

Prehistoric Rock Structures of the Idaho National Laboratory

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ABSTRACT

Over the past 13,500 years, human populations have lived in and productively utilized the natural resources offered by the cold desert environment of the northeastern Snake River Plain in eastern Idaho. Within an overall framework of hunting and gathering, groups relied on an intimate familiarity with the natural world and developed a variety of technologies to extract the resources that they needed to survive. Useful items were abundant and found everywhere on the landscape. Even the basaltic terrain and the rocks, themselves, were put to productive use. This paper presents a simple classification scheme for rock structures built on the Idaho National Laboratory landscape by prehistoric aboriginal populations, including discussions of the overall architecture of the structures, associated artifact assemblages, topographic placement, and possible functions.

Located 51 km (32 mi) west of Idaho Falls, Idaho, the Idaho national Laboratory (INL) is a government-owned, contractor-operated facility managed by the Dept. of Energy. Occupying 2,305 km² (890 mi²) of the northeastern portion of the eastern Snake River Plain (Figure 1), the Lab is a remarkable place to study the past. The undeveloped cold desert lands within its borders contain large numbers of well preserved archaeological sites representing human occupation from the late Ice Age through historic times. Archaeologists have studied the resources of the Lab for decades (DOE-ID 2007). Most of the investigations have been conducted in the

context of compliance with federal laws that require consideration of these types of resources during federal undertakings with potential to harm them (DOE-ID 2007). As a result of these efforts, approximately 9 % of the land has been examined and over 2,200 archaeological sites have been recorded. Rocks structures are common in the known inventory and include structures from both historic (50 – 150 years ago) and prehistoric (> 150 years ago) periods.

Topographically, the Lab is dominated by volcanic terrain that borders the broad flat floodplain of the Big Lost River and natural wetland sink areas of the Lost Rivers and Birch Creek. Dark black basaltic lava is exposed extensively in outcrops along ridges, rises, craters, and caves. Soils have accumulated in low areas and along the windward sides of ridges. Flood gravels also cover the basalt near the Big Lost River. During the Pleistocene, the northern portion of what is now the Lab was inundated by the shallow waters of a large freshwater lake known now as Lake Terreton. Smaller, isolated playas located away from the Lake and River corridor also hold seasonal water, even today. Human populations have lived on what is now the INL for thousands of years. The earliest occupants were hunters of very big game like mammoth, camel, and giant bison during the terminal Pleistocene and Early Holocene as many as 13,000 years ago. As environmental conditions warmed in the Holocene, local flora and fauna changed, resulting in many of the species we see today. People changed too. Hunting technology adapted with development of the spear thrower or atlatl. Foraging expanded and people began to utilize a wider area, turning away from focus almost exclusively on Lake margins and River corridors

About 1,000 years ago during the Late Prehistoric period (DOE-ID 2007), technology advanced again with the addition of bows and arrows to the toolkit of prehistoric hunters. Climatic fluctuations may have once again partially filled the basin of Lake Terreton at this time.

Again based on associated artifacts, it appears that a unique type of rock structure, similar to a hilltop fortification, was built and utilized. Rough calculations of the intensity of prehistoric use of the area can be obtained by examining the frequencies of the temporally sensitive projectile points shown on the right in relation to the length of time that they were employed. This simple analysis shows gradually increasing use and probably human population densities through time in the region. Late Prehistoric times from roughly 750 – 150 years ago (DOE-ID 2007), when the most unique INL rock structures were probably built, saw highest intensity and probably densest populations.

Basalt is ubiquitous on the northeastern Snake River Plain and was the building block of choice for prehistoric as well as early historic populations in the region. In the early 1900s it was used to build some of the finest homes. Further back in time, it provided shelter for stagecoach passengers and intrepid homesteaders, held heat well enough to bake bread, and captured drifting snow to provide a source of water for stock animals. But these structures and others made more recently are the subject of another paper.

The focus of this paper is on structures built by the aboriginal hunter gatherers who called INL lands home. Prehistoric inhabitants of the INL region used basalt to build rock cairns of several types, small and large rock rings, and substantial rock walls/enclosures. Each type is briefly discussed in terms of unique architecture, topographic placement, and associated artifact assemblages.

Cairns (Figure 2) are stacks of cobbles and boulders that probably served as landmarks and trail guides. We have recorded more than 20 on INL lands and many more are present but undocumented (DOE-ID 2007). Of course, many historic occupants of the INL area built cairns

made of local basalt. However, many of the cairns identified on INL lands exhibit dense lichen growth and none of the white calcium carbonate deposits indicative of recent construction.

