

Macrobotanical Analysis of the Topper Site (38AL23)

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Background:

In 2015 and 2016, the University of Tennessee, Knoxville has operated archaeological field schools at the Topper Site (38AL23) focusing on the excavation of Woodland Period (ca. 3200 to 1000 cal yr B.P.) occupations (Figure 1). The majority of the previous work at the Topper Site has targeted the extensive Paleoamerican occupations (ca. 21,000 to 11,000 cal yr B.P.) (Anderson et al. 2015; Goodyear et al. 2009).

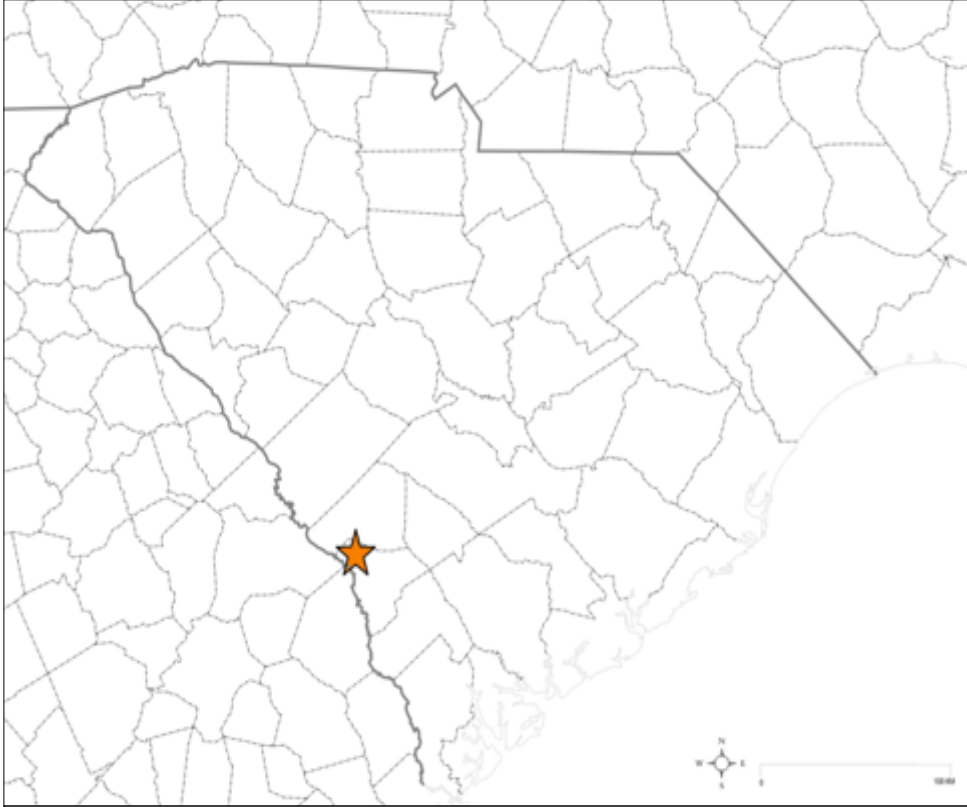


Figure 1: Location of the Topper Site in SC

clear what the role of maize was at the Topper Site during the Woodland Period.

Field Methods:

To date two block excavations, Woodland Block East (4-m-x-8-m units) and Woodland Block West (2-m-x-4-m units), and a dispersed 1-m-x-1-m unit survey have been conducted at the site (Figure 2). All units were excavated down to the base of the plowzone. Features and soil stains were then identified, mapped, and excavated. In all, 57 1-m-x-1-m units and over 350 features have been excavated. The full feature fill was excavated and individually bagged. The feature fill was then processed, via flotation (Figure 3). It is important to note that based upon the presence of cord-marked pottery within the ceramic assemblage, the excavated features in Woodblock Bock East are currently associated with the Woodland Period (ca. 3200 to 1000



