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Mussel Remains from Prehistoric Salt Works, Clarke County, Alabama

Stuart W. McGregor[1,*] and Ashley A. Dumas[2]

Abstract - Archaeological research at salt springs in Clarke County, AL (Tombigbee River drainage), documented bivalve mollusk exploitation by late prehistoric American Indians. A total of 582 valves representing 19 species of freshwater mussels (Unionidae) and an estuarine clam (Mactridae) from the Lower Salt Works Site (ca. A.D. 900–1550) and 41 valve fragments representing 6 mussel species from the Stimpson Site (ca. A.D. 1200–1550) were documented. The Lower Salt Works fauna was dominated numerically by *Fusconaia ebena* and *Quadrula asperata*, the dominant species reported during recent local surveys. The mussel species represented are known from medium to large streams in sand and gravel habitats and include four federally protected species and other species of conservation concern in Alabama. Results offer comparative data for other archaeological and ecological studies in the region.

Introduction

Freshwater mussels (Bivalvia: Unionidae) are relatively sedentary, benthic, gill-breathing, filter-feeding organisms. They were once exploited by prehistoric people as a source of food, adornment, and implements and, more recently, as a commercial resource in the pearl button and cultured pearl industries. Over the past few decades, their collective value as indicators of water quality and as tools for evaluating long-term trends in ecosystem function and health have become evident due to their longevity and tendency to take up toxins (Bogan 1993, Farris and Van Hassel 2007, Naimo 1995). Mussels also serve as an important food resource for many animals. Extensive analysis of mussel remains recovered from 17 archaeological sites from the lower and upper reaches of the Mississippi River Basin and the Cumberland, Green, Scioto, and Tennessee river systems present evidence that Indians exploited mussels for over 10,000 years (Bogan 1990). Furthermore, Stansbery (1966) documented that as early as 6000 B.C. people settled near the mussel-rich riffles of larger streams in the Ohio River Basin. An analysis of the soft parts (meats) of two mussel species, *Actinonaias ligamentina* (Lamarck) (Mucket) and *Potamilus alatus* (Say) (Pink Heelsplitter), collected from 15 locations in rivers of varying size in the Midwest indicated that they yield very few calories compared to other animals available for consumption at that time and thus may have been a supplemental resource (Parmalee and Klippel 1974). A recent study of mussel assemblages from twenty-three sites in the interior Middle South revealed that the consumption of freshwater mussels

[1]Geological Survey of Alabama, PO Box 869999, Tuscaloosa, AL 35486. [2]Center for the Study of the Black Belt, Station 45, University of West Alabama, Livingston, AL 35470. [*]Corresponding author - smcgregor@gsa.state.al.us.

by Southeastern Indians actually peaked during the Woodland period (ca. 700 B.C.–A.D. 1000), probably as a response to increasing population pressure on local subsistence resources. Comparisons of the species from sites along different portions of major rivers showed that Woodland people collected mussels only from beds adjacent to their villages (Peacock 2002). Furthermore, after analyzing collections from the central Tombigbee River in eastern Mississippi, Peacock (2000) demonstrated that mussel assemblages from archaeological contexts do not display any collection bias for certain species or sizes. The implication is that, if a collection of mussels from an archaeological site is large enough and obtained from a variety of contexts, it can be representative of mussel communities in the past.

The existence of mussels is tenuous and dependent upon suitable habitat, acceptable water quality and quantity, and appropriate host fish species for obligate parasitic larval stages (Dillon 2000). Man's activities across the landscape have had profound effects on the native mussel fauna and their hosts, especially during the past few centuries, but also from prehistoric activities (Peacock et al. 2004). The influence of the more recent activities has been well documented (for reviews see Bogan 1993, Lydeard and Mayden 1995, Neves et al. 1997). Increased international travel and commerce have also led to the introduction of competitive exotic species such as *Corbicula fluminea* Müller (Asian Clam) and *Dreissena polymorpha* Pallas (Zebra Mussel), which have had significant effects on native mussels in some areas of North America (Strayer 1999).

