

## **Interpreting Spotten Cave: The Spotten Cave Interpretive Project**

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## Abstract

The public interpretation of archaeological sites is crucial to the understanding, appreciation, stewardship, and ultimate preservation of archaeology by the public. Significant archaeological sites, such as Spotten Cave — a prehistoric rockshelter site in Utah County — should be interpreted to the public even if they have an uncertain future. Archaeological sites with uncertain futures are not protected by federal or state law nor are they publicly accessible, and some face the possibility of destruction in the future. Due to these challenges, public interpretation is generally not developed for archaeological sites with uncertain futures despite their significance. The Spotten Cave Interpretive Project aims to address this gap by researching methods of public interpretation for archaeological sites such as onsite, offsite, digital, and analog methods along with ways the public benefits from the interpretation of archaeology. The project also includes the development of a cohesive archaeological context for Spotten Cave using archaeological data derived from previous archaeological research and supplementary field work, lab work, and informal interviews. These two components ultimately combine key elements needed for interpretation in order to make several recommendations for the public interpretation of the site based on three possible future scenarios. The Spotten Cave Interpretive Project serves as a contribution to the heritage field by exploring ways in which significant archaeological sites with uncertain futures can be interpreted to the public, a topic that is scarcely available in the existing literature.

*Keywords:* Heritage interpretation, Utah archaeology, interpretation methods, archaeology sites with uncertain futures, public archaeology, prehistoric rockshelter, heritage stewardship, Archaic archaeology, Fremont archaeology, Late Prehistoric archaeology

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## **Chapter 1: Introduction**

### **The Spotten Cave Interpretive Project**

What are the best methods of interpreting a significant archaeological site to the public, especially when said site has an uncertain future? This is the question that Spotten Cave Interpretive Project aims to answer about Spotten Cave (42UT104), an archaeologically significant prehistoric rockshelter site located in Utah County, Utah. Archaeological sites with uncertain futures do not have guaranteed preservation, are usually privately owned, and generally not accessible to the public. Despite these challenges, the public interpretation of archaeological sites, even with uncertain futures, is important as it educates about the history of human species, helping the public to gain insight and perspectives about our cultural evolution and future (Little, 2012). Everyone has a right to access history, and making accurate and credible information about the past available is of the utmost importance to enrich the knowledge of the general public, and to encourage the stewardship and ultimate preservation of non-renewable archaeological resources for future generations. The Spotten Cave Interpretive Project puts two crucial components of public archaeological interpretation — research on public interpretive methods and an accurate Archaeological Context of the site (Appendix A) — together in order to make several recommendations based on three possible future scenarios regarding the most appropriate and effective methods to interpret Spotten Cave to Utah's public.

Spotten Cave (Figure 1) has a significant archaeological past and is currently the oldest known site in Utah County, dating back approximately 6,700 years (J. Allison, Personal Communication, September 24, 2020; Woods, 2004, p. 19). The site was excavated and radiocarbon dated during a 1960's excavation by James Mock of the Brigham Young University (BYU) Archaeology Department. The site is also currently privately owned, has little to no



public access, and preservation of the site is not a guarantee just like so many other significant archaeological sites in the United States (US). Sites with uncertain futures are generally not interpreted to the public, despite their significance. This project can serve as a case study for the fields of interpretation and archaeology in exploring the best interpretation methods for a significant site with an uncertain future. Although preservation of the site isn't guaranteed like many sites located in State or National Parks, public interpretation is still important to increasing the knowledge of the general public, specifically their understanding of the past and its connection to our present and future. The research and interpretive recommendations for the significant, privately owned site of Spotten Cave will guide other archaeologists or interpreters in how to capitalize on sites with uncertain futures for public interpretation, both on a national and local level.

**Figure 1**

*Spotten Cave Rockshelter*



The final interpretive recommendations address the main Research Question of the project, which is: “Using Spotten Cave as a case study, how should archaeological sites with uncertain futures be interpreted to the public?”. The other two project components answer the two identified Research Sub-Questions: #1 “What are the interpretative strategies for prehistoric archaeological sites without visible components and how do these benefit the public?” and #2 “How should archaeological data be used to develop a cohesive archaeological context for Spotten Cave?”. One main project component — how archaeological sites without visible (standing architectural) components are interpreted to the public, and the public benefits of interpretation — is fully answered in the literature review through a qualitative analysis of the interpretive methods of 27 archaeological sites. The Archaeological/Cultural Context (Appendix A) of Spotten Cave was developed through a full review of published archaeological research on the cave in conjunction with data collected in the field and at the BYU Museum of Peoples and Cultures where Spotten Cave’s artifacts are currently curated. In addition, I also conducted informal interviews with several people knowledgeable about the site, including the landowner, previous researchers, and prominent Utah County archaeologists. The Archaeological Context is included in this paper as Appendix A.

### **Why Public Interpretation of Archaeology?**

There are several critical reasons why the interpretation of archaeology is important and prudent. Firstly, interpretation increases the understanding and appreciation of cultural resources among the public, which leads to protection via notions of stewardship and promotes appropriate behavior by members of the public (Ham, 2013, p. 3; Tilden, 1977, p. 38). Interpretation also helps the public and non-experts gain a fuller picture of the past and the importance of the

archaeological process (Tilden, 2007, p. 69), teaching that archaeology is more than finding ‘treasures’ (Todd & Rapson, 2016, p. 196; Wright, 2014, p. 219). Interpretation is a form of communication and informal learning (Ham, 2013, p. 1; Tilden, 2007, p. 71) where people gain enhanced knowledge of the past through personal experiences (Johnson, 2018, p. 158), which advances a sense of pride and fulfillment among visitors (White et al., 2005, p. 63).

Interpretation is also an important part of visitor experiences, and thus site management, which increases public support for archaeological resources and influences positive behaviors at archaeological sites (White et al., 2005, pp. 63-64). Moreover, interpretation works at bridging the gap between professionals and members of the public by presenting archaeological information in an effective manner that promotes learning (Austin, 2011, p. 35; Endere et al., 2018, p. 2; Johnson, 2018, p. 158). In relation to communities, interpretation is also a catalyst for community building and encouraging support for heritage resources (Endere et al., 2018; Johnson, 2018, p. 158).

The importance of public interpretation is supported by the Society for American Archaeology, which identifies the public education of archaeology as an ethical obligation for professionals and includes interpretation in its ethical principles (Carter, 2017, p. 311). Additionally, the International Council on Monument and Sites’ (ICOMOS) *Charter for Presentation and Interpretation of Cultural Heritage Sites* recognizes the importance of public education and the effective presentation and interpretation of heritage, which includes archaeological sites (ICOMOS, 2008). On a national scale, the National Park Service (NPS) has developed the *Foundations of 21st Century Interpretation* identifying competency frameworks for NPS employees (NPS Interpretive Development Program, 2016). Interpretive frameworks

published by prominent heritage institutions reflect how essential interpretation is to the field of heritage and archaeology.

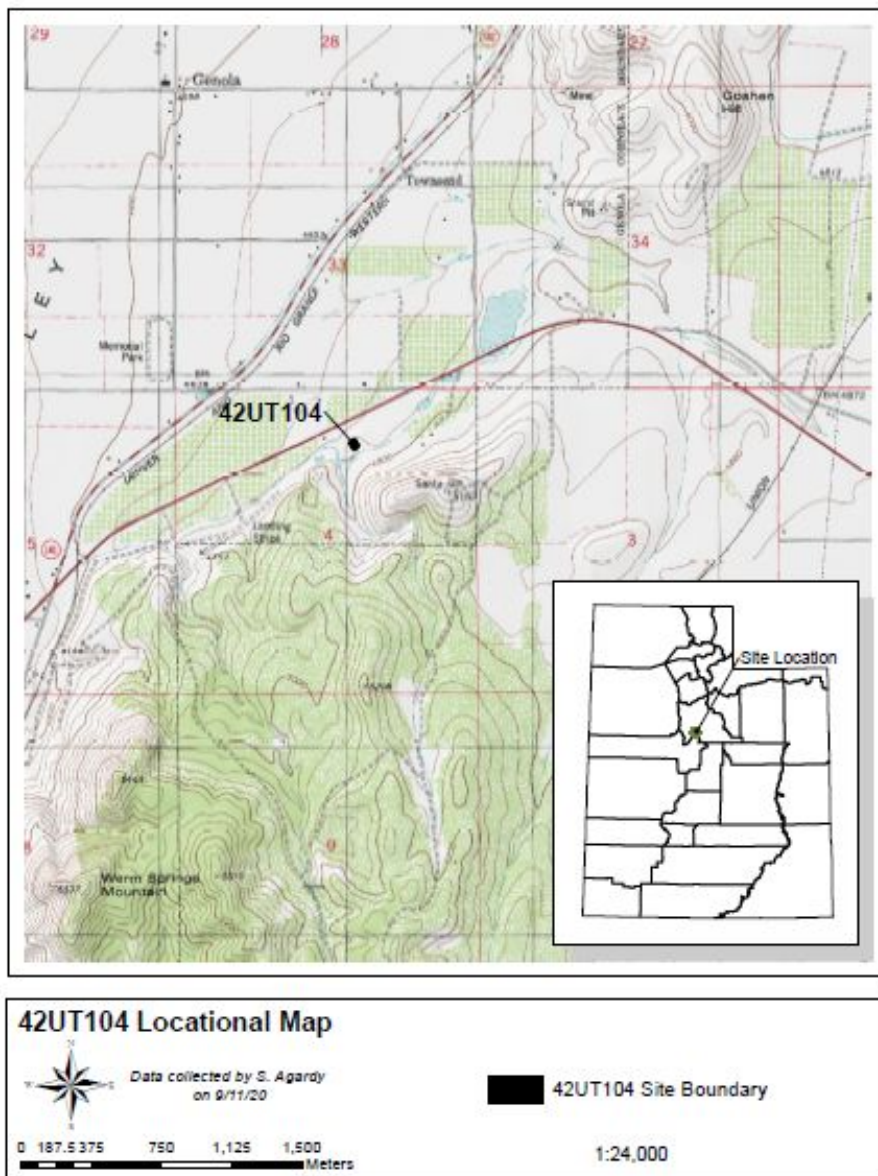
Another benefit of public interpretation includes providing credible and accurate information to members of the public who are interested in archaeology, but generally misinformed. A survey of 500 houses in Vancouver about the field of archaeology found that over half of respondents identified dinosaurs as an aspect of archaeological study, thus reflecting that archaeology is generally misunderstood (McManamom, 1994, p. 66). Despite these misconceptions, the study also found that there is a significant interest in learning about archaeology among the survey respondents, however the public often doesn't have the correct avenues or opportunities to learn from credible sources (McManamom, 1994, p. 66). Although this study was undertaken in Canada, it is still reflective of the mindsets of people in North America about archaeology, and the study results echo the need for public interpretation of archaeology to increase the understanding of the archaeological field and its purpose by the public.

### **An Introduction to Spotten Cave**

Spotten Cave is one of the most prominent rockshelter sites in Utah. However, it faces an uncertain future, making it a good candidate to explore how significant sites with uncertain futures should be interpreted to the public. The rockshelter represents five distinct time periods of Utah's history — the Middle Archaic, Late Archaic, Fremont, Late Prehistoric, and Historic — showing a consistent use by humans from 6,700 to 50 years ago (see Appendix A, *Site Cultural Chronology*). The site does not have visible archaeological components — there is no standing architecture, and most of the artifacts have been excavated and removed from the site

location. There is one faint pictograph panel inside the cave walls that is barely noticeable to the naked eye.

Geographically, Spotten Cave is located in Goshen Valley of Utah County (see Figure 2), south of Utah Lake on a dolomite upthrust formation (Mock, 1971, p. 1). The site was historically known as Indian Cave to locals, and was subjected to looting and vandalism in the 1900's due to the presence of prehistoric artifacts (Mock, 1971, p. 1). Looting of the site came to the attention of BYU sometime in the late 1950's and the site has been a subject for archaeological research at the University since 1960. Numerous archaeological investigations have taken place, including test excavations, extensive excavation of the shelter's interior, and several subsequent analyses of the excavated artifacts by graduate students. This project is the first non-BYU research conducted on Spotten Cave.

**Figure 2***Spotten Cave Locational Map*

Spotten Cave today is generally in stable condition — not deteriorating and clean from garbage, vandalism, and looting. The area around the site is also largely undeveloped, meaning the site retains a great deal of integrity and authenticity. Although the entirety of the shelter interior has been excavated, a large berm in front of the shelter starting at its dripline still

remains intact. It is highly likely that subsurface cultural deposits remain in the berm, which could yield more significant information on the site if systematically excavated. The 1960's excavation by Mock faced numerous issues, and the stratigraphic integrity of the interior had been severely compromised by rodents and human activity (Mock, 1971, pp. 49-54). Due to these issues, the five "Zones" identified by Mock are likely not completely accurate (see Appendix A, *A Note About Provenance Integrity*). Additionally, Mock mis-reported several artifact counts, and the BYU Museum of Peoples and Cultures still has outstanding cataloging issues with the collection. This project attempts to reconcile several issues with Mock's excavation and the current artifact collection, however future study of the site and its collection is highly recommended, including excavation of the berm and further analysis of the artifacts in order to gain a fuller picture of prehistoric lifeways at Spotten Cave.

Spotten Cave has been privately owned by a string of different landowners over the past century. Thomas Spotten owned the cave in the mid-20th century and allowed BYU to excavate the site. Since Thomas Spotten's ownership, the site has been known as Spotten Cave. Since the site is privately owned, it has an uncertain future as privately owned sites in the US are not automatically preserved — it is up to the discretion of the private landowner to manage the site as they wish, which could include anything from destruction to preservation. Archaeological sites on private land, regardless of significance, are generally not interpreted to the public due to access and research restrictions. As Spotten Cave has been the center of several research projects, a good amount of archaeological data exists on the site, another reason why it provides a good case study for exploring public interpretation along with its status of an uncertain future.

## **Public versus Privately Owned Archaeological Sites**

Spotten Cave has an uncertain future as it is located on private land and not protected by cultural property law. There are several cultural property laws in the US that protect or encourage the protection of cultural resources located on federal land, or on land being affected by a federally funded or permitted project. These protections come from the Antiquities Act of 1906 which prevents illegal excavation of archaeological sites on federal land, the National Historic Preservation Act (NHPA) of 1966 that mandates federal agencies to take into account the effects of a proposed federal action to significant cultural resources in Section 106 of the law, the Archaeological Resource Protection Act (ARPA) of 1979 which further prevents illegal excavation and requires a permit for archaeological investigations, and the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 that prevents excavation of Native American burials on federal land and mandates the repatriation of Native American human remains and cultural items located in museums receiving federal funding to affiliated tribes.

At a state level, there are several additional laws that give or encourage protection of Utah's cultural resources specifically. Utah Code Annotated 9-8-404 requires state agencies to take into account the effect of a state action on significant culture resources (Utah's state equivalent to Section 106 of the NHPA), and the Utah NAGPRA Law prevents the desecration of human bodies as well as the disturbance of prehistoric human remains anywhere in the state regardless of land ownership. Utah's NAGPRA law is the only cultural resource law in the state that provides protections to archaeological sites on private land, and only in instances where human remains are involved. Some states, such as Washington, do have laws that protect archaeological resources on private land (D'innocenzo, 1997, p. 144), however there are no such laws in Utah beyond the state NAGPRA law that ensures protection of Spotten Cave.



The US is unique in its private property law and cultural resource relationship. In many other countries, cultural resources are considered universal property where no one individual owns them, meaning that cultural resources are a communal resource (D'innocenzo, 1997, p. 140). In such countries, umbrella statutes have been passed where archaeological objects are automatically vested to the government and preserved (D'innocenzo, 1997, p. 140). However, cultural resources are protected under private ownership in the US, which is supported through the Fifth Amendment of the US Constitution, or the "Takings" Clause, which states that private property cannot be taken by the government without just compensation (D'innocenzo, 1997, p. 140). Cultural resources fall into the private property category, and thus cannot be taken by the government for protection as they are in other countries without compensation to the private property owner. Therefore, private property rights prevail over the theoretical sovereignty of archaeological resources, and preserving archaeological sites does not always triumph when competing interests and economic factors come into play (D'innocenzo, 1997, pp. 140, 154).

For privately owned archaeological sites, there are several creative approaches to ensuring protection, including conservation easements and/or donation to conservation non-profits such as the Archaeological Conservancy or EarthWatch (Colorado Historical Society, n.d.; Texas Historical Commission, n.d.). While these creative approaches are not mandated by law, they are available to landowners who care for archaeology and wish to protect archaeological resources well into the future. Fortunately for Spotten Cave, the current landowner recognizes the importance of the site and its preservation, and is exploring creative ways to ensure the site is protected, including a potential donation to the Archaeological Conservancy (J. Ogden, Personal Communication, September 24, 2020). The potential donation of the site broadens the future of Spotten Cave to include full preservation and public access.

However, the site may also remain in private ownership and in its current condition (preserved, but not publicly accessible). Although unlikely, the site may also be destroyed in the future for the development of a subdivision or other infrastructure. From these, three potential scenarios emerge for the future of Spotten Cave, which is why the site's future is considered “uncertain”.

Spotten Cave is not the only significant archaeological site located on private land — thousands, if not millions, of archaeological sites are located on private land where federal or state law do not provide protection. In the US, most sites interpreted to the public are located in State or National Parks when there are many privately owned sites that provide significant information that should also be interpreted to the public. The Spotten Cave Interpretive Project aims to bridge the gap between privately owned archaeological sites with uncertain futures and public interpretation in order to educate a broad public about significant archaeological sites despite their preservation and future status.

### **A Note About Terminology**

The term “interpretation” will primarily be used in this project to mean the *public interpretation* of archaeological sites rather than *archaeological interpretation*, which refers to the interpretation of archaeological evidence. Public interpretation largely refers to the interpretation of archaeological resources to the public, usually in an informal, instructional, and provocational way to encourage knowledge retention and ultimately stewardship among a non-captive audience (Ham, 2013; Tilden, 1977). Archaeological interpretation is generally employed by archaeologists who interpret evidence to make conclusions about a site — for example, the presence of a grinding stone at a site (evidence) indicates that people were processing and possibly consuming food at the site (archaeological interpretation). Interpretation

is used freely among the fields of archaeology and interpretation without much clarity, which is why interpretation is generally referred to as *public interpretation* or *archaeological interpretation* here in order to discern which type of interpretation is being discussed.

Additionally, in this project, the term “public” refers to the general public/population of the US. There are many different types of publics included in this term, such as adults, children, local communities, special interest groups, etc. (McManamom, 2003, p. 66) that could be included in a discussion about who the public is. However, for the purpose of simplicity, the term public used here refers to the general public of Utah.

## Chapter 2: Methodology

The methodology for the Spotten Cave Interpretive Project was carried out through a qualitative, interpretive analysis of interpretive methods and the way in which the public benefits from interpretation, as well as qualitative review of gathered data through fieldwork, lab work, and informal site interviews. In order to answer Research Subquestion #1, “What are the interpretive methods for prehistoric archaeological sites without visible components and how do those benefit the public?”, a qualitative analysis of data gathered through literature databases and internet searches was carried out. Research Sub-Question #2, “How should archaeological data be used to develop a cohesive archaeological context for Spotten Cave?”, was answered through information collected through a thorough review of existing Spotten Cave research, fieldwork at the site, lab work at Brigham Young University’s (BYU) Museum of Peoples and Cultures, and informal interviews conducted with the landowner, previous Spotten Cave researchers, and Utah County/BYU archaeologists. Together, the information gathered exploring Research Sub-Questions #1 and #2 informed the answer to the main project Research Question, which is: “Using Spotten Cave as a case study, how should archaeological sites with uncertain futures be interpreted to the public?”. The interpretive possibilities derived from Research Sub-Question #1 and the Archaeological Context (Appendix A) developed from Research Sub-Question #2 informed several interpretive recommendations for the site through the context of several possible future scenarios (see Chapter 7, *Exploring Interpretation for Spotten Cave*).

### Interpretive Research

Interpretive research included an exhaustive search of several topics that relate to the research questions, including the methods of public interpretation at archaeological sites

including both onsite and offsite strategies, the basics of public archaeology, public benefits of public interpretation/education, and the private ownership of archaeological sites, among others. In relation to the methods of interpretation at archaeological sites, sites without visible, standing components as well as prehistoric cave sites were specifically targeted in order to gather qualitative and quantitative data on interpretive methods for sites with a similar context to Spotten Cave. Several databases were searched to ensure a high return of published literature, including Google Scholar, the Johns Hopkins University Sheridan Libraries general database (World Cat Search, which includes EBSCOHost and JSTOR), Anthropology Plus, Academic Search Ultimate, and Art & Archaeology. Articles specifically from the journal *Public Archaeology* as well as from the Johns Hopkins *Heritage Interpretation* class (course number AS.465.730) were also examined in addition to sources recommended by the project advisor, Sarah Chicone. All sources identified through the database search were examined through a qualitative, interpretive lens, and the methods in which archaeological sites are interpreted were quantified into method types at each site displayed through a chart (see Table 1, *Interpretive Analysis Chart*).

### **Archaeological Research**

The majority of data on Spotten Cave was gained through archival research on Spotten Cave's archaeology, all sources of which derive from BYU, the institution that excavated Spotten Cave and now curates all the Spotten Cave artifacts. This research was partly based on a preliminary study of the archaeological research of Spotten Cave that was conducted by Utah State Historic Preservation Office (Utah SHPO) staff members, including myself. In addition to archival research on the published literature on Spotten Cave, data was also collected through

field work, lab analysis, and informal interviews. See the Chapter 6, *Project Fieldwork, Lab Work, and Information Interviews*, for a full description of field and lab work methods.

### **Limitations & Future Research**

There are potential limitations to the methodological approach, especially as there is a lack of published literature on the interpretation of archaeological sites, specifically sites that are primarily buried or have been excavated and do not contain standing architectural components. Additionally, the websites of prehistoric cave sites in the US were examined to identify interpretive strategies for sites similar to Spotten Cave, however several websites did not contain much information on interpretive efforts. In some cases, site officials were contacted to better identify interpretive strategies, such as Russell Cave National Monument and Indian Cave State Park (I ultimately received no response from Indian Cave State Park, and the site had to be excluded from the project). There is also a small amount of published studies on the effectiveness of the interpretive strategies implemented at archaeological sites, and those studies that do exist focus on sites with standing architectural components. This topic highlights a gap in the current literature, and there is potential for future research on the interpretive methods of archaeological sites without standing components and their effectiveness on the public.

### **Chapter 3: Interpretive Literature Review**

Published literature on the ways in which archaeology is interpreted to the public, primarily focusing on archaeological sites without visible/standing components, as well as the ways in which the public benefits from archaeology and its interpretation are abundant. The ways in which the public benefits from archaeological education, as well as the ways interpretation is conducted in practice, were analyzed to gauge the relevant and current research on these topics in order to answer Research Sub-Question #1, which asks “What are the interpretation methods for prehistoric archaeological sites without visible components and how do they benefit the public?” as well as to inform the final project component, which are the interpretive recommendations for Spotten Cave.

#### **Importance of Public Interpretation**

Review of the literature on the importance of the public interpretation of archaeological sites reveals several themes, including the ways different publics benefit from interpretation and the importance of community engagement.

#### ***How the Public Benefits***

There are many reasons why the public benefits from the science of archaeology and its interpretation. The most common identified themes in the literature include the public’s stake in archaeology, especially as archaeological investigations are primarily financed through public funds and often undertaken on public lands managed by tax dollars (Little, 2012, p. 397; McManamom, 1994, p. 64). Since archaeology is often executed with public funds, the public has a vested interest in the preservation and education of archaeological knowledge gained through the research process (Fisher Jr. & Roll, 2016, pp. 88, 104).

In addition to the expenditure of public funds, Colley (2007) identifies several additional public benefits of archaeology through a study conducted on students at University of Sydney about the public benefits of archaeology. The survey analysis found that the highest number of answers when asked what the public benefits of archaeology are fell under the “Origins, Identity, and Socio-economics” category, which includes promoting Australian national identity, increasing the rights of indigenous Australians, aiding in self-awareness, and understanding human cultural personal origins (Colley, 2007, p. 31). Another strongly identified benefit amongst the students’ answers was that archaeology provides more factual information than historical sources, as it is evidence based and not reliant on biased historical narratives (Colley, 2007, p. 32). The results of this survey are not fully representative of the general public as the students surveyed were archaeology students and had a basic understanding of archaeology, however Colley (2007, p. 35) does conclude by noting that increased engagement of the public in archaeology, such as participation in archaeological investigations, will increase benefits gained by the public. Although the study took place in Australia, it remains relevant as it is the only identified survey focusing on the public benefits of archaeology.

In addition to the student identified public benefits of archaeology and interpretation, Little (2012) discusses several ways in which the public benefits from the archaeological field. Archaeology can be used to challenge deep rooted ideologies of sexism and racism and work to include everyone in the past, especially disenfranchised groups that are generally excluded from historical narratives, by promoting identity and encouraging restorative justice (Little, 2012, pp. 396, 405; Colley, 2007, p. 32). Archaeology also helps people understand the web of relations in society throughout time in order to build a more cohesive understanding future, and can be beneficial in examining world trends to analyze the human quality of life throughout time,



helping to inform long-term perspectives on decision making (Little, 2012, pp. 401, 403, 405).

Through this, Little asserts that “archaeology raises consciousness and awareness and encourages different ways of seeing the world, thinking about it, and acting in it” (2012, p. 406). Little (2012, p. 402) also discusses specific ways in which archaeology and its interpretation can benefit society, originally posed by Tom King and Fred Plog, including insight and knowledge into the rise and fall of civilization, environmental change, and abandonment/depopulation. Perspective into environmental change’s impact on society, along with other topics such as diversification of crops, subsistence patterns, social issues, ecological adaptations, etc. (Little, 2012, p. 403) all benefit from the understanding of how society has evolved today, and provide knowledge on how future impacts may change society. Through education, these concepts understood by a wider public will overall improve our society to inform good decision making and other actions that could ensure a more positive future.

