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HUNTER - GATHERER ADAPTATIONS AND ENVIRONMENTAL CHANGE IN THE SOUTHERN GREAT BASIN: THE EVIDENCE FROM PAHUTE AND RAINIER MESAS

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ABSTRACT

This paper reviews the evidence for fluctuations in past environments in the southern Great Basin and examines how these changes may have affected the strategies followed by past hunter and gatherers in their utilization of the resources available on a highland in this region. The evidence used to reconstruct past environments for the region include botanical remains from packrat middens, pollen spectra from lake and spring deposits, faunal remains recovered from archaeological and geologic contexts, tree-ring indices from trees located in sensitive (tree-line) environments, and eolian, alluvial and fluvial sediments deposited in a variety of contexts. Interpretations of past hunter and gatherer adaptive strategies are based on a sample of 1,311 archaeological sites recorded during preconstruction surveys on Pahute and Rainier mesas in advance of the U.S. Department of Energy's nuclear weapons testing program. Although survey locations were not chosen through any random sampling scheme, a nearest neighbor analysis indicates that these areas are randomly distributed over the general region and should provide an adequate sample. Projectile point chronologies and available tree-ring, radiocarbon, thermoluminescence and obsidian hydration dates were used to assign these archaeological sites to specific periods of use. Although about half of these archaeological sites were redundantly used through a considerable period of time, a multi-dimensional scaling of the cooccurrence of projectile points at the archaeological properties and the examinations of the landforms and aspects occupied by these sites indicate that this redundant use occurred during a specific period and that past patterns of land use were different during other times.

The evidence suggests that Pahute and Rainier mesas, now blanketed by a pinyon-juniper woodland and associated sagebrush steppe, housed a limber pine forest with fluctuating occurrences of white fir during the terminal Pleistocene. While there is evidence that hunters and gatherers were in the region at this time, there is no evidence that they utilized the resources on Pahute and Rainier mesas. However, with the gradual retreat and thinning of the subalpine forest on the mesas and its replacement with a juniper woodland about 9,000 years ago, foraging parties began to exploit the mesa top environs. The low diversity in artifact assemblages at localities used by these peoples and the positioning of these localities near environments conducive for windfall hunting implies that large game were the primary resources sought. This emphasis on the exploitation of large game on the mesas appears to have continued for the next three to four thousand years. It was during this period, however, that the environments in the lowlands around the mesas changed significantly. The lakes, ponds and marshes that once characterized these lowland environments dried up and the vegetation in the valley bottoms started to assume its present day desert character. Pinyon, which had been in general region since the end of the Pleistocene, also began to expand in its distribution and density in the woodlands on the mesas.

By about 5,000 years ago these environmental changes began to effect how hunters and gatherers utilized the changing resources on Pahute and Rainier mesas. At first hunting probably remained to be a significant activity, but the inclusion of milling implements in artifact assemblages on the mesas started to increase not long after 5,000 years ago and by 3,000 years ago features interpreted to be rock caches for pinyon nuts joined this assemblage. Mobility patterns also gradually changed to be more logistically organized and resources started to be

exploited within the foraging radius of residential bases established directly on the mesas. Although it is argued that this gradual change in adaptive strategies conforms well with models of how increases in population density may affect hunter and gatherer behavior, the presence of pinyon on the mesas was a necessary prerequisite for this population growth.

There appears to have further changes in the way that the resources on the mesas were exploited during the last 900 years. The evidence suggests that there was a shift from monitoring those resources from within the foraging radius of winter camps established on the mesas to one of monitoring those resources in the logistic radius of camps established off the mesas. This change in exploitive strategies, however, does not appear to conform with models of the spread of the present day Numa in the Great Basin. Rather, it is suggested that this shift may have been due to a major drought between 900 to 500 years ago when water was scarce on the mesas.