The Mobile River Basin (MRB) historically supported 73 species of mussels, including 52 in the Tombigbee River system (Williams et al. 2008). Recent surveys indicate that more than 20 species persist in the main channel Tombigbee River in Alabama and over 40 species persist in tributaries of the upper Tombigbee River in Alabama and Mississippi (McGregor and Garner 2001, 2002, 2003; McGregor and Haag 2004; McGregor et al. 1999). Significant anthropogenic impacts to the MRB over the past 100 years, including impoundment, eutrophication, sedimentation, pollution, and channel modification, caused the decline in this fauna (McGregor and Haag 2004; Williams et al. 1992, 2008). Currently, 17 species of mussels in the MRB are recognized as endangered or threatened by the US Fish and Wildlife Service (USFWS) (Williams et al. 2008). Additional species lacking federal protection but of conservation concern in Alabama were given a designation of highest conservation concern or high conservation concern by Mirarchi (2004) based on documented or perceived trends in abundance and/or distribution. Other species were assigned diminishing levels of conservation concern (moderate, low, lowest conservation concern).

The recent accelerated decline of the MRB fauna has been well documented over the past century through comparison of results of extensive field surveys to historically collected museum material, and efforts to reverse that trend have been enacted through legislation of protective measures. However, there is relatively little documentation of prehistoric mussel faunas for further evaluation of possible population declines or expansions, shifts in population centers, or potential extinction events. With some notable exceptions, most archaeological projects emphasize other aspects of Indian culture, while shell material encountered is often given only cursory consideration. This is likely due, at least in part, to the complexity of mollusk taxonomy and its changing nomenclature, which often make identification of even fresh material problematic, compounded by loss of identifying characters as material weathers in situ. Considerable experience with mussel taxonomy and a reliable reference base are paramount for reliable mussel identification.

The vast and complex mussel assemblage of the Tennessee River system, unparalleled anywhere else in the world, has fueled interest in that fauna for many years. Due to massive archaeological salvage efforts funded by federal aid projects prior to closure of numerous mainstem and tributary dams by the Tennessee Valley Authority in the mid-20th century, abundant shell material from that region was preserved for research (e.g., Morrison 1942, Webb 1939) and extensive additional archaeological research has also been conducted (Hughes and Parmalee 1999, Little 2000). However, that is not the case in the MRB. It is one of the most diverse systems in terms of freshwater mussels (Williams et al. 2008), yet displays a dearth of in-depth prehistoric information on mussel distribution and abundance. Some notable exceptions include Curren (1976), Peacock (1998, 2000, 2002), Peacock et al. (2004), Quitmyer (2003), and Woodrick (1983).

Recent archaeological research in the region of salt springs in southern Clarke County, AL (lower Tombigbee River drainage) (Fig. 1), has uncovered evidence of the use of mussels by several distinct culture groups, from the Late Woodland (A.D. 400–1000) to Mississippian (A.D. 1000–1550) periods. Prehistoric Indians are known to have evaporated saline spring water to acquire salt during drier months (Brown 1980). This practice began at the end of the Late Woodland period (ca. A.D. 1000), probably as a means to enhance the nutritional value of diets that relied increasingly on maize and less on sodium-rich fish and game (Brown 1980, Dauphinée 1960). The volume of salt production increased during the subsequent Mississippian period in order to supply growing local populations and for long-distance exchange with people without salt resources (Brown 1980, Dumas 2007). In the winter of 2004–05, the junior author conducted archaeological excavations at the Lower Salt Works (1Ck28) (A.D. 900–1550) and Stimpson (1Ck29) (A.D. 1200–1550) sites under the auspices of the Gulf Coast Survey (GCS), Alabama Museum of Natural History. The purpose was to gain a better understanding of the process of salt production and the cultural identities of those involved in it. Remains of mussels were frequently encountered during excavations.

