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Ethnoarchaeology of Subsistence Behaviors within a Rural African American Community: Implications for Interpreting Vertebrate Faunal Data from Slave Quarters Areas of Antebellum Plantation Sites

ABSTRACT

Ethnoarchaeological observations of the subsistence activities practiced by an African American community in rural southern Mississippi were used to interpret the subsistence behaviors of African Americans within the slave quarters area at Saragossa Plantation, Natchez, Mississippi. Ethnoarchaeological data collected within the community included observations of modifications to bones (during butchery, secondary processing, cooking, and postdisposal activities) and the spatial distribution of subsistence behaviors and bone refuse that resulted from these activities. These data were compared to the faunal assemblages recovered from two former cabins occupied by enslaved African Americans at Saragossa Plantation, which resulted in the identification of several subsistence behaviors at these locations. The current study indicates that data obtained through ethnoarchaeological research provides archaeologists with a powerful tool that, when combined with other lines of evidence such as historical documents, can be used to reconstruct the subsistence behaviors of enslaved African Americans at antebellum plantation sites across the Southeast.

Introduction

Data from an ethnoarchaeological study of the subsistence behaviors among a modern-day African American community in rural southern Mississippi is used here to interpret the behaviors of enslaved African Americans as evidenced in the characteristics and distributions of faunal remains recovered from slave quarters areas of antebellum plantation sites. Of particular interest to this study is determining how the subsistence behaviors (including butchery, processing, cooking, and discard of vertebrate faunal remains) affected the characteristics and spatial distributions of the animal remains as

they filtered through the cultural processes and entered the archaeological record through the observation of the same behaviors and processes among modern-day descendants. The subsistence behaviors observed in the descendant community, and their documented influences on the vertebrate bone assemblages, could provide a useful analogy for interpreting the behaviors behind faunal patterning at African American archaeological sites.

Numerous ethnoarchaeological studies concerning subsistence behaviors and their effects on vertebrate bone characteristics and spatial distributions have been conducted among modern-day hunter-gatherer societies for use in interpreting prehistoric hunter-gatherer behaviors. In particular, these studies have investigated vertebrate animal procurement (O'Connell et al. 1988; Hawkes et al. 1992; Blurton Jones et al. 1994; Hawkes 1996), butchery and processing (Yellen 1977; O'Connell et al. 1992; Oliver 1993; Stewart and Gifford-Gonzalez 1994), sharing (Kaplan et al. 1984; Marshall 1993; Hawkes et al. 2001a, 2001b), consumption and discard (Yellen 1977; Bartram et al. 1991), as well as the effects that the actions of dogs have on discarded bone (Hudson 1993; Kent 1993). These data have been used in interpreting hominid behaviors, including hunter-gatherer mobility patterns (Jones 1993), butchery and processing signatures (Yellen 1977; Oliver 1993), and carcass transport (Bartram 1993; Bunn 1993), among others.

Very little ethnoarchaeological research among ethnic communities in industrialized societies has been conducted for use in interpreting subsistence behaviors from archaeological data recovered from historical archaeological sites. An exception includes a study of butchery techniques by modern-day Métis for use in interpreting historical Métis zooarchaeological data (Kooyman 1981). The only example of ethnoarchaeological subsistence data from African Americans that the author could locate was a short description by Charles Fairbanks (1984: 3–4) of the hunting and preparation of raccoons by modern-day African Americans inhabiting the southeastern coast.

A number of archaeological studies have been conducted within slave quarters areas of colonial

and antebellum plantations, which included the recovery and analysis of faunal remains. Most of the earlier work by researchers was directed at describing the proportions of wild vs. domesticated species (Ascher and Fairbanks 1971; Breitburg 1976, 1977; Barber 1980; Kelso 1984; Reitz et al. 1985; Reitz 1986), reconstructing slaughtering schedules (Breitburg 1976; Crader 1989), or comparing the quality of cuts between enslaved contexts and master or planter contexts (Miller 1979; Crader 1984; Otto 1984). Later studies included reconstructing provisions from masters (Crader 1990) and establishing the degree to which slaves supplemented their diets through stealing (Young 1997). Other researchers have examined slave status (Crader 1990) and identified ethnic markers manifested in the faunal remains (Crader 1984, 1990; McKee 1987). More recent research examined in detail the ethnic differences in the consumption of animals and animal parts between African Americans and their European American counterparts on plantations (Scott 2001) and planters' control over slaves' diets (Thomas 1998). A minimal amount of archaeological data has been published regarding the analysis of processing and cooking techniques employed by slaves through the observation and analysis of cut marks and other modification of bone (McKee 1987; Crader 1990); these studies concluded that a high degree of processing of low-quality parts and one-pot cooking was generally the rule. In addition, few data have been published regarding the spatial distribution of subsistence activities within slave quarters areas. Diana Crader (1984, 1989, 1990) provided evidence of activity areas within the Monticello slave quarters, including a sheep butchery area and rabbit house near Building *S*, and trash dumping at Building *O*. More recently Laurie Wilkie (2000) documented concentrations of artifacts along the boundaries between cabin yards, a result of yard sweeping. Barbara Heath and Amber Bennett (2000) discussed slaves raising food, butchering animals, and cooking in yard areas around cabins and provided archaeological evidence of the spatial occurrence of midden deposits along fences that bordered the yard areas near the cabins and garden plots within the yards. Of particular interest to this study is that little has been published by archaeologists

to suggest that the enslaved relied significantly on cooking techniques other than one-pot meals and less is known about the spatial distribution of subsistence activities within slave quarters areas, particularly within yard spaces.

Historical documents, when available, may be used to augment zooarchaeological data, but the limitations and incompleteness of historical records provide a skewed picture of the experiences of enslaved African Americans. For example, Crader (1990) reported on faunal data from Monticello and demonstrated that slave rations were comprised mostly of low-quality hog parts, including primarily feet, heads, and vertebral elements, supplemented by some limb elements. The archaeological evidence differed from slave rationing information contained in Monticello plantation records, which provided weight of the rations but was not as specific in listing the parts that were provided to the slaves. Thus, when plantation records are available, they often provide sketchy or distorted information regarding slave diets, while other subsistence behaviors of the enslaved escaped documentation in historical records altogether. Scattered accounts of cooking techniques used by slaves were recorded, whereas butchery and processing techniques as well as the spatial occurrence of activities and the discarding of food refuse at these activity areas are completely absent from historical accounts.

Faunal remains recovered from slave quarters areas of plantations are likely the best source of information regarding the treatment of vertebrate animal carcasses by enslaved African Americans; however, as in the case of the historical documents, faunal remains are subject to significant biases. A variety of taphonomic factors (including the activities of dogs and other scavengers, weathering, and other natural sources of bone attrition) can combine to erase portions of the faunal record, so that interpretations and conclusions regarding the diets and foodways of past peoples based on zooarchaeological data are skewed as well (see R. Lee Lyman 1994 for a discussion of the effects of taphonomic processes on bone).

Ethnoarchaeological studies of foodways may be particularly useful in identifying ethnic behaviors that have either persisted or changed through time and in determining their effects on faunal assemblages. Foodways are a basic

feature of ethnic traditional behaviors and are a critically important manner in which ethnic identities are maintained, even through time. The ethnic subsistence behaviors exhibited by the modern group in this study likely contain core elements that were passed through generations from their enslaved predecessors. African American ethnic signatures identified in this study regarding the choice of vertebrate animals and parts; their butchery, processing, and cooking; and the disposal of vertebrate bone refuse will likely be useful in identifying the same signatures in archaeological faunal assemblages.

This study is no doubt limited in its ability to make interpretations of archaeological data. In the 140 years since the abolishment of slavery, African Americans have been subjected to a variety of pressures that likely influenced their ethnic identities and, subsequently, their ethnic traditions and behaviors. “Ethnicity,” Larry McKee (1987:32) writes, “is ... something that grows and changes.” Ethnic groups react to historical changes by “maintaining some traditional behaviors, rejecting others, and defining new ones in reaction to these pressures.” Archaeologists also face the challenge of isolating ethnic behaviors from those that derive from factors such as socio-economic status or technology (McKee 1987; Crabtree 1990).

The purpose of this ethnoarchaeological research is to provide additional data for use in interpreting the subsistence behaviors of enslaved African Americans. These data should provide relevant insights into the behaviors of the slaves that may have been lost or misrepresented due to the inherent biases of historical documents and zooarchaeological data. This study is particularly aimed at describing the patterning of vertebrate faunal resources as they pass through the cultural system and enter the archaeological record. In the modern-day African American community under study, several subsistence activities occur outdoors throughout the year, including butchery of whole carcasses from a variety of vertebrate species, secondary processing, cooking, consumption, and disposal. Each of these subsistence activities occurs in specific areas of both public and private yards, resulting in a predictable distribution of bone refuse. The full range of subsistence activities occurs within the yards; the activities result in modifications of the bones during butchery

and cooking as well as in a spatial patterning of bone refuse at different areas of the yards. The carcass-processing behaviors and their effects on the characteristics of the bones, the spatial occurrence of subsistence activities in the yard areas, and the distribution of vertebrate animal refuse that results from these activities are described here. The results are then used to interpret faunal patterning observed in an archaeological faunal sample recovered from the slave quarters area of Saragossa, an antebellum plantation near Natchez, Mississippi, and directly adjacent to the modern community under study. Finally, the results are discussed in terms of their use as a tool to interpret faunal patterning and to provide directions for further research at African American archaeological sites across the Southeast.

