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## **MULTIPROXY PALEOENVIRONMENTAL ANALYSIS IN RANGE CREEK CANYON**

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Range Creek Canyon is considered one of the nation's best-preserved regions of ancient Ancestral Puebloan occupation due to the high density of undisturbed historic sites that have been found in the canyon. Current research being conducted in Range Creek Canyon supports the notion that Fremont who inhabited the area between BCE 200-CE 1350 applied labor intensive methods to grow maize in this arid region. To successfully farm, the Fremont were likely to have performed annual maintenance to their croplands by burning surface vegetation for land management and excavate irrigation trenches to water their crops. Cherry Meadows in Range Creek has been identified as a focus of agriculture in the canyon because of its central location, the amount of contiguous arable land and its proximity to the perennial creek. Thirteen sediment cores were collected in Cherry Meadows in the summer of 2018 along a 100-meter trench running east to west. Analysis of these cores will likely show a charcoal peak stratigraphically above and below the period of Fremont occupation. Charcoal peaks indicate that more organics are burning than what is normal for the region and can be construed as the Fremont using annual maintenance burning for agricultural management. Analyzing charcoal morphologies can allow inferences about the nature of the vegetation that was burned. The most recent laboratory analyses on charcoal in the sediment core samples indicate that the most ubiquitous charcoal morphologies are lattice and dark within all cores being studied. Magnetic susceptibility and x-ray fluorescence on the sediment cores have been completed. Preliminary results from Principle Component Analysis (PCA) plots indicate the variables driving sediment geochemistry to be fluvial deposition and diagenesis. The geochemical data are supporting our initial hypothesis that the Fremont used Cherry Meadows to irrigate maize during the period of occupation.