Although the INL desert appears to be relatively flat and featureless from the highway, one step away from the pavement takes the visitor into a land of rolling topography. The buttes and mountains provide rough orientation, but efficient travel from one specific point to another can be difficult and circuitous. Prehistoric cairns on the INL tend to be located at places that are difficult to locate based on overall topography alone: lava tube caves for example, and at watering holes in the rolling basaltic terrain. They would have proven quite useful in efficient orientation and travel to these important destinations. Nearly all of the older cairns found on the INL are associated with evidence of prehistoric camping activities. As the term implies, rock rings are circular arrangements of basalt usually only one course in height. At the Lab, they come in two sizes: small and large. Small rock rings are usually no larger than a meter or two in diameter. They are ephemeral and hard to identify, but we have discovered nearly 30 during surveys over the past 30 years (DOE-ID 2007). All have been associated with a variety of domestic artifacts reflecting stone tool maintenance/ manufacture, food processing, and cooking. Archaeological test excavations have been completed at four of these locations (DOE-ID 2007, Ringe 1988), marked at the surface by rock rings and discrete concentrations of charcoal, fire-cracked rock, flakes and burned bone. Three radiocarbon dates have been obtained from charcoal in these features: 10-BT-1034: 1350 ± 70 BP, 10-BT-1052: 310 ± 80 , 10-BT-395: 1500 ± 60 BP (all uncorrected). All excavated features also yielded faunal assemblages of probable cultural origin (charred, green fractures, butcher marks, etc.) that are dominated by nondiagnostic long bone fragments probably from large mammals. The only identifiable bones of probable cultural origin have been from the family Bovidae (Boss spp.) and rabbits (Brachylagus spp.,

Sylvilagus spp., Lepus spp.). It is clear that the smaller rock rings found on the INL are fire hearths, built by prehistoric people to contain campfires and probably for cooking.

Larger rock rings number approximately 30 within the boundaries of the Lab (DOE-ID 2007). A few of these features have been found inside caves out near the entrance where cooking and leisure activities appear to have taken place. Here they define a domestic space. Excavations have revealed grass and brush mats laid within the rock circle to provide a clean living surface (Lohse 1989). Many more, larger rock rings have been found out in the open on the INL desert (Figure 3). These structures are 3-5 meters in diameter. Nearly 30 have been formally documented and many more are certainly present. Their function is implied by their typical setting. All are placed on ridges that provide commanding, but limited views of playas, game trails, or other areas favored by large game animals. Augmented with a bit of brush, they would have made excellent hunting blinds. There are typically no artifacts associated with these rock rings, indicating that silence was probably important and no distractions were allowed. However, there is almost always a large campsite located just over a nearby ridge, where artifacts that could have been used to butcher and process fresh kills are abundant. The ages of these nearby sites are highly variable, from 13,000 – 150 years old, based on temporally diagnostic artifacts.

Several substantial rock structures were built by prehistoric people on lands within the INL. These structures are significantly larger in both height and extent than the smaller hunting blinds previously discussed and they also occupy different, seemingly strategic positions on the landscape. The archaeologists that have discovered these sites have been so impressed, that they've been compelled to give these places names like "Hellofasite," "Lost Arches," and "Bison Heights" (Miller 1985, Pace 2005, Henrikson and Pace 2006).

Three of these unique sites are known to occur on the INL and others may be present (Figure 4). Several additional sites have been documented on desert lands surrounding the Lab. Two of the known INL sites occupy prominent spots on a system of high pressure ridges that overlook the Big Lost River Basin and the bed of ancient Lake Terreton. The third site is located in and around the rim of a crater that provides a panoramic view up the Little Lost River Valley. From all three of these vantage points, individuals could see great distances on the open plain.

Each site contains an elaborate series of rock wall constructions a meter or more in height. The walls contain two, three, even four courses of stone, dry laid to form sizeable multi-room structures. Unlike the rock rings interpreted as hunting blinds, the interiors of these features are loaded with dense concentrations of artifacts. Dense artifact concentrations are also found in protected coves behind the rock features. None of this can be seen from below and from a distance, the sites look like natural portions of the surrounding rocky ridgelines.

The artifacts associated with these enclosures reflect use of these areas as seasonal base camps and include: abundant stone debitage from the manufacture of stone tools, pottery, hearth features, game processing tools (teshoa scrapers), several varieties of small finely made arrow points from the late pre-Contact period approximately 750 – 300 years ago. Although none of the INL sites have been excavated, radiocarbon dates from excavations completed at sites near INL (Henrikson and Pace 2006) place the occupations at these rock fortifications firmly within the last 750 years.

From the protection of the rock structures, people living at these sites would have had a strategic, hidden viewpoint for many miles. What prompted Late Prehistoric populations to seek these prominent points and spend their time and energy in modifying them significantly with the elaborate rock constructions? One possible trigger may have been an overall increase in human

populations coupled with an increase in the availability of local resources, which in turn may have attracted more people to the area, resulting in local competition. People may have found themselves between a rock and a hard spot, so to speak. There are some data to support this interpretation (Henrikson and Pace 2006). The overall frequencies of temporally diagnostic artifacts found at sites all over the region suggest that local populations rose gradually to peak during this time (Reed et al. 1987). The paleoclimatic record, including geologic and pollen data, also suggests that cool moist conditions may have prevailed approximately 700 years ago, causing Lake Terretton to at least partially fill its basin (Bright and Davis 1982, Forman and Kaufman 1997, Gianniny 2002). Obsidian sourcing data from artifacts in the region show a statistically significant increase in stone brought in from farther distances, perhaps reflecting the movement of new people into the region (Henrikson and Pace 2006).

