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11

TAKING IT TO ANOTHER LEVEL: ENGAGING THE ARCHAEOLOGY OF NORTHWEST WYOMING'S HIGH ELEVATION LANDSCAPES

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Many of the key archaeological sites for placing Dinwoody into a broader behavioral context are from the basin and foothills. It is unlikely peoples associated with Dinwoody manifestations did not also incorporate the higher elevation, montane, and alpine zones into their lifeways. However until recently, fundamental characteristics of northwest Wyoming's high country archaeology that might reflect this use have been little reported. While high-elevation sites are not unknown, their relationship to broader regional landscape patterns has not been well understood. Over the last 15 years, fieldwork conducted in the Absaroka Mountains has provided clues that the montane/alpine zones played a much more significant and complex role in prehistoric land use systems than are usually posited, but one in which rock art has not been identified. Summary data from this backcountry work, presented as an example of a multi-scale approach to regional investigations of a variety of data sets, demonstrate an exceptionally rich and diverse record. The data's implications for our perceptions of life in the basins and foothills may require inclusion of rock features into the discussion of regional rock art distributions.

For the most part, sites with rock art included under the Dinwoody umbrella are described from elevations of lower than 2200m (Loendorf 2004). This prompts the question, "what do we know about the archaeological contexts of higher elevations that were part of the landscape used by peoples likely associated with production and use of Dinwoody petroglyphs?" The quantity and quality of data on higher elevation archaeology in northwestern Wyoming has been augmented significantly since 2006 (Adams 2006; Adams 2010; Burnett *et al.* 2014; Eakin 2005; Finley and Boyle 2014; Finley *et al.* 2015; Kornfeld *et al.* 2010; Lee 2010, 2012; Morgan *et al.* 2012; Reckin 2013; Scheiber and Finley 2010, 2011; Stirn 2014; Todd 2015) when Loendorf and Stone (2006:182) advocated "[t]o recover more complete information about the highly capable mountaineering Sheep Eaters, we must, without question, be more diligent in our attempts at discovery." This paper presents an overview of one such attempt at diligence (2002-2016 field seasons: Todd 2015) in examining northwest Wyoming's high elevation settings. While newer work has added a great deal to the baseline data for montane and alpine areas, vast segments of these landscapes are still largely blanks on our maps of archaeological understanding. This review of one research project is by no means a comprehensive review of northwestern Wyoming mountain archaeology. Rather, it takes a quick look at some of the data collected at regional, artifact cluster (site), and individual artifact scales to illustrate information becoming available to help expand our understanding of how Dinwoody representations articulate with the broader archaeological and possibly sociopolitical landscapes. While, on the one hand, it would be easy to make this a remarkable succinct paper and end it right here by saying "Dinwoody petroglyphs in the high country? – We don't have any."

On the other, this sort of quick dismissal doesn't meet the larger goal of trying to understand landscape scale issues of which rock art studies are a part. Before beginning this examination of higher elevation archaeology, several key pieces of the foundation for this paper need to be made explicit. First is the noted association (Francis and Loendorf 2002; Loendorf and Stone 2006:36-48; Nabokov and Loendorf 2004:193-198) between Dinwoody petroglyphs and "the Mountain Shoshone, who are also known as the Tukudika or Sheep Eater" (Loendorf 2004:204). This statement serves as a premise of this paper and accounts for this discussion's focus on archaeology most likely associated with Mountain Shoshone: Sheep Eater peoples. A second is an intentional lack of specificity in highlighting locations being discussed. Although placed in a general geographic framework, I try to avoid the use of place names or descriptions since there is a serious problem of artifact theft and looting at even these back country sites. Therefore, I have opted for the rather cumbersome labels such as Area 1, Area 2, etc. rather than the more comfortable sort of "sites on the upper X drainage" or the "XX Creek Site." For researchers interested in more detailed locational information, Smithsonian numbers for all sites included in the samples used here are included (Appendix 11.1).

Finally, in preparing this paper, I've become increasingly more intrigued with the potential for multi-scale documentation methods to provide a richer linkage between the study of rock art and other classes of archaeological materials. In particular, the general perspectives offered in the *Figured Landscapes* volume (Chippindale and Nash 2004a) and specifically the multi-scalar approach described by Chippindale (2004) struck a chord. The results of the archaeological fieldwork reviewed here have most definitely emphasized a "millimetre up to kilometre" (Chippendale 2004) approach to recording and synthesizing a regional record. So while the difference between studying Dinwoody panels in the Bighorn Basin and stone tools in alpine meadows initially seems immense, with just a bit of methodological uniformity, both sorts of data could be examined along the same regional scales of analysis. I find the potential common ground at the basic data structure level exciting.

My systematic, long-term multi-scalar project began in 2002 (Todd 2015) and is focused on portions of the Shoshone National Forest in northwestern Wyoming, with an emphasis on areas in the Washakie Wilderness north of the Wind River and south of the South Fork of the Shoshone River. Four of the more intensively studied areas are used here as examples of high elevation archaeological diversity (Figure 11.1). Results of this on-going investigation provide glimpses of regional high elevation archaeological diversity to begin framing a background discussion of how Absaroka mountain archaeology and Dinwoody rock art may relate. The research project, begun in 2002, has used an artifact-based approach to recording landscapes. It is called the Greybull River Sustainable Landscape Ecology (GRSLE) project. The relevance of this particular area for beginning to address the questions of archaeology that may be associated with Shoshone groups is clearly indicated by both the place names and trail systems documented by Shimkin (1947) pointing to these areas as important parts of Shoshone land use systems, and, no doubt, cosmology.

The character of this area is determined not only by its elevation but also by the bedrock geology (Figure 11.2), which is dominated by Absaroka Volcanic Supergroup (Love 1939; Love and Christiansen 1985) rocks; the friable nature of which is a key factor shaping the region and its resources. Neither the Tensleep nor Frontier Sandstones, on which most Dinwoody petroglyphs are found (Loendorf 2004:202-203), are exposed in the GRSLE project area. Not only are the surfaces of many of the rock faces exposed in the Absarokas not of the sort normally associated with rock art panels, they are also prone to a good deal of exfoliation, slumping, and rock fall playing an important role in the formation and preservation of the regional archaeological re-

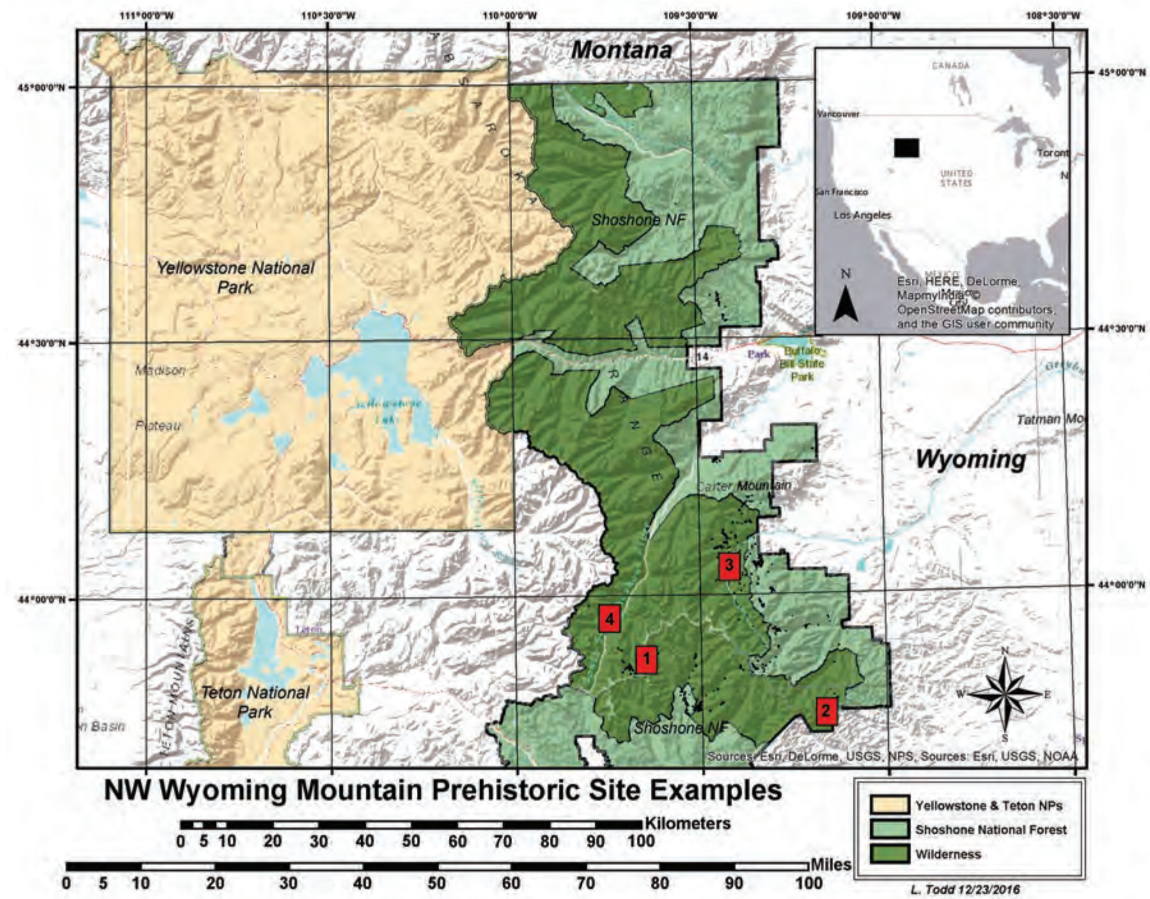

Figure 11.1: Northwestern Wyoming study area with locations of four example areas (1-4) of systematically inventoried mountain settings indicated (see Keyser, this volume, Figure 7.2).

cord (Ollie 2008). The lack of suitable sandstone faces in this high country has been posited as one reason for poor representation of rock art at higher elevations in the Absarokas (Loendorf 2004; Loendorf and Stone 2006:47).

While bedrock may be one of the factors playing a role in the selection of panels on which to create spiritual images, this is not to say there are no faces or stable surfaces in the Absarokas which could both support and preserve rock art. There are a few, rare known examples. However, as described here, the observation that "[i]n light of the association of altitude with power, it is difficult to explain the prevalence of petroglyph sites – where power was also concentrated – at lower elevations" (Loendorf and Stone 2006:47) still holds even with more intensive examination of high elevation settings. While it is likely there are still undiscovered petroglyph sites in the high Absarokas, from the sample of landscapes described here, they are certainly not common and not of the scale represented in the near-by, lower elevation Bighorn Basin (Francis and Loendorf 2002). Specifically, Loendorf (2004:203) notes elevation is one of the key variables seeming to influence location of Dinwoody petroglyphs, usually below about 2300 m (7500 ft). While beyond the scope of this paper, questions about the interplay between elevation and locations of major Dinwoody panels cannot be dismissed as only a function of lack of examination of the high country. This opens the door for the potentially informative "why not at elevation?" question posed by Loendorf and Stone, and to the more general issues noted by Whitley and Whitley (2012:262) in their discussion of the distribution of Californian rock art sites where they note "there are regions where sites are more common and somewhat regularly distributed, and other territories where sites tend to cluster, and not simply due to the geological distribution of suitable rocks and shelters. Rock art sites are neither ubiquitous across the landscape, nor randomly distributed, and this fact has implications for understanding . . . sociopolitical structures."

