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Savannah River Archaeology Research

Early Archaic Settlement along the Central Savannah River, Re-visited

By J. Christopher Gillam

Early cultures in South Carolina were dynamic and complex, not static or simplistic, and had an active role in shaping their environment and their cultural landscape (Sauer 1925) around them. Prior research on the Early Archaic period (ca. 8,000-10,500 years B.P.) suggested a mixed forager-collector strategy (cf., Binford 1980) of settlement along the Central Savannah River (Anderson and Hanson 1988; Gillam 2001; Hanson 1988). However, revised component-level analyses reveal that the cultural landscapes of early hunter-gatherers of the Inner Coastal Plain's Oak-Pine Savannah were more generalized than previously thought (cf., Daniel 2001).

Reduced to its most common factors, features of the hunter-gatherer landscape include archaeological components, or artifacts, and elements of the natural environment, or environmental variables, which were exploited by early cultures. Common stone artifacts of the period include Dalton, Hardaway, Taylor, and Kirk points, as well as formal cutting and scraping tools, including Edgefield scrapers, end scrapers, side scrapers, backed knives, and blades (Figure 1). A landscape approach toward understanding prehistoric hunter-gatherers should therefore incorporate a component-level analysis of the distribution of archaeological remains and should examine those components in relation to key environmental variables assumed to be significant to hunter-gatherer populations.

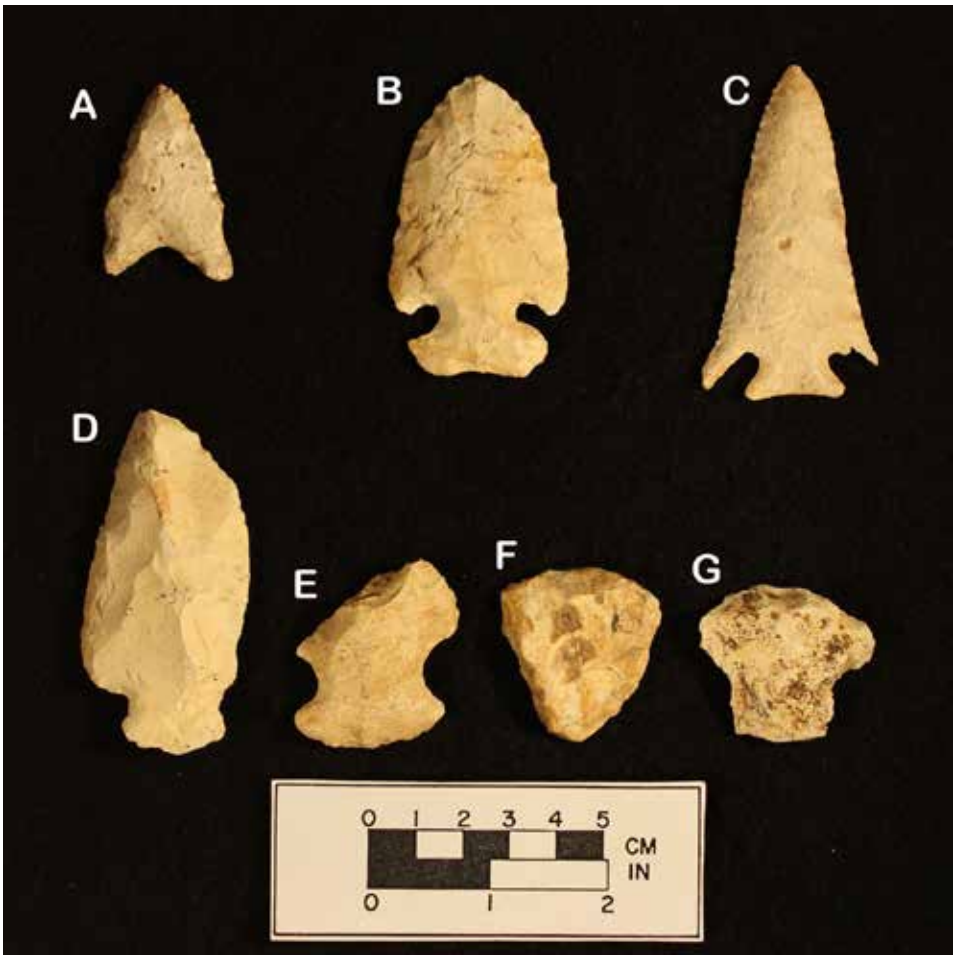

Figure 1: Typical Early Archaic artifacts (A. Dalton, 38AK224; B. Taylor Side-Notched, 38BR40; C. Kirk Corner-Notched, 38BR259; D. Waller Knife, 38BR393; E. Edgefield Scraper, 38AK557; F.-G. Hafted Endscrapers, 38BR393). (after Gillam 2015: In press)

