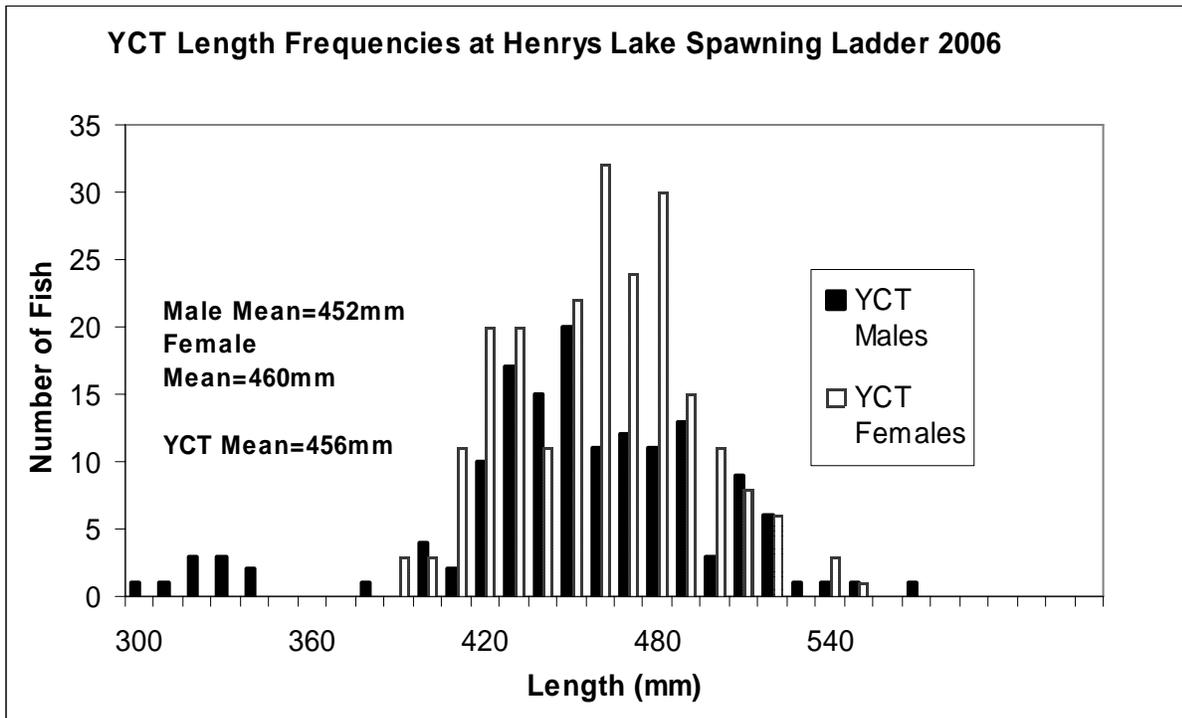


Figure 6. Henrys Lake 2006 Length Frequencies of Hybrid Trout Run

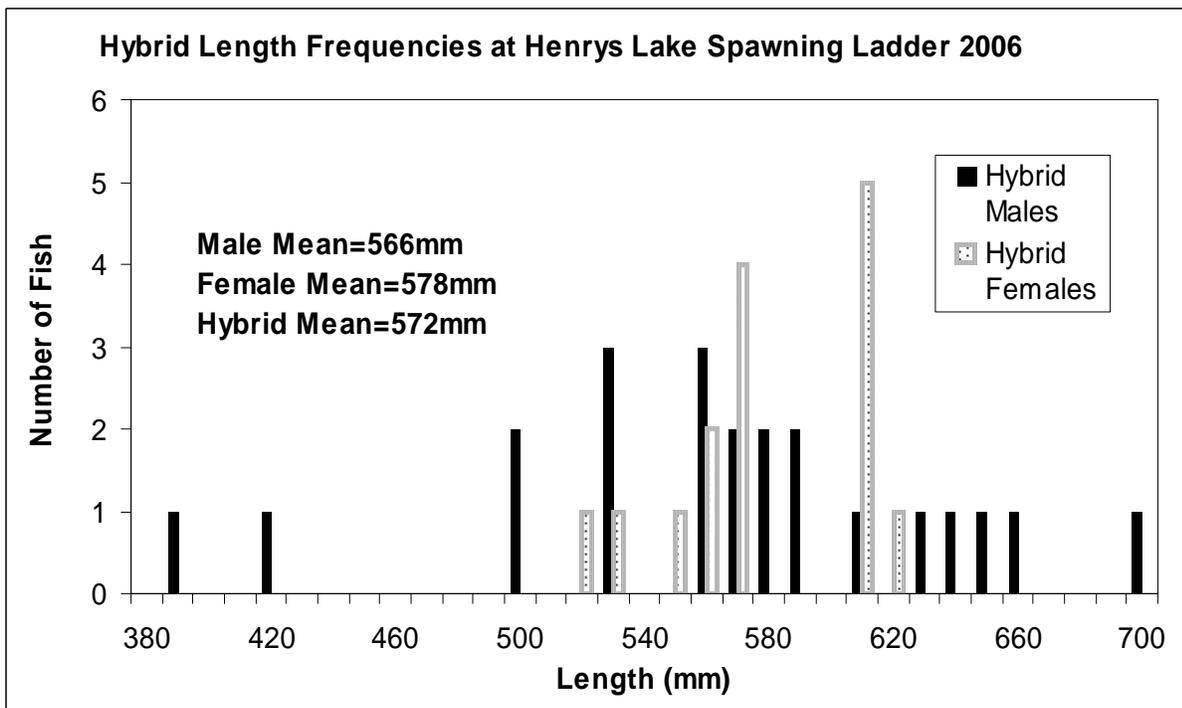


Figure 7. Henrys Lake Trap Species/Sex Ratio Composition 2006

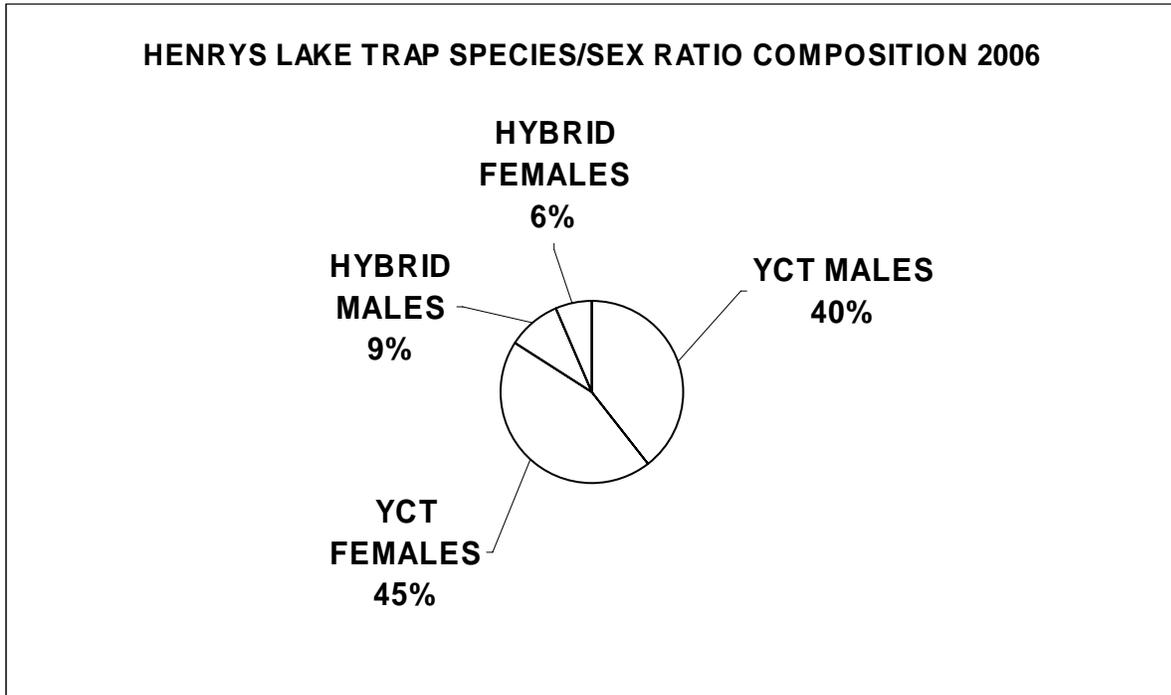


Figure 8. Henrys Lake Trap Historical Species/Sex Ratio Composition 2001-2006

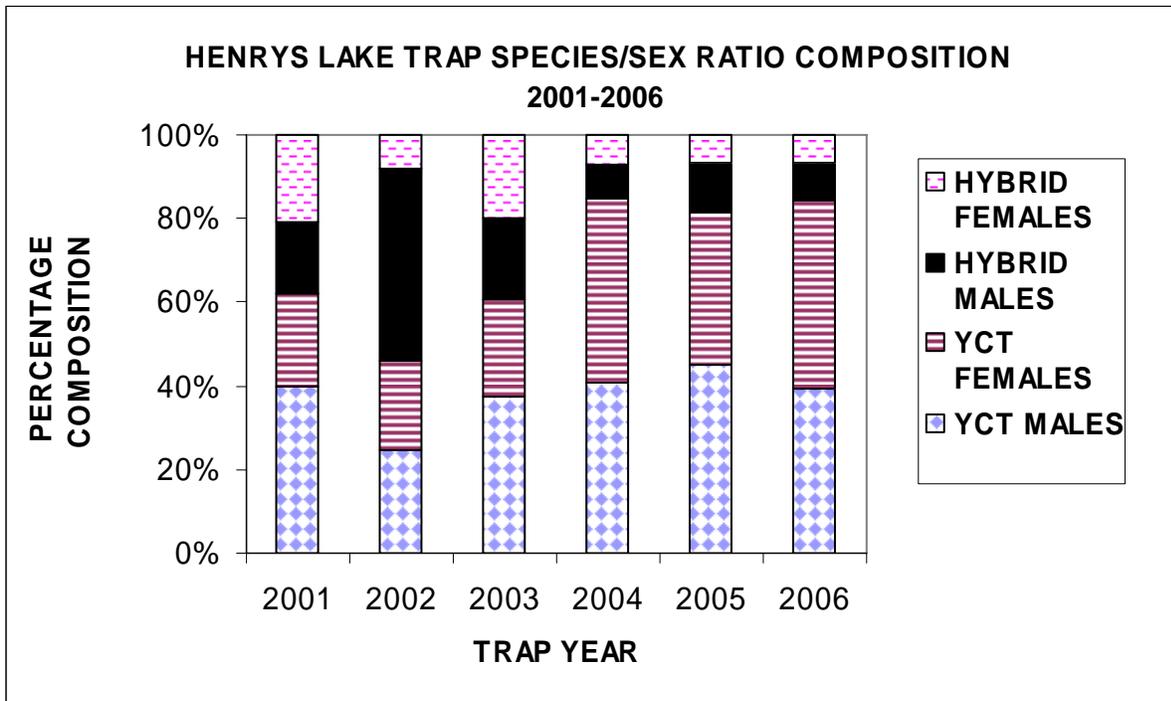


Figure 9. Henrys Lake YCT Eye-Up Percentages By Lot Number

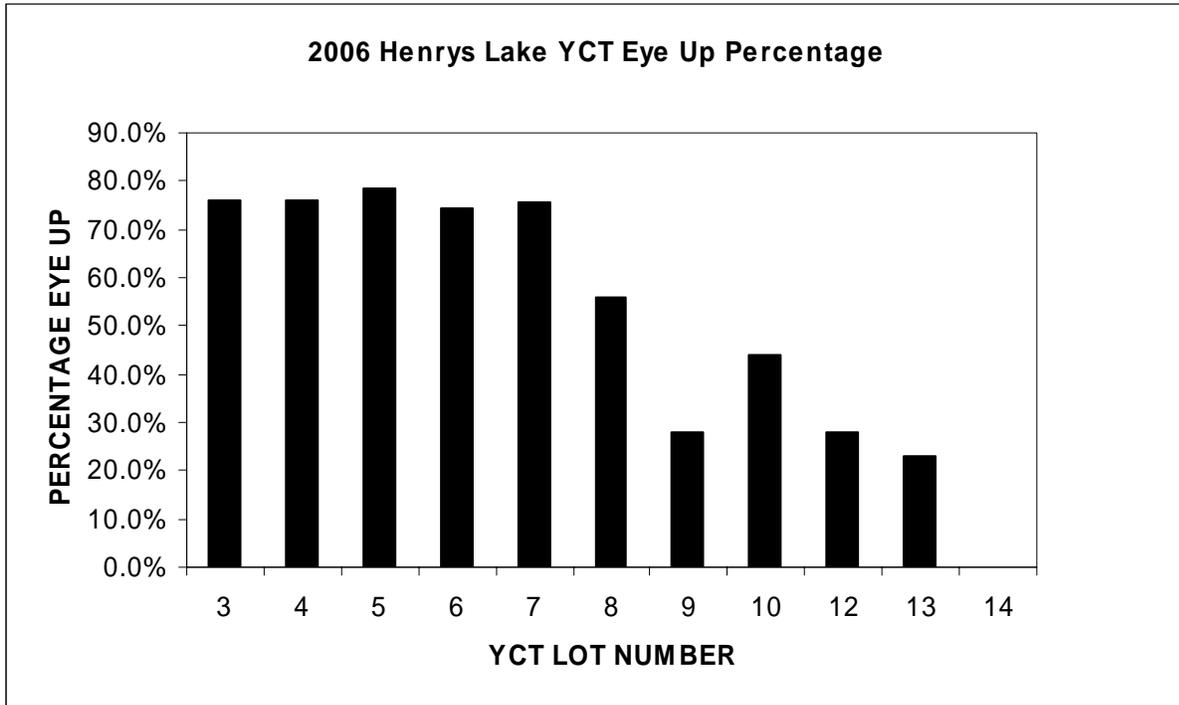


Figure 10. Henrys Lake Hybrid Eye-Up Percentages by Lot Number

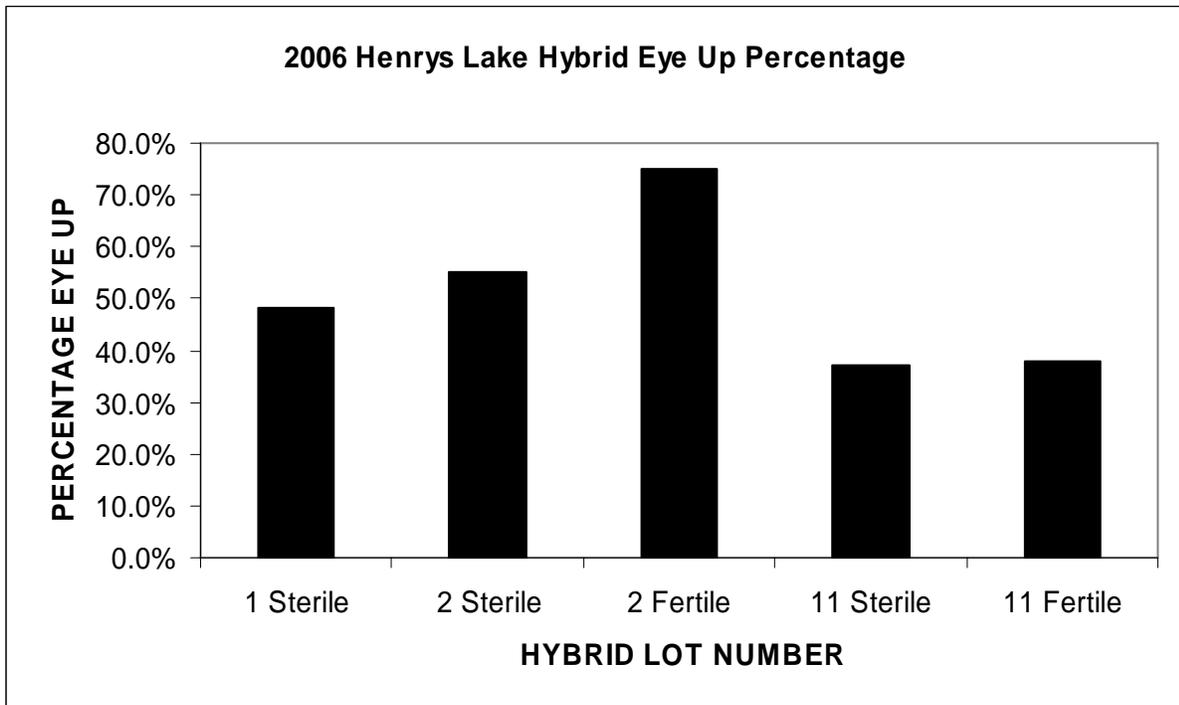
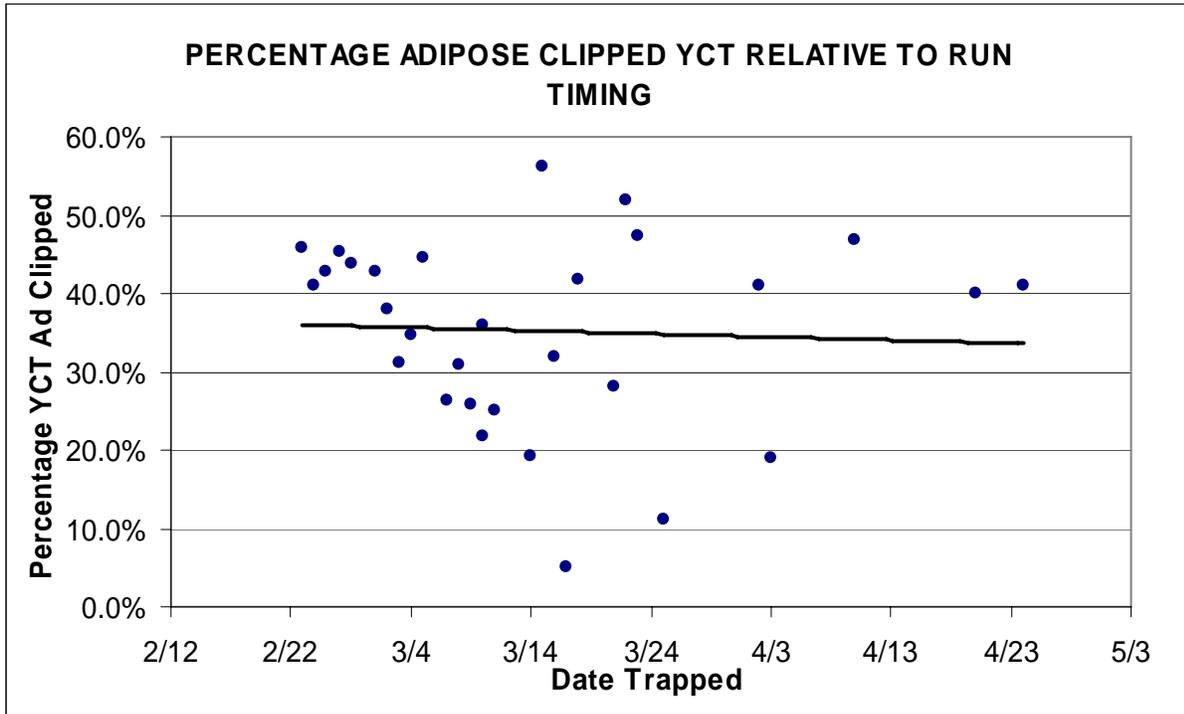


Figure 11. Henrys Lake Adipose Clipped Yellowstone Cutthroat Run Timing



IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

MACKAY FISH HATCHERY

**Phillip J. Coonts, Fish Hatchery Manager I
Robert M. Hoover, Assistant Fish Hatchery Manager
Bryan L. Grant, Fish Culturist**

INTRODUCTION

The Mackay Fish Hatchery (MFH) is a specialty fish production facility located approximately 15 miles north of Mackay, in Custer County. The hatchery produces fish of various species and strains, from 1 to 14 inches in length, for statewide distribution. The funding source comes from state license monies for operational and personnel cost.

