University of Wyoming National Park Service Research Center Annual Report

Volume 37 Article 12

1-1-2014

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ARCHAEOLOGY AND SOCIAL GEOGRAPHY IN THE SUNLIGHT BASIN, WYOMING

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✦ ABSTRACT

Painter Cave (48PA3288) is a dry rockshelter in the foothills of the Absaroka Mountains of northwestern Wyoming that has deeply stratified deposits. Archaeological materials were disturbed several decades ago by looters, who reportedly took a number of perishable Native American artifacts including moccasins and a cradle board, as well as numerous other unidentified objects. Preliminary assessment by Shoshone National Forest Service personnel in 2011 suggested that the site might still be partially intact. Indiana University's Bighorn Archaeology project conducted a pilot study at Painter Cave and the surrounding area in 2014 in an effort to identify and recover any additional cultural deposits. Artifact recovery addressed local landscape use, cultural chronology of the area, subsistence strategies, and environmental conditions. The looter activity unfortunately proved to be extensive. Although team members identified numerous archaeological signatures at different sites in the study area, primary deposits in the shelter itself were disturbed in such a way that investigation into the use of Painter Cave by past peoples was challenging.

✦ INTRODUCTION

Painter Cave is a recently-recorded archaeological site located in Sunlight Basin in northwestern Wyoming at an elevation of approximately 2268 m (7,440 ft.) above sea level. Sunlight is a resource-rich high altitude basin, 24 km east of Yellowstone National Park. It is located on the road between Cody, Wyoming, and Cooke City, Montana, via the Beartooth and Chief Joseph Scenic Byways. The Beartooth Highway (U.S. Hwy 212), which opened in 1937, is a National Scenic Byways All-American Road through southwestern Montana and northwestern Wyoming from Red Lodge, Montana, to the Northeast entrance to the Park. The road is partially closed in winter due to snow accumulations, leaving sole access to the eastern side of the Park via the Chief Joseph Scenic Byway from Cody that travels through Sunlight Basin. The Chief Joseph Scenic Byway (Wyoming Hwy 296) follows the route taken by Chief Joseph as he helped guide a group of eight hundred Nez Perce Indians fleeing the U.S. Calvary in 1877. The highway was built in the late 1800s to offer support to miners and railroad interests in the area. The route crosses the Shoshone National Forest through the Absaroka Mountains to the Clarks Fork Valley and was not paved until 1995. The Beartooth and Chief Joseph Highways are still heavily traveled today. The project area is located 15 km west of the highway just north of Sunlight Road, as it bisects and drops into Sunlight Basin. Archaeological evidence suggests that this travel corridor has been in use for thousands of years, linking the Wyoming Bighorn Basin to Yellowstone and the Montana Plains.

The Sunlight Basin environmental context is a combination of sagebrush grasslands, mixed conifer forest, and mountain meadows (Figure 1). It is a natural habitat for many species of animals including elk, mule deer, moose, bighorn sheep, black bears, mountain lions, and coyotes (Buskirk 2016). Birds such as blue and ruffed grouse, mourning doves, songbirds, and some duck species also spend time here. Previously extirpated animals such as wolves and grizzly bears have returned to the basin, while bison continue to graze in other areas of the forest closer to the park.

Figure 1. View of Sunlight Basin from project area.

Although referred to as a cave, Painter Cave is technically a dry rockshelter (Figures 2-3). It has the potential to contain deeply stratified deposits of multiple cultural and natural layers. The extensive use of the shelter by packrats (also called bushy-tailed woodrats, *Neotoma cinerea*) informs us about local animal species present through time. Size-sorted debris identified at the entrance of the shelter additionally provides evidence of previous looting activity and could mean that stratified deposits were impacted by the looters.

Figure 2. Entrance to Painter Cave.

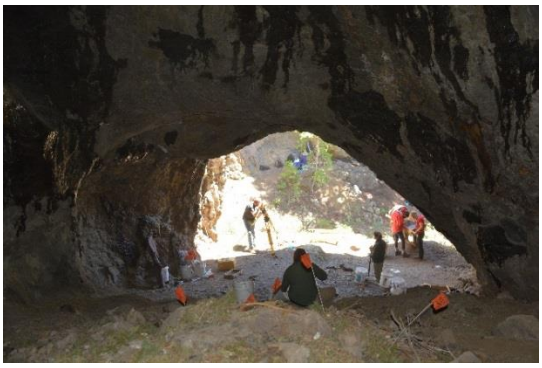

Figure 3. View from the back of Painter Cave. Note modern packrat nests and stains on ceiling.