The SRS study area is located on the eastern side of the Central Savannah River and overlaps portions of Aiken, Barnwell, and Allendale Counties (Figure 2). This location consists of several tributary streams of the Savannah River, including Upper Three Runs Creek, Fourmile Branch, Pen Branch, Steel Creek, and Lower Three Runs Creek. The uplands have gently rolling, sandy hills overlooking streams and Carolina Bay wetlands on the flat pine savannahs of the upland terraces. There are five major landforms that include the Savannah River floodplain, three levels of ancient terraces overlooking the floodplain (T1a, T1b, and T2), and the Aiken Plateau in the uplands (Figure 2). Near the mouth of Lower Three Runs in Allendale County, are outcrops of Coastal Plain Chert that were used for stone tools throughout prehistory (Goodyear and Charles 1984).

There are 114 archaeological sites in this sample dating to the Early Archaic period, separated into six sub-samples for the analyses that follow. The sub-samples include five component-level and one combined dataset. The component or artifact-level sub-samples consist of sites containing Dalton points (n=9 sites), Taylor side-notched points (n=23 sites), Edgefield scrapers (n=7 sites), Kirk corner-notched points (n=57 sites), and formal unifaces (scrapers, blades, and knives; n=58 sites), respectively. The combined dataset contains all 114 Early Archaic sites used in the study (Figure 2). Elements of the environment (n=10 variables) deemed potentially important to the hunter-gatherer cultural landscape explored in this research include land elevation,

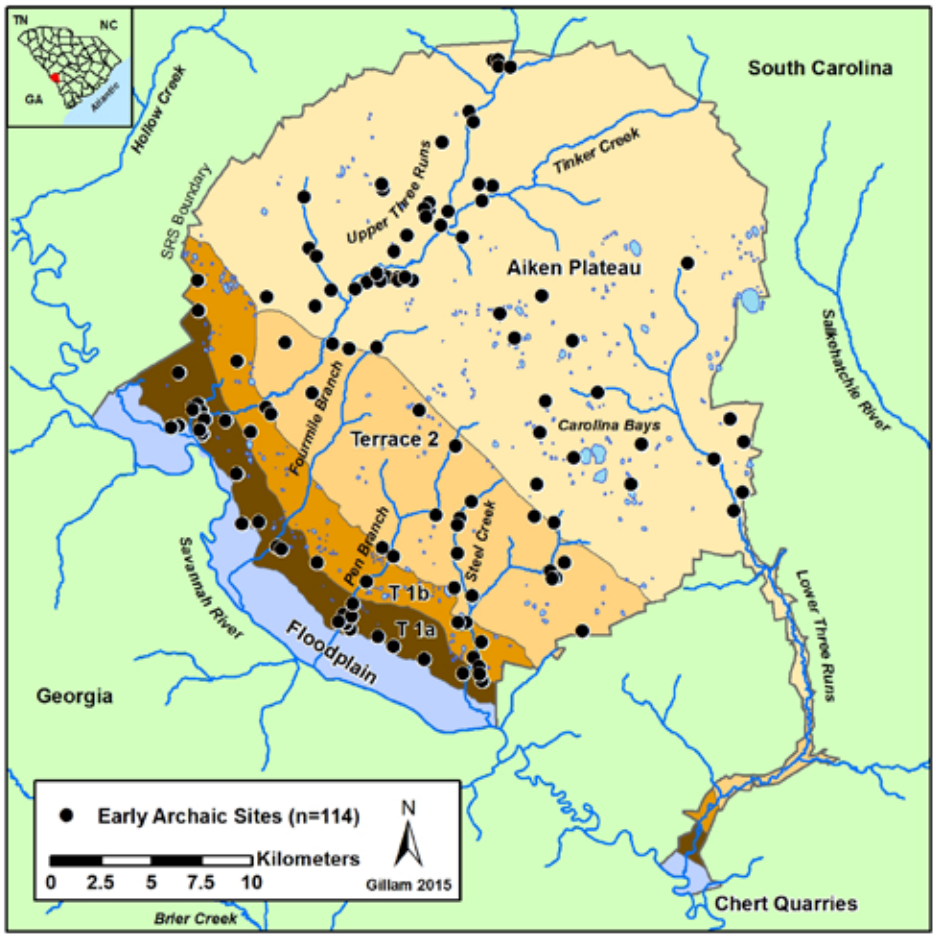

Figure 2: Early Archaic sites (n=114) on major landforms of the Savannah River Site (SRS) along the Central Savannah River. (after Gillam 2015: In press)

percent-slope of land, slope-direction (aspect) of land, major landforms and distance measures (m) to tributary streams, navigable streams, the Savannah River, upland Carolina Bay wetlands, upland trails, and chert stone quarries.

