

Title: Examining the relationship between climate and seasonal stream thermal regimes in a high desert ecosystem

Climate change is negatively affecting ecosystems around the world, and in the coming years, scientists predict that these changes will only intensify and accelerate. In the western mountains of North America, climate change projections predict elevated temperatures, reduced snowpack, and earlier snowmelt. Elevated air temperatures have the propensity to affect water temperatures in sensitive freshwater ecosystems. Temperature increases may cause streams to reach the upper thermal limit for many aquatic organisms, such as aquatic invertebrates and fish, and result in death or dispersal for these organisms. This makes the availability of cold-water refugia in streams that much more important for these organisms. Changes in water temperature also influence water quality and have the potential to shape communities of aquatic organisms. Our objective is to examine the relationship between climate and seasonal thermal regimes in a high desert stream located in western Colorado. Climate and water temperature data has simultaneously been collected along Kimball Creek from 2011 to 2017 in riffle habitats and beaver ponds. We predict that air and water temperatures will be positively correlated and that beaver ponds, located within the stream, will have cooler water temperatures and potentially serve as refugia for thermally sensitive species.