Figure 3: Students conducting flotation

cal yr B.P.).
Laboratory Methods:
Weights and volumes were recorded for all samples prior to processing and all information was recorded in a centralized access database. Samples from 13 features from Woodland Block East were selected for analysis. All samples were processed using a modified SMAP-type flotation machine with a 1.09 mm netting used for heavy fraction and a 0.063 mm mesh for light fraction. Upon drying, samples were taken to the Archaeological Research Laboratory (ARL) in Knoxville, Tennessee for analysis. Samples were analyzed using paleoethnobotanical standards (Pearsall 2000). Samples were weighed to the nearest 0.01 gram on an electronic scale, and then processed through 2 mm, 1.4 mm, and 0.71 mm geological sieves. Using a low powered stereoscopic microscope all carbonized materials were analyzed. Uncarbonized plant materials were not considered part of the archaeological record. Dr. Kandace Hollenbach assisted with identifications. The macrobotanical remains were sorted into type then counted and weighed.

Table 1: Macrobotanical remains from Woodland Block East														
Feature:	151	152	153	190	226	230	290	337	423	424	425	426	427	
Volume (liters)	1.2	0.8	0.4	10.9	11.0	23.0	14.0	39.9	35.8	1.9	1.0	2.6	24.2	
Total Plant Weight (grams)	0.13	0.06	0.02	1.71	0.24	1.82	5.40	4.99	11.74	0.78	0.33	3.32	6.35	
Common Name:	Scientific Name:	Count	Weight (g.)	Count	Weight (g.)	Count	Weight (g.)	Count	Weight (g.)	Count	Weight (g.)	Count	Weight (g.)	Count
Domesticates														
Maize	<i>Zea mays</i> spp.			1	0.01	2	0.00	5	0.00	21	0.03	8	0.02	3
Nuts														
Acorn	<i>Quercus</i> spp.					25	0.02	21	0.00	19	0.02	4	0.00	6
Hickory	<i>Carya</i> spp.			8	0.05				10	0.02	7	0.06	6	0.01
Fruits														
Blackgum	<i>Nyssa sylvatica</i>			1	0.00			3	0.00	7	0.00		1	0.02
Maypop	<i>Passiflora incarnata</i>							4	0.00			1	0.01	
Edible Seeds														
Chenopod	<i>Chenopodium</i>													
Maygrass	<i>Phalaris caroliniana</i>									1	0.00			
Other														
Wood														
Bark		0.13	0.06	0.02		1.50	0.22	1.65	2.01	3.83	10.74	0.66	0.30	2.92
Pinecone					2	0.00	1	0.00	2	0.04	20	0.14	2	0.00
Pitch		1	0.00	2	0.00	6	0.00	14	0.04	46	0.04	1	0.01	5
Cane	<i>Arundinaria</i> sp.			22	0.14	12	0.00	78	0.17	91	0.59	232	0.69	89
Fine Needle Base						1	0.00	1	0.00	1	0.00		1	0.00
Bud						2	0.00			1	0.00			
Poduncle										2	0.00			
Purslane Family Seed												1	0.00	
Woody stem						1	0.00							

