
THE THORNHILL LAKE ARCHAEOLOGICAL RESEARCH PROJECT: 2005-2008

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The Thornhill Lake Archaeology Research Project (TLARP) was initiated in 2005 with the purpose of gathering data related to the construction of earthen and shell mortuary mounds and other forms of monumental architecture by Mount Taylor period hunter-gatherers in the St. Johns River Valley (SJR/V). Much of the effort put forth in this project was focused on the Thornhill Lake Complex, a group of mounds and midden deposits within the Lake Monroe Conservation Area (LMCA) and managed by the St. Johns River Water Management District (SJR/WMD). Though a single site in reality, the different components of the site (two earthen mounds, three earth and shell ridges, and extensive midden deposits) have been given individual site numbers: 8VO58, 8VO59, and 8VO60. Site designations notwithstanding, this complex has the potential to provide baseline information to begin addressing a number of issues related to the construction and use of earthen and shell mounds, sand mortuary mounds, and shell ridges during Mount Taylor times (7300-4600 cal. B.P.). As part of the TLARP archaeological survey work was carried out within the LMCA in order to locate previously unrecorded archaeological resources. Beyond the above stated research potential, this work also contributes to our knowledge of chronology, settlement, subsistence, and technology during the Mount Taylor period. Additional questions concerning how later Orange and St. Johns peoples used this site and the landscape within the LMCA has also been recognized through this research.

This paper presents preliminary results of the TLARP from 2005 to 2008 with an emphasis on excavations at the Thornhill Lake Complex. I begin with an introduction to the project area and a sketch of the natural environment. Following this, background information on the Thornhill Lake Complex, principally previous investigations and other known sites within the LMCA, are reviewed. Next, the results of archaeological reconnaissance survey and general observations regarding site components and environmental settings are presented. Following the discussion of the survey work, the results of excavations at the Thornhill Lake Complex are considered. Last, the results of the TLARP are discussed and I put forth suggestions for future research.

Project Area and Environment

The LMCA is located on the eastern side of the St. Johns River south of Lake Monroe and east of the outlet of

Lake Jessup in southwestern Volusia County (Figure 1). The project area lies within the Eastern Valley physiographic province between the Osceola Plain, the Deland Ridge, and the Geneva Hill. Measuring 7,390 acres, the LMCA makes up approximately 90 percent of the floodplain of Lake Monroe (SJR/WMD 2003). Within the LMCA wetlands account for 94 percent of the total land area within its bounds and consist primarily of floodplain marsh and wet prairie. The remainder includes a number of ecological communities and forest among these are prairie hammock and scrubby flatwoods. Poorly drained soils predominate throughout the LMCA with most belonging to the Bluff-Tequesta-Astor soil series (USDA 1980). Large expanses of land within the LMCA, largely the marshes and floodplain, are characterized by Bluff Sandy Clay Loam, Gator Muck, and Terra Ceia Muck. Somewhat better drained soils are present in upland areas north of the St. Johns River and associated marshes. Overall wetlands dominate the landscape of the LMCA. The most extensive are the floodplain marshes and wet prairie associated with the St. Johns River, Brickyard Slough, Snake Creek, Hickory Creek, and Thornhill Lake. Numerous small wetlands are present throughout the interior of the LMCA as well.

Background

Previous Investigations

Previous research at the Thornhill Lake Complex and the LMCA is limited. Perhaps the earliest reference to the Thornhill Lake site is Jefferies Wyman's (1875:44) brief mention of "two sand mounds and midden below Black Hammock" on his list of sites visited along the St. Johns River. Though on his list, Wyman makes no mention of having excavated at the site. Clarence Moore is responsible for the most extensive excavations at the Thornhill Lake Complex. Moore made two trips to Thornhill Lake, the first in December 1892 and the second in January 1894, resulting in the publication of two articles (Moore 1894a, 1894b). Both articles present the results of Moore's work at the site. The first publication is brief, describing the placement of excavations in the mounds, stratigraphic observations, and the nature of the burials encountered. Moore is struck by the lack of pottery in the mounds. Believing his work to be insufficient to understand these mounds he planned another visit to conduct additional excavations.

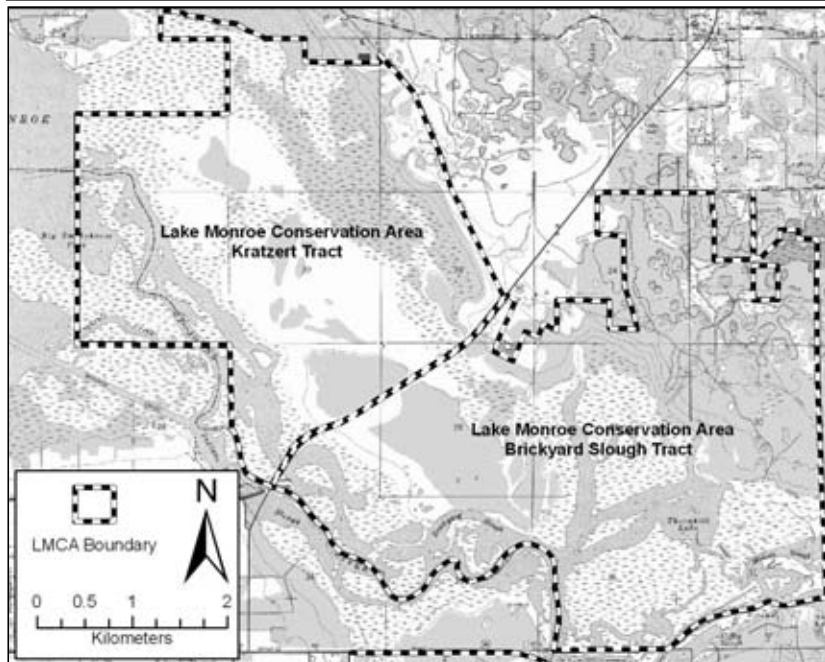


Figure 1. The Lake Monroe Conservation Area. USGS Osteen 1980 quadrangle map.

Upon his return to Thornhill Lake Moore reports the "total demolition" of the Mound A and the excavation of the center of Mound B (Moore 1894b:67). Compared to his first round of excavations, his second was more productive and provocative. Excavation in Mound A revealed the presence of burials accompanied by bannerstones, pendants, polished stone beads, and both tubular and disc-shaped shell beads (Figure 2). Stone used to manufacture the bannerstones, pendants, and polished stone beads include greenstone, steatite, and jasper – all exotic materials coming from sources outside of peninsular Florida. Exotic materials such as these were obtained through exchange networks that were established throughout the eastern United States during the Middle Archaic and lasted into the Late Archaic (Goad 1980; Jefferies 1996). Moore clearly describes the association of bannerstones, pendants, and beads of stone and shell with burials in both mounds. He also notes the virtual absence of pottery in Mound A and the total absence of pottery in Mound B, an occurrence that, along with the association of bannerstones with burials in mounds, was never before encountered by him during his work along the St. Johns River.