The hatchery is staffed with three full-time and two part-time Idaho Department of Fish and Game (Department) employees. The part-time employees share 16 months of temporary time. Wages, including benefits, cost \$186,280 for all personnel. The operating budget for the fiscal year was \$89,320, the same amount as in 2005-2006. This year's fish production included five species and ten strains (Appendix 1).

Rainbow trout (*Oncorhynchus mykiss*)

Hayspur triploid (Bellevue, ID - Hayspur SFH)

Troutlodge triploid (Sumner, WA)

Golden trout (*Oncorhynchus mykiss aquabonita*)

California (Mt Whitney SFH, CA)

Yellowstone cutthroat trout (*Oncorhynchus Clarkii*)

Henrys Lake (Island Park, ID - Henrys Lake SFH)

Snake River fine spot (Jackson, WY - Jackson NFH)

Rainbow x cutthroat triploid hybrids

Hayspur rainbow male x Henrys Lake cutthroat female

Kokanee salmon (*Oncorhynchus nerka*)

Early (Deadwood Reservoir, ID)

October (Blue Mesa, CO)

October (East River, CO)

Grayling (*Thymallus arcticus*)

Meadow Lake (Dubois, WY)

WATER SUPPLY

The hatchery's water is provided by three collection springs in an artesian area on the hatchery grounds. The area has been dug out and filled with cobblestone to eliminate any standing water. The available volume of water for hatchery production has remained consistent for many years. Flows range from 18 cfs during the early months of the year to 24 cfs during the summer months. The temperatures of the springs are as follows: 50°F, 51°F and 54°F. Egg incubation temperature is 51°F.

HATCHERY IMPROVEMENTS

- New dam boards for the large raceways.
- Aluminum screens were fabricated for the large raceways.
- Chips and cracks in the hatch house troughs were repaired.
- Repairs were made to the Small raceway walls.
- Two 8" drain holes were installed in the hatch-house floor.
- Jumps screens for all of the large raceway sections were fabricated.
- New furnace installed in Residence 1.
- New linoleum installed and oak floor refinished in Residence 1.
- New carpet and linoleum installed in Residence 2.
- Heater installed on the truck fill pump.

FISH STOCKED

Fingerlings were planted in five regions across the state. These put-grow-and-take fish numbered 3,492,845 and weighed 38,565 lbs (Appendix 2).

Catchable rainbow trout were stocked in Regions 6 and 7. These put-and-take fish numbered 73,610 and weighed 38,255 lbs (Appendix 2).

Catchable Yellowstone cutthroat trout were stocked in Region 6. These put-and-take fish numbered 26,440 and weighed 14,616 lbs (Appendix 2).

TRANSPORT COSTS

The three fish transport trucks assigned to MFH made 109 separate stocking trips during the year. Fish from MFH were planted into 55 different bodies of water. Hatchery personnel traveled 27,300 miles doing this, which averages 250 miles traveled per trip. The fleet rental charges are \$350.69/month and 27.0 cents/mile for each of the 2-Ton trucks. Fleet rental for the 1-Ton truck is \$151.34/month and 48.0 cents/mile. All of these expenses totaled \$20,448.

The fish transport tanker trucks from Nampa Fish Hatchery (NFH) made 7 trips to 4 different waters, traveling 3,010 miles for MFH during the year. For the use of the two tanker trucks, NFH expenses were \$9,185.00, bringing our total fish transportation cost to \$29,663.00.

FISH FEED

A total of 100,392 lbs of Rangen fish feed was used during the year, costing \$36,125, including shipping charges (Appendix 3). Conversions ranged from a low of 0.77 for the 2005 Troutlodge rainbow and the 2006 Henry's Lake cutthroat trout to a high of 1.26 for the 2005 Deadwood kokanee salmon. The average conversion for all lots of fish reared at MFH during the year was 0.94 (Appendix 3).

FISH MARKING

Adipose fin clips were given to 100,000 Henrys Lake Yellowstone cutthroat trout during the first week of August 2006. This represents approximately 10% of the Yellowstone cutthroat planted into the lake. Natividad Wilson and her crew administered these clips.

Of the 120,420 early kokanee planted into Deadwood Reservoir, 52,200 had adipose clips.

FISH HEALTH SUMMARY

The 2005 Troutlodge triploid rainbow trout tested positive for coldwater disease (*F. psychrophilum*) and motile aeromonas septicemia (*A. sobria*). Mortality was never high, but was chronic throughout their time at MFH.

The 2006 Troutlodge triploid rainbow trout experienced elevated mortality upon being transferred from the Small to the large raceways. After coldwater disease (*F. psychrophilum*) was isolated, a ten day 3.75 gm OTC/100 lbs fish/day treatment stopped the elevated mortality, but low chronic mortality was experienced through the end of the year.

After the 2005 Henrys Lake Yellowstone cutthroat trout suffered high mortality in the fry stage from coldwater disease (*F. psychrophilum*) carried inside their eggs, the 2006 brood year received a prophylactic treatment of 4.54 mg Florfenicol/lb fish/day for ten days. No abnormal mortality was experienced.

The 2006 early kokanee and 2006 late kokanee being raised in the B-sections of two large raceways suffered elevated mortality from bacterial gill disease (*Myxobacteria sp*). Treatment with Chloramine T lowered mortality. The kokanee being reared in the two large raceway A-sections, above the B-sections, did not show any symptoms of the disease.

PUBLIC RELATIONS

Approximately 400 people toured the hatchery during the year. Most of these visitors came to fish the diversion pond below the hatchery. Signs are posted suggesting the pond be for youth fishing only and most people complied. Scheduled tours were given to area groups and a Boy Scout group. Hatchery employees also participate in the *Adopt a Highway* program by clearing the litter from 12 miles of Highway 93 biannually. MFH continued to be an authorized stamp location for the *Idaho Corps of Discovery* program. MFH assisted the USFS, Lost River Ranger District fish biologist in a whitefish research project. MFH provided golden trout and Yellowstone cutthroat for the aquarium exhibit at the Boise Cabelas store.

ACKNOWLEDGEMENTS

MFH would like to thank Steve England and John Lambert, bio-aides throughout the year, for their very important contribution to the hatchery's accomplishments. Their work enables the hatchery to produce an excellent quality product for the angler.

Appendix 1. Fish cultured at Mackay Fish Hatchery, January 1 to December 31, 2006

<u>Species/strain</u>	<u>Lot</u>	<u>Source</u>	<u>Received as</u>	<u>Number received in or carried into '06</u>	<u>Lbs received in or carried into '06</u>	<u>Destination</u>
Triploid rainbow - Hayspur	04-ID-T9	Hayspur SFH	eyed eggs	1,900	1,800	2006 catchable
Triploid rainbow - Troutlodge	05-WA- TT	Troutlodge	eyed eggs	71,400	11,444	2006 catchable 2007 catchable
Triploid rainbow - Troutlodge	06-WA- TT	Troutlodge	eyed eggs	111,210	N/A	2007 catchable
Yellowstone cutthroat - Snake River fine spot	04-WY- C4	Jackson NFH	eyed eggs	26,000	8,989	2006 catchable
Yellowstone cutthroat - Snake River fine spot	05-WY- C4	Jackson NFH	eyed eggs	134,550	1,230	2006 fingerling 2007 catchable
Yellowstone cutthroat - Snake River fine spot	06-WY- C4	Jackson NFH	eyed eggs	306,436	N/A	2007 fingerling 2008 catchable
Yellowstone cutthroat - Henrys Lake	06-ID- C3	Henrys Lake SFH	eyed eggs	1,577,812	N/A	2006 fingerling
Rainbow x Cutthroat triploid hybrid	06-ID- TH	Henrys Lake SFH	eyed eggs	160,000	N/A	2006 fingerling
Early spawner kokanee - Deadwood Reservoir	05-ID- KE	Nampa SFH	green eggs	2,899,040	340	2006 fingerling
Early spawner kokanee - Deadwood Reservoir	06-ID- KE	Nampa SFH	green eggs	2,320,369	N/A	2007 fingerling
October spawner kokanee- Blue Mesa Reservoir, CO	05-CO- KO	Roaring Judy SFH	eyed eggs	347,009	N/A	2006 fingerling
October spawner kokanee- East River, CO	06-CO- KO	Glenwood Spgs SFH	eyed eggs	414,549	N/A	2007 fingerling

Appendix 2. Mackay Fish Hatchery stocking summary, 2006

<u>Species/Strain</u>	<u>Lot</u>	<u>Number planted</u>	<u>Lbs planted</u>	<u>Size at release</u>
Yellowstone cutthroat-Snake River fine spot	04-WY-C4	26,440	14,616	catchable
Yellowstone cutthroat-Snake River fine spot	05-WY-C4	107,550	4,350	fingerling
Yellowstone cutthroat-Snake River fine spot	06-WY-C4	72,500	125	fingerling
Yellowstone cutthroat-Henrys Lake	06-ID-C3	1,169,019	10,441	fingerling
Rainbow x Cutthroat triploid hybrid	06-ID-TH	149,800	2,200	fingerling
Triploid rainbow - Hayspur	04-ID-T9	1,903	1,850	catchable
Triploid rainbow - Troutlodge	05-WA-TT	71,707	36,405	catchable
Triploid rainbow - Troutlodge	06-WA-TT	9,954	177	fingerling
Early spawner kokanee-Deadwood Reservoir	05-ID-KE	1,664,200	19,615	fingerling
Late spawner kokanee-Blue Mesa Reservoir	05-CO-KO	313,500	1,650	fingerling
California golden	05-CA-GN	20	10	catchable
California golden	06-CA-GN	4,102	2	fingerling
arctic grayling	06-WY-GR	2,220	53	fingerling

Total fish stocked, 2006

	<u>Number of fish</u>	<u>Lbs of fish</u>
Fingerlings	3,492,845	38,565
Rainbow catchables	73,610	38,255
Cutthroat catchables	<u>26,440</u>	<u>14,616</u>
Total	3,592,895	91,436

Appendix 3. Feed used and feed conversions at Mackay Fish Hatchery, 2006

<u>Rangen Feeds</u>	<u>Cost / pound</u>	<u>Lbs used</u>	<u>Cost</u>
TSS # 0	\$0.484	1,967	\$952
TSS # 0 with Florfenicol	free	200	\$0
TSS # 1	\$0.484	5,090	\$2,464
TSS # 2	\$0.484	14,688	\$7,109
Trout Grower # 3	\$0.348	22,917	\$7,975
Trout Grower #3 OTC	\$0.557	450	\$251
Trout Grower #4	\$0.348	2700	\$940
Extruded 450 3/32 sinking	\$0.308	4,102	\$1,263
Extruded 450 5/32 sinking	\$0.308	48,278	\$14,870
Shipping Charges	N/A	N/A	\$3,301
Total lbs of feed used =	100,392		
Total cost of feed used =	\$ 39,125		

Feed conversions

<u>Lot</u>	<u>Conversion</u>
06-ID-C3	0.77
04-WY-C4	0.87
05-WY-C4	1.12
06-WY-C4	1.05
05-ID-KE	1.26
05-CO-KO	0.85
05-WA-TT	0.77
06-WA-TT	0.84
05-ID-TH	<u>0.92</u>
AVERAGE	0.94

Appendix 4. Mackay Fish Hatchery production and costs summary, 2006

Lbs of fish stocked, 2006 =	91,436 lbs.
Lbs of fish on station, 12/31/2006 =	<u>27,190 lbs.</u>
NET lbs of fish produced, 2006 =	118,626 lbs.
Lbs of fish on hand, 12/31/2005 =	<u>23,803 lbs.</u>
TOTAL lbs of fish produced, 2006 =	94,823 lbs.

Production costs

6 months FY 2006 budget

personnel =	\$ 90,154
operating =	<u>\$ 44,660</u>
	\$134,814

6 months FY 2007 budget

personnel =	\$ 96,126
operating =	<u>\$ 44,660</u>
	\$140,786

TOTAL 2006 costs =	\$275,600
Cost per 1000 fish stocked =	\$76.70
Cost per pound of fish stocked =	\$3.01
Cost per pound of fish produced =	\$2.90

IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

MCCALL SUMMER CHINOOK HATCHERY

**Steven T. Kammeyer
Assistant Hatchery Manager**

INTRODUCTION

McCall Summer Chinook Fish Hatchery (MCFH) is located within the city limits of McCall, approximately ¼-mile downstream of Payette Lake, adjacent to the North Fork of the Payette River. This facility underwent a complete renovation by the U.S. Army Corps of Engineers (USACE) in 1979. The primary objective for MCFH 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. Resident fisheries program activities are financially supported through Idaho Department of Fish and Game (Department) license sales revenue. Most resident activities occur during the summer months from May to September. Funding for personnel time used on resident program objectives is derived from Department license sales revenue and provides for six months of assistant fish hatchery manager and six months of seasonal biological aide time. Facility overhead and maintenance charges are provided through the anadromous program as funded by LSRCP.

Gravity flow from Payette Lake provides for all of MCFH water needs. Two water intakes are available, which provides 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-feet long and 4-feet wide. 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. clarkii lewisi*, domestic kamloop rainbow trout *O. mykiss*, golden trout *O. aquabonita* and rear grayling *Thymallus arcticus* fry for stocking into mountain lakes in the Panhandle, Clearwater, Southwest, and Salmon Regions.
- Redistribute up to 101,000 catchable-size rainbow trout.
- Maintain the statewide high mountain lakes stocking request database.
- Provide assistance to the anadromous program as needed and available.

FISH PRODUCTION

Mountain Lake Stocking

Fry numbering 220,440 were released into waters in Regions 1, 2, 3B, 3M, 4, and 7 out of MCFH during 2006 and included westslope cutthroat trout, rainbow trout, golden trout and arctic grayling (Appendix 1.). A total of 230 lakes, that are part of the mountain lake stocking program, received 208,090 fry. An additional 6 locations received 12,350 fry that were in excess of annual requests.

Thirteen fixed-wing fish stocking flights were flown during the period of August 3 through September 28, 2006 and resulted in the release of 192,390 fry into 219 mountain lakes. In doing so approximately 4,935 air miles were covered at a flight cost of \$11,472.00. The average cost, based on flight time, to stock a mountain lake in 2006 was \$52.38 and ranged from \$41.43 to \$152.80 for individual Regions. Volunteers stocked 9 mountain lakes with 7,700 fry in the McCall area saving the Department approximately \$400.00 in comparable flight time and IDFG personnel stocked 2 lakes with 8,000 fry that are also part of this program.

Golden trout and arctic grayling were available in numbers in excess of the 2006 request. To help compensate for previous shortages all lakes with golden trout requests (all rotations in all Regions) were stocked. Arctic grayling numbers allowed for completing all current requests and provided fry for stocking 17 additional lakes with emphasis given to 3-year rotation lakes that were not stocked in 2005. Extra westslope cutthroat eggs were ordered to provide fry to meet all current requests and to provide additional fry to stock those lakes in the McCall sub-Region that were not stocked in 2005 due to a shortage created by elevated incubation mortality. No fish health or mortality problems were experienced this year.

