ICS 2009

15TH INTERNATIONAL CONGRESS OF SPELEOLOGY

Proceedings, Volume 1

Symposia Part 1

Volume 1, Symposia, Part 1

Proceedings

15th International Congress of Speleology

Kerrville, Texas
United States of America
July 19–26, 2009

Editor:
William B. White

Cover design:
Beth Fratesi

Layout and design:
Greyhound Press

GREYHOUND PRESS

Library of Congress Control Number 2009930608
ISBN 978-1-879961-33-3

PROCEEDINGS

15TH INTERNATIONAL CONGRESS OF SPELEOLOGY

VOLUME 1

SYMPOSIA, PART 1

Kerrville, Texas

United States of America

July 19–26, 2009

Produced by the organizing Committee of the

15th International Congress of Speleology

Published by the International Union of Speleology

© 2009 National Speleological Society, Inc.
Individual authors retain their copyrights as indicated in the text. All rights reserved. No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any data storage or retrieval system without the express written permission of the copyright owner. All drawings and maps are used with permission of the artists. Unauthorized use is strictly prohibited.

Printed in the United States of America.

ROCK ART AND OTHER ARCHAEOLOGICAL CAVE USE ON THE NORTH AMERICAN PLAINS FROM CANADA TO NORTHERN MEXICO

JOHN GREER and MAVIS GREER
Dr. John Greer, Greer Services, Casper Wyoming USA, jgreer@GreerServices.com
Dr. Mavis Greer, Greer Services, Casper Wyoming USA, mavis@GreerServices.com

Rock art associated with caves is mostly pictographs (painted figures) although petroglyphs (engraved figures) occur in some entrance areas. Other kinds of cultural debris found in caves includes house remains, butchered bones, ocher mining, cold food storage, cultural deposits, log structures, human remains, stone and dirt platforms, placed objects and animal remains, and other items discarded from ritual. Natural light zones are divided into categories based on available light and personal orientation: Daylight, Twilight, Transitional Dark, and Dark zones. Rock art occurs in all zones, while other archeological manifestations mostly occur in Daylight to initial Transitional Dark zone settings. Rock art setting and position of other materials are generally evaluated relative to public and private use, or positions, although reevaluation of that distinction suggests the situation is more complex, and almost all rock art placement could be considered public in some sense. Most cultural materials in caves within the middle of the continent seem to date from the last 3500 years, with most in the last 1000 years. Implied function includes occupation in a protected setting, ritual activity, refuge areas for escape and hiding, ritual deposition of objects and animal remains, and disposal of the dead. Ease of reaching the desired location in the cave is highly variable, with open entrance areas easily accessed and other locations severely isolated by passage restrictions and complex navigation. Cave use throughout the region, as elsewhere, is part of generalized human activity and is not limited to particular cultural groups.

1. Introduction

Caves were used prehistorically by Native Americans through time for many purposes, with different activities occurring in different settings. The size, shape, and character of the utilized portion of the cave and the amount of available natural light influence what activity is conducted where, at any one time, but any activity, such as ritual resulting in rock art, can occur in any setting. Function of any activity can vary with different settings within a cave, or in caves of different characteristics.

Caves are measured from front to back, from mouth to most distant extent of the back wall. Rockshelters are wider than they are long (or deep), and caves are longer (or deeper) than they are wide. This traditional definition works well to distinguish cliff faces from deep caverns. Caves generally have some degree of light restriction because of an enclosed room, extended passageway, or complex underground system. The entrance may be large and allow entry of considerable light, or it may be small and difficult to negotiate. Large open entrance areas are essentially daylight settings, although they may change quickly in character and lead almost immediately into total darkness. Therefore, cave categories range from deep rockshelters to horizontal tubes, enlarged joints and cracks, large enclosed rooms, multiple rooms, multiple levels, larger complex systems, and expedition quality underground caverns. Caves may be strictly horizontal, a combination of horizontal and vertical, or vertically oriented pits, and systems hundreds of meters deep that require use of technical equipment. Some caves are very large; others barely hold one person. It is within this broad definition of *cave* that we examine the kinds of use that occurred through the central part of western North America.

