APALACHICOLA VALLEY RIVERINE, ESTUARINE, BAYSHORE, AND SALTWATER MIDDENS

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Shell midden sites in the Apalachicola-lower Chattahoochee valley region of northwest Florida/southwest Georgia/southeast Alabama can be classifed by content, Geor Georgia-Alabama border, then intentional is not necessarily discernible. That nearly all such sites include an abundance of other faunal remains is a clear indication that shellfsh were the principal subsistence resource (with a few possible exceptions, described below), simply the most archaeologically visible. As Griffn (1988) noted, we have come away from the notion that the people who left these sites were "the shellfsh eaters," and now realize that fsh and other resources made up the bulk of the diet but left far less material evidence. When fne screens began to be used in shell midden excavations decades ago, the faunal assemblages recovered indicated that other types of animals provided much more meat than the shellfsh that accounted for the more visible garbage.

the Georgia-Florida border; then it merges with the Flint to make the Apalachicola, which fows south 110 more miles (177 km) to the Gulf of Mexico (Figure 1). This large alluvial valley, with its lower delta estuaries, bayshores, and barrier islands, offers a wide range of shellfsh species that were gathered by aboriginal peoples for at least the last four millennia. I have surveyed throughout this region – along the lowest 50 river (navigation) miles (80 km) of the Chattahoochee, the 110 miles (177 km) of the Apalachicola, the large tributary Flint and Chipola Rivers, and up to 75 east-west miles (120 km) of bay and lake shores. My work and that of others has included recording several distinct types of shell midden sites in the region. They are worthy of examination at a time when such sites are continuously the subject of debate concerning their constructions and uses beyond the obvious disposal of refuse (e.g., Claassen 1991a, 1998; Marquardt 2010; Randall 2008; Randall et al. 2014; Russo 2008). The region as outlined has a great deal of internal cultural continuity, and it contrasts with the archaeological record upriver (to the north, closer to the fall line [the inland edge of the coastal plain]), as well as to the east and west, away from the large valley system (Schieffer 2013; White 2014). Thus it maintains a regional integrity justifying consideration as a unit.

The discussion begins with the assumption that shellfsh were obtained for food (slimy things though they might be); hence the traditional term "shell midden" instead of "shell-bearing," or "shell matrix" sites or other nomenclature (cf. Claassen 1991a, for example). After consumption, shells and other food waste were discarded in patterns that are recognizable, though the degree to which the patterning was