Three flights were made to receive golden trout and arctic grayling fry from Ashton FH that were stocked out in 2006 at a cost of \$3,152.50 in flight time.

Catchable Rainbow Trout Redistribution

A total of 96,280 sterile Trout Lodge rainbow trout triploids were stocked into 38 water bodies in the McCall vicinity between May 15 and September 12, 2006. These fish were reared at Nampa FH then transferred to MCFH. Transportation costs to bring catchable size trout from Nampa FH totaled \$4,615 with 1,266 miles driven by Transport Operators. Hatchery personnel drove 4,973 miles on 103 stocking trips to complete requests at an approximate transportation cost of \$5,650. To maximize efficiency, multiple sites were stocked on 22 occasions eliminating the need to make additional stocking trips. The combined transport distribution cost was \$106.62 for each 1,000 fish stocked (Appendix 3.). To maintain the condition of fish 1,450 pounds of BioDry-500 trout feed was utilized to provide intermittent feeding at a cost of \$754.00.

Lake Cascade Perch Relocation

McCall Sub-Regional fisheries staff collected a total of 380,945 yellow perch *Perca flavescens* in 2006 to aid in Lake Cascade perch recovery efforts: 357,460 Lost Valley Reservoir (May 11-June 13); 23,485 Horsethief Reservoir (May 4-25). Hatchery assistance was primarily provided through making available the MCFH resident 1-Ton and 2-Ton fish

transportation trucks and setting up a separate trailer with a fish tank for use in relocating yellow perch to Lake Cascade. Prior to the onset of catchable trout redistribution MCFH personnel provided assistance transporting yellow perch as requested. Hatchery personnel and the resident 1-Ton were no longer available once rainbow trout redistributions began. However, the MCFH 2-Ton fish transport truck and trailer-tank setup were still designated for use by fishery management personnel in yellow perch relocation even though this required making multiple stocking trips to specific sites with the 1-Ton fish transport truck to meet rainbow trout stocking requests.

No yellow perch relocation efforts are anticipated to take place in 2007. Rather fishery management staff has indicated they will be concentrating efforts to evaluate the effectiveness of previous yellow perch reintroductions through sampling efforts on Lake Cascade. Lost Valley and Horsethief Reservoirs were treated with rotenone during the fall of 2006 as part of an ongoing effort to eradicate illegally introduced yellow perch in those waters.

Since yellow perch relocation efforts to Lake Cascade were initiated in 2004 approximately 860,000 yellow perch have been added while 51,000 northern pikeminnows *Ptychocheilus oregonensis* have been removed.

Payette Lake Net Pens

The use of net pens in Payette Lake, for the continued rearing of catchable size rainbow trout during the summer, has not occurred since 2000. During the spring thaw of 2001 shifting ice caused sufficient damage that led to the dock walkway being condemned. Since that time Dale Allen, McCall sub-Regional Fish Manager, has continued to lead efforts to re-establish this project. A new "multi-use" dock and net pen frame supports were in place in the spring of 2006. However, continued opposition by adjacent landowners at the new Mill Park site prevented the addition of rainbow trout. Negotiations are continuing to return net pen fish rearing in Payette Lake.

Special Projects

Revisions were made to Regional "Mountain Lake Stocking Topographic Map Guide" booklets to ensure new lakes that had been requested were included. A new topographic map guide booklet was created for Magic Valley Region mountain lakes. A computer generated video depicting the mountain lake stocking program was completed in the spring of 2006 and made available to interested individuals. The "Catchable Rainbow Trout Stocking Directions" booklet was revised to include corrections to detailed driving directions and representative pictures of the various stocking locations were added.

Public Relations

Fish stocking opportunities were provided to several volunteers who backpacked fry into 9 mountain lakes in the McCall area. Hatchery personnel participated in Free Fishing Day activities at Fischer Pond and Rowland Pond. Numerous hatchery tours were given to visitors and several school groups throughout the summer.

ACKNOWLEDGEMENTS

Resident program activities were completed with the support and cooperation of the entire staff at McCall Summer Chinook Hatchery. I wish to thank Gene McPherson, MCFH Fish Hatchery Manager II, for his ongoing advice and support as well as for making available seasonal employees who were utilized on resident program endeavors. Individuals assisting on resident program activities in 2006 include: Dan Fielding, Bud Forsythe, Jerry Harris, Andrew Seymour, Nicholas Spiropulos, Pete Starr, James Swanger and Dan Wash.

APPENDICES

Appendix 1. Fry redistribution by Region, MCFH, 2006.

Species	Panhandle	Clearwater	Southwest (Nampa)	Southwest (McCall)	Magic Valley	Salmon	Excess	Total
Arctic Grayling (Ashton FH – Meadow Lk, WY)	8,800	-	2,750	11,750	1,000	12,260	-	36,560
Golden Trout (Ashton FH – Mt Whitney, CA)	5,400	-	6,000	13,330	2,000	6,375	-	33,105
Kamloop Rainbow Triploid (Hayspur FH – KT)	-	-	11,000	21,650	11,800	-	8,950	53,400
Rainbow Trout Triploid (Hayspur FH – T9)	-	-	-	-	-	8,125	1,900	10,025
Westslope Cutthroat Trout (Westslope Cutthroat Trout Co.)	3,800	8,000	11,250	61,300	3,000	-	1,500	87,350
Total	18,000	8,000	31,000	108,030	17,800	26,760	12,350	220,440
# Lakes Stocked by Plane	10	14	37	98	21	39	-	219
# Lakes Stocked by Other Means	-	1	-	10	-	-	6	17
Approximate Flight Costs	\$ 1,528	\$ 814	\$ 1,943	\$ 4,060	\$1,068	\$ 2,059	-	\$11,472
Average Cost to Stock Each Lake by Plane	\$ 152.80	\$ 58.14	\$ 52.51	\$ 41.43	\$50.86	\$ 52.79	-	\$ 52.38

Appendix 2. Resident feed usage and conversion data, MCFH, 2006.

	# Stocked/ Transferred	Feed Used (lb)	Pounds Gained	Conversion	Cost per Lb Gain	Cost per 1000 fish	Total Feed Cost
Arctic Grayling (Ashton FH – Meadow Lake, WY)	36,560	14.3	9.6	1.49	\$ 1.71	\$ 0.45	\$ 16.45
Golden Trout (Ashton FH – Mt Whitney, CA)	33,105	4.2	4.9	0.86	\$ 0.99	\$ 0.15	\$ 4.83
Kamloop Rainbow Triploid (Hayspur FH– KT)	53,400	26.0	32.6	0.80	\$ 0.92	\$ 0.56	\$ 29.90
Rainbow Trout Triploid (Hayspur FH – T9)	10,025	6.5	8.2	0.79	\$ 0.91	\$ 0.75	\$ 7.48
Westslope Cutthroat Trout (Westslope Cutthroat Trout Co.)	87,350	16.8	23.4	0.72	\$ 0.83	\$ 0.22	\$ 19.32
Total	220,440	67.8	78.7	0.86	\$ 0.99	\$ 0.35	\$ 77.98

Appendix 3. Total production and distribution costs, MCFH, 2006.

Species	Eggs/ fish Received	Fish Stocked	Transportation Cost	Pounds Gained	Cost per LB Gained	Cost per 1000 Stocked
Fry Redistribution ^a						
Arctic Grayling (Ashton FH – Meadow Lake, WY)	51,760	36,560	\$ 4,483.42	9.6	\$ 467.02	\$ 122.63
Golden Trout (Ashton FH – Mt Whitney, CA)	33,430	33,105	\$ 2,745.70	4.9	\$ 560.35	\$ 82.94
Kamloop Rainbow Triploid (Hayspur FH – KT)	97,600	53,400	\$ 2,402.18	32.6	\$ 73.69	\$ 44.98
Rainbow Trout Triploid (Hayspur FH – T9)	17,430	10,025	\$ 647.42	8.2	\$ 78.95	\$ 64.58
Westslope Cutthroat Trout (Westslope Cutthroat Trout Co.)	110,000	87,350	\$ 4,421.38	23.4	\$ 188.95	\$ 50.62
Fry Redistribution Total	310,220	220,440	\$ 14,700.10	78.7	\$ 186.79	\$ 66.69
Note: ^a Breakdown includes flight (\$ 11,472.00) and vehicle (\$75.60) redistribution costs. Also included are flight costs to pickup golden trout (\$1,072.50) and grayling (\$2,080.00) from Ashton FH. Fry stocked by volunteers are included at no cost.						
Catchable Rainbow Trout Redistribution						
Trout Lodge Rbt Triploid (Reared at Nampa FH)	95,583	96,280	\$ 10,265 ^b		N/a	\$ 106.62
Note: ^b Cost based on transportation costs of \$ 10,265 (\$ 5,650 MCFH and \$ 4,615 Nampa FH).						
Grand Total	405,803	316,720		78.7	\$1,162.22	\$ 288.86
Note: Grand total cost based on average resident program budget of \$91,467; no capital outlay is included.						

IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

MULLAN FISH HATCHERY

**Mary Van Broeke
Fisheries Technician**

INTRODUCTION

The Mullan Fish Hatchery (MUFH) is a resident species redistribution station located four miles east of Mullan. The Shoshone County Sportsmen's Association owns the MUFH. 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 through fishing and hunting license fee revenue. The manager at Cabinet Gorge Fish Hatchery (CGFH) 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 Little North Fork of the Coeur d'Alene River. Two (10-ft x 60-ft) concrete raceways and three dirt ponds (30-ft x 100-ft) 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 River drainages to stock ponds and lakes, 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.

Mullan Hatchery personnel, in 2006, were also involved with the Kokanee spawning operation at Granite Creek.

HATCHERY IMPROVEMENTS

Hatchery improvements during 2006 included:

- The stairs and porch to the main residence were replaced.
- The domestic water reservoir was cleaned out by the Shoshone County work crew.

FISH STOCKED OR TRANSFERRED

A total of 38,084 rainbow trout (nine-inches long) were released in waters of the Coeur d'Alene and St Joe river drainages from May to September to support a put-and-take fishery. All of the stocking sites received sterile rainbow trout. The Troutlodge triploid (TT) trout released from the MUFH were reared to size at Nampa Fish Hatchery (NFH) and delivered to MUFH via large transport trucks. Hatchery personnel loaded the fish into a 500-gallon pickup truck mounted tank and delivered them to numerous lakes and ponds. The distribution schedule requires three to five hour trips, four and five days each week during the summer season.

Mullan Hatchery has an annual operating budget of \$16,179.00 if you include employee wages of \$15,000.00 and transportation costs of \$4,615.00 for NFH to deliver fish to MUFH, the streamside cost for MUFH to redistribute fish was \$0.95/fish.

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 2006. The hatchery also hosted the Chrysler/Jeep Jamboree and the Silver Valley Good Samaritan RV rally. People from across the nation attended these functions. There were also 11 hatchery tours given to local school groups.

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

IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

NAMPA FISH HATCHERY

**Rick Alsager, Fish Hatchery Manager II
Jamie Mitchell, 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. The NFH water is supplied by eight pump assisted artesian wells. A maximum flow of 35 cubic feet per second (cfs) of 59°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 including 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

During the 2006 fish year, the NFH net fish production was 2,198,715 at a net weight of 286,243 lbs (Appendix 1). The net cost for rearing fish at the NFH from grow out through stocking was \$455,674.00 (Appendix 2). Fish transferred to other hatcheries are included in the total number and lbs produced. Kamloops and rainbow trout *Oncorhynchus mykiss* comprised 83.79% of the fish stocked or transferred from NFH. In addition, Lahontan cutthroat trout *O. clarkii henshawi* and fall Chinook salmon *Oncorhynchus tshawytscha* were produced at NFH during 2006 (Appendix 3). Another 450 fish weighing 140 pounds were produced at NFH and given to schools for educational purposes and department personnel for various research programs. In December, *Ichthyophthirius multifiliis* (Ich) claimed 70,000 fish from raceway C10 which were 9.5 fish per pound totaling 7,368 pounds. These fish were not included in overall production numbers. A total of 2,448,288 eyed-eggs were received during the 2006 fish year (Appendix 4).

Again in 2006, Ich struck at NFH. In June, raceway C7 began showing signs of the parasite and potassium permanganate (KMnO₄) treatment began. C1 also broke shortly after C7 and by the end of August we had a handle on the problem and treatment ceased. In November, after brood year 2006 was moved from the A ponds into the C ponds, we began treating for Ich again. Raceways C3-C6 and C10 were all treated in November and December which surely will continue well into 2007.

In September, NFH received 27,330 Hayspur triploid fingerlings weighing 61 pounds from Sandpoint Hatchery. These fish were sent to Sandpoint Hatchery as eyed eggs to slow down their development. This allows NFH to produce a catchable sized fish for release into Stanley basin lakes that meet the size restrictions as per ESA permit number 1188.

FISH STOCKED/TRANSFERRED

The NFH personnel stocked or transferred 1,945,332 fish, weighing 293,963 pounds, during the 2006 fish year. These fish included warm water transfers and fish reared in non-IDFG hatcheries to waters in Idaho. NFH made 208 stocking trips to 280 planting waters during 2006.

NFH stocked or transferred a total of 308,741 fry (Appendix 5), 871,626 fingerlings (Appendix 6) and 882,057 catchables (Appendix 7), which are listed by species/strain in each table. A total of 429,942 catchables (Appendix 8) were transferred to six other hatcheries throughout the state.

FISH TRANSPORTATION

Fish transport operators (Gary Ady and Dick Bittick) stationed at NFH stocked waters in all seven regions throughout the state. They transported fish to and from 16 different state and federal fish hatcheries. The transport operators made 108 trips totaling 50,398 miles during 2006. The little down time the transport operators have is spent assisting the NFH staff in fish rearing and facility and equipment maintenance.

The NFH transport operators stocked rainbow trout fingerlings from Lyons Ferry Fish Hatchery (136,932 weighing 2,162 pounds) into Clearwater Region waters. They also stocked Spring Chinook salmon and B-run steelhead smolts from Clearwater Fish Hatchery and assisted with the transportation of summer Chinook salmon smolts from McCall Fish Hatchery. NFH stocked Channel Catfish purchased from Fish Breeders of Idaho to lakes in the Panhandle, Clearwater and Southwest Regions.

In May, Dick went to Oxbow Fish Hatchery in Western Oregon operated by ODFW to transport 3,000 pounds of ESA sockeye salmon fingerlings back to Redfish Lake. In August, Gary and Bob Bellville from the Eagle Truck Shop went to Pennsylvania to transport 8,526 Tiger Muskellunge (*Esox luciosus x Esox masquinongy*) weighing 426 pounds across the United States to Hagerman State Hatchery. In September, Dick transported 400 pounds of adult Sockeye Brood stock from Manchester Hatchery in Western Washington to Redfish Lake. And finally in November the transport operators assisted in transporting and stocking 1000 surplus A-run adult steelhead from Oxbow Fish Hatchery into the Boise River.

Both Dick and Gary are preparing to replace their onboard Onan diesel generators in 2007. Dick also plans on installing an aerator operating alarm system similar to the one on Gary's truck.

LAHONTAN CUTTHROAT TROUT

During 2006, NFH stocked 308,741 Lahontan Cutthroat trout (483.75 pounds) into lakes and reservoirs located in the Southwest and Upper Snake regions. The Lahontan Cutthroat eggs were received from Omak Fish Hatchery in Washington. All of the Lahontan Cutthroat were stocked as fry (Appendix 5). Estimated survival from eyed-egg to stocking was 68.57%. Due to the past shipping and handling problems NFH personnel continue to meet the Omak personnel at Pendleton, OR to pick up the eyed cutthroat eggs.

FALL CHINOOK

In 2006, the Coeur d' Alene Fall Chinook was again reared at NFH. The fry were transferred to NFH from Cabinet Gorge Hatchery in January and reared through June. A total of 47,587 fingerlings were stocked in Coeur d'Alene Lake, meeting the June fish request (Appendix 6).

FISH FEED

A total of 294,160 pounds of feed was fed during 2006 at a cost of \$95,925.80 (Appendix 9). The average cost per pound of feed was 32.60 cents. Rangen's Inc. made up 99.40% of the feed purchased by weight. An additional 4,820 pounds of feed was received from other hatcheries and fed throughout the year. The overall feed conversion was 1.03 pounds of feed fed to produce one pound of fish.

Rangen's continues to provide the feed that is used throughout the rearing cycle. The use of Skretting feed was curtailed because of supply problems. The Lahontan Cutthroat were stocked as fry this year and were only on feed for approximately three weeks before stocking.

FISH SPAWNING

Early Kokanee

The NFH continues to operate the early run Kokanee salmon (*O. nerka kennerlyi*) trapping and spawning project on Deadwood Reservoir. The fish trapped at the weir continued to decrease in average size from 10.98 inches last year to 10.29 inches this year. Mackay received 2.53 million eggs and Cabinet Gorge hatchery received 3.55 million eggs.

Following the direction of Southwest Regional biologists no fish were intentionally released above the river weir for natural spawning. A total of 5 weirs were installed on the five major tributaries of Deadwood reservoir. Trail Creek, South Fork Beaver Creek, Beaver Creek, Basin Creek, and the river weir were installed and operated by crews from the region and NFH. Most of the fish that entered the trap and ripened were spawned. Approximately 1500 kelts were taken up stream after spawning for natural stream fertilization. After the egg-take goal was reached, Southwest Region personnel maintained all five weirs for bull trout monitoring through October 16. The NFH crew this year assisted regional personnel in walking Trail Creek and the other tributaries throughout the spawning season conducting adult spawning surveys.