Figure 2: The location of Woodland Block East and West

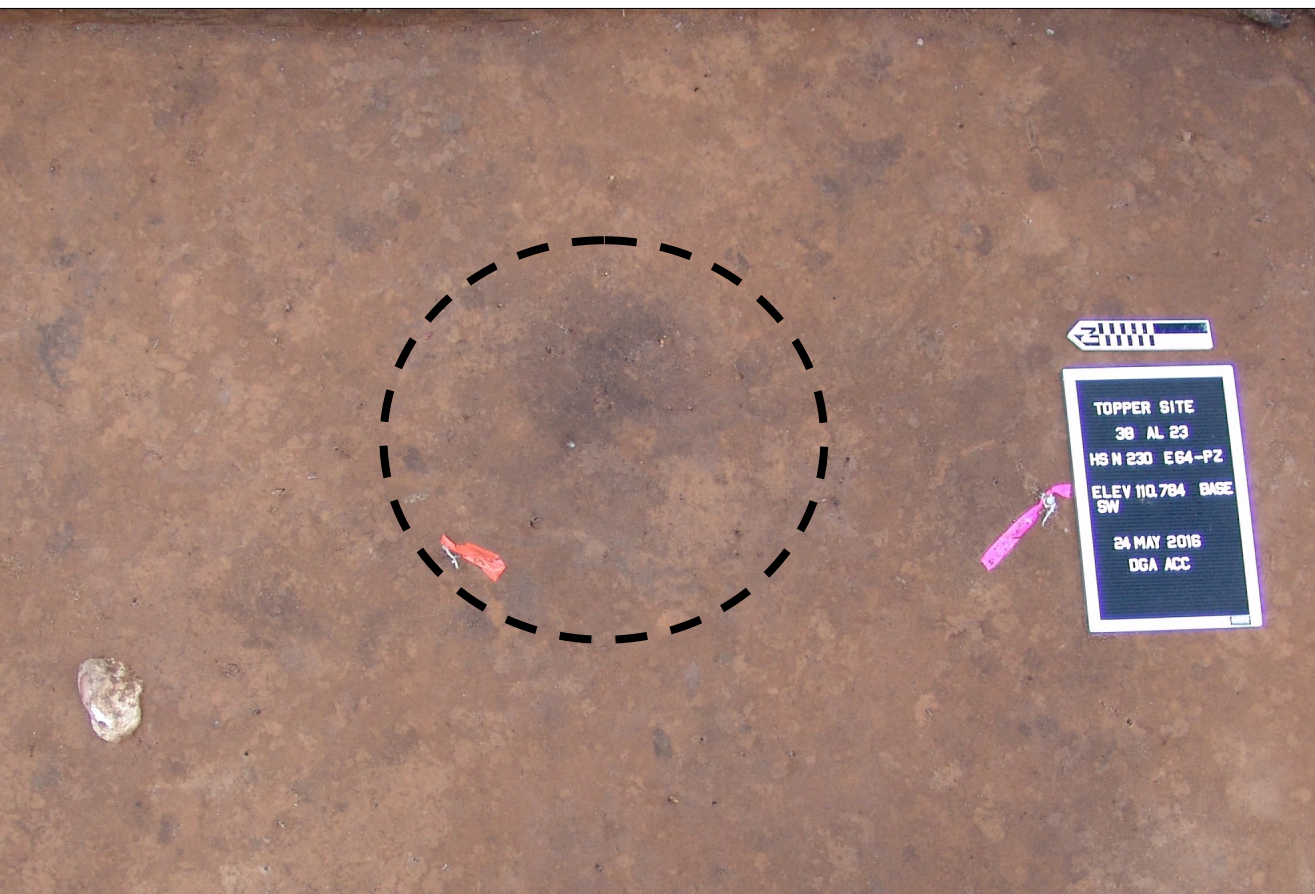