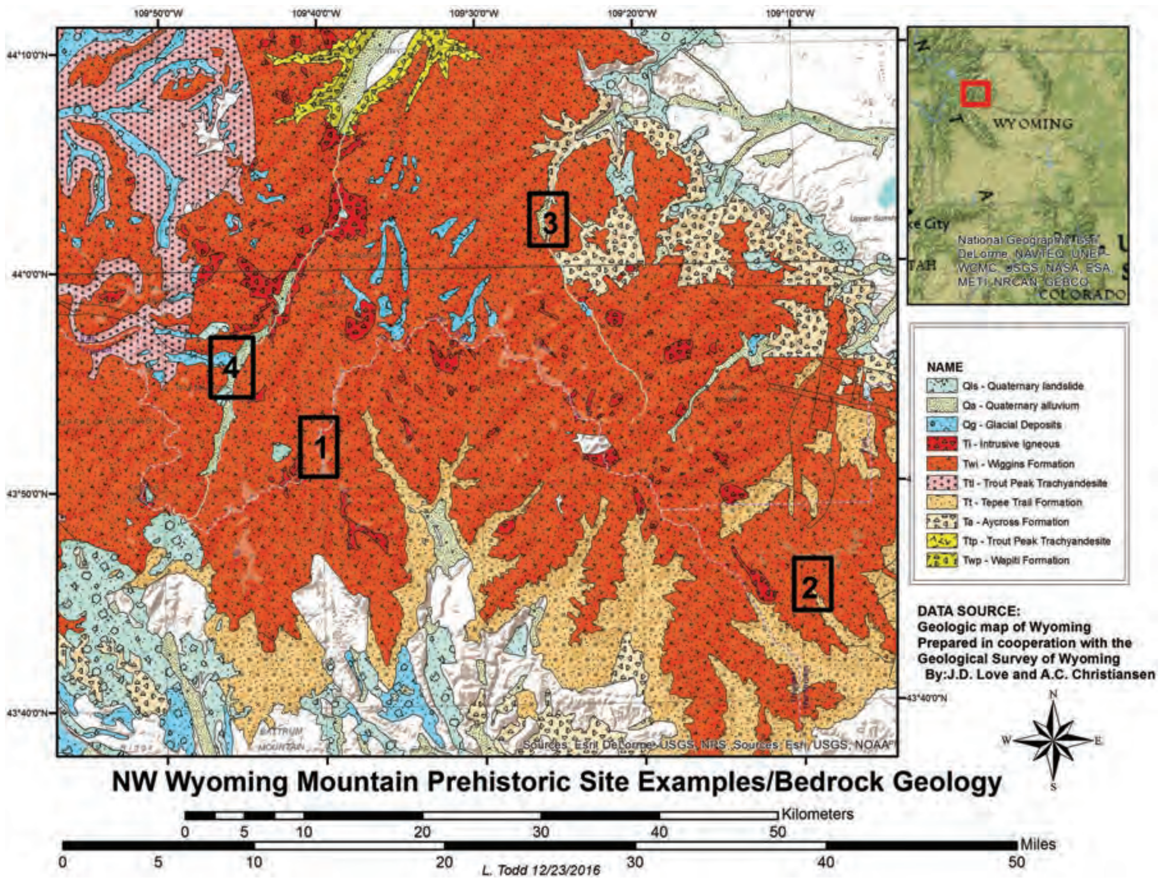

Figure 11.2: Bedrock geology has been suggested as one key to Dinwoody petroglyph location. The four mountain inventory areas (Areas 1-4) are all in settings with volcanic substrates (Love and Christiansen 1985).

A REGIONAL PERSPECTIVE ON SITES, ARTIFACTS, AND HIGH ELEVATION ARCHAEOLOGY

To take on the challenge of examining spatial patterning as a springboard to considering socio-political structures, we first need to have basic information on landscape scale archaeological distributions. At the landscape scale, accumulations of artifacts grouped as sites may provide one approach, but a basic premise of GRSLE project research is the creation of sites, as a conceptual grouping, from the basic unit of observation (artifacts) rests on the assumption the aggregates we label as sites have unambiguous behavioral meaning. Given a "site" is an interpretation based on observations of artifacts, the research presented here has decided, at least at the pattern recognition stage and probably at most levels of archaeological investigation, it's best to stay as close to fundamental observations as possible and leave the interpretive in the analytical realm rather than as the basic building blocks of a regional framework. This is by no means a novel perspective (e.g., Foley 1981), but does differ from most work currently being done in the Greater Yellowstone Ecosystem. Examination of archaeological materials at multiple scales has also been advocated in rock art studies (Chippindale 2004). The problem of site-based studies has also been highlighted as exemplified by comments by Chippindale and Nash (2004b:12), who note "it is hard to define sites or their edges in a fair way, and the number of 'sites' is multiplied or reduced according to what is taken to define a 'site' – which seems altogether too arbitrary a business." Concepts of sites, regions and the potential for methodological concordance between artifact and rock art archaeology are revisited below.

As a step toward developing such a framework for our Absaroka project area, we looked at 1) the relationships between elevation; 2) Francis and Loendorf's (2002:120-122) tripartite representation of Shoshonean cosmography (see also Loendorf 2004) as represented in Dinwoody rock art; 3) elevations of artifacts recorded by the GRSLE project; and 4) the four mountain archaeology settings that are the focus of this paper (Figure 11.3). At the base of this illustration is Francis and Loendorf's elevational/cosmological pyramid characterizing settings ranging from roughly 1200-2100 m (4000-7000 feet) with the 2200 m summit at the altitudinal apex of this representation of supernatural realms arrayed across landscapes. The second component of the illustration, on the same elevational scale, is the histogram of the 176,781 artifacts recorded by GRSLE, emphasizing the project's artifact-scale work in elevations well above the upper limits of the common Dinwoody representations.

The four example areas are some of the sample areas where the GRSLE project (Todd 2015) has undertaken block inventories using documentation based on recording individual artifact attributes. The four mountain examples represent three high elevation – greater than 2500 m (Aldenderfer 1998) – examples and one lower elevation case. Elevations for the example areas are calculated as the mean elevation of all documented artifacts in the block inventory areas. These four areas provide an introduction to the content and diversity of surface archaeological materials in the Absarokas (Figures 11.4-11.7). In each of the illustrations, the observed distribution of artifacts is highlighted, and the derived attribute of site boundaries is deemphasized (information, grouped by site designations within these areas, is summarized in Appendix 11.1).

MOUNTAIN EXAMPLES, MULTIPLE SCALES

In discussing methods for integrating rock art studies to a landscape perspective, Chippendale (2004) advocates a millimeters to kilometers multiscalar approach, which is essentially the same as the artifact-based research described here. Both begin with detailed, millimeter scale observations as the building blocks for examining regional patterns. As an illustration of the approach, and the results as expressed by patterns in the Absaroka Mountains, I'll begin with discussion of the larger, kilometer scale and then eventually focus on several examples at the artifact attribute scale. This discussion starts with region, then to artifact cluster, then inter-cluster, and finally artifact scale.

REGIONAL SCALE

The four example areas discussed here range in elevation from just above 2300 m (7545 ft; Figure 11.4) to 3400 m (11,155 ft; Figure 11.7). Comparison of these four areas provides a basis for examining the Absaroka surface archaeological record. Basic information on each area is summarized (Figures 11.4-11.7). One of the attributes included in these illustrations is the average maximum length (mm) of the chipped stone materials recorded and presents a first summary observation on what we see in the mountains – most of what's there is small and potentially easily overlooked in rapid reconnaissance visits or causal overviews. Mean maximum lengths range from 20.24 mm in the highest elevation example (Area 1; Figure 11.7), to items averaging nearly half that size (11.26 mm) in Area 3 (Figure 11.5).

Another attribute varying considerably among the four focal areas is the percentage of coded chipped stone artifacts and debitage made of obsidian. In general, obsidian makes up small percentages of the chipped stone assemblages with values ranging from 0.87 (Area 2) to 10.03 percent (Area 3). Not only do these two areas have considerable differences in numbers of obsidian items, the sources of obsidian are markedly different. In Area 2, of the 22 pieces for which we have source information, only three sources are represented: 72.7% are identified as having originated from Obsidian Cliff, 18.2 percent from the Teton Pass area, with the remaining 9.1 percent from the Bear Gulch, Idaho source.

In sharp contrast, the 139 pieces of obsidian with source information from Area 3 represent eight known and one unknown source locations, again with Obsidian Cliff being the most common, but at a slightly lower percentage (65.5%). The Teton Pass area is also well represented here (9.4%), but is less common than the Lava Creek area materials (11.5%). The other relatively common source area represented in Area 3 is Malad (southeastern Idaho) at 6.5 percent. Recent studies of regional patterns in obsidian sources patterns from northwest Wyoming (Bohn 2007; Finley *et al.* 2015; Reckin and Todd 2018; Scheiber and Finley 2011) provide a broader framework for these more localized samples. The point here is there is considerable inter-drainage variation in attributes such as obsidian procurement and use are ripe for additional, finer-grained study.

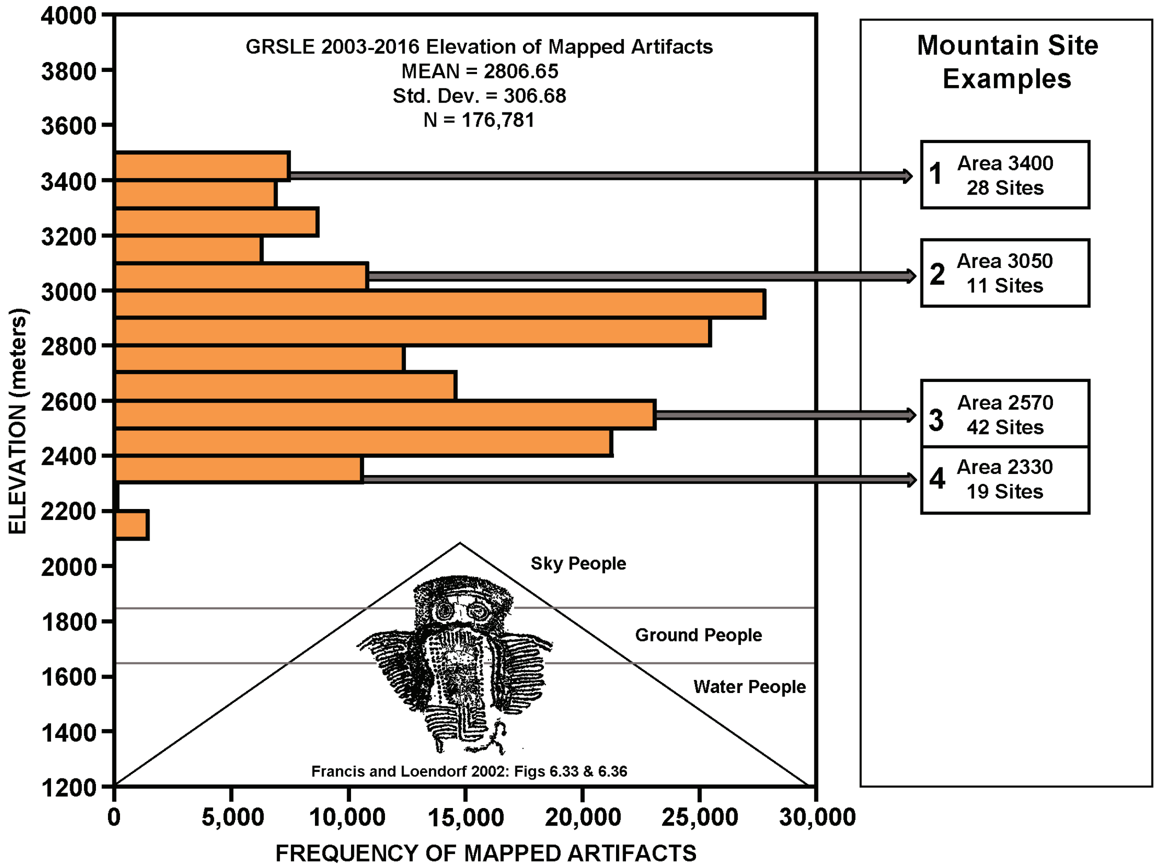

Figure 11.3: Shoshone cosmology has been described as including a tripartite division which can be recognized in the common elevation ranges of Dinwoody image type ranging from 1200-2200 m in elevation. Research at higher elevations ranging from 2200-3500 m has documented a large number of artifacts in a variety of settings, four of which are used as examples in this paper. Petroglyph drawing by Linda Olson, used with permission.

