



Yukon Salmon Sub-Committee

Your Voice in Salmon Management

Over-escapement: Is there such a thing?

Over-escapement is described as having more salmon spawn than is required to meet the fisheries management goal. **It may result in fewer offspring per spawning adult but it might be necessary to conserve salmon biodiversity and promote re-colonization of habitats** (Walters et al 2004).

Support for the concept of over-escapement is usually a result of the Ricker stock-recruitment curve (Dunklin 2005), which estimates the maximum sustainable yield (MSY) of a discreet population of fish. However, this overly simplistic model only accounts for harvest considerations and does not consider how spawners affect the broader ecosystem (Dunklin 2005). Scientists (Gresh et al 2000) found a deficiency of marine derived nutrients (nutrients from salmon) in north western U.S. freshwater systems from diminished salmon returns, with a decrease of more than 90% of some nutrients. Scientists encourage fishery managers to consider salmon as important contributors of nutrients to increase the habitat productivity of streams. The enriched habitat sustains the production of invertebrates, other fish and species of birds and mammals that consume returning adult salmon (Cederholm et al 1999). The carcasses release nutrients which feed invertebrates and results in fatter juvenile salmon (Wipfli et al 2011) more capable of overwintering and contributing to stock production of wild Chinook salmon (Warren et al 2014).

Several scientific papers support the idea that over-escapement does not have a negative long term effect on salmon populations. Scientists (Walters et al 2004) found a decrease in offspring at high spawning escapements but no evidence that over-escapement led to a collapse or near-collapse of salmon populations. In addition, Scientists (Healey 2009) considered that positive effects existed from having a large number of spawners, including that high numbers of spawning salmon encourage them to explore new habitats, which can result in re-colonizing extirpated populations or creating new populations.

Prior to fishery management, salmon persisted through ice ages, volcanoes, and river changes. Salmon faced difficult times, but they adapted and survived both gradual and rapid stresses (Dunklin 2005). It is believed that a highly variable life history, including straying of spawners during periods of high abundance, are some of the reasons they were able to adapt and survive (Dunklin 2005).

References:

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