Climatic Extremes and Human Resilience: An Examination of Two Hydrographic Basins in the Great Basin (northern Nevada, USA)

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The purpose of this paper is to look at the prehistoric human settlement patterns in the northern Great Basin of the United States in light of a variety of climate proxies. The intent is to look at the response of Great Basin hunter-gatherers in response to extreme climatic events. Focus will be on two US Geological Survey designated hydrographic basins: the Black Rock Basin and the Truckee Basin. The Black Rock Basin contains the Quinn River which originates in the Montanna Mountains and terminates into a seasonal lake on the Black Rock playa. The Truckee Basin contains the Truckee River which flows from Lake Tahoe in the Sierra Nevada range to the terminal Pyramid Lake.

Radiocarbon dates from excavated archaeological sites in the two basins are used as a demographic and settlement proxy. Climate proxies from the two basins include: oxygen isotope data from Pyramid Lake, pollen cores from Mud Meadows spring and Summit Lake, and tree ring data from the Jackson Mountains.

Both basins see initial human settlement during the Younger Dryas period, with a growth in population/settlements through 8000 BP. After approximately 7800 BP, there is a paucity of dated sites until approximately 4000 BP. Whether this is due to the 8.2 kya BP climatic event and/or the Mount Mazama volcanic eruption, is uncertain. Oxygen isotope data from Pyramid Lake does indicate a period of hyper-aridity throughout the northern Great Basin between ca. 8-4 kya BP. The aridity declines after 4 kya based on the oxygen isotope data, and settlement in the two basins increases. With the onset of the Late Holocene Drought, ca. 2500 BP, population/settlement declines are seen except around major lakes, north of 42N latitude, and elevations above 2000m. After 2000 BP, population/settlement increases throughout both basins. Notable increases of population/settlement occurs in the Late Antique Little Ice Age and continues throughout the Medieval Climatic Anomaly (MCA). Environmental proxy data indicates the MCA
was a period of extreme aridity in the northern Great Basin. Despite ameliorating conditions in both basins after the MCA and in the Little Ice Age, population/settlement declines after circa 700 BP.