Materials and Methods

The Research Community

The African American community under study lives on Saragossa Road in a rural area south of the city limits of Natchez in southwestern Mississippi. Saragossa Road leads to Saragossa Plantation, a former cotton-producing antebellum plantation (see Amy Young 1998, 1999 for descriptions of Saragossa Plantation). A unique aspect of the site is that many descendants of the slaves who worked the plantation prior to the Civil War live on a former portion of the plantation grounds today. After Emancipation, the freed slaves and their descendants were probably allowed to remain, most likely through tenant farming, on areas bordering Saragossa Road.

The community on Saragossa Road has experienced a degree of isolation from and marginalization by the dominant European American community of Natchez for much of its history through economic, social, racial, and geographic conditions. The infrastructure of the African American communities in rural areas south of Natchez are characterized by federal Section 8 housing, “shotgun” shacks, and substandard housing. Poverty is prevalent throughout the area. United States Census Bureau data for Adams County indicate that among African American households nearly 40% had an income of less than \$15,000 per year in 1999, compared to 4%

of European American households (U.S. Census Bureau 2002). Per capita income for African Americans was \$10,930 in 1999, compared to \$21,456 for whites (U.S. Census Bureau 2002). In addition to these economic factors, racial and social marginalization of the community occurs as well. Throughout the duration of the research there, interaction with European Americans was exceedingly rare within the African American neighborhoods throughout the area. European Americans from Natchez advised that the “black neighborhood” south of Natchez is a “dangerous place” and should be avoided. There is certainly interaction with the European American community of Natchez at the workplaces, schools, and marketplaces, but within the African American neighborhoods and communities, where most of the culturalization and socialization occurs, interaction with European Americans is extremely rare. The community is marginalized further by its geographic location in a rural, somewhat remote area south of Natchez. Because of the conditions that have marginalized the Saragossa Road community, a basic assumption of the current research is that this community is suitable for the study of the diachronic persistence and continuity of African-based cultural traditions and behaviors passed on by enslaved ancestors. Ethnoarchaeological data collected within this community should be particularly useful for interpreting the cultural behaviors of the enslaved African Americans who lived in the slave quarters at Saragossa Plantation as well as for other African American archaeological sites across the Southeast.

The community under study is comprised of several related families. Four houses along a row at the end of Saragossa Road at the current plantation boundary are the homes for the core of the African American community whose subsistence behaviors are described here. Kinship diagrams for the families are provided by the author (1999). The housing within the Saragossa Road community is characterized by mildly to moderately dilapidated houses in fairly close proximity. Across the road from the houses is a large dirt yard or plaza, used primarily for outdoor activities (cooking, eating, playing, socializing) and also as a parking lot (Figure 1). An outbuilding is located near the edge of the plaza, which is best described as a camp house—a structure used by visiting hunters for sleeping, a location for men’s social activities,

and an indoor cooking area for men. A butchery rack and table are located behind this structure. The majority of subsistence activities described in this paper occurred in the plaza area, including the vicinity of the camp house but also within and immediately outside of a number of homes inside and outside of the community. It should be noted that there are numerous semiferal dogs and feral cats living throughout the neighborhood. In contrast, hunting dogs are typically kenneled in various locations.

Ethnographic Field Methods

Ethnographic observations within the African American community on Saragossa Road were initiated in November 1997. During nine extended weekend visits (three to five days) from November 1997 to November 1999, subsistence activities performed by members of the community were recorded. Data-collection periods took place during both the deer hunting (fall and winter) and fishing (spring and summer) seasons. Methods of data collection included participant-observation and interview. Subsistence activities were recorded with detailed written descriptions from observations as well as from descriptions taken during interviews with informants, both during and after participation. Recorded subsistence activities included butchering, processing, and cooking behaviors as well as refuse disposal of the animal parts. During these activities, their locations of the cultural modifications to bone, and the distributions of discarded bones were

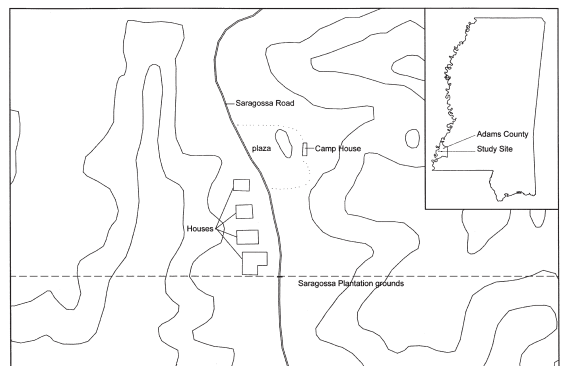


FIGURE 1. Map of the Saragossa Road community and its location in Adams County, Mississippi. (Drawing by author.)

recorded. Photographs were taken throughout the participant-observation period to improve certain records. Descriptions of observed data are recorded here in past tense, whereas descriptions of activities that were obtained solely through informant interview are recorded in the present tense.

Butchery, Processing, and Cooking of Bone: Cultural Signatures

As the animal bones filtered through the cultural processes of butchery, processing, and cooking, details of cultural modification to the bones were recorded. Observations of cutting, chopping, breaking, and burning to bone were made during the butchery, processing, and cooking of more than 30 deer, 6 raccoons, 1 goat, 1 squirrel, and a range of fish species. Additional data were collected through informant interviews regarding the treatment of other species, including hogs, rabbits, opossums, poultry, turtles, and gar.

Spatial Occurrence of Subsistence Activities and Discarded Bone

During the weekends of 25–29 November 1998 and 20–24 November 1999, subsistence activities in the public yard area on Saragossa Road were observed and recorded, including butchery and secondary processing of deer and raccoon carcasses, fish cleaning, cooking, and eating. The locations were recorded, paying particular attention to the patterns and distributions of animal refuse that resulted from each subsistence activity. Discarded bones were collected within 24 hours of their disposal, and their locations were provenienced on a map of the study area. Additional bone-refuse data from previous subsistence activities were obtained during complete surface collections of bones in the plaza area during the weekends of 25–29 November 1998 and 20–24 November 1999. The locations of the collected bones were compared to the plotted locations of the observed subsistence activities and to features such as tables, butchery racks, and fire hearths.

During surface collections, the locations of bones from several permanent data points were recorded with a measuring tape and compass and plotted on a field map. In order to expedite the process, bones located within 25

cm of each other were recorded as a single provenience. The collected bones were identified and analyzed for cultural modifications using a comparative faunal collection. The distribution of subsistence-activity locations and bones from each year (1998 and 1999) was plotted on a digital map for spatial analysis of bone refuse and its relationships to activity areas. Special attention was paid to the distribution of species and large mammal anatomical parts (deer and pig), including heads (skulls, mandibles, and teeth), axial elements (vertebrae and ribs), forelimbs (scapulae, humeri, ulnae, and radii), hind limbs (pelves, femora, and tibiae), and feet (metapodials, carpals, tarsals, astragali, calcanei, and phalanges).

Results

Bone Signatures and Refuse Patterns: Butchery, Secondary Processing, and Cooking

Large Mammal Butchery and Secondary Processing

Observations were made of 32 deer butchering and processing episodes during the study. Data regarding the butchery and processing of goats and pigs (feral and domestic) were obtained through in-depth interviews with members of the community. The butchery of large mammal carcasses proceeded through a series of steps, including gutting, skinning, head removal, removal of the organs in the chest cavity, dismemberment and disarticulation of the carcass, and feet removal. These processes left telltale signatures on the lower limb and feet elements, the vertebral column, the ribs, and the pelvis (Table 1). After the butchery of a deer carcass, the following anatomical units were kept for consumption: the neck (cervical vertebrae), several pieces of the back (thoracic, lumbar, and sacral vertebrae), the ribs (two sides), the forelimbs (scapula, humerus, radius, and ulna, two sides), the hind limbs (innominate, femur, patella, and tibia, two sides), the heart, the liver, the backstrap or loin (two sides), and the tenderloin (two sides). Other parts, including the head, the tail, and the feet, were discarded at the butchery site, in an adjacent ravine, or in a cistern located approximately 90 m east of the

TABLE 1
SUMMARY OF TYPICAL BUTCHERY MARKS TO LARGE MAMMAL BONES (DEER, PIG, AND GOAT)

Activity	Affected Bones	Butchery Marks
<i>Butchery</i>		
Skin removal	proximal metacarpals; distal radius and ulna	lateral cuts
	distal tibia; astragalus and calcaneus	lateral cuts
Head removal	atlas and/or axis	cleave, chop, or cut marks
Feet removal	distal radii and ulnae; carpals, and/or proximal metacarpals	lateral cuts
	proximal metatarsals and tarsals or distal tibia (deer and goat only)	lateral cuts or chop marks cutting and clean break (deer and goat only)
Rib removal	proximal rib shafts and transverse processes of thoracic vertebrae	cut and chop marks
Division of vertebral column	cervical, thoracic, and lumbar vertebrae	cleave and chop marks
Separation of hind limbs	pubic symphysis	cleave or chop marks
	sacral vertebrae	chop marks; smashing or crushing
<i>Secondary Processing</i>		
Disarticulation of limbs	articular ends of scapula, humerus, radius, ulna, pelvis (acetabulum), femur, and tibia	cut marks
Removal of meat from limb bones	scapula, humerus, femur; proximal radius, ulna, and tibia	cut marks
Further division of vertebral column	cervical, thoracic, lumbar and sacral vertebrae	cleave and chop marks
Division of pelvis	ilium, ischium, and pubis	cleave or chop marks
Division of ribs	ribs	cleave, chop, or cut marks
Division of feet (pigs only)	carpals, tarsals, metapodials, phalanges	cleave and chop marks
Division of mandible (pigs only)	mandible symphysis and ramus	cleave and chop marks
Division of vertebral column (for pork chops)	thoracic vertebrae	lateral saw cuts
Removal of pork steaks (pigs only)	femur	series of lateral, parallel cut marks
Medial split of pig for whole hog roast	vertebral arches, processes, and centra	medial saw cuts

butchery rack. Occasionally the feet were saved for kenneled hunting dogs. Informants reported that goats and feral hogs are butchered in the same manner as described for deer.

