GRACE HATCHERY
ANNUAL REPORT

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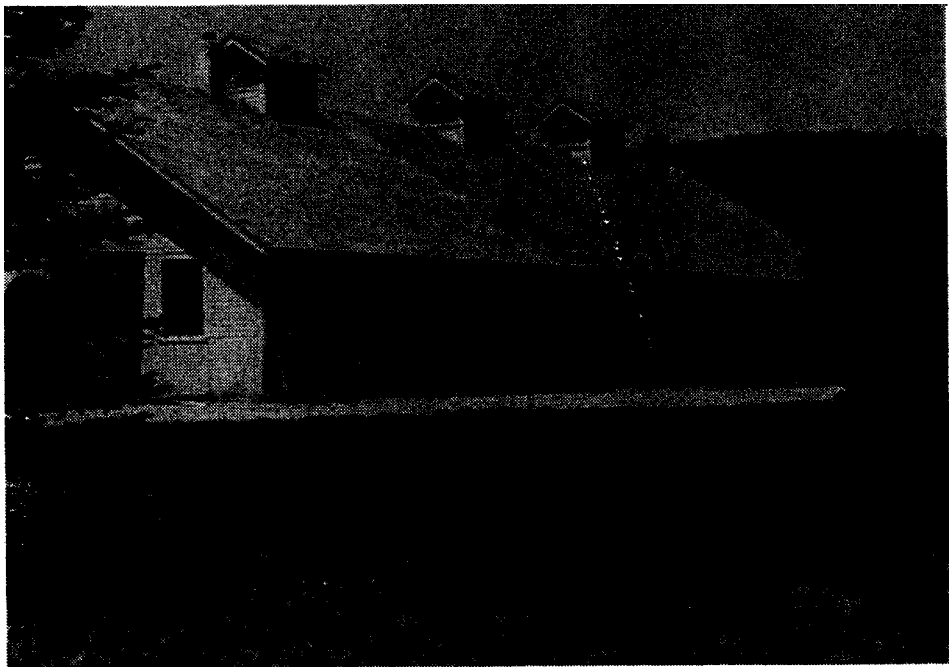

by
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ABSTRACT

During the 1986 fisheries year, Grace Hatchery received a total of 2,075,789 eyed eggs from various federal and state government sources. Species raised this year included: rainbow trout, brown trout, lake trout, Bear Lake cutthroat trout, and Henrys Lake rainbow x cutthroat trout hybrids. A total of 942,582 fish (13,787 lbs.) were reared and stocked in various state waters of Idaho.

A total of 173,385 lbs. of fish feed was fed out this year. The total feed conversion was 1.47, and production cost worked out to be $.33/lb. of fish shipped.

The St. Charles Creek trap on Bear Lake operated from April 29 to June 1. Ninety adults were trapped, with 10 males and 9 females put over the weir. Thirty-nine females were spawned at Utah's Swan Creek facility, which yielded 110,978 eggs. We did not receive any eyed eggs from Utah broodstock this year.

Grace Hatchery again went through extensive personnel changes due to lateral transfers and promotions within the department.

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INTRODUCTION

Grace Hatchery is a state-owned trout rearing facility located in southeastern Idaho eight miles south of the town of Grace. The water supply consists of two natural springs that form the headwaters of Whiskey Creek. Total flow varies from a low of 10 cfs to a high of 24 cfs annually. Temperature is a fairly constant 52°F year-round. The water chemistry is highly alkaline, but is excellent for coldwater fish rearing.

Hatchery personnel consists of a manager (Supt. II), an assistant manager (Supt. I), and a Fish Culturist. Two temporary bio-aides and/or laborers are employed during the spring and summer.

There are three residences for permanent personnel at this hatchery. Other structures include a hatchery building with shop and storage rooms, one two-car garage, an office building (crew's quarters, garage, and public restrooms attached), a four-stall garage (one-half for personal storage and one-half for state storage), and two small storage buildings.

OBJECTIVES

1. To rear 120,000 to 130,000 lbs. of salmonids--mostly rainbow trout--for planting in various state waters. Streams, lakes, and reservoirs in Franklin, Bear Lake, Caribou, Oneida, and Bingham counties are periodically stocked. Other state waters are planted with Grace Hatchery fish when rearing space is available.