Analysis of species assemblage patterns from different occupation zones could offer some insight into the mussel fauna available to late prehistoric Indians in the lower Tombigbee River portion of the MRB and serve as a benchmark for comparison to present-day species. It should be kept in mind that excavations rarely involve the recovery of every part of a site, so the resulting artifacts are a sample of the materials left behind. The mussels from a particular feature, for example, probably represent only one short-term collecting event. A better collection would include mussels from a variety of contexts across a site, creating more of a "time-and-space-averaged" sample (Peacock 2000). Nevertheless, inventories of any mussel collection not only provide insight into mussel diversity and portions of dietary choices at particular times in the distant past, but also offer comparative data to current populations of mussels within the same watershed.

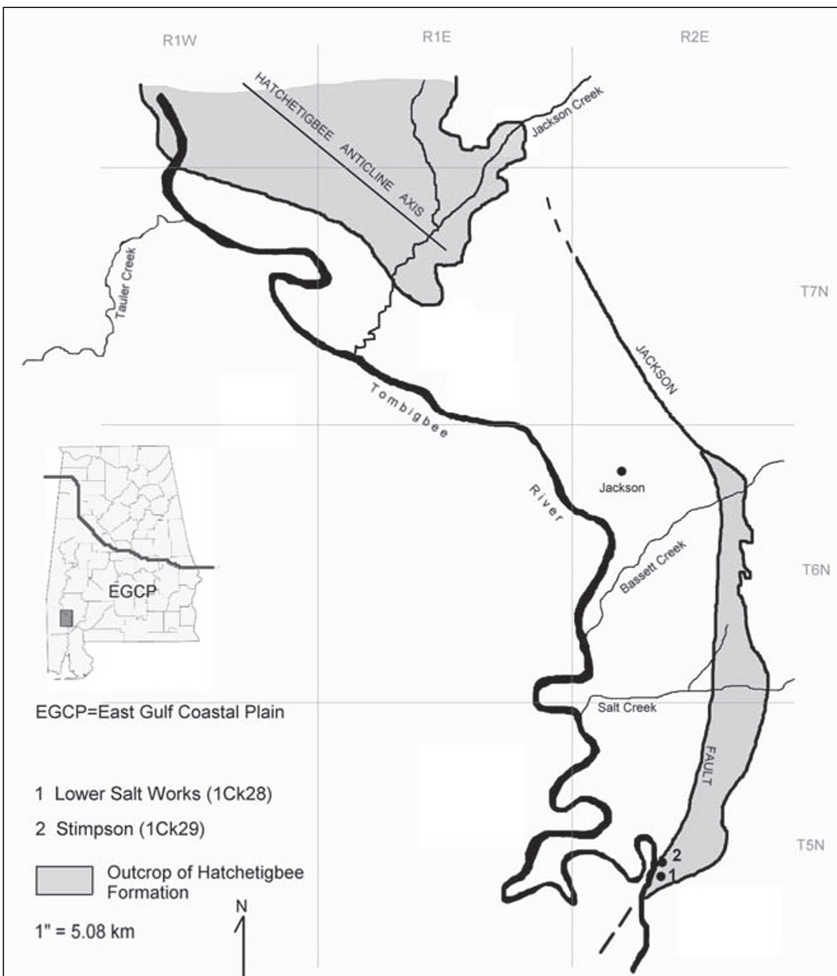

Figure 1. Locations of the Lower Salt Works and the Stimpson sites and nearby features in relation to the Hatchetigbee anticline and the Jackson fault system, Clarke County, AL (modified from Dumas 2007).

