NATCHEZ BLUFFS CUISINE AND THE TRANSITION TO MAIZE AGRICULTURE (AD 750-1500)

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ABSTRACT

Anna Fuller Graham: Natchez Bluffs Cuisine and the Transition to Maize Agriculture (AD 750-1500)
(Under the direction of C. Margaret Scarry and Vincas P. Steponaitis)

This dissertation investigates the relationship between food and social identity for Native groups in the Lower Mississippi Valley (LMV) during the transition to maize agriculture. The intensification of maize agriculture in the LMV is notable because it occurred several hundred years after surrounding regions. Previous studies have focused on *why* LMV communities adopted maize, ignoring *how* maize was added to existing foodways. Data from ceramics and plant remains from communal gathering spaces at six sites in the Natchez Bluffs region—Feltus (22Je500), Smith Creek (22Wk526), Center's Creek (22Cb518), Bayou Pierre (22Cb534), Lessley (22Wk504), and Fatherland (22Ad501)—support the conclusion that communities in the region had a longstanding shared cuisine. Notably, these sites span the periods before and after maize was introduced and intensified (AD 750–1500), indicating that maize was an addition, rather than a disruption, to existing cuisine practices.

Plant data indicate that Natchez Bluffs communities relied on a mixture of nuts and starchy seeds, some of which were cultivated. The types and amounts of plant foods used does not dramatically change following the intensification of maize, indicating continuity in cuisine staples. Ceramic evidence reveals that the forms and sizes of ceramic vessel that communities used to cook and serve their food was consistent through time, suggesting people adapted maize to existing cooking techniques and routines. Taken together, the plant and ceramic evidence

demonstrate a consistent cuisine through time, as communities made use of similar types of ingredients and cooking styles despite the addition of maize.

While the content of cuisine was not considerably altered, ceramic evidence and contextual data indicate that the performance of community meals shifted from humble and integrative to fancy and prestige-building over time. Differences in use-wear patterns on bowls from pre- and post-maize contexts suggest changes in how and where the meal was prepared. Additionally, large serving vessels, which were primarily plain and undecorated in the pre-maize periods, are elaborately decorated in post-maize contexts. Contextual data also indicate that some portion of the community began living in these gathering spaces in the post-maize period. I interpret these lines of evidence together as indicating that communal meals had taken on a prestige-building component for host communities.

I argue that these findings demonstrate that a shared cuisine tradition remained important to Natchez Bluffs communities, despite shifting social relationships. Overall, this project demonstrates the dynamic relationship between continuity and change within cuisine practices through time.

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CHAPTER 1: INTRODUCTION

Around AD 1000, American Indian communities living in the southern Lower Mississippi Valley (LMV) undertook major changes to both their subsistence and social systems. It is around this time that community members adopted maize, consuming it first in minor amounts and then steadily increasing their consumption over the next two centuries. At the same time, communities began to express social hierarchy in new ways, a departure from previous heterarchical structures where status was de-emphasized. Scholars have recognized that simultaneous shifts in subsistence and social systems are often connected and can be productively studied together to reveal commonalities (Hastorf 2017). Previous studies on maize adoption in the LMV have primarily sought to explain *why* these changes were occurring, with two primary frameworks posited. In one, maize adoption is a response to environmental change and/or population growth (Roberts 2006; Steponaitis 1986). In another, maize is a gastropolitical tool of the elite, first treated as a rare, ritual item, and then as a surplus food item to fuel competitive feasting (Fritz 1998). While these arguments are compelling, there are a few issues with them. First, they primarily draw on frameworks proposed for other regions in the Southeast (e.g., Gremillion 2002; Scarry 1993), rather than focusing on the specifics of the LMV. Second, *why*-focused studies such as these tend to essentialize behaviors, ultimately de-emphasizing agency and variation on the part of past communities (Mills 2004; Pauketat 2001a, 2001b). I instead propose to look at *how* these two changes occurred through an examination of LMV subsistence and social systems through time.

The American Indian communities that occupied the southern LMV have interested scholars considerably through the years. Communities in the region have a long history of mound construction and use, stretching back to at least the Middle Archaic period, ca. 3900–2800 B.C. (Saunders 2010). This tradition continued for thousands of years, resulting in rich descriptions by European observers on how Natchez, Bayou Goula, Chitimacha, among other LMV native communities, made use of these spaces. These accounts have been invaluable to scholars, not only as information on LMV native communities at this time, but also as analogs for earlier mound center communities in the LMV and elsewhere in the Southeast.

Due to the precocious nature of early mound building in the region, scholars assumed that the LMV must have been a center for other innovations, including the cultivation of native seed plants and/or maize (Kidder 1992; Cowan 1985; Ford 1985). Research by Fritz and Kidder (1993) ultimately disproved this notion, finding that both native seed and maize cultivation did not begin in the region until much later than previously assumed. The first evidence for native seed cultivation is domesticated chenopod seeds from contexts post-dating AD 900; prior to that communities were relying on wild varieties of chenopod and other native seeds (Fritz and Kidder 1993; Roberts 2006). Maize did not enter the region until AD 1000 and was not intensively grown or consumed until at least AD 1200. Not only did maize not enter the region until thousands of years after mound building began, its intensification also post-dated, by several hundred years, that of communities in surrounding regions. Elsewhere in the Eastern Woodlands, communities appear to adopt maize around AD 1000 and quickly elevate it to a staple part of their subsistence practices. Despite similar timelines of adoption, Native communities across the

Eastern Woodlands added maize into subsistence and social systems that were quite variable from one another. For some communities, maize entered existing intensive cultivation regimes, while for others, previously reliant on gathering-gardening production modes, maize introduced a more intensive agriculture routine (Fritz 2019; Scarry 1993; VanDerwarker et al. 2017). These differences indicate that it is more productive to examine the process of maize adoption from a regional perspective than to focus solely on the outcome.

Prior to this study, scholarly understanding of maize adoption and plant subsistence for the LMV was based entirely on one region in Louisiana, the Tensas Basin.[1] Recent studies of foodways from another LMV region in Mississippi, the Natchez Bluffs, indicate that plant use patterns were more variable between regions than was previously assumed. Notably, Natchez Bluffs communities seem to have consumed starchy seed plants in greater quantities than Tensas Basin communities (Kassabaum 2014; Peles 2022). Considering this insight along with the variable subsistence practices for groups across the Eastern Woodlands noted above, I chose to focus this project on the subsistence and social systems of Natchez Bluffs group specifically.

Theoretical Influences

In studying the adoption of maize by Natchez Bluffs communities, I am interested in the specific process of maize adoption and what it meant for existing cuisine. Broadly, I am influenced by social practice and agency frameworks that emphasize the intrinsic connection between who people are and what they do (Bourdieu 1977; Giddens 1979). As an archaeologist, I use material culture as a proxy for people's practices. Following other food scholars, I assume

[1] The LMV cultural area is made up of several regions, grouped by scholars based on physiographic features. As part of the culture-history paradigm for the region, scholars have recognized that communities across these regions both share cultural traits, such as platform mound building and pottery stylistic, while also exhibiting local and regional variations in material culture and behavior.

that food practices, and their material remains, serve to both create and reflect a shared identity (Appadurai 1981; Fajans 1988; Mintz 1996). I acknowledge here that identity is complex, and that people often have multiple, overlapping identities that cut across multiple scales from the individual to the larger group. My project focuses on community identity, which I define as a series of shared activities and interests that would have served to unite a group of people together. Specifically, I focus on how food practices reflect community identity and relationships through time.

For my project, I assume that people in the Natchez Bluffs belonged to specific mound center communities. I use *community* here to refer to a category of social organization that structures how people self-identify and relate to one another. Scholars have repeatedly critiqued the use of community as a category in archaeological studies, noting that it is often used in ways that elide it with archaeological sites, mischaracterize groups as monolithic, and/or assumes that such organization is naturally occurring and static in nature (MacSweeney 2011; Yaeger and Canuto 2000). In response, archaeologists have become more reflexive in their use of the term, providing more specific descriptions and justifications for categorizing past social groups this way and recognizing that complex social dynamics and variation exist within these groupings.

I identify the people who built and used Natchez Bluffs mound centers as a series of adjacent, related communities. I assume that people gathering within a mound center space shared an identity that was unique to that place; at the same time, shared practices and relationships between mound centers would have served to connect people under a regional, Natchez Bluffs identity. To define these layers of Natchez Bluffs community identity, I follow spatial and practice-oriented frameworks. Several archaeologists have defined "geographical communities," which assume people are related to one another based on the use of shared space, such as a mound-and-plaza complex. These studies have argued that proximity both guarantees regular interaction and also results in shared experiences and practices that form the basis of relationships (Macsweeney 2011; Varien and Potter 2008). While many practices likely contributed to fostering a sense of shared identity, it is likely that some practices played a more vital role in community building than other. These are what Macsweeney (2011) has termed “enactments of community” and are practices that include a significant portion of the group using similar material culture forms in significant and symbolic ways. Nelson’s (2019) recent study of a Mississippian mound community in the northern Yazoo Basin area provides a case study for identifying “enactments of community” in the archaeological record of mound center. She highlights mound building and feasting, in particular, as emblematic of community-building practices. Related to Macsweeney’s framework, both of these practices involve large numbers of people engaging in shared practices (i.e., food preparation and consumption for feasting, material selection and construction for mound building) and often with symbolic materials (e.g., ceramic stylistics, special foods, particular materials for mound construction). Nelson’s project focuses on a single mound center community identity, though she acknowledges how this identity is also connected into larger, regional identities as neighboring communities engaged in similar practices. My project takes a more regional approach, as I consider how the activities occurring at multiple mound center spaces in the Natchez Bluffs were reflective of a shared identity.

In taking a practice-based approach to community, my project is also influenced by *communities of practice* frameworks. Communities of practice categorize relationships people have through shared activities, with an emphasis on learning and knowledge transmission as social practices (Lave and Wenger 1991; Wenger 1998). In this framework, new members learn from older ones by observation and participation, gaining both practical knowledge and group membership. Lave and Wenger have emphasized the centrality of identity to this concept, noting that shared practices link people, and that by continuing to engage in these practices people are acknowledging each other as part of the same community. The framework also recognizes important temporal aspects to social practices and identity. First, that communities of practice are historically contingent and intergenerational. The past is made present through the transmission of knowledge and the subsequent enactment of those practices by new members then connects the past to the present and even future. Second, the interconnection of past, present, and future is a dynamic one that can involve both continuity and change. New generations can bring change, as they offer a different perspective, but can also be important to continuity as they seek to tie their own identity to the history of a community through maintained practices. Additionally, while older members may be invested in maintaining practices that are central to their identities and histories, they may also innovate practices based on their experiences and perspectives.

Archaeologists have made extensive use of the communities of practice concept, particularly favoring it for examining modes of production and intergenerational knowledge transmission. Many of these studies have focused on pottery traditions, using the framework to examine continuity and change (Crown 2001, 2014; Roddick 2009; Sassaman and Rudolphi 2001). Recently, scholars have sought to expand the use of the concept, examining distribution and consumption activities alongside production and considering multiple scales of activity and involvement (Knappett 2011; Mills 2016; Stahl and Roddick 2016). Consumption, in particular, is noted to be a historically and socially constructed practice; just as with production techniques, community members are taught appropriate ways to consume. Some studies have focused on feasts as loci where communities of practice operationalize consumption knowledge (Knappett 2011; Mills 2016). Mills, focused on the use of decorated serving bowls at feasting events in the

Southwest, describes meal contributors and participants as belonging to "communities of consumption," guided by a shared cuisine. She notes that "these events are opportunities for situated learning in how to serve food, who to serve it to, where it is placed, and when it is consumed" (2016:255-256). Studying the material remains related to communal consumption allows us to consider both the events themselves, and the knowledge and practices required to put them on.

My project focuses specifically on the practices associated with communal eating events as loci for building and maintaining community identity and relations. Following Mills' (2016) "communities of consumption" framework, I consider how the practices and materials involved in putting on these events were socially constituted and intergenerationally shared. Arguably, a variety of mound center activities could be considered through the communities of practice framework. Though she does not use the communities of practice framework, Nelson's (2019) study demonstrates how mound center focused activities, such as mound building and feasting, contribute to community building since they involve the community in shared, symbolic practices. Similarly, Kassabaum (2018, 2019) has identified a "ritual cycle" for Coles Creek communities that includes a package of mound center focused activities involving communal food consumption, mound construction, burial of the dead, and post-related ceremonialism. As argued by both Kassabaum and Nelson for their respective study areas, participation in these activities served, in part, to integrate community members into a shared world view and identity. Both of these studies demonstrate how shared, mound center-based practices have a long history and play an important role in identity construction and social relationships for native peoples in the LMV.

Though I focus on communal eating events as a community building practice, I am also interested in *cuisine*, which would have served to structure these events. Cuisine involves communally established structures and rules that define what foods are used, how they are combined, and which methods are used to prepare them (Douglas 1997; Mintz 1996; Weismantel 1988). More simply, cuisine is the socially constructed style of a particular geographic area, cultural group, or other community organization's foodways. Important to these definitions is the symbiosis between community identity and cuisine; a community defines its own cuisine and in turn cuisine is used to distinguish a community (Appadurai 1981; Brown and Munsell 1984). Community interaction is essential to cuisine, as people share in production and consumption of food, as well as opinions as to how that food should look, taste, smell, etc. (Mintz 1996). This idea connects back to the communities of practice framework, as it assumes that older community members guide newer members, as well as each other, in recognizing and reproducing cuisine. As with other practices, cuisine reproduction is not static through time, and often involves some degree of change, whether through innovation, accident, or external forces. Thus, tracking community cuisine practices through time must necessarily expect a dynamic relationship between continuity and change.

For this project, I define cuisine as the foods, flavors, preparation methods, consumption modes, and social contexts of community foodways. Cuisine thus includes the full set of activities and social interactions surrounding food production and consumption at the community level, which makes it a particularly well-suited vehicle for understanding interlinked subsistence and social changes. Cuisine is visible in the archaeological record through the combinations and proportions of foods used (both plant and animal), cooking modes (ceramic vessel forms, use wear patterns, and cooking residues), and consumption styles (ceramic vessel forms and sizes).

The social interactions associated with meals can be inferred via meal setting (physical environment and site context), group size (ceramic vessel size, amount of food consumed), formality (pottery style, food types), and any other related activities (nonfood-related material remains).

Cuisine has been used variously by archaeologists, with most using the term interchangeably with foodways, which refers more broadly to the ways groups produce, prepare, and consume food (Welch and Scarry 1995). However, a few studies have effectively used the concept to study the connection between food and group social dynamics (Crown 2000; Hastorf 2017; Joyce and Henderson 2007; Oas 2019); I highlight two of these as case studies here. Oas' (2019) study, focused on Native American communities in the Cibola region of the southwestern U.S., shows how a new maize flatbread foodway emerged in connection to an increase in large social gatherings, which she ultimately relates to increases in migration and population aggregation in the region. She argues that these gatherings, and the foods served at them, were essential to maintaining relationships and minimizing tensions in increasingly diverse communities. Joyce and Henderson (2007), focused on early village communities in northern Honduras, use cuisine to study how cacao preparation and consumption is transformed from an individual, private affair to a more public, performative act. They argue that the elaboration of this foodway is connected to feasting events and ultimately contributed to prestige building by distinguishing the hosts of these events. These studies highlight how cuisine is related to the social nature of foodways, in that the ingredients and preparation styles of dishes are often reflections of when, where, and who consumes them. They also demonstrate that archaeological examinations are particularly well-suited for studying cuisine transitions as it is possible to trace the various components of cuisine through time. This project makes use of cuisine as a framework to investigate how LMV communities maintained or modified subsistence activities and social practices following the introduction of maize.

Research Questions and Methods

My study focuses on cuisine as a tradition enacted by LMV mound center communities; as a tradition within the mound center "communities of practice" it is simultaneously produced by people and produces that group as a distinct community. Three main research questions guide this study. The first is, what is the nature of LMV cuisine prior to the introduction of maize? In asking this question, I am interested in understanding what people were eating, how they were preparing those foods, and the nature of communal consumption events. Sub-questions then ask what plant foods were people consuming and in what relative proportions? What do pottery vessel forms, sizes, and use-wear patterns indicate about how people were cooking and consuming food? What was the social context of community meals? My second research question is what, if any, cuisine changes occurred with the addition of maize? With this question, I am interested in both how communities were using maize and how they continued to use existing ingredients. Sub-questions include when and where do we first see maize used? Is maize associated with particular plants or contexts? Did the types and proportions of other plant foods used change? Was a new cooking method introduced? Did a new event style emerge? My third research question asks, what do changes to cuisine, or lack thereof, indicate about community interaction and relationships through time?

To answer these questions, I analyzed plant remains and pottery from contexts at six mound sites that span the periods from before maize was introduced to after maize use intensified. Plant remains provide data on the plant food component of LMV cuisine. For each period, I determined the types and amounts of plant food consumed, ultimately revealing which foods were most important to cuisine in each period. While animal meat no doubt had an integral place in the past foodways of the area (e.g., Kassabaum 2014; Kelley 1990; LaDu and Funkhouser 2018; Peles 2022), the analysis of faunal remains was beyond the scope and resources of this project and was not included. Pottery provides data on how these foods were prepared and consumed, as seen through a functional analysis of the ceramics. For each period, I collected observations on ceramic decoration, shape, size, and use-wear from pottery sherds. Combining these datasets with information from their archaeological contexts, allows for insight into the content and performance of cuisine.

The following chapters explore LMV cuisine during the period AD 750—1500 from the perspective of plant foodways, the pots used to prepare and serve these foods, and the communal events where those dishes were consumed. Chapter 2 is an archaeological and historical overview of the region, providing the necessary context for what is known about communities during the period of interest. I subdivide the longer time span into three periods related to maize adoption: AD 750–1000 (pre-maize), AD 1000–1200 (initial maize), and AD 1200–1500 (intensive maize). These periods are based on work done by Fritz (1993; 2000) who first identified that communities did not intensify maize production immediately. For each period, I include relevant information on the settlement patterns, sociopolitical organization, subsistence practices, and other activities.

Chapter 3 provides information on the archaeological sites and contexts studied in this project. Data were collected on materials from six sites: Feltus (22Je500), Smith Creek (22Wk526), Centers Creek (22Cb518), Bayou Pierre (22Cb534), Lessley (22Wk504), and

Fatherland (22Ad501). Most of the sites sampled date to only one of the three periods of interest (i.e., pre-maize, early maize, or intensive maize). However, Smith Creek contained deposits from all three periods. This chapter includes relevant background information on each site with a specific focus on the contexts sampled for this project, formation processes, and excavation history.

Chapter 4 focuses on the plant foodways of cuisine, presenting the results of the archaeobotanical analyses. I ultimately find that, though there is some variability in plant use among sites, Natchez Bluffs sites of all time periods are more similar to one another than to contemporary sites from other regions. I argue that this demonstrates the existence of a persistent shared regional cuisine.

Chapter 5 focuses on the results of the functional vessel analysis of the ceramic datasets. I find that communities across several sites and time periods use a similar vessel assemblage, which I suggest is further evidence for a shared cuisine. Additionally, because no new vessel forms or sizes were added following the adoption of maize, I argue that maize was adapted to existing cooking techniques.

Chapter 6 brings the plant and ceramic datasets together with additional data from archaeological contexts to present LMV cuisine through time and discuss patterns of continuity and change as they relate to the ingredients, preparation modes, and communal consumption event styles. I conclude by considering what these patterns mean for LMV community and cuisine through time. I argue that communities maintained a shared cuisine despite the addition of maize and the emergence of a new social hierarchy. Communal meals continued to be a space to express a shared identity, which may represent either a social strategy by an emerging elite or a means to resist this social order by the rest of the community.

My dissertation is the first to bring together plant and ceramic data to investigate the adoption of maize in the LMV. I suggest that the adoption process involved both continuity and change to existing food practices. Ultimately, this project provides a case study for recognizing the dynamic interplay between continuity and change within cuisine practices through time.

CHAPTER 2: SOCIAL AND SUBSISTENCE TRANSITIONS: THE SOUTHERN LMV AD 750-1500

In this chapter, I present the history of the southern Lower Mississippi Valley for the period AD 750–1500. This history serves to contextualize the subsistence and social changes that occurred across those centuries. I focus this history on the communities of the Natchez Bluffs but occasionally bring in evidence from other regions. I begin with a short introduction to the physical and cultural environment of the southern LMV broadly and the Natchez Bluffs region in particular. The larger time span is then broken up into three sections related to maize use, AD 750–1000 or pre-maize, AD 1000–1200 or early maize, and AD 1200–1500 or intensive maize. In each of these sections, I present the current understanding of settlement patterns, sociopolitical organization, subsistence practices, and other community activity patterns as indicated by the archaeological evidence.

The Southern Lower Mississippi Valley

The southern Lower Mississippi Valley refers to the area of the Mississippi River valley from just south of Memphis to the Mississippi Gulf Coast and includes parts of western Mississippi, eastern Louisiana, and southeastern Arkansas. A vast landscape, diverse in both culture and ecology, is included within this larger region. Scholars commonly divide the larger area into several distinct physiographic regions, including the Yazoo Basin, the Boeuf Basin, the

Ouachita Valley, the Lower Red River, the Tensas Basin, and the Natchez Bluffs (Figure 2.1). Archaeologists recognize both similarities and differences in terms of material culture and social patterns throughout history. This suggests that while the peoples of these regions were part of an interconnected cultural network, they were also autonomous entities. Archaeologists increasingly recognize that communities within each sub-region had their own unique histories and connections that often led to different outcomes despite shared material culture.

This project focuses on the communities of the Natchez Bluffs in an attempt to better understand their distinct regional history. The Natchez Bluffs have a distinctive physiology, the high loess bluffs that are their namesake, that would have supported a different ecology than the bottomlands of the neighboring Tensas or Yazoo Basins. By focusing on this region, I am also assuming that, due to proximity, communities within this region had greater, and/or more frequent, interaction with one another and therefore are more likely to have a shared culture as compared to neighboring regions.

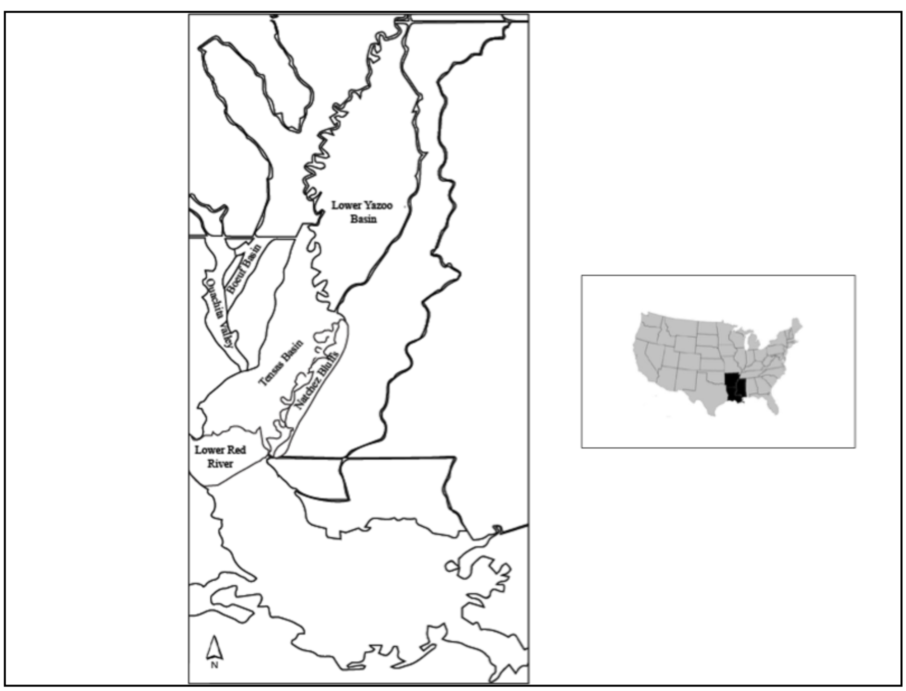

Figure 2.1. Map of the physiographic regions of the Lower Mississippi Valley.

However, I recognize that this assumption may not adequately capture the intricacies of relationship networks in the region. During the 1700s, when the French were living in the Natchez Bluffs, they documented several different town communities who were seemingly autonomous from one another and differed in both language and external political alliances despite living near one another (Ellis 2017; Lorenz 1997). If these historically documented town relationships are any indication of past relationships, Natchez Bluffs communities may have shared some cultural aspects while remaining distinct in regards to others. This project considers at least two sites, taken here to be proxies for past communities, for each time period. By considering multiple contemporaneous communities, I aim to account for community distinctions as well as similarities.

Early and Middle Coles Creek (AD 750–1000)

The time spanning AD 750 –1000 is part of the Coles Creek cultural period. Coles Creek was first named as a ceramic complex by Henry Collins. This was further defined and refined by James Ford (1936, 1951) based on his work at Greenhouse and a number of other sites in Louisiana and Mississippi. For the Natchez Bluffs, the Sundown (AD 750–850) and Ballina (AD 850–1000) phases make up this period. These phases are differentiated from one another primarily on the basis of ceramic stylistic traits and lithic forms. Originally developed by archaeologists for the Tensas Basin, these phases have also been adopted for the Natchez Bluffs due to the similarity of material culture between the two regions (Brain, Brown, and Steponaitis n.d.; Phillips 1970; Williams and Brain 1983). Most of the archaeological data from these phases come from earthen mound sites. Some non-mound sites have been identified from surveys and a few have been excavated (e.g., Wells 1998; Hunter et al. 1995), but more information is needed from these types of sites. With the exception of the Feltus and Smith Creek sites, the majority of data from Sundown and Ballina phase mound sites are from the Tensas Basin (Belmont 1967; Ford 1951; Hunter et al. 1995; Kassabaum 2014; Kidder 1990; Ryan 2004; Wells 1998).

From the few non-mound sites that have been excavated, it appears that people lived in small family households dispersed across the landscape. Hunter et al. (1995) speculate that ten to twenty people may have occupied a house identified at the Richardson site, while Wells (1998) conjectures that between ten and forty people could have occupied the three to four structures identified at Lisa's Ridge. This suggests small hamlets centered on large or extended families, but, given the few excavated sites, there may be more variation to community settlement patterns than is currently recognized.

The dispersed population gathered with some regularity at mound centers. These spaces were generally made up of two or more platform mounds surrounding an open plaza. Archaeological evidence suggests that the mound centers were used in a variety of ways, including feasting, burial of the dead, mound building, and other ceremonial activities (Kassabaum and Nelson 2016; Roe and Schilling 2010). A diversity of evidence also suggests there was no set pattern for how the mounds themselves were used, with some serving as burial spaces, others as platforms for structures, and still others as activity spaces (Ford 1951; Kassabaum 2014; Roe 2010). One consistency across these mound sites is that there is little or no evidence that anyone lived at these mound centers full time.

While mound building would have taken group organization and cooperation, it does not appear that this occurred under hierarchy. Scholars debate the nature of Coles Creek sociopolitical organization, but current evidence suggests that, during this period, communities were more heterarchically organized. Both settlement pattern and mound center use data suggest groups acted mostly as autonomous kin-based units and came together collaboratively at mound center spaces (Roe and Schilling 2010). Furthermore, there is little material evidence for status differentiation (Kassabaum 2011; Roe and Schilling 2010). As mentioned, there is no evidence that anyone lived at the mound centers, suggesting no population separation in that regard. Most burials are undifferentiated bundle burials with few or no evident grave goods. While certain sites show age and gender-related differences as to how burials were treated, there is no evident hierarchy to that treatment (Kassabaum 2011). Scholars have pointed to burials at two sites, Mt. Nebo and Lake George, as exceptions to the overall burial pattern. At these sites, there is some evidence for special treatment, with individuals being buried with various grave offerings, including other individuals (Barker 1999; Giardino 1977; Steponaitis 1986). However, it is difficult to say whether these burials are evidence for hierarchy or just exceptions to the overall pattern.

Subsistence data suggest people relied on a mixture of wild and cultivated resources. Faunal data from sites in both the Natchez Bluffs and Tensas Basin indicate communities subsisted on terrestrial and aquatic resources, including bear, deer, turtle, and fish (LaDu and Funkhouser 2018). The botanical data from the Tensas Basin suggest communities primarily consumed wild plant resources, such as acorns and persimmons, while relying on some cultivated, starchy seeds such as chenopod and knotweed (Roberts 2006). Recent botanical data from the Natchez Bluffs paint a slightly different picture. While communities at these sites relied on many wild resources, cultivated starchy seeds also made up a portion of their diets (Graham 2018; Kassabaum 2014).

Late Coles Creek (AD 1000–1200)

In other regions of the Eastern Woodlands, AD 1000 marks the approximate beginning of the Mississippi temporal and cultural period. However, for the LMV, the time between AD 1000 and 1200 is still considered by scholars to be part of the Coles Creek cultural period. The regional variant of Mississippian culture, Plaquemine, does not begin until AD 1200. This has been a fluid definition, though. As originally defined, the Coles Creek period ended at AD 1100 and the latter phase, the Gordon phase, was part of the early Plaquemine period (Phillips 1970). Williams and Brain (1983) opted to move the start of the Plaquemine period to AD 1200 based on their work at the Lake George site. As will be further discussed, the fluidity of the end of the Coles Creek period and start of the Plaquemine period has bearing on the interpretation of the changes occurring throughout the transitionary period.

For the Natchez Bluffs, two phases make up this transitionary period: Balmoral (AD 1000–1100) and Gordon (AD 1100–1200). These are closely related to the Tensas Basin phases for this period; Balmoral is the same, while Preston is the late phase in the Tensas region (Brain, Brown, and Steponaitis n.d.) As with other periods, most of the archaeological data from this period comes from mound sites (Cotter 1951, 1952; Kidder 1990; LaDu 2016; Roe 2010; Ryan 2004; Weinstein 2005). However, a few non-mound sites from both the Balmoral and Preston phases have been excavated in the Tensas Basin (Kidder 1993; Lee et al. 1997). Communities appear to continue the pattern of dispersed, small family unit settlements. Kidder (1993) suggested that some settlement aggregation may have occurred towards the later end of this period. However, given that this is based on data from just one site, Blackwater, and compared to limited data from preceding periods, further evidence would be needed to verify this claim.

Sociopolitical organization is also somewhat ambiguous for this transitionary period. Some scholars (e.g., Kidder 1998) have argued that communities began to express new forms of social hierarchy; however archaeological evidence shows that many of the same types of activities of the preceding periods still occurred. Communities still conducted consumption events, built mounds, and buried their dead in these spaces (e.g., Kidder 1990; LaDu 2016; Roe 2010). However, some changes occured to how mounds were built and used. Scholars have noted that the mound centers built during this period were larger, both in terms of size and number of mounds, than those in previous periods (Kidder 1998; Roe 2007). Kidder (1998) has also noted that there seems to be a change in mound center layout during this time, with more mounds surrounding the plaza. He argues that this change, alongside the use of ramps to access mounds, was symbolic of a shift to a more exclusive society that limited both who and how people could access mounds. The style of mound building also changed during this period, as mantle-style mound construction began to be used at various sites for the first time (Belmont 1967; Kassabaum et al. 2014; Kassabaum et al. 2017). Mantles, which act as a layer across the entire summit and flank surfaces of the mound, differ from previous styles of mound construction in that they not only add height, but also increase the overall footprint of the mound. This new style of construction was, no doubt, a contributing factor to the increased size of mounds during this period. Archaeological evidence also suggests differences in how mounds were used as compared to the preceding period. There is more evidence for structures on mound surfaces (Kassabaum et al. 2017; Steponaitis et al. 2018; Roe 2010), though the archaeological data is too limited to determine how these structures were used. While the evidence does not allow us to assign definitive functions to these structures, such as residences or politico-religious buildings, their very presence is still a notable change in how people were using these spaces.

Towards the end of the transitionary period, the first evidence for maize use in the region appears. From AD 900–1200, maize was used in low densities as compared to elsewhere in the Southeast where maize had become a staple foodstuff. LMV communities continued to rely on a mix of wild and cultivated plants, including fruits, nuts, and small starchy native seeds, such as maygrass and chenopod. Faunal remains indicate communities consumed a mix of terrestrial and aquatic species, including deer and fish. Comparative analyses between sites demonstrate disparate patterns in the proportions that species were used, suggesting distinct community preferences (LaDu and Funkhouser 2018).

Early and Middle Plaquemine (AD 1200–1500)

The period AD 1200–1500 is part of what LMV archaeologists refer to as the Plaquemine period. Plaquemine is the LMV variant of the Mississippian cultural phenomena. First defined by Quimby (1951), based on his work at the Medora and Bayou Goula sites, Plaquemine is an amalgamation of cultural traits from the preceding period as well as some innovations. Early definitions set the start of Plaquemine at AD 1000 (Phillips 1970). However, work by Williams and Brain (1983) at the Lake George site pushed the start date for Plaquemine to AD 1200. Williams and Brain reconceptualized the start of the Plaquemine period around the assumption that Plaquemine culture evolved as a result of outside Mississippian cultural influence. This assumption is based on the appearance of Mississippian-style cultural items, including shell-tempered pottery, Cahokian ceramic styles, and stone tool types, among other things, at a number of Yazoo Basin sites, including Lake George and Winterville. By moving the start of the period to coincide with the appearance of these items, Williams and Brain attributed the various cultural traits and changes of this period to Mississippian influence rather than a local evolution from Coles Creek antecedents.

Though the explanation of Mississippian influences works for the Yazoo Basin, particularly for Upper Yazoo Basin sites like Carson where definitive evidence of Cahokian interaction has been found (Mehta and Connaway 2020), the model has long frustrated scholars working in other regions. These scholars have pointed to the many continuities between the late Coles Creek and early Plaquemine periods, including ceramic styles and mound building, in order to propose that Plaquemine culture instead represents gradual changes from existing Coles Creek cultural patterns (Kidder 1998, 2007; Roe 2007). Recent evidence from the Tensas Basin has shown that Cahokian/Mississippian interactions were not limited to the Yazoo Basin (Weinstein and Wells 2007). Despite this, there is very little material evidence to support intensive Mississippian interaction elsewhere in the LMV; therefore, I consider the Plaquemine cultural patterns represented in the Natchez Bluffs to have clear antecedents in the preceding Coles Creek period.

The Plaquemine period in the Natchez Bluffs is composed of four phases: Anna (AD 1200–1350), Foster (AD 1350–1500), Emerald (AD 1500–1682), and Natchez (AD 1682–1730). This project primarily deals with the Anna and Foster phases. Mostly mound sites have been excavated from these phases, but a few non-mound sites have also been investigated (Brown 1985, 1997; Cotter 1951, 1952; Downs 2012; Kassabaum et al. 2014; Kidder 1993; Ryan 2004; Roberts 2006; Steponaitis 1974).

During this period, most of the population continued to live in dispersed settlements across the landscape in single households or perhaps multi-family farmsteads. Excavations at the Lookout site in the Natchez Bluffs revealed the remains of several domestic structures, four of which are believed to date to the Anna phase, AD 1200–1350 (Brown 1985). If contemporaneous in use, these structures would indicate a multi-family grouping. Excavations at the Emerson site in the Tensas Basin uncovered two midden patches believed to relate to at least two structures dating to the Fitzhugh phase, AD 1350–1500 (Kidder 1993). This would also seem to indicate a small, multi-family habitation grouping.

Scholars have long considered Plaquemine communities to be hierarchical in their sociopolitical structure (Brown 2007; Kidder 2007). This understanding comes from the French encounters with the historic Natchez, a Plaquemine descendant group, during the 1600–1700s. While the French documents are informative of Natchez groups, scholars must be careful to assess them as a product of a particular time and circumstances, and understand that it may not necessarily even speak to the early 1600s, let alone AD 1200. Archaeological evidence from those earlier time periods can serve to corroborate or challenge any historical assumptions that have been projected backwards. Burial data from this period show more elaborate burials with grave goods, indicating a shift towards marked, afterlife status (Bohannon 2009). Furthermore, continued shifts in mound center use suggest changes in community social interaction and status.

While some of the mound center uses from the preceding periods appear to continue, there is also evidence for new uses. The trend towards larger mound centers accelerated during this period, as exemplified by the Anna and Emerald sites (Brown 2007). There is also more evidence for structures on top of mounds. Direct evidence, in the form of post holes and wall trenches, has been uncovered at the Anna, Glass, and Windsor sites in the Natchez Bluffs (Brown 1997; Downs 2012; Kassabaum et al. 2014). There is also indirect evidence, in the form of large amounts of cane impressed daub, from the Lessley site (Graham and Kassabaum 2020). Just as with the preceding period, it is not entirely clear how these structures were used. At the

Grand Village site, a historic Natchez town, the French reported that one mound housed a temple, while another housed a residence for the principal chief, the Great Sun. The structures at these earlier Plaquemine sites may have functioned similarly as residences, politico-religious structures, or some other purpose or combination of the aforementioned. While it is difficult to definitively interpret mound-top structures as residences without more archaeological evidence, there is other evidence to suggest that mound centers now supported some type of residential population. At the Smith Creek site, various areas of the plaza contain large, accretional midden deposits as well as a great number of post holes. Clear structural patterns have yet to be discerned from the Smith Creek living surfaces, but the sheer number of post holes suggests these features may represent structural posts as well as screens, drying racks, storage facilities, or any other number of purposes. Similar residential patterns have also been noted for Plaquemine contexts at the Hedgeland site (Ryan 2004). Mound building and communal consumption activities continued at mound centers during this time; however, archaeological evidence suggests the nature of communal consumption activities changed. The presence of large, accretional middens at Smith Creek and Lessley and small surface middens at Lessley and Anna, suggest eating events were either done in domestic settings or with small numbers of participants. Notably, there is less evidence for the large feasting deposits seen at Coles Creek sites. This shift suggests that, while eating was still an important community activity, the composition and performance of these eating events had change substantially.

Plant use data from this period suggest communities were dramatically shifting their subsistence practices. Maize becomes a major part of the diet. Fritz notes that maize density at Emerson, a Fitzhugh phase (AD 1350–1500) site, is twenty-seven times that of Osceola, a Balmoral phase (AD 1000–1100) site (Kidder et al. 1993). Roberts (2006) has argued that alongside the increase in maize, there was a concomitant decline in the use of nuts, starchy seeds, and wild fruits. However, initial data from the Natchez Bluffs indicate that other plant food sources did not decline in this region (Graham 2018). This may suggest regional or community-level differences in subsistence practices and preferences. Faunal data from the Tensas Basin indicate the continued consumption of deer and fish, but Kidder (1993) has suggested that there may be an increase in deer consumption relative to fish consumption. Routh phase deposits at the Hedgeland site indicate overall exploitation of deer and fish, with a slight decline in deer and a slight increase in small mammals through time (Coxe and Kelley 2004).

Summary

Across the period AD 750–1500, major changes occurred to both community subsistence and social systems. Communities reoriented their diets to focus on maize and became increasingly hierarchical in their social relations. This project aims to examine how these changes transpired across the centuries and how they may have been linked. As the history presented above has shown, food and food-based events were central parts of how the dispersed community gathered together. Previous studies have also suggested that the transition to maize may have been linked to social hierarchy, but have primarily looked at these changes from the perspective of why maize was adopted. These studies have suggested that maize use increased as elites grew competitive with one another (Fritz 2000). Built into these arguments is the assumption that sociopolitical hierarchy existed in the region before the introduction of maize. I argue that it is more productive to look first at how these changes occurred to better understand them. In the chapters that follow, I will lay out the central artifactual data for LMV cuisine, as seen in the plant foods that made up the major ingredients and flavors and the ceramic vessels in which those foods were processed, prepared, and consumed. After these data are presented, I will examine them chronologically and bring in other artifactual and contextual data to lay out what LMV cuisine looked like through time, including both its subsistence and social components. This chronological view will attempt to address when and how subsistence and social systems changed.

CHAPTER 3: PROJECT CONTEXTS

Plant and ceramic data used in this project come from archaeological contexts at six different mound sites scattered throughout the Natchez Bluffs region. Figure 3.1 shows the location of these sites. For each period, I analyzed material from at least two sites to account for variability. Mound center communities, while sharing a broader material culture, may have chosen different modes of maize incorporation. I ideally wanted to analyze plant and ceramic material from the same contexts, in order to better assess changes to both the types of plant used and how they were prepared; however, the recovered ceramic sherds for some of the sites were either too small for functional analysis or were not available for analysis during the project period.

Table 3.1 shows the material types analyzed from each site. In the sections that follow, I give a brief overview of each site, detailing its excavation history, describing what is known from this work, and highlighting which contexts yielded materials for this project.

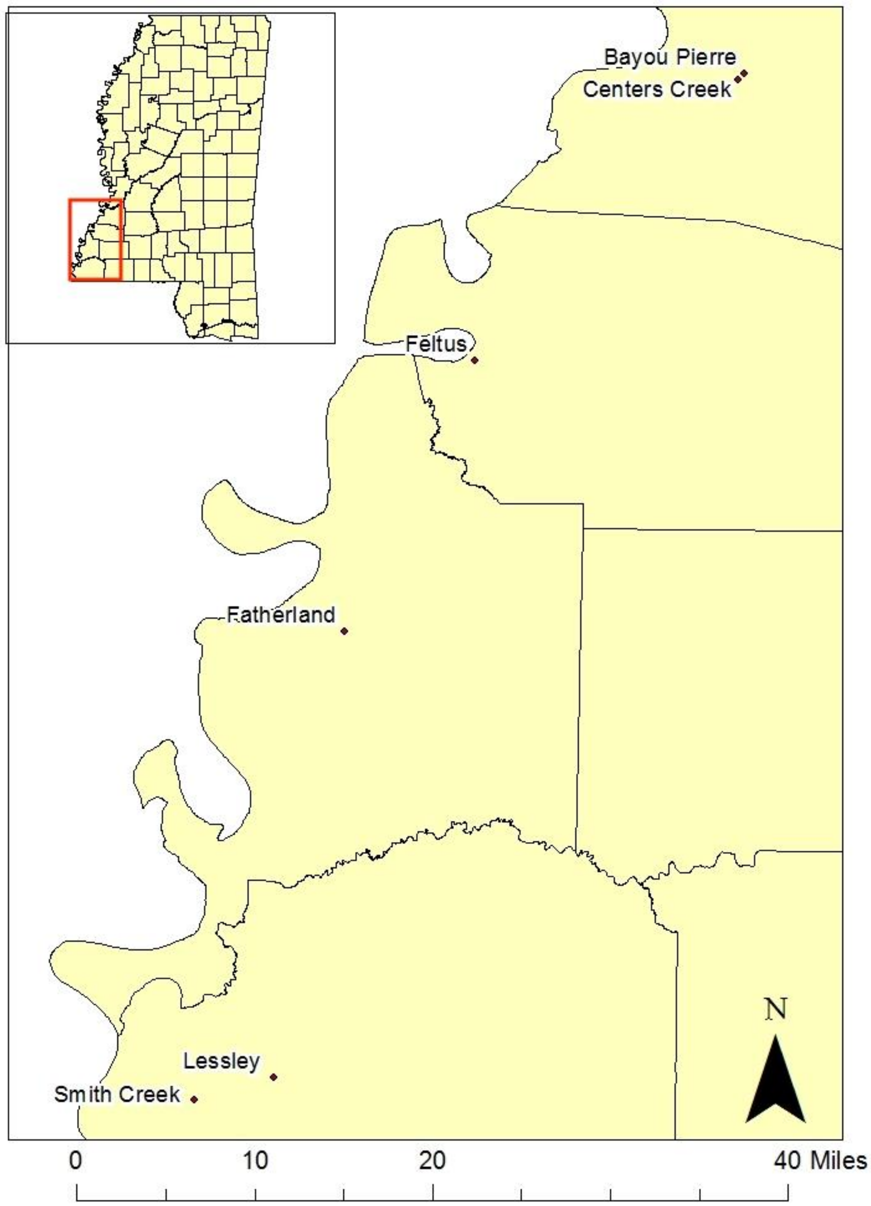

Figure 3.1. Map showing location of project sites.

Table 3.1. Materials from Each Time Period by Site.

Period	Site	Materials
Early and Middle Coles Creek (AD 750–1000)	Feltus	Ceramics, Plant Remains
Early and Middle Coles Creek (AD 750–1000)	Centers Creek	Plant Remains
Early and Middle Coles Creek (AD 750–1000)	Smith Creek	Ceramics, Plant Remains
Late Coles Creek (AD 1000–1200)	Smith Creek	Plant Remains
Late Coles Creek (AD 1000–1200)	Bayou Pierre	Plant Remains
Plaquemine (AD 1200–1682)	Smith Creek	Ceramics, Plant Remains
Plaquemine (AD 1200–1682)	Lessley	Ceramics, Plant Remains
Plaquemine (AD 1200–1682)	Fatherland	Plant Remains

Project Contexts

Feltus (22Je500)

The Feltus site originally consisted of four mounds surrounding an open plaza, though only three mounds remain today. Located in Jefferson County, Mississippi, the Feltus site sits on a bluff overlooking the Mississippi River floodplain. Current archaeological evidence indicates that use of the site likely began during the Baytown period, AD 400–750. The bulk of activity at the site dates to the Coles Creek period, AD 750–1000, with use of the site continuing to a lesser degree into the late Coles Creek and early Plaquemine periods, AD 1000–1500 (Kassabaum 2014; Peles 2022).

The mounds at Feltus were subject to excavations beginning in the late 19th century by Montroville V. Dickinson, with additional excavations occurring in the 1920s and 1970s by Warren K. Moorehead and the Lower Mississippi Survey (LMS), respectively. The most intensive investigation of the site to date began in 2006, under the Feltus Archaeological Project, co-directed by Vin Steponaitis and John O'Hear. From this work, a large portion of the site has been subjected to archaeological investigations in one form or another, including geophysical survey, surface collection, coring, shovel testing, and excavation. Excavations from 2006 and

2019 have focused on the four mound areas as well as the south plaza area (Figure 3.2). Two dissertations and several honors theses have focused on material from the Feltus site (DeMasi 2013; Kassabaum 2014; Patchett 2008; Peles 2022; Williams 2008).

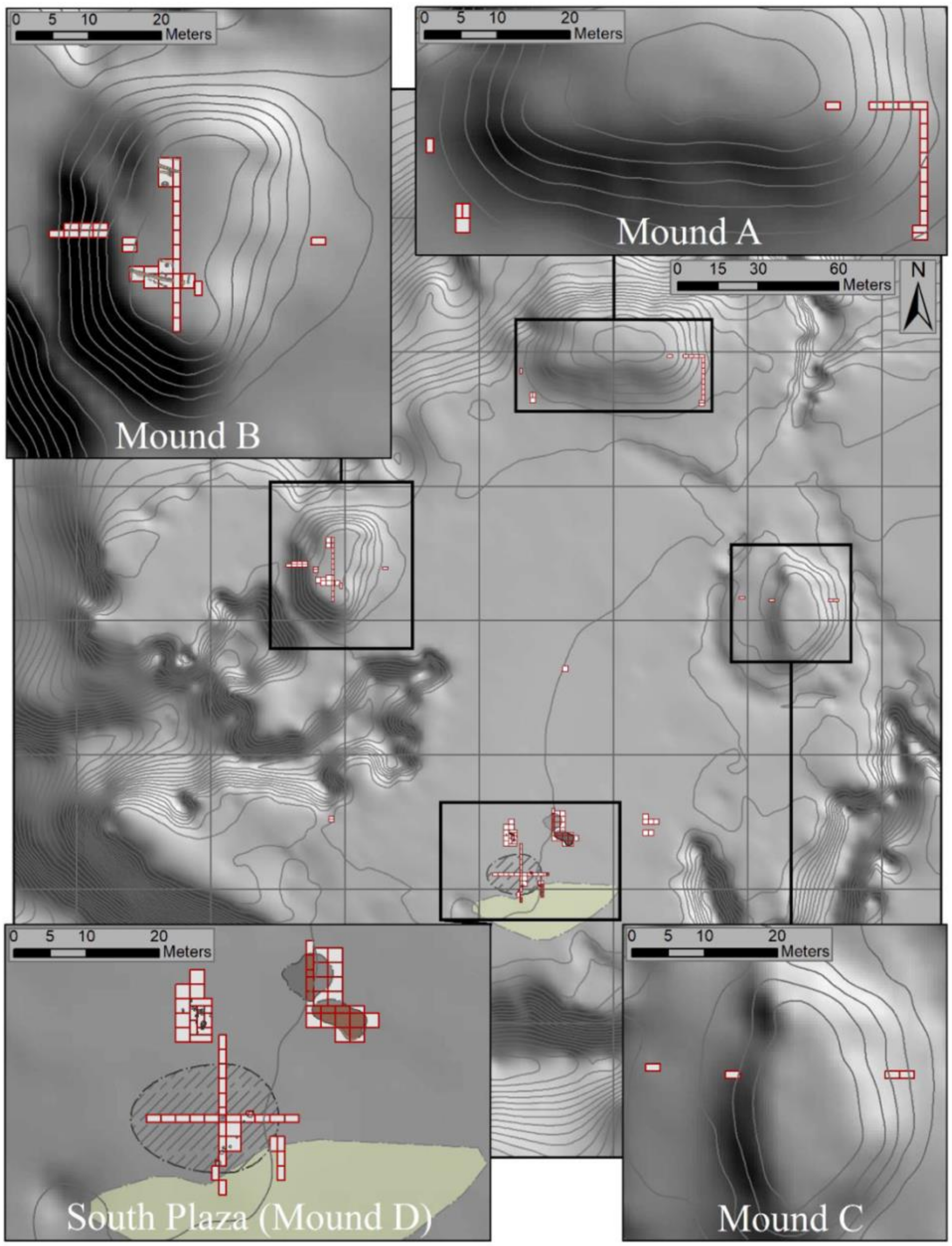

Figure 3.2. Location of 2006–2019 excavation units at Feltus (After Ashley Peles 2022:20, Figure 2.1.)

The Feltus Archaeological Project excavations and subsequent analyses of site materials provide a history of activity at the site. Use of the site likely began during the Baytown period, as evidenced by a ring-shaped midden from that period that encircles the site (Barrier and Kassabaum 2018). Activity at the site intensified during the subsequent Coles Creek period. During this time, the community dug both ceremonial post features and large pits, which may have had a ritual or practical function, in the southern plaza area (Graham et al. 2019; Kassabaum and Nelson 2016; Peles 2022). In addition to these features, the community constructed each of the four mounds in a series of building episodes, regularly gathered for communal meals, buried their dead in at least three of the mounds, and likely conducted other events and ceremonies in the space (Kassabaum 2014; Peles 2022). These activities primarily occurred during AD 700–1100, corroborated by both radiocarbon dates and temporally diagnostic ceramics from these contexts. Plant material from a wall trench structure on the ultimate stage of Mound B has been dated to AD 1204–1276 (Peles 2022). Though there are few diagnostic ceramics that correspond to this period at the site, this date does suggest that at least some activity was ongoing at the site into the early Plaquemine period.

This project draws on materials from Feltus that were analyzed by Megan Kassabaum and Ashley Peles for their respective dissertations, as well as some additional analyses conducted by me. Kassabaum (2014) analyzed all of the ceramics from excavations conducted from 2006 and 2012 and select flotation samples from contexts excavated in 2006–2007. Peles (2022) analyzed additional flotation samples from the 2006–2018 excavations. I analyzed ceramics collected during the 2018 season and also conducted a use-wear analysis on ceramics from the 2006–2018 seasons. Because this project focuses on cuisine, I chose to include only data from midden contexts at the site, though both Kassabaum's and Peles' analyses originally included material from additional context types, including post features and mound surfaces.

The south plaza area contains thick, zoned midden deposits that fill large pit features and extend across the surface of that area. Material from these deposits includes large pieces of ceramic vessels as well as abundant plant and animal remains. Kassabaum and Peles both interpret these deposits as resulting from feasting events. The zoned nature of the deposits indicates feasting events routinely occurred at the site. Material from the lowest of these midden zones has been radiocarbon dated to AD 887–997 and material from the upper zones have returned dates spanning AD 948–1030.

The Mound A area includes two different middens, both of which are pre-construction deposits but likely have different depositional histories. Deposit A1 is a sub-mound midden deposit on the east side of Mound A that has at least two zones. The upper zone is a dense area of material that likely represents a final deposition episode immediately prior to mound construction. The lower zone is an accretional midden deposit that includes areas of surface burning within it. Beneath this zone are post hole features that may represent structures of some type, though no structural patterns have been identified. Material from one of these post features has been dated to AD 889–1030 and mound construction deposits above the two midden zones have been dated to AD 870–997 and AD 882–996, indicating that the midden deposits, and associated activities, were likely occurring during the late ninth or early tenth centuries. The second Mound A midden is A2, a midden deposit on the west side of Mound A. This deposit is a thick, undifferentiated midden zone that includes large pieces of ceramics and abundant plant and animal remains, indicating that it was likely deposited as part of a single event, such as a feast. Material from this deposit has been dated to AD 940–1048.

Mound B has a flank midden associated with the fourth or penultimate mound stage. Large pieces of ceramic vessels and well-preserved plant and animal remains indicate that deposition was relatively rapid and immediately preceded mound construction for the ultimate mound stage. Material has been radiocarbon dated to AD 1077–1155.

To summarize, the Feltus materials included in the analyses of this project come from midden contexts associated with feasting events, with the exception of the lower zone of the eastern Mound A midden, which is more accretional in nature and may represent a domestic deposit. Kassabaum (2014) and Peles (2022) identified patterns within the plant and animal remains between the deposits that likely relate to differences in the types of eating events and activities. The distinctions they identify are important, not least of all because they provide interesting insights on the types of meals within LMV cuisine at this time. However, these differences will not be emphasized here, since this project is focused on the overarching structure of LMV cuisine rather than distinctions between meals or event types within it.

Centers Creek (22Cb518)

Centers Creek is a single-mound site located in Claiborne County. The site sits on a bluff overlooking the confluence of Centers Creek and Bayou Pierre. Current archaeological evidence suggests the site was constructed and used during the Coles Creek period.

Centers Creek was first surveyed by B.L.C. Wailes in 1852. The site was later surveyed though never excavated by several groups in the 1970s, including the LMS as well as the Mississippi Archaeological Survey (Nelson et al. 2013). Archaeological excavations at the site did not occur until the Mississippi Mound Trail (MMT) project in 2013. The objective of these excavations was to date mound construction and use and resulted in two excavation units on the mound. One unit was placed at the base of the western flank of the mound to identify pre-construction activity and date the initial mound stages. The other unit was placed on the summit of the mound to document and date later mound activity. I returned to the site in 2019 with Gracie Riehm and Rob Williams to conduct a coring survey to delineate a midden deposit identified in the summit unit. The survey revealed that the midden deposit extended across the entire mound summit. In 2021, I directed a small crew, which included Autumn Melby, Gracie Riehm, Matt Capps, and Regina Lowe, in the excavation of a one by two meter unit adjacent to the 2013 summit unit in order to obtain a larger sample of the midden deposit for this project (Figure 3.3).

Both the 2013 and 2021 excavations provide insights into the history and nature of site use. Material from the buried A-horizon beneath the mound has been radiocarbon dated to AD 780–892. The buried A-horizon was slightly enriched with burned plant material and some cultural artifacts, but does not represent extensive midden deposition. Excavations indicate that mound construction proceeded in a series of stages across the Coles Creek period. At least two distinct mound surfaces were identified from the summit excavations.

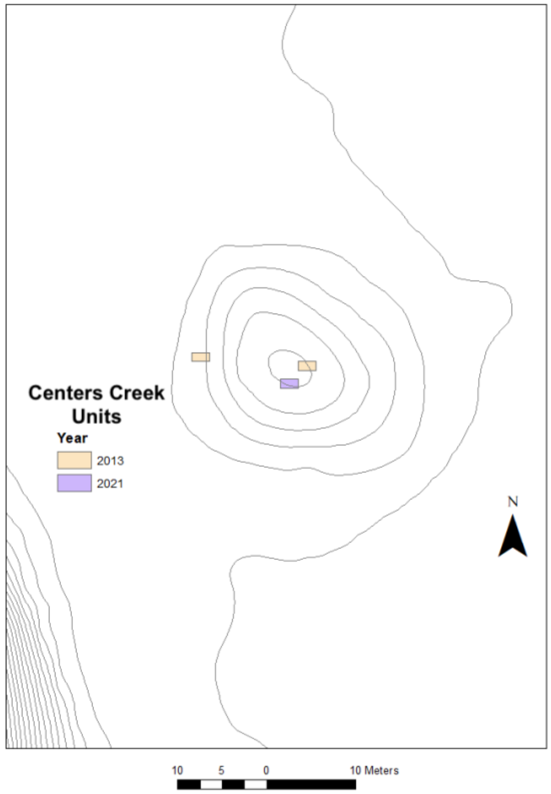

Figure 3.3. Location of 2013 and 2021 excavation units at Centers Creek site.

The lower surface contains a midden deposit roughly ten centimeters thick, areas of surface burning, and a series of post holes. No structural patterns could be identified from the post hole patterns, and these could have resulted from structures, screens, scaffolds, or free-standing posts. Material from the midden deposit yielded two radiocarbon dates: AD 900–1020 and AD 993–1155. The midden contained abundant lithics, fired clay, and burned plant material, as well as a smaller number of ceramics. I speculate that this deposit may have served as a cap for the activity surface containing the post hole features. Due to the small size of the ceramics in the deposit, this midden was likely a secondary deposit on the mound summit, rather than primary feasting debris. The second mound surface consists of two thin veneers and was easier to recognize in the unit profile than during excavation. Material from this surface was radiocarbon dated to AD 770–900 but this date likely represents contamination from older material since this surface sits 30 cm above the midden deposit dated to AD 900–1155.