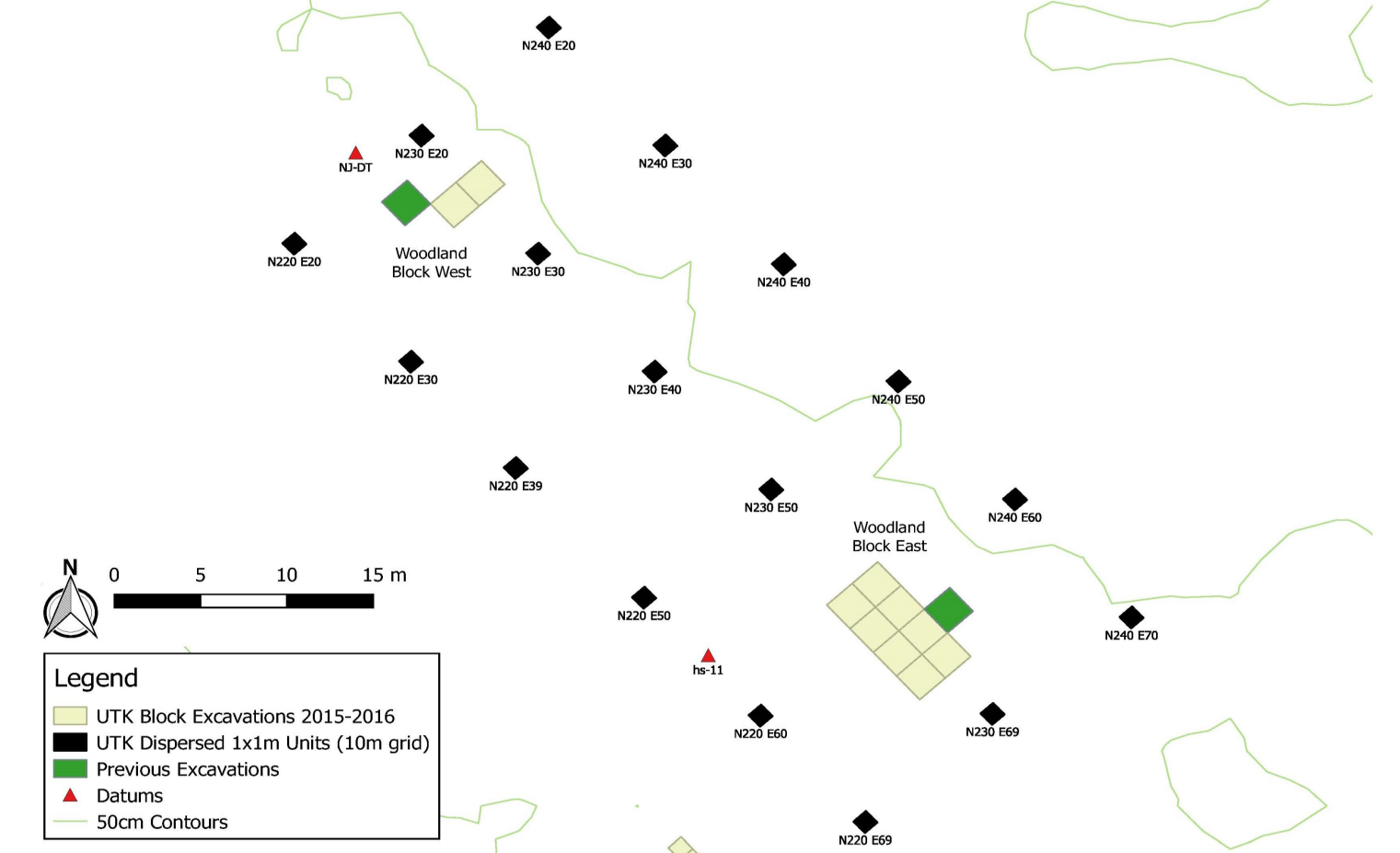
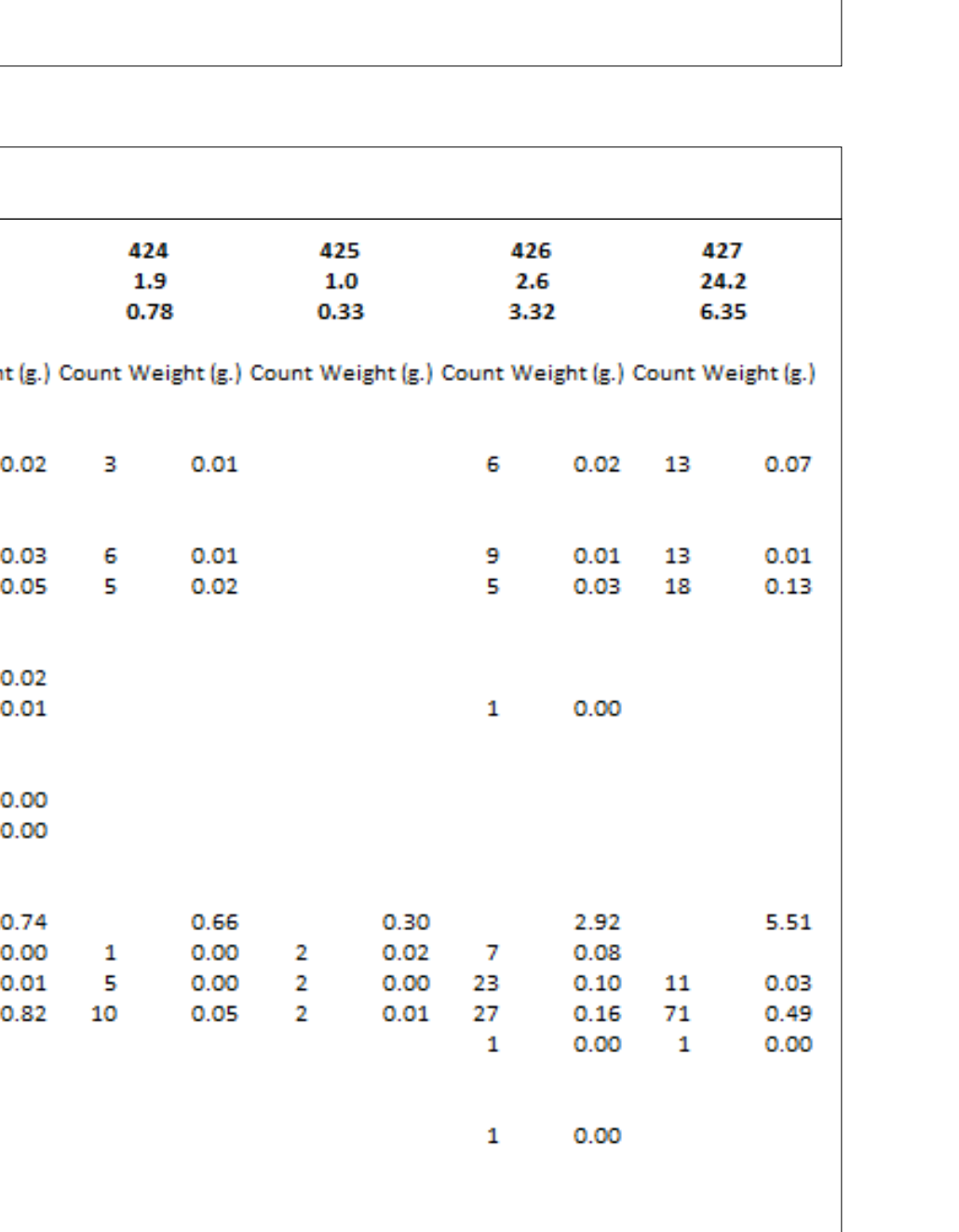


