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AWIARE Research Station at Weedon Island Preserve Weedon Island Cultural and Natural History Center

ARCHAEOLOGICAL RESEARCH OPPORTUNITIES AT WEEDON ISLAND PRESERVE

The Alliance for Weedon Island Archaeological Research and Education, Inc. (AWIARE) is accepting applications for research at Weedon Island Preserve in Pinellas County, Florida. The 300-acre preserve is home to the Weedon Island archaeological site (8P1), listed on the National Register of Historic Places, as well as other sites related to the Manasota, Weedon Island, and Safety Harbor cultures. Use of the AWIARE Research Station is open to qualified researchers and graduate students who wish to conduct archaeological research related to Weedon Island and related topics. Multidisciplinary projects that address questions of human-environment interactions (e.g., sea-level change, climate change, human ecology) are encouraged. Applicants must complete an application form that describes their research, explains how it conforms to the mission and objectives of AWIARE, and indicates the source of funding for the project. AWIARE does not provide funding, scholarships, or fellowships at this time. Use of the Research Station for research and living accommodations is provided free of charge. Applicants must be legal residents of the United States and be associated with an educational organization or institution. Independent researchers or those pursuing advanced degrees also may apply. Research may include field work, laboratory analysis, or archival research. For more information, contact Dr. John Arthur, AWIARE, 1500 Weedon Dr. NE, St. Petersburg, FL 33705 or by email [awiare@gmail.com](mailto:awiare@gmail.com).

INTRODUCTION

Weedon Island (8P1) (Fig. 1) is the type site of the Weedon (sic) Island archaeological culture (Willey 1949). Smithsonian excavations in 1931-1934 focused on the site's burial mound, unearthing the mortuary pottery for which the site is famous. William Sears conducted salvage excavations in the nearby shell midden in 1962, documenting an early ceramic component that is referred to as Manasota. During the 1980s and 1990s, a few CRM surveys were performed, but no excavations. In 2004-2005, a comprehensive survey by the University of South Florida provided baseline information on settlement layout, stratification, and artifact content while documenting occupation during the preceramic Archaic period through the Manasota, Weedon Island (Woodland), and Safety Harbor (Mississippian) periods. A study of the site's geomorphology was conducted in tandem with the archaeological survey. Additional sites dating to the Manasota, Weedon Island, and Safety Harbor periods were identified during a survey of the larger Weedon Island Preserve in 2008.

The work reported here began in 2007 and represents a multi-institutional research effort focused on the site's domestic sphere, which has received little attention. This research involves geomagnetic survey, excavation, and experimental studies. The large 130-hectare site has been divided into Loci and Operations to better organize research efforts. We have focused our work on Location 5, Operation 6 and Location 6, Operation 7 (Fig. 2).

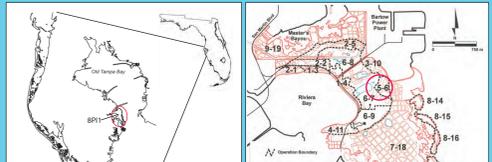


Fig. 1 (Left). Location of Weedon Island in Pinellas County, Florida.  
Fig. 2 (Above). Loci and Operations within Weedon Island archaeological site.

SPACE AND TIME: SOCIO-NATURAL PROCESSES

Weedon Island is not an island but rather a peninsula located on the eastern side of the Pinellas Peninsula on the west coast of Florida (see Fig. 1). The site overlooks Tampa Bay, a 103 sq km estuary with an average depth of less than 4 m. Donahue et al. (2003) indicate that the Bay was inundated by marine waters around 5000 BP, while Van Soelen et al. (2010) suggest a 7500 BP date. Sea level fluctuations of 1 to 3 m above and below modern levels have been proposed for Florida's Gulf Coast during the late Holocene (post-3000 BP) (Balsillie and Donoghue 2004).

Sea levels higher than today have yet to be confirmed by sedimentary and geological studies in the Bay, but coring along Weedon Island's bayshore identified deposits of freshwater peat overlying sand beginning at ~3400 cal BP, followed by alternating deposits of carbonate clays and shelly sand, reflecting brackish water lagoon and beach face deposits, respectively (Fig. 3). A radiocarbon date of 456 cal BP was obtained from the latest carbonate clay deposit. We interpret this sedimentary sequence as representing a transition from exposed upland to freshwater marsh to marine lagoon/beach face as a result of sea level rise, with the marine shoreline fluctuating between low energy lagoon and high energy beach as sea levels fluctuated.

