IDAHO
DEPARTMENT OF FISH AND GAME

Jerry M. Conley, Director

MACKAY HATCHERY

Annual Report

1 October 1982 - 30 September 1983

by

William C. Doerr
Fish Hatchery Superintendent II

November 1984

TABLE OF CONTENTS

LIST OF TABLES

MACKAY HATCHERY ABSTRACT

The Mackay Hatchery has been converted to specialty status with emphasis on fingerling and fry production for statewide distribution.

Production at Mackay Hatchery for the year October 1, 1982, to September 30, 1983, included:

101,392 (644 lb.) rainbow trout fry
1,540,405 (8,925 lb.) Henrys Lake cutthroat fry
822,135 (22,075 lb.) coho salmon fry and fingerling
630,815 (9,455 lb.) sockeye salmon fingerling
64,174 (1,911 lb.) fall chinook salmon fingerling, with 154,958 (5,803 lb.) on hand at the end of the year
90,500 (700 lb.) brown trout fry, with 27,878 (1,131 lb.) on hand at the end of the year

No fish were on hand at the beginning of the fish year (10-1-82). Total Mackay fish planted or transferred numbered 3,249,421 (43,710 lb.) with 182,836 (6,934 lb.) on hand at the end of the fish year. This brings total production to 3,432,257 fish weighing 50,644 pounds.

A total of 79,200 pounds of feed was fed at a cost of $16,760.03, with additional feed being used to maintain transferred catchables. A conversion of 1.56 was attained, and the feed cost per pound of fish produced was $0.33. When all hatchery costs are included, each pound of fish produced required an expenditure of $2.35.

In addition to raising fingerlings, Mackay is used as a catchable-sized rainbow trout redistribution facility. 115,347 fish (26,094 lb.) received from the state fish hatcheries at Hagerman, Grace and Nampa were redistributed to the Lost River Sinks drainages and the upper Salmon River drainage.

This year 56 high mountain lakes were planted with rainbow and cutthroat fry, mostly by helicopter, and one high lake was planted with catchables by helicopter and fire bucket.

The Mackay Hatchery also assisted in the Eagle SFH and Pine fish trap kokanee spawning operations. 539,628 eyed, 1982 eggs were shipped to Eagle SFH, and at years end, we are incubating 4,002,896 1983 kokanee eggs.

Author:

William C. Doerr
Fish Hatchery Superintendent II

OBJECTIVES

Because of its specialty status, the objectives of the Mackay Hatchery change from year to year depending on management needs and specialty species egg availability. The objectives of the Mackay Hatchery for 1982-83 were as follows:

1. To rear rainbow and cutthroat fry in sufficient numbers to stock approximately 60 high mountain lakes in Region 6.

2. To receive and redistribute approximately 25,000 pounds of catchable rainbow trout for stocking in the upper Salmon River drainage and the sinks drainages of Region 6.

3. To rear various species and numbers of fry and fingerling to be distributed to various locations in regions 1, 3, 4, 5, 6. These include:

   100,000 rainbow trout
   1,500,000 Henrys Lake cutthroat trout
   90,000 brown trout
   60,000 fall chinook salmon
   800,000 coho salmon
   600,000 sockeye salmon

4. To assist in the early kokanee spawning operations and incubate 4 million 1983 brood eggs and 500,000 1982 brood eggs to the eyed stage.

5. To hold Ashton Hatchery's rainbow trout, cutthroat trout and brook trout temporarily during reconstruction at that facility.

INTRODUCTION

The Mackay Hatchery is located 12 miles northwest of the town of Mackay, in Custer County, Idaho. It is situated in high desert terrain at an elevation of nearly 6300 feet.

The hatchery water supply is a large spring area, which provides water at a constant temperature of 52°F, with flows varying seasonally from 15 to 24 cubic feet per second (cfs). The water is low in dissolved oxygen(3.4 ppm) at its source but gathers oxygen quickly with air contact and simple aeration.

The hatchery is arranged in a somewhat unique "closed system," in that water rises from springs on the hatchery grounds, and after leaving the hatchery, gradually sinks back into the ground as part of the Lost River Sinks.

The physical plant consists of:

A hatchery building containing 12 heath incubator stacks containing 15 incubation trays each and 30 fiberglass nursery troughs, each 14.5' x 21" x 9.5" deep. The building is supplied with water via a 12-inch pipeline.

Eight fry raceways, each 3' x 100' x 24", supplied via a 14-inch pipeline.

Eight production raceways, each 8' x 400' x 32", supplied via a 30-inch pipeline and open headrace.

