



Alpine and Sage Grasslands – GRSLE Mountain and High Plains Archaeology 2025



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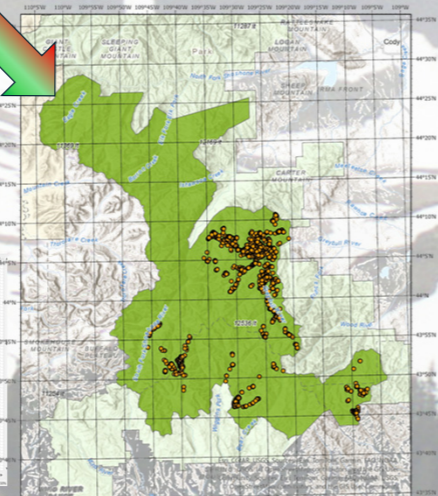
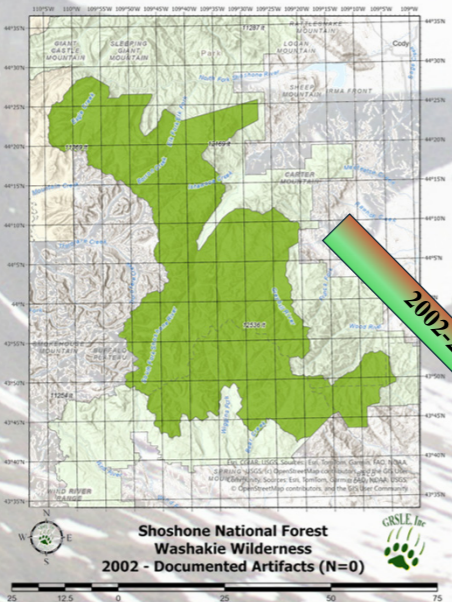


The 2025 field season of the GRSLE project expanded our long-term research program beyond high-elevation wilderness settings into lower elevation landscapes of the Big Horn Basin. This poster compares two systematically recorded, artifact-based inventory blocks located along a single drainage system—one at ~3100 m in alpine grasslands and another at ~2600 m in sage-steppe foothills. Both areas were surveyed using 5 m transects, single recording protocols, and individual stored GPS tracklog data to ensure direct comparability. Field documentation and preliminary results are presented, highlighting how consistent artifact-based (rather than site-based) inventory methods can bridge analytical gaps between montane and basin settings. A primary goal of this multi-setting approach is to evaluate archaeological evidence for differing human uses of sharply contrasting landscapes, and to explore how filling in “blank spots on the map” may reshape our understanding of mobility and land use in the Greater Yellowstone Ecosystem.

2002 Blank Spot on the Map:

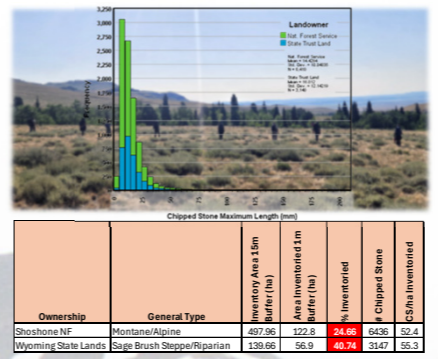
When the fieldwork that would become the GRSLE project started in 2002, the fundamental research question was very simple since only a single site was reported in the Washakie Wilderness – what sort of archaeology is there in this area? It was a classic “blank spot on the map” where it would be easy to implement an artifact-based, rather site-based documentation protocol. For the first several field seasons, based on retained 20th century misconception about past human presence in today’s Wilderness management areas, we were consistently very surprised by the numbers, densities, and diversity of back-country artifacts.

The surprise shifted to awe in 2006 when the first major wildland fire (Little Venus) impacted areas where we’d already completed basic surface inventory. The increased surface visibility provided the nail in the coffin for the notion that Wilderness archaeology should be considered marginal or limited. Rather than ignoring the blank spot, we’ve emphasized the richness and complexity.