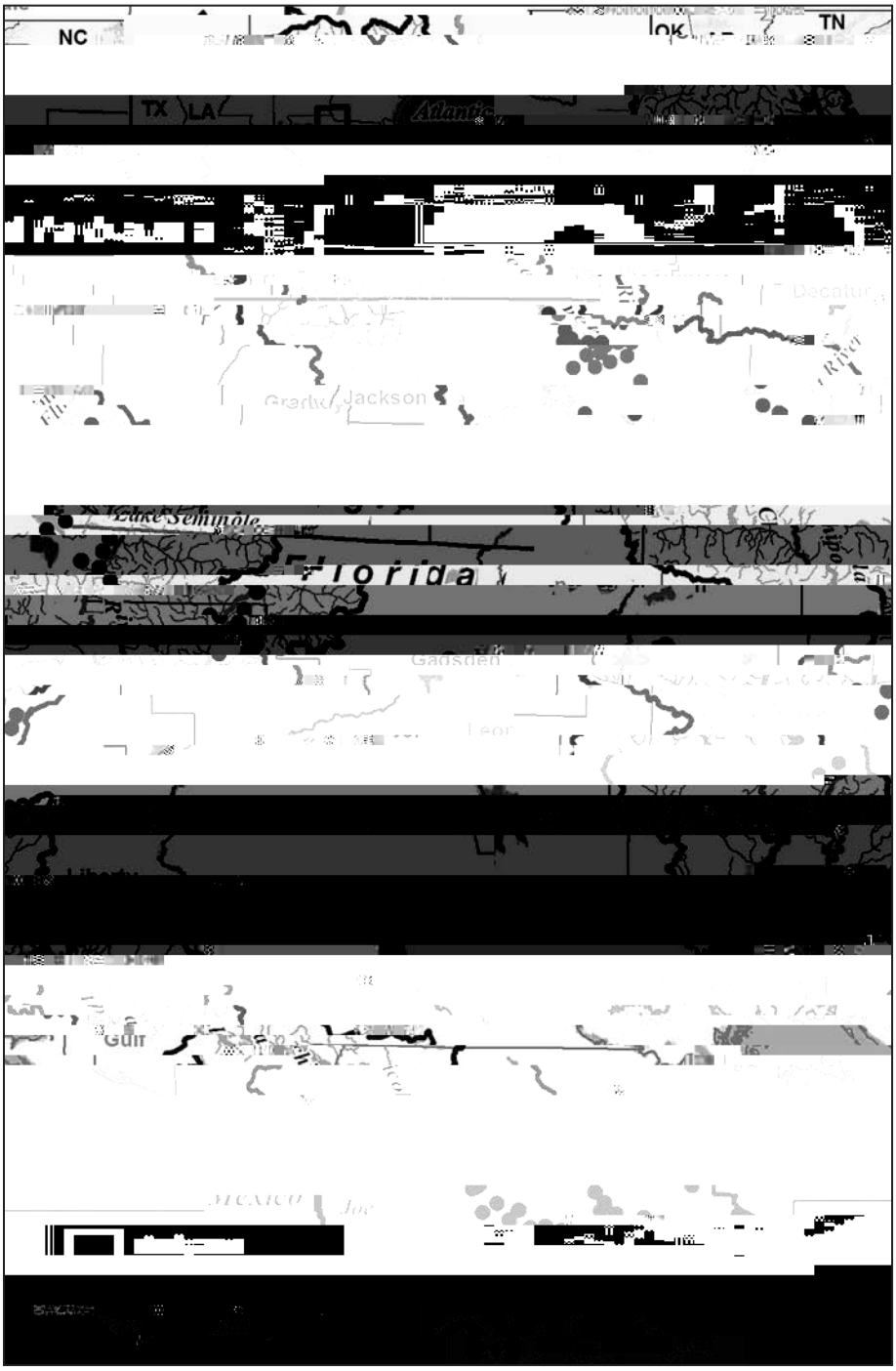

Figure 1. Distributions of known shell midden sites in the Apalachicola-lower Chattahoochee valley region of northwest Florida-southeast Alabama-southwest Georgia. Map by Adam Schieffer

with occasional marsh clams. In the southwest delta, around St. Joseph Bay, the shells are large gastropods, whelks and conchs, a reflection of the saline conditions here.

Shell middens worldwide are easy to find because they are so visible, white areas in the green forest or plowed field. It is no surprise that most are multicomponent sites. Later prehistoric peoples returned to them, for the higher elevation, or to live where ancestors obviously did, or because these sites showed where to get food easily. The shell neutralizes the acid soils to preserve faunal remains. So it is also no surprise that archaeologists devote great attention to shell middens, since they are packed with so much more information than typical

SITE #	NAME	SHELLS	CULTURE	DIAGNOSTIC ARTIFACTS	OTHER
8FR358	Headquarters Marsh	oyster	indet cer	stp, ch-st, indet punc	
8FR360	Saint Vincent 1	oyster	LArch, EWd, MWd, FW	stone tools, f-t, clay ball, Dept S-St, tetrapod, Sw Cr, SantaRosa st, LJ, ch-st, FW Inc	
8FR361	Saint Vincent 2	oyster	LArch, EWd, MWd, FW	celt, f-t, tetrapod, ch-st, s-st, Sw Cr, LJ, Carr, FW Inc, cobmk	
8FR362	Saint Vincent 3	oyster	Wd	stp?	
8FR363	Saint Vincent 4/Pickalene	oyster	LArch?, MWd	f-t?, red, Carr, WI Inc, Sw Cr, ch-st	
8FR364	Saint Vincent 5	oyster	MWd, LWd, FW	Sw Cr, ch-st, Keith, indet inc, LJ, Pens Inc	human skeletons -md?
8FR365	Saint Vincent 6	oyster	LArch, MWd, LWd, FW, Lamar, LC	f-t, ch-st, Sw Cr, Keith, red, cobmk, FW Inc, LJ, Pens Inc, Lamar, Chatt Br	
8FR366	Saint Vincent 7	oyster	MWd, FW	Sw Cr, WI Inc, red, ch-st, Carr,	
8FR367	Saint Vincent 8	oyster	EWd, MWd	ch-st, s-st, Carr, Sw Cr	
8FR368	Saint Vincent 9	oyster	FW	ch-st, FW Inc, LJ	
8FR369	Saint Vincent 10	oyster	FW, Lamar? LC?	LJ, indet brushed, Lamar rim? gun flint	
8FR370	Saint Vincent 11	oyster	MWd	stone tools, Sw Cr, ch-st, red, Carr	
8FR744	Van Horn Creek	oyster, marsh clam	LArch, FW, Wd?	microtools, microcores, clay ball, f-t, ch-st, FW Inc, LJ	
8FR745	Hendrix 2	oyster	indet cer	stp?	
8FR746	Pits Cove	oyster	indet		
8FR754					

