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Coastal Zone and Estuarine Studies

**SALVAGE OPERATION FOR
JUVENILE SALMONIDS
AT JOHN DAY DAM—1977**

by
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December 1978

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INTRODUCTION

Low flows and little or no spill predicted for the Columbia River in the spring and summer of 1977, coupled with the ineffectiveness of the bypass system, caused concern among the fishery agencies for passage of salmonid fingerlings at John Day Dam. In response to this concern, the NMFS, under contract to the U. S. Army Corps of Engineers, carried out a salvage dipnet operation at John Day Dam. The objective was to provide sufficient dipnetting effort to prevent a large accumulation and mortality of spring migrants in the gatewells.

METHODS

The salvage operation was accomplished by increasing ongoing dipnetting to include all accessible gatewells—dipnetting effort was more than doubled during the critical spring outmigration. A second work shift was added, and coverage of the first shift was extended. Sampling of our primary indexing unit, turbine Unit 3, was maintained through the migration season, and was not considered as part of the salvage operation. Other operational turbine units were dipnetted as necessary, when accessible, to prevent an accumulation of fish; during June priority was given to Units 13 to 16 (especially Units 14 and 15) to aid in monitoring the effectiveness of "Operation Fish Flow." Units 6 and 7 were inaccessible in May, and Units 6 and 9 were inaccessible in June, due to stored gates in the gatewells.

Intensive sampling began 9 May and continued through 25 June. Effort was reduced thereafter to a single shift and to 3 days per week starting 4 July. Salvage effort was terminated in mid-August when a transformer replacement prevented sampling Units 5 to 16. By this time, the numbers of "0"-age chinook salmon had declined from the late July - early August peak.

RESULTS

Catches during the salvage period are listed in Tables 1 and 2. The total of 21,070 juvenile salmonids is considerably smaller than anticipated. No doubt "Operation Fish Flow" reduced the numbers of fingerlings entering the gatewells, but mainly the small number of fish salvaged represents low numbers of fish arriving at John Day Dam. This, we believe, was due primarily to the following: 1) the success of "Operation Fish Haul" on the Snake River; 2) the very low survival of those fish which did swim down the Snake and Columbia River systems; and 3) delayed migration (fish holding over in the reservoir until the next spring before migrating to the ocean).

The disproportionate number of fish salvaged from Unit 5 (39%) compared to other units (Table 2) reflects its nearly constant use, 24 hours per day (for station service), especially during the night hours when most salmonids enter turbine gatewells at John Day Dam.

In the future, it appears that a salvage operation at John Day Dam could be simplified if fewer units were operated at night during the peak of the salmonid migration.

Table 1.--Juvenile salmonid catches by species during the fish salvage operations at John Day Dam, 1977

Date	Chinook "0"	Chinook "1"	Steelhead	Sockeye	Coho
	(No.)	(No.)	(No.)	(No.)	(No.)
5/8 to 14	2	568	140	23	54
5/15 to 21		1,327	145	61	125
5/22 to 28	2	3,161	205	52	181
5/29 to 6/4		2,095	182	195	192
6/5 to 11		1,603	91	83	142
6/12 to 18	5	2,230	720	236	158
6/19 to 25	6	1,091	218	144	164
6/26 to 7/2	13	590	104	17	59
7/3 to 9	65	438	51	11	36
7/10 to 16	52	201	23	8	26
7/17 to 23	95	225	13	2	31
7/24 to 30	346	557	68	10	84
7/31 to 8/6	387	161	22	2	24
8/7 to 13	945	234	75	7	52
8/14 to 20	340	60	20	2	13
Totals	2,258	14,541	2,077	853	1,341

Table 2.--Juvenile salmonid catch by turbine unit during fish salvage operations at John Day Dam, 1977

Catch by Units																
Date	1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	Totals
	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)
5/8 to 14	35	65	13	135	0	0	63	64	119	75	40	44	62	53	19	787
5/15 to 21	176	268	15	817	0	0	68	90	89	105	0	0	20	10	0	1,658
5/22 to 28	197	608	45	1,534	0	0	51	23	0	307	115	134	192	325	70	3,601
5/29 to 6/4	0	98	9	362	0	117	19	28	0	719	78	251	280	484	219	2,664
6/5 to 11	13	45	166	986	0	120	0	0	0	10	0	0	260	241	78	1,919
6/12 to 18	26	74	10	1,347	0	34	250	0	126	50	0	184	692	282	274	3,349
6/19 to 25	14	362	61	486	0	91	0	0	99	80	5	0	256	161	8	1,623
6/26 to 7/2	91	25	14	349	11	24	18	0	0	47	75	33	43		53	783
7/3 to 9	17	27	0	341	3	19	33	0	45	30	0	0	0	23	63	601
7/10 to 16	0	45	0	254	2	3	0	0	0	2	0	4	0	0	0	310
7/17 to 23	0	0	0	271	0	0	0	1	0	16	33	10	14	9	12	366
7/24 to 30	0	0	21	1,044	0	0	0	0	0	0	0	0	0	0	0	1,065
7/31 to 8/6	54	78	57	0	0	0	0	0	0	41	100	103	97	66	0	596
8/7 to 13	28	0	0	279	15	206	125	0	0	186	0	0	120	289	65	1,313
8/14 to 20	16	28	11	0	0	0	0	0	0	0	0	0	104	144	132	435
Totals	667	1,723	422	8,205	31	614	627	206	478	1,668	446	763	2,140	2,087	993	21,070