To summarize, activity at Centers Creek began during the early Coles Creek period with the construction and use of a single mound. Prepared mound surfaces, post features, and surface burning indicate that the mound served as a platform for activities. Materials from the redeposited midden indicate that food consumption and lithic processing were some of the major activities occurring at the site.

The re-deposited midden context was the primary focus for this project. Unfortunately, ceramics from this deposit were too few in number and too small in size to perform a meaningful functional analysis. However, I was able to analyze flotation samples from the midden deposit and associated post hole features. As noted, this deposit likely represents secondary deposition in order to cap the activity surface as part of the next stage of construction. I speculate that this midden comes from mound-related activities, and it may have originally been an accretional deposit representing a series of activities, rather than one large feasting deposit. Though likely representing several different meal types and sizes, the plant remains in this deposit still provide valuable information on the types of foods consumed at mound centers at this time. Additional flotation samples were analyzed from the upper mound surface and the enriched A-horizon beneath the mound.

Bayou Pierre (22Cb534)

Bayou Pierre was originally a three mound site, though only one mound remains today. Located in Claiborne County on a landform overlooking Bayou Pierre, the Bayou Pierre mound site is located a half mile away from the Centers Creek site. Previous investigations, including the MMT survey, have grouped the two sites under the same site number, 22Cb534. However, given the distance between the mounds, it is more likely that these are separate sites. Additionally, archaeological excavations indicate that the Bayou Pierre site is slightly younger than Centers Creek, with an occupation focused in the late Coles Creek to early Plaquemine period. It is possible that there is some overlap in site activity during the Coles Creek period, though.

The site was first mapped by B.L.C. Wailes in 1852 and re-surveyed in the early 1970s by both the LMS and the Mississippi Archaeological Survey (Nelson et. al 2013). Mound C was mistaken for a natural rise in 1978 and removed by road construction crews. Only a small rise remains of the former Mound B, and its original size is not known. MMT investigations in 2013 focused on two areas of Mound A as well as locating the remnants of Mound B. The Mound A excavations included a unit on the northern toe of the mound, as well as a narrow step trench placed from the summit to the base of the mound on the eastern flank. In 2019 I, along with Gracie Riehm, Rob Williams, Sophie Dent, and Gabby Purcell, conducted a coring survey to delineate a flank midden deposit identified in the 2013 step trench excavations. In 2021, I returned, along with Autumn Melby, Gracie Riehm, Matt Capps, and Regina Lowe, to excavate a one by one meter unit placed directly to the north of the area of the step trench where the flank midden was thickest (Figure 3.4).

The majority of information on the history and use of the site comes from the Mound A excavations in 2013 and 2021. Coring and excavation work in 2013 revealed the location of Mound B and indicated that some mound fill was still extant. Diagnostic pottery from the mound fill suggests that Mound B was built sometime during or after the Balmoral phase, but very little else was recovered from these excavations.

Sub-mound stratigraphy of Mound A consists of a truncated buried A-horizon with a roughly five-centimeter-thick deposit of dark brown fill directly on top of it (Kassabaum et al 2014). This layer may represent an intentional deposition to replace or cap the original ground surface, a pre-construction practice noted at several other mound sites across the LMV (Kassabaum and Graham 2021; Sherwood and Kidder 2011). A radiocarbon sample from the buried A-horizon returned a date of AD 224–376, and a sherd of *Alexander Incised* var. *Green Point* was also found in this deposit, suggesting either an earlier occupation at the site or the redeposition of an earlier midden from elsewhere. A thin layer of wash was situated atop of this fill, indicating that the deposit sat open for a while and also that construction of Mound A had begun.

Diagnostic ceramics from the base of Mound A indicate that construction of the mound began during or after the Gordon phase. Excavations indicate at least two major mound fill zones, though these groupings may not account for the total number of construction episodes. The lower mound stage consists of a basket-loaded, heterogeneous fill zone. The 2021 excavations revealed the use of sod-blocks, a style of mound construction that involves blocks of dirt that include intact A, E, and Bt Horizons. This practice has been identified at sites across the Eastern Woodlands dating as early as the Middle Woodland period (Sherwood and Kidder 2011). The sod blocks in Mound A appear to be piled together and may represent a berm, another mound construction technique in which earth is piled together and compressed to form a stable boundary before more earth is added around it. Berms have been identified at several Late Woodland and Mississippian sites across the Southeast (Sherwood and Kidder 2011). A mound surface sat on top of this sod-block fill zone, as evidenced by a flank midden that extends across the eastern side of the mound.

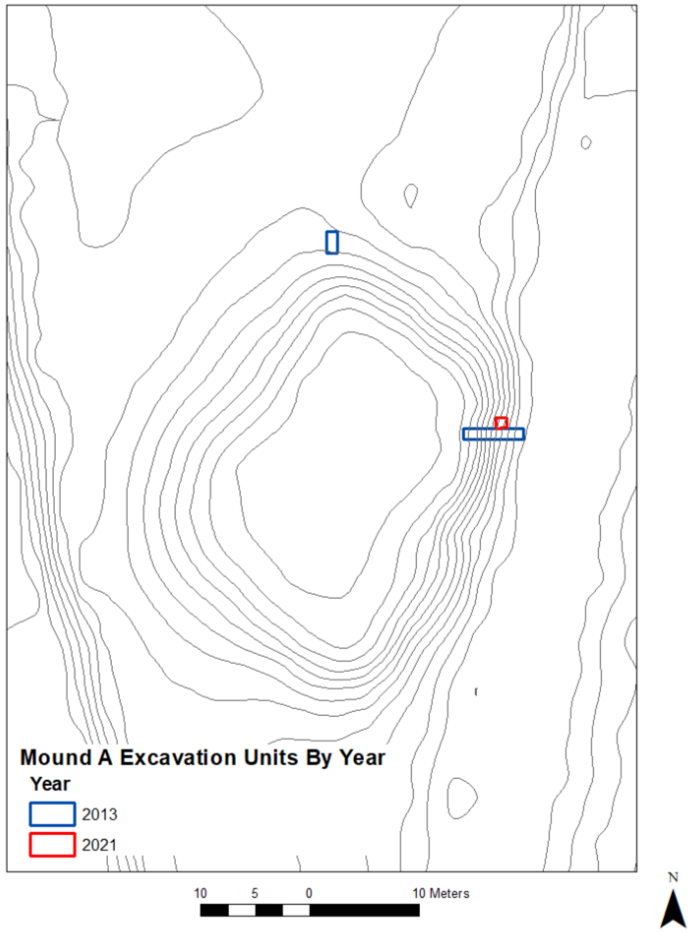

Figure 3.4. Location of 2013 and 2021 Mound A excavation units at Bayou Pierre.

The flank midden has at least two distinct zones, and is of varying thickness, ranging from 25 to 30 centimeters on the upslope portion and tapering to 10 centimeters in the down slope area. The lower zone of the flank midden is a lighter, grayish brown color and contained rich charcoal and burned plant material as well as several large sherds. On top of this layer sits a darker, more organically rich zone of midden that contained abundant charcoal and burned plant material, as well as pockets of ash and fired clay. The zoned nature of the midden deposit likely indicates that the mound surface was in use for some time, generating trash from food preparation, consumption, and other activities that occurred on the mound summit. Interestingly, though plant remains were recovered in moderate amounts, very few animal bones were recovered from these deposits, potentially indicating that animal meat was pre-processed elsewhere before it was consumed on the mound summit. This could also indicate that the surrounding soils were too acidic for post-depositional preservation. A radiocarbon sample from the lower zone of the flank midden produced a date of AD 1044–1222. A radiocarbon sample dated during the MMT project, and likely originating from the upper zone of midden, returned a date of AD 995–1150. Though the dates do not perfectly align, the overlap between them suggests midden deposition and associated mound-top activities occurred across the Gordon phase. Following this, a large, thick mantle was constructed over the midden and mound surface. This zone is a homogeneous, yellowish brown fill zone that significantly increased both the horizontal and vertical footprint of the mound. No excavations have occurred on the summit, and the mantled fill is fairly devoid of artifacts. Therefore, it is unclear what activities occurred on the ultimate mound summit.

To summarize the history of Bayou Pierre, ephemeral activity began in the area as early as the Middle Woodland period. Mound construction likely began during the Balmoral phase, with major construction episodes continuing into the Gordon and possibly Anna phases. Food preparation and consumption activities occurred on the penultimate summit, as indicated by the thick, zoned flank midden. Materials from the flank midden were the focus of this project. A functional vessel analysis was not possible due to the small sample of ceramics. Though large-sized sherds were recovered from the excavations, very few of these were rim sherds, which are necessary to reconstruct vessel shape and size. Flotation samples from the 2013 and 2021 excavations of the flank midden were analyzed. Given the zoned nature of the flank midden deposit, these samples likely represented the remains of several meal events across the use history of that mound summit and may have included larger feasting events as well as smaller meals.

Smith Creek (22Wk526)

Smith Creek is a three-mound site located in Wilkinson County, Mississippi. The site is bordered by Smith Creek on its east side where Mound C is currently eroding down the bluff and by the Mississippi River floodplain on the west side. Activity began as early as the Early Woodland period, though the most intensive periods of activity occurred during the Coles Creek and Plaquemine periods.

The site was surveyed and mapped at several points during the early to mid-twentieth century (Nelson et al. 2013). Two amateur archaeological projects, one targeting Mound B and the other the south plaza, took place during the 1960s–1970s (Nelson et al. 2013; Kassabaum and Terry 2018). The site was included in the 2013 MMT project with units placed on the lower flanks of Mounds A and C as well as in the central plaza. These excavations confirmed that mound construction and overall site use primarily dated to the Coles Creek and early Plaquemine periods. From 2015 to 2018, Dr. Megan C. Kassabaum of the University of Pennsylvania conducted excavations at the site, with the goal of understanding the Coles Creek and Plaquemine periods of activity. Smith Creek is notable for being one of the few excavated sites with a use history that spans the two periods. Kassabaum's project has focused on all three mounds as well as the southern and northeastern plaza areas (Figure 3.5).

The excavations in 2016 and 2018 revealed the Early Woodland occupation of the site through the discovery of a large, circular structure located in the northeastern part of the plaza. The function of this structure remains unclear, though it is likely communal given its large size.

Excavations in the plaza and all three mounds have revealed the Coles Creek history of the site. Table 3.2 lists the radiocarbon dates associated with Coles Creek contexts.

Sub-mound deposits, including middens and enriched buried A-horizons beneath Mounds B and C, indicate that Coles Creek communities used the site before mound construction. Mound construction likely occurred in stages throughout the Coles Creek period. Mound surfaces identified on Mounds A, B, and C indicate that they were likely used as activity platforms for ceremonies and communal consumption activities. Mound A contains a notably thick midden deposit that likely resulted from communal feasts immediately preceding the later stages of mound construction.

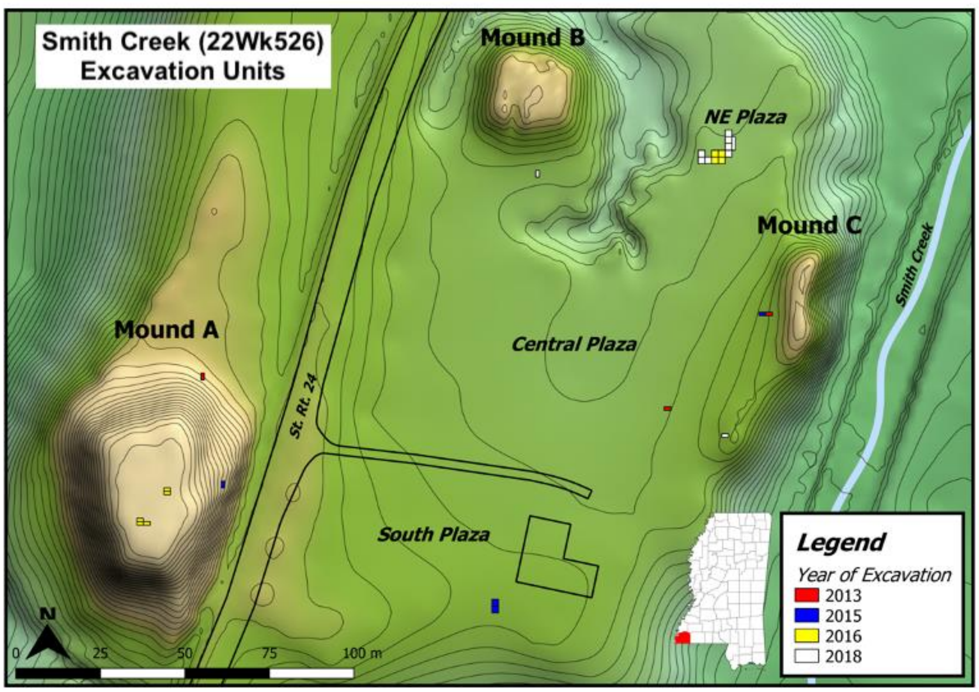

Figure 3.5. Location of 2013–2018 Smith Creek site excavation units.

Table 3.2. Coles Creek Radiocarbon dates from Smith Creek.

Context	Date	Laboratory Number
Mound B Midden	AD 664–770	Beta - 542058
Mound B Buried A	AD 766–898	Beta - 542059
Mound C Buried A	AD 771–884	Beta - 584496
S Plaza Pit	AD 780–985	Beta - 427247
Mound C Midden	AD 780–985	Beta - 427250
Mound A Midden	AD 780–990	Beta - 427249
NE Plaza Lower Midden Zone	AD 820–978	Beta - 584495
NE Plaza Upper Midden Zone	AD 870–992	Beta - 584494
Mound C Surface 3	AD 882–995	Beta - 584493

In the northeast plaza, a thick midden deposit is interspersed with zones of surface burning, and large amounts of pottery, animal bone, fired clay, and charred plant remains were recovered from this deposit. The zones of surface burning and accretional nature of the deposit suggest this was a repeated loci for food-related activities. Mound construction and use occurred across the Late Coles Creek period as well. Surfaces on Mounds A and C have been radiocarbon dated to AD 1000–1150 and AD 1028–1184, respectively. Both of these mound surfaces also have post hole features, which indicate that the mound summits were used as structural platforms at this time. These surfaces are the first indication at the site for the use of the mounds in this way, though it is not known whether the structures were used for ceremonial or domestic purposes.

In the subsequent Plaquemine period, intensive activity was focused in the plazas. Thick midden deposits with large numbers of pit and post hole features cutting through them cover the northeast and southern plazas. Notably, the northeast plaza Plaquemine midden is adjacent to a Coles Creek midden, indicating continued use of the area. Materials from these middens have been radiocarbon dated to AD 1295–1404 and AD 1300–1415 for the northeastern and southern deposits, respectively. The large number of features and the material types seen in the midden deposits indicate that these were likely used as residential areas.

To summarize, the Smith Creek site was the focus of communal activity beginning in the Early Woodland period and then again during the Coles Creek and early Plaquemine periods. During the Coles Creek period, the community used the site as a gathering space to feast, construct the mounds, and perform other ceremonies. In the Late Coles Creek period, mound-top activities shifted to include the use of structures of some type. Finally, in the Plaquemine period, use of the site further shifted to include a residential population.

For this project, I analyzed ceramics and flotation samples from select contexts excavated during the 2015–2018 seasons. Because of this project's focus on cuisine, I focused on materials and samples from midden contexts, though I also included some mound surface and feature contexts. For the Coles Creek period, my analyses included samples from the culturally enriched buried A-horizon deposits beneath Mound B and C, the mound surfaces and middens within those mounds, the thick midden within Mound A, and the midden deposits in the northeast plaza. Together, these contexts provided a large sample of both ceramic and plant materials. The Late Coles Creek period contexts at the site are primarily mound surface or feature contexts. These contexts yielded flotation samples that were analyzed for this project, but the ceramics from these contexts were not large enough for a functional vessel analysis. From the Plaquemine period, both ceramic and plant remains were analyzed from the large middens in the northeastern and southern plaza areas.

Lessley (22Wk504)

The Lessley site is a single mound site located in Wilkinson County. The site is adjacent to Percy Creek and is located about five miles northeast of the Smith Creek site. Archaeological evidence suggests that activity at the site began during the Late Coles Creek period, though the primary periods of activity occurred during the Anna and Foster phases of the Plaquemine period.

Lessley was first identified as an archaeological site in the late 1960s by Fred Kniffen of the Louisiana State University Archaeological Survey and was subsequently surveyed in the 1970s by William Hony of Mississippi State University (Nelson et al. 2013). The site did not receive any formal excavations until the 2013 MMT project. As with the other sites included in that project, the goal of the MMT excavations at Lessley was to define the history of site use. The mound at Lessley contains a historic family cemetery across most of the summit, as well as some unmarked graves around the base of the mound, which limited where units could be placed. Two units were placed on opposite flanks of the mound, one on the southeast flank and the other on the northwest flank. I conducted a coring survey in the summer of 2018 and spring of 2019, with the assistance of Gracie Riehm, Meg Kassabaum, Gabby Purcell, and Sophie Dent. The goals of this survey were to explore the extent of the sub-mound midden identified under the northwest flank during the 2013 excavations as well as to identify any other potential mound surfaces or midden deposits on the flanks and summit area outside of the cemetery. In the summer of 2019, excavations were conducted by a crew from the University of Pennsylvania, led by Meg Kassabaum with me serving as field director. These excavations opened new test units on either side of the 2013 northwest unit, a two by two meter unit ten meters to the south of those units, and a one by two meter unit on the northwest corner of the summit (Figure 3.6). Sub-mound deposits at Lessley include a midden deposit that sits on top of a truncated buried A-horizon.

In some areas, it appears the buried A-horizon is mostly or entirely removed, similar to what was seen at Bayou Pierre. The midden deposit is about ten centimeters thick and contained pottery, charcoal, lithic material, and fired clay. Post holes and a small hearth feature were encountered within or cutting through the midden. No structural patterns were identifiable from the post holes, and these may relate to structures, free standing posts, scaffolds, and/or screens. Overall, the presence of post holes and the small size of the material in the midden suggest this was an accretional deposit, rather than an event-specific deposit. Two radiocarbon samples have been dated from this deposit; the first is AD 1166–1268 from a hearth feature within the midden and the other is AD 1260–1295 from material within the midden deposit generally. These two dates suggest that activity at the site began in the Gordon phase and continued into the Plaquemine period, preceding the construction of the mound. The wash and midden layers are capped with a grey fill deposit that is not consistent across the entire area. This deposit is somewhat enriched with cultural material, and it is unclear whether this represents a less organically rich midden deposit or was meant to serve as an initial mound fill cap for the midden deposit. Above this are two recognizable mound construction zones, though these may relate to more than two construction episodes. The lower zone is a heterogeneous, basket-loaded fill zone that contains evidence of construction berms, similar to what was described at Bayou Pierre. Unlike Bayou Pierre, these berms were not constructed with sod blocks but with a homogenous dirt type. The upper fill zone is a homogenous, mantled fill zone. During the 2019 season, we also opted to place a unit on the northwest corner of the mound summit. This area was safely outside the cemetery fence, ensuring that we would not disturb any historic burials during excavation. Our goal with this unit was to gain insights into summit activity and use history. This unit revealed two major construction zones as well as a mound surface and small midden deposit. The mound surface has a slightly diffuse bottom border that is reminiscent of A-Horizon soil development. Meg Kassabaum and I (2020) have speculated that this may be A-Horizon formation and indicative of a break in construction that allowed for soil formation to occur on the mound.

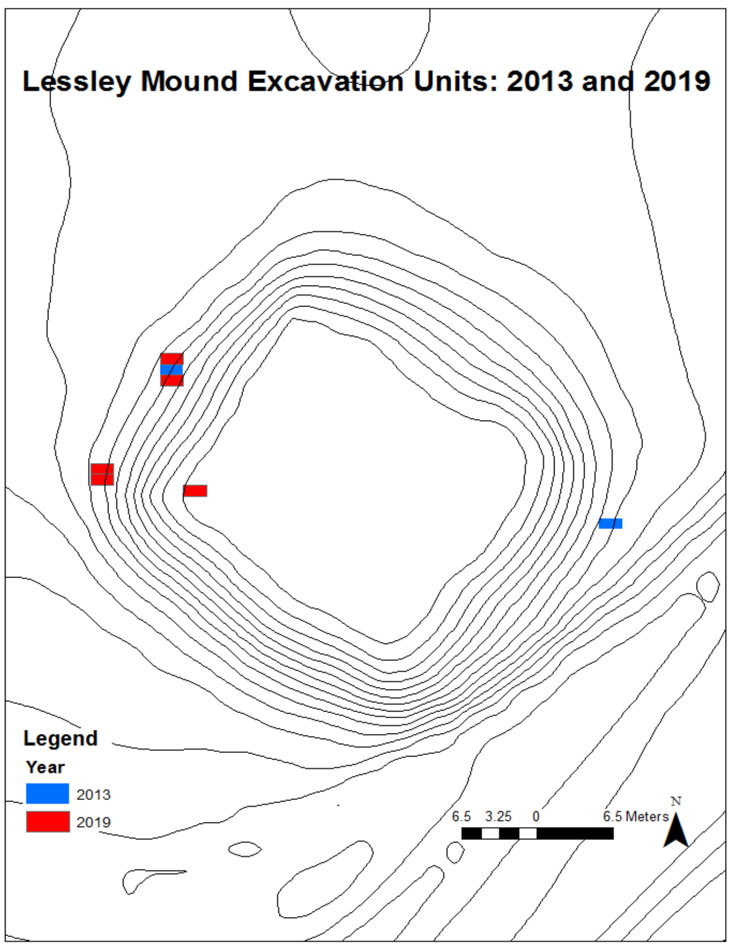

Figure 3.6. Location of 2013 and 2019 excavation units at Lessley.

Features were encountered both above and beneath this mound surface. Immediately beneath the surface was a burned area that likely represents an expedient hearth, fire feature, or general surface burning. Slightly above the surface, and part of the next mound fill layer, was a small surface midden. The midden contained large pieces of pottery as well as burned plant remains. It is unclear whether the midden represents in-situ or secondary deposition, but given the large size of the pottery pieces, it likely originated from consumption activities occurring nearby if not on the summit. Material from this midden has been radiocarbon dated to AD 1432–1520. Though no post holes or other structural features were identified in this unit, indirect evidence suggests that there were structures on the mound summit. Cane-impressed daub was regularly encountered in the mound fill of both the summit and flank units.

In summary, activity at the site began during the late Gordon phase with the deposition of a midden and the construction and use of structures. This activity continued into the early Anna phase when mound construction began, ultimately covering up the living surface. Construction and use of the mound continued into the Foster phase and likely involved at least one summit structure. Ceramic and plant remains from both the sub-mound midden, features, and summit midden deposits were analyzed for this project. The depositional nature of these two contexts is somewhat distinct, as the sub-mound midden deposit likely represents an accretional, domestic deposit and the summit midden relates to event-specific activities occurring on or around the mound summit. However, both provide useful perspectives on the content of cuisine.

Fatherland (22Ad501)

The Fatherland site is a five-mound site, best known for being the location of the Grand Village of the Natchez Indians visited and recorded by French colonists in the 1700s. The site is adjacent to St. Catherine's Creek in Adams County. Significant flooding by St. Catherine's Creek during the nineteenth century completely buried Mounds D and E and covered significant portions of Mounds A, B, C, and the plaza area in meters of alluvial silt.

Early excavations at the site occurred in 1930s by Moreau Chambers and focused on Mounds A, B, and C. Additional excavations at the site occurred during the 1960s and 1970s under the direction of Robert S. Neitzel (Neitzel 1965, 1983). Neitzel's excavations again concentrated on Mounds A, B, and C, as well as the plaza areas surrounding them. These excavations also revealed the extent of the alluvial deposition across the site. In 2019, a group from the University of Mississippi, led by Dr. Tony Boudreaux, undertook geophysical survey and excavations at the site with the goal of relocating features related to the battle fought between the Natchez and French during the Natchez War in 1730 (Boudreaux and Harris 2022; Brown and Steponaitis 2017). Though this project did not ultimately identify any battle related features, it did identify the locations of the two missing mounds, Mounds D and E (Figure 3.7). A fair amount is known about the Fatherland site, both from French documents and the excavations by Neitzel and Boudreaux. According to French sources, during the historic period the mound site functioned in part as a residence for a principal chief and other elites. The site was also used as an event space for feasts and ceremonies that occurred at least monthly and involved the wider community (Le Page du Pratz 1758). Neitzel's excavations confirmed the use of the site as an elite residential and ceremonial space and also determined that the mounds were first built and used during the Foster phase. Only the final stages of each mound appear to have been constructed and used during the historic period. His work also identified dense midden deposits and structural remains, likely related to residential and ceremonial buildings, on the three mounds as well as in the plaza area (Neitzel 1965, 1983).

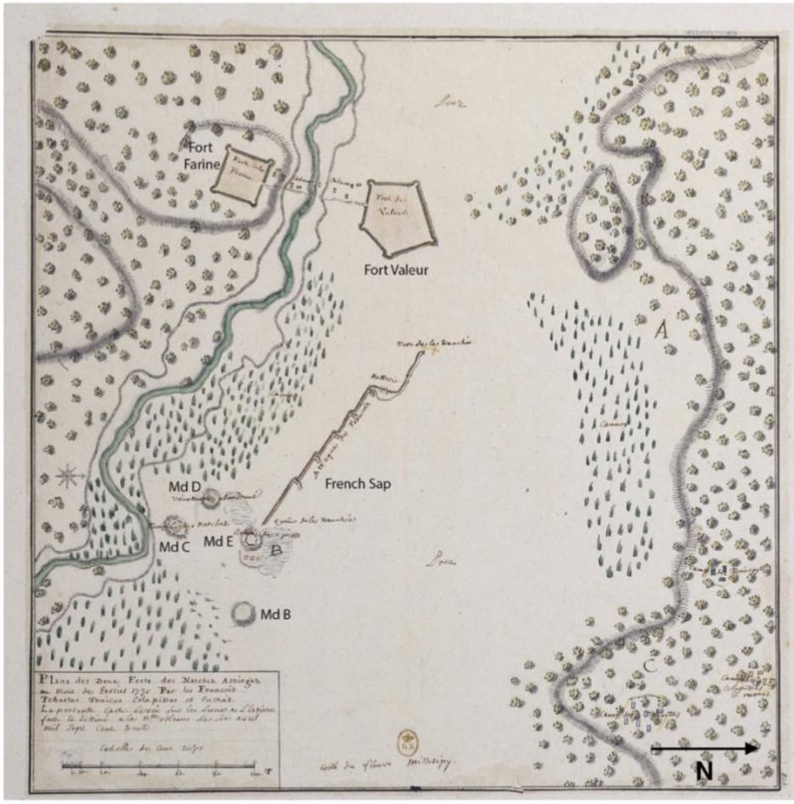

Figure 3.7. Anonymous map from 1730 showing the location of four of the Fatherland site mounds (Mounds B, C, D, E) as well as the location of the battlefield between the French and the Natchez (after Boudreaux and Harris 2022:10, Figure 1.2).

The 2019 excavations concentrated, in part, on Mound E with units placed on the summit and near the toe of the mound. The summit unit revealed a wall trench on the ultimate mound summit. As only a one by two meter unit was opened in this area, it is unclear how large the building was or how it functioned. Material from the wall trench has been radiocarbon dated to AD 1405–1450. Excavations at the toe of the mound identified a flank midden deposit made up of at least three distinct zones. The midden contained a dense amount of material including large pieces of pottery, animal bone, and plant remains. Material has been radiocarbon dated from each of the three zones, with the lowest zone returning a date of AD 1396–1495, the middle zone AD 1427–1635, and the upper zone AD 1454–1647 (Boudreaux and Harris 2022). These dates indicate that Mound E was primarily used during the Foster phase, aligning with the use history Neitzel identified for Mounds A, B, and C.

Flotation samples from the flank midden deposits and the wall trench feature were analyzed for this project. The flotation samples from the middens were particularly rich and likely represent the remains of communal feasting events, but they may also represent remains from smaller meals or events that occurred on the mound summit. The samples from the wall trench are smaller, and provide some indication of the activities that occurred on the mound summit.

Summary

This dissertation draws on plant and ceramic material from contexts at six different sites across the Natchez Bluffs. The majority of these sites contain deposits from just one temporal period, e.g., Coles Creek (AD 750–1000), Late Coles Creek (AD 1000–1200), or Plaquemine (AD 1200–1500). One site, Smith Creek, has deposits from all three periods. Smith Creek thus represents a rare opportunity to examine Coles Creek and Plaquemine deposits from the same site with seemingly no break in activity across those periods. Overall, there are plant and ceramic materials from at least two sites for each temporal period that make it possible to compare community food patterns across time. My intent in analyzing materials from multiple sites from each time period was to determine whether there were overall regional patterns to food use which would indicate a shared cuisine. I also sought to compare patterns through time to investigate how communities integrated maize into existing food practices and routines. By comparing plant and ceramic data across both space and time, the rest of this dissertation examines whether there is evidence for a shared cuisine for communities across the Natchez Bluffs.

CHAPTER 4: PLANTS

Ingredients are often the most recognizable and memorable elements of cuisine. Rozin and Rozin (1981) refer to this as "the flavor principle" and argue that distinct ingredients are what gives regional cuisines a style and identity. Comparing Greek and Italian cuisine, Rozin (1973) notes that despite geographic proximity, similar climate and agricultural systems, and even shared ingredients, the cuisines of the two countries are distinct due to the combinations of particular ingredients to form signature flavors and dishes. Indeed, specific foods often become symbolic of both cuisines and the cultural groups behind them, such as rice in Japan (Ohnuki-Tierney 1993). Repeated, daily use serves to form strongly held preferences that eventually lead these particular foods to become symbolic of identity (Smith 2006; Weismantel 1988). Of course, ingredients alone do not comprise cuisine; the preparation methods and social settings in which foods are prepared and served contribute equally to defining these structures. However, identifying the ingredients of a cuisine, as well as the proportions and combinations they are used in, is important to understanding the foundations of that cuisine. My project reconstructs some of the plant food ingredients of Natchez Bluffs cuisine using archaeobotanical methods.

Archaeobotanists have used plant remains to study many aspects of community foodways, including production, preparation, consumption, and discard. Studies of plant morphology, such as seed coat thickness, have been used to indicate that people domesticated particular species (e.g., Smith 1985; Mueller 2017a). Plant and spatial data have been combined to identify processing areas, based on high frequencies of discarded remains, such as wheat chaff and corn cupules (e.g., Scarry and Steponaitis 1997; van der Veen 2007b). Remains from consumption events have also been studied to determine group size and relationship, illustrating how plant remains can signal integrative vs. distinctive events (Jackson et al. 2016; Pauketat et al. 2002; VanDerwarker et al. 2007; van der Veen 2007a). Archaeobotanists have also investigated questions of identity within and between groups. Plant data have been used to show how people maintain distinct identities, such as elite and non-elite (e.g., Hastorf 2001; van der Veen 2007a), and have also highlighted how food use can create a collective identity (Bush 2004; Egan-Bruhy 2014; Gasser and Kwiatkowski 1991; Oas 2019). In many cases, food is used to maintain and symbolize a collective identity in a changing world (Bonhage-Freund et al 2002; VanDerwarker et al. 2007) while in other cases, people adopt different food use patterns in order to fit into a new community (Calentine and Simon 2006).

In this chapter, I present Natchez Bluffs plant foodways before, during, and after the adoption of maize. Identifying what communities were consuming prior to the adoption of maize is a necessary first step to understanding how maize fit into existing subsistence patterns. By examining plant food patterns from various points in time, I have three main goals. The first is to establish a baseline for the plant food portion of Natchez Bluffs cuisine before the introduction of maize. Questions that inform this goal include: what plant foods were people at each site consuming? How variable was that between communities? Can overarching similarities be identified that could be considered the basis of a regional cuisine? The second goal is to further investigate the introduction and intensification of maize in the LMV from a Natchez Bluffs perspective, since it has only previously been examined in the Tensas Basin. Questions that inform this goal include: When was maize first introduced into the region? Did maize use follow a similar pattern to the Tensas Basin where there was a span of several centuries between introduction and intensification? Where and how was maize initially used and did its use change? The third goal is to examine whether the use of other plant foods changed following the adoption and later intensification of maize. Did the use of other plant foods change? Specifically, did the use of certain plant foods decline? Were other plant foods added?

In the following sections of this chapter, I attempt to answer those questions. I first provide a detailed literature review on previous archaeobotanical studies for the region. Next, I discuss the methods used to collect the plant remains from the field, identify them in the laboratory, and statistically analyze and compare the resulting datasets. I then review the common plant species identified, with information on their frequency in the assemblages, ecology, and possible uses. Following this, I present the results from each site along with statistical comparisons both between sites and between overall time periods. I end by discussing plant food use for each time period, highlighting temporal patterns identified through my analyses.

Early and Middle Coles Creek Period Plant Food Use (AD 750–1000)

Until Kassabaum's (2014) dissertation, the primary data on Coles Creek plant food use were from sites in the Tensas Basin in Louisiana (Fritz 2008a; Fritz and Kidder 1993; Kidder and Fritz 1993; Roberts 2006). This work established that Coles Creek communities in that region primarily subsisted on arboreal resources, such as acorns, pecans, and persimmons. Small, starchy native seeds, such as maygrass and chenopod, were also used in low to moderate quantities and primarily in their wild form. There is evidence that some communities engaged in cultivation during this period, as domesticated varieties of chenopod have been identified (Fritz 2000). However, only a small number of these were identified, indicating that communities were primarily practicing small-scale horticulture alongside intensive gathering. Fritz (2007) has also suggested that communities may have engaged in some form of management of fruit and nut trees.

Subsequent work at Coles Creek sites across the river in the Natchez Bluffs indicated that there was some regional variation to subsistence patterns. As demonstrated by Kassabaum (2014) and Peles (2022), members of the Coles Creek community at Feltus produced and consumed larger numbers of starchy native seeds, including chenopod, amaranth, maygrass, and knotweed, as compared to Tensas Basin communities. Scanning electron microscopy measurements of chenopod seed coats indicate that they cultivated domesticated varieties of this plant. The community also consumed gathered nuts and fruits alongside wild and cultivated native seed plants.

It should be noted that the majority of Coles Creek sites where archaeobotanical work has occurred are mound sites, which are interpreted as communal event spaces. Further, many of the analyzed contexts from these sites have been argued to represent feasting deposits (Kassabaum 2014; Roberts 2006; Wells 1998). Archaeobotanical samples have been analyzed from a few non-mound sites, all from the Tensas Basin. Comparative studies of these sites with mound sites have indicated that communities consumed more or less the same types of plant foods in both domestic and mound center spaces (Fritz 2008a; Roberts 2006). The quantities of foods seen at mound centers are often much larger than those seen at non-mound sites, as to be expected with communal rather than domestic consumption.

Late Coles Creek Period Plant Food Use (AD 1000–1200)

Maize was first introduced into the region during the Balmoral phase (AD 1000–1100) of the Late Coles Creek period. Early maize remains have been identified from contexts dating to that phase from several sites in the Tensas Basin (Fritz 2007, 2008a; Kidder and Fritz 1993; Roberts 2006). During this phase it was used in low amounts, occurring in low densities compared to other subsistence remains (Fritz 2007; Roberts 2006). Subsequently, maize use intensified, though the timing of this intensification is unclear. Fritz (1998, 2000, 2007) has repeatedly identified AD 1200 as the point when intensification occurs, comparing the lower densities of maize, which range from 0.12 to 1 remain per liter, from several Late Coles Creek period sites, with the much higher densities seen at Plaquemine period sites, which are between 2.81 and 9.3 remains per liter. However, a high density of maize remains has been reported from Lake Providence, a Preston phase (AD 1100–1200) mound site (Roberts 2006). This may indicate that maize intensification began earlier for some communities in the LMV than for others. Before this dissertation, no archaeobotanical samples had been analyzed from Balmoral or Gordon phase (AD 1100–1200) contexts in the Natchez Bluffs.

In addition to maize, communities also continued to consume large amounts of nuts. Nuts make up similar quantities of the overall food assemblage in Late Coles Creek contexts as compared to Early Coles Creek assemblages. At some sites, such as Hedgeland and Birds Creek, native starchy and oily seeds are present in low frequencies (Lee et al. 1997; Roberts 2006). However, at Lake Providence, starchy seeds appear in more moderate amounts, indicating some regional variability in plant use (Roberts 2006). Notably, maize also appears in larger quantities at Lake Providence than at Hedgeland and Birds Creek, which may indicate different food production investments or strategies.

Plaquemine Period Plant Food Use (AD 1200–1500)

Plaquemine foodways are distinguished from those of previous periods by an increased reliance on maize. Archaeobotanical samples have been analyzed from Plaquemine contexts at several sites in the Tensas Basin, including both mound and non-mound sites (Fritz 2007, 2008a; Roberts 2006). Alongside maize, communities continued to consume nuts, starchy seeds, and fruits. While nut and fruit consumption remained fairly high, Tensas Basin communities consumed far fewer starchy seeds than in previous periods (Fritz 2007; Roberts 2006). Furthermore, the starchy seeds are primarily wild types, indicating that communities preferred to gather these plants rather than cultivate them alongside maize (Fritz 2007).

The Transition to Maize Agriculture

Previous studies of plant food use in the LMV have focused almost entirely on the rise of agriculture. This focus stems, in part, from assumptions that the complex culture of the late prehistoric LMV, as symbolized by the construction and use of earthen platform mounds, must have been fueled by agricultural products (Brain 1978, 1989; Fritz and Kidder 1993; Kidder 1992; Willey and Phillips 1958; Williams and Brain 1983). The LMV was then assumed to be an early center of plant domestication and/or maize adoption. Kidder and Fritz (1993) sought to investigate these assumptions through a subsistence-focused project in the Tensas Basin. This work resulted in the first data-backed understanding of Coles Creek and Plaquemine plant food use, including much of what was discussed in the sections above. One major revelation from this work was the depth of time, several hundred years, between when maize was first introduced and when it began to be intensively produced and consumed. Subsequent work by both Fritz (1998; 2000; 2008a) and Roberts (2006) has focused more explicitly on explaining this time gap.

Fritz, building on arguments proposed by several other researchers for other parts of the Eastern Woodlands (Bender 1985; Hall 1980; Scarry 1993), has suggested that maize may have first had ritual associations and that its appearance in low quantities may relate to elite control of the plant. As part of this argument, Fritz (1998) cited the co-occurrence of maize and tobacco in a small, mound-top pit dating to this early period as evidence for special use of the plant. Over time, though, elite demand and competitive events required greater quantities, which expanded both production and consumption.

Roberts (2006) proposed a different framework, focusing on environmental rather than social conditions. She argued that the richness of the LMV ecosystem, enhanced by the temperate climate that allowed for longer growing seasons, provided more than adequate availability of both wild plant and animal resources. This proposal builds on work by Gremillion (2002) that relates early and intensive maize investment to local climate, correlating cooler climates with a greater need for agricultural surplus. Following principles of Optimal Foraging Theory, Roberts contended that people in the LMV had no need for a labor-intensive plant like maize when they already had abundant, readily available wild resources. She speculates that it was only after large population expansion and/or environmental decline that communities were compelled to invest more heavily in maize agriculture.

Compared to other regions in the Eastern Woodlands, the LMV continues to be distinct in its time lag between introduction and intensification of maize. Current understanding holds that maize was introduced into the Eastern Woodlands from the Midwest, by way of the Southwest, sometime between AD 900–1000, quickly spread throughout the region, and in most areas became a staple crop shortly after communities encountered it (VanDerwarker et al. 2017; Simon et al. 2021). Researchers had previously believed maize was introduced much earlier, during the

Middle Woodland period, and that it slowly spread across the region, eventually becoming a staple crop between AD 900–1000. However, a recent re-analysis and re-dating project by Simon and colleagues (2021) has determined that none of these early examples are viable, either because they represent later contaminants to early contexts or because they are not maize. This work demonstrates that the adoption of maize as a staple crop was a much quicker process in much of the Eastern U.S. than previously presumed.

Despite similarities in the timing of maize adoption and intensification, research from the various culture areas of the Eastern Woodlands continues to demonstrate that other aspects of the adoption process were more variable (Scarry 1993; VanDerwarker et al. 2017). One notable difference is the impact maize had on the use of existing plant food resources. In the Black Warrior River Valley in Alabama, communities began to consume fewer wild resources, such as nuts and starchy seeds, after the addition of maize (Scarry 1986, 1993). In the American Bottom, communities added maize to an already intensive cultivation system centered on the small starchy seeds of the Eastern Agricultural Complex, which they maintained despite growing reliance on maize (Fritz 2019; Johannessen 1993). These examples highlight that, despite similar timing, the adoption of maize was still a local process. Groups adopted maize under different circumstances and made community-specific choices with regards to its place within existing subsistence patterns.

Sample Contexts and Methods

This project includes plant data from early Coles Creek contexts at Feltus, Centers Creek, and Smith Creek, from Late Coles Creek contexts at Bayou Pierre and Smith Creek, and from Plaquemine contexts at Smith Creek, Lessley, and Fatherland. The plant samples analyzed in this project primarily come from midden deposits, mound surfaces, and post hole and pit features. Midden deposits include primary depositions associated with single events, such as feasting deposits, accretional feasting or special event deposits, accretional domestic deposits, and secondary midden deposits that likely originated from both domestic and special events. Overall, several meal types are likely represented across the contexts sampled.

This project concerns cuisine from an overall structure perspective, which includes all meal types from snacks to daily meals and from communal feasts to socially exclusive consumption. Cuisine dictates both why and how these meals types are distinct, as well as dictating what the commonalities are between them. For the purpose of analysis, I chose to lump samples together by temporal context. In doing so, I am considering the full spectrum of cuisine behaviors to discuss what they indicate about the overarching structure and overall identity of cuisine. Archaeologists have distinguished feasting contexts from domestic contexts through types and amounts of plant remains consumed, among other things (Kassabaum 2019; Pauketat et al 2002; Van der veen 2007a; Welch and Scarry 1995). In the Eastern Woodlands, scholars have recognized that for some communities it is the amount of food that varies between types of contexts, more than the types of food (Pauketat et al. 2002; VanDerwarker et al 2007). Previous studies of LMV sites have also indicated that similar types of plant foods are consumed at both domestic sites and mound sites and between accretional contexts and event-specific ones (Kassabaum 2014, 2019; Roberts 2006). This suggests that the core ingredients of LMV cuisine are fairly consistent across event types. Furthermore, this indicates that combining event contexts in my analyses will not affect my ability to identify cuisine markers.

Taphonomic Considerations

The plant remains for this study are all carbonized plant remains and it is important to consider that these only represent one portion of the plant foods consumed by Natchez Bluffs communities. As a number of scholars have highlight, many factors affect the preservation of plant remains in the archaeological record (Gallagher 2014; van der Veen 2007b; Wright 2010; Yarnell 1982). As noted by Wright (2010:42), “where, when, and how a plant resource enters the record is dependent on the specifics of each succeeding decision” from acquisition to deposition. Processing and consumption methods can particularly bias not only what is preserved but also whether it is recognizable. Seeds and nuts that are pulverized or ground into flour will not be preserved in a recognizable way (Yarnell 1982). Foods such as fruits, where the seed is consumed, are also likely to be under represented in an assemblage (Gallagher 2014; Yarnell 1982). Plant remains subjected to heat and that subsequently carbonize or char tend to preserve well, though the carbonization process can often pop, twist, or shrink remains into unrecognizable forms (Gallagher 2014). Carbonized remains tend to result from several circumstances, including intentional burning, such as with wood and other fuel sources, casual or incidental burning, which tends to include nutshell and other remains that may be used as kindling, cooking accidents, such as parched seeds escaping a pot, and/or through unintentional charring, such as when charcoal embers are placed in a midden (Gallagher 2014; van der Veen 2007b). Furthermore, carbonization best preserves denser remains, such as nutshell or seeds, than it is does leaves or fibers (Gallagher 2014). While a focus on carbonized remains surely biases our perspective towards certain foods over others, archaeobotanists agree that we are still gaining information about important plant resources, particularly when samples have been recovered properly and/or from undisturbed contexts (van der Veen 2007b; Yarnell 1982).

Field Recovery

The majority of the plant remains used in this study were recovered as part of flotation samples taken during excavation. The samples ranged from <1 liter to 33 liters, but in most cases were standard 10-liter soil samples. All of these samples were processed using a modified SMAP-style flotation that produced both a light and heavy fraction. For some contexts, plant remains were also identified from water screen samples. In these instances, soil from these contexts was processed using water through both ¼" and 1/16" screen sizes. The charcoal from the 1/16" portion was then separated from the other materials using a bucket flotation process, resulting in light and heavy fraction portions similar to the SMAP-style recovered samples. Specific information about sample context, type, and volume can be found in tables in the subsequent section on results from each site.

Laboratory Methods

Samples were analyzed either in the Richard Yarnell Laboratory at University of North Carolina at Chapel Hill (UNC) or in the Center for the Analysis of Archaeological Materials at the University of Pennsylvania. Information on the analyses of the Feltus samples can be found in Kassabaum (2014) and Peles (2022). Ally Mitchem (2016) and Justin Reamer sorted a small number of samples from Smith Creek, and these samples were subsequently checked by me for consistency. I analyzed all the remaining Smith Creek samples, as well as the samples from Centers Creek, Bayou Pierre, Lessley, and Fatherland.

Light fractions of both flotation and water screen samples were first weighed, and larger samples were subsequently subsampled. All samples were separated into >2 mm, >1.40 mm,

>0.710 mm, and <0.710 mm fractions using geologic sieves. Each of these fractions was then examined using a low-powered microscope. The >2 mm fractions were completely sorted. Wood charcoal was separated and weighed. Nutshell, seeds, and other plant parts were separated, identified, counted, and weighed. Modern plant material, such as roots, twigs, and seeds, were separated, weighed, and discarded. Finally, any archaeological material encountered, such as animal bone, fired clay, lithics, or ceramics, were separated out. For the >1.40 mm fraction, nutshell, seeds, and other charred plant remains were also completely sorted out, identified, counted, and weighed. The bottom two fractions, >0.710 and <0.710 mm, were both scanned and seeds were sorted out, identified, counted, and weighed. For the heavy fractions of flotation samples, charred plant material was first sorted out, then separated into wood charcoal, nutshell, seeds, and other plant parts. Wood charcoal was weighed and all other plant remains were identified, counted, and weighed. Charred plant materials were not sorted out of the heavy fractions of water screen samples. Identifications were made to the lowest taxonomic level possible, with assistance from modern comparative specimen collections and a seed identification manual (Martin and Barkley 1961). Dr. Margaret Scarry provided assistance with unusual identifications. In instances where specimens could not be confidently identified, they were given the label cf., unknown, or unidentifiable.

Some of the chenopod seeds were selected to be viewed using a Scanning Electron Microscope (SEM). High-powered microscopy, such as SEM, allows for precise measurements of seed coat thickness, which is necessary to determine the domestication status of specimens. Domesticated varieties of chenopod develop a thinner seed coat morphology, with seed coats ranging from 9 to 21 microns (Smith 1985). Specimens were mounted, coated, viewed, and measured at the UNC-Chapel Hill Analytical and Nanofabrication Laboratory (CHANL) using a

Hitachi S-4700 Cold Cathode Field Emission Scanning Electron Microscope. Training and assistance were provided by Dr. Amar Kumbhar, a CHANL employee, with additional assistance provided by Sierra Roark and Gabby Purcell.

Statistical Analysis

I used a variety of measures to statistically analyze and visualize the resulting datasets. To ensure my data were comparable, I standardized counts using ratios to control for differences in sample size. I use *weight density* measures, in which the number of seeds or other plant parts are normalized by the total plant weight of the sample; *volume density*, in which the seed or plant part count is normalized by the sample volume, is a related measure (Marston 2014). I use weight densities to compare the use of broader taxa categories both within and between sites. Basic bar charts are used to visualize these site and time period comparisons. I also employ box plots to compare plant use through time for particular plant categories, including nuts, native starchy and oily seed plants, fruits, and maize. Box plots are a visualization of simple descriptive statistics in which the box represents the middle 50% of the data, with the median represented as either a line or center notch within that box, and the remaining top and bottom 25% represented by lines on either end of the box (Marston 2014; VanDerwarker et al. 2014).

To explore the broad category of miscellaneous plants, I use a measure called *ubiquity*, defined as the percentage of samples in which a particular taxon appears. Though this measure has been criticized for being misleading, it serves to standardize basic presence/absence data and can be used to track changes across time or space (Fritz 2005; Marston 2014). The miscellaneous category is often a catch-all category for plants that do not obviously or neatly fit into other prescribed categories (e.g., nuts, fruits, etc.). However, it results in a lumped category that is not comparable within itself or between sites and often serves to obscure patterns of plant use. Following several other researchers (Hastorf and Bruno 2020; Roark 2020; Williams 2000), I sub-group plants from the miscellaneous plant category according to use, such as foods/flavoring agents and medicinal/ritual, and then compare them through time using ubiquity.

Finally, I also use Correspondence Analysis (CA), a multivariate statistical method, to analyze Natchez Bluffs plant use across several scales. CA is a useful technique for exploring taxa use across sites or time periods. CA uses a two-way table in which the columns represent cases, such as samples or site contexts, and the rows represent units, such as taxa. The program then creates weighted averages of the columns and rows and using the chi-square distance and calculates the variance between the actual and expected values (Smith 2014; VanDerwarker 2010). The results of this calculation are displayed in a biplot in which the degree of correspondence between samples and taxa can be visually assessed with more similar samples plotting close together and more distinct samples plotting further apart. Archaeobotanists working in the Eastern Woodlands have used CA to examine patterns related to context or deposition type, temporality, and seasonality (Bush 2004; Hollenbach 2009; Kassabaum 2014). Notably, Bush (2004) uses CA to identify regional patterns in plant use that she argues are representative of local cuisines.

Commonly Encountered Taxa

In the following sections, I give a brief background for commonly occurring taxa in the assemblage. I have divided this into several sub-sections based on broader plant categories, including nuts, native starchy and oily seed plants, maize, fruit, and miscellaneous plants. Each taxon receives a brief description of its frequency within the assemblage, ecology or other plant growth concerns, and probable use. Table # contains presence/absence data by time period for each taxon.

Nuts

Acorn. Acorn (*Quercus* sp.) was found at all sites and in all contexts of the study assemblage. Nutshell was the most frequently identified acorn remain, but in some instances nut meats were also identified. There are at least thirty-five species of oak trees that grow in Mississippi (Hodges et al 2016). These include oaks of both the red oak and white oak sub-categories. Red oak acorns have bitter tannins which must be removed via soaking prior to consumption, whereas white oak acorns are sweeter and can be consumed without pre-processing (Scarry 2003). Both red and white oaks tend to grow in groves, and species of both sub-categories grow across bottomland and upland environments. While wood charcoal can be separated into red and white sub-categories due to visual differences in the cellular structure present at the cross-section view, archaeobotanists are not currently able to separate out nut shell or meat to either the sub-category or species level for oaks. Acorns are available every fall, and their tendency to grow in groves would have allowed communities to harvest substantial quantities from particular areas. Additionally, acorns tend to follow a cyclical mast production, in which individual trees overproduce every few years (Gardner 1997). Past communities were likely aware of this tendency and may have had management routines designed to benefit from and encourage particular groves (Fritz 2007; Gardner 1997; Wagner 2003). Acorns can be a surplus food, as they can be stored for long periods of time, but they must be parched first. Acorns were commonly pounded into a flour and served as a starchy base for breads, porridges, and stews (Scarry 2003; Thompson 2019).

Hickory. Hickory (*Carya* sp.) nutshell was found at all sites and in all contexts of the study assemblage. Hickory trees, like oaks, tend to grow in groves although they are restricted to upland environments (Scarry 2003). At least twelve species of hickory grow in Mississippi today, including pecan, which will be discussed below. Archaeobotanists generally are unable to distinguish hickory nutshell on the basis of species, with the exception of pecan. Hickory nuts are available in the fall, and their growth habitats would have supported large-scale collection efforts. Hickory is an oily nut and was often processed for oil, in addition to being consumed on its own (Scarry 2003). One common preparation method involves crushing unshelled nuts, removing larger pieces of nutshell, pounding the nut meats, and boiling them (Fritz et al. 2001; Scarry 2003). This preparation method forms the basis of what Cherokee groups refer to as ku-nu-che, or hickory nut soup, which can be consumed on its own or supplemented with other ingredients such as nuts or maize (Fritz et al. 2001; Thompson 2019). Hickory nut oil is also used as a flavoring agent for other dishes such as stews and breads (Thompson 2019).

Pecan. Pecan (*Carya illinoensis*) nutshell was identified in samples from all of the sites in the study assemblage, but in much smaller quantities than acorn or hickory. Pecan trees are a species of hickory that grow along the Mississippi River Valley on well-draining bottomland soils and alluvial terraces (Hodges et al 2016). Pecan trees, like other hickories, tend to grow in groves and their nuts are available in the fall (Scarry 2003)

Table 4.1. Presence/absence data by time period for assemblage taxa.

Taxon	**Early Coles Creek (AD 750-1000)**	**Late Coles Creek (AD 1000-1200)**	**Plaquemine (AD 1200-1500)**
Nuts			
Acorn (*Quercus* sp.)	X	X	X
Hickory (*Carya* sp.)	X	X	X
Pecan (*Carya illinoinensis*)	X	X	X
Walnut (*Juglans nigra*)	X	X	X
Starchy and Oily Seeds			
Amaranth (*Amaranthus* sp.)	X		X
Chenopod (*Chenopodium* sp.)	X	X	X
Knotweed (*Polygonum* sp.)	X	X	X
Little Barley (*Hordeum pusillum*)	X	X	X
Maygrass (*Phalaris caroliniana*)	X	X	X
Rye (*Elymus* sp.)	X	X	X
Sumpweed (*Iva annua*)	X		X
Sunflower (*Helianthus annua*)	X		X
Squash rind (Cucurbita/Lagenaria sp.)	X	X	X
Type X	X		X
Tropical Cultigen			
Maize (*Zea mays*)		X	X
Fruits			
Blackberry/raspberry (*Rubus* sp.)	X	X	X
Cabbage palm (*Sabal minor*)	X		X
Elderberry (*Sambucus* sp.)	X	X	X
Grape (*Vitis* sp.)	X	X	X
Hackberry (*Celtis* sp.)	X		
Maypop (*Passiflora incarnata*)	X		X
Persimmon (*Diospyros virginiana*)	X	X	X
Plum/cherry (*Prunus* sp.)	X		X
Sumac (*Rhus* sp.)	X		
Miscellaneous: Food and Seasoning			
Aster family (Asteraceae)	X	X	X
Barnyard Grass (*Echinochloa* sp.)	X		X
Cane (*Arundinaria gigantea*)	X		X
Grass family (Poaceae)	X	X	X
Groundcherry (*Physalis* sp.)		X	X
Legume family (*Fabaceae* sp.)	X	X	X

Table 4.1. Continued.

Taxon	Early Coles Creek (AD 750-1000)	Late Coles Creek (AD 1000-1200)	Plaquemine (AD 1200-1500)
Mustard (*Brassica* sp.)	X		
Nightshade family (Solanaceae)			X
Nightshade (*Solanum* sp.)	X	X	X
Purslane (*Portulaca* sp.)	X	X	X
Vetch/wild pea (*Vicia* sp. or *Lathyrus* sp.)	X		
Miscellaneous: Medicinal and Ritual			
Bedstraw (*Galium* sp.)	X	X	X
Blackgum (*Nyssa* sp.)	X		X
Copperleaf (*Acalypha* sp.)	X	X	X
Geranium (*Geranium* sp.)	X		
Greenbriar (*Smilax* sp.)	X		
Jimson weed (*Datura* sp.)			X
Mallow family (Malvaceae)	X		
Morning glory (*Convolvulus* sp./*Ipomoea* sp.)	X	X	X
Poison Ivy (*Toxicodendron radicans*)	X	X	
Pokeweed (*Phytolacca* sp.)	X		X
Sedge family (Cyperaceae)	X		X
Smartweed (*Polygonum* sp.)	X	X	X
Spurge (*Euphorbia* sp.)	X	X	
Tobacco (*Nicotiana* sp.)		X	X
Verbena (*Vervain* sp.)	X		X
Yellow stargrass (*Hypoxis hirsuta*)	X	X	X

Pecan nutshell is distinguishable from that of other hickories because it is thinner. Though a hickory species, pecans do not seem to have been processed for oil. The lack of interior ridges would have allowed nutmeats to be easily extracted, and it is likely they were consumed this way (Scarry 2003).

Walnut. Black walnut (*Juglans nigra*) nutshell was identified in samples from all of the sites in the study assemblage, but in much smaller quantities than acorn or hickory. The lower frequency of black walnut could be attributed to its growing habits. The trees grow in bottomland environments, but do not tend to grow in groves. Individual trees send out toxins through their roots, preventing other trees or plant species from growing nearby (Hodges et al 2016; Scarry 2003). These same toxins also occur in the husk surrounding the nutshell, and the nutmeat must be removed from both husk and shell to be consumed. Though the nutmeat is oily, it is difficult to separate the husks from the shell, which prevents it from being efficiently processed like hickory nutmeats (Scarry 2003). Nutmeats were likely consumed individually, and they could have been added to dumplings and stews (Thompson 2019). Le Page du Pratz (1758) observed that the Natchez used walnut nutmeats to make a bread.

