



Artifacts Over Sites: Cumulative Inventories and Regional Archaeology in the Greater Yellowstone Ecosystem

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GRSLE Setting & Conceptual Framework

For more than two decades, the GRSLE Project has worked in a part of Wyoming that was historically a blank space on archaeological maps. By focusing on artifacts rather than sites, GRSLE builds a cumulative, landscape-scale record that reveals patterns invisible in traditional survey frameworks. This column introduces the geographic setting, the rationale for an artifact-based approach, and the long-term commitment to documenting human activity across the Greater Yellowstone Ecosystem.

Context & Rationale

- High-elevation Absarokas historically under-documented — 1880s maps show largely “blank” space, and by 2000, were still archaeological blanks
- Traditional site-based surveys obscure landscape-scale patterning
- Artifact-level recording reveals finer-grained behavioral signals
- Long-term, non-collection strategy ensures consistent, comparable data

GRSLE Landscape Approach

- Provenience + descriptive attributes recorded for every artifact
- Integration with ecological and environmental datasets
- Initial GRSLE regional coverage focused on >2500m elevation area, but in 2025 began including lower elevations to address contemporary analytical gaps. The “blank spots” have shifted from mountains to basins.
- Cumulative dataset now >325,000 artifacts across diverse landforms



GRSLE Summer field camp.



Access to much of the project area is difficult.



The GRSLE project works in the Greater Yellowstone Ecosystem (GYE) in the Shoshone National Forest, NW Wyoming. Much of the work has been done in the Washakie Wilderness, which at the beginning of the project in 2002 was essentially a “blank spot” on the archaeological data map.



Annual fieldwork (2002-2025) has developed a cumulative, artifact-based dataset for the Shoshone National Forest that includes location, context, and basic descriptive data for over 270,000 pre-contact artifacts and the archaeological data map is no longer blank.

Conceptual Foundation: Artifacts and their individual contexts are the fundamental unit of analysis. Landscapes, not sites, hold potential for developing an ecological behavioral story.

ABSTRACT: For most of the 21st century, the Greybull River Sustainable Landscape Ecology (GRSLE) Project has conducted artifact-based inventory and interdisciplinary analyses in the higher-elevation Greater Yellowstone Ecosystem. Unlike traditional site-based surveys, this largely non-collection effort systematically records the provenience and descriptive attributes of every artifact encountered. A growing regional dataset of more than a quarter million artifacts has been assembled with corresponding environmental and ecological data, including animal migration corridors and fire histories. Materials from several key regional sites have also been systematically coded into the database, allowing comparative analyses across both surface and excavated assemblages. In 2025, GRSLE extended into adjacent lower-elevation basin settings to address analytical “blank spots” on Wyoming’s archaeological map. Applicability of these methods were tested across contrasting and transitional landscapes including water and elk scat collection for isotopic analysis. This poster highlights examples of how the cumulative artifact-based and ecosystem-sourced dataset supports diverse research questions, from lithic raw material use and mobility to the spatial organization of artifacts when compared with human and animal land use over time. *By prioritizing artifacts as the fundamental unit of analysis, GRSLE demonstrates the value of long-term, multidisciplinary inventories for advancing interpretations of human behavior at the landscape scale.*

Field Methods: Recording Artifacts, Not Sites (Observation, Not Interpretations)

GRSLE’s field methods emphasize systematic coverage and consistent recording of attributes for every artifact encountered. This approach produces a high-resolution dataset that links artifact distributions with environmental and ecological conditions. The material in this column illustrates how tracklogs, attribute coding, and non-collection strategies generate comparable data across years, landforms, and assemblage types.



The project is artifact-based. The goal is 100% observed artifacts to be individually coded.

