

Appearance of Squamous Cell Carcinomas in Four Spring Chinook Salmon Populations in Northeast Oregon: A Review

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The appearance of Squamous Cell Carcinoma was first observed in a captive population of Upper Grande Ronde River spring chinook salmon *Oncorhynchus tshawytscha*, rearing at Manchester Marine Laboratory, Port Orchard, Washington, December-2002. Subsequent sampling of this same cohort rearing at Bonneville Hatchery, Cascade Locks, Oregon in April 2003 revealed these fish were similarly affected. Of the 500 wild parr collected for broodstock in the summer of 2001, 86% of this population presented varying stages of tumor development in the mouth, tongue and maxillary when sampled in April 2003. The presence of this carcinoma has now been identified in both wild and hatchery returning adults across multiple year classes and in both the Grande Ronde and Imnaha River Subbasins. No acute mortality is associated with the disease at this time. The causative agent and transfer mechanism is still unknown and to date all attempts to identify the source of the tumors have failed. These attempts include, virology on tumors and internal organs, including primary culture of tumor tissue; electron microscopy on tumor tissue, cultured cells, and internal organs; histology on tumor tissue and internal organs; Polymerase Chain Reaction on tumor cell DNA extract using primers to identify *Oncorhynchus* Masou Virus and *Herpesvirus salmonis*; a modified PCR to detect reverse transcriptase activity, injection of whole cell and cell filtrate tumor homogenate into spring chinook fingerling (6 month duration); and cohabitation of spring chinook fingerling with tumor laden adults (3 week exposure – 6 month duration). Investigations to date have not provided evidence to support a viral pathogen as the cause of these tumors.