The North American Plains extend from Canada to Mexico and are bordered on the west by the Rocky Mountains. Extensive grasslands and sage-covered prairie are interrupted by island mountain ranges, such as the Black Hills of South Dakota and Wyoming, the Little Rocky Mountains of eastern Montana, and the high mesas of Colorado, New Mexico, and west Texas. These intermittent zones of limestone or sandstone are filled with caves of various sizes and shapes. Other cave systems also occur in the many rocky buttes and knolls filled with enlarged joints and collapsed depressions forming single rooms to vertical systems, such as Surratt Cave in New Mexico. Although only a few hundred caves on the Plains have been identified with archaeological remains, thousands of additional unexplored areas have a high potential for additional discoveries.

2. Natural Lighting Zones and Cave Forms

Archeological materials occur in all zones of natural light

and darkness, and setting obviously was selectively chosen. Caves provide darkness, isolation, visual effects, auditory stimulation, and various psychological reactions not available in daylight or in open-air settings, although some of the same conditions can be achieved at night in semi-enclosed cave rooms. Cave settings, however, can require greater preparation and energy for an activity. For example, ritual far below the surface in total darkness would require artificial light and could require transport of people and materials through restrictive areas of difficult access. Thus, lighting and location within a cave must be considered when analyzing remains within a cave. For purposes in categorizing archaeological remains, we have divided cave settings into four zones based on natural light and difficulty of personal orientation.

2.1 Daylight zone.

This is the immediate entrance where direct sunlight penetrates and lights up the area on a daily basis allowing for use without artificial light during daytime. The area could be illuminated by moonlight at night, which could limit the need for artificial light for some activities. This is universally the most common setting for archeological materials, and cultural remains include houses, hearths, bones, lithics, occupational debris, and rock art. Some remains appear to be the result of daily habitation activity, but some are clearly the result of ritual.

2.2 Twilight zone.

This shadow zone or penumbra is inside the cave in permanent shadow but with adequate light for visibility during most daylight hours. There is no direct sunlight, and artificial light may be necessary to view paintings on the walls and ceiling. There are numerous examples of rock art in these areas. The occurrence of structures and other features is unusual and probably associated with processing, storage, mineral extraction, or ritual in the eternal shadows, more than daily habitation.

2.3 Transitional dark zone.

This initial zone of total darkness, with absolutely no natural light, is away from the entrance but an area where natural entrance glow can be seen from a distance, either directly or with very little movement from the specific location. The cultural consideration is a beacon to guide one out of the cave, at least during the day, with little or no orientation problem and no fear of becoming lost. Traversing the route from a particular point toward the entrance may be a problem, depending on obstacles, but the distance and direction of exit are discernible. Rock art occurs through this zone, and other relatively rare items are almost certainly from ritual activity.

2.4 Interior dark zone.

Artificial light is necessary in this more distant area of total darkness far from the entrance and with no visible light orientation markers. Additionally, familiarity in maneuvering through such an environment in total darkness would be helpful. Exploration of deep pits would necessitate special equipment, although rawhide ropes, or special climbing tools, such as those used by honey climbers in Mexico, might suffice in some cases. Archeological materials are rare, although rock art and some human remains have been found in these areas.

In addition to natural light, shape and size of a cave are important when considering human activities. Whether the cave is a single room, a complex cavern, or a deep pit influenced how the cave was used. For our purposes in categorizing archaeological occurrence, we have divided cave forms into four categories.

2.5 Single room.

Entrance rooms of variable size, some very large and spacious, can have entrances that range from huge to small, nearly closed constricted openings. Some large rooms include twilight and dark zone settings, especially if they have restricted side passages or recessed ceiling domes, which were particularly attractive for rock art on the Northern Plains. Small cave rooms can support a Transitional Dark Zone if they have tiny entrances that open into larger rooms, such as the massive ceremonial U-Bar Cave in southwestern New Mexico. Rainbow Bear Cave in central Montana has a low duck-under entrance into a large room with hanging ceiling fans elaborately painted with ritual figures in a Transitional Dark zone requiring artificial light. Many single-room caves with restricted lighting appear to be associated with various forms of ritual activity (perhaps shamanism) more than simply expressing beliefs, myths, history, or other narrative aspects. Single-room caves with large entrances and better lighting conditions were used both as habitation and ritual locations, while sites with multiple rooms or horizontal passages were more often restricted for ritual and contain painted rock art, special structures, and unique artifact assemblages.

