Prehistoric Incentives to High Altitude Settlement in Wyoming’s Wind River Range

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Abstract
Villages in Wyoming’s Wind River Range, inhabited ca. 4000-420 BP, exhibit patterning that indicates reliance on specific lithic resources, white bark pine, and traditional game. These villages were occupied in the warmer months as part of a seasonal migration pattern, enhanced and accommodated by an early onset of the Medieval Warming Period in the region. The resources that motivated the settlement of these mountains conflict with any preconceptions of scarcity in the alpine and sub-alpine environments. This research seeks to inform future assessments of a locality’s potential to hold significant archaeological sites.

Keywords
prehistoric settlements, Wyoming, Altitude

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Prehistoric Incentives to High Altitude Settlement in Wyoming’s Wind River Range

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Villages in Wyoming’s Wind River Range (inhabited ca. 4000-420 BP) exhibit patterning that indicates reliance on specific lithic resources, white bark pine, and traditional game. These villages were occupied in the warmer months as part of a seasonal migration pattern that was enhanced and accommodated by an early onset of the Medieval Warming Period in the region. The resources that motivated the settlement of these mountains conflict with preconceptions of scarcity in the alpine and sub-alpine environments. This research seeks to inform future assessments of a locality’s potential to hold significant archaeological sites.

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Introduction

In the frost-capped mountains of Wyoming’s Wind River Range archaeologists have uncovered a series of nineteen villages at the lower limits of the alpine ecotone, in excess of 10,000 feet above sea level (Fig. 1). The 2003 to 2011 discoveries of these villages (Stirn 2014:524) and subsequent research by archaeologists directed by Matthew Stirn has provoked the curiosity of many, prompting high-altitude tourist expeditions that frequent the Wind River Range with questions. The distance that modern society has put between ourselves and the environment seems to have granted the mountains a level of both mystery and romance that colors our perspective. The widespread question from naturally intrigued parties is “why here?”

In answering this question there are two schools of thought, the generally opposed concepts of push vs. pull. Motivations for alpine settlement can easily be assumed to be the result of a push resulting from low-land scarcities. Drought and lack of traditional game, for example, are common stimuli for migration. This assumption is also influenced by the previously mentioned mystery of the mountains and their perceived marginal capacity to sustain a significant population. Contrary to these assumptions, the high elevation and landscape of the Wind River Range provided tremendous benefits that pulled the Shoshone ancestors to occupy the Wind River villages.

Sites

Of the Wind River villages, the best documented site is High Rise Village discovered in 2006 (Morgan et al. 2012:40), containing over seventy cut and fill lodge pads. The impressive assemblage of artifacts bears traits typical of the Numic Mountain Shoshone (Stirn 2014:524). This expansive site covers an impressive nineteen acres, extending from above into the modern tree line on a 23° south facing slope, allowing the occupants to exploit resources of two biomes (Morgan et al. 2012:36). The Mountain Shoshone historically occupied the Wind River Range into the 1800s, moving seasonally, settling in the lowlands during the winter months and the mountains in the summer (Adams 2006).

Sites in the Wind River Range cover a temporal range of 4,000 to 420 BP (Stirn 2014), making High Rise Village among the oldest and most expansive high-altitude settlements in North America, and at an elevation several thousand feet higher than Peru’s Machu Picchu. However, dating the site is not without its difficulties, as the occupants commonly burned older wood sources of up to 900 years in age. This coupled with the 700 year lifespan of whitebark pine suggests that the precision of dating could be off by as much as 1500 years (Morgan et al. 2012:53). Dating at this point must be regarded as tentative.

Patterning

The patterning of these sites suggests that environmental conditions drew the Shoshone people to this location. The spatial distribution of sites is highly specific, indicative of a substantial link to the environment. Villages within the Wind River Range occur between 10,500 and 11,500 feet in elevation (Stirn 2014:525). This form of patterning can be tied to the growth and density of vegetation and the treeline. High altitudes bring colder temperatures and increased periods of frost, harmful to the growth of plants.
**Figure 1** Map highlighting the Wind River Range, and Christopher Morgan’s Study Area marking the approximate location of High Rise Village (Morgan et al. 2014:210).