The Shoshone National Forest Service District Archaeologist Kyle Wright along with archaeologist Dr. Larry Todd documented the looter activity when they recorded the site in 2011. They drew preliminary maps of the cave floor and determined the depth to be multiple meters. The probability of finding perishable materials was thought to be high due to the protected nature of the cave, as well as previous reports from local community members. Perishables are rarely recovered in open air sites and thus are significantly understudied. The conspicuousness of the location and the former looting make Painter Cave susceptible to further vandalism by artifact collectors. This concern continues to be shared by the local community, indigenous groups, the Shoshone National Forest District Archaeologist, and the Forest Service Law Enforcement Rangers. Studying this cave was an attempt to preserve the histories that this site and its contents represent.

✦ BACKGROUND AND SIGNIFICANCE

Cave sites are known to be "extraordinary data sources for two fundamental reasons: they repeatedly provided permanent shelter for human groups, and they serve as fairly permanent post-depositional containers for the material residues of those human occupations" (Straus 1979:332-333). Closed sites in this area are usually classified as one of four features: caves, rockshelters, overhangs, and boulder shelters (Kornfeld 2007:58). Within the mountain regions that comprise the adjacent Bighorn Basin, at least 49 closed archaeology sites have been examined, with over 130 known (Finley et al. 2005, Kornfeld 2007). These sites have been used for thousands of years, and some deposits date to as old as the first inhabitants of the North American continent. They have the potential to inform us about long-term cultural processes in these environmental contexts. Stratified open air sites, while rare, have been documented and contribute valuable information about technologies and variations in lifeways over time. However, closed sites offer opportunities for the understanding of temporal cultural change and reconstructing past environments though stratified deposits in protected conditions (Finley et al. 2005, Walthall 1998). These sites are distinctive because they have "escaped to varying extents the geological processes of weathering and stream scouring and transport, so that in situ archaeological components were preserved in stratigraphic sequences that can extend over long periods of time" (Kornfeld et al. 2010:70).

Although numerous Native groups used this area through time, it is perhaps most known for the Mountain Shoshone or Sheepeater occupants. Shoshone people occupied this area for many thousand years (Larson and Kornfeld 1994, Nabokov and Loendorf 2004). A large late precontact Shoshone campsite is located at Sunlight Creek, just two kilometers south of Painter Cave (Kornfeld et al. 2010). Archaeologists and others have long recognized the relatively unique bighorn sheep hunting features in northwestern Wyoming as remnants of Mountain Shoshone "Sheepeater" bands (Frison et al. 1990, Norris 1881), but it has only been since 2004 that recognition of associated camp and butchering sites dated the hunting features to the contact period ca. AD 1750-1850 (Eakin 2005, Scheiber and Finley 2010). Both archaeologists and historians have a poor understanding of the first encounters between these Indians and Euroamericans, and rare records of culture contact in the mountains east of Yellowstone National Park informs both intellectual communities about Native responses to colonial encounters beginning with the Upper Missouri and Rocky Mountain fur trade and ending with forced settlement on the Wind River Reservation in central Wyoming. The Shoshone likely continued to travel north to the Yellowstone area through the 1870s and possibly beyond (Stamm 1999). The archaeological record from Painter Cave could supply additional insights about changing patterns of Shoshone subsistence, settlement, exchange, territoriality, and ethnic identity both pre and post contact (Scheiber and Finley 2010, 2011a, 2011b, 2012).