2.6 Multiple rooms and levels.

Archeological materials can occur in all four lighting zones in caves with multiple rooms and multiple levels. Zones can overlap, such as at Lookout Cave in Montana, where sunlight enters through a very small hole into an enclosed room and specifically lights up a small patch of wall with a red stylized bison while other figures around the room are in total darkness (M. GREER and J. GREER, 2007). At the

Comstock Airport Cave in southwest Texas an intensive chipping station and specialized artifacts were found in a very restricted lateral passage deep within the cave system, indicating specialized activity, while the nearby Whitehead Cave in Texas contains deep stratified cultural deposits in the dark zone of an interior room.

2.7 Cave systems.

Large complex horizontal or horizontal/vertical systems usually have cultural remains in the Daylight and Twilight zones. Frozen Leg Cave in southern Montana has pictographs of different ages and traditions in two large twilight rooms, plus other cultural materials and deposits in dark interior rooms and passages (J. GREER and M. GREER, 2006). Surratt Cave in New Mexico, a complex vertical system, has pictographs representing numerous ritual shrine locations all through the complex series of rooms and passages (J. GREER and M. GREER, 1997, 2002, 2007). Lick Creek Cave in central Montana had modern polychrome psychedelic art in the dark zone below the entrance — the only cave on the Northern Plains known to contain this early-1960s complex style and thus a unique representative of an important period of social change in American history. The U.S. Forest Service destroyed the panel, as graffiti, within a management concept of caves as static representations of a prescribed past, as opposed to dynamic cultural landscapes.

2.8 Vertical shafts.

Pits were used mainly for disposal of the dead. This includes both clean vertical shafts, some leading to rooms at the bottom of the entrance drop, and sloping entrance passages quickly dropping into a vertical shaft. There are several examples of this kind of occurrence in central Texas and northern Coahuila (see RALPH, 2009, this volume).

3. Kinds of Cultural Remains

Cultural remains in caves are as varied as they are in open-air sites or in rock shelters. While many materials are associated with various kinds of ritual activity, other activities also represented including habitation, mining, disposal of human remains, lost individuals, specialized activity, and refuge-safety for individuals or groups.

3.1 Rock art.

Rock art includes both painted images (pictographs) and engraved images (petroglyphs), and their presence in caves is often the most noticeable of cultural remains. Rock art most frequently occurs in entrance areas and in the Daylight Zone (J. GREER and M. GREER, 1997, 2002, 2007), with hundreds of examples, many just out of direct sunlight. The large natural entrance of Carlsbad Caverns in New Mexico is one example. Variable function appears to include marking territory, vision quest, shamanism, hunting magic, and commemorating events.

Rock art, especially pictographs, also occurs in the Twilight Zone and Transitional Dark Zone. Several sites throughout the western Plains have paintings (and in rare cases, petroglyphs) in areas where artificial light is necessary to see the rock art, although navigating through that part of the cave may be minimally possible without extra light. In a few cases rock art extends from the Daylight Zone to the Dark Zone in a single site. At Triangle Cave in central Montana the wall from the cave entrance to the back of the phreatic tube is covered with paintings relating to shamanism. Long cracks and tubes in sandstone, though relatively rare, similarly extend back into near darkness. Two passages in the North Cave Hills and the Black Hills of South Dakota have walls intensively covered from front to back with carved petroglyphs.

Rock art in the Dark Zone is not common in this region, but it does occur. Caves in New Mexico provide some of the best examples. Surratt Cave has paintings throughout the vertically oriented system of passages and interior rooms, and Feather Cave is similarly painted in a system of enclosed rear rooms with extremely restricted access (J. GREER and M. GREER, 1997).

3.2 Ritual artifacts.

Rock art is usually assumed to be the result of ritual, as are some other cultural remains (J. GREER and M. GREER, 2006, 2007). Ceremonies leave behind offerings and trash, and discarded items and midden-like deposits may have been placed intentionally in organized arrangement (and later scattered by human and animal visitors), or they may be casual by-products of ceremonial activity. Such observed items include small artifacts (such as lithics or beads in prehistoric contexts and coins in historic contexts), figurines, pendants, and plants (including flowers, tobacco, and leaves), and candles or torches. Remains deliberately placed at specific locations deep within the cave, including small shrines at the base of rock art panels, have been found in such sites as Lookout Cave in Montana and Feather Cave, U-Bar Cave, and Arrow Grotto in New Mexico (J. GREER and M. GREER, 1997). Based on our ethnographic observations in northern Mexico, items are left whether two or three people cooperatively or communally conduct ceremonies in a room, with or without a larger group of people. The amount of debris left depends upon the number of participants, with more discarded material from larger

groups, or from repeated use of the location. Even when the group is large, the focus location within the cave is usually small and specific.

