

IDAHO COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT
COLLEGE OF NATURAL RESOURCES
UNIVERSITY OF IDAHO
P.O. BOX 441141
MOSCOW, ID 83844-1141
(208) 885-2750
Fax (208 885-9080)

Technical Memo

From: Chris Peery, ICFWRU, University of Idaho
To: FPAC
Subject: Preliminary Summary of Effects of Dworshak Water on Passage of Adult Salmon and Steelhead: 2002 September Releases

Date: 18 June 2003

Flows are released from Dworshak Dam to augment flows for downstream migrating salmonid smolts and to produce cooler water temperatures for upstream salmonid migrating adults in the lower Snake River. In recent years Dworshak releases have occurred from early July until the end of August. During 2002, flows from Dworshak (10 kcfs) were extended 10 days into September with the goal to facilitate upstream movement of adult fall chinook salmon and steelhead through the lower Snake River. This memo summarizes the information known to date on the effects of the 2002 September Dworshak flows. Four pieces of information were summarized here, 1) Snake River water temperatures, 2) counts at Ice Harbor and Lower Granite dams, 3) telemetry information for radio-tagged chinook salmon and steelhead migrating through the system, and 4) temperatures of salmon and steelhead migrating through the Lower Granite reservoir. Data from 2000 will be presented for comparison since flows were similar to those that occurred during 2002.

Water temperatures. Flows during September at Lower Granite Dam were similar between 2000 (mean = 21.9 kcfs) and 2002 (21.5 kcfs). Water temperatures during September in the forebay at Lower Granite Dam were slightly cooler during 2002 (18.8°C) than 2000 (19.1°C), but more noticeably different in the tailrace between the two years mean = 17.7°C 2002, 18.4°C 2000).

Fish counts. The conversion of steelhead between Ice Harbor and Lower Granite dams was slightly better during the first and second weeks in September during 2002 (13.2% and 16% respectively) than during 2000 (8.6% and 12%).

Telemetry Data. Radio-tagged steelhead moved between Ice Harbor at similar rates between 2000 (median = 7 d, n = 37) and 2002 (8 d, n = 40) during the first half of September. During the second half of September, travel times were faster during 2002 (median = 6 d, n = 148) than during 2000 (7 d, n = 94), and this difference was significant ($P < 0.001$) due to the good sample size. Likewise, travel times between Lower Granite Dam and Lewiston, ID, were similar between years during the first half of September (11 d, n = 25 2000; 11 d n = 23 2002), and slightly faster during 2002 during the second half of September (4 d, n = 72 2000; 3.5 d n = 88 2002).

Fish temperatures in Lower Granite Reservoir, 2001 vs 2002. Fish tagged with sonic temperature sensing tags were tracked as they migrated through Lower Granite reservoir. We

noted that fish tracked during September during 2002 had significantly lower body temperatures than fish similarly tracked during 2001, indicating lower thermal stress when Dworshak water was available in September during 2002 (see below).

Temperatures while tracking MAP Fish in Lower Granite Reservoir

		2001			2002				
		N	Avg.	Min.	Max.	N	Avg	Min.	Max.
17-23 Aug.	Fish	4	15.4	11.2	19.2	7	16.3	12.8	17.6
	River		16.7	14.5	19.7		17.6	14.5	20.6
24-31 Aug.	Fish	13	14.0	12.8	16.3	11	13.7	12.8	18.4
	River		16.1	13.8	20.6		17.3	14.6	21.3
1-8 Sep.	Fish	12	19.2	14.4	21.6	15	14.8	12.8	17.6
	River		19.3	15.4	21.3		17.5	14.7	21.0
9-15 Sep.	Fish	4	18.4	16.8	20.0	14	15.6	13.6	19.2
	River		19.0	17.9	20.2		16.4	14.1	19.8
16-22 Sep.	Fish	10	16.4	10.0	19.2	23	17.4	12.8	20.8
	River		19.1	17.6	20.4		17.9	14.1	20.8

Conclusions are that it appears that there were some benefits to releasing Dworshak water during September during 2002, however dramatic effects were not noted. This may have been because the September releases were of relatively low amounts and for of short duration (10 d at 10 kcfs).