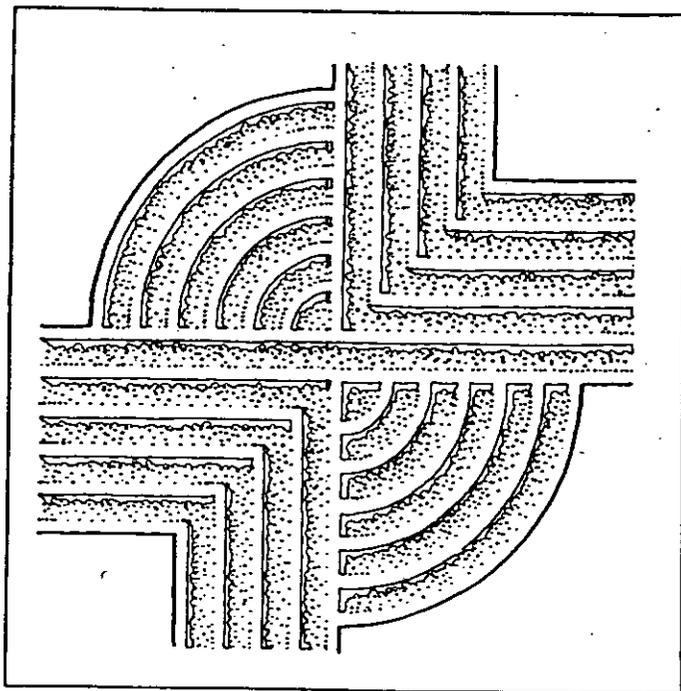


ETHNOBOTANICAL ANALYSIS OF SAMPLES FROM  
MINIM ISLAND, 38GE46, [GEORGETOWN COUNTY,]  
SOUTH CAROLINA



**RESEARCH CONTRIBUTION 29**

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ETHNOBOTANICAL ANALYSIS OF SAMPLES FROM MINIM ISLAND,  
38GE46, SOUTH CAROLINA

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Chicora Research Contribution 29

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## Introduction

These ethnobotanical samples were collected in April and May 1988 by Mr. Chris Espenshade, for the firm of Brockington and Associates, from data recovery excavations at the Minim Island site, Georgetown County, South Carolina (38BU46). The data recovery was conducted under contract with the Charleston District Army Corps of Engineers and this ethnobotanical analysis was conducted under a consultant agreement with Brockington and Associates. While it is important to consult the primary archaeological report for details concerning this site, a brief overview will be presented, with emphasis on the site context as it may effect the botanical record.

The Minim Island site is a multicomponent prehistoric shell midden situated on the southeastern shore of Minim Island, about 12 miles (19.2 kilometers) south of Georgetown, South Carolina. The site, located within the Santee Delta, is bordered by Duck Creek (now the Atlantic Intracoastal Waterway) to the east and continued operation of the waterway has resulted in significant erosion to the site, necessitating the present data recovery project. To the west there is a dike and rice fields constructed in the antebellum period. The site is evidenced by a ridge of shell about 100 by 45 feet (31 by 14 meters), stabilized by wax myrtle and cedar trees. The site has depth of up to 6.5 feet (2 meters) and the midden is primarily composed of oyster shell, mixed with soils, sherds, floral and faunal remains.

Today the Minim Island site is a small hammock surrounded by salt meadow cordgrass and an estuarine ecosystem to the east and a palustrine ecosystem to the west. Examination of a 1911 plat showing the site vicinity suggests that up to 100 feet (31 meters) of the shore has been destroyed by either erosion or construction of the Atlantic Intracoastal Waterway (Georgetown County RMC, DB B, p. 198). During the site's intermittent occupation the sea levels may have fluctuated between levels from 1.6 to 10 feet (0.5 to 3.0 meters) lower than today, with a mean elevation about 4.9 feet (1.5 meters) lower (Colquhoun et al. 1980:153). It is therefore reasonable to expect evidence of a considerably different vegetation during the prehistoric occupation of Minim Island. The area is expected to have supported a less salt-tolerant assemblage, similar to an oak-pine maritime forest (Sharitz 1975).

Previous work at the site was conducted by Carolina Archaeological Services in 1982, at which time a series of nine 1 meter (3 foot) and one 2 meter (6 foot) units were excavated in arbitrary 10 centimeter (0.3 foot) levels (Drucker and Jackson

1984). As a result of that work 60 handpicked charcoal samples and 10 water floated samples were submitted to this author for analysis (Trinkley 1984). Additional information on the findings of this early work is presented below.