According to informants, the process for butchering domestic hogs is very similar to butchering deer, with two important distinctions: (1) domestic hogs are not skinned, but rather their skin is softened (through scalding and scraping the hair off), the hooves are removed, and the skin remains attached to the parts that are removed from the carcass; (2) additional parts are saved from domestic hogs, including the head, the tail, and skin from the abdominal and back areas; there are no bony elements discarded during the butchery of domestic hogs.

Informants indicated that occasionally hogs were cooked whole, in which case butchery proceeded in a much different manner. Following scalding, hair and hoof removal, gutting, and head removal, the carcass is removed from the rack and split along the medial plane. This split occurs along the vertebral column and is executed using a saw, leaving medial saw cut marks to the vertebral arches, processes, and centra.

Secondary processing of large mammal parts was largely dependent upon the cooking technique that was planned for the part. Differences also existed between the treatment of domestic hog parts vs. deer, goat, and feral hog parts (Table 1).

Small Mammal Butchery and Secondary Processing

Six raccoons and one squirrel were butchered and processed during the study period, whereas information regarding the processing of other small mammals, including opossums and rabbits, was collected during informant interviews. Small mammals are essentially butchered and processed in the same manner as their larger counterparts, resulting in modifications to many of the bones in the carcasses (Table 2).

Poultry Butchery and Processing

The butchery of birds was not observed in the current study, but data regarding their treatment were collected from informants during interviews. Informants reported that birds, including chickens, turkeys, ducks, and geese

are butchered in very similar manners. The head of a live animal is cleaved or chopped off with a large sharp blade. The cut is made as close to the head as possible, as the head is discarded, and the neck parts are saved. The carcass is then scalded with hot water, plucked of its feathers, and gutted. The skin is left attached to the carcass, and the carcass is divided into the following parts: neck (cervical vertebrae), back (thoracic vertebrae), ribs with attached scapula and coracoid (“breast”), forelimb (humerus, radius, ulna, carpals, and phalanges—“wing”), hind limb (femur and tibiotarsus—“leg quarter”), pelvis with attached lumbar and sacral vertebrae (“hip”), tail (caudal vertebrae), and feet (tarsometatarsus and phalanges). The cutting of the carcass into these divisions results in transverse cut marks to cervical and thoracic vertebrae during separation of the neck from the back and medial cut marks to transverse processes of thoracic vertebrae and proximal ribs during the removal of the “breast” from the thoracic vertebrae. The sternum is also cut at muscle attachment areas and at articulations with the furculum and coracoids when it is removed from the breast. The distal ilium may also be impacted during removal of the breasts. Finally, the articular ends of limb bones may be cut during the separation of the limbs and feet.

Cleaning of Turtles and Fish

Data regarding the cleaning of turtles was collected during interviews with informants. Turtles are cleaned in the same basic manner regardless of family (Chelydridae, Trionychidae, and Emydidae). The live turtle is placed on its back, and the bridge between the carapace and plastron is cut on both sides with a sharp knife. The plastron and attached skin is peeled towards the head, and the head is cut off near the first or second cervical vertebra, leaving cleave or cut marks. The neck is cut from the inner carapace and saved, leaving cut marks on the posterior cervical vertebrae. The forelimbs are then removed from the inner carapace, leaving cut marks on the proximal scapula and coracoid. The hind limbs are cut at the articulation of the pelvis and the carapace, leaving cut marks on the pelvis. The hind limbs are split at the pubic symphysis using a knife. The feet may be removed before the

TABLE 2
SUMMARY OF TYPICAL BUTCHERY MARKS TO SMALL MAMMAL BONES
(RACCOON, OPOSSUM, RABBIT, AND SQUIRREL)

Activity	Affected Bones	Butchery Marks
Skin removal	carpals, distal radius and ulna	transverse cuts
	distal tibia, astragalus, and calcaneus	transverse cuts
Head removal	atlas and/or axis	cleave, chop, or cut marks
Feet removal	distal radii and ulnae, carpals, or radius and ulna	transverse cuts cut or chop through distal shaft
	distal tibia and tarsals or tibia	transverse cuts cut or chop through distal or midshaft
Rib removal	proximal rib shaft and transverse processes of thoracic vertebrae	cut and chop marks
Division of vertebral column	cervical, thoracic, and lumbar vertebrae	cleave and chop marks
Separation of hind limbs	pubic symphysis	cleave or chop marks
	sacral vertebrae	chop marks to one side
Disarticulation of limbs	articular ends of scapula, humerus, radius, ulna, pelvis (acetabulum), femur, and tibia	cut marks

limbs are cut from the carapace or following their removal; regardless, the cut is made through the carpals and tarsals, leaving cut marks. The tails from Chelydrids are also utilized; when the tail is cut from the inner carapace, cut marks are left on the anterior caudal vertebrae. The following parts are saved for consumption: neck (cervical vertebrae), forelimbs (scapulae, coracoids, humeri, radii, and ulnae), hind limbs (pelves, femora, tibiae, and fibulae), and tails (caudal vertebrae) from snapping turtles.

Numerous fish cleanings were observed during the course of the study. Fish cleaning proceeded in ways that varied depending on the size and species of fish as well as the preference of the person cleaning the fish. Two different techniques were observed for cleaning panfish (*Lepomis* and *Poxomis* spp.) and bass (*Micropterus* and *Morone* spp.). Both methods began by scaling the fish with a spoon. The first method involved removal of the heads by making angled cuts with a knife just posterior

to the opercula, cutting towards the ventral area of the head. About halfway through the head on the second of these cuts, the knife was removed and the remainder of the head was torn from the body, including the gills and gill rakers (with branchiostegal rays and hyoids). The break occurred between the skull and the first thoracic vertebrae. An incision was then made across the ventral region of the fish from the vent to the breast, cutting through the pectoral girdle. The pectoral fins were left attached to the body; the inner organs were removed and discarded. Following scaling, the second technique involved making an incision along the ventral region of the fish from the vent to the gills, removing the organs, cutting the pectoral fins from the body, and tearing gills and gill rakers from the head. The head and remaining fins were left attached to the body.

Catfish were gutted and skinned; the pectoral fins (including the spines) were pulled off the carcass with the skin. Following this procedure,

the heads were removed by cutting through either the articulation of the head with the first thoracic vertebrae or between the first and second thoracic vertebrae, resulting in cut marks to the affected bones. Larger catfish were cut into sections, resulting in cuts through thoracic, precaudal, and caudal vertebrae. Informants reported that other large fish, including gar and buffalo, are also cut into sections along the vertebral column, which would result in chop or cut marks to thoracic, precaudal, and caudal vertebrae.

Because of their tough-scaled skin, gars are subjected to different cleaning techniques, informants reported. The first cut is a transverse cut made behind the head, resulting in cutting through scales along the incision. The head is then secured, and the skin peeled from the carcass, facilitated by cutting around fins, resulting in additional cutting of scales. Once the skin is removed, the gutting and head removal proceeds in the typical manner for large fish.

Cooking Techniques

Cooking of animal parts, which was dependent upon the type of part being cooked, the species from which the part came, and the cooking technique employed, also resulted in modifications to the bones (Table 3). Four primary cooking techniques were employed within the community: boiling, frying, roasting, and baking. Sometimes specific parts of certain species were stewed in gravy following boiling. Bones boiled in a soup or stewed were likely made brittle, as bone collagen is particularly susceptible to destruction during this process (Roberts et al. 2002). Frying, roasting, and baking often resulted in burning of the bones, particularly exposed bones, or bones with thin soft tissue coverage.

Consumption

With few exceptions, meals were typically consumed where they were cooked. When meals were cooked and consumed outdoors, leftover bones were typically discarded on the ground where the person was sitting or standing. Occasionally, a larger bone was tossed into a ravine or to a dog; smaller bones were almost always tossed directly to the ground. Meals that were cooked indoors were often transported

outside and eaten there, resulting in the discard of additional bones outside.

Few changes to the bones occurred during consumption; an exception was chewing of boiled large mammal bones. An informant reported that deer femurs become soft with extensive boiling, after which they may be broken easily at midshaft and chewed during marrow consumption. A young man was observed chewing the proximal head of a deer ulna following a pot boil in February 1998. Chewing of large mammal bones softened during boiling would be evident in the form of chew marks on the bones.

