

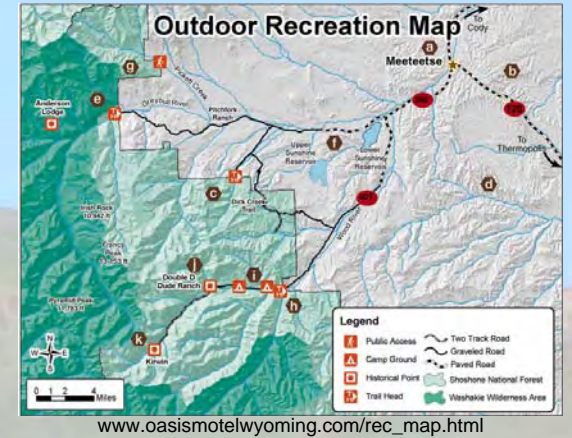


Phantom of the hearths: Using oxidized sediment patches from the Little Venus Fire to investigate the characteristics of phantom hearths



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In 2006, the Little Venus Fire burned over 34,000 acres of the Shoshone National Forest in north western Wyoming. The area included already surveyed and recorded sites from previous field sessions. This fire allowed the 2007 summer field session of the Greybull River Sustainable Landscape Ecology (GRSLE) project to collect data to aid in the development of methods in distinguishing naturally oxidized sediment patches (phantom hearths) from hearths. The goal is to evaluate characteristics to categorize oxidized sediment patches. Thirty oxidized sediment patches were tagged and mapped throughout two previously recorded sites, 48PA2772 and 48PA2776, where only a single hearth had been found. In identifying a hearth, an archaeologist often examines characteristics such as associated lithics, bones, rocks and oxidized sediment associated with the suspected feature. By measuring the depth of the oxidized sediment produced by the 2006 fire, counting the thermally altered rocks, coding the bone scatter within a 2 meter diameter, and mapping the lithic scatter within a 5 meter diameter, a further understanding of these phantom hearths is developed. The average oxidized sediment patches exhibited mean oxidized layer depths of 3.1 cm (range = 0.1-10.0 cm), contained from 0-15 thermally altered rocks, 0-9 bone fragments, and 0-27 pieces of chipped stone (mean=5). These characteristics mimic the qualities of a hearth and could lead to a misidentification. The research indicates that many of the common characteristics that denote a hearth can also be associated to oxidized sediment patches, therefore requiring further research to acquire a more complete set of distinguishing characteristics.



INTRODUCTION

The Little Venus Fire of 2006 opened up many opportunities for research on fire related features of archaeological sites. Several hot spots from the fire created numerous oxidized sediment patches over the landscape. These patches allowed the GRSLE field school to examine commonly used criteria for hearth identification to try and define a unique set of characteristics for naturally occurring oxidized sediment patches. The following research was conducted during the 2007 GRSLE summer field school.

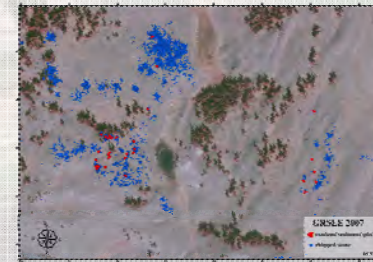
METHODS

- Find and tag thirty oxidized sediment patches throughout previously recorded sites 48PA2772 and 48PA2776
- Measure and flag a 2m diameter circle and a 5m diameter circle from the center point of each oxidized sediment patch
- Record (using a Trimble JunoST) the oxidized sediment patch width (m), length (m), and depth (cm)
- Record the associated thermally altered rocks, chipped stone and bone fragments within the 2 meter circle and chipped stone within the 5 meter circle



DATA

Associated Features (within 2 meters circle)	Mean	Min.	Max.
Thermally Altered Rocks	5	0	15
Bone Fragments	2.4	0	9
Chipped Stone	4.7	0	27



Overview of all oxidized sediment patch locations recorded on site 48PA2772 and 48PA2776



AN EXAMPLE OF AN EXCAVATED CULTURALLY MODIFIED HEARTH
From Pincevent, an archaeological site in France



AN EXAMPLE OF AN OXIDIZED SEDIMENT PATCH
From the Greybull Research area

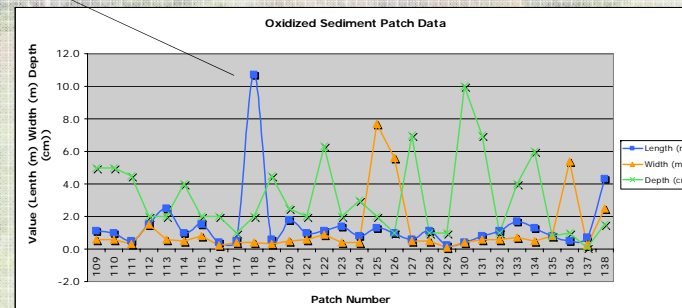


Oxy Sed 18



Oxidized sediment patches show high amounts of variability in size and shape

Oxidized Sediment Patches	Mean	Min.	Max.
Length (m)	1.4	0.2	10.7
Width (m)	1.2	0.1	7.7
Depth (cm)	3.1	0.1	10



RESULTS

- Natural fires can provide opportunities for controlled observation of archaeological formation processes.
- Although hearths are good indicators of human activity and site dating, this study highlights the potential ambiguity in distinguishing hearths from natural burns.
- Several oxidized sediment patches, most of which mimic hearths, were found throughout sites 48PA2772 and 48PA2776 where only a single suspected hearth had been found pre-fire.
- The data that was collected proved that a specific set of unique characteristics for oxidized sediment patches is hard to define
- This research provides the baseline for which further monitoring of oxidized sediment patches can take place.



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