

Abstract

Coastal Cutthroat trout (*Oncorhynchus clarkii*) resilience to wildfires in the western Cascade Mountains

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Relative to the previous century, wildfires have become increasingly common and severe in forested landscapes across the Pacific Northwest. Because these forested landscapes include many streams and rivers, this also means that aquatic biota – including cutthroat trout (*Oncorhynchus clarkii*) – in this region are also increasingly experiencing the direct and indirect effects of wildfire. One of the most prominent effects of wildfire on forest stream systems, is an increase in stream light following the loss or reduction of riparian canopy trees. This in-turn leads to increased stream temperatures, which has been raised as a potential concern for the persistence of robust cutthroat trout populations in these systems. In this talk we provide results from two studies that quantified stream temperature and cutthroat trout populations after wildfire in Cascade Mountain headwater ecosystems. In the first study, we used a before-after control-impact study design to assess relative changes in trout abundance in the first summer after wildfire across three replicate streams. We observed a decline in adult trout abundance in one stream after the fire, however in another stream we found a slight increase in adult trout. Independent of adult responses in this study, we found strong age 0+ trout responses with both larger and more abundant young-of-year trout in the first year after wildfire. This suggests that even if adult trout abundances decline in the first year after a fire, there may be the potential compensatory recruitment of young fish in the following year. In the second study evaluating trout along the continuum of a third-order stream one to three years after a fire, we found greater total adult trout abundances, but there was considerable spatial variation in the responses. We observed little to no change in adult abundance relative to previous years lower in the system, but a relative increase in trout abundances in smaller sections of the system. Overall, our data suggest that within these western Oregon headwaters, cutthroat trout are resilient to short-term effects of wildfire.