

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

To: Rod Engle, USFWS

From: Chris Peery and Matt Keefer, University of Idaho

Re: Requested information on behaviors of 2000-2003 Chinook salmon from the Little White Salmon and Spring Creek hatcheries

Date: 22 Dec 2004

Cc: Mike Langeslay, David Clugston, USACE

During the years 2000-2003, our radio-tagged samples included a total of 66 spring Chinook salmon and 36 fall Chinook salmon that were reported recaptured at Little White Salmon hatchery (LWSH) or Spring Creek hatchery (SCH). We inspected telemetry records for these fish to evaluate migration times from Bonneville Dam and temporary fish movements upstream from the hatcheries and into nearby tributaries.

All fish were captured and radio tagged in the adult fish facility at Bonneville Dam. After tagging, 80% of the spring Chinook and 61% of the fall Chinook were released about 10 km downstream from Bonneville Dam. The remaining fish were released in the Bonneville forebay, near the Oregon shoreline. Passage times were calculated from the time fish exited the top of a ladder at Bonneville Dam (downstream-released fish) or from the forebay release time (forebay-released fish). Forebay-released fish tended to have slightly longer passage times, but all fish were pooled for this summary.

Most LWSH spring Chinook migrated from Bonneville Dam into the Little White Salmon River in 2-3 d (Table 1). Elapsed times between initial entry into the Little White Salmon River and reported recapture at the hatchery averaged about 55 d. Eight percent of the spring Chinook were recorded falling back over and reascending ladders at Bonneville Dam. Overall, 26% of LWSH spring Chinook temporarily entered the White Salmon River, and one fish each was recorded in the Wind and Klickitat rivers. Salmon were also recorded in the Columbia River upstream, on receivers near Bingen (42%), Mayer State Park (24%) and at The Dalles Dam (11%) (Table 1).

There were no fixed-site radio receivers at SPH, and so passage times were calculated from Bonneville Dam to reported recapture. Mean and median times were about 15 d (Table 2). High proportions of SPH fall Chinook salmon temporarily entered one or more lower Columbia River tributaries. Almost 60% were recorded in the White Salmon River, and between a quarter and a third of the fall Chinook were recorded in the Little White Salmon River and Herman Creek. About a third were also recorded at Columbia River receivers upstream from SPH, near Bingen and Mayer State Park (Table 2). Eleven percent of SPH fall Chinook salmon were recorded falling back at Bonneville Dam.

Table 1. Summary of behaviors by Little White Salmon Hatchery spring Chinook salmon, 2000-2003. Detections at tributary receivers should have occurred inside tributaries, upstream from confluences with the Columbia River.

	2000	2001	2002	2003	Total
Number of fish	29	4	28	5	66
Mean date at Bonneville	26 Apr	24 Apr	28 Apr	23 Apr	27 Apr
Median date at Bonneville	27 Apr	24 Apr	27 Apr	22 Apr	27 Apr
Percent (<i>n</i>) fallback at Bonneville	14 (4)	--	4 (1)	--	8 (5)
Mean days: Bonn. to LWS entry	2.2	3.8	3.7	1.9	2.9
Median days: Bonn. to LWS entry	1.6	1.7	3.0	1.8	1.8
Mean days: LWS entry to hatchery ¹	37.6	39.0	69.8	71.7	55.8
Median days: LWS entry to hatchery ¹	32.4	61.3	65.1	67.9	56.8
Percent (<i>n</i>) detected: Wind R.	3 (1)	--	--	--	2 (1)
Percent (<i>n</i>) detected: White Salmon R.	24 (7)	50 (2)	46(13)	40 (2)	36 (24)
Percent (<i>n</i>) detected: Bingen	38(11)	20 (1)	50(14)	40 (2)	42 (28)
Percent (<i>n</i>) detected: Klickitat R.	--	--	4 (1)	--	2 (1)
Percent (<i>n</i>) detected: Mayer State Park	28 (8)	--	25 (7)	25 (1)	24 (16)
Percent (<i>n</i>) detected: The Dalles Dam	21 (6)	--	4 (1)	--	11 (7)

¹ based on date of reported recapture at hatchery

Table 2. Summary of behaviors by Spring Creek Hatchery fall Chinook salmon, 2000-2003. Detections at tributary receivers should have occurred inside tributaries, upstream from confluences with the Columbia River.

	2000	2001	2002	2003 ²	Total
Number of fish	13	14	9	0	36
Mean date at Bonneville	6 Sep	3 Sep	4 Sep	--	5 Sep
Median date at Bonneville	5 Sep	5 Sep	1 Sep	--	5 Sep
Percent (<i>n</i>) fallback at Bonneville	8 (1)	21 (3)	--	--	11 (4)
Mean days: Bonn. to hatchery ¹	17.0	15.6	10.4	--	14.8
Median days: Bonn. to hatchery ¹	18.5	15.6	10.4	--	14.5
Percent (<i>n</i>) detected: Herman C.	--	50 (7)	22 (2)	--	25 (9)
Percent (<i>n</i>) detected: Wind R.	8 (1)	7 (1)	--	--	6 (2)
Percent (<i>n</i>) detected: L. Wh. Salmon R.	15 (2)	29 (4)	67 (6)	--	33 (12)
Percent (<i>n</i>) detected: White Salmon R.	54 (7)	93(13)	11 (1)	--	58 (21)
Percent (<i>n</i>) detected: Hood R.	15 (2)	14 (2)	--	--	11 (4)
Percent (<i>n</i>) detected: Bingen	23 (3)	36 (5)	44 (4)	--	33 (12)
Percent (<i>n</i>) detected: Klickitat R.	--	7 (1)	--	--	3 (1)
Percent (<i>n</i>) detected: Mayer State Park	31 (4)	50 (7)	--	--	31 (11)
Percent (<i>n</i>) detected: The Dalles Dam	--	21 (3)	--	--	8 (3)

¹ based on date of reported recapture at hatchery

² no reported recaptures at hatchery in 2003