



**RESIDENT FISH HATCHERIES
2007 ANNUAL REPORT**

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RESIDENT FISH HATCHERIES



2007 ANNUAL REPORT

Resident fish hatcheries reared and stocked about 22 million fish weighing nearly a million pounds. More than 2,000 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 2007.

Resident hatchery program costs were about \$2.3 million for an average cost of \$2.63 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 raised and stocked by the Department hatcheries were triploid to minimize the crossing of the hatchery fish with native fish in the wild.

The resident hatcheries cooperated with the states of Colorado, 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 Colorado. 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. Sterile Brook trout were obtained from the Fresh Water Fisheries Society of British Columbia.

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. Yellowstone Cutthroat trout eggs were taken at the trap at Henrys Lake.

The Engineering Bureau coordinated construction at the American Falls, Cabinet Gorge, Hagerman Nampa, and Sandpoint hatcheries this fiscal year. A lot of work was done to the spring water collection system at American Falls, Ashton and Mackay hatcheries. Permitting and construction of raceways to house Westslope Cutthroat broodstock at Cabinet Gorge was begun as well as a new residence at Cabinet Gorge. 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**

01/01/07- 12/31/07
Average

Production Hatchery	Put-and-Take Number	Pounds	Put-Grow-and-Take Number	Pounds	Fish/pound	Feed Pounds	Feed Costs	Average Length	Total cost	Cost 1,000 fish	Cost/Pound
American Falls	222,681	76,013	9,067	1,820	2.97	79,596.75	\$28,049.46	9.1	\$212,650	\$917.59	\$2.58
Ashton	165,437	38,140	306,723	2,234	11.69	33,291	\$16,355.90	5.7	\$182,777	\$367.00	\$4.29
Cabinet Gorge	0	0	11,716,375	37,126	315	31,598	\$23,575	2.0	\$305,931	\$26.11	\$9.36
Grace	147,912	55,309	853,599	14,995	16.03	78,434	\$27,631	6.7	\$223,925	\$270.79	\$4.34
Hagerman	986,363	316,827	2,804,415	89,900	9.3	609,070	\$270,294	6.3	\$652,067	\$109.13	\$1.35
Mackay	78,514	46,806	3,598,717	34,257	45.4	80,850	\$38,683	4.0	\$285,154	\$77.55	\$3.52
McCall ¹	0	0	43,570	60	750	40.5	\$53.46	1.5	\$3,366	\$99.89	\$75.29
Nampa	657,640	172,669	1,012,943	14,511	8.93	217,415	\$94,694	6.3	\$501,323	\$300.19	\$2.68
Sandpoint ²	0	0	0	0	0	0	0	0	0	0	0
Sawtooth ²	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2,258,547	705,764	20,345,409	194,903	25.1	1,130,295.25	\$499,335.82	4.45	\$2,367,193	\$104.72	\$2.63

¹ Flight costs only

² There were no high mountain lake fish raised or stocked from Sandpoint or Sawtooth during 2007

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

Redistribution of catchables

Hatchery	Put-and-Take Number	Pounds	Put-Grow-and-Take Number	Pounds	Fish/pound	Feed Pounds	Feed Costs	Average Length	Total cost	Cost 1,000 fish	Cost/Pound
Clearwater	87,274	28,569	0	0	3.05	800	994	10	\$17,985	\$196.92	\$0.55
McCall ³	98,900	30,619	0	0	3.23	660	614	9.6	\$11,074	\$111.97	\$0.36
Mullan	28,400	8,353	0	0	3.4	0	0	9.0	\$42,655	\$1,500.00	\$5.10
Sandpoint	101,307	31,824	0	0	3.18	0	0	9.8	\$64,371	\$520.00	\$2.03
Sawtooth	53,400	15,940	0	0	3.35	350	126	9.06	\$7,161	\$134.10	\$0.45
Hayspur ⁴	37,692	19,918	0	0	1.89	N/A	N/A	10.5	N/A	N/A	N/A

³ Distribution mileage costs only

⁴ Distribution costs were not broken out of the overall hatchery budget.

IDAHO DEPARTMENT OF FISH AND GAME

2007 ANNUAL RESIDENT REPORT

AMERICAN FALLS FISH HATCHERY

**Steve Wingert, Fish Hatchery Manager
Tim Klucken, Assistant Fish Hatchery Manager**

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 brown trout, *Salmo trutta*, 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 2007. 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 19.11 cubic feet per second (cfs) at a water temperature of 54°F to 56°F during 2007.

TRIPLOID EGG USAGE

During the 2007 calendar year the AFFH received 135,000 triploid rainbow trout eggs from the departments Hayspur Fish Hatchery and 280,000 triploid rainbow trout eggs from the Troutlodge facility in Washington.

FISH PRODUCTION

The AFFH raised triploid Hayspur strain rainbow trout (KT & T9), triploid Troutlodge Kamloops (TT), and Soda Lake brown trout (BN) from Wyoming's Auburn Fish Hatchery for the 2007 production year.

The AFFH stocked 9,067 brown trout (1,820 lbs.) in Idaho waters. The AFFH stocked and transferred 222,681 catchable rainbow trout (76,013 lbs.) statewide. Total fish stocked and transferred was 231,748 fish, weighing 77,833 pounds (Appendix 1). Net production for the year (lbs. stocked + lbs. on hand 12/31/2007 - lbs. on hand 1/1/2007) was 82,422 pounds. Net number of fish produced, using the same basic formula, was 354,706 fish.

Costs in 2007 for various types and sizes of fish food were \$28,049.46 (Appendix 2). Feed costs for the year were \$0.34 per net pound of fish produced, or \$0.08 per net fish. Production costs overall were \$2.58 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 2007. This figure does not include capital outlay or capital construction/repair costs.

Feed conversion for the year averaged 0.97 pounds of feed per net pound of fish produced.

MAJOR HATCHERY IMPROVEMENTS

- The old automatic feed system was removed and sold for salvage.
- Raceway divider walls were installed in 5 sections of large raceway to create 10 medium sized raceways.
- A public 4-H archery range was built on AFFH grounds.
- Self guided tour kiosks were designed and installed.
- The front stoop on residence #2 was repaired and rebuilt.
- Many major improvements were made at the Springfield Hatchery with assistance from AFFH personnel as outlined in its report.

HATCHERY NEEDS

- The garage of residence #1 needs to be replaced.
- Additional raceways are needed to maximize efficiency and to more fully utilize the available water.
- Steam cleaner for chemical free disinfection of hatchery vats and equipment.
- Fish pump

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. In April 2007 a Fish Culturist FTE position from the Grace Hatchery was moved to the Springfield facility as an Assistant Hatchery Manager position. After an interview process Bryan Grant was selected to oversee and care for the Springfield facility in addition to assisting with project needs at the Grace and American Falls Hatcheries as needed. This FTE is supervised by the AFFH manager.

PUBLIC RELATIONS

The AFFH received an estimated 2,000 drop-in visitors during this period. Additionally, organized, scheduled tours were given to schools, scouts, and families which consisted of 555 children and approximately 95 adults. AFFH staff also gave presentations at camps, group meetings, zoo events, and school events which were attended by an estimated 425 children and adults. This year a nature trail kiosk and voluntary sign in sheet was installed to monitor nature trail usage. Of those signing in 123 visitor trips were recorded consisting of 71 youths and 211 adults. Eighty eight listed bird watching as their primary pursuit while here, 7 noted fishing, 4 listed hunting and 24 checked other/hiking/walking/exploring as the reason why they had come to the hatchery and utilized the nature trail area.

VOLUNTEER PROGRAM

Multiple volunteers were used throughout the year to assist in scatter planting catchable fish and hand loading fish onto transport trucks and assisting with various projects as outlined in the Springfield Hatchery report. 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 and Tim Klucken, Assistant Fish Hatchery Managers; Jennifer Evans, Casey Corrington, Tyson Fehringer and Janelle Porath, Biological Aides.

APPENDICES

Appendix 1. Swimming Inventory with fish transferred or stocked by month, American Falls Fish Hatchery, 2007.

Month	Fish on hand	Pounds on hand	Fish stocked	Pounds stocked
Dec. 2006	118,072	7,657	0	0
Jan. 2007	145,599	12,291	0	0
Feb. 2007	237,949	18,571	798	280
Mar. 2007	257,437	28,827	3,000	1,200
	10,270*	41*		
Apr. 2007	210,940	19,913	40,495	15,866
	10,246*	146*		
2007	192,965	19,520	26,165	10,466
	10,221*	352*		
Jun. 2007	211,591	11,862	30,643	10,202
	10,200*	583*		
Jul. 2007	245,287	14,434	7,649	2,985
	10,180*	971*		
Aug. 2007	228,153	20,293	5,060	2,200
	10,160*	1,116*		
Sep. 2007	239,522	27,242	9,126	3,134
	10,150	1,720*		
Oct. 2007	186,462	5,211	97,215	28,145
			9,067*	1,820*
Nov. 2007	201,212	7,566	1,518	1,095
Dec. 2007	241,030	12,246	1,012	440
Total Rainbow			222,681	76,013
Total Brown			9,067*	1,820*
Grand Total			231,748	77,833

* Denotes brown trout, all others are rainbow trout.

Appendix 2. Fish feed fed during the 2007 production year, American Falls Fish Hatchery.

Source	Size/Type	Pounds	Cost
Rangen Dry	0	8	\$5.35
Rangen Dry	1	22	\$14.72
Rangen Dry	2	181.5	\$121.42
Rangen Dry	3	8	\$5.35
Rangen Dry	3TM	90	\$65.05
Rangen Soft Moist	1/32"	2	\$2.30
Silver Cup	0	51	\$27.54
Silver Cup	1	164	\$88.56
Silver Cup	2	728.75	\$393.53
Silver Cup	3	194	\$71.78
Silver Cup	3TM	1,232	\$495.88
Silver Cup	4TM	200	\$150.00
Silver Cup	1.5mm	273.5	\$121.02
Silver Cup	2mm	6,057	\$2,347.09
Silver Cup	2.5mm	801.5	\$310.58
Silver Cup	3.5mm	65,447.5	\$21,466.78
Silver Cup	1/8" florfenicol	300	\$204.75
Silver Cup	1/8" TM	3,836	\$2,157.75
Totals		79,596.75	\$28,049.46

IDAHO DEPARTMENT OF FISH AND GAME

2007 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, Idaho, 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. clarki*, Arctic grayling *Thymallus arcticus*, brook trout *Salvelinus fontinalis*, rainbow x cutthroat hybrid, brown trout *Salmo trutta* and golden trout *Oncorhynchus 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 472,160 fish (40,374 lbs) were produced at AFH this year, consisting of 306,723 fry and fingerlings (2,234 lbs), and 165,437 catchable sized fish (including holdovers) (38,140 lbs). Total numbers were up although total pounds were down from the previous year (Appendix 1). Production costs (excluding capital outlay) were \$182,776.90 with \$16,355.90 spent on fish feed and the remaining \$166,420.97 spent on general hatchery operations and personnel costs. Fish transportation cost for 2007 was \$9,409.17. The average cost per lb of fish produced (less transportation cost) was \$4.29 (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 1.12 and conversion for holdovers was 0.88 in 2007 (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 67.3%. This is a decrease of 11.6% primarily due to poor survival of the Grayling and the rainbow x cutthroat Hybrids this year.

Rainbow Trout

Ashton Fish Hatchery produced and stocked 86,224 9.6-inch catchable rainbow (30,805 lbs) for distribution into area lakes and streams (Appendix 1). In December 2006, we received 125,000 Hayspur triploid rainbow trout (T9) eggs. From these eggs, 10,597 T9 fingerlings, averaging 4.6-inches, were planted in a number of Upper Snake Region waters. An additional 79,213 (7,335 lbs) of 6-inch T9 holdovers were produced for stocking in 2008.

Golden Trout

No golden trout were reared at Ashton Hatchery during 2007.

Henrys Lake Cutthroat Trout

No Henrys Lake cutthroat were reared at Ashton Hatchery during 2007.

Rainbow x Cutthroat Hybrid

We received 40,000 rainbow x cutthroat eyed hybrid eggs from Henrys Lake Hatchery in April 2007. From these eggs Ashton Hatchery produced 17,751 rainbow x cutthroat hybrids (131.5 lbs.) during 2007.

Arctic Graveling

In May 2007 we received 180,000 green arctic grayling eggs from Meadow Lake, Wyoming. From these eggs we produced 9,250 fry weighing a total of 2.57 pounds.

Brook Trout

In November 2006 we received 200,000 eyed triploid eggs from Kootenay Trout Hatchery, British Columbia for stocking as fingerling during 2007. We stocked 104,548 fingerling brook trout weighing a total of 590 lbs. into Henrys Lake. We also transferred an additional 62,000 fish weighing a total of 620 lbs. to Hagerman State Hatchery for use as tiger muskie feed. In November 2007 we received 250,000 eyed triploid brook trout eggs for stocking in 2008.

Brown Trout

In November 2006 we received 25,000 brown trout eggs from Auburn Hatchery, Wyoming. This resulted in 10,000 (40 lbs.) fingerling that were transferred to American Falls Hatchery for stocking in Region 5. We also received 100,000 brown trout eggs from Glenwood Springs Hatchery, CO. This resulted in 92,575 fingerling, weighing a total of 433 lbs., that were transferred to Hagerman Hatchery for stocking during 2007 in Region 4.

HATCHERY IMPROVEMENTS

A considerable amount of work was done on the spring area during 2007. Additional perforated pipe, drain rock and fabric were installed to reduce surface water on the spring collection area. This was somewhat successful and additional work will be necessary in the future to further reduce mosquito breeding areas as well as to improve the quality 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 fish produced, with the exception of grayling and rainbow/cutthroat hybrids, were sufficient to meet our requests for 2007. Excess brook trout were transferred to Hagerman State Hatchery for use as Tiger Muskie feed.

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 33,291 lbs of fish feed were fed (Appendix 4) to produce 28,627 lbs of gain(Appendix 1), for an average conversion of 1.16.

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 2007 Paul Martin gave a presentation at Ashton Elementary School on cutthroat trout.

SPECIAL PROJECTS

No special projects were undertaken this year.

APPENDICES

Appendix 1. Fish production and cost, Ashton Fish Hatchery, 2007

Species	Size	Number Fish	transf.	Weight Gained In 2007	Cost/lb	Cost/fish	Total Cost
F and Fin• erlin • s Produced and Stocked							
Hayspur triploid rainbow	4.6	10,597	417.0	412.9	6.79	0.267	2,834.56
rainbow x cutthroat hybrid	2.6	17,751	131.5	118.6	26.93	0.199	3,541.04
brown trout	2.2	102,575	473.0	434.6	41.95	0.193	19,841.94
brook trout triploids	2.7	166,548	1,210.0	1,155.7	27.41	0.199	33,171.31
grayling	1.0	9,252	2.6	1.6	666.13	0.187	1,731.95
Totals/Ave	2.6	306,723	2,234.1	2,123.4	27.36	0.199	61,120.80
C a t Produced and Stocked							
hayspur triploid rainbow	9.6	86,224	30,804	19,218	2.66	0.950	81,968.26
Totals/Ave	9.6	86,224	30,804	19,218	2.66	0.950	81,968.26
Catchables							
hayspur triploid rainbow	6.1	79,213	(7,335) On hand	7,286	4.12	0.382	30,278.67
Totals/Ave	6.1	79,213	7,335	7,286	4.12	0.382	30,278.67
GRAND TOTAL *		472,160	40,374.1	28,627.4	4.29	0.367	173,367.73

* Includes fish on hand

Appendix 2. Comparative growth rates, feed conversion, and percent survival for all species reared at Ashton Fish Hatchery, 2007.

Species	Average Monthly Length Increase	Average Conversion	Percent Survival
brown trout	.318	.960	82.0
brook trout triploid	.360	.650	83.2
rainbow (catchables) Hayspur	.462	1.12	95.0
rainbow (fingerlings)	.462	0.80	89.4
rainbow x cutthroat	.5321	0.85	44.4
grayling	.425	2.90	5.1
Holdover for 2008 stocking			
rainbow	.453	, 0.88	71.8

Appendix 3. Origin of eggs and fish stocked or transferred, Ashton Fish Hatchery, 2007

Species	Source	Eggs	Fish	Destination	Stocked	Transferred]	Size (inches)
brown trout	Auburn, WY	25,000		Region 4		See below	2.0
brown trout	Glenwood Sprgs, CO	100,000		Region 4		102,575	2.0
brook trout Triploid	Kootenay, BC	200,000		Henrys Lake	104,548	62,000	2.7
brook trout triploid	Kootenay, BC	250,000 ^b		Henrys Lake			eggs
rainbow x cutthroat	Henrys Lake	40,000		Region 6			
grayling	Meadow Lake, WY	180,000		Statewide	17,751	9,252	2.6 1.0
Hayspur triploid rainbow	Hayspur	125,000	--	Region 6	86,224	--	9.6
Hayspur triploid rainbow	Hayspur	125,000	--	Region 6	10,597	--	4.6
Hayspur triploid rainbow	Hayspur	125,000 ^b		Region 6			eggs
Total stocked or transferred					219,120	173,827	

Received prior to 2007

^bFor stocking in 2008

Appendix 4. Feed use, Ashton Fish Hatchery, 2007

Size	Source	Pounds	Cost/lb	Total Cost
Swimup	Rangen's	150	0.4857	\$92.95
#1 Starter	Rangen's	400	0.4840	\$238.00
#2 Starter	Rangen's	3,000	0.4840	\$1,517.25
#3 Starter	Rangen's	1,000		\$417.00
#3 Aquaflor	Rangen's	500	0.3480	\$502.50
3/32 pellet	Rangen's	5,000	0.3380	\$2,170.00
1/8 pellet	Rangen's	23,150		\$8,373.00
Cyclopeeze	Argent	2.6	0.3096	\$252.00
#0 Ewos	Ewos	44		\$53.68
1 Bio-Diet	Bio-Products	44	1.06	\$46.64
Shipping				\$2,692.88
Total		33,290.6	0.413	\$16,355.90

IDAHO DEPARTMENT OF FISH AND GAME

**ANNUAL REPORT
CABINET GORGE FISH HATCHERY
2007**

**John Rankin
Fish Hatchery Manager II**

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, Idaho 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 (IDFG). 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 degrees Fahrenheit (range 43.0 degrees F to 52.0 degrees F). Production water ranged from 38.0 degrees F to 46.0 degrees 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 cubic feet. The hatchery building encloses approximately one-third of each raceway. The adult kokanee holding area consists of two holding ponds (10 ft. by 30 ft. each) at the head of the fish ladder. Additional adult holding is available in three holding ponds (10 ft. by 30 ft. each).

PRODUCTION

Cabinet Gorge Hatchery produced a total of 11,716,375 fish in 2007 weighing 37,126 pounds (Appendix 2). On January 1, 2008, an estimated total of 486,050 Lake Pend Oreille kokanee eggs were on hand (Appendix 1). In addition 9,400 westslope cutthroat fingerling, 1,700,000 early-spawning kokanee fry, and 1,300,000 eyed kokanee eggs (received from Colorado) were also on hand at the end of the year.

A total of 31,598 pounds of feed produced 32,682 pounds of weight gain for an overall (all species reared) feed conversion of 0.97. Total production cost (including Nampa's transportation costs) was \$305,931, resulting in a cost per pound of fish of \$9.36, cost per inch of fish of \$0.0122, and \$26.11 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 Jensorter JHC-114 model sorter. Fry were allowed to volitionally swim out of the incubators into the raceways at 1,450 temperature units. All fry were thermally mass marked via temperature manipulation in the raceways. Feed training began at 1,700 to 1,720 temperature units.

Initial early rearing loading rates averaged 250,000 swim-up fry per raceway. Kokanee growth rates were equivalent to 29 monthly temperature units per inch of growth (MTU's), (2006, 29 MTU's). Fish health was excellent throughout rearing and no Bacterial Gill Disease was encountered in 2007.

Kokanee were feed trained at approximately 49 to 52 degrees F using Skretting_q (formerly Moore-Clark) Nutra Plus #0 starter for 10 days. Feed training continued from the 11^t day to the 28th day 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 Lake Pend Oreille. 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 9,076,625 late kokanee fry were produced at an average length of 2.10 inches and an average weight of 360 fish per pound. These fish gained 23,632 pounds from 21,593 pounds of feed, resulting in a conversion rate of 0.91: 1.0. Fish production cost was \$8.85 per pound, \$0.0110 per inch, and \$23.03 per thousand (Appendix 2).

Survival of Lake Pend Oreille green eggs to feeding fry was estimated at 77.6% (2006, 82.8%). Survival from first feeding to release was estimated at 98.3% (2006, 96.6%), resulting in survival from green egg to release of 76.2% (2006, 80.0%).

A total of 2,479,084 early kokanee fry were produced at an average length of 2.17 inches and an average weight of 323 fish per pound. These fish gained 7,236 pounds from 7,927 pounds of feed, resulting in a conversion rate of 1.10: 1.0. Fish production cost was \$10.61 per pound, \$0.0143 per inch and \$30.96 per thousand. Of these 2,182,324 (6,625 pounds) were stocked into Lake Pend Oreille (Appendix 2).

Survival of early kokanee green eggs to feeding fry was estimated at 76.8% (2006, 95.5% from eyed). Survival from first feeding to release was estimated at 97.9% (2006, 97.5%), resulting in survival from green egg to release of 74.3% (2006, 93.1% from eyed).

Fish Marking

To evaluate the success of a kokanee (*Oncorhynchus nerka kennerly*,) 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 degrees 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., 2007) 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 small (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 2006 were t-marked. With results from the Washington Department of Fish and Wildlife 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 62 fish sampled from the 2006 kokanee spawning run 3.2% were hatchery 5 year olds (2000 brood year), 14.5% were hatchery four year olds (2001 brood year), 51.6% were hatchery three year olds (2002 brood year), 6.5% were hatchery two year olds (2003 brood year), and 24.2% were four year olds of wild origin. To date, no results have been received from the 2007 spawning adults.

Fish Liberation

On June 7, 2007, 1,027,102 early kokanee fry were released into Sullivan Springs. On the days of June 19 through 21, 8,046,553 late kokanee fry were released into Sullivan Springs. On June 11, 2007, 993,647 late kokanee fry were released into Spring Creek. Later, on June 22, 2007, an additional 36,425 late kokanee fry were released into Spring Creek. On May 29, 2007, 597,171 early kokanee fry were released into Twin Creek.

In a continuing effort to encourage pioneering of kokanee into unused traditional spawning gravels, kokanee fry were also released into tributary streams along the Northern shore of Lake Pend Oreille. On June 4, 2007, 192,500 early kokanee fry were released into Trestle Creek. On June 6, 2007, 365,550 early kokanee fry were released into Grouse Creek (a Pack River tributary).

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 destined for Sullivan Springs was transported in one IDFG tanker (3,000-gallon capacity). There were two trips made to Sullivan Springs on June 7, 2007.

The late spawning Sullivan Springs release group was transported in two IDFG tankers (3,000-gallon capacity) and the two 2-ton stocking trucks from Cabinet Gorge and Sandpoint Hatcheries. Loading densities of small fish in all of the tankers was kept below 0.60 pounds per gallon. Two tankers made five releases each on June 19, 20, and 21, 2007. Five additional releases each were made with the two 2-ton stocking trucks.

All of the other kokanee fry releases were accomplished utilizing the one and 2-ton stocking trucks from Sandpoint and Cabinet Gorge Hatcheries.

Other Species

On May 15, 2007, the Cabinet Gorge Hatchery received approximately 15,000 westslope cutthroat eggs for future brood stock from King's Lake in Washington. These eggs were held in isolation for thirty days pending genetic and disease sampling results. Three individual pairings were culled. Two parent fish were identified with rainbow trout alleles and one was diagnosed with high BKD levels. On December 31, 2008, the hatchery had on hand 9,383 westslope cutthroat fingerling (King's Lake strain) weighing 158 pounds (Appendix 2).

During the month of April 2007, 146,166 westslope cutthroat were released into several lowland lakes in Regions 1 and 2. These fish averaged 40 fish per pound and had attained an average length of 4.15 inches at release. An additional 5,117 westslope cutthroat (Connor Lake, B.C. strain) were released into Lower Twin Lake on the 16th of April. These fish averaged 12 fish per pound and had attained a length of 6.2 inches at release.

During the months of May and June 2007, a total of 296,760 early spawning kokanee were released into seven lowland lakes in Regions 1 and 2. The fish released averaged 295 fish per pound and had attained a length of 2.25 inches.

On December 31st, 2007 the hatchery had 1,700,000 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, and stock lowland lakes in Regions 1 and 2. The hatchery also had 1,300,000 eyed kokanee eggs obtained from the state of Colorado.

HATCHERY IMPROVEMENTS

Repairs and Improvements

- A new 2-ton fish truck was acquired.
- New wire was pulled to pump 3 at which time the new pump was tested.
- Large rocks were removed from the North side of the hatchery building which created a larger parking area.
- A generator isolation switch was installed for pumps 3 and 7.
- The Fish and Game engineering crew began work on residence # 3 and the cutthroat raceways.
- The hatchery septic tank was dug up and pumped out.
- A new satellite dish was installed.

HATCHERY RECOMMENDATIONS

An inadequate amount of available warm water (50 degrees 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. This will be completed in 2008.

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, 2007 to November 23, 2007. No adult kokanee entered the trap the entire season. On November 23, 2007, the ladder was shut down. No eggs were taken. From July 24, 2007 to October 19, 2007 the trap was used by Avista Corp. personnel to collect and sample bull trout. A total of 10 adult bull trout were trapped, tagged, held for genetic results, and released. Avista also installed and operated a thrust block waterfall trap, electro-shocked, and hook and lined bull trout from the Clark Fork River that were staged on the spawning beds. The thrust block waterfall trap located just below Cabinet Gorge Dam was unsuccessful at capturing any bull trout. Electro-shocking yielded 22 adult bull trout over a four month period. Twenty-three adults (8 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 23, 2007 to December 19, 2007. The Sullivan Springs trap collected 5,914 (64,382 in 2006) adult kokanee salmon. Of these, 1,134 (10,683 in 2006) adults were passed above the trap to spawn naturally in Sullivan Springs Creek. Spawntaking records showed that 29.4% (45.0% in 2006) of the run was female (1,422).

Spawntaking and Eggs Received

An estimated total of 486,050 green fertilized kokanee eggs were collected during the 2007 spawning season. Of the 1,422 total females trapped, 1,133 female kokanee were spawned at the Sullivan Springs trap. This was an all time low for the Sullivan Springs kokanee trapping operation for the 33 years on record (Appendix 1).

A total of 2,333,100 green fertilized early spawning kokanee eggs were received from Deadwood Reservoir on September 1 through 7, 2007. An additional 1,300,000 eyed kokanee eggs were received from the state of Colorado in December.

FISH FEED

The fish produced during 2007 were fed a total of 31,598 pounds of feed. Fish feed was acquired from Rangen's Inc. and Skretting USA, Inc. (formerly Moore-Clark USA, Inc.) The overall conversion was 0.97 pounds of feed to produce 1 pound 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 240 people signed our guest registration book this year. An estimated 500 visitors toured the hatchery during the 2007 season. In addition, 12 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 40 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, Jamie Mitchell- Fish Culturist, CGFH Maintenance Craftsman- John Suhfras, CGFH Maintenance Craftsman- Todd Braunschweig, Mullan Hatchery Fisheries Technician- Mary Van Broeke and CGFH Biological Aides; Tyler Long, Shane Rewoldt, Rauno Raiha (Bonner County Sheriff's boat operator), Meggin Weinandt, and Taneesha Smith for their dedication and hard work in making 2007 a successful year.

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Appendix 1. Lake Pend Oreille kokanee spawntaking summary, 2007.