Sunlight Basin was Crow territory in early historic times (Medicine Crow 2000). It was part of the Crow Indian Reservation until 1868, when it was reduced to a fifth of its size and constrained to the state of Montana during the Fort Laramie Treaty. Yellowstone National Park was established in 1872, effectively shutting Native people out of park lands. In an effort to present Yellowstone National Park as an unaltered landscape, early officials effectively removed Native communities from regional histories (Nabokov and Loendorf 2004, Scheiber and Finley 2010). Mining in the late 1860s and 1870s brought white settlers to the Sunlight area. It is clear that the Crow were still regularly traveling south to Wyoming during this time. As quoted by the Mountain Crow spokesperson Sits in the Middle of the Land in 1873, "We used to go up the Yellowstone, and cross to the lake, and go through to Heart Mountain on the Stinking Water. That was our country. This summer we intend to go to Heart Mountain to get skins for our lodges" (Wright 1874:130). The route from the agency to the Stinking Water would likely have taken them through Sunlight Basin and near vicinity. In 1882 and again in 1891 the Crow lost the area near Cooke City, Montana, just north of Sunlight, largely due to mining interests. Euroamericans settled more extensively in the basin starting in the 1880s, although the Crow continued to travel through the area at least into the early 1900s (Dominick and Chivers 2004).

The Crow continue to tell stories about Sunlight Basin today. According to Grant Bulltail, Crow tribal historian whose grandfather grew up in the region, it was known as Yellow Crane's land. "A little further up from the Red Hills (*Shichíshe*) is the location known to whites as Sunlight Basin but to the Crow as Yellow Crane's Land (*Apitshiilishasawe*) for a leader who regularly took his band there to hunt elk, bighorns, and buffalo in the winter" (Nabokov and Loendorf 2004:43). Yellow Crane was likely born around 1850, and he was a tribal leader at the turn of the century (Hoxie 1995, U.S. Congress. Senate 1908, U.S. Congress. Senate. Committee on Indian Affairs 1886).

In 1877, Chief Joseph and eight hundred Nez Perce journeyed through this area as they were pursued by the U.S. Calvary (Lang 1990). Although they may not have traveled directly through Sunlight Basin, their attempts to avoid confinement by trying to flee to Canada contributes to the landscape of Native-white relationships in this area of northwestern Wyoming. The exact routes of both the Nez Perce and two Army units continue to be investigated by archaeologists and historians.

The research project at Painter Cave is significant in multiple dimensions across space and through time: 1) it contributes to the scientific study of regional rockshelters potentially offering a prehistoric "master sequence" of long-term cultural occupations and environmental histories in the basin uplands, 2) hundreds of recently identified high-altitude single-component surface sites may be tied into this potential master sequence, 3) it is located on a drainage between historic conical lodge structures and one of the largest known precontact Shoshone winter campsites and thus has enormous potential to contribute to knowledge about Shoshone landscape use across different elevations, 4) it is informed by the voices of local descendant tribal groups. The site is vulnerable because it is not protected. Although the sub-surface of the cave likely has not been disturbed in decades, the shelter was recently referenced on a local resident's blog, and other people are aware of its location. Studying this cave is crucial to protect and preserve the site for the future. Additionally, the site is

located in an unburned forested area. Providing baseline data for the forest pre-burn is an important tool for resource management. In fact, Sunlight Basin is adjacent to the boundary of the 1988 Yellowstone (Clover Mist) fire.

✦ ARCHAEOLOGY OF SUNLIGHT BASIN AND THE EASTERN YELLOWSTONE AREA

The project area is in the vicinity of several key archaeological sites, many that are essential for understanding the regional prehistory, including Mummy Cave, the Dead Indian Campsite, Bugas-Holding, and the Sunlight Sheep Trap. This work ties directly into these regional chronologies and provides more information to connect the valleys to the mountain contexts, which is now almost completely lacking. Painter Cave presents a unique opportunity to study long-term change and continuity in hunter-gatherer use of the Rocky Mountains, including subsistence strategies, resource exploitation, technological change, seasonality, climatic fluctuations, and cultural identity and migration. Investigating the variability of human occupation in this area is crucial for studying the duration and intensity of remote mountain landscape use as well as for tracking the movements of particular groups of people who came to occupy this area in historic times. Recovery of faunal remains also links ecological histories and fine-tunes environmental climatic fluctuations.

Several archaeological sites have been documented in the near vicinity, many through cultural resource management projects for road and building construction. Thirty-three archaeological sites have been recorded in a 9.6 km (6 mile) radius around the research area. Two-thirds are prehistoric sites, and one-third are historic sites. Most of these are located within a short distance from the water source of Sunlight Creek. This pattern is likely as much due to discovery efforts as past peoples' preferences.

