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Lead isotope analysis as a new method for identifying material culture belonging to the VÃ¡zquez de Coronado expedition

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Abstract

Archaeological evidence has become an increasingly important component of efforts to identify the route of the Francisco VÃ¡zquez de Coronado expedition through northern Mexico and the southwestern United States (1540â€“1542). Here, we report the first high-precision lead isotopic measurements of artifacts from two archaeological sites with strong material evidence for the expeditionâ€™s presence: Piedras Marcadas Pueblo in New Mexico and the Jimmy Owens Site in Texas. The analysis of lead and copper armaments from both sites reveals that many artifacts have overlapping or extremely similar isotopic ratios. We propose that the narrow range of lead isotopic ratios measured on these artifacts can be interpreted as a geochemical fingerprint for some of the Coronado expeditionâ€™s surviving material culture, and provides evidence that we interpret to suggest the expedition derived lead and copper metal from Mexican

sources. Such a geochemical fingerprint presents an empirical method for discriminating between artifacts that belonged to the Coronado expedition and those related to subsequent Spanish, historical, or modern activity in the Southwest U.S. Thus, this method could significantly impact the search for and identification of archaeological sites associated with the Coronado expedition.

Highlights

â–º Recognizing artifacts from the VÃ¡zquez de Coronado expedition is a challenge. â–º Measured lead isotopic ratios of metals from two sites associated with the expedition. â–º When compared, artifacts from both sites share a specific lead isotopic fingerprint. â–º Lead isotopes can help identify artifacts tied to the Coronado expedition. â–º Expeditionâ€™s supply of lead and copper metal likely came from Mexican ores.

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Keywords

Lead isotopes; Coronado; Piedras Marcadas Pueblo; The Jimmy Owens Site

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