Spawntaking Site	Total Fish	Females Spawned	Females Unspawned	Green Eggs	Fecundity	Percent Females *
Sullivan Sps. Cabinet Gorge	5,914 0	1,133 0	289 n/a	486,050 n/a	429 n/a	29.4%
Totals/Ave:	5,914	1,133	289	486,050	429	29.4%

* includes male/female prespawn mortality

Appendix 2

Production Summary, all species, 2007

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	Conversio
PdO KL	9,076,625.00	25,224.00	2.10	359.84	21,593.00	\$16,429.04	\$209,062.85	\$8.85	\$23.03	\$0.01	0.91
Dwd. KE	2,479,084.00	7,674.00	2.17	323.05	7,927.00	\$5,412.19	\$76,749.00	\$10.61	\$30.96	\$0.01	1.10
06-WS CO.	146,166.00	3,655.00	4.15	39.99	1,601.00	\$1,198.66	\$15,500.84	\$10.51	\$106.05	\$0.03	1.09
06-WS Cuff. (C.L.)	5,117.00	415.00	6.20	12.33	242.00	\$181.18	\$2,343.04	\$12.71	\$457.89	\$0.07	1.31
07-WS Cutt.BS (K.L.) (a)	9,383.00	158.00	3.63	59.39	235.00	\$354.32	\$2,275.26	\$14.68	\$242.49	\$0.07	1.52
Totals/Ave:	11,716,375.00	37,126.00	2.14	315.58	31,598.00	\$23,575.39	\$305,931.00	\$9.36	\$26.11	\$0.01	0.97

(a). Currently on station

(b). includes freight, shipping & handling

(c). Includes transportation costs for truck transportation from Nampa Hatchery-
\$11,476

IDAHO DEPARTMENT OF FISH AND GAME

2007 ANNUAL RESIDENT REPORT

CLEARWATER FISH HATCHERY

**Chad Henson, Fish Culturist
Chris Shockman, Fish Culturist**

INTRODUCTION

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

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 adjustable from five feet to fifty feet to collect surface water; the secondary intake is stationary at about 200 feet below full pool level. This design allows mixing of water to target a specific temperature.

FISH PRODUCTION

Release Year 2007

Catchable Rainbow Trout

CFH did not produce catchables in 2007 because spring chinook and steelhead occupied all available rearing space. CFH was strictly a redistribution center for Nampa State Fish Hatchery (NSFH) and American Falls State Hatchery (AFSH) reared rainbow trout catchables.

FISH FEED

Catchable Rainbow Trout

CFH redistributed catchable rainbow trout into Region 2 waters during 2007. 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 800 lbs of EWOS feed was fed to the rainbows through the summer of 2007 as a maintenance diet (Appendix 2). This food was surplus feed from the CFH Chinook program.

FISH STOCKED AND TRANSFERRED

Catchable Rainbow Trout

CFH redistributed 78,826 Troutlodge triploid (reared at Nampa State Fish Hatchery), 8,448 Hayspur triploid (reared at American Falls State Hatchery) and 4,125 Shasta strain (reared at Dworshak National Fish Hatchery) rainbow trout during 2007 (Appendix -1). Troutlodge and Hayspur fish averaged 3.0 fish per pound (fpp) and the Shasta strain averaged 1.0 fpp totaling 32,694 lbs. A total of 94 fish plants were administered to 24 different plant sites. The Shasta strain trout were left over from Dworshak National Fish Hatchery's annual open house in June. These fish were stocked by CFH personnel into Fenn Pond, Campbell's Pond, Powell Pond, Five Mile Pond, Robinson Pond and Carolyn's Pond.

PUBLIC RELATIONS

Clearwater Hatchery 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.

Three summer youth employees assisted Dworshak Hatchery during their annual open house on June 15, 2007.

On June 6, Jennifer Vafiades planted 500 catchable rainbow trout (3.0 fpp) and 5 trophy size into Camp Grizzly Pond.

On July 11, Cassie Sundquist and Jennifer Vafiades planted 250 rainbows and 14 trophy size fish into Jaype Mill Pond for sixth graders on a 4H forestry tour.

On August 3, Brad George hauled 500 catchable rainbow trout (3.0 fpp) to Orofino Creek near Pierce, Idaho for their annual 1860 Days Celebration.

SPECIAL PROJECTS

A total of 122 adult size fish, ranging in weight from 3 lbs. to 8 lbs., were recovered from Clearwater Fish Hatcheries total flow pond. The planting crew supplemented 15 fish stocking trips to 9 different sites with these large fish.

FISH HEALTH

In general, the fish health at Clearwater Fish Hatchery 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 some signs of poor health from *Ichthyophthirius multifiliis* (ICH) outbreak prior to arriving at the Clearwater Fish Hatchery; however no signs of ICH were observed at CFH. Prior to being moved to the Clearwater Fish Hatchery from Nampa, all fish were treated with formalin and samples were taken to ensure the ICH parasite was absent. All fish at CFH are monitored daily by personnel to detect any early signs of fish health problems.

Acknowledgements

The CFH would like to thank the Nampa Fish Hatchery and American Falls Fish Hatchery crews 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 Jeff Jenni, Theresa Elliott, Jennifer Vafiades, Jenny Hole, Nichole Madrid, Fishery Technicians Chad Hensen and Holly Stanton; Maintenance Craftsman Fred Hough; and 3 youths involved in the Clearwater Youth Program.

Appendix - 1. Clearwater Hatchery Resident Fish Redistribution, Jan 1 - Dec 31, 2007.

2007 Catchable Rainbow Trout

		Number of Fish	Weight (lbs.)	
2007 catchable RBT on hand 1/1/07		0	0	
2007 catchable RBT on hand 12/31/07		0	0	
Date	Number released	Pounds	Fish per Pound	Type of Fish
4/1-4/30	8,448	2,725	3.1	Troutlodge TT
5/1-5/31	29,912	9,649	3.1	Troutlodge TT
6/1-6/30	35,327	11,040	3.2	Troutlodge TT
Dworshak & Kooskia NFH- surplus	4,125	4,125	1.0	Mt. Shasta
7/1-7/31	750	227	3.3	Troutlodge TT
8/1-8/31	1,500	500	3.0	Troutlodge TT
9/1-9/30	3,150	1,575	2.0	Troutlodge TT
10/1-10/31	8,187	2,853	2.87	Troutlodge TT
Totals	91,399	32,694	Average fpp 2.7	

Appendix - 2. Fish feed costs and amount fed for the CFH rainbow programs, Jan 1 - Dec 31, 2007. ***

DATE	BRAND	FEED TYPE	WEI	COST PER LB	TOTAL
	EWOS	#1 & #0 crumb	<u>GHT (lbs)</u>	\$1.18	\$944.00
			800		

Total Summary of Catchable Rainbow Trout Redistributed.

# OF FISH	WEIGHT (lbs)	FEED FED	CONVERSION	COST PER LB FOR REDISTRIBUTION	COST/1000 FISH FOR REDISTRIBUTION
91,399	32,694	800 lbs	N/A	\$0.55	\$196.92

Estimated costs include 50% of the FY 07 & FY 08 budgets and do not include permanent salaries or feed cost @ NSFH. Redistribution expenditure by CFH: \$17,985.85

* Cost/lb equals total budget divided by total lbs produced 1/1/07 -12/31/07.

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

*** This feed was made available as surplus from BY06 Chinook early rearing feed study and fed out prior to the end of its shelf life at no cost to rainbow project.

1/1/07 to 12/31/07 Cost for rearing @ NSFH based on \$2.49 per pound
 estimated cost for T-9 rainbows \$71,137.00
 Transport cost to deliver fish from NSFH to CFH \$13,389.00

Total cost \$84,526.00

IDAHO DEPARTMENT OF FISH AND GAME

ANNUAL REPORT

GRACE FISH HATCHERY

2007

**Phil Coonts
Hatchery Manager 1**

**Travis Brown
Assistant Manager**

INTRODUCTION

Grace Fish Hatchery (GFH) is located in Caribou County, Idaho approximately seven miles south of the community of Grace. The GFH was acquired in 1946. Owned and operated by the Idaho Department of Fish and Game, 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 are distributed locally on a put-and-take basis. Fingerling trout 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.

An Assistant Fish Hatchery Manager and a Fish Hatchery Manager I 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. Flow for 2007 was an annual average of 14.28 cubic feet per second (cfs), 106% 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 hatchery 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, smalls, and medium 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 cultured sterile Hayspur strain rainbow (T9), Sterile Kamloop rainbow (KT), Troutlodge Triploid rainbow (TT), and sterile lake trout (LT) in 2007.

The GFH began the 2007 calendar year with 204,868 fish weighing 19,728 lbs. A total of 1,001,511 fish at a weight of 70,856 lbs were reared and planted by GFH in the year 2007. 198,863 fish totaling 20,420 lbs were killed in a chlorine spill on December 11, 2007. There were 30,303 fish at a weight of 456 lbs on hand December 31, 2007. This accounts for a total production of 1,025,809 fish and 72,004 lbs (Appendix 1).

The GFH received eyed eggs from various state and private hatcheries in 2007. During the year a total of 1,195,481 eyed-eggs of various species were received (Appendix 2).

2007 production costs at GFH, excluding capital outlay, were \$223,925 (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) accounted for 99.999% of the total pounds produced and 99.997% of total cost. The average cost to produce a trout at GFH in 2007 was \$4.34 per lb or \$.27 per fish (\$270.79 per 1,000 fish). Triploid lake trout accounted for the remaining 0.001% of the pounds produced and 0.003% of total cost (Appendix 4).

Catchable Rainbow Trout

During 2007, 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. The GFH achieved 115% of the 2007 catchable request. Surplus catchables were planted state wide to help replace the losses incurred at the Nampa State hatchery due to disease losses.

The GFH differentially freeze-branded fish destined for different sections of the Bear River in 2007. The freeze-branded fish will be evaluated by fisheries management biologists to track upstream and downstream migrations of catchables after stocking. The various brands and stream locations are listed in Appendix 6.

The GFH started out this calendar year with 155,868 triploid catchable trout. Over the course of the year, 147,912 (55,309 lbs) triploid catchable trout averaging 9.8-inches were planted. On December 31, 30,303 (456 lbs) fish remained on station for future planting. 198,863 (20,420 lbs) catchables were killed in a chlorine leak. Total produced for the year is 221,210 triploid catchable rainbows at a weight of 57,009 pounds. These fish converted 64,230 pounds of fish food at a feed conversion of 1.13. The average cost to plant a 9.8-inch catchable was \$1.65 per lb or \$.42 per fish (\$424.33 per 1,000 fish) (Appendices 1, 4).

Lake Trout

The Idaho Department of Fish and Game has a cooperative agreement with the Utah Department of Wildlife Resources (UDWR) to stock 50,000 triploid lake trout 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 lake trout. The GFH and Story Fish Hatchery personnel with the Wyoming Game and Fish Department (WGFD) produced the triploid lake trout that were stocked into Bear Lake in 2006. Our two year total ('06-'07) is 30,597, needing 19,403 to reach our goal.

During 2007, a total of 1,285 (80lbs) were planted as 6.8-inch triploid lake trout into Bear Lake. These fish were confirmed triploid by Paul Wheeler at the WSU School of Biology. They received an adipose and right ventral fin clip prior to stocking. The average cost of planting a 6.8-inch triploid lake trout was \$4.73 per lb, or \$.29 per fish (\$294.44 per 1,000). Triploid lake trout converted 190.8 lbs of food at a feed conversion of 2.39 (Appendices 1, 4).

Rainbow Trout Fingerlings

During 2007 the GFH raised triploid (3N) and diploid (2N) fingerlings, a total of 803,314 rainbow fingerlings weighing 14,915 pounds at an average length of 3.6 inches were planted. Rainbow fingerling cost \$4.10 per pound or \$.14 per fish (\$136.67 per 1,000 fish) (Appendix 4). Rainbow fingerlings converted 14,012 pounds of food at a feed conversion of 0.94 (Appendix 1).

FISH FEED

The fish produced during 2007 were fed a total of 78,434 lbs of feed from Rangen Inc. (Appendix 5). The net weight gained during 2007 was 72,004 lbs, which resulted in an overall conversion of 1.09 lbs of feed to produce one lb of fish (Appendix 1).

REPAIRS AND IMPROVEMENTS

- Insulated attic in Res. #3.
- Repaired fence on east side of the Property.
- We worked on cleaning up the bone yard and we removed a lot of old pipe and trash.
- Contracted the County Road Department to maintain entrance road.
- Purchased aluminum spool gun to manufacture screens.
- Manufactured new all aluminum screens for hatch-house.
- Cleaned out and organized egg and storage room in hatch-house.
- Cleaned out office and multiple other buildings where they can now be functional.

NEEDED RENOVATIONS

- Re-work all upper water supply lines from spring to large raceways to individualize water supplies to be able to shut off the various raceway's water supply.
- Dredge settling pond.
- Build a doublewide garage and storage area for 2-ton, snowplow, and feeding tractor.
- New siding and windows for hatch-house, along with repair to interior framing and pony-walls.
- Build a french drain at residence 1 entry door.
- New kitchen linoleum in residence 2
- Remodel kitchen in residence 3
- New 10" valves along with new plumbing inside hatch-house.

PUBLIC RELATIONS

The GFH staff gave 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 in 2007 took self-guided tours around the hatchery. 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 300 kids, 14 and under, fished the escapement pond on Free Fishing Day. GFH also answered many questions from personal contacts and phone calls.

Acknowledgements

During 2007, the Grace Fish Hatchery crew included Grey Pino, Biological Aide, Travis Brown, Assistant Hatchery Manager, Dwight Aplanalp, Hatchery Manager I, and Phil Coonts, Hatchery Manager I. 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, and stocked at Grace Fish Hatchery, 2007

Species/strain	Number (pounds) on hand 01/01/00	Number planted (pounds)	Fish Kill 12-11-2007	Number (pounds) on hand 12/31/00	Pounds produced	Conversion
Sterile Rainbow	155,868	147,912	198,863	30,303		1.13
catchables	(19,176)	(55,309)	(20,420)	(456)	57,009	
Rainbow	49,000	852,314		0		0.94
Fingerlings	(552)	(15,467)		0	14,915	
Lake Trout	0	1,285		0		2.39
	0	(80)		0	80	
Total fish	204,868	1,001,511	198,863	30,303		1.09
Total pounds	(19,728)	(70,856)	(20,420)	(456)	72,004	

Appendix 2.		Eyed eggs received at Grace Fish Hatchery 2007.	
Species/strain	Source	Number Received	Date Received
Troutlodge Triploid (TT)	Trout Lodge, WA	343,347	2/22/2007
Troutlodge Triploid (TT)	Trout Lodge, WA	48,387	5/17/2007
Troutlodge Triploid (TT)	Trout Lodge, WA	43,476	5/24/2007
Troutlodge Triploid (TT)	Trout Lodge, WA	89,285	8/16/2007
Troutlodge Triploid (TT)	Trout Lodge, WA	31,034	9/20/2007
Troutlodge Diploid (KS)	Trout Lodge, WA	381,884	3/15/2007
Troutlodge Diploid (KS)	Trout Lodge, WA	130,666	3/16/2007
Troutlodge Diploid (KS)	Trout Lodge, WA	64,205	3/29/2007
Lake Trout (LT)	WGFD, Story	62,745	11/30/2007
Total		1,195,029	

Appendix 3. Pond side and streamside production cost at Grace Fish Hatchery, 2007. Streamside Cost includes \$8,062.76 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
72,004	\$223,925	\$210,331	\$2.92	\$231,988	\$3.22

Appendix 4. Costs of fish produced at Grace Fish Hatchery, 2007.

				223,925/5,171,557	\$0.04330	per inch		
	length	number	weight	inches		cost	cost/1000	cost/lb
Fish Planted in 2007:								
Triploid lake trout	6.8	1,285	80	8,738		\$378.35	\$294.44	\$4.73
subtotal		1,285	80	8,738		\$378.35	\$294.44	\$4.73
Triploid catchables (KT, T9, TT)	9.8	221,210	57,009	2,167,858		\$93,866.82	\$424.33	\$1.65
Fingerlings (KT, T9, TT)	3.6	803,314	14,915	2,891,930		\$125,218.67	\$155.88	\$8.40
subtotal		1,024,524	71,924	5,059,788		\$219,085.49	\$213.84	\$3.05
Total		1,025,809	72,004	5,068,526		\$219,463.84	\$213.94	\$3.05
Fish on hand on 12/31/07:								
Triploid catchables (TT)	3.4	30,303	456	103,030		\$4,461.14	\$147.22	\$9.78
subtotal	7.2	30,303	456	103,030		\$4,461.14	\$147.22	\$9.78
Total fish produced in '07:								
Planted in 2007		1,001,511	70,856	5,068,526		\$219,463.84	\$219.13	\$3.10
Fish on hand Dec 31		30,303	456	103,030		\$4,461.14	\$147.22	\$9.78
Total		1,031,814.00	71,312	5,171,557		\$223,924.98	\$217.02	\$3.14
(-) on hand Jan 1, 2007	6.2	204,868	19,728					
Total Gained		826,946	51,584			\$223,924.98	\$270.79	\$4.34

Appendix 5.		Fish food received and cost, Grace Hatchery, 2007.			
Source	Diet	Size	Cost/lb.	Pounds	Total Cost
Rangen	Dry	00	\$0.669	350	\$211.95
Rangen	Dry	# 0	\$0.669	700	\$390.45
Rangen	Dry	#1	\$0.669	1,100	\$661.90
Rangen	Dry	#2	\$0.669	3,950	\$2,376.15
Rangen	Dry	#3	\$0.669	11,150	\$6,012.75
Rangen	Dry	#4	\$0.455	2,600	\$1,183.00
Rangen	Aquaflor	#2	\$1.219	100	\$121.90
Rangen	Aquaflor	3/32	\$0.984	950	\$934.801
Rangen	Extr.450XXvit	3/32	\$0.434	6,000	\$2,494.50
Rangen	T.M.	1 /8	\$0.603	1,100	\$663.301
Rangen	Extr. 450XXvit	1/8 bulk float	\$0.409	30,760	\$12,580.841
TOTAL				58,760	\$27,631.84

GFH had on hand (1-1-2007) 4251bs of #3, 7001bs of #4, and 23,3671bs of 1/8^h

Appendix 6.

The freeze-branded sterile rainbow were marked with a "T" brand on the right side of the fish posterior to the dorsal fin and above 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).

A SUMMARY TABLE FOR QUICK REFERENCES.

Production Hatchery	Grace
Put and Take Number	147,912
Put and Take Pounds	55,309
Put, Grow and Take Number	853,600
Put, Grow and Take Pounds	14,995
Avg. Fish/lb	16.03
Feed Used (lbs)	78,434
Feed Cost	\$27,632
Avg. Length	6.7in.
Total Cost	\$223,925
Cost/1000	\$270.79
Cost/lb	\$4.34

IDAHO DEPARTMENT OF FISH AND GAME

2007 ANNUAL RESIDENT REPORT

HAGERMAN FISH HATCHERY

**Joe Chapman, Hatchery Manager II
David May, Assistant Hatchery Manager I
Tom Tighe, Fish Culturist
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 \$652,067 this year: \$361,230 from Hagerman's budget, \$245,426 from Dingell-Johnson (DJ) monies, and \$45,411 from the fish transportation budget, to rear and stock fish in the 2007 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, Darlene Snider, quit and was replaced by Tom Tighe. 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°F to 67°F annually.

HATCHERY PRODUCTION

During 2007, the HFH reared and stocked 3,790,778 fish weighing 406,727 lbs. Of these, 986,363 were stocked 6-inches or longer and 2,804,415 were stocked smaller than 6-inches (Appendix 1). About 35.5% of the total fish were stocked in Magic Valley Region waters (Appendix 2). The majority of the larger trout were Kamloop rainbows from Troutlodge Inc., with the balance from Hayspur Fish Hatchery. Approximately 16,430 steelhead, 213,510 coho salmon, and 6,581 tiger muskies were also stocked. The 3-inch to 6-inch fish consisted of rainbow trout and Kamloop trout from Hayspur and Troutlodge Inc., and coho salmon (Appendix 1).

The 406,727 lbs stocked included 316,827 lbs of put-and-take fish averaging 9.1 inches, and 89,900 lbs of fingerlings that averaged 4.2 inches. The cost of planting the average 9.3 fish per pound (fpp) (6.3 inches) fish was approximately \$1.08 per lb, or \$115.39 per 1,000 fish (Appendix 1).

In addition to the fish reared and planted, 2,184,479 fish (168,072 lbs) were on hand at the HFH on December 31, 2007. These consisted of 1,318,834 fish (165,479 lbs), average 8.0 fpp, or 6.6 inches) in the large raceways and 865,645 fingerlings (2,594 lbs, average 334 fpp, or 1.9 inches) in the west raceways. The cost of producing these fish was \$1.28 per lb or \$98.26 per 1,000 (Appendix 1).

On hand January 1, 2007 were 1,817,704 fish (85,977 lbs). The HFH also received 757,728 fish (6,495 lbs) of fish from other hatcheries. Consequently, these subtractions yielded a net production for 2007 of 3,399,825 fish (482,327 lbs), mortality excluded (Appendix 1). The cost of producing the net production of 482,327 lbs was \$1.35 per lb.

A total of 10,990,532 eggs and fry were acquired to yield the fish produced. Approximately 2,710,698 eggs were purchased and the balance was acquired from government sources at no cost (Appendix 4). Of the eggs and fry received, 6,621,771 were received for the fish planted and the balance was used for 2008 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 117 fpp (2.8-inches). Because of continued success, eggs were again shipped to MVFH for early rearing and will be transferred here in February 2008.

The overall survival rate of fish stocked was 57%, up from 52% survival last year (Appendix 3). Most of this difference can be attributed to good survival in the hatchery building. Unfortunately, an outbreak of IHN among the fall catchables occurred, or the survival would have been better. Mortality due to IHNV *Infectious Hematopoietic Necrosis Virus* decreased overall, but still impacted larger fish that hadn't obtained the disease earlier in life, similar to last year. Losses to Ichthyophthirius (ICH) in 2007 did not occur due to an aggressive treatment program when the pathogen was initially detected.

Fish transport operator Ken Taylor logged 24,336 miles delivering fish to state waters, while the rest of the crew logged 9,800 miles. This amounted to a total of 34,136 miles and 329 stocking trips during 2007, and included 18 trips for the private sector and IDFG hatcheries.

In addition to the annual requests by regional fisheries managers, the HFH crew made 18 trips to haul and stock 970,249 fish weighing 56,888 lbs from other sources (Appendix 7). These included six trips for the American Falls Fish Hatchery (AFFH) to stock 119,139 trout weighing 32,309 lbs; three trips to stock 25,404 channel catfish weighing 3,832 lbs; three trips to stock 26,778 brown trout weighing 6,040 lbs, and one trip to stock 64,449 rainbow x cutthroat hybrids weighing 3,300 lbs from the University of Idaho Fish Culture Station; two trips for Grace Fish Hatchery (GFH) to stock 451,990 rainbow trout weighing 7,700 lbs; one trip for Magic Valley Hatchery to stock 220,415 steelhead weighing 2,815 lbs; one trip to Ashton Fish Hatchery to get 62,000 three-inch brook trout to feed tiger muskies at Hagerman Hatchery, and one trip to C.S.I. to stock 74 sturgeon weighing 272 lbs into the Snake River near Idaho Falls.

FISH FEED

The fish produced during 2007 were fed a total of 609,070 lbs of feed from Rangen Inc (Appendix 5). The net weight gained during 2007 was 482,327 lbs, which resulted in an overall conversion of 1.26 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:

- Repaired the belting on the traveling screen.
- Installed new informational signs at the showpond and visitor's bathroom.
- Installed copper strips at the tail end of raceways L1-8 to minimize the impact of the New Zealand Mud Snail.
- Installed bat boxes throughout the hatchery property to help reduce the mosquito population and consequently, West Nile Virus.
- Installed a bridge to access the settling pond and installed a safety bridge at the settling pond influent.
- Installed old cultivator disks on top of the support braces for the bird enclosure to prevent tearing of the chicken wire. Also installed concrete anchors to provide more support for the bird enclosure.
- Installed a support system for a leaning I-beam holding damboards under the Riley pond bridge.
- Patched some of the large raceway walls and floor with concrete and filled sinkholes in Riley Creek raceways.
- Replaced some of the wooden damboards in the large raceway system and replaced some old tailrace screens with aluminum ones.
- Repaired and installed the large blower motor.
- Installed 10-inch discharge gates on the one-ton and two-ton trucks.
- Repaired the supply lines to the domestic well.
- Repaired the upper automatic gate after it was damaged.
- Removed dry-rotted, moldy wall in basement of Res. #4 and applied mold inhibitor to Res. #2, 3 and 4.

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 19 tours to 620 school kids during the spring and fall, 1 tour for area scouts, and 3 tours to other large groups of adults. In addition, a hatchery presentation was given to the Twin Falls Lions Club, Magic Valley Flyfishermen, and a 4-H camp at Hayspur Hatchery. The hatchery also hosted a Free Fishing Day clinic here for about 507 participants. The Hagerman Boy Scouts and personnel from the BLM, Hagerman National Hatchery, Magic Valley Bassmasters and the Department assisted. Pepsi-Cola, Falls Brand Meats, Whitewater Fisheries, the University of Idaho Fish Culture Station, 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, and Bliss elementary schools, and Magic Valley Alternative High School. 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 a total of 232,698 fish weighing 8,434 lbs were marked. Of these, 2,500 trout weighing 1,041 lbs were floy-tagged and stocked into Devil's Creek Res., Island Park Res., Big Smokey and Little Smokey Creeks, and Cascade Reservoir (Appendix 6). Also, 9,828 channel catfish were ad-clipped for Lake Lowell, and 220,370 rainbow trout weighing 5,904 lbs were marked for waters for the '08 stocking season.

ACKNOWLEDGMENTS

Thanks to the permanent HFH staff of Dave May, Darlene Snyder, Tom Tighe and Ken Felty; to transport operator Ken Taylor; and to temporaries David Loranger, Stephanie Hendrix and Lionel Gonzales.

Regional personnel Doug Megargle, Rob Ryan, Richard Holman, 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 2007. Costs reflect all costs budgeted, except capital outlay, and include \$45,411 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, 2007						
Rainbow trout, yellow (YT,SP,04)	13.3	7,875	7,875			
Kamloop rainbow trout (KT)	12.0	29,714	22,102			
Steelhead (SA)	5.6	80,191	5,648			
Kamloop rainbow trout (TL,TT)	5.2	773,100	47,435			
Tiger Muskies	7.7	7284	834			
Kamloop rainbow trout (KT)	1.8	672,619	1,690			
Hayspur rainbow trout (T9)	1.6	120,281	238			
Hayspur mix (KT, T9)	1.4	126,640	155			
Totals	6.0	1,817,704	85,977			
FISH PLANTED						
Rainbow trout, yellow (YT,SP,01)	13.9	10,367	11,390	\$3,065.35	\$295.68	
Kamloop rainbow trout (KT)	11.3	65,238	38,770	\$15,720.69	\$240.97	
Kamloop rainbow trout (TL,TT)	9.5	598,317	212,625	\$121,380.45	\$202.87	
Hayspur rainbow trout (T9)	8.9	75,920	22,000	\$14,399.86	\$189.67	
Steelhead (SA)	9.7	16,430	6,200	\$3,403.10	\$207.13	
Coho salmon	6.5	213,510	23,200	\$29,452.20	\$137.94	
Tiger muskie	11.7	6,581	2,642	\$1,640.49	\$249.28	
Subtotals	9.1	986,363	316,827	\$189,062.14	\$191.68	
Hayspur rainbow trout (T9)	4.0	823,290	24,450	\$70,804.15	\$86.00	
Kamloops rainbow trout (KT)	42	1,698,800	57,400	\$152,608.67	\$89.83	
Coho salmon (CO)	4.2	282,325	8,050	\$24,941.46	\$88.34	
Subtotals	4.2	2,804,415	89,900	\$248,354.28	\$88.56	
Total Planted	Average	6.3	3,790,778	406,727	\$437,416.42	\$115.39
FISH ON HAND DECEMBER 31, 2007						
Rainbow trout, yellow (YT,CL,04)	13.3	20,561	20,561	\$5,798.90	\$282.03	
Kamloop rainbow trout (KT)	9.9	47,662	19,859	\$10,044.58	\$210.75	
Steelhead (SA)	6.1	153,914	13,797	\$19,901.45	\$129.30	
Kamloop rainbow trout (TL,TT)	6.2	1,060,757	108,162	\$139,775.50	\$131.77	
Kamloop rainbow trout (KT)	5.9	35,940	3,099	\$4,475.67	\$124.53	
Kamloop rainbow trout (KT)	1.9	731,456	2,247	\$29,537.94	\$40.38	
Hayspur rainbow trout (T9)	1.8	134,189	347	\$5,116.52	\$38.13	
Totals	5.6	2,184,479	168,072	\$214,650.58	\$98.26	
TOTAL FISH PRODUCED						
Planted in 2007		3,790,778	406,727			
On Hand December 31, 2007		2,184,479	168,072			
Totals		5,975,257	574,799	\$652,067.00	\$109.13	
From other hatcheries		757,728	6,495			
On Hand January 1, 2007		1,817,704	85,977			
TOTAL GAINED		3,399,825	482,327			

Appendix 2. Fish distribution from Hagerman Fish Hatchery, 2007.

