

## **2004 Salmon River Wild Young-of-Year Chinook Salmon Seining Program**

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Seasonal baseflows mandated by the Federal Energy Regulatory Commission hydroelectric licencing agreement (FERC 1996) have resulted in a dramatic increase in natural reproduction of chinook salmon in the Salmon River since 1997. A cooperative index seining program was initiated in the spring of 1999 by the U.S. Geological Survey (USGS) and the New York State Department of Environmental Conservation (NYSDEC) to assess spatial and temporal aspects of relative abundance, size structure, and distribution of wild young-of-year (YOY) Chinook salmon in the river. The program was continued for a sixth year in 2004.

### **Methods**

Seine hauls were conducted weekly at the four sites (Altmar, Pineville, CO. RT. 2A, and Douglaston, Figure 1) from 10 May through 23 June. The seine was a 20 foot bag seine 6 feet deep with 1/8 inch bar mesh. Hauls were made by stretching the seine perpendicular to the current and sweeping downstream toward one bank to a suitable landing area. A sample consisted of one seine haul per site. Obstacles on the river bottom and differences in the lengths of the hauls prevented the use of catches per unit of effort as precise density estimates but the range of numbers captured between sites and dates do provide a rough estimate of density.

All species captured were counted and a sample of Chinook were measured (total length) for each haul. Mean lengths of Chinook captured for each date and site were compared using a pairwise t-test multiple

comparison procedure (SAS Proc GLM, SAS Institute 1999).

### **Results and Discussion**

Densities of YOY Chinook in 2004 were the highest observed in the six years the survey has been conducted. The peak catch occurred the third week of May and was nearly double that of the second highest catch, observed in 2001 (Figure 2). We also caught the largest number of YOY Chinook for a single haul in the history of the program; 1,523 at Altmar on 19 May. Densities also remained higher throughout June than in all previous years sampled. This may have been related to the relatively cool spring weather and favorable temperatures in the river.

The high abundance of YOY Chinook in 2004 was probably the result of relatively high flows during the fall of 2003 (Figure 3). The high flows made fish less vulnerable to the sport fishery and allowed relatively large numbers of fish to ascend the river and spawn. In contrast, drought conditions with low flows during the fall of 2002 likely resulted in reduced available spawning habitat, higher exploitation on potential spawners and subsequent low production of YOY Chinook in 2003.

Sizes of YOY chinook encountered in 2004 were similar to those encountered in previous years. Results of the ANOVA comparing mean lengths by site and date are presented in Table 1.

**References**

Federal Energy Regulatory Commission (FERC). 1996. Order issuing original license (Major Project). Washington, D.C.: Federal Energy Regulatory Commission. FERC Project No. 11408, New York.

SAS Institute Inc., 1999. Release 8.0 TS level 00M0. Cary, NC, USA.