The work conducted by Brockington and Associates consisted of the excavation of a 3 by 9 meter (10 by 30 foot) trench, oriented east-west in the midden and broken into nine 3 by 1 meter (10 by 3.25 foot) units. Vertical excavation was by 10 centimeter (0.3 foot) levels. At least eight features were recovered, in addition to a number of column samples. Excavated pottery consists primarily of the Thom's Creek, Refuge, Deptford, and Deep Creek series. These wares date from about 1800 to 300 B.C. and although they are mixed within the midden levels, the Thom's Creek and Refuge pottery tends to peak in the lower levels, while the upper levels are characterized by Deptford and Deep Creek pottery (Chris Espenshade, personal communication 1988).

Although the original proposal by Brockington and Associates to the Charleston District Army Corps of Engineers stipulated that flotation and ethnobotanical analysis would be conducted on all of the column samples and features excavated by this project (Brockington 1987:45-46), the "best and final" proposal required the reduction in total number of samples. About half of the column samples and seven of the eight features were available for study.

All of the samples submitted for analysis were water floated by Brockington and Associates at the completion of the project. The 10 column samples each consisted of approximately 8 gallons (30 liters) of soils, while between 2 and 36 gallons (7.6 and 137 liters) of soil from the various features were subjected to water flotation. Two of the 17 examined samples had been previously sorted into refuse and charcoal components. The remaining samples were unsorted light fractions, many of which contained a large quantity of debris (noncarbonized roots, leaves, and other plant material). A series of six handpicked charcoal samples, obtained from waterscreening midden through 1/16-inch (0.2 centimeter) mesh, were submitted for analysis.

As mentioned, ten of the 17 samples submitted for study represent material recovered from general midden levels. Eight of these midden, or column, samples are from Deptford or Deep Creek levels, while two are from Thom's Creek levels. The samples submitted from five of the features represents Deptford or Deep Creek components, intrusive into the underlying Thom's Creek zone. Two features date from the Thom's Creek phase. The samples vary in weight from 1.22 to 114.25 grams (0.05 to 3.7 ounces), although several contain a considerable amount of noncarbonized organic material. Regrettably, little dietary or environmental information is provided by the column samples. Charcoal in

general midden contexts is expected to suffer greater fragmentation, as a result of pedestrian traffic, than materials from feature contexts. The features examined do provide significant insight on late Early Woodland subsistence activities.

### Procedures and Results

The 17 flotation samples were prepared in a manner similar to that described by Yarnell (1974:113-114) and were examined under low magnification (7 to 30x) to identify carbonized plant foods and food remains. Remains were identified on the basis of gross morphological features and seed identification relied on Martin and Barkley (1961), and Montgomery (1977). All float samples, as previously discussed, consisted of between 2 gallons (7.6 liters) and 36 gallons (137 liters) of soil. The results of the analyses are provided in Table 1.

Only in the feature samples does the wood charcoal account for the bulk of the material recovered. In the remaining samples the wood charcoal represents less than 25% of the sample weight and the noncarbonized organic material comprises up to 99.3% of the sample weight. Excepting the Deptford features, none of the samples, with the noncarbonized material removed, weights more than 5 grams (0.2 ounce). Typically, samples of 15 to 30 grams are required for reliable analyses. In two samples snail shells account for a significant quantity of the sample weight. Only two samples yielded seed remains. Unit 7, Level 4 produced a single unidentifiable seed coat fragment, while Feature 21 yielded four fragmentary seeds. While only one column sample, from Unit 9, Level 10, produced evidence of carbonized food remains (hickory nutshells), all of the Deptford features and one of the two Thom's Creek features produced hickory nutshell.

Five of the 17 column samples and the six hand picked samples produced charcoal fragments capable of identification to the genus level, using comparative samples, Panshin and de Zeeuw (1970), and Koehler (1917). The charcoal was broken in half to expose a fresh transverse surface. The results of this analysis are shown in Table 2, which is organized by provenience.

The wood charcoal from the flotation samples is primarily oak (Quercus sp.), although a minor amount of pine (Pinus sp.) was also identified. All of the examined flotation samples are from the Deptford/Deep Creek zone. The six hand picked samples indicated greater diversity. Pine was the most prevalent species, followed by minor amounts of oak, hickory (Carya sp.), cedar (Juniperus virginiana), and a diffuse porous wood.

