Environmental drivers of steelhead abundance in partially anadromous *Oncorhynchus mykiss* populations

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Oncorhynchus mykiss populations with ocean access display considerable life history plasticity. Resident (rainbow trout) and anadromous (steelhead) adults commonly produce offspring of the alternate ecotype, but environmental drivers of this life-history response are not well understood. Patterns in *O. mykiss* ecotypic distribution, suggest that flow and temperature conditions play an important role in determining the predominance of either resident or anadromous life history forms. As a supplement to traditional hypotheses about declining steelhead abundance, we propose a theory supported by evidence from pristine rivers. We hypothesize that flow regimes providing cool temperatures and maintaining depth and velocities necessary to sustain adult *O. mykiss* throughout the summer and fall seasons result in increased resident rainbow trout abundance and decreased steelhead abundance. This theory is consistent with a commonly referenced ecological principle that "when the animal's needs are being met, it stays where it is; when they are not, it moves until it finds appropriate conditions for its current demands." Furthermore, our hypothesis may explain why mainstem habitats in regulated river systems often support renowned resident rainbow trout populations, while tributaries tend to produce predominantly steelhead.