The river weir was installed on August 11th and the trap was installed on the 19th. The tributary weirs were installed on August 8th. The first Kokanee was trapped on August 19th in the river weir. The weir was installed Between Wild Buck Creek and Basin Creek this year essentially in the same spot as the previous year. A second weir was then placed at the mouth of Basin Creek preventing fish from entering the creek.

On August 21st the smoke rolled in. From there on out, smoke and fire from three major forest fires would wreak havoc upon the 2006 Deadwood Kokanee project. On the 24th of August, United States Forest Service (USFS) personnel forced us to abandon camp on the west side of the river and move to Reclamation point. On the 25th, USFS personnel forced us to evacuate. The hardware cloth was removed from the weir face and all the equipment and camp trailers were pulled out back to NFH. On the 28th, NFH personnel with permission from USFS returned to the Deadwood weir with a one-ton tanker for the day. The weir was still intact however some smaller fish were passing through the pickets. We transported 320 live KE to MK Nature center along with 100 dead KE. On August 31, the USFS approved NFH to reestablish a temporary camp on Reclamation point under the condition we would be ready to immediately pull out if the fires get any closer. On September 4th, USFS officials gave us until 2:00 pm on September 5th to get out. After the first egg take on September 5th, the Deadwood outfitters allowed us to move one camp trailer to their property 15 miles north of the reservoir. Two trap tenders stayed for five days at the outfitters camp enabling the NFH crew to maintain the weir daily therefore saving the program. On September 10th a new fire crew took over the suppression efforts and allowed the Kokanee project Deadwood camp to reestablish on Reclamation point. This would be the fifth and final time camp was moved. With great support from the new fire crew and the Deadwood outfitters, the Deadwood Kokanee program was a huge success

The Deadwood Kokanee run was very late this year. There were a total of 11 spawn takes. The first spawn date was September 5th and the last was on September 26th. All fish

were spawned at the trap site. A green egg yield of 6.08 million eggs was taken from 17,075 females with an average fecundity of 356 eggs/female (Appendix 11). The average total length of Kokanee females was 257 mm and the males averaged 266 mm (Appendix 12). Eggs were shipped to Mackay Hatchery and Cabinet Gorge Hatchery via fixed-wing aircraft. The shipping techniques were similar to those used in previous years. Due to poor visibility and weather, the eggs were driven to and flown from the Cascade airport. On two instances, planes were grounded and could not fly from Cascade. In the first instance Mackay Hatchery personnel met us between Lowman and Stanley on Highway 21. In the second instance we successfully held the eggs in coolers overnight and transported them to Cascade the next morning to be flown to Sandpoint. The Department contracted the flying service with McCall Air Taxi.

This year the weir across the Deadwood River was taken out by high water twice; once before the fish began running and the other at the very tail end of the run after spawning efforts were wrapped up. After the egg take goal was met and spawning ceased, Region 3 personnel installed a downstream trap box on the river weir for Bull Trout monitoring through October 16th.

Deadwood Reservoir continues to be a popular recreation spot during the Kokanee run. With the low number of returning Kokanee, the department again issued an emergency fishing closure from August 8th running through September 22nd to protect the fish that were in the Deadwood River. The closure area was from the weir in the river to the slack water of the reservoir. Information and no fishing signs were installed on both sides of the river from the weir downriver every 100 yards to the mouth to inform the public about the fishing closure. Despite the work to make and post the signs, the Deadwood area of the Boise National Forest was closed to the public throughout the trapping and spawning efforts.

HATCHERY IMPROVEMENTS

Several important improvements were implemented at NFH during 2006:

- Replaced the fence between residences 2 & 3
- Purchased Aluminum dam boards and screens for B ponds
- Purchased new Kubota lawnmower
- Purchased new Kubota tractor to replace the 1951 Ford 8N

NFH improvements scheduled for 2007 include:

- Develop hatchery pamphlets for self guided tour.
- Purchase aluminum dam boards for C raceways.
- Build new deck on residence #2.
- Install new back doors in residence #2
- Build new storage building for storing wood and metal.
- Repair broken key ways in the C ponds.

- Build or repair handicap fishing platform.
- Replace shake shingles on hatchery office, dorm and residence #1
- Repair and overhaul Nielson fish feeder
- Purchase flat bed utility trailer

PUBLIC RELATIONS

As in past years, NFH was a focal point for many visitors, tours, and special groups. In 2006, an estimated 3,500 tourists visited the NFH. Most visitations came through the late spring and summer months although year-round school and educational tours were scheduled throughout the spring, summer, and fall. A total of 40 guided tours were given to area school, church, and Boy Scout groups. He NFH participated in one job shadow program during 2006. Several disabled veterans groups were allowed to fish the settling pond five times during the summer months. Ten other disabled groups from the Nampa area were allowed to fish the settling pond throughout the summer as well. The settling pond was also opened to fishing on Free Fishing Day. The NFH, with the help of regional personnel, reservists, and the Nampa Recreation Department, hosted the Free Fishing Day clinic, which saw 750 visitors/fishermen, with an estimated 800 to 1,000 fish caught. The largest fish caught was a 7.25 lb rainbow trout and several more over five pounds were caught. Free Fishing Day at NFH was again a big success and will be continued in the future. The "kids only" session from 8:00 am to noon continued to be 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. Hatchery personnel assisted with the Trout in the Classroom program again this year. Eggs, fry and fingerlings were provided for living streams and catchables were provided for dissection in several instances.

ACKNOWLEDGEMENTS

The NFH staff for 2006 included Rick Alsager, Fish Hatchery Manager II; Brian Malaise, Assistant Fish Hatchery Manager; Bob Turik, Fish Culturist; Gary Ady and Dick Bittick, Fish Transport Operators. In April, Brian Malaise resigned from his position to take a Hatchery Manager position with the Iowa Department of Natural Resources. In May, Jamie Mitchell was promoted to Assistant Manager from the culturist position at the Hayspur Hatchery. Bio-aides for 2005 included; Travis Balls, Jason Jones, Nick Gates and Jake Erskine. Chuck Kiester trained new NFH Deadwood staff and assisted with the Kokanee spawning operation and fish marking. Three high school students assisted hatchery personnel through a work-study program in 2006. Volunteers, community service, and juvenile delinquents have also helped on a number of projects throughout the year donating over 478 hours of time.

Appendix 1. Total net fish production at Nampa Fish Hatchery, 1994 through 2006

Year	Put-and-Take		Put-grow-and-take		Total Number	Total Pounds	Feed Pounds	Costs	Feed Conversion
	Number	Pounds	Number	Pounds					
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	783,722	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	207,214	240,140	\$94,502	1.12
1998	692,706	228,006	2,172,659	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	1,100,595	18,197	1,965,198	269,173	281,264	\$81,862	1.04
2001	754,641	241,435	1,197,489	15,513	1,952,130	256,948	282,264	\$75,737	1.10
2002	923,854	346,918	1,155,212	24,334	2,079,066	371,252	356,982	\$100,727	0.96
2003	981,383	285,537	535,119	16,239	1,516,502	301,776	337,630	\$91,742	1.12
2004	811,838	272,531	711,242	11,206	1,523,080	283,737	310,718	\$93,818	1.10
2005	851,974	287,331	889,924	14,212	1,741,896	301,543	287,706	\$96,150	0.95
2006	882,057	269,183	1,316,658	17,060	2,198,715	286,243	294,160	\$95,925	1.03

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

Appendix 2. Total cost of net fish production at Nampa Fish Hatchery, 1994 through 2006

Year	Total cost through grow - out				Mean Length in inches	Total cost through stocking			
	Total Cost	Cost/1000 Fish	Cost/Pound	Cost/Inch		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
2002	\$379,398	\$182.49	\$1.02	\$0.027	7.75	\$440,031	\$211.66	\$1.23	\$0.032
2003	\$408,764	\$269.63	\$1.35	\$0.037	7.22	\$441,840	\$291.45	\$1.46	\$0.040
2004	\$391,145	\$256.83	\$1.38	\$0.036	7.07	\$409,293	\$268.74	\$1.44	\$0.037
2005	\$428,208	\$245.96	\$1.42	\$0.037	6.72	\$466,381	\$267.88	\$1.55	\$0.040
2006	\$418,182	\$190.26	\$1.47	\$0.037	5.11	\$455,674	\$207.31	\$1.59	\$0.041

Appendix 3. Fish Requested and produced at Nampa Fish Hatchery, 2006

Species/Strain	Size	Production	Actual	% of Goal
		Goal	Production	Achieved
Lahontan cutthroat trout (C6)	1-3 inches	200,000	308,741	154.4%
Triploid rainbow trout (T1)	3-5 inches	600,000	635,250	105.9%
Triploid Kamloops trout (KT)	3-5 inches	50,000	51,857	103.7%
Fall Chinook(FC)	6-8 inches	40,000	47,587	119.0%
Triploid Kamloops x steelhead trout (TT)	8-12 inches	900,000	882,057	98.0%
Triploid rainbow trout (T9)	8-12 inches	18,000	17,015	94.5%
Totals:		1,808,000	1,942,507	107.4%

Appendix 4. Eyed-eggs received at Nampa Hatchery, January 1 to December 31, 2006

Date	Species/Strain	Source	Number	Pond	Destination	Cost/1000 eggs
Received						
1/4/2006	Triploid rainbow trout	Hayspur	250,096	A14-16	SW/Reg	N/C
4/18/2006	Lahontan cutthroat trout	Omak	450,240	A9-11	SW/Reg	N/C
5/2/2006	Triploid Kamloops trout	Hayspur	40,689	A12	SW/Reg, C Reg	N/C
5/9/2006	Triploid Kamloops trout	Hayspur	42,884	A12	SW/Reg	N/C
5/31/2006	Troutlodge Triploid Kamloop	Trout Lodge	447,885	A1-6	Statewide	\$27.50
6/28/2006	Troutlodge Triploid Kamloop	Trout Lodge	498,610	A7,8,13-16	Statewide	\$27.50
9/27/2006	Troutlodge Triploid Kamloop	Trout Lodge	249,999	A9-11	Statewide	\$27.50
12/19/2006	Triploid rainbow trout	Hayspur	328,191	A1-5	SW/Reg	N/C
12/19/2006	Triploid Kamloops trout	Hayspur	139,694	A5,6	SW/Reg	N/C
Total:			2,448,288			

Designation Key

C Reg	Clearwater Region
MV/Reg	Magic Valley Region
P Reg	Panhandle Region
SE Reg	Southeast Region
SW/Reg	Southwest Region
US/Reg	Upper Snake
Salmon Reg	Salmon Region

Appendix 5. Fry produced at Nampa Hatchery

Species/Strain	Source and Date Received	Number Received	Number Produced	Pounds Produced	% Survival Egg to Plant	Destination
Lahontan cutthroat trout	Omak 4/18	450,240	308,741	483.75	68.6	Southwest Region
Totals:		450,240	308,741	483.75		

Appendix 6. Fingerlings produced at Nampa Fish Hatchery in 2006

Species/Strain	Source	Date Received	Number Received	Number Produced	Pounds Produced	% Survival Egg to Plant	Designation
Triploid Kamloops Trout (KT)	Hayspur	5/2,5/9	85,573	51,857	1,080	60.6%	Clearwater Region
Triploid Kamloops Trout & Triploid Rainbow Trout Mix (T1)	Hayspur	12/21/05,1/4	854,085	635,250	12,880	74.4%	Southwest Region, Magic Valley Region
Fall Chinook (FC)	Cabinet Gorge	1/05	46,727	47,587	2,350	101.8%	Panhandle Region
Totals:			900,812	682,837	15,230	79	

Appendix 7. Catchables produced at Nampa Fish Hatchery in 2006

Species/Strain	Source	Date Received	Number Received	Number Produced	Pounds Produced	% Survival Egg to Plant	Designation
Triploid Rainbow (T9)	Hayspur	9/05	27,330	17,015	5,950	62.3	Salmon Region, Southwest Region
Triploid Kamloops x Steelhead (TT)	Troutlodge	6/05 & 9/05	1,115,961	882,057	269,183	79.0	Statewide
Totals:			1,143,291	899,072	275,133		

Appendix 8. Catchable transfers from Nampa Hatchery to other Hatcheries throughout the state.

Hatchery	Species	Number	Pounds	Fish/pound
Clearwater Fish Hatchery	TT	105,100	29,800	3.53
Hayspur Fish Hatchery	TT	44,984	18,900	2.38
McCall Fish Hatchery	TT	95,583	29,000	3.30
Mullan Fish Hatchery	TT	38,458	11,700	3.29
Sawtooth Fish Hatchery	TT	34,375	11,583	2.97
Sandpoint Fish Hatchery	TT	111,442	34,300	3.25
Totals:		429,942	135,283	3.18

Appendix 9. Nampa Hatchery feed costs in 2006

Supplier/Source	Size/Type	Pounds	Price/lb.	Feed Charges
Skretting				
Nutra Plus	Starter #0	220	0.980	\$224.40
Nutra Plus	Starter #2	132	1.000	\$132.00
Nutra Fry	Grower 1.2 mm	264	1.099	\$240.24
Nutra Fry	Grower 1.5 mm	2,024	1.320	\$1,532.96
Nutra Fry	Grower 2.0 mm	1,320		DONATED
Total:		3,960		\$2,129.60
Freight:				\$0.00
Grand Total:				\$2,129.60
Rangen				
Dry Crumble	Starter #0	450	0.523	\$235.35
Dry Crumble	Starter #1	1,800	0.523	\$941.40
Dry Crumble	Starter #2	5,850	0.523	\$3,059.55
Dry Crumble	Starter #3	18,900	0.366	\$6,917.40
450 Floating	1/16" sack	8,650	0.474	\$4,100.10
450 Floating	3/32" sack	23,800	0.349	\$8,306.20
450 Floating	1/8" sack	25,500	0.319	\$8,134.50
450 Floating	1/8" sack	3,500		DONATED
450 Floating	5/32" sack	4,750	0.308	\$1,463.00
450 Floating	3/32" bulk	2,000	0.320	\$640.00
450 Floating	1/8" bulk	81,600	0.309	\$25,214.40
450 Floating	5/32" bulk	110,000	0.298	\$32,780.00
Dry Crumble med.	Grower #3	1,700	0.645	\$1,096.50
Dry Crumble med.	3/32" pellet	1,700	0.534	\$907.80
Total:		290,200		\$93,796.20
Freight:				7,880.76
Grand Total:		294,160.0		\$101,676.96

Appendix 10. Kokanee egg take at Deadwood Reservoir Nampa Fish Hatchery in 2006

MACKAY

Spawn Date	Lot Number	Females Spawned	Green Eggs	Eyed Eggs	% Eye-up
9/5/2006	06-U-ID-KE-1	616	213,717	0	0.0%
9/7/2006	06-U-ID-KE-2	1334	378,364	284,998	75.3%
9/9/2006	06-U-ID-KE-3	1,902	611,311	417,756	68.3%
9/10/2006	06-U-ID-KE-4	1,837	653,252	493,565	75.6%
9/11/2006	06-U-ID-KE-4	1,870	677,442	575,826	85.0%
Totals:		7,559	2,534,086	1,772,145	69.9%

Note - lot 1 was deemed unfit and later destroyed

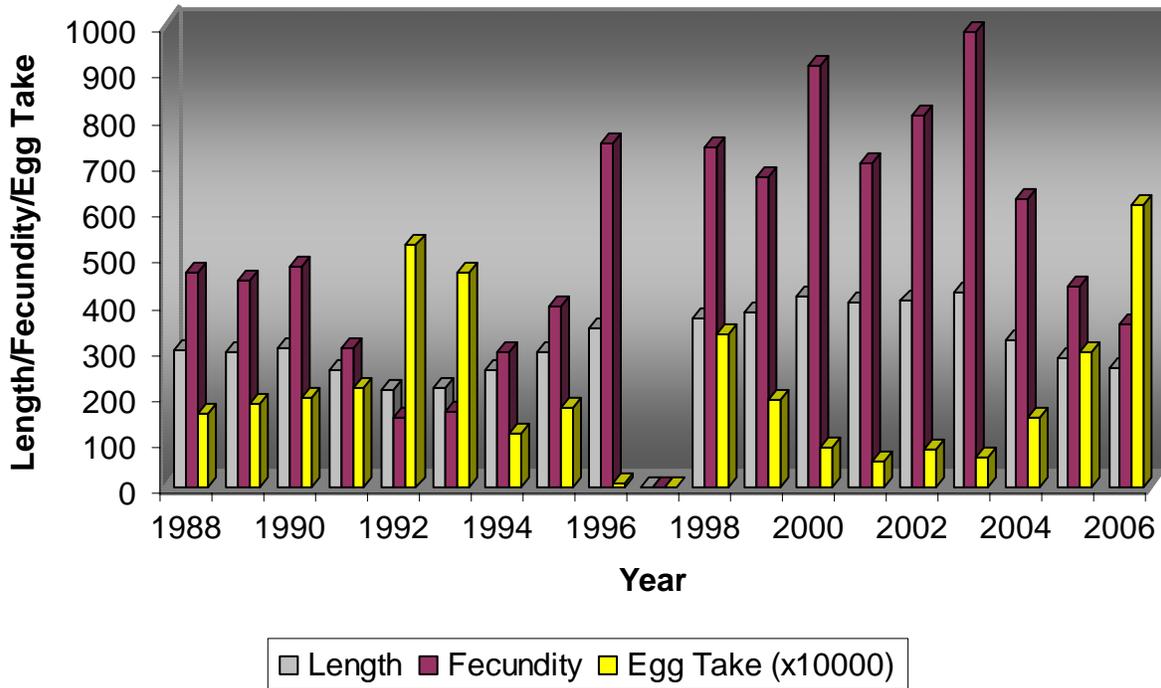
CABINET GORGE

Spawn Date	Lot Number	Females Spawned	Green Eggs	Eyed Eggs	% Eye-up
9/12/2006	1	1575	568,500	481,064	84.6%
9/14/2006	2	1580	584,250	494,392	84.6%
9/18/2006	3	1,895	688,100	582,270	84.6%
9/19/2006	4	1,718	617,400	463,050	75.0%
9/22/2006	5	1,370	558,600	472,687	84.6%
9/26/2006	6	1,378	532,000	450,178	84.6%
Totals:		9,516	3,548,850	2,943,641	82.9%

Note - lots were split and used to backfill so eyed number was calculated using percent eye up

2006 Spawning Totals:	17,075	6,082,936	4,715,786	76%
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Deadwood Kokanee Spawning Spawning Summary (1988-2006)



IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

SANDPOINT FISH HATCHERY

Zach Olson, Fish Culturist

INTRODUCTION

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. The Idaho Department of Fish and Game (Department) constructed SPFH in 1908, with additional funding from the Bonner County Sportsman Club. The hatchery is currently owned and operated by IDFG and is funded with revenue generated from hunting and fishing license sales.

