**A collaboration of two innovative technologies for VSP Monitoring of the Snake River Steelhead DPS (SY2010 – 2012)**

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Four key parameters are needed to evaluate a salmonid population’s viability status: abundance, population growth rate, spatial structure, and diversity. Snake River Steelhead have been difficult to survey through traditional methods using traps and weirs. Combining Instream PIT Tag Detection System (IPTDS) infrastructure and single nucleotide polymorphism (SNP) genetic analyses has allowed us to generate abundance estimates, measures of life-history diversity, and measures of genetic structure and diversity for the Snake River Steelhead DPS. Adult steelhead trapped at Lower Granite Dam are PIT tagged and later detected at IPTDS throughout the Snake River basin. Using a Bayesian patch-occupancy model, detected adults are used to decompose the adult run-at-large passing Lower Granite Dam (coarse spatial scale) into precise and reliable estimates of adult escapement at finer spatial scales. By combining known destination adults with biological samples taken during tagging we can also generate estimates of adult life-history diversity (sex ratios, length distributions, age structure, run-timing), and measures of genetic diversity and structure. Here we present results for 13 of the 24 extant populations for spawn years 2010 through 2012. These innovative methods are opening the door for estimating population characteristics of Snake River Steelhead at a finer scale than previously available.