The Early Archaic sites were initially broken down into their five individual archaeological components, and the means of their environmental variables were calculated and statistically compared using ANOVA. The eight environmental variables examined here included elevation, percentage slope, tributary stream distance, navigable stream distance, Savannah River floodplain distance, Carolina Bay distance, upland trails distance, and chert quarry distance. Results of the ANOVA tests establish that these components represent a single statistical population, as no significant variations in the sample means were found. That is, the distributions of the various artifact types across the land are the same relative to the environment. The archaeological components can therefore be combined into a single dataset for further statistical analyses and model development. These results also suggest that a generalized foraging adaptation is represented at the SRS location. The individual archaeological components have a similar distribution on the landscape overall, indicating a generalized adaptation instead of a collector strategy that would have targeted different resources across the terrain.

Analyses of the combined Early Archaic data using the Chi-Square (X^2) statistic had similar results. Comparing the observed versus expected frequencies of sites on (a) major landforms, (b) 250-meter distance buffers from streams, and (c) within slope-direction (aspect) categories, revealed few significant patterns other than the presence of significantly more Early Archaic sites on the lower Pleistocene terrace (T1a) immediately above the Savannah River floodplain (Table 1). Surprisingly, no other landforms had significantly more, or fewer, sites than expected by chance alone. For stream distance, significantly more sites than expected by chance alone occurred within 250 meters of streams and proportionally fewer sites occurred, than expected, beyond 250 meters; only the 750- to 1000-meter buffer area had significantly fewer sites than expected by chance alone (Table 2). Slope direction (aspect) is commonly used as an indicator of seasonal occupation. In particular, warmer south-facing slopes should be preferred for the winter habitation model proposed by Anderson and Hanson (1988). However, no statistically significant associations with slope direction were found in the analysis, suggesting habitation could have been any time throughout the year. Finally, the statistical t-Test for paired sample means revealed no significant difference for distance from sites to navigable streams and upland trails. Therefore, it is interpreted that navigable streams and upland trails were equally suitable passageways to-and-from Early Archaic sites. This also suggests that an equal amount of population movement may have occurred both within and between river drainage systems (e.g., Daniel 2001).

It is clear from the analyses that the existing Early Archaic hypothetical model for the SRS location needs revision (Figure 3; Anderson and Hanson 1988; Hanson 1988). Using the results of the statistical analyses, it is possible to develop a new model of the Early Archaic cultural landscape (Figure 4). Similar in concept to a combined prehistoric site location model for the SRS (Sassaman et al. 1990), the new model specifically represents the cultural landscape of the Early Archaic period.

The new model represents the hunter-gatherer cultural landscape as three foraging zones ranked by their relative importance, as reflected in the environmental setting of the Early Archaic archaeological record. The primary foraging and habitation zone of the model falls within the Savannah River floodplain and the lower Pleistocene terrace (T1a)

Landform	Observed	Expected	Coverage	X^2	Significance
S. R. Floodplain	1	6	0.055	4.3930	-
T1a	**26**	**7**	0.064	**47.5577**	**MORE***
T1b	12	8	0.071	1.8486	-
T2	19	21	0.185	0.2003	-
A. Plateau	56	71	0.625	3.2676	-
Total	**114**	114	1	**57.2673**	**YES****

*where $X^2 \geq 6.635$, df = 1, and 0.01 Probability.
**where $X^2 \geq 13.277$, df = 4, and 0.01 Probability.

Table 1: Chi-Square (X2) statistic comparing the observed versus expected frequencies of Early Archaic sites on major landforms of the SRS. (Table constructed by J. Christopher Gillam)

above it and then extends into the Aiken Plateau for all areas within 250 meters of tributary streams and upland Carolina Bays. This zone contained the greatest diversity of plants and animals and likely witnessed the greatest cultural modification and maintenance by early hunter-gatherers.