Duties at this facility include the put and take stocking program of catchables in lowland lakes and swim-up fry for high mountain lakes in the northern section of Region 1. Sandpoint Fish Hatchery has taken over the annual stocking of 21 lakes with sterile catchable rainbow trout *Oncorhynchus mykiss* after the closure of Clark Fork Hatchery in 2000. Due to cool water temperatures and available rearing space SPFH has taken on incubation and early rearing of T-9 rainbows for Nampa Hatchery. On even years, high mountain lakes are stocked with sterile Kamloop (KT) rainbow and westslope cutthroat *O. clarkii* trout fry. This program entails receiving eyed eggs from state and private sources, incubating, and then stocking the swim-up fry.

On even years McCall Fish Hatchery (MFH) stocks golden trout *O. aquabonita* and arctic grayling *Thymallus arcticus* into four additional high mountain lakes in the northern portion of Region 1 via a fixed wing aircraft.

Sandpoint Fish Hatchery is in operation from mid-March through October and is staffed with a Fish Culturist. The Fish Culturist spends the remainder of his time working at Cabinet Gorge Fish Hatchery (CGFH) assisting with the kokanee spawning operation and egg incubation. The Manager 1 position at CGFH oversees operations at SPFH and supplies additional labor when needed. During normal operations there is a great deal of ground and facilities maintenance at Sandpoint Hatchery that needs to be completed on a regular basis.

WATER SUPPLY

The hatchery receives water from Murphy Spring which flows into a pipeline located a quarter mile southwest of the hatchery. The spring is covered and supplies the facility with 400-450 gallons per minute (gpm) of water. Temperatures range from 44-48 degrees F.

There are four water control valves within the supply pipeline system. The four valves are located within the parking lot area at the hatchery. Two of the valves operate as isolation valves. The two remaining valves allow water to be diverted into the outdoor raceways and/or Water Life Discovery Center stream and viewing pond, which started construction in the summer of 2003. A valve located at Murphy Spring can compensate for overflow situations by spilling water back into Murphy Creek. An additional valve exists at the tail end of the outdoor raceways. This can be used to supply second use water to the Nature Center viewing pond. All valves are adjusted to allow water levels at the spring to remain full while maintaining maximum flow to the hatchery.

REARING FACILITIES

The hatchery rearing facilities include eight half-stack Heath incubators (8 trays), and 18 concrete vats (15-ft x 2.5-ft x 3-ft) located inside the main hatchery building. There are also two outdoor concrete raceways measuring (10-ft x 60-ft x 4-ft) each.

FISH STOCKING

Catchable size triploid rainbow trout (~9.0-10.0 inches) were stocked in the Kootenai, Pend Oreille, and Spokane River drainages to support a put and take fishery. All of the lakes and reservoirs stocked are located within the northern portion of Region 1. Fish supplied for redistribution in 2006 were Troutlodge triploid rainbows from American Falls (AFH) and Nampa Fish Hatcheries (NFH). A total of 123,750 fish weighing 38,468 lbs (3.21 fpp) were stocked between the first week of April and the fourth week of September. Fish stockings scheduled for March were cancelled due to road restrictions and were added to the stocking request for April. Twenty-one different bodies of water received catchable rainbows in 2006. In addition to normal plants, the hatchery provided fish for Free Fishing Day events at Rathdrum Boy Scout Park, Priest Lake golf course, and Clark Fork Lodge Pond. Streamside cost to redistribute fish was \$0.52 per fish (Appendix 1). The cost of stocking fish from SPFH included employee wages, transportation cost from NFH, and operating expenses that totaled \$64,371.

Sandpoint Hatchery stocked swim-up fry in 25 of the 28 high mountain lakes in the northern portion of Region 1. Five lakes received KT rainbows, and 20 lakes received westslope cutthroat. Due to high mortality both programs fell short of the region's stocking request. Mountain lake stocking allocations for rainbow fry were for 25,300 fish but only 21,600 were available after swim-up. All KT lakes received fish; however a deficit of 3,700 fish occurred in Hidden Lake. Mountain lake stocking allocations for westslope cutthroat were for 49,000 fish but only 41,780 were available after swim-up. Three lakes were omitted from Sandpoint's schedule and were picked up by McCall Fish Hatchery (MFH) which flew fish in by fixed wing aircraft. Two other lakes received adjusted stocking numbers (Appendix 2).

PRODUCTION

Sandpoint Hatchery received 48,700 eyed T-9 rainbow eggs from Hayspur Fish Hatchery (HFH) on May 16 and 24, 2006. Fish were kept on 46°F water and were fed a reduced diet between 1.25-1.5 percent body weight to minimize growth before being sent to NFH for final rearing. A total of 31,725 swim-up fry were ponded. After swim-up mortality 26,025 juveniles were sent to NFH on September 26th. Survival to shipping was 53.4%. A total of 32.3 lbs of Skretting Nutra Plus feed was fed which produced 49.02 lbs of growth for a feed conversion factor of 0.65:1(Appendix 3).

On May 31 a shipment of 34,000 KT sterile eyed rainbow eggs were received from HFH for high mountain lake stocking in Region 1. Stocking request called for 21,600 swim-up fry. After mortality, only 17,900 were available leaving the program 3,700 fish short of request.

On July 18 and 24 a total of 95,000 eyed westslope cutthroat eggs were received for high mountain lake stocking in Region 1 from Westslope Trout Company (WSTC) located in Ronan, MT. After swim-up, a total of 45,200 fry were available for stocking leaving the program 7,220 fish short of request. All high mountain lake fry were fed a minimal diet prior to stocking to prevent pinheading.

HATCHERY IMPROVEMENTS

- Eliminated the power pole by kiosk to accommodate tractor trailer loads of catchables.
- Replaced wooden dam boards with used aluminum boards.
- Installed motion sensor lights around main hatchery building and enforcement building.

HATCHERY NEEDS

- Repair hatchery building interior ceiling panels and windows.
- Catwalk over headbox and tailbox of new raceways.
- Upgrade interior electric service of work shop in main hatchery building.
- Pipeline structure for loading water on to fish trucks.
- Replace water supply line under hatchery building.

PUBLIC RELATIONS

The hatchery receives a fair amount of visitors because of its close proximity to Sandpoint and US Highway 95. A kiosk, built by the Lake Pend Oreille Idaho Club (LPOIC), serves as an information center for self-guided tours and natural history of the area. The SPFH is a one-person fish distribution station. There is not a great deal of public interaction due to lack of time actually spent at the hatchery. When available, the hatchery personnel conduct educational tours, provide information to the public, and attend community events on the department's behalf. Hatchery staff has many contacts with the public during fish plants and use those opportunities for positive interaction. In addition, hatchery personnel attend meetings with LPOIC and other sportsman's groups to communicate department/hatchery information and issues to them.

Construction has continued on the Water Life Discovery Center, which will increase public educational opportunities in the future. The Center will consist of a pond with viewing windows, spawning channel, interpretive trail system, and educational building for visitors. Thus far the pond and inflow stream have been dug and tested for flow rates and water retention. The viewing pond is expected to be functioning by the summer of 2007.

ACKNOWLEDGEMENTS

The SPFH staff would like to thank the staff at CGFH: John Rankin (Fish Hatchery Manager1), Bruce Thompson (Assistant Manager), John Suhfras (Maintenance Craftsman) for their assistance when additional manpower was needed. Thanks to Gary Ady, Dick Bittick, and Ken Taylor who transported catchable rainbows from Nampa and American Falls Fish hatcheries throughout the stocking season. Appreciation is given to Regional IDFG staff, reservist, and volunteers who make high mountain lake stocking possible.

APPENDICES

Appendix 1. Catchable Redistribution Cost.

Wages	\$12,500
Nampa Transportation cost	\$36,650
Operating	\$15,221
Total	\$64,371

Cost	Number of Catchables	Streamside Cost Per Fish
\$64,371	123,750	\$0.52

Appendix 2. High Mountain Lake Stocking Summary.

Rainbow:

Lake Name	Request #	Actual #
Hidden	13,500	9,800
Pyramid	1,600	filled
Roman Nose	3,600	filled
Spruce	1,500	filled
Trout	1,400	filled

Cutthroat:

Lake Name	Request #	Actual #
Ball Creek	1,200	filled
Beehive	1,200	filled
Big Fisher	1,800	filled
Caribou	2,100	filled
Copper	600	filled
Debt	900	filled
Dennick	4,000	filled
Harrison	5,800	3,380
Hunt	4,200	filled
Hunt Peak #1	1,500	filled
Hunt Peak #2	600	filled
Little Harrison	1,400	filled
Mollies	600	filled
Myrtle	6,000	5,000
Queen	900	filled
Sand	2,500	filled
Snow	2,700	filled
Standard	3,900	filled
West Fork	3,300	filled

Appendix 2. Continued.

Cutthroat Lakes Stocked by McCall:

Lake Name	Request #	Actual
Cutoff	1,000	filled
Two Mouth #2	1,200	filled
Two Mouth #3	1,600	filled

Appendix 3. T-9 Rainbow Production:

# Eyed Eggs Received	48,700
Number Ponded	31,725
% Survival to Ponding	65.1%
Transfer to Nampa	26,025
Overall % Survival	53.4%
Total Feed Fed	32.3 lbs
Begin Weight	9.23 lbs
End Weight	58.25 lbs
Growth	49.02 lbs
Feed Conversion	.65:1

IDAHO DEPARTMENT OF FISH AND GAME

2006 ANNUAL RESIDENT REPORT

SAWTOOTH FISH HATCHERY

**Roger Elmore
Fish Hatchery Assistant Manager**

INTRODUCTION

Sawtooth Fish Hatchery (SFH) is a U.S. Fish and Wildlife Service (USFWS) Lower Snake River Compensation Plan (LSRCP) hatchery and has been in operation since 1985. The Idaho 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, *Oncorhynchus mykiss*, into surrounding area waters for improved angling opportunities began.

FISH STOCKING

Sawtooth Fish Hatchery (SFH) met its stocking request in 2006 for the rainbow trout stocking program, except for Squaw Creek Pond which was not stocked after July 13 due to minimal flow, elevated water temperatures, and algae growth. Between June 8 and September 7, a total of 50,749 hatchery rainbows, based on SFH sample counts, were stocked in 73 stocking trips.

Nampa Fish Hatchery (NFH) supplied SFH with Troutlodge triploid rainbows for stocking. A total of 50,125 fish were delivered to SFH from May 24 to July 24. Based on 24 sample counts the fish averaged 3.27 fish per pound (fpp) and 9.15 inches in length (232 mm). Sawtooth employees drove approximately 3,000 miles to stock fish in local lakes and streams. The NFH stocked Stanley, Pettit, Perkins, and Alturas lakes in 2006.

National Marine Fisheries Service (NMFS) permit # 1188 which expired December 31, 2004, outlines resident rainbow trout release in anadromous waters in the Salmon River drainage. The permit allows that hatchery-reared rainbow trout be released in rivers, streams, and lakes with ESA-listed fish. The fish should average no greater than 250 mm in size with no individual larger than 300mm in length. The 250 mm size restriction would include fish planted in the Salmon River, Valley Creek, and the Yankee Fork Dredge Ponds. The permit stipulates the upper Salmon River cannot be stocked before June 15 and stocked fish must be adipose fin-clipped. Only fish with the adipose fin-clipped may be kept, thereby protecting wild fish. Rainbow trout received at SFH stocked into the river were adipose clipped by NFH personnel and then delivered to SFH over 21 days later to allow for withdrawal of MS-222 to comply with label directions. Trout destined to be stocked into ponds were unclipped.

The rainbows were fed a maintenance diet of Rangen's 450 extruded pellets in the 3/16 and 5/32 size. A total of 250 lbs of 3/16 pellets and 100 lbs of 5/32 pellets were purchased at a cost of \$157.08. The cost to transport catchable-sized trout from Nampa to Sawtooth was \$1,847.00. An approximate cost for 73 stocking trips was \$3,095.93 at a cost of \$42.41 per trip.

Weekly notices informing the public of the whereabouts of the latest stocking locations are distributed to the local businesses and are posted at SFH. Also, Fishing the Sawtooth Valley brochures are distributed to local businesses where they are readily available to summertime visitors. A repeating message containing stocking information and current news about SFH can be heard over the local Department radio transmitter. Stocking information can also be found on the Department's web site.

High Mountain Lake Stocking

Sawtooth personnel continued high mountain lake stocking of Westslope cutthroat trout by fixed wing aircraft in the Salmon Region. Forest fires in the Region delayed flying until late September. On September 25, 26 and 27, McCall Aviation using a Cessna 185 flew two flights on each day to complete stocking of lakes in rotation "B". A total of 74 lakes were stocked with 29,450 fry. In addition to "B" lakes, 12 lakes that were not stocked last year in rotation "A" due to smoke from forest fires were stocked. A total of 5,450 fry were stocked into these lakes. Another 12 lakes located in Region 4 were stocked with 7,400 fry. A total of 42,300 fry averaging 2,660 fpp (5.86f/g) were stocked by airplane. Fry were fed for approximately 31 days prior to stocking. Sample counting the fry and using the fish per gram number or weight, is used to meet each lakes' established stocking request. Excess fry totaling 24,000 were stocked by truck into Yellowbelly Lake.

Approximately 90,000 Westslope cutthroat eggs were received on July 18. A total of 18,000 dead eggs and fry were picked and removed for a survival rate from egg to fry of 80%. Cost of the flights was \$4,452.50 and estimated cost to stock fish was \$4,721.25. An additional \$ 90.42 was spent on fish feed.

Free Fishing Day

Sawtooth Fish Hatchery sponsored another Kid's Fishing Day at the Sawtooth Pond on Free Fishing Day, June 10, 2006. A total of 17 adults brought 10 young anglers aged 3 to 11 to the Sawtooth Kids pond to fish. For most kids, it was their first experience at fishing. Hatchery staff member Roger Elmore was assisted by Conservation Officers Brian Reeves and Merrit Horsman keeping everyone supplied with worms and untangling a few bird nests. The kids fished from 9:30 until 3:00. Surprisingly, the lack of fishing experience didn't matter as a fish was caught on almost every cast. Refreshments of fruit juice, soda pop, and chips were provided by the hatchery along with fishing tackle and bait. The weather was cool, breezy, and partly cloudy. Although this Free Fishing Day was not as well attended as some, we received many appreciative comments regarding the event. Thanks to all who participated.

PLANS FOR 2007

Sawtooth Hatchery will stock flowing water sites and small ponds with Nampa Fish Hatchery stocking Sawtooth Basin lakes. Fish for stocking will be provided again by NFH.

In 2007, SFH plans to continue high mountain lake stocking of westslope cutthroat trout, *Oncorhynchus Clarkii lewisi* by airplane in the Salmon Region and possibly continue to stock a portion of the Magic Valley Region lakes. Lake rotation C is scheduled to be stocked. Also, SFH personnel involved in flying will attend flight safety training as required.

SFH plans to participate in Free Fishing Day program.

ACKNOWLEDGEMENTS

The SFH would like to thank Rick Alsager and the Nampa Hatchery crew for their cooperation in making 2006 successful. Special thanks go to Gary Ady and Dick Bittick for transporting fish from Nampa and stocking the big lakes in the Stanley Basin. Bio Aide Tim Berk did a good job of stocking fish and delivering stocking notices. Thanks go to Magic Valley Regional Fish Manager Doug Megargle for coordinating the stocking of Magic Valley Region lakes and for loaning us flight gear and safety equipment required to fly. Also, thanks to Steve Kammeyer, McCall Hatchery Assistant Manager for providing maps and assisting with flight coordination.

APPENDICES

Appendix 1. Planting sites and numbers of catchable rainbow trout stocked in the Salmon Region by Sawtooth Fish Hatchery from June through September 2006.

Site	Number
Sawtooth Kids Pond	925
Stanley Lake	3,500
Little Bayhorse Lake	2,000
Kelly Creek Pond	1,240
Salmon River	33,884
Yankee Fork Dredge Ponds	4,000
Valley Creek	4,000
Blue Mountain Meadow Pond	900
Squaw Creek Pond	300
Totals	50,749

Appendix 2. Planting sites and numbers of cutthroat fry stocked in the high mountain lakes by Sawtooth Fish Hatchery in late September 2006.