Percent of number planted by Region

	Number	Pounds	1	2	3	4	5	6	7
Catchables >6 inches									
Rainbow trout, yellow	10,367	11,390				100.0			
Kamloops rainbow trout TT	598,317	212,625	-	20.0	19.8	35.8	17.5	6.9	-
Kamloops rainbow trout KT	65,238	38,770		-	-	62.4	37.6	-	
Hayspur rainbow trout T9	75,920	22,000		21.7	5.1	58.0	15.2		
Steelhead SA	16,430	6,200	-	-	100.0	-	-	-	-
Coho salmon	213,510	23,200			100.0				
Tiger muskie	6,581	2,642	15.4	2.3	66.4	7.6	-	-	8.3
Subtotal	986,363	316,827	0.1	13.8	36.2	31.4	14.3	4.2	0.06
Appendix 2 Continued									
Fingerlings <6 inches									
Hayspur rainbow trout (T9)	823,290	24,450	-	-	24.2	60.1	15.7	-	-
Kamloop rainbow trout (KT)	1,698,800	57,400	-	-	14.2	31.8	34.7	19.2	-
Coho salmon	282,325	8,050			100.0	-	-	-	
Subtotal	2,804,415	89,900	0.0	0.0	25.8	36.9	25.7	11.6	0.01
TOTAL	3,790,778	406,727	0.03	3.6	28.5	35.5	22.7	9.7	0.014

Appendix 3. Fish survival from eyed-egg to stocking, 2007.

Species/Strain	Number Stocked	Eggs and Fry Received	Percent Survival
Rainbow trout, Yellow	10,367	20,280	51.11
Rainbow trout, Hayspur (T9)	899,210	1,746,653	51.48
Kamloop, Troutlodge (T1)	598,317	1,454,710	41.13
Kamloop, Hayspur (KT)	1,764,038	2,529,517	69.74
Steelhead (SA)	16,430	179,251	9.17
Coho salmon	495,835	691,360	71.72
Tiger muskie	6,581	8,526	77.19
TOTAL	3,790,778	6,630,297	57.17

Appendix 4. Number of eyed-eggs and fry received, species, and source for fish produced in 2007.

Species/Strain	Eggs/Fry received		
	For Fish Planted	For fish on hand December 31, 2007	Source
Received as eggs			
Rainbow/Yellow (YR)	20,280	30,005Clear	Lakes (ITP)
Rainbow/Kamloop (KT)	2,207,649	2,015,506IDFG	Hayspur
Rainbow/Hayspur (T9)	1,310,793	699,362IDFG	Hayspur
Rainbow/sterile Troutlodge (TT)	1,454,710		1,255,988Troutlodge,
Rainbow/non-sterile Troutlodge (TD)	0		167,900Troutlodge,
Steelhead	179,251	200,000IDFG	Pahsimeroi, Oxbow
Coho Salmon (CO)	691,360		OEagle
Subtotal eggs	5,864,043	4,368,761	
Received as fry			
Rainbow from Magic Valley (T9)	435,860		OIDFG
Kamloop (Hayspur) from Magic Valley (KT)	321,868		OIDFG
Subtotal fry	757,728	0	
TOTAL	6,621,771	4,368,761	

Appendix 5. Fish feed used during 2007 at Hagerman Fish Hatchery.

Size	Source	Pounds	Cost/pound	Cost
Str	Rangen	1,450	\$0.6690	\$970.05
#1	Rangen	7,450	\$0.6690	\$4,984.05
#2	Rangen	25,850	\$0.6690	\$17,293.65
#2 Aquaflor	Rangen	250	\$1.2190	\$304.75
#2 TM	Rangen	1,250	\$0.7070	\$883.75
#3	Rangen	56,150	\$0.4550	\$25,548.25
#3 TM	Rangen	9,150	\$0.7565	\$6,921.97
#3 Aquaflor	Rangen	200	\$0.9670	\$193.40
1/16 EXT450Float	Rangen	6,250	\$0.5605	\$3,503.12
1/16Aquaflor	Rangen	1,200	\$1.1105	\$1,332.60
3/32 in, EXT450Float	Rangen	155,340	\$0.4240	\$65,864.16
3/32 in, TM	Rangen	6,200	\$0.6520	\$4,042.40
118 in, TM	Rangen	2,200	\$0.6520	\$1,434.40
1/8 in. Romet TC	Silvercup	2,000	\$0.3825	\$765.00
5/32 in, EXT450Float	Rangen	322,940	\$0.3890	\$125,623.66
5/32 in, TM	Rangen	3,500	\$0.7020	\$2,457.00
5/32 in, Romet TC	Silvercup	1,900	\$0.3825	\$726.75
5/32 in, Aquaflor	Rangen	5,790	\$0.6800	\$3,937.20
Subtotal		609,070	\$0.4380	\$266,786.17
Freight charges				\$3,045.35
Fuel Surcharge				\$462.89
Total cost				\$270,294.41¹

Appendix 6. Summary of fish marked at Hagerman Fish Hatchery in 2007.

Date Stocked	Species	Water	Number	Pounds	Clip
05/30	TT	Devil's Crk Res	500	208	Floy-tag
06/04	TT	Island Park Res	1,000	417	Floy-tag
06/05	TT	Cascade Res	500	208	Roy-tag
06/06	TT	Big Smokey	250	104	Roy-tag
06/06	TT	Little Smokey	250	104	Roy-tag
07/11	CC	Lake Lowell	9,828	1,489	Ad-clip
Stock in '08	TT	NA	109,885	2,747	CWT
Stock in '08	TD	NA	110,485	3,157	CWT- Blank wire
TOTALS			232,698	8,434	

Appendix 7. Fish stocked by Hagerman Fish Hatchery from other sources, 2007.

Hatchery Stocking	Species	Number	Pounds	Source	Destination
Hagerman	TT,T9	119,139	32,309	American Falls Hatchery (IDFG)	Am. Falls Res., Little Wood R., Blackfoot Res., Chesterfield Res.
Hagerman	T9	451,990	7,700	Grace Fish Hatchery (IDFG)	Island Park Res.
Hagerman	BK	62,000	620	Ashton Fish Hatchery (IDFG)	Hagerman Hatchery
Hagerman	SA	220,415	2,815	Magic Valley Hatchery (IDFG)	Salmon Falls Creek Res.
Hagerman	SS	74	272	College of Southern Idaho (CSI)	Snake R. at Idaho Falls
Hagerman	BN	26,778	6,040	U of ID-Idaho Springs	Billingsley Creek, L. Wood R, Horsethief Res.
Hagerman	RC	64,449	3,300	U of ID-Idaho Springs	Salmon Falls Creek Res.
Hagerman	CC	25,404	3,832	Fish Processors, Buhl, ID	Dog Creek Res., Alexander Res., Carey L.
TOTAL:		970,249	56,888		

IDAHO DEPARTMENT OF FISH AND GAME

ANNUAL REPORT

HAYSPUR FISH HATCHERY

2007

**Bradford W. Dredge
Fish Hatchery Manager II**

**Brian L. Thompson
Fish Hatchery Assistant 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* brood stocks and one Westslope cutthroat *Oncorhynchus clarkii lewisi* broodstock are maintained on station. These are the Hayspur strain rainbow trout, Kamloop 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 (11.6°C), and three pumped artesian wells producing 2.5 CFS at 48°F to 52°F (8.9° C to 11.6°C). 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 KAMLOOP EYED EGG PRODUCTION

The 2007 rainbow trout spawning season was a nine-month project, beginning in August and ending in May with an egg take of 12,121,092 green eggs from 4,093 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 2-year old round pond (experimental), two 3-year old round ponds, and two 4-year old round ponds of Hayspur rainbows and Kamloops rainbows were manipulated. Hayspur rainbow trout triploid eyed egg production totaled 3,100,044 with 1,934 females spawned and overall eye-up was 67.66%. Kamloop triploideyed egg production totaled 4,298,788 with 2,159 females spawned and overall eye-up was 57.02%. All eggs produced, except for broodstock replacement eggs, were pressure shocked for triploidy. Ashton, Cabinet Gorge (Sandpoint), Eagle Fish Health Lab, Hagerman, Hagerman National, Magic Valley, Nampa, Pahsimeroi, 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 equates to \$219,095.30 (Appendix 2).

In 2007, 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 seventh year of full production using the heat or pressure shock method refined during the previous eight years of research.

Washington State University performed induction rate sampling on thirteen randomly selected lots of eggs reared at the Eagle Fish Health lab. After the eggs had hatched and fish reached approximately three inches in length, blood samples were sent to the lab. A total of 418 individuals were sampled. Sample results indicated that 412 out of 418 were verified as being triploid. The overall induction rate was 98.56%, down from 99.4% the previous year.

WESTSLOPE CUTTHROAT TROUT EYED EGG PRODUCTION

The Westslope cutthroat trout program at HSFH was discontinued due to rearing and disease issues. The fish were destroyed and hauled to the public landfill during the month of February.

FISH LIBERATIONS

Fish requested for the Big Wood and Little Wood drainages were reared at Grace Hatchery and American Falls Hatchery and transported to HSFH for redistribution by HSFH personnel. Semi-tank and trailer loads were hauled as needed to complete HSFH 2007 plant requests. A total of 51 stocking trips into the Big Wood and Little Wood drainages were stocked with 29,150 catchable sized rainbow trout (Appendix 3). In addition, a total of 5,211 surplus diploid rainbow trout fingerlings were stocked into Lava Lake. A total of 115 triploid adults were released into Lake Creek Lake, Penny Lake, and the Heagle Park Pond. Gaver's Lagoon received a total of 3,216 surplus broodstock. In all, 37,692 fish or 19,918 pounds of 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).

HATCHERY IMPROVEMENTS AND NEEDS

Improvements to the HSFH during 2007 included:

- Large willow trees were trimmed.
- All of the residences and the dormitory had the carpets cleaned twice during the year.
- 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 incubation building to comply with State of Idaho safety requests.
- All of the hatchery fire extinguishers were serviced.
- A new wood stove was purchased and installed in Residence #3 and new carpet was installed in the hallway and living room area.
- The chimney flues were cleaned in all the residences during the fall.
- Both bathrooms in Residence #2 were remodeled. In addition, a new Trane furnace was installed.
- The laundry room in Residence #1 had the washer and dryer wall dry walled and additional insulation installed.
- All 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.
- 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 were isolated and outfitted with new spawning gear and crowd racks. The catwalks were extended the full length of the pond. In addition, the wader room was modified to accommodate additional waders.
- The park restrooms in the campground were pumped and serviced.
- Region 4 personnel sprayed the grounds area for noxious weeds.
- Minor repairs were made to the Residence #2 screen doors.
- New hatchery signs were purchased and installed at the facility.
- Ten new picnic tables were purchased, constructed, and placed around the facility.
- The hatchery building had new exterior siding installed and new windows installed.
- The hatchery entrance road was chip sealed and repaired.

Needs of the HSFH are:

- Replace the roof on Residence #2.
- 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 Gaver's Lagoon outlet pipe.
- Replace the linoleum in the bathrooms, kitchen, and laundry room of Residence #1, and replace the linoleum in the kitchen, dining room, and laundry room of Residence #2.

BROODSTOCK MANAGEMENT

The Hayspur rainbow trout (R9) replacement population is perpetuated by using year-class crosses. Using one-male with one-female, 163 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's Kamloop rainbow (K1) broodstock replacement population is perpetuated by using year-class crosses. Using one-male with one-female, 146 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 2007, three R9 and one 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 10 families segregated from one another. Each plastic tray was capable of holding 1 family. Trays were placed in Heath stacks and eggs were added for isolation incubation. Similar results occurred regardless of the method used.

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

On January 24th and January 31st Tom Frew received 2,250-eyed eggs and 400-eyed eggs for TIC programs, the Hagerman State Fish Hatchery received 500-eyed eggs on January 16th.

Brian and Brad attended a Fish Request meeting on February 15th

Bob and Brad attended "Current and Emerging Pathogens of Fishes in the Pacific Northwest" on the 20th of February.

Keith Johnson, Eagle Fish Health Lab, received 2,000-eyed eggs on the 20th of February for research purposes.

The Hayspur staff collected milt for use at Henry's Lake Fish Hatchery on March 1st and on March 5th. The milt was used to generate cutthroat/rainbow hybrids via delayed fertilization. Milt was sent again on April 11^m for Salmon Falls Creek Reservoir hybrids.

Bob Becker attended NEOT this year. In addition, Bob attended a Fish Health class in Bozeman the week of April 16^h

The State of Idaho facility inspection was performed on the 20th of June and the boiler inspection was completed on the 23rd of July.

John Cassinelli was shipped 1,500 diploid Hayspur rainbow trout eggs on the 5th of May.

Brian and Bob attended ISIS in May.

Brian and Brad attended the Hatchery Managers meeting in June.

Brad attended Supervision III and IV in Blackfoot on October 23-25, 2007.

ACKNOWLEDGMENTS

In 2006, Hayspur Hatchery benefited from the capable assistance of Biological Aides Richard Park, Celina Moreno, John Curtner, and Beau Gunter. The HSFH would like to thank IDFG employees who helped out during the spawning season: Ken Felty from Hagerman, Greg Sullivan and Wade Symons from Magic Valley. Special thanks go to Gary Ady, Bob Belveal, and Ken Taylor for transporting catchables to HSFH from Grace and American Falls during 2007.

APPENDICES

Appendix 1. Egg production summary of Hayspur Fish Hatchery, 2007.

Species	'Eggs Taken	"Eggs Shipped
T9's	4,582,000	3,100, 044
KT's	7,539,092	4,298,788
Totals	12,121,092	7,824,832

¹Total is displaced (gram weight) of both good and bad eggs taken in 2007.

^bTotal is displaced (gram weight) of eyed eggs available for shipping in 2007.

Appendix 2. Eyed egg shipment summary from Hayspur Fish Hatchery, 2007.

Hatchery	^a Species	Total eggs shipped	^b Estimated value
American Falls	T9	84,290	\$2,360.12
	KT	50,774	\$1,421.67
Ashton	T9	150,857	\$4,224.00
Hagerman	T9	1,956,569	\$54,783.93
	KT	2,765,644	\$77,438.03
Magic Valley	T9	322,201	\$9,021.63
	KT	707,305	\$19,804.54
Pahsimeroi	T9	202,000	\$5,656.00
	KT	224,000	\$6,272.00
Nampa	T9	527,010	\$14,756.28
	KT	686,769	\$19,229.53
Sandpoint	T9	18,858	\$528.02
Hagerman NFH	T9	40,259	\$1,127.25
	KT	23,296	\$652.29
Tucannon NFH	KT	65,000	\$1,820.00
Shipped		7,824,832	\$219,095.30
'Other	Thrown out	1,095,081	\$30,662.27
	Eagle lab	600	\$16.80
	TIC		\$0.00
Total		8,920,513	\$249,757.56

^aT9=sterile R9, KT=sterile Kamloops

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

'Eggs used for trout in the classroom programs, exchanged for laboratory work, and discarded.

Appendix 3. Hayspur Fish Hatchery stocking summary, 2007.

Fish size	Number of fish	Pounds of fish	Fish per pound
3N Catchables	29,150	11,640	2.50
3N Adults	115	242	0.48
2N Rainbow fingerlings	5,211	193	27.00
2N Broodfish Extras to Gaver	3,216	7,843	0.41
Total	37,692	19,918	

Appendix 4. Hayspur Fish Hatchery Feed Summary, 2007

Rangens			
Date	Size	Amount /pounds	Cost
4/20/2007	1/4 in. Brood pellet	10,320	\$4,365.25
6/15/2007	1/4 in. Brood pellet	12,320	\$5,181.60
Totals		22,640	\$9,546.85

Rangens			
	Size	Amount /pounds	Cost
	Trout/Salmon Starter #0	100	\$67.00
	Trout/Salmon Starter #1	100	\$67.00
	Trout/Salmon Starter #2	450	\$270.00
	Trout Grower #4	1500	\$630.00
	Extruded 450 1/8"	3000	\$1,200.00
	Extruded 450 3/32"	800	\$320.00
	Extruded 450 5/32"	1000	\$400.00
	TM Medicated 5/32"	5600	\$3,931.20
Totals		12,550	\$6,885.20

Appendix 5. Hayspur Fish Hatchery Tour Group Summary, 2007.

Month	Name of Tour Group	Grade/Age	Number in
April	Brooke Dane-Carey	preschool	7
May	Blaine County Soil & Water Conservation	5th	50
	Wood River Archery Club		40
	U of I Extension Camp		150
	Carey School	5th	12
June	Blaine County Sheriff - PAL	6-13 yrs.	30
	Free Fishing Day Event	5-15 yrs.	50
	Steve Frey - Church Group	5-15 yrs.	20
	Gary Fornshell - U of I		50
	Katie Notingham-Carey, Idaho	3-6 yrs.	5
	Mountain Adventures of Sun Valley		10
	Adam Forth - Cub Scouts and Boys Scouts		120
July	Blaine County Sheriff - PAL		20
	Family Camp Group		20
September	Women in Nature	18-70	70
October	Minico High School	15-18	50
Jan - Dec	General Visitors/Campers		3,600

IDAHO DEPARTMENT OF FISH AND GAME

2007 ANNUAL RESIDENT REPORT

HENRYS LAKE HATCHERY

Damon Keen, Regional Fisheries Biologist

ABSTRACT

The 2007 spawning operations at Henrys Lake produced 1,831,452-eyed Yellowstone cutthroat trout eggs and 551,613-eyed hybrid trout eggs. Yellowstone cutthroat trout in the Hatchery Creek run showed a mean length of 451 mm and the hybrid trout mean was 562 mm. The percentages of adipose fin clipped Yellowstone cutthroat returning to the ladder were recorded daily throughout the 2007 spawning run and ranged from 2.6% to 37.0%.

Henrys lake production hybrids were evaluated for sterility induction success. Induction for 2007 was 98% successful for the triploid condition.

Pathology reports for viral or bacterial presence did not detect any positive results from any family of Yellowstone cutthroat or hybrid eggs.

Riparian fences, fish diversion structures, and fish screens were maintained on the tributaries and other fragile areas surrounding Henrys Lake. Tributaries maintained included Howard Creek, Targhee Creek, Duck Creek, and Timber Creek. Fencing was also maintained on the south and north side of the county boat dock. Additionally, the Teton Valley fencing projects have been reassigned to this facility.

Fishery management activities included a major creel survey on Island Park Reservoir and a minor creel survey on Henrys Lake. Catch rates on Island Park were estimated at .50 fish per hour with an estimated 45,114 hours of effort. An estimated 15,340 fish were harvested. From May 24th through October 31st, a minor creel survey was conducted on Henrys Lake to monitor compliance and spot check only. A more intensive survey was conducted during November to evaluate the season extension (2nd year). Targhee creek was monitored for adult spawning activity from April-July.

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 in 2007.

Habitat improvement projects were identified and evaluated at several locations around the Upper Snake region including: Henrys Lake area, Henrys Fork river, Big Lost drainage, and Willow creek.

Author: Damon Keen

INTRODUCTION

Henrys 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 off set 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 c/arkii*, sterile rainbow trout *Oncorhynchus mykiss* x Yellowstone cutthroat trout *Oncorhynchus c/arkii* 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 Henrys 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 Regional Fisheries Biologist, one 5-month temporary employee, and one 3-month temporary employee.

METHODS

Spawning Operation

The Hatchery Creek fish ladder was opened for the spring run on February 26th and remained in operation until May 10th. 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 cutthroats 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 Henrys Lake run and rainbow trout milt obtained from Hayspur Hatchery. The hybrid contribution was sterilized by inducing a triploid condition using pressure to shock 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 fry were taken at the Mackay hatchery and sent to the Eagle lab to test induction rates of sterilization. Samples were taken from 50 fish. Hybrid production eggs were shipped to Mackay, Ashton, and the U of I facility at Hageman for hatching, rearing, and subsequent release back into Henrys Lake and other waters. Yellowstone cutthroat eggs were shipped to Mackay for hatching, rearing, and release back into Henrys 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 Eagle Laboratory.

Riparian Fencing and Fish Screening

Electric fencing has been in place at Henrys Lake since the early 1990's. Fencing was stretched and solar panels, batteries, and connections were installed during May 2007 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. Repairs were made as needed.

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 2007.

Creel Surveys

From January 16th through December 31st, a creel survey was conducted on Island Park Reservoir. A roving creel design was implemented. Anglers were identified and randomly interviewed. 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. Harvested fish were measured and lengths and species recorded. Time of interview was also recorded. Effort counts were initiated at random times to evaluate total hours fished.

A minor creel survey was conducted on Henrys Lake from May 24th through October 31st. Anglers were interviewed on a spot check basis to monitor compliance and spot check only. A more intensive survey was initiated during the month of November to evaluate the new season extension (second year) 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. Harvested fish were measured and lengths and species recorded. Time of interview was also recorded.

Adult Spawner Counts

An adult spawner count was initiated on Targhee creek, a tributary of Henrys Lake, in 2007. The tributary was walked in its entirety along the known spawning habitat and evaluated using physical observation with the help of polarized sunglasses. Numbers and species were recorded.

Water Quality

Winter (December 2006, January, February, and March 2007) 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.

Habitat Improvement Projects

As part of the job function at the Henrys Lake facility during 2007, fish habitat improvement projects were identified prioritized, and funding opportunities sought to complete said projects. This job function was in its infancy in 2007. Further details, accomplishments, and specifics are available in the Upper Snake Regional report

RESULTS AND DISCUSSION

Spawning Operation

4,027 Yellowstone cutthroat trout ascended the spawning ladder between February 26 and May 10th, with 1,963 males (Figure 1) and 2,064 females (Figure 2) enumerated. Yellowstone cutthroat trout male and female total length averaged 452 and 450 mm (Figure 5), respectively. Combined mean Yellowstone cutthroat trout length was 451 mm.

374 hybrid trout ascended the spawning ladder between February 22 and May 10th, with 214 males (Figure 3) and 160 females (Figure 4) enumerated. Hybrid trout males and females averaged 545 mm and 579 mm (Figure 6), respectively. Combined mean hybrid trout length was 562 mm.

Species/sex ratio at the Henrys Lake trap during 2007 included: YCT females 46%, YCT males 45%, hybrid males 5%, and hybrid females 4% (Figure 7).

Historical species/sex ratio at Henrys Lake for the years 2001-2007 was 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 and lack of spawning behavior exhibited. Creel catch rates for hybrids are still near objective. Likewise, gill net evaluations indicate good numbers of hybrids present in the lake. This indicates that the numbers of hybrids returning to the ladder has little correlation to overall lake population.

Yellowstone cutthroat green eggs totaled 2,990,180 from 1154 females for a mean fecundity of 2,591 eggs per female (Table 1). Eyed Yellowstone cutthroat eggs totaled 1,831,452 for an overall eye-up rate of 61.2% (Table 1). YCT eye-up varied throughout the spawn season from a low of 27.5% in Lot 10 to a high of 92.1% in Lot 4 (Figure 9). Eye-up was significantly reduced in Lot 10 because 10 trays were destroyed as the egg request had been met. Likewise, Lots 11 and 13 were also destroyed for this same reason. All of the eyed Yellowstone cutthroat eggs were shipped to the Mackay facility where they were hatched, reared, and subsequently released back into Henrys Lake in the fall of 2007 (Table 3). A total of ten spawn days during this year's spring run were devoted to Yellowstone cutthroat spawning.

Hybrid trout green eggs totaled 998,450 from 379 females for a mean fecundity of 2,650 eggs per female (Table 2). Eyed hybrid trout eggs totaled 551,613 for an overall eye-up rate of 55.2 % (Table 2). Hybrid eye-up varied throughout the spawn season from a low of 52.6% in Lot 12 (fertile) to a high of 58.7% in Lot 1 (sterile) (Figure 10). 317,742 of the hybrid eggs were shipped to Mackay (Table 3) for hatching, rearing, and subsequent release into Henrys Lake and 40,323 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, 161,290 fertile hybrid eggs and 32,258 sterile 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 98% (49/50) 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 and during gill net evaluations. However, until 2006, 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. Over the last four years, adipose clips have also been recorded at the ladder. Results of this year's 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 regional report.

Total historical run numbers (2001-2007) of both Yellowstone cutthroat and hybrids were recorded to evaluate hatchery run trends (Figure 12).

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

Bacterial disease sampling taken during spawning from ovarian fluid was negative for all Lots and trays. 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, with the exception of Duck creek. A combination of dry conditions and marginal fencing led to occasional damage by cattle grazing on riparian borders. Fish screens functioned well on Targhee and Howard creeks. However, the Duck creek screens exhibit their age and will need replacement soon.

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 hardened livestock water areas, as well as 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 1990's and early 2000's, fry were planted in the major tributaries of Henrys. Due to concerns of 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.

Adult counts on Targhee creek noted 17 adult fish above the newly constructed bridge on highway 87, with the last adult again sighted near the East Fork tributary. Fewer adults were recorded above the highway 87 bridge than last year. A total of 45 adult fish were enumerated from the mouth of Targhee creek to the highway 87 bridge. Marginal sightability and poor runoff probably contributed to fewer numbers sighted. A weir trap might provide a better estimate of adult passage due to the noted sightability impairments.

Creel Surveys Island Park

From January 19th through December 31st, a creel survey was conducted on Island Park Reservoir. It has been several years since a creel survey was last completed on this body of water. A roving creel design was implemented to collect angler catch data.

An estimated 45,116 hours of angling effort were recorded during the creel survey. Total catch rates were estimated at .50 fish per hour, with a harvest rate of .34 fish per hour. 32% of the fish caught were released. An estimated 22,559 fish were caught during the survey period, with 7,219 released and 15,340 harvested.

Catch compositions at Island Park were estimated at 97.8% rainbow, 1.55% kokanee, and .65% brook trout. Mean harvest sizes were 428 mm for rainbow, 454 mm for kokanee, and 270 mm for brook trout. 15.3% of the harvested rainbows exceeded 500 mm and 16.6% of the kokanee exceeded 500 mm.

Methods of fishing were estimated at 78.2% boating, 15.6% bank, 3.5% ice angling, and 2.8% tube anglers. Terminal tackle usage was estimated at 66.6% bait, 17.2% lure, 11.9% fly, and 4.3% combination.

Anecdotal reports from anglers prior to 2007, suggested fishing had been poor on Island Park Reservoir in recent years. The 2007 creel survey suggests that although catch rates for kokanee continues to be low, angling for rainbows has rebounded and catch rates during this survey were good for this species. Additionally, the percentage of catch exceeding 500 mm for rainbows indicated an excellent fishery for large fish. Island Park Reservoir planting numbers were increased in 2007 and given good survival of; the fishery should provide good angling in the near future.

Henrys Lake

From May 24th through October 31st, a minor creel survey was conducted on Henrys Lake. The creel survey was conducted only to spot check and monitor compliance during that period. However, an intensive survey was conducted during November to evaluate the social and biological impacts of the extended season.

The November creel survey on Henrys Lake was separated into two intervals to evaluate the data during open water fishing and during the ice fishing interval. The open water fishery prevailed November 1st through November 22^d. An estimated 5,013 hours of effort were calculated during this period, with an overall catch rate of .68 fish per hour. The harvest rate was estimated at .18 fish per hour. The estimated total catch during this open water period was 3,399 fish with 887 of those harvested. During the ice fishing interval (November 23rd-November 30th), an estimated 2,650 hours of effort were noted. The overall catch rate was 1.28 fish per hour and the harvest rate was .17 fish per hour. An estimated 3,393 fish were caught during this period with 451 of those fish harvested. The November evaluation also estimated the catch composition at 64.7% hybrids, 29.9% Yellowstone cutthroat, and 5.4% brook trout.

Upon analysis, it was determined that the extended season (through November) did not have a biological impact on the fish population during either the 2006 season or the 2007 season. The extended season allowed for an additional angling opportunity, including a period

for ice angling. Anglers participating during the November extension were supportive of the additional opportunity and were pleased with the results. Numerous comments of high angler satisfaction were noted.

Mean harvest size estimates were determined for the entire angling season on Henrys Lake. The mean size estimate for hybrids was 506mm, Yellowstone cutthroat 456mm, and brook trout 457mm. 53.4% of the hybrids recorded exceeded 500mm in length and 35.6% of the Yellowstone cutthroat exceeded 500mm.

The overall catch rate slowed during 2007 relative to 2005-2006 seasons, with the exception of the fall (October-November). Although gill net catch rates during the spring of 2007 were excellent and additional population data indicated good numbers of fish present in the lake, other environmental factors could have contributed to a lower than expected catch rate during the summer. As with all fisheries, factors including: water temperature, runoff, lake level, and ice out timing factor into overall catch rates. Given the continued strong population estimates, improved environmental factors should improve catch rates.