Artifact ID	Material	Location	Notes
1	Obsidian
2	Chert
3	Quartzite
4	Flint
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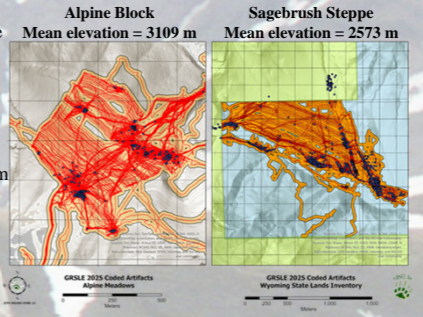
Initial Thoughts on Montane/Alpine vs Sage Grasslands:



In 2002, a common opinion based on no data was that high elevation archaeology was sparse in comparison to the richer, lower elevation record. We now know that the higher elevation record is much richer and complex. A question now is “what are the similarities and differences of the archaeology at higher versus lower elevations?” And as is often an honest initial response of “Don’t know, let’s take a look.” But what data can we look at to begin finding answers? Given the artifact-based nature of our GRSLE data for the higher elevations (we have >250000 artifacts recorded above 2100m and only 873 from less than 2100m).

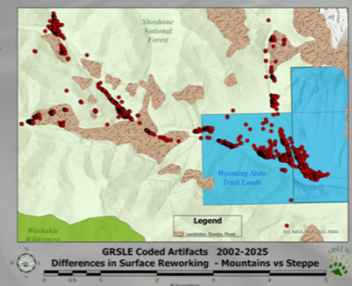
The 2025 season gave us the chance to start taking a look, not quite low elevations, but areas of open sagebrush steppe adjacent to our work on the Shoshone National Forest. Two block areas inventoried by crews at 5m spacing moving at 1km/hr are shown at the right – one at over 3100m on Forest Service land and the other on Wyoming State Trust lands at just over 2500m (shown in maps to the right). While an inadequate sample size to answer high vs low questions, these data do offer some points for further thought.

In terms of raw material, the State lands have more quartzite, Phosphoria chert (likely from Bighorn Mountains to east of the basin), locally available contact metamorphics, and surprisingly more obsidian. Generally, non-local chert predominates in the higher elevation Forest plot. The only statistically significant (in terms of adjusted residuals) difference in temporally diagnostic point is an overabundance of Late Prehistoric points at lower elevation. Interestingly, the points are the least well represented artifact type at lower on the State lands, which also is the most likely highly artifact collected sample area. Interesting. General impressions: the lower elevation material is more “scattered” and less concentrated, which might be an expectation of open versus constrained mountain settings. More work needed, more variables to consider.



Lithic Raw Materials	Land Owner		
	USDA Forest	State Lands	Total
Not Coded	Count: 0.0%	Count: 0.0%	Count: 0.0%
Basalt	Count: 1.0	Count: 1.0	Count: 2.0
Chert	Count: 2671	Count: 662	Count: 3333
Chalcedony	Count: 2319	Count: 699	Count: 3018
Dollar Mn. Chert	Count: 2.2	Count: 2.2	Count: 4.4
Green Chalcedony	Count: 0.0%	Count: 1.0%	Count: 1.0%
Obsidian	Count: 249	Count: 170	Count: 419
Phosphoria Chert	Count: 226	Count: 161	Count: 387
Petrified Wood	Count: 0.0%	Count: 0.0%	Count: 0.0%
Quartzite	Count: 656	Count: 1181	Count: 1837
Moronon Quartzite	Count: 11	Count: 16	Count: 27
Contact Metamorphic	Count: 227	Count: 831	Count: 1058
Other Volcanic	Count: 0	Count: 3	Count: 3
Total	Count: 6336	Count: 3147	Count: 9483