The secondary foraging zone is represented by all areas falling between 250 meters to 750 meters of tributary streams. Although less plant and animal diversity is expected for this relatively flat and dry terrain, it also may have experienced significant modification by early hunter-gatherers. Open canopies could be maintained by regular burning or tree girdling, the removal of bark to kill unwanted trees, and would result in a higher frequency of low shrubs, grasses, and herbs. Grasses and shrubs would have provided more grazing opportunities for large herbivores, such as white-tailed deer and woodland bison, as well as smaller game, such as turkey and rabbits.

The upland or tertiary foraging zone represents minimal use areas falling at distances greater than 750 meters from streams and more than 250 meters from upland Carolina Bays. This tertiary zone may have been primarily used for upland trail networks and tracking large game above the dissected streams and swampy bottomlands. This zone probably experienced the least cultural modification, other than burning, and witnessed minimal use for foraging, with more favorable environs located closer to stream and bay edges.

This data-driven model of the Central Savannah River's Early Archaic cultural landscape may be applied to the broader region of the Inner Coastal Plain. This is possible due to the similarities of the region's environment and topography. As such, it also serves as a predictive model of Early Archaic site location and has been successfully applied in the field for Kelsey Meer's MA research, as part of

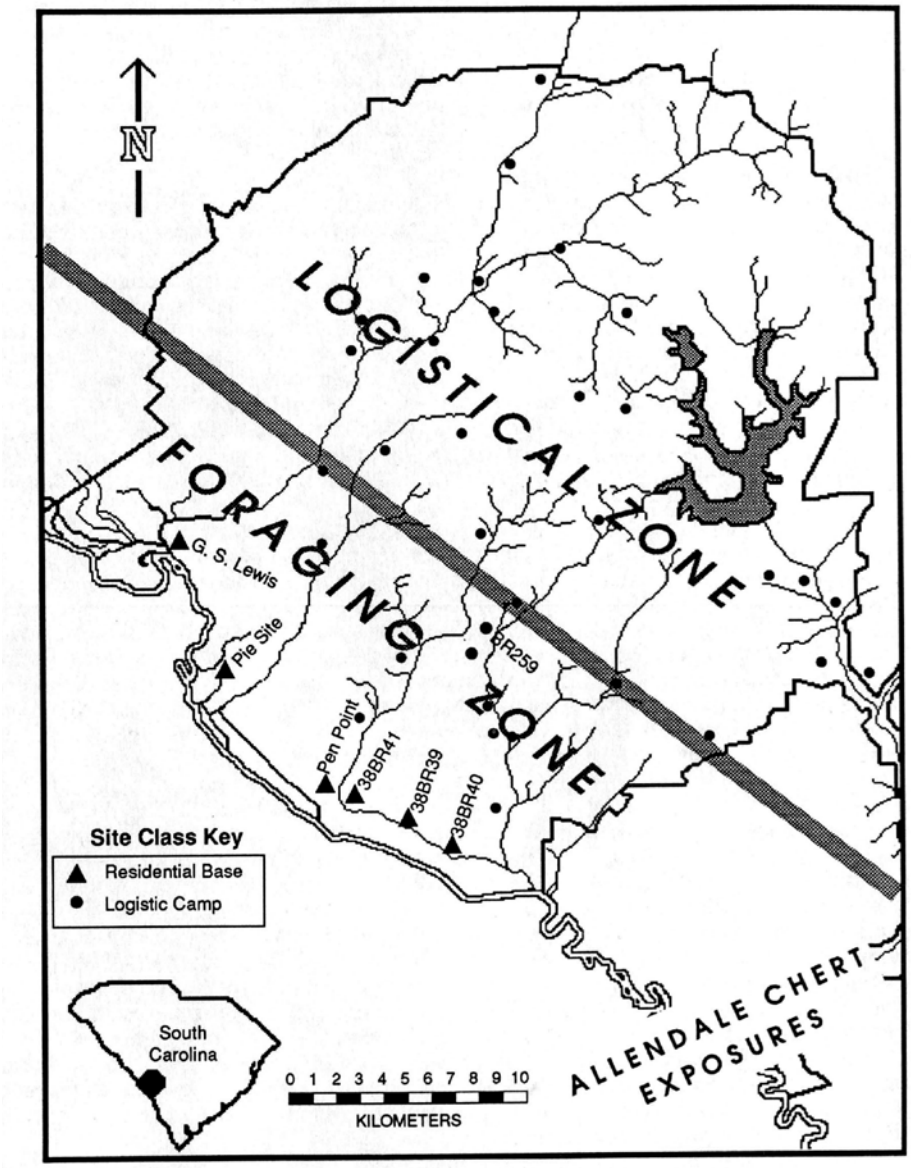

Figure 3: The Hanson (1988) model of Early Archaic settlement on the SRS (adapted from Sassaman et al. 1990)

