OBSIDIAN SOURCE USE AT DANGER CAVE

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Introduction

Danger Cave (42To0013) is located at the western edge of the Bonneville basin, within Tooele County, Utah, just northeast of Wendover. It is a classic Great Basin site containing well-stratified deposits that have high degrees of organic preservation and are well dated. It contains rich evidence of cultural occupations spanning the terminal Pleistocene and Holocene. Obsidian artifacts, including some debitage with provenience, are abundant in the assemblage; yet the site is quite distant to visible geologic sources of obsidian. XRF analysis of obsidian tools and debitage sampled throughout the site display a pattern of source use through time that can be used to investigate land use patterns and interactions within and outside the Bonneville basin of northwestern Utah. Results of this sourcing investigation indicate a broad geographic range of obsidian procurement through time with a heavy focus on the use of the Browns Bench geochemical group.

Research Questions

- What sources of obsidian were used at Danger Cave?
- Did the use of these sources vary through time?
- What factors may have affected source selection?

Obsidian Analysis

A sample of 237 obsidian artifacts from Danger Cave was loaned from the Utah Museum of Natural History in Salt Lake City, Utah. An additional 60 obsidian artifacts from Smith's early-19th-century excavations were also loaned but were not selected for XRF analysis as these artifacts lacked adequate provenience (Linnquist 1997; Redman and Ruttab 1997; Ruttab et al. 2005). The following obsidian tools and debitage (shown by major lithic division) was subjected to non-destructive geochronological trace element analysis using an energy dispersive XRF spectrometer at Northwest Research Obsidian Studies Laboratory (NWRDOSL 2007).

Results (XY Plot Rb/Zr)

Browns Bench Obsidian: Geographically Distinct or Geochemically Variable

Obsidian Source Profiles

Source profiles by strata (IV, III, II) (sources arranged by increasing distance)

At least 10 geochronological sources of obsidian in one source of unknown provenience are representative in the overall assemblage. "The Browns Bench geochemical group, as it is defined here combines three geochemically distinct source units that may or may not be geographically distinct. More work needs to be conducted to characterize Browns Bench." (Source: "Browns Bench Group", "Browns Bench Area") and "Bull Valley Group A (Bull Valley-Unknown A-1)" to determine whether it represents a "Browns Bench" obsidian source group that is purely a function of geochronological as its party or wholly geographically separate.

Discussion of Obsidian Use

Prior to DRI analysis, there was an expectation of mainly eastern Great Basin sources at Danger Cave. This expectation fits well into the idea of an eastern Great Basin provenance zone (Jones et al. 2003). Results portray land use patterns that mostly fit an eastern provenance zone, but there may be evidence for a more complex interaction between both the Great Basin material and the eastern material. However, there was a strong interaction between the western and the eastern groups. Obsidian sources from the western Great Basin were always used at Danger Cave, while those from the eastern Great Basin were never used.

Conclusions

A number of far reaching sources of obsidian were identified in the Danger Cave assemblage. Overall, source use varied through time, although the frequencies of certain sources were reliably high. Some sources were represented in very low quantities (1 or 2 pieces) and often only in a single stratum. Land use patterns were generally consistent with the eastern Great Basin and there were strong ties to use of Browns Bench material over all other sources identified. Little material was brought from other sources except Browns Bench; but some of this material was found in the distant sources indicating limited control of different groups in the region. The patterns observed at Danger Cave are consistent with the idea that different groups had different interests and interactions with the eastern and western Great Basin.

References

Accessions:

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