Native Starchy and Oily Seed Plants

The plants in this taxa category are all part of the Eastern Agricultural Complex (EAC), which refers to a group of plants that native communities across the Eastern Woodlands intentionally cultivated beginning in the Archaic period. In some instances, cultivation of these plants, such as chenopod, amaranth, knotweed, and little barley, resulted in selective pressure for particular traits and ultimately morphology changes that serve to distinguish wild plants from domesticated ones. As will be discussed below, the seeds in my assemblages represent a mix of wild and cultivated types. Though I use the EAC acronym in my statistical analyses, this is more of a convenient shorthand for the group of plants than an indication of production practices.

Amaranth. Amaranth (*Amaranthus* sp.) seeds were identified at all sites and were one of the most common native seed plants identified. Amaranth seeds look similar to chenopod, particularly when the seeds have been popped or are missing the seed coat. Seeds that could not be confidently identified as one or the other were labeled “cheno-ams”. Amaranth produces both edible seeds and leaves. The leaves are available in the early summer, while the starchy seeds ripen in the summer and fall. The plant grows wild throughout the Eastern Woodlands, and some communities also may have domesticated it (Fritz 1984). Based on visual characteristics, all of the amaranth seeds in the assemblage appear to be wild, although this does not preclude the idea that these plants may have been managed or cultivated without undergoing selection pressures leading to morphological changes. The greens could have been consumed raw or as a pot herb, while the seeds could have been added to soups or other dishes whole or ground into a flour (Moerman 2003; Scarry 2003).

Chenopod. Chenopod (*Chenopodium* sp.) seeds were identified at all sites and were one of the most common native seed plants identified. Chenopod plants grow in disturbed areas and floodplains across the Eastern Woodlands (Smith 1992). The seeds ripen in the summer and early fall, while the greens would have been available earlier in the summer. Though chenopod grows wild, communities also managed and cultivated the plant. Evidence from several sites in the Midwest suggests communities had domesticated chenopod as early as the Late Archaic period (Fritz 2019; Smith 1992). Domestication results in several morphological changes for the seeds, including a thinner seed coat (less than 21 microns in thickness) and truncate margins (Fritz 2019; Fritz and Smith 1988; Smith 1985). Domesticated chenopod has been previously identified in Coles Creek contexts at both Feltus and Hedgeland (Kassabaum 2014; Roberts 2006). Thin-coated chenopod was identified in both Coles Creek and Plaquemine contexts in my assemblage and will be discussed with the individual site assemblages below. The leaves could be eaten raw, sauteed, or boiled, while the starchy seed could be boiled as the base of stew to which nutmeats or animal meat could be added (Thompson 2019).

Knotweed. Knotweed (*Polygonum erectum*) seeds were identified at all sites in the assemblage and, though not as abundant as some of the other native species, were still present in fairly high numbers. Knotweed seeds are available in the late summer and early fall. Communities in the Eastern Woodlands made use of both wild and cultivated versions of the plant. Wild populations produce two types of seeds, a short and highly textured one, which is more common in the summer, and a long and smooth-coated seed more common in the fall (Fritz 2019; Mueller 2017a). Domesticated species are marked by both a larger seed and a higher proportion of the long, smooth-coated seed morph (Mueller 2017a). The earliest evidence for domesticated knotweed comes from a Middle Woodland site in Kentucky (Mueller 2017b). The seeds in my assemblages were mostly the short, textured morphs, although some long, smooth-coated morphs were noted. Due to the presence of both morphs on wild plants, I do not think my seeds are from domesticated species. However, this does not preclude the notion that these plants were managed or cultivated to some degree. Both the seeds and leaves of knotweed can be consumed.

Little Barley. Little Barley (*Hordeum pusillum*) seeds were identified in low frequency at most sites in the study assemblage. Little Barley is often referred to as an early season or cool season plant because its seeds begin to ripen in the spring and early summer. The status of little barley as a domesticate has often been debated due to ambiguity surrounding potential morphological changes (Fritz 2019; Hunter 1992). Recent research from the American

Southwest has suggested that free-threshing or “naked” grains are key domesticated traits, as experimental studies with wild populations have failed to remove the surrounding chafe-y material (Adams 2014; Graham et al. 2017). Many archaeobotanists in the Eastern Woodlands assume little barley may have been managed or cultivated to some degree due to frequent association with other cultigens (Fritz 2019). All of the little barley in the study assemblage are “naked” grains and thought to represent cultivated varieties. little barley may have been prepared in a variety of ways, including cooked whole or ground into a flour (Adams 2014).

Maygrass. Maygrass (*Phalaris caroliniana*) seeds were one of the most commonly occurring native seed species in the study assemblage. Maygrass plants prefer disturbed environments and, similar to little barley, are often referred to as early season plants due to the availability of the fruits in spring and early summer. The domestication status of maygrass is currently ambiguous as no known morphological changes have been demonstrated. Fritz (2019) has suggested that there may have been selection for simultaneous seed maturation and non-shattering stems, but, as she notes, additional evidence is needed to corroborate this argument. Scholars have also suggested several other lines of evidence for cultivation, including the plant’s occurrence at archaeological sites north of its natural range, frequent co-occurrence with other domesticated plants, and occurrence in storage contexts (Cowan 1978; Fritz 1986, 2019). Maygrass may have been consumed in a variety of ways, including boiled or parched, and its occurrence in ceremonial feasting deposits as well as domestic contexts suggests it may have had a variety of meanings (Cowan 1978; Fritz 2014, 2019). Notably, it has also been suggested to be the base of a fermented, ritual beverage, but this is primarily speculative (Schoenwetter 2001).

Squash. Squash (*Cucurbitaceae* sp.) remains were identified in low frequencies at most sites in the study assemblage. Both squash rind and squash seeds were identified, though rind was more commonly identified than seeds. Squash from two different genera were used by American Indian communities, *Cucurbita* sp. and *Lagenaria siceraria*. *Cucurbita* and *Lagenaria* can be differentiated archaeologically as the two have distinct cell structures. However, this can be tricky with smaller pieces of rind due to overlaps in rind thickness and cell structure appearance. At least two species of *Cucurbita* were used, *Cucurbita pepo* and *Cucurbita argyosperma*, but it is difficult to separate and identify archaeological specimens (Fritz 1994; Asch and Asch 1985). My assemblages mostly contained small pieces; therefore, I did not try to differentiate to genera or species. However, Le Page du Pratz (1758) notes that the Natchez used at least two kinds of squash, one he describes as round and the other as resembling a "corps de chasse" or hunting horn. Therefore, I assume that multiple types of squash may be represented in my assemblage. Squashes were used as functional containers and both the oily seed and the flesh were consumed as food (Smith 1992). Squashes were commonly roasted and either consumed on their own or added to stews (Thompson 2019). Le Page du Pratz (1758) observed that the Natchez had multiple methods of preparing squash including drying like jerky, adding it to soups, frying, braising, and roasting.

Sumpweed. Sumpweed (*Iva annua*) achenes were identified in small quantities from most of the study sites. When sumpweed achenes are fragmented, they can be confused with sunflower achenes. Specimens that were unable to be distinguished were labeled as sumpweed/sunflower. Sumpweed plants grow wild in edge areas between wet and well-drained soils (Smith 1992). Evidence from a number of sites across the Midwest indicate that communities domesticated the plant as early as the Late Archaic period (Fritz 2019; Smith 1992). The domesticated sumpweed is distinguished by a larger achene size, with achenes measuring six mm or greater (Fritz 2019). All of the sumpweed achenes in my assemblage are within the size range for wild populations. Sumpweed seeds are noted to have a strong scent, which is enhanced when the seed is crushed or boiled, leading to some debate over whether they were used for culinary or more specialized purposes, such as a medicine (Fritz 2019). Their presence in the Salts Cave paleofeces demonstrates they were consumed, although they could have had multiple non-food uses as well. Fritz (2019) suggests they may have been mixed with other seeds and nuts into a gruel or soup-like dish.

Sunflower. Sunflower (*Helianthus annuus*) achenes were identified in small quantities from most of the study sites. Similar to sumpweed, evidence from a number of sites in the Eastern Woodlands suggests communities in the region domesticated sunflowers during the Late Archaic period (Fritz 2019; Smith 1992). Domesticated sunflowers are distinguished by a larger achene size, with wild and weedy plants having achenes with lengths of seven mm or smaller (Fritz 2019; Smith 1992). All of the sunflower achenes in my assemblage are within the size range for wild populations. The oily seeds of sunflowers were consumed in a variety of formats. They were consumed raw, boiled to extract oil, ground into a paste, roasted and consumed as a drink, added to dumplings or stews, and used as a porridge or stew base (Kavasch 1979; Thompson 2019).

Maize

Maize *(Zea mays*) remains are seen in late Coles Creek contexts at Smith Creek and Bayou Pierre and at all Plaquemine sites. Kernel, cupule, and glume fragments were identified from these assemblages; no whole or partial cobs were identified. Maize is a tropical cultigen first domesticated in Mexico around 7150 BC and use of the plant slowly spread north, reaching the American Southwest by 2050 BC (VanDerwarker et al. 2017). The plant was subsequently traded into the Eastern United States, likely at multiple times and through multiple paths (Simon et al. 2021; VanDerwarker et al. 2017). As discussed previously, it was originally believed that maize was introduced into the Eastern Woodlands during the Middle Woodland period. However, researchers now contend that maize may not have been introduced until the end of the Late Woodland period when it was quickly adopted and elevated to a staple food (Simon et al. 2021). Unlike the species of the EAC, maize is unambiguously a domesticated species when identified in Eastern Woodlands contexts. Maize evolved from a wild progenitor, teosinte, which only grows in Mexico, and maize must be intentionally cultivated to grow. Many varieties of maize exist, with different types varying from row number to kernel type (e.g., flint, pop, dent, flour). Communities in the Eastern Woodlands are believed to have grown and used many different varieties of maize (Scarry 2003). When whole cobs or cob fragments are present in archaeological assemblages, it is possible to identify and differentiate between varieties. Since these types of remains were not present in my assemblages, I am unable to speak to this. However, French accounts of the Natchez note that these communities made use of several types of maize. Both Le Page du Pratz (1758) and Dumont (1753) observed that communities had different types of maize for particular food products, distinguishing between one used for flour and one for gruel or grits. Le Page du Pratz further noted that communities grew at least four different colors of maize for grits, which likely correspond to different varieties. As these accounts suggest, maize was consumed in a variety of ways. Dumont specifically mentions 42 different styles of preparation, which include bread, porridge, cold meal, ground corn, smoked dried meal, gruel, and hominy. Le Page du Pratz's list of preparation methods includes bread cooked in a vessel, bread cooked in ashes, bread cooked in water, cold meal, ground corn, coarse grits, fine grits, bread mixed with beans, and smoked dried grain.

Fruits

Bramble. Bramble (*Rubus* sp.) seeds were identified in low frequencies at most of the study sites. Bramble bushes favor edge environments and it has been suggested that communities may have encouraged or managed these plants through disturbance-generating activities, such as clearing an area using fire (Hammett 2000). Bramble fruits ripen during the summer and the small seeds were often consumed with the fruits (Scarry 2003). Fruits could be consumed in a number of ways, including raw and dried, and they were often added to dried composites, soups, stews, and as part of the broth for sweet dumplings (Scarry 2003; Thompson 2019). Both the leaves and the berries were used to make teas and juices (Kavasch 1979). The roots, bark, leaves, and fruit were all used for medicinal purposes, including for respiratory and gastrointestinal issues (Moerman 2003; Williams 2000).

Elderberry. Elderberry (*Sambucus* sp.) seeds were identified in low frequencies at most of the study sites. Elderberry shrubs are often found in disturbed or edge environments. The fruits, which are available in later summer and early fall, are edible when ripe, but the unripe berries and shoots of the plant contain toxic compounds (Williams 2000). Berries could be boiled for sweet dumplings or dried and added to other dishes, and both the flowers and berries were used to make teas (Kavasch 1979; Thompson 2019). The flowers, berries, leaves, roots, and bark were also used for gastrointestinal and other medical concerns (Moerman 2003; Williams 2000).

Grape (*Vitis* sp.). Grape seeds were identified in moderate to high frequencies at all sites, and it was one of the most commonly occurring fruits in the assemblage. Many wild grape species are native to Southeast, but it is difficult to distinguish between them in the archaeological record. Fruits ripen in the late summer and early fall (Scarry 2003). Grape fruits were consumed in a variety of ways, including raw and dried as well as an addition to soups and stews, as a beverage, and as a part of sweet dumpling dishes (Ellis and Penner 2011; Kavasch 1979; Scarry 2003; Thompson 2019). Grape leaves were also used for kidney and gastrointestinal issues (Williams 2000).

Maypop. Maypop (*Passiflora incarnata*) seeds were found in low quantities at a few of the sites. Maypop plants favor disturbed, edge environments, and several scholars have argued that communities may have actively managed areas to encourage their growth (Hammett 2000). Fruits ripen during the summer and fall, and the large seed is often removed when the plant is consumed or processed (Scarry 2003). Fruits were consumed in both raw and dried form and were used to make breads, sweet dumplings, and beverages (Scarry 2003; Thompson 2019). The roots of the plant were also used as a blood tonic and to treat earaches and lesions (Moerman 2003; Williams 2000).

Palmetto. Palmetto (*Sabal* sp.) fruits were identified in high abundance at Feltus but only seen in low frequencies at other study sites. Palmetto plants grow in the Lower Mississippi Valley and along the coastal plain. The fruits, which ripen in the fall, were consumed and the leaves were used for basketry and roof and wall thatch (Scarry 2003; Thompson 2019).

Persimmon. Persimmon (*Diospyros virginiana*) seeds were seen in high numbers at all study sites and were one of the most commonly occurring fruits identified. Persimmon trees grow in bottomland and well-draining soils and also favor disturbed environments (Hodges et al 2016). Fruits are available in the late fall through early winter. They were eaten fresh as well as dried and could be made into composites and breads or added to stews to add thickness and flavor (Scarry 2003; Thompson 2019). Le Page du Pratz (1758) observed that the Natchez made a bread with the fruits. Both the fruit and the leaves were made into beverages (Kavasch 1979). The fruit and bark of the tree were used for a number of ailments including toothaches, gastrointestinal concerns, and sore throats (Moerman 2003; Williams 2000).

Plum/Cherry. Pit fragments from plum/cherry (*Prunus* sp.) fruits were identified in small numbers from a few of the study sites. These remains could not be identified to species, but at least seven species of plum/cherry trees are native to Mississippi (Hodges et al 2016). Fruits of these trees ripen during the summer and fall and could be consumed both fresh and dry (Scarry 2003). The fruits, bark, and roots of the plant were used for a variety of medicinal purposes, including to treat coughs, cuts, urinary tract and kidney issues (Moerman 2003; Williams 2000).

Miscellaneous Plants

The category of "miscellaneous" can be a meaningless and misleading category, as it is traditionally used as a catch-all for plant species that do not fit into the main taxa categories discussed above. However, this can hide meaningful data about these plants as well as lump unrelated plants together despite widely variable characteristics. For this project, I chose to categorize plants by function (e.g. food, medicine, technology) instead of lumping them together as miscellaneous. The categories, food/seasoning and medicinal/ritual, will be defined and discussed in the results section. The taxa discussed below all appeared at multiple sites. However, a number of other miscellaneous taxa were identified at only one site and/or in very low quantities. The taxa include seeds identified as greenbriar (*Smilax* sp.), mallow family (Malvaceae), poison ivy (*Toxicodendron* sp.), and sedge family (Cyperaceae). Many of these plants had medicinal as well as food or technological uses. It is unknown whether their inclusion in the study site assemblages is incidental or representative of one of those functions but they will not be discussed in depth here.

Aster Family. Moderate to high numbers of an Aster family (Asteraceae) seed were identified in samples from nearly all study sites. These specimens all appear to be from the same species, but so far have not been identified to genera or species, although they have been compared to various *Echinacea*, *Rudbeckia*, and *Solidago* species. Notably, thousands of seeds identified as clasping coneflower (*Rudbeckia laciniata*) have been identified from a single pit feature at the Winterville site, a multi-mound site in the southern Yazoo Basin (Flosenzier 2010). Cherokee groups consume the early spring leaves of this species, which they call sochan (Cain 2010). Historic Natchez groups are recorded as using infusions of the flowering heads and roots of *Antennaria* species as a remedy for colds and the whole plants of *Vernonia* species for diarrheal issues (Swanton 1928; Taylor 1940). The leaves, roots, flowers, stems, and whole plant of *Echinacea*, *Rudbeckia*, and *Solidago*, as well as other Aster family species have been used by groups across the Eastern Woodlands for a variety of medicinal purposes including burns and other dermatological issues, gastrointestinal concerns, and gynecological issues (Moerman 2003). Additionally, the leaves and roots of *Rudbeckia* and *Eupatorium* are cooked and consumed on their own as well as serving as a flavoring for other dishes (Moerman 2003).

Black Gum. Black gum (*Nyssa* sp.) seeds were found in low quantities from a couple of the study sites. Black gum is a tree that grows primarily in bottomland environments (Hodges et al 2016). The roots and bark of the tree were used for a variety of medicinal purposes, including for worms, diarrhea, vomiting, and for urinary and dermatological issues (Moerman 2003). The fruit of the plant is also edible.

Bedstraw. Bedstraw (*Galium* sp.) seeds were found in low to moderate quantities in samples from most of the study sites. Bedstraw is a weedy plant that often grows in disturbed environments. Archaeobotanists often discuss bedstraw as an incidental inclusion in assemblages, but there are multiple documented uses for the plant. The leaves could be used for greens, and the whole plant was used for kidney and urinary tract issues and as a laxative and emetic (Moerman 2003; Scarry 2003; Williams 2000). Additionally, several American Indian groups in the western United States used it as a dye and cleaning product (Moerman 2003). Several analysts have noted that the seeds can be dried and roasted and made into a coffee-like beverage, but there is no documented record of this being an American Indian practice. Notably, bedstraw is in the same family as coffee (Rubiaceae).

Cane. Cane (*Arundinaria* sp.) seeds have been identified in small quantities at several of the study sites. Cane grows best on well-drained alluvium or natural levees but also grows in the understory of loess bluff uplands (Anderson and Oakes 2011). The roots, leaves, and stalk of the plant have many technological uses, such as for basketry and tools, as well as medicinal uses, including as a kidney aid, stimulant, and cathartic (Moerman 2003). Le Page du Pratz (1758) observed that the Natchez made breads and porridges with a flour made from cane seeds.

Copperleaf. Copperleaf (*Acalypha* sp.) seeds were identified in small quantities from most of the study sites. Copperleaf grows weedy in disturbed environments, such as along field edges. Several of the species, including *Acalypha virginica*, are noted to be toxic. The roots of *Acalypha virginica* were used by Cherokee groups for a number of medicinal purposes, including as a urinary and kidney aid (Moerman 2003).

Grass Family. A number of grass family (Poaceae) seeds were identified from the study sites. This includes both seeds that were able to be identified to genera, including rye (*Elymus* sp.), panic grass (*Panicum* sp.), and barnyard grass (*Echinochloa* sp.), as well as seeds that could only be identified as part of the grass family (Poaceae). While some of these seeds may represent incidental inclusions, others that appear in moderate or consistent numbers, such as rye or barnyard grass, may represent food resources. These grasses also may have been used for thatch or other functional purposes (Scarry 2003).

Seeds of "Type X," an unidentified grass family member were also identified in small quantities from a couple of the study sites. Seeds of this plant have been most prominently identified at Toltec Mounds in Arkansas and have also been identified at other sites in Arkansas, Mississippi, and Oklahoma (Fritz 2008b; Peles 2022). It is not currently known what genera or species these seeds may be from, but they have been speculated to be a hybrid grass due to their large size and distinctive features (Fritz 2008b).

Morning Glory. Morning glory (*Convolvulus* sp./ *Ipomoea* sp.) seeds were identified in small quantities at most of the study sites. Seeds from morning glory species are hard to distinguish from one another and are lumped together in this study. Morning glory plants favor disturbed habitats and are often found growing near habitation sites and field areas. Because they are a weedy plant, some have speculated that their inclusion in archaeological assemblages may be incidental rather than intentional. The seeds of some species have psychoactive compounds and can be used to induce hallucinations and other psychological effects. There is also documented use of the seeds as a diuretic and as a treatment for tuberculosis (Williams 2000).

Nightshade Family. Members of the nightshade family (Solanaceae), including seeds identifiable as ground cherry (*Physalis* sp.) and nightshade (*Solanum* sp.), as well as seeds only identifiable to the family level, were recovered in small quantities from most of the study sites. The nightshade family is noted to be a "pharmacologically very active family…noted for containing active compounds…[that] block the autonomic nervous system in humans" (Williams 2000:168). The fruits and leaves of both ground cherry and nightshade were consumed and were added as seasonings to stews and other dishes (Kavasch 1979). Fruits of nightshade must be heated in order to process out toxic compounds. The plants were also used for medicinal purposes, including for psychological purposes and as a de-wormer for children (Williams 2000).

Poke. Pokeweed (*Phytolacca americana*) seeds were identified in small quantities from a couple of the study sites. Pokeweed plants favor disturbed environments and the mature plants contain toxins, particularly in the roots and mature berries (Thompson 2019). The leaves and early shoots can be consumed and are often prepared through boiling, sauteeing, and frying (Scarry 2003; Thompson 2019). The toxins within the mature plant can produce gastrointestinal and respiratory effects and the plant has a variety of medicinal uses from skin treatments to gastrointestinal-related ones (Williams 2000; Moerman 2003)**.**

Purslane. Purslane (*Portulaca oleracea*) seeds were identified at most of the study sites and occurred in low to high quantities. Plants grow in open, disturbed areas and have been often considered as incidental rather than intentional inclusions by archaeobotanists. However, the consistent, and occasionally large, quantities in my assemblages suggest intentional use. Both the leaves and the seeds of the plant were consumed as food as well as being used for lesions and gastrointestinal issues (Scarry 2003; Williams 2000).

Smartweed. Smartweed (*Polygonum* sp.) seeds were identified in low to moderate quantities at several of the study sites. At least seventeen different species of smartweed are native to the Mississippi area. The plants tend to grow in moist environments, such as along mudflats or floodplains. Smartweed species have a variety of uses, and the leaves, stems, roots, flowers, and seeds were used as both food and medicine for gastrointestinal, gynecological, anticonvulsive, and antihemorrhagic purposes (Moerman 2003).

Spurge. Spurge (*Euphorbia* sp.) seeds were identified in low quantities at several of the study sites. Species grow across a variety of habitats, and often prefer disturbed environments. The roots, leaves, and whole plant had medicinal uses for respiratory and dermatological issues (Moerman 2003; Williams 2000).

Sweetgum. Sweetgum (*Liquidambar styraciflua*) seeds and fruiting pods were identified in features at both Smith Creek and Feltus (Mitchem 2016). Sweetgum trees commonly grow in alluvial soils and disturbed areas. Sweetgum fruits ripen in the summer and remain on the tree until mid-fall to early winter. The resin and bark of the tree can be made into beverages and also had medicinal uses, including for antidiarrheal, dermatological, gynecological, and sedative purposes (Moerman 2003).

Tobacco. Tobacco (*Nicotiana* sp.) seeds were identified in small quantities from several of the study sites. Tobacco is not native to the Eastern Woodlands but was traded into the region sometime during the Middle Woodland period, if not earlier (Fritz 2019). There are multiple species of tobacco, including *Nicotiana rustica* and *Nicotiana quadrivalvis*, and scholars have debated over which species were used by communities in the Eastern Woodlands. Unfortunately, the seeds of each species have similar morphologies, making it difficult to distinguish one from another. Tobacco is a highly sacred plant and the leaves were commonly used for smoking as well as for other medicinal uses (Williams 2000).

Vervain. Vervain (*Verbena* sp.) seeds were identified in low quantities from a couple of the study sites. Vervain plants prefer moist environments and often grow in disturbed areas. The leaves, flowers, and roots were used for a variety of medicinal purposes, including for respiratory conditions, child birth, cramps, ulcers, and cuts (Kirk and Belt 2010; Williams 2000). There are also records of Native communities in the Midwest and West using the leaves and seeds of the plant to make food and beverages (Moerman 2003).

Yellow Star Grass. Yellow star grass (*Hypoxis hirsuta*) seeds were identified in small quantities from most of the study sites. An infusion of the plant was used by Cherokee groups as a heart medicine (Moerman 2003). No other recorded uses of the plant could be found.

Results

Early Coles Creek (AD 750–1000)

This project includes plant samples from contexts at three sites dating to the Early Coles Creek period, Feltus, Smith Creek, and Centers Creek. A total of 113 samples were included in the analysis across the three sites, with the majority of samples coming from Feltus and Smith Creek.

Feltus. The Feltus plant data have been thoroughly reported in Kassabaum (2014) and Peles (2022), and my analysis draws on the data presented there. Though plant data exist from a variety of contexts across the site, I chose to focus my analyses on the larger midden deposits (Table 4.2). These include two large midden deposits from the Mound A area, midden deposits from the South Plaza area, and a flank midden from Mound B. Both Kassabaum and Peles have explored some interesting differences between these deposits, likely related to the activities that formed them. However, since this project explores cuisine more broadly, I have opted to lump these deposits together to focus on the major plant foods consumed at the site and their relative proportions.

Figure 4.1 provides an overview of the major plant food categories identified and their relative proportions, standardized by total plant weight. Nuts are the major plant remain identified, with acorn and hickory particularly emphasized and pecan and black walnut used to a lesser extent. Eastern Agricultural Complex (EAC) plants are the next most common remains, with starchy seed plants, such as chenopod, amaranth, maygrass, and knotweed, present in greater quantities than oily seed plants such as sunflower, sumpweed, and squash. This may reflect preservation biases, as oily seeds are less likely to preserve. The EAC plants from Feltus represent a mix of cultivated and wild types.

Domesticated chenopod seeds have been identified, while the sunflower and sumpweed seeds are all wild type (Kassabaum 2014; Peles 2022). Type X seeds have also been identified in these samples (Peles 2022). Miscellaneous plants were the next most frequent; key taxa include purslane, smartweed, grass family members, and bedstraw. Finally, a small quantity of fruit seeds were identified. These were primarily from palmetto, grape, persimmon, and bramble fruits. A small number of seeds from other fruits, including elderberry, sumac (*Rhus* sp.), maypop, hackberry (*Celtis* sp.), and plum/cherry were also identified.

Table 4.2. Plants Identified at Feltus, Only Includes Remains from Mound A East Midden, Mound A Southwest Midden, South Plaza Middens, and Mound B Flank Midden. Data from Kassabaum 2014 and Peles 2022.

Taxon	**Count**	**Standardized Count**
Nuts		
Acorn nutshell (*Quercus* sp.)	1916	4.38
Acorn nutmeat (*Quercus* sp.)	13	0.03
Hickory (*Carya* sp.)	1240	2.84
Pecan (*Carya illinoinensis*)	132	0.03
Walnut (*Juglans nigra*)	40	0.09
Starchy and Oily Seeds		
Amaranth (*Amaranthus* sp.)	107	0.24
Chenopod (*Chenopodium* sp.)	320	0.73
Chenopod/Amaranth (*Chenopodium* sp/*Amaranthus* sp.)	196	0.45
Knotweed (*Polygonum* sp.)	239	0.55
Little Barley (*Hordeum pusillum*)	78	0.18
Maygrass (*Phalaris caroliniana*)	451	1.03
Sumpweed (*Iva annua*)	19	0.04
Sunflower (*Helianthus annua*)	3	0.01
Squash rind (*Cucurbita/Lagenaria* sp.)	63	0.14
Squash seed (*Cucurbita/Lagenaria* sp.)	5	0.01
Type X	3	0.01
Fruits		
Blackberry/raspberry (*Rubus* sp.)	27	0.06
Cabbage palm (*Sabal minor*)	76	0.17
Elderberry (*Sambucus* sp.)	6	0.01
Grape (*Vitis* sp.)	61	0.14
Hackberry (*Celtis* sp.)	4	0.01
Maypop (*Passiflora incarnata*)	4	0.01
Persimmon (*Diospyros virginiana*)	46	0.1
Plum/cherry (*Prunus* sp.)	3	0.01
Sumac *(Rhus sp.)*	5	0.01
Miscellaneous: Food and Seasoning		
Aster family (Asteraceae)	2	0.004
Cane (*Arundinaria gigantea*)	1	0.002
Grass family (Poaceae)	56	0.13
Mustard (*Brassica* sp.)	5	0.01
Nightshade (*Solanum* sp.)	7	0.012
Purslane (*Portulaca* sp.)	330	0.75

Table 4.2. Continued.

Taxon	Count	Standardized Count
Vetch/wild pea (*Vicia* sp. or *Lathyrus* sp.)	11	0.02
Miscellaneous: Medicinal and Ritual		
Bedstraw (*Galium* sp.)	23	0.05
Bindweed (*Convolvulus* sp.)	1	0.002
Copperleaf (*Acalypha* sp.)	2	0.004
Geranium (*Geranium* sp.)	25	0.06
Morning glory *(Ipomoea* sp.)	5	0.01
Poison Ivy (*Toxicodendron radicans*)	1	0.002
Pokeweed (*Phytolacca* sp.)	26	0.06
Smartweed (*Polygonum* sp.)	73	0.17
Spurge (*Euphorbia* sp.)	2	0.004

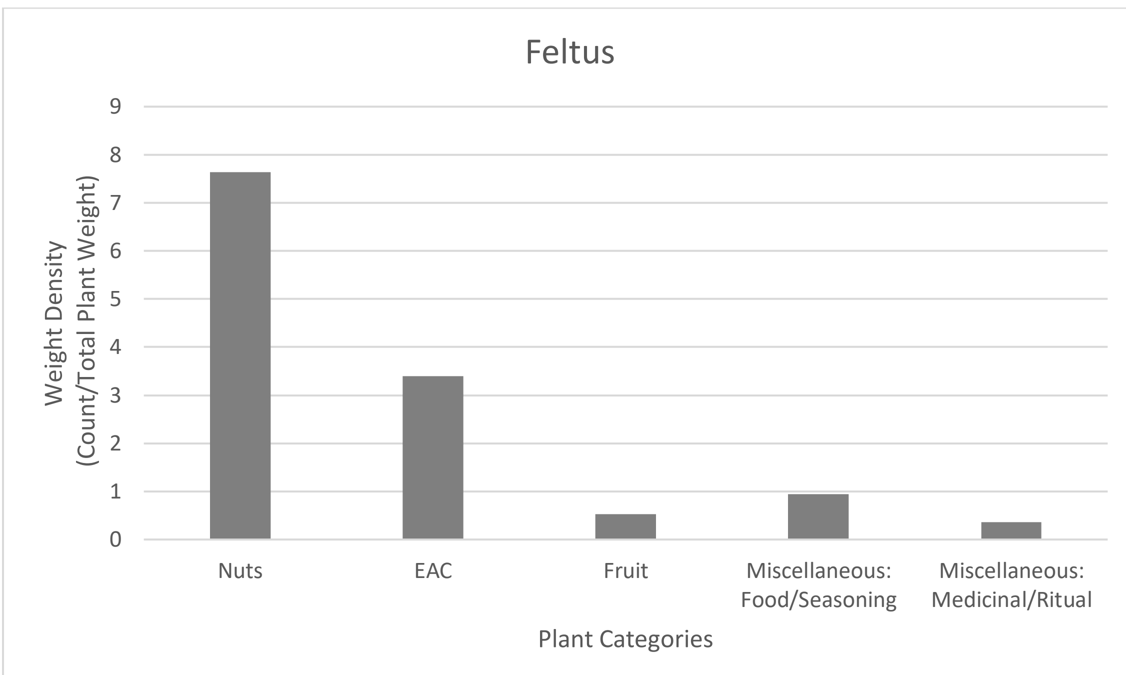

Figure 4.1. Comparison of major plant categories from Feltus middens

Smith Creek. Plant data from Coles Creek contexts at Smith Creek are primarily from two midden deposits, one on Mound A and one in the northeast plaza area. A small number of samples are from sub-mound midden and mound surface midden deposits from Mounds B and

C. Table 4.3 contains sample provenience information and Table 4.4 lists the taxa identified from these samples.

Figure 4.2 shows the proportion of each major plant category from these deposits. Similar to Feltus, nuts were the primary plant remain identified, with acorn and hickory predominating, followed by more minor use of pecan and black walnut. The small seeds of the EAC were the next most common category, and were used in much higher proportion than what is seen at Feltus. However, the types of plants present within this category are similar between the two sites, as the starchy EAC members were much more common than the oily seeds. As noted for Feltus, this may reflect preservation bias. The presence of thin-seed-coat chenopod specimens (Figure 4.3) attest to the use of domesticated varieties of this plant. Both Type X and rye seeds were recovered in small numbers, representing other potential cultigens. Miscellaneous plants were the next most common and key taxa include bedstraw, an Asteraceae family member, and purslane. A small proportion of fruit seeds were also identified, with persimmon, grape, and bramble seeds most common. Seeds from elderberry and plum/cherry were also identified.

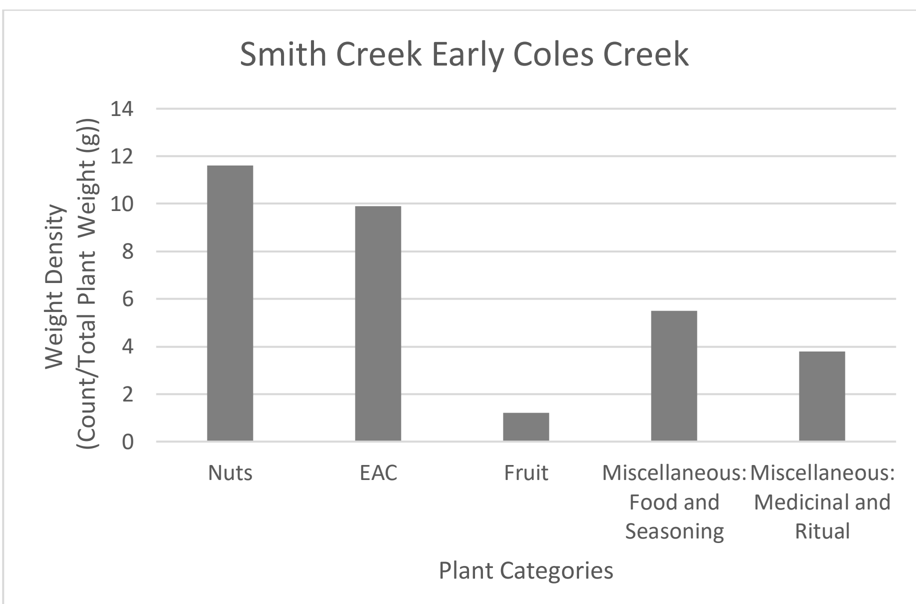

Figure 4.2. Comparison of major plant categories from Coles Creek contexts at Smith Creek.

Table 4.3. Provenience of Coles Creek Period Flotation Samples from Smith Creek.

Context	**Catalog Number**	**Sample Type**	**Volume (L)**	**Plant Weight (g)**	**Wood Weight (g)**
Mound A Midden	123/124	Flotation	10	8.35	8.35
Mound A Midden	224/225	Flotation	10	8.18	8.18
Mound A Midden	48/49	Flotation	10	4.59	4.16
Mound A Midden	65/66	Flotation	10	15.48	13.10
Mound A Midden	96/97	Flotation	10	5.14	4.85
Mound A Midden	127/128	Flotation	10	1.87	1.83
Mound A Midden	203/204	Flotation	10	8.99	8.58
Northeast Plaza Midden	1241/1242	Flotation	10	4.00	3.00
Northeast Plaza Midden	1163/1164	Flotation	10	1.00	1.00
Northeast Plaza Midden	1158/1159	Flotation	10	2.00	2.00
Northeast Plaza Midden	1342/1343	Flotation	10	3.00	3.00
Northeast Plaza Midden	1147/1148	Flotation	10	<1	<1
Northeast Plaza Midden	1304/1305	Flotation	10	16.00	16.00
Northeast Plaza Midden	1307/1308	Flotation	10	4.00	4.00
Northeast Plaza Midden	1463/1464	Flotation	10	<1	<1
Northeast Plaza Midden	1149/1150	Flotation	10	<1	<1
Northeast Plaza Midden	1260/1261	Flotation	10	8.21	7.30
Northeast Plaza Midden	1327/1328	Flotation	4	10.22	9.83
Northeast Plaza Midden	1310/1311	Flotation	10	5.10	4.71
Mound C Surface	71/72	Flotation	10	3.66	3.52
Mound C Surface	142/143	Flotation	10	8.24	8.19
Mound C Surface	155/156	Flotation	10	0.48	0.48
Mound C Sub Mound Midden	220/221	Flotation	10	1.32	0.96
Mound C Buried A-Horizon	234/235	Flotation	10	0.44	0.42

Table 4.3. Continued.

Context	Catalog Number	Sample Type	Volume (L)	Plant Weight (g)	Wood Weight (g)
Mound B Surface	1508/1509	Flotation	10	<0.1	<0.1
Mound B Surface	1715/1716	Flotation	10	<0.1	<0.1
Mound B Buried A-Horizon	1776/1777	Flotation	10	0.60	0.60

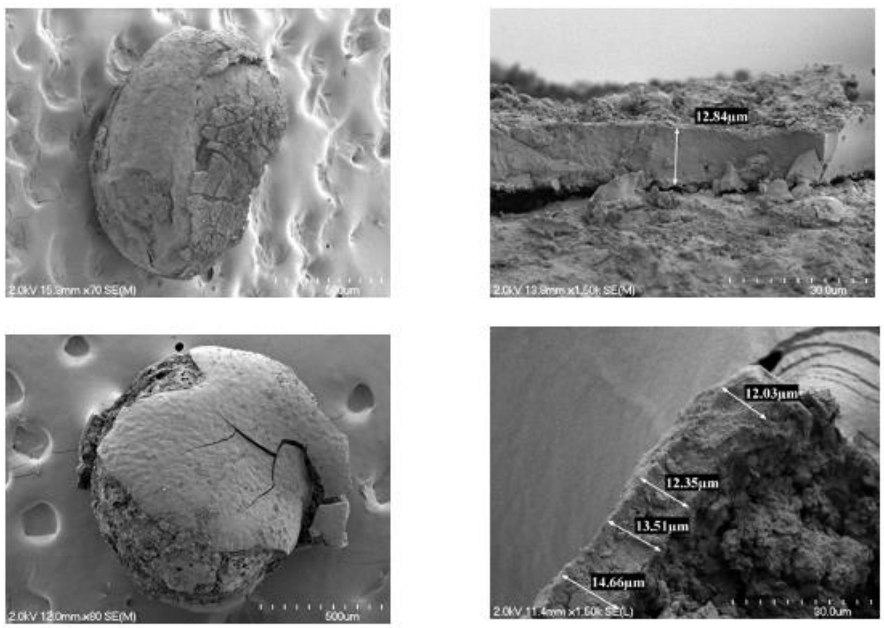

Figure 4.3. SEM images of domesticated chenopod seeds from the Coles Creek midden on Mound A at Smith Creek.

Centers Creek. A small number of Coles Creek period samples were analyzed from the Centers Creek site. These samples are from mound surfaces, a midden deposit within the mound, features in the midden deposit, and the enriched buried A-horizon beneath the mound. Table 4.5 lists the sample provenience, and Table 4.6 lists the taxa identified from these samples. Figure 4.4 provides an overview of the major plant categories identified in the Centers Creek samples. Nuts are the primary plant category identified, with hickory nutshell predominating, followed by smaller quantities of acorn, pecan, and black walnut nutshell.

Table 4.4. Plants Identified in Coles Creek Period Contexts at Smith Creek.

Taxon	**Count**	**Standardized Count**
Nuts		
Acorn (*Quercus* sp.)	603	5.78
Acorn nutmeat (*Quercus* sp.)	7	0.07
Hickory (*Carya* sp.)	478	4.58
Pecan (*Carya illinoinensis*)	44	0.42
Walnut (*Juglans nigra*)	81	0.78
Starchy and Oily Seeds		
Amaranth (*Amaranthus* sp.)	87	0.83
Chenopod (*Chenopodium* sp.)	100	0.96
Chenopod/Amaranth (*Chenopodium* sp/*Amaranthus* sp.)	175	1.68
Knotweed (*Polygonum* sp.)	99	0.95
cf. Knotweed	1	0.01
Little Barley (*Hordeum pusillum*)	21	0.20
cf. Little Barley	1	0.01
Maygrass (*Phalaris caroliniana*)	518	4.96
Rye (*Elymus* sp.)	13	0.12
Sumpweed (*Iva annua*)	1	0.01
Sunflower (*Helianthus annua*)	2	0.02
cf. Sunflower/Sumpweed	1	0.01
Squash rind (Cucurbita/Lagenaria sp.)	13	0.12
Type X	7	0.07
Fruits		
Blackberry/raspberry (*Rubus* sp.)	15	0.14
Elderberry (*Sambucus* sp.)	3	0.03
Grape (*Vitis* sp.)	47	0.45
Persimmon (*Diospyros virginiana*)	63	0.60
Plum/cherry (*Prunus* sp.)	2	0.02
Miscellaneous: Food and Seasoning		
Aster family (Asteraceae)	335	3.21
Barnyard Grass (*Echinochloa* sp.)	3	0.03
Cane (*Arundinaria gigantea*)	4	0.04
Grass family (Poaceae)	18	0.17
cf. Grass family	13	0.12
Nightshade (*Solanum* sp.)	5	0.05
Purslane (*Portulaca* sp.)	200	1.92
Miscellaneous: Medicinal and Ritual		
Bedstraw (*Galium* sp.)	361	3.46

Table 4.4 Continued.

Taxon	**Count**	**Standardized Count**
Blackgum (*Nyssa* sp.)	1	0.01
Greenbriar (*Smilax* sp.)	1	0.01
Mallow family (Malvaceae)	1	0.01
Morning glory (*Convolvulus* sp./*Ipomoea* sp.)	6	0.06
cf. Morning glory	2	0.02
Sedge family (Cyperaceae)	16	0.15
cf. Sedge	1	0.01
Spurge (*Euphorbia* sp.)	3	0.03
Verbena (*Vervain* sp.)	1	0.01
Yellow stargrass (*Hypoxis hirsuta*)	2	0.02
Unknown	68	0.65
Unidentifiable	308	2.95

EAC seeds were the next most common, with starchy seeds most abundant in this assemblage. Maygrass and chenopod were the most common EAC seeds. The chenopod seeds were not complete enough to determine whether they were domesticated. Wild type sunflower and sumpweed seeds were also identified. Small amounts of fruit seeds were recovered, and persimmon was the most abundant species within this category. Additionally, a smaller number of miscellaneous seeds were identified; key taxa within this category include purslane and grass family seeds.

Early and Middle Coles Creek Summary. As seen in Figure 4.5, nuts and EAC seeds were the primary plant foods consumed at each site. However, there is some variation between the sites, as Feltus and Centers Creek both have greater nut use than EAC use, while Smith Creek has almost equal nut and EAC use. Between the sites, there are similar patterns to the plant taxa used within these broader categories. Acorn and hickory are the primary nuts consumed, with minimal use of pecan and black walnut. Centers Creek is an exception to this, as acorn is used in smaller quantities comparable to pecan and black walnut.

Table 4.5. Provenience of Flotation Samples from Centers Creek.

Context	**Catalog Number**	**Sample Type**	**Volume (L)**	**Plant Weight (g)**	**Wood Weight (g)**
Feature 8 (post hole feature in midden)	108/109	Flotation	3	0.5	0.3
Feature 4 (post hole feature in midden)	99/100	Flotation	1.5	0.06	0.03
Feature 4 (post hole feature in midden)	97/98	Flotation	5	2.22	2.02
Feature 4 (post hole feature in midden)	91/92	Flotation	6	4.77	3.89
Mound Midden	82/83	Flotation	10	4.04	1.83
Mound Midden	78/79	Flotation	8	1.33	1.07
Feature 1 (post hole feature in midden)	126 (2013)	Flotation	4	0.12	0.05
Upper Mound Surface	109 (2013)	Flotation	10	0.04	0.03
Upper Mound Surface	113 (2013)	Flotation	10	0.07	0.06
Buried A Horizon	123 (2013)	Flotation	11	0.08	0.06

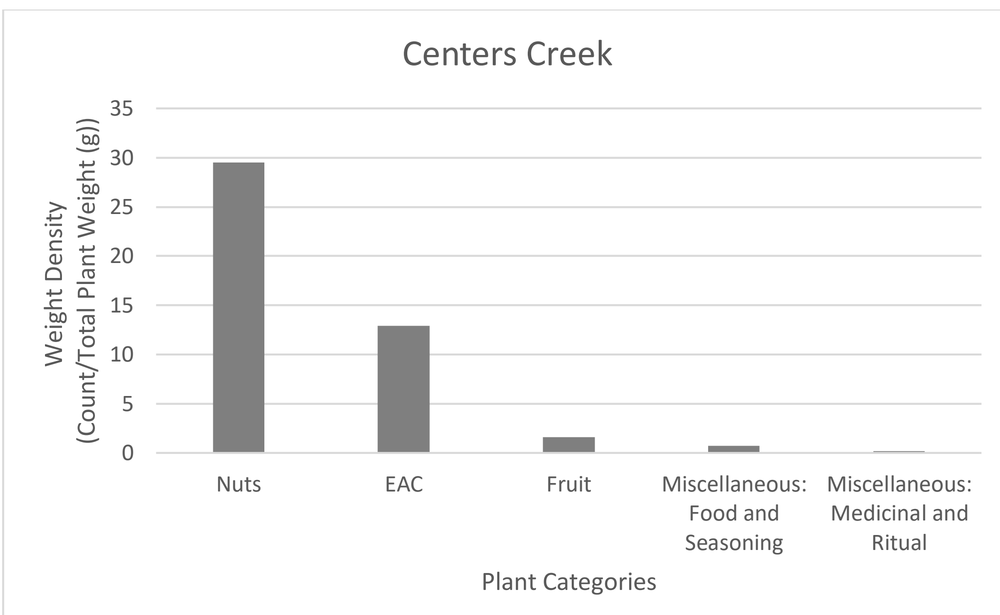

Figure 4.4. Comparison of major plant categories from Centers Creek.

Table 4.6. Plants Identified at Centers Creek.

Taxon	**Count**	**Standardized Count**
Nuts		
Acorn (*Quercus* sp.)	39	2.87
Hickory (*Carya* sp.)	315	23.16
Pecan (*Carya illinoinensis*)	34	2.50
Walnut (*Juglans nigra*)	13	0.96
Starchy and Oily Seeds		
Chenopod (*Chenopodium* sp.)	1	0.07
Chenopod/Amaranth (*Chenopodium* sp/*Amaranthus* sp.)	8	0.59
Maygrass (*Phalaris caroliniana*)	166	12.21
cf. Maygrass	21	1.54
Sumpweed (*Iva annua*)	1	0.07
Sunflower (*Helianthus annua*)	1	0.07
cf. Squash (Cucurbita/Lagenaria sp.)	1	0.07
Fruits		
Persimmon (*Diospyros virginiana*)	21	1.54
Sumac (*Rhus* sp.)	1	0.07
Miscellaneous: Food and Seasoning		
Grass family (Poaceae)	3	0.22
Purslane (*Portulaca* sp.)	7	0.51
Miscellaneous: Medicinal and Ritual		
Bedstraw (*Galium* sp.)	1	0.07
Smartweed (*Polygonum* sp.)	1	0.07
Yellow stargrass (*Hypoxis hirsuta*)	1	0.07
Unknown	2	0.15
Unidentifiable	1	0.07

The use of EAC plants also follows a similar pattern at each site, with greater quantities of starchy seeds, particularly maygrass and chenopod and to a lesser extent amaranth and knotweed. Fruit was identified in minimal quantities at all sites, with all sites containing an abundance of persimmon within this category. Additionally, there are differences in the quantities of miscellaneous plants identified at each site. The Smith Creek assemblage contains higher quantities of both food/seasoning and medicinal/ritual plants. The higher number of medicinal plants may reflect the inclusion of non-midden samples, such as mound surfaces.

Notably, the patterns of plant use at Natchez Bluffs sites differs from that of the Tensas Basin. Nuts and fruits were the most emphasized plant categories at Tensas sites, with minimal contribution from EAC plants (Roberts 2006). While high quantities of nut use are similar between the two regions, there are differences in which taxa are used. Minimal thick-shelled hickory remains have been recovered from Tensas sites, which likely relates to the bottomland environment of the region as hickory trees tend to grow in upland areas.

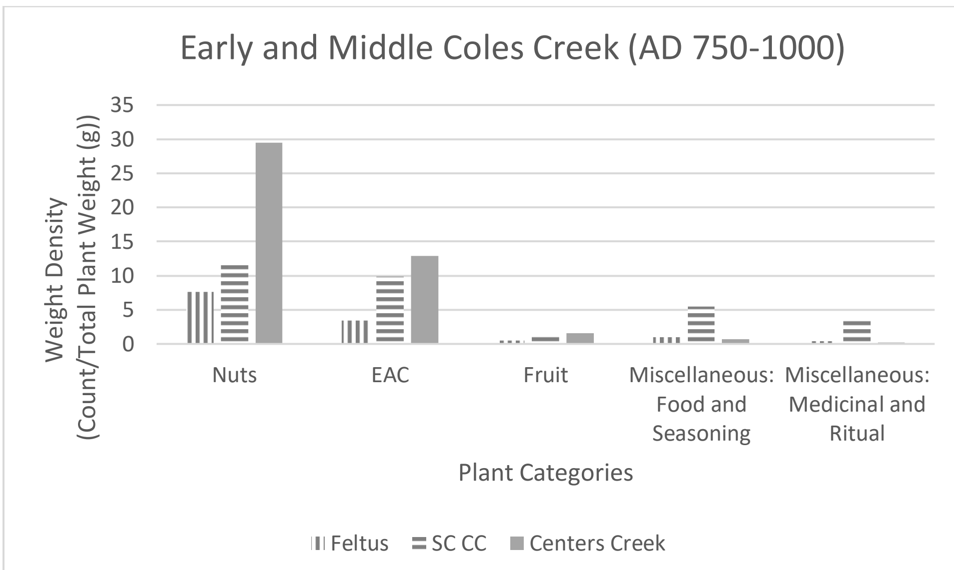

Figure 4.5. Comparison of major plant categories for the three Coles Creek sites.

Late Coles Creek (AD 1000–1200)

This project includes plant samples from contexts at two sites dating to the Late Coles Creek period, Bayou Pierre and Smith Creek. A total of 26 samples were included in the analysis across the two sites. Though small in number, I chose to include these samples in order to have some perspective on plant use during the period when maize is first introduced.

Bayou Pierre. A small number of samples were analyzed from Late Coles Creek contexts at Bayou Pierre Mound A. These include a flank midden context and a culturally enriched buried A-horizon. Table 4.7 contains sample provenience information, and Table 4.8 contains the taxa identified from these samples. Despite the fact that these samples mostly originated from midden contexts, plant remains were not particularly abundant.

Table 4.7. Provenience of Flotation Samples from Bayou Pierre.

Context	**Catalog Number**	**Sample Type**	**Volume (L)**	**Plant Weight (g)**	**Wood Weight (g)**
Midden	35/36	flotation	10	1.21	1.19
Midden	40/41	flotation	10	0.32	0.32
Midden	61/62	flotation	10	2.14	2.11
Buried A-Horizon	229	flotation	10	0.01	0.01

Figure 4.6 provides an overview of the major plant categories identified. Maize and EAC seeds were the most abundant plant categories identified, followed by nuts and miscellaneous seeds. No fruit remains were recovered in these samples. Both maize kernels and cupules were recovered, though more kernels than cupules were present. Only starchy seed EAC members were identified and include maygrass, knotweed, and cheno-ams. The knotweed was the wild morph. Acorn and pecan were the only nut taxa identified. Miscellaneous taxa include seeds from bedstraw and a grass family member.

Table 4.8. Plant Remains Identified from Bayou Pierre.

Taxon	Count	Standardized Count
Nuts		
Acorn (*Quercus* sp.)	2	0.54
Pecan (*Carya illinoinensis*)	2	0.54
Starchy and Oily Seeds		
Chenopod/Amaranth (*Chenopodium* sp/*Amaranthus* sp.)	3	0.82
Knotweed (*Polygonum* sp.)	2	0.54
Maygrass (*Phalaris caroliniana*)	7	1.90
Tropical Cultigens		
Maize (*Zea mays*) kernel	12	3.26
Maize (*Zea mays*) cupule	1	0.27
Miscellaneous: Food and Seasoning		
Grass family (Poaceae)	1	0.27
Miscellaneous: Medicinal and Ritual		
Bedstraw (*Galium* sp.)	1	0.27
Unknown	1	0.27
Unidentifiable	17	4.62

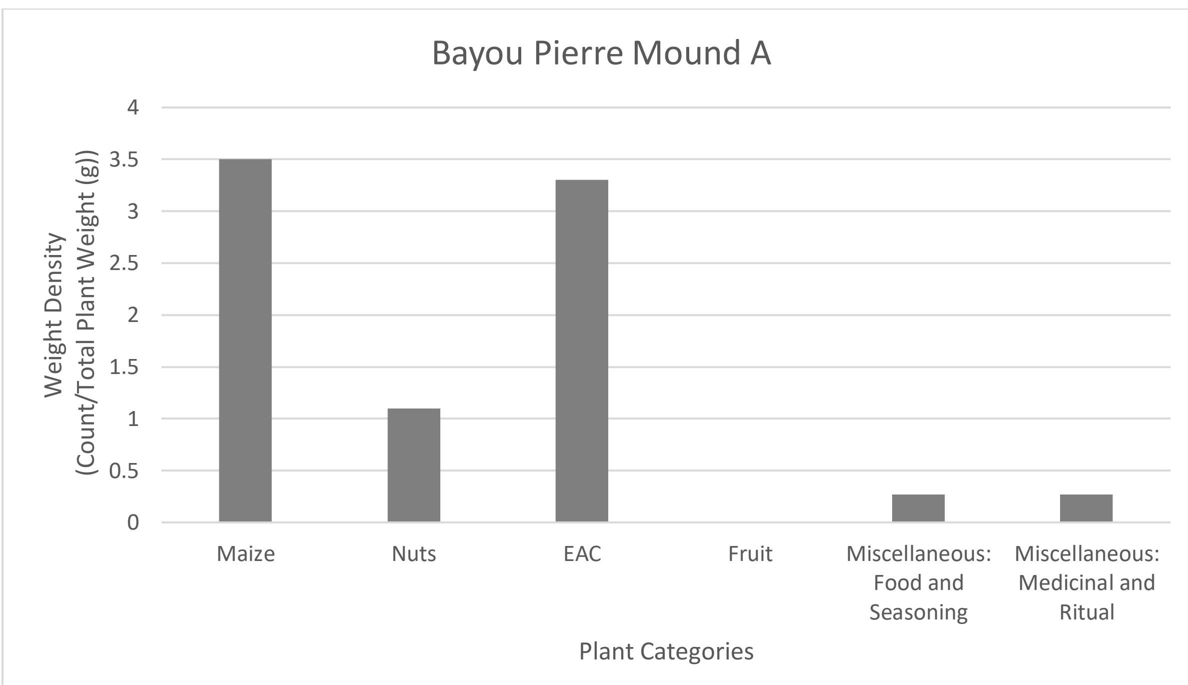

Figure 4.6. Comparison of major plant categories from Bayou Pierre.

Figure 4.7 contains an overview of the major plant categories. Miscellaneous plants are the most abundant category and include large numbers seeds of an Asteraceae family member, smartweed, bedstraw, and purslane. Additionally, seeds were identified from a number of plants with medicinal and/or ritual associations, including poison ivy, morning glory, tobacco, spurge, and yellow stargrass. The high frequency of "miscellaneous" plants highlights the unusual nature of mound surface contexts and activities. EAC seeds, maize, and nuts were recovered in relatively comparable quantities.

The starchy seeds of the EAC, including maygrass, knotweed, and chenopod, were more common than oily seeds. This may reflect differences in preservation, rather than use. Thin-seed-coat chenopod specimens were identified from these deposits (Figure 4.8). Seeds of both Type X and rye were also recovered in small quantities. Maize remains include both kernels and cupules, though kernels were recovered in greater numbers. Acorn and hickory were the primary nut types identified, with smaller numbers of pecan and black walnut also recovered. Very small amounts of fruit were recovered and included seeds from grape, persimmon, elderberry, and bramble.

Late Coles Creek Summary. The Late Coles Creek samples from this project primarily come from specialized mound contexts, such as mound surfaces and post features, with a few samples from a flank midden. Though these contexts may be more representative of special events, the samples from them do provide the first evidence for how maize was used. However, additional samples from a broader range of samples in off-mound areas are needed to compare how maize were used in other contexts. Figure 4.9 compares plant category use for this period from the Bayou Pierre and Smith Creek samples.