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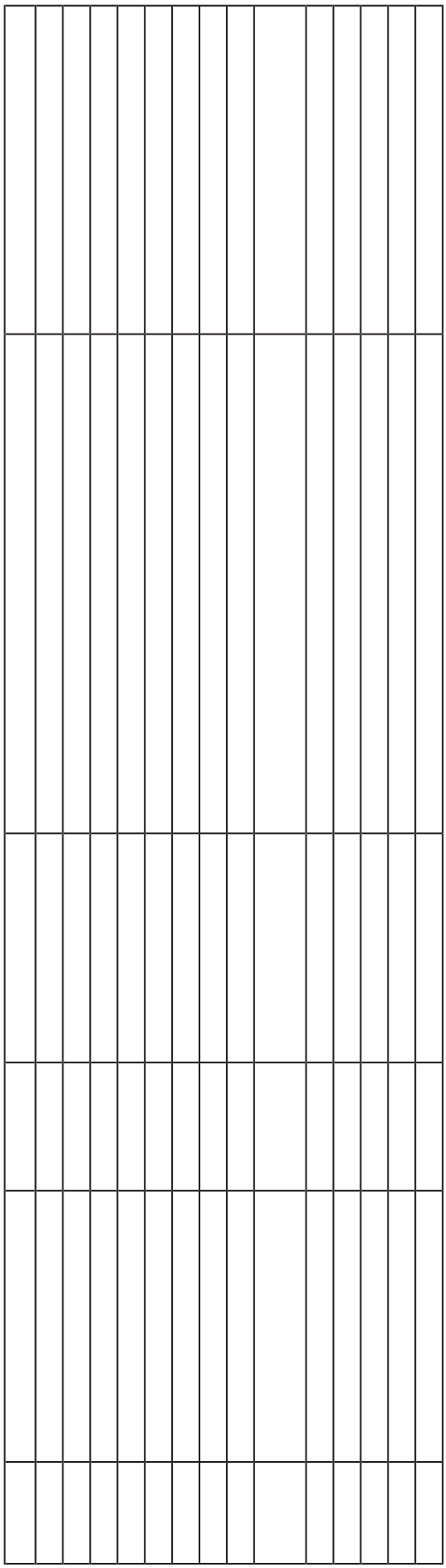

Southeast. Before model-building, a frst step is to develop a taxonomy of sites upon which to build, and a list of questions that need addressing (e.g., Morrison 2013). The types of sites

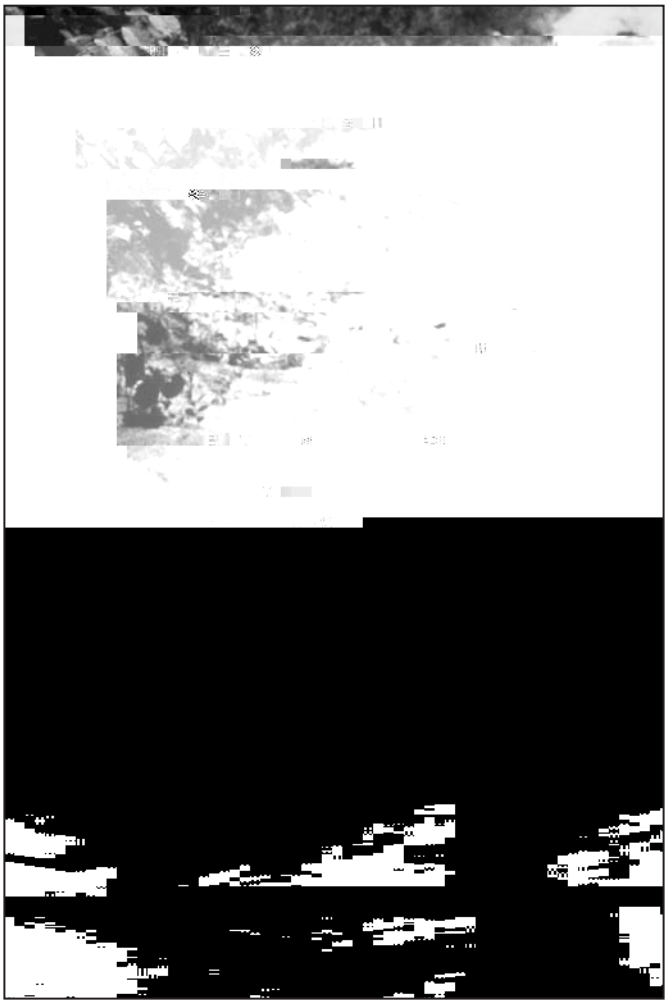

Figure 3 Shell pile exposed by a road grader at the Housing Development site (9DR118) on the east bank of the Flint 5LYHU DERYH LWV FRQÀXHQFH ZLWK area around feature is midden that has been shovel-VNLPPHG WR GH¿QH IHDWXUH OLPLW

Table 2). So even as people were beginning to grow maize, of course they still collected shellfsh and other wild species. Adjacent to this habitation area of the site was a Fort Walton cemetery with high-status burials that was used through the contact period (White et al. 2012).

When I began surveying in this valley, I was surprised to see oyster shell piles along the lower Chattahoochee, on roadsides or in the middle of the woods. This is some 150 river miles inland, but the fresh nature of the shell and the associated complete drinking vessels (metal ones) indicated modern trash disposal. I learned that hunters love to bring sacks of oysters and drinks to have while they sit and wait for game. But this modern practice illustrates well how shell midden piles get made – just throw it all on the ground and move on!

