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**Presentation Title: Using genetics and scales to estimate Snake Basin steelhead emigration for VSP metrics at Lower Granite Dam**

Abstract for the 2018 Pacific Coast Steelhead Management Meeting

Anadromous fish management programs in the Snake River basin include recovery planning and implementation efforts aimed at recovering ESA-listed wild steelhead stocks. However, specific data on Snake River steelhead populations are lacking, particularly for key smolt emigration parameters related to assessing the viability of salmonid populations. Starting in 2010, Idaho Fish and Game, in cooperation with Fish Passage Center’s Smolt Monitoring Program, implemented a program to sample genetics and scales for ageing from wild smolts at Lower Granite Dam. The ultimate goal of this program was to develop productivity relationships at the genetic reporting group and MPG levels using stock-specific information relative to sex and age. For 2010 through 2017, smolt passage data and biological data collected from individuals trapped were used to decompose the annual smolt emigration into genetic stock, MPG, sex, and freshwater age abundance estimates. Furthermore, ad-intact hatchery fish were removed from the putatively wild fish collection using parental based tagging genetic techniques to refine estimates of truly wild fish. Wild smolt abundance and composition estimates were used to evaluate the status of wild populations relative to three viable salmonid population criteria: abundance, productivity, and diversity at the aggregate and genetic stock levels. We directly estimated juvenile abundance as well as elements of diversity such as sex ratio and age. For productivity analyses, age data was used to estimate abundance by brood year. In combination with similar adult abundance and composition at LGR, the smolt data will enable us to estimate adult-to-juvenile, juvenile-to-adult, and adult-to-adult productivity at Lower Granite Dam. In addition, estimates by cohort could be used to forecast run sizes in subsequent years, and these forecasts are the basis for preliminary fisheries management plans in the Columbia River basin.