2. To maintain a wild egg source of Bear Lake cutthroat trout in Bear Lake by operating a fish trap on St. Charles Creek, a tributary to Bear Lake. Adult Bear Lake cutthroat trout are trapped in the spring, and transported to Utah's Swan Creek facility for sorting, tagging, and spawntaking. Adults are returned to the lake, and eggs are taken to Utah's Mantua Hatchery for rearing and stocking into the lake as fingerlings. This federally funded program operates as a joint effort with Utah to enhance and ensure the future of this unique species in its native habitat.

RECOMMENDATIONS

The following major improvements are necessary:

1. Grade the roadbed around raceways, lay a soil-reinforcement grid, and cover with red cinder rock (started in 1982) or asphalt.

2. Cap and/or repair large raceway walls as needed.

3. Construct nursery raceways behind Residence No. 3 as per request in July 1985 (eight 3 ft. x 3 ft. x 100 ft. with a 3-in. control valve), and build an overhead cover for shade.

4. Re-roof the hatchery building, Residence No. 3, and possibly Residence No. 2.

5. Construct two raceways (4 ft. x 4 ft. x 100 ft.) behind the office building as necessary for rearing 340,000 Bear Lake cutthroat trout at 20/lb.=17,500 lbs.

7. Black-top hatchery access road from the county road to the hatchery residences.

8. Build a two-car garage next to Residence No. 3 for storage of personal vehicles and possessions.

PRODUCTION CAPACITY

Currently, Grace Hatchery produces approximately 100,000 to 120,000 lbs. rainbow trout catchables. Other species recently propagated to fingerlings include: Bear Lake cutthroat trout, Henrys Lake rainbow x cutthroat trout hybrids, brown trout, and lake trout. The hatchery's future goal is to rear 365,000 rainbow trout catchables and 350,000 Bear Lake cutthroat trout fingerlings.

Incubation capacity is 1.5 million green eggs, or .75 million eyed eggs. Another million eggs could be hatched in 10 upwelling incubators (rearing space permitted).

Early rearing space inside consists of 16 concrete vats (3 ft. x 1.5 ft. x 13 ft.). A total of 500,000 swim-up fry can be started. Their maximum capacity is 250,000 2.5 inch fry (160 lbs.), or 1,500 lbs. Outside, there are eight fry ponds (four 7 ft. x 1.5 ft. x 60 ft., and four 3 ft. x 1.5 ft. x 60 ft.), and four new nursery raceways (4 ft. x 2.5 ft. x 100 ft.). The maximum capacity of these rearing ponds is 340,000 5-inch fish, or 17,000 lbs.

Discharge water from these ponds, combined with fresh water from the two springs, supplies six large production raceways (14 ft. x 2.5 ft. x 300 ft.). The maximum capacity of these ponds is theoretically 525,000 9-in. fish or 175,000 lbs., although these numbers have never been reared at this hatchery before. (All figures are based on a .6 maximum density index constant.) All hatchery discharge water flows into a settling pond (ca. 50 ft. x 200 ft.) before it enters Whiskey Creek.

Limiting factors at Grace Hatchery include: an open water supply (livestock in the main water supply), reused water in four of eight fry ponds, low flows from February to April (dependent on snowpack and irrigation needs by local farmers), and uneven flows in the large raceways due to their extreme width.

FISH PRODUCTION

Table 1. Eggs received and hatched at Grace Hatchery during the 1986 fisheries year.

Species	Number of eggs
Rainbow trout (R1)	813,080
Brown trout (BN)	278,576
Lake trout (MA)	318,498
Bear Lake cutthroat trout (C5)	190,806
Henrys Lake rainbow x cutthroat hybrids (RC)	474,829
Total	2,075,789

Table 2. Species stocked and/or transferred according to size.

Species	Size	Number	Pounds
Rainbow trout (R1)	3-6 inches	203,240	1,975
	6+ inches	369,161	88.785
	10+ inches	24,636	15,575
Brown trout (BN)	3-6 inches	226,270	1,870
Lake trout (MA)	3-6 inches	125,760	1,048
Bear Lake cutthroat trout (C5)	6+ inches	62,090	6,050
Henrys Lake rainbow x cutthroat hybrids (RC)	3-6 inches	325,222	2,844
Total		1,336,379	118,147

Table 3. Pounds of fish feed consumed.

Pellet size	Dry diet	Soft-moist diet
Swim-up	250	350
No.	450	1,000
No. 2	3,700	1,500
No. 3	13,150	4,700
No.	9,550	3,300
No. 5	12,000	
Bulk 1/8 inch	96,400	
Bulk 5/32	27,000	
Total pounds	162,521	10,864

The total amount of feed fed this year was 173,385 lbs. The total cost of feed was $38,852.71. The overall feed conversion was 1.47, and it cost $.33/lb. of fish produced (shipped).