Figure 6: Photograph of the northeast quad of Woodland Block East prior to excavation of features. Highlighted area shows the collection of stains that contain features 423-428



Figure 7: Overhead photograph of feature 426 where multiple sherds were found towards the base of the feature

Figure 8: Side profile photograph of feature 427 highlighting an in situ sherd



Results:

Table 1 displays the counts and weights of plant remains identified from the features. A distinction can be noticed dividing the assemblages and locations of the features. Figure 4 displays the weight of the total plant weight divided by the volume of the feature fill. Figure 5 displays the density values of maize, blackgum, and nutshell fragments divided by the liters of soil floated. Surprisingly, nearly two thirds of the samples contained maize (*Zea mays*) (Figure 5). Almost 62% of samples contained acorn nutshell. Additionally, nearly 54% of analyzed samples contained hickory nutshell. Multiple components of maize were identified, including the glume, cupules, and kernels. Little evidence of premaize agriculture or fruit was found among the assemblages, although maypop (*Passiflora incarnata*) and blackgum (*Nyssa sylvatica*) seeds were identified. It is possible that this lack of premaize agricultural macrobotanical remains is due to Woodland period processing and storage techniques (Fritz 1990). Hickory (*Carya sp.*) and acorn (*Quercus sp.*) nutshell were identified in the majority of features. Overall, the macrobotanical remains found illustrate a portion of the foodways and the relationships present between plants and prehistoric Native Americans.