An example of inter-feature differences within a single artifact cluster (site 48PA3135) is discussed below and highlights the rich information sets available as we shift observational scales.

The size of block inventories varies from 94 ha (~230 acres) in Area 2, to over 215 ha (~530 acres) in Area 3. Total numbers of artifacts with individual locational and descriptive attributes range from just under 5000 in Area 2 (Figure 11.6), to almost 25,000 in Area 3 (Figure 11.5). These area/artifact count data are more succinctly expressed as the number of documented artifacts per hectare inventoried. These artifact density values range from a low of 53 artifacts per hectare in Area 2 (Figure 11.6), to a high of 114 in Area 3 (Figure 11.5). All of these are higher than the mean chipped stone per hectare value of 39.4 reported for the larger GRSLE project area as a whole (Todd 2015: Table 1) and demonstrate other relevant points about northwest Wyoming mountain archaeology – the notion the record is either sparse or difficult to discover is false. Regarding just raw numbers of artifacts exposed on the surface, regardless of elevation, the potential of Absaroka archaeology should be clear. The record is rich and its interpretive potential is high, but as yet, underused in our discussions of regional prehistory.

As an additional example of artifact-based data serving as building blocks to help understand regional structure, the range of temporally diagnostic projectile points documented in Area 2 can be illustrated (Figure 11.8). Of interest here are not only the range of temporal periods indicated – Paleoindian to Late Prehistoric – but also the relationships between projectile point location and the density of other chipped stone items. Of particular interest in this high elevation case (mean elevation 3050 m), is two of the rare (Table 11.1) Late Prehistoric points (e.g., items 16 and 593 at top, left), which could be associated with likely makers of Dinwoody panels

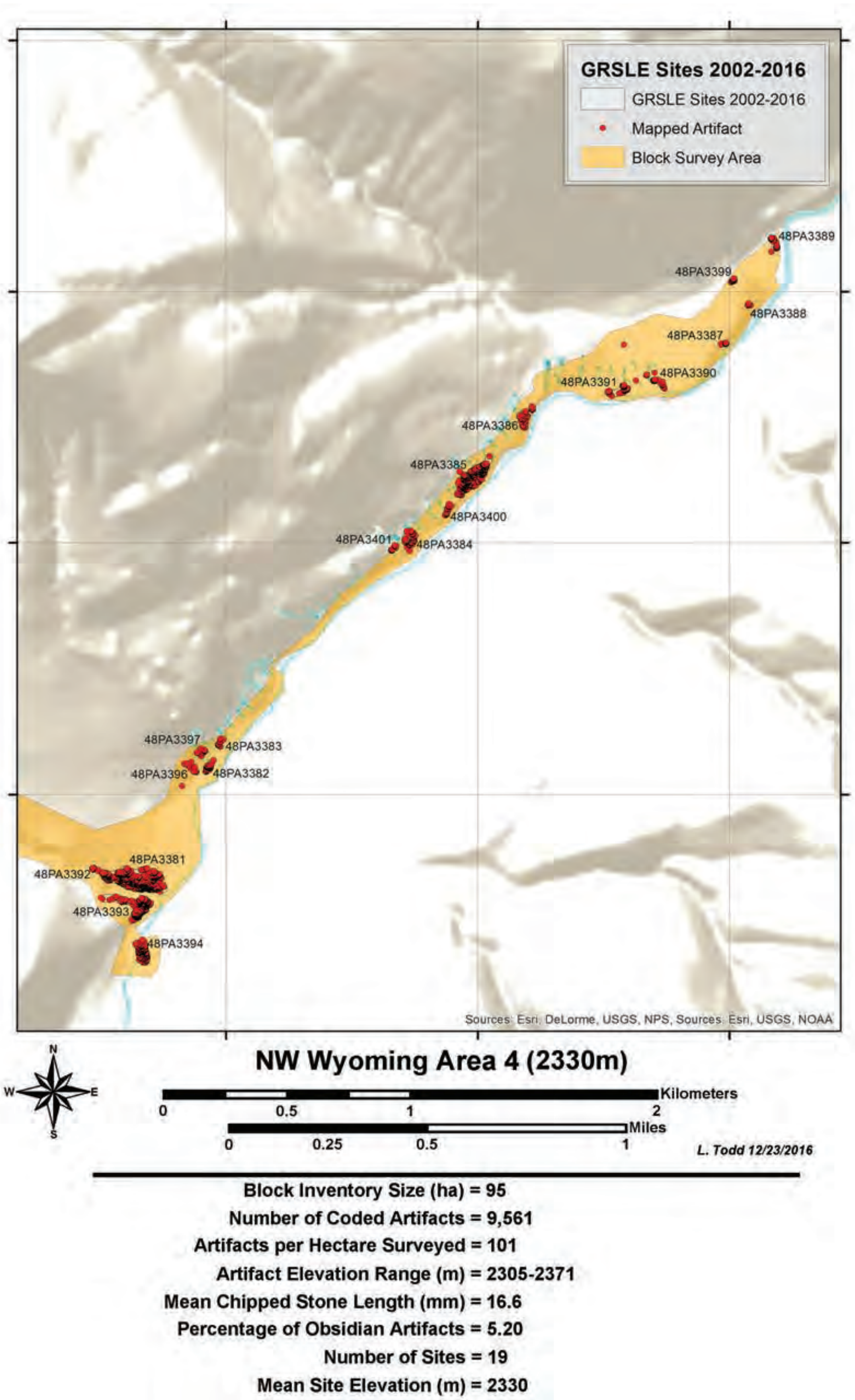

Figure 11.4: Inventoried areas, mapped artifacts, designated site clusters, and summary of archaeological information for the lowest elevation example (Area 4).

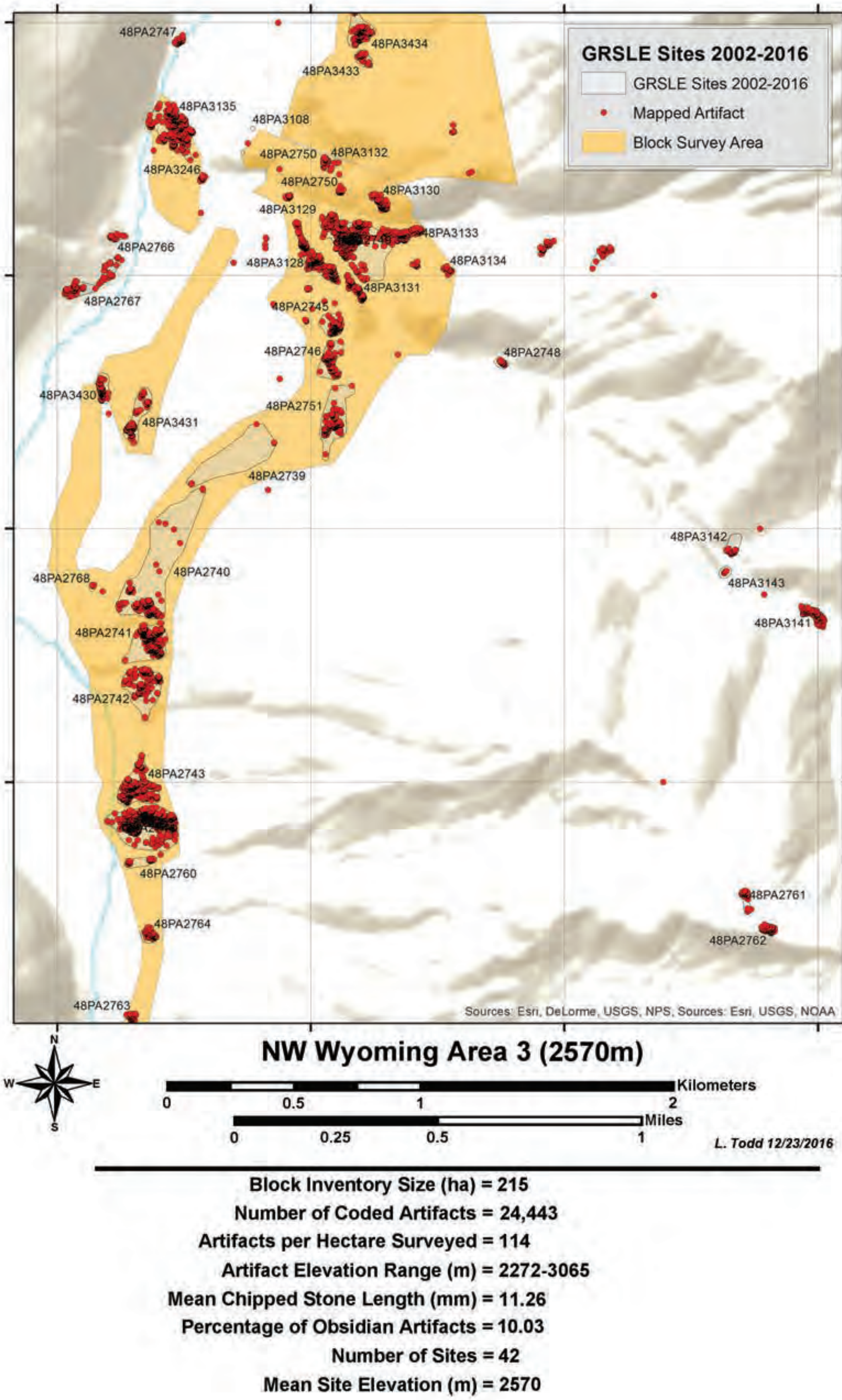

Figure 11.5: Inventoried areas, mapped artifacts, designated site clusters, and summary of archaeological information for a high elevation example with the highest artifact density (Area 3).

