FREEZE BRAND MARKING OF STEELHEAD TROUT AND CHINOOK SALMON FROM IDAHO FOR THE 1986 SMOLT MONITORING PROGRAM

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By

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ABSTRACT

Between the fall of 1985 and spring of 1986, 403,260 chinook salmon (Oncorhynchus tshawytscha) and steelhead trout (Salmo gearderi) juveniles were freeze branded for the National Marine Fisheries Service Downstream Smolt Monitoring Program in association with the Fish Passage Center. After brand loss and mortality, branded fish releases were: 160,100 spring chinook salmon, 43, 325 summer chinook salmon, 102,100 A-run steelhead trout, and 86,350 B-run steelhead trout. Freeze brand group releases began March 24 and were completed by May 7, 1986.

INTRODUCTION

In agreement with the Bonneville Power Administration (BPA), 403,260 hatchery-reared chinook salmon and steel head trout Juveniles were freeze branded for 1986 outmlgratlons. These fish were indicators of varlous release groups followed by the Fish Passage Center to determine travel time In the lower Snake and Columbia rivers.

METHODS

Freeze branding operations were conducted In an elght work station marklng unit (Duke 1980). Branding methods were followed as described by Raymond (1974). Branding was performed using insulated aluminum boxes with a funneled inner wall to concentrate liqui d nitrogen around two brandlng rods which protrude from opposite sides near the base of the box (Nelson 1985).

RESULTS

Nine groups of fish were branded at six state and federal hatcheries In Idaho for 1986 spring releases (Table 1). These groups incl uded: 166,881 spring chinook salmon from Dworshak Natlonal, Rapld River and Sawtooth fish hatcheries; 43,487 summer chinook from McCall Hatchery; 104,639 A-run steel head trout from Hagerman National and Nlagara Sprlngs fish hatcheries; and 88,253 B-run steelhead trout from Dworshak and Hagerman Natlonal fish hatcheries.

Steelhead trout were branded in the sprlng of 1986 four to eight weeks prior to release. Steelhead trout brand retention values ranged from 97% to 100%. Steel head trout (R.D. T-2) brand retention at Dworshak Natlonal was 99%. However, a large percentage (28%) of readable brands were ulcered.

Chlnook salmon from Rapld River Fish Hatchery were branded in February 1986. All other chinook salmon were branded between September 30, 1985 and November 20, 1985. Brand retention values ranged from 94% t o 100%.

DISCUSSION

Fish mortalities Induced by branding operatlons were minimal, seldom exceeding normal hatchery mortality averages.

Average brand retention values for chinook salmon were higher than last season. Allowing an adequate time for the brand setting process to take place is thought to be the reason for this increase.

Ulceration problems encountered on steelhead trout at Dworshak National Flsh Hatchery are probably due to the phsyiological condition of the fish,rather than poor marking procedure. First, the tagging crew was experienced in branding coded wire tagging and adipose marking. Second, branding experience has shown that it takes two to three seconds to burn in a brand. Observatlon of the crew showed they were brandlng normally and would have taken longer to finish the Job had they "overbranded." Finally, ten fish were analyzed at Dworshak Natlonal Dlsease Laboratory and no disease problems were found. Blood chemistry analysis indicated a peak of physiological change, a period when they are most susceptible to damage.

Table 1. Freeze brand date for steelhead trout and chinook salmon juveniles marked et Idaho hatcheries for the Fish Passage Center - Downstream Smolt Monitoring Studies, 1986 outmigration.

Species	Hatchery (release site)	Brand	Branding dates (release dates)	Number branded	% brand retention	Number[1] released
CH-1	Dworshak NFH (N.F. Clearwater)	R.A."Y"-2 & CWT	11/20/85 (4/2/86)	41,584	96	40,675
CH-1	Rapid River (Rapld RIver)	L.D."Y"-1	2/1 D-11/86 (3/15-4/7/86)	44,692	94	42,000
CH-1	Rapid River (Rapld River]	L.D."Y"-3	2/11-12/86 (3/26-27/86)	44,754	96	42,950
CH-1	Sawtooth (Sawtooth)	R.D."Y"-1 & CWT	9/30-10/3/85 (3/15-17/86)	35,851	100	34,475
CH-2	McCall (SFSR)	R.D."Y"-3 &CWT	11/5-8/85 (3/24-31/86]	43,487	100	43,325
SH-2"B"	Dworshak NFH (N.F. Clearwater)	R.D."T"-4	4/1/86 (5/7/86)	36,350	89[2]	35,025
SH-2"B"	Hagerman NFH (E.F. Salmon R.)	L.D."T"-4	3/8/86 (4/7 & 9/86)	51,903	99	51,325
SH-2"A"	Hagarman NFH [Sawtooth)	L.D."T"-2	3/1 0/86 (4/8-10/86)	52,375	100	52,300
SH-2"A"	Niagara Springs (Hells Canyon)	R.D."T"-2	3/5/86 (4/21 & 29-30/86)	52,264	97	49,800

[1]Includes brand loss and mortalities.
[2]Readable brands with a large percentage of ulcerations visible.

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