An interesting fact was uncovered during the course of the background research for the TLARP through a reading of Moore's field notes and draft versions of his publications – in addition to his excavation of the mounds, Moore (1892:88-90) also excavated in the nearby midden deposits. These excavations are never discussed in either of Moore's publications dealing with the site. A total of five excavations were placed into the midden. Little in the way of material culture was recovered and includes a modest assortment of stone, bone, and shell tools. Moore reports finding pottery within a foot and a half of the ground surface. He makes no remarks regarding the nature of the types of pottery present. The occurrence of hearths or "fireplaces" and faunal remains also are noted. Likely Moore's decision not to report his excavations into the midden stem from the lack of interesting artifacts. Nevertheless, his stratigraphic descriptions and observations regarding the vertical distribution of pottery at the site have proven valuable to the current research.

No mention of work at Thornhill Lake is to be found in the archaeological literature subsequent to Moore's. However, Goggin (1952:51-53) does discuss this site and Moore's work in



Figure 2. Bannerstones, pendants, and beads recovered by Clarence Moore from Mounds A and B at Thornhill Lake.

relation to his “unclassified complex” and notes the occurrence of bannerstones and jasper beads at the site. Archaic period artifacts such as bannerstones found in sand burial mounds did not lead to them being interpreted as Archaic period burial mounds, but as Woodland period St. Johns I mounds with “heirlooms” from earlier times included. Today archaeologists are more receptive to the existence of Archaic period mounds and it is now recognized that the mounds at Thornhill Lake belong to the Mount Taylor period of the SJRV (Mitchem 1999:30; Piatek 1994; Russo 1994; Wheeler et al. 2000).

Excluding the current research, the only other archaeological investigations at Thornhill Lake and the LMCA was a field visit by Conservation and Recreation Lands (CARL) archaeologist Christine Newman (1998) in response to reports of looting at the site. According to Newman the mounds were in good condition and that the looting was approximately a year old and was not active. In fact, Newman states that Mound A was not “demolished” as Moore (1894b:167) indicates but was, in fact, in relatively good condition, noting that there were likely intact deposits and burials within the mounds (Newman 1998:2).

Previously Recorded Sites

Six previously recorded archaeological sites are present within the LMCA (Figure 3). The best known of these are the two mounds (8VO58 and 8VO59) and shell midden (8VO60) that make up the Thornhill Lake Complex. Three other previously recorded sites are also within the boundaries of the LMCA: Beck Slope (8VO446), a probable St. Johns II period midden; an unnamed aboriginal canoe (8VO447); and the Thornhill Lake Canoe (8VO7218). Since little is known about these three other sites, and no work was conducted at them during the TLARP between 2005-2008, they will not be further discussed in favor of focusing attention on the sites newly discovered during survey in the LMCA.

Survey Results

Archaeological survey within LMCA began in 2005 and resulted in the identification of nine previously unrecorded sites (Table 1, see also Figure 3). Six of the nine newly discovered sites are primarily or exclusively prehistoric and

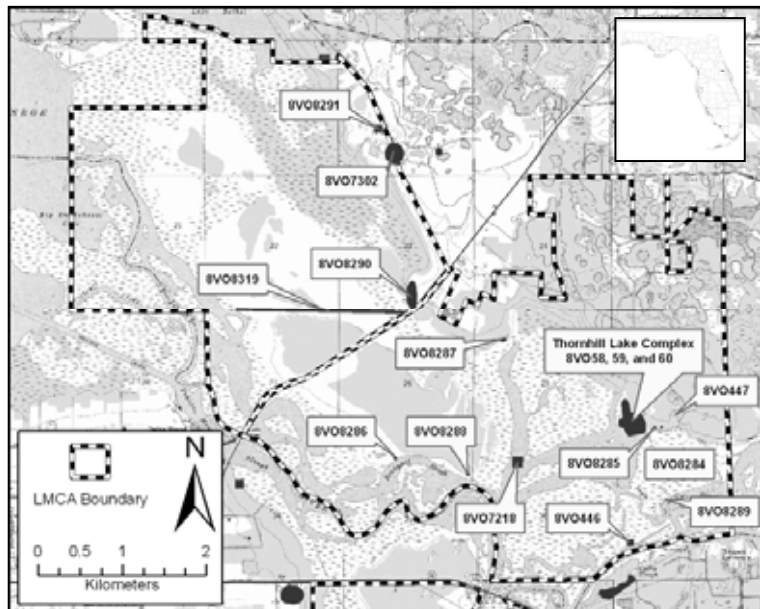


Figure 3. Archaeological sites within the Lake Monroe Conservation Area discussed in the text.

Table 1. Newly recorded archaeological sites in the Lake Monroe Conservation Area.

Site No.	Name	Type	Components
8VO8284	Mother's Day Lithic Scatter	Lithic Scatter	Mt. Taylor
8VO8285	Thornhill Prairie Site	Midden (bone only)	Mt. Taylor?, Orange
8VO8286	Brickyard Slough Midden	Shell Midden	Orange, SJ I, SJ II
8VO8287	Thornhill Marsh Midden	Midden (bone only)	Mt. Taylor, Orange, SJ Indet.
8VO8288	Twin Pygmy Rattler Midden	Shell Midden	Orange, SJ Indet.
8VO8289	Hickory Slough Midden	Shell Midden	SJ Indet.
8VO8290	Nix Farmstead	Farmstead	Late 19 th Century/ Early 20 th century
8VO8291	Lowe Farmstead	Farmstead	Late 19 th Century/ Early 20 th century
8VO8319	Kratzert Logging Road	Road	Early 20 th Century

SJ I—St. Johns I, SJ II—St. Johns II, SJ Indet.—Indeterminate St. Johns

consist of five middens and one lithic scatter. Where historic components are present, they are ephemeral and date from the late-nineteenth to mid-twentieth centuries. For purposes of this paper, the prehistoric sites are the focus. Two historic sites (8VO8290 and 8VO8291) are homesteads associated with Reed Ellis, a former Volusia County surveyor, truck crop farmer, and businessman and his descendants. The homesteads are located within the Kratzert tract of the LMCA (Stine 1998). Additionally, a historic logging road (8VO8319) dating to the 1930s was identified through aerial photographs and historic documents (Stine 1998). Several archaeological occurrences consisting of single lithic artifacts also were identified and occurred in close proximity to newly recorded sites found during this research.

Middens discovered during survey work were all found in prairie hammock environments and adjacent to open channel creeks, sloughs, or marshes. Three of the middens (8VO8286, 8VO8288, and 8VO8289) are composed of shell and are limited in extent horizontally and vertically. One site, the Thornhill Marsh Midden (8VO8287), produced a small amount of shell that is localized while the remainder of the deposits at the site are characterized by shell-free midden. Thornhill Prairie (8VO8285) is similar to the Thornhill Marsh Midden (8VO8287) although initially the former was determined to be a lithic scatter (Endonino 2007:38-41). Additional testing at 8VO8285 through the placement of a single 1 x 2 meter test excavation unit revealed the presence of shell-free bone midden and Orange Plain pottery. Although located in close proximity to the Thornhill Lake Complex, shell deposits, which are pervasive at the latter, are totally lacking at the Thornhill Prairie site. The relationship of the Thornhill Prairie and the other newly discovered sites to each other is explored later in this paper.