High Mountain Lakes Stocking:

Site	Number
Alpine Creek Lake #02	375
Alpine Creek Lake #06	300
Alpine Creek Lake #07	350
Alpine Creek Lake #12	50
Baldwin Creek Lake	350
Bear Creek Lake #01	200
Cabin Creek Lake #03	100
Cabin Creek Lake #04 (Crimson)	600
Cabin Creek Lake #07	200
Cabin Creek Peak Lake #01	150
Cliff Creek Lake #01	150
Cliff Creek Lake #04	75
Collie Creek Lake #01	1,075
Decker Creek Lake #01	575
Elizabeth Lake	500
Elk Lake	675
Finger Lake #03 (Fall Creek Lake #3)	475
Fishhook Creek Lake #02 (NE)	75
Fishhook Creek Lake #03 (South)	75
Goat Lake #01	2,225
Goat Lake #04	425
Goat Lake #05	50
Hanson Lake #01	225
Hanson Lake #03	725
Hanson Lake #05	125
Harlan Creek Lake #01	300
Harlan Creek Lake #02	250
Hasbrook Lake #01	375
Helldiver Lake	550
Hidden Lake	250
Hindman Lake	500
Imogene Lake #02	200
Imogene Lake #03	625
Imogene Lake #04	100
Imogene Lake #06	525
Iris Lake #01	225
Iris Lake #03	350
Kidney Lake #02	150
Knapp Lake #07	200
Lola Lake #02	500
Lola Lake #03	500
Loon Creek Lake #03 (Fish L)	150
Loon Creek Lake #11	175

Appendix 2. Continued.

Loon Creek Lake #13	225
Loon Creek Lake #15	175
Lost Lake	200
Lower Island Lake	550
Lower Valley Creek Lake	550
Lucille Lake	775
Marshall Lake #02	500
Martha Lake	200
McGowan Lake #03	250
P-38 Lake	325
Parks Peak Lake #01	500
Profile Lake	775
Rocky Lake	450
Saddleback Lake #01	775
Saddleback Lake #02	325
Soldier Lake #04	975
Soldier Lake #07	250
Soldier Lake #08	250
Soldier Lake #10	250
Soldier Lake #11	250
Tango Lake #04	675
Tango Lake #05	250
Tango Lake #06	900
Thompson Cirque Lake	900
Upper Cramer	500
Upper Hell Roaring Lake #01	275
Upper Hell roaring Lake #02	275
Upper Redfish Lake #02	425
Upper Redfish Lake #03 (Kathryn)	625
Valley Creek Lake #02	400
Vanity Lake #05	125
Total	29,450
Twelve lakes missed in 2005 due to fire:	
Garland Lake #01	500
Garland Lake #02	500
Garland Lake #03	350
Swimm Lake	875
Fourth of July	725
Washington Lake #02	750
Phyllis Lake	375
Thunder Lake	225
Six Lake #1	475
Lightning Lake	275
Pipe or Blackrock Lake	200

Appendix 2. Continued.

Rainbow Lake	200
Total	5,450
Twelve lakes stocked in Region 4:	
Window Lake #01	500
Nip-N-Tuck	500
Windy Lake	500
Lower Box Canyon Lake (Box Can 4)	500
Miner Lake	500
Little Lost Res. (Smoky Lake)	500
Heart Lake	700
Hideaway Lake	500
Lookout Lake (Big)	1,000
Fiddle Lake	700
S F Ross Fork Creek Lake #02	1,000
Little Bear Lake	500
Total	7,400
Grand Total	42,300

IDAHO DEPARTMENT OF FISH AND GAME

RESIDENT HATCHERIES

2006 FISH HEALTH REPORT

**Douglas R. Burton
Fishery Pathologist**

INTRODUCTION

As the Resident Hatchery Pathologist, my primary duties are to provide fish health inspection and diagnostic services to the Idaho Department of Fish and Game's (Department) resident fish hatcheries and to assist hatchery personnel in maintaining good health in cultured resident fish. These same services are provided to IDFG fishery managers and biologists and occasionally to private individuals or companies when the information or relationship is of benefit to the State of Idaho. My counterpart, the Anadromous Hatchery Pathologist (A. Douglas Munson), and I work closely together, often assisting each other in our respective programs and coordinating efforts when those programs overlap. Both of us work at the Eagle Fish Health Laboratory (EFHL) and are supported by the personnel and facilities there. We are both certified as Fish Health Inspectors by the American Fisheries Society Fish Health Section.

With the assistance of EFHL personnel, I examined 70 cases for IDFG resident hatchery programs during 2006 (36 diagnostic cases, 17 routine hatchery inspections, and 17 inspections of feral brood fish). I was also responsible for 1 inspection done on rainbow trout from Rangens Aquaculture (fish purchased by Idaho Power Co. for release in American Falls Reservoir), 1 certification inspection for the University of Idaho Aquatic Resource Center, 43 wild fish inspections (most from the Big Lost River), and 36 various research tests. The most significant fish disease in the IDFG resident hatchery program continued to be bacterial coldwater disease (CWD), caused by *Flavobacterium psychrophilum*. Clinical CWD was generally less severe in 2006 than in previous years. The treatment of choice for CWD has been oxytetracycline (OTC) in medicated feed under an Investigational New Animal Drug (INAD) protocol. The total of 14 INAD protocols needed to use OTC at resident hatcheries in 2006 was identical to the number used in 2005. There was a slight shift, with fewer protocols used at American Falls and Hagerman State Hatcheries, and 2 protocols used for the first time at Mackay Hatchery. Two-thirds of the INADs at Hagerman State were used to treat columnaris disease (COL) rather than CWD.

I am the INAD Monitor for the IDFG resident hatcheries and biologists. The INAD process is the means by which the U.S. Food and Drug Administration 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. Idaho Department of Fish and Game joined the U.S. Fish and Wildlife Service Aquatic Animal Drug Approval Partnership Program (USFWS-AADAPP) in 1998. This group, located in Bozeman MT, administers INAD programs for Federal, State, Tribal, and private aquaculture across the United States. My duties include identifying the situations in which a drug or chemical may be used, assisting in preparing written requests and reports, and generally acting as intermediary between IDFG hatchery personnel and the AADAPP administrators. Chemicals used by IDFG resident programs in 2006 under the INAD program included OTC (both in a medicated feed and as an immersion bath), Florfenicol (FLR), and Chloramine-T (CHLOR-T). Oxytetracycline and FLR are antibiotics used to treat fish with systemic bacterial infections, while CHLOR-T is used to treat external bacterial infections such as bacterial gill disease.

I issued import/transport permits for the State of Idaho, when the fish or fish eggs involved were of resident species and the goal of the movement was the noncommercial release of fish into surface waters of the state. Such permits were issued to IDFG personnel, other government or Tribal agents, and private individuals. This duty involved collecting fish health inspection and certification information from various sources. The goal of the permitting

process is to reduce jeopardy to Idaho's aquatic resources by reducing the likelihood of importing unwanted pathogens or exotic species. I also coordinated the paperwork needed to obtain a Federal Title 50 certificate to import sterile brook trout (*Salvelinus fontinalis*) eggs into Idaho (Ashton Hatchery) from British Columbia, Canada.

A summary of the work I did for each IDFG hatchery in 2006, as well as the results of all sampling done at those hatcheries, is as follows.

AMERICAN FALLS HATCHERY

Fish health at American Falls Hatchery was generally very good in 2006, with only 2 diagnostic examinations required for the year (Appendix A). Connor Lake Westslope cutthroat trout *Oncorhynchus Clarkii* were diagnosed with motile aeromonad septicemia (MAS), with both *Aeromonas sobria* and *A. hydrophila* isolated from the fish. Mortalities declined without antibiotic treatment. Bacterial CWD was diagnosed in Troutlodge rainbow trout *Oncorhynchus mykiss* fingerlings in mid-December. The signs indicated a more chronic form of the disease. Past experience has shown that the standard dose and duration of OTC-medicated feed treatment does not provide an acceptable reduction in mortality at American Falls Hatchery. Therefore, we chose to use the high-dose and duration treatment of OTC-medicated feed under an INAD protocol. Response to treatment was very good.

ASHTON HATCHERY

I visited the hatchery in March to sample the rainbow trout destined for the summer catchable stocking. No replicating viruses or *Myxobolus spp.* (MYXOB) spores were detected (Appendix B). *Renibacterium salmoninarum* (RS) was tested for by both direct fluorescent antibody test (DFAT) and enzyme linked immunosorbent assay (ELISA). All sample results for RS were negative. Samples of juvenile rainbow were sent to EFHL in July. A mixed bacterial infection (CWD and MAS) was diagnosed and treated.

The hatchery manager reports that infestations of the external trematode *Gyrodactylus* (GYRO) continue to be a significant disease problem on the station. Fish living in open portions of the spring and stream above the hatchery intake are the probable origin of these parasites. A feed-additive product called "Slice", used successfully in saltwater net-pens to control copepods, may become available for freshwater use under an INAD. If it does, I plan to test it as a control for GYRO. Ashton Hatchery continues to be at risk for contamination by *Myxobolus cerebralis* (MC), the causative agent of salmonid whirling disease (WHD), because the hatchery water source is not completely enclosed. The spring property near the county road has been purchased, but plans to cover any more of the spring have not yet been implemented.

CABINET GORGE HATCHERY

I inspected spawning kokanee salmon *Oncorhynchus kisutch* adults at Sullivan Springs in late November (Appendix C). Tests detected no replicating viruses, RS, or MYXOB spores. *Flavobacterium psychrophilum* was isolated from 16 of 16 individuals. This was not a new occurrence, although the prevalence was unusually high. Several lots of eggs from Sullivan Springs experienced poorer eye-up than the hatchery personnel expected, so the crew asked if the bacteria could have been a factor. A small group of blank eggs was tested in January, 2007 with no *F. psychrophilum* detected. Clinical CWD has never been observed in juvenile kokanee at Cabinet Gorge Hatchery. A light infection of encysted cestodes was evident in the pyloric caecae of about half of the spawning kokanee. These are present in this fish population at about the same intensity and prevalence every year, and do not appear to have any adverse effect upon their hosts.

Juvenile Connor Lake westslope cutthroat trout were inspected at Cabinet Gorge Hatchery. No replicating viruses, RS, bacterial pathogens, or MYXOB spores were detected in a 60-fish sample.

GRACE HATCHERY

Three diagnostic cases were examined from Grace Hatchery in May and June 2006 (Appendix D). I was notified of elevated fish mortality in May but my schedule would not allow me to drive across the state as soon as I wanted. So samples were shipped to me at EFHL and arrived in reasonably good condition. While I was able to isolate pathogenic bacteria (*F. psychrophilum*, *A. hydrophila*; no replicating viruses) and recommend a treatment, this was not an ideal situation because I was not able to observe the fish in the raceways or signs on truly fresh samples. I received a second call on the same group of fish in June and drove to the hatchery to resample. There I observed that most of the moribund fish were very emaciated, or had lost one or both eyes. I also observed belt feeders over the raceways and a high concentration of fish under them. In discussing the situation with hatchery personnel, I learned that they were trying to retard fish growth in the group by feeding a 50% ration. The objective was meet a request from the Regional office to plant small fingerling for a research project in the late fall. My diagnosis was starvation, with the lost eyes due to excessive competition and picking under the belt feeders. I recommended an immediate resumption of normal feed rations, scattered over the full length of the raceway. There is a limit to how much growth retardation can be achieved in a hatchery without adverse effect on fish health. It is imperative that such research projects be planned far enough in advance to allow hatchery managers to schedule production accordingly. If the hatchery personnel had been successful in holding these fish back long enough to meet the requested stocking size and date, the health of the fish would have been compromised to the point that the research results would not have been valid.

A second lot of fish experienced elevated mortality in June, and again the samples were shipped to EFHL. No viruses or RS were detected, multiple but bacterial pathogens were again detected (*F. psychrophilum*, *A. hydrophila*, *A. sobria*) and treated.

A series of MC exposure trials were done in the Bear River during 2005 (see Resident Fish Hatcheries 2005 Annual Report). However the fish exposed around Grace Hatchery from October 21 to Nov. 1, 2005 were still in the EFHL wet laboratory when that report was submitted. Exposure sites included the short open channel below Upper Whiskey Spring, Middle Whiskey Spring, the large raceway tailrace, and the lower end of the settling pond. No MYXOB spores were detected when these fish were sampled in February.

HAGERMAN STATE HATCHERY

A total of 20 diagnostic cases were examined from Hagerman State Fish Hatchery in 2006 (Appendix E). Losses to IHN virus were moderate, with fewer numbers of fish lost offset by greater numbers of larger fish. Hatchery management has been able to protect younger fish longer, which may have contributed to later exposure and loss at a larger size. Virus detections in larger fish almost always coincided with infections by other pathogens, including bacteria (*F. psychrophilum*, *F. columnare*, *Aeromonas salmonicida*, or other motile *Aeromonas* species) or internal parasites (*Nucleospora salmonis* or *Tetracapsuloides bryosalmonae*). Multiple infections often make determining the best course of treatment or evaluating a response difficult or impossible.

The number of INAD protocols for OTC-medicated feed totaled 2 to treat CWD and 5 to treat *F. columnare* (COL). Response to these treatments was generally very good. An unusual case was a group of fish that required a second treatment for COL in December after responding well to a previous treatment. The hatchery manager reports that private growers in the Hagerman Valley say COL was a much greater problem in 2006. The bacteria are certainly in the hatchery water supply and may have presented a greater challenge this year, leading to the second infectious episode.

Clinical Furunculosis (FUR), caused by *A. salmonicida*, was diagnosed once in tiger muskie (*Esox lucius* x *E. masquinongy* hybrid) imported from Pennsylvania, and three times from catchable-size rainbow trout held in Riley Creek water. The tiger muskies were successfully treated with Romet-30 in medicated feed, as were two of the trout epizootics. The third trout group was nearly ready for stocking, making the 42-day withdrawal period for Romet problematic. Therefore, the fish were treated with OTC-medicated feed under the existing label, even though tests in the laboratory suggested that the bacteria might be resistant to the drug. Response was good, and the fish were stocked following a 21-day withdrawal.

An experimental OTC immersion treatment was tried in January to see if it would be effective against the fry loss syndrome that frequently occurs in the vat building. This was done under an INAD protocol and therefore was constrained by the allowable dosage and duration within the protocol. The treatment was not effective. Before this era of carefully regulated chemical use, similar treatments were routinely used at Hagerman. However, the effective treatment dose was much higher than is now allowed by the INAD protocol.

The protozoan parasite *Ichthyophthirius multifiliis* (ICH) caused significant mortalities in several lots of fish during the winter of 2004-2005. Routine checks by hatchery personnel detected the parasite in December 2005 and flush treatments of potassium permanganate were initiated 3 times per week at 1.5-2.0 mg/L until mid-February. No losses to ICH were documented in 2006.

HAYSPUR HATCHERY

Clinical bacterial kidney disease (BKD) was diagnosed in the Connor Lake westslope cutthroat trout populations and in the BY03 Kamloops trout (K1) brood fish (Appendix F). The BY03 Hayspur rainbow (R9) population had higher than usual ELISA values but none of the fish showed obvious clinical signs. No samples from the BY04 populations were positive for RS. This was the 14th consecutive year with no replicating viruses detected at Hayspur Hatchery.

Sixty-fish inspection samples (lethal) were taken from both BY04 R9 and K1 populations prior to the spawning season. No replicating viruses, RS, cultured bacteria, or MYXOB spores were detected from either population.

The primary focus of my efforts at Hayspur Hatchery was sampling the R9 and K1 adult females whose eggs were used for broodstock replacement. With the assistance of hatchery personnel, I collected ovarian fluid from every such female to be tested for viruses and for RS using fluorescent antibody testing on the centrifuged ovarian fluid cell pellet (OCP-FAT). Lethal sampling of a portion of the same females provided kidney and spleen tissues for virology, kidney smears for DFAT, and kidney tissues for ELISA. The tissue sampling provided corroboration for the ovarian fluid tests, and was consistent with Federal Title 50 sampling protocols. Eggs from individual females were kept separate until the test results were complete. Following established protocol, eggs were culled from the replacement program if the parent female tested positive for any virus, for RS by either DFAT or OCP-FAT, or for RS antigen by ELISA at an optical density (OD) above 0.120 (or lower at the hatchery manager's discretion).

The R9 brood stock replacement spawning was done on five separate days between October 18 and December 21, 2006. A total of 192 females were tested (158 BY03; 34 BY04). All lethal samples were from the 3-year-old BY03 fish. No viruses were detected from any ovarian fluid or tissue samples. The RS test results were as follows, with 2005 results in parentheses for comparison: 1 of 191 (4 of 198) ovarian fluid samples positive by OCP-FAT, 1 of 57 (0 of 60) kidney smears positive by DFAT, and 8 of 57 (10 of 60) positive by ELISA. The mean ELISA OD value for all positive fish was 0.953 with only 2 individuals below 0.250 and a high individual OD of 2.095 (mean OD in 2005 was 0.409 with 7 below 0.250 and the high at 1.188). A single individual fish was positive by all 3 tests in 2006. Eggs from 8 females were culled from the program.