Windblown marine sands formed two arc-shaped ridges in the uplands (Fig. 4). The ridges are capped by shell midden deposits. Two <sup>14</sup>C dates from the lower levels of the outer midden near the burial mound indicate an early occupation at ~cal AD 400 (Manasota/Weedon Island) (Fig. 5). The southern end of this midden has been dated between AD 895 and AD 1270 (± 2 σ cal) (Safety Harbor). Underlying the midden is a White Sand unit (white, pale gray, grayish-brown fine-to-medium sand) and a lower Yellow Sand unit (yellowish-brown, pale brown, and brown fine-to-medium sand) (see Fig. 5). We don't know yet whether these sands represent separate depositional episodes or are the result of pedogenesis. Sediments within the White Sand unit obtained from the same depth (~78 cmbs) as an Archaic-age Marion point have been dated with 820 years ago (Kennedy 2013). The age of the Yellow Sand unit is undetermined, but it contains preceramic lithic deposits recovered from several locations on Weedon Island.

Based on current evidence, Weedon Island's initial occupation occurred during the Middle Archaic period while sea levels were still lower than today and aeolian sands were being deposited. Later maritime-adapted Manasota, Weedon Island-related, and Safety Harbor cultures occupied the site after Tampa Bay's estuary/lagoonal habitat formed.

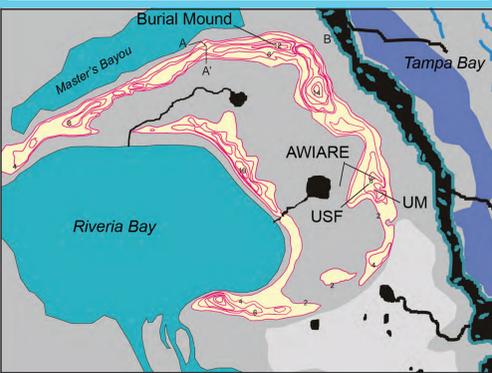
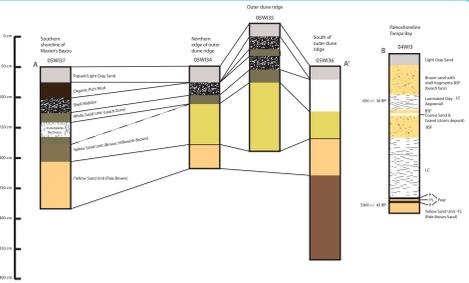


Fig. 4. Detail showing arc-shaped dune ridges containing shell midden. Current research is focused on the southern end of the outer midden ridge. Cores discussed in text are A-A' and B.

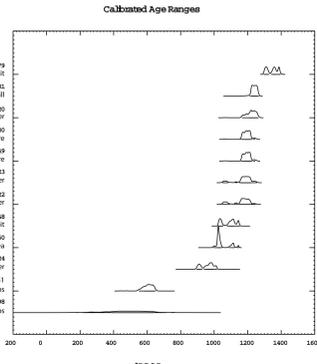


Fig. 5. Calibrated radiocarbon dates (2 sigma) from Weedon Island. Two early dates (M-1938 and UA-04W11) are from Sears (1971) and Lambert (2006), respectively.

ORGANIZATION OF SPACE

Topsoil magnetic susceptibility and magnetometer survey over 4.3 hectares within Operation 5-6 identified magnetic anomalies adjacent to the primary midden ridge. Five discrete clusters of positive magnetic anomalies corresponding with high magnetic susceptibility residues presumed to be features were targeted for excavation. Test excavations in Sub-Operation 5-6-C found that strong positive anomalies corresponded with refuse pits of various sizes and areas of in-situ burning. Larger-scale block and trench excavations in Sub-Operation 5-6-D found shell-filled pits corresponding with magnetic anomalies (Figs. 6, 7). Several postholes were identified in both sub-operations. Both areas were occupied during the Pinellas Phase of the Safety Harbor Period, based on AMS dates and ceramics, with 5-6-D perhaps dating slightly later than 5-6-C (see Fig. 5).

Post holes and a pit feature also were identified during excavation in Sub-Operation 5-6-A. Six post holes are closely associated and may represent a single structure with a large central post. Four AMS dates from 5-6-A are contemporaneous with the dates from 5-6-C (see Fig. 5).

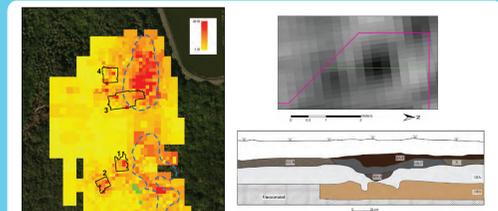


Fig. 6 (Left). Areas of high magnetic susceptibility and magnetometer survey areas in Sub-Operations 5-6-C (bottom) and 5-6-D (top).  
Fig. 7 (Above). Magnetic anomaly that corresponds with an excavated pit feature.