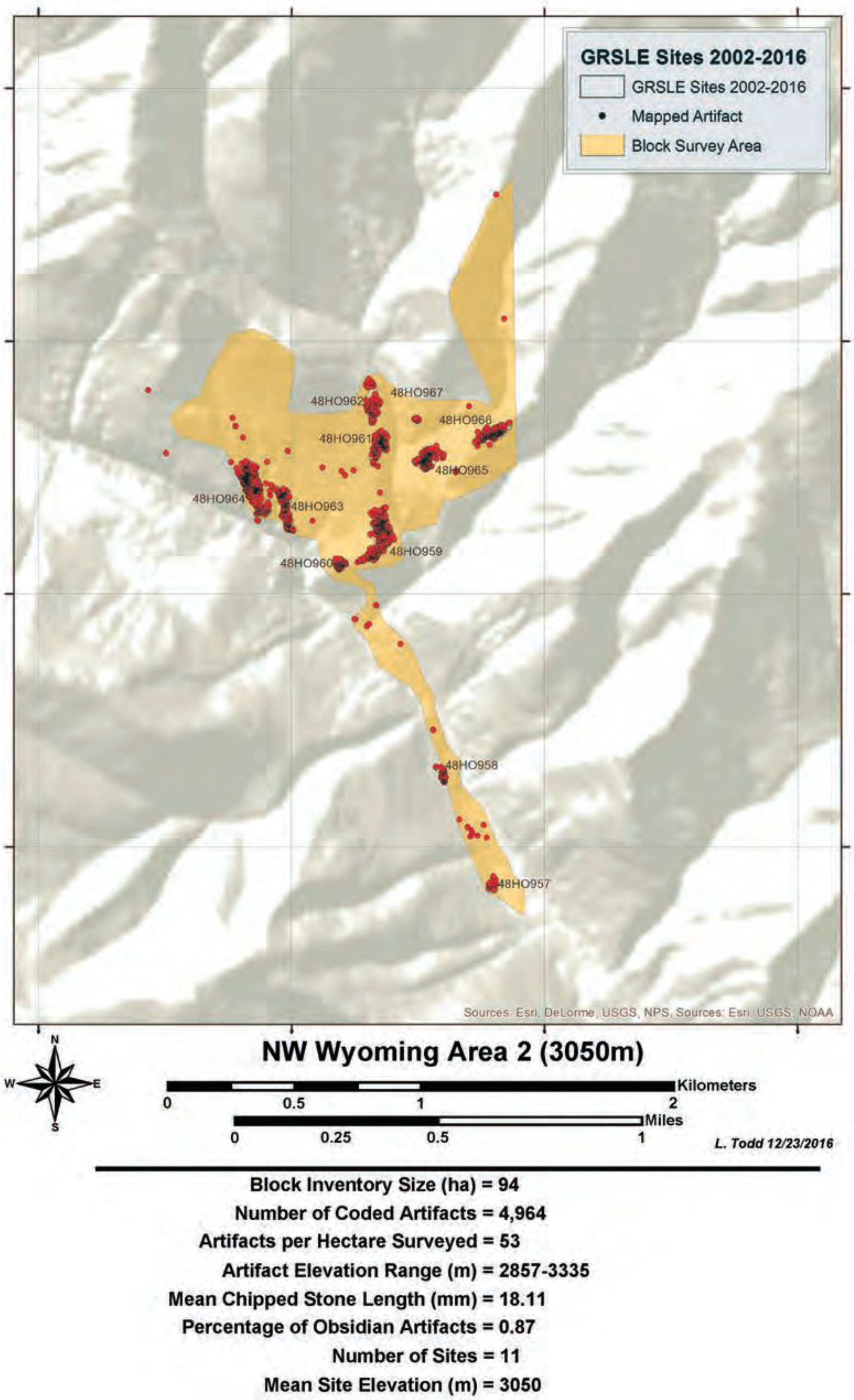

Figure 11.6: Inventoried areas, mapped artifacts, designated site clusters, and summary of archaeological information for a high elevation example (Area 2)

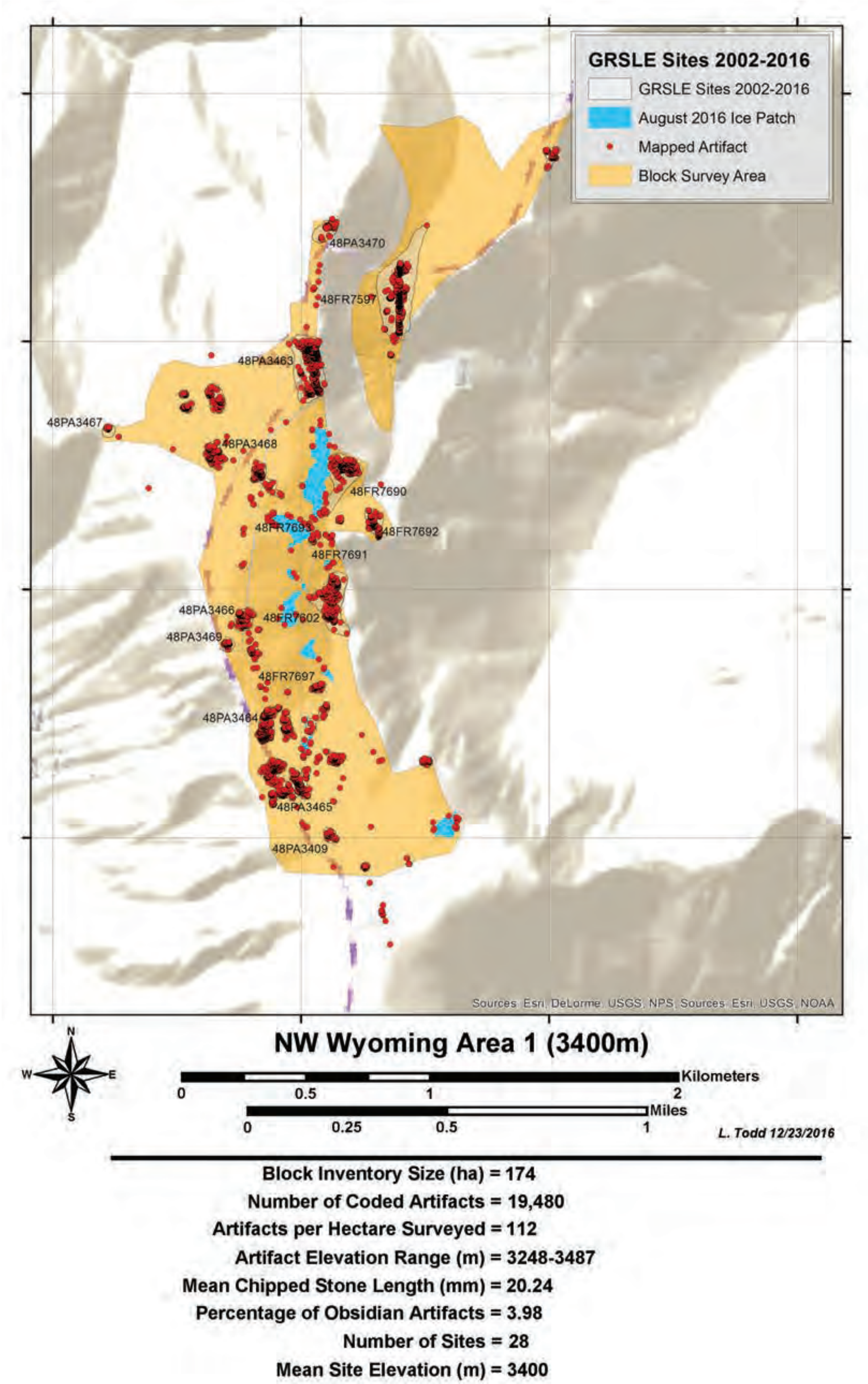

Figure 11.7: Inventoried areas, mapped artifacts, designated site clusters, and summary of archaeological information for the highest elevation example, which also includes materials recovered from melting ice patches (Area 1).

at lower elevations, were found as dispersed, isolated finds, instead of as part of the large artifact clusters. For most of the sample areas (with the exception of Area 2, 3050 m), Late Prehistoric points, which may be contemporaneous with Dinwoody rock art, are the most commonly recorded types.

While a limited sample, one hypothesis for temporal change in this example area is use shifted from a predominately residential pattern earlier to a more transient, logistical (Binford 1980) pattern later (note also the differences in total numbers of projectile points, and general morphological age assessment of points by comparison areas; Table 11.1). As discussed below (artifact cluster scale), while such a shift could account for the observed patterns in this portion of the Absarokas, in other areas there is solid evidence for high elevation residential use (Morgan *et al.* 2012; Stirn 2014). The take-home message seems to be the dynamics of landscape use in the mountains likely did not follow a single, regionally synchronous pattern. Although a good deal of work is being done in the high country, this is one of the reasons the overall percentages of the landscapes we've looked at are small, and any broad interpretive generalizations are likely to be short-lived in their validity. I think what we can say with certainty is we are beginning to recognize a great deal of diversity in regional mountain land use patterns, both synchronically and diachronically. There appear to be many ways for mountains to be integrated into broader sociopolitical systems.

ARTIFACT CLUSTER (SITE) SCALE

As noted above, the GRSLE project is predicated on artifacts as the basic unit of observation. Clustering of these individual observations into larger groupings has both analytical and administrative utility. In Wyoming, a prehistoric site is currently defined as a cluster of at least 15 items separated by less than 30 m. Clustering individually documented artifacts into groups meeting these criteria is a fairly easy process, and can be accomplished by a simple GIS buffering exercise (Burnett 2005:57-61). In terms of analytical utility, such arbitrarily defined "administrative clusters" have no inherently greater interpretive potential over other scales of clustered artifacts. However, since we have been trained to envision archaeological landscapes as being made up of sites, Appendix 11.1 provides a site-based clustering and designation summary for the larger artifact concentrations shown (Figures 11.4-11.8). While the figures illustrate a full data set of artifacts regardless of their site versus isolate administrative designation for each sample area, the site clusters perspective presented in the appendix is a smaller subset of data points and not necessarily the most suited for making the most effective regional comparisons. However, when examined from the broad brush stroke perspective of site cluster groupings, the theme of spatial heterogeneity in the mountain record is again apparent.

As one example of difference between the four areas, the number of projectile points and point fragments can be assigned to broad chronological classes (Appendix 11.1, Table 11.1). Clearly, no single temporal trend in land use is suggested. Both the highest and lowest samples (Areas 1 and 4 respectively) have comparable percentage of Late Prehistoric points, which could represent peoples most likely associated with Dinwoody rock art, while the mid-zone Areas (2 and 4) range from 4.8 to 58.3 percent Late Prehistoric. Area 2 (Figure 11.8), although geographically closest to Bighorn Basin Dinwoody sites, presents an interesting contrast with over 33% of the diagnostic artifacts attributed to either Paleoindian or Early Archaic, while less than 5% represent Late Prehistoric. Depending on what parts of the Absarokas are sampled, differences in land use patterns are suggested. Moving into the Wind Rivers, Beartooth Mountains, the Tetons, or the Big Horns (Adams 2006; Adams 2010; Eakin 2005; Finley and Boyle 2014; Finley *et al.* 2015; Kornfeld *et al.* 2010; Lee 2010, 2012; Morgan *et al.* 2012; Reckin 2013; Scheiber and Finley 2010, 2011; Stirn 2014), this diversity seems to continue and most likely expand in complexity. One is hard pressed to make any but the most sweeping generalizations about Wyoming mountain archaeology.