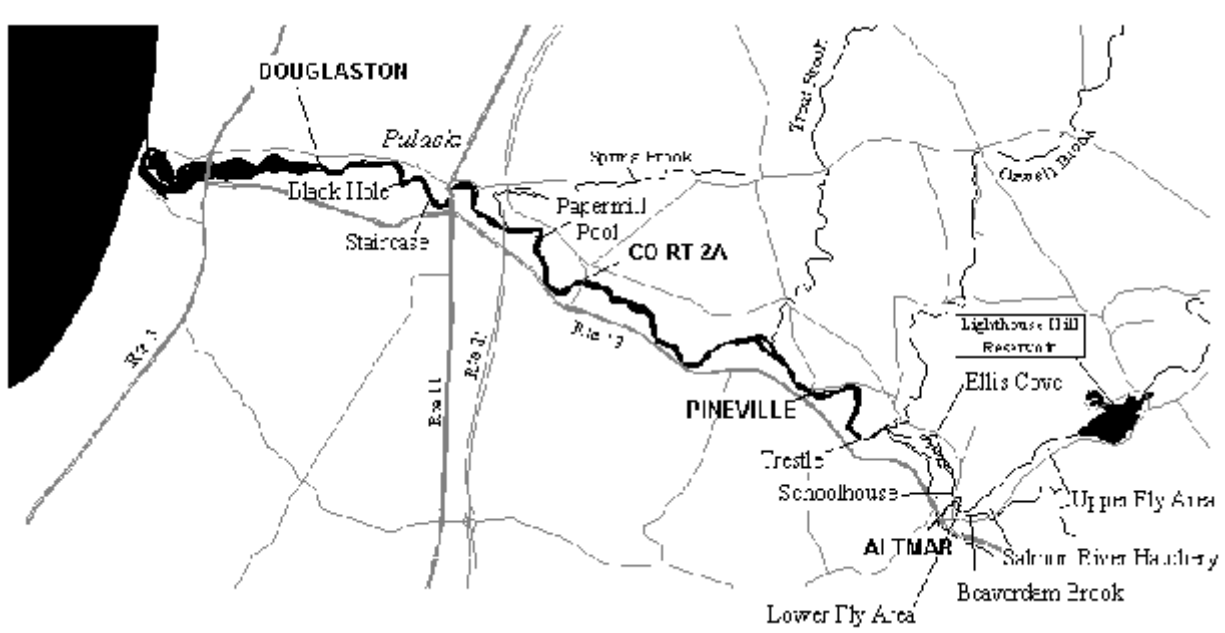


Figure 1. Sampling sites for the USGS/DEC 2004 Salmon River seining program.

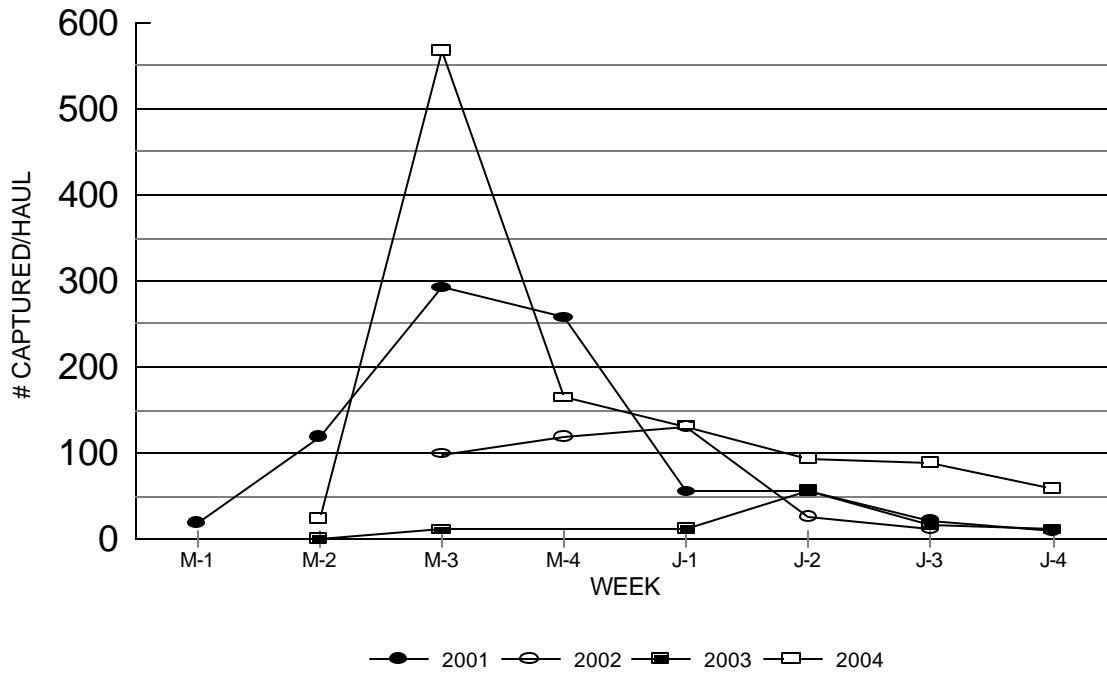


Figure 2. Mean numbers of young-of-year chinook salmon captured per seine haul by week and year in the USGS/DEC Salmon River seining program 2001 - 2004 (M=May, J=June).