Water Quality

Oxygen profiles for December 2006-February 2007 were recorded for the five sites (Pittsburgh creek, County boat dock, Wild Rose, the Outlet, and the Hatchery). Total oxygen diminished from 49.2 g/m² to 41.45 g/m² at the Pittsburgh site, 37.8 g/m² to 39.8 g/m² at the County dock, 49.45 g/m² to 40.75 g/m² at the Wild Rose site, 28.15 g/m² to 27.2 g/m² at the Outlet site, and 49.05 g/m² to 41.2 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 2006-2007 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 dissolved 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. Over thirty thousand dollars was pledged this year alone to improve habitat, purchase fishery equipment, and to improve fish passage for natural production benefits. Without the foundations support, many improvements would not happen.

The Henrys Lake facility remains an important avenue for disseminating information to the public. Hundreds of anglers, 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 IDFG 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. 2007 Henrys Lake Spring Yellowstone Cutthroat Spring Spawning Summary

Spawn Date	Lot Number	Females S.awned	Number of Green Epps	Mean Fecundity	Number Eyed Eggs	Disease Status	Percentage - Eye-up
3/8/2007	3	182	455,000	2500	364,516	Neg.	80.1%
3/12/2007	4	133	337,155	2535	310,484	Neg.	92.1%
3/15/2007	5	133	362,425	2725	306,452	Neg.	84.6%
3/19/2007	6	105	278,250	2650	229,839	Neg.	82.6%
3/22/2007	7	105	278,250	2650	225,806	Neg.	81.2%
3/29/2007	—	105	273,000	2600	221,774	Neg.	81.2%
4/2/2007	9	42	109,200	2600	72,581	Neg.	66.5%
4/5/2007	10	140	364,000	2600	100,000	Neg.	27.5%
4/9/2007	11	104	270,400	2600	0	Neg.	0.0%
4/16/2007	13	105	262,500	2500	0	Neg.	0.0%
TOTALS		1154	2,990,180	2591	1,831,452		61.2%

Table 2. 2007 Henrys Lake Hybrid Spring Spawning Summary

Spawn Date	Lot Number	Females S.awned	Number of Green Eggs	Mean Fecundity	Number Eyed Eggs	Disease Status	Percentage Eye-up
3/1/2007	1 Sterile	142	376,300	2650	220,968	Neg.	58.7%
3/5/2007	2 Sterile	119	315,350	2650	169,355	Neg.	53.7%
4/11/2007	12 Fertile	118	306,800	2600	161,290	Neg.	52.6%
TOTALS		379	998,450	2634	551,613		55.2%

Table 3. 2007 Henrys Lake Egg Shipment Summary

DATE	LOT	STOCK	EGG SIZE	ML	EGGS	TU'S	DESTINATION
3-Apr-07	1	Hybrids	3.1	13,700	220,968	445.5	MACKAY
5-Apr-07	2	Hybrids	3.1	2,500	40,323	418.5	ASHTON
9-Apr-07	2	Hybrids	3.1	6,000	96,774	472.5	MACKAY
9-Apr-07	2	Hybrids	3.1	2,000	32,258	472.5	U of I
9-Apr-07	3	YCT	3.1	22,600	364,516	432.0	MACKAY
13-Apr-07	4	YCT	3.1	19,250	310,484	432	MACKAY
19-Apr-07	5	YCT	3.1	19,000	306,452	472.5	MACKAY
19-Apr-07	6	YCT	3.1	14,250	229,839	418.5	MACKAY
25-Apr-07	7	YCT	3.1	14,000	225,806	459.0	MACKAY
2-May-07	8	YCT	3.1	13,750	221,774	459	MACKAY
2-May-07	9	YCT	3.1	4,500	72,581	405	MACKAY
10-May-07	10	YCT	3.1	6,200	100,000	473	MACKAY
16-May-07	12	Hybrids	3.1	10,000	161,290	473	U of I

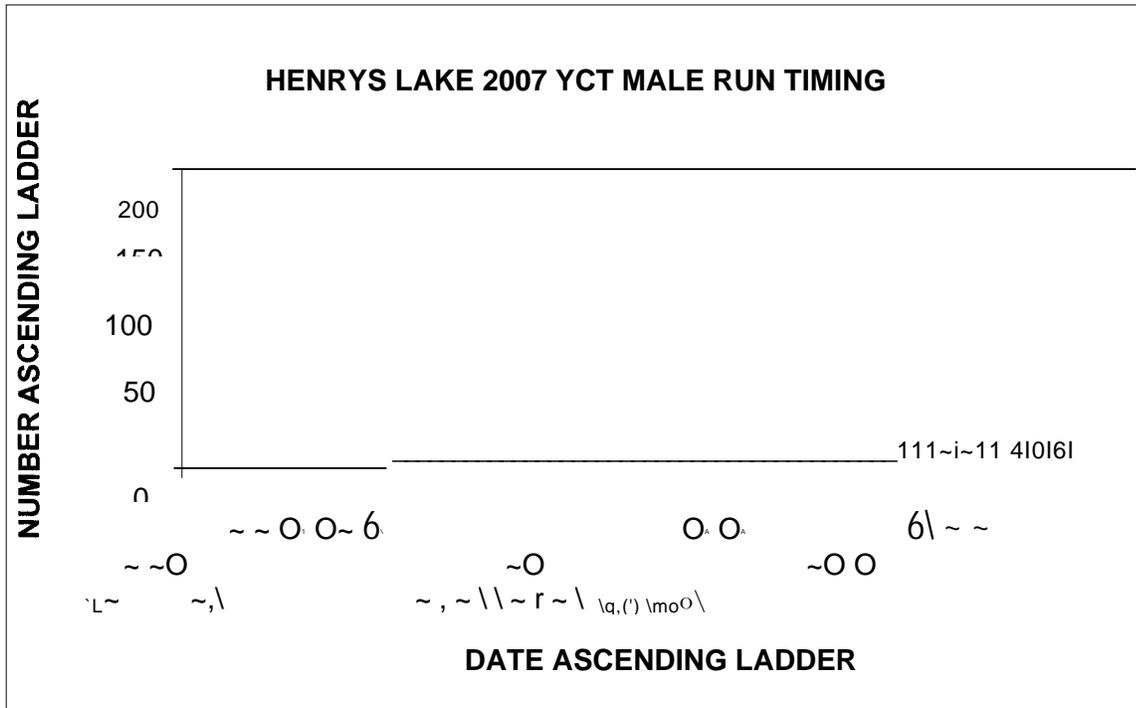
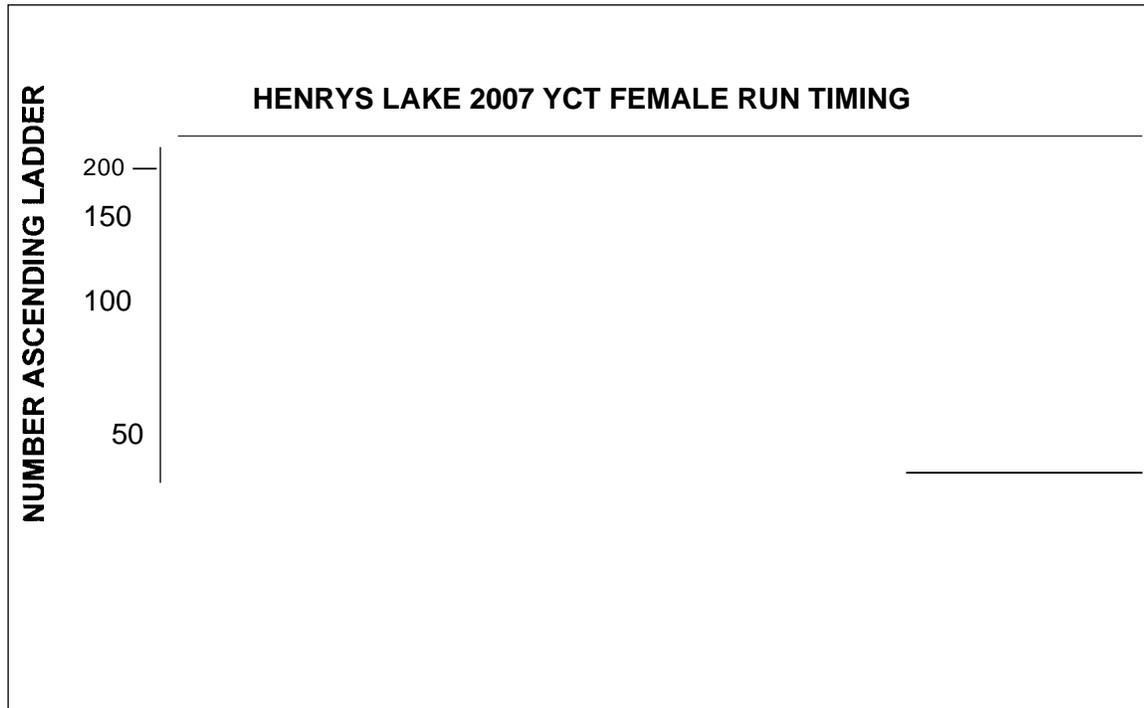


Figure 1. Henrys Lake 2007 Run Timing of Male Yellowstone Cutthroat Trout

Figure 2. Henrys Lake 2007 Run Timing of Female Yellowstone Cutthroat Trout



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Figure 3. Henrys Lake 2007 Run Timing of Male Hybrid Trout