Orange and St. Johns components were identified at three of the new middens while Hickory Slough Midden (8VO8289) lacks an Orange component. A limited St. Johns II presence is registered at the Brickyard Slough Midden (8VO8286) by a single sherd of St. Johns Check Stamped pottery but is absent at all the others. A single low-density lithic scatter was recognized during testing within the LMCA at the Mother's Day Lithic Scatter (8VO8284) and consisted of a limited assemblage of lithic waste flakes and tool fragments. This site represents the only one of this kind yet identified in the LMCA.

The Thornhill Lake Complex

Work at the Thornhill Lake Complex emphasized topographic mapping and limited test excavation. Collecting these data allow for an assessment of the site's temporal and cultural association as well as site function within a research framework that seeks to understand the emergence and use of monumental architecture (i.e. sand mounds and ridges of earth and shell) during the Mount Taylor period. However, before addressing these issues, an assessment of the site was solely needed considering that the only archaeological work at Thornhill Lake was Moore's excavations in the late nineteenth century. Brass tacks archaeology must be undertaken if any

discussion of Archaic mortuary mounds and purposefully constructed shell ridges is to be meaningful.

Topographic Mapping

A topographic map of the Thornhill Lake Complex was generated using a Nikon DTM310 total station and commercially available mapping software (Figure 4). Through the mapping efforts of the TLARP, the first detailed map of an Archaic mortuary complex in the SJRV was produced and revealed the form of the site's principal features as well as other features that escaped notice by Moore and are not readily apparent on the ground due to dense foliage. Among these are a shell knoll east of Mound A and a shell ridge connecting Mounds A and B. These are discussed in more detail below. Moore never produced a map of this site but he describes the Thornhill Lake Complex as consisting of two earth and shell mounds oriented in a north-south fashion. At the northern end of Mound B, he indicates that two parallel shell ridges converge and are oriented north-south. To the west of the mounds and ridges bordering Thornhill Lake, Moore (1892:89) describes a crescent-shaped midden deposit with its "horns" pointing toward the water. Lying between the mounds and Thornhill Lake are shell fields.

Mound A

Mound A is the southernmost of the two mortuary mounds. Moore (1894a:88) describes it as symmetrical in form, presumably round in plan, and having a circular platform at its top. He indicates that this is the larger of the two mounds at the site and measures, by his estimate, 11 feet (3.4 m) in height with a circumference of 425 feet (129.5 m). Compared to Mound B, Mound A does have a greater circumference. However, Mound B now attains a greater height by virtue of the fact that Moore dug extensively into the center of Mound A and is responsible for its reduction in height. Evidence of Moore's excavation is visible in both the mound center and on the northwestern slope. A depression is observed at the southern end of the mound summit and on the northwestern side of the summit is a spoil pile, associated with Moore's excavations in the mounds center or its northern slope, possibly both. The remnants of the in-filled trench Moore dug on the "northern slope" can be seen as a somewhat broader, flatter area on the northwestern side of the mound.

Mound B

Moore (1894a:89) describes Mound B as measuring 8 feet 10 inches (2.7 m) high and 295 feet (89.9 m) in circumference. Today this mound is conical in shape and its summit is more or less flat, though Mound B is overall smaller and less flat than Mound A. No evidence of Moore's excavation in the center Mound B or the trench he dug on the western slope of the mound are discernible and stand in marked contrast to Mound A. Topographic mapping revealed an interesting feature apparently not recognized or described by Moore: a ramp is present on the northwest side of Mound B and aligns nicely

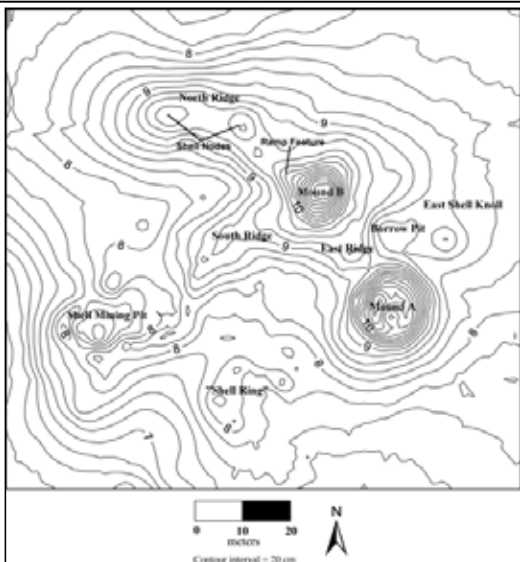


Figure 4. Topographic map of the Thornhill Lake Complex, 8VO58, 8VO59, and 8VO60.

with the southeast end of the North Ridge. The ramp is distinct from the North Ridge itself, and this is clearly visible in the congruity of the contour lines of the ramp and their contrast with the ridge topography.

North Ridge

The North Ridge begins at the northwest side of Mound B. Initially the North Ridge has a generally southeast-northwest orientation and aligns with the ramp on the northwest side of Mound B. At the northwest end of the southeastern segment of the North Ridge is a small shell knoll, and at this point it reorients and takes on a west-northwest heading. Approximately 25 meters west-northwest of this first feature is a second shell knoll about the same size. To the north and northeast a low terrace edge is visible both on the topographic map as well as on the ground. Beyond this low terrace edge no midden deposits are to be found and the vegetation indicates a transition to a wetlands environment.

South Ridge

Beginning on the southwest side of Mound B, the South Ridge runs in a southwesterly fashion and appears to be aligned with the mounded midden deposits at its westernmost end bordering Thornhill Lake. In comparison to the North Ridge, the South Ridge appears somewhat wider and has a crest that

seems to taper from the northeastern end near its juncture with Mound B toward the southwest. About midway between Mound B and Thornhill Lake the ridge truncates and becomes narrower and lower in elevation but still maintaining its general southwestern orientation. Approximately where the ridge narrows an in-filled depression is present and may possibly be one of Moore's pits. This can not be proven conclusively and other causes are certainly possible, both cultural and natural. At its terminus near the mounded shell deposits south of the Shell Mining Pit the South Ridge loses its topographic distinction and merges with the midden adjacent to Thornhill Lake. It is possible that prior to shell mining operations at this location that the ridge was more distinct.

East Ridge

Moore does not specifically note the presence of a shell ridge connecting Mounds A and B. He may not have considered this ridge to be a distinct feature and thought of it only as part of the "shell heap" that the mounds were constructed upon (Moore 1892:91), and this may very well be the case. Nevertheless, this topographic feature has been named the East Ridge. It has a southeast-northwest orientation. On either side of this ridge there is a clearly discernible drop in elevation which contributes to its form and prominence. The depression immediately to the east of the East Ridge is likely a borrow pit for one or both of the mounds.

Borrow Pit

A depression located north of Mound A, southeast of Mound B, and west of the East Shell Knoll was identified during mapping, contrasting noticeably with the topographic features in the vicinity. Possibly this is the source of at least some of the sand material used to construct one or both of the mounds. Because of this feature, the height of nearby Mound A is somewhat exaggerated when viewing it from its northern side. Moore (1894a:89) notes that the height of Mound A appears higher as the result of a depression on its south side. Mapping of the complex shows no depression to the south of Mound A and thus it appears that Moore was in error regarding which side of the mound the depression is located.