Freshwater Shell Strata

Next in the shell midden typology are the riverine sites with thick freshwater shell strata. These must have been made up of lots of the same kinds of small piles, as people stayed

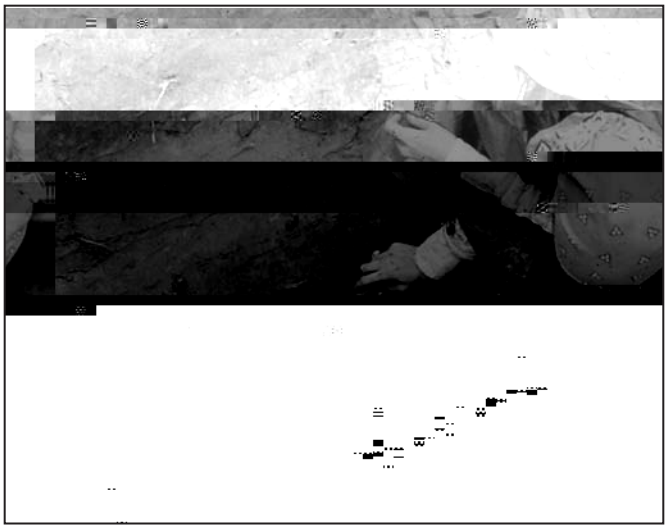

Figure 4. The author in the mud cleaning a small shell feature visible at the top of the lower dark Fort Walton midden zone at the Curlee site (8JA7); above the feature is a lighter, nearly culturally sterile layer and above that, another dark midden zone.

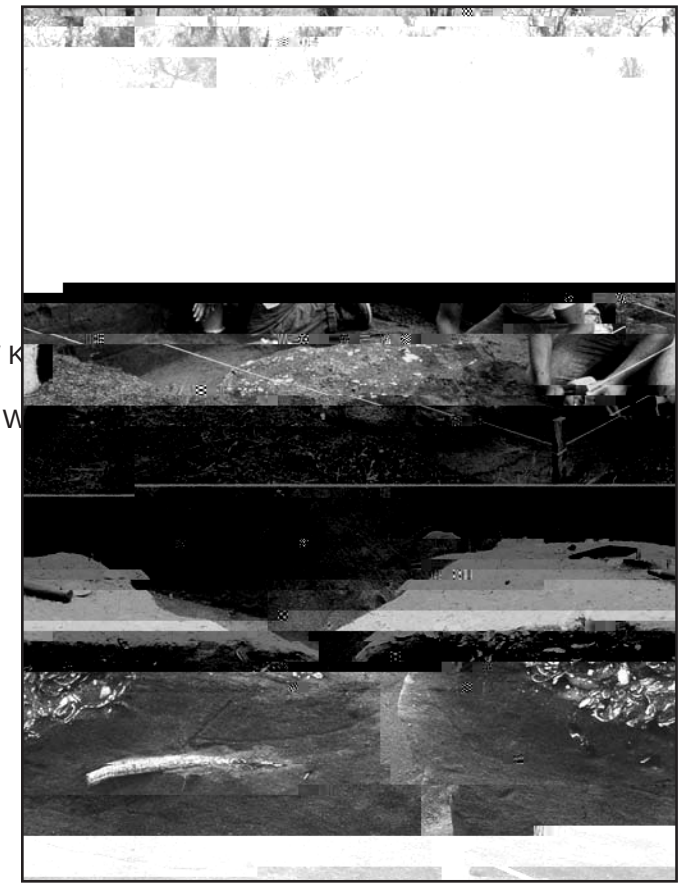

Figure 5. Shell feature at the Corbin-Tucker site (8CA142), with Maggie Goetze and John Kato digging in the 2-x-2-m unit placed around the feature; after pedestaling and cross-sectioning it is seen as a refuse pit with the top spread by the plow (large white root is at lower right of the feature; trowel points north).

longer, even year-round, or returned seasonally or otherwise often over the years. Multiple deposit episodes through time left piles that merged into layers with a wide horizontal extent.

Clusters of such sites are on the lower Chattahoochee at its con f uence with the Flint, in Seminole County, Georgia. Here, thick shell midden ridges along stream banks and grouped around springs were full of check-stamped pottery (White 1981:32-84), though we often do not know if it is Deptford (Early Woodland) or late Weeden Island (Late Woodland) or from some other time period. Farther upriver the same kinds of sites are numerous along old river meanders. The Arnold Soybean Field site (8JA204) measures about 80 m, with dark midden soil and projectile points ranging from Archaic to Mississippian in age, as well as Middle Woodland Swift Creek pottery; the 35-m spread of shell within the wider midden was the area where the crops grew less vigorously (White 1981:218-220).

