

INTERAGENCY ARCHAEOLOGICAL INVESTIGATIONS

AN EXAMPLE FROM THE GOETZ SITE ON THE NATIONAL ELK REFUGE, WYOMING

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Archaeological investigations at the Goetz Site (48TE455) on the U.S. Fish and Wildlife Service's National Elk Refuge in Teton County, Wyoming were initiated in 2000. The project involves the financial and administrative support of two federal agencies, the local historical society, the local chapter of the state archaeological society, private individuals and companies, and an international conservation organization, plus thousands of volunteer hours. This project is unusual for the assistance program at the National Park Service's (NPS) Midwest Archeological Center by being problem-oriented and not motivated by Section 106.

The original research focus of the project was to understand the role of bison in the precontact ecology and economy of Jackson Hole. Traditionally, bison have been viewed as a minor component of the Jackson Hole fauna. In his book, *People of the High Country: Jackson Hole Before the Settlers*, Gary Wright (1984) stated that bison were unpredictable and too small in number to provide a stable food resource. Wright's arguments were based upon limited archaeological evidence of bison and the relatively small modern Jackson Hole herd. Since the publication of Wright's book, archaeological excavations in Grand Teton National Park and southern Jackson Hole suggest bison may have been more common prehistorically than previously envisioned.

The Goetz Site

The Goetz Site is located in a narrow, steep-walled drainage in the northeast portion of the National Elk Refuge that heads on the flanks of Sheep Mountain in the Gros Ventre Wilderness. The mouth of the drainage opens onto Long Hollow, a sagebrush-grassland underlain by loess-mantled gravel. Many plant species, several of economic importance, have been identified. The valley walls are steep, and the valley bottom is roughly 50 m wide and may have served as a natural game trap. The entire area was covered by glaciers of the penultimate glaciation and the valley occupied by streams during the Bull Lake recession, as well as Pinedale. Finer-grained Holocene alluvial, eolian, and colluvial deposits overlie the older Pleistocene deposits and contain the archaeological deposits. A spring at the base of the valley slope probably served as an attractant to both large mammals and humans.

The potential of the Goetz Site was originally identified in 1971 when trenching around the spring exposed large mammal bones. The University of Wyoming field school, under the direction of George Frison, revealed bison bones along with lithic tools and debris from an excavation of a 5-by-1-foot block. The recovered material was never fully analyzed and was minimally reported by Love (1972). A radiocarbon age of A.D. 1560 ± 115 years was obtained from a thin carbon lens about nine inches below the surface, but above the bone deposit. Reanalysis of the bison bone indicates a minimum of four individuals were killed and processed at the site. An age of 800 ± 40 RCYBP (Beta-133690; δ¹³C = -21.0‰) was obtained from a right bison metatarsal. The right calcaneus and right mandible of a black bear (*Ursus*

americanus) were also identified.

Despite the limited analysis, the site became imbedded in the regional literature as either “a game trap and quartzite quarry” (Wright and Marceau 1981:13) or merely a “bison trap” (Wright 1984:Table 3). Based upon Love’s description and the reanalysis, we felt the Goetz Site was a prime candidate to yield information on precontact bison in Jackson Hole.

The NPS Midwest Archeological Center Project

In 2001, we began a formal program to investigate the role of bison in the ecology and economy of precontact Jackson Hole. What we found was a much longer and more diverse occupation represented at the Goetz Site, the 800-year-old bison kill being only one component. Funding for the research has been provided by grants from the Earthwatch Institute and the U.S. Fish and Wildlife Service through a Challenge Cost Share grant. Additional support has been graciously provided by the Teton County Historic Preservation Board, the Jackson Chapter of the Wyoming Archaeological Society, Patagonia, Lynne Bama, and Michael Collins. The Earthwatch Institute was a major source of our funding, plus the numerous hours of labor provided by Earthwatch volunteers. From 2001 to 2004, Earthwatch volunteers from 16 states and six countries enthusiastically provided well over 6,000 hours of labor. This project has also benefited from the efforts of University of Nebraska-Lincoln students Greg Horner and Amanda Landon.

Between 2001 and 2003, we focused upon delineating the vertical and horizontal extent of the site through hand excavation. A feature complex of burned bone, stone tools, and fired rock that encompasses a minimum of 9 sq m was uncovered. A large mammal long-bone fragment from the feature was dated to 1900 ± 40 RCYBP (Beta-165942; $\delta^{13}\text{C} = -19.2$). A second radiocarbon age, 3360 ± 40 RCYBP (Beta-183741; $\delta^{13}\text{C} = -21.1$), was obtained from the mid-shaft fragment of either the tibia or femur of a medium-sized artiodactyl recovered from 90 cm below surface from another area of the site. Hand excavations involve the piece-plotting of all items larger than 2 cm using a SOKKIA Total Station, with data being downloaded into an SDR field notebook. Mapping data were then downloaded into a Microsoft Access database for further analysis. Site maps are constructed in ArcGIS. Additional characteristics of the artifacts were also recorded in the field including dip-and-strike (Figure 1). At this time, all excavated material not from features was dry-screened through 1/8-inch (3.2-mm) mesh.

In 2003 and 2004, we began a geophysical survey of the site using a GeoScan FM36 fluxgate gradiometer. Results indicate the presence of several anomalies that may represent precontact deposits. Ground-truthing revealed evidence of fired rock and lithic debris. Data recovered from the geophysical survey will guide further investigations. It was during 2004 that we modified our recovery technique from dry-screening to water-screening through 1/16-inch (1.6-mm) mesh in order to increase the potential of recovering microfaunal and other paleoenvironmental remains (Figure 2).