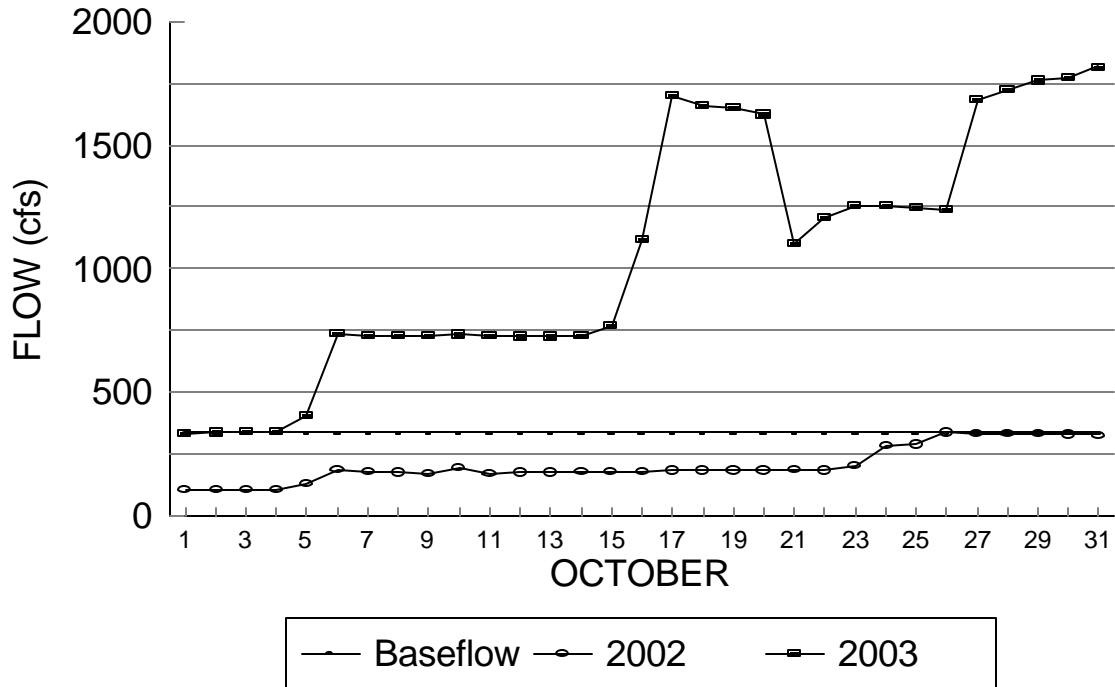


Figure 3. October 2002 and 2003 Salmon River flows from the Lighthouse Hill Reservoir (Reliant Power records). Note the prescribed baseflow of 335 cubic feet per second (cfs).

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Table 1. Multiple range comparisons (pairwise t-tests,  $\alpha = 0.05$ ) of mean lengths of wild young-of-year chinook salmon by site and date from the USGS/DEC 2004 Salmon River seining program.

SITE	DATE	NUMBER MEASURED	MEAN LENGTH (in)	STANDARD DEVIATION	T-GROUPING - 1		
CO RT 2A	23 JUNE	18	2.2	0.3			A
DOUGLASTON	23 JUNE	30	2.2	0.2			A
ALTMAR	18 JUNE	18	2.2	0.3			A
DOUGLASTON	18 JUNE	30	2.2	0.2			A
CO RT 2A	18 JUNE	24	2.1	0.2	B		A
PINEVILLE	23 JUNE	30	2.1	0.3	B		A
DOUGLASTON	9 JUNE	25	2.1	0.4	B		A C
PINEVILLE	3 JUNE	30	2.1	0.3	B		A C
CO RT 2A	9 JUNE	30	2.1	0.3	B		A C
DOUGLASTON	3 JUNE	30	2.0	0.3	B		A C
ALTMAR	3 JUNE	30	2.0	0.3	B		A C
ALTMAR	9 JUNE	14	2.0	0.3	B	D	A C
PINEVILLE	9 JUNE	30	2.0	0.4	E	B	D A C
ALTMAR	23 JUNE	1	2.0	0.0	E	B	D F C
PINEVILLE	28 MAY	30	2.0	0.3	E	B	D F C
CO RT 2A	3 JUNE	30	2.0	0.3	E	B	D F C
DOUGLASTON	28 MAY	30	1.9	0.2	E		D F C
CO RT 2A	28 MAY	30	1.8	0.3	E	G	D F
PINEVILLE	10 MAY	13	1.8	0.4	E	G	F
PINEVILLE	18 JUNE	31	1.8	0.2		G	F H
ALTMAR	28 MAY	30	1.7	0.2		G	I H
PINEVILLE	19 MAY	30	1.7	0.3		G	I H
DOUGLASTON	19 MAY	30	1.7	0.1		G	I H
CO RT 2A	19 MAY	30	1.6	0.1		J	I H
DOUGLASTON	10 MAY	30	1.6	0.1		J	I H
ALTMAR	19 MAY	30	1.6	0.1		J	I
CO RT 2A	10 MAY	8	1.6	0.1		J	I
ALTMAR	10 MAY	8	1.5	0.1		J	I

1-Means with the same letter are not significantly different.