The most commonly identified way to ensure these archaeological perspectives are understood by the public is the integration of archaeological concepts into school curriculum. Little (2012) posits that archaeological education in schools helps children cope with complex world problems and understand the diversity of human beings throughout time and space (p. 401). McManamom, Reynolds, and Adams further describe that archaeology is also conducive to hands-on learning outside the classroom environment, can provide real-world examples and experience, and is a good catalyst to discussing the scientific process while developing critical thinking skills among younger generations (McManamom, 1994, p. 71; Reynolds & Adams, 2014, p. 28). Education of younger generations is crucial to ensuring a culture that not only learns from archaeology and thus has a better understanding of the world, but also respects and preserves archaeological resources.

### *The Importance of Community Engagement*

Among the numerous ways in which archaeology benefits the public, one specific theme emerged in the review of relevant literature — the importance of community engagement in archaeological public interpretation and outreach. McManamom states that archaeological messages disseminated to the public must cater to a local and specific audience with communities in mind (1994, p. 65). Tailored interpretation for communities helps encourage local stewardship in which the past and present are connected and multifaceted relationships with heritage are encouraged among communities (Austin, 2011, p. 38). Community engagement is seen in several examples of interpretation techniques, such as Bay Shores Home Project in Florida and Garden Creek Archaeological Project in North Carolina, both located on private lands. In the Bay Shores Home Project, landowners and other community members were invited to participate in the archaeological excavations; Austin (2011, p. 38-39) believes that the project resulted in an appreciation of archaeology amongst the local community and instilled a unique sense of pride for the local history. Stewardship was also promoted in the Garden Creek Archaeological Project where the local residents were able to participate in survey, excavation, mapping, and other processes, where a place attachment phenomena allowed the residents to connect to the archaeology around them, even without being members of the descendent community (Wright, 2014, p. 219).

Another study of community engagement is outlined by Endere et al. (2018), who discuss a project in Olavarría, Argentina that sought to make heritage significant to the local communities. Education and interpretation is crucial to the value in which local communities place on local heritage (Endere et al., 2018, p. 2), however it can only be achieved through long-term, systematic objectives to spark a culture change in which heritage is both understood

and appreciated by locals (Endere et al., 2018, p. 15). In making heritage significant to communities, involvement and input gained from stakeholder groups is crucial to improving the values in which local communities place on heritage (Endere et al., 2018, p. 15), which in turn, leads to the protection and respect for archaeological sites. Community engagement not only enhances and builds communities, it also benefits heritage by ensuring stewardship and promoting preservation for present and future generations.

### **Methods of the Public Interpretation of Archaeology**

The available literature and online resources about archaeological interpretation methods reveals a broad set of interpretive strategies. Sources analyzed on public interpretive methods unveils four main categories: onsite analog interpretation, onsite digital interpretation, offsite analog interpretation, and offsite digital interpretation. The term analog is used here to represent physical interpretation that is not reliant on technology or digital devices (i.e. non-digital). The large majority of public interpretation strategies are onsite methods, as most archaeological sites with interpretive components are publicly accessible. Only four sites out of 27 analyzed discuss interpretive techniques for sites located on private land, which are more comparable to Spotten Cave, a privately-owned site. There are also several methods of interpreting archaeological sites digitally, both onsite and offsite, such as multimedia online resources, Augmented Reality, and 3D modelling, present in the analyzed interpretive strategies.

Sites without visible components (meaning no standing architecture) were specifically analyzed to better gauge the interpretive strategies for sites most comparable to Spotten Cave. Two major site categories without visible components were revealed through analysis: bison bone bed sites and prehistoric cave sites. Additionally, several sites with visible components

were also analyzed to include the interpretive methods identified, as interpretive strategies at archaeological sites are not abundant in the current literature. Therefore, a few sources that discuss interpreting archaeological sites with visible components were included to ensure a comprehensive review and analysis of the relevant data.

### ***Onsite Analog Interpretation***

Onsite analog interpretation is by far the most common method of interpreting archaeological sites, and includes strategies that are employed at archaeological sites without reliance on digital devices. In 1990, the Listing of Education in Archaeological Programs, published by the National Park Service, identified several outreach methods for archaeological interpretation including posters; brochures, exhibits/displays; public participation programs; school education programs; audio, video, and films; broadcasts; press articles; popular publications; community outreach (Knoll, 1990; McManamom, 1994, p. 64). These strategies are largely seen in *Pisskan: Interpreting First People Bison Kills at Heritage Parks* (2016), which provides various interpretation methods, as well as best practices for interpretation, at five bison bone bed sites in the United States and Canada (Wahkpa Chu'gn Archaeological Site in Montana, First Peoples Buffalo Jump State Park in Montana, Wanuskewin Heritage Park in Canada, Lubbock Lake National Historic Landmark in Texas, and Hudson-Meng Education and Research Center in Nebraska). Although bison bone bed sites, or bison kill sites as they are often archaeologically interpreted (Todd & Rapson, 2016, p. 200), are not comparable one-to-one with prehistoric rockshelter sites such as Spotten Cave, they are archaeological sites without visible components, and the interpretation strategies are therefore akin to how Spotten Cave could be interpreted. Further, Walker, who discusses the archaeology and interpretation of Wanuskewin Heritage Park, notes that sites which contain topographic elements often make good candidates

for public interpretation, as the natural topography can often substitute for standing architectural components (2016, p. 111), which is beneficial for Spotten Cave as it contains geological/topographical features (see Figures 1, 4, 5, and 6).

The types of interpretation of the five bison bone bed sites include interpretive walks (generally self-led with wayside panels), interpretive or visitor's centers sometimes with archaeological exhibits, community events such as dinners of bison steaks for fundraising efforts, school group tours, public media events, and participation activities such as prehistoric tool demonstrations and competitions. Many of the interpretation methods focus on the economics of tours at these sites, specifically Lubbock Lake and Wanuskewin, which hold public and community held media events in order to raise funds for site maintenance as well as to promote preservation (Johnson, 2016, pp. 139-140; Walker, 2016, p. 121).

The interpretation activities in the above-listed bison kill sites are fairly conventional as they reflect early and evolving interpretation efforts at bison kill sites, however *Pisskan* (2016) does discuss several theoretical ideas about interpretation, specifically the quality of the content being disseminated and the way in which visitors interact with professionals at archaeological sites. Specifically, Todd and Rapson (2016, p. 196) of Hudson-Meng advocate for interpretation beyond simple displays of artifacts and narrations of the past, and promote a more complex discussion about the archaeological process. Through this approach, visitors will often have their preconceived notions of archaeology perpetuated through media debunked, allowing open and honest conversation about the research process — including gaps in the archaeological record, archaeological evidence versus archaeological interpretation, and issues faced in archaeology (Todd & Rapson, 2016, p. 196-200).

“By learning about the bonebed, visitors will understand that archaeology is a process where observations are transformed into interpretations and not a discovery based on the encounter of objects. They will begin to appreciate the complexities of past environments and why interpreting the past gives us a perspective on understanding the effects of modern actions [Douglas Stephens, personal communication 1997, emphasis added]” (Todd & Rapson, 2016, p. 220).

Discussion of the archaeological process lays an important framework for both the content of interpretation as well as how professionals interact with visitors at archaeological sites. By educating about the research process, the public is more accurately informed on the field of archaeology, and may get excited about new research ideas and future knowledge discovered, ultimately making personal connections with the site that may lead to stewardship (Todd & Rapson 2016, p. 196).

Much like the interpretive methods at bison bone bed sites, the ways in which prehistoric cave sites are interpreted include fairly conventional methods, specifically guided tours and interpretive walks. Through analysis of seven cave sites in the US, including Mammoth Cave National Park (Kentucky), Russell Cave National Monument (Alabama), Graham Cave State Park (Missouri), Dunbar Cave State Park (Tennessee), Fort Rock Cave State Park (Oregon), Danger Cave Heritage Area State Park (Utah), and one cave site in South Africa, uKhahlamba-Drakensberg Park, several similar interpretive strategies emerge. The majority of cave sites have guide-led tours, as many are not regularly open to the public, including Fort Rock Cave and Danger Cave, (Metcalf Archaeological Consultants, 2020; Missouri State Parks, 2019; NPS, 2020a; NPS, 2020b; Oregon State Parks, 2020; Tennessee State Parks, 2020), and several have interpretive walks with wayside interpretive panels displaying the different periods of

human occupation, such as Russell Cave, Graham Cave, and uKhahlamba-Drakensberg Park (Mazel, 2008, p. 43; Missouri State Parks, 2019; NPS, 2020a). Specifically, the visitors at Graham Cave can “walk in the footsteps of hunter-gatherers” on the interpretive walk with panels at Graham Cave State Park (Missouri State Parks, 2019, para. 1). Interpretive walks with wayside panels are distinctive from guided tours as they are generally self-led without a guide.

Another interpretive commonality between cave sites are participant activities centered around prehistoric tool demonstrations, competitions, and classes. Russell Cave holds ranger-led prehistoric tool demonstrations (NPS, 2020a), Graham Cave conducts atlatl throwing competitions (Missouri State Parks, 2019, para. 1-4), and Dunbar Cave holds coil pottery classes (Tennessee State Parks, 2020). Guided tours appear to be the predominant strategy of interpretation at these sites, possibly because the topographical and geological elements of caves substitute the lack of visible archaeological components, thus making them good candidates for interpretation, even if the archaeology is still buried or has been long excavated from the site (Walker, 2016, p. 111). Apart from guided tours, interpretation methods seem to be limited to interpretive walks. These similarities may be attributed to the fact that most of these sites are National or State Parks, and thus bear similarity in tourism, visitor demographic, and management systems. Moreover, several cave sites, such as Russell Cave, Graham Cave, and Dunbar Cave all have nature hiking activities available in addition to experiencing the archaeological site, as they are multi-component parks also aimed at public recreation.

In addition to bison bone bed and prehistoric cave sites, two sites located on private land exhibited onsite analog interpretive strategies that involved community engagement of the local residents or the landowners of the site. Both projects — the Bay Shores Home Project and Garden Creek Archaeological Project — included interpretation of privately owned sites without

visible components, as both are buried archaeological sites, offering a great comparison to Spotten Cave. The Bay Shores Home Project in Florida included community involvement in the excavation of a large shell mound complex site (Austin, 2011, p. 35). Newsletters were sent out to community members of Bay Shores Homes inviting them to participate in the archaeological excavations; the archaeological team also conducted several presentations on their findings, including two presentations to the local community accompanied by coverage by local press (Austin, 2011, p. 38). Not only was the appreciation for archaeology boosted among members of the local community, the project was also a successful archaeological investigation on private land in which landowners and archaeologists connected (Austin, 2011, p. 39)

Similarly, the Garden Creek Archaeological Project, centered on a prehistoric mound site in North Carolina, also included community involvement in the excavation, survey, and mapping, as well as educational talks about the investigation findings to debunk the myth that archaeology reveals “treasures” worth monetary value (Wright, 2014, p. 218). Wright (2014, p. 215) also discusses the relevance of place attachment, a physiological concept, in proving that resident communities have a place connection to archaeological sites in their communities, even if they aren’t members of the descendant communities. Through place attachment, past and present cultures can be brought together over the commonality of shared living places (Wright, 2014, p. 220). While stressing the fact that place connection does not trump ancestral ties, Wright (2014, p. 222) argues that place attachment can be used to increase notions of stewardship among the local communities. Both examples emphasize the importance of communicating archaeological information and involving community members in archaeological investigations in an attempt to bridge the gap between professionals and members of the public. Additionally, both Austin (2011) and Wright (2014) underscore the importance of community



involvement in instilling notions of stewardship amongst the locals who have a place connection to archaeological sites in their community or on their land, helping to promote long-term preservation.

Apart from sites without visible components, three sites with visible architectural features were examined as they were some of the only published sources on public interpretation present in the literature, and therefore recognized here as they are relevant to the field and research. Tinkinswood Burial Chamber in the United Kingdom conducted an outreach project with local school children in which prehistoric rituals were conducted, including prehistoric music making, dancing, and pottery breaking — all informed by archaeological evidence (Reynolds & Adams, 2014, p. 20). The involvement of school children in participation activities like prehistoric music rituals can help children improve their understanding of what life was like in prehistoric period, and direct access to the site outside the classroom increased the connection of past and present peoples among students (Reynolds & Adams, 2014, pp. 22, 28). Although performing prehistoric rituals would not be appropriate with prehistoric sites in the US out of respect for indigenous peoples, participation activities among children at archaeological sites seems to be a common and successful method of public interpretation and the involvement of younger generations.

Additionally, two sites in the Verde Valley of Arizona with architectural components were examined for interpretation methods, and also to gauge visitor preference in interpretation. White et al. (2005, p. 66) conducted analysis of visitor opinions on archaeological themes and interpretation methods at Montezuma Castle National Monument, Montezuma Well (part of Montezuma Castle National Monument), and Tuzigoot National Monument. Although these sites contain visible, standing architecture, the source provided a systematic analysis of visitor preference in the interpretation of archaeological sites in the US, something not currently found

in abundance in the available literature. The interpretation strategies at Montezuma Castle include interpretive trails with wayside exhibits, an interpretive center, and guided tours (White et al., 2005, p. 67) while Tuzigoot offers a short, paved interpretive path along with an interpretive center and guided tours (White et al., 2005, p. 67-68). Further, White et al. (2005, p. 74) conducted a comprehensive statistical analysis of visitor preference, and while visitor preference slightly varied between the three sites analyzed, the study found that guided tours, nature trails, and Native American cultural demonstrations were among the most preferred interpretation methods of the visitors surveyed. Visitor's preference in guide-led tours further validates guided tours as the predominant interpretive method observed among bison bed and prehistoric cave sites analyzed for interpretive methods. Additionally, visitor preference in Native American cultural demonstrations matches well with participation activities such as tool making as another popular interpretive method observed in the site types analyzed.

Finally, one unique onsite analog method of interpretation was also examined: an outdoor memorial exhibit for the Emeryville Shellmound, an archaeological site in Oakland, California that had been destroyed for development (Sacred Sites International Foundation, n.d., para. 4-5). The Emeryville Shellmounds Memorial contains several granite monoliths and archway statues displaying a timeline history of the affiliated tribe, the Ohlone (Sacred Sites International Foundation, n.d., para. 1, 9). Although this interpretive strategy is only for archaeological sites that have been destroyed, it is important to recognize this option as a future possibility for many sites with uncertain futures. Therefore, it has been included in review of onsite analog methods.

### ***Onsite Digital Interpretation***

Onsite digital interpretation strategies have more recently emerged, and do offer more creativity and audience interaction than many of the traditional analog interpretation strategies.

Onsite digital interpretation usually includes a phone application with the incorporation of Augmented Reality (AR), interactive gameplay, or audio tours with multimedia. One example of the use of AR at the New Philadelphia National Historical Landmark includes the reconstruction of architecture once belonging to disenfranchised groups that is no longer standing (Amakawa & Westin, 2018, p. 316). The architectural reconstructions are accompanied by historical characters, which are also informed by archaeological and historical evidence (Amakawa & Westin, 2018, p. 316). Other examples of AR interpretation include AR applications developed for the town of Arbela in Iraq and the pre-Columbian site of Chan Chan in Peru. AR developed for Arbela, Iraq specifically focuses on interpreting buried archaeological deposits that are not visible (Mohammed-Amin, 2012, p. 12). The developed AR experience includes a live camera with AR overlay, and an interactive screen where users can select audio and visual content information about the 7,000 year history in Arbel, three-dimensional and reconstructed views of architecture, and a database option where links to archival records, historical photographs, and other information are available (Mohammed-Amin, 2012, p. 13-14). Moreover, computer science experts developed a workflow for developing AR experiences to reconstruct the site of Chan Chan, a representation of the Chimu culture that is now significantly degraded (Pierdicca et al., 2015).

In addition to simple reconstruction overlay as demonstrated in these examples, AR can also be enhanced by audio sounds or historical photographs for a more cohesive audience experience (Amakawa & Westin, 2018, p. 318, Mohammed-Amin, 2012, p. 13). AR also offers the ability for visitors to view the site the way it was in its period of significance, which allows for people to have a better visualization of the past (Amakawa & Westin, 2018, pp. 319). Although AR offers a creative and interactive interpretive experience, it is often costly to

develop and there are many challenges in ensuring the application runs smoothly and reflects the most accurate information (Amakawa & Westin, 2018, p. 323).

In addition to AR experiences, interactive gameplay is another digital technique for onsite interpretation. Several interactive gameplay experiences have been designed for archaeological sites, including several that Poole (2018, p. 305-306) discusses: *1831 Riot!*, where players navigate a dramatic reconstructed scene and soundscape of an 1831 riot in Bristol's Queen Square, *Jewish Time Jump* where players collect and evaluate evidence from the 1911 Chicago garment workers strike, learning about Jewish women's history, and *Up River*, where players follow clues, read virtual maps, and meet historical characters along the St. Louis River estuary. Additionally, *Ghosts in Garden* offers an interactive 'choose your own adventure' gameplay experience that is not reliant on the use of a phone or tablet by the users, who use a Time Radio to gain clues along with a map to navigate the Sydney Gardens (the Time Radio is a tablet hidden in a historically reconstructed device) (Poole, 2018, p. 308). *Ghosts in the Garden* is unique in that it does not rely on the use of electronic devices by the participants, allowing for a more personal experience between players.

Audio tours are another popular method of digital onsite interpretation. Audio tours are a cost effective way of disseminating information to visitors that will not ruin the historic fabric of a site (Bath, 1996, p. 107). Audio tours can also add unique elements to interpretation, such as background noises that create a soundscape to immerse the visitor in an interpretive experience (Bath, 1996, p. 107). Bath (1996) discusses audio tours at English Heritage sites, 40 of which used audio tours at the time of Bath's publication in 1996; this number has likely changed in recent years. One site included in the analysis — Hailes Abbey, Gloucestershire — encompasses an immersive soundscape with background winds and orchestral music in order to create an

audio reconstruction of the site (Bath, 1996, p. 108). The audio tour in this instance was combined with display panels, which was found to be a highly successful combination according to Bath's study (1996, p. 108). Audio tours also have the ability to cater to children, people with learning disabilities, and be available in multiple different languages — all extremely useful when interpreting for a diverse public (Bath, 1996, p. 108). Although Bath (1996) is undoubtedly outdated, the information on audio tours still remains relevant as a low cost and effective method of interpreting heritage sites to the public.

### ***Offsite Analog Interpretation***

The large majority of interpretation methods discussed include onsite strategies, as most sites with developed interpretation are publicly accessible. However, there are various offsite analog interpretation strategies for sites in which physical access is not a possibility. For this type of interpretation, three examples were analyzed — the reconstruction of AltaMira Cave and Lascaux Cave, both prehistoric rock art sites in Europe, along with the interpretation of a privately-owned Paleolithic site in Stélida, Greece.

The offsite analog strategy for AltaMira Cave is fairly simple — a life-size reconstruction of the cave and its rock art at the National Museum and Research Center of Altamira and National Archaeological Museum in Madrid (Atlas Oscura, 2019, para. 1-2). Lascaux offers a similar experience with a fully reconstructed cave open to the public, however the Lascaux replica is located closer to the actual cave location and not in a major city or museum (Lascaux IV, 2020). While AltaMira and Lascaux Caves are preserved archaeological sites, they are not publicly accessible due to the sensitivities of the rock art, and therefore offsite analog interpretation have been implemented. Although these are both prehistoric cave sites like Spotten Cave, they do not directly compare to Spotten Cave, as AltaMira and Lascaux are interpreted for

an international audience while Spotten Cave is most significant to local and state history in Utah. Nevertheless, site replicas are a creative and tangible way for audiences to experience an archaeological site without negatively impacting it.

Another offsite analog example comes from a Paleolithic quarry site in Stélida, Greece where public outreach and interpretation efforts have been conducted by archaeologists. This site is an excellent example of interpretation while considering Spotten Cave, as it is a privately owned site without visible components. The archaeologists conducting research at the Paleolithic site encountered several issues with the private landowners of and around the site, and were treated with hostility in certain circumstances (Carter, 2017, p. 321-323). Because of these issues and out of respect for private land, Carter (2017, p. 329) recommends that privately owned archaeological sites without public access should focus on offsite interpretive methods such as lecture presentations, online media, school curriculum packets, exhibitions, and popular science writing. Despite landowner encounters, the team was still able to find ways to publicly interpret the site in a positive way offsite, such as public presentations of the archaeological findings to the local community (Carter, 2017, p. 329). The archaeological team also had expert drawings of the site created in its Paleolithic period, which significantly enhanced their public presentations, helping members of the public understand the archaeological information in a more visual way (Carter, 2017, p. 329-330). Carter (2017) concludes that sites without exciting visible components need more creative ways of interpreting to the public, ways in which the team of archaeologists on the site have not yet been able to find (p. 330). This rings true for the majority of sites analyzed for analog methods, there seems to be a lack of interpretive creativity and a continuation of the status quo of interpretation — e.g. guided tours, interpretive panels, etc. Although these strategies do have some backing in the most preferred methods of interpretation

put forth by White et al. (2005), there is a need for more creative interpretation in order to more effectively engage the public, specifically for sites without standing visible components or those not physically accessible to the public, like Spotten Cave.

### ***Offsite Digital Interpretation***

Finally, offsite digital interpretation methods are aplenty, and mostly include online resources for archaeological sites. Two of the prehistoric cave sites analyzed for onsite analog techniques also included digital offsite engagement strategies, specifically multimedia resources available online. Russell Cave National Monument offers school curricula packets for natural and archaeological education in the classroom (NPS, 2020a), and there is a video of the cave's 3D model which highlights the process of making a 3D model also available on the cave's website (NPS, 2020a). Additionally, the interactive, 3D model produced by the University of South Florida is available on Sketchfab, and includes several points of interest that reveal more information about the cave if selected (University of South Florida Libraries, 2016). Mammoth Cave National Park offers online multimedia as well, including livestream webcams of different points of interest around the park, in addition to presentations of the site's history along with photographs (NPS, 2020b). The similarities of these two sites offering online resources is likely due to the fact that both sites are administered by the National Park Service, and share a similar mission and management style.

Online resources like the ones available on the websites for Russell Cave and Mammoth Cave are by far the most common form of offsite digital interpretation. Hannah (2018) wrote the Heritage Council's Heritage Resource Guide, which includes online resources for archaeological sites in Europe. Although most of the sites included are located in Ireland or the UK (and have visible components), they provide additional examples of online resources as a form of digital

interpretation. Some of the resources shared in the Heritage Resource Guide include the Atlas of Hillfort, an interactive map of hillfort sites in Ireland and the UK; 3D Icons, an online resource of 3D models of archaeological sites (similar to Sketchfab, which contains thousands of site and artifact 3D models available for free); the Corpus of Electronic Texts, which contains multiple archaeological resources in several different languages; excavations.ie, an electronic database of Irish archaeological investigations; an Irish stones database where information on Irish inscribed stones are available; a British animal bone guide to identification; and a dendrochronology and radiocarbon dates database for Irish archaeological sites, among many other resources (Hannah, 2018, p. 2-9)

Online immersive virtual tours offer another form of offsite digital interpretation. The Ministère de la Culture's Lascaux website provides an excellent example of an online virtual tour. The website's opening is the entrance to the virtual tour, where there are several tour panels which take the visitor through the site's 3D model in a video-style mode, with information boxes available to learn more about each site feature being highlighted. The video is a Virtual Reality (VR) experience, something that has emerged in the past few years in relation to experiencing archaeological sites digitally. The Lascaux website also contains multimedia with maps and historical and artifact photos, and highlights several topics related to the site, including discussions on the setting, archaeological research, and site conservation (Ministère de la Culture, 2020). Like Spotten Cave, Lascaux is another cave site that is not physically accessible by members of the public, so interpretation includes offsite digital content (in addition to the offsite site replica), which the Ministère de la Culture does well for Lascaux, especially for its international audience.



Another VR experience produced for an international audience and archaeologists is the project animation and 3D visualization of Catalhoyuk, a prehistoric site located in Turkey. Data from decades of excavations at Catalhoyuk has been digitized, including 3D scans of artifacts and features, and added to a comprehensive database (Lindsay, 2017). From this database, an extensive VR visualization of the site is available, and can be altered for archaeologists to change certain archaeological interpretations about the site based on the most recent data (Lindsay, 2017). Although Catalhoyuk is also a site with an international audience, the virtual visualization of the site is an excellent example of interpretation where archaeological site features or artifacts are not impacted by site visitation or research of the archaeologists.

### ***Native American Involvement in Interpretation Methods***

Native American involvement in interpretation was present in several of the sites analyzed for interpretive methods. While not a specific strategy, Native American involvement in the interpretation of their own heritage requires specific attention among this review. Archaeological sites have significant traditional cultural value to indigenous descendant communities, and archaeological sites are crucial to continuation of cultural identity and practices for many descendant communities (Colorado Historical Society, n.d., p. 8). Therefore, the incorporation of Native American descendant communities is essential to the interpretation of prehistoric sites in the US.

Two of the prehistoric cave sites examined — Graham Cave and Russell Cave — hold events that involve or celebrate Native Americans. Graham Cave holds an annual Archaeology Day, which in 2019 included events such as tool competitions and classes, mock excavations for children, prehistoric cooking, and storytelling by Native Americans. Additionally, Russell Cave holds an annual Native American festival that features educational demonstrations of prehistoric

lifeways of Native Americans in the Southeast United States (RUCA, 2009, p. 4). Although these events highlight and involve Native Americans at prehistoric sites, it is difficult to discern how much involvement affiliated tribal groups have at these sites from the available resources.