At the individual site cluster scale, this diversity and complexity can also be apparent (48PA3135; Figure 11.9). The group of surface artifacts illustrated from 48PA3135 (located in Area 3, Figure 11.5: see Appendix 11.1) is clustered into a single administrative site when buffered at 15 meters. The results of a 2.5 m buffering together with field feature designations is also shown (Figure 11.9). Site features include stone circles/lodge structures (e.g., F9 and F13), hearths (e.g., F1 and F5), metal working area (F2), and concentrations of glass trade beads (e.g., F7). The distribution of artifact classes

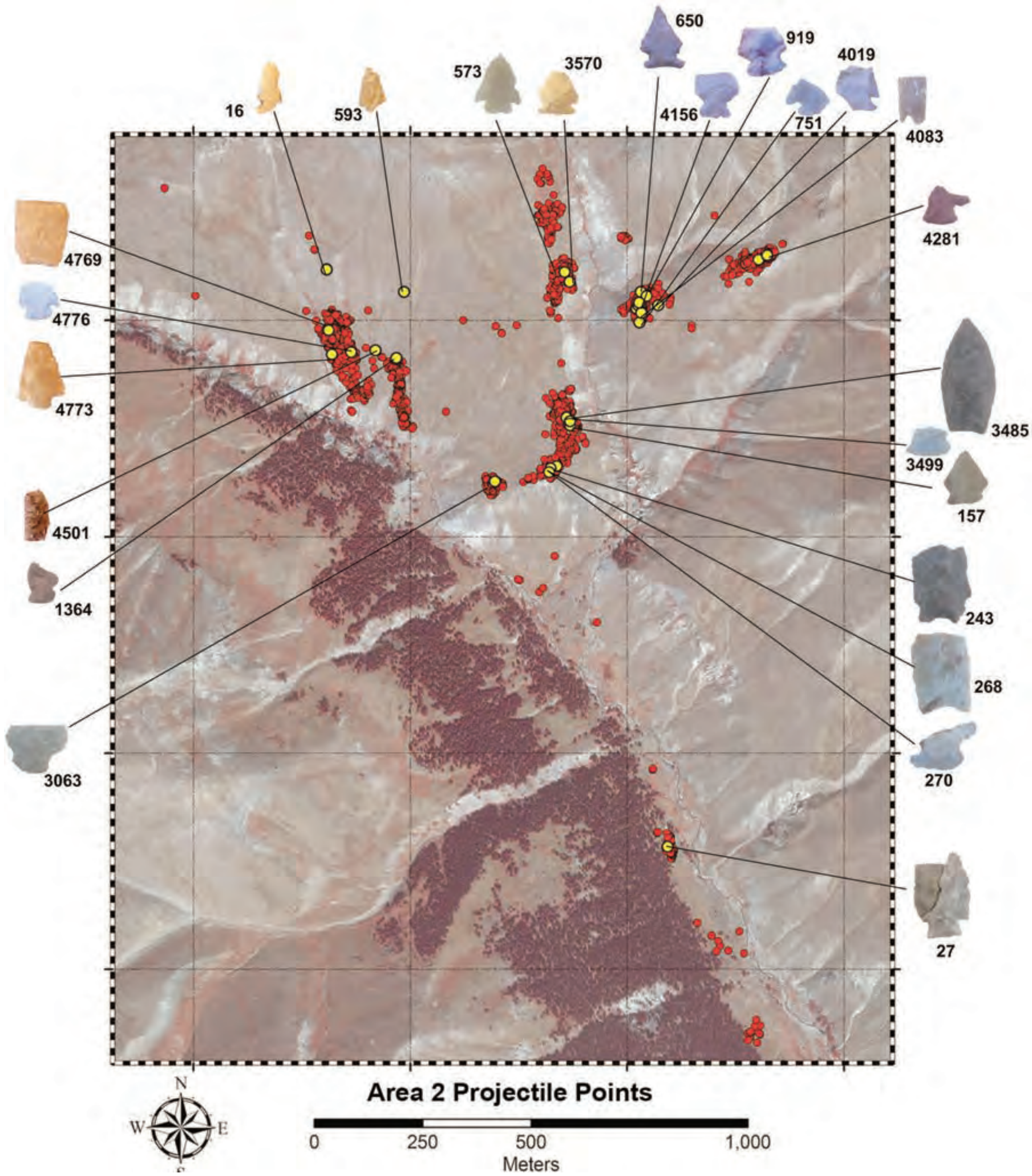

Figure 11.8: Mountain inventory example Area 3 showing all mapped chipped stone and the locations of temporally diagnostic projectile points.

shown (Figure 11.9a) demonstrates a good deal of spatial heterogeneity. Beads are found in only a few areas of the site, debris from metal working is restricted to one area, while metal artifacts have a slightly more dispersed pattern. Both steatite and ceramics are found at only single feature locations. At this scale, clustering has the potential to help identify activity differentiation, or possibly temporal differences in site use (see Burnett 2005:59-61).

Digging a little deeper into spatial patterning at the 2.5 m cluster scale, the distribution of sourced obsidian items, including both formal tools and debitage from 48PA3135, can also be seen (Figure 11.9b). One of the first observations is obsidian is not ubiquitous across the site (samples for sourcing were selected based on item size criteria), with most being found in the southeastern areas of the site. Second, there are some clear distinctions in major source areas at the feature level. Features F1, F13, F3, and F5 are exclusively Obsidian Cliff;

Table 11.1: Summary of Number and Percentage Frequency of Diagnostic Projectile Points Recorded in Four Mountain Inventory Areas: PL – Paleoindian, EA – Early Archaic, MA – Middle Archaic, LA – Late Archaic, US – indeterminate Archaic, and LP – Late Prehistoric

AREA	N	% POINTS BY TIME PERIOD					
		PL	EA	MA	LA	UA	LP
1	41	7.3	14.6	4.9	29.3	4.9	39.0
2	21	14.3	19.0	0.0	61.9	0.0	4.8
3	187	0.5	1.1	2.7	28.9	8.6	58.3
4	13	0.0	7.7	0.0	15.4	38.5	38.5

F18, which is also the only feature with ceramics (see Figure 11.11) and F6 (with steatite vessel fragments), have no Obsidian Cliff pieces. While beyond the scope of this paper, interpretations of these differences may include both temporal (see Table 11.2) and social variation in obsidian sources within a single site-scale cluster. The point here is not, however, to follow these sorts of interpretive leads, but to highlight the utility of a multi-scale, artifact-based regional data set to provide opportunities for investigating a diversity of sociopolitical variation analogous to the discussion by Whitley and Whitley (2012) for rock art.

This Late Prehistoric through Historic age span at 48PA3135 (see Table 11.2 for radiocarbon dates from this site) is mirrored by the artifact assemblage, which includes glass trade beads, manufactured Euroamerican items, and indications of on-site metal working (Figure 11.10a, d, and g respectively). Other items often used to ascribe a Mountain Shoshone/ Sheep Eater occupation (Nabokov and Loendorf 2004:149-168; Scheiber and Finley 2010) include quartzite Teshoas, bifacial Shoshone knives, obsidian tri-notched projectile points, steatite vessels, and brownware ceramics (Figure 11.10c, e, h, i and Figure 11.11a respectively). Sites such as this, as well as others recently investigated or currently under study (e.g., Scheiber, Burtt, Haskell, Moskvin, Kennedy, and Todd 2013; Scheiber *et al.* 2014; Scheiber, Simmons, Wells, and Todd 2013), provide our best opportunities to examine life at the higher elevational ranges. Within the next decade, we can expect to learn a great deal more about the use of landscapes above the 2200 m upper limits of Dinwoody petroglyphs.

ARTIFACT SCALE

While most items documented by the GRSLE project have been chipped stone (Figure 11.10), mountain artifact classes are certainly not restricted to stone tools. One of the material classes often given scant attention is the ceramic component. This is changing (Finley and Boyle 2014; Scheiber, Simmons, Wells, and Todd 2013). When individual artifact scale investigations are embedded in regional scale analysis, it is clear there may be more to Mountain Shoshone ceramic production and use than brownware/Intermountain ware cooking vessels. Several of the non-vessel ceramics from 48PA3135 and an adjacent site (48PA3128) are illustrated (Figure 11.11; also see Appendix 11.1).

Although vessel sherds are represented (Figure 11.11a), it is the wider range of ceramic forms, including spatulate objects (Figure 11b, d), rods/cylinder fragments (Figure 11.11e, f), small 'button-like' objects (Figure 11.11c), and incised objects (Figure 11.10f, Figure 11.11g), which may come to be the more informative types when examining land use and technological continuity of peoples likely associated with Dinwoody petroglyphs. Although rare, some of these forms such as the 'buttons' (Figure 11.11c) have been reported from other sites in the region such as the Sand Draw Dump site (48FR3123: Walker *et al.* 2006), which is well within in the elevation zone, temporal window, and locational setting making their Shoshonean affiliation likely.

The incised ceramic item from 48PA3135 (Figure 11.11g) is perhaps the most evocative in terms of thinking about possible relationships between Shoshone cosmology, elevational gradient, and mountain archaeology. Although broken, and the full extent of the design is not fully revealed, it's probably not stretching interpretation to suggest somewhat of a wing-like or feather-form appearance to the linear incisions made before the object was fired. Loendorf (2004:213-215; Francis and Loendorf 2002:120-122) makes the point the

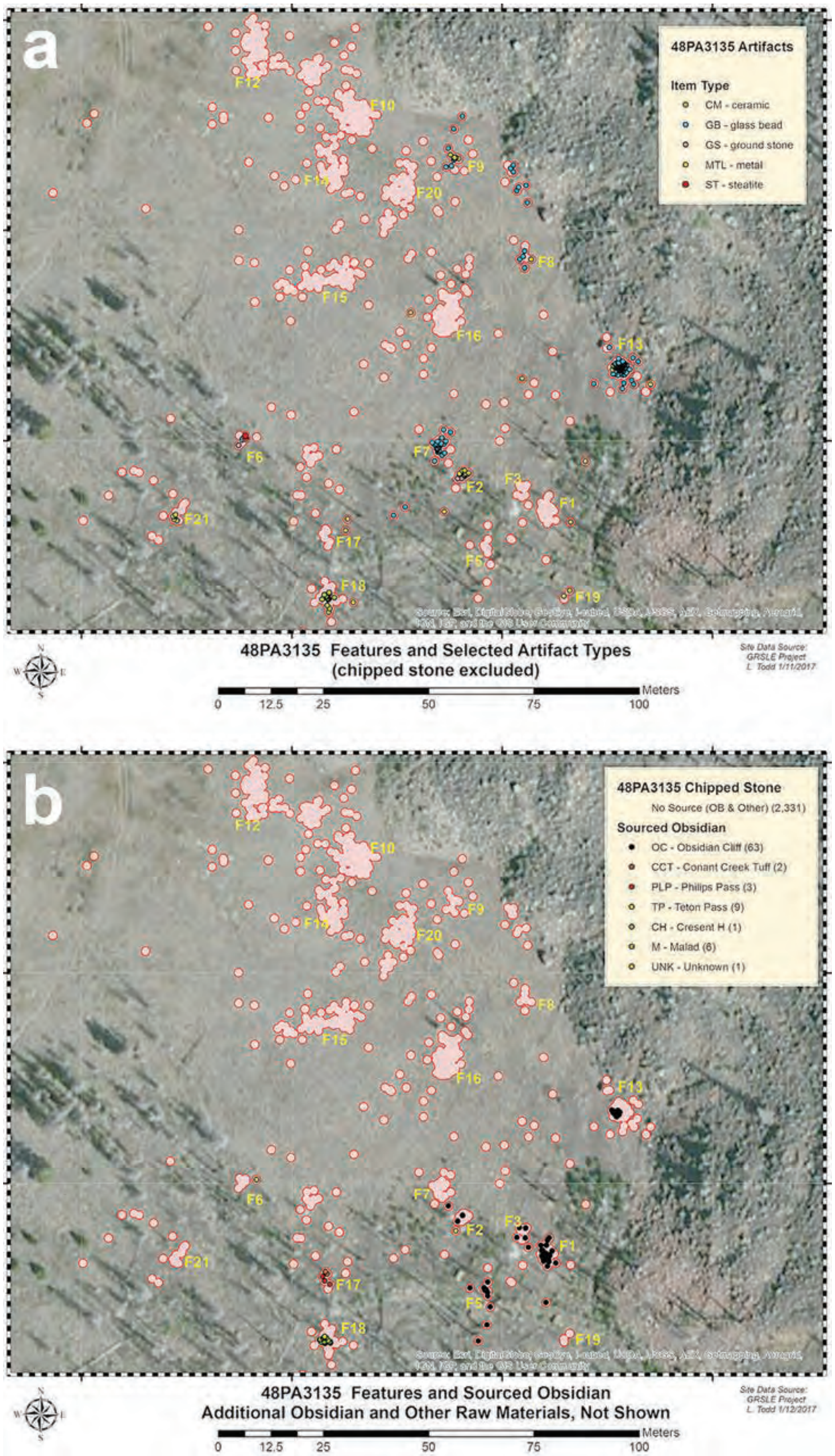

Figure 11.9: 48PA3135 artifact clusters identified using 2.5m buffers: a) distribution of key diagnostic artifact classes, and b) source locations for samples of obsidian pieces.

elevational patterning of differences in winged versus hoofed animals in Dinwoody petroglyphs fit comfortably within a Shoshone world-view differentiating between sky people, ground people, and water people are so strongly represented "it would have been possible to postulate such a world-view by studying only the distribution and elevation of the flying figures, the four-legged figures and the water figures" (Loendorf 2004:214). While the 48PA3135 ceramic object is part of a mobile artifact assemblage, perhaps its discovery (and possible manufacture, see Finley and Boyle 2014) at an elevation over 2200 m (at 2483 m) may provide clues to a hitherto unrecognized component of this elevational schema.