East Shell Knoll

During excavations in the winter of 2007 a small and distinct mounded shell deposit was identified in the dense vegetation located to the east of the mounds. Previously it was assumed that all of the mounded shell deposits at the site had been documented. This feature is spatially isolated and quite distinct. It measures approximately 25-30 meters in diameter and approximately 50 centimeters in height. In form the East Shell Knoll is reminiscent of the two shell knolls on the North Ridge.

"Shell Ring"

Located to the southeast of the Shell Mining Pit and northwest of Mound A on the western edge of the site, is another notable topographic feature. Based on a visual inspection and the topographic map presented here, this feature can be best described as a small ring-shaped midden deposit. The origins of this feature are somewhat enigmatic but ultimately may be attributable to shell-mining operations during the twentieth century. A similar but more pronounced type of disturbance is associated with a shell mining pit on the western side of the site.

Shell Mining Pit

Another site feature is a shell mining pit dug into the mounded midden deposits on the far western edge of the site bordering Thornhill Lake. This feature is a more or less circular pit dug down into midden deposits that are approximately 2 meters in height. Considering its origins, it seems appropriate to call this cavity the "Shell Mining Pit." An apron of intact midden deposits surrounds it and is most easily discerned on the north and west sides. To the south and east of the Shell Mining Pit are remnants of the South Ridge. A breach in the apron is discernible to the southwest and might be attributed to the use of a dragline during mining operations. The Shell Mining Pit and the location where the dragline cut through the apron were clear and distinct shortly after the hurricanes of 2004 when elevated water levels in the St. Johns River caused Thornhill Lake to rise and filled the borrow pit and the dragline trench, giving it the appearance of a "keyhole." Concreted midden is present at the bottom of the pit and is visible in

several places. Currently it is not clear who mined the shell or when. A local historian from Deland, Bill Dreggers (personal communication, July 2007) has indicated that Volusia County may have been responsible as they had mined several other sites on the east bank of the St. Johns for road fill during the early- to mid-twentieth century. Another possibility is that Reed Ellis or other Ellis family members mined the shell after they had acquired the land.

Excavations

Excavations at Thornhill Lake were geared toward the exposure of stratigraphic profiles and the recovery of organic materials for radiometric dating. Through the exposure of stratigraphic profiles in Mounds A and B as well as the North, South, and East Ridges and the "Shell Ring," it was believed that physical evidence for intentional construction would be obtained. Radiometric dates would provide the time frame for construction. Zooarchaeological specimens and samples of material culture also were obtained in order to provide additional evidence for site-related activities. Thirteen test units were placed in key site features: Mounds A and B; the North, South, and East Ridges; shell deposits adjacent to the Shell Mining Pit; and the "Shell Ring" feature at the site's southern end near Thornhill Lake (Figure 5).

Stratigraphy and Chronology

Perhaps the most significant contribution of the TLARP is the demonstration of mound construction for the explicit purpose of burying the dead members of Mount Taylor society. These contributions were made through the exposure of stratigraphic profiles and eight radiocarbon dates (Table 2). Regarding stratigraphy, approximately four millennia of pottery-making culture is confined within 50 centimeters of the ground surface and can be characterized as a shell-free midden. Beneath this shell-free stratum is an extensive shell midden deposit approximately 1.5 meters in thickness and in some places as much as 2 meters thick. Underlying this shell midden deposit is an organic sandy soil that appears to be a buried ground surface. Beneath this is sterile gray sand and, in a few locations, clay.

Excavations in Mounds A and B were carried out on the lower slopes of each in order to avoid human remains and burials that are reported from the mound cores by Moore (1894a, 1894b). Three of the four units were terminated at depths of approximately 50 cm below surface and failed to produce the stratigraphic data sought. However, the units did produce disturbance related to Moore's excavations and the bioturbative processes related to historic cattle ranching and citrus cultivation. This was especially evident in TU-A where disturbance related to Moore's work was clearly discernible in the unit profiles. One test unit, TU-D, was placed in the ramp feature on the northwest side of Mound B, and revealed strata lacking pottery and produced a carbon sample that, along with the sample from TU-A, figured prominently in the establishment of the time frame for mound construction at Thornhill Lake.

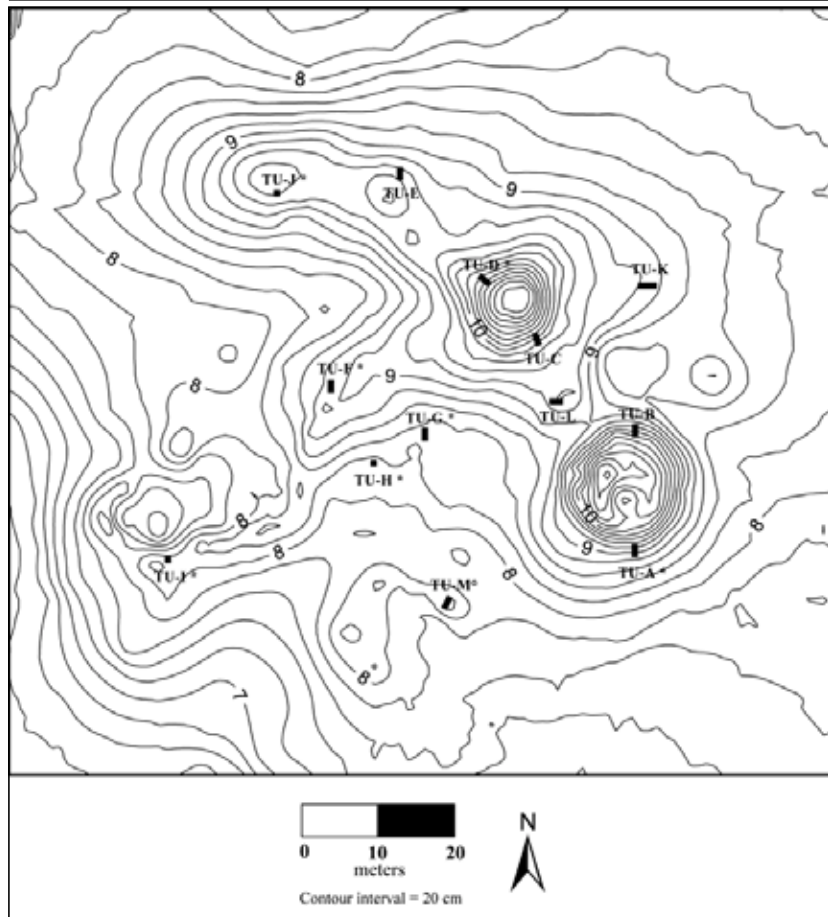


Figure 5. Location of excavation units within the Thornhill Lake Complex.