Among the sources examined, Native American involvement seems to be largely absent in the interpretation methods, with the exception of Graham Cave and Russel Cave, as well as Wanuskewin Heritage Park in Canada. Wanuskewin has taken steps to include First Peoples (the universal Canadian term for Native Americans) in the management of the site, ensuring that interpretive content is deemed appropriate by affiliated tribes, and that oral histories and traditional knowledge are given as much credibility as the archaeological evidence (Walker, 2016, p. 122). While Wanuskewin seems to be an outlier in Native American involvement, it is likely due to Wanuskewin being located in Canada, which holds different cultural heritage and tribal relationship systems than the United States.

Further, McManamom (1994, p. 74) discusses the challenges in Native American involvement in archaeological outreach, specifically the fact that consultation only happens under the authority of the NAGPRA and the NHPA; indigenous involvement and collaboration are not generally undertaken when it's not necessary by law. Further, there are distinct differences between consultation, involvement, and collaboration, as distinguished by Colwell-Chanthaphonh and Ferguson in *The Collaborative Continuum* (2008). Colwell-Chanthaphonh and Ferguson (2008, pp. 5,7) clarify that collaboration means joint involvement on a project, whereas consultation indicates a strong legal requirement between governments. While Native Americans have traditionally been left out of the management of their own heritage, collaborative relationships can work towards addressing many historical wrongs by increasing fairness in the archaeological process in which descendant communities,

other stakeholder groups, and professionals all reap the benefits of archaeology. More involvement of Native American tribes in the public interpretation and outreach of archaeological sites is evidently necessary, and further research about the best practices of tribal collaboration in public interpretation projects should be carried out, but is beyond the scope of this research project.

### ***Additional Considerations in Interpretation***

Apart from the interpretation methods themselves, there are several other considerations in interpretation that need to be accounted for. Economic and financial feasibility of an interpretation program must be considered for all sites (Walker, 2016, p. 124), physical access to the site for multiple different groups, including ADA compliance, is essential for successful interpretation of sites open to the public (Grima, 2017, p. 77), and intellectual accessibility and cognitive impairments should also be considered in developing interpretive content (Grima, 2017, p. 77). The background and mindset of the visitors in relation to a particular heritage site should also be taken into account in interpretive development (Poria et al., 2009, p. 93).

Additionally, several scholars in the field of interpretation have argued for a more interactive and dialogic experience between the visitors and professionals, which can often create more meaningful and memorable experiences. Silberman (2013, p. 25) argues for public participation, rather than passive education, as a discourse to enrich interpretive experiences at heritage sites, and Knapp and Forist (2014, p. 35) propose a dialogic experience between the visitor and professional as a new interpretive pedagogy. Although these considerations address interpretation only theoretically and not methodologically, they are important for any interpretive development process to ensure successful visitor experiences. Further, both White et al. (2005, p. 66) and Ham (2013) discuss the importance of theme in an interpretive experience, which serves

as an important framework in which information is presented in a cohesive way, ensuring that tangible evidence is more easily connected to intangible understandings among the audience.

It is evident that there are many ways in which archaeological sites are interpreted to the public. While these vary from offsite and onsite, analog or digital techniques for sites with or without visible components, all provide a good baseline of how interpretation is done in practice, and some sources allude to visitor preferences in interpretation methods (White et al., 2005). Despite these published analyses of visitor preference, more research is needed on what the public, including different types of publics, prefer in interpretation in order to create the most effective interpretive experiences. Audience data and visitor preference is also crucial to the management of archaeological sites, specifically those with a public interpretation focus (White et al., 2005, p. 77).

Credible and accurate data to inform interpretive content is also necessary to inform good interpretive experiences. At the uKhahlamba-Drakensberg Park in South Africa, Mazel (2008, pp. 48, 50) discusses the inaccuracies observed in the interpretive content at the site, which conveyed inaccurate archaeological information not consistent with regional findings, as well as a skewed focus on the site's rock art over the buried archaeological deposits. Inaccurate interpretive content misinforms the public from a trusted source, and ruins the site's credibility for those who are knowledgeable about the archaeology of the site and able to recognize inaccuracies (Mazel, 2008, p. 47-48). The International Council on Monuments and Sites (ICOMOS) Second Principle in the *Charter for Interpretation and Presentation of Cultural Heritage Sites* states that "interpretation and presentation should be based on evidence gathered through accepted scientific and scholarly methods as well as from living cultural traditions" (ICOMOS, 2008, p. 8), further solidifying the need for reliable and credible sources informing

interpretive content along with input from descendant communities. These sources strengthen the reason for the Archaeological Context (Appendix A) developed for Spotten Cave in this project in order to best inform the recommended interpretive strategies for the site.

It is evident that the ways in which archaeology is interpreted to the public are broad, and the benefits of public interpretation of archaeology are many, revealing several strong arguments for why the public should care about the archaeological past. With the offsite and onsite strategies, both digital and analog, there are successful and creative ways in which archaeological information is disseminated to the public. The purpose of this review was to gauge the types of interpretive techniques currently being practiced for archaeological sites similar to Spotten Cave in order to best inform site interpretive recommendations. Full analysis of all archaeological interpretation methods across various site types should be undertaken in the future, along with supplemental evaluation to gain audience data and preference in interpretive techniques. Finally, more research on Native Americans involvement in the public interpretation of archaeology, as well as ways to build genuine collaborations with descendant communities, is essential to improving indigenous engagement in the public interpretation of archaeological resources.

## Chapter 4: Interpretive Analysis

The Interpretive Literature Review (Chapter 3) yielded a total of 27 sites that were examined for interpretive methods, which were broken down into four unique categories: onsite analog, onsite digital, offsite analog, and offsite digital. Thirteen onsite analog methods were identified, 3 onsite digital methods, 3 offsite analog onsite methods, and 3 offsite digital methods. Onsite analog strategies are by far the most common interpretive method, which is likely attributed to the fact that most sites developed for public interpretation are open to the public and physically accessible. Additionally, of the 27 sites analyzed, 18 sites did not have visible components (which is defined by not having standing architecture) while the remaining 9 sites did have visible, standing architectural components. Although not as comparable to Spotten Cave, the 9 sites with visible components were analyzed as they were some of the few examples present in the published literature on the ways in which archaeological sites are interpreted to the public.

The interpretive methods were categorized into groups in order to clarify the analysis. An explanation of what each category entails is necessary to better read Table 1, the Interpretive Analysis Chart.

- Guided Tours: tours led by a ranger, archaeologist, or other professional, usually in a group of people.
- Interpretive Walks with Wayside Panels: self led trails or paved paths where visitors can explore the site on their own with complementary interpretive panels.
- Community Events: activities such as archaeology days, stewardship events with local media coverage, and community dinners where prehistoric foods are served (e.g. bison dinners at a bison bonebed site).

- Archaeology Classes: lessons taught by professionals at the site, usually to school children, on prehistoric lifeways and archaeological stratigraphy.
- School Field Trips: school events and tours led at archaeological sites.
- Participation Activities: Prehistoric tool use, tool making, tool competitions, or other hands-on activities visitors can actively participate in.
- Nature Hikes: hikes at archaeological sites that do not necessarily highlight the archaeological site itself, but the nature around the site emphasising natural heritage.
- The Guide Booklets: pamphlet or small booklet provided to visitors at the archaeological site in lieu of permanently placed wayside panels.
- Interpretive Facilities: built centers that generally hold archaeological exhibits, gift shops, and visitor information.
- Native American Celebrations: events that highlight Native Americans, usually by having Native Americans at the event demonstrating prehistoric lifeways or telling stories.
- Informational Videos: videos about the site that are shown to visitors before they see the archaeological site, a practice common among National Park Service sites.
- Discussion of the Archaeological Process: dialogue with visitors about the archaeological process. This method is best exhibited in the interpretation practices at Hudson-Meng (Todd & Rapson, 2016).
- Outdoor Memorial Exhibit: an outdoor memorial exhibit that commemorates archaeological sites that have been destroyed for development, such as the Emeryville Shellmound site in California.
- AR Experiences: digital experiences involving Augmented Reality on a smart device.

- Digital Gameplay: digital interactive or ‘choose your own adventure’ games employed at archaeological sites to better engage visitors. (Note — only Sydney Gardens was included in the chart as Poole (2018) focuses on *Ghosts in the Garden* and only briefly mentions the three other games discussed in the Interpretive Literature Review).
- Audio Tours: self-guided tours with an audio component, either on a personal digital smart device or a device provided by the archaeological site.
- Site Replicas: physical replicas of archaeological sites not located near the actual sites location.
- Community Lectures: lectures about archaeological sites that are not given at the actual site, but at an offsite location such as a community center (this category was separated from Community Events as it is a distinctly offsite strategy, not relying on presence at the actual site).
- School Curriculum Packets: K-12 curriculum or lesson plans highlighting archaeological sites that also do not rely on visitation at the site.
- Online Multimedia Resources: online resources that include anything from archaeological manuscripts, downloadable teaching packets, livestream webcams of sites, artifact or site guides, video documentaries on sites, etc. To see a full discussion of Online Multimedia Resources, refer to the Chapter 3, Literature Review. Not all sites discussed in relation to Online Multimedia Resources are included in the chart, as many online resources, such as the Irish database of Hill Fort sites (Atlas Hillfort) include numerous archaeological sites that weren’t specifically analyzed in the literature review.
- 3D Site Models: online models of sites virtually explorable to the public, such as the Russell Cave 3D model on Sketchfab.



- Virtual Tours: online guided or annotated virtual tour generally including a 3D model, such as the virtual Lascaux tour provided by the French Ministère de la Culture.

**Table 1**  
*Interpretive Analysis Chart*

Archaeological Sites	Wahkpa Chu gn	First Peoples Buffalo Jump	Wanuskewin	Lubbock Lake	Hudson-Meng	Mammoth Cave	Russell Cave	Graham Cave	Dunbar Cave	Fort Rock Cave	Danger Cave	uKhahlamba-Drakensberg Park	Bayshore Homes Site	Garden Creek Site	Stelida Site	Emeryville Shellmounds	Atlatl Mira	Lascaux	Tinkinswood	Montezuma Castle	Tuzigoot	Catalhoyuk	New Philadelphia	Chan Chan	Arbel	Sydney Gardens	Hailes Abbey	Total Number of Sites
Interpretive Methods																												
Guided Tours	☒			☒		☒	☒		☒	☒	☒	☒								☒	☒							10
Interpretive Walks with Wayside Panels			☒		☒		☒	☒												☒	☒							6
Community Events				☒			☒	☒					☒	☒														5
Archaeology Classes							☒	☒					☒	☒														4
School Field Trips	☒		☒	☒															☒									4
Participation Activities				☒			☒	☒	☒				☒	☒					☒									7
Nature Hikes				☒			☒	☒	☒			☒																4
Guide Booklets												☒																1
Interpretive Facilities	☒	☒	☒		☒		☒													☒	☒							8
Native American Celebrations							☒	☒																				2
Informational Videos							☒					☒																2
Discussion on Archaeological Process					☒																							1
Outdoor Memorial Exhibit																☒							☒	☒	☒			1
AR Experience																							☒	☒	☒			3
Digital Gameplay																									☒			1
Audio Tours																										☒		1
Site Replicas																☒	☒	☒										2
Community Lectures (Offsite)															☒													1
School Curriculum Packets							☒								☒													2
Online Multimedia Resources						☒	☒											☒				☒						4
3D Site Models							☒											☒				☒						2
Online Virtual Tours																		☒										1
<b>Total Number of Interpretive Methods</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>12</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	
<b>Key</b>																												
Onsite Analog	Sites w/out Visual Components																											
Onsite Digital	Sites with Visual Components																											
Offsite Analog																												
Offsite Digital																												

## **Chapter 5: Archaeological Review of Spotten Cave**

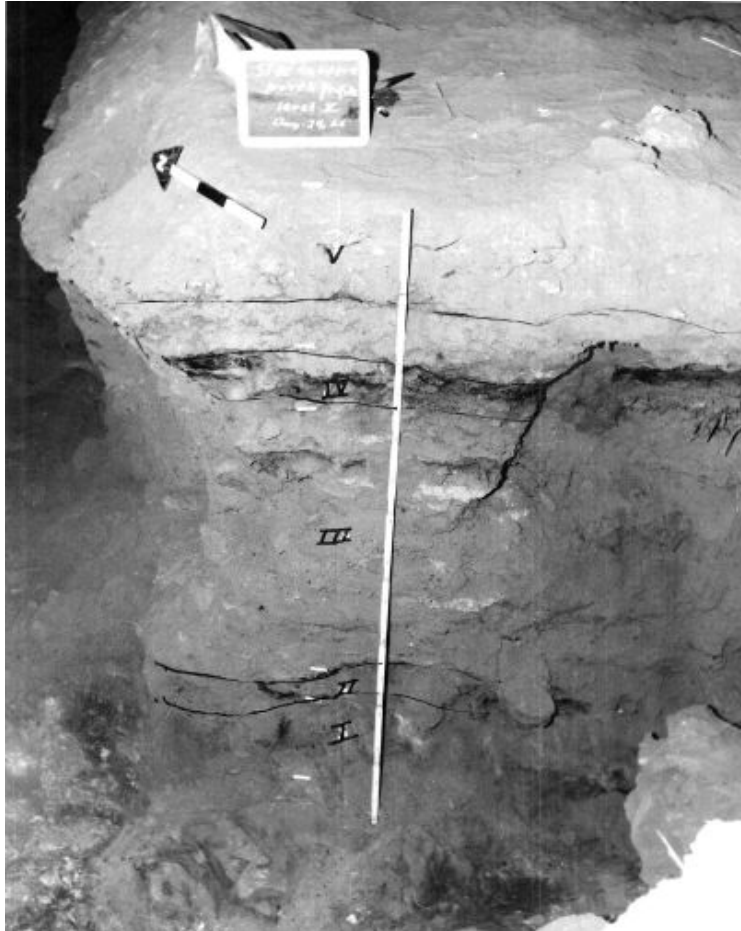
There are several publications on the archaeology of Spotten Cave. Reviewed here in chronological order, the archaeological research on Spotten Cave provides a decent background of Spotten Cave's cultural affiliation and chronology. Starting with a 1960's excavation, Spotten Cave's research from the Brigham Young University (BYU) Archaeology Department is ongoing, with the most recent publication in 2016 along with additional unpublished research projects on the site's artifacts. This chapter partially addresses the second project component and Research Sub-Question #2, "What are the methods of interpreting prehistoric archaeological sites without visible components and how do they benefit the public?". The Archaeological Context derived from the information here is compiled in Appendix A.

### **Spotten Cave's Excavation**

James Mock excavated the entirety of the Spotten Cave in the 1960s, the results of which are outlined in his 1971 thesis. Mock's thesis describes the excavation methodology, issues faced, and a description of five cultural "Zones" that include features and artifacts from different occupational layers, including the Middle Archaic (Zone I-II), Late Archaic (Zone II), Fremont (Zone III), Late Prehistoric (Zone IV), and Historic (Zone V) (see Figure 3). Mock (1971, p. 152-159) also provides a short archaeological interpretation of the site based on the feature and artifactual evidence discovered through excavation, however many of his archaeological interpretations are now out of date with current archaeological research of the Great Basin and Utah Valley.

### Figure 3

#### *Spotten Cave's Stratigraphy*



*Note.* Stratigraphy with Zones indicated. Courtesy of the Museum of Peoples and Cultures from Mock's 1971 Stratigraphy Report.

Geographically, the site is located in a rock outcrop of dolomite upthrust on Long Ridge in Goshen Valley in Utah County (see Figure 2) (Mock, 1971, p. 1). The site was known to locals as Indian Cave for several decades due to the presence of prehistoric artifacts in the cave. Several archaeologists conducted test excavation pits in 1960 (Jones) and 1961 (Taylor and Woodard) to evaluate the potential for subsurface cultural material at the site (Mock, 1971, p. 1). Jones, Taylor, and Woodard hit cultural materials through the Fremont layers of the site (Mock,

1971, p. 1), however, in between Jones's 1960 investigation and Taylor and Woodard's 1961 investigation, a Utah type metate (shelved metate indicative of the Fremont) was looted from the cave, exposing an intact stratigraphy (Mock, 1971, p. 3). As such, BYU recommended a prompt excavation of the site to recover archaeological data before additional looting activities occurred (Mock, 1971, p. 3). The excavation started in August of 1964 and concluded in August of 1969 (Mock, 1971, p. 5).

To lay a foundation for the prehistory of the area, Mock discusses a cultural chronology for Utah Valley, including "Lithic Stage", "Desert Archaic", Fremont, and Historical periods (1971, p. 5-7). This section of the thesis was not closely examined as the understanding of Great Basin archaeology has significantly advanced since 1971 where cultural time periods, such as the "Lithic Stage" and "Desert Archaic", are no longer used. This same issue is consistent throughout much of the thesis, with projectile point typologies and other artifact classifications now out of date and no longer accurate to the most recent archaeological record in Utah. Therefore, other sources, such as Simms (2008) were reviewed to provide a current and accurate foundation for the prehistory of Utah.

Mock's excavation faced several challenges that impacted the integrity of the archaeological data. Firstly, the aeolian dust in the cave's deposits was easily disturbed, filling the cave with significant amounts of dust and making it difficult to see or breathe during the excavation (Mock, 1971, p. 49). Mock (1971, p. 49) describes that dust masks were worn, but filters had to be changed every two hours in order to breathe; the dust also compromised the ability to take photos of the excavation. In addition to considerable amounts of dust, some of the profile walls were unstable and sloughed down, causing several features to be destroyed before recordation (Mock, 1971, pp. 48, 51). Rodent activity, as well as looting and vandalism, were

also chronic issues faced during the five year excavation, both of which caused damage to the stratigraphic layers in the open excavation units (Mock, 1971, p. 51). Due to these issues, the recordation of features, collection of artifacts, and identification of stratigraphic layers were compromised, causing a detriment to the archaeological data and leaving many questions for the subsequent researchers, including myself (Mock passed away less than ten years after the thesis completion, therefore no subsequent researchers have been able to discuss the excavation with him (Cook, 1980, p. 43; Pearce, 2016, p. 96)). Additionally, Mock grouped the stratigraphy into five “Zones” based on cultural affiliation (1971, p. 54), likely missing smaller, more subtle stratigraphic layers which could have yielded much more nuanced archaeological data.

Mock (1971, p. 12) took seven radiocarbon dates ( $^{14}\text{C}$  dating) from several features of the different excavation Zones. The earliest radiocarbon date taken from the Pleistocene gravels layer is  $10,450 \pm 180$  B.C. (uncalibrated). Although this predates the cultural occupations, it is a geographically significant date as it provides a time frame for the Provo level of Utah Lake (Mock, 1971, p. 12).

Zone I encompasses the earliest cultural occupational layers in the cave, and is attributed to the “Desert Archaic” culture as specified by Mock (1971, p. 61), which is generally referred to as the Archaic period today. Mock (1971, p. 65) interprets this Zone as occupied by Archaic peoples who used the cave as a temporary stopover site. Feature 49, a fire hearth, yields the oldest cultural radiocarbon date from the site, as well as from Utah County (thus far), which is 3630 B.C. or 5650 B.P. (uncalibrated) (J. Allison, Personal Communication, September 24, 2020; Mock, 1971, p. 61). The small hearths in this Zone represent small cooking episodes of hunter-gatherer groups (Mock, 1971, p. 65). Occupation in Zone I ranges from 3,635 B.C. to 2,250 B.C. based on the  $^{14}\text{C}$  dates, indicating Zone I took approximately 1,400 years to

accumulate (Mock, 1971, p. 152). Mock (1971, p. 154) interprets the presence of stemless projectile points as an indication of atlatl use, and the evidence of one incised stone and one pendant indicate cultural complexity.

Zone II represents the Late Archaic stage which contains the same artifact types as Zone I. Radiocarbon dates from the bottom and top of Zone II indicate that Zone II took about 1,500 years to accumulate, and was still used as a temporary shelter/stop-over site for Archaic peoples (Mock, 1971, p. 154). There are more artifacts in Zone II than Zone I, with an equal amount of projectile points to milling stones (Mock, 1971, p. 154). Stemless points found in the bottom layers of Zone II and arrowpoints in the top layers of Zone II indicate a diversified change in hunting technology; this shift in lithic technology suggests the bow and arrow was introduced to Spotten Cave approximately 1000 B.C. (Mock, 1971, p. 155). Zone II likely represents a change from the Mid to Late Archaic as evidenced by the diversification of projectile point typology and the increase in groundstone at the site (and thus food processing), however Mock does not differentiate occupational layers within Zone II. Additionally, Mock's hypothesis of the bow and arrow introduction around 1000 B.C. is likely a bit too old with subsequent archaeological research in the Great Basin, as the earliest recorded introduction of the bow and arrow in the Great Basin is 2500 B.P. (approximately 500 B.C.) (Simms, 2008, p. 209). If Mock conducted a more thorough stratigraphical analysis of Zone II, the 1,000 B.C. estimation could have been more accurately determined (see Figure 3).

Mock (1971, p. 71) describes Zone III as the main Fremont occupation at the site with the A.D. 640 radiocarbon date representing the earliest Fremont date. Mock (1971, p. 156) states that the Fremont occupation is the only period where the cave was inhabited more frequently than a temporary shelter as indicated by the adobe wall at the entrance and the presence of a "sleeping

platform”, however subsequent archaeologists postulate that the site still served as a temporary shelter for Fremont groups venturing from village sites on hunting and fishing excursions due to the small amount of artifacts and faunal assemblage compared to other Fremont long-term habitation sites (Cook, 1980, p. 48).

Mock (1971, p. 156-157) also asserted that Zone III has a similar artifact assemblage to the Archaic layers, with the exception of small dart points and pottery, therefore the Fremont must have stemmed from the Archaic based on similarities in artifact typologies. More recent archaeological evidence shows that the Fremont were largely indigenous Archaic peoples (Simms, 2008, p. 203), which is consistent with Mock’s theory about Fremont origins. Additionally, the Fremont were also heavily influenced by Basketmaker cultures of the Southwest, specifically the introduction and influence of farming corn, beans, and squash (Simms, 2008, pp. 203-205), which also is consistent with Mock’s theory of the presence of corn, beans, and squash in Zone III indicating a Southwest influence with an adaptation of farming (Mock, 1971, p. 157). The youngest radiocarbon date from Zone III is A.D. 1220, marking an approximate end of the Fremont occupation at the site (Mock, 1971, p. 156)

In Zone IV, no  $^{14}\text{C}$  dates were obtained, but Mock (1971, p. 81) postulates this Zone dates from A.D. 1300 to the Historic period. Artifacts from Zone IV appear Fremont in origin, and thus may represent a late occupation of Fremont, possibly up to A.D. 1670 (Mock, 1971, p. 82), however Mock also notes there is little evidence of human occupation in Zone IV with only two small features, both of which lay directly on top of Zone III (Mock, 1971, p. 158). The original archaeological interpretation of this Zone is likely fairly inaccurate, as the stratigraphic integrity was heavily compromised in Zone IV.



Zone V ranges from the early 1900s to 1966, however significant disturbance by rodents and humans have caused intermixing with deeper layers, which is why several prehistoric artifacts are present in Zone V (Mock, 1971, p. 82-84). Historical accounts tell that Shoshonean people were hunting and camping in the Goshen hills in the early 1900s, indicating they may have used Spotten Cave as a temporary shelter, as evidenced by the one Shoshonean sherd identified by Mock in Zone V (1971, p. 158).

Mock outlines the main points taken from the excavation, many of which are either proven or disproven today based on current archaeological research. Nevertheless, Mock's theories provide a good foundation for early Utah archaeology at the oldest recorded site in Utah County and a basis for subsequent researchers on the Spotten Cave assemblage.

### **Artifact Assemblage Analysis Subsequent to Excavation**

The first analysis of the Spotten Cave artifact assemblage after Mock's excavation was a faunal and flora analysis conducted by Clayton Cook. Cook (1980) focused on the Fremont occupational zone (Zone III), but also included data from the other four Zones of Spotten Cave. Zone I faunal analysis showed the Utah chub (*Gila atraria*) (a fish native to Utah Lake), Blacktail jackrabbits (*Lepus californicus*), and Desert cottontails (*Sylvilagus audubonii*) to be in highest abundance at the site, with waterfowl occurring four times more frequently than upland fowl (Cook, 1980, p. 85). Zone II's faunal assemblage shows Desert cottontail as the most abundant animal with the Utah chub and jackrabbit/deer following as the second and third most abundant, with waterfowl also four times more frequent than upland fowl (Cook, 1980, p. 84). The frequency of Desert cottontail in Zone II is consistent with pollen records, which indicate

that the area was covered in a pinyon-juniper forest during the Late Archaic, an environment in which Desert cottontail is found in abundance (Cook, 1980, p. 87).

In Zone III, which Cook discusses in detail, lagomorphs — Desert cottontail and Blacktail jackrabbit — account for 36% of the faunal assemblage, waterfowl accounts for 13% of the assemblage, upland fowl accounts for 3% of the assemblage, fish accounts for 26% of the assemblage, *Geomys* (gopher) accounts for 10% of the assemblage, and deer accounts for 3% of the assemblage (1980, p. 41). The high percentage of *Geomys* in Zone III is puzzling to Cook (1980, pp. 46, 47, 89) even with ethnographic evidence of Shoshonean peoples eating *Geomys*, however the presence of *Geomys* remains may be due to the natural rodent activity at the site. Cook (1980, p. 43) also discusses the flora at Spotten Cave in Zone III, a high percentage of which were historic cultigens (peaches, apricots, cherries), raising questions about the stratigraphic integrity, however 24% of the flora in Zone III are prehistoric cultigens — corn, beans, squash, and 25% of the flora is bulrush (*Typha latifolia*), a marsh plant.