Finally, the artifact scale geographic data also includes radiocarbon dates since these are isotopic properties of individual items rather than properties of artifact clusters/sites. Results of radiocarbon dating of 32 samples (from a variety of GRSLE project materials) are presented (Table 11.2). These dates (Table 11.2) represent only those project sample results with 14C ages of 2500 or younger to encompass the "at least two millennia of antiquity" documented for the Dinwoody Tradition (Loendorf 2004:204). Most of these samples are from butchered bone associated with features, and many are from sites exposed after wildfires (Todd 2015). Charcoal from several buried hearth features is also included. Several of the samples are from sites containing brownware ceramics, steatite vessels, or glass beads. The marked increase in samples from the terminal Late Prehistoric (Figure 11.12) contributes additional support for the temporal span of many Absaroka sites falling into a time range congruent with Mountain Shoshone occupation. It seems the spike in late dates may be more a function of the selection of well-preserved bone sample for analysis (which have come mostly from sites exposed by recent fires and therefore is biased toward montane rather than alpine setting) than as an indication of a rapid increase in mountain populations in the post A.D. 1500 (for discussion interpretations of regional radicarbon dates and population estimates, see Kelly *et al.* 2012).

This section began with discussion of abundances of chipped stone items per hectare across mountain settings and concluded with observations on relative abundances of carbon isotopes in selected organic materials from those landscapes. Although clearly markedly different scales of observation, each sort of observation is fully integrated into a regional data set with each object, whether it's a projectile point or a piece of charcoal, linked by their individually documented geographic coordinates. The examples given here are by no means either a comprehensive or representative sample of Absaroka Mountain archaeology. As noted in the introduction, the GRSLE project is just one of several on-going research groups in the area. Also, only a fraction of the GRSLE data are reviewed here – the four example areas include just under 60,000 mapped items out of the nearly 180,000 the project has recorded since 2002. The nearly 100 artifact clusters/sites comprise less than 20% of the sites defined by the project. The key points of these examples are: 1) the potential analytical diversity available with object based regional data; 2) the quality of mountain data is approaching a level where meaningful discussions of relationships between lower elevations encompassed by Dinwoody petroglyphs and other environmental settings part of the sociopolitical systems; and 3) coupling object-based regional data on archaeological objects with comparable geographically documented rock art attributes seems a feasible and productive approach for bringing the two sorts of archaeology (artifact and art) into at least an approximation of interpretive convergence.

MOUNTAINS TO PLAINS – ROCKS AND PETROGLYPHS: METHODS FOR FINDING COMMON GROUND

If archaeological inventory above 2200 m has not documented any figures, panels, or sites, then is there common ground for the study of stones and bones archaeology and Dinwoody rock art archaeology in northwestern Wyoming? As stressed using a series of examples of views of the high elevations at increasingly fine-grained scales – region, site clusters, individual artifacts – one of the keys to a common ground may well be at the level of basic methods. While specific attributes used to record stones, bones, and petroglyphs will be different, all can be assembled into a spatially based framework suitable for multi-scale analysis of relationships among attributes and their geographic distribution and covariation regardless of whether art or debitage. If our goal is to understand the operation of past systems, it behooves us to record our data

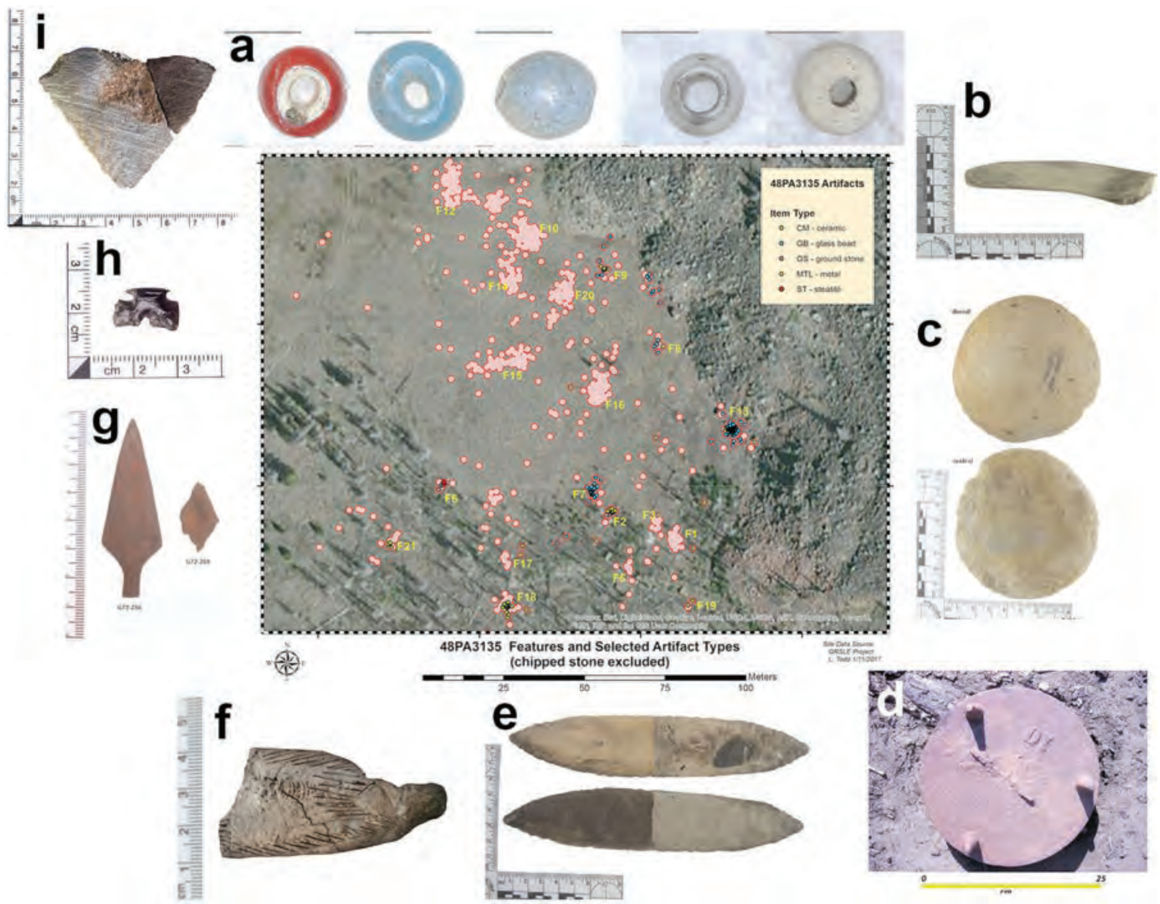

Figure 11.10: Site 48PA3135 (Dooley Site; see Figure 11.5) provides a spatially extensive example of a likely Mountain Shoshone/Sheep Eater occupation which includes: a) glass trade beads, b) antler flint knapping tools, c) quartzite Teshoas, d) cast iron Dutch oven, e) bifacial knives, f) ceramics, g) metal projectile points, and point manufacture debris, h) obsidian tri-notched points, tools, and debitage, and i) steatite vessel fragments.

sets of individual interest systematically. Using fine-grained spatial data is a cross-cutting common ground method prompting us to approach regional landscape studies from novel interpretive perspectives. Regardless of whether thinking of rock art as aspects of "figured landscapes" (Chippindale and Nash 2004a) or stone tools from an "off-site" (Foley 1981) perspective, development of geographic data sets has tremendous potential for seeing the big picture develop, albeit pixel by pixel.

I have concerns in presenting an overview of high elevation Absaroka archaeology based on such a limited spatial sample having been systematically inventoried and not wanting to go too far out on the limb asserting rock art is not part of Wyoming's high mountain landscapes. There's always the nagging worry, what if I have just missed the rock art!

In reflection, given our current work, worries about having missed what aspects of the mountain archaeological record has become less troubling than concerns for not having made appropriate observations on some of the things we have seen.

It is possible, however, other components of the record may record behavioral variants of activities associated with rock art at lower elevations. For example, culturally modified trees, particularly peeled trees with bark removed from large portions of a trunk and dating to the mid-1800s or earlier, are relatively common in the area (Reiser 2010) and may represent another form of marking the physical environment in montane settings. In higher elevation alpine settings above tree-line, work by Whitley *et al.* (2004), (although dealing with materials from California and Oregon) proposing a model of landscape symbolism, prompts thought both on possible spiritual aspects of higher versus lower elevations

Figure 11.11: Ceramics from Absaroka sites include: a) brownware sherds, b-f) a variety of non-vessel ceramic objects, and g) incised ceramics object.

in the Absarokas, and how our archaeological expectations may need re-tuning.

Whitley and colleagues make a point, although both rock art and rock structures such as cairns and stone alignments were potentially used as part of vision questing activities and functionally related, the constructed rock features "are not *locationally* associated with the rock-art, even though they are functionally, temporally and ritually linked to it. In this instance, the locational distinction between these different types of archaeological features reflect a kind of ritual path across the landscape, involving an intentional movement from high to low places on the terrain" (Whitley *et al.* 2004:226; emphasis in original). Of course we've found and documented cairns, alignments, and other rock structures (Kinneer 2007), and in many instances suggested a possible vision quest or ritual function

Table 11.2: Uncalibrated radiocarbon dates for samples less than 2500 years old from the GRSLE project mountain inventories with notes on whether the 15 m buffered artifact cluster (site) from which the sample was collected also contained steatite, ceramics, glass trade beads, or metal artifacts.