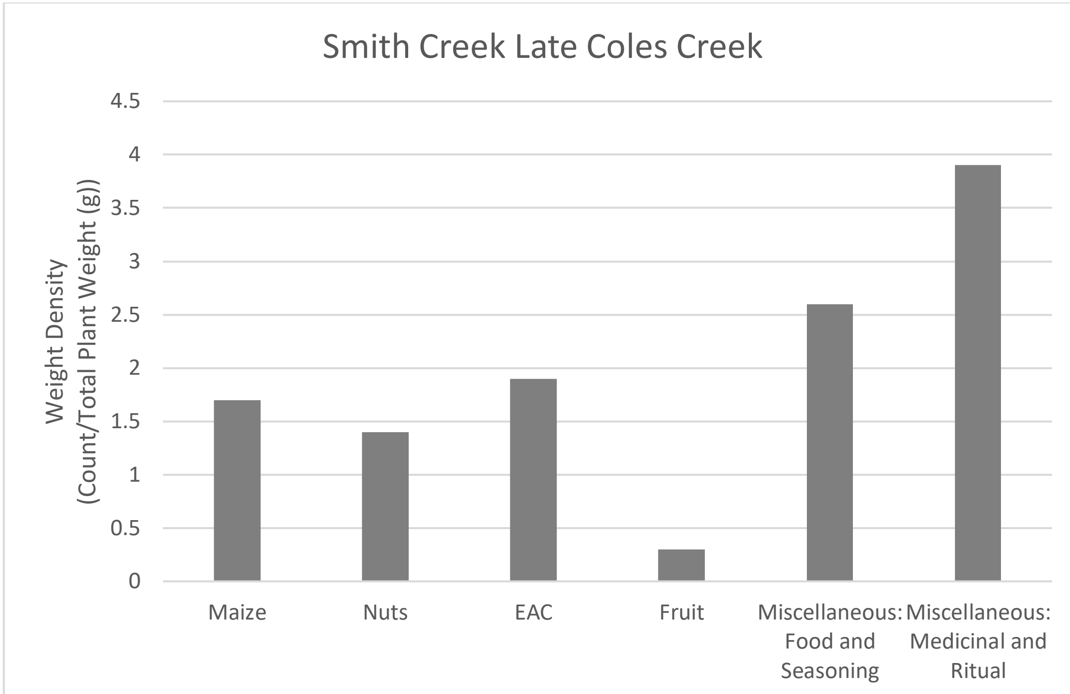

Figure 4.7. Comparison of major plant categories from Late Coles Creek contexts at Smith Creek.

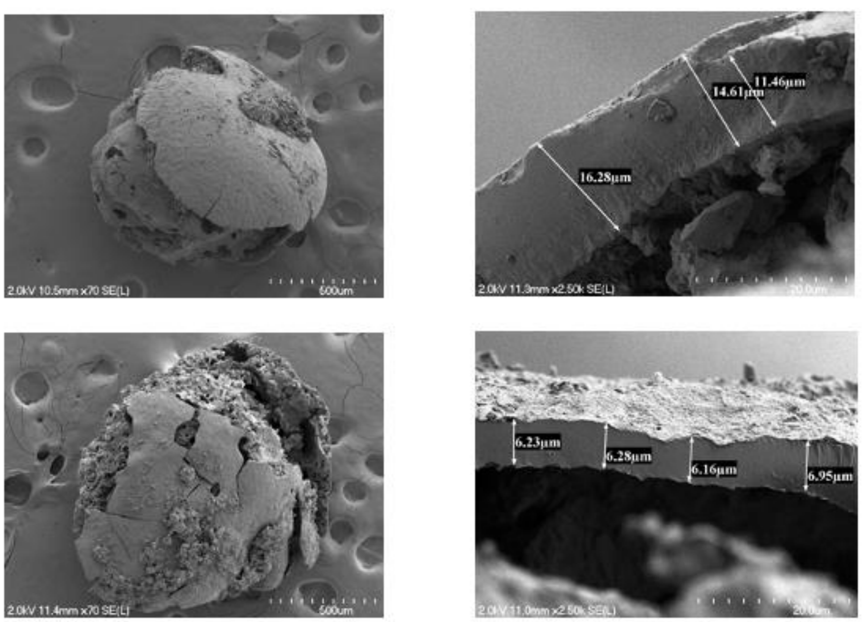

Figure 4.8. SEM images of domesticated chenopod seeds from Late Coles Creek mound surfaces on Mound A at Smith Creek.

Table 4.9. Provenience of Samples from Late Coles Creek Period Contexts at Smith Creek.

Context	Catalog Number	Sample Type	Volume (L)	Plant Weight (g)	Wood Weight (g)
Mound A Surface	544/545	Flotation	11	7.98	7.82
Mound A Surface Feature	550/551	Flotation	13	9	9
Mound A Surface Feature	586a/587a	Flotation	13	2.39	2.38
Mound A Surface Feature	586b/587b	Flotation	16	13.84	13.73
Mound A Surface	640/641	Flotation	10	0.44	0.31
Mound A Surface	690/691	Flotation	17	0.09	0.09
Mound A Surface	743/744	Flotation	6	<1	<1
Mound A Surface	782/783	Flotation	14	0.02	0.02
Mound A Surface	808/809	Flotation	15	0.12	0.12
Mound A Surface	819/820	Flotation	7	<1	<1
Mound A Surface	909/910	Flotation	18	<1	<1
Mound A Surface Feature	911/912	Flotation	21	<1	<1
Mound A Surface Feature	920/921	Flotation	26	<1	<1
Mound A Fill	922/923	Flotation	17	0.68	0.48
Mound A Surface Feature	924/925	Flotation	7	1.87	1.72
Mound C Fill	1349/1350	Flotation	3	0.01	<0.01
Mound C Surface Feature	1456/1457	Flotation	<1 L	<0.1	<0.1
Mound C Surface Feature	1378/1379	Flotation	5	0.84	0.8
Mound C Surface Feature	1443/1444	Flotation	5	1.3	1.2
Mound C Surface Feature	1445/1446	Flotation	4	0.02	0.02
Mound C Surface Feature	1503/1504	Flotation	10	0.27	0.2
Mound C Surface Feature	1701/1702	Flotation	2	<0.1	<0.1

Table 4.10. Plants Identified from Late Coles Creek Contexts at Smith Creek.

Taxon	**Count**	**Standardized Count**
Nuts		
Acorn (*Quercus* sp.)	27	0.69
Hickory (*Carya* sp.)	30	0.77
Pecan (*Carya illinoinensis*)	4	0.10
Walnut (*Juglans nigra*)	4	0.10
Starchy and Oily Seeds		
Chenopod (*Chenopodium* sp.)	8	0.21
Chenopod/Amaranth (*Chenopodium* sp/*Amaranthus* sp.)	23	0.59
Knotweed (*Polygonum* sp.)	17	0.44
cf. Knotweed	2	0.05
Little Barley (*Hordeum pusillum*)	8	0.21
cf. Little Barley	1	0.03
Maygrass (*Phalaris caroliniana*)	25	0.64
Rye (*Elymus* sp.)	1	0.03
Squash rind (Cucurbita/Lagenaria sp.)	1	0.03
cf. Squash rind	1	0.03
Type X	3	0.08
Tropical Cultigens		
Maize *(Zea mays*) kernel	53	1.36
Maize (*Zea mays*) cupule	24	0.62
Fruits		
Blackberry/raspberry (*Rubus* sp.)	3	0.08
Elderberry (*Sambucus* sp.)	4	0.10
Grape (*Vitis* sp.)	4	0.10
Persimmon (*Diospyros virginiana*)	4	0.10
Miscellaneous: Food and Seasoning		
Aster family (Asteraceae)	95	2.44
Grass family (*Poaceae* sp.)	3	0.08
Groundcherry (*Physalis* sp.)	1	0.03
Legume family (Fabaceae)	1	0.03
Nightshade (*Solanum* sp.)	1	0.03
Nightshade family (Solanaceae)	1	0.03
Purslane (*Portulaca* sp.)	14	0.36
Miscellaneous: Medicinal and Ritual		
Bedstraw (*Galium* sp.)	17	0.44
Copperleaf (*Acalypha* sp.)	1	0.03

Table 4.10. Continued.

Taxon	Count	Standardized Count
Morning glory (*Convolvulus* sp./*Ipomoea* sp.)	1	0.03
Poison Ivy (*Toxicodendron* sp.)	1	0.03
Smartweed (*Polygonum* sp.)	100	2.57
Spurge (*Euphorbia* sp.)	1	0.03
Yellow stargrass (*Hypoxis hirsuta*)	2	0.05
Unknown	7	0.18
Unidentifiable	14	0.36

Maize and EAC plants were used in relatively similar proportions to one another. As noted, though kernels and cupules were identified at both sites, far more kernels were identified than cupules, a pattern which will be further explored in the statistical analyses of the following section.

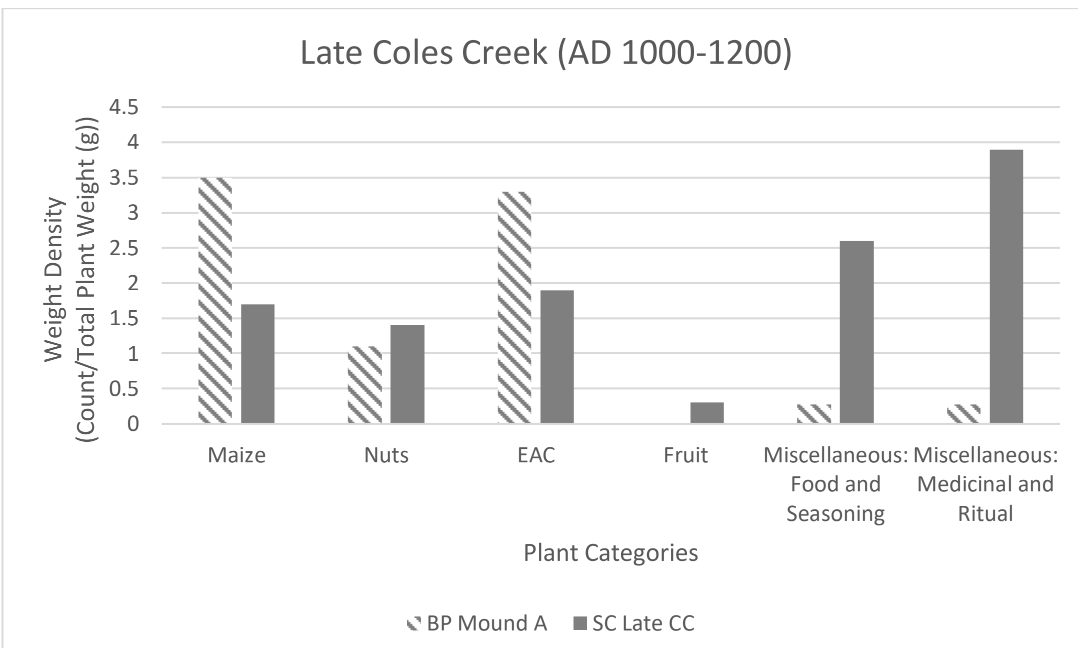

Figure 4.9. Comparison of major plant categories for the Late Coles Creek sites.

The starchy EAC seeds, particularly maygrass, knotweed, and chenopod, were the most common within this category. Minimal nutshell fragments, particularly compared to maize and EAC remains, were recovered from both sites. However, this may reflect a contextual bias rather than indicating that nuts were consumed less. It is plausible that nuts were processed elsewhere and the resulting dishes, which would have had minimal archaeological signatures, were served in these contexts. Fruit remains were particularly underemphasized, with no fruit seeds identified at Bayou Pierre. Finally, miscellaneous seeds were overemphasized in Smith Creek contexts, reflecting the special nature of these contexts.

Plaquemine (AD 1200–1500)

This project includes plant samples from contexts at three sites dating to the Plaquemine period, Smith Creek, Lessley, and Fatherland. A total of 78 samples were included in the analysis across the three sites.

Smith Creek. Plaquemine plant remains are from two large midden deposits in the northeastern and southern areas of the plaza at Smith Creek. Table 4.11 contains the provenience information for these samples, and Table 4.12 contains the identified plant remains. Figure 4.10 displays the relative proportion for each of the major plant categories. Nuts were the most abundant remain identified, and acorn and hickory were emphasized, with small to moderate quantities of black walnut and pecan also identified. Maize was the next most common, with both kernels and cupules identified. The EAC plants were identified in almost the same quantities as maize. The starchy seed plants, particularly maygrass, chenopod, amaranth, and knotweed, were most common within this category. Thin-seed-coat chenopod specimens were identified from these deposits (Figure 4.11). Rye and Type X seeds were also present in small quantities. Fruit was present in small quantities and seeds from persimmon, grape, and bramble fruits were the most frequently identified taxa. Miscellaneous plants were also identified in small quantities; key taxa within this category include bedstraw, purslane, and a member of the Asteraceae family.

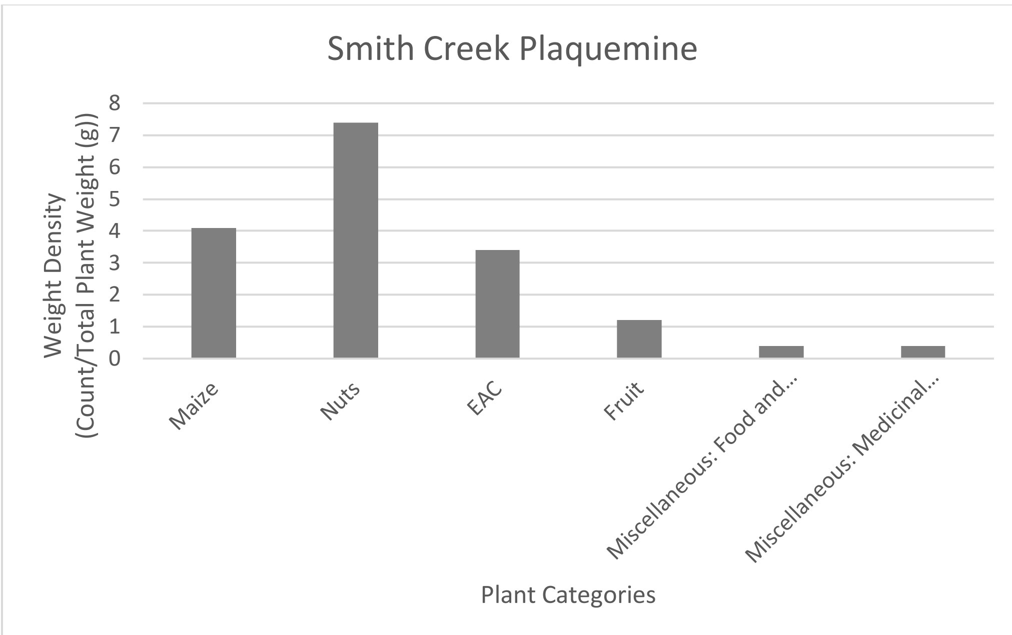

Figure 4.10. Comparison of major plant categories from Plaquemine contexts at Smith Creek.

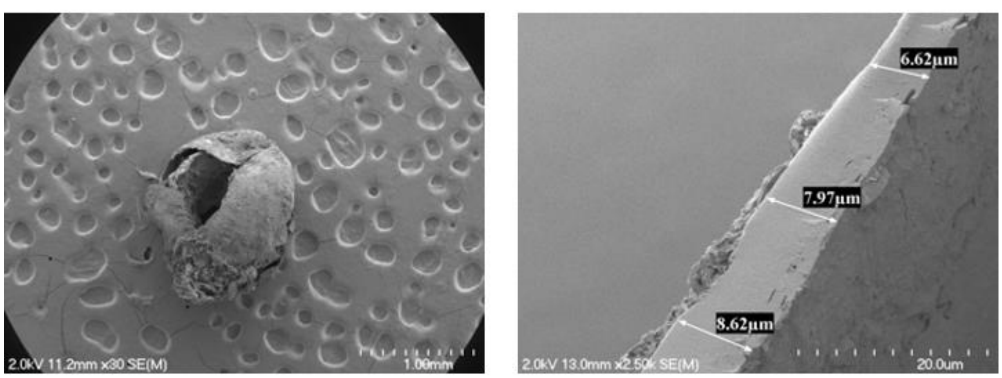

Figure 4.11. SEM images of a domesticated chenopod seed from the northeast plaza Plaquemine period midden at Smith Creek.

Table 4.11. Provenience Information for Plaquemine Period Samples from Smith Creek.

Context	**Catalog Numbers**	**Sample Type**	**Volume (L)**	**Plant Weight (g)**	**Wood Weight (g)**
Northeast Plaza Midden	788/789	Flotation	10	8.00	8.00
Northeast Plaza Midden	763/764	Flotation	25	2.00	2.00
Northeast Plaza Midden	964	Flotation	12	<1	<1
Northeast Plaza Midden	751/752	Flotation	10	8.00	8.00
Northeast Plaza Midden	557/558	Flotation	10	8.00	8.00
Northeast Plaza Midden	991/992	Flotation	33	13.00	13.00
Northeast Plaza Midden	753/754	Flotation	18	10.00	10.00
Northeast Plaza Midden	794/795	Flotation	3	2.00	2.00
Northeast Plaza Midden	486/487	Flotation	10	7.01	1.39
Northeast Plaza Midden	502/503	Flotation	13	4.46	4.19
Northeast Plaza Midden	1145/1146	Flotation	10	2.00	2.00
Northeast Plaza Midden	1141/1142	Flotation	10	<1	<1
Northeast Plaza Midden	1237/1238	Flotation	10	3.05	2.70
Northeast Plaza Midden	1254/1255	Flotation	9	1.19	0.96
Northeast Plaza Midden	1283/1284	Flotation	10	0.66	0.54
Northeast Plaza Midden	1617/1618	Flotation	4	8.00	7.95
Northeast Plaza Midden	1683/1684	Flotation	10	1.97	1.70
Northeast Plaza Midden	1581/1582	Flotation	3	3.52	3.49
Northeast Plaza Midden	1497/1498	Flotation	13	4.44	3.99
Northeast Plaza Midden	1611/1612	Flotation	20	15.29	14.89
Northeast Plaza Midden	1477/1478	Flotation	10	4.75	3.89
Northeast Plaza Midden	501	Water screen	n/a	17.54	16.02
Northeast Plaza Midden	1140	Water screen	n/a	6.86	5.91
Northeast Plaza Midden	485	Water screen	n/a	10.10	9.68
Northeast Plaza Midden	1253	Water screen	n/a	3.08	2.81
Northeast Plaza Midden	1236	Water screen	n/a	7.81	7.49
Northeast Plaza Midden	1144	Water screen	n/a	6.72	5.99
South Plaza Midden	42/43	Flotation	10	0.99	0.47
South Plaza Midden	38/39	Flotation	10	0.83	0.41
South Plaza Midden	41	Water screen	n/a	9.81	9.81
South Plaza Midden	67/68	Flotation	9	3.22	0.47
South Plaza Midden	25/26	Flotation	10	2.15	1.65
South Plaza Midden	27/28	Flotation	10	2.10	1.77

Table 4.12. Plants Identified from Plaquemine Period Contexts at Smith Creek.

Taxon	Count	Standardized Count
Nuts		
Acorn (*Quercus* sp.)	474	2.65
Acorn nutmeat (*Quercus* sp.)	5	0.03
Hickory (*Carya* sp.)	630	3.53
Pecan (*Carya illinoinensis*)	40	0.22
Walnut (*Juglans nigra*)	153	0.86
Starchy and Oily Seeds		
Amaranth (*Amaranthus* sp.)	33	0.18
Chenopod (*Chenopodium* sp.)	134	0.75
Chenopod/Amaranth (*Chenopodium* sp/*Amaranthus* sp.)	247	1.38
Knotweed (*Polygonum* sp.)	27	0.15
cf. Knotweed	3	0.02
Little Barley (*Hordeum pusillum*)	5	0.03
cf. Little Barley	4	0.02
Maygrass (*Phalaris caroliniana*)	135	0.76
Rye (*Elymus* sp.)	4	0.02
Squash rind (Cucurbita/Lagenaria sp.)	10	0.06
cf. Squash rind	7	0.04
Squash (Cucurbita/Lagenaria sp.) seed	1	0.01
Sumpweed (*Iva annua*)	3	0.02
Sunflower (*Helianthus annua*)	2	0.01
Sumpweed/Sunflower	2	0.01
cf. Sumpweed/Sunflower	1	0.01
Type X	1	0.01
Tropical Cultigens		
Maize *(Zea mays*) kernel	473	2.65
Maize (*Zea mays*) cupule	260	1.46
Fruits		
Blackberry/raspberry (*Rubus* sp.)	11	0.06
Cabbage palm (*Sabal minor*)	2	0.01
Elderberry (*Sambucus* sp.)	3	0.02
Grape (*Vitis* sp.)	61	0.34
Maypop (*Passiflora incarnata*)	1	0.01
Persimmon (*Diospyros virginiana*)	136	0.76
Plum/Cherry (*Prunus* sp.)	1	0.01
cf. Plum/cherry	2	0.01

Table 4.12. Continued.

Taxon	**Count**	**Standardized Count**
Miscellaneous: Food and Seasoning		
Aster family (Asteraceae)	19	0.11
cf. Aster family	4	0.02
Bean/Persimmon	1	0.01
Grass family (Poaceae)	4	0.02
Groundcherry (*Physalis* sp.)	4	0.02
Legume family (Fabaceae)	2	0.01
cf. Legume family	1	0.01
Nightshade family (Solanaceae)	1	0.01
Purslane (*Portulaca* sp.)	29	0.16
Miscellaneous: Medicinal and Ritual		
Bedstraw (*Galium* sp.)	42	0.24
cf. Bedstraw	1	0.01
Blackgum (*Nyssa* sp.)	1	0.01
Copperleaf (*Acalypha* sp.)	3	0.02
Jimson weed (*Datura* sp.)	1	0.01
Morning glory (*Convolvulus* sp./*Ipomoea* sp.)	3	0.02
Poke (*Phytolacca americana*)	4	0.02
Sedge family (Cyperaceae)	2	0.01
Smartweed (*Polygonum* sp.)	1	0.01
Tobacco (*Nicotiana* sp.)	1	0.01
Verbena (*Vervain* sp.)	1	0.01
Yellow stargrass (*Hypoxis hirsuta*)	9	0.05
Unknown	8	0.04
Unidentifiable	97	0.05

Lessley. Plant samples from Lessley are primarily from a sub-mound midden deposit and associated features, including a hearth and several postholes. A few samples are also from a small midden related to a mound surface. Table 4.13 contains the full provenience information, and Table 4.14 contains the identified taxa from these samples. Overall, the Lessley samples contained a low density of plant remains. Figure 4.12 provides an overview of the relative proportion of each major plant category. Maize was the most common plant remain recovered, and both kernels and cupules were identified. EAC seeds were identified in a relatively similar proportion and primarily included starchy seed plants, including maygrass, chenopod, and amaranth. Chenopod seeds were not subjected to scanning electron microscopy, but could be in the future. Nuts were the next most common, with primarily hickory and acorn identified. Fruit seeds were identified in very small quantities, and primarily included remains from persimmon, grape, and bramble. There was also a small proportion of miscellaneous plants identified; key taxa within this include seeds from the nightshade and grass families, as well as yellow stargrass seeds.

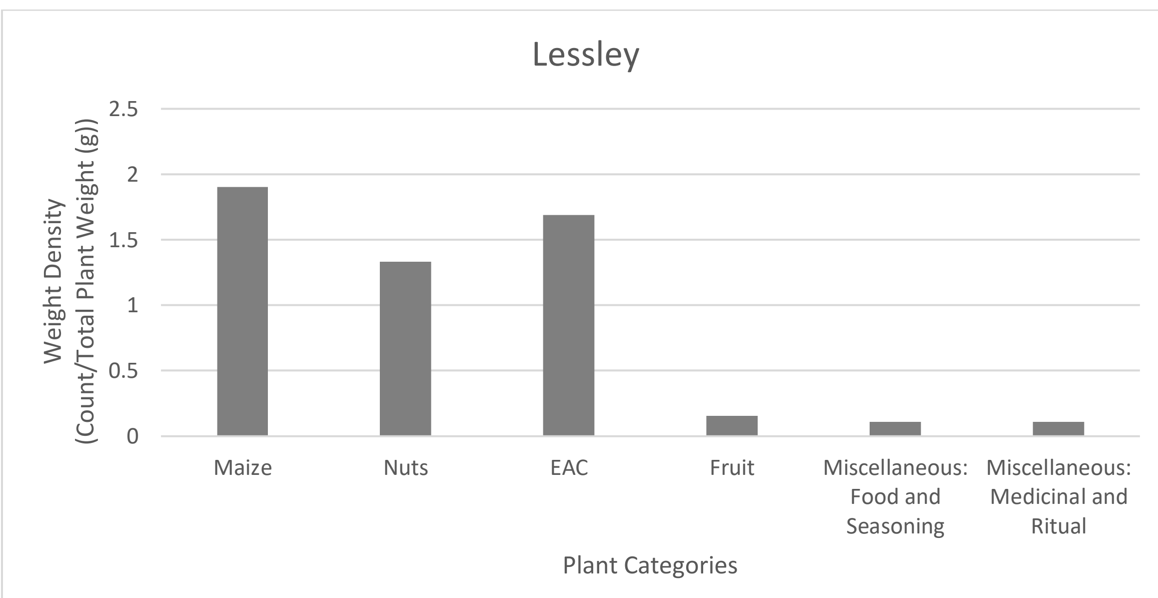

Figure 4.12. Comparison of major plant categories from Lessley.

Table 4.13. Provenience Information for Lessley Plant Samples.

Context	Catalog Number	Sample Type	Volume (L)	Plant Weight (g)	Wood Weight (g)
Summit Mound Fill	22	Flotation	10	1.5	1.5
Summit Midden	44	Flotation	10	1.7	1.6
Summit Midden	69	Flotation	7	0.1	0.1
Summit Midden	67	Flotation	16	0.2	0.2
Sub Mound Midden	34	Flotation	8	0.5	0.4
Sub Mound Midden	40	Flotation	10	0.29	0.29
Sub Mound Midden	50	Flotation	10	2.6	2.6
Sub Mound Midden Feature	61	Flotation	10	1.11	1.11
Sub Mound Midden Feature	141	Flotation	8	1.9	1.9
Sub Mound Midden	151	Flotation	10	2.3	2.3
Sub Mound Midden	156	Flotation	10	0.3	0.3
Sub Mound Midden Feature	174	Flotation	4	0.1	0.1
Sub Mound Midden Feature	176	Flotation	3	1.5	1.5
Sub Mound Midden Feature	171	Flotation	<1	<0.1	<0.1
Sub Mound Midden	71	Flotation	9	2.8	2.8
Sub Mound Midden	90	Flotation	10	18.8	18.6
Sub Mound Midden	104	Flotation	10.5	0.6	0.6
Sub Mound Midden Feature	78	Flotation	9	8.1	8
Sub Mound Midden Feature	80	Flotation	6	1.3	1.3
Sub Mound Midden	147	Flotation	10	3.1	3.1
Sub Mound Midden	158	Flotation	10	2.2	2.2
Sub Mound Midden	164	Flotation	10	8.6	8.5
Sub Mound Midden Feature	197	Flotation	3	<0.1	<0.1
Sub Mound Midden Feature	199	Flotation	15	0.6	0.6
Sub Mound Midden Feature	201	Flotation	<1	<0.1	<0.1
Sub Mound Midden Feature	184	Flotation	<1	<0.1	<0.1
Sub Mound Midden Feature	186	Flotation	3	3.8	3.8
Buried A Horizon	652	Water screen	n/a	<1	<1
Buried A Horizon	618/619	Flotation	10	0.3	0.04
Sub Mound Midden	621/622	Flotation	10	0.06	0.02
Sub Mound Midden	653	Water screen	n/a	<1	<1
Sub Mound Midden Feature	635/636	Flotation	12	0	0.02
Sub Mound Midden Feature	637	Flotation	5	0.1	0.08
Sub Mound Midden Feature	633/634	Flotation	4	0	0
Sub Mound Midden Feature	631/632	Flotation	12	0.08	0.04
Sub Mound Midden Feature	650	Flotation	10	0.02	0.02

Table 4.14. Plants Identified from Lessley.

Taxon	Count	Standardized Count
Nuts		
Acorn (*Quercus* sp.)	24	0.37
Hickory (*Carya* sp.)	60	0.93
Pecan (*Carya illinoinensis*)	1	0.02
Walnut (*Juglans nigra*)	1	0.02
Starchy and Oily Seeds		
Amaranth (*Amaranthus* sp.)	18	0.28
Chenopod (*Chenopodium* sp.)	16	0.25
Chenopod/Amaranth (*Chenopodium* sp/*Amaranthus* sp.)	3	0.05
Knotweed (*Polygonum* sp.)	3	0.05
cf. Knotweed	1	0.02
cf. Little Barley	2	0.03
Maygrass (*Phalaris caroliniana*)	68	1.05
cf. Maygrass	1	0.02
Squash rind (Cucurbita/Lagenaria sp.)	1	0.02
cf. Squash rind	2	0.03
cf. Sunflower	1	0.02
Tropical Cultigens		
Maize *(Zea mays*) kernel	78	1.21
Maize (*Zea mays*) cupule	44	0.68
Fruits		
Blackberry/raspberry (*Rubus* sp.)	1	0.02
cf. Blackberry/raspberry	1	0.02
Cabbage palm (*Sabal minor*)	1	0.02
Elderberry (*Sambucus* sp.)	1	0.02
Grape (*Vitis* sp.)	6	0.09
Persimmon (*Diospyros virginiana*)	1	0.02
cf. Plum/cherry	1	0.02
Miscellaneous: Food and Seasoning		
Cane (*Arundinaria gigantea*)	1	0.02
Grass family (Poaceae)	4	0.06
cf. Legume family	1	0.02
Nightshade (*Solanum* sp.)	2	0.03
Purslane (*Portulaca* sp.)	1	0.02
Miscellaneous: Medicinal and Ritual		
cf. Bedstraw	1	0.02
Tobacco (*Nicotiana* sp.)	1	0.02
Yellow stargrass (*Hypoxis hirsuta*)	3	0.05

Table 4.14. Continued.

Taxon	Count	Standardized Count
Unknown	33	0.51
Unidentifiable	24	0.37

Fatherland. Samples from Fatherland are primarily from a flank midden deposit with a couple of samples from a wall trench structure on the summit of the mound. Table 4.15 contains the full provenience information for the samples, and Table 4.16 lists the identified taxa from these samples. The relative proportion of the major plant categories can be seen in Figure 4.13. Nuts were the most commonly recovered plant food and primarily include acorn and hickory, with very small quantities of pecan and black walnut also recovered. Maize was the next most common plant identified, with both kernels and cupules recovered. Seeds from EAC plants were present in more moderate quantities and starchy seeds, particularly amaranth, maygrass, chenopod, and knotweed, were the most common within that category. Chenopod seeds were not subjected to scanning electron microscopy, but could be in the future. Fruit remains were recovered in very small quantities and include persimmon, bramble, grape, and maypop. A small number of miscellaneous plants were also identified; key taxa include purslane and seeds from the grass family.

Plaquemine Summary. Figure 4.14 compares the overall plant categories for the three Plaquemine sites. As with the Coles Creek period sites, there is some variation in plant use between the Plaquemine sites. Smith Creek and Fatherland follow a similar pattern, in which nuts are the most commonly occurring plant remain, followed by maize and then EAC plants. However, EAC plants are used in relatively comparable proportions to maize at Smith Creek.

Table 4.15. Provenience Information for Fatherland Plant Samples.

Context	Catalog Number	Sample Type	Volume (L)	Plant Weight (g)	Wood Weight (g)
Midden	28	Flotation	20	23	22.4
Midden	34	Flotation	10	1.9	1.9
Midden	29	Flotation	10	9.4	9.4
Midden	37	Flotation	10	9.6	9.6
Midden	35	Flotation	10	8.7	8.7
Midden	39	Flotation	10	8.1	8.1
Midden	12	Flotation	10	3.8	3.8
Wall Trench	4	Flotation	10	0.2	0.2
Wall Trench	6	Flotation	10	0.1	0.1

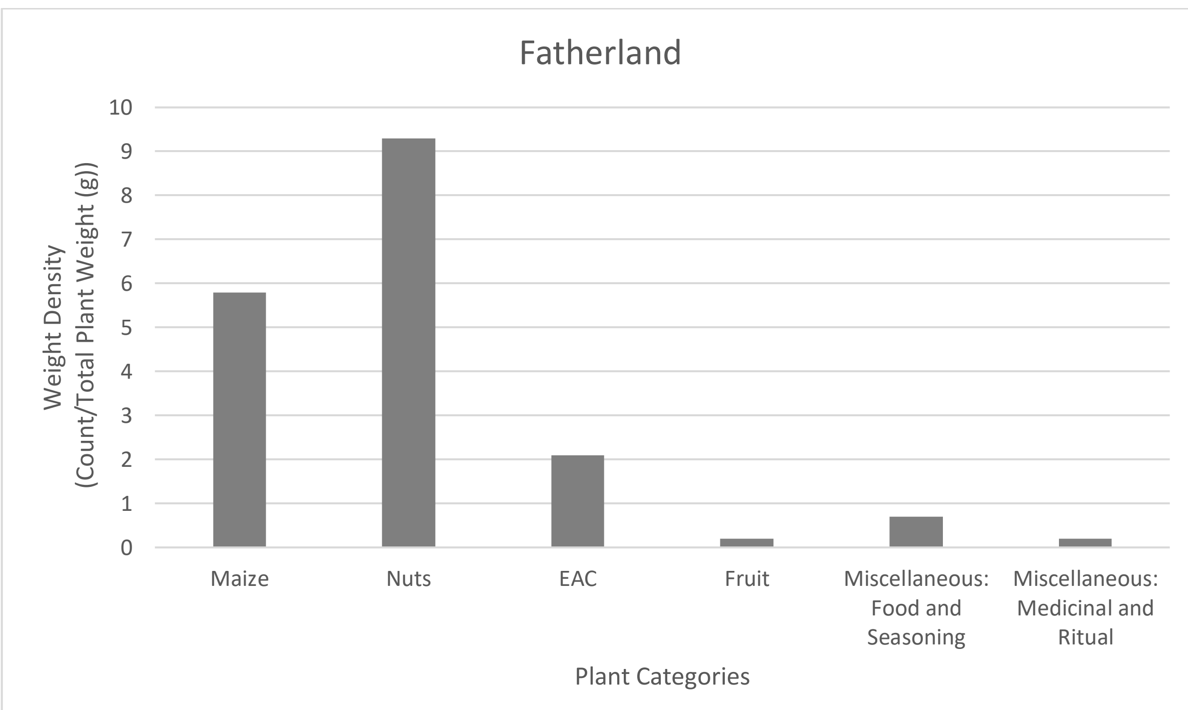

Figure 4.13. Comparison of major plant categories from Fatherland.

Table 4.16. Plants Identified from Fatherland.

Taxon	**Count**	**Standardized Count**
Nuts		
Acorn (*Quercus* sp.)	321	4.95
Hickory (*Carya* sp.)	276	4.26
Pecan (*Carya illinoinensis*)	1	0.02
Walnut (*Juglans nigra*)	5	0.08
Starchy and Oily Seeds		
Amaranth (*Amaranthus* sp.)	41	0.63
Chenopod (*Chenopodium* sp.)	20	0.31
Chenopod/Amaranth (*Chenopodium* sp/*Amaranthus* sp.)	8	0.12
Knotweed (*Polygonum* sp.)	18	0.28
Little Barley (*Hordeum pusillum*)	15	0.23
cf. Little Barley	1	0.02
Maygrass (*Phalaris caroliniana*)	31	0.48
Sunflower (*Helianthus annus*)	2	0.03
cf. Sumpweed/Sunflower	1	0.02
Tropical Cultigens		
Maize (*Zea mays*) kernel	260	4.01
Maize (*Zea mays*) cupule	114	1.76
Fruits		
Blackberry/raspberry (*Rubus* sp.)	5	0.08
Grape (*Vitis* sp.)	3	0.05
Maypop (*Passiflora incarnata*)	1	0.02
Persimmon (*Diospyros virginiana*)	5	0.08
Miscellaneous: Food and Seasoning		
Aster family (Asteraceae)	1	0.02
Bean/Persimmon	1	0.02
Cane (*Arundinaria gigantea*)	1	0.02
Grass family (Poaceae)	14	0.22
Legume family (Fabaceae)	1	0.02
Nightshade (*Solanum* sp.)	1	0.02
Purslane (*Portulaca* sp.)	29	0.45
Miscellaneous: Medicinal and Ritual		
Copperleaf (*Acalypha* sp.)	4	0.06
Morning glory (*Convolvulus* sp./*Ipomoea* sp.)	2	0.03
cf. Poke (*Phytolacca americana*)	1	0.02
Sedge family (Cyperaceae)	5	0.08
Tobacco (*Nicotiana* sp.)	1	0.02
Unknown	8	0.12

Table 4.16. Continued.

Taxon	Count	Standardized Count
Unidentifiable	56	0.86

Lessley presents a somewhat different pattern in that maize, EAC seeds, and nuts were used in relatively equal proportions. The variation between these sites could reflect a number of things, including differences in community preferences, event types, seasonality, or disposal context. Despite some variation, there are many similarities between these contexts as well. The use of nuts and EAC seeds remains consistent across all sites, even with the addition of maize.

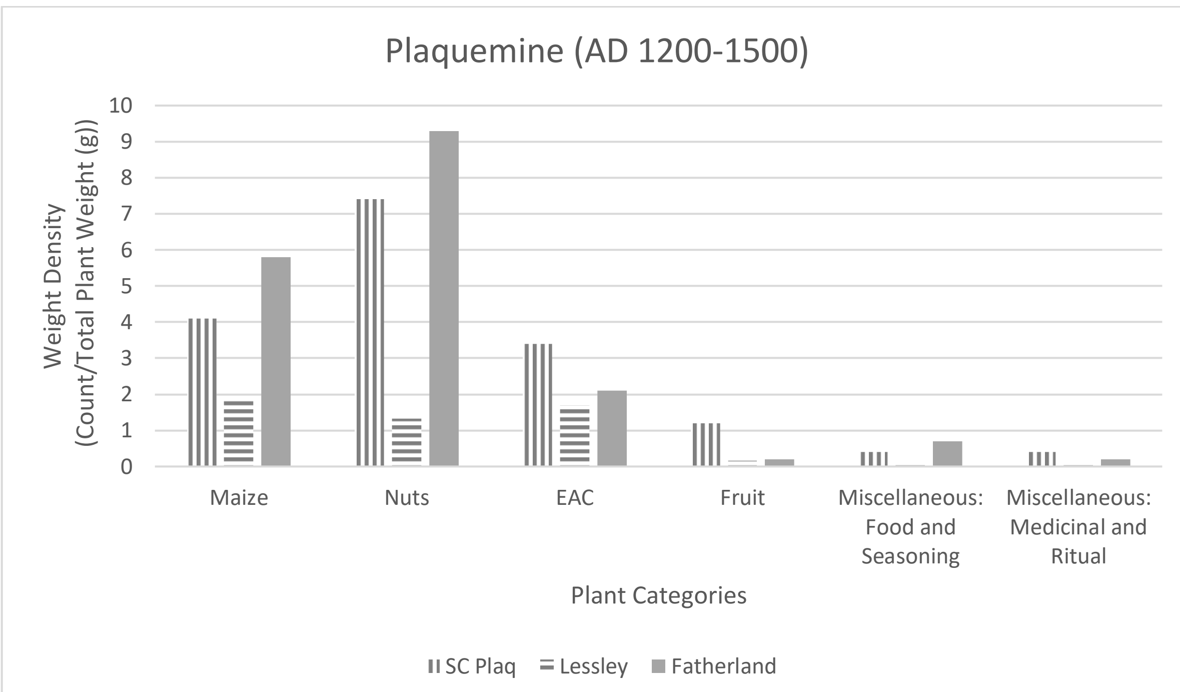

Figure 4.14. Comparison of major plant categories for the Plaquemine sites.

Additionally, the particular plants used and their proportions within these broader categories are relatively similar across the three sites. Hickory and acorn are the most abundant nut types identified, with black walnut and pecan used in low to moderate amounts. Starchy seeds were identified in higher numbers than oily seeds, with maygrass, chenopod, knotweed, and amaranth identified in the greatest quantities. As noted, this may reflect differences in preservation more so than actual use. Fruit remains, though seen in small quantities across all sites, follow similar patterns. Seeds from persimmon, grape, and bramble fruits are the most abundant. Finally, food and seasoning plants as well as medicinal and ritual plants are seen in similar quantities at both Fatherland and Smith Creek, though there are a greater variety of species seen for both categories at Smith Creek. This may be due to contextual differences between the more domestic like Smith Creek midden and the more event specific Fatherland midden.

Coles Creek to Plaquemine Comparison

Despite the addition of maize, plant food use remains relatively similar through time (Figure 4.15). Nuts were recovered in the highest abundance and EAC use remains fairly consistent through time, with fruits used in low to moderate quantities. However, both nut and EAC use appears to decline between the Coles Creek and Plaquemine periods. The Late Coles Creek samples are included solely to compare maize use through time, since there are too few samples from contexts comparable to the early Coles Creek and Plaquemine samples.

Statistical Analysis

Boxplots

To further explore plant category use through time, I also used boxplots. For the most part, I opted to only include Early Coles Creek and Plaquemine samples since these were the most contextually comparable. For each sample, the plant taxa categories were standardized using weight density (count/total plant weight) and subsequently log transformed.

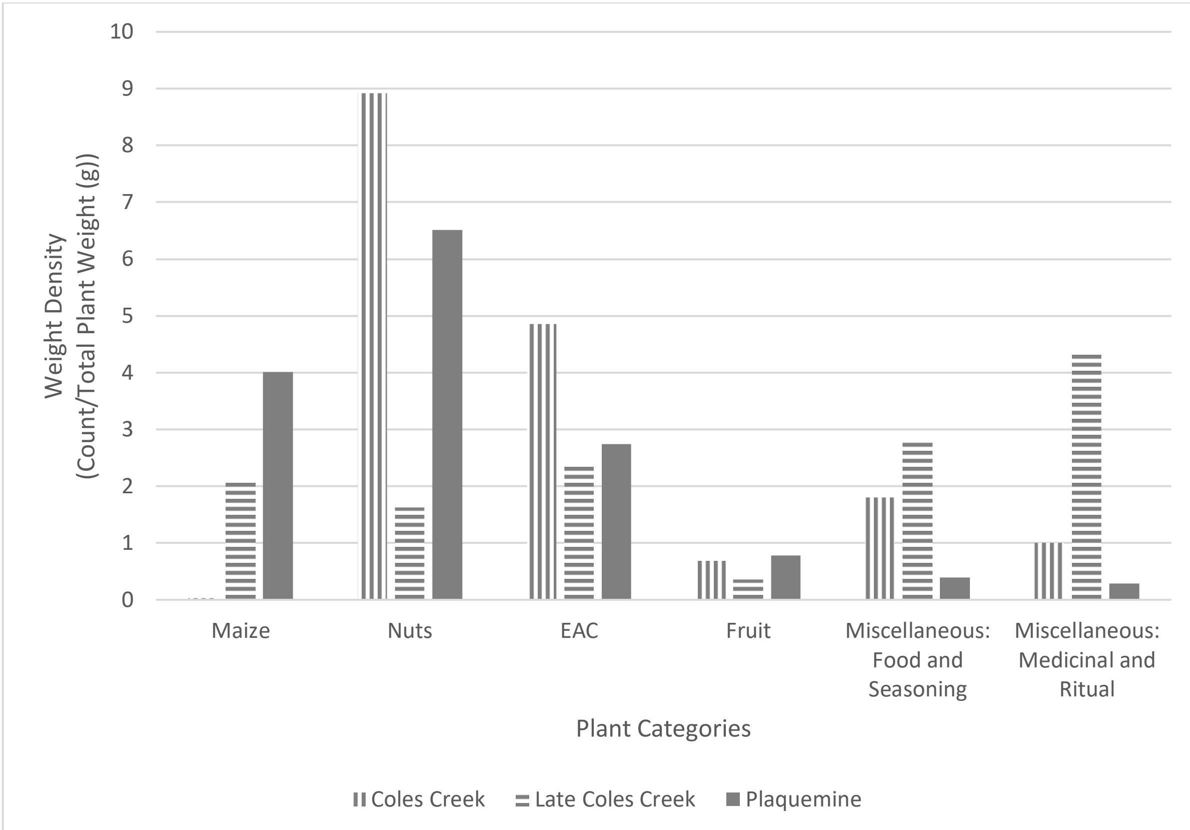

Figure 4.15. Comparison of major plant categories through time.

Log transformation allows for a better comparison between samples of different sizes (Scarry 1986; Marston 2014).

A boxplot of nut remains (Figure 4.16) shows that nut use is relatively consistent through time, despite the bar chart indicating a decline between the Coles Creek and Plaquemine periods. Though the median amount for the Plaquemine period, which is indicated by the thick black line, is lower than that of the Coles Creek period, the notches of the boxes still overlap slightly, indicating that the difference between the two medians is not statistically significant. Furthermore, the ranges of the two periods mostly overlap, also indicating relatively similar nut use through time. An examination of the nut taxa themselves reveals similar patterns. Acorn and hickory continue to be the primary nuts, and boxplot comparisons demonstrate that these taxa are used in similar amounts across both periods (Figure 4.17; Figure 4.18). This is in contrast to other regions, such as the Black Warrior Valley, where acorn use declines as maize use increases (Scarry 1986).

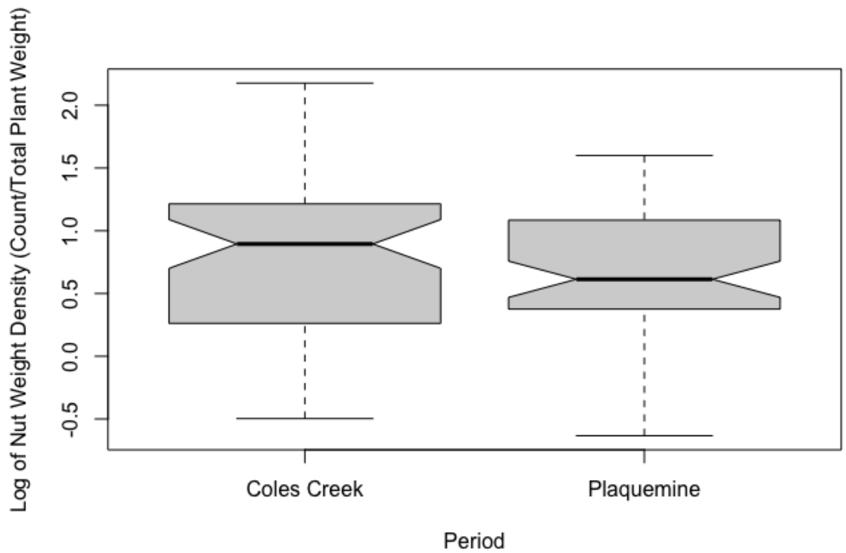

Figure 4.16. Boxplot comparing nut use through time.

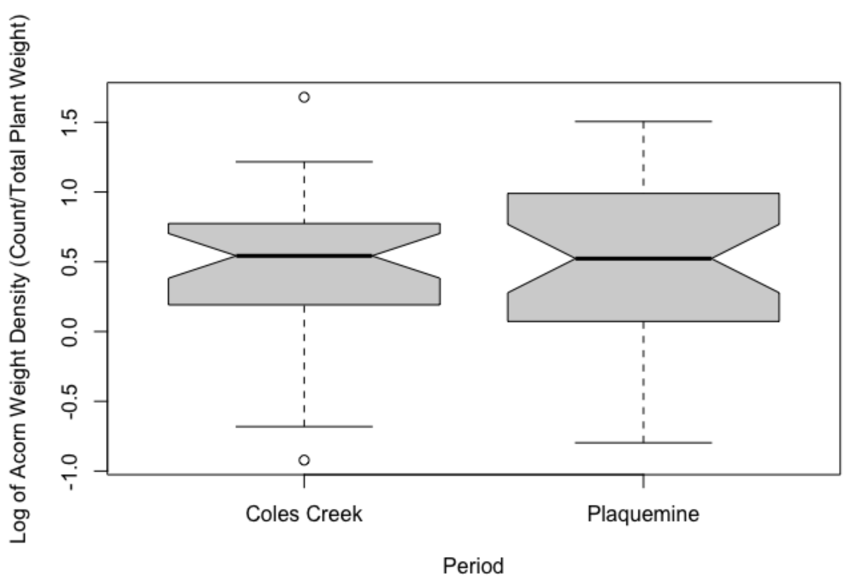

Figure 4.17. Boxplot comparing acorn use through time.

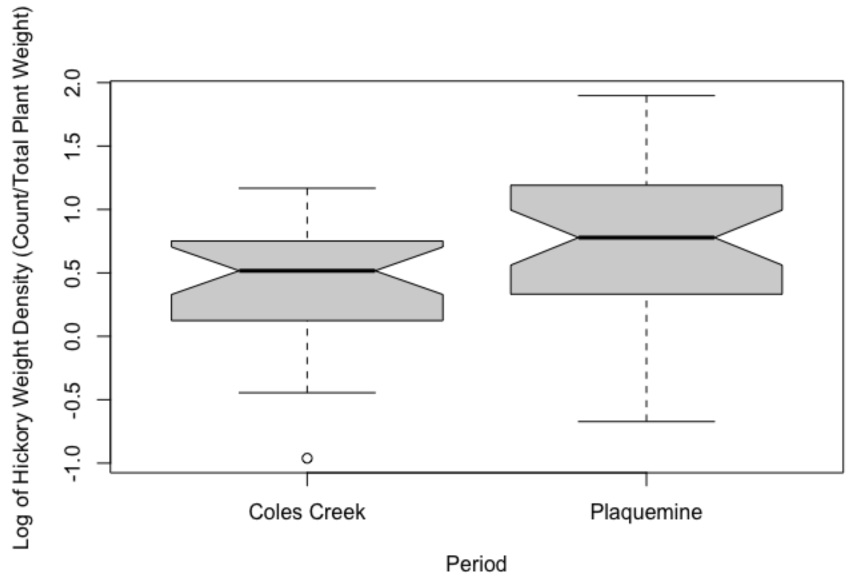

Figure 4.18. Boxplot comparing hickory use through time.

A boxplot of EAC use through time (Figure 4.19) confirms the pattern seen in the overall bar chart. The median Coles Creek amount is larger than the median Plaquemine amount, a difference that is statistically significant, as illustrated by the notches of the two boxplots, which do not overlap. A comparison of specific taxa used does not indicate any shifts in the most common plants. Chenopod, maygrass, amaranth, and knotweed remain the most abundantly used EAC taxa, and boxplots run on individual taxa suggest each of these plants were used in comparable amounts across both periods. This pattern falls in between what is seen in other regions, where EAC use has been observed to either decline dramatically or continue unchanged (Fritz 2019; Scarry 1993).

Fruit remains are consistently low in both periods as indicated by both the bar chart and a boxplot (Figure 4.20). Both the median amounts and the overall ranges are relatively similar between the two periods.

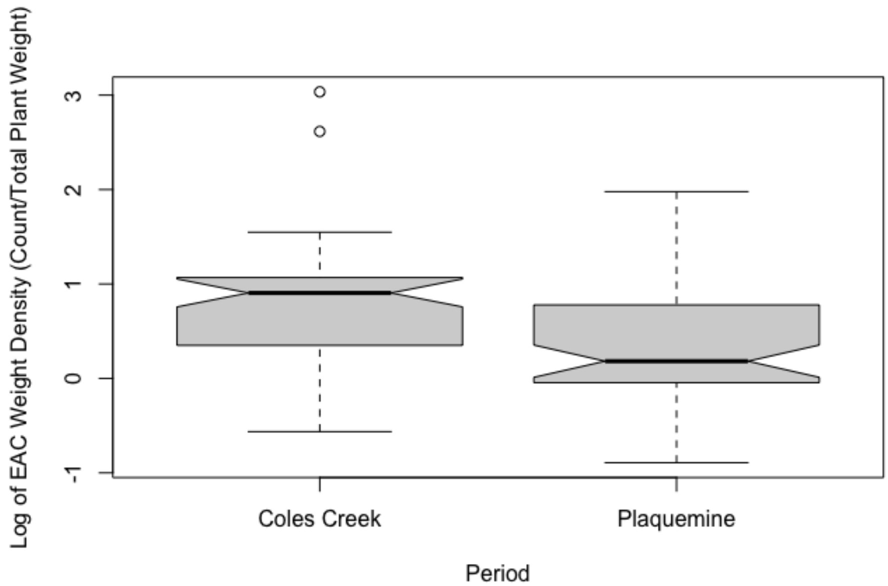

Figure 4.19. Boxplot comparing starchy seed (abbreviated as EAC) use through time.

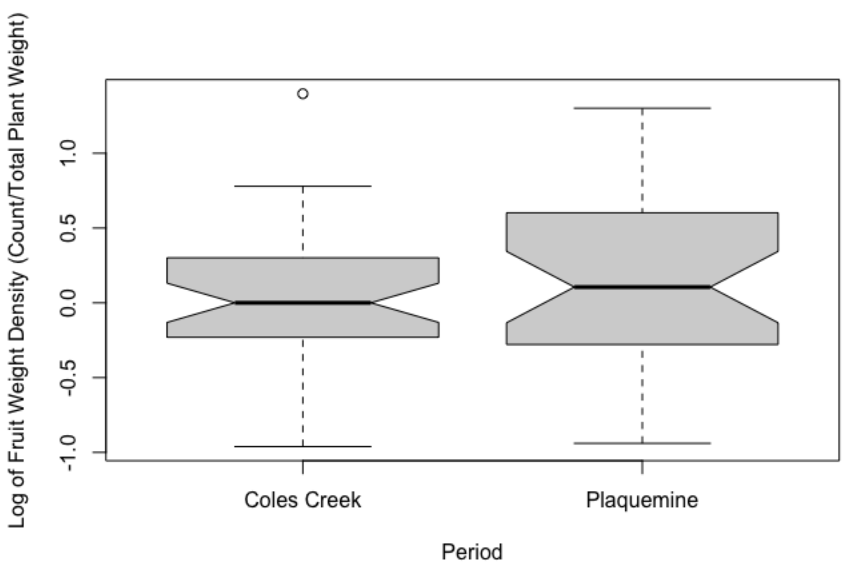

Figure 4.20. Boxplot comparing fruit use through time.

The fruit types used are also comparable between the two periods, with grape, persimmon, and bramble primarily identified and boxplots indicate these were used in comparable amounts.

I also compared maize use between the Late Coles Creek and Plaquemine periods using boxplots. For this analysis, I looked at both overall maize use as well as the ratio of kernels to cupules identified, which is used as a marker of processing stage (Welch and Scarry 1995). The bar chart indicates that maize use increases between the two periods. This is similar to the pattern identified by Fritz (2007) for the neighboring Tensas region. However, a boxplot comparison of my samples (Figure 4.21) indicates that maize use is comparable between the two periods. Not only do the median amounts almost exactly match each other, but the ranges are comparable between the two periods. The boxplots are comparing the weight density by sample, whereas the bar charts are comparing overall weight density for each site. Therefore, the bar chart indicates that the overall amount of maize is higher at Plaquemine sites, while the boxplots indicate that maize remains occur in similar densities per sample. Since the Late Coles Creek samples are all from specialized mound surface contexts, additional samples from non-mound midden contexts are needed to further explore this pattern. Notably, Roberts (2006) identified a much higher amount of maize use at the Late Coles Creek Lake Providence site as compared to the Late Coles Creek sites analyzed by Fritz. This may indicate that the timing of maize intensification was variable within the LMV, with some communities increasing maize production and consumption before others.

I also compared kernel-to-cupule ratios between the two periods. Following Scarry (1986), this ratio has been used to explore differences in maize processing between contexts or time periods. A higher ratio indicates maize has been pre-processed somewhere else than where the kernels were consumed and disposed, whereas as lower ratio indicates maize processing occurred in that area. This ratio has been used to identify provisioning as well as event-related differences between contexts (Scarry and Steponaitis 1997; VanDerwarker et al. 2007). Table 4.17 shows the total kernel-to-cupule ratio for the Late Coles Creek and Plaquemine period sites.

As seen in both the table and boxplot diagram (Figure 4.22), the kernel-to-cupule ratio is relatively low for both periods, with the exception of Bayou Pierre. This would indicate that maize processing and consumption occurred in the same areas. Further, this suggests that the treatment of maize at mound centers did not change after production intensified. This is in contrast to other mound communities in the Eastern Woodlands, such as Moundville, where there is more evidence for pre-processed, or provisioned, maize at mound centers through time (Welch and Scarry 1995).

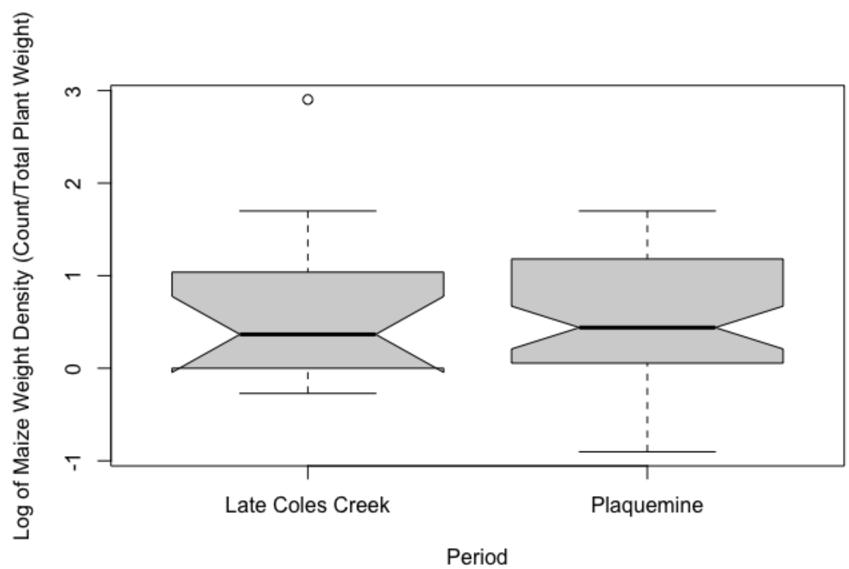

Figure 4.21. Boxplot comparing maize use through time.