Profiles from TU-D show three mounded sand strata (Strata II, III, IV) extending from shortly beneath the ground surface down to the top of the shell deposits (Strata V, VI) at the base of the mound (Figure 6). St. Johns ceramics were sparingly recovered in the upper 30 centimeters of the unit, the remaining 60 centimeters of sand deposits and 42 centimeters of midden at the base of the mound are aceramic. An AMS

date of 4970 ± 40 radiocarbon years before present (rcybp) (5860-5600 cal. B.P.) was obtained for the shell deposits at the base of Mound B. Based on this radiocarbon date and the absence of fiber-tempered pottery, a conservative estimate for mound construction between 5600-4500 cal. B.P. is suggested. An AMS date on charcoal from shell deposits immediately beneath mounded sand in the lower southern slope of Mound

Table 2. Radiocarbon dates from the Thornhill Lake Complex.

Beta Lab #	Provenience	Material	$^{13}\text{C}/^{12}\text{C}$ Ratio	Conv. ^{14}C	Cal. B.P.*	Cal. B.C.*
231047	Mound A, shell at mound base	charred material	-22.8o/oo	4170+/-50	4840-4530	2890-2580
231048	Mound B, Str. VI, basal shell	charred material	-26.0o/oo	4970+/-40	5860-5830 5750-5600	3910-3880 3800-3660
231049	South Ridge, TU F, Fea. 7	charred material	-25.1o/oo	4950+/-90	5910-5580 5520-5480	3960-3630 3570-3530
231050	North Ridge, TU I, Str. Va top	charred material	-24.3o/oo	5170+/-40	5990-5900	4040-3940
231051	North Ridge, TU I, Str. VI	charred material	-26.5o/oo	5420+/-40	6290-6180	4340-4230
231052	TU H, Fea. 2, Lvl.2	charred material	-22.7o/oo	5190+/-40	6000-5900	4950-3950
231053	TU H, Str. IV	charred material	-24.4o/oo	5130+/-40	5990-5960 5950-5740	4040-4010 4000-3800
231054	TU I, Str. V	charred material	-26.1o/oo	4430+/-40	5280-5160 5130-5100 5080-4870	3330-3219 3180-3150 3130-2920

* Dates reported at the two sigma calibration

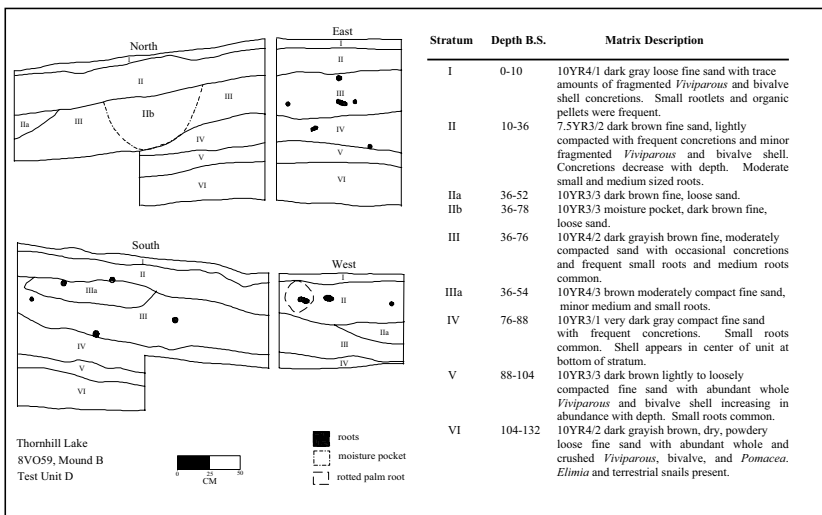


Figure 6. Unit profiles for TU-D in the ramp feature on the northwest side of Mound B.

A produced a date of 4170 +/- 50 rcybp (4840-4530 cal. B.P.) and falls within the suggested date range, though toward the end, for the construction of Mound B. Such a large window for the timing of mound construction is lamentable but, in lieu of dating human remains or marine shell artifacts associated

with burials from the mounds, it is nonetheless sufficient to demonstrate that these monuments are Mount Taylor period constructions. Corroborating evidence for the timing of mound construction is provided by Sassaman and Randall's (2007) bannerstone chronology for the Savannah River Valley

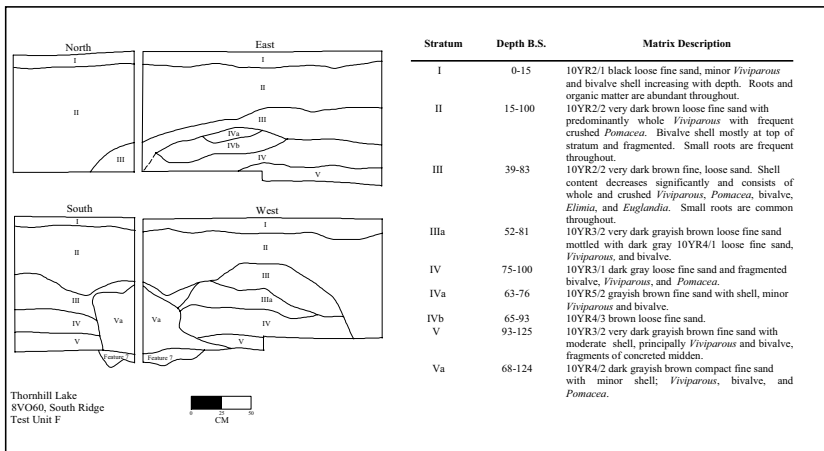


Figure 7. Unit profiles for TU-F in the South Ridge.

in Georgia – the likely source of these artifacts. Based on their chronology, the bannerstones from these mounds date between 5200-4700 cal. B.P. and confirm the general time frame for mound construction indicated by the radiocarbon dates and absence of fiber-tempered pottery.

Excavation in the South Ridge produced unequivocal evidence for intentional construction in the form of alternating strata composed of sand and shell which was later capped by, and subsumed within, a homogenous dark brown sand and shell matrix (Stratum II) that expanded the ridge vertically and horizontally (Figure 7). Orange and St. Johns period ceramics were found in trace amounts within 50 centimeters of the ground surface. Several features, primarily hearths and shallow pits, were encountered at this locus. A hearth (Feature 7) at the base of the mounded sand and shell contained remnants of a charred log and produced a standard radiocarbon date of 4950 +/- 90 rcybp (5910-5480 cal. B.P.) and marks the initiation of construction on the South Ridge. An auger test in the floor of the unit revealed over a meter of additional midden deposits and produced a Newman point at 168-185 cmbs.

Work in the North Ridge also provided evidence for intentional construction. A series of auger tests dug east-west across this feature demonstrate that the shell deposits composing the North Ridge are localized and absent within about 10 meters from its northern and eastern sides. Additionally, the auger tests revealed that the core of this feature is a shell ridge with two distinct nodes, also composed of shell (Figure 8). Sand apparently was deposited on the ridge, filling in the saddles between the shell nodes and Mound B while raising and leveling its surface. An excavation unit on the North Ridge's westernmost node (TU-J) provided two AMS dates. The first of these came from the top of the demonstrably

preceramic shell deposits and produced a date of 5170 +/- 40 (5990-5900 cal. B.P.). The second of these dates from TU-J comes from the sub-midden deposits and dates to 5420 +/- 40 rcybp (6290-6180 cal. B.P.). This last date from the base of the midden deposits marks the initiation of shell deposition in this part of the site.