Other important sites in the area were investigated several decades ago (primarily in the 1960s, 1970s, and 1980s). Dating from 5,000 to 500 years ago, the Dead Indian Campsite (48PA551), is located 10 km south/southwest of Painter Cave (Frison and Walker 1984). It has been listed on the National Register of Historic Places since 1974 and is one of only three prehistoric archaeological sites listed on the register in Park County, along with the Horner site (48PA29) and Mummy Cave (48PA201). The most intensive occupation at the Dead Indian site is the Middle Archaic (4,500 years ago) winter pithouse camp with evidence of extensive deer processing. The Bugas-Holding site (48PA563), just two km south of Painter Cave, is a large Shoshone fall/winter campsite dated to AD 1400-1600 (Rapson 1990). It, along with Mummy Cave, demonstrates the most extensive evidence for sheep procurement in the region.

Mummy Cave is a large rockshelter containing one of the prehistoric master sequences discussed above (Husted and Edgar 2002, Wedel et al. 1968). It is thirty-three km southwest of Painter Cave almost at the East entrance to the Park. Containing thirty-eight occupation levels, it spans human occupation in the region from more than 10,000 years ago to several hundred years ago. The Sunlight Sheep Trap (48PA1040) is an excellent example of a preserved sheep trap, with a wood catch pen and wooden drivelines (Frison et al. 1990). It is located five km west of the site. Painter Cave has the potential to tie together these important sites as well as bring innovations and advances through the use of 21st century technology and recovery methods not possible fifty years ago.

This research also builds on the recent experiences of numerous archaeological teams working throughout the high-elevation wilderness areas of the Greater Yellowstone Ecosystem (GYE). Although a limited number of wooden features associated with sheep traps (drivelines, catchpens, structures) as well as conical pole lodges have been known throughout the area since the late nineteenth century, associated artifacts are rare or absent at these sites so that archaeologists were unable to document the daily lives of those participating in the communal sheep hunts. Based on the preservation of the wood and a few preliminary dendrochronology dates, archaeologists assumed that most of these sites were created and used during the early 1800s (Frison et al. 1990). Much of the work during the next fifteen years in the region was conducted as part of Section 106 compliance for cultural inventories such as the fourteen-season project associated with the upgrade to the North Fork highway between Cody and Yellowstone (Eakin et al. 1986). Most of the identified sites are still in the valley. During the last decade however, several archaeologists realized this gap in knowledge and initiated new research projects specifically targeting high-altitude sites (Adams 2010, Morgan et al. 2012, Scheiber 2015, Todd 2015, Todd and Scheiber 2012). Hundreds of new sites have been identified and recorded as a result of this renewed interest. It was not until the Boulder Basin II wildfire in 2003 that the full extent of mountain archaeological

resources started becoming clear, as site visibility rose dramatically in fire-altered contexts.

The objective for the social geography part of this project was to respond to previous work conducted by Peter Nabokov and Larry Loendorf for the National Park Service in the mid-1990s and published in their book *Restoring a Presence* (Nabokov and Loendorf 2004). They found that many Native groups continue to tell compelling stories about the Yellowstone area. They also wished for better archaeological data, describing an "inadequate archaeological database on which to build ethnographic data" (Nabokov and Loendorf 2004:28). This situation is rapidly changing. Archaeologists and other scholars need to continue to involve Native people in investigations about the past, in responsible participatory research. Other efforts in this regard include the Heart Mountain Pipe Ceremony, sponsored by the Wyoming Humanities Council and the Park County Library, which is now in its fifth year of welcoming Crow people back to northwestern Wyoming to tell stories about their homelands (Keller 2014).

✦ METHODS AND PRELIMINARY RESULTS

The project employed archaeological methods that were best suited to investigate this type of environment, including surveying the surrounding area in a systematic fashion to assess the use of the broader landscape, mapping surrounding sites, conducting test excavations in the shelter to investigate the depth of deposition, and stratigraphic profiling to examine the cave's use over time. In addition to archaeological investigation, the research team met with descendant community members and stakeholders. The team also used innovative resources to investigate the Painter Cave site, including a three-dimensional laser scanner to digitally capture the cave interior. Widespread packrat activity extended throughout the shelter, with nests (branches, leaves, pine needles, sticks, and bones) and droppings covering the current surface. The packrat middens were not only pervasive throughout the shelter but extended for several meters below the surface as well. Rodent occupation may have predated temporary past human occupations. Several meters of rat urine and excrement were observed in exposed interior walls. In creating these middens, packrats brought hundreds of animal bones to the cave.

