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**Presentation Title: Monitoring Puget Sound Early Winter Steelhead Hatchery Releases**

Abstract for the 2018 Pacific Coast Steelhead Management Meeting

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WDFW’s Puget Sound early winter steelhead hatchery programs support important tribal and recreational fisheries, and provide important cultural and economic benefits to western Washington. WDFW raises segregated, early winter steelhead in five watersheds in Puget Sound: the Nooksack, Stillaguamish, Snoqualmie, Skykomish, and Dungeness basins. While the early winter programs are designed to minimize risks to other populations, including ESA-listed wild Puget Sound steelhead and Chinook, monitoring is essential to ensure risks meet established conservation limits. WDFW and tribal co-managers recently initiated a comprehensive monitoring program to evaluate the genetic and ecological effects of the early winter programs on wild steelhead and Chinook. This talk will focus on efforts to quantify risks at the smolt life stage as fish are released from the hatcheries. Hatchery managers encourage rapid outmigration following release through releasing timing and volitional release strategy. To evaluate precocious maturation and the potential for residualism, we measured size, smolt index, sex, and maturity rates of early winter steelhead smolts at three facilities pre-release, and at two facilities after release in 2017. At pre-release the majority of sampled fish were smolting or transitioning to smolting, the sex ratio was approximately 50:50, and nearly all males were immature; however low levels of precocious maturation was detected at all facilities. The majority of non-migrant fish sampled after the end of the volitional release were male and 21% to 43% of males were mature or had initiated the maturation process. To evaluate the potential for ecological effects during outmigration, such as predation or competition, we monitored how quickly early winter steelhead smolts migrated after release via smolt trap catches. The first early winter steelhead were captured at downstream smolt traps within two to six days of the first release. Releases ranged from eleven days on the Dungeness to thirty-one days on the Stillaguamish, and the final early winter steelhead were detected eight to twenty-three days after the final release.