Study Area

Numerous salt springs are located in the lower Tombigbee River drainage of the East Gulf Coastal Plain (EGCP) in southwest Alabama and are derived from salt-bearing deposits (see Fig. 1). These formed when sea water evaporated from the margins of the ancestral Gulf of Mexico during the Upper Jurassic period (170–140 million years ago). This left behind tremendous deposits of salt and other evaporite minerals that eventually became covered by other sediments and were buried deep beneath the land surface (Landes 1960, Lefond 1969). Because salt is less dense and more plastic than surrounding rocks, it tends to migrate toward the surface. In southwest Alabama, upward flow of the Louann Salt formed the Hatchetigbee anticline, a broad, low lying fold about 80 km in length and 30 km in width. Associated with the anticline is the Jackson fault system, which extends north from the Tombigbee River near the project area to 6 km northwest of Jackson (Barksdale 1929, Copeland 1968, Fenneman 1938; Fig. 1).

Connate water that originates from the vicinity of salt deposits sometimes is pushed up through faults and fissures by pressure of the surrounding rock and emerges as salt springs or seeps (Landes 1960, Raymond 1981). Salt springs are common along the Hatchetigbee anticline and the Jackson fault system. Many of them bubble up with a boiling effect due to the natural gas that also is trapped underground. Salt water from these springs probably lacked sufficient flow rates to reach the Tombigbee River and likely never affected its salinity. However, brackish water from Mobile Bay periodically encroaches inland as far as Jackson, Clarke County (Smith 1988). A saline wedge was documented 48 km upstream of Mobile Bay by Robinson et al. (1956), who found that in the lower Mobile River, when river discharge was below a daily average of 6000 cubic feet per second (cfs), tidal conditions were the dominant influence on saline intrusions, while with a daily average discharge of over 6000 cfs, river discharge was the driving force.

The Lower Salt Works Site is located 0.5 km from the pre-lock-and-dam channel of the Tombigbee River and 1 km from the current cut-off channel, within the floodplain and at the base of a bluff, and is therefore susceptible to floods during high-water events. The Stimpson Site also is 0.5 km from the original channel and about 1.5 km from the current river. The slightly higher elevation of Stimpson meant that it may not have flooded as easily. However, it is located on the banks of Limestone Creek, a meandering third-order stream that has impacted the landscape at the site through the deposition of alluvium.

Materials and Methods

The Lower Salt Works Site was chosen for excavation because it was known to have been used by several different prehistoric Indian cultures for acquiring salt (Dumas 2007). A 2.54 cm–diameter soil corer was used to conduct probe tests into the low knolls and narrow terraces that surround the salt springs. These areas likely were the only places that were high and flat enough to have supported the activities related to evaporating brine without being threatened by potential flood waters. Unfortunately, later nineteenth-century settlers and Confederate soldiers also found these locales convenient for acquiring salt, and their activities disturbed the underlying prehistoric remains. In an effort to find intact prehistoric strata, a 1- x 2-m excavation unit was placed on the slope of a knoll. No salt-making activity areas were located, but the refuse associated with such activities was found to have accumulated on the slope. Individual layers were excavated using hand trowels, and the soil was screened through 1.3-cm-square wire mesh. Artifacts were processed at the laboratory of the GCS. Material from each layer was processed and analyzed separately. The cultural affiliations of the people who created the deposits, as well as the relative age of the deposits, were determined by examination of the style and form of pottery. As a means to refine the chronology of the deposits, two radiocarbon samples were obtained from wood charcoal and sent to Beta Analytic, Inc., in Miami, FL, for analysis.

Activity at the Stimpson Site included excavation of three 2-x 2-m units and one 2- x 5-m block of units. Mussel shells were present in small amounts in most units, but only those from one context have been analyzed. A small refuse pit or post mold was discovered in the profile of one unit and was found to be entirely filled with shells.

In the absence of soft anatomy, only shell characters were available to aid in species identifications, and were in various states of erosion. Identifications were made using best professional judgment based on characteristics of currently recognized taxa, and with frequent comparison to reference specimens. Thus, it is possible that different valves with similar features, or those representing currently unknown taxa, were misidentified. Due to the eroded nature of the shells making positive matches of opposing valves problematic, total numbers of valves are reported rather than total numbers of individuals. Nomenclature follows Williams et al. (2008). All material analyzed from both sites is curated in the GCS.