In Zone IV, Cook (1980, pp. 89, 91) describes an equal abundance of Utah chub, Mule deer (*Odocoileus hemionus*), and Pronghorn (*Antilocapra americana*), and an even percentage of waterfowl and upland fowl. In Zone V, Cook (1980, p. 91) theorizes that Spotten Cave was used as a shelter site for fishing and hunting trips for Shoshonean people as the Utah chub was the most abundant, which is consistent with historical accounts from the Dominguez-Escalante expedition of 1776 describing Shoshonean peoples congregating around rivers.

From the faunal assemblage, a model of seasonality at the site can be hypothesized. Cook (1980) describes an emphasis on marshland resources, as evidenced by the high abundance of Utah chub and waterfowl, however utilization of upland resources is also apparent with the presence of lagomorphs, deer, bison, and other upland animals. Utah chub was generally fished

in the spring and summer, indicating a spring and summer use of the site throughout time, however the presence of jackrabbit, cottontails, and also deer indicate a fall and winter presence at the site (Cook, 1980, p. 46). Since Spotten Cave was primarily used as a temporary shelter, the faunal assemblage data only provides a snapshot of subsistence patterns, however the variety in seasonality and exploitation of both marshland and upland resources indicates that Spotten Cave was used year-round as a temporary shelter (Cook, 1980, p. 48). Cook (1980, p. 48) also states that the small faunal assemblage in Zone III does not support the theory that the cave was consistently inhabited in the Fremont period, and suggests that the cave was used as a temporary shelter for Fremont people from village sites who were on fishing and hunting trips. This is supported by the general archaeological understanding of the Fremont, who exhibited a mixture of agricultural and hunter-gatherer lifeways (Simms, 2008, p. 214-215).

Donald Forsyth conducted ceramic analysis of sites in Utah Valley in 1986. Although he does not describe Spotten Cave specifically (he did analyze ceramics from Spotten Cave, but did not discuss the Spotten Cave artifacts in the publication), his analysis of Late Prehistoric ceramics showed that Promontory peoples succeeded the Fremont, however the timing of the succession was fairly unknown at the time (Forsyth, 1986, p. 199). Along the same lines, Pearce (2016, p. 95) asserts that Mock likely misclassified Zone IV due to the bioturbation and since Forsyth's research in 1986, much more is known about the Promontory culture, specifically the fact that many Promontory artifacts are similar to the Fremont style (Simms, 2008, p. 231). This could also explain why Mock misidentified Zone IV as a Late Fremont zone.

The faunal and flora analysis conducted by Cook (1990) is well supported through Janetski (1990), who discusses the importance of Utah Lake to prehistory, drawing on historical accounts and archaeological evidence. Utah Lake was an extraordinary fishery and marshland

habitat in prehistory shown through archaeological evidence as well as through historical accounts of Ute and Shoshone activity in the area; the lake was also home to twelve Utah native fish species (Janetski, 1990, pp. 5, 7). Bulrush was also present in massive quantities as documented by Daniel Potts in 1827, which the Ute used as insulation for habitation structures such as wickiups, but also as material to support fishing boats (Janetski, 1990, pp. 11, 30). Although bulrush could have been a dietary item for the people at Spotten Cave, it was historically used for non-dietary purposes (Janetski, 1990, pp. 30). This ethnographic evidence supports that bulrush was used at Spotten Cave for non-dietary purposes in prehistory. Janetski (1990) also states that the limited artifactual evidence at Spotten Cave in the Archaic levels of the site indicate that it was used as a stopover site for peoples moving from the uplands of Long Ridge to the Wasatch Front (Janetski, 1990, p. 15), which is consistent with the Wetland Settlement Pattern model described by Simms (2008, p. 36).

Janetski (2001) also discusses Spotten Cave in a journal publication about the Paleoindians of Utah Valley. One possible Late Paleoindian projectile point (MPC Catalog # 1988.055.00064.001, see Figure 3 in Appendix A) was found in Zone III, but was misidentified by Mock as a Plains type point and as obsidian toolstone when it is, in fact, black chert (Janetski, 2001, p. 20-21). The projectile point has a distinct oblique parallel flaking pattern and exhibits evidence of potlidding (heat treatment), but is missing the base and is therefore un-typable (however, the style is consistent with the Agate Basin) (Janetski, 2001, p. 20-21). Because the point was found in Zone III, it is likely that the point was re-deposited in the cave during the Fremont period, and thus the cave most likely does not have a Paleoindian occupation (Janetski, 2001, p. 21), although the fire hearth at the deepest cultural level directly above the Pleistocene

gravels was not radiocarbon dated by Mock, it indicates that the occupation of the cave is likely earlier than the 3630 B.C. (uncalibrated).

Aaron Woods conducted an analysis project on Spotten Cave's projectile point assemblage, revamping the outdated alpha-numeric typologies that Mock originally assigned to the site's stone tools. Woods (2004) also recalibrated the original radiocarbon dates making them more accurate. The oldest radiocarbon date, 3630 B.C. (uncalibrated), is 4,713 - 4,220 B.C. calibrated (Woods, 2004, p. 19), suggesting the cave was inhabited up to 6,700 years ago. Woods (200, p. 21) analyzed 88 projectile points, 25 fewer than the 113 originally recorded by Mock. This discrepancy is attributed to several factors: mislabelling in the field specimen log, artifact misplacement, and the misidentification of stone tools as projectile points rather than bifaces or scrapers (Woods, 2004, p. 21). Woods (2004, p. 23-25) reconciled Mock's alpha-numeric types (i.e. Type 1a) into modern projectile point classifications, such as Elko Corner-notched, Rosespring, Humboldt, Eastgate, etc. An analysis of the material revealed that 88% of the projectile points were made from chert (cryptocrystalline silicate), 8% made from obsidian, 2% fashioned from quartzite, and 1% made from an unknown material (Woods, 2004, p. 26).

Projectile points from each Zone do not necessarily match the cultural affiliation of the Zones themselves, indicating, yet again, a very questionable stratigraphy (Woods, 2004, p. 29). The majority of the points are found in Zone III regardless of type. Rosegate, Eastgate, and Cottonwood Triangular are consistent with the Fremont age, however Pinto points and Elko series points were also found in Zone III when these types are more consistent with the Archaic period (Woods, 2004, p. 29). Stratigraphical mixing was likely due to rodent activity at the site, which is evidenced by rodent burrows in deeper layers, where domesticated fruits, metal, and an 1872 newspaper clipping were found in Zone III (Woods, 2004, p. 29). In addition to rodent

activity, looting and vandalism by modern people as well as excavation by prehistoric inhabitants also contributed to stratigraphical mixing (Woods, 2004, p. 30). The inconsistency of stratigraphy to time period is also likely due to the large Zones defined by Mock, who missed subtle changes in soil type and thus time period. Mock seemed too eager to group Zones based on cultural affiliation rather than the depositional type.

Despite this stratigraphic mixing, Woods (2004) also identified MPC Catalog # 1988.055.00064.001 as a possible Paleoindian point, and agreed with Janetski (2001) that the point was likely taken from another location and re-deposited in the cave by Fremont peoples. Although Zones III-V show a significant amount of bioturbation, there is little disturbance below Zone III in Zones I and II, indicating a small possibility of the Late Paleoindian point being risen into Zone III through bioturbation, and therefore likely shows a reuse of Paleoindian technology by later prehistoric peoples.

The most recent published analysis on Spotten Cave's assemblage is from Madison Pearce in 2016, who looked at the human coprolites from the cave. Just as Woods's analysis of projectile points was inconsistent with Mock's data, there also seems to be an underreporting of coprolites. Mock only mentions three coprolites recovered from Zone II, while Pearce identified 16 human coprolites that derived from Zones II-V (Mock, 1970, p. 68-69; Pearce, 2016, p. 91). Pearce (2016, p. 97) only looked at botanical remains in coprolites (i.e. seeds), and notes that coprolite analysis only provides a small picture of prehistoric diets as they only represent a few meals from a limited number of days in one human's life. Nevertheless, Pearce's (2016, p. 96) analysis is still beneficial for understanding prehistoric lifeways in Spotten Cave, as it is the first analysis of coprolites in Utah Valley. Pearce also briefly discussed an obsidian sourcing analysis conducted on obsidian toolstone in the cave from Zone III, which shows that 30% of obsidian

came from Mineral Mountain, 30% from Black Rock, 20% from Malad, and 20% from Topaz Mountain (Pearce, 2016, p. 95). Although Mineral Mountain, Black Rock, and Topaz Mountain are not surprising as they are large obsidian sources located in Utah, Malad is located in Idaho several hundred miles from Spotten Cave, suggesting a large mobility range and/or trading network. This, however, is not uncommon for toolstone procurement in the Great Basin (Agardy & Coddling, 2017), but does provide a better snapshot of toolstone procurement and mobility in Utah Valley. Further, additional obsidian sourcing analysis is also currently being conducted at BYU, the results of which are not available at the time of this writing. This research will provide additional insight into the mobility patterns of Spotten Cave's prehistoric people when available (J. Allison, Personal Communication, September 24, 2020).

Pearce (2016, p. 97) reports two coprolite specimens from Zone II that show traces of poverty weed, grasses, and ground cherry; six coprolites specimens from Zone III, in which sunflower, poverty weed, beans, amaranths, knot weed, and ground cherries were present; and two coprolite specimens from Zone IV showing traces of sunflower, cherries, amaranth, grasses, purslane, poverty weed, saltwort, and mint. Zone IV consisted of the most diverse assemblage of botanical remains, and the overall most abundant plant from all 16 coprolites was ground cherries followed by amaranths, however it should be noted that many seeds present in the coprolites were unidentifiable (Pearce, 2016, p. 99). Pearce (2016, p. 101-103) also looks at ethnographic evidence of Numic speaking groups from the Western Great Basin as a basis to hypothesize botanical subsistence patterns among prehistoric people. Paired with ethnographic evidence, the results of the coprolite analysis indicates that Archaic peoples at Spotten Cave used poverty weed medicinally while consuming cherries and grasses for subsistence, Fremont peoples ate ground cherries and sunflower seeds, and Late Prehistoric/Promontory peoples ate

sunflowers, ground cherries, purslane, mint, amaranths, and grasses. However, comparing this data to other Utah Valley sites, it becomes apparent that these are only snapshots of prehistoric diets, and not a holistic evaluation (Pearce, 2016, p. 107)

The most recent research on Spotten Cave's artifacts is being done under the supervision of Jim Allison, a professor at BYU, who conducted radiocarbon analysis on several prehistoric cultigen specimens (corn, beans, squash) from the Fremont occupation of Spotten Cave. These recent radiocarbon dates range from A.D. 907 - 1208 (calibrated) (J. Allison, Personal Communication, April 28, 2020), which are consistent with the Fremont date range in Utah Valley and fall in between Mock's Fremont dates of A.D. 640 - A.D. 1220 (uncalibrated). Additionally, as mentioned above, Jim Allison is also conducting research on the sources of numerous obsidian artifacts from Spotten Cave, the results of which are forthcoming (J. Allison, Personal Communication, Sept. 24, 2020)

Lastly, Simms (2008) was examined in this review to provide a solid archaeological background to the prehistory of the Great Basin, emphasizing Utah and the Fremont in particular. Simms (2008) discusses the environmental context of prehistory, a hugely important factor when studying human behavior, and also provides a general context for each occupational time period: Paleoindian, Early-Late Archaic, Fremont, and Late Prehistoric to European contact. Simms (2008, p. 158) also mentions Spotten Cave specifically, describing that the presence of Utah chub and waterfowl faunal remains in the Middle Archaic levels provides evidence that marshlands were not completely dried up during the Middle Archaic. Simms (2008) provides a modern baseline prehistory to supplement the prehistory at Spotten Cave in order to inform the Archaeological Context (Appendix A) for the site.



Although a considerable amount of research has been conducted on the archaeological assemblage of Spotten Cave, it is clear that more analysis is needed to fully gain all the information the archaeological data has to offer. For instance, lithic analysis of the debitage assemblage can reveal the type of tool processing activities happening at the site throughout time, a pollen analysis on the metates and manos can further reveal the types of plants being processed throughout different occupational periods (beyond what Pierce (2016) has identified), and a perishable analysis of the cordage and raw plant materials can reveal important information about basketry techniques throughout time. Additionally, the questionable stratigraphic integrity of the cave is likely compromising archaeological data. A re-analysis of each Zone should be undertaken, if possible, to tighten up the cultural chronology of the site. This could be done through further excavation of the intact berm at the cave's entrance to provide answers to many of the questions that Mock's 1971 thesis raises about the stratigraphy and cultural occupations of the cave.

## Chapter 6: Supplemental Research of Spotten Cave

### Project Fieldwork

Fieldwork at Spotten Cave was led by me under the authority of Public Lands Policy Coordinating Office Principal Investigator Permit No. 44 along with assistance of three Utah SHPO staff members on September 24, 2020 (see Figure 4, 5, and 6). The site was re-recorded on a Utah Archaeology Site Form and a new GIS boundary was delineated using a Trimble Geo 7X unit which contains sub-meter accuracy after post-PDOP (position of dilution of precision) processing. The interior of the rockshelter was measured and mapped using Spike and Tacklife HD50 laser distance electronic measuring tools and a recorded azimuth from the temporary datum (Datum 2), which was placed at the cave entrance below the berm and dripline (see Figure 7). Elevations of the berm in front of the rockshelter were also recorded in order to analyze the build up of rock and aeolian loess overtime that likely still contains buried archaeological deposits (see Figure 8). Additionally, the location of several historical artifacts and the probable location of the screened back dirt from the 1960's excavation were all recorded (see Figure 9).

Three historical artifacts were identified during fieldwork: H-1, an amethyst glass shard; H-2, a sawed bone; and H-3, an unknown machinery part (see Figure 10). Four fake rock imagery panels were recorded (see Figure 11), and one Fremont pictograph (Panel 1) was photographed, drawn, put through photo enhancement software (iDStretch), and digitized in Adobe Illustrator (see Figure 12). Hundreds of photographs were also taken of the interior and exterior of the rockshelter using a DSLR camera in order to produce a 3D model using photogrammetry software in the future. All maps and figures of the site post-fieldwork were created using ArcMap 10.8.1 and Adobe Illustrator.

**Figure 4***Spotten Cave Site Overview*

**Figure 5**

*Spotten Cave Shelter Entrance*

**Figure 6**

*Spotten Cave Shelter Interior*

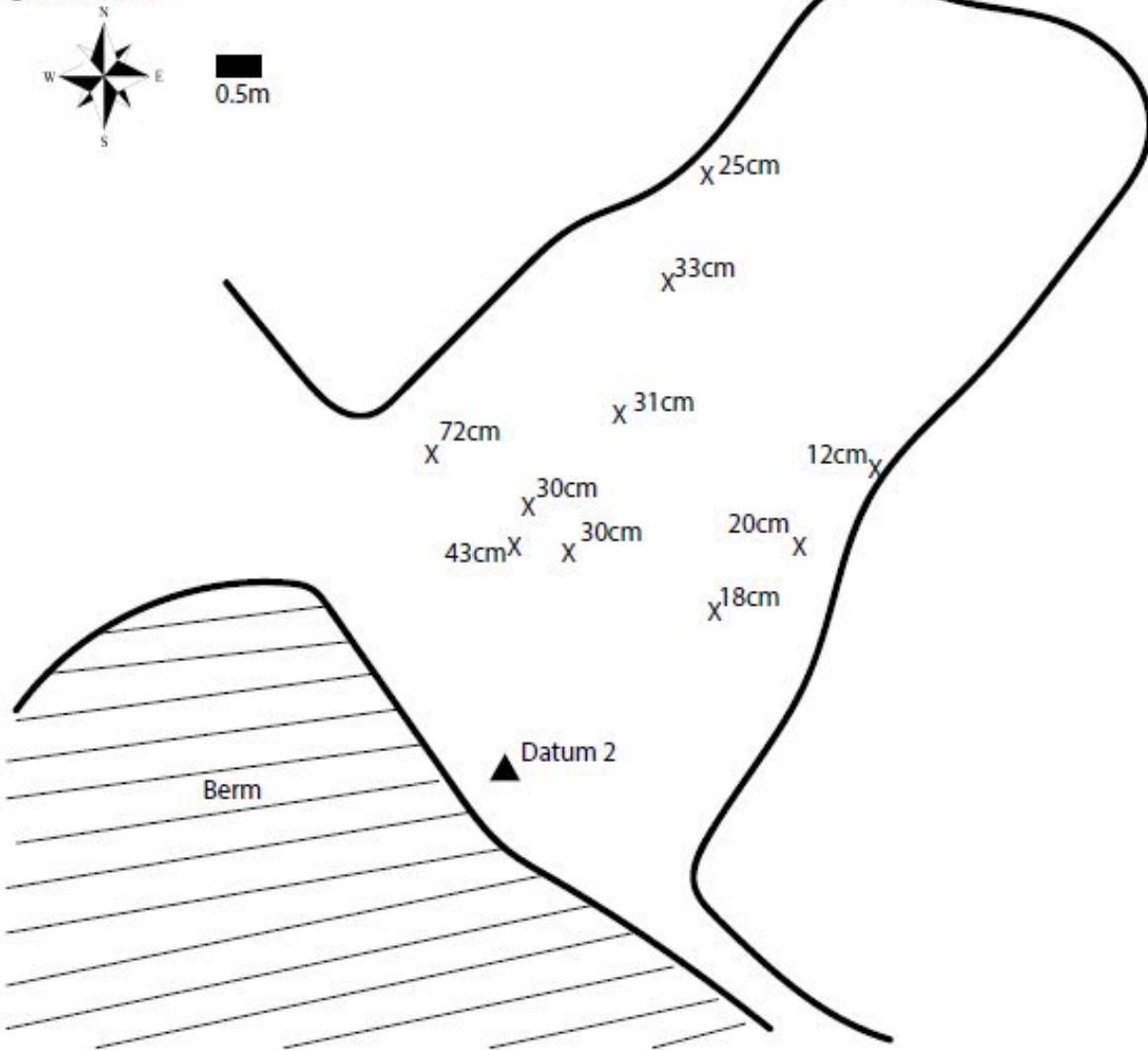


Figure 7

Spotten Cave Shelter Interior Map

**Spotten Cave Site Map - Plan View**

X marks level above datum (interior shelter ground level)



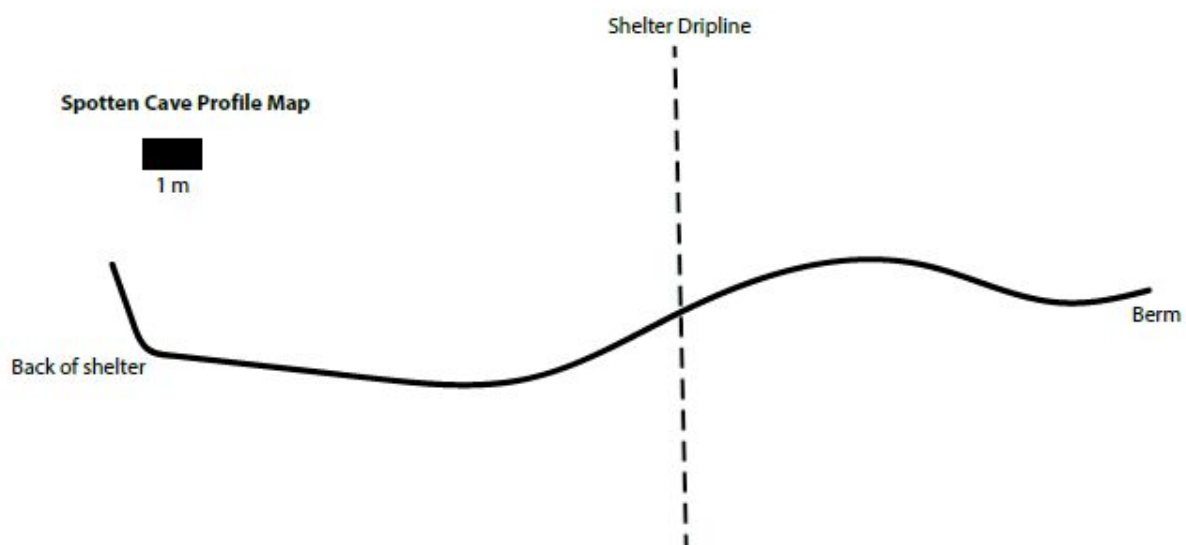
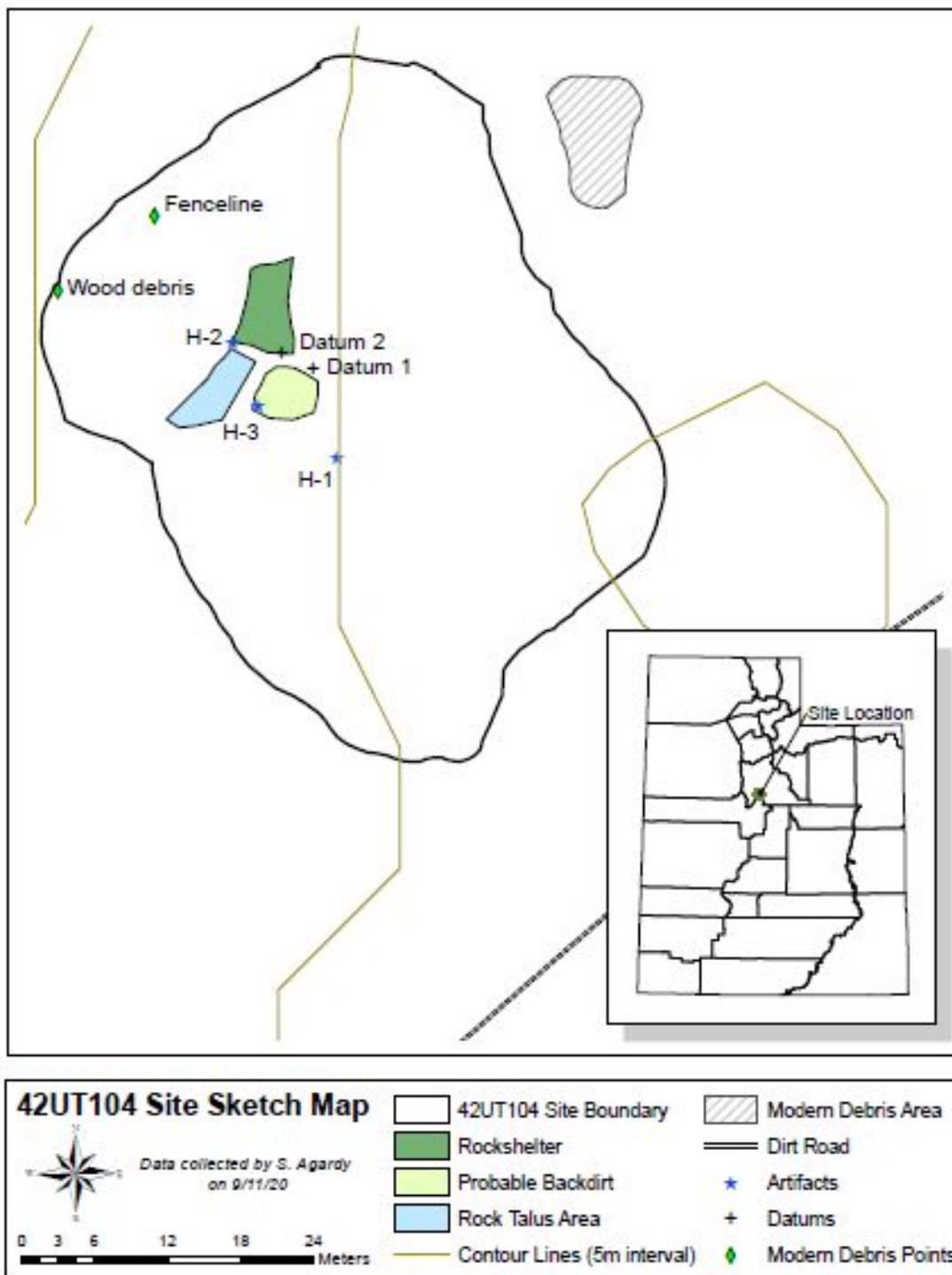
**Figure 8***Spotten Cave Elevation Map*

Figure 9

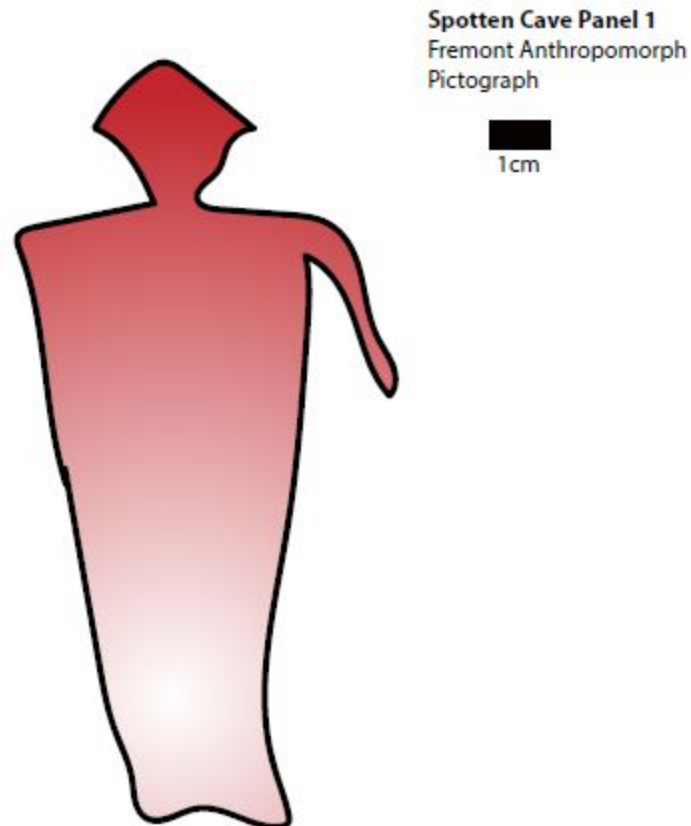
*Spotten Cave Site Sketch Map*

**Figure 10***Historic Artifacts*

*Note.* Left: H-3, Top Right: H-1, Bottom Right: H-2.