Cool, moist conditions and a large, albeit shallow, freshwater lake on the northeastern Snake River Plain would have been attractive to animals and people, alike, during the late Holocene. Even today, when the Lost River Sinks fill their basin during wet years, they become a magnet for migratory waterfowl and big game animals. Shrimp, toads, and many insects are also plentiful and useful and edible plants like cat tails and rushes thrive. Although the rock structures on the INL at the Lost Arches and Hellofasite sites would not have functioned well as scouting points for these resources, they would have provided an excellent vantage point to monitor the movements of any human parties approaching the Lake during this late highstand. At locations within a few miles of the shoreline, both sites could also be seen as a safe retreat for parties loaded with resources from a day of foraging. So, it is possible that territorial competition may have arisen under these conditions, bringing individual groups into

competition, or at least prompting some to occupy positions on the landscape that may have been a bit less hospitable, but ultimately more strategic than ever before

Prehistoric populations living on the eastern Snake River Plain had intimate knowledge of the resources available in their cold desert home. On the INL, we are fortunate to have a largely undisturbed record of their activities, including the structures that they built of local basalt. Research into these features at the INL will continue in collaboration with other federal land managers in the region. Topics of interest will include but certainly are not limited to: comparison of INL and eastern Snake River Plain sites with rock structures from other portions of the Great Basin and with ethnographically documented rock structures, quantitative measurement of the walls and estimation of required labor for construction, field of view analysis and classification using geographic information systems technology, and further investigation of artifact assemblages, including data from excavations.

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Overview of Eastern Idaho

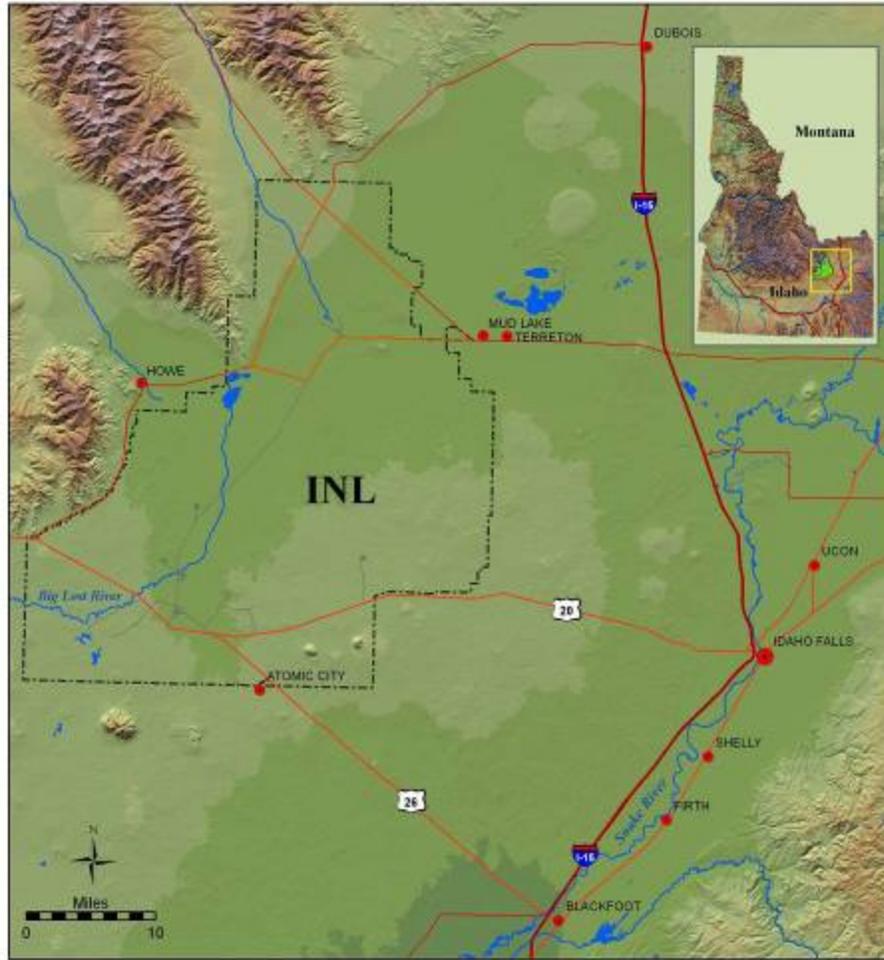


Figure 1.



Figure 2: Rock cairn from INL (note evidence of roosting birds on upper rocks)



Figure 3. Rock ring (probable hunting blind from INL).



Figure 4. Substantial rock structure from INL (Hellofasite).