Results and Discussion

Each group that exploited the salt left behind a thick layer of refuse, consisting primarily of broken pottery, with minor amounts of faunal material, which, along with the lack of human remains and unarticulated (unpaired) shells, suggests that these were not mortuary facilities, but rather food and refuse deposits (Peacock 2002). An aggregate total of 582 valves representing 19 species of mussels (Bivalvia: Unionidae) and *Rangia cuneata* (Atlantic Rangia) (Bivalvia: Mactridae) were collected from the Lower Salt Works Site (Table 1). An additional 41 valves representing six species of mussels were collected from the Stimpson Site (Table 2). Shells of both aquatic and terrestrial snails (Gastropoda) were also collected and are archived at GCS, but their abundance and frequencies were minimal and they were not analyzed. Furthermore, it is not known if the terrestrial snails were exploited for food or were naturally occurring. While these collections provide a glimpse

Table 1. Aggregate totals of shell material collected in each layer of the Lower Salt Works Site (1Ck28) and current conservation status of each species (Mirarchi 2004).

Taxa[1]	Cultural layer (number of valves[2]/% total for each layer)					Totals
	A	B	C	D	E	
Order Unioniformes, Family Unionidae						
Amblema plicata (Say) Threeridge – P4	-	1/2.00	5/2.82	10/2.89	-	16/2.7
Ellipsaria lineolata (Rafinesque) Butterfly – P4	-	-	-	1/0.29	-	1/<1.0
Elliptio arca (Conrad) Alabama Spike – P1	-	-	5/2.82	1/0.29	-	6/1.0
Elliptio crassidens (Lamarck) Elephantear – P5	-	-	2/1.13	5/1.45	-	7/1.2
Fusconaia cerina (Conrad) Southern Pigtoe – P5	-	1/2.00	1/0.56	7/2.02	-	9/1.5
Fusconaia ebena (I. Lea) Ebonyshell – P5	-	29/58.00	108/61.02	184/53.18	4/44.44	325/55.8
Glebula rotundata (Lamarck) Round Pearlshell – P3	-	-	1/0.56	-	-	1/<1.0
Lampsilis straminea (Conrad) Southern Fatmucket – P4	-	-	1/0.56	4/1.16	-	5/<1.0
Lampsilis teres (Rafinesque) Yellow Sandshell – P5	-	-	1/0.56	3/0.87	-	4/<1.0
Obliquaria reflexa Rafinesque Threehorn Wartyback – P5	-	-	2/1.13	1/0.29	-	3/<1.0
Obovaria unicolor (I. Lea) Alabama Hickorynut – P2	-	2/4.00	1/0.56	3/0.87	-	6/1.0
Pleurobema decisum (I. Lea) Southern Clubshell – E, P2	-	1/2.00	9/5.08	20/5.78	-	30/5.2
Pleurobema perovatum (Conrad) Ovate Clubshell – E, P1	-	-	-	3/0.87	-	3/<1.0
Pleurobema taitianum (I. Lea) Heavy Pigtoe – E, P1	-	7/14.00	8/4.52	9/2.60	1/11.11	25/4.3
Potamilus purpuratus (Lamarck) Bleufer – P5	-	-	1/0.56	-	-	1/<1.0
Quadrula apiculata (Say) Southern Mapleleaf – P5	-	-	4/2.26	2/0.58	1/11.11	7/1.2
Quadrula asperata (I. Lea) Alabama Orb – P5	-	8/16.00	28/15.82	82/23.70	2/22.22	120/20.6
Quadrula metanevra (Rafinesque) Monkeyface – P3	-	-	-	3/0.87	1/11.11	4/<1.0
Unidentified unionid valves	-	73	230	221	1	525
Unidentifiable unionid fragments	X	X	X	X	X	X
Order Veneroida, Family Mactridae						
Rangia cuneata (G.B. Sowerby) Atlantic Rangia	-	21/2.00	-	8/2.31	-	9/1.6
Specimen totals per layer/% aggregate total for all layers (identifiable valves only)	-	50/8.59	177/30.41	346/59.45	9/1.55	582

[1]Current status of the species: E = federally listed endangered, Priority (P)1 = highest conservation concern, P2 = high conservation concern, P3 = moderate conservation concern, P4 = low conservation concern, P5 = lowest conservation concern.