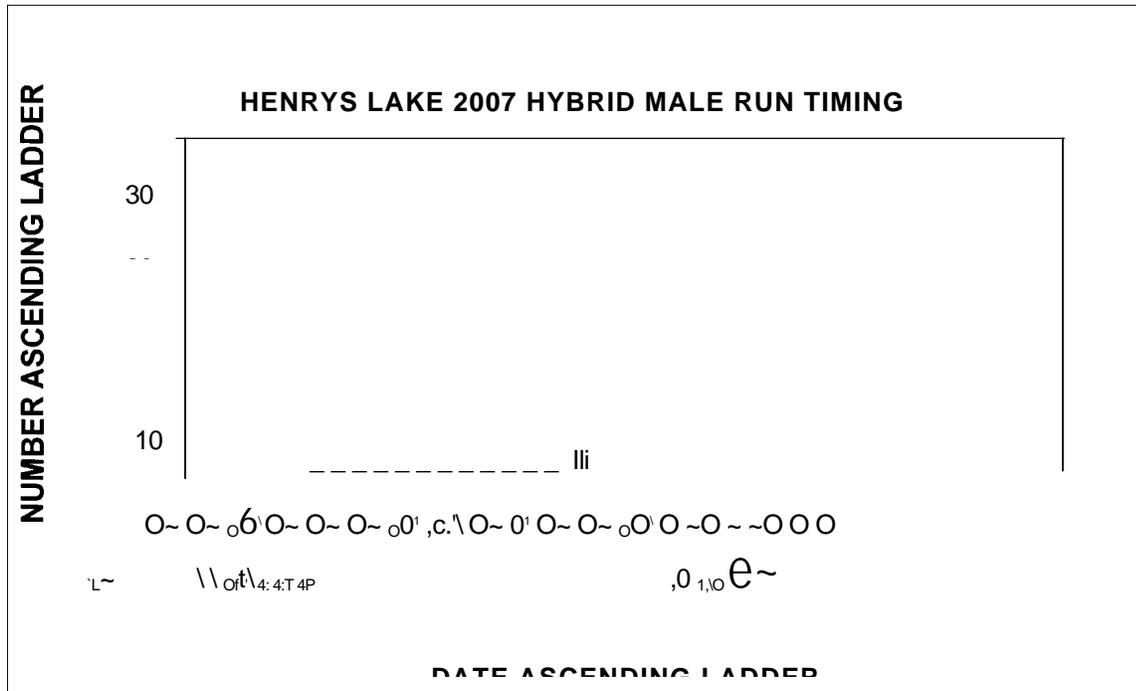


Figure 4. Henrys Lake 2007 Run Timing of Female Hybrid Trout

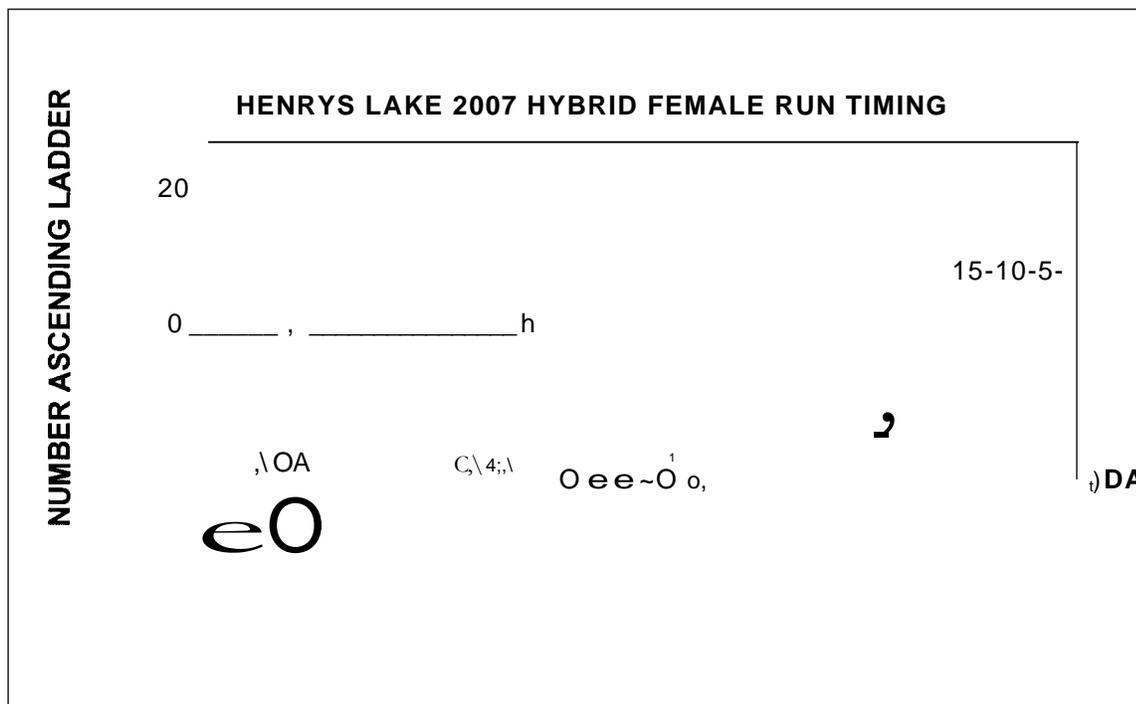


Figure 5. Henrys Lake 2007 Length Frequencies of YCT Spawning Run

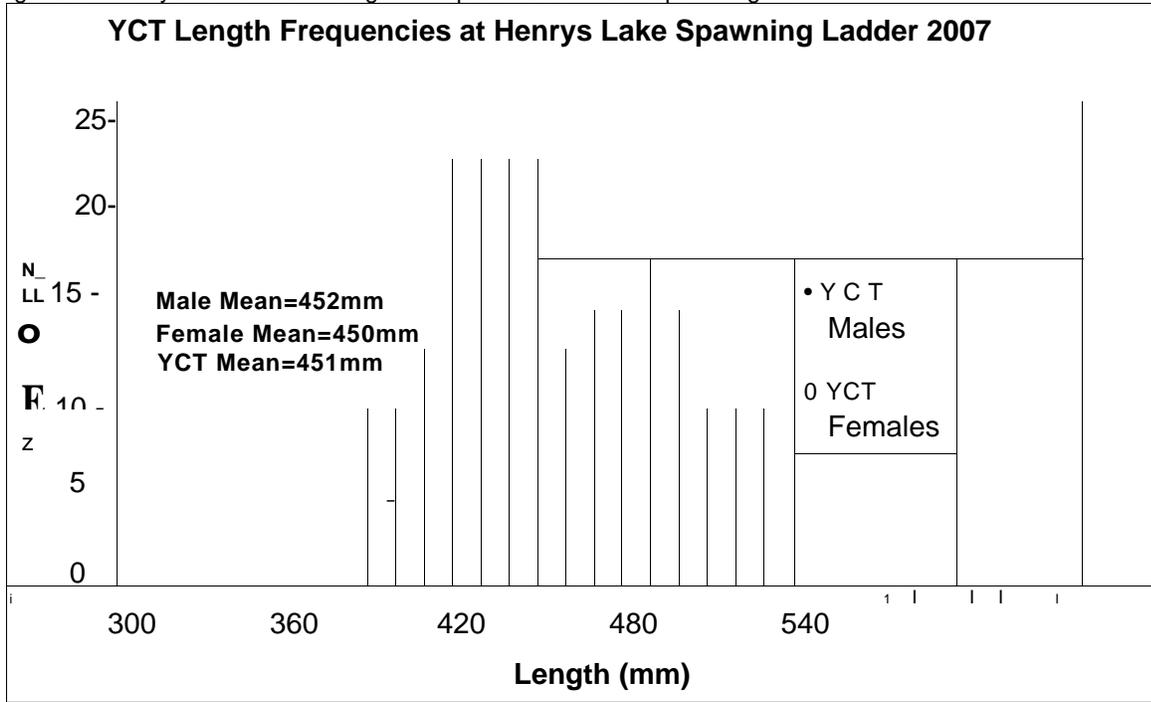


Figure 6. Henrys Lake 2007 Length Frequencies of Hybrid Trout Run

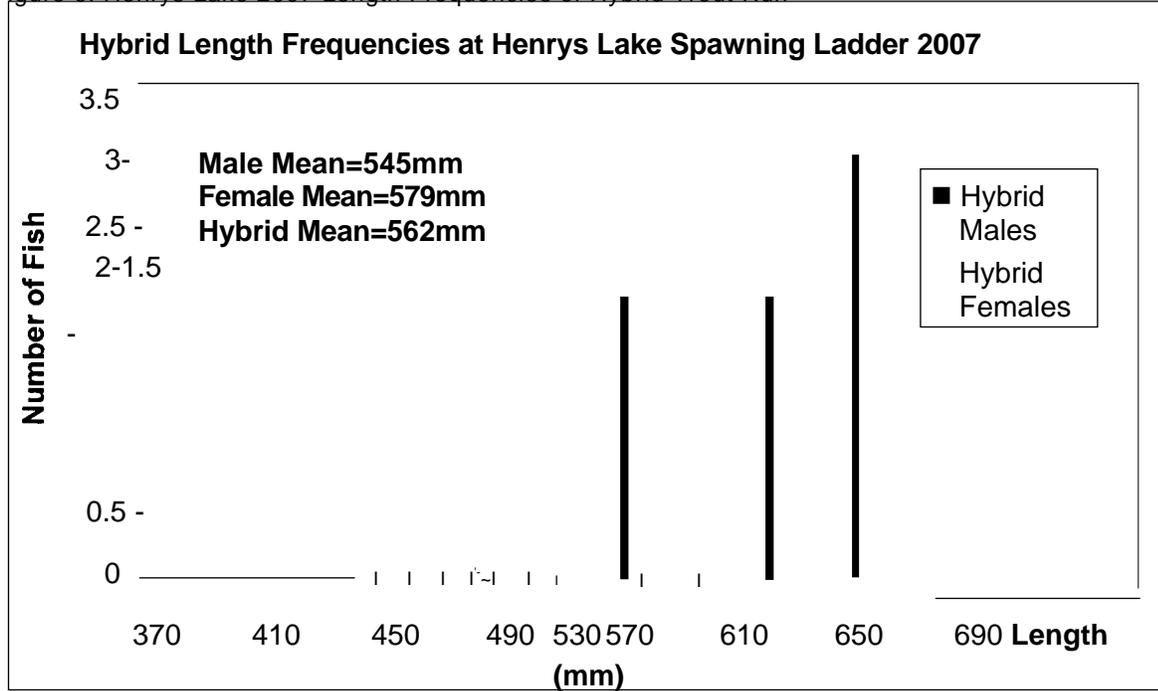


Figure 7. Henrys Lake Trap Species/Sex Ratio Composition 2007

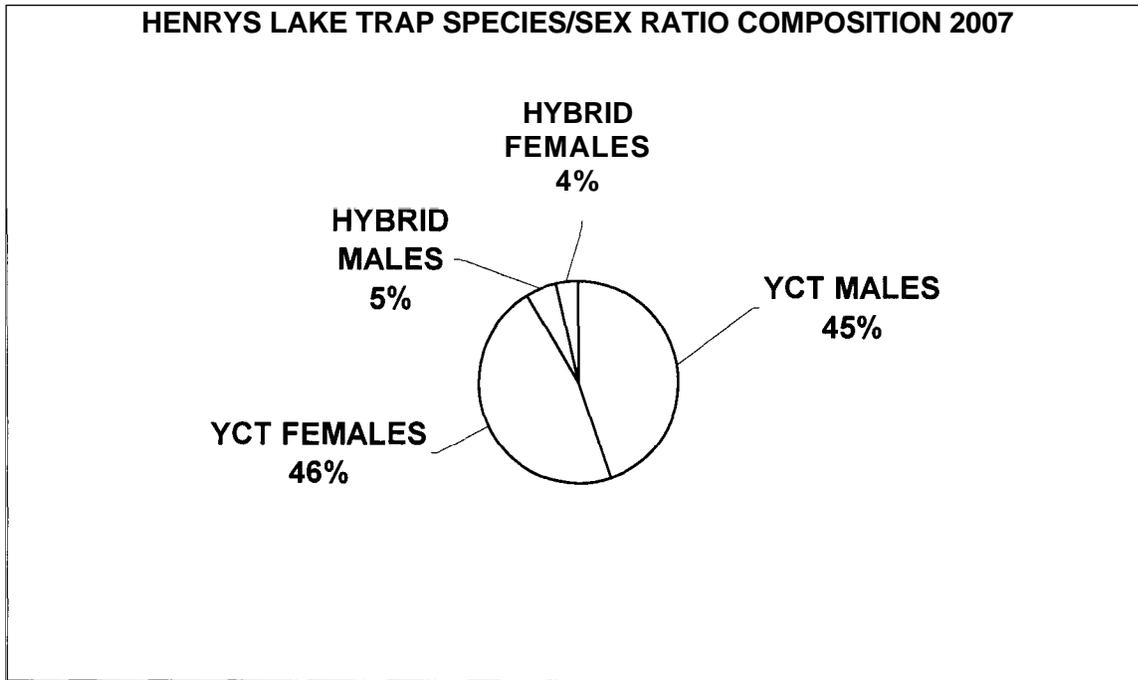


Figure 8. Henrys Lake Trap Historical Species/Sex Ratio Composition 2001-2007

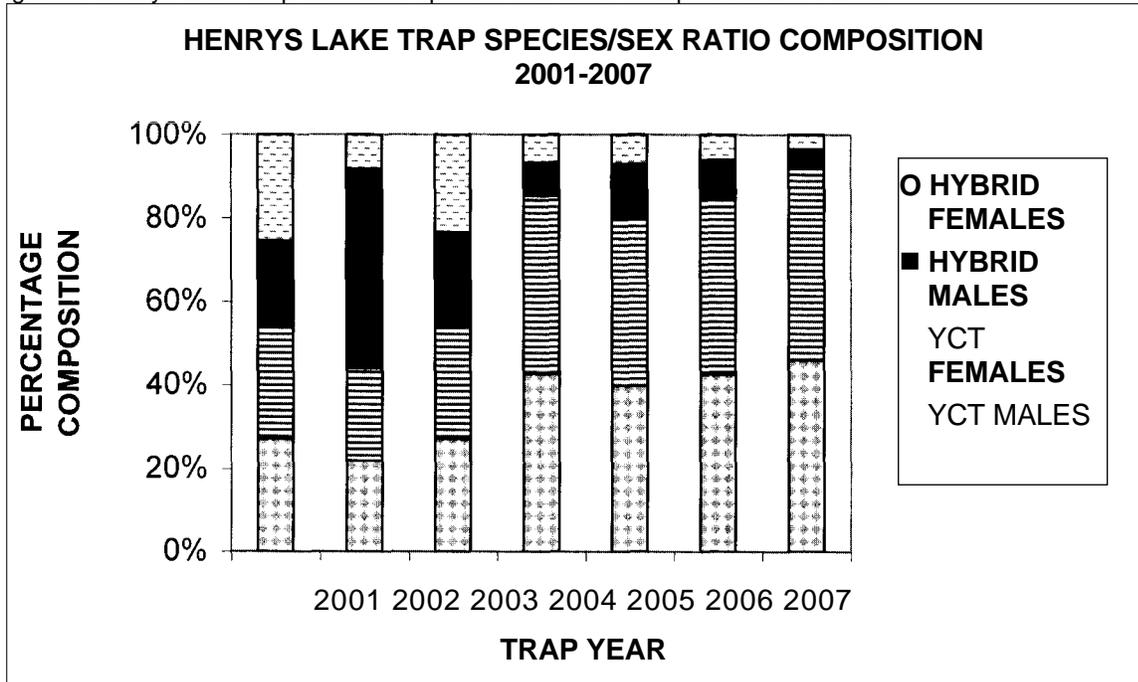


Figure 9. Henrys Lake YCT Eye-Up Percentages By Lot Number

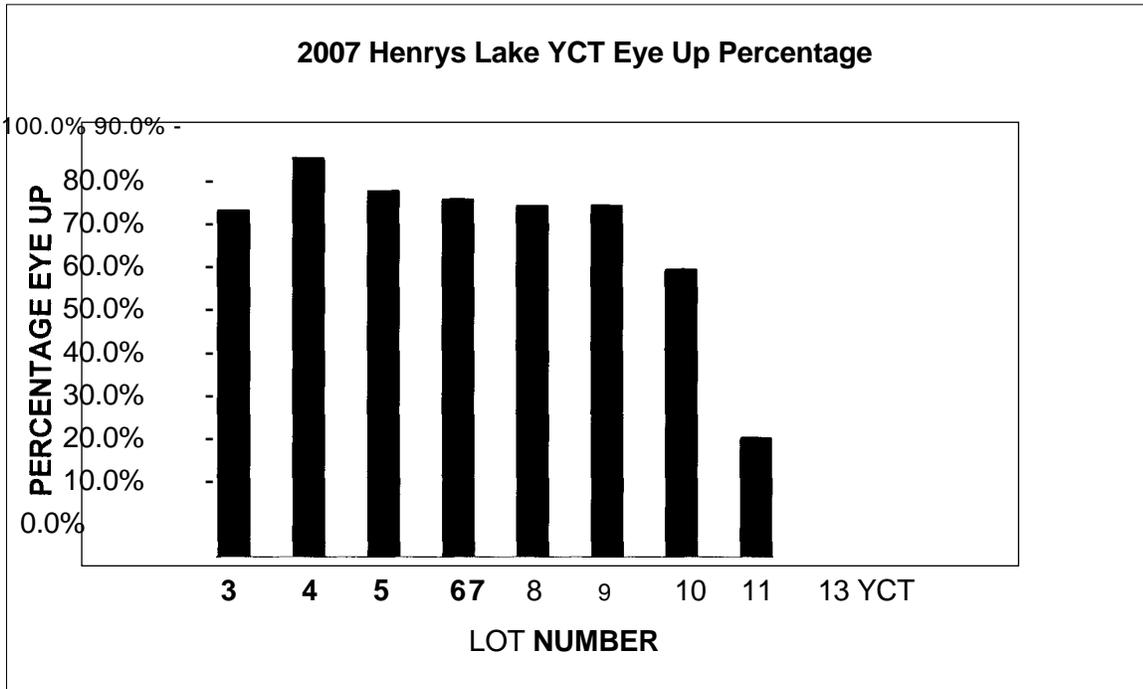


Figure 10. Henrys Lake Hybrid Eye-Up Percentages by Lot Number

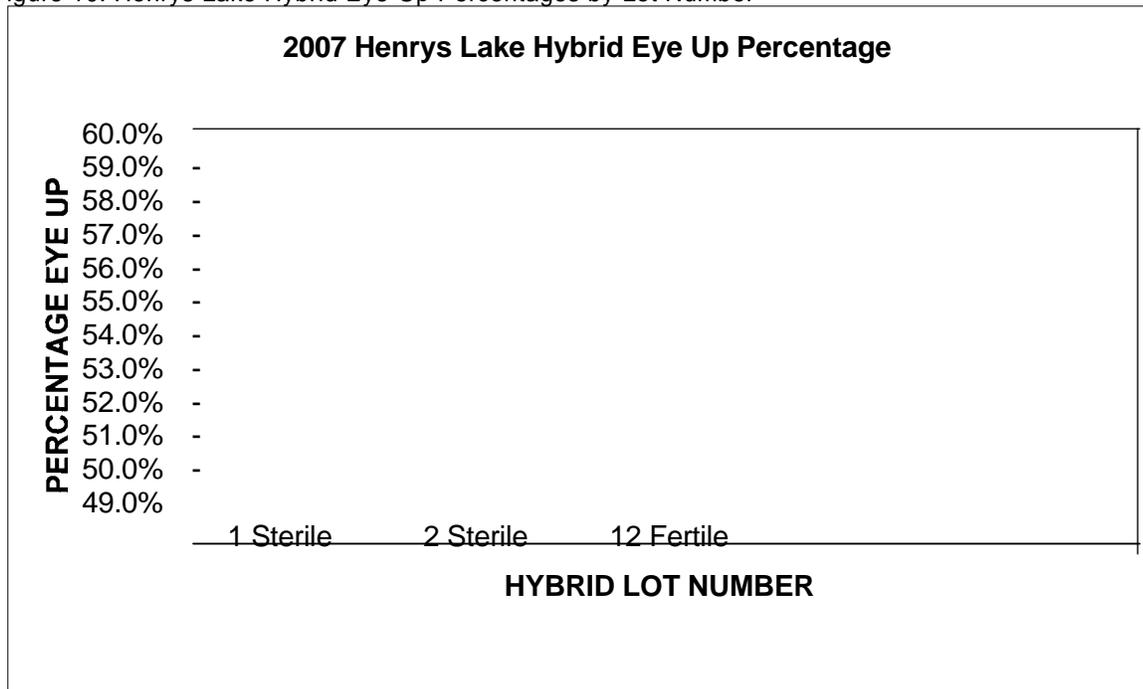


Figure 11. Henrys Lake Adipose Clipped Yellowstone Cutthroat Run Timing

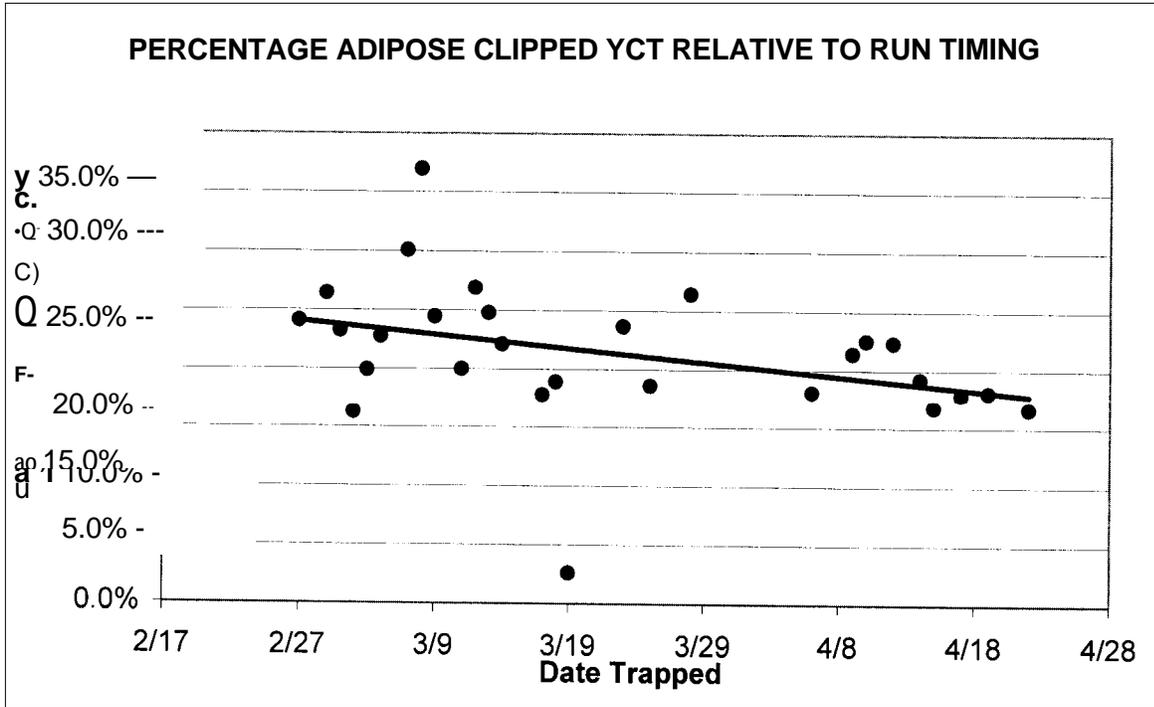
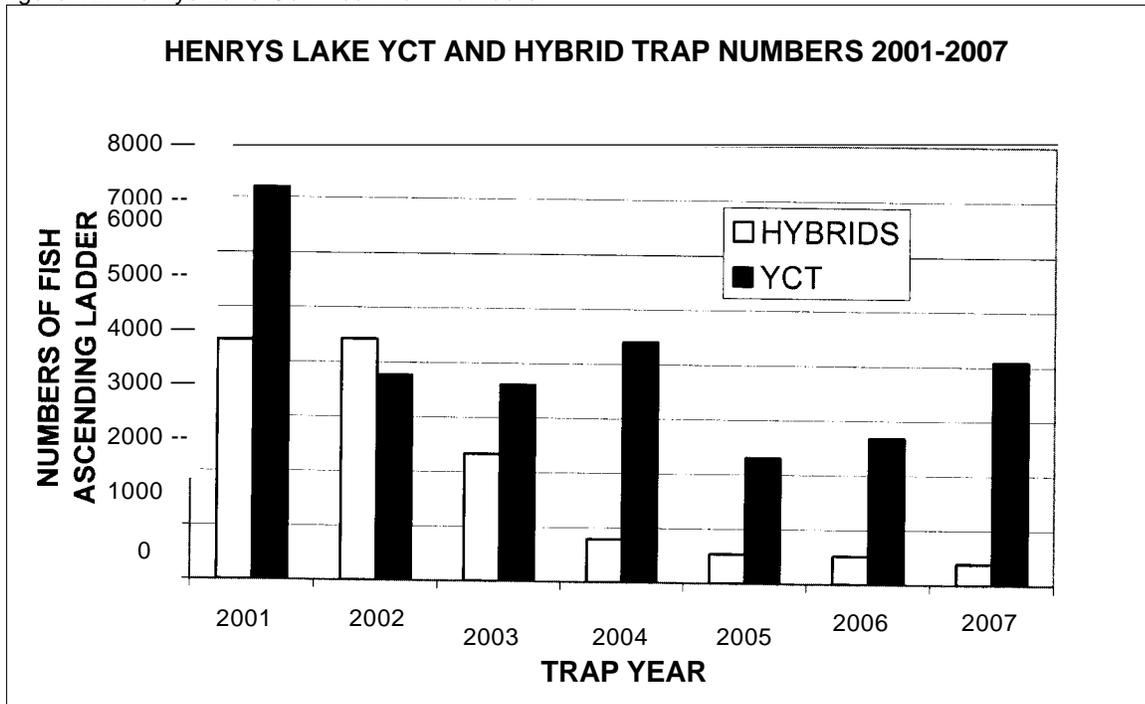


Figure 12. Henrys Lake Cutthroat Run Numbers



IDAHO DEPARTMENT OF FISH AND GAME

2007 ANNUAL RESIDENT HATCHERY REPORT

MACKAY FISH HATCHERY

**Patrick M Moore,
Fish Hatchery Manager I**

**Robert M. Hoover,
Assistant Fish Hatchery Manager**

**Jason M Jones,
Fish Culturist**

INTRODUCTION

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

The hatchery is staffed with three full-time and two year round part-time Idaho Department of Fish and Game (IDFG) employees. Wages, including benefits, are \$199,416 for all personnel. The operating budget for the fiscal year was \$89,320, the same amount as in 2005-6. This year's fish production included five species and seven strains (Appendix 1).

Rainbow trout (*Oncorhynchus mykiss*)
Troutlodge triploid (Sumner, WA)

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)

Arctic grayling (*Thymallus arcticus*)
Meadow Lake (Dubois, WY)

WATER SUPPLY

The hatchery's water comes from an artesian spring on the hatchery grounds. The spring flows are collected in six distribution boxes that provide water to the raceways and hatchery building. Following the earthquake in 1983 the spring area was 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

- The roof on Residence #3 was repaired after a windstorm damaged the shingles.
- The hatchery received new ¹/₂ ton and 1 ton trucks.
- A private contractor removed vegetation from springs, re-worked the water lines and added new cobble.
- New oxygen flow meters were installed on stocking trucks.
- A sump pump was installed in the basement floor of Res. #3/Dorm.
- Electrical improvements in the shop and feed room were made to improve employee safety.
- Signs to prevent the public from driving through the hatchery were installed.

FISH STOCKED

Fingerlings were planted in five regions across the state. These put-grow-and-take fish numbered 3,598,717 and weighed 34,257 pounds (Appendix 2).

Catchable rainbow trout were stocked in Regions 6 and 7. These put-and-take fish numbered 58,071 and weighed 32,785 pounds (Appendix 2).

Catchable Snake River Fine Spot cutthroat trout were stocked in Region 6. These putand-take fish numbered 20,443 and weighed 14,021 pounds (Appendix 2).

Fingerling Grayling, Henrys Lake cutthroat, and Troutlodge triploid rainbow were stocked in 18 mountain lakes. Stocking numbers were as follows: 908, 7,548, and 12,320 respectively. Stocking methods included: fixed wing aircraft, ATVs, horse, and backpacking.

TRANSPORT COSTS

The three fish transport trucks assigned to MFH made 78 separate stocking trips during the year. Fish from MFH were planted by truck into 29 different bodies of water. Hatchery personnel traveled 22,818 miles for an average of 289 miles per trip. The fleet rental charges are \$355.55/month and 64.0 cents/mile for each of the 2-ton trucks. Fleet rental for the 1-ton truck is \$147.48/month and 40.0 cents/mile. MFH fish transport cost totaled \$22,261 for 2007.

The fish transport tanker trucks from Nampa Fish Hatchery (NFH) made 9 trips to 5 different waters, traveling 3,651 miles for MFH during the year. The cost for the use of the two tankers were \$13,389 bringing our total fish transportation cost to \$35,650.

FISH FEED

A total of 80,850 pounds of feed provided by Rangen, Inc. was fed during the year. This feed cost \$38,683, including shipping charges and fuel surcharges (Appendix 3). Conversions ranged from a low of 0.82 for the 2007 Troutlodge rainbow and the 2006 Snake River Fine Spot cutthroat to a high of 1.37 for the 2005 Snake River Fine Spot cutthroat. The average conversion for all lots of fish reared at MFH during the year was 1.06 (Appendix 3).

FISH MARKING

Adipose fins were clipped on 130,850 Henrys Lake cutthroat trout during the first week of August 2006. This represents approximately 10% of the Henrys Lake cutthroat planted into the lake. Natividad Wilson and her crew administered these clips.

FISH HEALTH SUMMARY

The 2007 Deadwood kokanee were a very unique lot this year. They hatched 12-14 days earlier than normal. After they had been on feed for approximately one week they started to die at night apparently by smothering. The die-offs appeared completely random among all of the egg lots and rearing vats. When the fish are inventoried to the outside raceways in 2008 an accurate inventory will be determined.

The 2007 Snake River Fine Spot cutthroat continued to have significant egg quality issues. One lot was discarded because it was received with over 90% dead eggs. The request for these fish will not be met for the Snake River Fine Spot cutthroat; however Jackson National Fish Hatchery has agreed to make up for the shortage by stocking fish raised by them.

Two INADs were administered in 2007. Aquaflor (Florfenicol) was used in May in early rearing to treat the Henrys Lake cutthroat and the Triploid Hybrids. In July the triploid hybrids were fed OTC feed to treat coldwater disease at the 10gm/100 lb of fish INAD dosage.

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 assisted the USFS, Lost River Ranger District fish biologist in a whitefish research project. Phil Coonts and Mick Hoover each received awards from the USFS for their role in this research project.

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. Personnel changes in 2007 include: Culturist Bryan Grant promoted to Assistant Hatchery Manager at the Springfield Fish Hatchery in April and was replaced by Jason Jones in June; Manager Phillip J. Coonts transferred to Grace Fish Hatchery in October and was replaced by Patrick Moore in December.

APPENDICES

Appendix 1. Fish cultured at Mackay Fish Hatchery, January 1 to December 31, 2007

<u>Species/strain</u>	<u>Lot</u>	<u>Source</u>	<u>Received as</u>	<u>Number received in or carried into '07</u>	<u>Pounds received in or carried into '07</u>	<u>Destination</u>
Triploid rainbow - Troutlodge	05-WA-TT	Troutlodge		2,640	2,425	2007 catchable
Triploid rainbow - Troutlodge	06-WA-TT	Troutlodge	eyed eggs	76,956	30,360	2007 catchable N/A 2008 catchable
Triploid rainbow - Troutlodge	07-WA-TT	Troutlodge	eyed eggs	102,125		N/A 2008 catchable
Yellowstone cutthroat - Snake River Fine Spot	05-WY-C4	Jackson NFH	eyed eggs	26,496	14,021	2007 catchable
Yellowstone cutthroat - Snake River Fine Spot	06-WY-C4	Jackson NFH	eyed eggs	151,122	4,375	2007 fingerling N/A 2008 catchable
Yellowstone cutthroat - Snake River Fine Spot	07-WY-C4	Jackson NFH	eyed eggs	-125000		N/A 2008 fingerling 2009 catchable
Yellowstone cutthroat - Henrys Lake	07-ID-C3	Henrys Lake SFH	eyed eggs	1,416,454	9,526	2007 fingerling
Rainbow x Cutthroat triploid hybrid	07-ID-TH	Henrys Lake SFH	eyed eggs	145,700	1,550	2007 fingerling
Early spawner kokanee - Deadwood Reservoir	06-ID-KE	Nampa SFH	green eggs	1,516,587	17,040	2007 fingerling
Early spawner kokanee - Deadwood Reservoir	07-ID-KE	Nampa SFH	green eggs	-2.07million		N/A 2008 fingerling
Arctic Grayling	07-WY-GR	Ashton SFH	fry	908	2.3	2007 fingerling
October spawner kokanee- East River. CO	06-CO-KO	Glenwood Spgs SFH	eyed eggs	367,500	1,750	2007 fingerling

Appendix 2. Mackay Fish Hatchery stocking summary, 2007

Species/Strain	Lot	Number planted	Pounds planted	Size at
Yellowstone cutthroat-Snake River Fine spot	05-WY-C4	20,443	14,021	catchable
Yellowstone cutthroat-Snake River Fine spot	06-WY-C4	131,700	4,375	fingerling
Yellowstone cutthroat-Henrys Lake	07-ID-C3	1,424,002	9,526	fingerling
Rainbow x Cutthroat triploid hybrid	07-ID-TH	145,700	1,550	fingerling
Triploid rainbow - Troutlodge	05-WA-TT	2,453	2,425	catchable
Triploid rainbow - Troutlodge	06-WA-TT	55,618	30,360	catchable
Triploid rainbow - Troutlodge	07-WA-TT	12,320	13.6	fingerling
Early spawner kokanee-Deadwood Reservoir	06-ID-KE	1,516,587	17,040	fingerling
October spawner kokanee-Blue Mesa Reservoir	06-CO-KO	367,500	1,750	fingerling
Arctic Grayling	07-WY-GR	908	2.3	fingerling

Total fish stocked, 2007

	Number of fish	Pounds of fish
Fingerlings	3,598,717	34,257
Rainbow catchables	58,071	32,785
Cutthroat catchables	20,443	14,021
Total	3,677,231	81,063

Appendix 3. Feed used and feed conversions at Mackay Fish Hatchery, 2027

Rangen Feeds	Cost / pound	Pounds used	Cost
TSS # 0	\$0.643	1,200	772.35
TSS #0 Aquaflor	\$0.993	200	198.50
TSS # 1	\$0.632	4,850	3,067.05
TSS #2	\$0.623	15,000	9,073.00
TSS #2 OTC	\$0.803	200	160.60
Trout Grower #3	\$0.432	7,050	3,006.35
Trout Grower 1/8"	\$0.360	250	90.00
2.5mm Grower	\$0.457	2,000	914.00
Extruded 450 3/32 sinking	\$0.415	4,500	1,855.50
Extruded 450 5/32 sinking	\$0.360	45,600	16,416.00
Shipping Charges	N/A	N/A	3,129.56
Total pounds of feed used =	80,850		
Total cost of feed used =	\$38,683		

Feed conversions

Lot	Conversio
07-ID-C3	0.96
05-WY-C4	1.37
06-WY-C4	0.82
07-WY-C4	1.36
06-ID-KE	1.10
06-CO-KO	1.00
05-WA-TT	0.93
06-WA-TT	1.17
07-WA-TT	0.82
07-ID-TH	1.12
AVERAGE	1.06

Appendix 4. Mackay Fish Hatchery production and costs summary, 2007

Pounds of fish stocked, 2007 =	81,063
Pounds of fish on station, 12/31/2007 =	26,658
Total pounds of fish on Site for 2007 =	107,721
Pounds of fish on hand, 12/31/2006 =	27,190
Net pounds of fish produced, 2007 =	80,531

Production costs

6 months FY 2008 budget

personnel =	\$99,708
operating =	\$44,660
	<u>\$144,368</u>

6 months FY 2007 budget

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

TOTAL 2007 costs =	\$285,154
Cost per 1000 fish stocked =	\$77.55
Cost per pound of fish stocked =	\$3.52

Appendix 4. Mackay Fish Hatchery Production and costs summary 2007, Continued

Production Hatchery	Mackay
Put and Take Number	78,514
Put and Take Pounds	46,806
Put, Grow & Take Number	3,598,717
Put, Grow & Take Pounds	34,257
AVG Fish/lb	45.4
Feed Used Pounds	80,850
Feed Cost	\$38,683
AVG Length	4
Total Cost *	\$285,154
Cost per 1000 Fish Stocked	\$77.55
Cost per lb of Fish Stocked	\$3.52

** Total Cost includes permanent & temporary employee wages and benefits, and the fiscal operating budget*

IDAHO DEPARTMENT OF FISH AND GAME

**ANNUAL REPORT
2007**

**McCALL SUMMER CHINOOK HATCHERY
(Resident Program)**

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 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 (IDFG) 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 IDFG license sales revenue and provides for 5-months of assistant fish hatchery manager and 6-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, and Southwest 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 43,570 were released into waters in Regions 1, 2, 3B and 3M out of MCFH during 2007 and included rainbow trout and arctic grayling (Appendix 1.). A total of 34 lakes, that are a part of the mountain lake stocking program, received 42,790 fry. Two additional locations received 780 rainbow trout fry that were in excess of annual stocking requests.

Five fixed-wing fish stocking flights were flown during the period of August 29 through September 20, 2007 and resulted in the release of 39,890 fry into 30 mountain lakes. In doing so, approximately 1,925 air-miles were covered at a flight cost of \$3,366.00. The average cost, based on flight time, to stock a mountain lake in 2007 was \$112.20 and ranged from \$68.00 to \$277.67 for individual Regions. Volunteers stocked 5 mountain lakes with 2,900 rainbow trout fry in the McCall area saving the IDFG approximately \$355.00 in comparable flight time.

Skretting BioVita Starter #0 feed was used throughout the rearing period with good results. A total of 40.5 pounds of feed was fed out resulting in an average conversion of 0.70. Total feed cost for the resident fry was \$53.46 and averaged \$1.23 per 1,000 fish stocked (Appendix 2.)

No westslope cutthroat trout or golden trout were available for stocking into mountain lakes in 2007. Additional westslope cutthroat trout are being requested from the Montana Department of Fish and Game and those lakes requesting westslope cutthroat trout which were not stocked in 2007 will be added onto the 2008 request (117 lakes in Regions 1, 2, 3B and 3M).

One flight was made to return arctic grayling fry from Ashton FH to MCFH in 2007 at a cost of \$986.00 in flight time.

Catchable Rainbow Trout Redistribution

A total of 98,900 sterile Troutlodge rainbow trout triploids were stocked into 37 water-bodies in the McCall vicinity during the period of May 15 to August 20, 2007. Due to the fire activity taking place at the South Fork Salmon River adult summer chinook trap, scheduled catchable trout releases for late August-early September were moved forward to empty the MCFH collection basin in the event adult salmon would need to be transported to the hatchery.

Catchable size rainbow trout were reared at Nampa FH then transferred to MCFH at an average size of 3.23 fpp, or 9.6 inch total length. Transportation costs to bring catchable rainbow trout from Nampa FH totaled \$5,730 with 1,680 miles being driven by transport operators. Hatchery personnel drove 4,622 miles on 99 stocking trips at an approximate transportation redistribution cost of \$5,344. In an attempt to maximize stocking efficiency, multiple sites were stocked on 15 occasions eliminating the need to make additional stocking trips. The combined transport redistribution cost in 2007 was \$111.97 for each 1000 fish stocked (Appendix 3.). To maintain the condition of fish while being held at MCFH 660 pounds of BioDry-1000 LP was utilized to provide intermittent feeding at a cost of \$614.

Payette Lake Net Pens

Payette Lake Net Pens were re-introduced in Brown's Park, as part of a multi-use dock, with activities directed by the McCall sub-Regional Fishery Management staff; MCFH simply loaded the nets with rainbow trout. Two nets (20' x 20' x 17') were used for the continued rearing of catchable size rainbow trout during the summer. Feeding was accomplished using a Sweeney Brand (Model L1) automatic feeder that was placed between the nets and would periodically broadcast feed to the trout. Due to concerns that some people may interfere with its operation, the mechanism was set to deliver feed during the night and only operated on weekdays. A coin operated "gum-ball" machine was also set up on the dock near the net pens to allow visitors the opportunity to feed the trout if they wished.

Rainbow trout, numbering 6,000, were placed into the nets on June 1st at a size of 3.50 fpp (9.35 inch TL) and it was estimated that 5,950 were released on September 5th at a size of 1.65 fpp (11.5 inch TL). During the summer, these fish were fed 2,860 pounds of BioDry-1000 LP at a cost of \$2,660. Rainbow trout reared in the net pens realized an average monthly length gain of 0.68 inches per month. However, since the trout were fed only 65 days of the 95 day rearing period an effective average monthly growth rate was calculated to be 0.99 inches per month based on actual days fed. Experienced feed conversion was 1.51 for the rearing period.

Special Projects

Coordination was made McCall Aviation which would allow greater flexibility in conducting mountain lake fish stocking flights by creating a procedure, and cost arrangement to be reviewed and adjusted annually, which would allow a fish stocking flight to be conducted without IDFG personnel being on the plane during the flight. This new system was not attempted in 2007, but is now available to various hatchery managers when setting up fish stocking flights.

Hatchery personnel assisted McCall sub-Regional Fishery Management efforts to stock 900 floy-tagged catchable rainbow trout scattered at sites in the four North Fork Payette River segments that are normally stocked during the summer. Tagging operations encompassed four days from June 7-15, 2007.

The resident 1-Ton fish stocking truck was made available to McCall sub-Regional Fishery Management who captured then relocated 210 smallmouth bass *Micropterus do/mieui* from Oxbow Reservoir to Little Payette Lake on August 10, 2007.

Hatchery Improvements/ Needs

Capital outlay money was made available in the FY08 budget to purchase 7 new vertical incubators (trout) that will be available to hatch resident fry during the 2008 cycle.

Public Relations

Due to widespread fire activity in the McCall area and lack of westslope cutthroat trout, only limited fish stocking opportunities were available to volunteers in 2007. Five groups of volunteers backpacked 2,900 rainbow trout fry into 5 mountain lakes in the McCall area; saving the Department approximately \$355.00 in comparable flight costs. Hatchery personnel participated in Free Fishing Day activities during events held at Rowland Pond and Kimberland Meadows 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, support and for making available seasonal employees who were utilized on resident program endeavors. Individuals assisting on resident program activities in 2007 include: Carlos Camacho, Sean Dardis, Cory Earle, Brian Ferry, Andrew Gibbs, Andrew Seymour, Peter Starr and Matthew Watterson.

APPENDICES

Appendix 1. Fry redistribution by Region, MCFH, 2007.

Species	Panhandle	Clearwater	Southwest (3B)	Southwest (3M)	Excess	Total Stocked
Arctic Grayling (Ashton FH - Meadow Lake, WY)	6,000	-	1,040	-	-	7,040
Rainbow Trout Triploid (Trout Lodge - TT)	14,600	1,500	5,250	14,400	780	36,530
Total	20,600	1,500	6,290	14,400	780	43,570
# Lakes Stocked by Plane	6	1	9	14	-	30
# Lakes Stocked by Other Means	-	(1) ^a	-	4	2	6
^a Seven Devil's Lake was stocked both by Plane and by a volunteer using a backpack.						
Approximate Flight Costs	\$1,666.00	\$ 68.00	\$ 680.00	\$ 952.00	-	\$3,366.00
Average Cost to Stock Each Lake by Plane	\$ 277.67	\$ 68.00	\$ 75.56	\$ 68.00	-	\$ 112.20

Appendix 2. Resident fry feed usage and conversion data, MCFH, 2007.

Species	# 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)	7,040	3.1	5.0	0.61	\$ 0.82	\$ 0.58	\$ 4.09
Rainbow Trout Triploid (Trout Lodge - TT)	36,530	37.4	52.8	0.71	\$ 0.94	\$ 1.35	\$ 49.37
Total	43,570	40.5	57.8	0.70	\$ 0.92	\$ 1.23	\$ 53.46

Appendix 3. Total production and distribution costs, MCFH, 2007.

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)	8,000	7,040	\$1,628.23	5.0	\$ 325.65	\$ 231.28
Rainbow Trout Triploid (Trout Lodge - TT)	40,400	36,530	\$2,723.77	52.8	\$ 51.59	\$ 74.56
Fry Redistribution Total	48,400	43,570	\$4,352.00	57.8	\$ 75.29	\$ 99.89
Note: ^a Breakdown includes \$3,366.00 flight redistribution costs and \$986.00 in flight costs generated returning grayling from Ashton FH to MCFH. Fry stocked by volunteers, or as excess, are included at no cost.						
Catchable Rainbow Trout Redistribution						
Trout Lodge Rbt Triploid (Reared at Nampa FH)	99,520	98,900	\$11,074 ^b		N/a	\$ 111.97
Note: ^b Based on transportation costs of \$11,074 (\$5,650 MCFH and \$5,730 Nampa FH).						
Grand Total	147,920	142,470	N/a	57.8	\$1,548.86	\$ 628.37

IDAHO DEPARTMENT OF FISH AND GAME

ANNUAL REPORT

MULLAN FISH HATCHERY

2007

Mary van Broeke Fisheries Tech

INTRODUCTION

The Mullan Fish Hatchery (MUFH) is a resident species redistribution station located four miles east of Mullan, Idaho. 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 provides funds for personnel costs, production costs, and equipment with fishing and hunting license fee revenue. The manager at Cabinet Gorge Fish Hatchery supervises operations and provides additional labor and equipment if needed. There is one temporary employee on station year-round.

The hatchery receives water from the South Fork of the Coeur d'Alene River and the 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 to the Coeur d'Alene and St. Joe River drainages to stock ponds and lakes, from May to September, 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 2007, were also involved with the kokanee spawning operation at Granite Creek.

HATCHERY IMPROVEMENTS

Hatchery improvements during 2007 included:

- Replaced 200 feet of broken pipe line and a valve from the domestic water supply. Salt, from Interstate 90 snow and ice maintenance, has eroded the pipe over time. Idaho Fish and Game funded the supplies and Shoshone County supplied the equipment and labor for this project.

- Painted all hatchery structures. Shoshone County funded this project.

- A new tourist platform was constructed over pond #1. The platform was built by Dave Ross and his crew. Shoshone County funded the project.

FISH STOCKED OR TRANSFERRED

A total of 28,400 rainbow trout, 3.4 fish/pound (nine-inches long), were released into waters of the Coeur d'Alene and St Joe river drainages from May to September to support a put-and-take fishery. All stocking sites received sterile rainbow trout. Trout Lodge Triploids (TT) Trout released from the MUFH came from Nampa Hatchery Hatchery personnel loaded the fish into a 500-gallon pick-up truck mounted tank and delivered them to numerous lakes and ponds. The distribution schedule requires three to five hour trips, four to five days each week during the summer season.

Mullan Hatchery has an annual budget of \$16,179. If you include employee wages of \$15,000 and transportation costs of \$11,476 for Nampa Hatchery to deliver fish to MUFH, the stream side cost for MUFH to redistribute fish was \$1.50/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 13,500 people touring the grounds in 2007. The hatchery also hosted the Silver Valley Good Samaritan RV rally. Many groups of local school children also toured the hatchery.

