



### **D8 Rodent Gnawing, Wildfire, and Cultural Modification: Using Forensic Techniques to Interpret Historic Artifacts From the Spencer Site**

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The goal of this presentation is to provide an example of how modern forensic techniques contribute to the field of historic archeology.

This presentation will impact the forensic science community by highlighting a case where knowledge relevant to both fields assisted with the interpretation of a historic site. The presentation will hopefully encourage communication between forensic experts and archeologists; ideally, this would optimize the insights of professionals in the interpretation of sites and cases through reciprocal knowledge, therefore benefiting all parties.

The Spencer Site is a historic site in the Seeley Lake area of Western Montana that contains a wealth of information within only a few artifacts. The site was revealed to archeologists in the fall of 2007 after a large wildfire swept through the area, which severely burned the vegetation and exposed the ground surface. The Spencer site lies within a travel corridor proximal to the Old Jocko Indian Trail and dates to the late Bison fur trade period, around the late 1870s. Spencer .56-52 cartridges were the dominant artifact at the site, and a cluster of other high value artifacts were found amidst the dispersed cartridges. The cluster of artifacts included a bullet mould, a pair of scissors, a cut nail, components of a possible beaver trap, an axe head, and a Bison hide scraper crafted from an octagonal rifle barrel. The artifacts were analyzed and curated in the Heritage department at the Lolo National Forest Supervisors Office. Each artifact was analyzed individually as well as macroscopically to determine the effects different environmental and cultural processes had on the artifacts over time. Some of the artifacts that were found in the cluster at the base of a stump exhibit unique characteristics that were produced through cultural means, including odd striations on the axe head, strange use patterns on the scissors and bullet mould and hammer marks on the Bison hide scraper. The Spencer cartridges were malformed from a variety of cultural and environmental influences. Rodent gnawing marks of various degrees occur on the bullets; some of the bullets have been extensively gnawed, while others show no gnaw marks. The bullets also show various degrees of melting and oxidation that would have taken place prior to the Jocko Fire of 2007. Several unique metal pieces were analyzed using a SEM with EDX to determine their elemental makeup, and the results provided key insights into the events surrounding the deposition of the site materials. The artifacts and the cultural modifications as well as the environmental processes that affected them have interesting implications to the overall interpretation of the site and how the site fits into the historical context of Montana during this fascinating period of history. These artifacts reinforce the possibility that Native American artifact assemblages during this time period look strikingly similar to Euro- American assemblages due to the extent of assimilation. Though the artifacts at the site provide insight for the events that happened at the site, the evidence was not conclusive enough to determine which cultural group the artifact assemblage should be associated with.

**Spencer Cartridges, Rodent Gnawing, Historic Archeology**