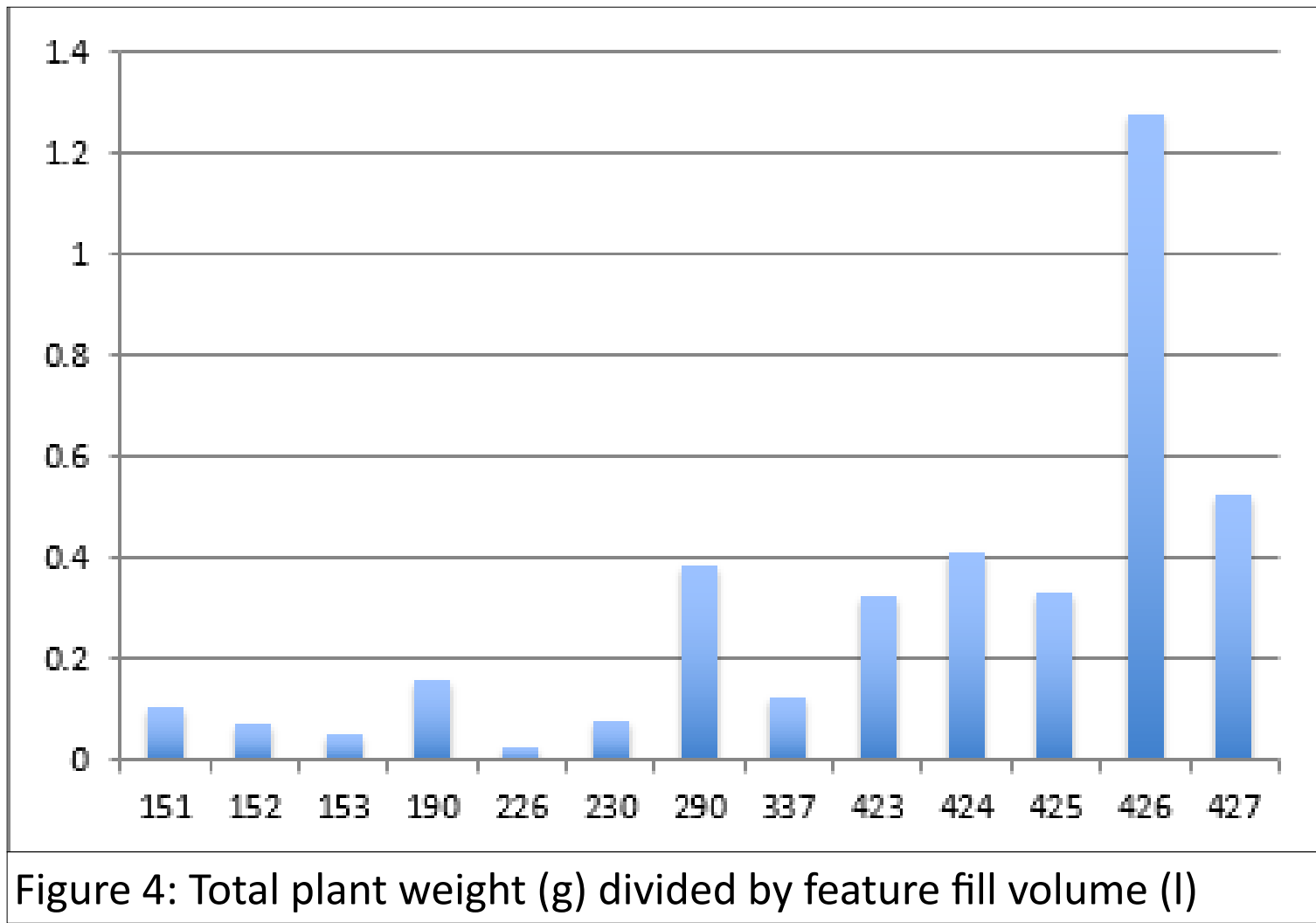


Figure 4: Total plant weight (g) divided by feature fill volume (l)

Future Directions:

Based upon the ceramics assemblage recovered from the site, the features that were examined in this study, and thus the identified maize and botanicals, appear to be associated with Woodland Period occupations, yet intensive maize agriculture is usually associated with the Mississippian Period (Sassaman and Anderson 2012:149). Currently, funding has been allocated for radiocarbon dating of the maize. It is possible this study has yielded some of the earliest evidence of maize in South Carolina. Thus this project represents the first steps towards understanding not only the human activity at the site, but also how the Topper Site fits into the narrative of intensive maize agriculture in the Southeast. It is currently unclear whether maize is being produced at or imported to the site. If maize is being cultivated at the Topper site, is it by women? Furthermore, who controlled and consumed the maize? It is probable the arrival of maize drastically altered the social dynamics and overall health of the site’s inhabitants. Hopefully, future analyses can address how social dynamics and health were affected. For more conclusive results, future analyses are needed on the other 337 excavated features. Even from this limited initial assessment it can be definitively stated that maize is present at the Topper Site, which once dated can help better explain the timeline of its arrival into the region. Obtaining such dates will allow for the examination of the chronologies both ceramic technology and use and the spread maize within the Southeastern United States.