Two looter's trenches in the dense midden deposits located to the east of 5-6-A and 5-6-C, designated Sub-Operation 5-6-B, were cleaned, expanded with nine 1x1-m units, and profiled to determine the stratigraphic and temporal relationships of the midden ridge to "off-midden" areas. The midden here is much thicker (~50 cm) and overlies grayish-brown sand that represents migration of organics into the upper part of the White Sand unit. We excavated into the upper part of the Yellow Sand unit which contains lithic debris from a preceramic Archaic component. Shell-filled pits and 9 postholes were identified in the midden and immediately below it (Fig. 8). Large deposits of raw sandy clay were exposed just below the midden deposit, suggesting a possible clay processing area. The clay is non-carbonate, unlike the clays identified during coring along the bayshore. Samples were collected and chemical characterization using PXRF is planned to determine if this clay is the same used to make the ceramics found at the site.

Excavation in Operation 6-7 has focused on a small lithic scatter located near a large brackish-water lake (see Fig. 2). Sand-tempered plain pottery is present in the thin (5-20 cm) shell midden, which has been disturbed by historic land use. The underlying White Sand unit contains a lithic concentration at ~40-60 cmbs. Waste flakes, cores, hammerstones, and biface fragments made from local chert appear to represent a single knapping event. No temporally diagnostic artifacts have been recovered, but the stratigraphic position and lack of ceramics suggest an Archaic age. Below is a dark brown spodic horizon followed by brown sand. Biface thinning flakes, some thermally altered, are present within these lower sediments.



Fig. 8. Cleaning East wall profile of Trench 2, Sub-Operation 5-6-B with pit features and post holes.

DOMESTIC ECONOMY (MAKING A LIVING)

SUBSISTENCE: Analysis of a faunal sample from Sub-Operation 5-6-A indicates dependence on marine fish and shellfish for food (Figure 9). A total of 82 individual taxa were identified, including 66 potentially edible taxa and 16 probable commensals. Six invertebrate species (Eastern oyster, crown conch, lightning whelk, shark eye, ribbed mussel, pear whelk) and two fish species (hardhead catfish and pinfish) together account for 96% of all MNI. Terrestrial (e.g., deer, rabbit, dog, wood rat, gopher tortoise) and freshwater aquatic species (e.g., alligator,

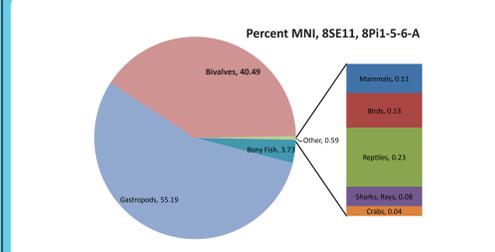


Fig. 9. Proportional representation of MNI by faunal class, 8SE1, 8P1-5-6-A.

turtles, redear sunfish) as well as several birds (common loon, heron, egret, duck, red-breasted merganser, wood warblers, turkey vulture), also are present.

O'Donnell (2015) reconstructed habitat-specific faunal assemblages using salinity tolerances to understand where people traveled for the capture and collection of these species. She identified three marine/riverine faunal assemblages, each separated by low (< 10 ppt), moderate (10 - 20 ppt), or high (> 20 ppt) salinity ranges. The habitats of greatest use were centrally located in Tampa Bay near Weedon Island and to the south towards the barrier islands of the Gulf of Mexico (Fig. 10). Of less importance were the rivers and streams that flow into Tampa Bay and the surrounding uplands. Exploitation of the open waters of the Gulf of Mexico is not evident in the sample.

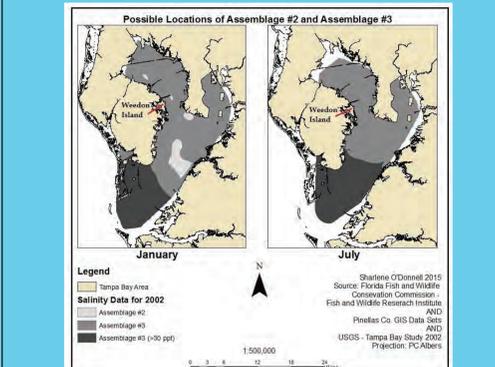


Fig. 10. Possible locations of Faunal Assemblages 2 and 3 in relation to Weedon Island based on salinity.

EXPERIMENTAL STUDIES: Subsistence studies also included the harvesting of crown conch (*Melongena corona*) from two locations along Tampa Bay. Collections were made monthly over a two-year period (Fig. 11). The purpose of the study was to devise an allometric formula that would accurately predict meat weight and caloric content for archaeological specimens. Shell length proved most accurate in predicting meat weight (Fig. 12). Modern samples were on average smaller than those from the archaeological sample recovered from two excavation units in 5-6-A, suggesting that native occupants selectively harvested larger snails for food and for raw materials for tools.