[2]X = present but not tallied.

of the fauna available to and selected by occupants of the sites, they cannot be relied upon to absolutely define the mollusk fauna present at that time. A sample in excess of 2000 valves (based on large series of samples with 40–45 species) is considered the minimum needed to find all but the rarest of species (Bogan 1990). In his assessment of bias in archaeological mussel assemblages, Peacock (2000) had a minimum of 2891 valves from a number of contexts from any one site. Furthermore, most species reported herein are associated with gravel and sand substrates in shallow habitat (easily accessible and easy to harvest) as opposed to species more commonly associated with soft mud or silt habitats or deep pools (not easily accessible without specialized gear and more difficult to harvest).

At the Lower Salt Works, five intact cultural layers were examined and are believed to represent debris associated with prehistoric salt production. Representing the order of their deposition, Layer E is the oldest and Layer A is the youngest (Fig. 2). Layer A had been disturbed by historical activities, so its contents are not considered to have much cultural or chronological value and will not be discussed further. The mussel content of Layer E is

Table 2. Aggregate totals of shell material collected at the Stimpson Site (1Ck29) and current conservation status of each species (Mirarchi 2004).

Taxa[1]	# valves/% of total
Order Unioniformes, Family Unionidae	
Elliptio crassidens Elephantear – P5	1/2.43
Epioblasma penita Southern Combshell – P1	1/2.43
Fusconaia cerina Southern Pigtoe – P5	1/2.43
Fusconaia ebena Ebonyshell – P5	36/87.8
Lampsilis straminea Southern Fatmucket – P4	1/2.43
Quadrula asperata Alabama Orb – P5	1/2.43
Specimen total	41

[1]Current status of the species: E = federally listed endangered, Priority (P)1 = highest conservation concern, P4 = low conservation concern, P5 = lowest conservation concern.

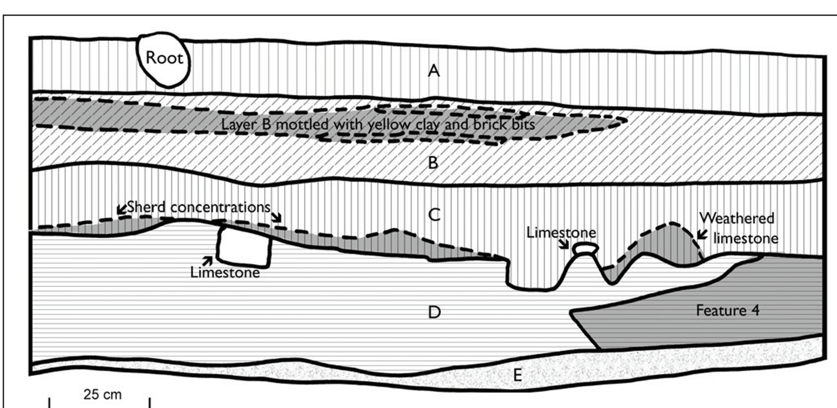

Figure 2. Cross-section of the west wall of the 1- x 2-m excavation unit at the Lower Salt Works Site (1Ck28), showing layers A–E (Dumas 2007).

probably from a refuse pit whose associated artifacts suggest that it was formed during the Late Woodland period, between about A.D. 600 and 900. A charcoal sample from Layer D, also Late Woodland, yielded a calibrated radiocarbon date of A.D. 900–1010 (Dumas 2007). Layers B and C were deposited during salt-making activities by Mississippian people, who also were known to collect mussels as a food source. However, they also used crushed mussel shell as a primary tempering agent in their pottery. Based on the decorative styles of associated artifacts, Layer C dates to about A.D. 1000–1250, while Layer B was created between about A.D. 1250 to 1400 (Dumas 2007).