Archaeological survey

Several important archaeological sites have previously been recorded in the Painter Cave near-vicinity, including Bugas Holding, the Sunlight Basin Sheep Trap, and the East Fork of Painter Gulch lodges (48PA305). The first few days were spent systematically surveying for previously unidentified sites and visiting known site locations. Landforms varied from open alluvial terraces along the creek drainages to wooded foothills. The primary method was a standard archaeological survey inventory using pedestrian transects with 10 meter interval spacing. The field crew visited the Sunlight Basin Sheep Trap and the East Fork of Painter Gulch lodge site, to access the integrity of these rare and unique sites (Figure 4).

Figure 4. Sunlight Basin Sheep Trap catchpen.

Because they are constructed of perishable wood material and have been impacted by harsh elements, they likely are no older than two or three hundred years (Scheiber 2015). As part of the field school training, the crew mapped the collapsed lodge structures and used GPS units to locate the sheep trap. Observing both features informed the students' understanding of high-altitude occupation and subsistence strategies.

A systematic survey was also conducted in the area surrounding Painter Cave, including a crawl survey of the 20 meters surrounding the cave opening with a 50 cm interval spacing. Five new sites and site isolates were recorded, including several lithic scatters and a Late Paleoindian (ca. 8,000 year old) projectile point. In total, the crew surveyed 938,000 square meters, or 232 acres.

Excavation and mapping

East Fork of Painter Gulch Lodge Site:

The East Fork of Painter Gulch lodge site is a campsite with several fallen lodge structures. Often

referred to as war lodges or wickiups, these features are more appropriately called conical pole lodges that were primarily residential structures (White and White 2012). The site was originally recorded over 30 years ago as two lodge structures, one of which was still standing. The standing structure was excavated, revealing a central fire pit and burned bones. The site was re-identified by then Forest Service District Archaeologist Molly Westby and Larry Todd in 2010. They recorded four features, all collapsed and were unable to determine which structure had previously been excavated.

Our team re-visited the site as part of the 2014 project (Figure 5). We re-identified the four collapsed lodge structures, drew scientific illustrations of each, and metal detected the site. Because the site is unburned and located in a forested environment, the mountain duff and pine needles are several cm thick throughout the site, making surface artifact visibility nearly impossible.

Figure 5. Collapsed lodge at the East Fork of Painter Gulch site.

Most of the identified metal artifacts were food cans, horseshoes, round nails, beverage pull tabs, a gum wrapper, and unidentified metal, which speak to the site's historic and modern impacts. The most interesting item was a .53 caliber lead musket ball that was found on the edge of Lodge 2 (Figure 6). It was likely fired from a smooth bore musket and dates to the nineteenth century. This size musket ball was popular in many hunting guns of the early historic era, although they technically could still be used today. The musket ball might be associated with the residential structure, given their similar ages and their proximity to one another.

Figure 6. Musket ball at edge of lodge under thick forest duff.

Painter Cave:

The interior of Painter Cave is approximately 20 meters in length by 8 meters in width. With an area of 160 square meters of floor space and an unknown depth of at least several meters, the cave deposits had the potential to contain a rich assemblage of material culture dating from recent times to several thousand years ago. An abandoned 1/2" mesh screen with a 1969 date and a shovel in the back of the cave indicate that it was likely looted in a somewhat methodical manner decades ago. Other modern cultural items such as beverage pull tabs and cigarette butts speak to the cave's ongoing visitor presence. Although no obvious looting pits were present, piles of size-sorted rocks and dirt since overgrown with vegetation near the drip line of the cave likely represent these efforts. Forest Service personnel estimated that looters may have impacted approximately 5-10 cubic meters of the cave floor. The sediments on the floor of the shelter were extremely loose and unstable, and it was difficult to walk from the entrance to the back of the cave without disturbing the unconsolidated soft dry cave sediments.