IDAHO DEPARTMENT OF FISH AND GAME

**ANNUAL REPORT
NAMPA FISH HATCHERY
2007**

**Rick Alsager
Fish Hatchery Manager II**

**Bob Turik
Assistant Fish Hatchery Manager**

**Bob Becker
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 2007 fish year, the NFH net fish production was 1,670,583 at a net weight of 187,180 pounds (Appendix 1). The net cost for rearing fish at the NFH from grow out through stocking was \$501,323.00 (Appendix 2). Fish transferred to other hatcheries are included in the total number and pounds produced. Kamloops and rainbow trout *Oncorhynchus mykiss* comprised 85.95% of the fish stocked or transferred from NFH. In addition, Lahontan cutthroat trout *O. clarkii henshawi* were produced at NFH during 2007 (Appendix 3). Another 550 fish weighing 175 pounds were produced at NFH and given to schools for educational purposes and department personnel for various research programs. In 2007, *Ichthyophthirius multifiliis*, (Ich) claimed 250,000 fish; 50,000 pounds; from our C-raceways. These fish were not included in overall production numbers. A total of 2,766,407 eyed-eggs were received during the 2007 fish year (Appendix 4).

In January 2007, the Ich outbreak that started in December 2006 continued to work across our C raceways. Potassium Permanganate (KMnO₄) and Chloramine-T was used but proved to be ineffective. Prior Ich treatments with KMnO₄ had been successful in bringing the disease under control. After consulting with our pathologists, the recommendation was to initiate Formalin treatments on all affected ponds at 175 ppm every day for 1 week. We then did treatments every other day for another week. After that we treated 3 times per week for another week. The Formalin treatment was very effective and brought the Ich under control. From December 2006 to February 2007, Nampa Hatchery lost 250,000 fish out of the entire 950,000 Troutlodge Rainbow Trout on station. This fish loss impacted the statewide catchable stocking program resulting in each region reducing its requested fish. 5 state fish hatcheries shuffled catchables to make up for NFH losses. NFH continued treating and pathologists would sample each raceway before stocking or transferring any fish to other facilities.

In August, NFH received 43,000 Hayspur triploid fingerlings weighing 16 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 1,520,240 fish, weighing 207,536 pounds, during the 2007 fish year. These fish do not include warm water transfers and fish reared in non-IDFG hatcheries to waters in Idaho. NFH made 171 stocking trips to 275 planting waters during 2007.

NFH stocked or transferred a total of 157,369 fry (Appendix 5), 724,320 fingerlings (Appendix 6) and 638,551 catchables (Appendix 7), which are listed by species/strain in each table. A total of 332,740 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 15 different state and federal fish hatcheries. The transport operators made 145 trips totaling 48,769 miles during 2007. The 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 (224,449 weighing 6,992 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 and Gary went to Oxbow Fish Hatchery in Western Oregon operated by ODFW to transport 6,200 pounds of ESA sockeye salmon fingerlings back to Redfish Lake. In November the transport operators assisted in transporting and stocking 1,000 surplus A-run adult steelhead from Oxbow Fish Hatchery in western Oregon into the Boise River.

Both Dick and Gary replaced their onboard diesel generators in 2007. Dick also installed an aerator operating alarm system similar to the one on Gary's truck.

LAHONTAN CUTTHROAT TROUT

During 2007, NFH stocked 157,369 Lahontan Cutthroat trout (341.5 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 58.04%. 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 2007, no fall chinook were raised.

FISH FEED

A total of 217,415 pounds of feed was fed during 2007 at a cost of \$94,694.48 (Appendix 9). The average cost per pound of feed was 32.60 cents. Feed from Rangen Inc. made up 95.7% of the feed purchased by weight. An additional 9,850 pounds of feed was received from other hatcheries and fed throughout the year. The overall feed conversion was 1.16 pounds of feed fed to produce one pound of fish.

Feed purchased from Rangen, Inc continues to be 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 10.29 inches last year to 10.00 inches this year. The egg-take goal for 2007 for Mackay was 2 million green eggs. Mackay had received 2,077,170 green eggs by August 30th. Another 2,330,000 eggs were sent to Cabinet Gorge in 2007 before ending the spawning season.

This spawning season began with a massive Middle Fork Complex fire. There was much debate whether to relocate the trap to the S.F. Boise river or continue at Deadwood. One factor to consider was the state's contract with BLM. Other factors were the abundance of kokanee at Deadwood and unpredictable numbers at the S.F. site. After considering personnel safety, egg transport, and discussion with the Forest Service, it was decided that as long as the camp was "mobile", we could maintain a trap at the Deadwood site. After two weeks, the fire was contained and the reservoir was opened to the public.

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 5 major tributaries of Deadwood reservoir. Trail Creek, South Fork Beaver Creek, Beaver Creek, Basin Creek, and the Deadwood river weir were installed and operated by crews from the region and NFH. After the egg-take goal was reached, region 3 personnel maintained all 5 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 Deadwood river weir was installed on August 8th. The tributary weirs were also installed on August 8th. The first kokanee was trapped on August 14th 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.

There were a total of 9 spawn takes. The first spawn date was much earlier this year, August 24th compared to September 5th last year. Due to the large number of green females arriving early, it was decided to discard the first egg take. Also, due to the large numbers of kokanee, no green females were held to ripen in live boxes. The last spawn date was on September 7th. All fish were spawned at the trap site. A green egg yield of 4.4 million eggs was taken from 15,487 females with an average fecundity of 313 eggs/female (Appendix 11). The average total length of kokanee females was 256 mm and the males averaged 306 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. The Department contracts 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, South West Region 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. The Department again issued an emergency fishing closure to avoid conflicts with anglers near the weir and 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 down river every 100 yards to the mouth to inform the public about the fishing closure. This year, informational signs to explain the purpose of the weirs were attached to each weir.

HATCHERY IMPROVEMENTS

Several important improvements were implemented at NFH during 2007:

- Acquired large fish hauling tank from Eagle truck shop
- Purchased Aluminum dam boards and screens for C ponds
- Acquired new heated pressure washer from Eagle Hatchery
- Built new deck and installed new sliding doors on Residence #2
- Started replacing keyways in C-pond raceways
- Replaced domestic water lines for Residence #3, office and Residence #1
- Replaced sewer and domestic water lines in dorm
- Repaired and overhauled Neilsen Fish Feeder

- Replaced shake shingles on Residence #1, office, and dorm with asphalt shingles
- Purchased flat bed utility trailer

NFH improvements scheduled for 2008 include:

- Replace "Take Me Fishing" signs on 1- Ton transport trucks
- Replace disabled fishing platform next to settling pond.
- Replace carpet and vinyl in hatchery office and dorm..
- Replace Hatchery Transfer Tank
- Build new heated storage building for formalin.
- Repair broken key ways in the C ponds.
- Do informational pamphlets for hatchery.
- Acquire camp trailer for Deadwood project.

PUBLIC RELATIONS

As in past years, NFH was a focal point for many visitors, tours, and special groups. In 2007, an estimated 3,700 tourists visited the NFH. Most visitations came through the late spring and summer months although year around school and educational tours were scheduled throughout the spring, summer, and fall. A total of 37-guided tours were given to area school, church, and Boy Scout groups. NFH participated in one job shadow program during 2007. Several disabled veterans groups were allowed to fish the settling pond five times during the summer months. 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 800 visitors/fishermen, with an estimated 1000 fish caught. The largest fish caught was a 8.5 pound rainbow trout and six more over four 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 a.m. 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 2007 included Rick Alsager, Fish Hatchery Manager II; Jamie Mitchell, Assistant Fish Hatchery Manager; Bob Turik, Fish Culturist; Gary Ady and Dick Bittick, Fish Transport Operators. In October, Jamie Mitchell took a voluntary demotion to the Fish Culturist position at Clark Fork Hatchery. In November, Bob Turik was promoted to Assistant Manager at Nampa Hatchery and Bob Becker lateraled from Hayspur Hatchery as the new Fish Culturist. Bio-aides for 2007 included; Nick Gates , Mike Kren.and Kyle Sandy. 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 2007. Volunteers, community service, and juvenile delinquents have also helped on a number of projects throughout the year donating over 478 hours of time.

APPENDICES

Appendix 1. Total net fish production at Nampa Fish Hatchery, 1994 through 2007

Year	Put-and-Take		Put-grow-and-take		Total	Total	Feed	Costs	Feed
	Number	Pounds	Number	Pounds	Number	Pounds	Pounds		Conversion
1994	308,023	146,978	793,065	55,014	1,101,088	201,992	220,544	\$72,340	1.09
1995	567,147	193,309	783,722	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
2007	657,640	172,669	1,012,943	14,511	1,670,583	187,180	217,415	\$94,694	1.16

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

**2007 numbers reflect the loss of 250,000 fish and 50,000 lbs of production lost to disease (Ich).

Appendix 2. Total cost of net fish production at Nampa Fish Hatchery, 1994 through 2007

Total	Total cost through grow - out					Mean	Total cost through stocking			
	Year	Cost	Cost/1000 Fish	Cost/Pound	Cost/Inch	Length inches	Total Cost	Cost/1000 Fish	Cost/Pound	Cost/ in 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
2007		\$466,723	\$279.48	\$2.49	\$0.052	5.38	\$501,323	\$300.19	\$2.68	\$0.056

Appendix 3. Fish Requested and produced at Nampa Fish Hatchery, 2007

Species/Strain	Size	Production Goal	Actual Production	% of Goal Achieved
Lahontan cutthroat trout (C6)	1-3 inches	200,000	157,369	78.68%
Triploid rainbow trout (T1)	3-5 inches	600,000	622,320	103.7%
Triploid Kamloop trout (KT)	3-5 inches	50,000	49,700	99.4%
Triploid Kamloop x steelhead trout (TT)	3-5 inches	50,000	52,300	104.6%
Triploid Kamloop x steelhead trout (TT)	6-12 inches	900,000	619,211	68.8%
Triploid rainbow trout (T9)	8-12 inches	18,000	19,340	107.4%
Totals:		1,818,000	1,520,240	83.6%

Appendix 4. Eyed-eggs received at Nampa Hatchery, January 1 to December 31, 2007

Date Received	Species/Strain	Source	Number	Pond	Destination	Cost/1000eggs
1/3/2007	Triploid rainbow trout	Hayspur	607,810	A7,8,13-16	SW/Reg	N/C
1/31/2007	Triploid rainbow trout	Hayspur	80,266	A11	SW/Reg	N/C
4/24/2007	Triploid kamloop trout	Hayspur	56,056	A12	P Reg	N/C
5/1/2007	Triploid kamloop trout	Hayspur	50,000	A12	P Reg	N/C
5/1/2007	Lahontan cutthroat trout	Omak	271,125	A13-14	SW/Reg	N/C
5/31/2007	Troutlodge Triploid Kamloop	Trout Lodge	421,936	AI-6	SW/Reg, C Reg	\$27.50
6/26/2007	Troutlodge Triploid Kamloop	Trout Lodge	382,140	A7-10	Statewide	\$27.50
9/27/2007	Troutlodge Triploid Kamloop	Trout Lodge	424,339	A11-14	Statewide	\$27.50
11/14/2007	Brown trout	Auburn, WY	50,000	A13	SW/Reg	N/C
12/19/2007	Triploid rainbow trout	Hayspur	422,735	AI-6	SW/Reg	N/C
Total:			2,766,407			

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 5/1	271,125	157,369	341.50	58.0	Southwest Region
Totals:		271,125	157,369	341.50		

Appendix 6. Fingerlings produced at Nampa Fish Hatchery in 2007

Species/Strain	Source	Date Received	Number Received	Number Produced	Pounds Produced	Survival Egg to Plant	Designation
Triploid Kamloop Trout (KT)	Hayspur	4/24,5/1	86,056	49,700	700	57.8%	Panhandle Region
Triploid Kamloop Trout & Triploid Rainbow Trout Mix (T1)	Hayspur	12/19/06,1/3,1/31	848,262	622,320	9,091	73.4%	Southwest Region
Triploid Kamloop x steelhead trout (TT)	Trout Lodge	5/31	67,200	52,300	7,165	77.8%	SW Reg/ Clearwater Region
Totals:			1,001,518	724,320	16,956	72.3	

Appendix 7. Catchables produced at Nampa Fish Hatchery in 2007

Species/Strain	Source	Date Received	Number Received	Number Produced	Pounds Produced	% Survival Egg to Plant	Designation
Triploid Rainbow (T9)	Hayspur	12/06	28,616	19,340	5750	67.6	Salmon Region, Southwest Region
Triploid kamloop x Steelhead (TT)	Troutlodge	6/06 & 9/06	1,196,494	619,211	184,830	51.8	Statewide
Totals:			1,225,110	638,551	190,580	52.1	

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

Hatchery	Species	Number	Pounds	Fish/pound
Clearwater Fish Hatchery	TT	79,043	23,525	3.36
McCall Fish Hatchery	TT	97,429	29,800	3.27
Mullah Fish Hatchery	TT	22,840	6,400	3.57
Sawtooth Fish Hatchery	TT	53,060	17,125	3.10
Sandpoint Fish Hatchery	TT	81,368	24,150	3.37
Totals:		333,740	101,000	3.304

Appendix 9. Nampa Hatchery feed costs in 2007

Supplier/Source		Pounds	Price/lb.	Feed Charges
Rangen				
Dry Crumble	Starter #0	350	0.669	\$234.15
Dry Crumble	Starter #1	750	0.669	\$501.75
Dry Crumble	Starter #2	5,700	0.669	\$3,813.30
Dry Crumble	Starter #3	11,775	0.455	\$5,357.63
450 Floating	1/16" sack	5,500	0.5605	\$3,082.75
450 Floating	3/32" sack	9,250	0.434	\$4,014.50
450 Floating	1/8" sack	63,250	0.399	\$25,236.75
450 Floating	5/32" sack	100	0.360	\$36.00
450 Floating	3/32" bulk	19,860	0.424	\$8420.64
450 Floating	1/8" bulk	29,600	0.389	\$11,514.40
450 Floating	5/32" bulk	51,380	0.350	\$17,983.00
Dry Crumble med. TM	Grower#2	1850	.7565	\$1,399.53
Dry Crumble med. TM	Grower #3	1300	.7565	\$983.45
Dry Crumble med. TM	Grower #4	1800	.707	\$1,272.60
Dry Crumble med. TM	3/32 pellet	3100	.652	\$2,021.20
Dry Crumble med. TM	1/8 pellet	1250	.603	\$753.75
Dry Crumble med. Aquaflor	1/16 pellet	250	1.0745	\$268.63
Dry Crumble med. Aquaflor	3/32 pellet	500	.945	\$472.50
Skretting				
Dry Crumble	Starter#0	50	\$0	DONATED
Dry Crumble	Starter #2	100	\$0	DONATED
Dry Crumble	2mm	100	\$0	DONATED
Dry Crumble	2.5mm	2,050	\$0	DONATED
EWOS				
Dry Crumble	#1,#2, 1.2mm	2,000	\$0	DONATED
Dry Crumble	1.2 mm	1,000	\$0	DONATED
Dry Crumble	1.5 mm	1,000	\$0	DONATED
Dry Crumble	2 mm	1,050	\$0	DONATED
Total:		217,415		\$87,366.53
Freight:				\$7,327.95
Grand Total:		217,415		\$94,694.48
	TOTAL			\$7,327.95
	FREIGHT=			
TOTAL				\$94,694.48

Appendix 10. Kokanee egg take at Deadwood Reservoir Nampa Fish Hatchery in 2007

MACKAY

Spawn Date	Lot Number	Females Spawned	Green Eggs	Eyed Eggs	% Eye-up
8/24/2007	1	882	250,334	**	**
8/25/2007	2	1,098	306,670	**	**
8/26/2007	3	1,351	349,440	**	**
8/28/2007	4	1,810	538,224	**	**
8/30/2007	5	2,360	632,502	**	**
Totals:		7,501	2,077,170		

**No eyed egg numbers or % eye up available due to lack of data from Mackay Hatchery

CABINET GORGE

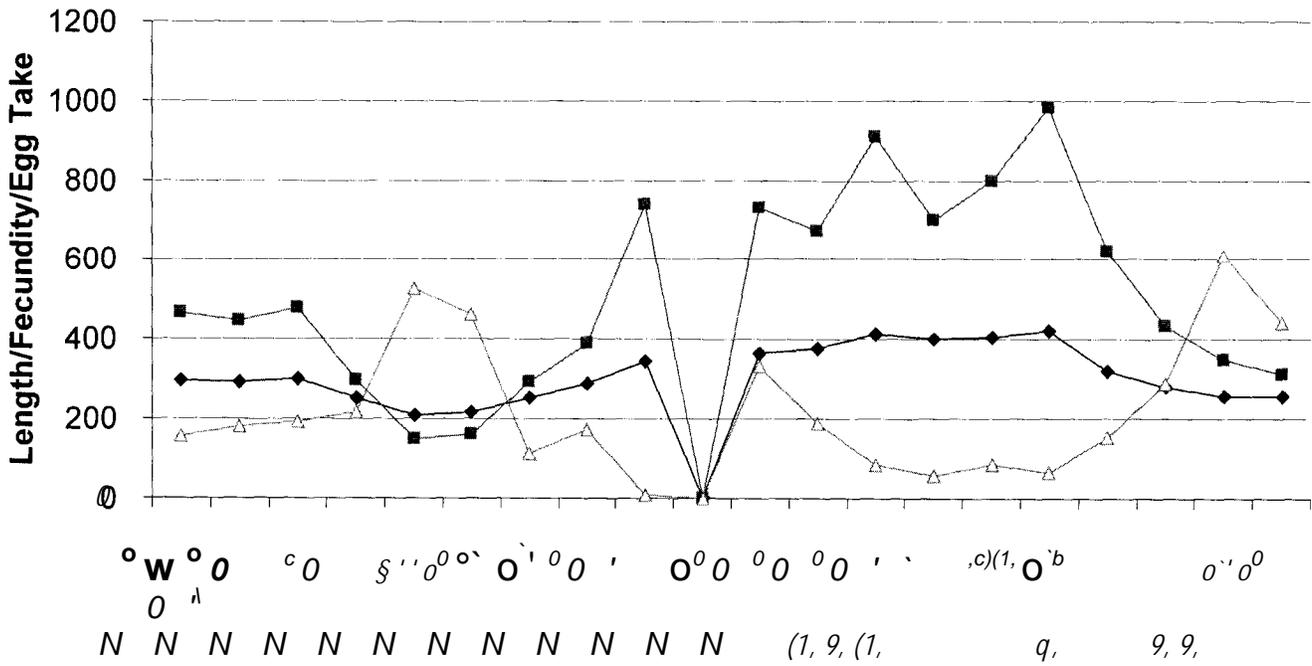
Spawn Date	Lot Number	Females Spawned	Green Eggs	Eyed Eggs	% Eye-up
9/1/2007	1	1,976	442,400	345,000	77.9
9/3/2007	2	1,640	660,100	500,114	75.7
9/5/2007	3	1,966	442,400	338,730	76.5
9/7/2007	4	2,404	788,200	606,849	76.9
Totals:		7,986	2,333,100	1,790,693	76.75

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

2006 Spawning Totals:	15,487	4,410,270
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**Eyed Egg and % Eye up numbers unavailable due to no data from Mackay Hatchery

Deadwood Kokanee Spawning Spawning Summary (1988-2007)



—+- Length —* Fecundity - Egg Take (x10000)

IDAHO DEPARTMENT OF FISH AND GAME

Sandpoint Hatchery

Annual Report

2007

**Prepared by:
Jamie Mitchell
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, Idaho. The Idaho Department of Fish and Game (IDFG) 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 their time working at Cabinet Gorge Fish Hatchery (CGFH) assisting with the kokanee spawning operation and egg incubation. The Manager II 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 Fahrenheit.

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 tray incubators (8 trays), and 18 concrete vats (15x2.5x3ft) located inside the main hatchery building. There are also two outdoor concrete raceways measuring (10x60x4ft) 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 2007 were Troutlodge triploid rainbows from American Falls (AFH) and Nampa Fish Hatcheries (NFH). A total of 101,307 fish weighing 31,824 lbs (3.18f/lb) were stocked between the first week of April and the fourth week of September. Twenty-two different bodies of water received catchable rainbows in 2007. 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.

PRODUCTION

Sandpoint Hatchery received 50,000 eyed T-9 rainbow eggs from Hayspur Fish Hatchery (HFH) on May 19th 2007. 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. After swim-up mortality 43,000 juveniles were sent to NFH on September 26th. Survival to shipping was 86%.

HATCHERY IMPROVEMENT

On December 10th and 11th, a section of the water supply line 100 yards below the spring collection box was excavated and found to have .25 to .5" crack approximately 180 degrees around the pipe. A professional welder was called in to repair the pipe. The hatchery now seems to be receiving roughly 200 gallons per minute more than before the repair.

HATCHERY NEEDS

- Repair hatchery building interior ceiling panels and windows.
- Catwalk over headbox and tailbox of new raceways.
- Upgrading 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. 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 frequently interacts with the public during fish plants, and use those opportunities for up keeping a positive departmental image and education. 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 now consists of a pond with viewing windows, public boat dock, interpretive trail system, and educational building which is rapidly nearing completion.

ACKNOWLEDGEMENTS

The SPFH staff would like to thank the staff at CGFH; John Rankin (Fish Hatchery Managed), Bruce Thompson (Assistant Manager), John Suhfras (Maintenance Craftsman) for their assistance when additional manpower was needed. Thanks to Gary Ady and Dick Bittick for transporting catchable rainbows from Nampa and American Falls Fish Hatcheries throughout the stocking season. We would also like to thank Doug Bopp for his assistance with the pipeline access and repair.

APPENDICES

Appendix 1. Catchable Redistribution Cost.

Wages	\$12,500
Nampa Transportation cost	\$19,127
Operating	\$15,221
Total	\$46,848

Cost	Number of Catchables	Streamside Cost Per Fish
\$46,848	101,307	\$0.46

Appendix 3. T-9 Rainbow Production:

# Eyed Eggs Received	50,000
Transfer to Nampa	43,000
Overall % Survival	86%
End Weight	35.83 lbs

IDAHO DEPARTMENT OF FISH AND GAME

RESIDENT FISH STOCKING

ANNUAL REPORT

SAWTOOTH FISH HATCHERY

2007

**Roger Elmore
Fish Hatchery Asst. Mgr.**

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*. Also, adult steelhead are 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. In 1996 SFH began participating in a program to stock high mountain lakes with cutthroat trout fry for future angling opportunities.

FISH STOCKING

Sawtooth Fish Hatchery (SFH) met its stocking request in 2007 for the rainbow trout stocking program, except for Squaw Creek Pond which was not stocked after July 4 due to minimal flow, elevated water temperatures, and algae growth. Between May 21 and September 7, a total of 53,400 hatchery rainbows were stocked in 78 stocking trips.

Nampa Fish Hatchery (NFH) supplied SFH with Troutlodge triploid rainbows for stocking. A total of 53,205 fish were delivered to SFH from May 21 to July 18. Based on 18 sample counts the fish averaged 3.35 fish per pound and 9.06 inches in length (230 mm). SFH employees drove approximately 3,400 miles to stock fish in local lakes and streams. NFH stocked Stanley, Pettit, Perkins, and Alturas lakes in 2007.

National Marine Fisheries Service (NMFS) permit # 1188 that 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. Stocked fish should average in size no greater than 250 mm with no individual larger than 300 mm 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 stocked into ponds were unclipped.

The rainbows were fed a maintenance diet of Rangen's 450 extruded pellets 3/16 inch size. A total of 350 pounds of 3/16 pellets were purchased at a cost of \$126.00. The cost to transport catchable-sized trout from Nampa to Sawtooth was \$3,825.00. An approximate cost for 78 stocking trips was \$3,336.50 at a cost of \$42.77 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, updated weekly, containing stocking information and current news about SFH can be heard over the local IDFG radio transmitter. Stocking information can also be found on the Department's web site.

High Mountain Lake Stocking

Stocking of high mountain lakes by fixed wing aircraft was suspended in 2007. Westslope cutthroat trout eggs were unavailable to support the program. If eggs are available in 2008, SFH plans to stock rotation "C" lakes which were scheduled for 2007 as well as rotation "A" lakes. A total of 31 lakes are in rotation C and 43 lakes in rotation "A".

Free Fishing Day

Sawtooth Fish Hatchery sponsored another Kid's Fishing Day at the Sawtooth Pond on Free Fishing Day, June 9, 2007. There were 68 kids under the age of 13 and 51 people over 13 that participated from mid morning to mid afternoon. There were 7 kids and one adult that caught their first fish ever. The weather was perfect with little wind and temperature near 70. Hatchery staff members Lars Alsager, Danielle Dorsch, Tomi Baker, and Joey Saccomanno provided assistance. All kids received a packet of fishing related books and tackle. Gifts were donated by the following merchants: Bent Rod Outdoors, Sawtooth Adventure Company, Jerry's Country Store, White Cloud Rafting Adventures, River 1, Riverwear, Peaks and Perks, Stanley Baking company, McCoy's Tackle shop, and Mountain Village Mercantile.

PLANS FOR 2008

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

In 2008, SFH plans to continue high mountain lake stocking of westslope cutthroat trout, *Oncorhynchus clarkii lewisi* by airplane in the Salmon and Magic Valley Regions. SFH plans to participate in Free Fishing Day program in June.

ACKNOWLEDGEMENTS

The SFH would like to thank Rick Alsager and the Nampa Hatchery crew for their cooperation in making 2007 successful. Special thanks go to Gary Ady, Dick Bittick, Jamie Mitchell, and Bob Turik for transporting fish from Nampa and stocking the big lakes in the Stanley Basin. Bio Aide Tim Berk for the second straight year did a good job of stocking fish and delivering stocking notices.

APPENDIX

Appendix 1. Planting sites and numbers of catchable rainbow trout stocked in the Salmon Region by Sawtooth Fish Hatchery from June through September 2007.

Site	Number
Sawtooth Kids Pond	1,900
Stanley Lake	3,600
Little Bayhorse Lake	2,000
Kelly Creek Pond	600
Salmon River	34,100
Yankee Fork Dredge Ponds	4,000
Valley Creek	4,000
Blue Mountain Meadow Pond	900
Squaw Creek Pond	300
Salmon Kids Pond	200
Hayden Ponds	1,800
Totals	53,400

IDAHO DEPARTMENT OF FISH AND GAME

2007 ANNUAL RESIDENT REPORT

SPRINGFIELD HATCHERY

Bryan L. Grant, Assistant Fish Hatchery Manager

**Steve D. Wingert
Fish Hatchery Manager**

INTRODUCTION

Springfield Hatchery (SH) is a 73 acre facility located in Bingham County, Idaho, approximately 20 miles west of Blackfoot, Idaho. In 2006, the Yanke Family donated the private Crystal Springs Hatchery (CSH) to the Idaho Fish and Wildlife Foundation (IFWF). The IFWF has arranged for the Idaho Department of Fish and Game (IDFG) to manage the facility. The IDFG is now referring to the former CSH site as SH (appendix 1, 2).

Located on station are a residence, a shop/garage building, an office/early rearing vat building and a fish processing plant building which is currently being utilized as a storage warehouse.

Also located on site is Crystal Springs Pond (CSP), an approximately 6-acre pond which was opened to the public as an IDFG Family Fishing Water on the 2007 fishing opener.

WATER SUPPLY

The SH water is provided by 9 artesian wells located at numerous sites on the facility grounds. The water right (est. 1945) allows for 50 c.f.s., although the wells are currently not providing that amount for available use. Temperatures of the wells have remained constant at 50°F. Since no previous water monitoring records existed, SH personnel have initiated and maintained water discharge monitoring records to get an idea of what the available use will be on an annual basis. Since August 2007, well discharge measurements have been taken using the California pipe method. Well discharge data is then entered onto spreadsheets and graphs and kept on file at SH for future reference and consideration when construction plans are finalized. Water discharge readings have fluctuated from a low of 12.19 cfs to a high of 19.25 cfs, with an average discharge of 17.48 cfs (appendix 3).

In January 2007, nine piezometers were installed at different locations on site to monitor ground water fluctuations. Of the 9 piezometers originally installed, 8 are still functional and ground water levels are measured on a bi-weekly basis. The sole piezometer that is non-functional was destroyed by neighboring cattle that were previously free to graze on the facility grounds. Piezometer monitoring records are also kept on file at SH and will be helpful when finalizing SH construction plans.

FACILITY AND GROUNDS IMPROVEMENTS

- Initiation and maintenance of IDFG facility records.
- Grounds clean-up and junk removal. This includes hauling rubbish to the dump or salvage yard, brush mowing and noxious weed control.
- Removal of bird-netting from existing raceway structures.
- Future hatchery master plan was composed by Engineering Science Construction.
- Northwest boundary of the property was fenced to prevent neighboring landowners cattle from grazing around the pond, well pools and ditches.
- Western property boundary line was surveyed by Harper-Leavitt.
- A chain-link fence was constructed around the perimeter of the fish processing plant building to prevent trespassing, vandalism and theft.
- Idaho Department of Water Resources and Idaho Power Company installed a water flow monitoring station on site.
- Initiation and set-up of a functioning work shop. Tools and equipment purchased.
- Improvements to residence. This includes installation of a propane free standing stove, fixing of electrical problems and pumping of the septic tank.