The Mercer site (8JA233), also on the lower Chattahoochee (White 1981:239-244), was a similar dark midden with a large area of shell on the northeast side. It was f rst exposed when the land was cleared of forest to plant watermelons, and though collectors got to it before the archaeologist, they shared their information. The site produced a Tallahassee point, Archaic and Woodland points, and check-stamped, Carrabelle Punctate, and Swift Creek Complicated-Stamped pottery, all of which indicate multiple components (at least Middle and Late Woodland and Archaic). The shallow midden stratum was disturbed by plowing at the top but had small undisturbed concentrations of shell below the plow zone, with bigger sherds—suggesting primary deposits of garbage piles or pits.

The Mercer site illustrates well another aspect of such shell middens: many (including some of the individual piles noted above) are far from the modern river channel on old meanders. They were probably right on the bank before the river moved, and might even provide good geomorphological data. Or they could have been on the bank of cutoff meanders, oxbow lakes that still had some f ow, where shell f sh might still be available. The Mercer site is today 2 km west of the main river channel. The SBSY site (9SE32) is another freshwater shell midden stratum right on the lower Chattahoochee riverbank (White 1981:509-512) with a shell layer 60 cm thick that is visible from a boat out in the river (Figure 6). Its ceramics indicate a Middle to Late Woodland age.

The Otis Hare site (8LI172) along the middle Apalachicola is a large freshwater shell midden washing out of the bank; data from test excavations are still being analyzed in the USF lab. The north end of the site had a meter-thick black midden stratum packed with shells, which merged horizontally into a dark brown midden stratum without shell at the south end. The entire midden was buried under 1 to 1.5 meters of historical alluvial deposits. Diagnostics indicated continual occupation from Early Woodland through Fort Walton. Included were typical domestic stone and ceramic artifacts, Middle Woodland exotics such as a cut-mica arrowhead and a quartz crystal fragment, cut cane fragments, and coprolites. At the bottom of this deep midden we uncovered a feature indicating where the f rst people to arrive dug into the culturally-sterile pale sand to leave a small pit full of shell (Figure 7), with Swift Creek sherds and charcoal dated to cal. A.D. 550. Possibly more than other kinds of archaeological information, this feature shows how the site began as a single episode of burying shell f sh trash in a pit.

Summary of Interior Riverine Shell Middens

Freshwater shell middens dot the Apalachicola-lower Chattahoochee valley all the way down to about 35 km (straight-line distance) inland. As seen in Figure 1, there is a gap in the upper part of the lower valley, but it is probably due to survey bias since there has been less work in this area as

access to the backwater swamps and myriad small streams is difficult. Furthermore, the heavy deposition of alluvial sand in the lower valley and standing water over much of it means that archaeological sites are often buried and/or submerged.

All these shell middens noted so far contain freshwater bivalves and gastropods. Some even have a newly named species of unionid river mussel that is now extinct and known only from prehistoric archaeological sites in this valley. The Apalachicola Ebonyshell,

et al. 2000). It is unclear what habitat or other differences there might be between the two clams that would result in their differential distribution in estuarine shell middens, though both temperature and salinity might be factors.

Most of the marsh clam middens also have a small percentage of oyster shells. Oyster (*Crassostrea virginica*) usually lives farther out in the bay, in slightly saltier water, with a salinity between 6 and 35 ppt, the optimal range being 10-18 ppt (Puglisi 2008). As the ranges of all three species overlap, they may reflect fluctuating conditions near one site or (possibly less likely) deliberate choices of aboriginal collectors. Salinity changes by season or with tides or after storms may have meant that people inhabiting or coming to the same place for a long time or repeatedly just kept getting whatever species was available and dumping the shells, building up the living space. The relative frequencies of these three species of molluscs have yet to be extracted from the site reports and subjected to fine-tuned investigation.

no evidence of deliberate design or indication of ceremonial

component in between. The deepest deposits (over 165 cm) may represent a preceramic Archaic component that could not be sampled due to inundation. The shell was packed solid, difficult to dig except with picks, and so excavated in 15 cm arbitrary levels. Zooarchaeological specimens recovered from the small number of flotation samples indicated that the upper two levels were dominated by marsh clam and the deeper ones by oyster until Level 9 (135 cm depth), which was little over half oyster and nearly 40 percent clam.