The initial stages of investigation began by screening the backdirt through a 1/8" mesh dry screen, to try to recover a sample of what may have been removed by the looters. In dozens of buckets of screened backdirt, we recovered a handful of chipped stone flakes and debitage and hundreds of faunal remains. No lithic tools, ceramics, trade goods, or organics were recovered. The looter activity was prolific and presumably robbed the site of many artifacts, especially those that were greater than one-half inch.

Two other areas were also excavated in horizontal levels, with different strategies. Two 50x50 units were excavated from the deepest and most undisturbed part of the cave. Another large unit

approximately 1x2 m revealed the posterior wall of what appeared to be a disturbed ledge possibly left by looters. The small test units recovered no archaeological material while the possible edge of the looter's pit showed packrat midden stratigraphy and bones with varying degree of modification, both cultural and natural. Chipped stone debitage and one small Late Prehistoric (ca. 300-500 years ago) projectile point were also recovered. All units were dug to sterile levels, which in the case of the larger unit was several meters deep. The stratigraphy of the deep unit informed us more about taphonomic (packrat) disturbances than about improving our understanding of cultural deposits (Figure 7). No obviously cultural perishable materials were recovered, although denning materials from the packrats were present throughout the levels.

Figure 7. Interior of Painter Cave, showing large excavation unit with stratified packrat midden.

Packrats have likely been present for millennia, and their activities have obviously impacted the site. Packrats urinate on their middens, which crystalizes into a material known as amberat. This process of hardening the midden was obvious in the stratigraphic profile of the large unit, with evidence of layer after layer of packrat midden through time. The middens may be several thousand years old, as they decay slowly from the amberat and the dry shelter environment (Davis 1990). While few artifacts were recovered, we were able to assess the local faunal environment based on the presence of bones both on the surface and sub-surface. The bones were likely the result of packrat occupation, while some were culturally modified.

With the help of staff from the Idaho Virtualization Laboratory of the Idaho State University Museum, we were able to obtain a complete digital image of the inside of Painter Cave. The shelter was scanned with a FARO Focus3D LS120, producing detailed measurements of the cave's interior and surrounding landscape. Five separate scans produced a three-dimensional video that seamlessly captured the topography and features of the land and cave.

Social geography

Social geography includes empirical studies of the role of space, place, and culture in relationship to social issues, politics, daily practices, and identity. Our understanding of the cultural history of Sunlight Basin was informed by Apsaalooké tribal elder Grant Bulltail from the Crow reservation in Montana. Interview questions included stories about Sunlight Basin, the Bighorn Basin, the Cody area, Yellow Crane, and movements by the Crow during the early reservation period.

✦ ANALYSIS

Artifact analysis focused on the hundreds of faunal remains that were recovered from Painter Cave, as well as basic analysis of the lithic materials and of the lead musket ball described above. We hoped to include information about the artifacts that were previously removed from the cave but were unable to obtain additional information about their current whereabouts. The faunal material was analyzed following standard zooarchaeological methodology. The total number of identified specimens (NISP) is 1207. This number represents specimens, i.e. number of bones, not individual animals. Taxonomic assessment was determined with the aid of the comparative collection at the William R. Adams Zooarchaeology Laboratory at Indiana University. Taxonomic lists are important to determine which animals lived in the vicinity of the site through time and possibly which animals were procured by past peoples. Bone surface modification was also recorded, including burning, rodent gnawing, and carnivore modification. Burning is a sign of cultural activity, as bones were likely burned during cooking or when discarded in fire hearths. Rodent gnawing suggests the degree to which the packrats impacted the assemblage and possibly which bones were introduced to the site. Carnivore modification also suggests that the bones were impacted after primary deposition, either when animals were killed by humans, killed by other animals, or died naturally. Cutmarks, digestion, and pathologies were also observed on a few bones.