**Figure 11***Fake Rock Art Panels*



**Figure 12***Panel 1 Digitization***Project Lab Work**

In addition to fieldwork, basic artifact analysis and photography was also conducted at the BYU Museum of Peoples and Cultures. Artifacts were identified prior to analysis based on the museum's catalog, which did not contain much information beyond object material, basic typology, and probable cultural affiliation. The identified artifacts prior to analysis included

several artifact types from each occupational period at the site in order to capture elements of the material culture over time. During the artifact examination, it became clear that discerning which occupational layers the artifacts derived from was not possible in all circumstances due to a lack of information in the artifact labels and catalog. Many artifacts were also misidentified in the museum's catalog due to cataloging inconsistencies (A. Maughn, Personal Communication, September 24th, 2020). This issue raises questions as to how other researchers, such as Cook, Pearce, and Woods, were able to so clearly discern which Zones each artifact analyzed derived from.

Due to this inconsistency, personal identification was conducted on most specimens in order to better classify the artifacts. It also became clear that the artifact types and counts in the museum collection are vastly different from what is described by Mock in his 1971 thesis. It is hard to discern where the inconsistencies lie here, however they should attempt to be reconciled in the future to ensure that further archaeological research is accurate to the site and Zone.

Lastly, several artifact types organized into occupational time periods to the best of my ability were photographed, including several specimens of varying types from the Mid-Late Archaic periods, Fremont period, Late Prehistoric period, and Historic period (see Figures 3, 4, 7, 10, 11, 12, 13, 15, 17, 19, 20, and 21 in Appendix A). All artifact photos were edited in GIMP 2.1 and the default Microsoft Photos viewer.

### **Site Related Informal Interviews**

Several informal interviews with Spotten Cave's stakeholders were conducted during this project. Correspondence with the landowner was carried throughout the project via email and in-person to discuss the site's archaeology and future. A site visit with the Regional Director of

the Archaeology Conservancy<sup>1</sup> was facilitated, which included a visit to the site (see Figure 13) along with the landowner as well as a tour of selected artifacts at the BYU Museum of Peoples and Cultures. The Regional Director of Archaeology Conservancy shared several details about the organization and logistics for acquired sites. Additionally, during artifact analysis at the BYU Museum of Peoples and Cultures, Dr. Jim Allison was consulted for the current research of the cave (obsidian analysis and recent radiocarbon dates), as well as general information on the site and the validity of many of Mock's interpretations. Finally, I met with the researcher who conducted the projectile point analysis, Aaron Woods, who shared several insights about the cave and its previous archaeological investigations.

### **Figure 13**

#### *Spotten Cave Site Visit*



*Note.* Spotten Cave's landowner and Regional Director of the Archaeology Conservancy in front of the site, taken October 20th, 2020.

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<sup>1</sup> The Archaeology Conservancy is a non-profit conservation organization that acquires archaeological sites from private or public land for long-term preservation.

## Chapter 7: Exploring Interpretation for Spotten Cave

The culmination of this project's research, which answers the main Research Question — “Using Spotten Cave as a case study, how should sites with uncertain futures be interpreted?” — are the interpretive recommendations for Spotten Cave, an archaeological site with an uncertain future. Sites with uncertain futures, especially those without visible architectural components, are more difficult to interpret as public access is not guaranteed or even possible in most circumstances. Sites without visible components also bring their own set of challenges as the archaeology is more obscure to both identify and understand for members of the general public. However, despite these difficulties, archaeologists owe it to the past and the public to interpret significant sites like Spotten Cave regardless of their land ownership and protection status. The more the public understands the past, the easier it is to appreciate, which leads to notions of stewardship in which archaeological sites are protected (Tilden, 1977). Further, as discussed in the section on how the public benefits from archaeology in Chapter 3, there are many advantages to individuals and communities by understanding and being a part of archaeology. Therefore, interpretation of archaeological sites with uncertain futures is beneficial to both the resource and the public.

In order to make interpretive recommendations, I first suggest several themes for the possible future interpretive experiences. Theme is essential to an interpretive experience, therefore it was important to recommend themes for the future interpretation of Spotten Cave in order to more effectively tie together the past and present for modern members of the public. The themes are based on the archaeological evidence at the site, the full context of which can be found in Chapters 5 and 6 and in Appendix A. Secondly, I explore several interpretive possibilities for Spotten Cave, framing many of the options for the public interpretation of the

site based on what is present in existing interpretation explored in Interpretive Literature Review (Chapter 3) and the Interpretive Analysis (Chapter 4). Finally, the recommended themes and possible interpretive options are combined with the three plausible future scenarios of the site to make several interpretive recommendations based on the site's potential future.

### **Recommended Themes**

Theme is a crucial element to an interpretive experience. Although this project does not focus on developing an entire interpretive plan for Spotten Cave, a suggestion of several themes based on the examination of archaeological data is prudent to the future interpretation of the site. Themes provide a main concept to members of the public in which information is presented cohesively (Ham, 2013; White et al. 2005, p. 66). Themes also serve an important role in connecting the archaeological data, or tangible components, to bigger concepts and the understanding of archaeological data (White et al. 2005, p. 66). Five themes are suggested from the examination of the archaeological research as well as project fieldwork, lab work, and informal interviews:

1. Use of the Spotten Cave Landscape Throughout Time. Spotten Cave served as a temporary shelter or “stop-over site” for Archaic through Historic peoples, a time span of approximately 6,700 years. The site is still frequented by modern peoples for various uses such as community clean-up projects, filming for religious movies, and as a significant point of interest for Utah Archaeologists (see *Spotten Cave Today* in Appendix A). This theme highlights the importance of Spotten Cave to human mobility and activities throughout time, and could be branded as Spotten Cave: The Stop-Over Site.

2. Subsistence of Local Resources Throughout Time. Several food sources identified through faunal/floral analysis and coprolite analysis reveals that locally sourced items, such as cherries, fish, deer, mint, and bison, were all consumed at Spotten Cave in prehistory (see Chapter 5 and Appendix A). These are all items that are still sourced locally in Utah and consumed by Utah's modern residents. Specifically, the large presence of ground cherries derived from the coprolite analysis presents an interesting connection of past and present Utahns, as the area around Spotten Cave is a large producer of domesticated cherries today. In fact, the land parcel closest to the site is a cherry orchard, which shows a direct connection of subsistence practices throughout a span of thousands of years.
3. Spotten Cave as an Important Geological Landmark in Utah Valley. The site is located on the gentle slopes of Long Ridge right along a transportation corridor, which is easily visible and accessible. The site as a geological landmark continues to draw people to the site today, which is unfortunately evidenced by instances of graffiti and looting. The geology and topography of the site in addition to its central location in Utah Valley has made Spotten Cave a place that people have been drawn to throughout time. The stewardship of cultural and natural resources can tie into this theme, specifically discussion on how vandalism within the site endangers the natural and cultural environment. For example, Panel 1, the Fremont pictograph, is extremely faint (see Figure 10 and Figure 12 in Appendix A). This may be due to past attempts to remove graffiti from the shelter's interior (see *Spotten Cave Today* in Appendix A). The story of Panel 1 shows that vandalism is not only costly to resource stakeholders, it can also cause irreparable damage to cultural resources.

4. Continued Native American Traditions. This theme focuses on Native American connection(s) to the site and any intangible components the site bears for indigenous peoples. A theme focusing on Native American history and connection to the site is absolutely necessary for any future public interpretation of the site. However, as discussed in Chapter 3, the Interpretive Literature Review, it is essential that the development of this theme happens in collaboration with affiliated Native American tribes with a genuine effort. Collaboration between Native American tribes and heritage professionals is the only way to decrease inequity in access to and management of their heritage (Colwell-Chanthaphonh & Ferguson, 2008, pp. 5, 7). With the inclusion of a Native American theme, as well as Native American involvement in several of the interpretive possibilities and recommendations, the Spotten Cave Interpretive Project has the potential to make strides towards improving of Native American involvement in their own Utah heritage.
5. The Archaeological Process at Spotten Cave. The excavation and subsequent artifact analysis at Spotten Cave were not without challenges (see Chapter 5, Archaeological Literature Review, and *A Note About Provenance Integrity* in Appendix A), which provide a great opportunity to discuss the scientific, archaeological process with the public. Issues faced in the 1960's excavation will be discussed openly with the audience, similar to how the professionals at Hudson-Meng discuss the archaeological process, including its challenges, with visitors (Todd & Rapson, 2016). The underlying message of this theme will be that archaeological knowledge is a process, and Spotten Cave provides a key part of the puzzle for early humans in Utah Valley. However, much of what is known about Spotten Cave is a connection of various lines of evidence from

many archaeological sites as well as traditional knowledge of affiliated Native American tribes. The archaeological process is dynamic, and future visitors could contribute to the discovery or connection of new archaeological evidence if they choose to get involved with the protection of archaeology (site stewardship), or go into the field of professional/academic archaeology.

### **Interpretive Possibilities**

This section includes several interpretive possibilities based on what was analyzed in the literature review. As the Interpretive Literature Review (Chapter 3) and Interpretive Analysis (Chapter 4) were organized into onsite and offsite strategies, both analog and digital, so too are the possible interpretive methods for Spotten Cave. Each interpretive possibility listed here is then analyzed through the lens of each future scenario in the subsequent section (*Future Scenarios & Interpretive Recommendations*). Additionally, it should be mentioned that Erin Haycock, intern at the Utah SHPO, has developed a 7th grade school curriculum packet on Spotten Cave that hits several core standards for public education in Utah, however it has not yet been finalized or used in the classroom. The curriculum packet includes a presentation for the kids and a PDF guide produced for teachers on how to implement the lesson. Some interpretive possibilities listed below could work in conjunction with the existent curriculum development project for the site.

#### ***Onsite Interpretive Possibilities***

##### *Analog Methods (Non-digital, in-person methods)*

1. Spotten Cave Day. An archaeology day encompassing several events related to archaeology, preferably held in conjunction with participatory Native American tribes



(Missouri State Parks, 2019; NPS, 2020a). Spotten Cave Day could also include other significant prehistoric sites in the area, such as Woodard Mounds (42UT102) or Wolf Village (42UT273). It could include several events such as short presentations, cooking and eating prehistoric food dishes (a modern take on prehistoric foods informed by the coprolite analysis), and prehistoric tool making among others (Missouri State Parks, 2019). All activities would be planned in collaboration with Native American members and only what is deemed appropriate by the tribes will be used (meaning some of the initial activity recommendations may not be implemented) (Colwell-Chanthaphonh & Ferguson, 2008; Walker, 2016). Spotten Cave Day could include all five themes along with participation from the audience, heritage professionals, and affiliated Native American tribes.

2. Guided Tours. Tours guided by professional archaeologists, interpreters, or site stewards as a primary way of engaging the public. Tours would focus on the archaeology of the site, as well as components of the natural flora and fauna found in the site area (Brumley, & Stallcop, 2016; Johnson, 2016; Mazel, 2008; NPS, 2020a; NPS, 2020b; Oregon State Parks, 2020; Rood, 2020; Tennessee State Parks, 2020; White et al., 2005). The tour route would start at the parking lot, walk up to the rockshelter, then continue Northeast up the short slope to the top of the rockshelter where a spectacular 360° view of the surrounding area can be seen. At present, there is no established trail for this route, so a small and subtle trail (one that does not ruin the integrity of the site) is recommended. Within this interpretive possibility, several themes would be discussed, including Themes 1-3 and 5. If approved with affiliated tribes prior to tours, Theme 4 (Continued Native

American Traditions) could also be included, otherwise Theme 4 should be reserved for other interpretive possibilities where tribes can be more involved.

3. Guide Booklet/Pamphlet. A small guide booklet or pamphlet developed for the site to supplement guided tours (Mazel, 2008). The booklet/pamphlet should be written at different cognitive levels (i.e. one for adults and one for children), and also translated into different languages that are predominantly spoken in Utah, such as Spanish. The guide booklet could also contain a list of resources on how to learn more about Spotten Cave or get involved with archaeology in Utah, including becoming a Site Steward with the Utah Cultural Site Stewardship Program (UCSS)<sup>2</sup>. It would be handed out at the beginning of the tour as an additional resource guide and a take-home document from the tour. Guide booklets/pamphlet would hit on Themes 1-4 (with the content for Theme 4, Continued Native American Traditions, developed in collaboration with affiliated tribes), and possibly Theme 5 on the discussion of the archaeological process. However, to best convey information, Theme 5 wouldn't be an emphasized theme in the guide booklet/pamphlet.
4. Local School Field Trips. Guided school field trips to the site as a way to engage younger generations in archaeology (Brumley & Stallcop, 2016; Johnson, 2016; Reynolds & Adams, 2014; Walker, 2016). School field trips would include a guided tour, and be led in conjunction with the 7th grade school curriculum already developed for the site. The students would get an in-class module on the site, which could be followed by a site visit with a guided tour. School field trips could also include tribal youth from school systems on reservation lands in Utah. Local school field trips would focus on Theme 2:

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<sup>2</sup> The Utah Cultural Site Stewardship Program is housed at the Utah SHPO and available to all members of the public.

Subsistence of Local Resources Throughout Time, Theme 4: Continued Native American Traditions, and Theme 5: The Archaeological Process at Spotten Cave.

5. Community Participant Excavation. Excavation conducted by the Utah SHPO and/or BYU Archaeology Department. The excavation could be open to members of the local community to visit and participate in, which would provide opportunities for community building and engagement as well as encouraging stewardship among the current residents of the area (Austin, 2011; Wright, 2014). Affiliated Native American tribes should also be invited to participate in the excavation. The excavation would focus primarily on Theme 5, the Archaeological Process of Spotten Cave, but could also include Theme 4 on Continued Native American Traditions based on the involvement and/or participation by affiliated tribes.
6. Commemorative Plaque or Outdoor Memorial Exhibit. Physical signs or sculptures placed at the Spotten Cave location, or nearby, if the site is destroyed for development (Sacred Sites International Foundation, n.d.). This interpretive possibility would only be appropriate if developed in collaboration with or by affiliated tribes and could specifically emphasize the site's significance to descent communities (Theme 4). Small grants or fundraising opportunities may be necessary to secure funding for the plaque or memorial.

*Digital Methods (Technology-focused methods)*

1. Digital Enhancement of the Pictograph Panel. A URL link or QR code located in the guide booklet/pamphlet or on the Spotten Cave Website (see below) to the Dstretch website (Amakawa & Westin, 2018; Mohammed-Amin, 2012; Pierdicca et al., 2015). Dstretch is a digital enhancement software where people can experiment with digital

enhancement technology to enhance the Fremont anthropomorphic pictograph panel as it is barely visible to the naked eye. The website version of Dstretch is free and open source, however there is also an option for a phone app download (this option does cost money). This interpretive possibility would focus on Theme 5: Archaeological Process of Spotten Cave, specifically how technology plays a role in discovering new, archaeological information as well as and Theme 3: Spotten Cave as an Important Geological Landmark and the discussion of stewardship.

### ***Offsite Interpretive Possibilities***

#### *Analog Methods (Non-digital, in-person methods)*

1. Community Presentation in Goshen or Santaquin: A presentation to the local communities that live around Spotten Cave, educating about the archaeological heritage in their area (Austin, 2011; Carter, 2017; Wright, 2014). The community presentation would likely be presented by professional archaeologists (such as members of the Utah SHPO, professors at Brigham Young University, or former Spotten Cave researchers), as a free and fun event open to the public. Aaron Woods, who conducted the projectile point analysis on Spotten Cave, conducted a community lecture in Goshen in 2006, indicating the city may be open to another lecture sometime in the future (see *Spotten Cave Today* in Appendix A). The presentation would include a history of the site, but should be photo heavy with historical photos of the excavation and photos of the artifacts housed at the BYU Museum of Peoples and Cultures. The presentation flier should be shared on a variety of community boards for Goshen and Santaquin, such as NextDoor phone app or local Facebook groups. The presentation would focus on Themes 1-3 and 5.

2. Spotten Cave Exhibit: An exhibit on the Spotten Cave at the BYU Museum of Peoples and Cultures or the Santaquin Chieftain Museum with several exhibit displays highlighting the site's material culture (Brumley & Stallcop, 2016; Fisher & Roll, 2016; Johnson, 2016; Mazel, 2008; NPS, 2020a; White et al. 2005). The Spotten Cave collection consists of 50 boxes of material culture curated at the BYU Museum of Peoples and Cultures, including many items that would make a great museum exhibit (see Figures 3, 4, 7, 10, 11, 12, 13, 15, 17, 19, 20, 21 in Appendix A). The BYU Museum of Peoples and Cultures did have some Spotten Cave artifacts temporarily on exhibit in the 1990s (Aaron Woods, Personal Communication, November 5, 2020), however there is further potential for a public display. Both the BYU Museum of Peoples and Cultures and Santaquin Chieftain Museum have an exhibit space to make this possible. One exhibit possibility is a display that focuses on tool type, such as grinding stones, projectile points, bone/shell beads, fire board, etc. which includes a discussion on how these items were used in everyday life in prehistory. This could connect well to Theme 1 (Use of the Spotten Cave Landscape Throughout Time) and Theme 2 (Subsistence at Spotten Cave Throughout Time). If possible, any exhibit on Spotten Cave should receive tribal input (at minimum) to ensure the displays are culturally sensitive and appropriate. This would also open Theme 4, Continued Native American Traditions, as a possible focus depending on the level of tribal involvement. The possibility would need the support from the BYU Museum of Peoples and Cultures, and likely outside funding opportunities gained through grants or other fundraisers in order to implement.

*Digital Methods (Technology-based methods)*

1. Spotten Cave Website: An online, publicly accessible website where information on the site is available. The website could be a central hub to post interpretive activities happening at the cave, such as the Spotten Cave Day or guided tours. The Spotten Cave Website would hit on all five themes and be broadly accessible, but would exist on a stand-alone website that could be advertised or linked from the Utah SHPO's website, or the websites of additional archaeological organizations such as the Archaeological Conservancy, the Utah Professional Archaeological Council, or the Utah Statewide Archaeological Society. There are several possible specific elements to consider inclusion on the website:
  - a. 3D model of the site (Lindsay, 2017; Ministère de la Culture, 2020; University of South Florida Libraries, 2016). During fieldwork for this project, hundreds of photos were taken in order to produce a 3D model of the site in the future. The 3D model, once completed, would be a great interactive element for the website. It could also be used to explore Theme 3 and also serve as important data if the site is destroyed in the future.
  - b. Documentary style short video (Lindsay, 2017; Ministère de la Culture, 2020). A 5-10 minute video of archaeologists, tribal members, and other stakeholders discussing the site with overview shots and/or drone footage as well as shown photos of the Spotten Cave artifacts.
  - c. Highlight on Native American traditions. This would be solely developed in collaboration with Tribes and focus on Theme 4: Continued Native American Traditions.

2. Utah Division of State History (UDSH) Blog Post: A blog post on Spotten Cave, its archaeology, and its history on the Utah State History Main Blog (<https://history.utah.gov/category/history-main-blog/>) or the Utah Public Archaeology Network Blog (<https://history.utah.gov/category/upan-blog/>). The blog post can also be shared on the Utah SHPO's social media accounts to reach a broader audience, and should also be advertised on the NextDoor app or local Facebook groups for Goshen and Santaquin. The blog post would hit on Themes 1-3.
3. Local News Story: A story about Spotten Cave and privately owned archaeological sites on a local news network, either video or article (Johnson, 2016). Both KSL and Fox13 have covered stories about archaeological sites in the past, so they could be good options for covering the story of Spotten Cave. The local news story would hit on Theme 1, 3, and 4, specifically focusing on the stewardship discussion posed in Theme 3 about Spotten Cave as an important geological landmark.

### **Future Scenarios for Spotten Cave & Recommended Interpretive Methods**

There are three potential scenarios for the future of Spotten Cave, and a description of what each scenario could entail is warranted in order to better understand how each interpretive possibility could work with the site's future scenarios. Each scenario is then paired with the interpretive possibilities listed above based on plausibility, sustainability, and suitability in order to make recommendations for the future public interpretation of Spotten Cave. In addition to the recommendations listed below, see Table 2 for a chart comparing each interpretive possibility, recommended theme, and all three scenarios.

These recommendations would be made possible with the financial support from the Utah SHPO and/or Archaeological Conservancy. However, money for interpretive options could also

come from small grants or fundraising events during other archaeological events in Utah (such as Utah Archaeology & Historic Preservation Month in May). It is important to recognize that sites with uncertain futures such as Spotten Cave must have a professional dedicated to and advocating for the site (such as myself for Spotten Cave) in order to secure funding (if needed), conduct tribal collaboration, and implement interpretive methods at the site. If sites with uncertain futures do not have a dedicated individual or group committed to its interpretation, I recommend reaching out to the appropriate SHPO or to a local historical society in order to gain the resources and support needed to carry out interpretation for archaeological sites.

### ***Scenario 1***

Scenario 1 sees Spotten Cave donated to the Archaeology Conservancy and made a designated Preserve. If the site becomes a Preserve, a Preserve Site Steward will be chosen. The Site Steward is a volunteer that agrees to monitor the site and could help facilitate guided tours. A Management Committee as well as Management Plan would be created for Spotten Cave. The Committee would be made up of various site stakeholders, such as the current and/or past landowners, adjacent landowners, a member from the Utah SHPO, and representatives from affiliated Native American tribes (J. Walker, Personal Communication, October 28, 2020). The site would be fenced off and not openly accessible to the public due to liability reasons, however guided tours and other supervised events could be an available option (J. Walker, Personal Communication, October 20, 2020). Additionally, the Archaeological Conservancy allows for researchers to conduct archaeological investigations at designated Preserves, meaning the berm in front of the rockshelter could be excavated to test for subsurface deposits.

This scenario would allow for all four categories of possible interpretive methods: onsite analog, onsite digital, offsite analog, and offsite digital. Because of the wide-range of



possibilities for Scenario 1, I recommend several methods for interpretation in order to capitalize on public, professional, and tribal education involvement at the site:

- Recommendation 1: Guided tours, including local school field trips, along with the guide booklet/pamphlet. The guided tours and school field trips would be led by the Site Steward for the Archaeological Conservancy, UCSS, or someone from the Utah SHPO. The guide booklet/pamphlet would also likely be developed by the same organizations, however it is recommended that someone who is dedicated to long-term tribal relationships coordinate tribal collaboration for developing the guide booklet's section on Continued Native American Traditions (Theme 4). The guide booklet/pamphlet should be written at both an adult and children levels with the child-focus document given out at school field trips. Additionally, whichever party is responsible for the guide booklet/pamphlet should ensure that the document is revisited periodically to ensure all information is continually up to date for people receiving the document on guided tours.
- Recommendation 2: Community excavation in conjunction with a local news story and a subsequent local community lecture on the excavation findings. The community excavation could include various stakeholders such as local community members, landowners, professionals, and affiliated tribes. The excavation poses a great opportunity for a local news story aired on a broadcasting network. Fox13 News and KSL News have both covered archaeological stories for the Utah SHPO in the past, and are the recommended networks to reach out to about a story.

- Recommendation 3: Spotten Cave website with the Dstretch digital enhancement exercise (available on the website) in conjunction with a Utah Division of State History (UDSH) blog post. To increase viewership, the website and blog post would be advertised on the Utah SHPO's website and social media accounts as well as the Archaeological Conservancy's website and social media accounts. In order to keep the website updated and sustainable for the long-term, the site would be maintained by a Site Steward for the Archaeology Conservancy, a Site Steward for the UCSS program, or a staff member at the Utah SHPO (such as myself).

Refer to Table 2 for a comparison on interpretive recommendations and themes for this scenario.

### ***Scenario 2***

Scenario 2 would include if Spotten Cave remains in the hands of private landowners with no change to its status or management. The landowner(s) will not destroy the site, but may or may not take proactive steps towards public interpretation. For the purposes of simplicity, it is assumed that members of the public would not be allowed onsite in this scenario, meaning only the offsite strategies would be feasible for public interpretation. The permission of the landowner(s) would also be necessary for the development of the interpretation. There are two recommendations for public interpretation in Scenario 2:

- Recommendation 1: Spotten Cave exhibit along with a community presentation, ideally in the same space. The exhibit would likely not be permanent, but could be available for a period of time where multiple community lectures are given by professional archaeologists in the exhibition space. The presentation would be followed by a question

and answer period by the audience and a free form exploration of the artifacts on display with professionals available to answer questions.

- Recommendation 2: If approved by the landowner, Spotten Cave website and UDSH blog post. The website and blog post could both be advertised on the Utah SHPO's social media accounts as well as on the websites and/or social media of local Utah Archaeology societies such as the Utah Professional Archaeological Council and Utah Statewide Archaeological Society. The website would be maintained by staff members of the Utah SHPO (such as myself), or a Site Steward for the USSC Program.

As with Scenario 1, refer to Table 2 for a comparison on interpretive recommendations and themes for Scenario 2.