Morehead (2015) compared the efficiency of two archaeological recovery methods - flotation tank and bucket - and found that the average recovery rate of the simpler bucket method was higher than the flotation tank method (98% to 91%). The light fraction contained less sediment when using the bucket method and used significantly less water when compared to the flotation method.



Fig. 11. Liz Southard collecting crown conch at Weedon Island Preserve.

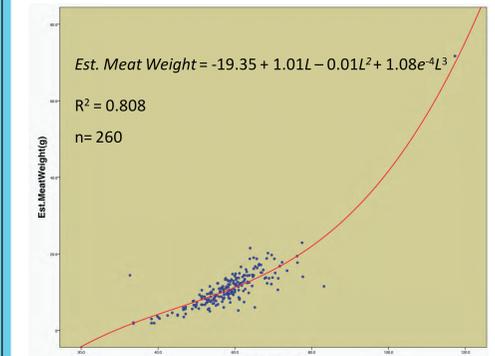


Fig. 12. Regression and allometric formula for predicting crown conch meat weight from shell length.

SEASONALITY: Ongoing research by Edwards (2015) to determine the season of occupation is focusing on the analysis of the size range of micromorphological gastropods, which are ectoparasites of other shellfish including Eastern Oyster. Preliminary results suggest that the Safety Harbor occupation of 5-6-A was year round, but additional work needs to be done to confirm this.

TECHNOLOGY: Shell was a primary raw material used for tools, implements, and ornaments. Whelk shell cutting-edged tools, columella hammers, columella plummeters or net weights, conch shell hammers and picks, and shell disk beads in various stages of manufacture have been recovered from all excavation areas as well as during the 2004-2005 survey (Fig. 13). Bone implements are not common and consist of fragments of pins and/or points. Stone tools and debitage also are rare in the midden deposits, and usually consist of moderately large flakes, rough cores, small triangular Pinellas points (Fig. 13) and occasional salvaged Archaic stemmed points. Earlier, pre-midden deposits contain numerous biface thinning flakes, which often are thermally altered. Most of the chert analyzed thus far comes from local outcrops in and around Tampa Bay.



Fig. 13. Miscellaneous artifacts from Weedon Island.

CERAMICS: Only the ceramics from the looters' trench excavations have been analyzed completely. Of the 1005 sherds recovered from the two trenches, 410 are large enough to accurately identify. Pinellas Plain is the dominant form in all strata and levels with Sand-tempered Plain and St. Johns Plain a distant second and third, respectively. This is consistent with a Safety Harbor time frame. Several Pinellas Plain rim sherds display lip-ticking, a ceramic trait of the Pinellas Phase of Safety Harbor (Fig. 13). Decorated wares include Englewood Incised, St. Johns Check Stamped, Wakulla Check Stamped, and one sherd of possible West Florida Cord Marked.

WATERCRAFT: In 2011, a 40-foot-long dugout canoe and an associated pole were excavated from the shoreline of Tampa Bay (Figs. 14, 15). Radiocarbon dating of both artifacts indicated a mean pooled age of cal 120 ± 40 BP (± 2 σ cal AD 777-1013), during the transitional Weedon Island-Safety Harbor period (Kolianos and Austin 2012). The length of the canoe, its narrow width (36 cm average), and its raised bow suggest open water use, perhaps as one half of a catamaran or outrigger. The canoe could have been used for fishing in the open waters of Tampa Bay or for transporting goods between communities around the Bay or along the Gulf of Mexico.



Fig. 14. Excavating the Weedon Island canoe.



Fig. 15. Diorama showing the likely shape of the Weedon Island canoe.

WHAT HAVE WE LEARNED SO FAR?

- Aeolian sand deposition began at least 5000 years ago creating the arc-shaped dune ridges that characterize Weedon Island.
- Sea level rose to near its current level by ~3400 BP and may have retreated below current levels several times until sometime after ~460 BP.
- The site was occupied as early as the Middle Archaic (~5400 BP).
- The Weedon Island site contains a significant Safety Harbor (Mississippian) component.
- Different parts of the site may date to different time periods meaning that the entire site was not occupied at the same time.
- Ceramic data and radiocarbon dates support the in-situ development of Safety Harbor from the preceding Manasota and Weedon Island-related cultures in the Tampa Bay region
- Subsistence during the Safety Harbor occupation was marine oriented, with an emphasis on oysters, marine gastropods, and fish.
- Subsurface features, including post molds, are common and discrete house patterns might be defined by future excavation.
- Canoes, possibly catamarans, were used to exploit the resources of Tampa Bay and interact with neighboring communities.
- The mortuary practices evident in the Weedon Island burial mound reflect a specific slice of time in the site's history, which begs the question, where were people who occupied the site during other periods buried?