Spatial Analysis of Subsistence Activity Areas and Bone Refuse

Because a significant portion of the subsistence activities within the community occurred in the plaza and other outdoor settings, the spatial occurrence and the resulting distribution of bone refuse could be analyzed for patterning. The distribution of discarded bones was examined through provenienced surface collections and analyzed for spatial patterns in relation to locations of the various activity areas. Most of the collected bones were discarded during subsistence activities that occurred prior to the study periods but within two to three months of the collections, as determined by both the condition of the bones and interviews with informants. Just a small fraction of the collected bones was discarded during the weekend visits in 1998 and 1999.

Spatial Occurrence of Subsistence Activities and Discarded Bones—1998 Data

Subsistence activities observed during the weekend of 25–29 November 1998 included fish cleaning, fish cooking and eating, butchery of deer, secondary processing of deer parts, cooking and eating of deer parts, and disposal of animal parts during butchery and following consumption. The locations of these activity areas in the yard area are plotted on Figure 2.

In all, 65 bones from 57 proveniences were collected and mapped during this weekend (Figure 2) (Table 4). An attempt was made within 24 hours to recover the bones discarded during the recorded subsistence activities. Only

TABLE 3
SUMMARY OF MODIFICATIONS MADE TO BONES DURING COOKING

Animal/Part	Cooking Technique	Modifications To Bones
<i>Deer/Goats/Hogs</i>		
Vertebrae	boiled	destruction of bone collagen
Ribs	fried	may cause slight burning to exposed bone
	roasted	moderate to significant burning on exposed bone
Limbs	boiled	destruction of bone collagen
	fried	bones not affected when meat is cut from bones (most cases)
	roasted	moderate to significant burning on exposed bone
<i>Domestic hogs</i>		
Skulls/mandibles	boiled	destruction of bone collagen
Feet	boiled	destruction of bone collagen
	roasted	moderate to significant burning on exposed bone
<i>Raccoons/Rabbits/Opossums/Squirrels</i>		
Vertebrae, ribs, and limbs	boiled/stewed in gravy	destruction of bone collagen
	boiled/baked	destruction of bone collagen; may cause slight burning to exposed bone
<i>Rabbits/Opossums/Squirrels</i>		
Vertebrae, ribs, and limbs	fried	may cause slight burning to exposed bone
<i>Poultry</i>		
Limbs	fried	may cause slight burning to exposed bone
	roasted	moderate to significant burning on exposed bone
Vertebrae, pelves, tails, and feet	boiled/stewed in gravy	destruction of bone collagen
<i>Turtles</i>		
Limbs, vertebrae, (and tails —Chelydridae only)	boiled/stewed in gravy	destruction of bone collagen
<i>Panfish/Bass/Catfish/Buffalo/Bowfin</i>		
Vertebrae, ribs, (and sometimes heads —panfish only)	pan fried	may cause slight burning to exposed bone; ribs and vertebral processes may become deformed (curled or bent)
	roasted	may cause slight burning to exposed bone; ribs and vertebral processes may become deformed (curled or bent)
Vertebrae and ribs	deep fried	ribs and vertebral processes may become deformed (curled or bent)
<i>Gar</i>		
Vertebrae and ribs	baked	ribs and vertebral processes may become deformed (curled or bent); may cause slight burning to exposed bone

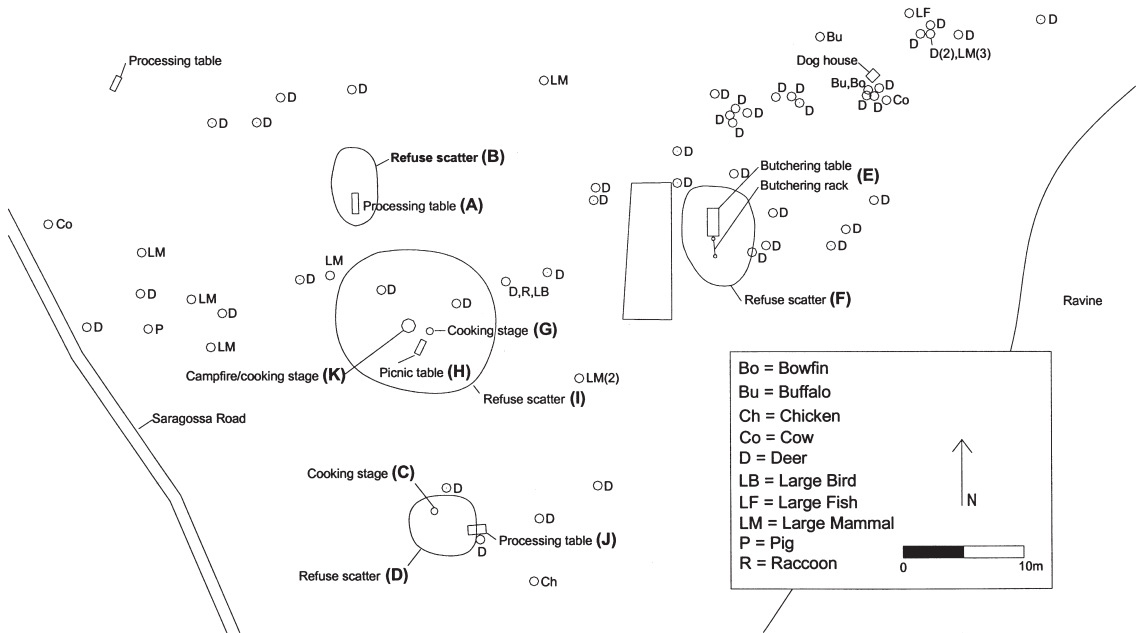


FIGURE 2. Location of subsistence activity areas and discarded bones in the public yard area during the weekend of 25–29 November 1998. Activity areas include (A) fish cleaning (26 Nov.), secondary processing of deer limbs and back meat (27 Nov.); (B) fish cleaning refuse scatter (26 Nov.); (C) fish cooking site (26 Nov.); (D) fish bone refuse scatter (26 Nov.); (E) deer butchery area (27 Nov.); (F) deer bone butchery refuse scatter (27 Nov.); (G) deer limb meat cooking (27 Nov.), deer rib cooking (27 Nov.); (H) deer rib processing (27 Nov.); (I) deer rib refuse (27 and 28 Nov.); (J) deer limbs, ribs, vertebrae, and back meat processing (28 Nov.); (K) deer limb meat and ribs cooking (28 Nov.). (Drawing by author.)

three rib fragments were recovered following the cooking and consumption of deer ribs; semiferal yard dogs apparently scavenged the remainder. As well, no bones were recovered following the fish fry; these elements were likely scavenged by feral cats. The remainder of the collected bones was disposed during activities that preceded the study weekend.

Several patterns were evident in the spatial distribution of these bones that were consistent with the spatial occurrence of observed subsistence activities and data collected during informant interviews. Among deer elements ($n=45$), the most commonly recovered species, all of the anatomical part categories (heads, axial elements, forelimbs, hind limbs, and feet) were observed in both the plaza and butchery areas, but the proportions of the distributions differed. Heads were much better represented in the vicinity of the butchery area than in the plaza ($n=16$, 88.9%). Axial elements were better represented in the plaza area than from the area behind the

camp house ($n=6$, 75.0%). These distributions were consistent with the observations that deer were butchered behind the camp house and processed, cooked, and eaten in the plaza in front of the camp house. Slight differences were observed for the other anatomical part categories. Forelimbs ($n=6$, 60.0%) and feet ($n=3$, 60.0%) were slightly better represented in the butchery area, whereas hind limbs ($n=4$) were equally represented in plaza and butchery areas. Based upon observations of bone discard, deer feet should be better represented in the butchery area behind the hunting camp, whereas limb bones should be better represented in the plaza area where cooking and consumption occur. Other patterns were observed in the distribution of elements from other taxa. The only bones recovered from large fish were skull elements ($n=4$), which were restricted to the butchery area; this is consistent with data collected from informants who reported that large fish were cleaned primarily in the deer

TABLE 4
SUMMARY OF BONE RECOVERED FROM SURFACE CONTEXTS OF PUBLIC YARD AREAS

Taxa	NISP (1998)	NISP (1999)	Total
Cow (<i>Bos taurus</i>)	2	3	5
Deer (<i>Odocoileus virginianus</i>)	45	11	56
Goat (<i>Capra hircus</i>)	0	1	1
Pig (<i>Sus scrofa</i>)	1	68	69
Large mammal, undiff.	10	13	23
Opossum (<i>Didelphis marsupialis</i>)	0	7	7
Raccoon (<i>Procyon lotor</i>)	1	11	12
Gray squirrel (<i>Sciurus carolinensis</i>)	0	1	1
Chicken (<i>Gallus gallus</i>)	1	2	3
Large bird, undiff.	1	0	1
Bowfin (<i>Amia calva</i>)	1	0	1
Catfish (<i>Ictalurus</i> sp., undiff.)	1	0	1
Buffalo (<i>Ictiobus</i> sp., undiff.)	1	0	1
Gar (<i>Lepisosteus</i> sp., undiff.)	0	1	1
Large fish, undiff.	1	0	1
Total	65	118	183

butchery area. The only recovered bird elements included a chicken scapula and a large bird long bone, both from cooking and eating areas in the plaza. Mammalian elements recovered from the same areas of the plaza included a cow rib, a pig rib, and a raccoon humerus. Finally, a cow humerus was recovered near the doghouse located behind the camp house.

