

Dobos, Marika – Idaho Department of Fish and Game

Presentation Title: Trends, Survival, and Productivity of Wild Steelhead in Idaho

Abstract for the 2021 Pacific Coast Steelhead Management Meeting

Marika E. Dobos (marika.dobos@idfg.idaho.gov)¹, Tim Copeland², Brett J. Bowersox¹, Eric J. Stark³

¹ Idaho Department of Fish and Game, 3316 16th St, Lewiston, Idaho, 83501

² Idaho Department of Fish and Game 600 S. Walnut St, Boise, Idaho 83707

³ Idaho Department of Fish and Game 1414 E. Locust Lane, Nampa, Idaho, 83686

Resiliency of steelhead *Oncorhynchus mykiss* is attributed to their diverse life history in both freshwater and saltwater habitats. Management decisions for returning adult steelhead requires the understanding of their complex life history, survival, and recruitment potentials. Ontogenetic shifts are not often highlighted as an important diversity characteristic in salmonids. For a subpopulation (Fish Creek) in the Lochsa River basin, we report abundance, size, age structure, and survival of wild juvenile and adult steelhead from 1995 through 2020. Using this information, we examined diversity, recruitment, and survival of steelhead in Fish Creek at several points in their life history (e.g., juveniles at the screw trap, smolts at Lower Granite Dam [LGR], adults at a weir). Total estimated juvenile emigration varied from 4,668–71,940 (mean = 25,249), and estimated adult returns varied from 16 (SE = 5.7) in 2018 to 499 (SE = 67.1) in 2011. Twelve different freshwater and saltwater age combinations were identified in adult steelhead returning to spawn with total adult ages that ranged from three to seven years. Juvenile survival from Fish Creek to LGR was dependent on age at migration and migration pathway to the ocean. Survival increased with age with the mean survival being the highest for age-4 fish across seasons (0.614; SE = 0.005). Mean survival for age-3 fish was 0.571 (SE = 0.062) for, 0.538 (SE = 0.027) for age-2 fish, 0.263 (SE = 0.029) for age-1 fish, and 0.132 (SE = 0.035) for age-0 fish. Total number of smolts that recruited to LGR varied from 4,562 for brood year 2014 to 22,861 for brood year 2009. Beverton-Holt models estimated recruitment asymptotes at 81,447 (95%CI = 50,332–202,124) juveniles in Fish Creek and 21,490 (95%CI = 13,192–44,486) smolts at LGR. Indications of density dependence occurred in both the natal tributary and in main stem river habitat. This study highlights the importance of extensive monitoring and identifying habitat and limiting factors extending beyond natal tributaries that are critical for population stability.