FISH HEALTH

Bacterial gill disease became a major problem again this year. During spring and summer, we were constantly treating most large raceways (rainbow trout catchables) with various concentrations of cutrine and benzalkonium chloride. Also, rainbow trout fingerlings (85-Ut-Ri) came down with a severe case of coldwater or peduncle disease. These were treated with a salt bath, which was followed by a 14-day diet of Terramycin-medicated feed. I suspected the problems were primarily due to the poor digestibility of the Clear Springs dry pellet diet fed to these fish.

BEAR LAKE CUTTHROAT TROUT TRAPPING AND SPAWNTAKING

Sandra Allison, a Bio-Aide traptender, operated the St. Charles Creek fish trap this year from April 29 to June 1. This temporary trap is installed annually in a cooperative effort with the Utah Division of Wildlife Resources to capture adult Bear Lake cutthroat trout for artificial spawning. A total of 90 cutthroat trout were captured this year before heavy runoff and record high lake levels forces a premature halt to operations. All, except the required 20X, were taken to Utah's Swan Creek facility for sorting, tagging, and spawntaking. Ten males and

nine females were passed over the weir to spawn naturally. This year, Utah personnel took eggs from 39 St. Charles Creek females, yielding 110,978 eggs. As per agreement, eggs were transferred to Utah's Mantua Hatchery for rearing to fingerlings and subsequential return to the lake.

For the first time, Grace Hatchery personnel took Bear Lake cutthroat trout eggs at a temporary regional trapping station on Little Blackfoot River (Blackfoot Reservoir) from May 30 to June 8. These fish were mostly three-and four-year-olds from 1983 and 1984 fingerling plants. Morpholine-imprinted fish were attracted to their original planting site with a morpholine drip station set upstream of the weir. The hatchery crew received valuable spawntaking assistance from Bud Ainsworth Jr., Magic Valley Hatchery Superintendent III, during the last few days of the trapping operation. Unfortunately, due to the young age of fish and extremely high water temperatures (57 to 70^0F+), only 21,000 fry survived from the original 190,806 egg take.

HATCHERY IMPROVEMENTS

A diesel-powered, four-wheel-drive Kubota tractor with a snowblower attachment was acquired for feeding fish and for winter snow removal. Residence No. 1 received a new water heater, and carpeting for two bedrooms. Residences nos. 2 and 3 had new linoleum installed in the kitchens and bathrooms. Also, Residence No. 3 had new thermopane windows installed to improve heating efficiency. All hatchery vehicles are now equipped with new Phoenix-SX radios. Currently, plans are underway to drill one to three wells at Grace Hatchery to ensure a safer source of domestic drinking water for residents and visitors.

PUBLIC RELATIONS

I estimated 2,000 visitors at Grace Hatchery this year. In addition, hatchery personnel gave tours of the facility to approximately 100 local grade school students. Next year, plans will be underway to build a small visitor center to further inform and educate the public.

MISCELLANEOUS

In June, Mike Stoddard accompanied Fred Page to South Dakota. They brought back 5,000 spottail shiners, and planted these in Oneida Reservoir for future walleye forage. This summer, hatchery personnel conducted a comparative sterilization study on Henrys Lake rainbow cutthroat trout hybrids in conjunction with Lynn Watson, Henrys Lake Hatchery Superintendent I. Including a control group of normal fish, four groups were established. One group comprised heat-shocked eggs for triploid sterility. Another group received methyl testosterone drip

treatment for sterility during incubation. The third group was subjected to the same hormone drip treatment, but was also fed hormone-mixed feed for 90 days. Survival, growth rates, percent of sterilization, and hormone residualism levels are to be studied and analyzed.

Once again, Grace Hatchery experienced a complete turnover in personnel. Bruce Thompson became Superintendent II in December 1985. Rob Hill, Fish Culturist, transferred to McCall Hatchery in May, and was replaced by Brad George. In September, Mike Stoddard transferred to the Bureau of Enforcement as a Conservation Officer Trainee. In October 1986, Rick Alsager was promoted to Hatchery Superintendent I.

ACKNOWLEDGMENTS

Bruce C. Thompson, Hatchery Superintendent II
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Hill, Fish Culturist
Brad George, Fish Culturist
Sandra Allison, Bio-Aide traptender
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