

Hogback Surfers: A Synchronic Test of Transhumance Mobility Patterns at the Fossil Creek Site in Northern Colorado

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Site Background

- During the summer of 2011, Colorado State University's field school conducted a four-day pedestrian survey of the Fossil Creek site, yielding **over 75 stone tools**. Additionally, 32 shovel tests were employed yielding subsurface debitage and hints towards the possibility of a buried component.
- While radiocarbon dates are pending, the dominance of **Foothills Corner Notched** projectile points recovered from the site indicates occupation during the **Early Ceramic period, dating to ca. 800-1850 B.P.** (Butler, 1988). However, both Paleoindian and Archaic components are also documented in this assemblage.
- This **Plains Woodland** site is nestled along the corridor between the foothills and eastern plains adjacent to Fossil Creek providing a Front Range winter haven during Colorado's cooler months.
- Nelson (1971) refers to the Woodland occupations in Colorado as the "**Hog Back Phase**," likely named after the unique geologic formations dividing the corridor between the Plains and Foothills.



The Fossil Creek site is located just south of Fort Collins along the Foothills of northeastern Colorado. It sits upon a small creek, which drains into the nearby Poudre River, a major economic resource for prehistoric hunter-gatherers.

Pictured Above: 2011 CSU field school conducting pedestrian survey at the Fossil Creek site.

Pictured Right: Graduate student, Tyler Beeton, assisting with total station

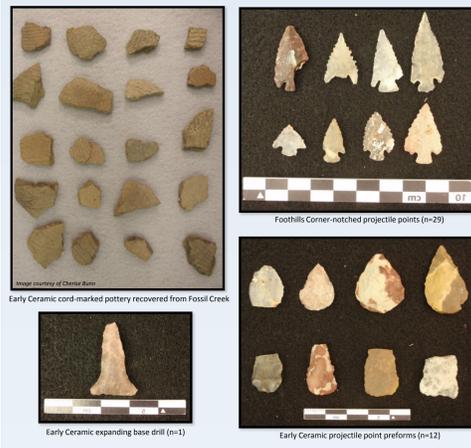
The Colorado Woodland Period

Butler (1988) and Nelson (1971) define four traits associated with this period in northeastern Colorado:

- 1.) Cord marked ceramics
- 2.) Corner-notched projectile points, often serrated
- 3.) Expanding base drills
- 4.) Ovoid knives or projectile point preforms

The Hog Back phase best illustrates the "Rotary System" proposed by James Benedict with site occurrences in both high-altitude Front Range game drives and campsites as well as in mountain parks and the eastern foothills (1992)

- ✓ **Rotary System:** a seasonal transhumance system involving a counterclockwise grand circuit originating along the foothills of the Front Range in winter, crossing into North Park and Middle Park in the summer, and arriving at a series of game drive systems above tree-line along the Front Range in the fall (Benedict, 1992; Bamforth, 2006)



Early Ceramic cord-marked pottery recovered from Fossil Creek

Early Ceramic expanding base drill (n=1)

Foothills Corner-notched projectile points (n=29)

Early Ceramic projectile point preforms (n=12)

Research Questions

- 1.) Did prehistoric hunter-gatherers make seasonally-based residential movements between Colorado's foothills and mountains parks?
- 2.) Did prehistoric hunter-gatherers follow the Rotary System proposed by James Benedict?
 - If so, do the raw materials identified in the Fossil Creek assemblage reflect such logistical movements?
- 3.) What periods are represented in the Fossil Creek assemblage?

For decades, archaeologists have constructed mobility models and defined territorial ranges based upon the sources of raw materials for stone artifacts. Accurately identifying these raw material sources is vital to the legitimacy of popular and widely accepted models.