Ritual cave remains can also be identified from kind of object or from specific placement of objects. Skulls and other parts of power animals, such as bear or mountain lion, can be placed on ledges or constructed platforms within the cave, presumably as a request for supernatural assistance. Offerings can include finely made projectile points (often large spear points), feathers, flutes, beads, combs, prayer sticks, wands, and other decorative and ceremonial objects. Such offerings deep in the cave may be from a single person or associated with a group ceremony. Such offerings also may be buried or hidden. Conch shell masks probably transported from the Mississippi River area in the southeastern United States were found buried in a specially prepared area of Mask Cave in Montana, with its walls completely painted with red ochre.

3.3 Houses and habitation remains.

Constructed house floors or stone walls are occasionally found in the entrance areas of horizontal caves, and more rarely back into twilight areas, often associated with painted figures. Circular rock foundations for small wickiups are in the entrance of Juniper Cave in Wyoming, along with other house floors and painted figures, and other prehistoric stone foundations are in a nearby cave in Montana. In Montana and Wyoming, complete pole wickiups of the normal tall conical form — or the remains of such structures — occur in entrance areas. In other sites, interior rooms or small entrances are occasionally closed off with logs (M. GREER and J. GREER, 1997).

Frozen Leg Cave in southern Montana and Cave of the Logs in eastern Utah contain log structures, a large wickiup-like enclosure and a rectangular platform. These are horizontal systems of very difficult access, high on the canyon wall, and large logs, not available near the caves, were brought up to the entrances and transported with extreme difficulty into interior twilight and dark zone areas of the caves. The structures are considered associated with ritual, but their size and complexity are beyond normal wooden constructions in entrance areas.

Other kinds of habitation debris occur mostly in entrance areas. Common materials include hearths, stone and ceramic tools, chipped stone debitage, and butchered bones (J. GREER and M. GREER, 2006). At the heavily painted Two Hands Cave in Montana, a bone bead next to a hearth suggests additional activity. In the lower part of the entrance passage of Horsethief Cave, a large cavern in Wyoming, ashy deposits with burned rock, chipped stone tools, debitage, and large amounts of butchered bone indicate repeated use of the interior entrance area for habitation.

Ice caves are common on the Northwestern Plains, and they undoubtedly provided refrigeration for prehistoric people, as they still did during historic times. No recognizable ritual remains or rock art have yet been recognized in caves with year-round ice deposits on the northern Plains, as they have in parts of western New Mexico. However, at Hand Stencil Sink in Montana the temperature at the bottom of the main room is nearly freezing, and there is evidence of wooden racks for hanging animals. The cave also contains rock art and an area of mineral extraction.

3.4 Stone and soil platforms.

At a few sites, the entrance area has been lined with stones, built up, and flattened, creating a platform. This suggests formal preparation of a habitation or ceremonial floor with a considerable amount of expended time and energy. Two entrance rooms in central Montana contain such platforms (GREER, 1995), both made by creating a stone facing of locally available rocks, and then filling in the faced area with dirt to create a flat floor. The floor provides a work area or place to sit in front of the entrance. Another site in Montana has a constructed rock walkway about 20 feet long leading away from the entrance and onto a flat area (THORSON and DAVIS, 1974).

3.5 Ochre mining.

Some caves on the Northern Plains contain mineral deposits used for paint pigment. An ethnohistorical reference describes Flathead Indians in Montana extracting red pigment from a limestone cave. Hand Stencil Sink in central Montana has several dark rooms and a small interior passage used for extraction of red iron oxide mineral, the main paint material in this region. Two negative handprints are located at the entrance of the cave.

3.6 Human remains.

Human remains are in caves for various reasons. Bodies are placed intentionally mostly in crevices or single rooms on the Northern Plains, such as Wyoming, or in larger cave rooms on the Southern Plains. In Texas and northern Mexico bodies also were both carefully placed and informally thrown into vertical shafts and vertically oriented small systems. Evidence of this practice has been found in the central and southwestern Texas, the Mexican state of Coahuila, and in the far eastern part of the Mexican state of San Luis Potosí (BEMENT, 1994; KUNATH,

2007:279-283; see RALPH, 2009, this volume). The small room surrounding a burial shaft in San Luis Potosí was covered with petroglyphs (GREER, 1974b; ARIAS FERNÁNDEZ, 2001:47-57). Remains are also found in deep, somewhat inaccessible parts of interior passages where people presumably died while wandering in the cave alone because they were lost. It is also possible, though unlikely, that bodies were carried far back into these remote areas for disposal. One such set of adult male remains about 5000 years old was found deep within Felton Cave in Texas. Another set of adult male remains about 8000 years old was found deep within another horizontal system in western Colorado (MOSCH and WATSON, 1997). In both cases, it is unknown if the person was lost, crawled into the cave to die, or if his body was placed there by other members of his social group.