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Figure 9: Overhead photograph of feature 426 where multiple sherds were found towards the base of the feature

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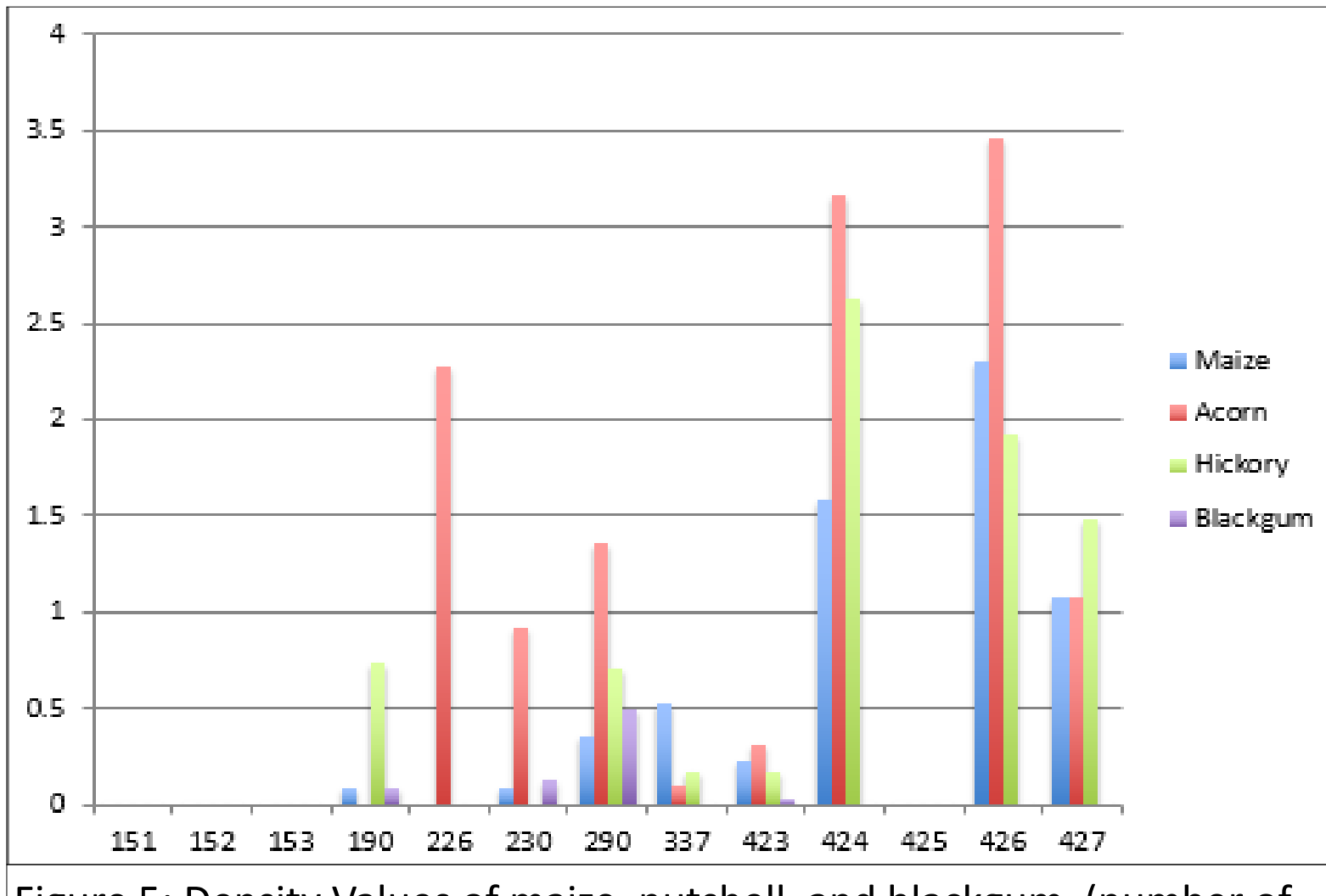