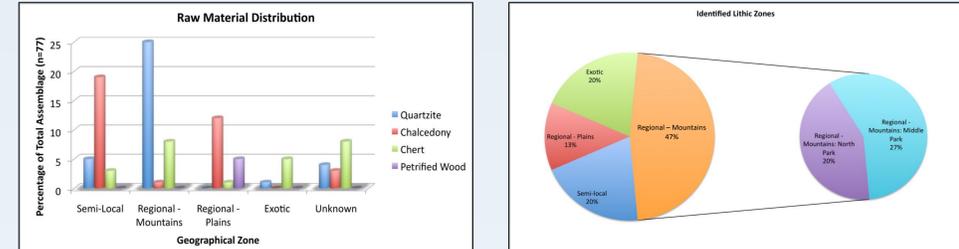
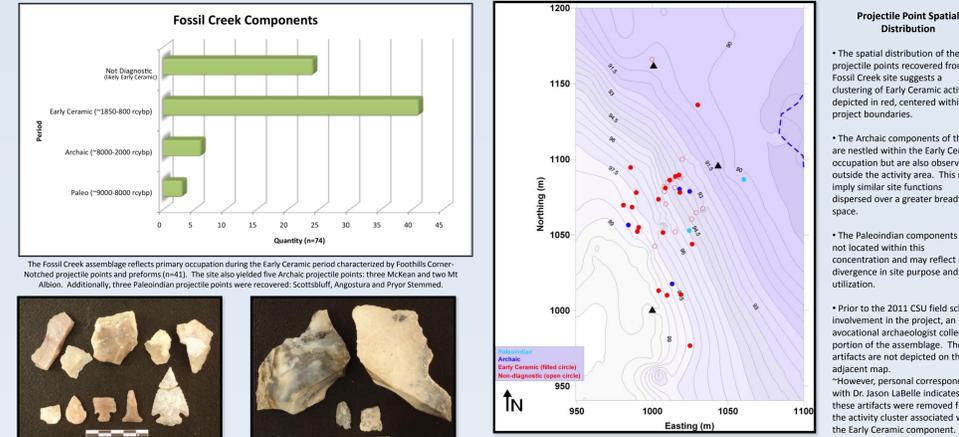
Methods

The methods utilized in this research attempts to accurately classify the lithic sources of the 77 recovered artifacts from the Fossil Creek site:

- 1.) Basic raw material classification
- 2.) White light color-coding
- 3.) Visual macroscopic analyses:
 - texture
 - luster
 - translucence
- 4.) Magnified analyses (10x)
 - impurities
 - inclusions
 - dendrites
 - fossils
- 5.) Comparative analysis
 - 119 specimens provided by the Center for Mountain and Plains Archaeology
- 6.) Ultraviolet light response
 - Long wave
 - Short wave
 - Combination wave



Data Analysis



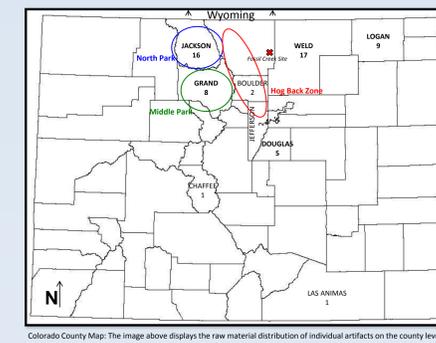
The figure above displays the raw material distribution based upon percentage of the total assemblage. The majority of quartzite has been identified as mountain sourced (n=39). Conversely, the majority of the chalcodony (n=24) has been sourced to plains zones, both regional and semi-local. In addition, all of the petrified wood (n=4) can be traced to the regional plains area known as Parker.

Raw Material Geographical Distribution				
Zone	Source	County	Distance (kilometers)	Quantity
Semi-Local	Pawnee Alluvium		122	15
	Toetli Ranch	Weld	130	2
	Boulder Opal	Boulder	64	2
Regional - Mountain	Independence Mt, North Park			5
	5JA1, North Park			5
	5JA6, North Park	Jackson	167	6
	Windy Ridge, Middle Park			3
	Middle Park Alluvium			2
	Troublesome Formation, Middle Park	Grand	196	3
Regional - Plains	Table Mountain, Middle Park	Jefferson	107	2
	Flattop Butte	Logan	178	9
Regional - Plains	Parker/Franktown Area	Douglas	138	5
	Exotic	Morrison Formation, Mesa de Maya	Las Animas	580
Trout Creek, South Park		Chaffee	260	1
Hartville Uplift, Wyoming		Platte/Goshen	220	3
*TOTAL ARTIFACTS SOURCED				64

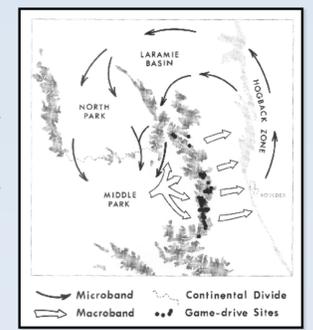
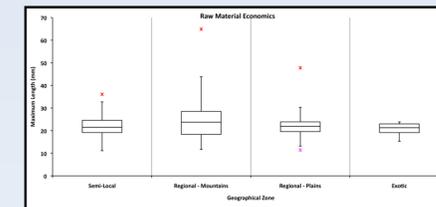
The Center for Mountain and Plains Archaeology provided the comparative lithic collection used for this analysis. Distance to source was calculated using "as the crow flies" computations, but there are many other ways to measure space. Ease of travel was taken into consideration when defining the "Semi-Local" zone (>130km). The Regional zones range from 131-200km and the Exotic zone consists of sources over 201 kilometers from the Fossil Creek Site.