Kamloops brood stock replacement spawning was done on four days, from October 18 to November 30. A total of 142 BY03 females were tested. No viruses were detected from any ovarian fluid or tissue samples. The RS test results were as follows (2005 results in parentheses): 2 of 142 (0 of 144) ovarian fluid samples positive by OCP-FAT, 1 of 48 (0 of 57) kidney smears positive by DFAT, and 1 of 48 (1 of 57) positive by ELISA. One individual was obviously sick when handled in the pond (lethargic, bilateral exophthalmia, bloody ovarian fluid), and her internal organs were pale, swollen, and hemorrhagic. She was strongly positive for RS by all 3 tests. Her eggs were initially taken but they did not fertilize, so there were no viable eggs to cull. Eggs from one other female were culled. This was the first time that any production rainbow or Kamloops at Hayspur has been diagnosed with clinical BKD. Therefore, it was decided that no more eggs from either BY03 population would be shipped from the hatchery following confirmation of disease, and the remaining requests would be met with eggs from the BY04 populations that have tested negative for RS to date. Decisions will be made in 2007 on whether or not to completely remove the BY03 R9 and K1 populations from the

hatchery and how to more aggressively treat the remaining younger fish to reduce or eliminate RS from facility.

The Connor Lake cutthroat broodstock program at Hayspur has not proven successful, probably due to a combination of constant warm water temperature and high alkalinity. The fish have not grown well, have matured at a very early age, and have produced very poor quality gametes. Finally, they were diagnosed with clinical BKD in 2005 and were probably the source of RS-amplification leading to the intensified infections in the rainbow and Kamloops populations. No eggs were taken for broodstock replacement in 2006. The last remaining fish from both the BY00 and BY02 populations were sacrificed (8 each). Fifty percent (4 of 8) of the BY00 fish were positive for RS by DFAT, although only 1 tested positive by ELISA. In contrast, the BY02 fish were all negative by DFAT, with 2 of 8 positive by ELISA. No viruses were detected. Pooled ovarian fluids were taken from the BY04 female population with no viruses or RS detected in the samples. The very few viable eggs collected this year were originally sent to American Falls Hatchery, then transferred to Cabinet Gorge Hatchery, where a new cutthroat broodstock program is planned. To date, the fish are growing well and show no signs of disease (see Cabinet Gorge Hatchery, above). A decision is pending on whether or not to use these fish in the new broodstock program or to start fresh with eggs from a different population.

Stocking sterile rainbow trout from all IDFG hatcheries has become an important part of statewide fishery management. All rainbow or Kamloops eggs taken at Hayspur Hatchery for general hatchery production were treated to induce a state of triploidy (3N), in which the embryonic cells retain an extra set of chromosomes from the parent female. All resulting 3N trout are sterile. Because induction techniques are not perfect, IDFG has established a program goal of 95% 3N induction for all hatchery production populations. To determine if this goal was met, hatchery personnel randomly selected 14 lots of treated eggs throughout the spawning season and gave me eyed egg subsamples from those lots for incubation and rearing at the EFHL wet laboratory. When the resulting groups of fish were large enough, 40 individual blood samples per group were taken and sent to the Thorgaard Laboratory at Washington State University for analysis by flow cytometry. A total of 521 individual fish were tested of which 518 (99.4%) were triploid. All egg lots tested in 2006 were treated with high pressure to induce triploidy.

HENRYS LAKE HATCHERY

Fish health inspection samples were taken from spawning Yellowstone cutthroat trout at Henrys Lake Hatchery from February 24 through April 24, 2006 (Appendix G). Ovarian fluids were collected by hatchery personnel and shipped to EFHL where they were tested for viruses (161 females in 24 pools) and RS by OCP-FAT (1424 females in 214 pools). No viruses were detected in any of the ovarian fluid samples, including 6 pools (42 fish) that were blind-passed to check for North American viral hemorrhagic septicemia virus (NAVHS). Six pools (6 fish/pool) were positive for RS by OCP-FAT and the eggs from those pools were discarded.

I visited the hatchery on March 21 and took lethal samples from a group of 60 fish (both males and females) for kidney DFAT, ELISA, tissue virology, bacteriology, and MYXOB tests. No viruses were detected. Twenty individual kidney smears were positive for RS by DFAT, while all 12 tissue samples (5-fish pools) were positive by ELISA (all low OD). The ELISA prevalence was consistent with previous year's findings, while the number of DFAT detections was higher than in recent years. Bacteriology samples isolated *F. psychrophilum* from 14 of 16 fish. This was consistent with previous year's findings. No signs of clinical disease have ever

been evident in the adult cutthroat trout at Henrys Lake, but significant losses to CWD have occurred in their offspring at Mackay in both 2004 and 2005 (see Mackay Hatchery, below). Spores of size and shape consistent with *M. cerebralis* were detected by pepsin/trypsin digest (PTD) from 1 of 12 five-fish pools. The parasite was first confirmed in fish from Henrys Lake in 1996.

Henrys Lake Hatchery uses milt from Hayspur Hatchery Kamloops during the earliest egg takes, producing rainbow x cutthroat hybrids to stock back into the lake. The resulting fertilized eggs are exposed to high pressure to induce triploidy. Eyed eggs from 4 randomly selected trays were sent to EFHL for rearing. When the fish were large enough to take a blood sample, they were sacrificed and the samples sent to the Thorgaard Laboratory for analysis. A total of 117 fish were tested and 116 (99.1%) were triploid.

MACKAY HATCHERY

First-feeding Henrys Lake cutthroat fry experienced significant losses due to CWD in both 2004 and 2005. Treatments using OTC-medicated feed have not been successful. With this history, an INAD for a preventative treatment using FLR was issued by the AADAPP administrators. Starter feed was shipped to Bozeman, where the drug was top-dressed using fish oil as a binder. Treatment was begun on each lot of fish as soon as they were well started on feed, usually 3-5 days after swim-up. The treatment appeared to be highly successful, as no significant losses occurred in any group of cutthroat fry. The fish were too important to IDFG programs to leave any untreated controls for comparison, a situation that is reality on almost any production fish hatchery.

The BY05 Colorado kokanee salmon were inspected in May (Appendix H) and diagnosed with bacterial gill disease (BGD). No replicating viruses were detected. Treatment with CHLOR-T for 3 days under an INAD was quite successful in one raceway, but less so in another. The fish were stocked before a second series could be applied.

Rainbow trout fingerlings were diagnosed with CWD in August. No viruses or MYXOB were detected. The fish were treated with OTC-medicated feed under INAD protocols. Success of the treatments was fair to good, with daily mortalities eventually returning to single digits.

Mackay Hatchery receives green eggs every year from the early-spawning kokanee in Deadwood Reservoir. A major forest fire complex near the reservoir made sampling the fish on site problematic, but Nampa Hatchery personnel were able to bring 60 spawned carcasses out to EFHL on ice. The carcasses were sampled the next day. No viruses were detected. No RS was detected by DFAT, but ELISA tests on 5-fish pooled kidney samples detected a single low positive pool. These results are consistent with historic information. Large MYXOB spores were detected by PTD in 11 of 12 five-fish pools. Testing for specific DNA by polymerase chain reaction (PCR) confirmed these to be the unnamed neurotropic *Myxobolus* species (NEURO) previously identified in Deadwood Reservoir and many other Idaho waters. Bacteriology samples isolated *F. psychrophilum* from 10 of 10 fish and *A. sobria* from 8 of 10 fish. The former is a primary pathogen of which adult kokanee salmon seem to be nonclinical carriers, but the latter may have been a secondary saprophyte detected because the fish carcasses had been held nearly 24 hours before sampling.

NAMPA HATCHERY

Ten diagnostic cases were examined at Nampa Hatchery in 2006 (Appendix I). Eight episodes of clinical CWD and/or MAS were diagnosed. Treatments of OTC-medicated feed were applied using either the existing label or an INAD protocol when appropriate and response to treatment was generally good.

Ichthyophthirius multifiliis was diagnosed from large rainbow trout in June and again in December. Losses at the end of the year and into early 2007 were catastrophic in at least 3 raceways and the situation was not yet under control at the writing of this report. Treatments with potassium permanganate did not seem to be effective. The design of Nampa Hatchery is significantly flawed, in that the raceway floors are below the level of the outflow to the settling pond. Thus the raceways can never be dried up nor can they be isolated from the settling pond or outflow stream. Major changes, requiring either significant costs in reconstruction or reductions in production, will be necessary if this parasite is to be eliminated at Nampa. In the meantime, the redistribution of Nampa fish to other hatcheries or hatchery water sources puts those other programs at serious risk.

SPRINGFIELD HATCHERY

I placed 3 live-boxes in the upper and lower sections of the lake and in the production raceway outlet at Springfield Hatchery in 2005 to look for evidence of virus or MC infectivity. Fish were exposed for 10 days then returned to the wet lab at EFHL for a 100-day incubation period. A portion of the fishes were sampled in November 2005 for viral testing, while those remaining were sampled for MC tests in January 2006. No replicating viruses or MYXOB spores were detected (Appendix J)

OTHER ACTIVITIES

I completed two WHD exposure trials during 2006, one in the Portneuf River from Pebble Creek to Pocatello, and the other in the Loving Creek/Silver Creek area near Hayspur Hatchery. The Portneuf River trial included sites in Pebble Creek above Lava Hot Springs, and in the river at the mouth of Crane Creek, below the Batiste Road Bridge, and beneath the Siphon Road Bridge. *Myxobolus cerebralis* infectivity was found to be heavy in Pebble Creek (100% prevalence with heavy individual levels of infection in the exposed fish) but no infectivity was detected in any other locations. The middle and lower reaches of the Portneuf River are not good salmonid habitat due to major agricultural and municipal use. This probably explains why the parasite could not be detected at the downstream locations.

The trial in the Loving Creek/Silver Creek area was done in order to repeat trials completed in 2003 and 2004. The difference in 2006 was that there was high water runoff from the winter snow pack as opposed to the drought conditions experienced in the earlier trials (see IDFG Fishery Research Report Number 05-54). The previous trials had demonstrated that the irrigation water diverted from the Big Wood River to the agricultural fields where Loving Creek Springs arise was highly infective for the parasite. But no infectivity could be detected anywhere in Loving Creek, on Hayspur Hatchery, or in Silver Creek. It was inferred from this information that the historic WHD infections found in upper Silver Creek and on the hatchery could have originated from the irrigation water, but due to drought conditions no water was spilled into the springs during the trial period. In contrast, excess water was run through the irrigation canal for most of summer of 2006. No infectivity was detected in 2006 anywhere on Hayspur Hatchery or in Silver Creek. A single *Myxobolus* spore was detected by PTD from 1 of

74 fish exposed in Loving Creek at the railroad trestle site below Hayspur Hatchery. Again, evidence was not conclusive, since fish exposed in Loving Creek between the springs and the positive site were not found to be infected. However, since water flows were high and the dilution factor during the trial was significant, the theory that infectivity in the area is a result of irrigation water from the Big Wood River was still somewhat supported.

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Appendix A. Summary report of Eagle Fish Health Laboratory results for American Falls Hatchery, January 1 – December 31, 2006.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2006	Connor Lake	Westslope Cutthroat trout	06-221	6/14/06					-	-	-	+			DX: MAS; <i>Aeromonas hydrophila</i> 4/4, <i>A. sobria</i> 4/4
2006	Troutlodge	Rainbow trout--3N	06-481	12/12/06					-	-	+	-			DX: CWD, BACTEREMIA; <i>Flavobacterium psychrophilum</i> 4/4, <i>Sphingomonas paucimobilis</i> 4/4, <i>Pasteurella spp.</i> 4/4

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Appendix B. Summary report of Eagle Fish Health Laboratory results for Ashton Hatchery, January 1 – December 31, 2006.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2005	Hayspur	Rainbow trout--3N	06-089	3/20/06	-	-		-					-	-	IX: NPD; VIRO 0/60, DFAT 0/60, ELISA 0/60, PTD-MYXOB 0/60
2006	Hayspur	Rainbow trout--3N	06-254	7/31/06	-	-		-	-	-	+	+			DX: CWD, PSEU; VIRO 0/5, DFAT 0/5, <i>F. psychrophilum</i> , 4/5, <i>Pseudomonas spp.</i> 1/5

Appendix C. Summary report of Eagle Fish Health Laboratory results for Cabinet Gorge Hatchery, January 1 – December 31, 2006.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
Brood	Sullivan Springs	Kokanee salmon	06-474	11/27/06	-	-		-	-	-	+	-	-	-	IX: CWD; VIRO 0/60, DFAT 0/60, ELISA 0/60, PTD-MYXOB 0/60, <i>Flavobacterium psychrophilum</i> , 12/12,
2006	Connor Lake	Westslope Cutthroat trout	06-475	11/28/06	-	-		-	-	-	-	-	-	-	IX: NPD; VIRO 0/60, DFAT 0/60, ELISA 0/60, BACTE 0/12, PTD-MYXOB 0/60

Appendix D. Summary report of Eagle Fish Health Laboratory results for Grace Hatchery, January 1 – December 31, 2006.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2005	Troutlodge	Rainbow trout--3N	06-033	2/09/06									-	-	IX: RESEARCH, NPD; PTD-MYXOB 0/35
2005	Troutlodge	Rainbow trout--3N	06-034	2/09/06									-	-	IX: RESEARCH, NPD; PTD-MYXOB 0/23
2005	Troutlodge	Rainbow trout--3N	06-035	2/09/06									-	-	IX: RESEARCH, NPD; PTD-MYXOB 0/25
2005	Troutlodge	Rainbow trout--3N	06-036	2/09/06									-	-	IX: RESEARCH, NPD; PTD-MYXOB 0/30
2006	Hayspur	Rainbow trout--3N	06-194	5/08/06	-	-			-	-	+	+			DX: CWD, MAS; VIRO 0/20, <i>Flavobacterium psychrophilum</i> 15/20, <i>Aeromonas hydrophila</i> 5/20
2006	Hayspur	Rainbow trout--3N	06-218	6/12/06	-	-			-	-	-	-			DX: BACTEREMIA, STARVATION; <i>Flavobacterium spp.</i> 2/4
2006	Troutlodge	Rainbow trout--3N	06-230	6/26/06	-	-			-	-	+	+			DX: CWD, MAS; VIRO 0/6, DFAT 0/6, <i>F. psychrophilum</i> 5/6, <i>A. sobria</i> 2/6, <i>A. hydrophila</i> 2/6

Appendix E. Summary report of Eagle Fish Health Laboratory results for Hagerman State Hatchery, January 1 – December 31, 2006.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2005	Hayspur	Rainbow trout--3N	06-007	1/17/06	-	-			-	-	+	-			DX: CWD; VIRO 0/4, <i>Flavobacterium psychrophilum</i> 4/4
2005	Troutlodge	Rainbow trout--3N	06-008	1/17/06	+	-	-		-	-	+	-			DX: IHN, CWD; IHNV 1/1 (x5), IPNV 0/5, NAVHS 0/5, <i>F. psychrophilum</i> 2/4 PCR- <i>Nucleospora</i> 0/4
2005	Troutlodge	Rainbow trout--3N	06-071	3/08/06	-	-			-	-	+	+			DX: COL, CWD, MAS; <i>F. columnare</i> 2/3, <i>F. psychrophilum</i> 1/3, <i>Aeromonas spp.</i> 3/3
2005	Troutlodge	Rainbow	06-072	3/08/06	-	-			-	-	+	-			DX: CWD, PKD; VIRO 0/5 <i>F. psychrophilum</i> 3/4, PCR- <i>Tetracapsuloides</i> 3/10. PCR- <i>Nucleospora</i> 0/10
2005	Hayspur	Kamloops trout--3N	06-073	3/08/06	-	-			-	-	+	-			DX: CWD; VIRO 0/8, <i>F. psychrophilum</i> 7/8, <i>F. odoratum</i> 1/8
2006	Hayspur	Rainbow trout--3N	06-074	3/08/06	-	-			-	-	+	-			DX: CWD; VIRO 0/5, <i>F. psychrophilum</i> 4/4
2005	Troutlodge	Rainbow trout--3N	06-138	4/17/06	-	-			+	-	+	-			DX: FUR, CWD, PKD, NUC; VIRO 0/5, <i>A. salmonicida</i> 4/4, <i>F. psychrophilum</i> 1/4, PCR- <i>Tetracapsuloides</i> 5/5, PCR- <i>Nucleospora</i> 5/5
2005	Troutlodge	Rainbow trout--3N	06-139	4/17/06	-	-			-	-	+	+			DX: COL, CWD, MAS; VIRO 0/5, <i>F. psychrophilum</i> 3/4 <i>A. hydrophila</i> 1/2

Appendix E. Summary report of Eagle Fish Health Laboratory results for Hagerman State Hatchery, January 1 – December 31, 2006 (continued).