Figure 5: Density Values of maize, nutshell, and blackgum (number of fragments divided by liters of soil floated)

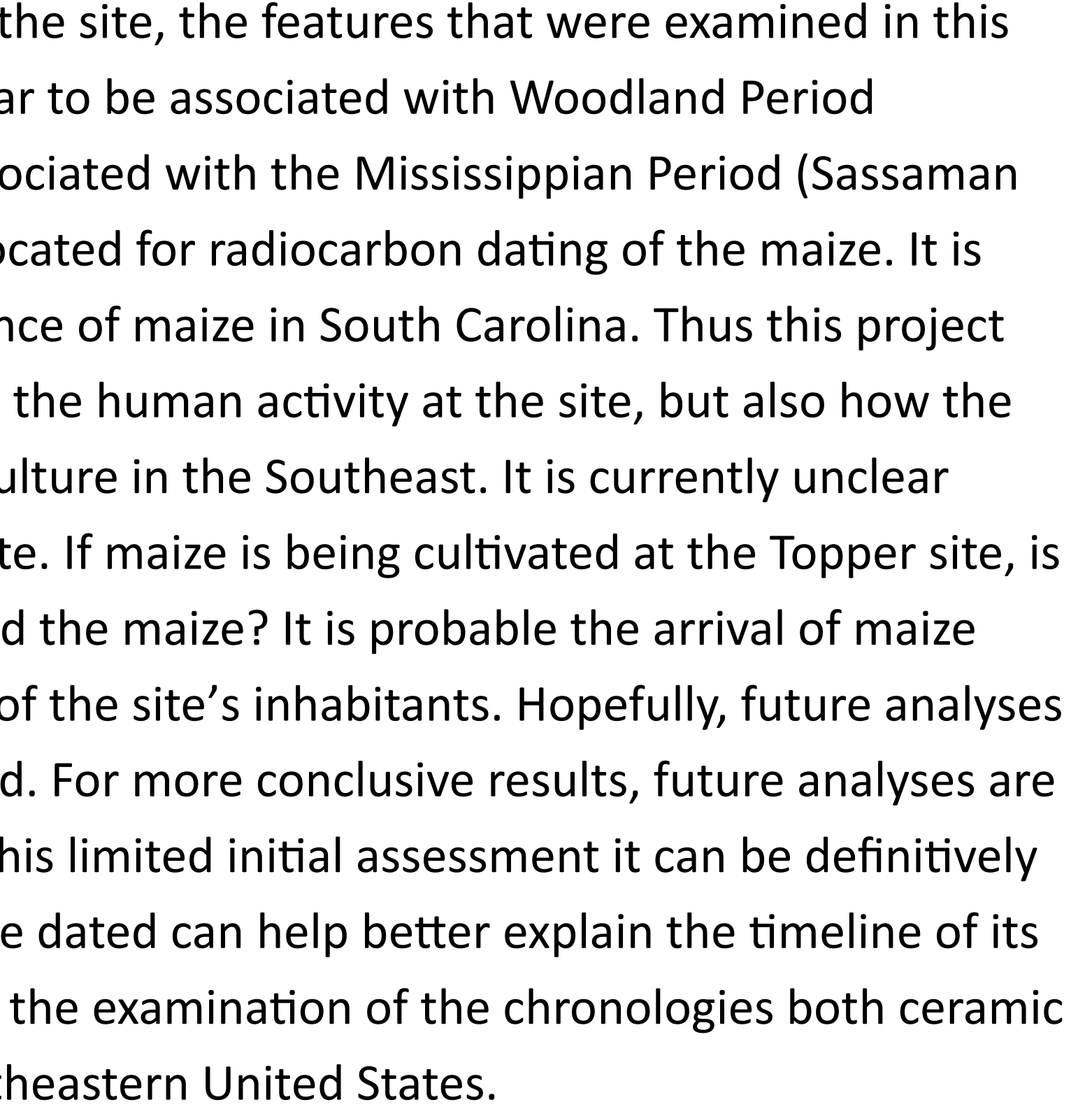


Figure 10: Cord-mark ceramic sherd from feature 426