

WATERSHED-SCALE APPROACH TO ASSESSING COLORADO RIVER CUTTHROAT TROUT ABUNDANCE AND HABITAT IN THE UPPER COLORADO RIVER HEADWATERS

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Information concerning the effects of physical habitat on the distribution, abundance, and population structure of salmonid fishes has been routinely gathered at the site and reach scales, but data collected at these scales has provided little insight into spatial and temporal structure of fish assemblages within the stream network. This is especially relevant where periodic disturbances across the landscape are extensive, and effects are not uniform (spatially or temporally). To gain new insight into the relationships between trout abundance and population structure and the physical habitat at multiple spatial scales, we surveyed six watersheds in the upper Colorado River basin and assessed Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*) abundance and habitat variables continuously throughout the stream network. The watersheds were selected randomly from a sampling frame based on presence of Colorado River cutthroat trout populations, percent beetle infestation of the watershed area, and erosion potential of the upslope geology. Although similar physical habitat conditions existed within and among several watersheds, fish distribution was patchy at the channel-unit scale, and physical habitat was not strongly related to distribution. However, at the reach scale, patterns of fish distribution explained a substantial amount of the variation in abundance. Further refining of these relationships will provide critical information necessary to assess future changes related to restoration activities, wildfire, and climate change.