Spatial Occurrence of Subsistence Activities and Discarded Bones—1999 Data

Subsistence activities observed during the weekend of 20–24 November 1999 included butchery of raccoon, butchery of deer, secondary processing of deer parts, cooking and eating of deer parts, disposal of animal parts, and yard cleaning (Figure 3). The butchery area used during the 1998 season had been converted to a processing/cooking/eating area in 1999. This area was likely chosen for these activities because it was shaded. During the previous spring, a large elm tree that was located in front of the camp house fell during a storm, leaving that area exposed to the hot sun. As part of the new configuration, the butchery rack was

moved to a new location approximately 15 m northeast of its previous location (Figure 2).

A yard cleaning was observed during the weekend, which consisted of sweeping the subsistence debris from an area of the yard into a pile where it was burned. The debris included paper and plastic debris as well as numerous bones that were littered in the area during the preceding weeks. The trash was raked to a former campfire location south of the camp house (Figure 3). Ten bones that were burned in this pile were collected later in the day. Eight of the 10 were extensively burned; two others located underneath the pile were not burned. Other yard-cleaning activities were noted in other yards outside of the study area throughout the course of the investigations. These activities included the raking of dead leaves, sticks that had fallen from trees, trash, and subsistence debris. Informants reported that major clean-up events in yard areas occurred once per year, whereas smaller clean-up events occurred sporadically throughout the year in various areas throughout the yard.

In all, 118 bones from 74 proveniences were collected and mapped during the weekend (Figure 3) (Table 4). As with the 1998 data-collection period, an attempt was made to recover bones discarded during the observed subsistence

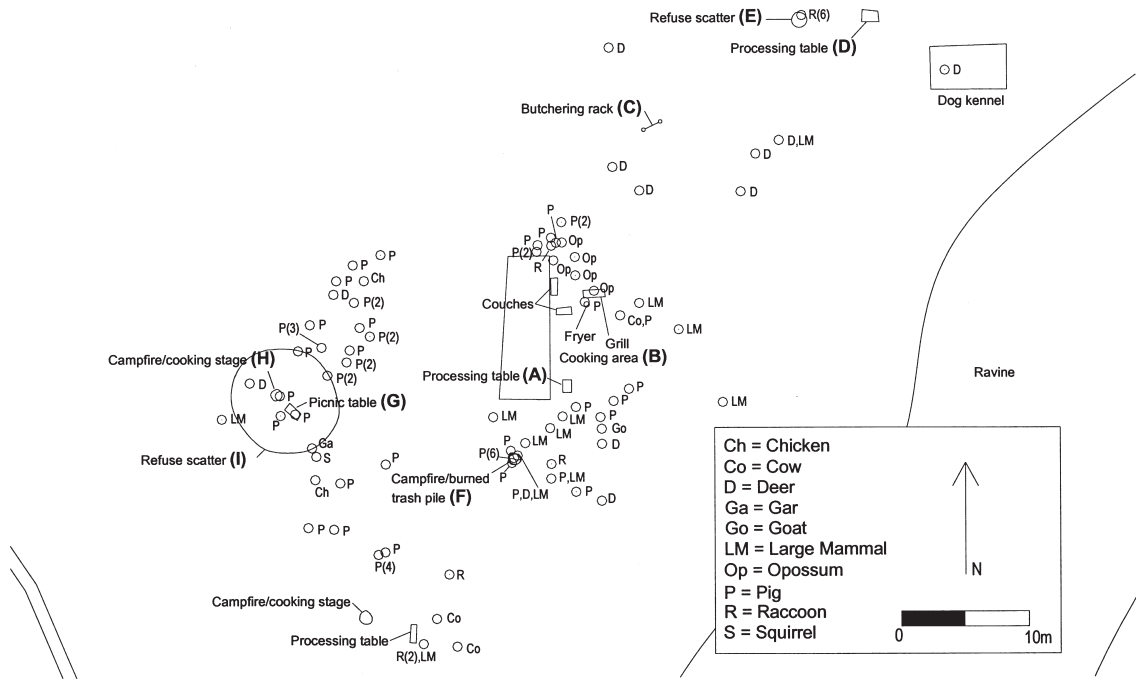


FIGURE 3. Location of subsistence activity areas and discarded bones in the public yard area during the weekend of 20–24 November 1999. Activity areas include (A) deer limb processing (21 Nov.); (B) deer limb cooking (21 Nov.); (C) deer butchery ($n=2$, 20 Nov.); (D) raccoon butchery (21 Nov.); (E) raccoon butchery refuse scatter (21 Nov.); (F) campfire/trash burning (22 Nov.); (G) deer limb and rib processing (23 Nov.); (H) campfire/cooking stage for deer limb meat and ribs (23 Nov.); (I) deer rib scatter (23 Nov.). (Drawing by author.)

activities within 24 hours of their discard. Just six elements were recovered, including the head, four feet, and tail of a raccoon that was butchered that weekend. The remaining bones were discarded during activities that occurred prior to the study weekend.

Data from the 1999 collection were markedly different from the 1998 data in terms of spatial distribution and species composition. Most of the bones were collected from the plaza in areas associated with cooking and eating activities; just 13 elements were collected from the vicinity of the butchery area, and one element was collected from within a dog kennel (Figure 3). Although the sample size of elements recovered from the butchery area was small, data collected there indicated primarily butchery refuse. Of the 13 elements, 11 (84.61%) were butchery refuse, including skull, feet, and tail elements from raccoons and deer. Bones recovered from

processing, cooking, and eating areas were more numerous and diverse than those recovered in the designated butchery area. In addition, fewer deer elements ($n=11$) were represented in the 1999 collection; pig dominated this collection ($n=68$).

In terms of species distributions, several patterns were apparent (Figure 3). Pig bones were widely distributed throughout the yard, occurring in areas of secondary processing, cooking, and consumption. Most of the recovered deer bones were from the general vicinity of the butchery area and were primarily butchery waste (heads and feet). Several raccoon skull elements were located in areas across the yard, indicating butchery of these animals at several locations, including at a table at the southern edge of the plaza and a table to the northeast of the butchering rack. All of the opossum elements, which were limbs likely discarded following consump-

tion, were recovered in the newly converted cooking area behind the camp house. Finally, two chicken forelimbs, a squirrel forelimb, and a gar vertebra were recovered in the center of the plaza near a cooking/eating area and represented discard following consumption. A goat humerus was recovered from a cooking/eating area south of the camp house.

Since pig remains were far better represented than deer in the 1999 surface collections, the distribution of the anatomical parts of this species was analyzed. Nearly all of the anatomical parts of pigs were represented in the collection, with the exception of hind limbs. Skull elements, including two molars, were recovered from the area behind the camp house that was formerly the butchering area in 1997 and 1998. These remains may have been deposited in the area following skull or mandible processing or cooking; however, it is also possible that these elements represent butchery refuse that was deposited in the area prior to its conversion to a cooking area. Pig axial elements were distributed primarily between two areas, including the area south of the camp house and the campfire area located west of the camp house. Both of these areas were associated with cooking and consumption activities, and these bones were likely discarded in the immediate vicinity of cooking and/or meal consumption areas. Of the eight pig forelimb elements, seven were recovered from the burned trash pile feature located south of the camp house. These parts were probably cooked and consumed there, discarded in the general area following the meal, and later swept from the vicinity into the trash pile and burned. Finally, pig feet elements were distributed widely across the plaza area but were restricted primarily to cooking and eating areas.

Expected Activity Area Locations and Bone Distributions

Based upon the observations made during the course of the study, the locations of the subsistence activity areas in the public yard as well as the discarded bone distributions could be predicted (Table 5). Cultural and natural processes blurred the distributions of the discarded bones. The actions of semiferal yard dogs and feral cats played a part in altering

the original distribution of bones. On numerous occasions during the course of this study, yard dogs were observed transporting bones throughout the yard. Most often, these dogs were responsible for transporting head and feet elements of deer from the butchery area to the plaza area. In addition, kenneled dogs were fed deer remains by their keepers. These dogs were given deer feet elements after a deer was butchered and limb bones following secondary processing or cooking of the limbs. The higher than expected proportions of deer forelimb and hind limb elements behind the camp house in 1998 was likely influenced by the location of a dog kennel there. Dogs and cats were also responsible for removing a substantial portion of the discarded faunal remains. In particular, small, relatively less dense elements were removed at high frequencies, including small fish bones, which were likely removed by feral cats, and processed large mammal ribs, which were removed by yard dogs.

Shifts in the locations of subsistence activity areas over time could also have implications for the spatial patterning of bone refuse at archaeological sites. During this study the area designated as the large mammal butchery area in 1997 and 1998 was converted to a cooking and eating area in 1999, resulting in the observation and collection of bones at that location that were discarded during both butchery and consumption. Two pig molars were recovered there, which may have been discarded during butchery prior to the activity area conversion, as well as an abundance of meat-bearing parts that were discarded there following cooking and consumption.

Finally, yard-cleaning could have pronounced implications for the spatial distributions of discarded bones. Evidence from this study indicates that yard-cleaning activities (sweeping and burning) take place regularly, which results in concentrations of extensively burned bones that were formerly unburned (or relatively less burned) and spread over a larger area.