We conducted backhoe trenching in 2004 across the site for geomorphic exploration. Kenneth Pierce (U.S. Geological Survey) and William Eckerle (Western GeoArch Research) conducted the geomorphic investigations. Trench 7, at the northern end of the site, provided the most compelling evidence of a long stratigraphic record. The trench exposed over 2 m of Holocene and Pleistocene fine sediment,



Figure 1: Earthwatch volunteer recording dip-and-strike on an artifact prior to removal.

including a buried paleosol in contact with late Pleistocene Pinedale-aged fluvial deposits. A bulk soil sample of the paleosol produced a mean residence age of 8840 ± 70 RCYBP (Beta-194594; $\delta^{13}\text{C} = -24.4\text{‰}$). In addition to the soil age, at least one early Holocene lanceolate projectile point has been recovered from the site.

Lithic raw materials at the site are dominated by local quartzite cobbles. This is in contrast to other sites in the region in which volcanic glasses and cherts predominate. Glacially redeposited quartzite cobbles were being bifacially reduced on site. Limited geochemical analysis of obsidian artifacts by Richard Hughes (Geochemical Research Laboratory) has identified the following geochemical obsidian types: Crescent H, Phillips Pass area, Teton Pass, Obsidian Cliff, and one unknown source. Phytolith samples were collected from the trench at 10-cm intervals by Steve Bozarth (University of Kansas). Additional sampling was conducted for mechanical and chemical analysis of the soils, as well as magnetic susceptibility. Immunological residue analysis of stone tools has produced positive results for bear, deer, rat, rabbit, *Chenopodiaceae*, and *Asteraceae*. Faunal remains include bear, elk, deer/sheep, and bison.

Despite intense work focused upon the postglacial geologic (e.g., Good and Pierce 1996) and vegetative history (e.g., Whitlock 1993) of Jackson Hole and northwestern Wyoming, the literature on the history of the area's faunal community and the role of mammals in precontact subsistence systems is largely speculative (Cannon et al. 2000). However, this is not the result of a lack of effort by researchers, but more likely the result of limited preservation of organic materials in this mountainous environment. The Goetz Site is unusual in this respect—it has a long record with excellent preservation of organic materials. Future excavations at the site will focus on verifying the presence of *in situ* Terminal Pleistocene–Early Holocene occupations. We believe the Goetz Site represents an important site for northwestern Wyoming where few sites with long stratigraphic records and preserved faunal material have been found (Cannon et al. 1999).

Government Archaeology Collaboration

The Goetz Site investigation is just one of the latest examples of the NPS Midwest Archeological Center's assistance to other federal agencies. From its inception in 1969, the Midwest Archeological Center has assisted other federal agencies with their cultural resource research and management needs. With shrinking budgets and limited personnel, this commitment to cooperation between agencies results in an efficient and cost-effective work force. These projects range from creating and maintaining Geographic Information System (GIS) databases, to remote sensing and geophysical prospecting, to historic structure documentation, to data recovery.



Figure 2: Earthwatch volunteers water-screening sediments.

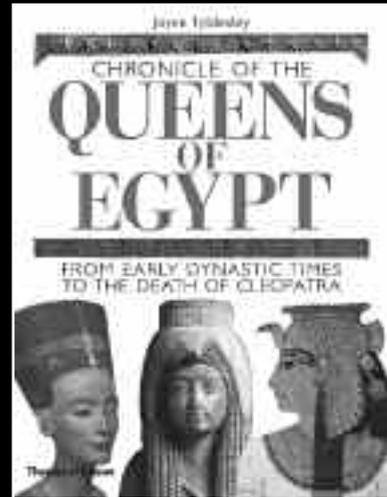
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References Cited

- Cannon, K. P., W. Eckerle, and K. L. Pierce
 1999 Geoarcheological Investigations of the Crescent H Ranch Site (48TE1079), Teton County, Wyoming. *Current Research in the Pleistocene* 16:19–20.
- Cannon, K. P., M. Sittler, and P. W. Parmalee
 2000 Small Mammal Remains from Terminal Pleistocene-Holocene Deposits in Southern Jackson Hole, Wyoming. *Current Research in the Pleistocene* 17:115–117.
- Good, J. M., and K. L. Pierce
 1996 *Interpreting the Landscape: Recent and Ongoing Geology of Grand Teton and Yellowstone National Parks*. Grand Teton Natural History Association, Moose, Wyoming.
- Love, C.
 1972 An Archeological Survey of the Jackson Hole Region, Wyoming. Unpublished M.A. Thesis, Department of Anthropology, University of Wyoming, Laramie.
- Whitlock, C.
 1993 Postglacial Vegetation and Climate of Grand Teton National Park and Southern Yellowstone National Park, Wyoming. *Ecological Monographs* 63(2):173–198.
- Wright, G. A.
 1984 *People of the High Country: Jackson Hole Before the Settlers*. Peter Lang, New York.
- Wright, G. A., and T. E. Marceau
 1981 Report on Excavation at Blacktail Butte. Report on file at the Midwest Archeological Center, Lincoln, Nebraska.

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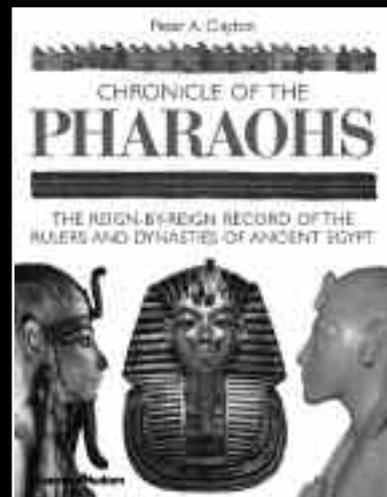


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