An earthen pond, 15' x 80' x 3', supplied by spill directly from the spring area.

FISH PRODUCTION

Six species of fish were raised at the Mackay Hatchery this year, with percent survivals (live fish at release size, divided by eggs received) ranging from 59% to 77% (Table 1).

We planted or transferred 3,249,421 fry and fingerling, weighing 43,710 pounds, with an additional 182,836 fish, weighing 6,934 pounds on hand at the end of the fish year, bringing total production to 3,432,257 fish, weighing 50,644 pounds. 539,628 1982 eyed early kokanee eggs were shipped to Eagle SFH and 4,002,896 1983 kokanee eggs were on hand at the end of the fish year.

Eggs and fry for our programs are received from various locations in the United States and Canada (Table 2).

Table 1. Fish Production at Mackay Hatchery, 10/1/82 - 9/30/83

SPECIES	EGGS RECEIVED	FISH PONDED	% HATCH	FISH PRODUCED	SURVIVAL	POUNDS PRODUCED
Rainbow Trout	140,448	119,381	84	101,392	72	644
Cutthroat Trout	2,165,879	2,057,586	95	1,540,405	71	8,925
Brown Trout	177,848	151,171	85	118,378	66	1,831
Fall Chinook	NA[1]	300,672	NA[1]	219,132	72[2]	7,714
Sockeye	810,667	800,000	98	630,815	77	9,455
Coho	1,389,000	1,045,252	75	822,135	59	22,075
Kokanee						
83 brood	4,002,896	NA[3]				
82 brood	616,276	NA[4]				
TOTALS	9,303,014			3,432,257		50,644

[1]Received as fry.
[2]Represents survival from fry to release size only.
[3]Not hatched at end of fish year.
[4]Shipped as eyed eggs (539,628).

Table 2. Origin of Fish Species Reared at Mackay Hatchery, 10/1/82 - 9/30/83

Species	Developmental Stage Received	Received From:
Rainbow trout	Eyed Eggs	Aqualife Corporation, Idaho
Cutthroat trout	Eyed Eggs	Henrys Lake Hatchery, Idaho
Brown Trout	Eyed Eggs	Plymouth Rock Trout Co., Massachusetts
Fall Chinook Salmon	Fry	Washugal SFH, Washington
Sockeye Salmon	Eyed Eggs	Fulton River Salmon Project, British Columbia
Coho Salmon	Eyed Eggs	Quilyut & Quilcene Hatcheries, B.C.
Kokanee	Green Eggs	Pine Fish Trap, Eagle Hatchery, Idaho

FISH HEALTH

Fish health this year appeared generally good. The coho had some problems with Costia sp., and cold water disease in February, although losses appear negligible. The cutthroat had trouble when started on feed and were suspected of bacterial gill disease, Costia, and nutritional gill disease. Though samples were sent to several laboratories, none of the three suspected causes were ever entirely confirmed or eliminated. The cutthroat did, however, pull out of the slump when feed was changed from "Clear Springs" brand to "Rangens-Salmon" brand, supplemented with desicated liver, indicating some type of nutritional problem.

FISH RELEASES

Fingerling and Fry Transfers and Plants

A total of 3,249,421 fry and fingerling weighing 43,710 pounds were transferred to other stations or planted in waters in regions 1, 3, 4, 5, 6. (Table 3).

High Mountain Lake Program

Fifty-six high mountain lakes in Region 6 were planted with rainbow and cutthroat fry this year. Two of these were planted by backpack. The remaining 54 were planted by Forest Service helicopter. Survival in the flights was good except for one particularly long flight from Indianola, in which the cutthroat became stressed and started to die. Most lakes from that flight were restocked at a later date with healthy fry.

Due to the large size of the Henrys Lake cutthroat reared at Mackay, we used the smaller Ashton hatchery-reared cutthroat for the mountain lakes, as the Ashton fish were already here while Ashton Hatchery was in reconstruction. The Ashton fish are not included in any of Mackay's production figures.

A total of 49,500 Henrys Lake cutthroat weighing 51.85 pounds, and 8,000 rainbow trout weighing 40 pounds were planted in high mountain lakes.

In addition, one lake (Grouse Creek Lake 07-1296) was stocked with catchable-sized rainbow trout by Forest Service helicopter and fire bucket.

Catchable-Sized Rainbow Trout Redistribution

Mackay hatchery is used for redistribution of catchable-sized rainbow trout trucked here from Hagerman, Grace and Nampa State fish hatcheries. During this year, 115,347 fish, weighing 26,094 pounds were distributed.