Case Study: Slave Quarters Area of Saragossa Plantation

The findings from the current ethnoarchaeological investigation were used to interpret faunal assemblages recovered from the slave quarters area at Saragossa Plantation

TABLE 5
 SPATIAL OCCURRENCE OF SUBSISTENCE ACTIVITIES IN THE PUBLIC YARD AREA
 AND EXPECTED DISCARDED BONE FOR EACH ACTIVITY

Activity	Area In Yard	Discarded Bone
<i>Large mammals</i>		
Butchery	butchery rack located towards back of yard	heads, feet, tails (except domestic hogs)
Secondary processing	on table in plaza	none
Cooking/Consumption	cooking/eating area in plaza	vertebrae, ribs, and limbs
<i>Small mammals</i>		
Butchery	either in large mammal butchery area or on table located at edge of plaza	heads, feet, and tails
Secondary processing	either on table in plaza or indoors (when prepared for baking)	none
Cooking/Consumption	cooking/eating area in plaza	vertebrae, ribs, and limbs
<i>Poultry</i>		
Butchery	either in large mammal butchery area or on table located at edge of plaza	heads
Secondary processing	on table in plaza	none
Cooking/Consumption	cooking/eating area in plaza	vertebrae, ribs, pelves, limbs, and feet
<i>Turtles</i>		
Cleaning	either in large mammal butchery area or on table located at edge of plaza	heads, feet, carapace, plastron, and tails (except Chelydridae)
Cooking/Consumption	cooking/eating area in plaza	cervical vertebrae, limbs, and tails (Chelydridae only)
<i>Large Fish (Gar/Catfish/Buffalo/Bowfin)</i>		
Cleaning	either in large mammal butchery area or on table located at edge of plaza	head elements and scales (except catfish)
Cooking/Consumption	cooking/eating area in plaza	vertebrae and ribs
<i>Small Fish (Panfish/Bass/Small Catfish)</i>		
Cleaning	on table in plaza	all head elements (if head removed) and scales or hyoids and branchiostegal rays (if head left attached) and scales
Cooking/Consumption	cooking/eating area in plaza	remainder of head elements (if head left attached), vertebrae, and ribs

(22AD984). Descriptions and maps detailing this site are provided by Young (1998, 1999). Vertebrate faunal material used for the analysis was recovered during the 1997 field season from the Caroline Burke House and the Fourth House, two of the slave cabins at the site. In all, 258 bones weighing 645.5 g were recovered from five units excavated at the Caroline Burke House, whereas 158 bones weighing 498.1 g were recovered from three units excavated at the Fourth House. These assemblages were associated with antebellum period artifacts (Tuma 1998). The faunal assemblages were analyzed for evidence of butchery, processing, and cooking characteristics (or signatures) on the bones and for representation of parts in order to assess the range of activities that occurred within the cabins based upon the current ethnoarchaeological data. Body-part representation profiles were constructed for large mammal, small mammal, bird, turtle, and fish species, expressed as the minimum number of elements within five anatomical part categories, including head, axial, forelimb, hind limb, and feet. A sixth anatomical category, carapace/plastron, was added for turtles.

Cultural Modifications to Bone

Cultural modifications of elements recovered from the Fourth House include characteristics that are analogous to the modern ethnographic example. In particular, the modifications show secondary processing of pig distal humeri (meat removal [n=2] and separation of the elbow joint [n=4]) and cow ribs (cutting or chopping into segments [n=2]), and cooking of pig ribs (burned [n=1]). Cooking practices inferred from the observed modifications include frying, roasting, or stewing of meat procured from the pig humerus; stewing of pig elbow joints; and frying or roasting of cow and pig ribs. Modification data from the Caroline Burke House included three modifications that were analogous to the modern ethnographic example: a cleaved pig vertebra that indicates either butchery or secondary processing of this element for use in a soup or stew; a cleaved pig mandible that indicates secondary processing of this element for stewing, roasting, or frying; and a burned sheep/goat dew claw that most likely represents butchery

refuse that was later swept into a trash pile and burned. A cleaved-and-cut cow phalanx recovered at the Carolyn Burke House does not compare well with the modern ethnoarchaeological data; however, this modification likely represents secondary processing of that element.

Bone Distributions

Observations of the spatial distribution of faunal remains across portions of the slave quarters area were made by assessing the representation of species and anatomical parts at the two cabin structures (Table 6). Comparison of the data between these two areas results in some patterns worth noting. Representation of a wide variety of cow, pig, and sheep/goat parts indicates that significant portions of these animals were utilized, despite the low quality of some of the parts represented. Assuming that the cabins were used primarily as domiciles, the presence of head and feet elements at both locations probably indicates that these elements were prepared for consumption, rather than being butchery refuse. These data compare with the modern ethnographic example where pig heads are used for headcheese, and hog jowls were prepared in a number of ways. In addition, historical accounts indicate that meat from both head and feet elements could be used in preparing headcheese. The representation of other elements of these species, including primarily axial elements and forelimbs, indicates typical household processing, consumption, and refuse similar to remains recovered from the plaza and yard contexts in the modern example.

Deer parts included only axial elements and forelimbs. Because no head or feet elements of this species were represented, it would appear that (1) deer were butchered in a separate area of the site, and (2) deer heads and feet were not utilized for manufacturing headcheese, reflecting a situation similar to the ethnographic example. Opossum elements (humeri and vertebrae) were recovered from both slave houses and indicated refuse disposal following consumption. One chicken foot element (distal metatarsal) was recovered from the Fourth House; this element likely was used in a soup and discarded following consumption. Carapace and plastron elements from aquatic Emydid turtles were

TABLE 6
PART REPRESENTATION DATA FROM THE SLAVE QUARTERS AREA OF SARAGOSSA PLANTATION

Part Representation	Fourth House (MNE)	Caroline Burke's House (MNE)
<i>Cow</i>		
Head	1	2
Axial	2	2
Hind limb	1	0
Feet	0	1
<i>Pig</i>		
Head	4	5
Axial	2	2
Forelimb	7	1
Hind limb	0	1
Feet	3	1
<i>Deer</i>		
Axial	0	4
Forelimb	1	3
<i>Sheep/Goat</i>		
Head	1	1
Forelimb	0	1
Feet	0	1
<i>Opossum</i>		
Axial	1	0
Forelimb	1	1
<i>Chicken</i>		
Feet	1	0
<i>Aquatic Emydid Turtle</i>		
Carapace/plastron	0	13
<i>Bigmouth Buffalo</i>		
Head	0	1
<i>Catfish</i>		
Axial	0	2
<i>Gar</i>		
Head	0	1
Scale	0	9

recovered from the Carolyn Burke House, indicating that turtles were butchered at this location. Fish parts represented at the Caroline Burke House included skull elements of gar and bigmouth buffalo and gar scales, suggesting that these large fish were butchered at this location. The presence of catfish vertebrae indicates that this species was cooked and consumed there as well.

Discussion

McKee (1988:134) stated, “it is exciting to think what could be said about life in the quarter if a year of eating (or for that matter, a single meal) could be observed. The knowledge that this information is lost forever encourages the student of the Afro-American experience to push the analysis of what is left to the

limit.” Furthermore, Theresa Singleton (1995: 135) urged that “input from African Americans should ... be considered in generating questions to be investigated and in the interpretation of the results. [African Americans] are contributors to an ongoing dialogue that maximizes the interpretive potential of the archaeological record.” The current study fulfills, to a certain extent, the wishes of these researchers; ethnoarchaeological research not only involves modern African Americans through interviews and observations of their behaviors but also allows researchers, under the correct circumstances, to view and record behaviors that were passed down from enslaved ancestors who lived and worked on antebellum plantations and farms. The observation of these behaviors can be used to help interpret archaeological data, thereby “pushing the analysis to the limit” and “maximizing the interpretive potential of the archaeological record.” Carefully collected archaeological data can best be augmented through the use of both historical documents and ethnoarchaeological data.

Prior to a discussion in which interpretations of archaeological data are made based upon the modern example, a discourse comparing and contrasting the conditions within the modern community with those of historic enslaved African Americans communities is useful. In order to fully appreciate the value and limitations of the current study, juxtaposition of several factors that influence foodways is needed, especially economies, technologies, social/family structures, amount of free time, and methods of food acquisition.

The modern community suffers from poverty, although not to the extent of the antebellum slave experience. While a few members of the modern community work full-time jobs, most work sporadic, temporary jobs, and many of the adults in the community are unemployed or underemployed for substantial portions of the year. Hunger is an issue at times within the study community. Activities such as hunting, fishing, gardening, and tending of livestock are important aspects of the economy that mitigate monetary shortfalls. In addition, sharing and trading of resources are extremely important activities within the modern community; these behaviors further lessen economic hardships. Although enslaved African Americans suffered

from abject poverty, they probably used techniques to mitigate economic hardships and resource shortages similar to those employed by the modern community. Like the modern community, slaves supplemented their master’s rations with hunting, fishing, gathering, gardening, and livestock tending.