### ***Scenario 3***

In Scenario 3, Spotten Cave is destroyed to make way for land development. Although the most unlikely scenario, it is a possibility for the site (and many other sites with uncertain futures). There is currently a residential development planned for another section of nearby land, and subdivision sprawl could eventually take over Spotten Cave. The site is also located near a main highway, so other types of development may also threaten the site in the future. Interpretive methods for this scenario encompass offsite strategies, with a possible commemorative plaque placed at the site location if feasible. There are two recommendations for Scenario 3:

- Recommendation 1: Spotten Cave website with an emphasis on the 3D model, historical photos of the excavation, and artifact photos. As with the other scenarios, the website would be advertised on the Utah SHPO's website and social media account, and could be maintained by a Site Steward of the UCSS Program.

- Recommendation 2: Commemorative plaque or outside exhibit placed at, or closest location to, the former site location. This would be developed mostly by affiliated tribes with the logistical and financial support from the Utah SHPO, BYU, or other interested organization. A fundraising effort is suggested for this recommendation in order to make a commemorative plaque or outside exhibit feasible.

See Table 2 for a comparison on interpretive recommendations and themes for Scenario 3.

**Table 2**

*Interpretive Recommendations Chart*

Scenarios	Scenario 1	Scenario 2	Scenario 3
<b>Recommended Interpretive Methods</b>			
<b>Spotten Cave Day</b>	YES: Themes 1-5	NO	NO
<b>Guided Tours</b>	YES: Themes 1-3, 5 (with a Theme 4 as a possibility)	NO	NO
<b>Guide Booklet/Pamphlet</b>	YES: Themes 1-4	NO	NO
<b>Local School Field Trips</b>	YES: Themes 2, 4, 5	NO	NO
<b>Community Excavation</b>	YES: Theme 5 (with Theme 4 as a possibility)	NO	NO
<b>Commemorative Plaque/Outdoor Exhibit</b>	NO	NO	YES: Theme 4
<b>Interactive Pictograph Panel Digital Enhancement</b>	YES: Theme 5	NO	NO
<b>Goshen/Santaquin Community Presentation</b>	YES: Theme 1-3, 5	YES: Theme 1-3, 5	NO
<b>Spotten Cave Exhibit</b>	NO	YES: Theme 1-2 (with Theme 4 as a possibility)	NO
<b>Spotten Cave Website</b>	YES: Themes 1-5	YES: Themes 1-5	YES: Themes 1-5
<b>UDSH Blog Post</b>	YES: Themes 1-3	YES: Themes 1-3	NO
<b>Local News Story</b>	YES: Themes 1, 3, 4	NO	NO
<b>Key</b>			
Onsite Analog			
Onsite Digital			
Offsite Analog			
Offsite Digital			

*Note.* Recommendations for Scenarios 1-3.

## Conclusion

The above recommendations for Spotten Cave are just the first step in a long process of developing interpretation for the site. The interpretive recommendations should be implemented

to the best extent possible alongside tribal collaboration, involvement, and participation.

Although the onsite interpretation methods cannot be carried out unless the site is donated to the Archaeological Conservancy or other non-profit organization, the offsite recommendations will still achieve the goal of interpreting the significant site to the public more broadly than past efforts (see *Spotten Cave Today* in Appendix A).

The end goal of the public interpretation of Spotten Cave is stewardship, where it is hoped that members of the local community and other members of Utah's public will achieve an understanding and appreciation for archaeological resources, ultimately increasing the stewardship and protection of archaeology in the state. If notions of stewardship, which can be loosely defined as an ethical responsibility to care for and protect cultural resources, are a result of the public interpretation of Spotten Cave, it could have significant implications for the protection of the site as well as for other publicly and privately owned archaeological sites in Utah. There are over 100,000 recorded sites in Utah in addition to many more unrecorded sites, many of which are in need of monitoring and protection from human and natural activities.

In addition to stewardship, it is hoped that people who experience the public interpretation of Spotten Cave will gain perspectives on the history of the human species and feel a greater connection to the past, as our past has made us who we are today and holds key information into what our future could be. The recommended themes will be crucial to connecting past and present people, specifically the themes on food consumption of local resources, as well as the site as an important geological landmark. Theme 4 on Continued Native American Traditions could help the public see the significance of Native American archaeological sites to modern indigenous descendant communities, further increasing notions of

stewardship and protection by the public. The nearly 6,700 years of history that Spotten Cave holds is a powerful tool that both archaeology and members of the public benefit from.

I had the unique opportunity to be one of a few archaeologists to visit the site since it was excavated by James Mock over 50 years ago, and the site immediately spoke to me as a Utahn. Although I am not a member of the indigenous descendant community, I still feel a significant connection to the site and immediately knew that I had the knowledge and tools to do the site justice in relation to cleaning up the archaeological research and exploring ways in which the site could best be interpreted to the public. I hope other archaeologists or interpreters who are facing similar situations with significant sites with uncertain futures look to my research as a guide and tool in which to best utilize important information about the past in order to increase archaeological stewardship and enhance the knowledge of history by members of the public.

### **Acknowledgements**

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## Appendix A: Archaeological/Cultural Context of Spotten Cave

### Site Background and Excavation

Spotten Cave (42UT104) is currently the oldest known site in Utah County with periodic human occupation from the Middle Archaic to Historic Periods. The site has been subject to various archaeological investigations in the past 60 years, and still remains to be one of the most significant sites in Utah County. Radiocarbon dates from the site range from 6733 - 6240 B.P. to 874 - 610 B.P. (approximately Middle Archaic - Fremont, see Table 1 for a full list of calibrated radiocarbon dates), but artifacts show a distinct Late Prehistoric and Historical use of the site in addition to early prehistory.

**Table 1**

#### *Radiocarbon Dates of Spotten Cave*

Zone	Radiocarbon Date (B.P.)	2-Sigma Calibrated Date	Years Before Present (B.P.) <sup>3</sup>	Time Period	Source
I	5580 ± 120	4713 - 4220 B.C.	6733 - 6240 B.P.	Middle Archaic	Woods (2004) Calibrated from Mock (1971), IntCa98 (Stuiver et al. 1998)
I	4640 ± 120	3652 - 3076 B.C.	5672 - 5096 B.P.	Middle Archaic	Woods (2004) Calibrated from Mock (1971), IntCa98 (Stuiver et al. 1998)
I	4200 ± 120	3099 - 2462 B.C.	5119 - 4482 B.P.	Middle Archaic	Woods (2004) Calibrated from Mock (1971), IntCa98 (Stuiver et al. 1998)
II	3600 ± 110	2347 - 1740 B.C.	4367 - 3760 B.P.	Middle Archaic	Woods (2004) Calibrated from Mock (1971), IntCa98 (Stuiver et al. 1998)
II	2100 ± 110	383 B.C. - A.D. 68	2403 - 1952 B.P.	Late Archaic	Woods (2004) Calibrated from Mock (1971), IntCa98 (Stuiver et al. 1998)
III	1310 ± 90	A.D. 596 - 898	1424 - 1122 B.P.	Fremont	Woods (2004) Calibrated from

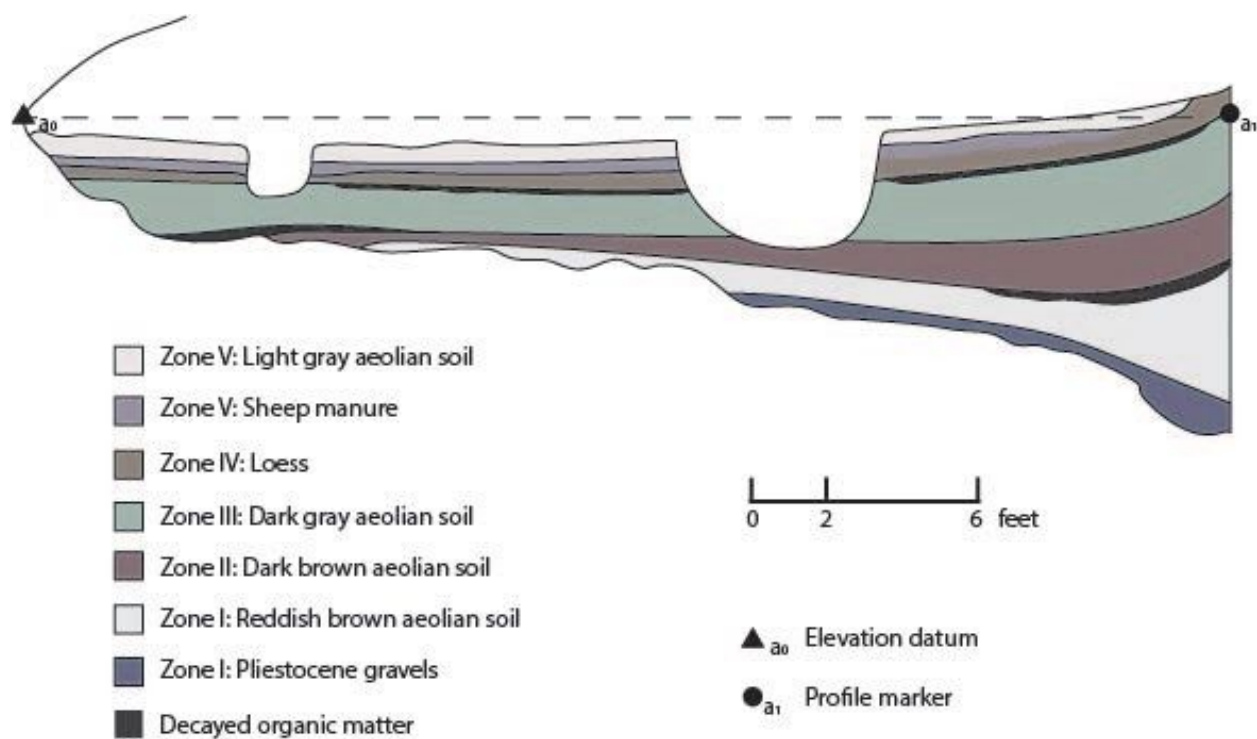
<sup>3</sup> B.P. dates calculated from calendar year 2020.



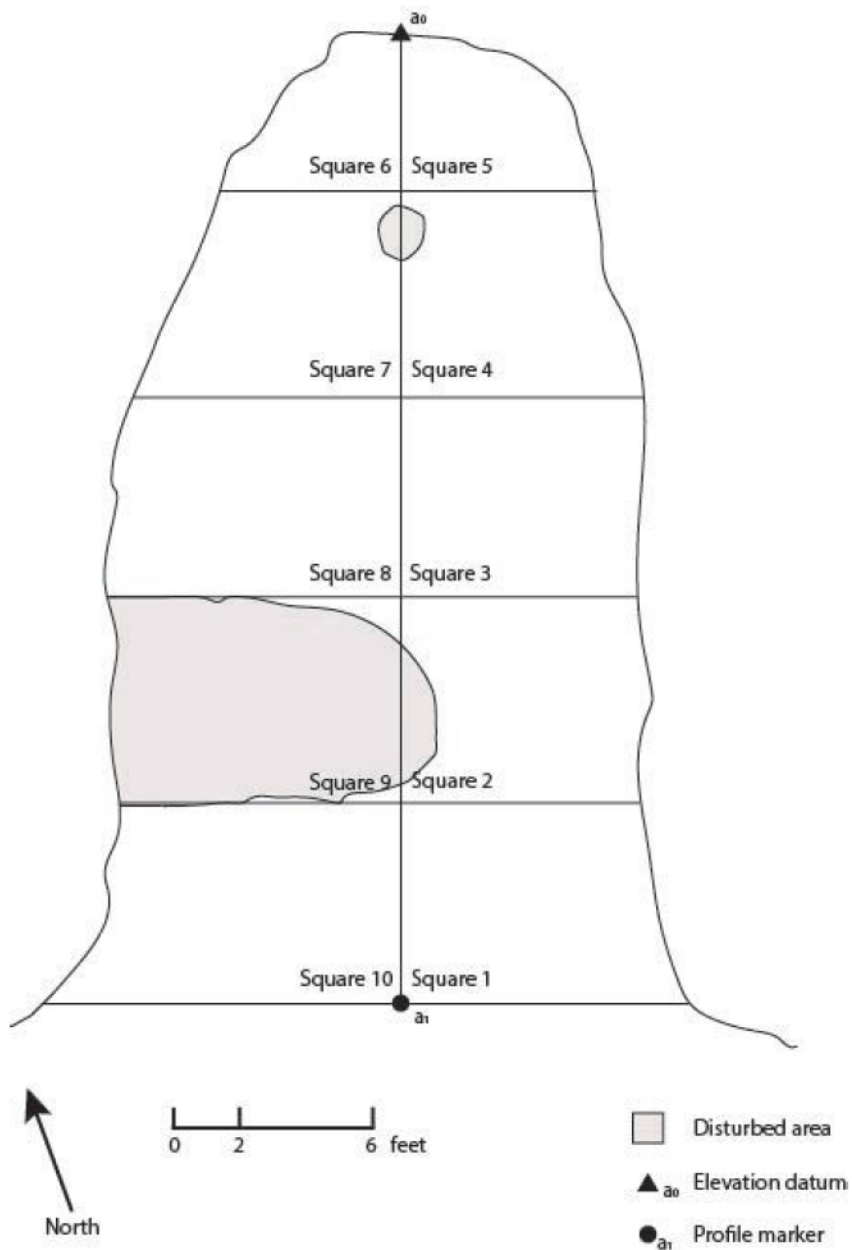
					Mock (1971), IntCa98 (Stuiver et al. 1998)
III	1040 ± 30	A.D. 907 - 1028	1113 - 992 B.P.	Fremont	Allison Unpublished (Personal Communication, 2020)
III	1020 ± 30	A.D. 969-1120	1051 - 900 B.P.	Fremont	Allison Unpublished (Personal Communication, 2020)
III	900 ± 30	A.D. 1040 - 1208	980 - 812 B.P.	Fremont	Allison Unpublished (Personal Communication, 2020)
III	900 ± 30	A.D. 1040 - 1208	980 - 812 B.P.	Fremont	Allison Unpublished (Personal Communication, 2020)
III	730 ± 90	A.D. 1146 - 1410	874 - 610 B.P.	Fremont	Woods (2004) Calibrated from Mock (1971)

*Note.* Table adopted from Woods (2004) and Jim Allison, 2020, Personal Communication.

Most of the archaeological data on Spotten Cave comes from the 1960's excavation conducted by James Mock of the Brigham Young University's (BYU) Archaeology Department (see Figures 1 and 2 for digitized sitemaps from original excavation), in conjunction with several subsequent studies on the site's artifacts, including faunal and floral analysis (Cook, 1980), ceramic analysis (Forsyth, 1986), projectile point analysis (Woods, 2004), and coprolite analysis (Pearce, 2016). It is important to note that the stratigraphy during Mock's excavation was compromised by natural and human caused bioturbation activities, which has led to some inaccuracies in the archaeological data (see *A Note About Provenance Integrity*).

**Figure 1***Depositional Profile Map of Spotten Cave*

*Note.* Profile map adapted from Mock (1971) and created by Elizabeth Hora in Adobe Illustrator.

**Figure 2***Plan Map of Spotten Cave*

*Note.* Plan map adapted from Mock (1971) and figure created by Elizabeth Hora in Adobe Illustrator. Please note this map is not necessarily accurate compared to the shelter interior map created in 2020 (see Figure 7 in Chapter 6).

## **Site Cultural Chronology**

### ***Paleoindian Period (~15,000 - 9,000 B.P.)***

The Paleoindian period in American history is far broader than Spotten Cave or Utah Valley; Paleoindians represented the first humans on the American continent, turning the continent's landscape into an anthropogenic one for the first time. Humans at this time were rapidly settled across the continent, albeit in low population densities, and were highly mobile hunter-gatherers (Janetski, 2001). Archaeologists term Paleoindians as “subsistence generalists”, who took advantage of both small and large game as well as plant resources with a small and mobile tool kit (Simms, 2008, p. 110). The Paleoindian period is largely characterized by the presence of stemmed, fluted, or lanceolate projectile point typology (Simms, 2008, p. 110). Evidence of Paleoindian occupation of modern-day Utah Valley is scant (Janetski, 2001) and there is no evidence of Paleoindian people at Spotten Cave.

Although Spotten Cave doesn't have a definite Paleoindian occupation, one probable Paleoindian point was excavated by Mock in Zone III, the Fremont cultural zone. It is the opinion of two subsequent researchers — Janetski (2001) and Woods (2004) — that the point was redeposited in the cave by Fremont people (see Figure 3). This shows the likely reuse of Paleoindian stone technology by prehistoric groups thousands of years later, indicating awareness of past groups and the recycling of stone tools by prehistoric peoples in Utah.

**Figure 3**

*MPC Catalog# 1988.055.00064.001, Probable Paleoindian Point*



*Note.* This Paleoindian projectile point is an unknown projectile point type due to the missing base, but has a distinct oblique parallel flaking pattern indicative of Paleoindian point styles and most closely resembles an Agate Basin point (Janetski, 2001, p. 20). The top section of the point is currently glued together. Evidence of potlidding is present on the proximal section above the medial fracture, indicating the toolstone was deliberately heat treated or the tool was subjected to fire unintentionally.

Mock (1971, p. 12) did derive one radiocarbon date that predates the human occupation of the cave, which is  $10,450 \pm 180$  B.C. (uncalibrated). Several Pleistocene shells were excavated from below Zone I, which were likely deposited by the Provo level of Lake Bonneville (see Figure 4).

**Figure 4***Pleistocene shells*

*Note.* Pleistocene shells were excavated by Mock in a sterile Pleistocene layer deposited by the Provo Level of Lake Bonneville.

***Archaic Period (9,000 - 1,400 B.P.)******Early Archaic (~9,000 - 7,000 B.P.)***

The Early Archaic in Utah represented a change in human behavior from the initial expansion into and colonization of the American continent to a more geographically “tethered” lifeway, most notably marked by the intensification of food production reflected in the archaeological record by the increased use of grinding stones (i.e. manos and metates) and coiled basketry (Jennings, 1978; Simms, 2008, p. 142). There is no known Early Archaic occupation of Spotten Cave based on the radiocarbon dates taken by Mock. The earliest radiocarbon date from

the site 6733 - 6240 B.P. (from Feature 49, a fire hearth, taken by Mock (1971) and calibrated by Woods (2004)), which corresponds to the Middle Archaic. However, Mock (1971) recorded a hearth, Feature 57, below Feature 49 in Zone I, the Middle Archaic layers and noted that there wasn't enough organic matter to collect for a radiocarbon date (at the time). If general stratigraphic theory indicates that Feature 57 is older than Feature 49 (there is no noted stratigraphical mixing in Zone I), it is safe to assume that the Spotten Cave occupation predates the  $^{14}\text{C}$  date of 6733 - 6240 B.P., meaning it is possible that Spotten Cave did have a Early Archaic occupation.

*Middle Archaic (6,700- 4,367 B.P.)*

The Middle Archaic was a unique time in the Archaic, as the climate turned dramatically drier with most lakes and wetlands completely dried up (Grayson, 1993; Simms, 2008, p. 152). Many Great Basin archaeologists suggest that as the climate warmed and resource patches became limited, the human population likewise contracted. Across the state, archaeologists have found relatively few archaeological sites dating to this period, and using  $^{14}\text{C}$  records as a proxy for population frequency suggests a smaller overall number of people in the region (Simms, 2008).

Occupation at Spotten Cave first begins during the time of low population density. The whole of Zone I in Mock's excavation corresponds to the Middle Archaic based on radiocarbon dates, the artifact assemblage, and stratigraphic context. One fire hearth from this Zone, Feature 49, returned a calibrated  $^{14}\text{C}$  date of 6733 - 6240 B.P, placing it squarely in the Middle Archaic Period (see Table 2) (Mock, 1971; Woods, 2004). Further supporting a Middle Archaic interpretation, manos and metates were encountered within the Middle Archaic stratigraphic layers. As the climate warmed it changed the structure of the flora and fauna people were

dependent upon, and as food resources in particular dwindled people invested more time into processing the food that was available. The “twin hallmarks” of the Archaic toolkit - grinding stones and coiled basketry – appear in the archaeological record for the first time during the Archaic (Jennings, 1978) . Although there is no identified coiled basketry in the Zone I artifact assemblage, there are manos and metates in Zone 1 and throughout the upper Zones of the shelter (see Table 2), consistent with Jennings (1978) interpretation of the Middle Archaic.

**Table 2**

*Zone I Artifacts and Features*

<b>Zone I Artifacts and Features</b>				
<b>Feature #</b>	<b>Type</b>	<b>Associated Radiocarbon</b>	<b>Associated Artifacts</b>	<b>Total Zone Artifacts (some associated with features, others not)</b>
21	Burned vegetation	N/A	Fragmentary bones, lithic artifacts, splinter bone awl, and incised stone	2 stemless projectile points, 1 scraper, 3 choppers, 2 incised stones, 1 pendant, 2 hammerstones, 1 complete metate, 5 one-handed manos, 3 splinter bone awls
22	Living floor	N/A	None	
23	Fire hearth	4710 B.P.	Bones of waterfowl and other small and large mammals, projectile point, and pipe bowl	
24	Fire hearth	4270 B.P.	Scraper, several bone fragments, and bone bead	
30	Fire hearth	N/A	Stemless projectile point with flute	
49	Fire hearth	5650 B.P.	Lithic and bone fragments	
57	Fire hearth	N/A	Quartzite flake and bone fragments	

*Note.* Table adopted from Mock (1971).

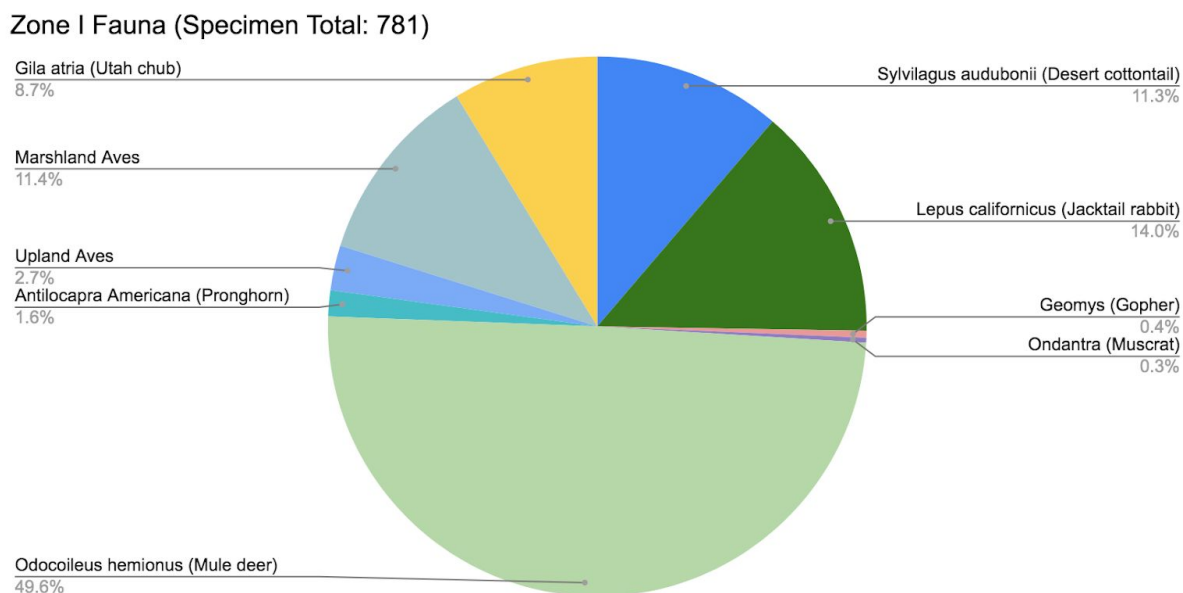
Spotten Cave’s Zone I occupation provides evidence that Utah Valley was still inhabited in the Middle Archaic, and the faunal assemblage indicates that Spotten residents took advantage of the nearby wetland and lake resources. The Utah chub, a freshwater fish native to Utah lakes and streams comprises 8.7% of the Zone I faunal assemblage and another 11.4% of the



assemblage is waterfowl (Figure 5) (Cook, 1980). Both are strong indicators of persistent water sources that would have been welcome refuge during the Middle Archaic Period. The most abundant percentage of fauna, however, is mule deer followed by Blacktail jackrabbit (Figure 5), reflecting the exploitation of a wide set of resources characterizing the subsistence patterns that emerged during the Archaic period in the Great Basin (Cook, 1980).

Artifacts and features encountered throughout Zone 1 reflect redundant Middle Archaic Period occupation and use of the shelter. There are five fire hearths, one living floor, and one burned vegetation feature (Mock, 1971). According to Mock's thesis (1971), artifact types include one-handed manos, metates, projectile points, choppers, hammerstones, pendants, bone awls, and incised stones (see Table 2). Based on the three calibrated  $^{14}\text{C}$  dates from Zone I, 6733 - 6240 B.P., 5672 - 5096 B.P., and 5119 - 4482 B.P., it appears that Zone I sediments accumulated over approximately 1,600 years. Given the small number of features and artifacts in Zone I, Spotten Cave was likely used only a few times as a temporary camp for people targeting nearby freshwater resources (Cook, 1980; Mock, 1971).

The bottom layers of Zone II also appear to correspond to the Middle Archaic Period based on Mock's (1971) radiocarbon dates calibrated by Woods (2004). Feature 18 in Zone II yielded the  $^{14}\text{C}$  date of 4367 - 3760 B.P., which still dates to the Middle Archaic. It is unfortunately difficult to discern what features in Zone II date to the Middle Archaic and Late Archaic based on Mock's thesis, therefore the specific change between Middle to Late Archaic can only be attributed to Zone II generally.

**Figure 5***Zone I Faunal Assemblage*

*Note.* Figure adapted from Cook (1980).