### Discussion

Because of the small size of the samples after sorting out

Providence	Wood Charcoal		Uncarb. Organic		Shell		Bone																																																																																															
	wt.	%	wt.	%	wt.	%	wt.	%																																																																																														
DEPTFORD/DEEP CREEK																																																																																																						
U 7, L 4	2.37	2.3	98.59	97.7																																																																																																		
U 7, L 5	0.97	1.4	70.69	98.6																																																																																																		
U 7, L 9	0.62	2.9	15.44	72.7	5.19	24.4																																																																																																
U 7, L 10	1.80	5.6	18.94	58.8	11.39	35.3	0.09	0.3																																																																																														
U 9, L 4	4.64	17.5	21.77	81.7	0.22	0.8																																																																																																
U 9, L 5	4.33	10.9	14.54	70.2	1.85	8.9																																																																																																
U 9, L 9	0.69	4.4	7.85	49.8	7.21	45.8																																																																																																
U 9, L 10	2.55	20.8	8.28	67.7	1.36	11.1																																																																																																
Fea 15	13.64	75.5	1.77	9.8	0.33	1.8	2.05	11.4																																																																																														
Fea 17	12.29	64.0	4.09	21.3			1.99	10.4																																																																																														
Fea 18	9.10	36.4	7.53	30.1			5.33	21.3																																																																																														
Fea 21	25.03	61.2	15.41	37.7																																																																																																		
Fea 25	5.04	35.7	3.86	27.3	0.10	0.7	4.60	32.5																																																																																														
THOM'S CREEK																																																																																																						
U 6, L 11	1.83	10.8	15.12	89.2																																																																																																		
U 9, L 14	0.01	0.7	1.46	99.3																																																																																																		
Fea 28	2.41	67.5	0.62	17.4			0.50	14.0																																																																																														
Fea 29	1.06	86.9	0.01	0.8			0.15	12.3																																																																																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2"><u>seeds</u></th> <th colspan="2"><u>hickory nutshell</u></th> <th rowspan="2">Total</th> </tr> <tr> <th>wt.</th> <th>%</th> <th>wt.</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>t</td> <td>t</td> <td></td> <td></td> <td>100.96</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>71.66</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>21.25</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>32.22</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>20.72</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>26.66</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>15.75</td> </tr> <tr> <td></td> <td></td> <td>0.05</td> <td>0.4</td> <td>12.24</td> </tr> <tr> <td></td> <td></td> <td>0.27</td> <td>1.5</td> <td>18.06</td> </tr> <tr> <td></td> <td></td> <td>0.82</td> <td>4.3</td> <td>19.19</td> </tr> <tr> <td></td> <td></td> <td>3.04</td> <td>12.2</td> <td>25.00</td> </tr> <tr> <td>0.02</td> <td>t</td> <td>0.47</td> <td>1.1</td> <td>40.44</td> </tr> <tr> <td></td> <td></td> <td>0.53</td> <td>3.8</td> <td>14.13</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>16.95</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>1.47</td> </tr> <tr> <td></td> <td></td> <td>0.04</td> <td>1.1</td> <td>3.57</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>1.22</td> </tr> </tbody> </table>									<u>seeds</u>		<u>hickory nutshell</u>		Total	wt.	%	wt.	%	t	t			100.96					71.66					21.25					32.22					20.72					26.66					15.75			0.05	0.4	12.24			0.27	1.5	18.06			0.82	4.3	19.19			3.04	12.2	25.00	0.02	t	0.47	1.1	40.44			0.53	3.8	14.13					16.95					1.47			0.04	1.1	3.57					1.22
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t = <0.01 gram or 0.01%

Table 1. Analysis of flotation samples, weight in grams.

Provenience	Pinus	Quercus	Carya	Juniperus	UID Wood
Unit 6, Level 13	5				
Unit 6, Level 16	3	1	3		1
Unit 7, Level 4	2	3			2
Unit 7, Level 5		3			1
Unit 7, Level 9	1	2			
Unit 7, Level 10	2	1			
Unit 7, Level 16	6	1	1		1
Unit 7, Level 17	3		1*	1	1
Unit 8, Level 13	10	1	1		1
Unit 9, Level 5	1	5			1
Unit 9, Level 13	12				1

\* = hickory nutshell

Table 2. Wood species identified from flotation samples.

the noncarbonized organic material, the column flotation samples from Minim Island provide limited insight on subsistence and environmental questions surrounding the site's occupation. The two samples attributable to the Thom's Creek phase yielded only a small quantity of wood charcoal.

The remaining samples, particularly those from Deptford/Deep Creek contexts provide some interesting data which is best examined in light of the previous ethnobotanical study for Minim Island (Trinkley 1984). Pine was the dominant species in the earlier study, based on 52 hand picked charcoal samples from the Deptford/Deep Creek zone. Oak was found in only 23 of the samples. From the current study, which consists of 11 samples, oak is found in eight and dominant in four, while pine is found in 10 and is dominant in seven. Other species are only minimally present and lack the diversity found in the earlier study. This disparity in the two studies may be attributed to sample bias. Clearly, Minim Island supported a mesic to xeric forest of pine and hickory, an environment considerably different from that found at the site today. The remaining species found in the 1984 study represent minority trees present in the maritime forest.