Fauna identified taxa

Twenty-three taxa were identified to various levels, including both mammals and birds, and large and small animals (Figure 8). Eleven of these could be

narrowed down to genus/species-level: bighorn sheep (*Ovis canadensis)* (n=179 identified specimens), deer (*Odocoileus* spp.) (n=39), rabbits (both *Lepus* spp. and *Sylvilagus* spp.) (n=28), pronghorn (*Antilocapra americana*) (n=4), bison (*Bison bison*), (n=1), coyote (*Canis latrans*) (n=1), cow (*Bos taurus*) (n=1), elk (*Cervus canadensis*) (n=1), mountain lion (*Puma concolor*) (n=1), and porcupine (*Erethizon dorsatum*) (n=1). The vast majority of the bones belong to bighorn sheep, possibly as many as 40% of the assemblage. The minimum number of bighorn sheep recovered from throughout the shelter is six, as determined using right astraguli (ankle bones).

Taxa	**NISP**
Bighorn Sheep (*Ovis canadensis*)	179
Bison (*Bison bison*)	1
Canidae (wolf, dog, coyote, fox)	8
Carnivora	1
Cow (*Bos taurus*)	1
Cricetidae (rats and mice)	61
Coyote (*Canis latrans*)	1
Deer *(Odocoileus* spp.)	39
Elk (*Cervis canadensis*)	1
Leporidae (*Lepus* spp. and *Sylvilagus* spp.)	28
Mountain lion (*Puma concolor*)	1
Porcupine (*Erethizon dorsatum*)	1
Pronghorn (*Antilocapra americana*)	4
Unidentified Artiodactyl	505
Unidentified Medium Artiodactyl	284
Unidentified Large Artiodactyl	29
Small Mammal	3
Medium Mammal	31
Large Mammal	16
Extra Large Mammal	4
Mammal (unknown size)	1
Small Bird	2
Medium Bird	6
TOTAL	1207

Figure 8. Fauna taxa identified from Painter Cave. NISP = Number of Identified Specimens.

In broader terms, 1043 (86%) bones were identified to the order of Artiodactyla (prey-animals common throughout the region). Almost half of these are medium-sized artiodactyls, including bighorn sheep, deer, and pronghorn. A small number are large-sized artiodactyls, including bison, elk, and cow. All of these animals, except for the bison, are currently present in the area. Relatively smaller numbers of other animal groups are represented, some in higher values than others. Over 60 rodents were identified, from mice and rats to porcupine. Many of these belong to the family Cricetidae. Nearly 30 rabbit specimens were found at the site, both jackrabbits and cottontails. A relatively small number of carnivores were identified, which includes mountain lion, coyote, and possibly a wolf.

Animals that are not represented or poorly represented include birds, fish, reptiles, and amphibians. Mammal species that are not present are small carnivores such as badgers, weasels, otters, skunk, and raccoons, and other small mammals such as squirrels and pocket gophers. Bears, bobcats, moose, and beaver were also not recognized in the assemblage.

Fauna modification

A selected sample of the total faunal assemblage (n=538) was examined for bone surface modification. Not surprisingly, 301 (56%) of the study set were impacted by rodent gnawing, both light and heavy, sometimes obliterating identification landmarks on the bones. Rodents such as packrats constantly gnaw on objects such as bone or wood in order to keep their incisors from growing too long and piercing their skulls. Packrats carry these items for several dozen meters to create their nests or middens. Some of the bones that were gnawed by the packrats could have been food remains left in the cave by human occupants.

Thirty-eight bones (7%) were gnawed by carnivores, such as coyotes or wolves, which are also known to chew, break, and digest animal bones. This number is relatively low and may suggest that these species did not have direct access to many of the dead animals, either due to human deposition or rodent taphonomy. One calcaneus or heel bone of a jackrabbit showed signs of digestion through acid etching, likely when eaten by a carnivore. Two bones displayed evidence of pathologies (Figure 9). A coyote tibia was broken and re-healed during life, and a bighorn sheep metatarsal had an abscess that infected the bone with evidence of remodeling.

Figure 9. Bones exhibiting pathologies. Coyote tibia on top, bighorn sheep metatarsal on bottom.

Some of the faunal remains showed signs of possible cultural modification. Ninety-four (17%) of the bones were burned, with various levels of severity. Burning is not always caused by human cooking and discard activities, but often is, especially since there is no evidence of forest fires in the area around the cave. The presence of burned bone indicates primary deposition of people living in or near the cave. Almost all of the burned bones are medium artiodactyls such as bighorn sheep. In addition to burning, several bones (n=10) showed signs of cutmarks, created during past butchery activities. Although this number is not high, the rodent gnawing could have obfuscated the cutmarks.