Table 4.17. Kernel to Cupule Ratio for Late Coles Creek and Plaquemine Period Sites.

Smith Creek Late Coles Creek	**Bayou Pierre**	**Smith Creek Plaquemine**	**Lessley**	**Fatherland**
2.21	12.00	1.82	1.77	2.28

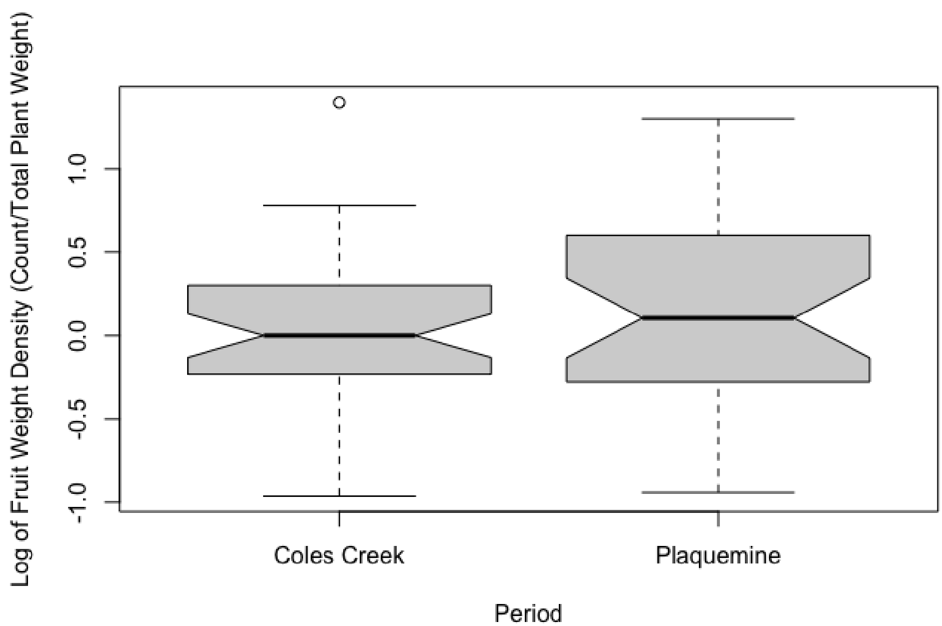

Figure 4.22. Boxplot of kernel to cupule ratio for Late Coles Creek and Plaquemine periods.

Miscellaneous Plants

Due to the wide variety of uses for the plants categorized as "miscellaneous," I chose to analyze them separately rather than lumping them as a whole. My first step was to identify more commonly used miscellaneous plants, as these were more likely to represent intentional use. I separated out taxa seen at multiple sites. Following other analysts (Roark 2020; Williams 2000), I then categorized these taxa as to their primary use, ultimately creating two major groupings: (1) food and seasoning and (2) medicinal and ritual (Table 4.18). The food and seasoning category includes plants that were either consumed in food or beverage form or may have served as a flavoring agent. Medicinal and ritual taxa are those primarily used for medicinal or ritual purposes. Treating these categories as mutually exclusive is somewhat problematic, though. Native peoples did not keep such neat distinctions between plants, with larger taxa, and even the same plant parts and dishes, serving as both foods and medicines (Williams 2000). Where possible, I tried to separate taxa according to their primary use, noting secondary use and overlap between the categories. After categorizing these taxa, I calculated ubiquity for each taxon by period to explore spatial and temporal patterns of use.

Food and Seasoning. Recent archaeobotanical studies have emphasized how certain "miscellaneous" plants may have served as core flavors for past cuisines (Hastorf and Bruno 2020; Oas 2019). However, due to differential use of plant parts, such as using the leaves rather than the seeds, these may not preserve in the archaeological record in the same quantities in which they were used. Yet, as Hastorf and Bruno argue, rather than ignoring the small quantities of seeds, we should instead acknowledge the consistent presence of certain taxa and explore how these may have fit into past cuisines.

As seen in Figure 4.23, there are three food and seasoning plants used during both the Coles Creek and Plaquemine periods. One of these, purslane, has a relatively high usage, occurring in at least 20% or more of samples from both time periods. The succulent leaves of purslane can be eaten raw or cooked, and the small seeds could be boiled or ground. Ethnographic accounts have recorded use of the leaves as a potherb and as well as the seeds for a flour (Castetter 1935; Palmer 1878; Rusby 1906). Additionally, three other plant types were used in low, but consistent amounts across both time periods.

Table 4.18. Miscellaneous Plant Categories.

Taxon	**Category**
Aster family (*Asteraceae* sp.)	Food and Seasoning
Bedstraw (*Galium* sp.)	Medicinal and Ritual
Blackgum (*Nyssa* sp.)	Medicinal and Ritual
Copperleaf (*Acalypha* sp.)	Medicinal and Ritual
Morning glory (*Convolvulus* sp./*Ipomoea* sp.)	Medicinal and Ritual
Nightshade family (*Solanaceae* sp.)	Food and Seasoning
Pokeweed (*Phytolacca* sp.)	Medicinal and Ritual
Purslane (*Portulaca* sp.)	Food and Seasoning
Spurge (*Euphorbia* sp.)	Medicinal and Ritual
Tobacco (*Nicotiana* sp.)	Medicinal and Ritual
Verbena (*Vervain* sp.)	Medicinal and Ritual
Yellow stargrass (*Hypoxis hirsuta*)	Medicinal and Ritual

These plants are an Aster family species, and Nightshade family species, a grouping which includes both ground cherry and nightshade. Though the Aster family species remains unidentified at this time, we can speculate that the leaves and roots of it may have been consumed, similar to how native communities consumed other Aster species. Though nightshade species (*Solanum* sp.) are often thought of as medicinal plants by archaeobotanists, they were also a food source for Native communities who consumed the fruits and used the leaves as potherb. Fruits of the other nightshade family species, groundcherry (*Physalis* sp.) were consumed both fresh and dried, and the seeds were occasionally ground as a seasoning by native communities (Kindscher et al. 2012).

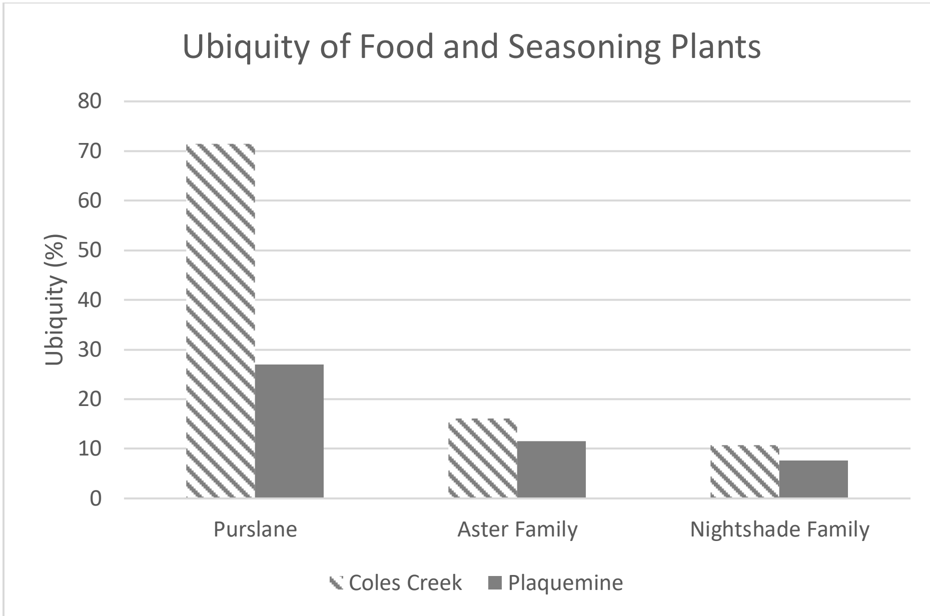

Figure 4.23. Ubiquity of food and seasoning plants in Coles Creek and Plaquemine contexts, showing consistent presence of Aster and Nightshade family plants through time and a decline in purslane through time.

Medicinal and Ritual Plants. This project primarily focuses on reconstructing food practices; however, in exploring the various "miscellaneous" taxa identified in the study assemblage, it was clear that several taxa had non-food uses as well. The presence of medicinal and ritual plants in these assemblages highlight the other activities that occurred at LMV mound centers alongside food consumption. All of the taxa were present in low amounts except bedstraw which was consistently identified in moderate to high amounts in both Coles Creek and Plaquemine contexts (Figure 4.24). Seven taxa were identified in contexts from both periods: bedstraw, pokeweed, yellowstar grass, morning glory, black gum, verbena, and copperleaf. Two of the taxa had more limited use; spurge seeds were only identified in Coles Creek contexts and tobacco seeds were only identified in Plaquemine contexts. Though evidence from pipes demonstrates that the plant was used during the Coles Creek period as well (Carmody et al. 2018).

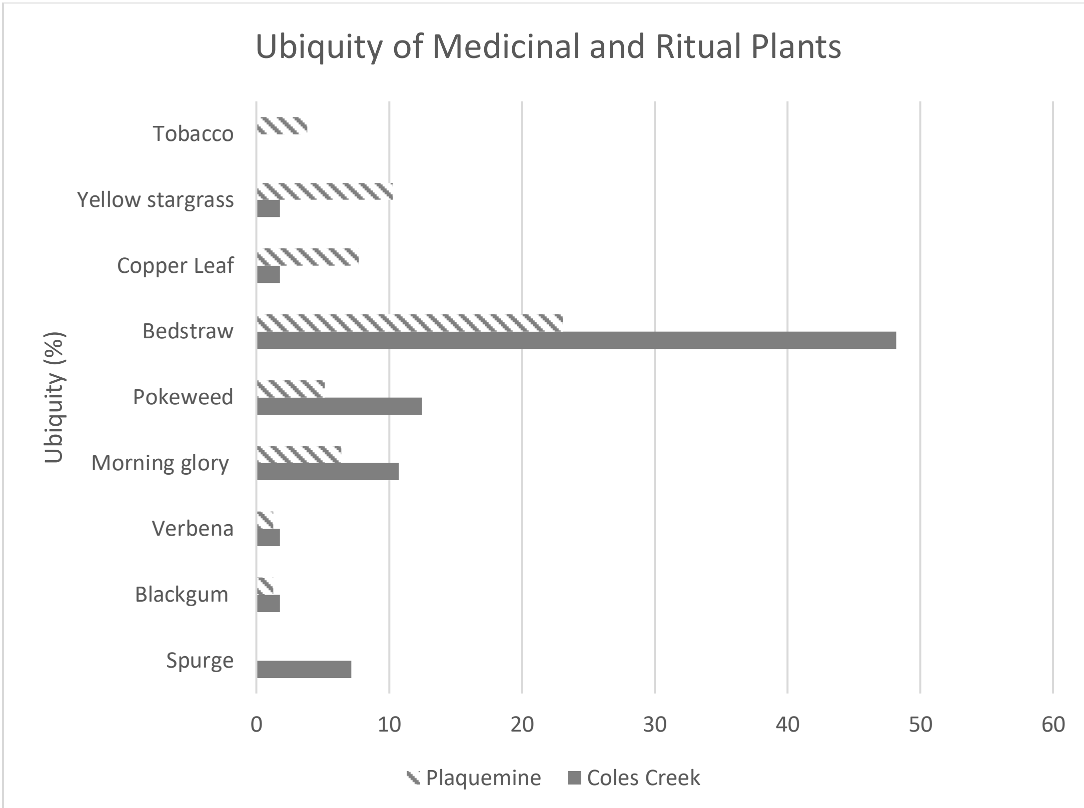

Figure 4.24. Ubiquity of medicinal and ritual plants in Coles Creek and Plaquemine contexts.

Multivariate Analyses

I also conducted Correspondence Analysis along several temporal and spatial scales. Following Bush (2004), I was interested in whether I could identify a pattern for LMV plant use that could be characterized as a cuisine. To do this, I needed to compare the Natchez Bluffs assemblage to assemblages from sites both within and outside the LMV to see if regionally distinct plant use patterns existed. I also sought to compare plant use before and after the introduction of maize. Similar to the boxplot analyses, I opted to only include Early Coles Creek and Plaquemine samples since these were more contextually comparable.

Temporal Comparison within the Natchez Bluffs. My first scale of comparison was within the Natchez Bluffs. I ran a Correspondence Analysis for the major taxa categories, nuts, native seeds, maize, and fruits (Figure 4.25). Dimension 1, or the x-axis, is the source of 88.6% of the variation seen in the plot. This relates to a difference between the use of maize and the other primary subsistence items, nuts and EAC seeds. As seen in the plot, this resulted in the Plaquemine sites loosely clustering on the right side of the axis, pulled towards maize, and the Coles Creek sites pulled towards the left, away from maize. Dimension 2, or the y-axis, is the source of a much smaller amount of variation, 9.1%. This dimension relates to differences in EAC and nut use. Sites with higher EAC use are pulled upward on the y-axis, as exemplified by both the Coles Creek component at Smith Creek and the Plaquemine site Lessley. Sites with higher nut use are pulled lower on the y-axis, as exemplified by Feltus and Fatherland. The Plaquemine component at Smith Creek is positioned near the x-axis indicating a relative equal distribution of nuts and EAC compared to the other sites. Fruit, which is used in relatively low amounts through time, is seen clustering near the origin, indicating a relatively similar distribution at all sites.

Overall, the biplot displays the temporal patterning related to maize, which separates Coles Creek and Plaquemine sites. It also shows variability in plant use at sites from all periods, particularly related to patterns of nut and EAC use. These patterns could be the result of a number of factors, including differences in community preferences, seasonality, environment, or event type.

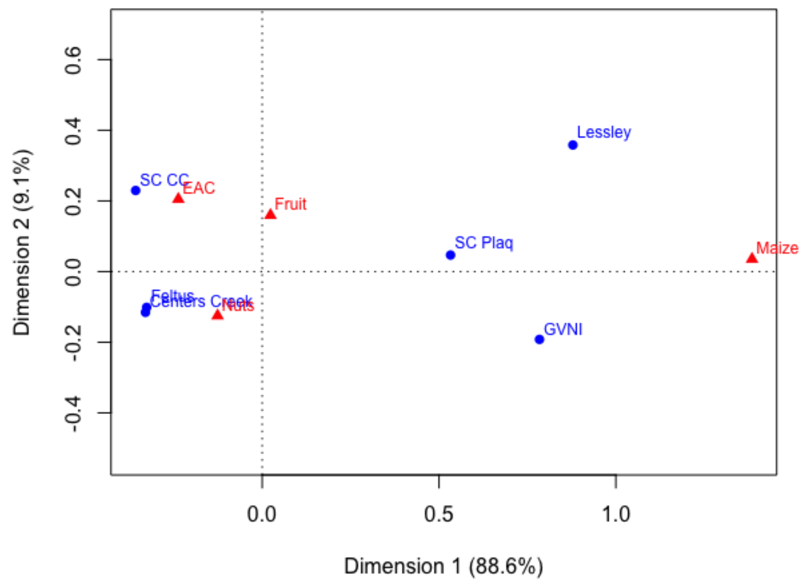

Figure 4.25. Correspondence Analysis biplot of plant use for Natchez Bluffs sites. Key to abbreviations: EAC, Native Starchy and Oily Seed Plants; SC CC, Smith Creek Coles Creek; SC Plaq, Smith Creek Plaquemine; GVNI, Fatherland.

Temporal Comparison within the LMV. I also used Correspondence Analysis to compare Natchez Bluffs plant use patterns to those of communities in the Tensas Basin (Figure 4.26). Data for this analysis was sourced from analyses by Roberts (2006) and Fritz (2008a) and includes three Coles Creek sites and four Plaquemine sites. Dimension 1, which accounts for 72.1% of the variation displayed, relates to the presence or absence of maize. Plaquemine sites of both regions loosely cluster on the right side of the x-axis, pulled by maize, while Coles Creek sites loosely cluster on the left side, pulled away from maize. Dimension 2, which accounts for 24.7% of the variation, relates to differences in EAC and fruit use primarily, and reveals an interesting regional pattern. The Natchez Bluffs sites all fall on the lower half of the y-axis, pulled towards EAC plants, whereas the Tensas sites are primarily on the upper half of the y-axis. An exception to this is the Coles Creek component at the Hedgeland site, which clusters with the Natchez Coles Creek sites. Hedgeland has previously been noted by both Roberts (2006) and Fritz (2007) to represent somewhat of an outlier in Tensas Basin plant use patterns due to the large amount of EAC seeds present. Additionally, Routh and Emerson, two Plaquemine sites, fall almost directly on the x-axis, indicating that at these sites there is a fairly equal distribution of nuts, fruits, and EAC seeds relative to other sites. Nuts, which are used in fairly high amounts at all sites, cluster near the origin, indicating their equal distribution. Notably, this analysis shows the relative similarity of Natchez Bluffs sites to one another. As seen in the biplot, the Natchez Bluffs sites cluster together by their respective period, indicating they are more similar to one another than they are to the Tensas sites of that period. Several insights can be gained from this analysis. First, despite cultural similarities, such as a shared mound-building culture and pottery stylistics, Natchez and Tensas groups have distinct patterns in plant use. These may be attributed, in part, to the different ecological settings of the two regions. The upland communities of the Natchez Bluffs would have had access to different resources than the swampy, bottomland communities of the Tensas Basin. In all likelihood, these environmental differences became enshrined in community food preferences and subsistence strategies (LaDu and Funkhouser 2018). Second, these regional differences are mostly maintained despite the introduction of maize. This indicates that communities in each region adopted maize in variable ways related to their existing cuisines.

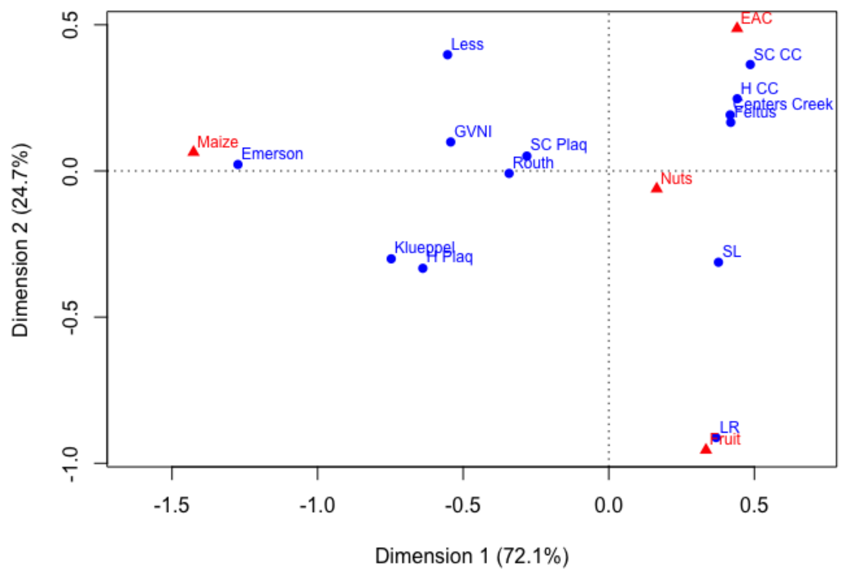

Figure 4.26. Correspondence Analysis biplot of plant use at Natchez Bluffs and Tensas Basin sites. The Natchez Bluffs sites cluster together by time period, with Coles Creek sites in the lower left axis and Plaquemine sites in the lower right. Key to abbreviation: EAC, Native Starchy and Oily Seed Plants; SC CC, Smith Creek Coles Creek; SC Plaq, Smith Creek Plaquemine; Less, Lessley; GVNI, Fatherland; H CC, Hedgeland Coles Creek; LR, Lisa's Ridge; SL, Shackleford Lake; H Plaq, Hedgeland Plaquemine.

Eastern Woodlands Finally, I also used Correspondence Analysis to compare Natchez Bluffs plant use patterns to other Late Woodland and Mississippian communities in the Eastern Woodlands (Figure 4.27). To do this, I used a dataset compiled by Margaret Scarry, which includes Late Woodland and Mississippian sites from the American Bottom, the Black Warrior River Valley, the Ohio River Valley, and the Tombigbee River Valley. I also included the Coles Creek and Plaquemine sites from the Tensas Basin. I opted to keep the Natchez Bluffs sites separate, rather than combining them by time period, though the sites from other regions are aggregated by time period. I chose to keep the Natchez Bluffs sites separate in order to track where they plotted in relation to each other, as well as the other communities. Dimension 1, which accounts for 60.6% of the variation in the biplot, relates to the use of maize. Accordingly, all Mississippi period sites cluster on the right side of the plot, pulled towards maize. The Late Woodland sites are on the left side, with those with some maize use pulled towards the center. Dimension 2, which accounts for 34.9% of the variation in the biplot, relates to the use of gathered resources, nuts and fruits, versus cultivated ones, EAC seeds and maize. American Bottom sites of both periods, which have been recognized for the extensive use of cultigens, are pulled down, as are the Mississippian period Summerville sites of the Tombigbee River. Sites from other regions cluster towards nuts, indicative of the continued importance of this resource.

Notably, the Natchez Bluffs sites continue to cluster together. With the exception of Lessley, which clusters near the origin due to a low, but relative equal distribution of all resources, the four other Natchez Bluffs sites cluster together near the middle of the biplot. While this cluster is somewhat loose, these sites are much closer to one another than the other Late Woodland and Mississippian regional pairings. The proximity of the Natchez Bluffs sites within this analysis is significant for two reasons. First, it demonstrates that plant food use in the region follows a similar pattern across space and through time, suggesting the existence of a regional cuisine. Second, this analysis demonstrates that this cuisine signature is mostly unchanged by the addition of maize. Plaquemine period communities in the Natchez Bluffs consumed plant foods in similar ways to their Coles Creek predecessors.

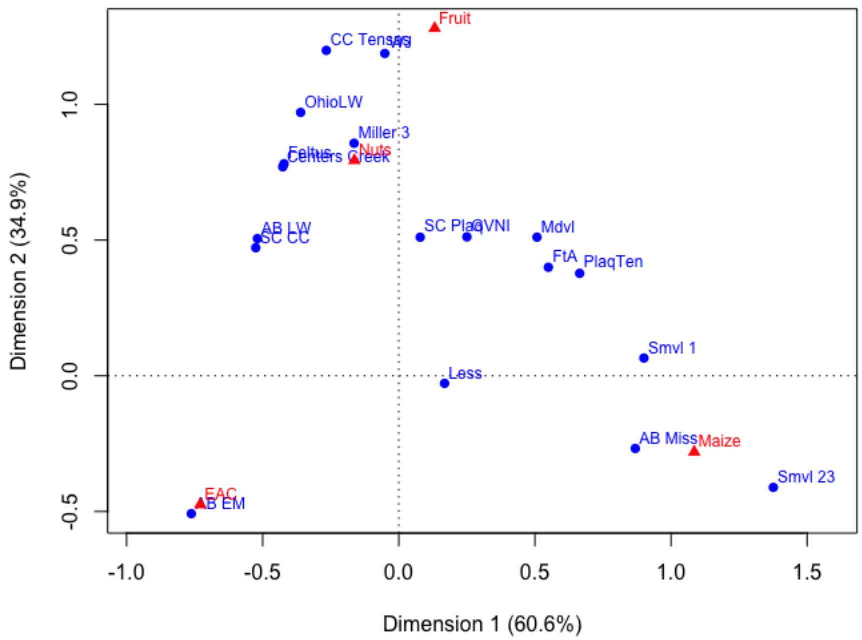

Figure 4.27. Correspondence Analysis biplot for Eastern Woodlands sites. The Natchez Bluffs sites, SC CC, SC Plaq, GVNI, and Feltus cluster near the center of the graph near nuts. Key to abbreviatons: EAC, native starchy and oily seed plants; SC CC, Smith Creek Coles Creek; SC Plaq, Smith Creek Plaquemine; Less, Lessley; GVNI, Fatherland; AB LW, Late Woodland American Bottom; AB EM, Emergent Mississippian American Bottom; AB Miss, Mississippian American Bottom; WJ, West Jefferson; Mdvl, Moundville; OhioLW, Late Woodland Ohio River Valley; FtA, Fort Ancient sites; Miller 3, Miller III; Smvl 1, Summerville I; Smvl 23, Summerville II/III; CC Tensas, Coles Creek Tensas Basin; PlaqTen, Plaquemine Tensas Basin.

Summary and Conclusion

The analyses presented in this chapter showed that Coles Creek communities in the Natchez Bluffs had a cuisine based on nuts and starchy seeds, some of which were domesticated and others which may have been managed and gathered. In addition to these main staples, fruits and other plants, such as purslane and an Aster family member, flavored these dishes. The correspondence analyses demonstrated that, though there is some variation to this pattern by site (such as higher starchy seed use at Smith Creek), communities in the Natchez Bluffs have similar patterns of plant use that can be considered an overarching cuisine. This cuisine is particularly apparent when comparing the Natchez Bluffs assemblage to those from other regions. Notably, Coles Creek plant use in the Bluffs is distinct from that of communities in the neighboring Tensas Basin. This pattern was first recognized by Kassabaum (2014), but the additional Coles Creek data presented here further confirm it.

While limited, the data from Late Coles Creek contexts does provide some insights, particularly regarding initial maize use. Maize has been radiocarbon dated from multiple Late Coles Creek contexts at project sites, all of which have returned dates between AD 1000 and 1100. Maize has not been identified from any earlier contexts. These dates are similar to what Roberts (2006) and Fritz (2000) had previously established for maize in the Tensas Basin. However, the question of whether Natchez Bluffs communities also delayed intensification for several centuries is more complicated. Comparisons of the overall standardized count of maize from Late Coles Creek and Plaquemine contexts indicate maize use nearly doubled between the two periods. I also calculated ubiquity percentages which returned 55% from Late Coles Creek contexts and 86% from Plaquemine contexts, further suggesting that intensification occurred later. However, a sample-by-sample comparison via boxplots suggests relatively similar use. Due to the special nature of the Late Coles Creek contexts sampled, more samples are needed from off-mound middens and non-mound contexts to investigate this question further. These samples do demonstrate that maize was used during mound-summit activities, and its association with tobacco, morning glory, and other rare taxa suggests it was part of specialty meals and practices. Again, additional samples from non-mound center contexts would help determine whether maize was solely used as a specialty plant at this time, as Fritz (1998) has suggested, or if it had broader use.

The Plaquemine plant assemblages analyzed for this project demonstrates a mixture of change and continuity. Maize is a major addition to the cuisine, and coincides with a decline in native starchy seeds. Notably, this decline is not to the level seen in other Plaquemine or Mississippi-period communities, and may reflect more of an accommodation for maize, another starchy plant, than a complete replacement (Roberts 2006; Scarry 1993; VanDerwarker et al. 2017). Communities continued to consume nuts in similar amounts, as indicated by the boxplots. People also continued to use several of the miscellaneous sub-category food and seasoning plants, including purslane, an Aster family member, and nightshade family plants, which I argue following Oas (2019) and Hastorf and Bruno (2020), contributed to the flavor signature of Natchez Bluffs foodways. As with the Coles Creek sites, there is still some variation to plant use by community, such as greater nut use at Smith Creek and Fatherland compared to Lessley and the continued use of Type X and native rye at Smith Creek. However, as the Correspondence Analyses demonstrate, Plaquemine plant-use patterns are more similar than different, particularly when compared to other regions.

Overall, the results discussed in this chapter indicate that despite some changes, namely the addition of maize and decline in starchy seeds, Natchez Bluffs communities continued many of the same patterns of plant use through time. I argue that maize serves as an addition, rather than a substitution, to existing menus and meals. In the subsequent chapters, I present the results of the ceramic vessel analysis and then discuss what these two lines of evidence indicate about continuity and change for Natchez Bluffs cuisine.

CHAPTER 5: POTTERY

Cuisine is often characterized as the foods and flavors of community foodways. While these are important aspects of cuisine, focusing on them alone overlooks what is arguably one of the most important structures behind the style of cuisine: how foods are prepared. Cooking, by which I refer to blending, boiling, stewing, parching, roasting, among many other methods, is the essential act by which ingredients are transformed into the essential products, or dishes, that define cuisine (Weismantel 1988). The remains of this transformation process are visible in the archaeological record through several means, but most prominently through pottery. Here the echoes of preparation and consumption methods and their resulting food products can be seen by connecting vessel form with function.

People make pots to serve one, or often, multiple functions, such as storage, food processing, cooking, and serving. Archaeologists have recognized that function can be reconstructed through careful study of whole vessels and vessel fragment attributes. Ethnographic work and a variety of foundational studies have demonstrated that within functional categories, such as cooking, storage, and serving, vessels often have certain morphological requirements (Henrickson and McDonald 1983; Smith 1985). By observing and recording characteristics such as vessel shape, size, wall thickness, temper, surface treatment, and wear patterns, archaeologists can consider how these characteristics would aid particular uses and thereby begin to reconstruct both intended vessel function and actual use. While these measurements are ideally done on whole vessels, these are rarely found on archaeological sites. Fortunately, archaeologists working in the southeastern U.S., and elsewhere, have successfully demonstrated that vessel function can also be reconstructed from sherds and partial vessel fragments (e.g., Boudreaux 2010; Hally 1986; Kassabaum 2018a; Nelson 2019; Pauketat 1987; Wilson and Rodning 2002).

The starting point for most functional studies is a reconstruction of vessel shape and size. Ethnographic studies have revealed that vessels of particular functional classes often follow distinct design parameters. For example, cooking pots often have a slightly restricted mouth to reduce evaporation, while serving vessels often have more open mouths to facilitate access (Henrickson and McDonald 1983; Smith 1985). Alongside these ethnographic observations, archaeologists have also proposed several ways of connecting form to function. Braun (1980) connects form and function using two central principles: frequency of access and containment security. Frequency of access refers to how often people need to add, remove, or manipulate vessel contents. This is reflected in wider vessel openings for serving vessels where easy access to contents is important, and conversely, in more restricted orifices for certain storage vessels where contents are stored for longer periods of time and/or are less frequently needed (Smith 1985). A related concept, containment security refers to how likely, or not, a vessel's contents are to escape from it unintentionally. High containment security is important for storage and cooking vessels, where content overflow can result in loss of materials or a dampened fire, in the case of cooking. Containment security can be reflected in multiple aspects of a vessel's morphology: a restricted orifice can prevent evaporation or boiling over and high vessel walls and/or vessel neck can similarly protect vessel contents. Rice (1987) has identified four important characteristics for relating vessel form to function: capacity, or how much a vessel can hold; stability, or ability of a vessel to remain upright; accessibility or how easily contents can be manipulated, removed, or added; and transport, or how easily a vessel can be moved.

Reconstructing vessel size is equally important to functional vessel analysis. Differences in vessel size can be an indicator of household or gathering size (e.g., Turner and Lofgren 1966), activity differences, such as public feasting vs. household meals (e.g., Blitz 1993), or an indicator of different food-processing requirements (e.g., DeBoer and Lathrap 1979; Nelson 1981, 1985). Vessel shape and size have an intertwined relationship. Archaeologists have recognized that the same vessel form can be made in a variety of sizes that often have distinct functions from one another (Skibo 2013). For example, in the southeastern U.S., archaeologists have observed that the "Mississippian standard jar" came in a variety of sizes that likely had different functions. These scholars have posited that small and medium jars were more likely used for cooking, which sooting and oxidation patterns corroborate; larger jars, in contrast, were likely used for storage, as they would have been too heavy to move or put on a fire once filled (Briggs 2016; Hally 1986; Pauketat 1987). This example highlights both the variation in function according to size and the importance of other variables, such as use-wear, for distinguishing those functions.

Observations of vessel use-wear, such as scraping, pitting, sooting, and oxidation, are another important method for reconstructing vessel function. Use-wear is important because it can help reveal actual function. Actual function, as opposed to intended function, refers to how pots were actually used. As noted by Skibo (2013), pots can be made for one thing and ultimately used for another or multiple other things. In some cases, this is because needs have changed, and in other cases it reflects the multifunctional nature of certain vessel forms. While vessel shape and size can show the intended, ideal use of a vessel, wear patterns, such as sooting and scraping, can reveal how the vessel actually functioned. Ideally, use-wear observations are made with whole vessels where the analyst can determine the full range of patterns (e.g., Briggs 2016; Miller 2015; Van Keuren and Cameron 2015). However, archaeologists mostly work with sherds and not whole vessels. While use-wear observations are more limited with sherds and archaeologists must be careful not to overinterpret their findings, these types of observations can still provide helpful information on vessel use, especially when one can determine from where on a pot a sherd originated.

Studies of the presence and location of sooting are useful for identifying cooking pots. The presence of soot by itself can be an indication that a vessel was used for cooking (Hally 1983; Skibo 2013). The thickness of sooting deposits as well as their location on the vessel can also be used to determine how often a vessel was used for cooking, placement of vessel in relation to the fire, and/or cooking mode (Boudreaux 2010; Briggs 2016; Hally 1983; Hawsey 2015; Miller 2015; Skibo 2013). Scraping can be a general sign of content manipulation within a vessel during its use-life (Hally 1986; Skibo 2013). This can occur due to the mixing of ingredient during food processing, stirring during cooking, serving with a utensil, or removal of stored contents. Using ethnographic examples from the Kalinga, Skibo (2013) shows how different activities can produce different types of scraping on the interior of vessels. His detailed descriptions of particular activities, such as preparing a stew or washing a vessel, highlight both the types of scraping, such as deep or shallow, and their relative location on the vessel. Pitting refers to depressions on the vessel wall, usually circular or ovoid, where bits of vessel surface have been removed. Some pitting is the result of the spalling of a vessel wall, usually due to thermal or mechanical stress, where pieces of temper and/or vessel body are dislodged (Hally 1983). Pitting can also be the result of chemical corrosion or physical abrasion of the vessel surface. As noted by Hally (1983), stirring, scraping, grinding, or pounding could all cause pitting, particularly if the vessel body already contained faults or weaknesses due to thermal shock. In certain cases, pitting may also be the result of chemical corrosion, which is caused by the interaction of vessel contents with the vessel surface, such as during the fermentation of alcohol or with alkaline substances such as lime or lye used for nixtamalizing maize (Hally 1983; Skibo 2013).

In this chapter, I present a functional vessel analysis of Natchez Bluffs pottery. Careful study of vessel form, size, and other characteristics such as use wear sheds light on the cooking and eating practices of these communities through time. I have several goals for my functional vessel analysis. The first is to determine how people prepared and served food prior to the introduction of maize. Questions that inform this goal include: What vessel forms and sizes did people use? What does use-wear data indicate about how vessels were used? The second goal is to determine whether vessel assemblages changed through time. Questions that inform this goal include: Was a new vessel form or size introduced? Do the proportions that particular vessel forms and sizes were used in change? Do use-wear data indicate a change in how vessels were used? My final goal is to connect the ceramic data to the subsistence and social changes that occurred. Can changes in vessel form, size, or use-wear be connected to the introduction of maize? Does the ceramic assemblage indicate changes to communal meals?

In the following sections, I present the results of the functional vessel analysis and attempt to answer those questions. I first provide a literature review of previous ceramic studies for the region. Next, I describe my study assemblage, noting potential biases introduced by the archaeological contexts and my sampling strategy. I then discuss the methods I used and the observations I recorded on each sherd. Following this, I present the results from my analyses. I begin with an overview of the ceramic forms identified and then discuss each form category individually. I conclude by discussing pottery use through time, highlighting the temporal patterns identified through my analyses.

Previous Ceramic Studies

Studies of pottery in the LMV initially focused on decoration and stylistics, following and expanding upon the type-variety system established by Phillips (1970). Vessel form has often been included in these studies, as researchers have noted that some types tend to occur on particular shapes. By the mid-1980s, researchers had established both the important decorative types and vessel forms for the Coles Creek and Plaquemine periods (Brain 1978; Ford 1951; Hally 1972; Phillips 1970; Steponaitis 1981; Williams and Brain 1983). Similar to other regions, functional studies became popular in the 1990s following the publication of several seminal studies (e.g., Henrickson and McDonald 1983; Hally 1986). In general, Coles Creek assemblages have received more functional attention, though a few Late Coles Creek and Plaquemine assemblages have also been studied and reported (Jones 1996; Kassabaum 2014, 2018a; Roe 2010; Ryan 2004; Weinstein 2005; Wells 1998). These studies have been foundational, establishing a basis for understanding how pots may have been used by linking functional considerations, such as containment security and frequency of access, with observations of vessel shape and use-wear. Moreover, these studies have established a precedent for systematically recording and reporting vessel shape and size. Kassabaum (2018a), through a case study of Coles Creek vessels, has recently introduced more robust descriptions in an attempt to standardize vessel shape categories.

Several temporal patterns have been identified through these functional studies. Many of these patterns were first identified by Jones (1996) in his study of Coles Creek period vessels at Osceola. Since deposits at Osceola range from early to late Coles Creek (AD 750–1000), these patterns have important bearing on the subsistence and social changes ongoing across that period. Subsequent work at other sites, including those with Plaquemine deposits, has both corroborated and questioned Jones' arguments. The first temporal pattern is a decrease in the use of bowls through time, which has been speculated to relate to smaller communal event sizes. (Jones 1996; Lee et al. 1997; Ryan 2004). A recent systematic review of regional datasets by Kassabaum (2014:236) has argued that this decline is less dramatic than has been previously reported. She notes that restricted bowls show a greater decline than other bowl types. Since restricted bowls were more likely used for cooking than serving, she interprets this as tied to subsistence changes rather than social ones. However, Kassabaum (2014) does acknowledge that bowl size seems to reduce through time, which would support the argument for smaller gatherings. A second trend relates to an increase in beakers and jars through time. Some researchers have argued that this indicates a change in mound center activities from communal consumption venues to elite restricted areas focused on storage (Jones 1996; Roe 2010). Other researchers have suggested that this may relate to subsistence changes, such as the introduction of maize or an increasing emphasis on native cultigens (Lee et al. 1997; Kassabaum 2014). Notably, none of these studies have attempted to bring use-wear data to bear on this argument. A final trend is an increase in smaller beakers through time, which has been noted at several sites (Jones 1996; Kassabaum 2014; Roe 2010; Ryan 2004). Jones (1996) argues that, concomitant with more exclusive gatherings, there is an increasing emphasis on drinking rituals involving these vessels.

I build on these studies by using the form categories established by previous researchers. However, I also focus on systematically identifying vessel size categories and use-wear patterns. Previous studies have reported vessel size and have even suggested possible size classes, but these tend to be more nebulous than categorical (Kassabaum 2014; Ryan 2004; Wells 1998). Additionally, use-wear data are often reported anecdotally or listed in appendices without any attempts at analysis. In the sections that follow, I introduce my assemblage and discuss my methods in more detail.

The Sample

I collected data on sherds from Coles Creek contexts at Feltus and Smith Creek and from Plaquemine contexts at Smith Creek and Lessley. I also had originally intended to also collect data on sherds from Late Coles Creek contexts. However, the Late Coles Creek contexts in this study, Bayou Pierre and Smith Creek, did not yield a large enough assemblage of measurable sherds. A future functional study should address how pots were being used during this period.

The sherds analyzed for this project primarily come from midden deposits, mound surfaces, and features from those mound surfaces. Data were also collected on sherds from mound fill and other mixed contexts, but these contexts often did not produce sherds large enough to assess vessel form. Furthermore, the mixed nature of these contexts makes it difficult to track temporal changes. Therefore, while these data will occasionally be used for general statements, my analyses are almost entirely focused on sherds from primary refuse deposits. The assemblages from these deposits are made up entirely of sherds, although it was possible to reconstruct some partial vessel fragments. No whole pots were uncovered during excavation or were able to be reconstructed in the laboratory. All of my contexts represent refuse contexts, rather than behavioral contexts. Behavioral contexts, such as a catastrophically burned house, are rare archaeologically. Due to the nature of destruction, these contexts allow for a better view into the full range of ceramic forms and intended uses (Pauketat 1987). More common are refuse deposits, where pots, or portions of pots, are discarded as they break. These contexts overrepresent pots that are broken more frequently, such as cooking pots (Pauketat 1987; Skibo 2013). My assemblages are potentially further biased due to their association with mound center contexts. As generally more public-centered spaces, these have the potential to favor certain activities, such as feasting or communal storage (e.g., Blitz 1993). Kassabaum (2018a, 2018b) notes a higher proportion of serving wares as compared to cooking wares in Feltus deposits, suggesting that cooking forms may be underrepresented in my assemblage. However, a comparison of a mound center assemblage and an associated non-mound site assemblage in the Tensas Basin area indicates roughly similar proportions of vessel forms and sizes between the two site types (Wells 1998). While I do not have comparable non-mound site data to compare to my assemblages to test this, I take the Tensas data as an indication that there may not be major differences between mound and non-mound areas, as is seen in other regions (e.g., Blitz 1993).

Methods

I was the primary analyst for the Smith Creek and Lessley ceramics with data processing and collection assistance provided by a number of student volunteers at the University of Pennsylvania and the University of North Carolina at Chapel Hill. Ceramic vessel decoration, shape, size, and wall thickness data had been collected on the Feltus assemblages from the 2006–2012 seasons by Kassabaum (2014). I collected these data on sherds from the 2018 season and collected additional data on use-wear and rim angle on sherds from all seasons.

Only rim sherds a half inch or larger were used for data collection and analysis. I collected data on sherds from all contexts, including mixed or plow zone contexts, although only sherds from midden, feature, or mound surface contexts are included in the analysis below. For each sherd, I oriented the sherd according to the rim and then visually examined the rim form and sherd curvature to determine vessel shape, such as bowl, jar, or beaker. I classified vessel form following categories established and refined through previous studies (Brain 1976; Ford 1951; Hally 1972; Jones 1996; Kassabaum 2014, 2018a; Phillips 1970; Roe 2010; Steponaitis 1981; Wells 1998; Williams and Brain 1983). The specific form classes will be defined and discussed in greater detail below. All sherds were weighed on a scale and vessel wall thickness was measured using calipers. I used a rim diameter template to estimate both the percentage of a vessel's circumference represented by the sherd and the internal diameter of the overall vessel based on that. At least five percent of a vessel's circumference must be present for diameter estimates to be accurate. I drew rim profiles for all sherds representing five percent or more of a vessel's circumference and for all bowls, regardless of their size. Bowls were singled out for rim profiles because Kassabaum (2014) identified sub-categories for bowls according to rim angle. Drawings were made in order to adequately measure rim angle and place bowls into their respective sub-categories. Rim angle was also measured for all drawn rim profiles. The measurement was taken on the exterior of the vessel at the rim, and the interior baseline angle was recorded (Figure 5.1). I believe rim angle conveys important techno-functional insights to vessels. For instance, flared rims would allow for more efficient pouring, while more restricted rims would prevent rapid evaporation. Quantitatively measuring rim angle, as opposed to qualitative assessment alone, allows a researcher to track another aspect of how potters purposefully crafted vessels for particular functions.

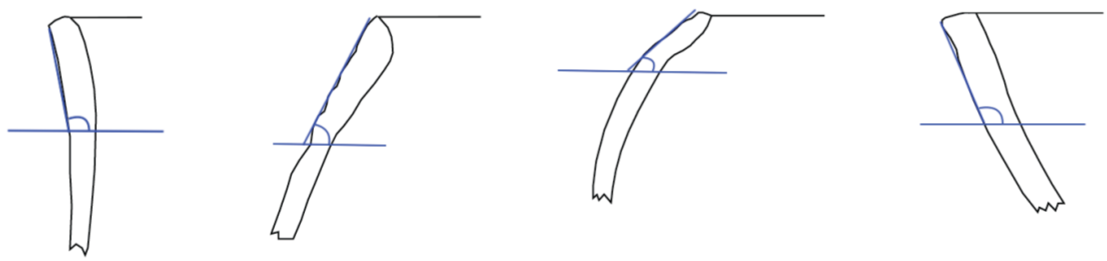

Figure 5.1. Drawing showing where rim angle measurement was taken for (left to right) beakers, restricted jars, restricted bowls, and bowls.

I also recorded observations related to use-wear. The presence of both sooting and fire clouding were noted. Fire clouding, which usually occurs during vessel firing, is a darkening of the vessel surface. Sooting occurs when a vessel is placed on or near a fire after firing (i.e. during use), and is the result of carbon deposits from fuel combustion. While the two can sometimes be confused, fire clouding extends into the surface of the vessel wall and is usually somewhat amorphous, occurring randomly on a vessel wall (Skibo 2013). Sooting, in contrast, is somewhat superficial and is comprised of two types. The first is a lighter, ashier sooting that can be easily wiped away (Skibo 2013; Hally 1983). The second is a thicker, lustrous sooting that is less easily removed, but still can be removed (Skibo 2013; Hally 1983). I did not separate out the two types of sooting for this study. Intentional smudging can also leave a vessel’s walls blackened with carbon deposits. This can be differentiated from sooting in that smudging takes up the entirety of a vessel’s surface, whereas sooting is often patchy even when it extends across a larger vessel surface area.

While I did not routinely record smudging, I did differentiate sooting from smudging when assessing a sherd. During initial analysis, only the presence and general location (e.g., interior and/or exterior) were noted for sooting deposits. I subsequently returned to these sherds to be certain whether they actually represented sooting and determine if these deposits seemed to be, to the best of my observations, pre-depositional. Once these determinations were made, I took measurements regarding the location and extent of sooting in relation to the rim.

In addition to sooting, I also recorded attritional deposits, specifically the presence of scraping or pitting on ceramic vessel walls. Attrition can occur at various points during the use-life of a vessel, after it is discarded, and during excavation and processing (Skibo 2013). In noting attrition, I was careful to distinguish between post-depositional or excavation-related marks, such as incisions from shovels, trowels, or screens, and pre-depositional markings. Similar to sooting patterns, I initially noted the presence of scraping or pitting and the general location. I then re-examined these sherds and recorded measurements on the location and extent, as related to the rim. I also recorded qualitative observations regarding the size (e.g., narrow, regular, wide) and depth (e.g., shallow, regular, deep). I did not attempt to further quantify my observations, and this may be something a future use-wear study could expand upon.

Shape Classes

There are eight vessel shape classes in my assemblage: necked jars, restricted jars, beakers, restricted bowls, carinated bowls, deep bowls, simple bowls, shallow bowls (Figure 5.2). These shape classes are derived from ones used by previous researchers in the region (Kassabaum 2014; Ryan 2004; Steponaitis 1981; Wells 1998). Some classes are identical to those used by other researchers, while others are a simplified category that lumps several previous forms together.

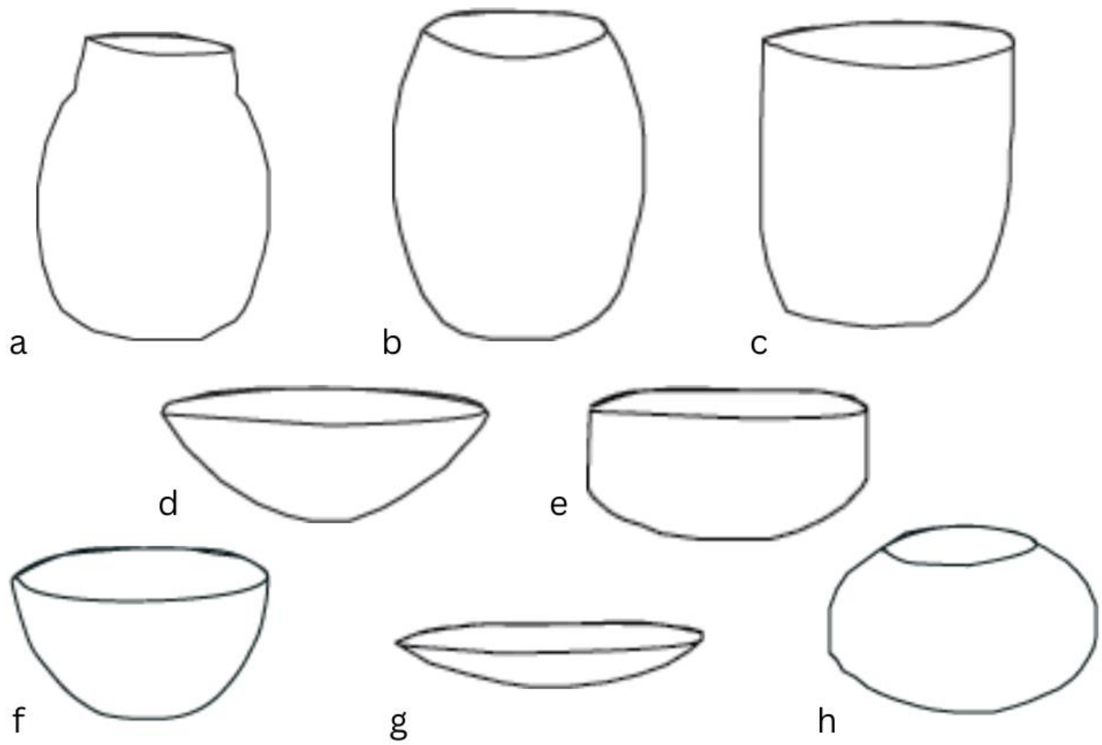

Figure 5.2. Vessel shape classes: a. necked jar; b. restricted jar; c. beaker; d. simple bowl; e. carinated bowl; f. deep bowl; g. shallow bowl; h. restricted bowl.

Necked jars, beakers, and carinated bowls are all classes used consistently by other researchers (Hally 1972; Jones 1996; Kassabaum 2014; Roe 2010; Ryan 2004; Steponaitis 1981; Wells 1998). Restricted jars build on a category used by Kassabaum (2014) and Ryan (2004) and include forms similar to Steponaitis's (1981:10) globular jar and Wells's (1998:172) open and barrel shaped jars. Restricted bowls follow a class created by Kassabaum (2014:221) to combine overlapping forms, such as "globular bowl" and "sub-globular bowl," used by other analysts (Jones 1996; Roe 2010; Wells 1998). Simple, deep, and shallow bowls have been variously used by other researchers, who have primarily distinguished each class via visual, qualitative measures prior to Kassabaum (2014) who suggested four sub-categories based on rim angle:

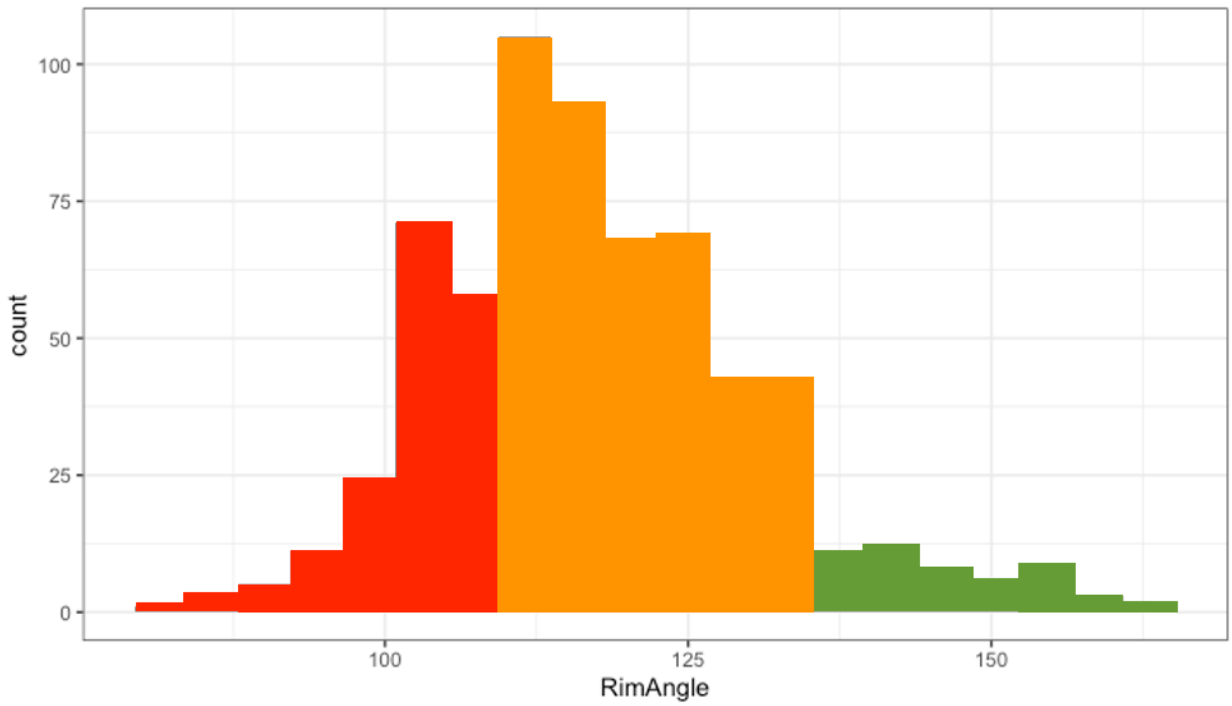

Figure 5.3. Histogram of bowl rim angles showing potential sub-categories.

deep, simple, shallow, and plate. Following Kassabaum's suggestion, I measured the rim angle of every identified bowl sherd to place them in one of these four categories. Additionally, I ran histograms of the rim angle data to determine if the rim angle categories suggested by Kassabaum were distinct, identifiable categories within my assemblage. As seen in Figure 5.3., these somewhat map onto Kassabaum's categories. The distinction between deep bowls (85-110 degrees) and simple bowls (110-135 degrees) is somewhat represented, but there is no obvious distinction been shallow bowls and plates (135-180 degrees), which appear as a tail of the simple bowl measurements.

Vessel form could be identified for 628 rims from Feltus, 359 from Coles Creek contexts at Smith Creek, 392 from Plaquemine contexts at Smith Creek, and 34 from Lessley. Table 5.1 lists the number of ceramics from each context. As seen in Figure 5.4, when form is compared by lumped categories, rather than split into sub-categories, bowls are the primary form in assemblages from both periods, followed by jars. Beakers are more common in Plaquemine contexts than in Coles Creek ones, and restricted bowls and pipes are used in relatively equal amounts. When the sub-categories of each form are included, this comparison become slightly more complex (Figure 5.5). Simple bowls are the most common form in Coles Creek contexts, followed by restricted jars. However, restricted jars, followed by beakers are the most common forms for Plaquemine contexts. In the following sections, each form will be discussed in detail, with functional suggestions made for vessels from each period.

Table 5.1. Ceramic Counts for Each Context in the Study.

Context	Period	Beakers	Deep Bowls	Simple Bowls	Shallow Bowl/Plate	Carinated Bowls	Restricted Bowls	Necked Jars	Restricted Jars	Pipes
Feltus Mound A East Midden	Coles Creek	10	6	20	2	1	10	6	15	1
Feltus Mound A Southwest Midden	Coles Creek	6	17	37	3	3	11	1	10	4
Feltus South Plaza Midden	Coles Creek	45	30	93	36	3	41	9	58	2
Feltus Mound B Flank Midden	Coles Creek	8	3	19	3	1	8	0	5	0
Smith Creek Mound A Midden	Coles Creek	9	14	9	5	3	6	4	12	1
Smith Creek Northeast Plaza Midden	Coles Creek	16	36	71	19	1	57	4	72	6
Smith Creek Northeast Plaza Midden	Plaquemine	74	62	74	33	5	71	2	108	7
Smith Creek South Plaza Midden	Plaquemine	21	17	13	10	1	15	0	28	2
Lessley Midden	Plaquemine	7	3	3	6	0	0	0	5	0

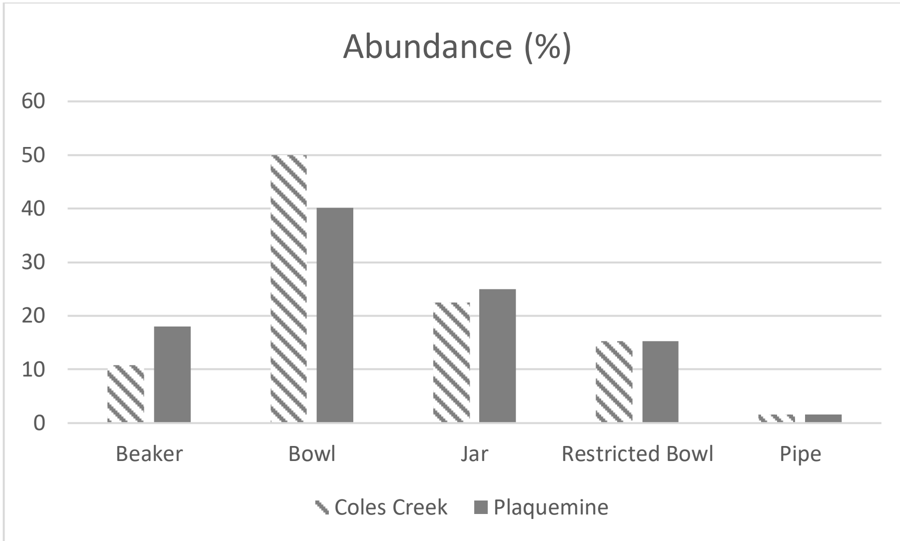

Figure 5.4. Comparison of vessel categories by period.