SITE	ELEV(m)	FEATURE #	MATERIAL	LAB	NUMB	^{14}C age BP	±	STEATITE	CERAMIC	GLASS BEADS	METAL	COMMENTS
48PA2811	2549	F1	CH	Beta	206176	1550	90	N	N	N	N	Hearth feature fill, inner rings
48PA2811	2549	F1	CH	Beta	206177	1100	60	N	N	N	N	Hearth feature fill, outer rings
48PA2811	2549	F1	CH	Beta	206178	1040	60	N	N	N	N	Hearth feature fill, charcoal
48PA2874	3098		CH	Beta	221329	2430	40	N	N	N	N	Test Unit excavations, charcoal
48PA3277	2597	F1	BN	Beta	237478	200	40	N	N	Y	Y	Surface collection near Feature 1. Bison tibia with green breaks and cutmarks
48PA3128	2641	F2	BN	Beta	248546	70	40	N	Y	N	N	Bighorn sheep articulated radius-ulna and distal humerus. Impact fracture on cranial surface of proximal radius. Two fragments of the radius submitted.
48PA3277	2586	F1	BN	Beta	248547	290	40	N	N	Y	Y	Bison long bone shaft fragment.
48PA3135	2497	F13	BN	Beta	248549	40	40	Y	Y	Y	Y	Burned bone fragments (radius) probably bighorn sheep
48PA3281	2792	F2	BN	Beta	265972	420	40	N	Y	N	N	Lateral half of complete bison tarsal (left CPF CO; medial archived)
48PA3135	2503	F2	BN	Beta	265973	180	40	Y	Y	Y	Y	Partially burned bison-sized long bone shaft fragment.
48FR7097	2494		BN	Beta	343977	200	30	N	N	N	N	Right proximal bison radius. Green bone fractures, distinct impact point on cranial surface. Near surface associated with chert initial reduction areas.
48FR7115	2513		BN	Beta	343978	160	30	N	N	N	N	Left distal bison tibia. Green bone fractures, possible impact point on caudal surface. Near surface associated hearth and obsidian reduction area.
48FR7119	2526		BN	Beta	343979	80	30	N	N	Y	Y	Left postero-lateral bison femur shaft. Green bone fracture, but no cutmarks or impact point.
48FR7078	2453		CH	Beta	344654	2070	30	N	N	N	N	Hearth exposed in cutbank; sample collected from profile.
48FR7110	2570		CH	Beta	369544	120	30	Y	N	N	N	Residue from exterior of steatite vessel
48PA3131	2619		BN	Beta	369545	180	30	N	Y	N	N	Right Deer/Sheep sized tibia w/ impact fracture. Near ceramics

48PA3128	2647	F2	BN	Beta	391944	180	30	N	Y	N	N	E3-89; Test Unit; UD LB FK
48PA3130	2663		BN	Beta	391945	30	30	N	Y	N	N	B2-3; UD RD SH
48PA3131	2640		BN	Beta	391946	120	30	N	Y	N	N	TU7-124; UD LB FK
48PA3131	2637		BN	Beta	391947	460	30	N	Y	N	N	TU4-74; BI RD PR AL
48PA3135	2490	F1	BN	Beta	391948	430	30	Y	Y	Y	Y	Test Excavation; UD, LB,FK. D2-2
48PA3410	2956		CH	Beta	419690	850	30	N	N	N	N	Charcoal from inside hearth test unit; F1-3
48FR7597	3277	F9	CH	Beta	445163	2010	30	N	N	N	N	*Pinus albicaulis*; stone circle
48PA3128	2647	F2	BN	UCIAMS	155797	185	20	N	Y	N	N	Metapodial flake from test unit, sheep sized; E3-73
48PA3128	2647	F2	BN	UCIAMS	155798	210	20	N	Y	N	N	Tibia flake from test unit, sheep sized; E3-76
48PA3128	2647	F2	BN	UCIAMS	155799	155	20	N	Y	N	N	Radius flake from test unit, sheep sized; E3-116
48PA3135	2490	F1	BN	UCIAMS	155800	360	20	Y	Y	Y	Y	Test Excavation D2-6. Sheep sized (UD) tibia flake
48PA3131	2640		BN	UCIAMS	155801	350	20	N	Y	N	N	Test Unit TU2-62; UD HM FK
48PA3281	2793	F3	BN	UCIAMS	165402	110	15	N	Y	N	N	From feature test excavation
48PA3281	2793	F3	BN	UCIAMS	165403	95	15	N	Y	N	N	From feature test excavation
48PA3135	2495	F2	BN	UCIAMS	175963	100	15	Y	Y	Y	Y	HM FK (probably OC)
48PA3036	2599		BN	UCIAMS	175964	130	15	N	N	N	N	Sheep petrous

FEATURE # - cluster/site specific feature number

MATERIAL – BN = bone; CH = charcoal/charred organic

(Figure 11.13), but have not considered the possibility they could be another facet of the activity sets which produced manifestations like Dinwoody petroglyphs at lower elevations.

So while the emphasis here on seeking a common ground between basin and mountain archaeology has been on a multi-scalar approach to methods, it may be a second productive approach may be conceptual rather than methodological. At least for our mountain inventories, it seems prudent to expand our definition of rock art beyond petroglyphs and pictographs to include some of the rock features and culturally peeled trees. With this definitional expansion, it may well be the case, rather than not finding Dinwoody manifestations in the mountains, I was simply not recognizing some of what we were recording (Figure 11.13) – research questions to consider on the next round of regional pattern recognition analysis and future fieldwork.

In terms of the methodology issues, if mountain archaeology might benefit from a slight shift in conceptual underpinning, a final suggestion is Dinwoody rock art studies could benefit from adopting a multi-scalar documentation approach similar to that being used to record mountain surface archaeology where individual object attributes are the basis of documentation, rather than sites. This is the perspective advocated by Chippendale (2004) in his “millimetre up to kilometre” approach, and its application to Wyoming rock art studies would put us in a position to simultaneously examine regional patterns of both the “rocks and bones” and the rock art archaeological records. At present, it is difficult to compare rock art to other components of the archaeological record in part because they share limited methodological common ground. If however, attributes of each rock art image were recorded with individual spatial coordinates, as are attributes of the surface materials artifacts described here, we could begin to search for regional patterns along comparable, multi-scale locational dimensions. One way to integrate

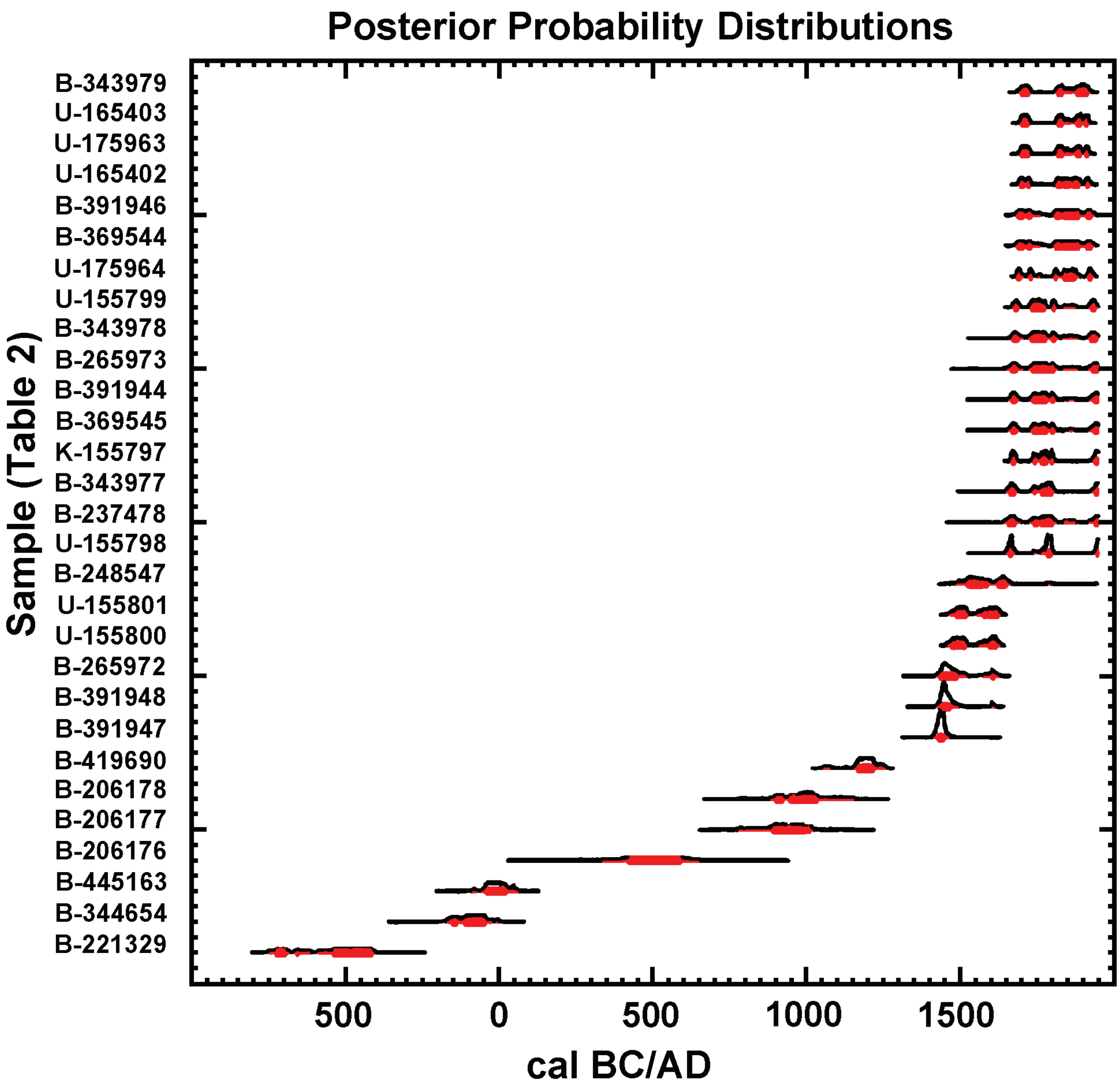

Figure 11.12: Calibrated age ranges (BC/AD) for radiocarbon dated samples with ages less than 2500 years from the GRSLE high elevation inventory project (calibrated using Calib 7.10). Additional information on samples in Table 11.2.

the various archaeologies is to use a common baseline documentation strategy. I'm convinced an off-site approach (Foley 1981) is the most appropriate method for studying the regional stone tool record, and as demonstrated by Chippendale (2004) it can also prove of value in investigating rock art. To really address issues of how cultural systems associated with Dinwoody operated across a diverse set of landscapes, we need a few shared documentary conventions. Being able to combine the data sets, such as the GRLSE sample described here, with comparable regional multi-scalar coverages incorporating finer-gained figure by figure documentation as described by de Lumley (1995) in the Mont Bego region (France) with contemporary photogrammetric documentation and GIS capabilities seems the obvious next step.

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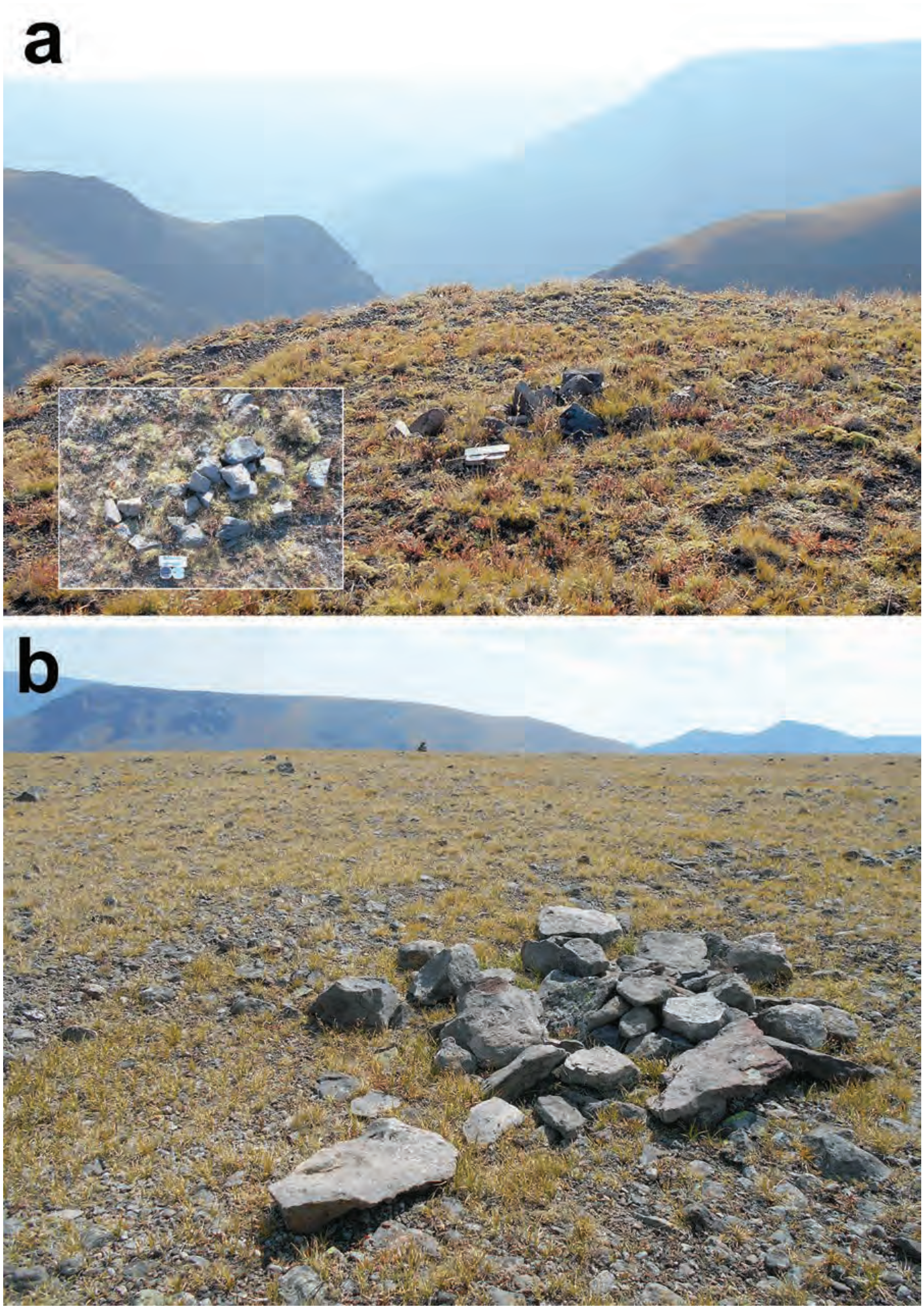