There were only nine identifiable valves from Layer E, but they represent species well-represented in other layers (Table 1). Layer D had the largest number of mussel remains (n = 346; 59.5% of the aggregate total) and the most diverse species assemblage (n = 17). While Layer C yielded a similar number of species (n = 15), it represented only 30.4% (n = 177) of the aggregate total. These findings, while admittedly not sufficient for meaningful statistical analysis, follow the findings of Peacock (2002), who reported that 70% of mussel remains from 23 archaeological sites in the Tennessee and Tombigbee river systems, totaling 203,581 valves, were found in Woodland contexts and suggested that, based on the number of Woodland period shell assemblages in the literature, that pattern likely holds true throughout the Southeast. Although it is possible that some shells were used as tools or ornamentation (Morgan 2003), their special-purpose use would not have affected the proportions of represented species in the assemblage (Peacock 2000). The lower number of representative species in Layer B (n = 8) and number of specimens (n = 50; 8.6% of the aggregate total) could be due to smaller sample size yielding fewer shells. In general, these figures demonstrate a temporal decline in shell deposition at the Lower Salt Works. This drop may be explained, at least in part, by inferred habitation patterns at the salt works, and not necessarily by per capita consumption. The Late Woodland people, associated with Layer D, appear to have lived at or near the site year round, whereas the later Mississippians occupied the area only seasonally, based on other archaeological evidence (Dumas 2007). The sharp decline in mussels deposited in Layer B may be a reflection of the fact that Mississippians at this time did not live at the salt springs but occupied the surrounding region. They probably were able to make daily salt-making trips and then return home for meals. Additionally, although their salt-boiling vessels included crushed shells, the vessels were small enough to have been made at home and then transported to the salines, thus reducing the likelihood that mussels in Layer C were related to making pottery.

Most mussel species reported in this study are known to occupy stable gravel and sand habitats in medium to large rivers in the MRB (Mirarchi 2004). Four federally endangered species, *Epioblasma penita* (Southern Combshell), *Pleurobema decisum* (Southern Clubshell), *Pleurobema perovatum* (Ovate Clubshell), and the *Pleurobema taitianum* (Heavy Pigtoe), and two species of conservation concern in Alabama, *Elliptio arca* (Alabama Spike) (highest) and *Obovaria unicolor* (Alabama Hickorynut) (high), were recovered during this study but not reported from this area during recent surveys (McGregor and Garner 2001, 2002, 2003; McGregor and Haag 2004; McGregor et al. 1999), though Mirarchi (2004) reported that the Heavy Pigtoe still occurs in very restricted populations in the Alabama and Tombigbee rivers. The decline of these species is probably due to habitat alteration and changes in water quality. It is interesting to note that while certainly far different levels of effort were employed by prehistoric Indians (likely wading and handpicking shallow gravel bars and shorelines or free-diving shallow pools) as opposed to recent surveys (diving to extreme depths for extended periods with a surface air source and a light source), the two most commonly encountered species during this study, *Fusconaia ebena* (Ebonyshell) (55.8%), and *Quadrula asperata* (Alabama Orb) (20.6%) (Tables 1, 2), were also the most commonly encountered species during recent nearby investigations (33.8% and 22.4%, respectively) (McGregor and Garner 2003). This finding is consistent with results of Bogan (1990), who reported that mussel communities at a given place may remain stable in terms of species richness and abundance over periods of as long as 6000 years, as determined from an exhaustive analysis of the mussel faunas represented in numerous archaeological investigations in the Mississippi River Basin. It also follows the hypothesis of Peacock (2002) that if human populations achieved the extent surmised, then the mussel species recovered at a given archaeological site should have been collected nearby. It is interesting also to note that many shells collected during this study were smaller than typical adult shells of those species collected recently (S.W. McGregor, pers. observ.). Whether this finding is an expression of age or size selection for palatability or ease in transport, or is a reflection of changes in ambient temperature and concomitant changes in food availability, or whether elevated nutrification during recent times has accelerated shell growth in some species, is unknown. Similar observations have been made at other archaeological sites in eastern North America, including those reported by Matteson (1960), Peacock (2000, 2002), Peacock and James (2002), and Quitmyer (2003). From a statistical comparison of measurements between modern and archaeological mussels, Peacock (2000) determined that there actually are not as many small specimens as perceived.