**Figure 2** Map showing spatial distribution of lodge pads with associated radiometric dating (Morgan et al. 2012:41). Reprinted with permission.
In addition to the relatively narrow altitude band, villages in the Wind River Range are found on the south facing aspect of the mountains and on slopes primarily between 0-35% (Stirn 2014:525). Southern aspects of the mountains receive the most sunlight in the northern hemispheres and as a result would be warmer, more resistant to frost, and have a longer growing season for vegetation. The presence of villages explicitly on southern slopes suggests that the motivations for settlement in this extreme climate were heavily influenced by available vegetation. Of particular interest and mystery is the placement of these villages on slopes themselves, while Stirn (2014) notes that level areas are available that would have met the remaining settlement patterns in terms of resources. A map of lodge distribution in High Rise Village presents lodge location relative to the timberline and its proximity to lithic resources (Fig. 2).

Whitebark Pine

Whitebark pine is the most common tree within the Wind River treeline and is recorded at its highest densities in the Wind River Range between 10,300 and 11,300 feet (Stirn 2013:526). Dendrochronology at High Rise Village reveals that the climate conditions during the occupation of the village allowed whitebark pine to extend higher in elevation than in modern times by approximately 100-150m (Morgan et al. 2012:45) This prehistoric tree line would have encompassed the majority of High Rise Village, which can be seen in Christopher Morgan’s map (Fig.3).

For the Numic cultures of the Great Basin and northwest Wyoming, whitebark pine nuts, both limber (Pinus flexilis) and piñon (Pinus edulis), are a traditional food source and make up the most available food source in the Wind River Range (Stirn 2014: 530). Edible roots, bulbs and fruits grown at high elevation ripen later than their low altitude counterparts (Adams 2006) allowing the same plants to be relied on for subsistence for a longer season with the appropriate mobility.

The availability of a traditional food source presents a solid motivation for residential mobility. According to Christopher Morgan (2009), residential movements are only more efficient than logistical movements when diet breadth is narrow or lower yield nutrients, such as the piñon nut are abundant, as they are near the site locations. The gathering of unprocessed piñon nuts further than 1.5 to 3.6 kilometers from a residence results in a caloric loss (Morgan 2009:383). The piñon nut, like other nuts that require processing to be edible, is simply inefficient for transportation in its weight to

Figure 3 Map showing the modern treeline elevation in relation to High Rise Village (Morgan et al. 2012:45). Reprinted with permission.
calorie ratio. A sustainable settlement in the Wind River Mountains would require close proximity to dense clusters of white bark pine.

Moisture and Climate

Matthew Stirn’s (2014) research into the hydrology and solar patterning of the Wind River Range revealed that settlements were located predictably within close proximity to moisture sinks and areas of high yearly sunlight to facilitate ideal growing conditions for whitebark pine trees, which demand both to grow optimally. Whitebark pine advance in Wind River Range, Union Peak occurred 1050 to 550 years prior to the Medieval Warming Period (Morgan et al. 2014:214).

Plant fossils and pollen suggest that the environment in western Wyoming warmed approximately four to sixteen centuries before the Medieval Warming Period and continued throughout its duration. In addition to this warming, moisture levels in the region increased starting in about 2,000 BP. Severe regional droughts between 820 and 780 years BP can be related to the retreat of the tree-line (Morgan et al. 2014:215).

These two moisture related changes, extreme in an environmental sense, suggest that the expansion of the whitebark pine was primarily influenced by moisture. This information supports the previous association of whitebark pine and moisture sinks, and ultimately with the location of settlements in the Wind River Range.

Hunting and Game

High Rise Village is located near a traditional bighorn sheep corridor (Stirn 2014: 529), providing excellent hunting opportunities for its inhabitants. Animals at this elevation are not exposed to the exhausting scale and frequency of hunting present at lower elevations and, as a result, have no natural fear of humans as predators. This includes bighorn sheep, moose, elk and antelope (Stirn 2014). Bighorn sheep provide an excellent resource of meat, furs, bone, and horns, and are present in large herds. Sheep traps near the eastern edge of the site (Morgan et al, 2012:529) provide evidence that bighorn sheep were a food source for the people of High Rise Village. Daniel Eakin (2012) describes deadfalls and catch pens, two forms of sheep traps used by the Shoshone. Deadfalls and catch pens were both constructed from wood, leaving them susceptible to the environment, and difficult to accurately date. Group hunting in north western Wyoming is evidenced archaeologically in the discovery of a large net dated to ca. 7700 cal BP. This massive net, fifty to sixty five meters long, would have required the cooperation of several hunters to operate (Lee 2012:172).