*Late Archaic (2,403 - 1,423 B.P.)*

The Middle to Late Archaic represented the most significant change in the Archaic Period, with populations rising and cultigens from the Southwest causing sweeping cultural, linguistic, and subsistence changes (Simms, 2008, p. 167). The top layers of Zone II likely formed in the Late Archaic, starting with Feature 40, a fire hearth that yielded a calibrated  $^{14}\text{C}$  date of 2403 - 1952 B.P. (see Table 3) (Mock, 1971). The Late Archaic is an archaeologically rich period due to these changes, and the significantly higher frequency of features and artifacts compared to Zone I, indicates an increased human presence at Spotten Cave consistent with Late Archaic demographic changes (Hora-Cook, 2018). Features include fire hearths, artifact caches, a rock alignment, and a living floor (Mock, 1971). Changing Late Archaic lifeways can be seen in the diversification of artifact types present in Zone II, including the presence of bison bones, bighorn sheep horn cores (including one worked) and bone beads. Zone II seems to be where the

stratigraphic mixing at the cave starts, as a burial and domesticated peach pit cache are present in Zone II, intrusive from the Fremont layers (burial) and the modern era (peach pits) (Table 3) (Mock, 1971).

**Table 3**

*Zone II Artifacts and Feature*

<b>Zone II Artifacts &amp; Features</b>				
<b>Feature #</b>	<b>Type</b>	<b>Associated Radiocarbon</b>	<b>Associated Artifacts</b>	<b>Total Zone Artifacts (some associated with features, others not)</b>
16	Burial	N/A	None	14 projectile points, 3 scrapers, 1 drill, 9 incised stones, 8 one-handed manos, 4 metates, 1 slate bead, 4 bone awls, 4 pieces of greasewood arrowshafts, and 4 pieces of cane arrowshafts
17	Rock alignment	N/A	None	
18	Fire hearth	4367 - 3760 B.P.	Outlined by rocks with Phragmite arrowshaft material, 3 round smoothed stones, splinter bone awl, tip of projectile point	
20	Fire hearth	N/A	Scraper/knife	
25	Ash lens	N/A	None	
37	Fire hearth	N/A	3 projectile points, 1 bone bead, 3 pieces of worked bone, 5 pieces of 'bison' rib bones, 1 incised stone, 2 big horn sheep cores (one worked with a sharpened end). Manure also found in association with hearth	
39	Fire hearth	N/A	1 incised stone and 1 big horn sheep horn core	
40	Fire hearth	2403 - 1952 B.P.	4 choppers, knife, 3 coprolites, charred bison rib	
43	Living floor	N/A	Lithic flakes, fragmentary bones	
44	Peach pits	N/A	None	
48	Natural feature	N/A	Two hammerstones, one projectile point, one chopper	
50	Artifact	N/A	1 mano, 3 hammerstones, 1 worked piece	

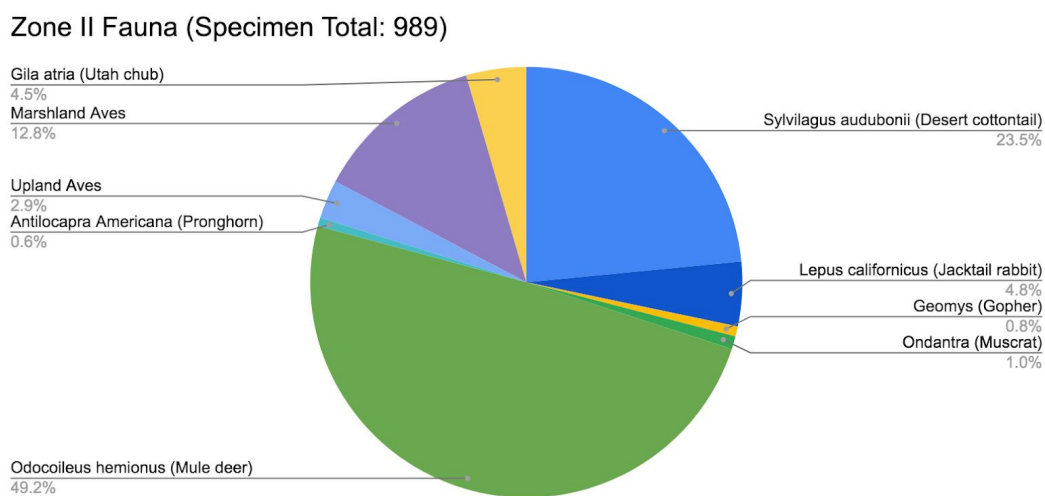
	cluster		of calcite (items likely cached)
51	Fire hearth	N/A	4 hammerstones, 1 incised stone, 1 splinter bone awl
56	Living floor	N/A	1 broken mano, 1 side-notched projectile point

Note. Table adapted from Mock (1971).

Faunal analysis indicates people targeted mule deer as a game item, and also ate Desert cottontail, waterfowl, and Utah chub (Figure 6) (Cook, 1980). Coprolite analysis from specimens excavated in Zone II indicate the consumption of poverty weed, ground cherries, and grasses by people in the Middle to Late Archaic Periods (Table 4) (Pearce, 2016). Projectile point analysis shows Pinto, Humboldt, and Elko Side-Notched points in Zone II (Table 5), consistent Great Basin Archaic projectile point chronology, however the churned sediments also mixed in Rosepring and Eastgate points that generally date to the Fremont and Late Prehistoric periods (Thomas, 1981; Woods, 2004). Artifacts from Zone II curated at the BYU Museum of Peoples and Cultures are displayed in Figure 7.

## Figure 6

### *Zone II Faunal Assemblage*



Note. Figure adapted from Cook (1980).

**Table 4***Zone II Projectile Points*

<b>Zone II Projectile Points</b>					
<i>Humboldt</i>	<i>Elko Corner-Notched</i>	<i>Elko Side-Notched</i>	<i>Rosepring</i>	<i>Eastgate</i>	<i>Unidentified</i>
2	2	1	2	9	2

*Note.* Table adapted from Woods (2004).

**Table 5***Zone II Coprolite Assemblage*

<b>Zone III Coprolite Flora</b>					
<i>Specimen 12</i>	<i>Specimen 13</i>	<i>Specimen 14</i>	<i>Specimen 15</i>	<i>Specimen 16</i>	<i>Specimen 22</i>
Sunflower	Indeterminate seed	Amaranths	No residual material	No residual material	No residual material
Poverty weed		Knot weed			
Beans		Ground cherries			
Indeterminate seeds		Indeterminate seeds			

*Note.* Table adapted from Pearce (2016).

Figure 7

*Zone II Artifacts*

*Note.* Artifact descriptions: Cat. #1981.055.00081 (top left) mid-late stage quartzite biface; Cat. #1981.055.00079 (top right) quartzite debitage flakes; Cat. #1981.055.00071 (middle left) quartzite Elko Corner-Notched projectile point; Cat. #1972.023.00232 (middle right) late-stage biface; Cat. #1972.023.00017 (bottom left) possible quid; Cat. #1972.023.00017 (bottom right) cordage.

***Fremont (1,424 - 874 B.P.)***

The Fremont period in Utah was characterized by a rise in population and the emergence of a more sedentary lifestyle with pithouse habitation structures in Fremont villages (Madsen & Simms, 1998; Simms 2008). Archaeologists characterize the Fremont by their adaptive techniques that were diverse enough to include cultigens along with more traditional foraging patterns. Utah Valley was home to Fremont people settled in hamlets and villages, pursuing an agriculturally based economy (Madsen & Simms, 1998; Simms, 1999; Simms, 2008). Although Spotten Cave does not appear to be an agricultural site and likely represents a fieldhouse or stop-over site, the presence of prehistoric cultigens reflects the breadth of subsistence strategy amongst the Fremont.

The Fremont Period at Spotten Cave ranged from approximately 1424 - 874 B.P. (derived from Mock's 1971 <sup>14</sup>C dates calibrated by Woods (2004)); Zone III of Mock's excavation represents the main Fremont occupation of the site. Zone III has by far the most material culture from the site, including evidence of farming with the presence of corn, beans, and squash excavated from Zone III (Table 6) (Mock, 1971). The archaeological assemblage of Zone III supports the current archaeological understanding of the Fremont with a similarity in Archaic artifact styles and the prehistoric cultigens of corns, beans, and squash (Simms, 2008). Demographic increases evident throughout the Fremont Period (Hora-Cook, 2018) appear to also

be evident at Spotten Cave — the high frequency of occupations, including unique radiocarbon dates, indicates the frequent and redundant use of the site by Fremont people.

**Table 6**

*Zone III Artifacts and Features*

Zone III Features & Artifacts				
Feature #	Type	Associated Radiocarbon	Associated Artifacts	Total Zone Artifacts (some associated with features, others not)
5	Living floor		Flakes, bone fragments, one small metate, greasewood arrowshaft, and squirrel skin and fur	<b>Artifacts:</b> 27 stemmed PPs, 7 corner-notched PPs, 4 side-notched PPs, 3 bird points, 3 dart points, 10 lanceolate PPs, 5 scrapers, 1 knife, 6 drills, 1 chopper, 8 incised stones, 1 pendant, 5 hammerstones, 33 one-handed manos, 4 splinter bone awls, 4 bone beads, 136 GSL sherds, 12 Sevier Gray sherds, 41 Snake Valley Gray sherds, 39 Knolls Gray, 2 Sevier Red-on-Gray, 1 greasewood arrow, coiled willow (possible part of a basket), 1 skunk or squawbush (possible part of basket), 4 pieces of cedar and sage bark, 2 cane arrowshafts, 2 pieces of cordage, 1 quid, one rectangular mano, 14 metates, 2 slate beads <b>Plant materials:</b> Big sagebrush, Hackberry, Mountain Mahogany, Rabbit Brush, Bee weed, Cliff rose, Squash, Buckwheat, Cocklebur, Yucca, Sunflower, Utah Juniper, Bean, Pinyon Pine, Singleleaf Pinyon, Apricot, Cherry, Plum, Pleach, Willow, Greasewood, Corn
6	Pack rat nest		3 metate fragments, 3 metal fragments, stemmed projectile point, and cedar hearth	
7	Fire hearth		Flakes and bone fragments around (but not in)	
8	Rodent nest		3 pot sherds and one incised stone	
9	Living floor		Flakes, bones, decayed organic matter, 3 metates, a cache of chert nodules, incised stone, human child's skull (Feature 16 from Zone II), and a small cache pit (Feature 26?)	
10	Fire hearth		Lithic flakes and bone fragments	
11	Fire hearth		Burned bone fragments	
12	Sleeping platform		Decayed organic matter, knife, bones, 18 sherds	
13	Fire hearth		Bone fragments and lithic flakes	
14	Chert nodule cache		Light tan chert, doesn't specify count or type	
15	Fire hearth		Lithic flakes and bones	
26	Cache pit		None	



28	Pack rat nest		Spoil Dirt artifacts, including fragments of an 1872 newspaper
31	Pack rat nest		None
32	Refuse/storage pit	800 B.P.	3 corn cobs, corn husks tied together, several loose corn stalks, 5 beans, 3 pods, 2 squash rinds, Phragmite fragments with cut marks, sagebrush bark netting, 3 pieces of cordage made from yucca, 6 pieces of cedar bark with knots, other fibers, duck and hawk feathers, shredded/chewed corn stalk, 3 corner-notched projectile points, knife blade, 1 hammerstone, 1 one-handed mano, 3 scrapers, lithic flakes, 1 splinter bone awl, 1 mother of pearl bead, 1 fragmented coiled basketry, 4 gamel oak leaves, grass used to line the pit
33	Ash/charcoal lens		Burned vegetable matter, no artifacts
35	Cache pit		~100 white quartz flakes, 2 dart points, one incised stone, 1 Gray Knolls pottery sherd, 2 chalcedony cores, one carbonized corn cob, and small bone fragments
36	Peach pits		Worked bird bone and obsidian projectile point
38	Fire hearth		Carbonized corn cob, bone bead, bison molar, lithic flakes
41	Fire hearth		Bone and lithic flakes on top but not in
42	Pack rat nest		None
45	Living floor		Lithic flakes, stemmed projectile point, core material (?), decayed wood, other fragmented projectile points
46	Fire hearth		Lithics and bone (few)

47	Adobe wall		Floor inside of wall contained: decayed organic matter, 3 hammerstones, 2 broken manos, 1 worked stone, 1 drill tip, 1 bird bone bead, lithic flakes, and bone	
54	Boundary marker		Side-notched projectile point and knife	

*Note.* Adapted from Mock (1971).

Mock documented twenty-four features in Zone III, including eight fire hearths, three living floors, one “sleeping platform” (Mock’s interpretation of a rectangular raised feature with decayed vegetation), multiple artifact cache pits, and an adobe wall at the entrance of the cave (Table 6) (Mock, 1971). There are several non-cultural features that are intrusive from upper layers — including packrat nests with domesticated peaches — which evidently compromised the integrity of the stratigraphy. Ceramics appear at Spotten Cave for the first time in Zone III, and include several locally produced Fremont pottery types (Sevier Grayware, Snake Valley Grayware, Great Salt Lake Grayware, etc.) (Mock, 1971). In particular, one Snake Valley applique ceramic sherd from Spotten Cave is a rare example of Fremont applique pottery, a ceramic technique most commonly seen on Fremont clay figurines (Simms & François, 2010) (see Figure 8).

**Figure 8***Snake Valley Grayware Fremont Applique Sherd*

Mock (1971) discovered several prehistoric cultigens specimens in Zone III, including corn cobs and husks, beans, and squash seeds, most of which came from Feature 32, an artifact storage pit (Table 6). Zone III also contained the most amount of projectile points — forty-three in total — including a potential “heirloomed” Paleoindian point (see Figure 3), a Pinto series point, several Elko series points, Rosespring, Eastgate, Cottonwood Triangular, Desert Side-Notched, and Northern Side-Notched points (Table 7) (Woods, 2004). Most projectile points found in Zone III correspond to the Fremont period in typology, but stratigraphic mixing potentially caused stone tools from other occupation layers to be found in Zone III (Woods, 2004). Faunal analysis yielded a total of 3,001 specimens from Zone III, most of which corresponded to the mule deer, but also included Desert cottontail, waterfowl, Blacktailed jackrabbit, Pronghorn, and the Utah chub among others (Figure 9) (Cook, 1980). Coprolite

analysis from Zone III specimens showed the shelter’s inhabitants also ate sunflower seeds, poverty weed, beans, amaranths, knot weed, and ground cherries as items during the Fremont period (Table 8) (Peace, 2016).

**Table 7**

*Zone III Projectile Point Assemblage*

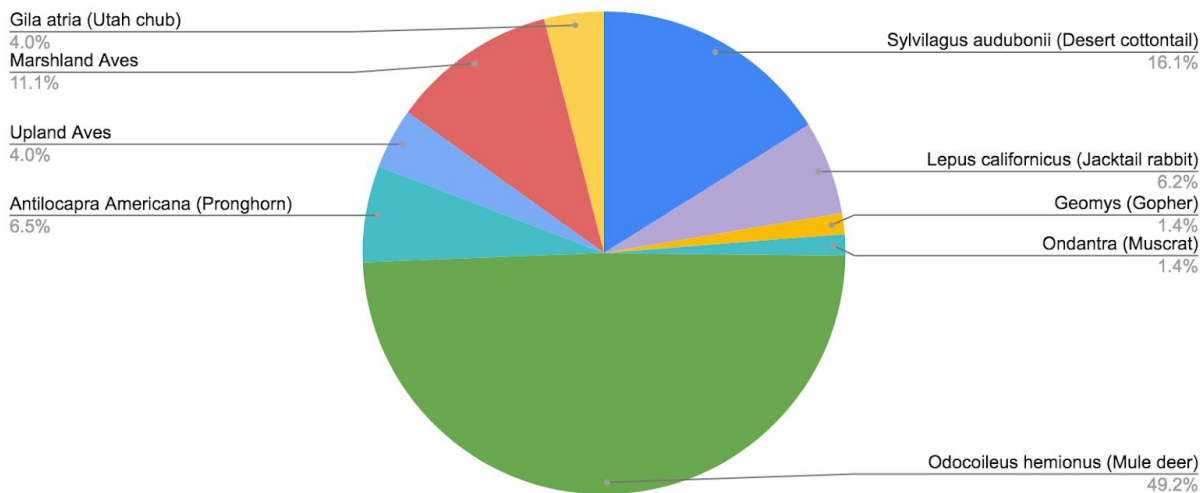
Zone III Projectile Points										
Late Prehistoric	Pinto Series	Elko Corner-Notched	Elko Side-Notched	Northern Side-Notched	Rosespring	Eastgate	Cottonwood Triangular	Desert Side-Notched	Small Side-Notched	Unidentified
1	1	8	2	1	16	3	2	1	1	7

Note. Table adapted from Woods (2004).

**Figure 9**

*Zone III Faunal Assemblage*

Zone III Fauna (Specimen Total: 3001)



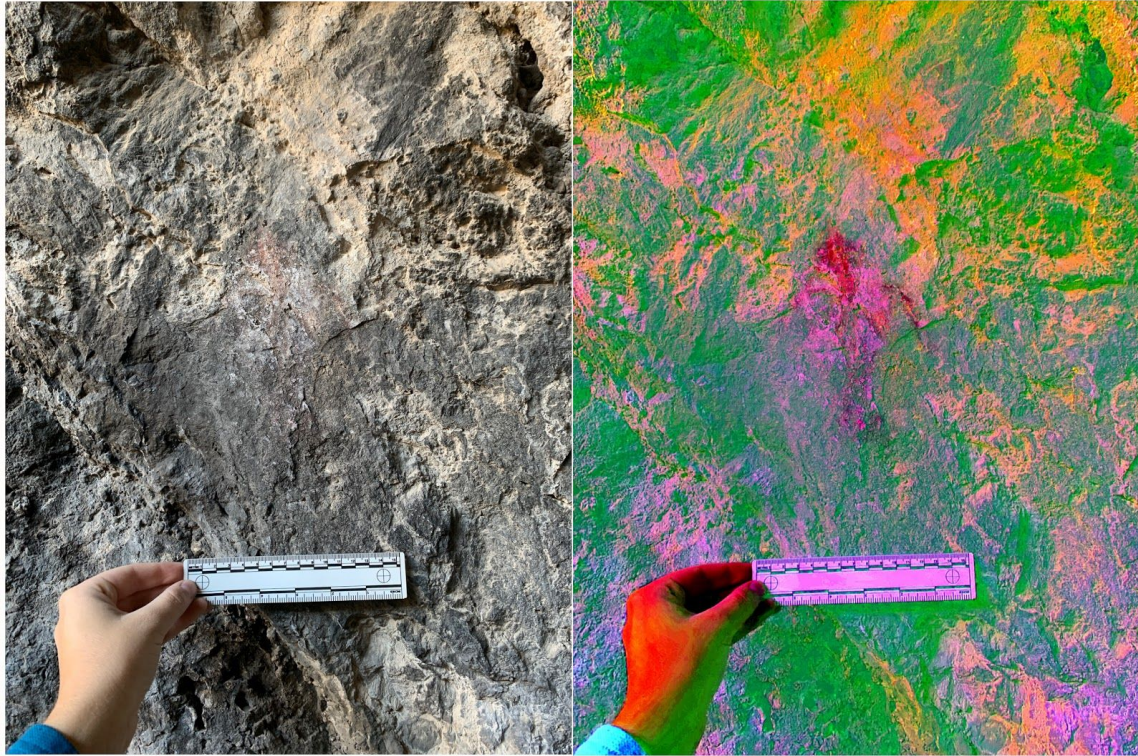
Note. Table adopted from Cook (1980).

**Table 8***Zone III Coprolite Assemblage*

<b>Zone III Coprolite Flora</b>					
<i>Specimen 12</i>	<i>Specimen 13</i>	<i>Specimen 14</i>	<i>Specimen 15</i>	<i>Specimen 16</i>	<i>Specimen 22</i>
Sunflower	Indeterminate seed	Amaranths	No residual material	No residual material	No residual material
Poverty weed		Knot weed			
Beans		Ground cherries			
Indeterminate seeds		Indeterminate seeds			

*Note.* Table adapted from Pearce (2016)

The only visible archaeological element at the site, a faint pictograph panel, dates to the Fremont period. The pictograph panel is an anthropomorphic figure with one arm, and is Fremont in style, thus can be relatively dated to the general Fremont period (although specific dating is not possible for rock imagery) (see Figure 10). Artifacts attributed to Zone III curated at the BYU Museum of Peoples and Cultures are displayed in Figures 11-14.

**Figure 10***Panel 1, Fremont Anthropomorphic Pictograph*

*Note.* Left: Raw pictograph photo; Right: Pictograph enhanced through iDStretch.

**Figure 11***Zone III Lithics*

**Cat. # 1981.055.00038, 1981.055.00037, 1981.055.032.0002, 1981.055.00025**



**Cat. # 1981.055.00098**



**Cat. # 1981.055.00010.003**



**Cat. # 1972.00023.052**



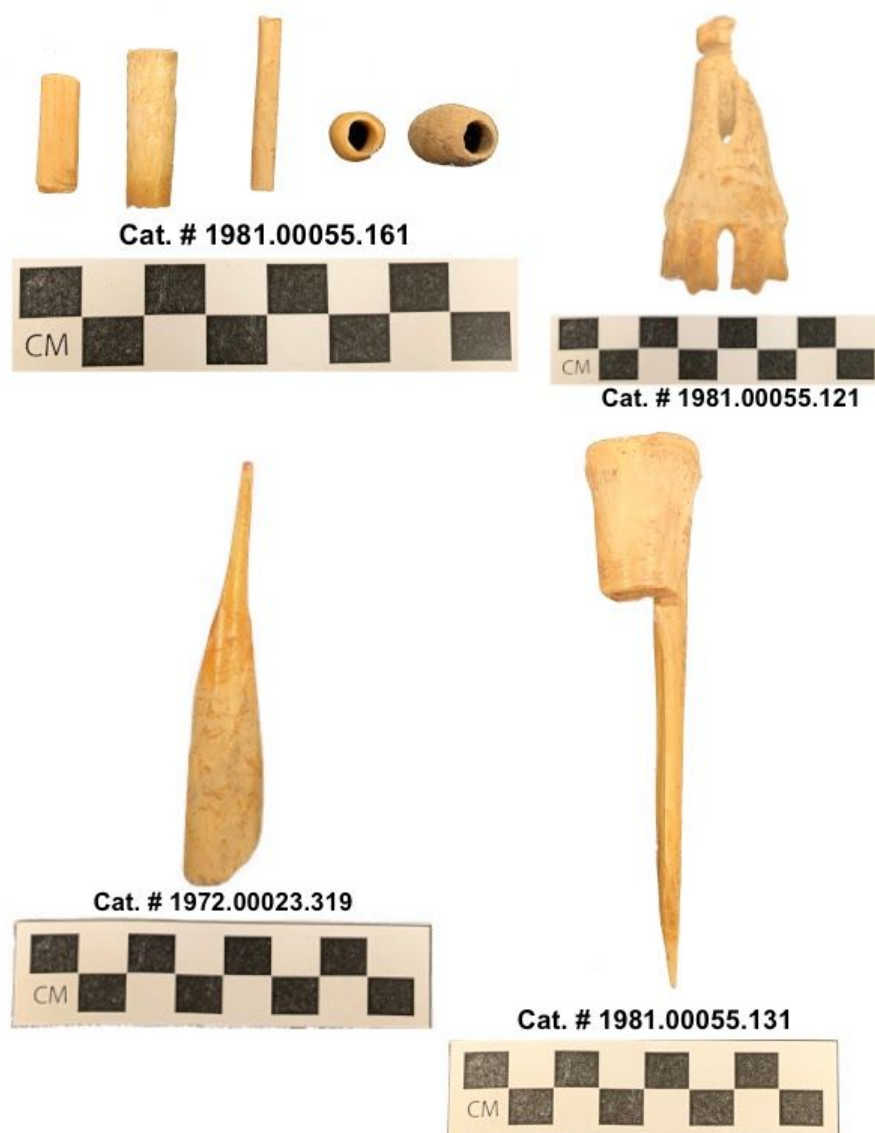
**Cat. # 1972.00023.052**



*Note.* Artifact descriptions: Cat. # 1981.055.00038, 1981.055.000037, 1981.055.032.0002, 1981.055.00025 (top) four corner and side-notched projectile points; Cat #. 1981.055.00098 (middle left) late-stage bifaces with convex bases; Cat. # 1981.055.00010.003 (middle right) serrated projectile point; Cat. # 1971.023.00052 (bottom left) incised stone; Cat. # 1972.023.000052 (bottom right) incised stones.

## Figure 12

### *Worked Bone from Zone III*





*Note.* Artifact descriptions: Cat. # 1981.051.00161 (top left) bone beads; Cat. # 1981.051.000121 (top right) worked bone; Cat. # 1972.023.00319 (bottom left) bone awl; Cat. # 1981.055.00131 (bottom left) bone awl.

### Figure 13

*Perishables from Zone III*



*Note.* Artifact descriptions: Cat. # 1972.00023.018 (top) cordage; Cat. # 1972.023.00005 (bottom) corn husks.

**Figure 14**

*Fire starter kit from Zone III*



**Cat. # 1972.023.00026**



**Cat. # 1972.023.00005**



*Note.* Artifact descriptions: Cat. # 1972.023.00026 (top) wooden fire starter board; Cat. # 1972.023.00005 (bottom) fire starter stick.