Lithics

All of the units in the front part of the shelter as well as from the surface contained chipped stone lithic materials. The small units in the back and middle of the shelter did not. A total of 208 flakes and angular debris and one projectile point were recovered. The majority of these were made of a clear translucent chert. The lithics were found distributed throughout the levels from the surface to several meters below the surface but without specific changes in stratigraphy. Most of the flakes (84%) measured under 2 cm, which is consistent with the half-inch screen size found in the back of the cave (0.5 inch = 1.27 cm). The flakes found in the deeper larger units may not have previously been disturbed, but the stratigraphy did not support an argument for tracing temporal change in that part of the shelter. No other tools or artifact types were found.

One small nearly complete projectile point was recovered from the large deep unit along the possible edge of the looter area. It is a clear chert tri-notched arrow point, measuring approximately 1x1 cm. It might have passed through the half-inch screen used by the original looters. This type and size of arrow point is common in the late precontact (Late Prehistoric) period and dates to between about A.D. 1500 and A.D. 1800. They are often called desert tri-notched points and have been found at several Mountain Shoshone sites in the region (Scheiber and Finley 2010).

✦ CONCLUSIONS

This project lead to a number of conclusions about Sunlight Basin, past and present. First, this resource-rich basin has been inhabited by past peoples for thousands of years, and many archaeological sites have not yet been identified or recorded. The 2014 Bighorn Archaeology crew located several new sites and site isolates, ranging from 8,000 years old to several hundred years old. These materials contribute to the broader understanding of past Native American life ways in the Greater Yellowstone Ecosystem (GYE). Second, fragile and perishable wood features in the form of sheep traps and conical pole lodges are still present in the area but are disappearing and are threatened by forest fires. They should be monitored on a regular basis. The lead musket ball found in one of the collapsed lodges during metal detecting of the East Fork of Painter Gulch lodge site provides additional details about these sites. Third, this research contributes to more robust and interdisciplinary scientific endeavors. Incorporating Native informants and perspectives in archaeological research is a critical part of "Restoring the Presence" of Native peoples in the Greater Yellowstone Area. Fourth, closed sites like Painter Cave have the potential to add important details about long-term environmental histories, chronology, technology, and subsistence in the past. They can provide master cultural sequences that can tie together single-component sites. Unfortunately, most of the cultural materials, and certainly diagnostic time-sensitive ones, were systematically removed by looters. The shelter is deeply stratified with packrat middens, but not necessarily with cultural materials. Fifth, over 1200 faunal materials left behind at the cave represent both cultural cooking activities and natural packrat accumulations. The multiple taxa that are present and the ones that are absent tell interesting stories about the diversity of animal species in the area through time.

This project should serve as a cautionary tale for the importance of protecting archaeological sites and educating the public on the importance of archaeological resources. The information this site could have provided will never be known. Moving forward we hope to continue our commitment to public outreach and working with communities regionally and beyond.

✦ ACKNOWLEDGEMENTS

The authors would like to thank the University of Wyoming-National Park Service Research Center for providing funding to conduct this project. We also thank the 2014 Bighorn Archaeology Field School (Karina Black, Jacob Heredos, Natalie Knudel, Jack Neizer, Anne Riley, David Sellers, Lindsey Simmons, Cally Steussy, Robert Whittaker, Emma Woodruff, Courtney Scheiber, Sophie Scheiber, and Gabriel Scheiber), Kyle Wright and the Shoshone National Forest, Dr. Larry Todd, and Rising Star Ranch. Dan Brumley and Michael Gear provided assistance with identification of the musket ball. Special thanks to Robert Schlader and the Idaho Virtualization Laboratory for the laser scans. Comparative faunal collection was provided by the William R. Adams Zooarchaeology Laboratory, Indiana University. Meghan Buchanan, Ryan Kennedy, Tekla Schmaus, Ryann Seifers, and Natalie Knudel assisted with the faunal analysis and data entry. Samuel Christian, Jacob Heredos, and Cally Steussy conducted additional analyses and drafted features. Thanks also to Roscoe the resident packrat who vocally and insistently kept us entertained as we investigated his home.

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