

Title:

Hyporheic Characteristics of Chinook Salmon Redds: Investigating Spawning Habitat Advantages

Author:

Scott Kline

U.S. Bureau of Reclamation / Central Washington University

509-575-5848 x277

skline@pn.usbr.gov

Summary of Presentation:

It is well documented that chinook salmon locate their natal streams by their keen sense of smell. The source of the smell is likely a complex soup of characteristics related to the geology, flora, and fauna of the stream in which they were born. The smell of a river that leads the salmon to their particular spawning areas is the same on a scale measured in kilometers. However, once the spawning adults reach their natal stream, spawning sites are selected that are chosen in a nonrandom fashion on a scale measured in meters. What are female salmon using to locate spawning habitat on this small scale? Substrate size, water velocity, and water depth influence the female's ability to build a redd, but these characteristics alone often do not explain the nonrandom distribution of redds found. This study investigates characteristics of the hyporheic zone that may provide an ideal habitat for incubating salmon embryos and a selective advantage for embryos to be buried in specific locations chosen by the adult female. Hyporheic characteristics including vertical head gradient, dissolved oxygen, temperature, specific conductivity, and permeability were measured in spawning and nonspawning areas of the Cle Elum River. Survival to hatching, weight, and length of planted embryos were measured in spawning and nonspawning areas to determine if there is evidence of a selective advantage for embryos incubating in spawning locations.