How We Work in the Field

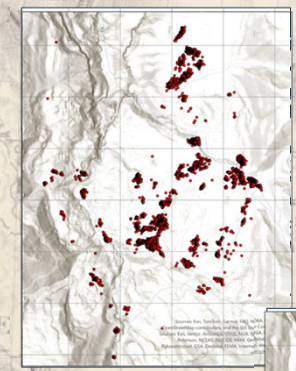
- GPS-logged tracklogs recorded full time for each crew member all day, every day, with 15 m buffers, document full actual coverage
- Every artifact is georeferenced individually
- Standardized attribute coding enables cross-assemblage comparison
- Primarily, a non-collection approach preserves the spatial patterning in place

What We Record

- Material, type, size, cortex, condition, technological attributes
- Discovery context (e.g., rodent mound, vegetated surface, erosional rill, etc.)
- Spatial relationships among artifacts
- Associated ecological samples (water, elk scat) for isotopic analysis
- To meet managerial requirements for site-based documentation, we use the Wyoming SHPO definition of sites (>15 artifacts separated by <30m) to buffer mapped artifacts and create artifact groups that meet the site definition, but that we refer to as “administrative clusters.”
- We investigate both high and low artifact probability modeled areas.

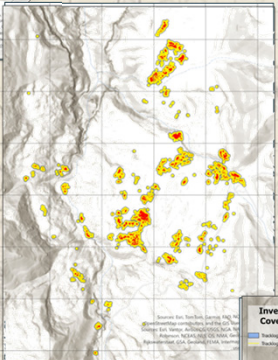
Why It Matters

- Comparable data across surface and excavated assemblages
- High-resolution spatial datasets support landscape-scale questions
- Attribute-level consistency enables regional synthesis over decades
- By recording artifacts rather than “sites,” the field data are based on observations rather than interpretations
- High-resolution GRSLE data can be collected efficiently over large spatial scales.

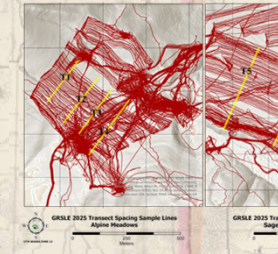


GRSLE Coded Artifacts 2002-2025

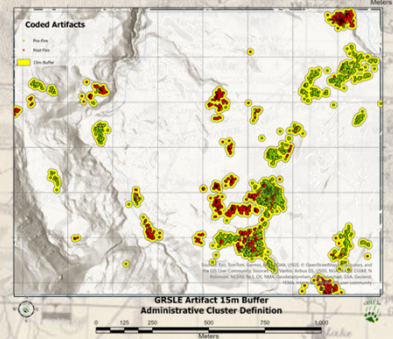
Individually mapped artifacts are analytically (GIS-buffered) grouped into clusters that meet the current definition of prehistoric sites. While such administrative clusters can be used for some types of regional analysis, most of our research questions maintain the artifact-based focus.



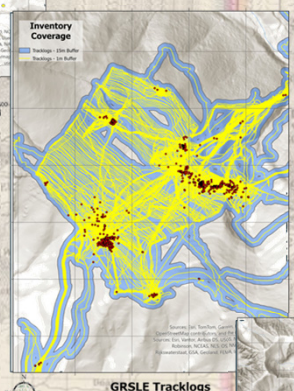
GRSLE Artifact 15m Buffer



GRSLE Tracklogs



GRSLE Artifact 15m Buffer Administrative Cluster Definition



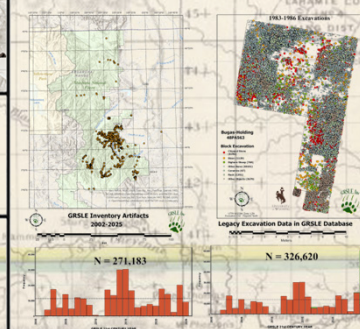
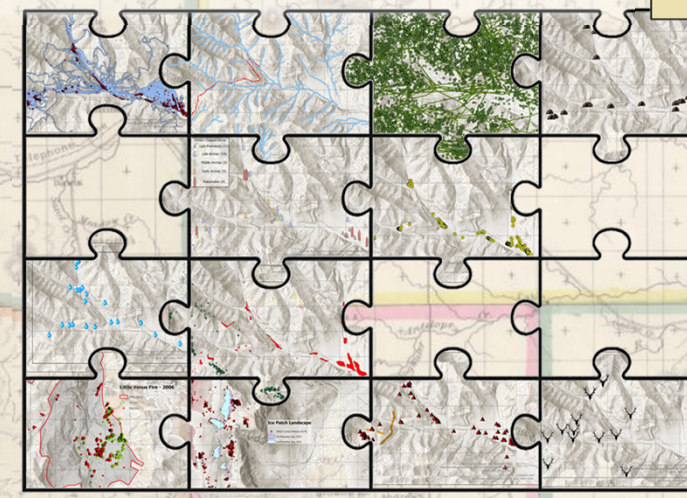
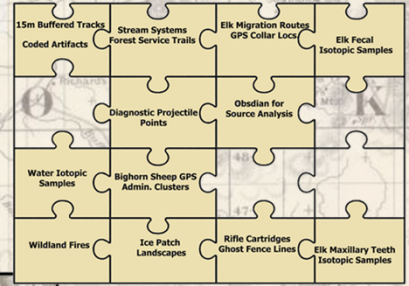
GRSLE Tracklogs 15m Buffer Inventory Area