Our catchable planting area includes the Lost River Sinks (Birch Creek, Little Lost River drainage and Big Lost River drainage), and the Upper Salmon River drainage from Indianola to Redfish Lake Creek.

Table 3. Fry and Fingerling Plants and Transfers From Mackay Hatchery 10/1/82 - 9/30/83

SPECIES	RECEIVING WATERS	NUMBERS	POUNDS	REGION
Coho	Cascade Reservoir	641,585	19,775	3
Coho	Ririe Reservoir	180,550	2,300	6
Sockeye	Stanley Lake	150,015	2,055	6
Sockeye	Alturas Lake	480,800	7,400	6
Brown Trout	Priest River	90,500	700	1
Fall Chinook	Little Payette Lake	10,012	375	3
	Salmon Falls Reservoir	20,025	750	4
	Chesterfield Reservoir	4,005	150	5
	Coeur d'Alene Lake	30,132	636	1
Rainbow Trout	High Mountain Lakes	8,000	40	6
	Hagerman State Hatchery	63,800	550	4
	McCall Hatchery	29,592	54	3
Cutthroat Trout	Henrys Lake	1,540,405	8,925	6
	TOTALS	3,249,421	43,710	

SPAWNTAKING OPERATIONS

In addition to our other duties, this year the Mackay Hatchery assisted in the spawntaking operation for early kokanee eggs at Pine and at the Eagle Hatchery. 4,002,896 '83 brood "green" eggs were brought here for eyeing, and future shipping, planting or hatching.

A total of 616,276 "green" kokanee eggs was received in October of 1982. These eggs were eyed here and 539,628 were shipped back to Eagle Hatchery as eyed eggs for an 87% eye-up.

FISH FEED UTILIZED

A total of 79,200 pounds of feed was used to rear fish at Mackay this year. In addition, 1,150 pounds of feed was used to sustain catchables transferred in at times when redistribution was delayed because of high water. A feed conversion of 1.56 was attained on the Mackay production fish.

Clear Springs brand feed was used for the first eight months and Rangens brand was used for the last four months.

Feed costs totaled $16,760.03. Feed cost per pound of fish produced was $0.33.

Total production costs per pound of fry and fingerling produced was $2.35. Cost per fish produced averaged $0.0347. This cost includes all costs for redistributing fish from other hatcheries.

HATCHERY IMPROVEMENTS

New wood stoves and rock hearths were installed in houses #1 and #3. Shower doors were installed in the same two houses.

A doorway which was roughed-out in residence #1 some years ago was framed in and finished.

HATCHERY VISITORS

Because of its remote location and severe climate, the Mackay Hatchery received few visitors, other than a few fishermen and hunters who happened here incident to other activities. The total number of visitors in the last year was approximately 700.

MISCELLANEOUS ACTIVITIES

During reconstruction at the Ashton Hatchery, fish from that facility were held at the Mackay Hatchery. None of these fish have been included in Mackay Hatchery production figures.

356,400 Henrys Lake cutthroat, 18,590 Temiscamie brook trout, and 3,012 Assinicas brook trout from Ashton were planted in Henrys Lake. 49,500 Henrys Lake cutthroat from Ashton were planted in high mountain lakes. 52,850 rainbow trout from Ashton are-still on hand at Mackay for transfer back to Ashton when construction is completed.

HATCHERY NEEDS

A spring cover or underground water collection system with aeration devices is needed badly. Aquatic vegetation plugs screens continually and presents the possibility of massive fish losses should the weeds turn loose at night, as has happened in years past.

High and low water level alarms are strongly recommended by the pathologist, as we now have no alarm system at all.

The fish culturist position which was removed from the Mackay Hatchery during the personnel realignment of 6/83 needs to be reinstated in order to continue operations at present levels.

ACKNOWLEDGEMENTS

Hatchery staffing during the first half of the year included Bob Vaughn, Fish Hatchery Superintendent II; Jim McLin, Fish Hatchery Superintendent I; Lynn Watson, Fish Culturist; and Dan Hart, Laborer.

Hatchery staffing from June, 1983, through the end of the year included Bill Doerr, Fish Hatchery Superintendent II; Lynn Watson, Fish Hatchery Superintendent I; David McGonigal, Laborer; and for one month, Bob Poertner, Biological Aide.

Mel Reingold, Regional Fisheries Manager, planted the Salmon River mountain lakes by helicopter. Mark Armbruster, Conservation Officer, planted the Challis Creek Lakes by backpack.