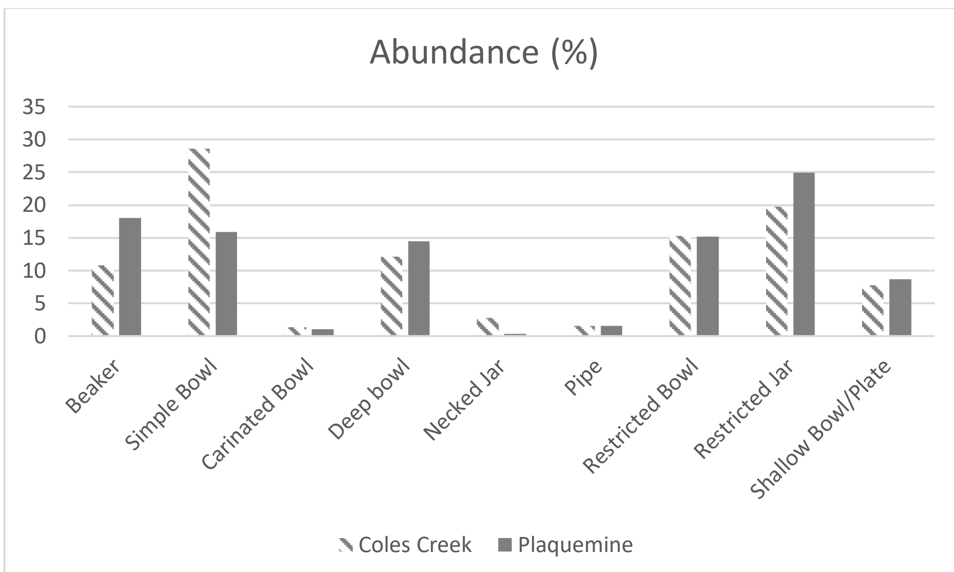

Figure 5.5. Comparison of vessel categories by period, including sub-categories for jars and bowls.

Restricted Jars

Restricted jars are generally tall, ovoid vessels with a slightly restricted upper body and/or orifice. As seen in the rim profile drawings (Figure 5.6) there is some variability within the class, with some restricted jars having a slightly flared rim above a restricted upper body

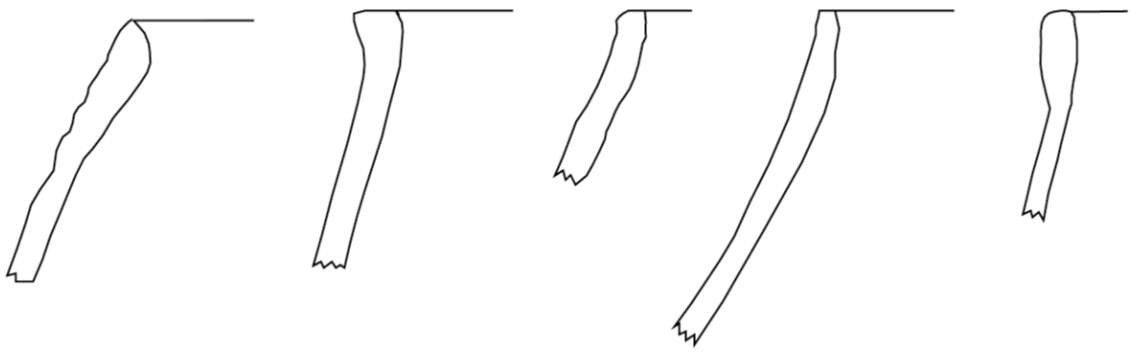

Figure 5.6. Rim profile drawings of restricted jars from Smith Creek. Drawings are at three quarter scale.

while others have restricted orifices.[2] From my Coles Creek contexts, I identified 92 restricted jars from Smith Creek and 85 from Feltus. I identified 136 restricted jars from Plaquemine contexts at Smith Creek and 5 from Lessley. Restricted jars made up 20% of the Coles Creek assemblage as a whole and 25% of the Plaquemine assemblage, a fairly consistent use through time.

Restricted jars, in general, are highly decorated. In the Coles Creek assemblage, 81% of restricted jars are decorated and 19% are plain and in the Plaquemine assemblage 70% are decorated and 30% are plain. Varieties of Coles Creek Incised are the primary decorative type, indicting strong continuity in use of the overall type through time, although later varieties, such as *Greenhouse* and *Hardy* are only seen in Plaquemine contexts. Other late types such as Plaquemine Brushed and Mazique Incised are also only seen in Plaquemine contexts. Coles Creek contexts have a greater emphasis on earlier types, such as Alligator Incised and French Fork Incised. Other decorative types include Chevalier Stamped, French Fork Incised, and Mulberry Creek Cordmarked.

[2] When working with sherds, it can occasionally be difficult to distinguish restricted jars from restricted bowls. This will be discussed in further detail in the restricted bowl section.

Size estimation varied, and was possible for 48% of Coles Creek restricted jars and 38% of Plaquemine restricted jars. Restricted jars ranged from 9-40 cm. A histogram of rim diameters (Figure 5.7). indicates four possible size classes small (9-21 cm), medium (22-32 cm), large (33-37 cm), and extra large (38-40 cm). With the exception of the largest class, which only appears in Plaquemine contexts and may be an outlier, all three size classes occur in both Coles Creek and Plaquemine contexts. Additionally, as seen in Figure 5.8 as well as both histograms, the size classes are used in similar proportions to each other through time. The range of rim diameters seen in both the Coles Creek and Plaquemine assemblages fits within the range seen at other sites in the region (e.g., Kassabaum 2014; Roe 2010; Ryan 2004). These analysts have similarly suggested that there may be multiple size classes represented within the overall range but were either unable or did not attempt to define sub-classes. Summary data on each size class for the two periods can be found in Table 5.2.

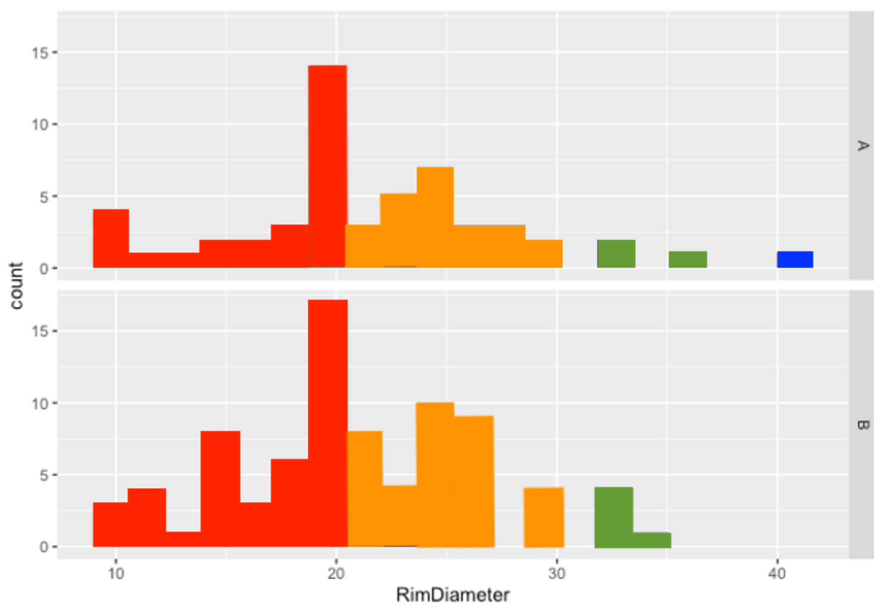

Figure 5.7. Histogram of rim diameter for restricted jars with colors showing potential size categories. Key to abbreviations: A, Plaquemine period; B, Coles Creek period.

Rim angle was measured for all restricted jar sherds with at least 5% of the circumference present. Because I was interested in the angle of restriction specifically, I measured the outer wall at its greatest point of restriction closest to the rim. For most restricted jars, this corresponded to the rim angle, but for some, such as those with flaring rims, this was right below the rim. Coles Creek restricted jar rim angles range from 61 to 91 degrees and Plaquemine restricted jars range from 47 to 82 degrees. As seen in Figure 5.9, rim angle from both periods largely overlaps, though their ranges are quite different, with Coles Creek assemblages containing much more open forms and Plaquemine assemblages containing much more restricted forms.

Table 5.2. Attributes of Restricted Jars by Size Category.

Period: **Size Category**	**Sample (n)**	**Decoration (%)**	**Sooting (%)**	**Attrition (%)**	**Proposed Functions**
Plaquemine:					
Overall	177	70	18	19	cooking, storage
Small (9-21 cm)	26	67	23	42	cooking
Medium (22-32 cm)	22	77	14	23	cooking
Large (33-37 cm)	1	100	0	100	storage
Extra Large (38-40 cm)	1	100	100	100	cooking
Coles Creek :					
Overall	141	81	23	32	cooking, storage
Small (9-21 cm)	42	84	33	36	cooking
Medium (22-32 cm)	38	84	18	47	cooking
Large (33-37 cm)	2	100	50	100	cooking

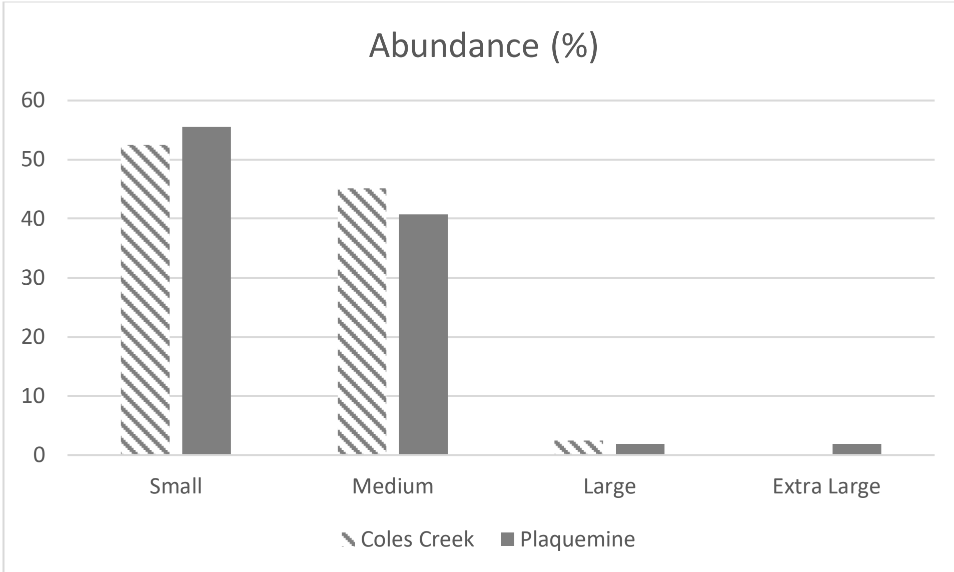

Figure 5.8. Restricted jar size class frequency by period.

Overall, restricted jars display very similar wall thickness through time (Figure 5.10). The median wall thickness for both Coles Creek and Plaquemine jars is 5 mm and the ranges, 3-9 mm for Plaqumine and 3-10 mm for Coles Creek, are quite similar. The similarity was seen across all size classes as well. Restricted jars from all contexts displayed a fair amount of sooting and attrition. I observed sooting on 18% of restricted jars in the Plaquemine assemblage. For Coles Creek contexts, there was sooting on 23% of restricted jars. Since my assemblage was entirely comprised of rim sherds, my observations only relate to sooting observed on the rim and upper body. This is consistent with the placement of the vessel in a fire, and I consider this be evidence of continuity in cooking practices through time.[3] Attrition was observed on 19% of Plaquemine restricted jars and on 32% of Coles Creek ones. For both assemblages, the observed attrition included both scraping and pitting.

[3] This pattern contrasts with a shift to suspending a vessel over a fire, which occurred in the Black Warrior River Valley after the introduction of maize and hominy food practices (Hawsey 2015; Briggs 2016)

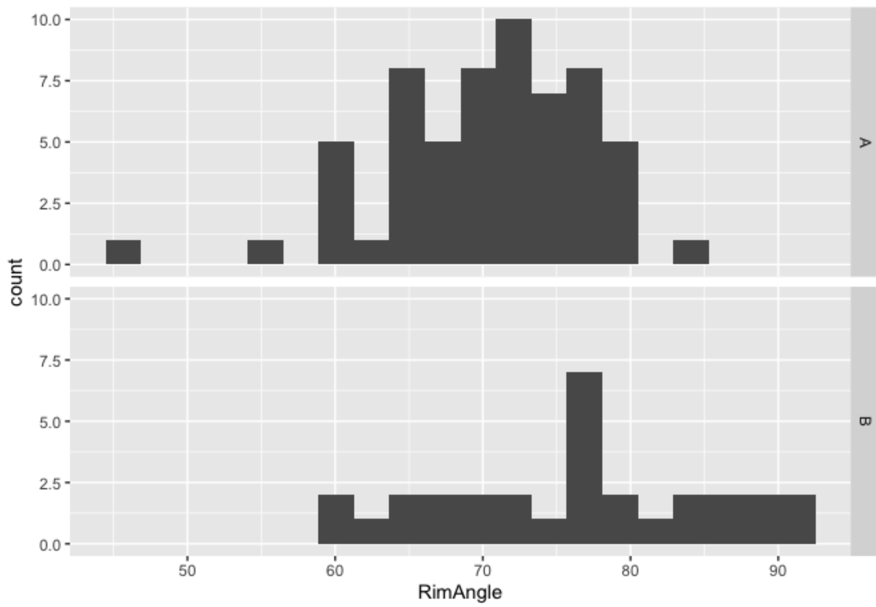

Figure 5.9. Histogram of restricted jar rim angle by period. Key to abbreviations: A, Plaquemine period; B, Coles Creek period.

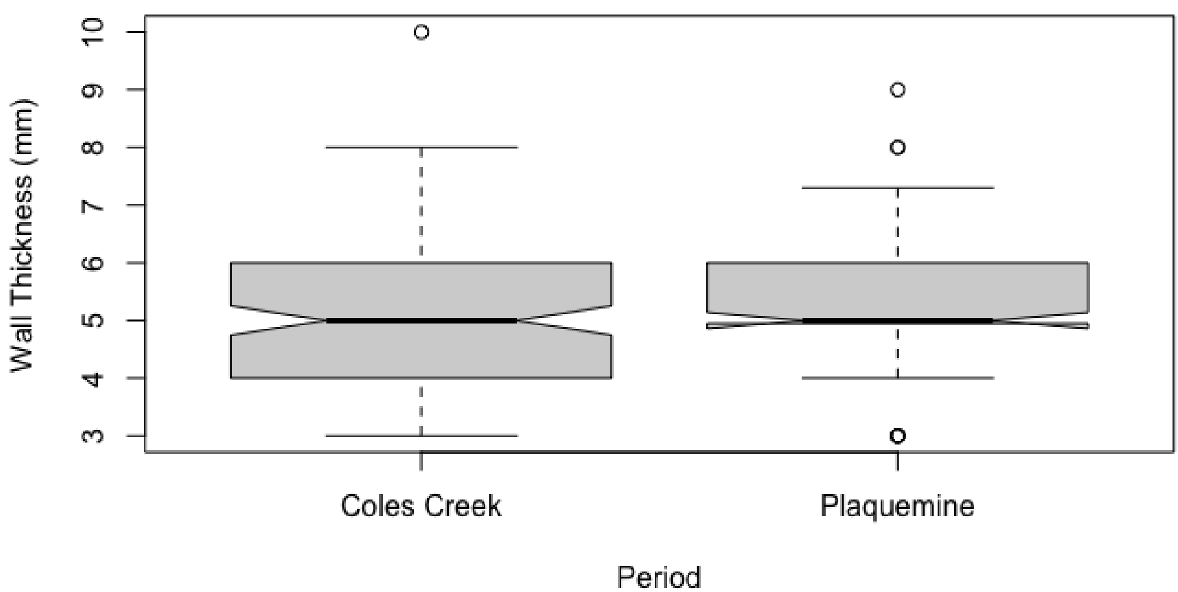

Figure 5.10. Box plot of restricted jar wall thickness for both periods.

Other researchers in the region have proposed both cooking and storage functions for restricted jars (Jones 1996; Kassabaum 2014; Lee et al. 1997; Roe 2010; Ryan 2004; Wells 1998). The presence of sooting on vessels from several sites supports a cooking function (Ryan 2004; Wells 1998). The restricted orifice, as well as other features such as lugs or incised lines that could have been used to secure a lid, have been cited as evidence for a storage function (Lee et al. 1997; Wells 1998). Several scholars have specifically identified restricted jars as dry storage vessels, noting it would have been difficult to pour liquids out of them (Jones 1996; Lee et al. 1997; Ryan 2004).

My analyses corroborate that restricted jars were primarily used as cooking vessels, with secondary use as storage vessels. The slightly restricted orifice would have prevented rapid evaporation, which would allow for simmering dishes over long periods of time, and would have also provided containment security for stored goods. Observed use-wear patterns, which include a moderate amount of sooting and scraping, are similar on vessels from both periods, indicating similar functions. Furthermore, these patterns are consistent across most of the size classes as well. Differences in capacity would have been the main functional distinction between restricted jar classes, with smaller vessels used for cooking ingredients or dishes prepared in modest amounts, such as greens or mushrooms, or for smaller numbers of consumers. Larger vessels would have been used for simmering dishes for large groups or typically made in large quantities, such as bear oil and hickory nut oil. The one exception to this pattern is large restrited jars, which appear to have been primarily used for storage in the Plaquemine period, due to no observed sooting patterns. Due to their large size, these were likely used to store oil or other ingredients amassed in large quantities.

Necked Jars

Necked jars are similar to restricted jars in having an overall ovoid shape where the vessel height is greater than the maximum vessel width. However, necked jars differ in that they have distinct upper vessel profile in which the rim of the vessel is separated from the body by a straight walled neck (Figure 5.11).

Necked jars are a fairly uncommon form overall, and are much more prevalent in Coles Creek contexts than Plaquemine contexts. Twenty-three necked jars were identified in the Coles Creek assemblage, and two were identified in the Plaquemine assemblage. Necked jars make up 3% of the Coles Creek assemblage and 0.3% of the Plaquemine assemblage, as compared to restricted jars which make up 20% and 25% of the respective assemblages. Necked jars are primarily decorated with decoration observed on 96% of Coles Creek necked jars and 100% of Plaquemine necked jars. Decorative types include Alligator Incised, Chevalier Stamped, Coles Creek Incised, and French Fork Incised, among others. Similar decorative types were observed through time; the two Plaquemine necked jars were decorated with French Fork Incised and Alligator Incised. This would seem to indicate continued/re-use of earlier made vessels and/or the close coupling of earlier design motifs with this particular form.

An examination of rim diameter indicates that there are at least two distinct size classes for necked jars (Figure 5.12), a small size class (8-10 cm) and a large size class (14-30 cm). Neither of the Plaquemine necked jar sherds were large enough to be measured, so it is unknown whether these size classes are maintained through time. Summary data on each size class for the two periods can be found in Table 5.3.

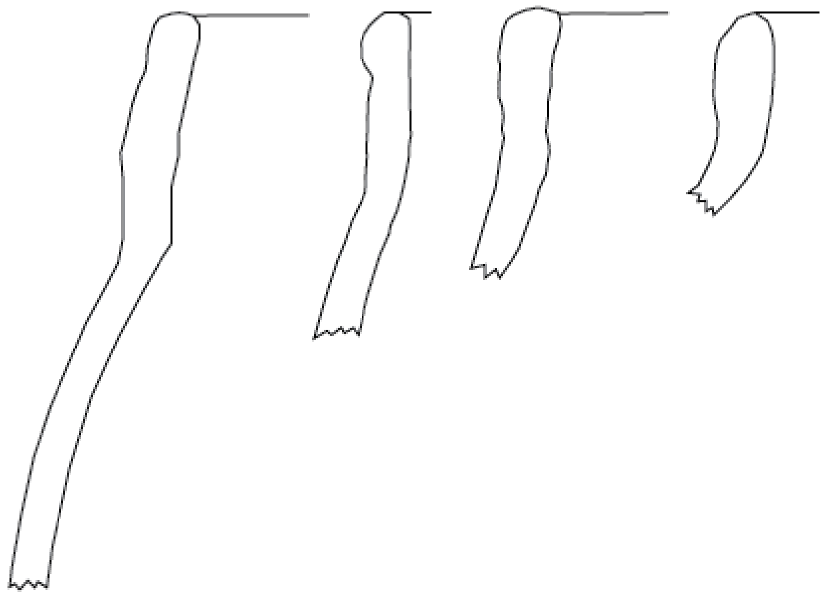

Figure 5.11. Rim profile drawings of necked jars from Smith Creek. Drawings are at three quarter scale.

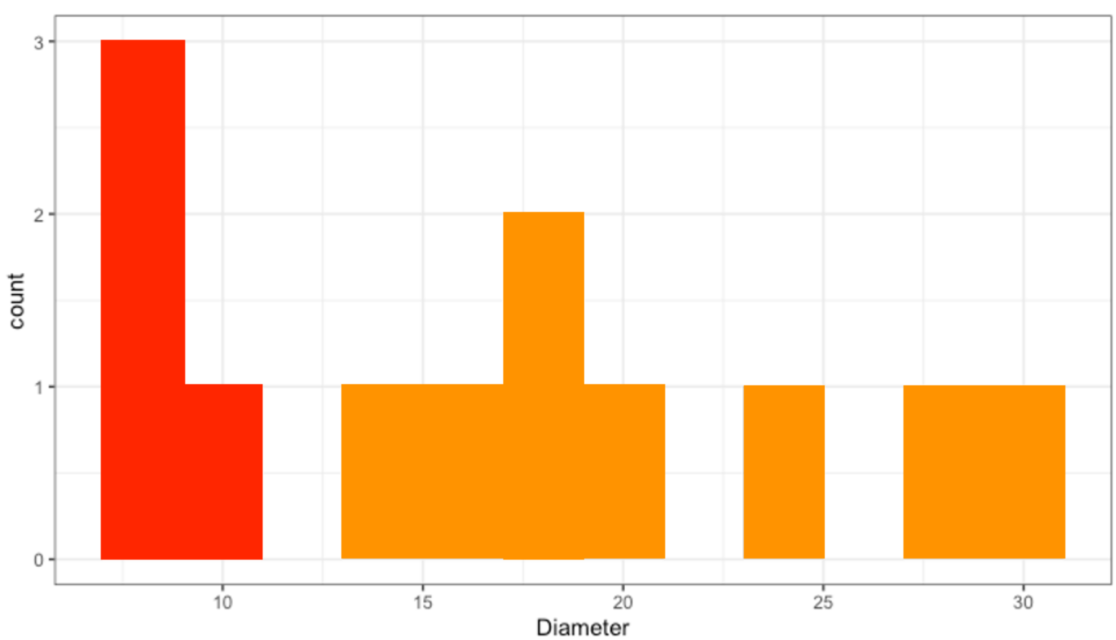

Figure 5.12. Histogram of rim diameter for necked jars with colors showing potential size classes.

Sooting was observed on 26% of Coles Creek necked jars, and was primarily seen on the exterior of the vessel in areas beneath the rim on the neck and upper body. No sooting was observed on Plaquemine necked jars. Attrition was observed on 30% of Coles Creek necked jars and on 100% of Plaquemine necked jars. Attrition patterns on Coles Creek necked jars include both scraping and pitting on the interior vessel wall, and were observed in a range of areas from immediately beneath the rim to 5 cm below it. On Plaquemine necked jars, the attrition patterns observed were scraping on the interior of the vessel in the area 1-2 cm beneath the rim.

Other researchers in the region have suggested that necked jars were used as storage or cooking vessels. The restricted vessel neck has been cited as both a means of containment security and a place to attach a lid or cover for additional protection (Kassabaum 2014; Lee et al. 1997; Roe 2010; Wells 1998). Some scholars have also specifically classified these vessels as liquid storage containers since their necks and outwardly curving rims would have aided in pouring (Jones 1996; Ryan 2004). Use-wear data for these vessels have not been systematically reported, but sooting was noted on necked jars from Hedgeland, leading Ryan (2004) to also consider a cooking function for this vessel form.

I propose that necked jars were primarily storage vessels, with secondary use as cooking vessels. The absence of sooting patterns on Plaquemine necked jars suggests these may have only been used for storage. Due to their limited capacity, smaller necked jars may have been used to store items produced in small quantities and/or stored for short amounts of time (Smith 1985). As suggested by other researchers, these may have been ideal for storing liquid items. Hally (1986) notes that black drink, a tea made from yaupon holly (*Ilex vomitoria*) leaves, was often cooled in jars before being served.

Table 5.3. Attributes of Necked Jars by Size Category.

Period: **Size Category**	**Sample (n)**	**Decoration (%)**	**Sooting (%)**	**Attrition (%)**	**Proposed Functions**
Plaquemine:					
Overall	2	100	0	100	storage
Coles Creek :					
Overall	23	96	26	30	storage, cooking
Small (8-10 cm)	4	100	25	0	storage, cooking
Large (14-30 cm)	8	100	25	37.5	storage, cooking

Small necked jars would have been ideal for this task, particularly since beverages could then be easily poured from them. Large necked jars would have functioned similarly, albeit for liquid ingredients stored in larger quantities, such as water, hickory or bear oil.

Beakers

Beaker refers to straight walled, cylindrical vessels, where the height of the vessel is greater than the maximum vessel width (Figure 5.13). In other areas of the Southeast, beaker has been used to refer to small, cylindrical drinking vessels. In the LMV, the beaker is perhaps more accurately a “beaker like jar” (e.g., Steponaitis 1981) and encompasses a range of sizes, including a smaller size, similar to the drinking beakers of other regions, as well as larger vessels that were more likely used for food preparation, cooking, and storage tasks.

Twenty six beakers were identified from Coles Creek contexts at Smith Creek, seventy from Coles Creek contexts at Feltus, seven from the Lessley assemblage, and ninety-five from

Plaquemine contexts at Smith Creek,.[4] Beakers make up 11% of the Coles Creek assemblage as a whole, and 18% of the Plaquemine assemblage, indicating an increase in beaker use through time. Beakers from both periods tend to be decorated. For the Coles Creek period, 70% of beakers are decorated and 30% are plain. For the Plaquemine period, 62% of beakers are decorated while 38% are plain. Common decorative types for both periods include Chevalier Stamped, French Fork Incised, and Coles Creek Incised. Coles Creek contexts tend to have greater numbers of earlier types, such as Alligator Incised. Later types, such as Plaquemine Brushed, Carter Engraved, and Mazique Incised are exclusively seen in Plaquemine contexts. Size estimation was possible for 51% of Plaquemine beakers and 42% of Coles Creek beakers. Beaker rim diameter ranged from 8-40 cm.

Size estimation was possible for 42% of Coles Creek beakers and 51% of Plaquemine beakers. Beaker rim diameter ranged from 8-40 cm and a histogram of rim diameter (Figure 5.14) indicates five possible size classes: extra small (8-11 cm), small (12-16 cm), medium (17-28 cm), large (29-34 cm), extra-large (35-40 cm). These size classes were used in relatively similar proportions through time (Figure 5.15). Notably, this is a different trend than what has previously been observed by archaeologists in the region, who have argued that there is an increasing emphasis on smaller beakers beginning in the late Coles Creek period (e.g., Jones 1996; Kassabaum 2014; Roe 2010). However, specification of the parameters for “small” has mostly been vague with the exception of Kassabaum (2014: 229-230) who suggests that it could be anything less than 20 cm. The data from my assemblages show extra small beakers (8-11 cm) are used in roughly equal proportion through time.

[4] An additional three sherds from Plaquemine contexts at Smith Creek, one sherd from Coles Creek contexts at Smith Creek, and four sherds from Lessley were identified as either deep bowls or beakers but could not be confidently placed in either category. One sherd from a Plaquemine context at Smith Creek was identified as a bottle or a beaker but also could not confidently placed in either category.

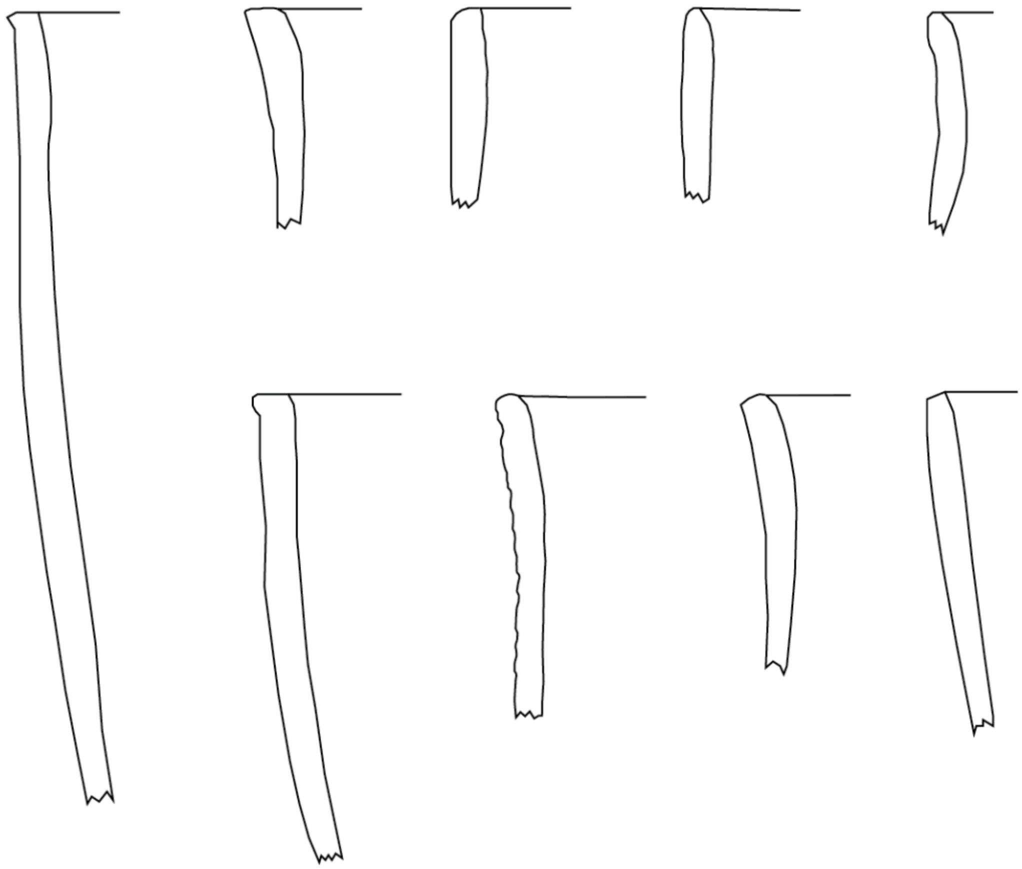

Figure 5.13. Rim profile drawings of beakers from Smith Creek. Drawings are at three quarter scale.

Small beakers (12-16 cm) are seen in greater proportion in Plaquemine assemblages, which may be consistent with the trend observed in previous studies. However, I argue that the overall size trend suggests similar use of the various beaker sizes through time more than anything else. Summary data on each size class for the two periods can be found in Table 5.4. Rim angle was measured for all beakers where at least 5% of the vessel circumference was present. Rim angle ranged from 73 to 101 degrees for Coles Creek beakers and from 80 to 110 degrees for Plaquemine beakers.

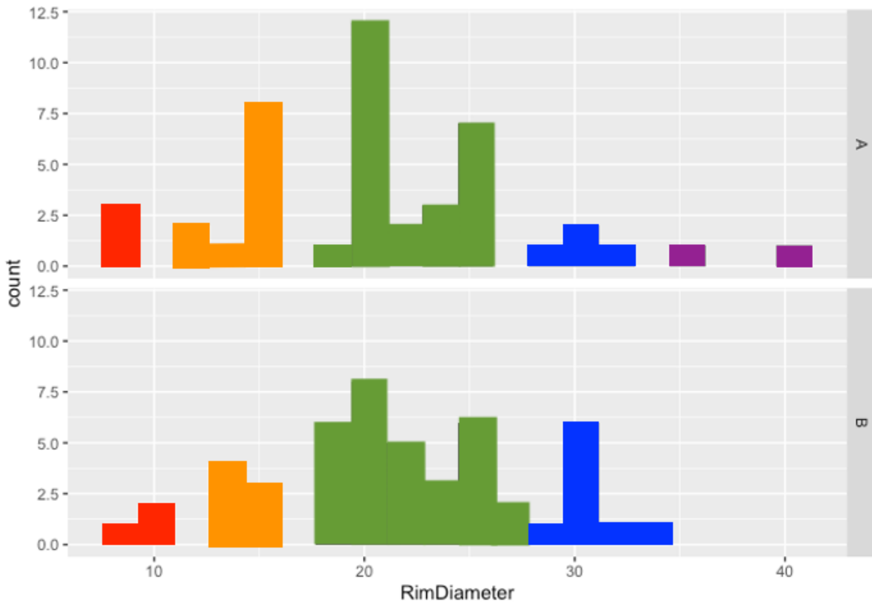

Figure 5.14. Histogram of rim diameter for beakers with colors showing potential size classes. Key to abbreviations: A, Plaquemine period; B, Coles Creek period.

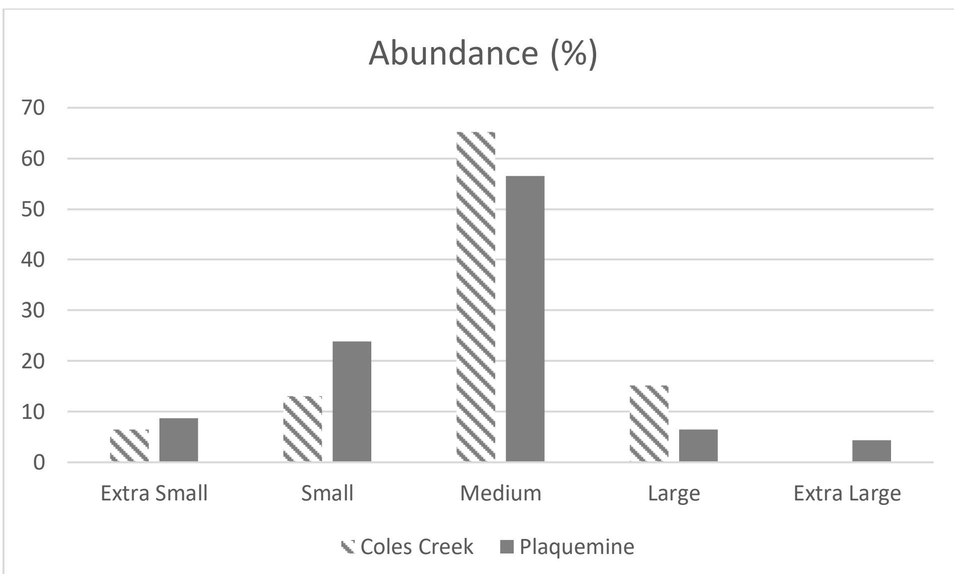

Figure 5.15. Beaker size class frequency by period.

Table 5.4. Attributes of Beakers by Size Category.

Period: **Size Category**	**Sample (n)**	**Decoration (%)**	**Sooting (%)**	**Attrition (%)**	**Proposed Functions**
Plaquemine:					
Overall	102	62	22	18	cooking, storage
Extra Small (8-11 cm)	4	50	25	25	serving
Small (12-16 cm)	11	91	9	45	storage
Medium (17-28 cm)	26	61	19	19	cooking, storage
Large (29-34 cm)	3	100	100	0	cooking
Extra Large (35-40 cm)	2	0	50	100	cooking, storage
Coles Creek :					
Overall	96	70	39	23	cooking, storage,
Extra Small (8-11 cm)	3	100	0	33	serving
Small (12-16 cm)	6	67	0	33	storage
Medium (17-28 cm)	30	73	53	30	cooking
Large (29-34 cm)	7	43	57	57	cooking

As seen in Figure 5.16, Plaquemine beakers are significantly more open to flaring, as compared to Coles Creek beakers. This pattern holds across all size classes, suggesting it was a larger form requirement, rather than being specific to and/or an unintentional characteristic of any one size class.

Overall, beakers display a very similar wall thickness through time, with a median thickness of 5 cm seen in both Coles Creek and Plaquemine assemblages, and very similar overall ranges (Figure 5.17). The similarity in wall thickness is seen across all size classes, with the exception of the medium (17- 22 cm) size class. In this size class, Plaquemine beakers are thicker than Coles Creek beakers. It is unclear whether this difference is related to a deliberate functional requirement difference or is an unintentional artifact of the differences in individual or potting community choices.

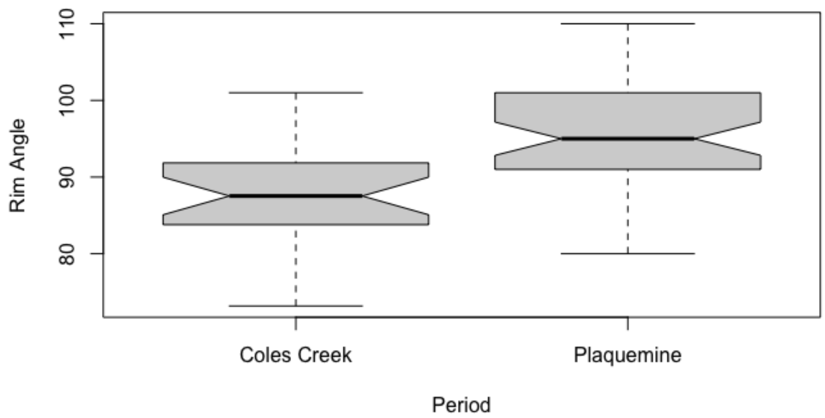

Figure 5.16. Boxplot showing beaker rim angle through time.

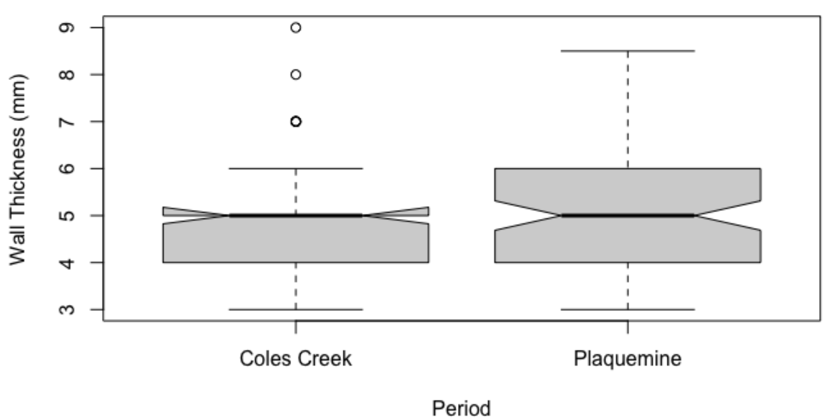

Figure 5.17. Boxplot showing beaker wall thickness through time.

I observed sooting on 39% of beakers in the Coles Creek assemblage and 22% of beakers in the Plaquemine assemblage. For all periods, sooting was primarily observed on the exterior of the vessel in areas at or directly beneath the rim, which is consistent with the placement of the vessel over a fire. Attrition, in the form of both scraping and pitting, was observed on 23% of Coles Creek beakers and 18% of Plaquemine beakers. Attrition patterns were primarily observed on the interior of the vessel in the areas directly beneath the rim, consistent with stirring and removal of vessel contents.

Other researchers have suggested that beakers had serving, storage, and cooking functions. Functional arguments for beakers have centered on both time period and size, with scholars arguing that beakers become increasingly smaller through time and, as a result, begin to serve new purposes (Jones 1996). Larger beakers are often cited as both dry and liquid storage vessels and various vessel features are cited to support this. Their thickened rims are noted as ideal for lashing a cover on while their unrestricted orifices are cited as allowing easy content removal (Roe 2010; Wells 1998). Kassabaum (2014) also suggests that these larger beakers could be used for cooking. Smaller beakers are considered to be drinking or serving vessels for liquids due to their everted rims, which would have aided in pouring (Jones 1996; Lee et al. 1997; Ryan 2004).

Similar to other researchers, I propose that beakers were variously used as food preparation, storage, or serving vessels depending on the size. Extra small beakers were likely serving vessels for liquids such as black drink, or teas and juices made from fruits such as grape or maypops (Thompson 2008; Chiltoskey 1951). The other four size classes were primarily used for food preparation tasks, including cooking, mixing, and soaking, and may have also been used for storage tasks. The open profile of the vessel suggests beakers would have been ideal for boiling grains or small seeds or cooking soups and stews that required frequent manipulation via stirring. These vessels also would have worked well for soaking acorns or maize as well as mixing nut or grain meal together with water to make breads or dumpling. Similar use wear patterns are seen across these size classes, suggesting that the primary difference between classes was capacity, with larger vessels used for dishes cooked in greater quantities or for larger groups. Use wear patterns are also similar through time, suggesting no major functional changes for any size class.

Restricted Bowls

Restricted bowls are squat, globular bowls with restricted orifices. Rim profiles from restricted bowls can be seen in Figure 5.18. It can occasionally be difficult to differentiate between restricted bowls and restricted jars, particularly when working with smaller sherds. In each assemblage there are sherds that were labeled either “restricted bowl/jar” or “restricted jar/bowl”.[5] Restricted bowls tend to have a more restricted orifice than restricted jars. Rim angles from restricted bowls in the study assemblage range from 16 to 82 degrees. There is some overlap with this range and that of restricted jars, which is primarily between 60 to 80 degrees, as seen in Figure 5.19. Though not explored past this observation, this data suggest that rim angle could be used to separate out smaller sherds that are visually ambiguous between the two forms. Restricted bowls are a somewhat common form. Eighty-six restricted bowls were identified from Plaquemine contexts at Smith Creek, and no restricted bowls were identified from the Lessley assemblage. Seventy restricted bowls were identified in the Feltus assemblage, and sixty-nine restricted bowls were identified from the Coles Creek contexts at Smith Creek. Restricted bowls make up 15% of the identified vessel forms for both Coles Creek and Plaquemine assemblages respectively. Restricted bowls are usually decorated: 88% of Coles Creek restricted bowls and 74% of Plaquemine restricted bowls are decorated. Decoration types include several varieties of Coles Creek Incised and French Fork Incised. Mulberry Creek Cordmarked was exclusively seen in earlier contexts, while Carter Engraved was exclusively seen in later contexts.

[5] Nineteen sherds from Smith Creek and five from Lessley were identified as either restricted bowl or jar but could not be confidently placed in either category.

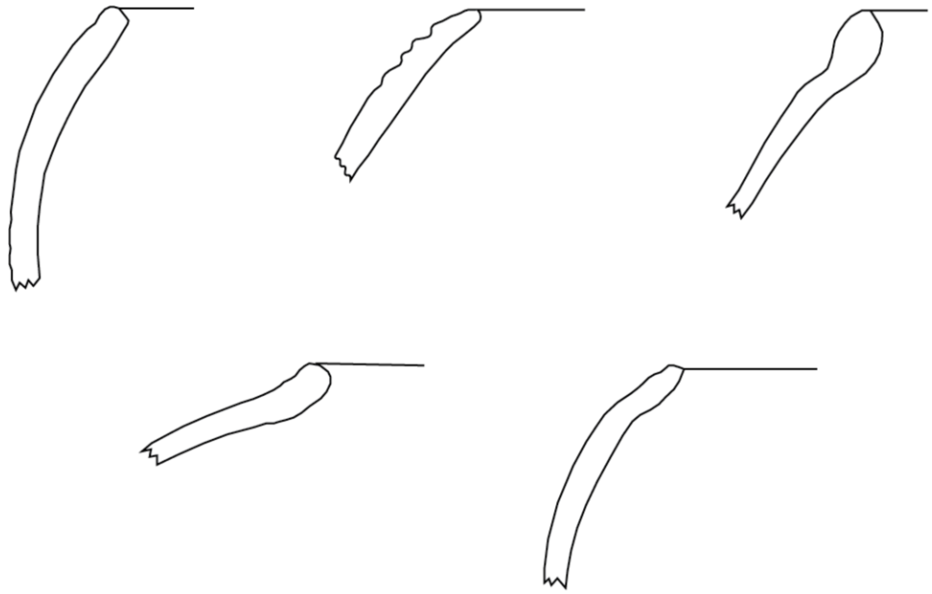

Figure 5.18. Rim profile drawings of restricted bowls from Smith Creek. Drawings are at three quarter scale.

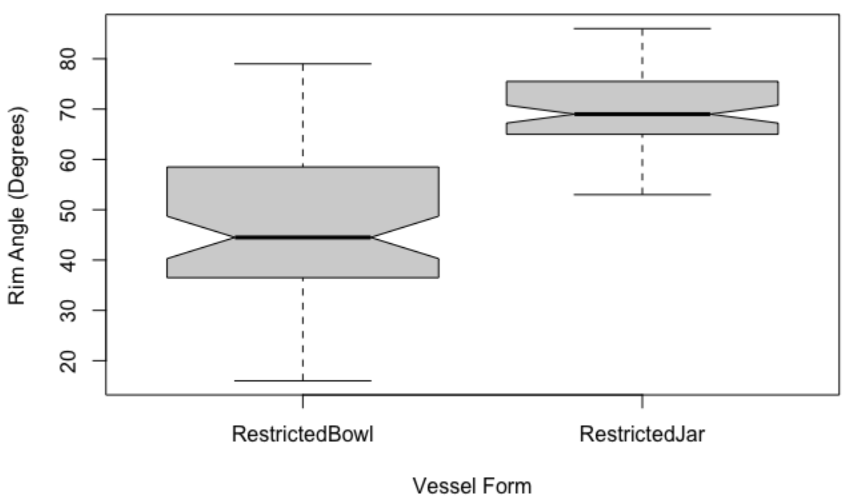

Figure 5.19. Boxplot comparing rim angle measurements for restricted bowls and restricted jars.

Size estimation was possible for 48% of Coles Creek restricted bowls and 46% of Plaquemine ones. A histogram of rim diameters (Figure 5.20) indicates four possible size classes: extra-small (6-12 cm), small (13-19 cm), medium (20-27 cm), large (40 cm). As seen in

Figure 5.21, these size classes are used in roughly similar proportions through time. These sizes also fit within the range seen at other contemporaneous sites in the region (e.g., Wells 1998). Summary data on each size class for the two periods can be found in Table 5.5.

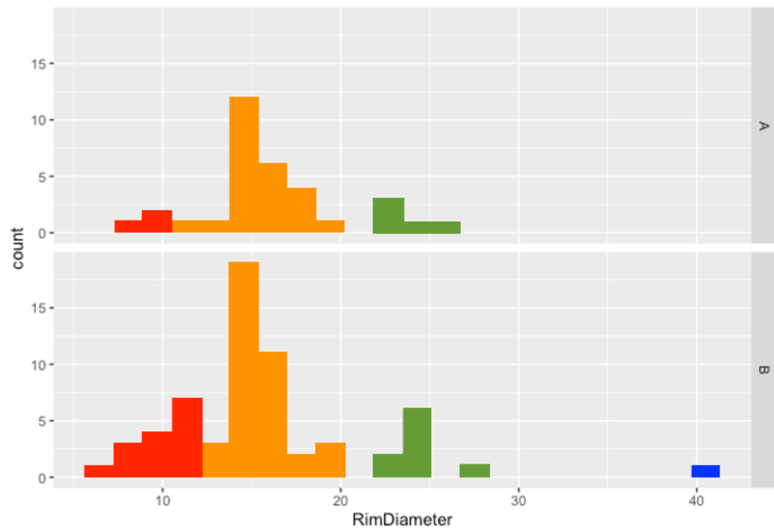

Figure 5.20. Histogram of rim diameter for restricted bowls with colors showing potential size classes. Key to abbreviations: A, Plaquemine period; B, Coles Creek period.

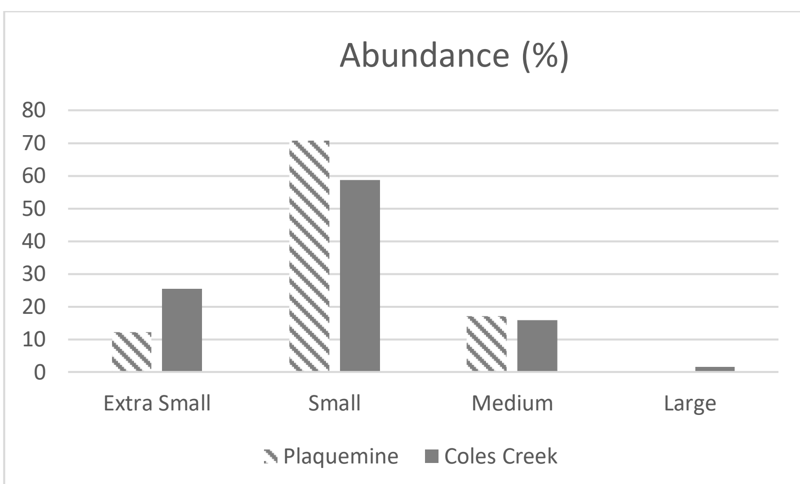

Figure 5.21. Frequency of restricted bowl size classes by period.

Rim angle was measured on all restricted bowl sherds where at least 5% of the vessel circumference was present. A histogram of these rim angles suggests there may be at least two different sub-categories of restricted bowls (Figure 5.22). The restricted bowl sub-categories are "very restricted" (16-50 degrees) and "moderately restricted" (51-82 degrees). Vessels of these sub-categories were present in similar quantities in both periods. Rim diameter data suggest that both categories of restricted bowls had a similar range of sizes, between 8 and 25 cm. There may be functional differences related to both degree of rim angle restriction and vessel size (e.g., small moderately restricted bowls vs medium moderately restricted bowls) but give the relatively small sample size overall, I opted not to explore these potential differences at this time. I also measured wall thickness for all identified restricted bowls. Restricted bowls have a similar wall thickness through time (Figure 5.23). This is also true for all size classes as well as the for the rim angle sub-categories.

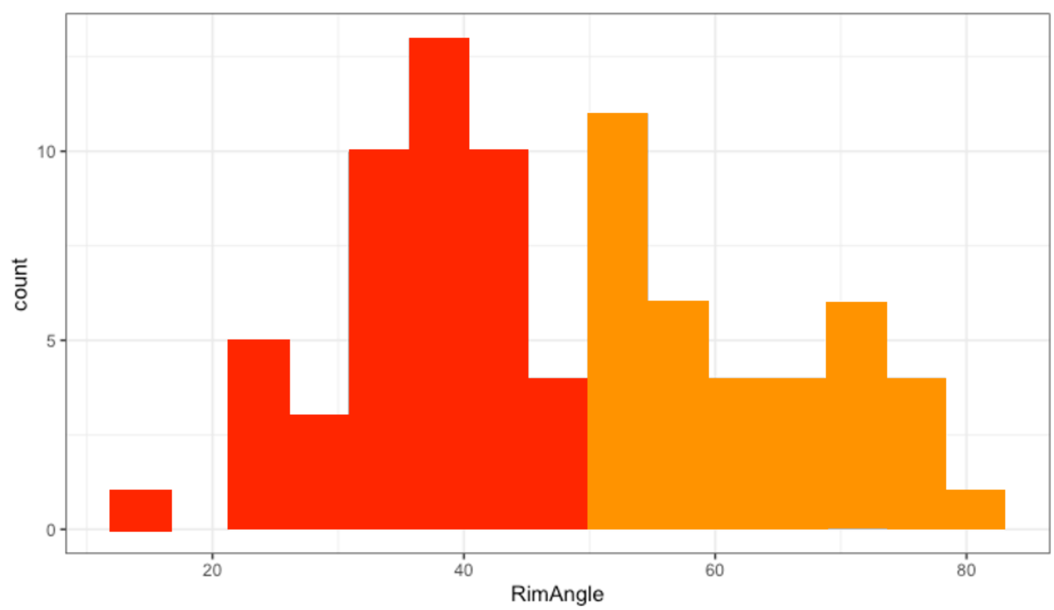

Figure 5.22. Histogram of restricted bowl rim angles with colors showing potential sub-categories.

Sooting patterns were observed on 16% of Coles Creek restricted bowls and on 8% of Plaquemine restricted bowls. Sooting was primarily observed on the vessel exterior near the rim and on the upper body, although carbonized residue was also observed on the interior of several vessels. Attrition patterns, including scraping and pitting, were observed on 17% of Coles Creek restricted bowls and 24% of Plaquemine ones. Scraping was the primary attrition pattern observed and was seen on the interior vessel wall at or just below the rim.

Other analysts in the region have suggested that restricted bowls are likely to have been either cooking or storage vessel based on the presence of both interior abrasions, which are thought to be from content removal or manipulation, and exterior sooting patterns (Jones 1996; Kassabaum 2014; Roe 2010; Ryan 2004; Wells 1998). I propose that restricted bowls were alternately used for cooking, serving, and storage, with a shift in primary function occurring through time. Sooting patterns were more common on Coles Creek vessels, suggesting these were mainly used as cooking vessels. In contrast, Plaquemine restricted bowls were likely used as serving and storage vessels, with occasional uses as cooking vessels. These temporal patterns also map onto the size classes, with restricted bowls of all sizes used for similar purposes, albeit with different capacities. From a serving and storage perspective, the restriction of the orifice would have protected vessel contents from spilling, but also would have made removal somewhat difficult. Scraping on interior vessel walls was commonly observed, and was likely the result of frequent vessel abrasion during content removal. They may have been used to store or serve liquid condiments, such as bear or nut oils, commonly used to cook and flavor foods (Nelson 2016).

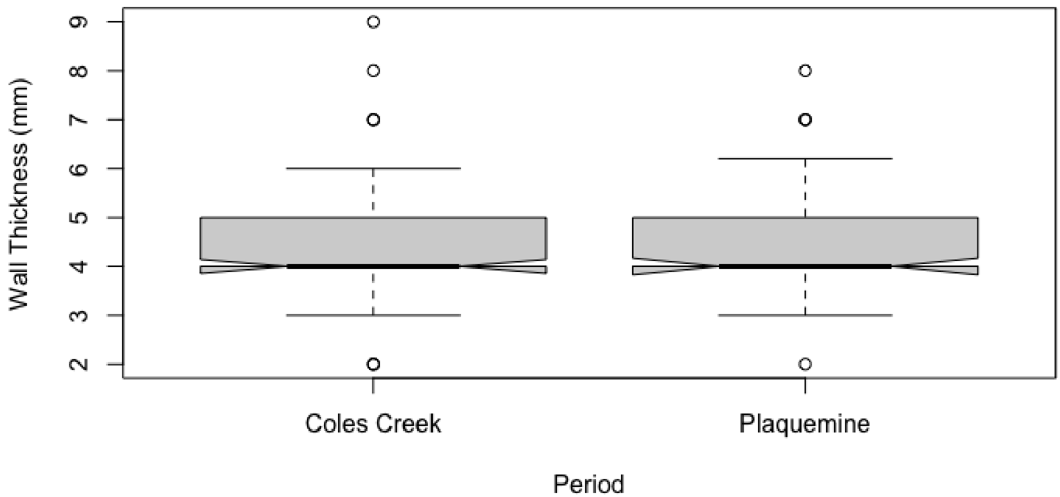

Figure 5.23. Box plot showing restricted bowl wall thickness through time.

Table 5.5. Attributes of Restricted Bowls by Size Category.

Period: **Size Category**	**Sample (n)**	**Decoration (%)**	**Sooting (%)**	**Attrition (%)**	**Proposed Functions**
Plaquemine:					
Overall	86	74	8	24	Storage, Serving, Cooking
Extra Small (6-12 cm)	5	40	0	40	Storage, Serving
Small (13-19 cm)	27	69	3	24	Storage, Serving, Cooking
Medium (20-27 cm)	7	71	14	43	Storage, Serving, Cooking
Coles Creek :					
Overall	139	88	16	17	Cooking, Serving, Storage
Extra Small (6-12 cm)	16	63	6	17	Storage, Serving, Cooking
Small (13-19 cm)	37	92	19	24	Cooking, Serving, Storage
Medium (20-27 cm)	10	80	40	20	Cooking
Large (40 cm)	1	100	100	0	Cooking

These would have been very efficient cooking vessels due to their globular shape and restricted orifice. Researchers in other regions have suggested similar vessels were used for preparing liquid-based foods, such as soups (Boudreaux 2010; Hawsey 2015; Kowalski 2019; Nelson 2016).

Carinated Bowls

Carinated bowls have a distinctive vessel profile as the angle of the body profile changes, somewhat dramatically at an inflection point mid-way down the body profile (Figure 5.24). The distinctive vessel profile allows for this form to be identified from body sherds if the carination point is present. Other analysts in the LMV have sub-categorized carinated bowls by the angle of carination and the length of the vessel walls between the carination point and the rim (Hally 1972). However, due to the limited number of carinated bowls in the study assemblage, I opted not to sub-divide for my study.

Carinated bowls are a fairly uncommon vessel form in my study assemblage. Four carinated bowls were identified from Coles Creek contexts at Smith Creek and seven from Feltus. Six were identified from Plaquemine contexts at Smith Creek, and none were identified from Lessley. Carinated bowls make up 1% of the overall Coles Creek and Plaquemine assemblages, respectively. Half of Plaquemine carinated bowls are decorated, while 82% of Coles Creek carinated bowls are decorated. Decorative types include Coles Creek Incised and French Fork Incised. Plaquemine carinated bowls also include Carter Engraved, *var. Carter*.

54% of Coles Creek and 33% of Plaquemine carinated bowls were large enough for rim diameter estimation. A histogram of rim diameter measurements (Figure 5.25) indicates at least one size class, 20-28 cm. Due to the small sample size, I opted not to compare wall thickness measurements for carinated bowls. Summary data on carinated bowls for the two periods can be found in Table 5.6.