Excavations in TU-H to the south of the South Ridge revealed the presence of stratified midden deposits and yielded two radiocarbon dates which indicate that the deposits in this location were laid down within a relatively short period of time. The first of the dates was taken from Level 2 of Feature 4, a hearth, and returned a date of 5190 +/- 40 rcybp (6000-5900 cal. B.P.). A second date of 5130 +/- 50 rcybp (5990-5740 cal. B.P.) was obtained from charcoal in the general level midden matrix composed of loose apple snail approximately 20 centimeters above the water table. Although the youngest date occurs stratigraphically below the oldest they are penecontemporaneous when their sigmas are taken into consideration. Test Unit I on the southern edge of the Shell Mining Pit revealed additional stratified midden deposits composed mainly of concreted *Viviparus* and bivalve shell, terminating within a stratum composed of loose apple snail. It was believed that this apple snail stratum and that observed in TU-H were related and a sample of charcoal from it was submitted for dating, returning a date of 4430 +/- 40 rcybp (5280-4870 cal. B.P.). The younger date returned for the apple snail stratum in TU-I demonstrates that these two strata are not related and that the midden deposits located closer to Thornhill Lake are younger than those further to the east – namely the shell ridges and other midden deposits.

Additional excavations have been undertaken in the orange grove east of Mound B, the East Ridge, and the "Shell

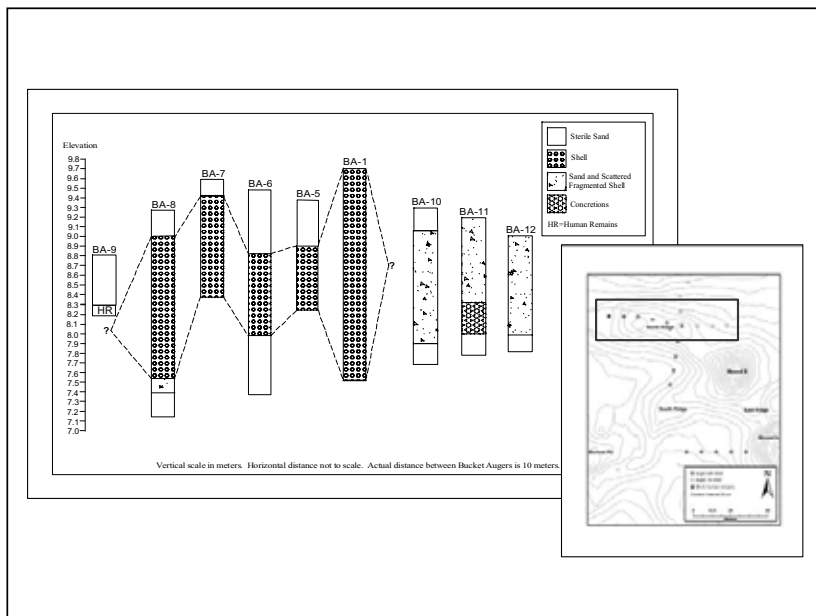


Figure 8. Auger profiles showing the mounded shell deposits on the North Ridge.

Ring.” Analysis is ongoing and the results for these units are preliminary. The excavation of a 1 x 3 meter trench (TU-K) east of Mound B revealed the presence of shell-free midden deposits related to the Mount Taylor period occupation of the site with the usual upper 30-50 centimeters of ceramic-bearing deposits. Three concreted shell filled pit features were encountered and a modest assemblage of lithic waste flakes and tools was recovered. Faunal bone was abundant. Excavation of a 1 x 2 meter test unit in the East Ridge (TU-L) revealed shell-free midden deposits to a depth of approximately 40-60 cms underlain by stratified shell midden. The shell free midden produced an abundance of faunal bone and lithic waste flakes and tools. Shell midden deposits with a noticeable ascending slope from west to east lies beneath the shell-free midden and mirror the topography of the East Ridge. Though not conclusive, stratigraphic profiles from this unit hints at the possibility that these shell deposits were laid down in a purposeful fashion. Evidence for this may be seen in what appears to be basket loading manifest as concentrations of apple snail and sand in TU-L during excavation as well as in the unit walls. Lastly a 1 x 2 meter test unit (TU-M) was excavated in the “Shell Ring” and has not resolved the lingering questions as to the origin of this feature. My inclination is that it represents the apron of formerly mounded midden deposits that have been

mined out at some point in the twentieth century. Very little in the way of cultural material was recovered from this unit but it did reveal the presence of additional intact and stratified preceramic midden deposits in this location.

Material Culture and Technology

Material culture recovered during the TLARP conforms to the expectations for shell middens along the St. Johns River. A sample of artifacts found during excavation of test units at Thornhill Lake is shown in Figure 9. Lithic technology at Thornhill Lake shows an emphasis on late-stage biface production and maintenance based on the relative infrequency of large flakes (over 3 cm sq.) and lack of cortex on the dorsal surface. By far waste flakes are the most abundant lithic artifact from all contexts. Other tool forms recovered include a unifacial flake tool, a small number of microliths similar to those from the Lake Monroe Outlet Midden (8VO53) (ACI/Janus 2001), and several utilized flakes. Regarding formal tools, hafted bifaces and biface fragments identified consist almost exclusively of Newnan and Hillsborough points. In terms of the types and numbers of lithic artifacts, the Thornhill Lake Complex is most similar to Groves’ Orange Midden (8VO2601) (Purdy 1994) and both pale in comparison to



Figure 9. Selected artifacts from the Thornhill Lake Complex. Top row from left: drilled shark tooth, shell bead, bone bead, bone bead; middle row from left: dolphin vertebra ear spool, bone pin/point fragment, shell pendant, Newnan point; bottom row: columella gouge or chisel.

the Lake Monroe Outlet Midden (8VO53) in terms of sheer numbers and assemblage diversity. The fact that stone tools are not more frequent in the assemblage owes much to the absence of knappable stone within the SJRV.

Bone tools consist largely of “pins” and “points” but remain somewhat functionally ambiguous without a microscopic inspection of the tool surfaces and breakage patterns. Shark teeth are fairly frequent at Thornhill Lake. Few show any signs of hafting and only two have perforations suggesting that they may have been hafted. Analysis of bone tools is currently underway. In addition to the tool forms, bone was also the raw material used to manufacture items of personal adornment. Two bone beads were recovered from the sand strata in TU-D near the base of Mound B. Bone beads similar to these have

also been recovered from Groves’ Orange Midden (Wheeler and McGee 1994). Presumably these items would have been worn as part of a necklace or bracelet as the Groves’ Orange Midden specimen would suggest. Perhaps the most interesting bone artifact believed to have been for personal adornment is a curious object that may be an ear spool judging its form. Making this specimen even more unusual is the fact that it is made from a dolphin vertebra (Brian Worthington, personal communication, 2008). The protrusions that normally are present on dolphin vertebrae have been ground off and a notch has been ground circumferentially around the edge, creating a dumbbell-like morphology (see Figure 9). At present I am not aware of any other instances of marine mammal bone being

use for the production of items of personal adornment in the SJRV.

