A comparison of life histories among selected Snake River steelhead populations

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Abstract: Life history diversity is important to population resilience. The suite of life histories in a population influence its spatial structure, productivity, genetic diversity, and ultimately its abundance. Knowledge of these parameters is lacking for individual Snake River steelhead populations. Status assessments have been based on information from the Snake River aggregate or from coastal populations. We contrasted freshwater life histories present in selected populations within the Snake River steelhead ESU and considered implications for population productivity and management. We examined migration timing, age composition, and length at age of young steelhead leaving their natal streams in 2008 (Big Bear Creek, East Fork Potlatch River, Fish Creek, Crooked Fork, and Rapid River). In Fish Creek, 75% of emigrating juveniles left during the fall. In Big Bear Creek, East Fork Potlatch River, Rapid River, and Crooked Fork, the spring emigration comprised a much larger portion of the outmigration (87%, 65%, 61%, and 46%, respectively). Of the fish detected passing Lower Granite Dam, most spring emigrants were detected by mid-June; however, based on past data, fall emigrants will be detected 1-3 years later. Mean length at emigration out of natal stream differed among populations; average spring lengths ranged from 110.2 mm (East Fork Potlatch River) to 179.3 mm (Rapid River). In each population, 3-4 age classes emigrated. In East Fork Potlatch River, spring emigrants ranged 1-2 years in age; whereas they were 3-4 years in Crooked Fork. We attribute variation in juvenile life histories to habitat conditions within the different drainages (e.g., temperature regime and biological productivity). The distance from the ocean and diversity in elevation, hydrology, and geology in the landscapes Snake River steelhead inhabit make these populations diverse. Age structure of Snake River steelhead is more complex than assumed from previous status assessments. Management should account for these differences.

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