CRYSTAL SPRINGS POND IMPROVEMENTS

- Outdoor cement vault toilet was installed.
- Parking area was blacktopped and sealed.
- Buck-n-rail style fence was constructed around the entrance and parking area.
- Docks were installed including a handicap accessible ramp with handrails.
- A kiosk was installed for public information purposes.
- Fish hauling truck access area and fish stocking pipe were installed.
- Pond water samples were analyzed.

VOLUNTEER PROGRAM

Multiple IDFG Region 5 volunteer personnel have assisted at SH since its acquisition by IFWF. Volunteer effort has included barbed wire fence construction, grounds clean-up, debris removal and aid in cleaning out the existing shop and vat buildings. Volunteer assistance was also provided to help clear out the existing raceway structures to prevent flooding and impeding of the current water flow coursing through them.

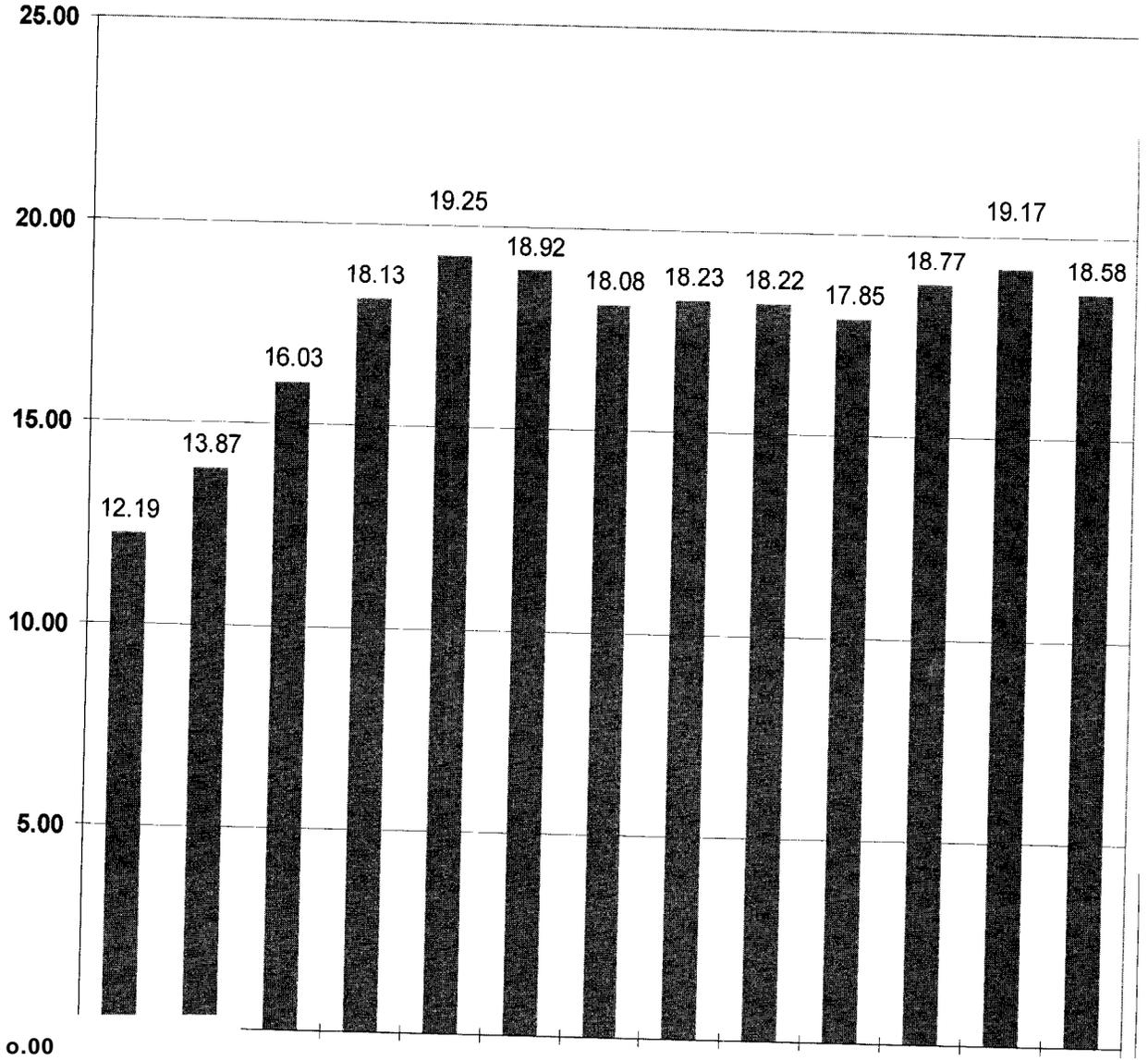
PUBLIC RELATIONS

Since its opening to the public, countless anglers of all age groups have utilized Crystal Springs Ponds. Many of these anglers inquire about the future of SH and are excited to see a new IDFG hatchery come to life and assist in making fishing better for local and statewide waters.

ACKNOWLEDGEMENTS

SH would like to thank the Yanke Family, the Idaho Fish and Wildlife Foundation, the crew at American Falls Fish Hatchery, Matt Kreizenbeck-IDFG Access Coordinator, J.R. Zazweta-IDFG, Terri Bergmeier and the IDFG Region 5 volunteer team, Bingham County Mosquito Abatement, Bingham County Noxious Weed Control, Bingham County Highway Department, Bingham County Water Treatment Facility, The Hoe Works and Mill Creek Metals.

Appendix 3 : Springfield Hatchery Water Discharge



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FISH HEALTH REPORT

2007

**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 (IDFG) 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 110 cases for IDFG resident hatchery programs during 2007 (70 diagnostic cases, 23 routine hatchery inspections, and 17 inspections of feral brood fish). I was also responsible for 3 inspections done on rainbow trout from Rangens Aquaculture (fish purchased by Idaho Power Co. for release), 7 wild fish inspections, and 1 private pond inspection done at the request of Southeast Regional biologists, and 18 various research tests.

The most significant fish disease in the Resident hatchery system continued to be bacterial coldwater disease (CWD), caused by *Flavobacterium psychrophilum*. Clinical or epizootic CWD was diagnosed at resident hatcheries 38 times in 2007, almost all in rainbow trout *Oncorhynchus mykiss* or rainbow hybrids. This was a significant increase in incidence over 16 cases in 2006. The treatment of choice for CWD has been oxytetracycline (OTC) in medicated feed under an Investigational New Animal Drug (INAD) protocol, but the drug Aquaflor became available under Veterinary Feed Directive (VFD) in 2007. (A VFD is essentially a written prescription from a licensed veterinarian, and must be provided to any fish food manufacturer before they can legally sell medicated feed to any user). A total of 15 INAD protocols and 10 VFDs were used to treat CWD at resident hatcheries in 2007, compared to 14 INAD protocols each in 2005 and 2006.

The only pathogens detected during 2007 in the Resident hatchery system that are classified as "reportable" were found exclusively at Hagerman Hatchery. These were infectious hematopoietic necrosis virus (IHNV) and *Aeromonas salmonicida*, the causative bacterium of furunculosis (FUR). Both are considered endemic to the Hagerman Valley.

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 (FDA) 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 personnel and the AADAPP administrators. Chemicals used by IDFG resident hatcheries in 2007 under the INAD program included OTC, Aquaflor, and

Chloramine-T (CHLOR-T). Oxytetracycline and Aquaflor 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. Aquaflor was available under an INAD early in the year, but was later granted approval for use under VFD against both *F. psychrophilum* (CWD) and *A. salmonicida* (FUR). Dr. Phil Mamer of IDFG's Wildlife Health Laboratory was extremely cooperative in providing VFDs whenever needed.

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 to meet state permitting regulations. 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. The Idaho State Department of Agriculture (ISDA) became more involved in the import permit process in 2007 in response to emergency rulings regarding viral hemorrhagic septicemia (VHS) in the Great Lakes region. Idaho State laws and regulations give IDFG and ISDA parallel (and sometimes overlapping) regulatory authority for the importation of live fish and fish eggs. Cooperation between the agencies has been essential to make the permit process work. I also coordinated the paperwork needed to obtain a Federal Title 50 certificate to import sterile brook trout *Salvelinus fontinalis* eggs to the Ashton Hatchery from British Columbia, Canada.

The following is a summary of the work I did for each IDFG hatchery in 2007, including the results of all sampling done at those hatcheries.

AMERICAN FALLS HATCHERY

Five of six diagnostic examinations of rainbow trout at American Falls determined that CWD was the cause of mortality (Appendix A). Four of those five episodes were treated successfully with OTC under INAD protocols. The fifth case was treated with Aquaflor. Initial response was outstanding, with daily mortalities dropping to single digits in a population of nearly 30,000 before the 10-day treatment was complete. However, mortality suddenly began to climb 3 days after completion of the treatment, peaking on day 5 at almost 8.5% or 2,333 fish (Figure 1). Signs included loss of mucus, scales, and color in large patches of skin, and a distended hindgut with a mucoid plug. If the fish did not die immediately, the patches of skin would slough away, exposing the underlying musculature. No systemic bacteria could be isolated. Histology confirmed the gross visual signs, along with changes consistent with recovery from a bacterial infection. Analysis of the feed indicated that all nutrient and vitamin parameters, as well as the content of medication and the level of rancidity, checked out within acceptable guidelines, and the manufacturer reported that other facilities receiving the same lot of medicated feed did not experience any similar problems. Two other raceways of rainbow trout began to show similar but less severe external signs, were diagnosed with CWD, and successfully treated with OTC. Other groups of fish on the same water supply showed no signs at all. Total loss to the isolated episode was nearly 30% in the one raceway. A final explanation of cause is still unknown. While it is possible that this particular group of fish was for some reason predisposed to an adverse reaction to the Aquaflor medication, no solid evidence other than timing of the episode supports that supposition.

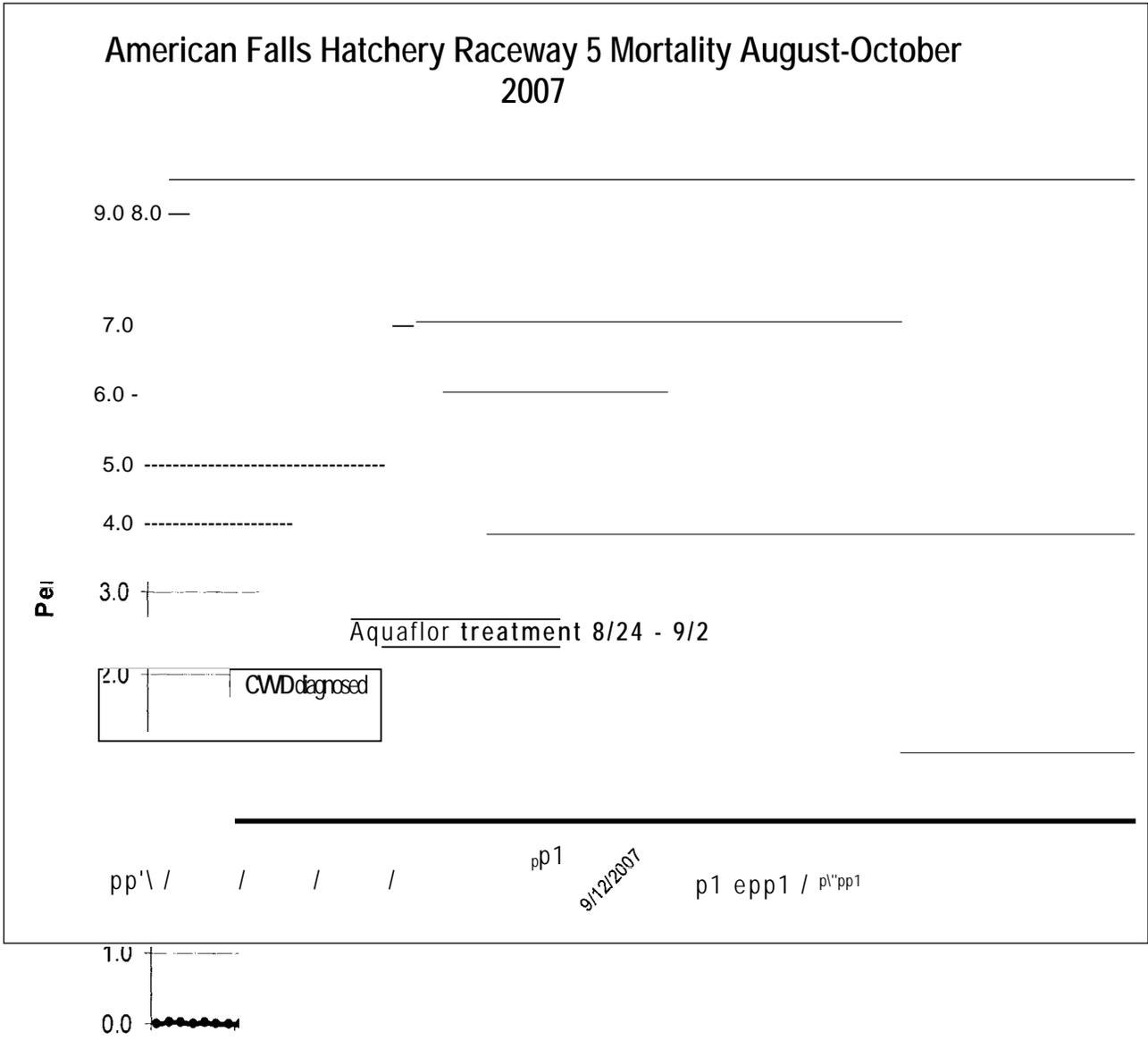


Figure 1. Percent daily mortality in rainbow trout from Raceway 5 at American Falls Hatchery, August through

October, 2007.

ASHTON HATCHERY

I inspected the BY06 rainbow trout at Ashton in April (Appendix B). No replicating virus, cultured bacteria, or MYXOB spores were detected. Direct fluorescent antibody tests (DFAT) and enzyme-linked immunosorbent (ELISA) tests detected no evidence of *Renibacterium salmoninarum* (RS). I also did an abbreviated inspection on excess brook trout in May, in which I detected no viruses or MYXOB spores. These fish were subsequently transferred to Hagerman State Hatchery to feed the tiger muskies. Increasing mortalities in the BY07 rainbow were reported in August. The first attempt to ship samples was not a success, in that they reached the laboratory warm and badly decomposed. Bacterial cultures were attempted but grew only enteric contaminants. A second shipment of samples arrived in much better condition, and CWD was diagnosed. The fish were treated with Aquaflor and responded very well.

Work was done on the spring area to improve the efficiency of the intake, but the hatchery manager reports that there is still surface water where ducks or other animals could possibly convey infectious organisms to the hatchery water source.

CABINET GORGE HATCHERY

A trial was conducted on kokanee salmon *O. kisutch* eggs from Cabinet Gorge Hatchery to determine if bacteria might have been the cause for unusually elevated losses of eggs in the incubators following the 2006 spawning season. Internal contents of 10 eggs (9 blanks and one with a viable embryo) were streaked on TYES agar (Appendix C). Significant numbers of unusual bacteria grew from only one egg that did not react well with standardized biochemical tests. Identification was tentative as a species of either *Moraxella* or *Pseudomonas*. It was concluded that these bacteria were most likely saprophytes or contaminants.

I inspected spawning kokanee salmon adults at Sullivan Springs in late November. Tests detected no replicating viruses or *Myxobolus* (MYXOB) spores. The DFAT tests for RS were negative, but 7 of 12 ELISA pooled samples were low positives for RS antigen. This was consistent with historic results. A light infection of encysted cestodes was evident in the pyloric caecae of about half the fish. These organisms are observed every year and do not appear to have any adverse effect upon their hosts.

Cabinet Gorge Hatchery received green westslope cutthroat trout *O. clarkii* eggs taken from King's Lake in Washington State. I traveled to King's Lake to sample the feral adult fish from which these eggs were taken. No replicating viruses were detected by EFHL from kidney/spleen tissue samples (ovarian fluid samples were taken by the Washington Dept. of Fish and Wildlife pathologist and were also negative). No MYXOB spores were detected. Direct FAT tests detected no RS, while ELISA detected RS antigen from 32 of 60 individuals (31 low and 1 high optical densities). In addition, fin clips were taken from all individuals for genetic analysis. The Eagle Genetics Laboratory reported rainbow trout alleles from 2 individuals (1 male and 1 female). Because these eggs were intended as the foundation of a new hatchery brood population of westslope cutthroat, eggs were culled from the high ELISA positive female and from both crosses that utilized gametes from the introgressed hybrid individuals.

GRACE HATCHERY

Three diagnostic cases were examined from Grace Hatchery rainbow trout (Appendix D). The first case was diagnosed as MAS (*Aeromonas sobria*) with a carrier detection of CWD. This episode was treated with OTC using the existing label. The other two cases were diagnosed as CWD, one of small fish in the hatchery vats and the other in the large production raceways. Both episodes were treated successfully with VFD Aquaflor.

A short section of open ditch remains between the main springs and the intake to the hatchery raceways. Biosecurity for the facility would be enhanced if this were enclosed. The middle springs remain open, but would require much more difficult engineering to capture. I have offered the hatchery manager my assistance in his assignment to compile a handbook of recommended drug and chemical use for all IDFG hatcheries.

HAGERMAN STATE HATCHERY

A total of 40 diagnostic cases were examined from Hagerman State Fish Hatchery in 2007, double the number from 2006 (Appendix E). The increase was likely due to a combination of factors: there were more episodes of clinical FUR and CWD; the level of surveillance was probably higher due to increased concern from the manager; and it is possible that the internal parasite *Nucleospora salmonis* (NS) has become more prevalent, thus predisposing fish to outbreaks of other more virulent pathogens.

There is an obvious progression of disease problems as fish grow at Hagerman. For the first year in memory, no fish were lost to infectious disease episodes in the indoor vats. As fish grew, they were moved from the vats to the west raceways. Eleven cases were examined from the west raceways this year, with CWD diagnosed 8 times. Three cases were identified as MAS (1 concomitant with CWD), and one case failed to detect any pathogen. After a growth period, fish are transferred from the small west raceways to large raceways supplied with water from Tucker Springs (designated L1 through L16). Twenty-two diagnostic cases were examined from this set of raceways in 2007. Bacterial CWD was detected 12 times, IHN 5 times, FUR 4 times, MAS 4 times, *F. columnare* (COL) 2 times, and no pathogens were detected in 3 cases. Multiple pathogens were detected from many groups of fish. Finally, as fish grew nearer to the "catchable" size, they were moved to raceways on the Riley Creek water supply (L17 through L24). Seven diagnostic cases were examined from these raceways, with IHN detected 2 times, FUR 3 times, CWD 2 times, COL 2 times, MAS 2 times, and NS once. Most of the disease episodes/diagnostic examinations occur in raceways L1 through L16 because they hold the greatest concentration of fish at the most susceptible life stage for the longest time period in Hagerman's production scheme. Biosecurity of these raceways is not as good as in the west raceways due to the much larger area and design that makes exclusion of animal vectors much more difficult.

Losses to IHN virus were moderate in 2007, with fewer numbers of fish lost offset by the loss of more pounds because effected fish were larger. Hatchery management has been able to protect younger fish from exposure for a longer time, which may have contributed to later disease development. Virus detections in larger fish almost always coincided with detection of other bacterial pathogens. Multiple infections often make determining the best course of treatment or evaluating a response difficult or impossible. Several antibiotic treatments for bacterial infections in 2007 were probably compromised by the effect of IHN virus.

The protozoan parasite *Ichthyophthirius mutt/fills* (ICH) was detected by hatchery personnel during routine checks in December 2006 and again in December 2007. One-hour flush treatments of potassium permanganate (KmNO₄) were initiated 3 times per week at 1.5-2.0 mg/L until mid-February 2007, and again in late December. No actual losses to ICH were documented in either episode, indicating that the treatments were both timely and effective. My first recommendation for ICH treatment would be formalin rather than KmNO₄ but the volume of formalin to needed to treat the water flow at Hagerman is almost prohibitive (see Nampa Hatchery, below).

Nucleospora salmonis and *Tetracapsuloides bryosalmonae* (the causative agent of proliferative kidney disease or PKD) were both detected only once in one group of fish. This reflects more the number of tests run (2 for NS; 1 for *T. bryosalmonae*), not the prevalence of the parasites. Historic tests indicate that both organisms are established in Riley Creek, and it is assumed that any fish reared on that water supply are probably infected. Because neither parasite appears to cause primary mortality in the fish at Hagerman State, and since the polymerase chain reaction (PCR) test for either organism is very involved, it has not been a priority to frequently test for either.

HAYSPUR HATCHERY

Sixty-fish inspection samples (lethal) were taken from both BY05 Hayspur-stock (R9) and Kamloops (K1) rainbow trout populations prior to the spawning season (Appendix F). 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, ovarian fluid was collected 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 0.100. This was the 15th consecutive year with no replicating viruses detected at Hayspur Hatchery (since 1992).

The R9 brood stock replacement spawning was done on four separate days between October 31 and December 5, 2007. A total of 163 females were tested from BY04 (3-year-olds). No viruses were detected from any ovarian fluid or tissue samples; including 53 samples that were either blind-passed or carried out 21 days to check for VHS. The RS test results were as follows, with 2006 results in parentheses for comparison: 0 of 163 (1 of 191) ovarian fluid samples positive by OCP-FAT, 0 of 60 (1 of 57) kidney smears positive by DFAT, and 3 of 60 (8 of 57) positive by ELISA. The mean ELISA OD value for all positive fish was 0.658 with 1 individual below 0.250 and a high individual OD of 0.936 (mean OD in 2006 was 0.953 with 2 below 0.250 and the high at 2.095). No signs of clinical bacterial kidney disease were observed. Eggs from 3 ELISA-positive females were culled from the program.

Kamloop brood stock replacement spawning was done on four days, from October 11 to November 20. A total of 146 BY04 females were tested. No viruses were detected from any ovarian fluid or tissue samples (0 of 19 for VHS). The RS test results were as follows (2006 results in parentheses): 0 of 146 (2 of 142) ovarian fluid samples positive by OCPFAT, 0 of 60 (1 of 48) kidney smears positive by DFAT, and 1 of 60 (1 of 48) positive by ELISA. The single positive ELISA optical density was high at 0.762, compared to one positive at 1.713 in 2006. No signs of clinical bacterial kidney disease (BKD) were observed. Eggs from the single ELISA-positive female were culled. Several females in the K1 population showed moderate to severe signs of nephrocalcinosis (calcium deposits in the kidney tubules that may lead to diffuse necrosis in the kidney). The cause is generally thought to be environmental rather than infectious. Tests of the effected fish did not detect any of the usual pathogens (RS, cultured bacteria, or viruses).

Clinical BKD was observed for the first time at Hayspur Hatchery in BY03 Kamloops in 2006. Therefore, it was decided to initiate a more aggressive antibiotic treatment for all broodstock at Hayspur during 2007. The BY04 Kamloops received 3 separate feedings of OTC, while the BY04 R9 rainbow received 2 feedings of OTC plus a pre-spawning injection of erythromycin. There were no controls and comparing the 2006 3-year-olds (BY03) to 2007 3-year-olds (BY04) may be questionable (totally different populations), but it seems that the treatment may have had some benefit. The number of positive detections (prevalence) was reduced, as was the mean ELISA OD (intensity). More than one year's results will be necessary to truly evaluate the response to these treatments.

Stocking sterile rainbow trout from all IDFG hatcheries has become an important part of statewide fishery management. All rainbow or Kamloop 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 13 lots of treated eggs throughout the spawning season and delivered eyed egg subsamples from each for incubation and rearing at the EFHL wet laboratory. When the resulting groups of fish were large enough, individual blood samples were taken and sent to the Thorgaard Laboratory at Washington State University for analysis by flow cytometry. Four hundred twelve of 418 fish, or 98.6% were triploid (4 of the 6 diploids were from a single spawning lot). All egg lots tested in 2007 were treated with high pressure to induce triploidy.

The triploid sampling protocol will change next year. No eggs were delivered to EFHL from Hayspur spawning lots in 2007. Instead, lots of Hayspur-stock fish will be selected at the production hatcheries to be tested just prior to stocking in 2008. This will provide documentation of the percentage of sterile 3N fish actually leaving the hatcheries.

HENRYS LAKE HATCHERY

Fish health inspection samples were taken from spawning Yellowstone cutthroat trout at Henrys Lake Hatchery from March 1 through April 16, 2007 (Appendix G). Ovarian fluids were collected by hatchery personnel and shipped to EFHL where they were tested for viruses (173 females in 25 pools) and RS by OCP-FAT (1537 females in 223 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). No RS was detected by OCP-FAT, so no eggs were discarded in 2007.

I visited the hatchery on April 3 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. None of the kidney smears were positive for RS by DFAT, compared to 20 of 60 in 2006. Seven of 12 tissue samples (5-fish pools) were positive by ELISA (all low OD), compared to 12 of 12 in 2006. Bacteriology samples isolated *F. psychrophilum* from 7 of 16 fish (14 of 16 in 2006) and a *Pseudomonas* species from 6 of 16 fish. No signs of clinical CWD have ever been evident in the adult cutthroat trout at Henrys Lake, but significant losses to CWD have occurred in their offspring at Mackay Hatchery. The *Pseudomonas* was probably an opportunist taking advantage of the fish's compromised condition at spawning and may or may not have resulted in post-spawn illness or mortality. Spores of size and shape consistent with *M. cerebralis* (MC), the causative agent of salmonid whirling disease (WHD), were detected by pepsin/trypsin digest (PTD) from 6 of 12 five-fish pools. Water conditions in the lake were generally much better over the winter of 2006-7 than in the previous winter. This probably reduced pre-spawning stress and might explain the return to more typical levels of bacterial pathogen detection.

MACKAY HATCHERY

First-feeding Henrys Lake cutthroat fry have historically experienced significant losses due to CWD. Treatments using OTC-medicated feed were never successful. Florfenicol was first tried in 2006 under an INAD protocol with remarkable success. With the change in regulations, the 2007 fish were treated with Aquaflo using a VFD from Dr. Mamer. Medicated feed was presented to first feeding fry about 5 days after swim-up. Dr. Mamer explained that this was considered a "metaphylactic" treatment, meaning there was adequate evidence to believe the pathogen was present even though it had not yet manifested as clinical disease. This differs from "prophylactic", meaning a treatment just on the chance that a pathogen could be present. Hatchery personnel report that response to the treatment seemed to be positive. All but two lots receiving the medication at early swim-up experienced very low mortality. Historically, the first lots of eggs from Henrys Lake are rainbow X cutthroat hybrids and have not experienced early mortality. For this reason, these hybrids did not receive the early swim-up treatment. This year, the hybrid lots did experience the early losses and did not respond well to the medication when it was applied too late. Hybrids will not be left off treatment in the future.

The hybrid lots continued to experience elevated mortality rates after transfer from the hatchery building to the outside raceways, so were sampled in June (Appendix H). Clinical CWD was diagnosed and an INAD treatment of OTC was applied. Daily mortalities were reduced by the treatment, but lingered at chronic levels until the fish were released.

Mackay Hatchery receives green eggs every year from the early-spawning kokanee in Deadwood Reservoir. Eagle Hatchery personnel took eggs for an experimental project on August 28 and brought the 53 carcasses back to EFHL for disease sampling. This served as the annual inspection for this feral population. No viruses or RS were detected. Large MYXOB spores were detected in 2 of 4 pools by PTD, and from 4 of 5 individuals using a light microscope to look at squashes of brain tissue. This population has previously been confirmed positive for a neurotropic *Myxobolus* species (NEURO) that is not *M. cerebralis*.

Triploid induction samples were taken from the Henrys Lake hybrids in August. Fifty fish were randomly selected, individual blood samples were collected, and the samples were shipped to Washington State University for analysis by flow cytometry. Results were 49 3N out of 50 samples, for a 98% sterility rate. In previous years, samples of eyed eggs were taken from the spawn lots at Henrys Lake and reared at EFHL. This protocol was effective in determining the efficiency of the induction techniques at spawning, but did not reflect the percentage of triploids in a population actually released after the production cycle. By sampling the fish just prior to release, we can now document with reasonable certainty that the hybrids returned to Henrys Lake in 2007 met or exceeded the management goal of 95% sterility.