*Technically, the term "source" should only be applied to obsidian by using XRF methods, for clarification, its use in this research refers to the macro/microscopic visual analyses and UV fluorescence response when compared to the comparative samples. Artifacts identified from sources represented in the comparative collection are listed above, however, the author recognizes many raw material sources occur throughout the bedrock and are present within multiple outcroppings. These materials may also occur as secondary deposits, such as alluvial settings.

Discussion



Colorado County Map: The image above displays the raw material distribution of individual artifacts on the county level.



Visual interpretation of Benedict's Rotary Transhumance System (1992:11)

The spatial distribution of raw material sources supports the Rotary Transhumance System modeled by James Benedict:

- The near dominance in mountain lithic sources suggests a cultural complex intimately linked to Colorado's park regions.
 - ✓ However, many sources identified also demonstrate close ties to the eastern Colorado Plains
- The high frequency of North Park sourced artifacts may indicate a preference for Middle Park raw materials, after all these North Park items were discarded at the site.
- Moreover, the abandonment of these mountain stone materials may indicate anticipated movements into the higher elevations to resupply raw materials and extract new resources
 - ✓ This would mirror Benedict's theory that this Hog Back Phase site represents a winter encampment where the termination of occupation signifies the seasonal movement into the mountain park regions for the warmer summer period
 - ✓ Additionally, these high transportation cost tools would no longer need to be carried if such sources were going to be revisited during embedded seasonal movements

Conclusions & Future Research

The Fossil Creek Site provides serves as an exceptional case study for examining mobility patterns utilized during the Early Ceramic period in Northeastern Colorado. While this provides only a synchronic test for testing mobility ranges, the methods employed for this research can be applied to other Plains Woodland sites along the Colorado Foothills. The data collected for this poster indicates the following:

- The Fossil Creek assemblage reflects primary occupation during the Early Ceramic period characterized by Foothills Corner-Notched projectile points and preforms
 - Since weaponry items are typically considered highly curated tools, they serve as only a single example for examining mobility patterns – many other site aspects can be utilized to explore land-use strategies
- A total of 64 artifacts representing 15 raw material sources were identified for the Fossil Creek assemblage
 - The Center for Mountain and Plains Archaeology the comparative lithic collection consisting of 119 sources
- The spatial distribution of raw material sources reflects the Rotary Transhumance System modeled by James Benedict:
 - The dominance of Regional Mountain Zones reflects a territorial range linked to the park regions of northern Colorado
 - 47% of the assemblage, primarily quartzite, has been sourced to either North Park or Middle Park
 - Close ties to the Eastern Plains are also demonstrated though raw material sources
 - 33% of the assemblage consists of chalcodony from Semi-Local or Plains Sources (~50km separates the two sources)
 - Combined, these two aspects reflect a territorial range connecting Colorado's high country to the Foothills and Eastern Plains
- The discard of mountain stone materials may indicate anticipated movements into the higher elevations to resupply raw materials and extract new resources
 - Suggests this site represents a winter encampment where the termination of occupation signifies the seasonal movement into the mountain park regions for the warmer summer period
- Future research aims to apply these methods to other Plains Woodland sites located along the Hog Back and Foothills regions of Northeastern Colorado
 - Major Early Ceramic sites to consider include the following:
 - Harvester site (5LR12641)
 - Weinmeister site (5LR12174)
 - Lindsay Ranch (5JF11)
- Once a robust sample size is created from these Foothills sites, data should then be compared to the game drives located along the Continental Divide to test the patterns in raw material sources within these higher-altitude sites
- Debitage and other tools should also be included in raw material analysis in order to create an accurate interpretation of stone sources used during site occupation
 - Trade and exchange serve as an alternate means of procuring raw materials, however, this research is guided under the premise of direct procurement by the site occupants



Acknowledgments

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