Despite the adobe wall at the shelter entrance and “sleeping platform” as interpreted by Mock (1971), archaeological evidence indicates that Spotten Cave continued to serve as a temporary shelter site for the Fremont as it did for Archaic peoples, an interpretation shared by later researchers Cook (1980) and Aaron Woods (A. Woods, Personal Communication, November 5, 2020). Rockshelter sites are not generally used as long-term habitation sites, and there are several larger open Fremont village sites in the surrounding area (Woodard Mounds, Wolf Village) that would have made better candidates for habitation (Woods, 2004). Although the Fremont period has the largest archaeological assemblage and is the only period with

associated rock imagery at the site, the archaeological record is just simply not large enough for approximately 600 years of occupation as originally postulated by Mock (1971). Fremont peoples exhibited a partial hunter-gatherer lifestyle, and Spotten Cave represents a manifestation of the hunter-gatherer component of the Fremont (Madsen & Simms, 1998). Most Fremont sites in Utah County are village habitation sites with pithouses representing the sedentary and agricultural component of Fremont lifeways; Spotten Cave is perhaps the most significant site in Utah County that reflects the hunter-gatherer Fremont lifeway.

***Late Prehistoric (700 - 244 B.P.)***

Archaeologically, little is known about the Late Prehistoric Period, however Late Prehistoric peoples did exhibit a more mobile lifestyle and did not settle in large villages like the Fremont (Simms, 2008). Promontory peoples inhabited Northern Utah before the arrival of separate Numic speaking groups from the Western Great Basin (Simms, 2008). The Late Prehistoric period at Spotten Cave occurs after a distinct break from the Fremont period, and could represent Promontory peoples (Janetski, 1990; Pearce, 2016), however further research and artifact analysis would be necessary to further explore this theorization. The archaeological assemblage in Zone IV is significantly less than Zone III, which led Mock (1971) to believe that the area was abandoned or barely travelled in the Late Prehistoric period. Although no <sup>14</sup>C dates derived from Zone IV, Mock estimated Zone IV to date from between A.D. 1300 - 1900. Despite Mock's estimation, it is more appropriate to end the Late Prehistoric period at A.D. 1776, the date of first European contact in Utah Valley with the Dominguez-Escalante Expedition (Simms, 2008, p. 270).

Four features and several artifacts were found in Zone IV, however it should be noted that the Zone was heavily impacted by stratigraphical mixing through rodents and human

activity, which is cause for concern about the provenance integrity of each feature and artifact. The features include a fire hearth, artifact cache pit, rodent nest, and living floor (see Table 9) (Mock, 1971). Associated artifacts include chipped stone and groundstone tools, several ceramic sherds, bone awls, and one slate bead (see Table 9) (Mock, 1971). Faunal analysis from the Zone IV faunal assemblage shows a similar trend to the Fremont period with the largest percentage of fauna attributed to Mule deer, followed by lagomorphs, waterfowl, Pronghorn, and the Utah chub (see Figure 15) (Cook, 1980). Projectile points from Zone IV are fairly consistent with the Late Prehistoric period, including Rosegate, Eastgate, and Small Side-Notched points (see Table 10) (Woods, 2004). Coprolite analysis is distinctly different than what is present in the Fremont period with the addition of mint, saltwort, grasses, and purslane, indicating a diversification in Late Prehistoric diets, which reflects decreased consumption of prehistoric cultigens and increased utilization of naturally occurring plant species (see Table 11) (Pearce, 2016). It is highly likely that many of the artifacts in Zone IV were intrusive from Zone III as they are Fremont in origin, which caused confusion in Mock's original interpretation of the site. Artifacts curated in the BYU Museum of Peoples and Cultures attributed to this Zone are pictured in Figure 16.

**Table 9**

*Zone IV Artifacts and Features*

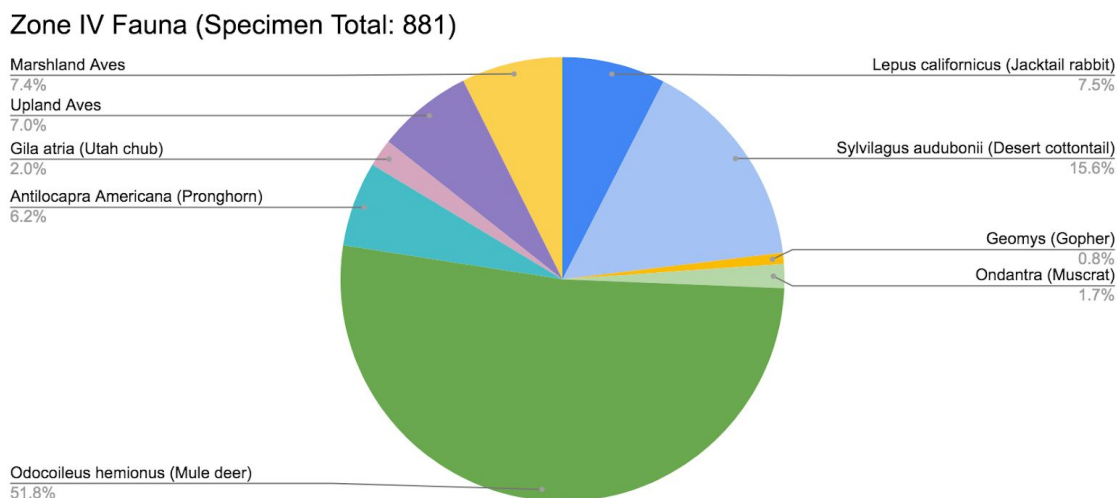
Zone IV Artifacts & Features				
Feature #	Type	Associated Radiocarbon	Associated Artifacts	Zone Artifacts (some associated with features, others not)
1	Cache pit	N/A	None	3 stemmed projectile points, 1 side-notched projectile point, 1 stemless point, 1 knife, 1 corner-notched knife, 1 scraper, 2 hammerstones, 1 one-handed mano, 1 metate, 1 slate bead, 2 splinter bone awls, 12 Great Salt Lake sherds, 2
2	Fire hearth	N/A	1 metate, 1 stone ball, 1 Knolls Gray sherd, 1 lithic knife	
3	Living floor	N/A	Lithic flakes, bone fragments	

4	Rodent nest	N/A	Spoil Dirt artifacts	Snake Valley Gray sherds, 2 Knolls Gray sherds
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Note. Table adapted from Mock (1971)

**Figure 15**

*Zone IV Faunal Assemblage*



Note. Table adapted from Cook (1980)

**Table 10**

*Zone IV Projectile Point Assemblage*

Zone IV Projectile Points					
<i>Elko Corner-Notched</i>	<i>Rosespring</i>	<i>Uintah Side-Notched</i>	<i>Cottonwood Triangular</i>	<i>Desert Side-Notched</i>	<i>Unidentified</i>
1	3	1	1	1	1

Note. Table adapted from Woods (2004).

**Table 11**

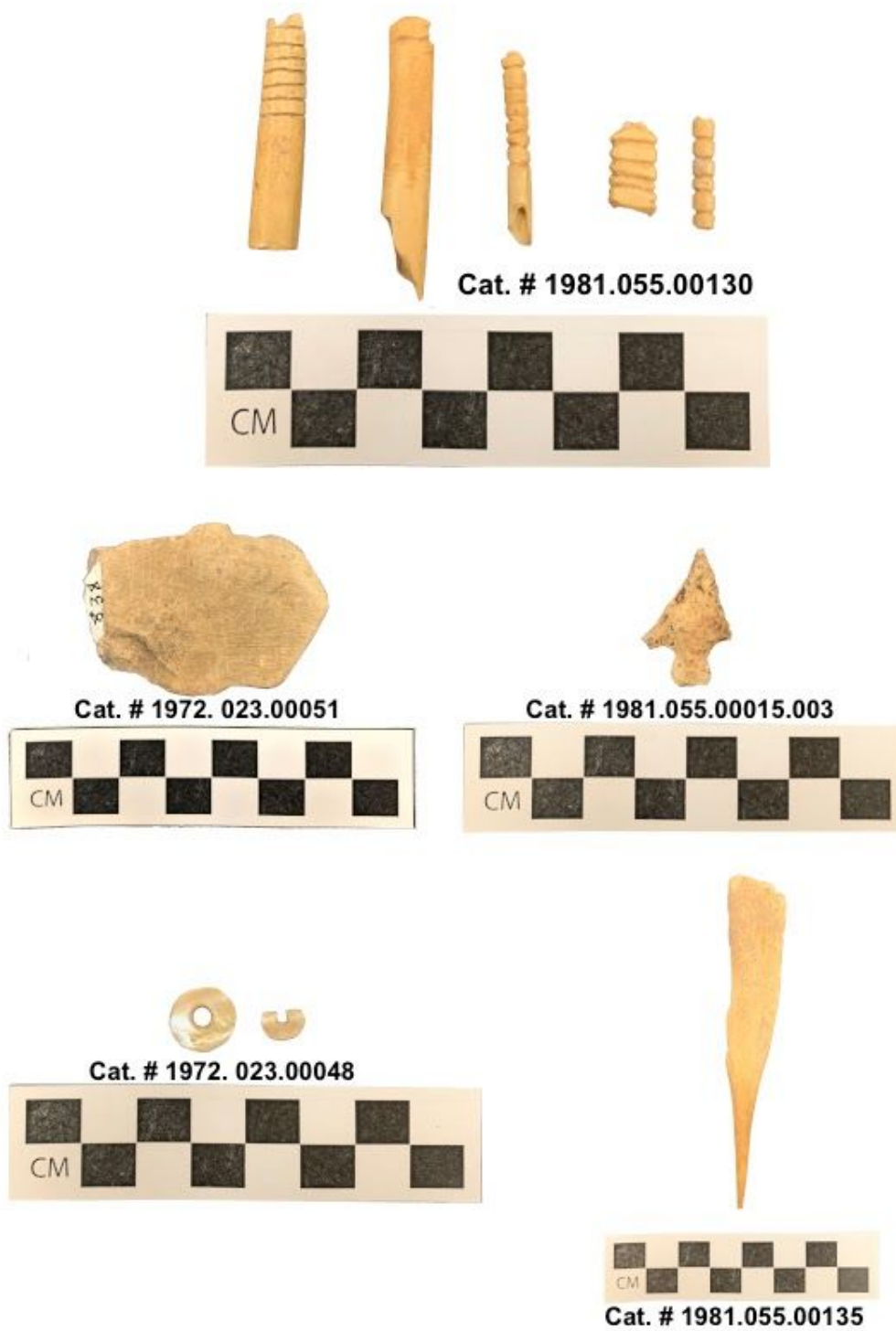
*Zone IV Coprolite Assemblage*

Zone IV Coprolite Flora							
<i>Specimen 23</i>	<i>Specimen 24</i>	<i>Specimen 25</i>	<i>Specimen 26</i>	<i>Specimen 27</i>	<i>Specimen 28</i>	<i>Specimen 29</i>	<i>Specimen 20</i>
No seeds	Sunflowers	Amaranth	No seeds	Amaranth	Amaranth	Indetermina	Ground

identified			identified			te seeds	cherries
	Ground cherries	Indeterminate seed		Sunflowers	Sunflowers		
	Indeterminate seeds			Grasses	Poverty weed		
				Purslane	Saltwort		
				Ground cherries	Mint		
				Indeterminate seeds	Grasses		
					Purslane		
					Ground cherries		
					Indeterminate seeds		

*Note.* Table adapted from Pearce (2016).

Figure 16

*Zone IV Artifacts*

*Note.* Artifact descriptions: Cat. # 1981.055.00130 (top) decorated, incised bone; Cat. # 1972.023.00051 (middle left) incised stone; Cat. # 1981.055.00015.003 (middle right) small stemmed projectile point; Cat. # 1972.923.00048 (bottom left) shell beads; Cat. # 1981.055.00135 (bottom right) bone awl.

Like the general archaeological record in the Great Basin, the Late Prehistoric period at Spotten Cave is a bit of a mystery, however, with the small amount of Zone IV artifacts and features, it is evident the cave was not frequently occupied in the Late Prehistoric and was still likely used occasionally as a temporary stop-over site as it was in preceding time periods.

#### ***Historic (245 - 54 B.P.)***

Spotten Cave was used historically by both Native American and Euroamerican groups. Mormon pioneers first settled in Utah Valley in 1849 (Janetski, 1990, p. 5), but historical accounts describe Shoshonean groups hunting and fishing around Utah lake in the early 1900s (Cook, 1980, p. 91). Shoshonean peoples certainly stopped at the cave at least once, as Mock did identify a Shoshonean style sherd in Zone V. Although there are prehistoric artifacts in Zone V, most of them are likely as a result of the significant disturbance that occurred in the shelter prior to Mock's excavation by rodents and humans (Table 12). Thus, faunal and projectile point analysis in Zone V most likely corresponds to deeper layers within the cave's stratigraphy and not exclusively the historic period (see Figure 17 and Table 13) (Cook, 1980; Woods, 2004). However, the preponderance of artifactual evidence from Zone V is consistent with the historic period and Euroamerican use, including the presence of domestic items such as cast iron pieces, nails, milk jug fragments, and hoses (see Table 12 and Figure 18).



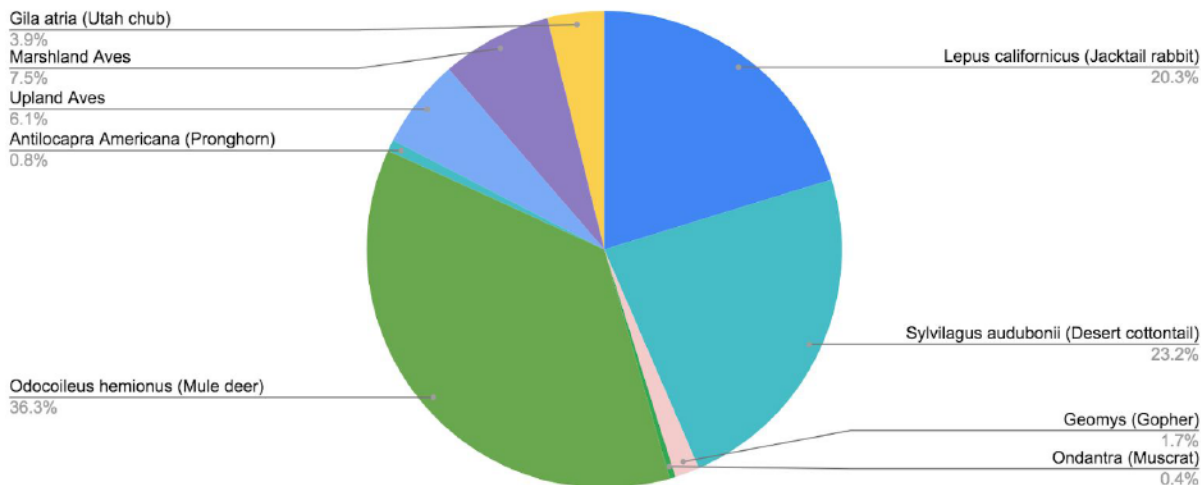
**Table 12***Zone V Artifacts and Features*

Zone V Artifacts & Features				
Feature #	Type	Associated Radiocarbon	Associated Artifacts	Zone Artifacts (some associated with features, others not)
27	Fire hearth	N/A	None	<b>Prehistoric Artifacts:</b> 3 corner-notched PPs, 2 stemmed PPs, 1 lanceolate PP, 1 scraper, 2 incised stones, 6 one-handed manos, 1 metate, 1 slate bead, 3 bone awls, 3 beads, 13 Great Salt Lake sherds, 2 Sevier Gray sherds, 6 Snake Valley sherds, 1 Shoshone sherd <b>Historic Artifacts:</b> Various round and square nails, several cartridge cases, 1 milk can handle, 1 hose clamp, 1 "C" clamp, 2 iron bars, female garden house, bolts, bottle caps, stables, ox shoe, paper clip, washer, knife blade (metal), case iron pieces, 1 leather strap, 2 sheep pelts, 1 burlap bag, piece of dynamite fuse buttons <b>Plants:</b> Serviceberry, Big Sagebrush, Hackberry, Utah Juniper, Apricot, Cherry, Peach, Plum, Willow, Greasewood (all fruits historic)
29	Fire hearth	N/A	.22 caliber cartridge case	
52	Cache Pit	N/A	3 one-handed manos	
53	Artifact cache	N/A	4 hammerstones, 1 scraper	
55	Rock Wall	N/A	None	

Note. Table adapted from Mock (1971).

**Figure 17***Zone V Faunal Analysis from Cook (1980)*

## Zone V Fauna (Specimen Total: 863)



*Note.* Figure derived from Cook (1980)

**Table 13**

*Zone V Projectile Point Assemblage*

<b>Zone V Projectile Points</b>		
<i>Elko Corner-Notched</i>	<i>Elko Side-Notched</i>	<i>Rosespring</i>
1	1	2

*Note.* Table adapted from Woods (2004)

**Figure 18**

*Zone V Historic Artifacts*



**Cat. # 1972.073.00002**



**Cat. # 1972.023.00009**



**Cat. # 1972.065.00045.001**



**Cat. # 1972.023.00238**



**Cat. # 1981.055.00208**



*Note.* Artifact descriptions: Cat. # 1972. 073.00002 (top left) copper bowl; Cat. # 1972. 023.00009 (top right) historic nails; Cat. # 1972.065.00045.001 (left) Amore soda bottle, ca. 1900; Cat. # 1972.023.00238 (middle right) historic amber and amethyst glass shards; Cat. # 1972.055.00208 (bottom right) historic buttons.

Mock's excavation occurred in the 1960s, and is now considered historic as it is older than 50 years. Photos from the excavation and anything that was left behind from the excavation are now historical artifacts that contribute to the site's archaeological record and continued use by humans throughout time (Figure 19).

**Figure 19**

*Historical Photograph of Mock's 1960's Excavation*



*Note.* Historical photograph from Janetski (1990), courtesy of the BYU Museum of Peoples and Cultures.

### *Spotten Cave Today (1969 - 2020)*

Spotten Cave today is less frequented by humans than it was throughout the Middle Archaic - Historic Periods. Along with being occasionally visited by archaeologists, the landowner informed me that the site was used as the filming location for several Church of Jesus Christ of Latter-Day Saints (Mormon) films, however more information on these films, such as dates and names, could not be identified despite research.

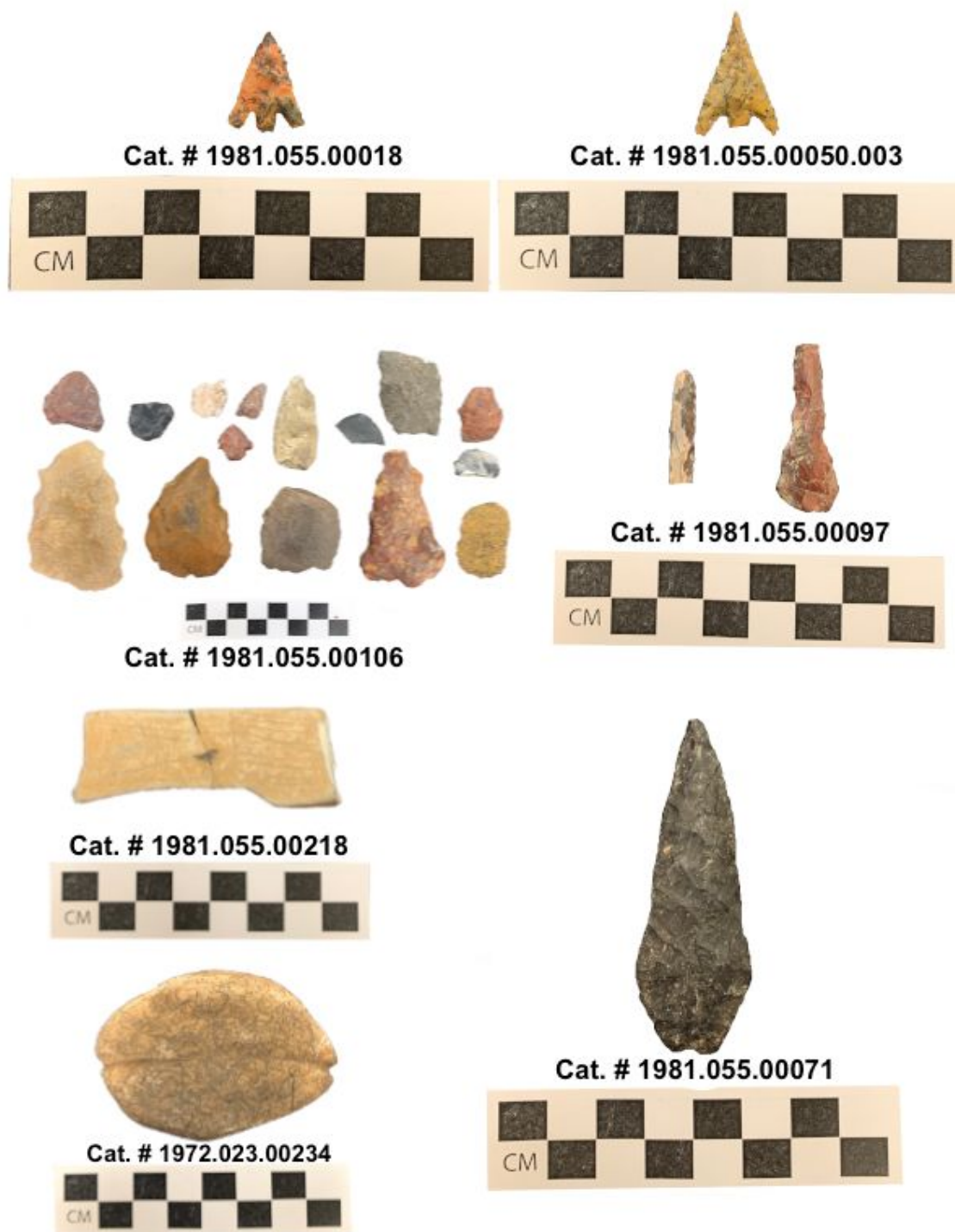
There are currently five instances of graffiti inside the cave walls, four of which appeared in the last ten years (see Figure 11 in Chapter 6) (A. Woods, Personal Communication, November 5, 2020). There is also one graffiti image that has been drawn on the walls in black permanent marker. Although the cave was in stable condition in 2020, it has not always been that way in the modern period. According to Aaron Woods, the site contained graffiti, couches, and garbage in the early 2000s. The city of Goshen organized a clean-up effort in 2006 where graffiti was removed or covered up with paint that matched the interior walls (A. Woods, Personal Communication, November 5, 2020). Although this was a genuine effort to improve the condition of the cave by the city of Goshen, this activity likely damaged the rock imagery on the interior site walls. The one Fremont anthropomorphic image that was identified in 2020 is extremely faint (see Figure 10). The pictograph's faintness could be attributed to the graffiti clean-up effort, although it could never be confirmed.

It is evident that Spotten Cave has been used for a broad set of purposes, and this context attempts to draw together all the pieces to the best extent possible given certain inconsistencies with the archaeological data and Spotten Cave artifact catalog (see Chapters 5 and 6). There are certainly many more parts to the Spotten Cave story that need to be examined, including further

analysis of the site's probable intact cultural deposits and analysis of the Spotten Cave artifact assemblage at the BYU Museum of Peoples and Cultures.

### **A Note About Provenance Integrity**

Each archaeological time period discussed here is based on standard archaeological knowledge of the Great Basin as well as the information yielded from Mock's excavation and subsequent researchers. It is overwhelmingly evident that the artifacts and features from each excavation Zone do not necessarily correspond to the Zone's associated time period due to the stratigraphical mixing by rodents and humans (including looting) that occurred prior to the excavation. Additionally, during artifact photography, it was observed that most artifacts did not have an associated Zone or layer noted on their label, and the provenance information beyond the site wasn't available from the collection's catalog. This made it extremely difficult to match artifacts to Zones, so artifact photos included in the discussion of each time period/Zone are only those that could be definitively matched, and there are likely more artifacts that correspond to each Zone. Because of this inconsistent labelling and the stratigraphical mixing that occurred at the site, it can be reasonably assumed that most artifacts came from the "Spoil Dirt"- that Mock removed from significantly disturbed sections before starting excavation (J. Allison, Personal Communication, Sept. 24, 2020). See Figures 20-22 for Unprovenanced/"Spoil Dirt" artifacts.

**Figure 20***Unprovenanced/"Spoil" Dirt Lithics*

*Note.* Artifact descriptions: Cat. # 1981.055.00018 (top left) mottled CCS Rosegate Projectile Point; Cat. #1981.055.00050.003 (top right) mottled CCS Eastgate Projectile Point; Cat. # 1981.055.00106 (top middle left) assortment of debitage and early stage bifaces; Cat. # 1981.055.00097 (middle right) formal drill fragments; Cat. # 1981.055.00218 (bottom middle left) incised stone; Cat. # 1972.023.00234 (bottom left) incised fishing weight; Cat. # 1981.055.00071 (bottom right) contracting stem projectile point.



**Figure 21***Unprovenanced/"Spoil" Dirt Groundstone***Cat. # Unknown****Cat. # 1972.023.00248****Cat. # 1972.023.00243****Cat. # 1972.23.00223****Cat. # 1972.023.00097**

*Note.* Artifact descriptions: Cat. # Unknown (top right) sandstone metate with a multi-use surface; Cat. # 1971.023.00248 (top right) incomplete one-handed sandstone mano; Cat. # 1972.023.00243 (middle left) one-handed sandstone mano; Cat. # 1972.23.00223 (middle right) sandstone maul; Cat. # 1972.023.00097 (bottom) two-handed basalt mano.

**Figure 22***Unprovenanced/"Spoil" Dirt Ceramics*

*Note.* Artifact descriptions: Cat. # 1972.023.00174 (top left) Knoll Grayware ceramic sherds; Cat. # 1981.055.00211 (top right) Snake Valley Grayware ceramic vessel handle; Cat. # 1981.055.00215 (middle left) Snake Valley Grayware ceramic sherds; Cat. # 1981.055.00212 (middle right) Shoshone ceramic sherd; Cat. # 1972.23.00173 (bottom) Sevier Grayware ceramic sherds.