Pottery recovered during excavation throughout the site consists of types typical of the SJRV and include incised and plain Orange and St. Johns wares as well as check-stamped St. Johns. Sand tempered plain and check stamped pottery was rarely recovered. Pottery was not abundant from any excavated context and, as discussed previously, was confined to within 50 centimeters of the ground surface throughout the site. More pottery was recovered from surface contexts along the shore of Thornhill Lake where erosion has exposed midden deposits than from all excavated contexts combined. Further, pottery from excavated contexts was more abundant nearer Thornhill Lake and was notably less frequent with increasing distance from the lake and reinforces the fact that the lakeshore location of the site was of importance to later inhabitants following the Mount Taylor period.

Shell tools were infrequently recovered from excavation units at this site but several specimens have been recovered from surface contexts. A shell gouge or chisel was found in TU-F on the South Ridge. Of note is the frequent occurrence of cockle shells, primarily heart cockle (*Dinocardium* spp.). Quahog (*Mercenaria* spp.) shell fragments were common as well. However, neither of the latter displays any evidence of having been utilized as a tool.

Subsistence

No zooarchaeological analyses beyond field identifications have been carried out materials from the Thornhill Lake Complex to date. One column sample from the North Ridge has been collected and fauna from the general excavations of all the test units all are available for study. At this point, however, a few general impressions regarding the faunal assemblage can be offered. First, as many other researchers in the SJRV have noted (Quitmire 2001; Russo et al. 1992; Sassaman 2003; Wheeler et al. 2000), aquatic resources played a prominent role in the diet of the site's inhabitants, notably fishes and turtles. Birds were occasionally noted and included both small and large examples. Deer are foremost among the large mammals. Smaller mammals such as raccoon, opossum, and domestic dog also have been noted. Freshwater mollusks are well represented in the faunal assemblage and banded mystery snail (*Viviparus georgianus*) was most abundant. Frequencies of both apple snail (*Pomacea paludosa*) and freshwater mussel (*Unionidae* spp.) varied from unit to unit and both typically were highly fragmented and mussel shells showed a high degree of burning and substantially more than either mystery or apple snail. Several coprolites were recovered during testing throughout the site and their analysis has the potential to provide yet another avenue to the study of subsistence practices during the Mount Taylor period and, possibly, Orange and early St. Johns as well. Though impressionistic and brief, the above comments related to subsistence at the Thornhill Lake Complex bear out the findings of previous investigations into subsistence in the SJRV. The collections of zooarchaeological specimens from this site hold the potential to provide insights into the use of biotic resources at a Mount Taylor mortuary mound complex.

Future work is needed to quantify the remains by taxa and examine it for taphonomic patterns.

Discussion

Thornhill Lake and Contemporary Sites in the LMCA

Archaeological survey within the LMCA revealed two sites that are potentially contemporary with the Thornhill Lake Complex: the Thornhill Marsh Midden and the Mother's Day Lithic Scatter. The Thornhill Marsh Midden is a short-term habitation site and consists principally of a moderate density shell-free midden deposit with a limited assemblage of lithic waste flakes and tools and bone tools. Later Orange and St. Johns occupations are present at this site but were stratigraphically separable from the Mount Taylor period midden deposits. Whether or not the Thornhill Marsh Midden is contemporary with the Thornhill Lake Complex can not be known without dating the aceramic deposits at the former. The Mother's Day Lithic Scatter produced a very limited assemblage of lithic waste flakes and biface fragments. Again it is very difficult to demonstrate the contemporaneity of this site with the Thornhill Lake Complex with such limited data. What both sites do have in common with the Thornhill Lake Complex are preceramic components associated with the Mount Taylor period. Apart from this, no solid relationships between these sites can be discerned with the available data.

Settlement Patterns

Regarding settlement patterns, although Mount Taylor sites are few within the LMCA, the Thornhill Lake Complex, along with the Thornhill Marsh Midden and the Mother's Day Lithic Scatter, have demonstrable Mount Taylor components. Possibly the Thornhill Prairie site has a Mount Taylor component but as yet has not produced definitively diagnostic Middle-Late preceramic Archaic projectile point types that would be useful in establishing its relative chronological position. Thornhill Marsh Midden and the Thornhill Lake Complex contrast noticeably in that one is a moderate density bone midden and artifact scatter and the other is a substantial mounded shell midden/mound complex and these in turn contrast with the low density Mother's Day Lithic Scatter.

Orange period sites are more common within the LMCA and without exception each is characterized by a midden deposit, either shell or bone only, that is limited in both its horizontal and vertical extent. All are located in close proximity to water, either shallow marshes or former and current river channels. This was observed definitively at the Thornhill Lake Complex, the Thornhill Marsh Midden, the Twin Pygmy Rattler Midden, and at the Thornhill Prairie site. All other Orange period sites encountered within the LMCA occur at locales without prior Mount Taylor deposits. Later St. Johns period occupations typically co-occur with the Orange period components. Generally these sites have St. Johns I or otherwise indeterminate St. Johns components. Only the Thornhill Lake Complex and the Brickyard Slough Midden register a St. Johns II presence. Though not yet visited the

Beck Slope midden also is reported to have check-stamped St. Johns pottery. The settlement patterns noted for Mount Taylor contrast with the succeeding Orange and St. Johns periods during Mount Taylor times the Thornhill Lake Complex was a focal point of settlement with smaller, temporary camps in the vicinity as represented by the Thornhill Marsh Midden and the Mother's Day Lithic Scatter sites. During Orange and St. Johns times settlement seems to be more distributed across the landscape with no one site having been occupied more intensively than another.

Mount Taylor Mound-Building and Monumentality

Perhaps one of the greatest contributions of the TLARP is the unequivocal demonstration that the Thornhill Lake Complex is the oldest mortuary mound complex yet known in Florida and the southeastern United States, dating between 5600 and 4600 years cal. B.P. In addition to demonstrating the age of these mounds it was also shown that other forms of monumental architecture, specifically ridge construction, occurred at approximately the same time that mound construction began, a fact substantiated by the stratigraphic profiles exposed in the South Ridge and the accompanying radiocarbon dates. These findings call into question the currently accepted models of material cultural development and monumentality from the Archaic to the Woodland. Mound-building once was considered a Woodland period characteristic but research has shown that mound-building begins during the Archaic (Russo 1994). Similarly, it has now shown that mortuary mound construction also begins during the Archaic period in Florida although it apparently was not a common occurrence beyond the SJRV.

The Thornhill Lake Phase

Based on the work of the TLARP and previous research in the SJRV and Atlantic Coast (Douglass 1882; Endonino 2007; Moore 1891, 1894a, 1894b, Piatek 1994; Sears 1960), sufficient data have come to light to warrant a modification to the chronology of the Mount Taylor period. Therefore I propose that the Mount Taylor (7300-4500 cal. B.P.) period be divided into Early Mount Taylor (7300-5600 cal. B.P.) – which will retain the Mount Taylor title – and the Thornhill Lake Phase (5600-4500 cal. B.P.). The Thornhill Lake Phase is characterized by aspects of the material culture and social relations that differ from what both precedes and succeeds it. Foremost among these are: 1) the construction of sand mortuary mounds and, 2) the increase and persistence of interregional and intraregional exchange. Evidence for the latter comes in the form of bannerstones, pendants, and beads of exotic non-local stone from elsewhere in the southeastern coastal plain. These items are found mainly in mortuary contexts although they also occur in non-mortuary contexts as well (ACI/Janus 2001; Wheeler and McGee 1994).