The modern community has a significant technological advantage over the historic communities, especially in terms of food storage. In particular, the modern community uses refrigerators and freezers, which allows them to have access to a nearly constant supply of fresh meat. Antebellum enslaved communities had to rely on more primitive food-storage technologies, including smoking or salting of meats. Fresh meat could possibly have been stored for short periods in subfloor pits inside cabins, but for the most part fresh meat acquired by slaves had to be prepared or preserved immediately. These differences in food-storage technologies have significant implications for processing and cooking vertebrate meat resources by these groups. Because slaves extended the storage period of meats through smoking and salting, alternative cooking techniques (especially boiling) were likely employed in preparing these types of preserved meats. Therefore, pot-boiled meals were likely more common in the historic communities compared to the modern community, where roasting and frying techniques are commonly used. Cooking technologies differ between the modern community and historic communities as well; however, these differences should not result in differential bone signatures. Boiling and frying are conducted in almost identical manners, with pots or skillets placed over a heat source. Roasting techniques likely differ most substantially. Enslaved African Americans roasted food by either wrapping the item in leaves and placing it into the hot coals of a fire or by cooking the item above an open flame. The former roasting technique differs most from techniques observed in the current study but probably results in similar burning signatures on bone.

Social and family structures within the Saragossa Road community share many similarities with historic communities. The modern community is comprised of four households of related individuals in addition

to a network of related and unrelated people that visit the neighborhood regularly. The four houses are situated in close proximity in a row, much the same way slave cabins were arranged at Saragossa Plantation and at many other antebellum plantations. Slave quarters were most often comprised of a family of related individuals within each cabin. Families from neighboring cabins were not usually related, but they were no doubt part of an extended kin network where close relationships facilitated economic and social activities (Young et al. 2001). Slave communities likely acquired, processed, cooked, and shared food resources in a cooperative manner, much the same way that the modern community on Saragossa Road does.

Members of the modern community undoubtedly have more free time than did their enslaved ancestors, a factor that may substantially influence subsistence behaviors. Because slaves had little free time to conduct their subsistence activities, including gardening, hunting, fishing, livestock tending, butchering, processing, and cooking, efficient techniques for accomplishing these tasks were likely favored over techniques that were time- or labor-intensive. Because of their proximity to the slave quarters area, gardening and livestock tending were probably favored over hunting, fishing, and gathering of wild resources that required extended forays from the slave quarters area. Hunted resources probably included a higher proportion of nocturnal species, such as raccoons and opossums, as enslaved African Americans had more free time at night after their work was completed. In terms of cooking, choices were likely made between techniques that required less time, such as frying and roasting, and techniques that required less supervision, such as pot boiling (Franklin 2001). In contrast, members of the modern community, who have considerably more leisure time, spend more time hunting and fishing than gardening or livestock tending and are free to decide preparation techniques based upon personal preference rather than on time constraints. The amount of free time that slaves had depended upon whether they worked within a task or gang labor system. Free time probably varied from plantation to plantation within each labor scheme. Slaves at Saragossa Plantation likely worked under the task labor system, which

was common for cotton-producing plantations; this arrangement likely gave the slaves relatively more leisure time to conduct subsistence activities than those who worked under a gang labor system, although not to the degree observed in the modern community.

Despite many of the differences between the modern community and the communities that preceded them, modern ethnoarchaeological data have considerable utility for interpreting archaeological data, particularly those from Saragossa Plantation. The modern community acquires many of the same food items that their enslaved ancestors did, including many of the same domesticated and wild species. Domestic vertebrate species that were provisioned from masters or raised by slaves themselves, including cow, pig, and chicken, are common fare in the diets within the modern community. Wild species, including deer, raccoon, opossum, rabbit, squirrel, turtle, and fish supplemented the diets of slaves and modern descendants alike in the Saragossa Road community. In addition, because the modern community hunts, fishes, and raises its own livestock, full carcasses of most animals are processed, a circumstance similar to that in enslaved African American communities. These similarities in dietary contributions from vertebrate species make comparisons between historic and descendant communities pertinent, particularly for the modern Saragossa Road community and the enslaved community of Saragossa Plantation.

More importantly, a direct link exists in the passing of cultural information down the generations from the slaves who lived at Saragossa Plantation and other nearby plantations to the descendant community that lives in the area today. An array of cultural and ethnic traditions, ideals, and practices carried out by these enslaved African Americans, including subsistence behaviors, have likely persisted in some form or another to modern times. Because of the geographic, racial, and economic isolation of the modern community, knowledge of subsistence practices and traditions has probably largely been preserved in its passing through the generations. This makes comparisons of subsistence practices between the modern community and the enslaved community at Saragossa Plantation particularly appropriate.

Bone Signatures: Butchery, Secondary Processing, and Cooking

Butchery and secondary processing of animals were the most influential behaviors in terms of modifications to bones. During these processes, bones were affected dramatically by cutting tools, resulting in cleave, chop, and cut marks. The locations of these marks and the elements upon which they were made were associated with particular behaviors, allowing for the reconstruction of butchery and processing behaviors. The locations of cut marks on bone varied considerably from one individual butcher or processor to the next, making an organized classification of ethnic characters relating to these behaviors somewhat difficult. The variable breakdown of the carcasses may actually be an ethnic signature itself. McKee (1987) noted the same haphazard pattern in an analysis of carcass processing by enslaved African Americans at Kingsmill Plantation. Despite this, the ethnographic data collected in the current study provides valuable insights regarding the treatment of vertebrate parts and species by African Americans.

Comparison of bone modifications and the behaviors that produced them in the modern ethnographic example with the cultural signatures on bones recovered from the slave quarters area of Saragossa Plantation proved to be particularly useful. Other zooarchaeological studies of slave subsistence have identified behaviors based upon cultural modifications to bone that also compare well to the data collected during the current investigation. For example, Crader (1984, 1990) provided details of cut and scrape marks, chop marks, and shear and saw marks on bones in reconstructing butchery, secondary processing, and meat removal activities by the enslaved at Monticello. While she speculated that limb bones without cut or scrape marks were probably used in pot boils, the current ethnographic data provides alternative or additional interpretations of Crader's (1984, 1990) data; in this study, limb bones used in stews received cut marks during meat removal activities prior to their inclusion in stews. Occasionally, a limb bone with meat attached was used in a pot boil, but this was not the norm. Although she provided data regarding processing marks on numerous rib elements (Crader 1984, 1990),

she did not interpret their use. Data from the current study indicate that ribs were typically processed for frying or roasting, cooking techniques inferred from Crader's (1984, 1990) data as well. Crader (1989) provided additional evidence of butchery practices from Building O, a slave cabin at Monticello where limb bones exhibiting multiple parallel cuts along the shafts were recovered. She speculated that limb bones cut in this manner were probably roasted with the meat carved off following cooking. Findings from the current ethnographic investigation provide an additional explanation for the observed cut marks; specifically, parallel transverse cut marks along pig femurs occurred either prior to cooking when the meat was removed for frying or after the ham was roasted.

McKee (1987) provided data regarding bone-modification characteristics for an assemblage that compare well to the current ethnographic data. In his examination of faunal material from the slave quarters area at Kingsmill Plantation, he identified a number of pig and sheep tibiae that were broken or smashed midshaft. This signature is consistent with the current ethnographic data, whereby the distal tibia and feet are chopped from the hind limb during butchery or secondary processing. He also identified a three-step method for artiodactyl rib processing in the archaeological data: (1) ribs were separated from the vertebral column during butchery, in which the rib head or transverse processes of the thoracic vertebrae were cleaved; (2) ribs were cut into sections at midshaft to reduce the length of the element; and (3) the ribs were further cut into smaller pieces. These interpretations of butchery and processing signatures correspond directly to observations of rib processing made during the current ethnographic investigation, giving credence to McKee's (1987) assessment. He interprets the use of the rib pieces for stewing and roasting. Although the current research does not preclude these interpretations, it indicates that ribs were prepared exclusively through frying and roasting and not by stewing. McKee (1987) also interprets the processing of pig mandibles, whereby the ascending ramus was cleaved, as evidence of extraction of the mandible from the tongue and jowl. These data compare well with the modern ethnographic data collected through informant interviews.

The author (1998) provided evidence of the under-representation of pig vertebrae in the slave quarters area of Saragossa Plantation as well as evidence of highly deteriorated bone smears encountered during excavations that may have represented these axial parts. Data from the current study indicates that axial parts are cooked in pot boils, a process that destroys bone collagen and leads to increased rates of bone attrition, particularly for these low-density elements. The under-representation of vertebrae and the highly deteriorated bone observed in the slave quarters area at Saragossa Plantation likely represent boiling of pig vertebrae at those locations. Michael Barber (1980) reported the recovery of six pig vertebrae from a slave cabin at Shirley Plantation in Virginia that were split medially, thereby suggesting a particular cooking technique. In the current ethnographic example, hogs butchered in this manner were roasted whole. Emmanuel Breitburg (1976) provided limited but comparable data regarding butchery practices. He reported evidence of hog head removal through the identification of cut marks on the posterior portions of skulls as well as sheared atlases, data that are consistent with the current ethnographic data. Removal of mandibles from the skull was suggested through the identification of several mandibles with cut marks on the ascending rami, data similar to that reported by McKee (1987) and to data collected during the current investigation. Finally, Breitburg (1976) reported that proximal ulnae received cut marks, implicating disarticulation of the upper and lower limbs at the elbow joint; these data are consistent with secondary processing activities observed in the current investigation.