The hickory nutshell fragments found in one of the two Thom's Creek features and all of the Deptford features account for less than 1% to over 12% of the samples by weight while the hickory nutshells in the column sample account for 0.05% of the total sample weight. Espenshade (Chris Espenshade, personal communication 1988) reports that hickory nutshell was identified during the sorting process in an additional eight samples from both Thom's Creek and Deptford proveniences, although quantitative information is not available and these samples were not submitted as part of this examination. Previous ethnobotanical research at the site has found hickory nutshell

accounting for 1 to 8% of the Deptford/Deep Creek flotation samples and in 23% of the hand picked material. In contrast, only 13% of the Thom's Creek hand picked samples produced hickory nutshells. Although hickory nutshell is fairly durable and is expected to occur fairly commonly in collections, even when the samples are collected in such a way as to preclude more fragile remains, there seems to be clear evidence that the importance of hickory increased into the Deptford and Deep Creek phases.

All of the hickory species along the coastal plain fruit in October (Radford et al. 1968:363-366), although the nuts may be stored for a considerable period. If used as food, hickory provides large quantities of fat and moderate quantities of crude protein (Asch et al. 1972). The food energy is consequently high, averaging 670 to 690 calories per 100 grams of meat. This caloric yield is equal to that of many meats (Hutchinson 1928:261). The presence of hickory nutshell is well documented at Early Woodland sites (e.g., Harris and Sheldon 1982, Trinkley 1976, 1986) and at least some sites may have been situated to exploit nut masts (e.g., Trinkley 1986). While these samples are small, the absence of acorn shell or meat reaffirms the earlier study of Minim Island samples.

The seed remains found in these samples were all fragmentary and could not be identified, although it is not possible to determine if this was the result of prehistoric or excavation activities. The seeds probably represent "weedy" species, suggestive of a disturbed habitat. Previous work at Minim Island has identified seeds of palmetto (Sabal minor), swamp privet (Forestiera acuminata), skullcap (Scutellaria sp.), bedstraw (Galium sp.), and sumac (Rhus sp.), all occurring in the period from late summer through early winter. These species are also suggestive of an ecotonal situation, with the vegetation influenced by the disruptive activities of man. These data have previously suggested a year-round occupation or short term occupations at a variety of seasons.

The presence of column samples containing abundant noncarbonized material cannot be readily explained since the author did not participate in either the collection or flotation of the soil samples. The quantity of noncarbonized organic material in these column samples, however, is very high, with the result that the feature samples should be considered more reliable with regard to subsistence activities.

The various column samples could profitably have been five to ten times larger to ensure their representativeness. Future work at Early Woodland shell middens should attempt to incorporate in-field flotation to ensure that samples, 15 to 30 grams in weight, are obtained. In addition, while flotation samples are unquestionably required for the recovery of most subsistence information, the use of either hand picked or water

screened samples can make major contributions to our understanding of environmental diversity. Generally, flotation samples do not yield carbonized wood of sufficient size, in sufficient quantities, to allow such analysis.

### Summary

Previous work at Minim Island has suggested considerable species diversity, typical of a maritime forest community. While the current study does not match or expand on this diversity, the dominant woods remain oak and pine, and the absence of diversity may be attributed to the small column sample sizes. The limited presence of "weedy" seeds is suggestive of a disturbed habitat or ecotone and all of the seeds are presumed to be accidental inclusions in the archaeological record. While equivocal, their presence suggests a fall occupation. Seed preservation at other Early Woodland sites is variable, although the assemblages, including those from Minim Island, have provided no indication of economically useful species.

The only probable subsistence items recovered from this analysis are hickory nuts. Their consistent presence in Deptford feature context suggests use as a subsistence item, but the data are equivocal on the question of the importance of hickory to the total Early Woodland diet at this site (cf. Trinkley 1986 for the importance of hickory nuts at a Stallings site). Given the limited samples from the Thom's Creek phase, it is difficult to interpret their significance in the Early Woodland diet. By the Deptford time period, however, hickory appears to have been a significant plant food at Minim Island.

One major ethnobotanical research question for Early Woodland sites involves the importance of hickory to the subsistence base. Work at the Stallings component of the Fish Haul site (Trinkley 1986) suggests the exploitation of the hickory nut masts may have been a significant aspect of subsistence scheduling and perhaps even site settlement. Extending this research to other sites will require large ethnobotanical samples from feature contexts.

Future research at similar sites should ensure that the collection of ethnobotanical samples is a high priority. Samples should be subjected to thorough flotation in the field and sufficient soil from each provenience should be floated to provide a sample of 15 to 30 grams of carbonized material. The work at Minim Island, coupled, with other shell midden research, clearly indicates that feature contexts are vastly superior to midden columns for reliable data. The exception to this, of course, involves the collection of hand picked samples which are more suitable for wood species identification.

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