Further research conducted by Craig Lee (2012) shows that the alpine environment also presents unique opportunities for game in the form of ice patches. These patches, of which exploitation is common throughout the region, are present in the Greater Yellowstone Ecosystem (GYE) in alpine elevations, and create micro-environments for game as well as providing melt-water. Evidence suggests that ice patches in the GYE were targets of group hunting efforts that take advantage of the complacency of wildlife at a remote elevation. Primary game at these ice patches is bighorn sheep, though other species of ungulates are present (Lee 2012).

Lithic Toolkit

Madison Limestone and Flathead Sandstone provide an excellent source of high quality chert, quartzite, and steatite and are present throughout the history of the range (Stirn 2013:529). All 57 lodges excavated in 2010 and 2011 by Roger Adams’ archaeology team contain some form of grindstone implement for food processing in the form of manos, metates and handstones (Morgan et al. 2012). Nut processing played a significant role in the material culture of the inhabitants, and supports the theory of whitebark pine nuts as a significant food source.

Figure 4 Rocky Mountain soapstone bowls. a., bowl preform unfinished; b. complete bowl; d. bowl fragments (Adams 2006:529). Image used with permission.
During the archaic period these local lithic resources were utilized almost exclusively, while debitage from sites occupied during the late prehistoric period show that more exotic lithic resources were preferred, and brought in from locations in excess of 70 miles. This information suggests that the patterning of Wind River sites was not a result of lithic resource proximity during the prehistoric period (Stirm 2014:529).

An exception to this seems to be steatite (soapstone) bowls, an indispensable item of the Mountain Shoshone toolkit. Steatite bowls are resistant to thermal shock, allowing them to be placed from temperatures below freezing into fire without cracking (Adams 2006:528), a feature that would have been tremendously valuable during Wyoming winters. Shoshone steatite bowls are undecorated, flowerpot shaped and possess flat or flanged bases (Fig. 4).

Unlike baskets, whose lesser weight makes them portable, stone bowls must be crafted near their source as a matter of transport efficiency (Adams 2006:539). Soapstone bowls are crafted with a removal method, slowly chipping away at the rock until the desired shape is formed, a process that can take months or even years (Adams 2006:530). These bowls would have been made near their source, high in the Wind River Mountains. This is supported by the distribution of unfinished bowls, which have an average altitude of 2,996 meters (Adams 2006:537), well within mobility range of the Wind River settlements. Adams provides a map (Fig. 5) illustrating the provenance of complete, unfinished and fragmentary steatite bowls in their highest concentrations among the range near Wind River Village.

Discussion

After examining the many environmental factors and local resources, it is clear that there were many incentives for the Wind River occupants to be drawn, rather than forced, into such high altitudes. The lithic evidence at Wind River Village supports both proximity to lithic resources as a motivation and, through its focus on nut and seed processing, the whitebark pine is a motivation as well. Easily accessible, and calorie efficient piñon nuts would have provided a convenient food source. A wealth of reasons to be drawn to the alpine and sub-alpine ecotone remain. There is clear evidence to support motivations for residential mobility in both lithic resource proximity, and piñon nut subsistence activities; the location of villages on slopes rather than level surfaces seems to be a mystery, at least for the

![Figure 5](image_url) Map showing the distribution of soapstone bowls throughout Wyoming (Adams 2006:536). Image used with permission.
Positioning settlements on slopes may have been useful for the drainage of meltwater as the weather warmed with the approach of summer. Improved drainage would have allowed a longer stay in their seasonal mountain settlements, and more flexibility in their migration habits.

Conclusion

Examination of traditional resources of the Mountain Shoshone and their relation to the patterning of prehistoric alpine/subalpine ecotone settlements in the Wind River Range reveals a clear focus in the locations chosen. These locations provided a wealth of traditionally important resources that motivated the Mountain Shoshone out of surplus rather than scarcity. They were drawn, rather than forced into this plentiful ecotone that would have provided ample resources for seasonal occupation. It is critical to keep these motivations in mind, to avoid marginalizing the occupants of these mountain environments in a way that could profoundly impact our interpretation of future archaeological discoveries.

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Sources

Adams, Richard  

Eakin, Daniel H.  

Lee, Craig M.  

Morgan, Christopher  

Morgan, Christopher, Ashely Losey, and Lukas Trout  