In addition to the material and social aspects used to delineate the Thornhill Lake Phase, it is also both spatially and temporally discrete. Spatially the Thornhill Lake Phase occurs in the middle St. Johns River Valley, between Lake

Harney and Lake George, and the adjacent Atlantic coast of St. Johns, Flagler, and Volusia Counties, from just south of St. Augustine southward to the Ormond Beach area. This general spatial domain corresponds to the occurrence of the known and suspected Thornhill Lake Phase mound sites. Temporally the Thornhill Lake Phase is defined by three radiocarbon dates, two dates from the Thornhill Lake Complex (Mounds A and B) presented in Table 2 and one date of 4817-4447 cal. B.P. from Mound 6 at the Tomoka Complex (8V081) (Piatek 1994).

As indicated above, the Thornhill Lake Phase differs from what precedes and succeeds it. These differences are most clearly discerned in the realm of mortuary practice. During Early Mount Taylor interments occur in mounded shell contexts (Aten 1999; Moore 1894a, 1894b). During the succeeding Orange period little is known about the mortuary practices but cemetery type treatments are known and burial in mounded shell midden also may have been practiced (Bellomo 1995). Likewise one of the hallmarks of the Thornhill Lake Phase, namely bannerstones, pendants, and beads of exotic stone, are nowhere reported from Early Mount Taylor or Orange period contexts. Further, the phenomenon of Middle/Late Archaic sand mortuary mound construction, with the exception of Horr's Island on the southwest coast of Florida (Russo 1991), has not been observed elsewhere in peninsular Florida, further reinforcing the geographic specificity of this phase. At this point I hasten to add the caveat that this division of the Mount Taylor period into Early Mount Taylor and Thornhill Lake should be considered provisional and subject to modification as additional research is conducted and new data become available. A more detailed and formal description of the Thornhill Lake Phase is forthcoming in the author's dissertation.

Future Research Directions

Though a substantial amount of work has been carried out at the Thornhill Lake Complex during the TLARP there remains much to be done. Additional excavation at selected locations, namely the shell ridges, has the potential to produce corroborative evidence for their purposeful construction. However, of immediate concern is the dating of additional radiocarbon samples already collected and the analysis of material culture and zooarchaeological specimens already recovered.

Although eight radiocarbon dates were returned from samples taken during excavations at the Thornhill Lake Complex (see Table 2) more are needed in order to more securely date the deposits and architectural features at this site. Foremost among these are features found in the shell-free midden deposits to the east of Mound B, the East Ridge, and the ring-like shell feature located at the southern end of the site. Despite the lack of available funds for dating, organic samples have been collected from all of these locations nonetheless in the hope that funds might one day become available. Additional dates from the above mentioned architectural features will allow for meaningful comparisons regarding the timing of

their construction with the ultimate goal of determining the sequence of site construction. Additional dates from the basal deposits at this site are also needed to more accurately determine the timing of initial site use.

One area of research that has yet to be addressed adequately is the zooarchaeology of the Thornhill Lake Complex. Limited analysis of Units A and C at the Thornhill Marsh Midden has been undertaken and demonstrates a reliance of shallow water and marsh species, notably small fishes and turtles (Pye 2007, Randall 2007). No analysis of fauna has been undertaken at the Thornhill Lake Complex. A column sample has been taken but at the time of publication, processing and analysis have not occurred. Currently these samples and additional zooarchaeological specimens are housed at the Laboratory of Southeastern Archaeology at the University of Florida. Ultimately they will be curated at the Bureau of Archaeological Research in Tallahassee and will be available for study.

Several areas within the LMCA have received limited reconnaissance survey. Among those areas most likely to yield additional previously unrecorded sites are the extensive marsh and prairie bordering the river that is only accessible by boat, as well as the numerous small ponds and wetlands within the interior of the LMCA. Sites likely to be encountered include low density lithic and artifact scatters around the interior ponds and wetlands and both shell and bone middens within the wet prairies and lands bordering sloughs and river channels. Time constraints and the emphasis on the excavations at the Thornhill Lake Complex prevented comprehensive subsurface testing in the interior as well as the marshes and prairies in the Kratzert Tract of the LMCA. Further reconnaissance and survey in these areas are likely to prove fruitful.

Additional excavations at the Thornhill Marsh Midden offer an opportunity to explore the nature of a shell-free Mount Taylor period midden. The study of such a site independently is worthy in and of itself considering that such sites are not generally excavated and therefore little is known about them. Studying smaller sites such as these provides a broader picture of Mount Taylor period settlement, land use practices, and subsistence than studying the shell middens and mounds alone.

Conclusions

The TLARP over the past four years has made a number of contributions to Florida archaeology, some minor and others significant. Among the most significant contributions is the documentation of mortuary mound and shell ridge architecture beginning at approximately 5600 cal. B.P. Clarence Moore's work pointed suggestively to this fact but prior to this work it had only been conjecture. Importantly, Thornhill Lake is not the only example of Mount Taylor period mounds, mortuary or otherwise. Additional research at these other known and suspected Archaic mound sites in the future will hopefully prove as fruitful and enlightening. The proposal of the Thornhill Lake Phase is another contribution to Florida archaeology, further refining the temporal parameters of the Mount Taylor period. Contributions to the understanding of settlement patterns over the long term, material culture, and

subsistence practices of Mount Taylor groups also have been made by the TLARP although these goals are yet to be fully realized. Continued research will no doubt bear this out. As discussed above, survey and excavations across the LMCA yielded insights into the nature of Mount Taylor, Orange, and St. Johns period settlement practices. Thornhill Lake was a central place during Mount Taylor, waning shortly thereafter and being only one of many locations utilized by later Orange and St. Johns period groups. This is evidenced by the occurrence of several small sites dating to these periods throughout the LMCA. Judging by their small size and limited material culture assemblages, sites such as the Thornhill Marsh Midden and the Mother's Day Lithic Scatter were short-term habitations or resource extraction sites and satellites to the main areas of occupation (i.e. Thornhill Lake Complex). On the whole the nature of post-Mount Taylor occupation of the area seems to be one of greater mobility and reduced intensity of occupation, in seeming opposition to what was occurring at the Thornhill Lake Complex during Mount Taylor times. Overall the Thornhill Lake Archaeological Research Project was very successful. Field has been completed as of December 2008. Analysis of material culture is ongoing and it is hoped in the future that researchers will take an interest in the zooarchaeological remains. A final accounting of all field work and results of the TLARP will be presented in a final monograph submitted to the Florida Division of Historical Resources in fulfillment of the 1A-32 permit issued for this work well as part of the author's dissertation research at the University of Florida.

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