3.7 Objects removed from caves.

Cave use is also evidenced by objects removed from caves and taken to another location either with or without modification. In some cases, most notably caves in northeastern Mexico (GREER, 1974a), cave formations have been intentionally broken and pieces removed from the cave, presumably for ceremonial use outside the cave. Likewise, cave crystals and pieces of formations have been found in archeological sites far from known caves. For example, a small stalactite artifact found on a river terrace in eastern Montana had been polished and then finely incised into what appears to be a highly decorated snake or salamander. The carved piece is at least 200 km from known cave areas.

4. Caves as Refuge Locations

Caves often blend into the surrounding environment and provide places for people to hide from enemies. Unfortunately, little is documented about use of caves as refuge locations. Boyd's Cave in southeastern New Mexico has a large flat sinkhole entrance, easily climbable, obscured and camouflaged by rock outcroppings and vegetation. The massive underground entrance chamber is documented to have been used by an entire band of Apache Indians hiding from the Army in the 1800s. Such use may have occurred more frequently than currently known, especially since there would be little, if any, remaining physical evidence for such a function. Human remains in some Texas caves are in locations and positions believed to indicate use of the cave for refuge during Indian attacks in the late 1800s (KUNATH, 2007:279-283).

5. Summary and Conclusions

People probably used caves across the Plains from the time they entered the New World more than 13,000 years ago. The earliest dates for human remains in Texas caves are more than 11,000 years old (KUNATH, 2007:279-283). Cave use across the Plains from Canada to northern Mexico certainly dates back at least 8,000 years, but with widespread use during the last 3,500 years. Artifacts, cultural deposits, in-cave construction, and rock art all show an intensification of cave use during the last 1,000 years, with a dramatic increase in ritual use, particularly interior dark zone areas. Thus, use of caves in this region has a long and complex history covering thousands of years and many cultures.

Cave use, or site function, was equally complex, and caves were used by many cultures for both secular and religious reasons, with setting in the cave more important than available light. Daily habitation and most ritual activities were concentrated in areas with at least some entrance light. Rituals and ceremonies were conducted in all zones, perhaps because the Twilight Zone and many entrance rooms, especially enclosed rooms, at night are ideally dark and isolated from external influences of light and sound. At least some of the more elaborate and complex religious activities appear to have been reserved for the Dark Zone, suggesting that complete isolation, remoteness, and depth into the underworld were important. The characteristics of total darkness within a constricted space surrounded by solid rock, with the auditory effects of imagined supernatural noises and pounding trance-inducing reverberations of deep cavern passages cannot be replicated elsewhere. Also, the degree and intensity of interaction with the earth could change with the depth into which one goes into the cavern and the degree of isolation one would experience. Although activities could take place in enclosed entrance rooms, one would expect that those activities conducted far within the Dark Zone of a deep cavern would have different psychological, and presumably cultural, effects and meaning. Such use of the Dark Zone is reflected in various ways throughout this extended Plains zone, especially where paintings are far from entrances, and shrines were constructed far beyond the reach of natural light. Access to remote areas is often controlled by a tiny constriction — or notch — barely large enough for a small human body. Several such notches Surratt Cave in New Mexico are less than 30 cm in diameter. The back ritual rooms of Arrow Grotto, at the rear of the main passage in Feather Cave in New Mexico, are reached through a long low (est. 30 cm) passage ending at a very narrow notch entry into the first room. Comstock Airport Cave in Texas has an even smaller notch opening into a narrow passage with chipped stone debris from specialized ritual, and Whitehead Cave in Texas has a very narrow entrance leading down to the main

ritual area of a massive interior room. For other functions, such as ochre extraction or removing objects from the cave, the resource within the cave was more important than the degree of available light. Refuge use was dependent on the hidden nature of the entrance and the depth and complexity of the interior passages.

