Monitoring of Downstream Salmon and Steelhead at Federal Hydroelectric Facilities

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TABLE OF CONTENTS

INTRODUCTION

Smolt monitoring of juvenile salmonids was performed by the National Marine Fisheries Service at three key points in the Snake-Columbia River system for the Water Budget Center (WBC) during 1984; funding was provided by the Bonneville Power Administration.

Smolt migrations were sampled at Lower Granite, McNary, and John Day Dams to provide data for evaluation of smolt survival, travel time, and migrational timing as required by the WBC. Primary objectives were to monitor and index juvenile salmonid passage at these three sites. At each site this involved: (1) monitoring the smolt migration from 1 April to 30 June at Lower Granite Dam, 10 April - 28 September at McNary Dam, and 3 April - 31 August at John Day Dam; (2) recovering and recording brands; (3) providing WBC with a daily and seasonal index of smolt passage at the dams, including numbers sampled and numbers collected for transport; and (4) providing WBC with daily and seasonal summaries of brand recapture information.

METHODS AND MATERIALS

Monitoring the smolt migration at Lower Granite and McNary Dams was accomplished by sampling from the fingerling collection systems at a target rate of 1.5 and 3%, respectively, of the estimated total smolt passage at each site. At John Day Dam, the airlift pump system (Unit 3, B and C) was used to sample the smolt migration. With few exceptions, sampling was 7 days per week at all three sites. Daily sample numbers and the estimated total collected (at Lower Granite and McNary Dams), as well as passage

estimates for John Day Dam [based on collection efficiency curves developed by Sims et al. (1984)] were phoned to WBC as requested. Brand summary cassette tapes were forwarded weekly, or as requested, for entry into the computer file at the Northwest and Alaska Fisheries Center to be available for the WBC when needed.

Analysis and evaluation of these data are being performed by the WBC. Verification of the computer listing of the monitoring data is currently being completed by the WBC and will be included in their report of 1984 activities.

RESULTS AND DISCUSSION

Results are summarized in Table 1. These include numbers of fish sampled at each dam by species including branded fish, estimated numbers collected, and numbers of days each species appeared in the sample. Overall, few problems persisted beyond the initial start-up of the spring sampling season and those were primarily matters of communication between the various individuals associated with research, management, and operations at the sites. The only item of potential significance was how to accurately enumerate and determine mark/species composition of fish flushed from the separator at McNary Dam during debris clean-out. Hopefully, some of the separator modifications planned by the U.S. Army Corps of Engineers prior to spring 1985 may obviate this concern by reducing the suitable sanctuary area within the separator housing; with fewer fish holding in the separator, daily estimates of collection/passage would not reflect fewer fish the day succeeding the clean-out (flushing) operation as has been the case.

Table 1.--Summary of 1984 sampling activities conducted at Lower Granite, McNary and John Day Dams.

Species	Dam	Total number sampled	Total no. of brands in sample	Estimated total[a/] number collected'	Number of days species occurred in sample
Sockeye	Lower Granite	1,222	0	11,261	100
	McNary	17,937	220	190,969	149
	John Day	15,050	135	15,050	114
Coho	Lower Granite	30	0	268	16
	McNary	8,015	12	81,897	73
	John Day	2,662	2	2,662	50
Yearling chinook	Lower Granite	95,655	1,368	922,284	115
	McNary	119,645	2,345	1,241,968	134
	John Day	50,514	921	50,514	130
Steelhead	Lower Granite	79,606	129	1,104,532	115
	McNary	58,438	3,412	605,515	118
	John Day	84,792	2,062	84,792	100
Subyearling chinook	Lower Granite	0	0	0	0
	McNary	291,414	975	4,083,314	166
	John Day	114,347	168	114,347	125

a/ At John Day Dam the sample is the actual collection.

SUMMARY

The juvenile salmonid outmigration was monitored at Lower Granite, McNary, and John Day Dams during spring and summer 1984. The numbers of fish, by species and brand, sampled and collected were provided to the WBC for the purpose of developing estimates of survival, migration rates, and population sizes.

RECOMMENDATIONS

1. Coordinate all activities affecting sampling/monitoring with those individuals or groups directly involved in the sampling programs.

2. Contact person(s) be designated at each sampling site to assure that adequate samples are available when necessary, especially when operation and samplers are from different agencies or groups.

3. Dissemination of marked fish release information prior to the migration season. This should include release date/location, species, and marks applied; size of the fish is desirable but not essential.

ACKNOWLEDGMENTS

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SUMMARY OF EXPENDITURES FY 1984

Salaries and benefits	$134,780.28
Travel and transportation	8,075.02
Rent, communications, and utilities	7,490.45
Contract services	28,958.85

Supplies and materials	5,316.71
Computer services	5,000.00
Support (NOAA, DOC)	54,750.49
Total	$244,371.80

LITERATURE CITED

Sims, C. W., A. E. Giorgi, R. C. Johnsen, and D. A. Brege. 1984. Migrational characteristics of juvenile salmon and steelhead in the Columbia River Basin - 1983. Natl. Mar. Fish. Serv., Seattle, WA. Annual Report to U. S. Army Corps of Engineers, April 1984 (Contracts DACW68-78-C-0051 and DACW57-83-F-0314). 31 p. plus Appendixes.