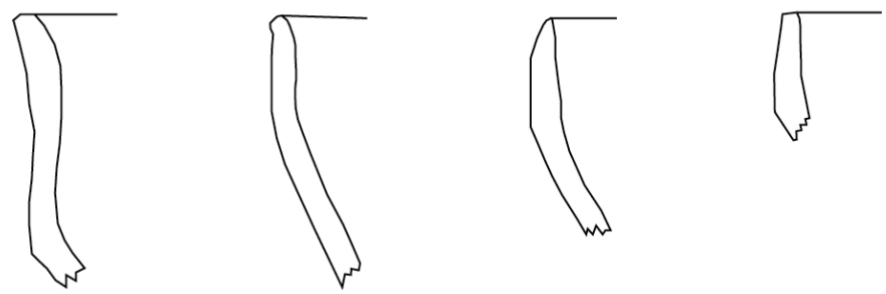

Figure 5.24. Rim profile drawing of carinated bowls from Smith Creek. Drawings are at three quarter scale.

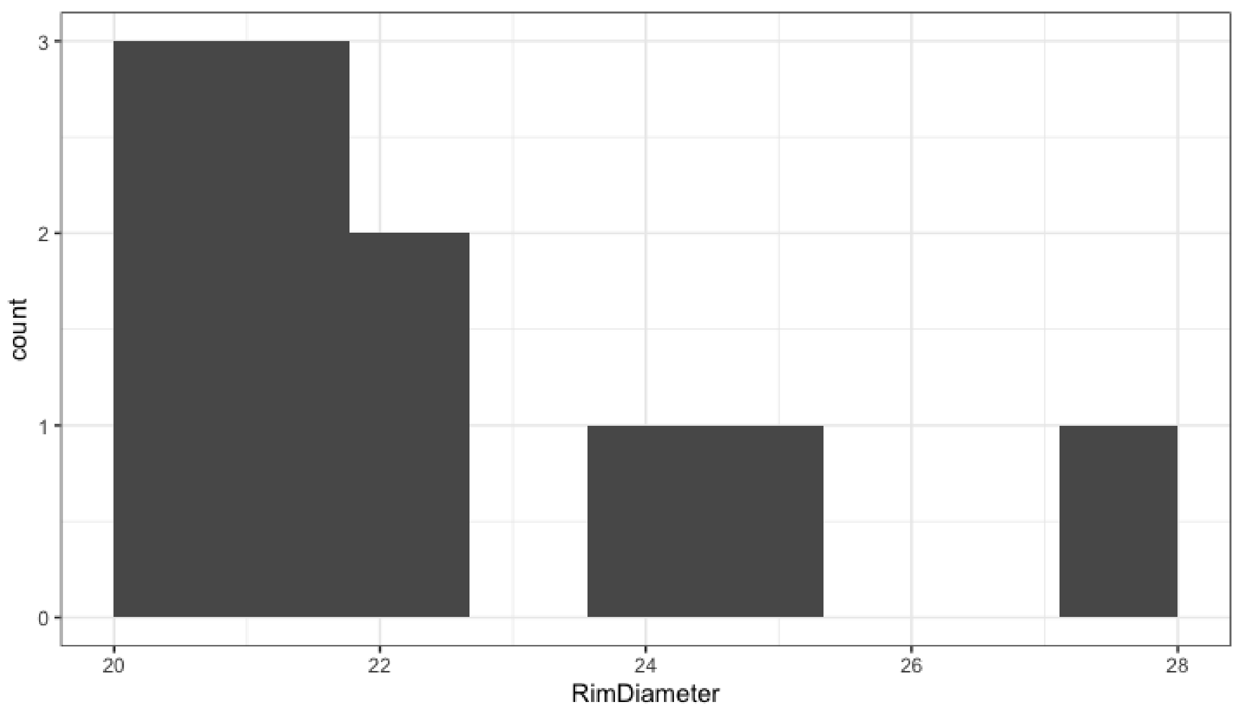

Figure 5.25. Histogram of carinated bowl rim diameters showing potential size classes.

Table 5.6. Attributes of Carinated Bowls.

Period: **Size Category**	**Sample (n)**	**Decoration (%)**	**Sooting (%)**	**Attrition (%)**	**Proposed Functions**
Plaquemine:					
Overall	6	50	0	17	Serving
Coles Creek:					
Overall	11	82	36	0	Serving, Cooking

Sooting was observed on 36% of Coles Creek carinated bowls, and was primarily noted on the exterior of the vessel beneath the rim. Two vessels also had carbonized residue on the interior wall. No sooting was observed on Plaquemine carinated bowls. No attrition was observed on Coles Creek carinated bowl, though scraping was observed on 17% of Plaquemine vessels. The observed scraping on the on the interior of the vessel near the carination point.

I propose that carinated bowls were primarily used as serving dishes during both the Coles Creek and Plaquemine periods. They were also occasionally used as cooking vessels during the Coles Creek period. Though carinated bowls are reported from other sites in the region, function has never been discussed. Researchers in other regions have similarly suggested serving and storage for comparable vessels (Boudreaux 2010; Nelson 2016). The fairly open profile would have allowed easy access to vessel contents. Their relative rarity in both periods suggests these were not commonly made or used vessels.

Deep Bowls

Deep bowls have straight to slightly out sloping walls and are wider than they are tall (Figure 5.26). Because of the steep, nearly vertical vessel profile, deep bowls can be confused with beakers if not enough of the vessel wall is present. Five vessels from Smith Creek and four from Lessley were classified as “deep bowl/beaker” because of this ambiguity.

Fifty deep bowls were identified in the Coles Creek contexts at Smith Creek and fifty-six were identified in the Feltus assemblage. Three were identified from Lessley and seventy-nine from Plaquemine contexts at Smith Creek. Deep bowls make up 12% of the overall Coles Creek assemblage and 14.5% of the overall Plaquemine assemblage. 50% of Coles Creek deep bowls are decorated while 50% are plain and 55% of Plaquemine deep bowls are decorated and 45% are plain. Decorative types include varieties of Coles Creek Incised and French Fork Incised. Certain types are exclusive to Plaquemine contexts, such as Carter Engraved.

Size estimation was possible for 39% of Coles Creek deep bowls and 33% of Plaquemine deep bowls. Deep bowl rim diameter ranged from 8 to 53 cm. A histogram of deep bowl rim diameters, Figure 5.27, indicates five possible size classes: extra-small (8-15 cm), small (16-21 cm), medium (22-36 cm), large (39-46 cm), extra-large (53 cm). Though other regional analysts have not attempted to define size classes, the overall range of measured rim diameters is comparable to other sites (e.g., Ryan 2004; Wells 1998). As seen in Figure 5.28, there are some slight differences in how the sizes are emphasized through time.

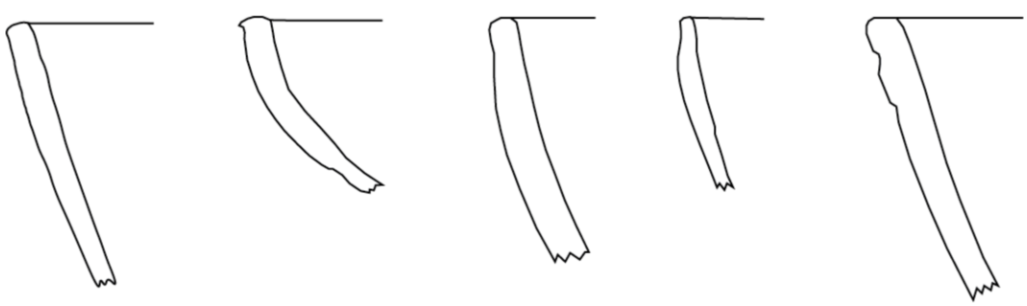

Figure 5.26. Rim profile drawings of deep bowls from Smith Creek. Drawings at three quarter scale.

Notably, the two largest sizes are only seen in Coles Creek contexts. Summary data on each size class for the two periods can be found in Table 5.7. As seen in Figure 5.29, wall thickness is comparable through time. This is seen across all size classes as well. Sooting was observed on 19% of Coles Creek deep bowls and on 14% of Plaquemine ones. Sooting was primarily observed on the exterior of the vessel in the area between the rim and up to 4 cm beneath it. Several Coles Creek deep bowls also had carbonized residue on the interior of the vessel. Attrition was seen on 14% of Coles Creek deep bowls and on 19.5% of Plaquemine ones. The observed attrition was primarily scraping on or near the rim on the interior, but some pitting was also observed. The observed use-wear patterns fit with those observed by other analysts in the region, who have assigned deep bowls a food preparation and cooking role based on the presence of sooting and scraping (Jones 1996; Kassabaum 2014; Lee et al. 1997; Roe 2010; Ryan 2004).

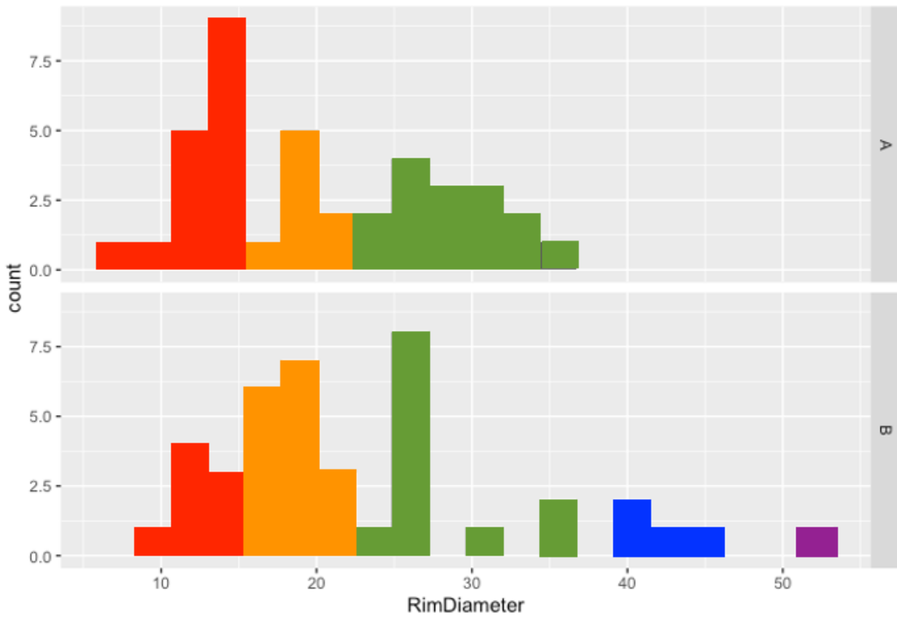

Figure 5.27. Histogram of deep bowl rim diameters with colors showing potential size classes. Key to abbreviations: A, Plaquemine period; B, Coles Creek period.

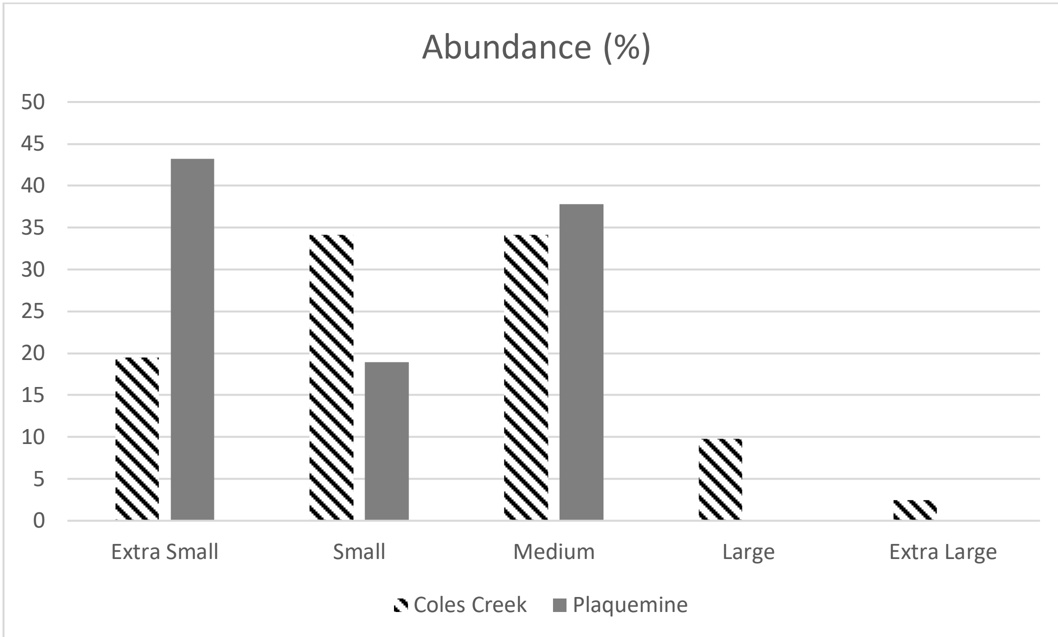

Figure 5.28. Frequency of deep bowl sizes by period.

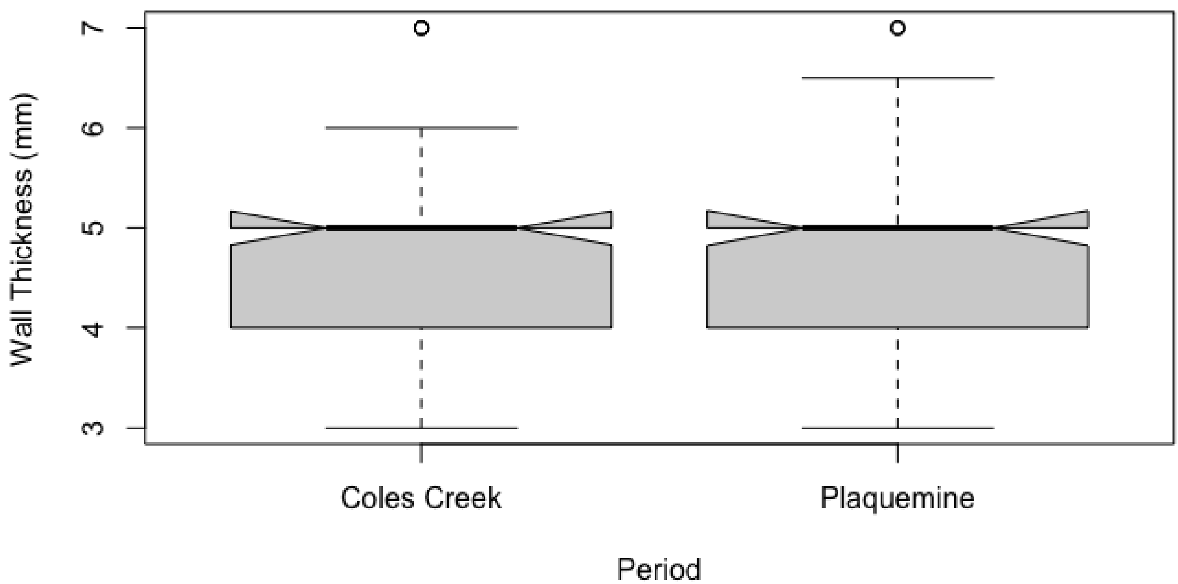

Figure 5.29. Boxplot comparing deep bowl wall thickness through time.

Table 5.7. Attributes of Deep Bowls by Size Category.

Period: **Size Category**	**Sample (n)**	**Decoration (%)**	**Sooting (%)**	**Attrition (%)**	**Proposed Functions**
Plaquemine:					
Overall	82	55	14	20	Cooking, Serving
Extra Small (8-15 cm)	16	56	6	31	Serving
Small (16-21 cm)	7	29	0	7	Serving, Cooking
Medium (22-36 cm)	14	50	14	36	Cooking, Serving
Coles Creek :					
Overall	106	50	19	14	Cooking, Serving
Extra Small (8-15 cm)	8	40	13	0	Serving, Cooking
Small (16-21 cm)	14	57	14	14	Serving, Cooking
Medium (22-36 cm)	14	43	21	29	Cooking, Serving
Large (39-46 cm)	4	25	25	25	Serving, Cooking
Extra Large (53 cm)	1	100	100	100	Cooking

I propose that deep bowls were primarily used for serving and food preparation tasks. Food preparation would include initial steps such as soaking, mixing, and crushing ingredients, as well as heating and cooking dishes. The higher incidences of sooting on Coles Creek vessels suggests they were primarily used for the latter during that period. Deep bowls were only occasionally used for cooking tasks in the Plaquemine period, and were used instead for other food preparation and serving tasks. Scholars in other regions have proposed similar bowls were used for mixing ingredients, re-heating dishes, and for parching nuts and seeds (Boudreaux 2010; Hally 1986; Hawsey 2015; Nelson 2016). These vessels would have been ideal for food manipulation tasks such as mixing or crushing of ingredients, since the relatively steep sides would have provided containment security while the open orifice would have allowed hands or utensils to work freely. Use-wear patterns suggests these vessels were used relatively similarly across size classes, with the primary difference relating to capacity. Smaller vessels were used for serving individuals or preparing small quantities of ingredients. Larger vessels would have been used for serving larger groups, parching, or for mixing larger quantities of ingredients.

Simple Bowls

Simple bowls are those with a more out-flaring rim and more open profile compared to deep bowls; the maximum width is greater than the vessel height (Figure 5.30). Eighty simple bowls were identified from Coles Creek contexts at Smith Creek and one hundred seventy from Feltus. Three simple bowls were identified in the Lessley assemblage and eighty-seven were identified from Plaquemine contexts at Smith Creek. Simple bowls make up 29% of the overall Coles Creek vessel assemblage and 16% of the overall Plaquemine vessel assemblage. Coles Creek simple bowls are 43% decorated and Plaquemine simple bowls are 38% decorated. Decoration types include several varieties of Coles Creek Incised. The Coles Creek assemblage also includes Chevalier Stamped and Larto Red.

Thirty nine percent of Coles Creek simple bowls and half of Plaquemine simple bowls were large enough for size estimations. Rim diameters ranged from 7 to 52 cm, and a histogram (Figure 5.31) of these measurements suggest five possible size classes: extra-small (7-15 cm), small (16-29 cm), medium (30-36 cm), large (37-46 cm), and extra-large (52 cm). As seen in Figure 5.32, the various size classes are used in relatively similar proportion through time with the exception of the two largest size classes which are almost exclusively used in the Coles Creek period. Summary data on each size class for the two periods can be found in Table 5.8. As seen in Figure 5.33, wall thickness is comparable through time; this applies to each size class as well. Sooting was observed on 14% of Coles Creek simple bowls and 10% of Plaquemine ones.

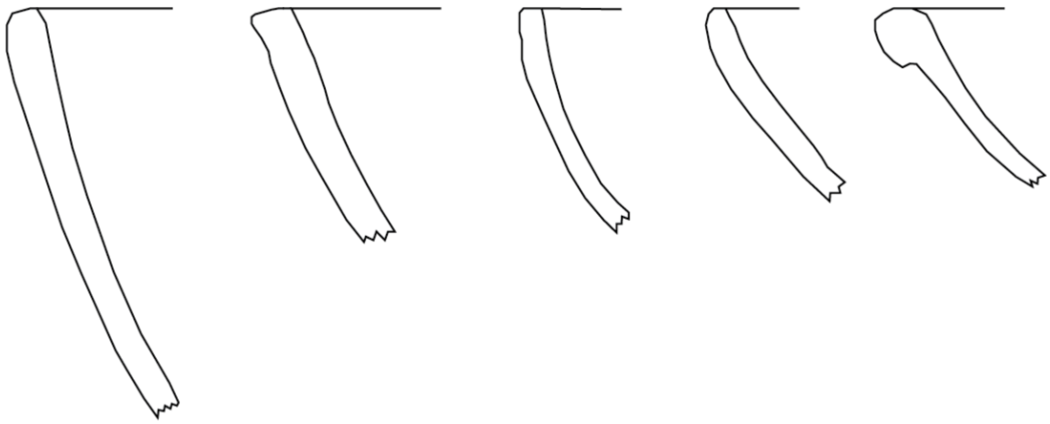

Figure 5.30. Rim profile drawing of simple bowls from Smith Creek. Drawings at three quarter scale.

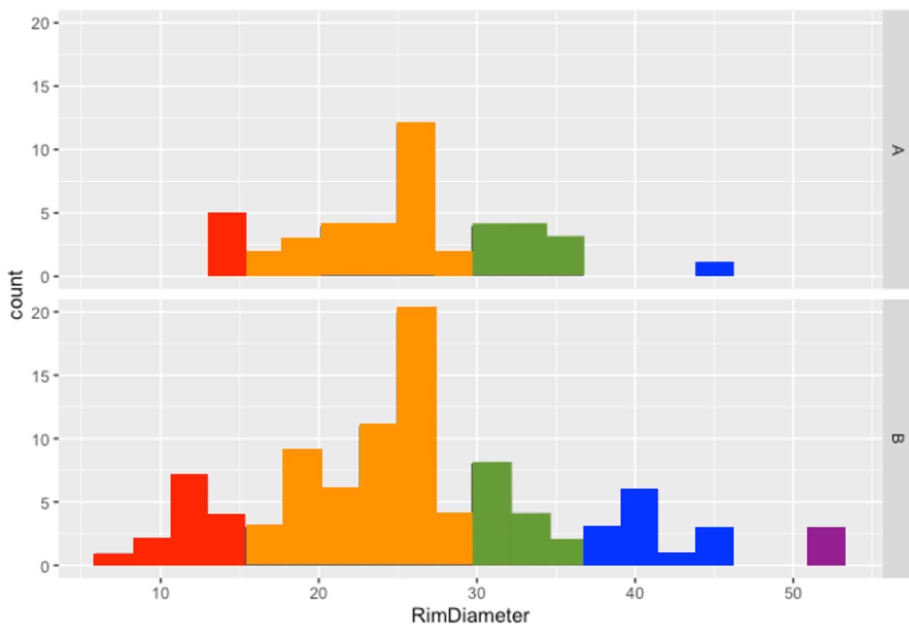

Figure 5.31. Histogram of simple bowl rim diameters with colors showing potential size classes. Key to abbreviations: A, Plaquemine period; B, Coles Creek period.

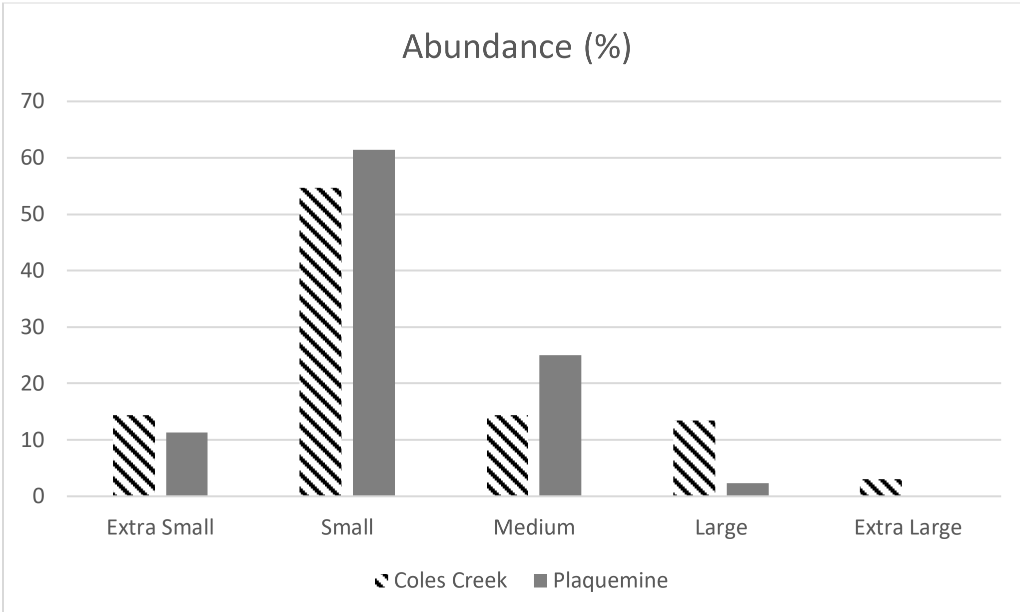

Figure 5.32. Proportion of simple bowl size classes through time.

Sooting was primarily noted on the exterior of these vessels either at the rim or in areas 1 to 3 cm beneath the rim. Several Coles Creek bowls also had carbonized residue on the interior. Attrition was observed on 7% of Coles Creek simple bowls and 12% of Plaquemine ones. The observed attrition was a mix of pitting and scraping, all of which was observed on the interior vessel wall either at the rim or in the area 1 to 2 cm beneath it. As noted above, the simple bowl category was created by Kassabaum (2014) as an intermediary between deep and shallow bowls, which were the categories previously defined by other researchers. Kassabaum (2014:218) suggests simple bowls were used primarily for serving and food consumption. Overall, the use-wear patterns in the study assemblage suggest simple bowls were used for a mix of food preparation, cooking, and serving tasks, expanding the previously reported functions for these vessels. These vessels are very similar to deep bowls, although simple bowls have more out flaring walls and would be better suited for preparing or serving viscous or solid foods.

Table 5.8. Attributes of Simple Bowls by Size Category.

Period: Size Category	Sample (n)	Decoration (%)	Sooting (%)	Attrition (%)	Proposed Functions
Plaquemine:					
Overall	90	38	10	12	Cooking, Serving
Extra Small (7-15 cm)	5	0	0	20	Serving
Small (16-29 cm)	27	30	15	18	Serving, Cooking
Medium (30-36 cm)	11	36	0	0	Serving
Large (37-46 cm)	1	0	100	100	Cooking, Serving
Coles Creek:					
Overall	250	43	14	7	Cooking, Serving
Extra Small (7-15 cm)	14	50	7	0	Serving, Cooking
Small (16-29 cm)	53	59	30	15	Serving, Cooking
Medium (30-36 cm)	14	21	14	0	Serving, Cooking
Large (37-46 cm)	13	31	15	8	Cooking, Serving
Extra Large (50 cm)	3	0	33	0	Serving, Cooking

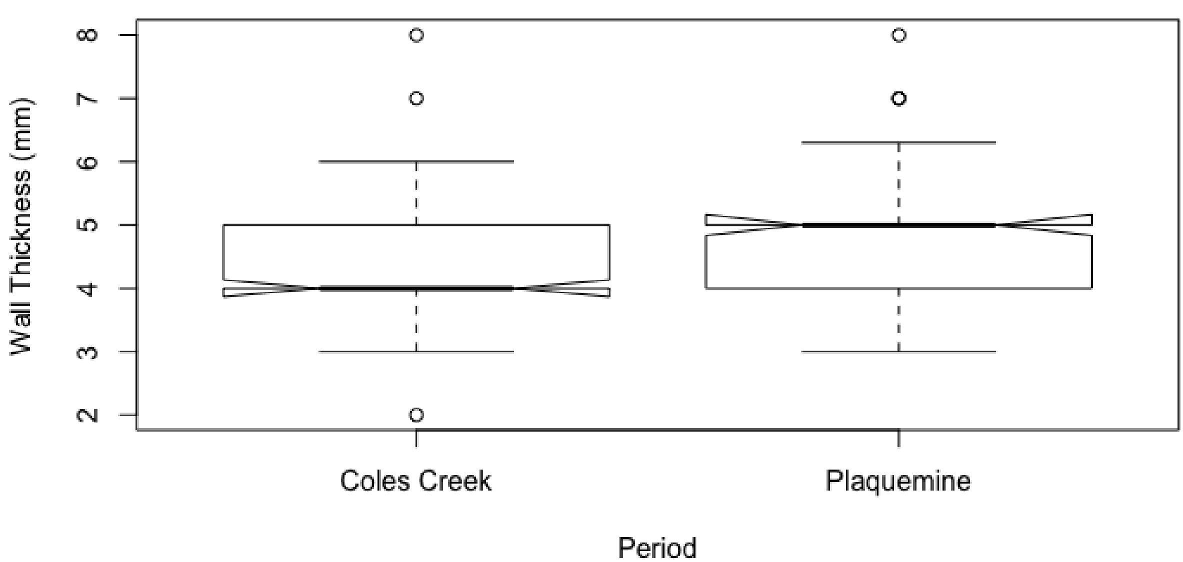

Figure 5.33. Boxplot of simple bowl wall thickness through time.

As with deep bowls, Coles Creek simple bowls have higher incidences of sooting than Plaquemine bowls, suggesting they were more frequently used for cooking or re-heating tasks. Looking across size classes, simples bowls appear to have been similarly used, with the primary difference relating to capacity. Smaller simple bowls would have been used to serve individuals or as bowls for dips or condiments. Both dried ingredients, such as ashes or ground cherry fruits, and liquid ones, such as hickory nut oil and bear oil, were frequently used as seasonings or condiments by groups across the Eastern Woodlands (Briggs 2015; Kavasch 1979). Larger vessels would have been used to serve groups or to mix or cook larger quantities of food.

Shallow bowls

Shallow bowls are vessels with very out-flaring to horizontal rims (Figure 5.34). Twenty-four shallow bowls were identified from Coles Creek contexts at Smith Creek and forty-four from Feltus. Six were identified in the Lessley assemblage and forty-three were identified from Plaquemine contexts at Smith Creek. Shallow bowls make up 8% of the overall Coles Creek vessel assemblage and 9% of the Plaquemine. Fifty seven percent of Cole Creek shallow bowls are decorated and 55% of Plaquemine shallow bowls are decorated. Decorative types seen in all contexts include varieties of Coles Creek Incised and Larto Red. Plaquemine contexts also contain varieties of Anna Incised and L'eau Noire Incised. Thirty nine percent of Plaquemine and 29% of Coles Creek shallow bowls were large enough for size estimation. Rim diameters ranged from 9 to 49 cm, which is comparable to the range seen at contemporaneous sites in the region (Ryan 2004; Wells 1998). A histogram of rim diameter measurements, Figure 5.35, suggests four possible size classes: small (9-19 cm), medium (20-29 cm), large (30-39 cm), extra-large (40-49 cm).). As seen in Figure 5.36, there is a major difference in which sizes are used through time. Coles Creek communities primarily used the small and medium sizes, whereas all four sizes were used in relatively similar amounts by Plaquemine communities. Summary data on each size class for the two periods can be found in Table 5.9.

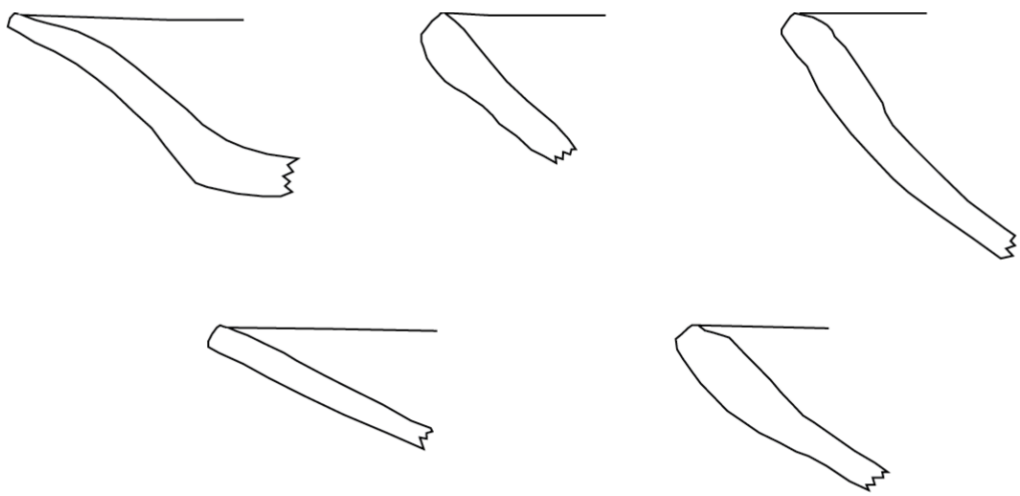

Figure 5.34. Rim profile drawing of shallow bowls from Smith Creek. Drawing at three quarter scale.

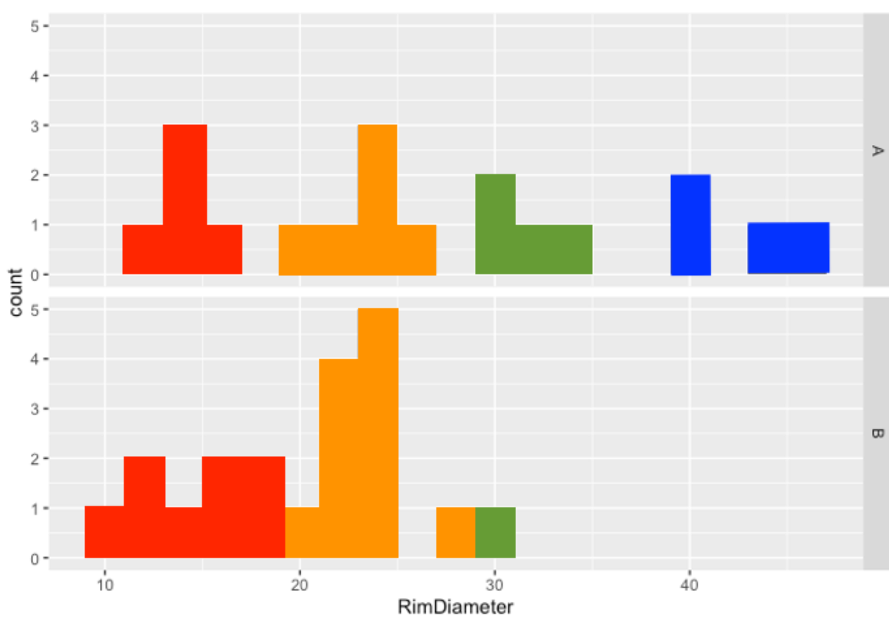

Figure 5.35. Histogram of shallow bowl rim diameters with colors showing potential size classes. Key to abbreviations: A, Plaquemine period; B, Coles Creek period.

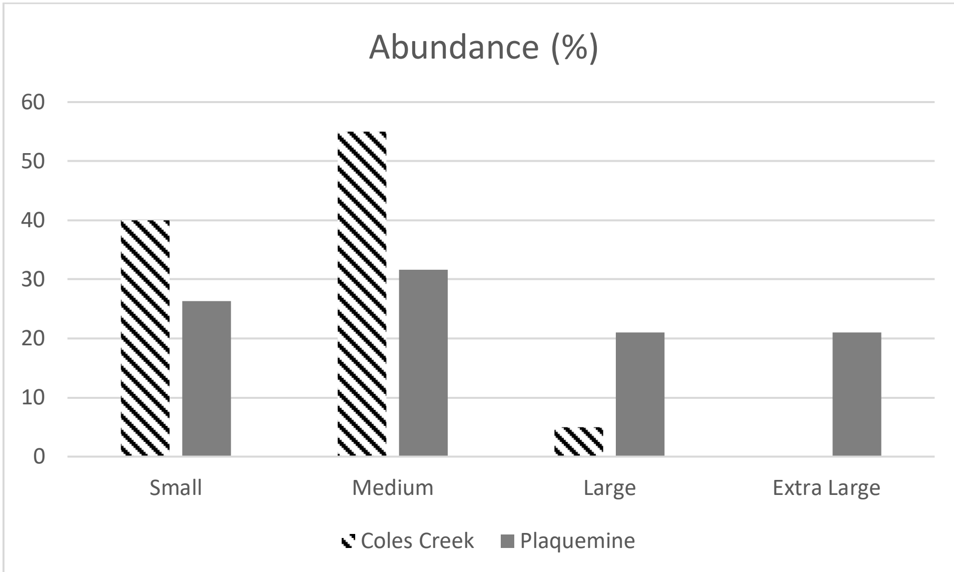

Figure 5.36. Proportion of shallow bowl size classes through time.

Table 5.9. Attributes of Shallow Bowls by Size Category.

Period: **Size Category**	**Sample (n)**	**Decoration (%)**	**Sooting (%)**	**Attrition (%)**	**Proposed Functions**
Plaquemine:					
Overall	49	55	0	4	Serving
Small (9-19 cm)	5	40	0	0	Serving
Medium (20-29 cm)	6	0	0	0	Serving
Large (30-39 cm)	4	0	0	50	Serving
Extra Large (40-49 cm)	4	100	0	0	Serving
Coles Creek :					
Overall	68	57	7	1	Serving, Cooking
Small (9-19 cm)	8	50	0	13	Serving
Medium (20-29 cm)	11	64	27	0	Serving, Cooking
Large (30-39 cm)	1	100	100	0	Cooking

The wall thickness of shallow bowls is comparable through time, as seen in Figure 5.37, and this applies to all size classes. Sooting was observed on 7% of Coles Creek shallow bowls, and no sooting was observed on Plaquemine shallow bowls. Sooting was primarily observed on the exterior of these vessels ranging from immediately beneath the rim to 2.5-3 cm beneath the rim, and one vessel also had evidence for carbonized residue on the interior. Attrition was observed on 1% of Coles Creek and 4% of Plaquemine shallow bowls. The observed attrition was mix of scraping near the interior rim and pitting that occurred across the interior vessel wall. Other analysts in the LMV have primarily suggested that shallow bowls were serving and food consumption vessels, though some have also proposed these as food preparation vessels (Jones 1996; Kassabaum 2014; Lee et al. 1997; Roe 2010; Ryan 2004).

Shallow bowls were primarily used as serving vessels during the Plaquemine period and had a more multipurpose role during the Coles Creek period. As evidenced by sooting patterns, Coles Creek shallow bowls were occasionally used for cooking or re-heating tasks. These could have been used for short-term reheating, parching, or even flipped over and used to bake breads (Hally 1986; Smith 1985). As serving vessels, the open profile would have allowed for easy content removal although the shallow walls suggest these would have better suited for solid or

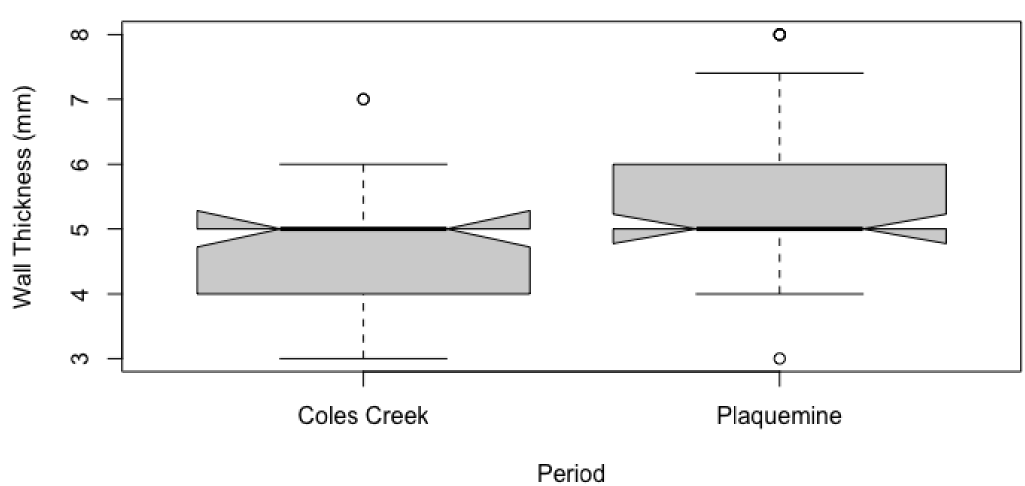

Figure 5.37. Boxplot of shallow bowl wall thickness through time.

viscous foods than liquid-based ones. Looking across size classes, the primary difference is capacity rather than function. Smaller vessels were used to serve individuals or foods served in small quantities, such as fruits, mushrooms, or greens (Chiltoskey 1951; Thompson 2008). Larger vessels would have been used for serving groups or food made in more sizeable quantities such as roasted meats or dumplings (Chiltoskey 1951; Thompson 2008). Notably, extra-large shallow bowls, which are only seen in Plaquemine contexts, are intricately decorated. Given the ornate designs of these vessels coupled with the large size, I propose that these vessels were used to serve the central dish during highly performative communal meals.

Summary and Conclusion

From the above results, the full food preparation and consumption vessel assemblage for each period can be surmised. For each period, several size classes were identified for each shape class. Further analysis revealed that for some forms, function varied by size, while other forms followed similar functional patterns regardless of size. In some cases, it is probable that the size classes I identified may be artificial distinctions and future studies should continue to explore whether these represent functionally distinct size classes. For the Coles Creek period, simple bowls are the most common vessel form, followed by restricted jars, restricted bowls, deep bowls, and beakers, with other vessel forms making up very small percentages (Figure 5.38). There are at least two sizes of restricted and necked jars, all of which were used for cooking, food preparation, and storage tasks. For both jar types, the primary difference between size classes was capacity.

Figure 5.38. Coles Creek vessel assemblage highlighting both shape classes and functionally distinct sizes. Vessel sizes are not too scale but meant to display general categories.

For beakers, the smallest size was functionally distinct as a serving vessel while the larger sizes were used for cooking and other food preparation tasks. The smaller sizes of restricted bowls were used for serving and storage while the larger sizes were used for cooking. Carinated bowls were used for serving, and only one size was identified. There are at least three size classes for both simple and deep bowls, all of which appear to have served a multipurpose role, alternately used for cooking, mixing and other food preparation tasks, and serving. Finally, there are one or two size classes of shallow bowls, which were used for both cooking and serving tasks.

The Plaquemine assemblage presents a more complex picture, depending on how vessels are categorized. When vessel sub-categories are lumped, bowls are the most common form identified. However, when the assemblage is split into sub-categories, restricted jars are the most common, followed by beakers, simple bowls, restricted bowls, and deep bowls, with all other vessel forms making up a smaller proportion of the assemblage (Figure 5.39). There are at least three sizes of restricted jars, all of which were used for cooking and storage tasks, with the primary difference related to capacity. Necked jars were also present in the assemblage, though a small sample size prevented size estimation and comparison. These vessels were used as serving and storage containers. There are at least three sizes of beakers, including an extra small sized beaker used for serving with the other sizes functioning as multipurpose forms used for serving, cooking, food preparation, and storage. Restricted bowls were made in at least two sizes, all of which were primarily used as serving and storage vessels, and occasionally

Figure 5.39. Plaquemine vessel assemblage highlighting both shape classes and functionally distinct sizes. Vessel sizes are not too scale but meant to display general categories.

as cooking vessels. One carinated bowl size was used for serving. There are at least two sizes of deep bowls, the smaller sizes were food preparation and serving vessel while the largest size served a more multipurpose role for food preparation, cooking, and serving. Similarly, there were at least two sizes of simple bowls, and the small to medium sizes were primarily used as serving and food preparation vessels while the largest size was used for food preparation, cooking, and serving tasks. Finally, there were at least two sizes of shallow bowls, all of which were used as serving vessels.

When the vessel assemblages from both periods are compared, both similarities and differences can be identified. The same overall vessel forms continue to be used through time, with more or less the same size classes represented in similar proportions. When there are differences in size class representation, it is always the largest size classes that are underrepresented. Analysis of particular data points, such as such as size class, rim angle measurements, and use-wear patterns, indicates some underlying differences between the two assemblages, though.

Restricted jars and beakers are used as cooking and storage vessels in both periods, and similar sizes are emphasized in both periods. However, changes in rim angle suggest Plaquemine communities slightly altered traditional forms. Since the overall function remains similar, e.g., cooking, I suggest these changes, which I term tweaks, are related to changes in cooking technique and process. Furthermore, both of these forms appear in slightly higher proportions during the Plaquemine period, which may be related to differences in depositional context.

The data also suggest a number of changes related to bowls. Notably, bowls seem to have a slightly greater emphasis during the Coles Creek period than the Plaquemine period, a pattern that has been noted by other researchers (e.g., Kassabaum 2014; Lee et al. 1997; Ryan 2004).

Though bowls appear in high numbers in assemblages from both periods, the frequency of simple bowls in the Plaquemine assemblage is half of that of the Coles Creek period. Alongside frequency data, size class and use-wear patterns suggest other differences between the assemblages. Though the size classes used are roughly similar through time, there is a major shift related to the largest sizes for each form. The largest sizes of simple and deep bowls are only seen in Coles Creek contexts, while the largest size of shallow bowls is only seen in Plaquemine contexts. Furthermore, while all of these large bowls seem to have functioned primarily as serving vessels, the Plaquemine shallow bowls are always highly decorated, in contrast to the large simple and deep bowls of the Coles Creek period which are always plain. All together, these patterns suggest changes related to not only the type of food served in large quantities, but also to the performance surrounding food serving and consumption.

Use-wear data also indicate a shift in bowl use through time. Coles Creek bowls of all types and sizes functioned as multipurpose vessels, with use-wear data corroborating their use as food preparation, cooking, and serving vessels. While there is some evidence that Plaquemine bowls were also used for cooking, this seems to have been more of an occasional role, with bowls of all types and sizes from this period more commonly used for other types of food preparation tasks, such as mixing or soaking, as well as for serving and consumption. In the next chapter, I combine the ceramic data patterns with the plant data patterns to discuss Natchez Bluffs cuisine through time.

CHAPTER 6: DISCUSSION AND CONCLUSION

I define cuisine as the foods, flavors, preparation methods, consumption modes, and social context of community foodways. In the previous chapters, I have presented data on particular aspects of cuisine: the plant food ingredients and the ceramic vessels used to prepare and serve those foods. In this chapter, I bring those data sets together, alongside the archaeological contexts, to discuss the nature of LMV cuisine through time. I begin by describing Coles Creek and Plaquemine eating events, as defined by the ingredients, cooking methods, and performance of the meals. Following this overview, I highlight the major patterns identified for these three aspects of LMV cuisine: ingredients, cooking, and event style. For each**,** I discuss the interplay of both continuity and change seen through time. I close by discussing what these patterns indicate about LMV cuisine and social relations through time.

Coles Creek Cuisine and Eating Events

The plant portion of Coles Creek cuisine in the Natchez Bluffs was based around nuts, particularly acorn and hickory, and starchy seeds, particularly chenopod, maygrass, knotweed, and amaranth. Other plants contributed to the diet in more modest amounts. These included other nuts (pecan and black walnut), grasses (little barley, Type X, rye), oily seed plants (squash, sunflower), fruits (persimmon, grape, bramble), and seasoning plants (purslane, nightshade, aster). Communities practiced a mix of strategies to obtain these foods, including gathering from groves and wild stands, for nut, fruit, and seed plants, as well as active cultivation of some seed plants. It is likely that gathering practices involved some degree of management, which could have ranged from passive monitoring of nearby stands to active encouragement through clearing, burning, and pruning. Around AD 1000, maize was introduced into the region and began to have a role in mound center meals and activities. As suggested by Fritz (1998), during this time maize may have had a special role in mound-top activities and rituals. Data from this project corroborate this suggestion as maize from Late Coles Creek mound summit contexts was often associated with ritual or specialty plants such as tobacco, morning glory, and poison ivy.

Cooking vessels suggest foods were primarily boiled and stewed, and a variety of nut-based stews or boiled grain-based dishes were likely the centerpiece of meals that also would have included a variety of meats, such as deer, fish, and turtle. Other cooking modes likely included parching, which could have been done in bowls, and roasting and drying, which would have occurred directly in or over fires, making use of temporary constructions such as wooden drying racks. In addition to cooking, the pottery examined for this study was used for other food preparation, consumption, and storage tasks. Vessel forms, which include beakers, jars, restricted bowls, and bowls, were made in a range of sizes, and use-wear evidence suggests these sizes often had distinct functions. Beakers and jars were primarily used for cooking but also had additional food preparation and storage functions. Bowls, which ranged from steep-walled to shallow, plate-like forms, had multiple roles. Bowls of all forms and sizes were used for food preparation, cooking, and serving tasks.

Building on Kassabaum (2014), this study has provided additional data and insights on the nature of Coles Creek eating events. Meals were clearly a regular part of mound center gatherings, as indicated by midden deposits at these sites. Kassabaum (2014: 331-332) was able to classify several of the middens at Feltus as feasting deposits based on the presence of large ceramic pieces and the rapid nature of deposition. She described these events as potluck, communal events where participants brought ingredients and dishes to the mound center that were then combined and consumed as part of a larger feast. Despite the large amount of food and the large size of the serving vessels, these meals were fairly undifferentiated affairs. These feasts centered on the same animal proteins, nuts, and starchy seeds that made up daily meals, and the large serving vessels mimicked the same plain, undecorated forms that communities used at home.

My data largely corroborate Kassabaum's findings, with large quantities of nuts and starchy seeds appearing in the Smith Creek and Centers Creek middens alongside similar vessel forms. Use-wear data from the Feltus and Smith Creek ceramics contribute new insights to Kassabaum's speculation that foods arrived at the mound center in various states of preparation. In particular, a high prevalence of sooting on bowls suggests that the preparation process continued at mound centers in an ad-hoc fashion. I suggest that bowls would have provided an ideal, multi-purpose vessel in which ingredients could be transported, combined, re-heated, and ultimately served. I interpret all of this as contributing to the informal, potluck-style setting, in which all participants contributed and consumed equally. The informality of these events was designed to keep the focus on the gathering itself, which served to integrate the community.

Plaquemine Cuisine and Eating Events

During the Plaquemine period, the basic components of cuisine largely followed that of the previous period. However, the style and performance of eating events changed. The plant-food ingredients of cuisine remained largely the same, as nuts, particularly acorn and hickory, continued to be important. There were some adjustments to the starchy, cultivated plants used, though. Native starchy seeds, particularly maygrass, chenopod, knotweed, and amaranth, continued to be used albeit in somewhat lower amounts than previously. At the same time, maize, which was added late in Coles Creek times, was used in increasingly larger amounts. Other, more minor, contributors to cuisine, such as fruits and flavoring plants, followed the same patterns of consistent, moderate use as in the previous period. Overall, the shifts in plant use, particularly the increase in maize and the concomitant decline in starchy seeds, is not surprising. These plant types occupy a similar niche as starchy, cultivated plants. Because native starchy seeds continued to be cultivated and consumed in moderate amounts, I consider the patterning to reflect maize as an accommodation or addition, rather than a replacement or substitution.

Ceramic evidence suggests that cooking modes remained largely the same. Beakers and restricted jars continued to be the main cooking pots, with no new forms identified. These vessel forms appeared in the same sizes and quantities as the previous period. Use-wear patterns indicate these pots were placed in the fire to boil and/or simmer foods, suggesting preparation styles did not change from the preceding period. This would also suggest that nut- or maize-based stews and boiled maize or starchy-seed dishes still formed a major part of the diet. I did identify a couple of "tweaks" to cooking vessel forms, in the form of changes to rim angle. Plaquemine beakers display a more open and/or flaring rim angle than Coles Creek ones, while Plaquemine restricted jars display a more restricted rim angle. As will be further discussed, these tweaks would have changed aspects of vessel function, such as reducing evaporation. However, I argue that these tweaks would have not changed the overall function of these vessels, which still served to boil and simmer foods.

Though the dishes served at Plaquemine events remained largely similar to the ones served at Coles Creek events, the style and function of those events changed. Eating events continued to happen at mound centers, but the preparations and performance of these meals was quite different. In Coles Creek times, communities used mound centers as communal gathering spaces, but lived in dispersed habitations away from these centers. In the Plaquemine period, part of the community lived at mound centers, at least for some portion of time. I suggest that these people may have functioned as a host community for the gatherings in these spaces. Because of the host community, the potluck nature of previous gatherings also changed. Rather than ingredients arriving in various states of preparation to be combined, cooked, and/or re-heated, the meal was largely prepared on site. This is particularly reflected in how bowls were used. As noted, bowls from Coles Creek contexts had higher incidences of sooting and other use-wear evidence, such as scraping, which I argue supports their use in ad hoc preparations for Coles Creek feasts. In contrast, Plaquemine bowls have much lower incidences of sooting or other use-wear evidence, and likely were used primarily for food serving and consumption, as well as some food preparation tasks, such as mixing or soaking ingredients.

Ceramic decorations suggest changes in the performance of the meal. Large Coles Creek serving vessels were undecorated, which I have argued was intentional to keep the focus on the shared meal, ultimately symbolizing communal identity and egalitarian relationships. The largest Plaquemine serving vessels were ornately decorated (Figure 6.1). This would have drawn attention to the vessel itself and ultimately would have served to reflect the prestige of the host community. Interestingly, these large, decorated serving vessels were shallower than the larger serving vessels of the preceding period. This suggests that the centerpiece of the meal was a different dish, likely made up of solid or viscous foods. The shallower walls of the vessel would have also increased the visibility of the contents. The use of highly decorated ceramics would have differentiated this meal from more everyday ones, and by association the hosts and participants. The shift in performance to a "fancier," more differentiated meal, suggests a change in the function of the meal and may also reflect changes in social relations.

Figure 6.1. Replica of an Anna Incised shallow bowl/plate showing the ornate decoration along the rim. This replica was created by Tammy Beane based on vessel fragments that were found in Plaquemine contexts at Smith Creek and is currently displayed in the Wilkinson County Museum, Mississippi.

Cuisine, Continuity, Change

The preceding overview of Coles Creek and Plaquemine foodways has highlighted three main aspects of cuisine: the foods used, how they were prepared, and the events where these foods were consumed. These aspects showed both continuity and change through time. Here, I will explore those patterns using the theoretical frameworks that informed this study, including communities of practice and the cuisine traditions that connected people and practices across space and through time. Before doing so, I introduce an additional theme that will run throughout the discussion. In exploring patterns of continuity and change, I wish to emphasize that these are inter-related, dialectical patterns not dichotomous ones. This idea was introduced and expanded upon by scholars, often working in colonial and culture-contact contexts, who were frustrated by essentializing categories that have turned continuity and change patterns into all or nothing scenarios (Ghisleni 2018; Silliman 2009; Stahl 2012). These scholars were ultimately informed by practice and historical-processual approaches that have emphasized an understanding of how events or actions unfolded over why they occurred (Pauketat 2001a, 2001b; Pauketat and Alt 2005; Silliman 2009). Examining process over cause embraces a contextual approach that acknowledges both the multiplicity of potential origins and the dynamic relationship between continuity and change. Rather than considering continuity and change to be mutually exclusive, these scholars have argued that these are impossible to fully separate and instead urge consideration of "continuity with change" (Stahl 2012) and "contingent persistence" (Ghisleni 2018). One example of this framework is the use of European goods in Native burials, which Silliman (2009) interprets not as a change to burial practices, but as continuity in the traditional practice of conveying status and identity through burial goods. Another example is the increased partitioning of space in Roman Britain, which is interpreted as not solely a result of Roman influence but as having roots in traditional, pre-Roman practices, which Ghisleni (2018) notes shows the many contingencies present to people. Both of these case studies exemplify the interrelationship between continuity and change, demonstrating how elements of each are often reflected in cultural practices. Thus, in the following discussion of LMV cuisine patterns through time, I wish to emphasize the dynamic relationship between the two.

Gathering and Growing the Meal

Food ingredients form the basis of cuisine and are often the most recognizable elements of it. Studying the ingredients of LMV cuisine through time necessarily focuses on the relationship between maize and other plant foods. This project focuses on both the specifics of maize adoption (e.g., in what contexts and how much was consumed) and the extent to which traditional plant-food use continued. Plant-food data indicate that though maize becomes a major part of cuisine during the Plaquemine period, communities also continued to make use of traditional foods.

The addition of maize to LMV cuisine is a major change in itself. Food adoptions such as this one have been theorized by scholars in a few ways. Rozin and Rozin (1981) note that humans are simultaneously drawn towards new foods and afraid of them. The omnivorous nature of human diets supports the desire for novelty, while the fear of dangerous or unwanted outcomes may structure what, when, and how new foods are added. Macbeth and Lawry (1997) have similarly suggested that cuisine change occurs along two extremes: prosperous people seeking novelty or stressed communities seeking new staples following changing conditions. Many studies of food transitions have tended to explore the necessity angle, with colonialism, migration, or environmental change being a few of the external circumstances attributed to the adoption of new foods (Brown and Mussell 1984; Logan 2012; Powers and Powers 1984). Previous research on the adoption of maize by LMV communities has considered both the necessity and novelty angles, suggesting environmental changes, population shifts, or elite influence as driving factors (Fritz 1998; Roberts 2006; Steponaitis 1986). While these suggestions are compelling, they have mostly ignored *how* communities adopted maize into their existing cuisine in favor of explaining *why*. Examining how transitions like this one happened is important for considering human agency and variability and avoiding essentializing frameworks.

Several scholars have proposed frameworks for understanding how new foods are adopted into existing cuisines. Fuller (2005) has proposed a linguistic model for understanding cuisine change. Using examples of how food terms, like names for ingredients or dishes, are adopted or adapted into new cultures, he proposes four modes for how foods and dishes become part of a cuisine. These modes are in-situ evolution, where a new food tradition evolves out of an earlier or existing one; borrowing, where a new food item is adopted alongside new methods of preparation or cooking; semantic shifts, where a new food is adapted to existing cultivation and culinary routines; and hybridization, in which old and new elements are combined. Wilk (2006) and Logan (2012) have focused more specifically on the mechanisms by which a new food is used in existing cuisines. Wilk's framework includes blending, where a new food is added to an existing dish; submersion, where an ingredient is submerged or absorbed inside another; substitution, where a normal ingredient is replaced with something new; wrapping and stuffing when one ingredient is enclosed in another, either wrapping a traditional food around a foreign one or vice versa; compression, which involves simplifying a cuisine down to more common or emblematic elements or dishes; and alternation and promotion, where new foods are only served on certain occasions, serving to slowly incorporate new items. Logan (2012), building on Wilk's work, has suggested two additional modes: habituation and experimentation, both of which account for the temporal dimension of food transitions. Habituation is the eventual adoption of a food after variable use of it over time, while experimentation involves variation in who, how, and when new foods are prepared. Notably, the modes proposed by both researchers are not meant to be mutually exclusive and may be used simultaneously or interchangeably by communities.

