

1-1-2010

Spanish lead Shot of the Coronado Expedition: A Progress Report on Isotope Analysis of Lead from Five Sites

Nugent Brasher

Follow this and additional works at: <https://digitalrepository.unm.edu/nmhr>

Recommended Citation

Brasher, Nugent. "Spanish lead Shot of the Coronado Expedition: A Progress Report on Isotope Analysis of Lead from Five Sites." *New Mexico Historical Review* 85, 1 (2010). <https://digitalrepository.unm.edu/nmhr/vol85/iss1/5>

This Article is brought to you for free and open access by UNM Digital Repository. It has been accepted for inclusion in *New Mexico Historical Review* by an authorized editor of UNM Digital Repository. For more information, please contact amywinter@unm.edu, lsloane@salud.unm.edu, sarahrk@unm.edu.

Spanish Lead Shot of the Coronado Expedition

A PROGRESS REPORT ON ISOTOPE ANALYSIS OF
LEAD FROM FIVE SITES

Nugent Brasher

In September 2004, I attended a presentation concerning the Coronado Trail by historians Richard Flint and Shirley Cushing Flint. I learned that the trace of most of the trail followed by Spanish explorer Francisco Vázquez de Coronado during 1540–1542 was both unknown and the subject of vigorous historical debate. This puzzle inspired me to begin exploration in October 2004 for evidence of Coronado's route between Señora (Río Sonora valley, Sonora, Mexico) and Cíbola (Hawikku, New Mexico), and for the legendary Red House called Chichilticale. My study of the historical documents convinced me that identifying Chichilticale was integral to solving the mystery of the expedition's route across present eastern Arizona and western New Mexico. My ongoing effort has resulted in the likely discovery of both Chichilticale at the Kuykendall Ruins in southeastern Arizona and the camp that the expedition's advance party made on 23 June 1540. Two reports of my search for Coronado's route have been published by the *New Mexico Historical Review*.¹

My 2009 report recommended that "lead isotope ratios should be obtained for the four lead balls" discovered at Kuykendall Ruins, and that these data should be compared to those from lead balls found at other known or suspected Coronado sites.² My team followed this analytical course by using Thermal Ionization Mass Spectrometry (TIMS) to measure isotope ratios of lead shot found at Kuykendall Ruins (Chichilticale), Doubtful Canyon (advance party's camp of 23 June 1540), Hawikku-Kyakima in New Mexico, and the Jimmy Owens site in the Texas Panhandle. The team added

to its data the isotope ratios presented by Charles M. Haecker for two lead shot found at Piedras Marcadas Pueblo (LA 290, Mann-Zuris site). For comparative purposes, the team assembled a database using published data from Spain, Mexico, New Mexico, the Rocky Mountains, the mid-continent United States, the Caribbean region, Central America, and the Mediterranean region. In this analysis, each region was treated as a conceivable source location for lead carried by members of the Coronado Expedition of 1540–1542 or by travelers who visited Coronado sites after 1542. The team compared its ratios to those in the database to conduct a robust analysis and to produce an internal report that assigned lead source provenience to the shot under consideration. Subsequently, with the intention of obtaining corroboration or objection to the team's conclusions, lead isotope abundances (Pb_{204} , Pb_{206} , Pb_{207} , Pb_{208}) from its database and from its samples were analyzed independently by an unaffiliated party to determine numerically their similarity for the purpose of designating origin of the lead.³ The team's isotope ratios of the lead shot, a discussion of its analytical methods and conclusions, and a report on the discovery of likely sixteenth-century iron artifacts in Doubtful Canyon will be presented in an article published in a future issue of the *New Mexico Historical Review*.

The team's isotope analysis strongly supports the interpretation that shot composed of Spanish lead sources were present at five proposed Coronado Expedition sites: Kuykendall Ruins, Doubtful Canyon, Hawikku, Piedras Marcadas Pueblo, and Jimmy Owens. The positive correlation between Spanish lead and these five individual Coronado sites suggests a nexus between the otherwise disparate locations. The common thread connecting all five sites of Spanish lead, the team believes, is the Coronado Trail. The results of the lead analysis has caused the team to modify its ever-evolving exploration model to include the likelihood of Spanish lead at Coronado sites and the probability that Spanish lead found within specific geographical corridors is diagnostic of the Coronado Expedition.

Notes

1. Nugent Brasher, "The Chichilticale Camp of Francisco Vázquez de Coronado: The Search for the Red House," *New Mexico Historical Review* 82 (fall 2007): 433–68; and "The Red House Camp and the Captain General: The 2009 Report on the Coronado Expedition Campsite at Chichilticale," *New Mexico Historical Review* 84 (winter 2009): 1–64.

2. Brasher, "The Red House Camp and the Captain General," 54.
3. TIMS measurements were conducted by geochemist Dr. Franco Marcantonio at the Radiogenic Isotope Geochemistry Laboratory in the Department of Geology and Geophysics at Texas A&M University. Isotope ratios for the Piedras Marcadas Pueblo are from Charles M. Haecker, untitled presentation to Society for Historical Archaeology, January 2008, Albuquerque, New Mexico. Dr. Michael J. Rothman, Michael J. Rothman & Associates, LLC, a data analysis and visualization consulting company, in Hopewell, New York, conducted a comparative data analysis.