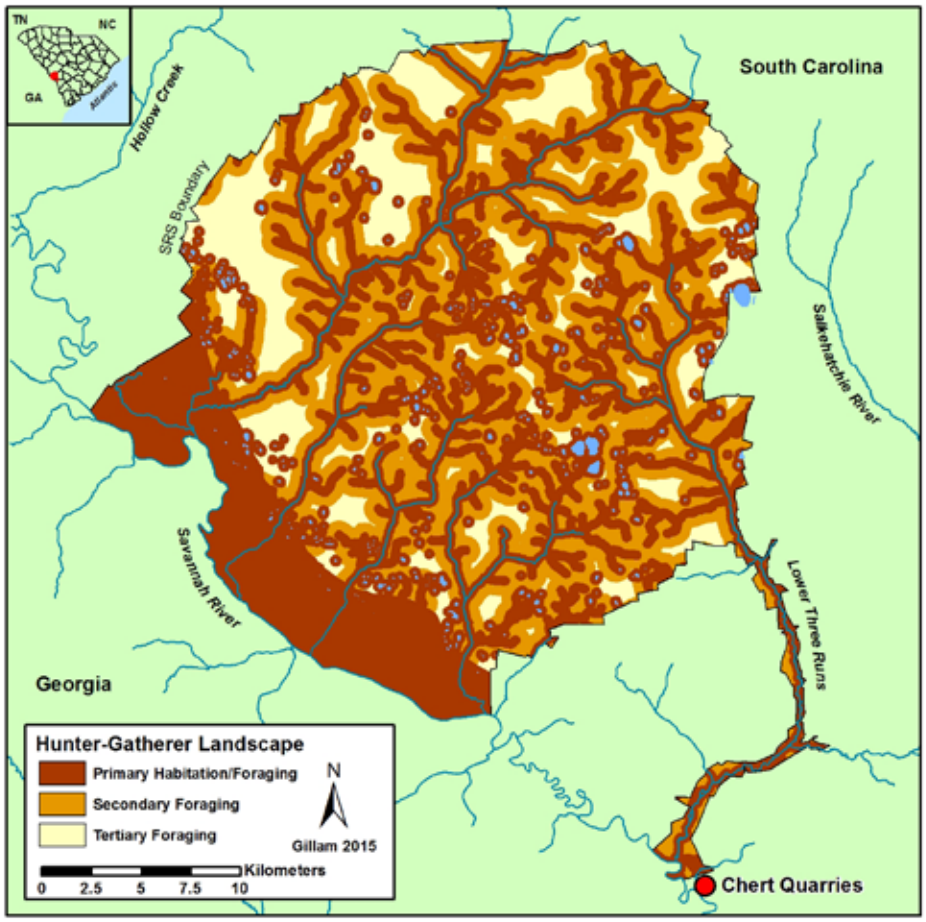

Figure 4: The Early Archaic cultural landscape of the SRS. (after Gillam 2015: (In press)

the 2015 Mississippi State University field school in Allendale County (Miller 2015, Pers. Comm.). The model aided survey planning and significantly reduced the area requiring archaeological survey to discover and document early prehistoric sites, a positive development indeed!

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Distance (m)	Observed	Expected	Coverage	X^2	Significance
250	**65**	**42**	0.3656	**13.043**	**MORE***
500	25	30	0.2664	0.950	-
750	16	20	0.1772	0.873	-
1000	**2**	**11**	0.0965	**7.366**	**FEWER***
1250	3	5	0.0478	1.102	-
1500	2	3	0.0256	0.287	-
1750	0	1	0.0127	1.443	-
2000	1	1	0.0058	0.174	-
2250	0	0	0.0021	0.244	-
2500	0	0	0.0003	0.033	-
Total	**114**	114	1	**25.513**	**YES****

where $X^2 \geq 6.635$, df = 1, and 0.01 Probability.
*where $X^2 \geq 21.666$, df = 9, and 0.01 Probability.

Table 2: Chi-Square (X2) statistic comparing the observed versus expected frequencies of Early Archaic sites within 250-meter distance buffers from streams and Carolina Bays. (Table constructed by J. Christopher Gillam)