Considering the data from the LMV alongside these frameworks, it is possible to speculate about the process of maize adoption. Unfortunately, there are limits to the archaeological data (i.e., we cannot know much about specific recipes or resulting dishes). However, there are several possibilities to consider. From Fuller's framework, it is likely that maize adoption fits the semantic shift explanation, and may also fit the hybridization explanation. No new tools accompanied maize into the LMV, and maize preparations did not necessarily evolve out of existing traditions.[6] I argue that the use of traditional pots and plant food ingredients alongside maize indicates that it was adapted or hybridized to existing culinary traditions. The modes proposed by Wilk and Logan allow for some consideration of how this adaptation may have occurred. I propose that Logan's modes, experimentation and habituation, are likely interrelated with Wilk's modes. LMV communities may have *experimented* with maize through a number of methods, such as blending, submersion, substitution, and alternation. Individual meals may have included any number of these methods, and there would have been a degree of trial and error as people figured out the interactions between maize and existing tools, techniques, and ingredients. Through time, these experiments would have served to *habituate* communities, and existing cuisine, to the new food, as both cooks and consumers became accustomed to menus that included maize.

[6] Though nixtamalization methods have been noted to be similar to acorn preparation methods (e.g., Briggs 2017), this would not be considered the evolution of one into the other. Nixtamalization techniques likely arrived to the Southeast with maize, rather than developing after communities adopted the plant. Examples of cuisine evolution in other cultures include the development of fermented cacao beverages from an existing non-alcoholic cacao beverage in Honduras (Joyce and Henderson 2007) or the shift to maize-based flatbreads from maize stews in the southwestern U.S. (Oas 2019).

Although LMV communities increased their consumption of maize through time, marking a major addition to their cuisine, they also continued to rely on traditional staples. Nuts, in particular, remained a major part of the diet. Additionally, though the use of starchy seeds dropped, use of these plants did not dramatically decline. As I have already argued, the decline in starchy seed use may reflect an accommodation for maize, another starchy grass. The Correspondence Analysis (CA) graphs seen in Chapter 4 particularly illustrate the consistency in cuisine through time. Despite the addition of maize, Natchez Bluffs sites are more similar to one another than different when compared to other regional communities. I argue that these analyses demonstrate both the existence of a Natchez cuisine as well as the maintenance of that cuisine through time.

My analyses are directly influenced by Bush (2004) who first demonstrated the effectiveness of CA for identifying regional patterns in plant use that can then be tied to group identity. Based on her own CA work with plant remains from Late Woodland communities in Indiana, she notes "Oliver people developed a plant use signature, as they did a ceramic style, that sets them apart from others, both in time and space… The Oliver botanical pattern is empirically distinguished from that of other Late Prehistoric and historic groups by the choice of particular crops, in the intensity of growing versus gathering, and in the use of a large number of wild plant resources" (Bush 2004:127). Her work demonstrates that there are real, archaeologically distinguishable differences to community plant use, even among groups that relied on similar staples and lived in similar geographical and ecological areas. These differences, then, are considered to be related to cultural patterns of plant use that can be tied to community identity. My analyses differ slightly from Bush in that I tracked LMV community consumption patterns through time, whereas she is focused on a particular point in time.[7] As demonstrated by my analyses, LMV community consumption patterns remained similar to one another and did not become like other Mississippian communities, even after maize use increased. I argue that this represents an active choice on the part of LMV communities to maintain their culinary identity.

Food is simultaneously a biological necessity and a medium for expressing identity and social relations. The repetitive, daily consumption of food in shared, social contexts is what allows it to be tied to who we are and how we relate to one another. Both the foods themselves and all the materials, structures, and rules involved in food production, preparation, consumption, and disposal allow us to express who we are or wish to be (Appadurai 1981; Hastorf 2017; Rozin and Rozin 1981; Weismantel 1988). The sensory nature of food is one explanation for the deep ties between food, identity, and relationships. Sutton (2001, 2010) has written extensively about the relationship among sensory experiences and memory. His work highlights how food engages multiple senses, such as taste, sight, smell, and hearing, all along the production-to-consumption spectrum. He argues that the engagement of multiple senses, a type of synesthesia, forms lasting memories. These memories then serve to connect the person to not only the food, but also to the people and contexts surrounding its preparation and consumption. As demonstrated by Sutton's interlocuters, when people eat foods embedded with memories, they are not only remembering the past but also connecting it to their present and future.

I argue that LMV communities were making an active claim to a traditional identity by continuing to consume traditional foods. Often, changes or introductions offer opportunities for

[7] This is in part because the Oliver phase is recognized to be a somewhat short-lived phenomenon or coalescence.

identity to be realized. As several scholars have noted, traditional cuisines are most noticeable when there is exposure to other cuisines (Hastorf 2017; Weismantel 1988). This presents an awareness of practices and social meanings and offers people a choice. Existing foods may be both socially preferred and a means to assert a sociopolitical identity in the face of something new (Oas 2019; Ralph 2007; Smith 2006; Weismantel 1988). By continuing to eat familiar dishes in mound center spaces, LMV peoples were simultaneously reaffirming their connection to the past as well as their present and future connections to one another. As new social hierarchies were forming, people may have sought to maintain existing ties through continued commensality traditions. In this case, it was not just the act of sharing foods, but the foods themselves, that may have served to re-integrate community members to a shared identity and connection to the past.

Preparing the Meal

Cooking is an essential element of cuisine, since it transforms ingredients into dishes and meals. Therefore, ceramic vessel assemblages provide important insights into the nature of cuisine. Through time, LMV communities made use of the same vessel forms and sizes in similar proportions. Not only did they continue to use the same types of cooking pots, they also appear to have used them mostly in the same ways. Similar use-wear patterns were observed on jars and beakers from Coles Creek and Plaquemine contexts. Overall, I argue that this indicates that food preparation continued in a similar style.

Since the ingredients of meals largely were not changing, it is perhaps not surprising that the tools used to process and cook them were not changing either. However, given the addition of maize, a new vessel form or changes in the use of existing forms might be expected.

Elsewhere in the Southeast, communities adopted new jar forms alongside maize. Briggs (2016, 2017) has argued that these jar forms were essential technologies to the hominy foodway. To produce hominy, maize must be soaked in an alkaline solution, pounded, and then simmered for several hours. Without this nixtamalization process, the nutrients in maize are not bioavailable to humans and therefore a heavy maize diet will lead to malnutrition and other health problems (Katz et al. 1974). Briggs (2016) has also argued that, in addition to the health benefits, this process was also what rendered maize into a culturally acceptable product as the long simmering time and addition of ashes contributed towards a desired texture and flavor profile. Scholars have long assumed that nixtamalization techniques accompanied maize as it spread through the Southeast. Researchers have only recently been able to identify archaeological evidence for nixtamalization processes as part of ceramic residue studies (Johnson and Marston 2020). This type of study has not yet been undertaken for the LMV or for any of the ceramics in my study assemblage. Thus, without definitive proof for nixtamalizing, I must acknowledge that it is possible that this technology may not have been used by LMV communities at this time. Notably, the rich diversity of LMV cuisine, which included plenty of animal protein from deer, fish, and other animals, as well as nutrients from nuts and starchy seeds, would likely have countered any malnutrition effects from unprocessed maize. However, regardless of whether maize was nixtamalized, all preparation and cooking steps occurred in existing vessel types. Thus, maize, and nixtamalization technologies if they were being used, were adapted to traditional tools. Briggs (2017) has noted that nixtamalization has an analog in acorn processing, as these nuts were soaked, pounded, and then boiled. It is possible that LMV communities, observing the similarities between maize and acorn processing, may have felt the “new” technique was easily adaptable to existing tools. Crown (2000) notes that communities are more likely to adopt foods that can be processed using existing tools or easily substituted in for other foods in existing recipes. As I have already argued for the plant data, maize was an addition rather than a disruption to LMV cuisine. The ceramic data further corroborate this argument, demonstrating that maize was adapted to existing cooking routines and styles.

Adapting maize to existing tools, rather than adopting new ones, can be understood by considering the communities of practice that surround cooking and cuisine. Crown (2000) notes that cuisines tend to be conservative because they are “entangled with technological styles.” Cooking specifically sits at the intersection of several types of technological knowledge, from how to make a pot to how to use a pot. LMV women were likely the keepers of these knowledge traditions and from an early age would have been socialized into these practices. The regular, repetitive experiences of not only making but using these pots would have served to deeply embed the knowledge and practices that surrounded these vessels into women’s memories and routines, connecting past, present, and future (Crown 2000; Farb and Armelagos 1980; Goody 1982). Furthermore, these routines were not conducted in isolation; both pottery production and cooking were social tasks. Sharing in these tasks together connected people to one another, contributing to a sense of community identity (Lave and Wenger 1991; Wenger 1998). Thus, introducing a new vessel form would result in a disruption to the communities of practice that surrounded and supported Natchez Bluffs cuisine. Several processes would have to occur: Community members would have to first be introduced to the new form and then would have to agree on the new form as acceptable. Subsequently, both potting and cooking routines would have to be configured, which could involve large or small shifts depending on how similar the technology was to existing ones. Briggs (2017) has argued that this process, of evolving communities of practice, occurred with the introduction of the Mississippian standard jar in the

Black Warrior River valley. Importantly, she recognizes that this was likely the result of exogamous marriage practices that would have involved women from other regions or cultural groups moving into these communities. These women brought with them their own knowledge, practices, and preferences from their birth communities of practice and slowly infused these into the ones they had joined through marriage. Since Natchez Bluffs communities maintained similar potting and presumably cooking traditions through time, we can assume that there is no such disruption to existing communities of practice. Instead, I argue that Natchez Bluffs women adapted maize and any associated cooking techniques to existing tools, technologies, and routines that made up their crafting and culinary communities of practice.

While the overall assemblage of vessel forms used did not change, there were some tweaks to cooking pots. Both restricted jars and beakers demonstrate measurable changes in rim angle through time. Beaker rims, which were straight to slightly in-sloping during the Coles Creek period, became more open and flaring during the Plaquemine period.

Conversely, restricted jar rims display a greater degree of restriction through time. I argue that these changes were intentional on the part of potters. The range of rim angle measurements indicates that potters were not aiming for a specific rim angle, but instead for a generalized ideal. I suggest that this ideal, such as for a flaring beaker, would have been visually distinct from previous iterations. I further argue that these represent tweaks to vessel function, rather than decorative or stylistic changes. A flaring rim would have aided pouring, particularly liquid, contents out of a beaker and the open vessel profile would have facilitated removal of content with a utensil as well as adding ingredients or stirring. The greater restriction on jars would have served to further reduce evaporation of liquid and also would have aided in covering the vessel with a lid. Notably, these tweaks to rim angle would not have changed the overall functionality of these vessel forms. Both beakers and jars would have continued to serve in cooking roles to boil and simmer dishes, and in storage roles for dry and wet materials. I argue that the changes to rim angle added new functional dimensions for these vessels without drastically altering their overall functionality.

These tweaks serve as a reminder of the dynamic nature inherent to communities of practice and the traditions they reproduce. Scholars have noted that innovation and change are natural parts of both communities of practice and the traditions they support (Lave and Wenger 1991; Mills 2016; Pauketat 2001a, 2001b; Stahl and Roddick 2016; Wenger 1998). The individual, in enacting various tasks related to the tradition, can simultaneously carry forward the practice while changing aspects of it. The active nature of these practices means that individuals are reactive to and affected by their circumstances and experiences, which can lead to varying degrees of innovation. As noted by Mills (2016:252), "in some situations the margin for innovation may be narrow and in others wide." Innovations can be both accidental, as participants unintentionally alter parts of the practice, as well as intentional, as people reflect on their own experiences, respond to changing conditions, or seek to infuse some individuality into materials and practices (Bowser and Patton 2008; Pauketat 2001a, 2001b; Stahl and Roddick 2016). I argue that reflection on prior experience best accounts for the functional tweaks seen on LMV cooking pots. LMV women were likely the ones both making and using cooking pots. Ethnoarchaeology studies have emphasized how women's domain over both crafting and culinary practices leads to fluidity and feedback loops between both (Gokee 2014; Gokee and Logan 2014; Logan and Cruz 2014). As women cook in the vessels they have created, they are confronted with different aspects of vessel function. This is particularly apparent in cases where new foods or cooking techniques are introduced. Women then reflect on their lived experiences, and any vessel shortcomings, as they make new pots. In the Banda region of Ghana, women modified an existing bowl form by adding incisions to the bottom to make grinding vegetables more efficient (Logan and Cruz 2014). Archaeological studies have also considered the reflexivity between making and using pots. Crown (2000) notes that potters in the Southwest may have introduced new surface treatments, such as corrugation and smudging, in attempt to create more durable, heat-efficient pots. Similarly, studies of ceramic vessel temper in the Southeast have considered how changes in temper type and size may, in part, reflect new functional concerns with thermal efficiency and vessel durability (Sassaman 2002; Steponaitis 1984).

Overall, I argue that LMV women were intentionally altering the rim angles of their cooking pots to fit new functional considerations. It is possible that these new functional considerations were directly related to the addition of maize. Reviewing the hominy cooking process, it is possible to speculate how the changes to beakers and restricted jars might be related to this new foodway (Briggs 2015). Hominy requires that maize is soaked in an alkaline solution prior to simmering. The flaring rim on beaker forms could have aided in pouring water to create the alkaline solution. Additionally, hominy must be simmered for several hours to create the desired soft texture. Long simmering times must be balanced with moisture levels to prevent rapid evaporation in which food can burn to the sides and bottom of a pot. The greater restriction on jar rims would have allowed for reduced evaporation during the long simmering time. These suggestions are speculative, and it is important to note that these changes could also represent other cuisine needs unrelated to maize. Additionally, if these changes are related to maize, they are the outcome of women's experimentation with and reflection upon cooking a new food in traditional forms. What I wish to emphasize overall is that these are tweaks to existing vessel forms, not the creation of entirely new vessel forms. Ultimately, LMV women were still largely adapting maize to existing cooking routines, as the overall functionality of these pots, to boil and simmer foods, was not changing.

Performing the Meal

As with the other aspects of cuisine, communal consumption events exhibited a mixture of continuity and change through time. People continued to engage in food consumption events at mound centers, but there were some changes to aspects of how those meals were prepared and performed. I argue that these changes relate to the social function of the meal. During the Coles Creek period, feasts and communal meals may have had an integrative function. Kassabaum (2018a, 2019) has argued convincingly for this function based on the use of everyday foods and plain serving vessels, the lack of prestige goods, and the inclusion of communal rituals, such as smoking. While the integrative function of these meals likely remained to some degree, prestige building emerged as another function of food consumption events during the Plaquemine period.

Though eating events can serve many social functions, power and prestige-building events have received particular attention from scholars (Dietler and Hayden 2001; Hayden 2014; Wiessner and Schiefenhovel 1996). Ethnographic and archaeological studies have demonstrated the various ways that leaders and communities used communal eating events to gain and exercise power, such as through mobilizing large amounts of labor and resources to put on the event, serving rare or luxurious food items, or otherwise putting on a display that demonstrates the amount of capital, both material and immaterial, that the host has access to (Hayden 2001; Potter 2000; van der Veen 2007a; Wiessner and Schiefenhovel 1996).

LMV scholars agree that hierarchical social relations emerged in the region at some point between AD 1000–1200, though it is unclear exactly when or why these new social relations developed. Changes to mound center layouts are often cited as evidence for these new social relationships, as mound-top activities are argued to have become more restricted (Kidder 1998, 2004). For at least two mound center sites, Smith Creek and Hedgeland, there is evidence that a residential population developed during this period, further suggesting new relationships to space and to one another (Ryan 2004). I argue that, unlike at the potluck-style events of the earlier Coles Creek period, the residential populations at these sites served as hosts for communal consumption events, which would have affected how the meal was prepared and performed. Functional vessel analysis data from this period suggests the entire meal was prepared on site, which I suggest made it the responsibility of the residential community. Similar patterns are noted in the Southwest, where host households are associated with higher numbers of feasting gear, such as cooking pots and serving vessels (Potter 2000). I argue that the change in how, who, and where communal consumption events were prepared would have effected who benefited from the outcome of a feast. Previously, the satisfaction of a successful feast would have been shared by the community since the responsibility of contributing was also shared. However, with responsibility shifted to a host community, credit would shift to individuals rather than all attendees.

The performance of the meal also reflected a changing event style, which I suggest was due to the influence of host communities. This change is evidenced by the shift from plain serving vessels to highly decorated ones featuring intricate designs that would have been highly visible to all participants due to both the large size of the vessels and the location of the designs on the large, flat rims of the plate-like bowls. These vessels would have both drawn attention to the contents and to the hosts who provided these dishes, ultimately reflecting on their generosity and skill. In the Southwest, highly decorated vessels had an important performative role at communal eating events, serving to communicate the capital and relationships held by event hosts and participants (Mills 2007; Potter and Ortman 2004). Similarly, the use of flaring rim bowls in feasting contexts in the Moundville area served a performative role in elite display and prestige (Welch and Scarry 1995). I argue that Plaquemine serving vessels held a similar performative role in the LMV, communicating the generosity and prestige of the event hosts.

While prestige building was an important new aspect of communal consumption events, I do not believe this was the sole function of these meals. Instead, I argue that they continued to have a solidarity-building aspect. Scholars have noted that communal meals often serve multiple functions and can simultaneously enhance the prestige of certain individuals or groups while also serving to reinforce larger group identity and social relations (Dietler 2001; Kassabaum 2019; Potter 2000). I believe the continued use of traditional ingredients and preparation styles is evidence for the integrative nature of these meals. Scholars have noted that maintained culinary traditions, particularly in the face of other social or political changes, often serves to reinforce identity and existing social ties (Oas 2019; Potter 2000; Potter and Ortman 2004; Ralph 2007). It is possible that the continuation of some traditions is strategic on the part of incipient elites. This could have served to diffuse tensions and appease the larger population, as well as to legitimate authority through coopting existing structures (Dietler and Hayden 2001; McGuire 1992; Pluckhahn 2010; van der Veen 2007a). However, the maintenance of these traditions may also have been an active effort towards community heterarchy and a way to check emerging power structures. Pluckhahn (2010) has considered how Woodland period communities may have kept elite power in check by limiting where it was exercised within mound center spaces. Similarly, Potter (2000) notes how regular, routine feasting in the Southwest may have prevented these events from becoming prestige-building venues and instead functioned more towards community social integration. It is likely that both community building and authority building simultaneously occurred at these events. These dual functions were likely not the only motivations or outcomes of these events, and highlight the dynamic nature of communal events.

Conclusion

The addition of maize to LMV cuisine coincided with changes to the event style and function to focus on prestige building; at the same time, communities also maintained many aspects of cuisine, including ingredients and preparation styles, suggesting these continued to be important part of community identity and relationships. Looking towards the historical record, we see some analogs to this in the monthly feasts of the Natchez, which contained degrees of both prestige negotiation and community integration (Swanton 1911). These monthly feasts were a time for the community to come together and share seasonal foods, such as fruits during the summer and nuts and game meats during the fall. Community members contributed equally to the foods that were shared at these feasts, such as the green corn feast in which a communal granary was established for the event. Furthermore, community members of the same sex shared food from the same dish, emphasizing solidarity. However, at the same time, the principal chief, the Great Sun, served as a host for these meals. Feasts occurred in his village on a day predetermined by him. He conducted pre-meal ceremonies and either ate before others or at least had the food presented to him before others could eat. The descriptions of these meals clearly show how meals can serve both an integrative function for the wider community while still showcasing the power and prestige of community leadership. It is likely that the Plaquemine gathering patterns seen in this study represent early iterations of those meals, marrying the traditional, integrative feasts of the preceding centuries with the motivations of an emerging hierarchy.

When LMV cuisine is examined through time, it is clear that all aspects of it—ingredients, preparation methods, and meal performance—undergo a mix of continuity and change. With each aspect, it is possible to see how dynamic traditions can be. Overall, the content of LMV cuisine was relatively consistent through time. Though a new food—maize—was added, traditional ingredients continued to be used. All of these ingredients appear to have been prepared in a similar fashion, and though traditional cooking pots exhibit slight tweaks, these would not have changed their overall functionality or dramatic shifts in the actions taken by or the knowledge required by their users. While the content of cuisine was mostly maintained, the performance of communal meals was not. Humbler, potluck-style meals shifted to fancier, hosted meals, which I have argued relates to an added social function of prestige building. As with the individual aspects, I do not seek to emphasize one thing over the other when it comes to continuity and change for LMV cuisine as a whole. Instead, I think LMV cuisine demonstrates how communities in the region reconciled emerging social hierarchies with existing heterarchical traditions.

APPENDIX 1

CENTERS CREEK: 2021 EXCAVATION REPORT

Centers Creek is a single mound site located in Claiborne County on the bluff above Bayou Pierre. The site is located a half mile from the nearby Bayou Pierre mound site and has variously been considered to be part of the same site. Presently, the two are considered to represent separate sites. The site was first surveyed by B.L.C. Wailes in 1852 and then again in the 1970s by both the Lower Mississippi Survey and the Mississippi Archaeological Survey (Nelson et al. 2013). The first formal excavations occurred at the site in 2013 and were conducted by the University of North Carolina at Chapel Hill as part of the Mississippi Mound Trail project. These excavations focused on the summit and toe of the mound to obtain information on the history and use of the site (Kassabaum et al. 2014).

In 2021, a unit was placed on the summit of mound adjacent to 2013 summit unit. A coring survey done prior to beginning excavation determined that the midden deposit identified in the 2013 summit unit extended across the entire summit. The purpose of the 2021 excavations was to obtain a larger sample of the midden, thus exact placement on the summit was somewhat arbitrary. A one by two meter unit with southwest corner N620 E985 was excavated in nine levels. The northeast corner was used as a datum as it was the highest in elevation (40.099 m) Levels 1-4 are mound fill deposits representing the last stage(s) of construction. This fill zone was a heterogenous, mixed basket loaded fill that included sod-blocks. Level 5 is a mixture of mound fill and a mound surface. The surface, Floor 1, was first identified during the Mound Trail excavations. Though we attempted to isolate it during excavation, it was very thin and we were not able to confidently recognize it.

Table A1.1 Stratigraphy of 2021 Centers Creek unit.

Level	*Depth (cmbd)*	*Elevation (m)*	*Description*
1	0-20	40.09-39.89	A horizon and mound fill
2	20-40	39.89-39.69	mound fill
3	40-60	39.69-39.49	mound fill
4	60-80	39.49-39.29	mound fill
5	80-100	39.29-39.09	mound fill, floor 1
6	100-125	39.09-38.85	mound fill
7	125-140	38.85-38.69	mound fill, midden
8	140-150	38.69-38.59	floor 2/, midden
9	150-155	38.59-38.55	mound fill

However, we were able to identify it in the unit wall during mapping. The mound fill above and beneath it included a mix of heterogenous basket loads. Level 6 and the top of Level 7 represent another layer of mottled mound fill between Floor 1 and Floor 2. The bottom of Level 7 and all of Level 8 are a mound surface consisting of a layer of midden. Four post holes (Features 4A, 4B, 6, and 8) were identified cutting down from the base on the midden into the mound fill below. Concentrated areas of surface burning (Feature 3) were also identified within the midden in the northwest area of the unit. Level 9 is a layer of mound fill consisting of a homogenous clay, Bt- subsoil-like fill (Figures A1.1-A1.5).

There was a low density of material in the mound fill layers both above and beneath the two mound surfaces. In both zones, ceramics and lithic material were consistently present in small amounts. Slightly higher numbers of ceramic and lithic material were seen around the upper mound surface, which is represented by level 5. The midden layer had the highest artifact density, including ceramics, bone, fired clay, and lithic material. One radiocarbon date was submitted from the midden layer (level 8) and returned a Balmoral phase date of 1077-1155 AD/ 993-1052 AD (Beta – 605600) consistent with the date obtained during the mound trail project (Kassabaum et al. 2014: 27).

Table A1.2. Description of Centers Creek features

Feature	*Elevation (m) Top | Bottom*	*Horizontal Dimensions (cm)*	*Description*
3	38.73 | 38.63	67 x 80	areas of surface burning
4A	38.57 | 38.12	13 x 12	post
4B	38.57 | 38.44	20 x 18	post
6	38.59 | 38.52	13 x n/a	post
8	38.54 | 38.39	18 x 11	post

Table A1.3. Artifact counts from each level at Centers Creek.

Context	*Ceramics*		*Bone*		*Fired Clay*		*Lithics*	*Pebbles*
	count	**wt. (g)**	**count**	**wt. (g)**	**count**	**wt. (g)**	**count**	**count**
Level 1	2	3.0					11	4
Level 2	5	19.0					20	5
Level 3	4	27.0					11	5
Level 4	14	29.0					61	5
Level 5	16	42.0					47	4
Level 5b	4	9.0					5	5
Level 6	2	8.0					6	5
Level 7	0	0.0			1		2	1
Level 7b	7	48.0			4	12.0	22	7
Level 8	31	96.0	5	<1	103	391.0	228	41
Level 9	3	10.0			1	<1	1	1
Total	88.0	291.0	5.0	0.0	109.0	403.0	414.0	83.0

The 2021 excavations served to enhance our understanding of the history of Centers Creek first uncovered during the Mound Trail excavations, particularly for the lower mound surface. The mound was primarily built and used during the Coles Creek period. The community constructed the mound in several stages across the period, making use of sod-block construction technique for at least some of the stages (Sherwood and Kidder 2011). The mound served as platform for activities, as indicated by the presence of at least two distinct mound surfaces. The lower surface represents a period of particularly intensive activity during the Balmoral phase, as indicated by the presence of several post hole features and an area of surface burning. The community continued construction on the mound after the use of this surface, raising the mound by nearly half a meter. On top of this sat another surface, though it is unclear what communities may have used this for, as no features have been identified to date and very little material has been recovered from it. Furthermore, it is not known when this surface dates. Future excavation work could address questions about this surface, although this may be difficult due to the ephemeral nature of the surface. Following the use of this surface, communities continued construction of the mound raising it another meter or so. No other mound surfaces were identified and it is not known when communities stopped constructing or using the mound.

Table A1.4. Centers Creek diagnostic pottery counts.

Context	Coles Creek Incised, var. Phillips	Larto Red, var. Larto	Mulberry Creek Cordmarked, var. Smith Creek	Mulberry Creek Cordmark, var. unspecified	Unclassified Incised	Unclassified Plain (Rim)	Unclassified Plain (Body)	Total
Level 1					1			1
Level 2			1					1
Level 3			1				1	2
Level 4						1		1
Level 5	1	1						2
Level 6			1					1
Level 7			1	1		1		3
Level 8			1	1	1			3
Level 9			1					1
Total								15

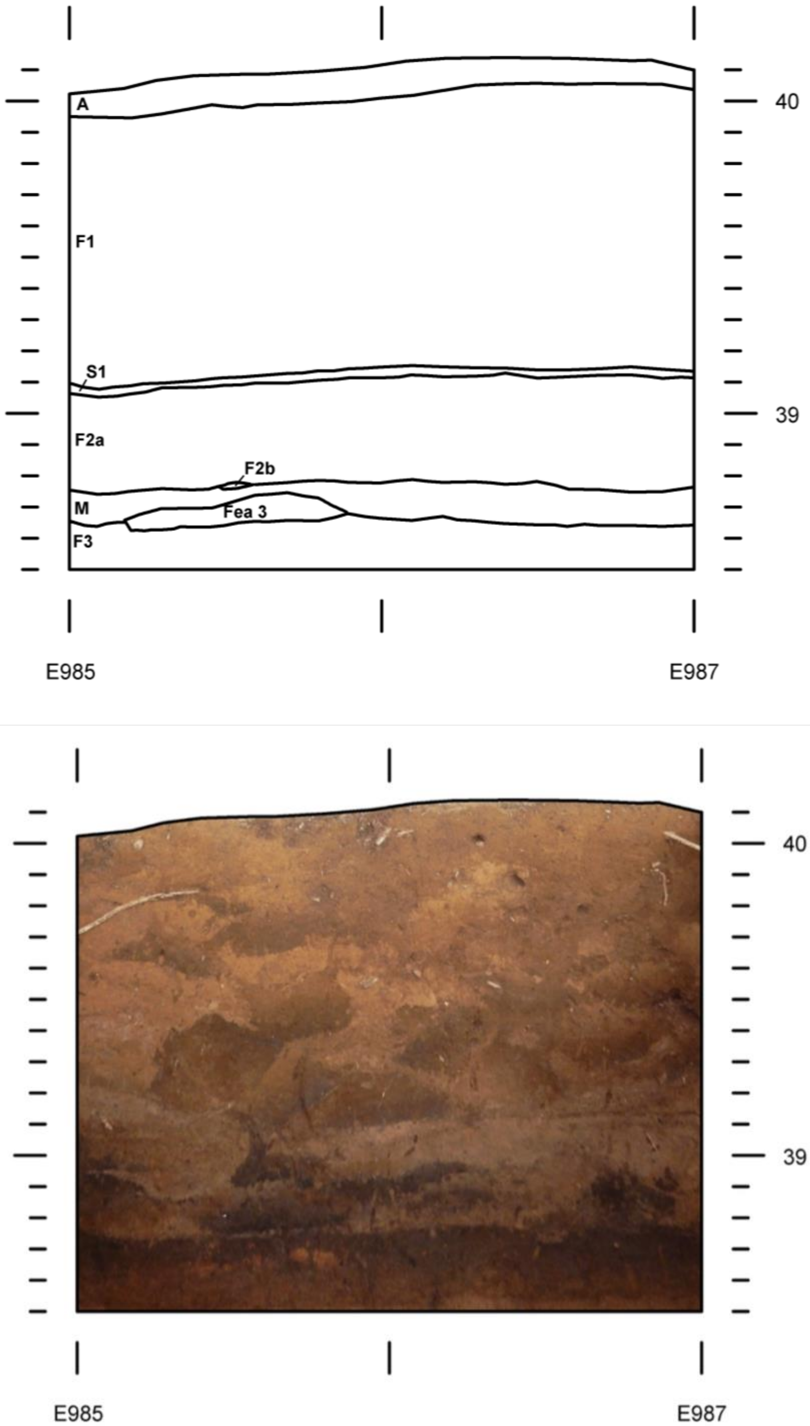

Figure A1.1. Centers Creek, north profile. Key: (A) A horizon; (F1) basket-loaded mound fill; (S1) dark brown silt mound surface; (F2a) basket-loaded mound fill; (F2b) light brown mound fill; (M) midden; (Fea 3.) area of surface burning; (F3) clay mound fill.

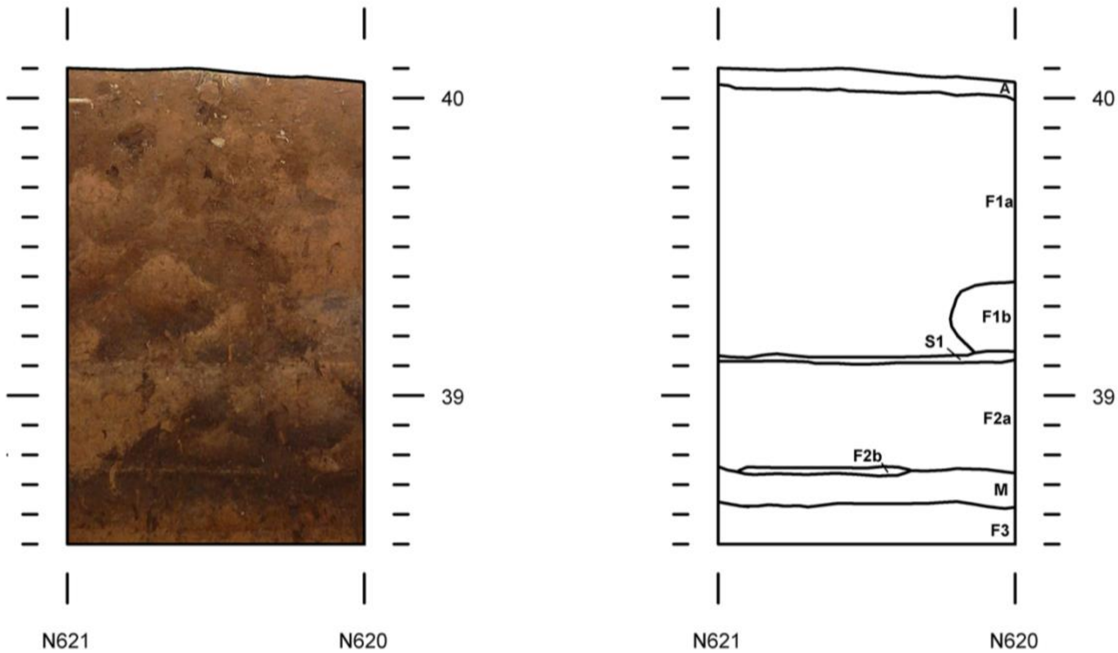

Figure A1.2. Centers Creek, east profile. Key: (A) A-horizon; (F1) basket-loaded mound fill; (S1) dark brown silt mound surface; (F2a) basket-loaded mound fill; (F2b) light brown mound fill; (M) midden; (F3) Bt-horizon mound fill.

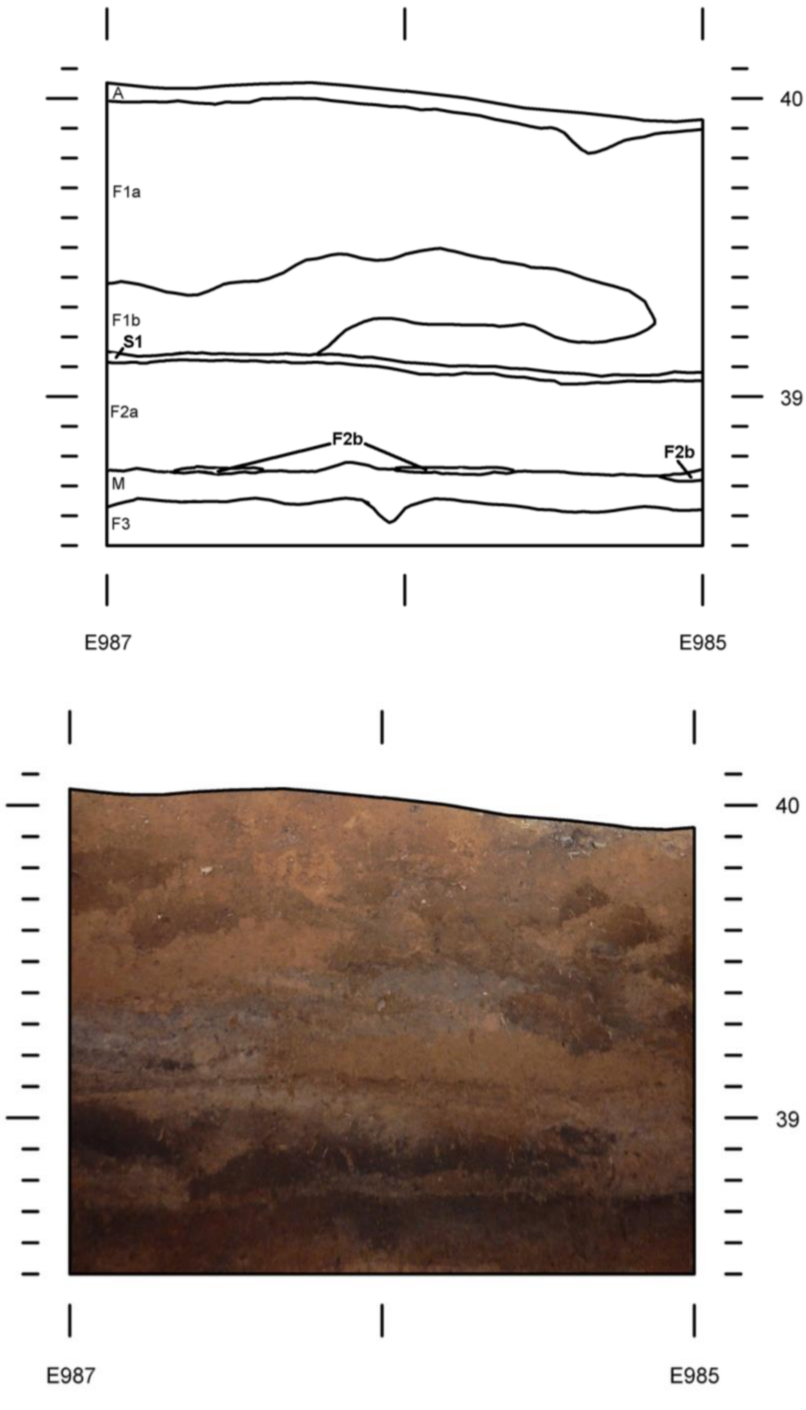

Figure A1.3. Centers Creek, south profile. Key: (A) A-horizon; (F1) basket-loaded mound fill; (S1) dark brown silt mound surface; (F2a) basket-loaded mound fill; (F2b) light brown mound fill; (M) midden; (F3) Bt-horizon mound fill.

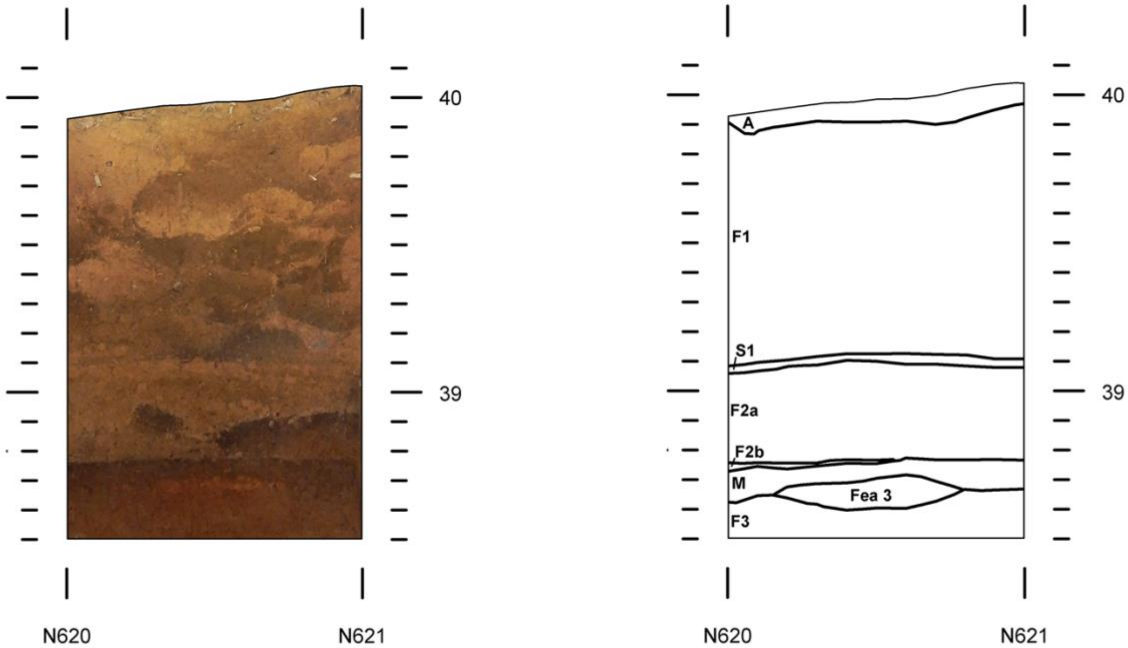

Figure A1.4. Centers Creek, west profile. Key: (A) A-horizon; (F1) basket-loaded mound fill; (S1) dark brown silt mound surface; (F2a) basket-loaded mound fill; (F2b) light brown mound fill; (M) midden; (Fea 3.) area of surface burning; (F3) Bt-horizon mound fill.

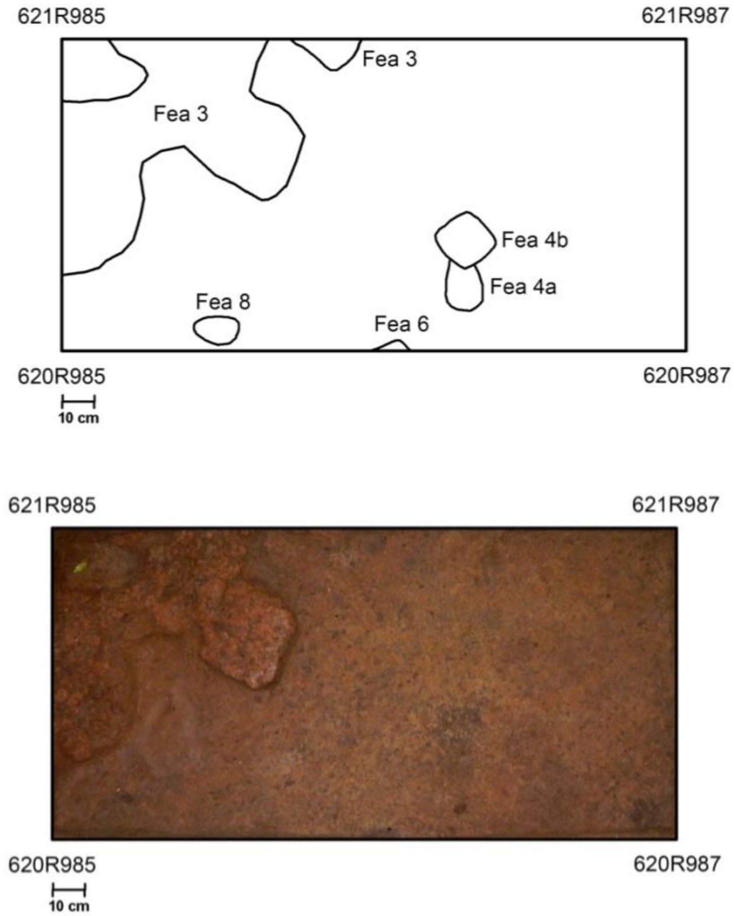

Figure A1.5. Centers Creek, plan map and photo showing features identified as part of midden layer mound surface.

APPENDIX 2

BAYOU PIERRE: 2021 EXCAVATION REPORT

Bayou Pierre is a mound site located in Claiborne County on the bluff adjacent to a bayou of the same name. The site originally included at least three mounds, though only Mound A remains today. Mound B was mostly leveled by agricultural activity and Mound C was removed during road construction in the 1970s (Nelson et al. 2013). The site was first mapped by B.L.C. Wailes in 1852 and re-survey in the 1970s by both the Lower Mississippi Survey and the Mississippi Archaeological Survey (Nelson et al. 2013). The first formal excavations at the site were conducted by the University of North Carolina at Chapel Hill as part of the Mississippi Mound Trail project in 2013. These excavations included a one by two meter unit on the northern toe of the mound and a narrow step trench running from the summit to the base on the eastern flank of the mound.

In 2021, a one by one meter unit was placed on the eastern flank immediately to the north of the 2013 step trench. A portion of the step trench was re-excavated in order to identify where the flank midden was thickest. The steep slope of the mound and existing trees constrained the size and the placement of the unit. The unit, identified by the southwest corner 238R506.5, was excavated in five zones corresponding to the stratigraphy identified in the profile of the re-excavated portion of the 2013 unit. The northwest corner was used as the datum as it was the highest in elevation (37.7220 m)

The first two zones represent the final mound fill zone, which was placed as a mantle across the entire surface of the mound. This was a homogenous zone of fill and contained minimal artifacts. Zone A also contained the A horizon and included a piece of modern glass, representing the historic occupation of the area.

Table A2.1. Stratigraphy of 2021 Bayou Pierre unit.

Zone	*Depth (cmbd)*	*Elevation (m)*	*Description*
A	0-15	37.69-37.54	A horizon and mound fill
B	15-30	37.54-37.39	mound fill
B/C	30-35	37.39-37.34	mound fill and midden
C	35-60	37.34-37.09	midden
D	60-80	37.09-36.89	midden
E	80-145	36.89-36.24	mound fill

Zone B only contained the upper mound fill zone. Zone B/C was dug as a transition level between the top layer of mound fill and the flank midden beneath it. This contained a slightly higher concentration of artifacts, likely due to the midden. The flank midden was represented by two zones, Zones C and D. Zone C represents the thickest part of the midden and contained pockets of fired clay and ash, as well as the greatest diversity of artifacts. Zone D was thin, slightly less organically rich portion of the midden, which may represent the first layers of trash deposited. Zone E represents the layer of mound fill beneath the flank midden. This was a heterogenous, basket loaded fill zone. This zone also included evidence for the use of sod blocks, with sections that included an intact A, E, and B horizons (Figures A2.1-A2.4).

Table A2.2. Artifact counts from each level at Bayou Pierre.

Context	*Ceramics*		*Bone*		*Fired Clay*		*Lithics*	*Pebbles*
	count	**wt. (g)**	**count**	**wt. (g)**	**count**	**wt. (g)**	**count**	**count**
Zone A	3[a]	6.0	1	<1				4
Zone B	13	4.0						1
Zone B/C	3	11.0	5	2.0	1	2.0	1	
Zone C	4[b]	23.0	15	9.0	2	2.0	1	1
Zone D			4	2.0			2	
Zone E							2	4
Total	23	44	25	13	3	4	6	10

[a] Includes one plain rim; [b] includes one Coles Creek Incised, *var. Coles Creek* body sherd

One radiocarbon date was submitted from the lower zone of the flank midden (Zone D), which indicates the midden was deposited sometime during the Balmoral or Gordon phases, AD 1120-1222/AD 1044-1086 (Beta-605597) consistent with the date submitted from the mound trail excavations (Kassabaum et al. 2014: 24)

The 2021 test unit provided further information on the stratigraphy first identified during the mound trail project. Primarily, it provided more information on the flank midden deposit that was part of the penultimate mound summit. The radiocarbon date indicates that this midden was deposited during the Gordon phase. Unfortunately, no diagnostic ceramics were uncovered from this deposit to corroborate this date. The midden did contain large pieces of plain pottery, animal bone, and charred plant remains, as well as pockets of fired clay and ash, indicating that surface activities likely focused on food consumption. Interestingly, the mound fill layer beneath this deposit contained evidence for sod-block style construction (Sherwood and Kidder 2011), which was not previously identified in the mound trail excavation at Bayou Pierre. However, it was identified in the excavations at Centers Creek, the adjacent single mound site. Sod blocking was also used at sites across the southeast, and does not necessarily mean that the same people or community were involved in construction at both mounds. Aside from the use of similar construction techniques, the relationship between the two sites remains unclear, though radiocarbon dates suggest the two sites may have briefly overlapped in use during the Balmoral phase.

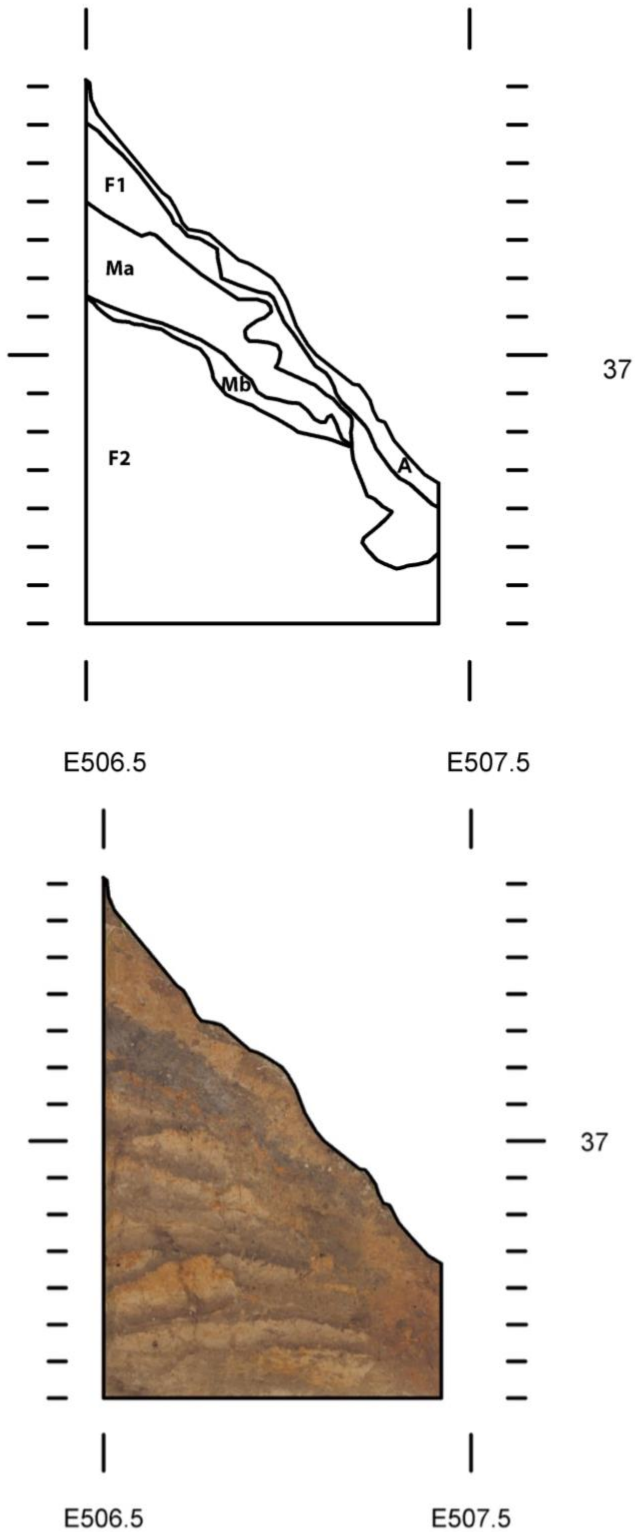

Figure A2.1. Bayou Pierre, north profile. Key: (A) A horizon; (F1) light brown mound fill; (Ma) darker flank midden zone; (Mb) lighter flank midden zone; (F2) mound fill layer composed primarily of sod blocks.

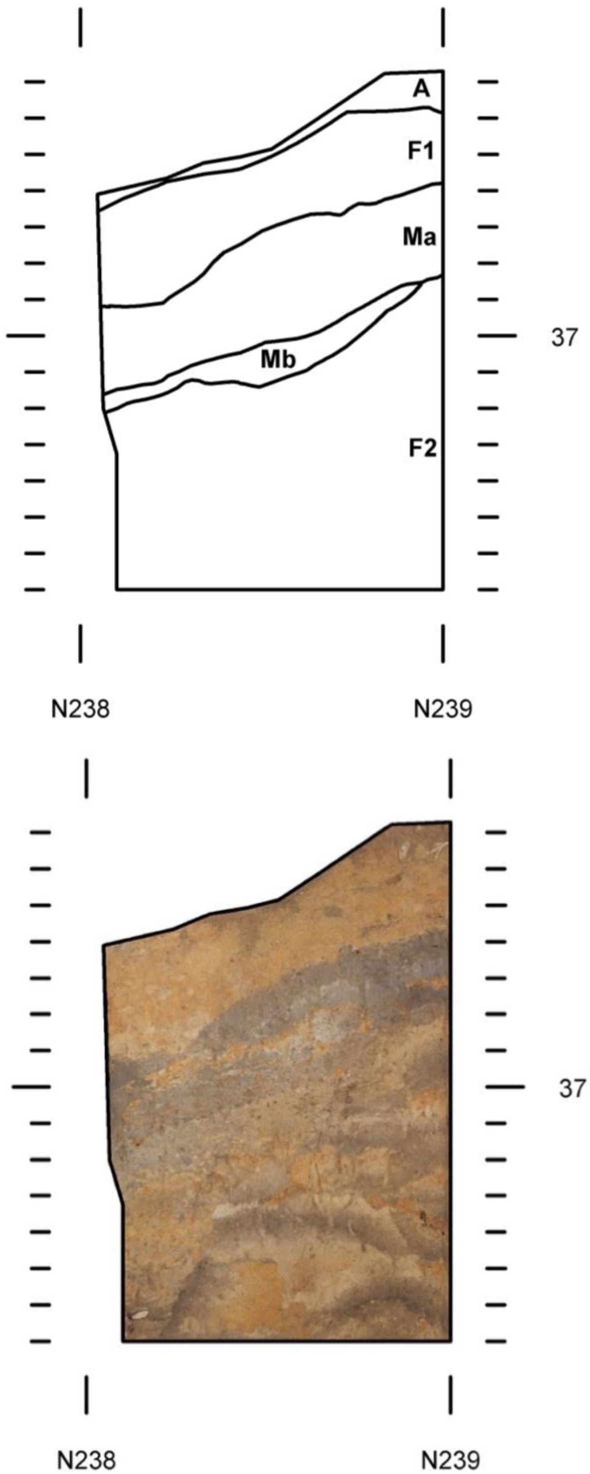

Figure A2.2. Bayou Pierre, west profile. Key: (A) A horizon; (F1) light brown mound fill; (Ma) darker flank midden zone; (Mb) lighter flank midden zone; (F2) mound fill layer composed primarily of sod blocks.

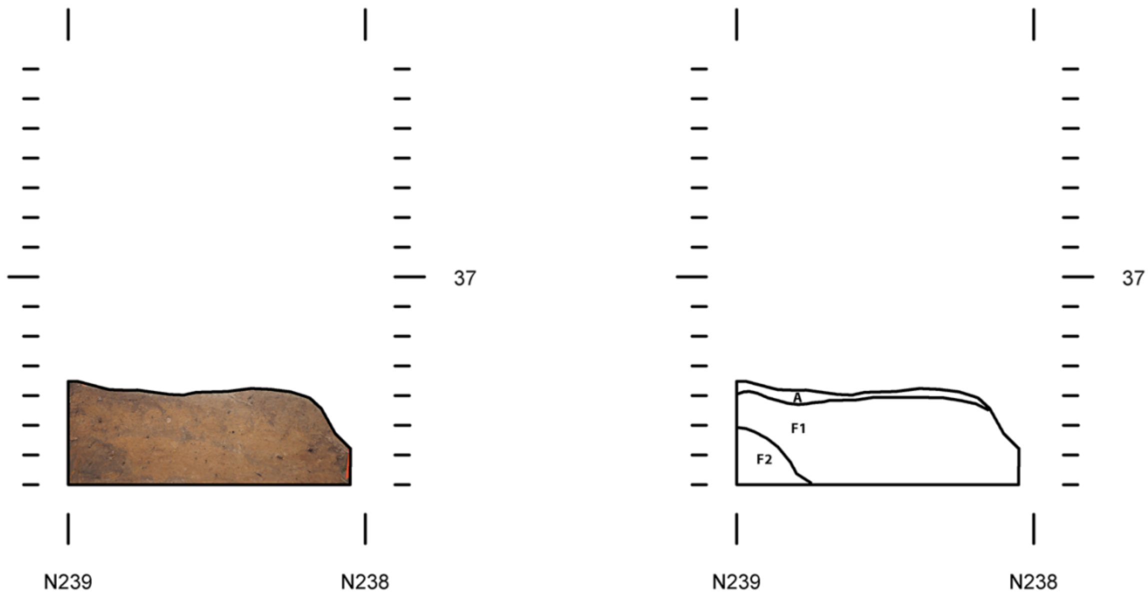

Figure A2.3. Bayou Pierre, east profile. Key: (A) A horizon; (F1) light brown mound fill; (F2) mound fill layer composed primarily of sod blocks.

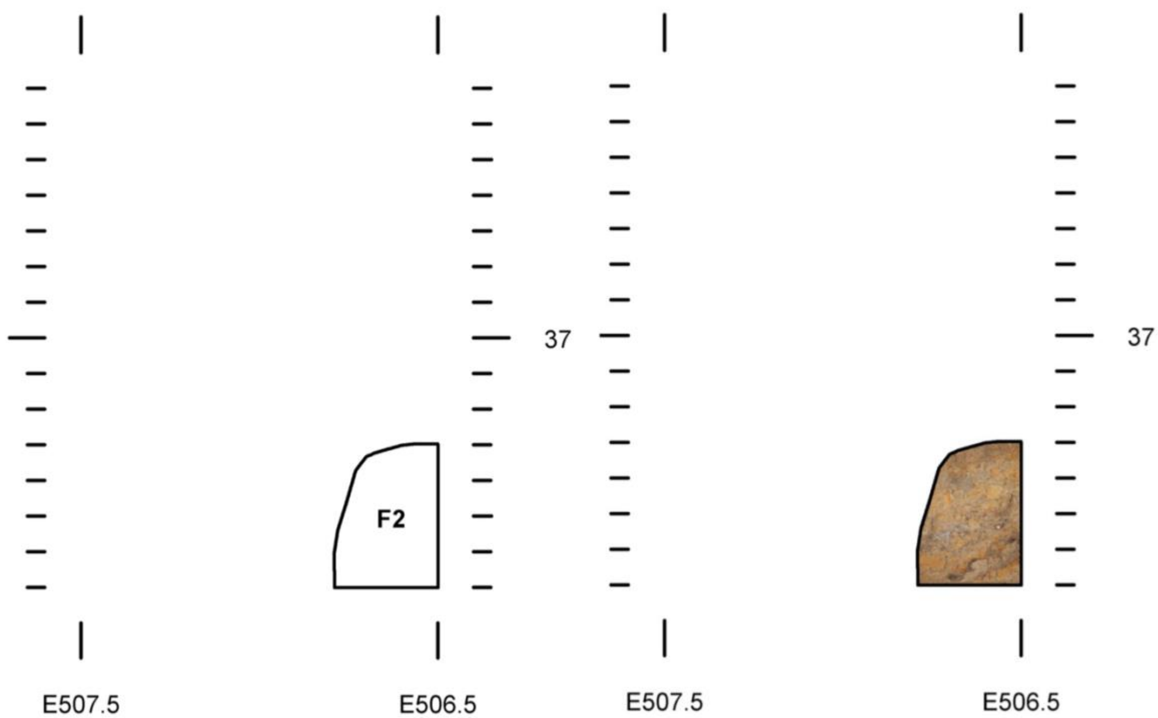

Figure A2.4. Bayou Pierre, south profile. Key: (F2) mound fill layer composed primarily of sod blocks.

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