Rock art and ritual, and locations in sites in which they occur, are often evaluated relative to whether the art (or activity) was done for public use and observation, or if it was made only for the eyes of the specialist. The distinction is usually that *public* locations are those used by groups of people and thus have an outward orientation. *Private* locations are those presumably for use by only one or two people and have restricted viewing within a very small area. Based on this, it is generally assumed that a *public* place has a wall or altar facing a large, open area of ample space to hold a number of people and easily viewed by the group, while a *private* place is one occupied or utilized by only one person at a time, such as a small nook in the edge of a room, or a small isolated cavity. In applying these concepts to cave sites, particularly those with rock art, we have found that even the most private places still could accommodate a second or third participant, even if standing or lying a few feet away. The private location may not have been strictly private in the individual sense, and the private party may have consisted of a few, or even several, people. Equally important, however, there is no way to determine how many people may have participated in an activity in an open area that we class as public. It is possible that the number was very limited. Our ethnographic observations of ongoing native cave use in northern Mexico supports our views that *private* and *public* are inappropriate concepts relative to actual ritual conducted within a cave, usually taking place in a very restricted area, done privately by a specialist, but observed and supported by a group of people for whom the ceremony is actually intended.

In conclusion, evidence left in caves indicates that through time people have been attracted to caves as important locations for a variety of functions that range from secular to sacred. Each cave must be analyzed on its own from remaining cultural evidence to determine how it functioned, when it was used, and by which group or groups.

References

ARIAS FERNÁNDEZ, R. (2001) *Sótanos de México, Abismos de Luz y Sombra*. Secretaria de Medio Ambiente y Recursos Naturales. México DF.

BEMENT, L.C. (1994) *Hunter-Gatherer Mortuary Practices during the Central Texas Archaic*. University of Texas Press, Austin.

GREER, J. (1974a) Aboriginally Occupied Caves in the Sierra de El Abra, San Luís Potosí and Tamualipas, Mexico. Association for Mexican Cave Studies, *Newsletter* 4(4):126–128. Austin.

GREER, J. (1974b) Petroglyphs at Sótano de los Monos, Sierra de El Abra, San Luís Potosí, Mexico. Association for Mexican Cave Studies, *Newsletter* 5(1):23–30. Austin.

GREER, J. and M. GREER (1997) Dark Zone Rock Art at Surratt Cave, A Deep Cavern in Central New Mexico. In *American Indian Rock Art*, Vol. 23, edited by S.M. Freers. pp 25–40. American Rock Art Research Association, San Miguel.

GREER, J. and M. GREER (2002) Dark Zone Pictographs at Surratt Cave, Central New Mexico. In *Forward Into the Past: Papers in Honor of Teddy Lou and Francis Stickney*, *The Archaeological Society of New Mexico*, Vol. 28, edited by R.N. Wiseman, Thomas C. O'Laughlin, and Cordelia T. Snow, pp 37–46. Archeological Society of New Mexico, Albuquerque.

GREER, J. and M. GREER (2006) *Archeological Use of Caves on the Northwestern Plains, USA.* Paper presented at the IFRAO – GLOBAL STATE OF THE ART, An International Rock Art Meeting at the UISPP XV Congress, Lisbon, Portugal.

GREER, J. and M. GREER (2007) *Rock Art Associated with Ritual Cave Use in the Southwest and Northern Mexico.* Paper presented at the 72nd Annual Meeting of the Society for American Archaeology, Austin.

GREER, M. (1995) *Archaeological Analysis of Rock Art Sites in the Smith River Drainage of Central Montana.* PhD Dissertation, University of Missouri-Columbia.

GREER, M. and J. GREER (1997) *24BE601, Wickiup Cave, Addendum Site Form*. On file with the Montana SHPO Record's Office, Missoula.

GREER, M. and J. GREER (2007) *Lookout Cave, An Example of Ritual Cave Use in Montana.* Paper presented at the 72nd Annual Meeting of the Society for American Archaeology, Austin.

MOSCH, C.J. and P.J. WATSON (1997) An Ancient Rocky Mountain Caver. *Journal of Cave and Karst Studies* 59(1):10–14.

KUNATH, C.E. (2007) *50 Years of Texas Caving*. A&K Enterprises, San Angelo.

RALPH, R. (2009) Texas Caves, Texas Ossuaries. This volume.

THORSON, J. and S. DAVIS (1974) *24ME41 Site Form*. On file with the Montana SHPO Record's Office, Missoula.