SMOLT SALVAGE, JOHN DAY DAM, 1984

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In 1984, the National Marine Fisheries Service was contracted to salvage stranded juvenile salmonids from turbine intake gatewells at John Day Dam on the Columbia River. The purpose of the program was to expeditiously remove juveniles from gatewells associated with Turbines 1-9 while bypass construction was in progress and release them into the tailrace.

Fish were removed from 27 April through 30 September 1984 using either a dip-net or the box-net designed specifically for use at John Day Dam. Both nets were constructed with sanctuary bags. The netted fish were placed in a hopper and exited through a 4-inch diameter hose fitted with a Smith-Root[1/] electronic counter. The hose led directly into the bypass flume near Turbine 10. Fish were carried out with the bypass discharge which emptied into the tailrace adjacent to Spillbay 20. Typically, each gatewell was sampled every 2 days as time and weather permitted.

In fulfillment of the first objective in the contract, 174,252 smolts were captured and released in the tailrace; a weekly catch summary is presented in Table 1.

Ports on the existing fingerling bypass were cycled on a daily basis through most of the season. Screens on the separator at the tailrace were inspected and cleaned daily.

The second objective of the contract was accomplished, i.e., determining the efficiency of a newly designed gatewell salvage box-net (Brege, unpublished manuscript). A total of 1,019 subyearling chinook salmon were finclipped and released into a gatewell in four replicates (Table 2). Within 15-60 minutes after release, the gatewell was netted once and the number of

[1/] Reference to trade name does not imply endorsement by the National Marine Fisheries Service, NOAA.

Table 1.--Weekly summary of juvenile salmonids salvaged at John Day Dam, 1984.

Week of	Number of juvenile salmonids	Cumulative total
4/22-28	1,500	1,500
4/29-5/5	4,155	5,655
5/6-12	6,530	12,185
5/13-19	8,526	20,711
5/20-26	17,882	38,593
5/27-6/2	8,467	47,060
6/3-9	4,561	51,621
6/10-16	2,168	53,789
6/17-23	1,994	55,783
6/24-30	6,781	62,564
7/1-7	2,439	65,003
7/7-14	578	65,581
7/15-21	6,950	72,531
7/22-28	23,079	95,610
7/29-8/4	11,691	107,301
8/5-11	20,284	127,585
8/12-18	4,498	132,083
8/19-25	14,693	146,776
8/26-9/1	7,200	153,976
9/2-8	2,850	156,826
9/9-15	7,926	164,752
9/16-22	4,900	169,652
9/23-29	4,600	174,252

Table 2.--Estimated collection efficiency of box-net, subyearling chinook salmon, 1984.

Date	Number of marked fish released into gatewell	Number recovered	Collection efficiency (%)
16 July 84	200	197	98.5
18 July 84	369	364	98.6
20 July 84	200	196	98.0
25 July 84	250	234	93.6
Total	1,019	991	

recaptured marks enumerated. Collection efficiency was high, ranging from 93.6 to 98.6% ($\bar{X}$ = 97.3). The large net, which was typically deployed using a boom-crane, was difficult to operate during protracted periods of strong wind. However, if it were deployed with a gantry crane, it could be used in such weather and would probably require fewer people to operate it; presently four persons operate the net.

The third contract objective, determining the length of time smolts remain in non-barrier screened gatewells, could not be addressed. Construction activity during the salvage period resulted in extreme congestion on the turbine intake deck. Consequently, systematic sampling of particular gatewells at regular intervals could not be accomplished.