Archaeologists as Landscape Modifiers: Monitoring Ecological Impacts of Excavation in an Alpine Environment, Absaroka Range, Wyoming

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Abstract: As traditionally practiced, archaeology is seen as a discipline focused on issues that often involve prehistoric human impacts on their environment. Present day archaeologists are becoming more diversified in their interest on ecological impacts at a number of temporal and spatial scales. As part of a more general trend toward conservation oriented archaeology, this concern for evaluating impacts is being extended to methods of excavating or observing artifacts in situ. Particularly in areas of fragile conservation, archaeology is becoming more relevant in order to preserve the landscape integrity of the site and artifacts for future research, further improving the intrinsic value of the area for generations to come. Excavation of sensitive sites such as those in the Jack Creek drainage of the Absaroka Range, Wyoming, has focused on monitoring human impacts on sites in the area in terms of both the bio-physical and cultural actions, including archaeological research itself. By observing soil deposition, traffic-related erosion, and floral and faunal disturbances caused by latest excursions and its human drivers, a case study of ecological impacts around an excavation unit is described. Two 1x2m test units of 48PA2874 served as an experiment in monitoring ecological interruptions due to archaeological investigation.

Introduction: The Absaroka Mountain Range of Northwestern Wyoming has seen thousands of years of human occupation ranging from hints of Paleoindian influence up to and beyond the post-Contact period with Western civilizations. This alpine landscape networked by a confusenence of several drainage systems has been used by modern humans living by the hunter-gatherer ecology. In more recent times, the Absarokas have been host to humans living by other means such as hunters and trappers, ranchers and farmers, modern-day recreationists, as well as a handful of professorial student archaeologists seeking to gain knowledge about fieldwork and its affects on the environment. During the CSU field school session of 2006 as well as previous sessions, special care was taken to lessen research impacts particularly around the area of archaeological study, the 48PA2874 with its two 1x2 excavation units T26 and T27, several rodents burrows excavations. The site itself lies on a high mountain plateau covered by a sediment slump, a product of a mass wasting event that appears to be Late Pleistocene in age.

Why? Many may ask why we should consider archaeological impacts on the ecology of a site, despite a common professional interest in preserving cultural remains. Two approaches can be taken into thought when assessing the environmental impacts of archaeology, including the surrounding environment and its integrity as an "artifact" in analyzing a site, and considering the recreational and conservation efforts involving a landscape while treating the local community as a benefit to the people who enjoy its integrity. The main objective of this study was to present methods of low impact archaeology concerning excavation, researcher land-use, and biotic disturbances as well. The information provided by this study will be compiled to prevent ecological impacts in future sessions, further building on a symbiotic relationship between recreation ecology, conservation biology, and archaeology.

Part I Methods: Both 25 cm sub-units in T26 were segmented into 2x2 plots in order to remove and record the integrity of the first soil layer (5 cm thick) in excavation. In the U27 excavation unit researchers attempted to remove the first soil layer in 4x4 units for comparison. The lower biotic capacity and steep gradient of slope throughout U27 caused the extracted soil to become more disaggregated as removal progressed. The sub-units U27-10 was more successfully extracted into 1x2 units. At soil segments were placed in order as they lay in situ in a tap for the extent of soil excavation. 13 auger holes were dug at varying elevations and consistencies of sediments indicating the native soil in each soil. Sediments were also extracted and sifted from rodent mounds/burrows that ridited the project area.

Assessment: Approximately 4 m² of the 21,500 m² site, or .019% of the project area, was disrupted on the surface averaging at 65.22 cm in circumference, however, they are also expected to make a full recovery.

Part II Methods: The sifted dirt extracted from T26 and U27 was backfilled on the sixth day of excavation and the resulting unit was replaced as best possible to their original positions on the soil as possible. The auger hole dirt was also replaced on the seventh day or usually on the eighth day. The high plain landscape involving site 48PA2874 is, as previously stated, the result of a late Pleistocene wasting event that covered the landscape at the time with thick sediment deposit. The site itself specifically centers itself around an ephemeral sag pond, that dried up prior to the 2006 summer session. The vegetative cover includes plains grasses such as blue grama (Bouteloua gracilis) and mountain cress (Oxyria digyna) among others, stunted from the higher elevation and colder climate. Pocket gophers (Thomomys talpoides) also call the site their home and frequently involve cultural remains from the surrounding sites in their burrows from the mound/burrow excavations.

Conclusion: Effective monitoring of archaeological sites requires a level of ecological stability in order to efficiently document artifacts as accurately within their spatial context as possible. Taking precautions with the biotic/abiotic components that effect the symbiotic relationship between site and ecosystem will enable researchers to return for future work and for non-researchers to appreciate an "artifact" in analyzing a site, and considering the recreational and conservation efforts involving a landscape while treating the local community as a benefit to the people who enjoy its integrity. The main objective of this study was to present methods of low impact archaeology concerning excavation, researcher land-use, and biotic disturbances as well. The information provided by this study will be compiled to prevent ecological impacts in future sessions, further building on a symphysis between recreation ecology, conservation biology, and archaeology.

References:

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