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2006	Hayspur	Rainbow trout--3N	06-140	4/17/06					-	-	+	-			DX: CWD; <i>F. psychrophilum</i> 1/4, <i>Pseudomonas spp.</i> 1/4
2005	Troutlodge	Rainbow trout--3N	06-219	6/14/06	-	-			-	-	-	+			DX: COL, MAS, PKD, NUC; VIRO 0/8, <i>F. columnare</i> 1/4, <i>A. caviae</i> 3/4, PCR- <i>Tetracapsuloides</i> 6/8, PCR- <i>Nucleospora</i> 5/8
2005	Troutlodge	Rainbow trout--3N	06-220	6/14/06	+	-			+	-	-	-			DX: IHN, FUR, PKD, NUC; IHN 1/1 (x5), IPNV 0/5, <i>A. salmonicida</i> 4/4, PCR- <i>Tetracapsuloides</i> 2/5, PCR- <i>Nucleospora</i> 4/5
2006	Troutlodge	Rainbow trout--3N	06-307	8/23/06	-	-			-	-	-	-			DX: BGD, GILL MYCOSIS; VIRO 0/10, BACTE (INTERNAL) 0/4
2006	Troutlodge	Rainbow trout--3N	06-308	8/23/06	-	-			-	-	-	-			DX: BACTEREMIA; VIRO 0/10, <i>Pseudomonas spp.</i> 1/8
2006	Hayspur	Rainbow trout--3N	06-309	8/23/06	-	-			-	-	-	+			DX: COL, MAS; VIRO 0/5, <i>F. columnare</i> 4/4, <i>A. hydrophila</i> 3/4
2005	Troutlodge	Rainbow trout--3N	06-310	8/23/06	-	-			+	-	-	-			DX: FUR, NUC; VIRO 0/5, <i>A. salmonicida</i> 3/4, PCR- <i>Tetracapsuloides</i> 0/5, PCR- <i>Nucleospora</i> 5/5
2005	Troutlodge	Rainbow trout--3N	06-450	10/30/06	+	-			-	-	+	-			DX: IHN, CWD; IHN 1/1 (x4), IPNV 0/4, <i>F. psychrophilum</i> 3/4
2006	Troutlodge	Rainbow trout--3N	06-451	10/30/06	+	-			-	-	+	-			DX: IHN, CWD; IHN 1/1 (x5), IPNV 0/5, <i>F. psychrophilum</i> 4/4
2005	Penn	Tiger muskie	06-470	11/16/06	-	-	-		+	-	-	+			DX: FUR, MAS; VIRO 0/16. NAVHS 0/12, <i>A. salmonicida</i> 15/16, <i>A. hydrophila</i> 16/16

Appendix E. Summary report of Eagle Fish Health Laboratory results for Hagerman State Hatchery, January 1 – December 31, 2006 (continued).

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2006	Troutlodge	Rainbow trout--3N	06-482	12/12/06	-	-			-	-	-	-			DX: NPD: VIRO 0/5, BACTE 0/4
2005	Hayspur	Kamloops trout--3N	06-483	12/12/06					-	-	+	+			DX: MAS, CWD; <i>A. hydrophila</i> 4/4, <i>F. psychrophilum</i> 4/4

Appendix F. Summary report of Eagle Fish Health Laboratory results for Hayspur Hatchery, January 1 – December 31, 2006.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2005	Hayspur	Kamloops trout--3N	06-037	2/06/06											IX: RESEARCH: Triploid induction rate 40/40 (100%)
2005	Hayspur	Kamloops trout--3N	06-038	2/06/06											IX: RESEARCH: Triploid induction rate 38/39 (97.4%)
2005	Hayspur	Kamloops trout--3N	06-039	2/06/06											IX: RESEARCH: Triploid induction rate 39/40 (97.5%)
2005	Hayspur	Rainbow trout--3N	06-120	3/13/06											IX: RESEARCH: Triploid induction rate 40/40 (100%)
2005	Hayspur	Rainbow trout--3N	06-121	3/13/06											IX: RESEARCH: Triploid induction rate 40/40 (100%)
2005	Hayspur	Rainbow trout--3N	06-122	3/13/06											IX: RESEARCH: Triploid induction rate 40/40 (100%)
2004	Hayspur	Rainbow trout	06-123	3/13/06											IX: RESEARCH: Triploid induction rate 40/40 (100%)
2000	Connor Lake	Westslope cutthroat trout	06-155	4/21/06	-	-		+							IX: BKD; VIRO 0/8, DFAT 4/8, ELISA 1/8 (low)
2002	Connor Lake	Westslope cutthroat trout	06-156	4/21/06	-	-	-	+							IX: RS; VIRO 0/8, NAVHS 0/8, DFAT 0/8, ELISA 2/8 (2 low)
2004	Connor Lake	Westslope cutthroat trout	06-157	4/21/06	-	-		-							IX: NPD; VIRO 0/35, OCP-FAT 0/35
2005	Hayspur	Rainbow trout	06-182	5/01/06											IX: RESEARCH: Triploid induction rate 40/40 (100%)

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Appendix F. Summary report of Eagle Fish Health Laboratory results for Hayspur Hatchery, January 1 – December 31, 2006 (continued).

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2005	Hayspur	Kamloops trout--3N	06-183	5/01/06											IX: RESEARCH: Triploid induction rate 39/40 (97.5%)
2005	Hayspur	Rainbow trout--3N	06-216	5/15/06											IX: RESEARCH: Triploid induction rate 40/40 (100%)
2005	Hayspur	Rainbow trout--3N	06-217	5/15/06											IX: RESEARCH: Triploid induction rate 42/42 (100%)
2005	Hayspur	Kamloops trout--3N	06-257	8/07/06											IX: RESEARCH: Triploid induction rate 40/40 (100%)
2005	Hayspur	Rainbow trout--3N	06-258	8/07/06											IX: RESEARCH: Triploid induction rate 40/40 (100%)
2004	Hayspur	Kamloops trout	06-280	8/14/06	-	-		-	-	-	-	-	-	-	IX; NPD; VIRO 0/60, DFAT 0/60, ELISA 0/60, BACTE 0/32, PTD-MYXOB 0/60
2004	Hayspur	Rainbow trout	06-395	10/02/06	-	-		-	-	-	-	-	-	-	IX; NPD; VIRO 0/60, DFAT 0/60, ELISA 0/60, BACTE 0/20, PTD-MYXOB 0/60
Brood 2003	Hayspur	Kamloops trout	06-427	10/18/06	-	-		-							IX: NPD; VIRO 0/24, DFAT 0/12, OCP-FAT 0/24, ELISA 0/12
Brood 2003-4	Hayspur	Rainbow trout	06-428	10/18/06	-	-	-	+							IX: BKD; VIRO 0/24, NAVHS 0/5, OCP-FAT 0/24, DFAT 0/9, ELISA 1/9 (HIGH)
Brood 2003-4	Hayspur	Rainbow trout	06-455	11/01/06	-	-		+							IX: BKD; VIRO 0/36, OCP-FAT 1/36, DFAT 1/12, ELISA 2/12 (2 HIGH)
Brood 2003	Hayspur	Kamloops trout	06-456	11/01/06	-	-	-	-							IX: NPD; VIRO 0/48, NAVHS 0/5, OCP-FAT 0/48, DFAT 0/12, ELISA 0/12

Appendix F. Summary report of Eagle Fish Health Laboratory results for Hayspur Hatchery, January 1 – December 31, 2006 (continued).

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
Brood 2003	Hayspur	Kamloops trout	06-469	11/16/06	-	-		+							IX: BKD; VIRO 0/46, OCP-FAT 2/46, FAT 1/12, ELISA 1/12 (HIGH/CLINICAL)
Brood 2003	Hayspur	Rainbow trout	06-471	11/21/06	-	-		+							IX: BKD; VIRO 0/48, OCP-FAT 0/48, DFAT 0/12 ELISA 2/12 (1 LOW, 1 HIGH)
Brood 2003	Hayspur	Kamloops trout	06-476	11/30/06	-	-	-	-							IX: VIRO 0/24 , NAVHS 0/12, OCP-FAT 0/24, DFAT 0/12, ELISA 0/12
Brood 2003	Hayspur	Rainbow trout	06-478	12/07/06	-	-	-	+							IX: BKD; VIRO 0/48, NAVHS 0/6, OCP-FAT 0/48, DFAT 0/12, ELISA 1/12 (HIGH)
Brood 2003-4	Hayspur	Rainbow trout	06-485	12/21/06	-	-	-	+							IX: BKD; VIRO 0/36, NAVHS 0/10, OCP-FAT 0/35, DFAT 0/12, ELISA 2/12 (1 LOW, 1 HIGH)

Appendix G. Summary report of Eagle Fish Health Laboratory results for Henrys Lake Hatchery, January 1 – December 31, 2006.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-050	2/24/06	-	-		-							IX: NPD; VIRO 0/14, OCP-FAT 0/161
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-056	2/28/06	-	-		-							IX: NPD; VIRO 0/14, OCP-FAT 0/140
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-063	3/02/06	-	-		-							IX: NPD; VIRO 0/14, OCP-FAT 0/140
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-064	3/06/06	-	-		-							IX: NPD; VIRO 0/14, OCP-FAT 0/161
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-078	3/09/06	-	-	-	-							IX: NPD; VIRO 0/21, NAVHS 0/21, OCP-FAT 0/168
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-079	3/13/06	-	-	-	-							IX: NPD; VIRO 0/21, NAVHS 0/21, OCP-FAT 0/105
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-087	3/16/06	-	-		-							IX: NPD; VIRO 0/21, OCP-FAT 0/105
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-088	3/20/06	-	-		-							IX: NPD; VIRO 0/12, OCP-FAT 0/60
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-090	3/21/06	-	-		+	-	-	+	-	+		IX: BKD, CWD, WHD; VIRO 0/60, DFAT 20/60, ELISA 12/12 (X5, LOWS) <i>Flavobacterium psychrophilum</i> 14/16, PTD-WHD 1/12 (X5)

Appendix G. Summary report of Eagle Fish Health Laboratory results for Henrys Lake Hatchery, January 1 – December 31, 2006 (continued).

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-095	3/27/06	-	-		+							IX: BKD; VIRO 0/12, OCP-FAT 5/10 (X6)
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-107	3/30/06	-	-		-							IX: NPD; VIRO 0/12, OCP-FAT 0/78
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-108	4/03/06	-	-		-							IX: NPD; VIRO 0/6, OCP-FAT 0/84
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-118	4/06/06				+							IX: BKD; OCP-FAT 1/10 (X6)
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-142	4/13/06				-							IX: NPD; OCP-FAT 0/60
Brood	Henrys Lake	Yellowstone Cutthroat trout	06-165	4/24/06				-							IX: NPD; OCP-FAT 0/42
2006	Henrys Lake	Rainbow/Cutthroat hybrids	06-489	7/17/06											IX: RESEARCH: Triploid induction rate 116/117 (99.1%)

Appendix H. Summary report of Eagle Fish Health Laboratory results for Mackay Hatchery, January 1 - December 31, 2006.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2005	Colorado	Kokanee Salmon	06-193	5/05/06	-	-			-	-	-	-			DX: BGD; VIRO 0/40. <i>Flavobacterium psychrophilum</i> 4/4 (isolated from gills)
2006	Troutlodge	Rainbow trout	06-322	8/27/06	-	-			-	-	+	-	-	-	DX: CWD; VIRO 0/20, <i>F. psychrophilum</i> 6/8, PTD-MYXOB 0/60
Brood	Deadwood Reservoir	Kokanee salmon	06-350	9/07/05	-	-	-	+	-	-	+	+	-	+	IX: RS, CWD, MAS, NEURO; VIRO 0/60, DFAT 0/60, ELISA 1/12 (X5, LOW) <i>F. psychrophilum</i> 10/10, <i>Aeromonas sobria</i> 8/10, PTD-MYXOB 11/12 (X5), PCR-NEURO 3/3

Appendix I. Summary report of Eagle Fish Health Laboratory results for Nampa Hatchery, January 1 - December 31, 2006.

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Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2005	Troutlodge	Rainbow trout	06-001	1/04/06	-	-			-	-	+	+			DX: CWD, MAS <i>Flavobacterium psychrophilum</i> 4/4, <i>Aeromonas caviae</i> 1/4
2005	Troutlodge	Rainbow trout	06-002	1/04/06	-	-			-	-	-	+			DX: MAS, BACTEREMIA; VIRO 0/4, <i>A. sobria</i> 4/4, <i>Pseudomonas</i> spp. 2/4, <i>Flavobacterium</i> spp. 2/4
2005	Troutlodge	Rainbow trout--3N	06-025	2/01/06											DX: COS, GYROS; <i>Ichthyobodo (Costia)</i> spp. 2/2, <i>Gyrodactylus</i> spp. 2/2
2005	Troutlodge	Rainbow trout--3N	06-065	2/07/06	-	-			-	-	+	+			DX: CWD, MAS, EGD, GYROS; VIRO 0/5, <i>F. psychrophilum</i> 4/4, <i>A. sobria</i> 1/4, <i>Gyrodactylus</i> spp. 2/2, Environmental Gill Disease 2/2
2005	Troutlodge	Rainbow trout--3N	06-086	3/20/06	-	-			-	-	+	+			DX: CWD, MAS, EGD; <i>F. psychrophilum</i> 3/5, <i>Pseudomonas</i> spp. 4/5,
2006	Hayspur	Rainbow trout--3N	06-102	4/03/06					-	-	-	+			DX: MAS; <i>A. sobria</i> 3/4
2005	Troutlodge	Rainbow trout--3N	06-215	6/07/06											DX: ICH; <i>Ichthyophthirius multifiliis</i> 4/4
2006	Hayspur	Rainbow trout--3N	06-441	10/26/06					-	-	+	+			DX: CWD, MAS; <i>F. psychrophilum</i> 8/8, <i>A. caviae</i> 4/8 <i>Pasteurella</i> spp. 5/8
2006	Troutlodge	Rainbow trout--3N	06-487	12/26/06					-	-	-	+			DX: MAS; <i>P. vesicularis</i> 4/4, <i>Stenotrophomonas maltophilia</i> 2/4
2006	Hayspur	Kamloops trout	06-488	12/26/06					-	-	-	+			DX: MAS; <i>P. vesicularis</i> 1/4

Appendix J. Summary report of Eagle Fish Health Laboratory results for Springfield Hatchery, January 1 – December 31, 2006.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	NAVHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2005	Troutlodge	Rainbow trout--3N	05-444	11/08/05	-	-									IX: NPD: VIRO 0/50 (Upper Pond)
2005	Troutlodge	Rainbow trout--3N	05-445	11/08/05	-	-									IX: NPD: VIRO 0/50 (Lower Pond)
2005	Troutlodge	Rainbow trout--3N	05-446	11/08/05	-	-									IX: NPD: VIRO 0/45 (Hatchery Outlet)
2005	Troutlodge	Rainbow trout--3N	06-004	1/12/06									-	-	IX: NPD; PTD-MYXOB 0/45 (Upper Pond)
2005	Troutlodge	Rainbow trout--3N	06-005	1/12/06									-	-	IX: NPD: PTD-MYXOB 0/28 (Lower Pond)
2005	Troutlodge	Rainbow trout--3N	06-006	1/12/06									-	-	IX: NPD: PTD-MYXOB 0/32 (Hatchery Outlet)

Appendix K. List of Acronyms used in the Resident Hatcheries Fish Health Report-2006.

3N	Tetraploid; having 3 times the haploid (N) chromosome number.
AADAPP	Aquatic Animal Drug Approval Partnership Program
BACTE	Bacteriology test results.
BGD	Bacterial Gill Disease, caused by a number of bacterial species.
BKD	Bacterial Kidney Disease, caused by <i>Renibacterium salmoninarum</i> .
CHLOR-T	Chloramine-T; used under INAD protocol to treat bacterial gill disease.
COL	Columnaris disease, caused by <i>Flavobacterium columnare</i> .
CWD	Coldwater Disease, caused by <i>Flavobacterium psychrophilum</i> .
DFAT	Fluorescent antibody test
DX	Diagnostic examination
EFHL	Eagle Fish Health Laboratory
ELISA	Enzyme-linked immunosorbent assay
ERM	Enteric Redmouth Disease, caused by <i>Yersinai ruckeri</i> .
FLR	Florfenicol antibiotic
FUR	Furunculosis, caused by <i>Aeromonas salmonicida</i> .
GYRO	<i>Gyrodactylus</i> ; a monogenetic trematode.
IDFG	Idaho Department of Fish and Game
IHN	Infectious Hematopoietic Necrosis disease, caused by IHN virus.
IHNV	Infectious Hematopoietic Necrosis virus; acronym used in diagnoses to indicate presence of virus without signs of clinical disease.
INAD	Investigational New Animal Drug
ICH	<i>Ichthyophthirius multifiliis</i> ; a protozoan parasite of skin and gills.
IPN	Infectious Pancreatic Necrosis disease, caused by IPN virus.
IPNV	Infectious Pancreatic Necrosis virus; acronym used in diagnoses to indicate presence of virus without signs of clinical disease.
IX	Inspection examination
K1	Kamloops trout of generic origin
MAS	Motile Aeromonad Septicemia, caused by many <i>Aeromonas</i> -like species.
MC	<i>Myxobolus cerebralis</i> ; causative agent of Whirling Disease of salmonids.
MYXOB	<i>Myxobolus</i> ; acronym used when a species is not identified.
NAVHS	North American Viral Hemorrhagic Septicemia; viral disease not yet detected in Idaho.
NEURO	Neurotropic <i>Myxobolus</i> species
NPD	No Pathogens Detected

Appendix K. Continued.

OCP-FAT	Ovarian cell pellet fluorescent antibody test
OTC	Oxytetracycline antibiotic
OD	Optical density; a measure of light transmission in the ELISA test directly correlated with the quantity of RS antigen in the sample.
PCR	Polymerase chain reaction test; used to detect specific DNA fragments of a targeted organism
PKD	Proliferative kidney disease, caused by <i>Tetracapsuloides bryosalmonae</i>
PTD	Pepsin/trypsin digest method for detecting <i>Myxobolus</i> spores
R9	Hayspur-strain rainbow trout
RS	<i>Renibacterium salmoninarum</i> ; causative agent of BKD; acronym used in diagnoses to indicate presence of bacteria without signs of clinical disease
USFWS	United States Fish and Wildlife Service
VIRO	Virology test results
WHD	Whirling Disease of salmonids, caused by <i>Myxobolus cerebralis</i>

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