Corey Phillis--2016 Steelhead Management Meeting Abstract

# Restoration of Anadromy: Recovering Lost Migratory Behavior in Steelhead Populations

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# Abstract

Where steelhead populations have declined restoration activities are increasingly being called upon to recover not just species, but also the expression of the anadromous life history. For instance, the removal of migratory barriers is a common tool in the recovery of anadromous steelhead populations. However, migratory life histories are controlled by genetic and environmental factors; simply removing a barrier may restore hydrologic connectivity, but fail to recover the anadromous steelhead phenotype. Therefore, effective restoration requires a greater understanding of the ecological and genetic mechanisms underpinning the expression of migratory behavior. Here we review the theory of migration in steelhead and explore three pathways through which anadromy may be restored: re-colonization, re-expression, and re-evolution. Because these processes may act simultaneously but on different timescales, it is important that the temporal scales of management and restoration align. Further, we should look to use restoration efforts such as dam removals as large-scale experiments that can illuminate these processes and guide future efforts to restore anadromy. In the general sense, restoration of anadromy provides an alternative to stocking anadromous fish from out-of-basin and provides clear advantages over stocking from logistical, cost, and biodiversity perspectives.