NAMPA HATCHERY

A catastrophic outbreak of ICH occurred at Nampa Hatchery from December 2006 through January 2007. More than 250,000 large (greater than 6 in.) rainbow trout were lost before the episode was brought under control. Since the first detection of ICH at Nampa in 2005, the treatment preferred by hatchery personnel has been a 1-hour flush of 1.5 to 2.0 mg/l potassium permanganate (KMnO₄) on alternating days. There were several reasons for this choice. First, significantly less chemical was required per treatment. A 1-hour effective treatment of a raceway with 2.5 cfs flow requires 178 grams (6.3 oz) dry KMnO₄ (1.75 mg/l), versus 42.3 L (11.2 gal) of formalin (166 mg/l). Multiply these numbers by 13 raceways and 3-4 treatments per week for 3-6 weeks for a perspective on the total chemical necessary to eliminate an outbreak of ICH. Not only was less chemical going into the hatchery discharge, there was much less physical labor when handling a 25-lb bucket of KMnO₄ compared to a 55-gal drum of liquid formalin. Second, formalin must be stored above 4.4° C (40° F) or it will become paraformaldehyde, a compound toxic to fish. At the time, Nampa did not have a heated, hazardous materials storage area adequate for multiple drums of formalin. Finally, hatchery personnel do not like to handle formalin because they consider the human health risk to be greater than that of KMnO₄. However, in this situation, the KMnO₄ treatments were not effective and it became necessary to use formalin to finally control the outbreak.

Thirteen diagnostic cases and 10 inspection cases were examined at Nampa Hatchery in 2007 compared to only 10 diagnostics in 2006 (Appendix I). Twelve of the diagnostic cases detected clinical CWD and/or MAS, while one confirmed ICH. Both OTC and Aquaflor were used to treat the bacterial infections and results were generally very good. The inspection cases were all in response to a need to screen groups of fish for ICH before the

fish could be transferred to other hatcheries for redistribution. It was decided that ICH could pose a threat to the receiving hatcheries, so a protocol was established in which a raceway of fish destined for transfer would be treated with formalin for 5 consecutive days. A microscopic inspection was then done on gills from 60 fish per raceway for the presence of ICH. If no ICH trophonts were detected, the transfer was then allowed. In only one instance was a transfer cancelled due to detection of ICH. In that case, fish from another inspected raceway were substituted for the transfer, formalin treatments were continued, and that raceway of fish was eventually used for local stocking.

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. This is a likely reason for the recurring problems with ICH. 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 must be considered as a potential risk.

OTHER ACTIVITIES

I completed one WHD exposure trial during May 2007. Exposure sites were in Crystal and Willow Creeks (both tributaries to the Big Wood River), Loving Creek, Silver Creek at Kilpatrick Bridge, and in the Big Wood River at Bellevue. The Bellevue site has traditionally been a positive control and was again positive (100% with moderately high intensities). The Loving Creek site (railroad trestle below Hayspur Hatchery) was positive in an exposure trial completed in 2006, but no positive fish were detected in 2007. No positive fish were detected from Silver Creek at a site that has been historically been negative. Crystal Creek and Willow Creek both enter the Big Wood River near the Stanton Creek Crossing campground, west of the junction of State Highways 20 and 75. No positive fish were detected from either location.

I performed a 60-fish inspection of Bonneville cutthroat *O. ciarkii utah* from a private pond near Grace (Caribou County) at the request of Southeast Region Fishery Biologists. This was a pilot trial to learn the feasibility of rearing fish in this particular pond with the goal of repopulating Whiskey and Trout Creeks. The fish originated from the Afton Hatchery (Wyoming). No replicating viruses, cultured bacteria, or MYXOB spores were detected. One 5-fish pool of 12 was positive for RS by ELISA at an extremely low OD, so this was considered an insignificant finding.

ACKNOWLEDGMENTS

I wish to thank my anadromous counterpart, A. Douglas (Doug) Munson, for his assistance in the field, for sharing his considerable knowledge with me, and for being a congenial office-mate and valued friend. I also acknowledge my supervisor, Keith Johnson, for directing the course of my work. The efforts of Fish Health Technologists Roberta Scott, Carla Hogge, and Sharon Landin are greatly appreciated. Their timely and accurate results from the laboratory are essential in managing the resident hatchery system's fish health challenges. Doug Marsters, Utility Craftsman, was great at keeping Eagle Fish Health Laboratory's physical plant operating and in keeping our vehicles on the road. Administrative Assistant Lani Clifford has kept us all organized and operating smoothly. I also thank Dr. Phil Mamer for his gracious assistance in providing Veterinary Feed Directives to treat coldwater disease. Most importantly, I wish to gratefully acknowledge the Hatchery Managers, Assistant Managers, and Fish Culturists with whom I work. I would be unable to do my job without their cooperation. I sincerely hope my efforts have benefited their hatchery programs.

APPENDICES

Appendix A. Summary report of Eagle Fish Health Laboratory results for American Falls Hatchery, January 1 – December 31, 2007.

B r o o d	y e a r	Sample	Accession	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
	2006	Troutlodge	Rainbow	07-007	1/16/07	-	-	-	-	+	-			DX: CWD; VIRO 0/5, <i>F. psychrophilum</i> 8/8
			trout--3N											
	2007	Troutlodge	Rainbow	07-178	6/03/07	-	-	-	-	+	-			DX: CWD, PSEU; VIRO 0/10, <i>F. psychrophilum</i> 4/6, <i>Pseudomonas fluorescens</i> 3/6, <i>Pseudomonas</i> spp. 2/6
			trout--3N											
	2007	Hayspur	Rainbow	07-181	6/06/07	-	-	-	-	+	+			DX: CWD, MAS; VIRO 0/5
			trout--3N											<i>F. psychrophilum</i> 5/5, <i>Aeromonas sobria</i> 3/5
	2007	Troutlodge	Rainbow	07-263	8/21/07	-	-	-	-	+	-			DX: CWD; VIRO 0/5
			trout--3N											<i>F. psychrophilum</i> 4/5
	2007	Troutlodge	Rainbow	07-315	9/06/07	-	-	-	-	-	-			DX: NPD; VIRO 0/8, BACTE 0/8,
			trout--3N											HISTO-Bacterial enteritis
	2007	Troutlodge	Rainbow	07-326	9/17/07	-	-	-	-	+	-			DX: CWD, PSEU; VIRO 0/8,

Appendix D. Summary report of Eagle Fish Health Laboratory results for Grace Hatchery, January 1 – December 31, 2007.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2006	Hayspur	Rainbow trout--3N	07-134	4/25/07	-	-			-	-	+	+			DX: MAS, CWD; VIRO 0/10, <i>Aeromonas sobria</i> 4/8, <i>Flavobacterium psychrophilum</i> 1/8
2007	Troutlodge	Rainbow trout--3N	07-373	10/22/07	-	-			-	-	+	+			DX: CWD, MAS; VIRO 0/5, <i>F. psychrophilum</i> 5/5, <i>A. sobria</i> 1 /5
2007	Troutlodge	Rainbow trout--3N	07-397	11/7/07					-	-	+	-			DX: CWD; <i>F. psychrophilum</i> 3/6

Appendix E. Summary report of Eagle Fish Health Laboratory results for Hagerman State Hatchery, January 1 – December 31, 2007.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2006	Hayspur	Rainbow trout--3N	07-028	2/26/07	-	-			-	-	+	-			DX: CWD; VIRO 0/5, Flavobacterium psychrophilum 4/4
2006	Hayspur	Rainbow trout--3N	07-029	2/26/07	-	-			-	-	+	+			DX: CWD, MAS; VIRO 0/5, <i>F. psychrophilum</i> 1/4, <i>Aeromonas caviae</i> 2/4
2006	Hayspur	Kamloops trout--3N	07-030	2/26/07	-	-			-	-	-	+			DX: COL, MAS; VIRO 0/5, <i>F. columnare</i> 4/4, <i>A. caviae</i> 3/4
2006 Troutlodge		Rainbow trout--3N	07-031	2/26/07	-	-			+	-	+	-			DX: FUR, CWD; VIRO 0/5 <i>A. salmonicida</i> 3/4, <i>F. psychrophilum</i> 1/4
2006 Troutlodge		Rainbow trout--3N	07-032	2/26/07											DX: NPD; PCR-NS 0/4
2006	Hayspur	Kamloops trout--3N	07-070	3/20/07	-	-			-	-	+	-			DX: CWD; VIRO 0/5, <i>F. psychrophilum</i> 4/4
2006	Troutlodge	Rainbow trout--3N	07-071	3/20/07					+	-	-	-			DX: FUR; <i>A. salmonicida</i> 4/4
2006	Troutlodge	Rainbow trout--3N	07-091	4/03/07					+	-	-	+			DX: FUR, PSEU, MAS; <i>A. salmonicida</i> 1/7, <i>A. sobria</i> 2/7, <i>Pseudomonas spp.</i> 4/7

Appendix E. Summary report of Eagle Fish Health Laboratory results for Hagerman State Hatchery, January 1 – December 31, 2007 (continued).

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2006	Hells Canyon	Steelhead trout	07-164	5/17/07	-	-			-	-	-	-			DX: NS, PKD, BACTEREMIA; VIRO 0/5, <i>Flavobacterspp.</i> 1/6, <i>PCR-Nucleospora salmons</i> 1/2, <i>PCR-Tetracapsuloides bryosa/monae</i> 2/2
2007	Hayspur	Rainbow trout--3N	07-196	6/22/07	-	-			-	-	+				DX: CWD; VIRO 0/5, <i>F. psychrophilum</i> 3/4
2007	Hayspur	Rainbow trout--3N	07-197	6/22/07	-	-			-	-	+	-			DX: CWD; VIRO 0/5, <i>F. psychrophilum</i> 4/4
2006	Troutlodge	Rainbow trout--3N	07-204	7/06/07	+	-			+	-	-	+			DX: IHN, FUR, MAS, COL; IHNV 1/1(X5), IPNV 0/5, <i>A. salmonicida</i> 2/6, <i>A. hydrophila</i> 3/6, <i>F. columnare</i> 3/6
2006	Hayspur	Rainbow trout--3N	07-207	7/13/07	+	-			-	-	+	-			DX: IHN, CWD; IHNV 1/1(x5), IPNV 0/5, <i>F. psychrophilum</i> 4/4
2007	Hayspur	Rainbow trout--3N	07-213	7/17/07	-	-			-	-	+	+			DX: CWD, MAS; VIRO 0/5, <i>F. psychrophilum</i> 4/5, <i>A. hydrophila</i> 4/5
2007	Hayspur	Rainbow trout--3N	07-214	7/17/07	-	-			+	-	+	-			DX: FUR, CWD; VIRO 0/3, <i>A. salmonicida</i> 3/3, <i>F. psychrophilum</i> 1 /3
2006	Troutlodge	Rainbow trout--3N	07-224	7/26/07	+	-			-	-	-	-			DX: IHN, COL; IHNV 1/1(x5), IPNV 0/5, DFAT 0/5, <i>F. columnare</i> 3/4

Appendix E. Summary report of Eagle Fish Health Laboratory results for Hagerman State Hatchery, January 1 – December 31, 2007 (continued).

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2007	Hayspur	Rainbow	07-264	8/21/07	+	-			-	-	+	-			DX: IHN, CWD; IHNV 1/1(X5), IPNV 0/5. <i>F. psychrophilum</i> 4/4
		trout--3N													
2007	Hayspur	Rainbow	07-265	8/21/07					-	-	-	+			DX: MAS; <i>A. hydrophila</i> 1/4, <i>A. sobria</i> 1/4
		trout--3N													
2007	Troutlodge	Rainbow	07-266	8/21/07					-	-	-	-			DX: NPD; BACTE 0/4
		trout--3N													
2007	Hayspur	Rainbow	07-341	9/21/07	-	-	-		-	-	+	-			DX: CWD; VIRO 0/4, VHS 0/4 <i>F. psychrophilum</i> 4/4
		trout--2N													
2007	Hayspur	Rainbow	07-342	9/21/07	+	-			-	-	+	-			DX: IHN, CWD; IHNV 1/1(X5), IPNV 0/5, <i>F. psychrophilum</i> 1 /4
		trout--3N													
2007	Hayspur	Rainbow	07-343	9/21/07	+	-									DX: IHN; IHNV 1/1(x5), IPNV 0/5
		trout--3N													
2007	Troutlodge	Rainbow	07-352	10/02/07	-	-			-	-	+	-			DX: CWD; VIRO 0/5, <i>F. psychrophilum</i> 3/4
		trout--3N													
2007	Troutlodge	Rainbow	07-353	10/02/07	-	-			-	-	+	+			DX: CWD, MAS, PSEU; VIRO 0/5, <i>F. psychrophilum</i> 3/4, <i>A. hydrophila</i> 1/4, <i>Pseudomonas</i> spp. 1 /4
		trout--3N													

Appendix E. Summary report of Eagle Fish Health Laboratory results for Hagerman State Hatchery, January 1 – December 31, 2007 (continued).

B rood year	Stock	Species	Accession	Sample Date	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2007	Troutlodge	Rainbow trout--3N	07-407	11/16/07					-	-	+	-			DX: CWD; <i>F. psychrophilum</i> 4/4
2007	Troutlodge	Rainbow trout--3N	07-414	12/03/07	-	-			-	-	-	+			DX: MAS; VIRO 0/5, <i>A. caviae</i> 2/4
2007	Troutlodge	Rainbow trout--3N	07-415	12/03/07	-	-			+	-	-	-			DX: FUR; VIRO 0/5, <i>A. salmonicida</i> 4/4
2007	Troutlodge	Rainbow trout--3N	07-423	12/26/07	-	-			-	-	-	-			DX: NPD; VIRO 0/5, BACTE 0/4
2007	Troutlodge	Rainbow trout--2N	07-424	12/26/07	+	-			-	-	+	+			DX: IHNV, CWD, MAS; IHNV 1/1 (x5), IPNV 0/5, <i>F. psychrophilum</i> 2/4, <i>A. hydrophila</i> 1/4
2007	Troutlodge	Rainbow trout--3N	07-425	12/26/07	-	-			-	-	-	-			DX: PSEU; VIRO 0/5, <i>Pseudomonas sp.</i> 1/4
2007	Troutlodge	Rainbow trout--3N	07-426	12/26/07	-	-			-	-	-	-			DX: NPD; VIRO 0/5, BACTE 0/4
2007	Troutlodge	Rainbow trout--3N	07-427	12/26/07	-	-			+	-	-	-			DX: FUR; VIRO 0/5, <i>A. salmonicida</i> 4/4
2007	Troutlodge	Rainbow trout--2N & 3N	07-428	12/26/07	-	-			-	-	+	-			DX: CWD; VIRO 0/5, <i>F. psychrophilum</i> 4/4

Appendix F. Summary report of Eagle Fish Health Laboratory results for Hayspur Hatchery, January 1 – December 31, 2007

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2006	Hayspur	Kamloops trout--3N	07-186	3/12/07											IX: RESEARCH: Triploid induction rate 39/40 (94.5%)
2006	Hayspur	Kamloops trout--3N	07-187	3/12/07											IX: RESEARCH: Triploid induction rate 40/40 (100%)
2006	Hayspur	Kamloops trout--3N	07-188	3/12/07											IX: RESEARCH: Triploid induction rate 40/40 (100%)
2006	Hayspur	Rainbow trout--3N	07-189	4/09/07											IX: RESEARCH: Triploid induction rate 36/40 (90.0%)
2006	Hayspur	Rainbow trout--3N	07-190	4/09/07											IX: RESEARCH: Triploid induction rate 40/40 (100%)
2006	Hayspur	Kamloops trout--3N	07-191	4/09/07											IX: RESEARCH: Triploid induction rate 40/40 (100%)
2007	Hayspur	Rainbow trout--3N	07-192	5/29/07											IX: RESEARCH: Triploid induction rate 11/11 (100%)
2007	Hayspur	Rainbow trout--3N	07-193	5/29/07											IX: RESEARCH: Triploid induction rate 11/12 (91.7%)
2005	Hayspur	Kamloops trout	07-235	8/06/07	-	-	-	-	-	-	-	-	-	-	IX: NPD; VIRO 0/60, BACTE 0/16, DFAT 0/60, ELISA 0/60, PTD-MYXOB 0-60
2005	Hayspur	Rainbow trout	07-249	8/14/07	-	-	-	-	-	-	-	-	-	-	IX: NPD; VIRO 0/60, BACTE 0/16, DFAT 0/60, ELISA 0/60, PTD-MYXOB 0-60
Brood	Hayspur	Kamloops	07-362	10/11/07	-	-	-	-	-	-	-	-	-	-	IX: NPD; VIRO 0/24, VHS 0/6,

trout

DFAT 0/24, ELISA 0/12,
BACTE 0/1

2007 Hayspur Rainbow 07-366 7/09/07 trout--3N

IX: RESEARCH:
Triploid induction rate
30/30 (100%)

Appendix F. Summary report of Eagle Fish Health Laboratory results for Hayspur Hatchery, January 1 — December 31, 2007(continued).

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2007	Hayspur	Rainbow	07-367	7/09/07											IX: RESEARCH: Triploid induction rate 21/21 (100%)
		trout--3N													
2007	Hayspur	Kamloops	07-368	7/09/07											IX: RESEARCH: Triploid induction rate 33/33 (100%)
		trout--3N													
2007	Hayspur	Kamloops	07-369	10/09/07											IX: RESEARCH: Triploid induction rate 36/36 (100%)
		trout--3N													
2007	Hayspur	Rainbow	07-370	10/09/07											IX: RESEARCH: Triploid induction rate 35/35 (100%)
		trout--3N													
Brood	Hayspur	Kamloops	07-375	10/24/07	-	-	-	-							IX: NPD; VIRO 0/48, VHS 0/5, DFAT 0/18, OCP-FAT 0/48, ELISA 0/18
		trout													
Brood	Hayspur	Rainbow	07-388	10/31/07	-	-	-	+							IX; RS; VIRO 0/45, VHS 0/6. DFAT 0/15, OCP-FAT 0/45, ELISA 2/15 (1 LOW, 1 HIGH)
		trout													
Brood	Hayspur	Kamloops	07-396	11/07/07	-	-	-	+							IX; RS; VIRO 0/38, VHS 0/4, DFAT 0/18, OCP-FAT 0/38, ELISA 1/18 (1 HIGH)
		trout													
Brood	Hayspur	Rainbow	07-404	11/14/07	-	-	-	-							IX: NPD; VIRO 0/36, VHS 0/4,

Appendix G. Summary report of Eagle Fish Health Laboratory results for Henrys Lake Hatchery, January 1 – December 31, 2007.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-047	3/01/07	-	-	-	-							IX: NPD; VIRO 0/12, OCP-FAT 0/144
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-050	3/05/07	-	-	-	-							IX: NPD; VIRO 0/14, VHS 0/14 OCP-FAT 0/119
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-059	3/12/07	-	-	-	-							IX: NPD; VIRO 0/14, VHS 0/7 OCP-FAT 0/133
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-060	3/08/07	-	-	-	-							IX: NPD; VIRO 0/14, VHS 0/7 OCP-FAT 0/182
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-067	3/15/07	-	-	-	-							IX: NPD; VIRO 0/14, OCP-FAT 0/133
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-068	3/19/07	-	-	-	-							IX: NPD; VIRO 0/14, OCP-FAT 0/105
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-079	3/22/07	-	-	-	-							IX: NPD; VIRO 0/14, OCP-FAT 0/105
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-083	3/29/07	-	-	-	-							IX: NPD; VIRO 0/14, VHS 0/14 OCP-FAT 0/105
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-084	4/02/07	-	-	-	-							IX: NPD; VIRO 0/7, OCP-FAT 0/42

Appendix G. Summary report of Eagle Fish Health Laboratory results for Henrys Lake Hatchery, January 1 – December 31, 2007 (continued).

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-090	4/03/07	-	-	-	+	-	-	+	-	+		IX: RS, CWD, PSEU, WHD; VIRO 0/60, VHS 0/30, DFAT 0/60, ELISA 7/12(x5, ALL LOW), <i>Flavobacterium psychrophilum</i> 7/16, <i>Pseudomonas sp.</i> 6/16, PTD-WHD 6/12(x5)
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-099	4/05/07	-	-	-	-	-	-	-	-	-		IX: NPD; VIRO 0/14, OCP-FAT 0/140
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-100	4/09/07	-	-	-	-	-	-	-	-	-		IX: NPD; VIRO 0/14, OCP-FAT 0/105
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-118	4/11/07	-	-	-	-	-	-	-	-	-		IX: NPD; VIRO 0/14, OCP-FAT 0/119
Brood	Henrys Lake	Yellowstone Cutthroat trout	07-119	4/16/07	-	-	-	-	-	-	-	-	-		IX: NPD; VIRO 0/14, OCP-FAT 0/105

Appendix H. Summary report of Eagle Fish Health Laboratory results for Mackay Hatchery, January 1 - December 31, 2007.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	NEURO	Diagnoses
2007	Henrys Lake	Rainbow X Cutthroat hybrids	07-199	6/25/07	-	-		-	-	-	+	-			DX: CWD; VIRO 0/10, DFAT 0/5, Flavobacterium psychrophilum 8/8
2006	Jackson NFH	Yellowstone Cutthroat trout (finespot)	07-200	6/25/07	-	-		+	-	-	-	-	-	-	IX: RS: VIRO 0/60, DFAT 0/60, ELISA 1/12(x5, LOW), BACTE 0/8, PTD-MYXOB 0/60
2007	Henrys Lake	Yellowstone Cutthroat trout	07-209	7/16/07					-	-	-	-			DX: NPD; BACTE 0/8
2007	Henrys Lake	Yellowstone Cutthroat trout	07-210	7/16/07					-	-	+	-			DX: CWD; F, psychrophilum 1/8
2007	Henrys Lake	Rainbow X Cutthroat hybrids	07-252	8/20/07											RESEARCH: Triploid induction rate 49/50 (98%)
Brood	Deadwood Reservoir	Kokanee salmon	07-288	8/28/07	-	-	-	-					-	+	IX: NEURO; VIRO 0/53, VHS 0/10, DFAT 0/53, ELISA 0/53, PTD-MYXOB 2/4 (X5), HISTO-NEURO 4/5

Appendix I. Summary report of Eagle Fish Health Laboratory results for Nampa Hatchery, January 1 - December 31, 2007.

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	ICH	Diagnoses
2006	Troutlodge	Rainbow trout--3N	07-006	1/16/07										+	DX: BGD, ICH; <i>Pseudomonas fluorescens</i> 3/3 (gills), <i>Ichthyophthirius mu/Mils</i> 3/3
2006	Troutlodge	Rainbow trout--3N	07-018	2/02/07					-	-	+	-			DX: CWD; <i>Flavobacterium psychrophilum</i> 4/4
2006	Troutlodge	Rainbow trout--3N	07-019	2/02/07					-	-	+	-			DX: CWD; <i>F. psychrophilum</i> 4/4
2007	Hayspur	Rainbow trout--3N	07-038	3/01/07					-	-	+	+			DX: CWD, MAS; <i>F. psychrophilum</i> 3/4, <i>Aeromonas caviae</i> 4/4, <i>She wane/a putrefaciens</i> 3/4
2006	Troutlodge	Rainbow trout--3N	07-072	3/21/07					-	-	+	-			DX: CWD; <i>F. psychrophilum</i> 2/4
2006	Troutlodge	Rainbow trout--3N	07-126	4/18/07										+	DX: ICH; <i>I. multifilis</i> 5/152
2007	Hayspur	Rainbow trout--3N	07-127	4/19/07	-	-			-	-	+	-			DX: CWD; VIRO 0/5, <i>F. psychrophilum</i> 3/5
2006	Troutlodge	Rainbow trout--3N	07-140	4/27/07										-	IX: NPD; ICH 0/62
2006	Troutlodge	Rainbow trout--3N	07-141	5/01/07										-	IX: NPD; ICH 0/61
2006	Troutlodge	Rainbow trout--3N	07-151	5/09/07										-	IX: NPD; ICH 0/60
2006	Troutlodge	Rainbow trout--3N	07-153	5/11/07										-	IX: NPD; ICH 0/60 (RCWY C-4),

trout--3N

ICH 0/14 (RCWY C-5)

Appendix I. Summary report of Eagle Fish Health Laboratory results for Nampa Hatchery, January 1 - December 31, 2007 (continued).

Brood year	Stock	Species	Accession	Sample Date	IHN	IPN	VHS	BKD	FUR	ERM	CWD	MAS	WHD	ICH	Diagnoses
2007	Hayspur	Rainbow trout--3N	07-155	5/15/07	-	-			-	-	+	-			DX: CWD, PSEU; VIRO 0/5, <i>F. psychrophilum</i> 6/8, <i>Pseudomonas sp.</i> 2/8
2007	Hayspur	Rainbow trout--3N	07-176	5/31/07	-	-			-	-	+	-			DX: CWD, PSEU; VIRO 0/5, <i>F. psychrophilum</i> 6/6
2006	Troutlodge	Rainbow trout--3N	07-182	5/31/07										-	IX: NPD; ICH 0/120
2006	Hayspur	Rainbow trout--3N	07-183	6/11/07										-	IX: NPD; ICH 0/120
2006	Troutlodge	Rainbow trout--3N	07-205	7/12/07										-	IX: NPD; ICH 0/120
2007	Troutlodge	Rainbow trout--3N	07-216	7/23/07					-	-	+	+			DX: MAS, CWD; <i>A. hydrophila</i> 2/4, <i>F. psychrophilum</i> 1/4
2007	Troutlodge	Rainbow trout--3N	07-251	8/17/07					-	-	-	+			DX: MAS, PSEU; <i>A. hydrophila</i> 4/4, <i>P. vesicularis</i> 2/4
2006	Troutlodge	Rainbow trout--3N	07-325	9/12/07										+	DX: ICH; <i>I.</i> <i>muff/Nis</i> 1/23

2007	Troutlodge	Rainbow trout--3N	07-332	9/18/07					-	-	-	+			DX: MAS; <i>A. hydrophila</i> 6/8
2006	Troutlodge	Rainbow trout--3N	07-351	9/26/07										-	IX: NPD; ICH 0/60
2007	Troutlodge	Rainbow trout--3N	07-419	12/13/07					-	-	+	+			DX: MAS, CWD; <i>A. sobria</i> 4/4, <i>F. psychrophilum</i> 1/4
2007	Troutlodge	Rainbow trout--3N	07-420	12/13/07					-	-	+	-			DX: CWD; <i>F. psychrophilum</i> 1/4

Appendix J. List of Acronyms used in the Resident Hatcheries Fish Health Report-2007.

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 rucked</i> .
FDA	U. S. Food and Drug Administration
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>/chthyophthirius mu/tifilis</i> ; a protozoan parasite of skin and gills.
ISDA	Idaho State Department of Agriculture
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 cerebra/is</i> ; causative agent of Whirling Disease of salmonids.
MYXOB	<i>Myxobolus</i> ; acronym used when a species is not identified.
NEURO	Neurotropic <i>Myxobolus</i> species
NPD	No Pathogens Detected
NS	<i>Nucleospora salmonis</i> , an intranuclear, microsporidian parasite
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 bryosa/monae</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
VFD	Veterinary Feed Directive
VHS	Viral Hemorrhagic Septicemia; viral disease not yet detected in Idaho.
VIRO	Virology test results
WHD	Whirling Disease of salmonids, caused by <i>Myxobolus cerebra/is</i>

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Steven T. Kammeyer, Assistant Hatchery Manager

Rick Alsager, Fish Hatchery Manager II

Bob Becker, Fish Culturist

Tim Klucken, Assistant Fish Hatchery Manager Paul

Martin, Fish Culturist Bruce Thompson, Assistant Fish

Hatchery

Chris Shockman, Fish Culturist

Travis Brown, Assistant Hatchery Manager David

May Assistant Hatchery Manager I Darlene

Snyder, Fish Culturist

Ken Fetty, Fish Culturist

Bradford W. Dredge, Fish hatchery Manager II Robert

W. Becker, Fish Culturist

Patrick M. Moore, Fish hatchery Manager I

Jason M. Jones, Fish Culturist

Mary Van Broeke, Fisheries Tech

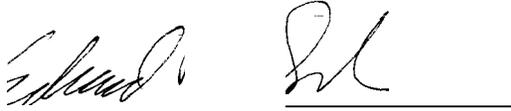
Bob Turik, Assistant Fish Hatchery Manager Jamie

Mitchell, Fish Culturist

Bryan L. Grant, Fish Hatchery Manager

Douglas R. Burton, Fishery Pathologist

Approved By:

Handwritten signature of Edward B. Schriever in black ink, written over a horizontal line.

Edward B. Schriever, Chief
Fisheries Bureau

Handwritten signature of Thomas S. Frew in black ink, written over a horizontal line.

Thomas S. Frew
Resident Fish Hatcheries Supervisor