Given the assumption (not yet testable) that people got whatever resources were closest, the original interpretation after the 1987 testing was that the local environment had been farther from the fresh water of the river during the Late Archaic, meaning saltier local environments and collection of mostly oysters. Then as sea level continued rising in the later Holocene, backing up the mouth and forcing the river to migrate eastward, more fresh water was brought nearby, so that more marsh clam was available. But the dewatering in 1993 permitted the sampling down through Level 9, where more marsh clam and other remains of freshwater fauna were mixed with the species from more salty habitats. So the relationships of fluvial processes and human systems are more complex than expected. Within even the tiny faunal samples able to be analyzed, zooarchaeologists Karen Walker (1988) and Arlene Fradkin (1994) identified some 70 taxa of creatures obtained by the inhabitants at Van Horn Creek. One of these was snow goose, which shows up only in winter, suggesting that season of occupation, but far more comparative work remains to be done with the rest of the samples. The site did have one feature, a pit 50 cm in diameter, 45 cm deep, extending from the surface in one unit (Figure 11), that contained all marsh clam shells with a very small coating of blackish sandy clay, as opposed to surrounding oyster shells which were in a browner slimy clay. The radiocarbon dates came from Levels 10 and 11, which also produced fiber-tempered sherds. Besides ceramics, the artifacts included clay balls and chert microtools relating to the Poverty Point or Elliott's Point adaptations of the Late Archaic farther west along the Gulf and up into northeast Louisiana.

Sam's Creek Cutoff shell mound (8FR754), the second estuarine oyster midden, even farther to the east, was even more submerged, protruding barely 50 cm above the surrounding marsh (White 2003). It was all of oyster (only 19 marsh clam valves recovered) and all Late Archaic, with fiber-tempered pottery, clay balls, and microtools. An AMS radiocarbon date on unburned, tufa-mixed fiber in a sherd was cal. 2292-1942 B.C. Unexpectedly, this site also had a feature, a skeleton of a young or teenaged woman only 2 to 20 cm deep, with no grave goods or indications of a burial pit. The skeleton was in an unusual position, partially flexed on the right side but with the face turned away to the left, one or both hands under the body, and both femurs broken. Similar to the burial at Yellow Houseboat shell midden, it looked like someone who was left in the garbage pile, possibly under atypical circumstances. But this site's overwhelmi þ ¤ ţ sit & À

Figure 11. Test Unit 5 at Van Horn Creek shell mound (8FR744), with biologist Woody Miley, then director of the Apalachicola National Estuarine Research Reserve, at left and geologist Joe Donoghue, then of Florida State University, at right. View facing northwest; Miley's hand marks the boundary in the north wall between the upper stratum dominated by marsh clam and the lower deposits of oyster. To his left in the west wall is a large pit in which the clam deposits extend some 45 cm below the surface.

(Deptford, Swift Creek-early Weeden Island) constructed with shell lenses and strata over or under burials with exotic grave goods. Our work at Pierce included cleaning and backfilling looter trenches in Pierce Mounds C and A, and testing in Singer Mound, all of which had such oyster shell layers or lenses, as well as strata of yellow sand and gray sand. These construction practices suggest possible ceremonial use of midden refuse – or maybe just use of a convenient fill material that was close at hand and, with its lime content, might alleviate the smell and decomposition of the dead. Preliminary examination of deposits from both the midden ridge and mound fill indicate they are full of artifacts and animal bone typical of domestic refuse. But placing a lens of shell over or under a Woodland grave might have been a ritual practice full of symbolism that we simply do not understand.

On the east side of the oval of mounds at Pierce, the Fort Walton village is centered by a temple mound made of oyster shell from the midden (Figure 12). Moore (1902:228) did not even consider it worthy of being named, simply calling it a shell heap, but Willey (1949:280) recognized its deliberate construction as a flat-topped mound. It was mostly destroyed by the building of the adjacent railroad bed in the early twentieth century, as well as recent looting. It has not been tested, but all-terrain vehicle ruts up the sides of it do offer views of its construction material, which seems to be all oyster shell and black sand throughout, with Fort Walton ceramics and animal bone garbage. At present it is not possible to see the use of shell in building this admittedly probably ceremonial structure as anything but utilitarian; it is the closest and toughest building material. Test excavation is necessary, as well as comparison of the detailed composition of shell midden samples taken from other parts of this site. Waselkov (1987:148) has noted how some domiciliary or temple mounds are known to have been "constructed using old shell middens from earlier occupations.... All such activities seem to have been motivated by a desire to create interpretive difficulties for archaeologists."

East of the Fort Walton component at Pierce are at least three other burial mounds: Cemetery Mound (8FR21), Mound Near Apalachicola (8FR20A), and Shell Mound Near Apalachicola (8FR20B), which were all or partially built of oyster shell. These are now destroyed and we can only learn a little more from surface collection around where they were, since the location is in a modern cemetery. Shells from these

the idea that Middle Woodland people camped here or left the oyster shells, but clearly later prehistoric Fort Walton people also inhabited the campsite, and harvested at least the oyster that provided the late dates.