2025 Pickett Creek Investigation, Greybull District						
INVENTORY BLOCK	AREA (ha)	ART/ha	YEAR	% INV*	INV	ART/ha
Pickett Creek	1231	498.0	16.9	2025	24.7	68.4
2025 TOTAL	1231	498.0				

Although the technology was not available when the GRSLE project started, today in addition to collecting individual artifact data, we can also record individual crew member spatial data, which are used to provide basic information on archaeological documentation attributes such as inventory areas. Currently, we buffer crew track logs at 15m to meet the “less than 30m spacing” requirements of our Section 110 inventory agreements with the Forest Service. However, we also know that we can’t really see the ground at 15m on either side, so we use a second 1m-buffered tracklog to assess how much of the 15m-buffered inventory area was likely to have actually been examined. Therefore, we don’t assert that we have done “100% inventory,” but calculate a best estimate of the percentage inventoried.

The GRSLE Landscape Taphonomy Puzzle

The GRSLE “landscape taphonomy puzzle,” integrating multiple archaeological, ecological, and environmental datasets across the Greater Yellowstone Ecosystem. Filled puzzle cells show examples of how artifact distributions, raw material sourcing, fire histories, animal movement corridors, isotopic samples, and excavated assemblages interlock to reveal regional behavioral patterns. Blank cells represent persistent research potentials in regional archaeological record and highlight the need for continued, multidisciplinary inventory across transitional and basin landscapes.



By incorporating excavation data into our surface artifact data, the GRSLE cumulative dataset is building a unique regional analytical foundation. All too often, surface data and excavated data are treated as independent, non-comparable archaeological windows.

Data Layers in the Puzzle

- Artifact distributions and density surfaces
- Lithic raw material sourcing
- Elk GPS migration routes
- Bighorn sheep cluster locations
- Fire history and burn perimeters
- Water and fecal isotope samples
- Diagnostic projectile point distributions
- Excavated site assemblages coded into the same system

What Integration Reveals

- Mobility and raw material transport across elevation gradients
- Artifact patterning relative to animal movement corridors
- Fire history shaping windows of human land use
- Convergences and divergences between surface and excavated assemblages
- Transitional landscapes (high → mid → basin) showing distinct signatures

What’s Still Missing

- Gaps in basin-scale coverage
- Limited ecological sampling in some zones
- Need for more cross-disciplinary datasets
- Puzzle pieces intentionally left blank to highlight future potentials

Acknowledgments: These data would not be possible without the thousands of hours contributed by students and other volunteers. Support and encouragement from the Shoshone National Forest, and particularly Forest Archaeologist Kyle Wright have been essential. Becky Thomas has been a key team member for the entire project and provides much support and encouragement. Background image is 1883 Holt map of Wyoming with very little in NW Wyoming. Archaeologically that lack of information lasted until the 21st Century.

Linking Ecology and Archaeology through Isotopes

Take-home Message: Cumulative, transdisciplinary datasets allow us to research many regional multi-species behavioral patterns, but the archaeological map still has many blank spaces waiting to be filled.



Not enough time to read this? Download the poster summary song and listen later: http://grsle.org/Music/Artr_facts_%20not%20sites.mp3