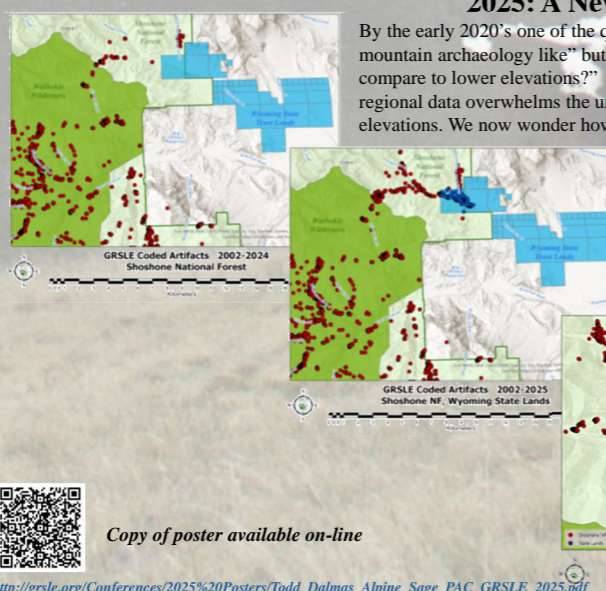
One such variable that could well condition archaeological visibility is the difference in landscape stability in the mass-wasting rich Absarokas and the more stable lower Bighorn Basin surfaces. Will be interestingly fun to spend more time in areas where terrace systems are a more common geomorphological features than massive slumps. We’ll see.



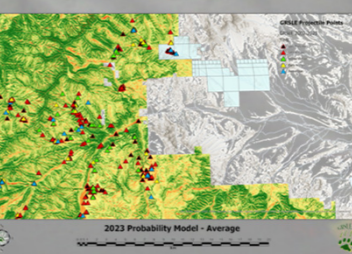
2025: A New Blank Spot on the Map:

By the early 2020’s one of the questions that has become more pressing is not “what is mountain archaeology like” but rather “how does the richly complex mountain archaeology compare to lower elevations?” At least in NW Wyoming, the once blank high elevation regional data overwhelms the unsystematically partitioned, site-based data from the lower elevations. We now wonder how to understand high elevation data without comparison.

To begin the collecting data about this gap in regional data cartography we requested authorization from the Wyoming Office of State Lands and Investments to begin inventory in blocks of State Lands in the western margins of the Bighorn Basin adjacent to the Shoshone National Forest where all our prior work has been conducted.



Another issue that needs more work is our multi-iteration probability model that’s proved to be very useful in predicting artifact densities in the mountain settings but has not had for the lower elevations since there have been no data to model. As shown in the Figure to the right, one of the trends in the existing model, which is high elevation based, is that lower elevations are often shown as being low probability. As our limited 2025 work shows, this is most likely the result of insufficient data and points to the need for a model based on different attributes. More work needed, stay tuned for 2026.



General Chronology	Land Owner		
	USDA Forest	State Lands	Total
Late Prehistoric	Count: 17	Count: 47.75	Count: 64.75
Late Archaic	Count: 2.2	Count: 1.0	Count: 3.2
Middle Archaic	Count: 1.8	Count: -1.8	Count: 0.0
Early Archaic	Count: 0	Count: 0	Count: 0.0
Paleoindian	Count: 1.3	Count: 7.65	Count: 8.95
Total	Count: 63	Count: 57	Count: 120

Stone Tool Type	Land Owner		
	USDA Forest	State Lands	Total
Fflake	Count: 6278	Count: 3063	Count: 9341
Projectile Point	Count: 76	Count: 21	Count: 97
scraper	Count: 23	Count: 14	Count: 37
Other Tool	Count: 1.5	Count: -1.5	Count: 0.0
Total	Count: 6436	Count: 3147	Count: 9583

Copy of poster available on-line
http://grsle.org/Conferences/2025%20Posters/Todd_Dalmas_Alpine_Sage_PAC_GRSLE_2025.pdf

Greybull River, 2002, Ceding in Modified Whitaker plot

Recording Stone Circle - 3400m

Alpine zone artifact recording

Access to high elevation project Areas is not simple

Post-Fire Recording has opened our eyes to mountain archaeology complexity

Artifacts in and near Ice Patches Provide an unusual, spectacular record

No matter how much sense you've got it's Hard to come in from the rain in alpine

High elevation inventory - 2003

Mountain Meadow Inventory - 2004

Alpine Test Excavations - 2006

Surface alpine documentation - 2021