**Simpson, Phil – Oregon Department of Fish and Wildlife**

**Presentation Title: A Preliminary Assessment of Residual Hatchery Steelhead in the Hood River, Oregon**

Abstract for the 2018 Pacific Coast Steelhead Management Meeting

Phil Simpson, Project Leader

Oregon Department of Fish and Wildlife

P: (541) 296-8026 ext. 36

philip.c.simpson@state.or.us

Impacts to wild fish in the Hood River (OR) related to hatchery origin individuals failing to immediately migrate to the ocean following release (residuals) are highly variable and potentially negative. PIT tag data collected during 2005 – 2016 was analyzed to quantify the number of residuals that survived overwinter and exhibited an age-2 freshwater outmigrant life history (FW-2). The number of FW-2 hatchery winter steelhead residuals was estimated by combining the recapture probability (Cormack Jolly-Seber model) of PIT-tagged hatchery winter steelhead during year *y+1* with the marking rate during release year *y.* The number of estimated FW-2 residual hatchery steelhead appears limited, with typically less than 2% (mean = 1.65%, range [0.22% - 5.61%]) of the hatchery release group estimated to survive to detection the year following release. Data expansions based on the detection probability of recapture or interrogation sites were somewhat problematic since detection probabilities for most Hood River PIT tag sites are generally low. Because this evaluation was based on detections from the year *y+1,* ultimately the estimates did not account for hatchery steelhead that were unable to survive through the winter season, or ones that remained in the river as resident trout. Consequently it was difficult to ascertain how many residuals each PIT tagged hatchery fish truly represented. We also attempted to evaluate the effects of residuals on wild steelhead smolt productivity using a multiple regression model approach. Regression modeling indicated a negative relationship existed between the proportion of non-smolt hatchery steelhead present during release year *y* and the number of age-2 wild steelhead smolts present during year *y+1*. Additional sampling should be conducted to determine the overwinter survival rate and to quantify the non-migratory component of residuals.