The presence of the Atlantic Rangia in levels B and D is rather interesting. Mussels from a Woodland archaeological site on the Tombigbee River can be assumed to be locally collected and not imported from a distant source (Bogan 1990, Peacock 2002). Rangia is a brackish water species and only penetrates inland as far as wedges of salt water intrude into freshwater streams and deliver its free-swimming veligers (larvae), usually reaching farther inland during droughts (Swingle and Bland 1974). Adult Rangia can survive but cannot reproduce in freshwater. It has been reported as far inland as the vicinity of Bottle Creek in the upper Mobile Delta, about 40 km upstream of Mobile Bay (Quitmyer 2003, Swingle and Bland 1974). The Lower Salt Works are located about 70 river km farther inland than Bottle Creek, but Smith (1988) reported that brackish waters from Mobile Bay occasionally encroach as far as Jackson, 20 km farther up the river, thereby providing the necessary mechanism to deliver veligers. However, Rangia was not encountered in the vicinity recently (McGregor and Garner 2001, 2002, 2003; McGregor and Haag 2004; McGregor et al. 1999), and no records exist from earlier historical collections in this vicinity (Paul Hartfield, USFWS, Jackson, MS, 2008, pers. comm.). Documented changes in sea stands and concomitant changes in inland river levels have been implicated in altering the distribution of many species, including mussels in inland rivers (Little 2000), and Rangia may have periodically occupied the study area. Rangia may have also succumbed to subtle alterations to the habitat by agricultural Mississippians or early European settlers. It is possible, though unlikely, that they may have been acquired through trade.

The nearby Stimpson Site has cultural components that suggest it was contemporaneous with cultural Layer B at the Lower Salt Works. However, the materials from Stimpson have not been fully analyzed. The shell-filled pit or postmold feature yielded 41 valves (Table 2). Like the Lower Salt Works, the species list from this feature was dominated by the Ebonyshell (n = 36; 87.8%). However, valves of two species not encountered at the Lower Salt Works Site were recovered: the Elephantear and the Southern Combshell. The Elephantear is a widespread and abundant species, while the Southern Combshell is a federally endangered MRB endemic (Williams et al. 2008). The mussel-filled pit is an interesting glimpse of a single mussel-gathering and subsequent depositional episode at the Stimpson Site.

Summary and Recommendations

Five distinct stratigraphic layers covering about 800 years of occupation, likely representing food and refuse deposits, were excavated at two sites in southern Clarke County, AL, to evaluate their salt-making components. Activities of early 19th-century settlers and Civil War era salt makers disturbed one layer, rendering it irrelevant. Remains of 19 primarily shoal-dwelling mussel species and 1 brackish water species were recovered from the remaining layers and include four federally endangered species and two additional species of conservation concern in Alabama. None of the six imperiled species were reported from the vicinity during recent sampling efforts, likely due to subsequent habitat alteration. Shallow water species dominated the assemblage, possibly due to harvest bias. A consistent temporal decline in mussel exploitation at one site, possibly due to changes in settlement patterns, was documented. While the aggregate sample set was insufficient for meaningful statistical analysis, the information gleaned provides a glimpse of a food resource available to late prehistoric salt makers. Completion of the Stimpson Site analysis and comparison to faunal remains from other archaeological investigations in the MRB could offer a better picture of selection and exploitation of mussels by prehistoric Indians. It is hoped that this analysis will help to further refine distributional information on mussels in the basin, both in prehistory and today.

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