The curious relationship of burial mound and slightly unusual shell midden might be compared to that of the Jackson Mound (8FR15), an Early-Middle Woodland burial mound on a small stream in the lower Apalachicola just 1.5 km north (upriver) from the Pierce mounds complex. We began investigating what remained of it in 2013, and also examined the adjacent marsh clam shell midden (Jackson Midden, separately numbered 8FR77). The sand mound contained Swift Creek and early Weeden Island pottery and exotics with burials (Moore 1902:213-236). The midden had been bulldozed for planned housing, but it must have been the occupation site for people who used the burial mound. However, it is only that short distance away from the extensive oyster midden ridges è 1902: m M

those of the other parts of Apalachicola Bay system. Instead of oyster or clam, the shell middens around St. Joseph Bay are dominated by large gastropods, mostly lightning whelk, *Busycon sinistrum* (formerly *contrarium*), and horse conch, *Triplofusus giganteus*. Sites range from individual piles of these large shells to continuous linear shoreline middens presumably made up of such piles (White 2005). Two islands out in the bay (Black's Island, 8GU11, and Conch Island, 8GU20) consist entirely or partially of large-gastropod shell midden.

The Lighthouse Bayou site (8GU114) has 16 individual shell piles ranging in age from prehistoric Fort Walton through protohistoric Lamar times. Piles are as small as 1.5 m in diameter and as large as 20 x 10-m ovals. The site is on the south side of the bay near a swale that fills seasonally with fresh water and in a place where winter cold causes sea turtles caught in the bay to swim south and potentially end up easily in human hands.

The 2013 USF field school investigated the Wildfire site (8GU229), which had only two small shell piles, one Fort Walton and one Lamar (Novell and White 2013). The latter pile had been destron

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facing north; about 25 percent of the pile remains unexcavated beyond the northwest wall (under the gloves).

Certainly natives mining their own or earlier shell middens for construction materials have altered tremendously or removed these sites over thousands of years as well. But the remaining archaeological record does show that nearly all the archaeological sites known on the coast are all or partially shell middens – not unexpectable when the resource is so abundant.

So far the data from both the estuarine clamshell middens and the coastal oyster middens overwhelmingly inform us about subsistence practices. More comparative work is needed to see how different they are from shell midden sites elsewhere in Florida and all along the Gulf Coast, not to mention the Atlantic. For exAy ᵰcon ή A ɿ M Floris ΰ t " ҵ ʀ Ӆ iew

Figure 14. Test Unit B, north wall, at Richardson's Hammock site (8GU10), showing continuous stratum of large-gastropod shell midden in black sand, overlying culturally-sterile white dune sand (large root is in foreground).

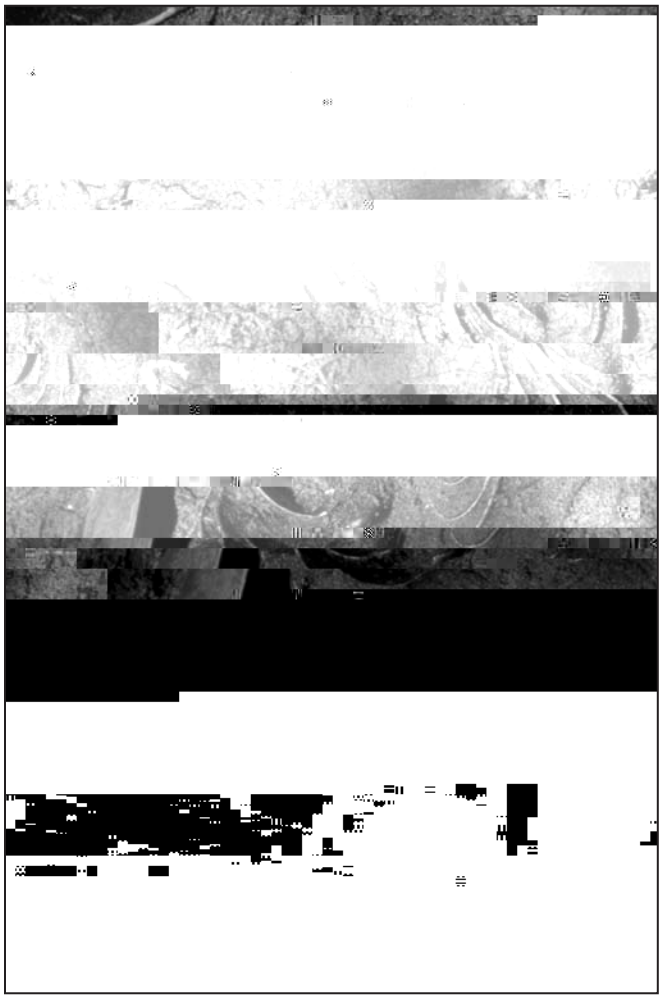

Figure 15. Unusual feature in Test Unit A at Richardson's Hammock site (8GU10): an arc of sunray Venus clamshells (ritual deposit, child's play, or something else?).

midden deposits for later construction, both for lenses and strata in Early-Middle Woodland burial mounds and for building a Fort Walton temple mound at Pierce. Whether these were sacred deposits in ritual architectural fabrication is not yet known. Surely the mounds served as monuments of some kind, perhaps drawing later people back to reoccupy, maybe also to honor the ancestors.

