

**Title:** Survival of Supplemented and Wild Spring Chinook Adults returning to the Yakima Basin

**Authors:**

**Mark Johnston**<sup>1\*</sup>, David Fast<sup>1</sup>, Charles Strom<sup>1</sup>, David Lind<sup>1</sup>, Curt Knudsen<sup>2</sup>, Doug Neeley<sup>3</sup>, Bill Bosch<sup>1</sup>

<sup>1\*</sup>Yakama Nation, YKFP Nelson Springs Research Office, 771 Pence Road,  
Yakima, WA, 98902, 509-945-1206, Fast@Yakama.com.

<sup>2</sup> Oncorh Consulting

<sup>3</sup> IntSTATS Consulting

The Yakima/Klickitat Fisheries Program (YKFP) has designed a supplementation program to enhance the Spring Chinook salmon (*Oncorhynchus tshawytscha*) in the Yakima Basin. This paper describes evaluation of the survival of returning adults reared and released under the new Semi-Natural Treatment (SNT) against returning adults reared under the Optimum Conventional Treatment (OCT). For the 1997 brood based on combined Age-3, Age 4, and Age 5 returns (return years 2000, 2001, 2002 and 2003, respectively), there were no significant differences ( $P = 0.339$ ) between the OCT and SNT survival from juvenile tagging to adult passage at Roza Dam on the Upper Yakima River. For the 1999 brood there were no significant differences between the SNT and OCT survival at the Clark Flats and Easton release sites ( $P = 0.431$  and  $P = 0.207$ , respectively) based on combined Age-3 and Age-4 returns (return-years 2001, 2002 and 2003, respectively); however, SNT's survival was significantly less than that of OCT's at the Jack Creek Site ( $P = 0.029$ ). The 1999 brood-year results should be regarded as tentative because age-5 adults are not included. We also compare the overall survival of the supplementation adults with that of returning naturally produced adults. Survival is measured from adult brood stock salmon monitored at Roza dam (wild adults released to spawn in upper Yakima River against adults taken to Cle Elum hatchery for brood stock) to detection of their progeny returning as adults at Roza Dam. Survival has been considerably higher for first generation hatchery (35 returning adults for every adult taken into the hatchery) than for the wild fish (5 returning adults for every adult released to spawn in the wild). Total adult escapement to the upper Yakima was 91%, 87% and 1.3% higher during 2001, 2002 and 2003 respectively, than would have occurred without the supplementation program.

Fisheries have been initiated and enhanced as a result of this program with 2,606 and 2,580 fish caught by tribal fishers and 2,024 and 528 fish caught by sport anglers, during 2001, and 2002 respectively. Only a tribal harvest was initiated in 2003, with 440 fish being caught.