

Chinook Spawning Area Mapping for the Clear Creek Restoration Program, 2000-2003.

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Abstract.—Spawning area mapping was conducted on a 4.8 mile section of Clear Creek from 2000 to 2003 to monitor spawning habitat use by fall Chinook salmon (*Oncorhynchus tshawytscha*). The study area was divided into various sections in order to evaluate changes in spawning habitat use that may be related to specific restoration projects. Restoration projects include dam removal, spawning gravel placement and channel reconstruction. Redd areas were delineated on aerial photos during walking surveys at the completion of the fall Chinook spawning season and then transferred onto digital ortho-rectified photos using GIS software. Using computer software, spawning area used was calculated for each year. The number of redds and spawning area used in Segment 1 were found to be strongly correlated in the four years evaluated ($r^2=0.957$). Based upon the total number of redds counted and spawning area used, the average size of an individual redd for each year was: 147 ft² in 2000; 210 ft² in 2001; 150 ft² in 2002; and 149 ft² in 2003. There was no relationship between yearly fall Chinook escapement and total spawning area used in Segment 2 ($r^2=0.073$). In 2002, 1,400 ft section of stream channel was relocated and reconstructed. Spawning area use in the new channel was 363% greater than in the previous un-restored channel. In a 0.51 mile section downstream the former McCormick-Saeltzer Dam site spawning area use increased each year. Overall from 2000 to 2003, spawning area used below the dam site increased 4,099%, primarily due to spawning gravel released following the removal of the dam, as well as spawning gravel placements near the dam site. Spawning area mapping may be more useful than annual escapement estimates in evaluating the benefits of specific restoration actions.