Figure 11.13: Two small, indistinct stone cairns from Area 1 (Figure 7) which a) overlook the lower elevation settings, and b) are scattered across high elevation surfaces (note recent Forest Service trail marker cairn in distance). *Photographs by Lawrence Todd.*

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Appendix 1: Summary information on all 15 m artifact clusters assigned Smithsonian site numbers from the four example areas described in text

AREA	SITE	AREA (m^2)	ELEV (m)	CS	# PROJECTILE POINTS						MLEN (mm)	%OB
					PL	EA	MA	LA	UA	LP		
1	48PA3409	3079	3470	84	1	0	0	0	0	0	23.2	2.4
1	48PA3470	6294	3400	186	0	0	0	0	0	0	N/A	0.0
1	48PA3463	29213	3399	3052	0	2	0	3	0	0	20.6	0.6
1	48FR7692	6795	3376	375	0	1	0	0	0	0	20.9	0.3
1	48FR7691	953	3372	25	0	0	0	0	0	0	18.1	0.0
1	48FR7602	22823	3359	767	0	0	0	0	0	0	22.4	0.3
1	48PA3469	2360	3461	287	0	0	0	0	0	0	16.1	0.0
1	48PA3467	2258	3370	51	0	0	0	0	0	1	15.6	13.7
1	48FR7597	47508	3277	7604	1	1	2	8	1	11	14.4	6.2
1	48FR7693	1968	3391	17	0	0	0	0	0	0	N/A	0.0
1	48FR7690	20055	3382	618	0	0	0	0	0	0	21.9	0.5
1	48PA3506	7061	3409	203	0	0	0	0	0	0	22.8	0.0
1	48PA3505	2127	3395	242	0	0	0	0	0	0	19.9	0.0
1	48PA3507	1145	3393	166	0	0	0	0	0	0	33.5	0.0
1	48PA3468	7742	3411	247	0	0	0	0	0	0	27.1	0.0
1	48PA3503	8590	3422	991	1	2	0	1	0	1	23.8	0.9
1	48PA3466	6477	3457	442	0	0	0	0	0	0	22.4	0.0
1	48FR7796	2325	3455	35	0	0	0	0	0	1	21.3	2.9
1	48PA3464	9523	3437	903	0	0	0	0	0	1	19.2	1.8
1	48FR7797	4638	3427	201	0	0	0	0	0	0	28.1	0.0
1	48FR7697	2388	3402	58	0	0	0	0	0	0	21.5	0.0
1	48FR7801	5407	3405	19	0	0	0	0	0	0	29.3	0.0
1	48FR7799	3836	3435	120	0	0	0	0	0	0	23.9	10.8
1	48PA3465	24325	3449	2288	0	0	0	0	1	1	23.8	10.4
1	48PA3504	1103	3473	59	0	0	0	0	0	0	24.4	0.0
1	48FR7800	1857	3423	64	0	0	0	0	0	0	17.9	0.0
1	48FR7795	605	3251	60	0	0	0	0	0	0	29.8	0.0
1	48PA3502	4011	3353	98	0	0	0	0	0	0	26.3	0.0
2	48HO957	2402	2870	18	0	0	0	0	0	0	18.2	16.7
2	48HO958	1959	2902	80	0	0	0	1	0	0	16.4	0.0
2	48HO959	15763	3041	650	2	0	0	4	0	0	18.2	2.6
2	48HO960	2315	3011	163	0	0	0	1	0	0	16.1	2.5
2	48HO961	6757	3071	454	0	1	0	1	0	0	19.0	0.0
2	48HO962	8520	3104	103	0	0	0	0	0	0	21.9	1.0
2	48HO963	8267	3024	502	0	0	0	0	0	1	19.1	0.4
2	48HO964	15231	3068	1550	1	0	0	1	0	0	N/A	N/A
2	48HO965	7614	3093	926	0	3	0	3	0	0	17.9	0.5
2	48HO966	7438	3139	558	0	0	0	2	0	0	16.7	0.9
2	48HO967	469	3124	18	0	0	0	0	0	0	17.2	5.6
3	48PA2739	37987	2630	4	0	0	0	0	0	0	22.0	0.0

3	48PA2740	71395	2576	525	0	0	0	2	2	0	15.1	9.3
3	48PA2741	19101	2573	1146	0	0	2	7	1	2	14.2	5.3
3	48PA2742	20719	2571	259	1	0	0	2	1	0	18.5	0.4
3	48PA2743	18829	2547	978	0	0	0	1	0	1	13.6	2.9
3	48PA2744	37568	2545	5636	0	1	0	15	0	12	13.2	1.4
3	48PA2745	6891	2676	713	0	0	0	0	1	0	13.2	0.4
3	48PA2746	10567	2673	207	0	0	0	5	0	0	22.3	3.9
3	48PA2747	1259	2489	72	0	0	0	0	0	0	12.1	1.4
3	48PA2748	1816	2670	23	0	0	0	0	0	0	21.4	56.5
3	48PA2749	48076	2399	2399	0	0	2	10	6	17	14.2	12.8
3	48PA2750	615	2628	112	0	0	0	0	0	1	14.8	0.2
3	48PA2751	21813	2676	338	0	0	0	4	2	0	12.2	5.0
3	48PA2760	3714	2549	156	0	0	0	1	0	0	13.3	1.3
3	48PA2761	2453	3041	54	0	0	0	0	0	0	14.4	9.3
3	48PA2762	1617	3061	105	0	0	0	1	0	0	15.6	1.0
3	48PA2763	1771	2552	53	0	0	0	0	0	1	12.8	7.5
3	48PA2764	3462	2542	127	0	0	0	0	0	0	13.0	3.1
3	48PA2765	5647	2541	26	0	0	0	1	0	0	20.6	3.8
3	48PA2766	1476	2505	36	0	0	0	0	1	0	18.4	0.0
3	48PA2767	11557	2510	124	0	0	0	0	0	1	15.3	6.5
3	48PA2768	537	2550	5	0	1	1	1	2	0	22.8	0.0
3	48PA3108	229	2574	0	0	0	0	0	0	0	0.0	0.0
3	48PA3128	12366	2628	980	0	0	0	0	0	25	16.5	3.6
3	48PA3129	329	2592	39	0	0	0	0	0	1	13.1	7.8
3	48PA3130	3228	2646	233	0	0	0	1	0	3	13.2	7.3
3	48PA3131	3201	2622	5901	0	0	0	2	0	18	5.5	3.4
3	48PA3132	3253	2632	17	0	0	0	0	0	1	15.2	5.9
3	48PA3133	633	2658	9	0	0	0	0	0	0	18.0	0.0
3	48PA3134	1317	2690	10	0	0	0	0	0	0	13.8	0.0
3	48PA3135	24139	2483	2803	0	0	0	0	0	21	7.1	32.6
3	48PA3141	5171	2820	124	0	0	0	0	0	2	15.9	6.5
3	48PA3142	4297	2797	28	0	0	0	0	0	0	17.7	10.7
3	48PA3143	1803	2823	4	0	0	0	0	0	0	N/A	N/A
3	48PA3246	647	2504	20	0	0	0	0	0	0	14.1	10.0
3	48PA3430	5533	2502	180	0	0	0	0	0	0	14.9	3.3
3	48PA3431	11510	2537	246	0	0	0	1	0	3	17.3	5.7
3	48PA3433	3629	2650	35	0	0	0	0	0	0	11.3	0.0
3	48PA3434	10165	2650	370	0	0	0	0	0	0	16.0	0.0
4	48PA3381	19591	2357	4699	0	1	0	2	3	3	15.4	4.7
4	48PA3382	1585	2345	316	0	0	0	0	0	0	17.6	9.8
4	48PA3383	1099	2352	22	0	0	0	0	0	0	22.4	0.0
4	48PA3384	3898	2329	151	0	0	0	0	0	1	17.6	1.3
4	48PA3385	10940	2326	2370	0	0	0	0	1	0	16.0	5.6
4	48PA3386	3891	2322	68	0	0	0	0	0	0	20.7	8.8
4	48PA3387	518	2312	54	0	0	0	0	0	0	21.5	0.0
4	48PA3388	475	2310	8	0	0	0	0	1	0	22.5	0.0
4	48PA3389	2018	2309	53	0	0	0	0	0	0	23.6	1.9
4	48PA3390	1539	2317	84	0	0	0	0	0	0	17.8	2.4

4	48PA3391	3270	2320	193	0	0	0	0	0	0	15.9	1.0
4	48PA3392	350	2358	21	0	0	0	0	0	0	24.2	4.8
4	48PA3393	9377	2358	822	0	0	0	0	0	0	18.5	1.5
4	48PA3394	4460	2358	438	0	0	0	0	0	1	20.5	13.5
4	48PA3396	1920	2352	30	0	0	0	0	0	0	23.7	30.0
4	48PA3397	1534	2358	26	0	0	0	0	0	0	29.8	0.0
4	48PA3399	593	2309	58	0	0	0	0	0	0	20.1	1.7
4	48PA3400	1345	2328	27	0	0	0	0	0	0	28.5	0.0
4	48PA3401	719	2336	90	0	0	0	0	0	0	28.9	16.7

NOTE: these data represent only items located within administrative site boundaries, and do not include materials from lower density or more dispersed settings.

AREA – Mountain site example area
AREA m^2 – area of artifact/site cluster
ELEV (m) -- mean elevation of all mapped items in cluster
CS – number of mapped chipped stone items in cluster
PL – Paleoindian
EA – Early Archaic
MA – Middle Archaic
LA – Late Archaic
UA – Indeterminate Archaic
LP – Late Prehistoric
MLEN (mm) – mean maximum length of coded chipped stone in millimeters
%OB – percent of the total site chipped stone assemblage (CS column) represented by obsidian