2018 PSMFC Steelhead Management Meeting – Presentation Abstract

Steelhead Status in Washington

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Among seven steelhead distinct population segments (DPS) in Washington five are ESA-listed as threatened—Puget Sound, Lower Columbia, Middle Columbia, Upper Columbia, and Snake River Basin—and two are non-listed—Olympic Peninsula and Southwest Washington. Statewide there are 116 extant populations and most of them occur in the four western Washington DPSs. We analyzed long- and short-term abundance trends using available annual adult abundance estimates for 76 populations. These estimates were derived from redd surveys, passage facility counts or mark-recapture studies. Most western Washington populations, ESA- and non-listed, showed declining long-term (1980 or later to 2016) trends, while most Columbia Basin DPSs' populations showed increasing trends. Short-term (recent 12 years) trends showed improvements in Puget Sound and Southwest Washington populations. Several populations in Upper and Middle Columbia DPSs that had increased over the long term (from very low abundance in the 1980s) showed declining short-term trends. Smolt-to-adult productivity (marine survival) rates, measureable in 12 populations from four DPSs, were highest in Olympic Peninsula and Southwest Washington and lowest in Puget Sound DPSs. A declining trend in average smolt-to-adult return rates was also evident in Lower Columbia DPS. Spawner-to-smolt (freshwater) productivity varied among populations (11 with data) but there was a universal declining per-capita productivity as number of spawners increased. Our evaluation of this relationship suggested freshwater survival may be density dependent. Regarding diversity, we lacked data to conduct quantitative analyses of change in life-history characteristics over time, and we need more baseline data for comparative genetic diversity analyses. For many ESA-listed populations, spatial structure has been constricted by impassable large and small barriers. Habitat loss due to large dams was highest among interior Columbia Basin populations. Recolonization has followed dam removals in Elwha and White Salmon rivers.

We highlighted a variety of factors affecting status and viability in the following categories: habitat loss; dams and other passage barriers; hatchery production; harvest; and predation. For example, degraded flows and water quality due to water extractions, diversions, and changing climate contribute to habitat loss in most of the state. Also, Columbia Basin mainstem dams impose downstream passage mortality risks for adults, kelts, and juveniles as well as upstream passage survival hazards. WDFW is engaged in actions statewide that target risk and threat factors in all categories, including the following examples. To enhance aquatic benefits, WDFW collaborates with land management authorities working to protect and restore riparian areas. Culverts are being inventoried for passage conditions and prioritized for removal. Hatchery programs continue to be operated to meet Hatchery Genetic Management Plan (ESA permits) requirements and minimize wild fish impacts. Harvest regulations continue to be constructed to protect wild steelhead through time, manner, and place of fishing, and wild steelhead release is required in sport fisheries. Further actions were recommended such as: expanding monitoring of presence and proportion of hatchery fish on spawning grounds; transitioning to use of volitional smolt releases with removal of non-migrants; and including projected climate change impacts in prioritizing habitat restoration locations.