Although the use of vertebrate animal parts is rather intuitive based upon bone characteristics, particularly for parts that were used in pot boils, this study provides evidence that enslaved African Americans probably used alternative forms of cooking. Archaeologists (Crader 1984, 1990; Otto 1984; McKee 1987; Franklin 2001) generally consider pot boils or one-pot meals to have been the primary cooking technique employed by the enslaved. Historians report the use of pot boiling during cooking; however, they also provide accounts that slaves employed other forms of cooking. For example, Eugene Genovese (1976:546–547) writes that slaves par-

boiled and roasted adult opossums, fried immature opossums, and fried and roasted chicken. Sam Hilliard (1972:43–48) provides even more descriptions of diverse cooking techniques, including boiling adult rabbits; boiling or roasting adult chickens; pickling pork; roasting pork; and frying young rabbits, beef, young chickens, and fish. He indicates that meat was frequently fried in pork lard (Hilliard 1972:42). He also writes that communal barbecues were occasionally held within slave quarters areas (Hilliard 1972:59). Based upon the historical literature as well as the findings in this study, cooking techniques other than stewing, most notably frying and roasting (or barbecuing), should also be considered in archaeological discussions of cooking techniques employed by African American slaves.

Spatial Distributions of Subsistence Activities and Bone Refuse

This study identified patterns in the spatial distributions of subsistence activities in yard areas, as well as spatial patterning in vertebrate bone refuse that resulted from different subsistence activities. Subsistence activities were conducted in predictable locations in public yard areas, while bone refuse patterning could be predicted by the types and locations of the subsistence activities that produced them. However, the actions of domesticated carnivores, shifts in spatial use over time, and yard cleaning resulted in a blurring of bone refuse patterns.

Subsistence activities in slave quarters areas on plantations likely occurred in separate spaces, as observed in this study. Yards, no doubt, were areas where secondary processing, cooking, and eating activities occurred, whereas a designated large mammal butchery area was probably located in a discrete location away from other subsistence activity areas. This should have resulted in a predictable pattern in the spatial distribution of vertebrate faunal remains, similar to those observed in this study.

To test this idea, faunal assemblages from two slave quarters cabins at Saragossa Plantation were assessed for species and anatomical part representation, with the idea that the range of subsistence practices conducted at each of these structures would be evident in the representation of faunal remains recovered

there. Comparison of the faunal assemblages from each of these structures with data obtained in the current ethnographic study indicated that numerous subsistence activities occurred at these locations, primarily processing, cooking, and eating activities typical of public yards and households. The recovery of turtle carapace and plastron elements, gar scales, and skull elements from large fish from the Caroline Burke House indicated that cleaning of turtles and large fish was conducted there. The absence of deer skulls and feet from the slave quarters contexts suggests that a butchery area for large mammals was located away from the cabins. The ethnographic data regarding the use of pig heads for headcheese helps to explain the recovery of significant numbers of skull elements from cow, pig, and sheep/goat from the cabin area. These remains represent parts that were deposited following processing, cooking, and consumption in a household setting, rather than as butchery refuse.

Comparing the current ethnoarchaeological data to anatomical part representation data recovered from other African American archaeological sites yields some interesting insights as well. For example, Crader (1984) presented data from the storehouse within the slave quarters area of Monticello that included a high proportion of large mammal heads and feet, in contrast to data from a slave cabin, Building *O*, where a modest proportion of high-quality parts were also represented (Crader 1990). Crader (1990) concluded that the differences in anatomical part representation between these two structures in the slave quarters area were evidence of differential slave status. In light of the current ethnoarchaeological data, however, the Storehouse might be viewed as a specialized activity area within the public space of the slave quarters area. The refuse was restricted to the outside of the structure, suggesting that the immediate yard vicinity of the structure was the location of secondary processing and cooking of a variety of taxa. The high proportion of head elements, particularly from pigs, suggests that the area may have been the location of a specialized pot boiling station, perhaps where headcheese was manufactured. Other cooking activities suggested by the refuse include boiling of large mammal vertebrae; boiling, frying, or roasting of limb elements; and frying or roasting

of ribs. Crader (1984) reported a high density of bones outside the structure and interpreted the deposit as a trash dump; the current ethnoarchaeological data suggest an alternative explanation, that the accumulation of faunal remains there may have been the result of periodic yard cleaning in the area. Crader (1989) documented the recovery of a substantial amount of sheep cranial and feet elements at Building *S* and hypothesized that the cabin was located near a sheep butchery area. Based upon the findings in the current study, this assertion appears valid, as these elements are predicted to occur in high proportions at large mammal butchery areas. A high proportion of pig feet elements were also present at Building *S*; these data indicate the presence of a cooking/eating area, consistent with a household context expected at a slave cabin.

Finally, John Ehrenhard and Mary Bullard (1980) reported on the recovery of deer head and feet elements from a slave cabin at Robert Stafford Plantation, Cumberland Island, Georgia, and hypothesized that this was evidence of consumption of these low-quality parts by enslaved African Americans. The current research indicates an alternative hypothesis, that the slave cabin, at some point in time, was the location of a large mammal butchery area.

The sample recovered from Saragossa Plantation was limited, in that only two areas, both slave cabins, were used in the current analysis. Exploration of other parts of the slave quarters complex should be the goal of future excavations at Saragossa, particularly the public yard area between the slave house rows and possible specialized locations, including processing and butchery areas at the edge of the yard or adjacent to a ravine, large mammal butchery areas, and disposal areas. For example, based upon the data collected during the current study, cooking and eating areas are expected to exist in public yard areas within the slave quarters complex; furthermore, faunal remains recovered from such locations should represent the remains of communal meals. Other studies of slave quarters areas should consider the importance of the use of public yard space for various subsistence activities. The current ethnoarchaeological data show that outdoor public space is extremely important for understanding the occurrence and spatial distribution of sub-

sistence activities as well as other aspects of African American cultural expression.

Heath and Bennett (2000) provided numerous ethnohistoric data concerning the prevalence of the use of yard space for subsistence activities among peoples of African descent across time and space. They provided ample evidence for gardening and poultry-keeping areas of yards in the immediate vicinity of the houses and cabins, and they suggest that processing and cooking areas existed as well. Although they provided little ethnohistoric or archaeological evidence for these specialized processing and cooking areas within the yards, the current ethnographic data would seem to support their contention that these areas not only existed in slave quarters areas but should be actively sought by archaeologists. Heath and Bennett (2000) also provided evidence that yard sweeping was a common practice by peoples of African descent, a behavior that has its roots in Africa, where yards were swept for practical and spiritual reasons. Wilkie (2000) provided archaeological evidence for yard sweeping at Oakley Plantation in Louisiana, where the majority of subsistence debris was swept to the edge of the yards around the cabins, resulting in concentrations of artifacts at the yard boundaries between the cabins. In addition, some material was swept under the cabins (Wilkie 2000). Yard sweeping was likely a regular activity within slave quarters areas, a factor that, no doubt, influenced the distribution of bones deposited there. Data presented by Richard Westmacott (1992) regarding yard sweeping by African Americans in present-day rural South Carolina, Georgia, and Alabama, as well as similar observations made during the current study, confirm that yard sweeping continues to be an important activity, a factor that archaeologists studying African American sites will have to consider in spatial analyses of cultural materials deposited in yard contexts.

Finally, the actions of domesticated carnivores should be considered for spatial analyses of African American archaeological sites. Bone removal and bone displacement has been documented in other ethnoarchaeological research (Hudson 1993; Kent 1993) as well as in the current investigation. In order to detect whether domesticated carnivores have impacted the spatial distribution of zooarchaeological

assemblages, researchers should look for modifications to bones recovered from archaeological contexts, particularly carnivore gnawing. If gnawing is evident on any of the recovered bones, then it would be safe to assume that the distribution and representation of bones in the assemblage were skewed by the presence of these carnivores.

Concluding Summary

This ethnoarchaeological study of subsistence activities within a modern-day African American community provides important data that can be used to aid in the interpretation of subsistence behaviors associated with the characteristics and spatial distributions of bones recovered from African American archaeological sites. The ethnoarchaeological data were particularly useful in elucidating the subsistence behaviors of enslaved African Americans who occupied the slave quarters area of Saragossa Plantation. The current study was also helpful in providing additional interpretations of data recovered from other slave quarters sites as well as corroborating previous interpretations.

The ethnoarchaeological data from this study should provide a useful interpretive tool to archaeologists as they search for the meanings behind the zooarchaeological remains recovered from African American archaeological sites across the Southeast and elsewhere. The findings from this study should provide a theoretical framework that will allow archaeologists to formulate questions regarding the reconstruction of butchery, food processing, and cooking behaviors for all vertebrate animal products and bone refuse patterns that result from different subsistence activities. When used to interpret faunal assemblages from slave quarters contexts, the ethnoarchaeological data from this study should be combined with historical documents (slave accounts, masters' provision lists, etc.), when available, for more complete appraisals of slave subsistence as determined through archaeological means.

Future research at Saragossa Plantation and other plantation sites should be directed at determining the full range of butchering, processing, and cooking techniques as evidenced in the current ethnographic example and other sources of information, including historical

texts containing recipes or cooking techniques. Researchers should also try to identify different subsistence activity areas at plantation sites, especially those in public yards. These areas include communal subsistence activity locations as well as specialized locations where butchery, processing, and cooking and eating of different species occurred. Finally, researchers should also consider the cultural and natural factors that influence the deposited assemblage when making their interpretations of the subsistence behaviors of enslaved African Americans.

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