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Discussions

In sum, for the Apalachicola/lower Chattahoochee valley of northwest Florida, south Georgia and Alabama, shell middens range from one meal's garbage pile to thick strata, ridges, and mounds. The typology includes inland middens of river mussels and snails, estuarine and bayshore middens of marsh clam and oyster,

A huge amount of work remains to be done in the Apalachicola-lower Chattahoochee region along the lines of shell midden studies elsewhere in the South (e.g., Peacock 2000). This includes measurement of individual shells, calculations of size, shape, and relative frequency variations of different species over time, comparison with modern natural species assemblages to show ecological change or cultural change in dietary preferences, and exploration of the possibilities of prehistoric overexploitation of different shellfsh beds. Archaeological shells could show effects of past and modern land-use practices to address current management issues such as impacts of agricultural runoff, stream channelization, impoundment through dams, and so on. Results can be useful, often unexpected; for example, Peacock and coauthors (2013) determined how an Arkansas stream that is still free-fowing and relatively unmodifed has modern shellfsh assemblages that are not much changed from what is evident in the prehistoric shell midden sites along it. A major goal, then, should also be good applied anthropology.

Construction, Intent, and Ideology

Many researchers now emphasize ideological and political aspects of shell middens in the southeastern U.S., how they can be special places for ritual and feasting, and monuments symbolizing political power (e.g., Gibson and Carr 2004; Randall 2008; Randall et al. 2014; Thompson and Andrus 2011). Similar fndings come from elsewhere in the world, especially with the benefit of bioare of m T M

In the lower Apalachicola delta, the rare use of shell for special construction in Early and Middle Woodland burial mounds and a temple mound could also be utilitarian if it is the closest, cheapest building material available, or it could be ritual that we are far from understanding. Humanistic speculation is fun, and certainly there were social differences and complex religious practices throughout prehistory. During eight months of study in Borneo (in 2007 and 2014), I witnessed how coastal and riverine indigenous groups still make astoundingly diverse assemblages of complex fishing gear of bamboo and rattan (and now plastic strip) in all shapes and sizes, for many different kinds of aquatic environments. Incorporated into these utilitarian objects are designs symbolizing concepts beyond the mundane, relating to beliefs about esthetic, social and magical things. Had we a Florida site with preserved fishing nets, traps, baskets, weirs, and other devices, which could all have been made of sturdy river cane, wood, and other fibers, we probably would appreciate more the kinds of subsistence pursuits that the people who created shell middens might have undertaken on a daily basis. If the shape of the artifact or the pattern woven into it had a ritual symbolism, then people also might have had daily spiritual or other non-material reminders of the abundance of their rich aquatic environments. In short, I am very willing to say that shell middens and activities represented by them probably served sacred or spiritual functions, but cannot do so without convincing scientific evidence.

Social and Economic Aspects

Related to issues of ideology and monument-building is the socio-political organization of peoples who left shell midden sites in the Apalachicola-lower Chattahoochee region. Given the great time depth and spatial expanse, social systems must have varied from small seasonal groups of foragers to centrally-organized village agriculturalists, since the sites range from Late Archaic through Fort Walton in age, and interior riverine to coastal in location. The lack of domestic structure patterns or any other kind of social indicators beyond mound burials makes speculation difficult. As noted, settling on the bay or Gulf coast, with its reliable aquatic resources, may have meant more sedentary and complex social systems, even without an agricultural foundation, in the Apalachicola region, as in many other parts of the world (Álvarez et al. 2011:3-4; White 2014:237), though archaeological evidence for what constitutes native hierarchies is always controversial. Similarly, whether shell midden/mound construction might have been “a symbolic strategy to link people together in regional alliances or to demarcate territories...necessary only where population levels were high and competition for resources was intense” (Anderson et al. 2007:463), is an

Summary

Future work on shell middens in the Apalachicola-lower Chattahoochee valley should utilize fne-scaled individual site data to establish models of landscape, demographic and local population changes and social intensifcation, responses to climate change, and natural processes that modify the archaeological record, from sea-level fuctuations to storm activities to stability in coastal landforms. A frst step is establishing the typology upon which to base models. A recent example of this in Australia (Morrison 2013) defnes three broad types, based on stratigraphy and composition: light shell scatters; low shell mounds up to 30 cm thick, with little internal layering, overlying natural strata; and 'classic' shell mound deposits with complex stratigraphy. The last type shows patterns of shifting local discard through time, so that repeated midden deposition in a specifc area leads to the formation of new mounds, which then coalesce further to form large elongated mounds and ridges (Morrison 2013: 178-179). Given this classifcation, new data can then be compared and the model refned.

The recent trendy archaeology attributing the building of mounded shell middens to the ritual purposes of native leaders striving for wealth and power provides explanation that is not yet scientifcally testable, and ignores the sophisticated abilities of Native Americans to develop strategies for practicals

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