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Cover: A view of Yellow Bluffs Mound in Sarasota, Fl. Compare the pergola on top of the mound in both pictures. Top: Postcard view toward the pergola at the Acacias residence in the 1910s. Bottom: A half century later, a similar view was taken during archaeological excavations at the Yellow Bluffs Mound in early April 1969. Henry Sheldon holds a shovel in the trench's northwest corner and Doris "Dottie" Davis wears a hat. Bottom image courtesy of the Sarasota County History Center. See the George Luer article beginning on page 5 for more information.

AN INCISED ANTLER ARTIFACT FROM LITTLE SALT SPRING (8SO18)

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Little Salt Spring (8SO18, hereafter LSS), a sinkhole containing an active spring (with a spring magnitude of 3), is located in southern Sarasota County about 15 km from the Gulf of Mexico. Intensive excavation work took place there during the 1970s and some of the earlier research is summarized in Clausen et al. 1979. In 1982, LSS and a surrounding 110-acre buffer property were donated by the General Development Corporation to the The University of Miami.

In 1992, the Florida Department of State awarded a Special Category grant for initial test excavations in the basin of LSS (between 0 and 13 meters deep). This grant funded the most extensive fieldwork to date (February through June, 1992) and established the methodology for research that has continued to the present. However, underwater excavation in the basin, as well as elsewhere in LSS, has proceeded very slowly since 1992, primarily during short (1-2 week) field sessions involving graduate and undergraduate students from the University of Miami. Since 2005, volunteer divers from the Florida Aquarium in Tampa have assisted in three levels of fieldwork in LSS: surveying of the Basin (0-14 meters below the spring surface), excavating on the 27-Meter Ledge, and exploring of the bottom features, 65-75 meters below the spring surface.

During the June 2004 field school, students began to expose an object in the southwestern quadrant of Operation 9, a 2x2 meter excavation unit on the north side of the LSS basin at a depth of 8.4 meters below the spring surface. The object was protruding at a near-vertical angle from an organic-rich marl stratum (Locus Z) that underlies a quartz sand deposit (Locus 8) in this part of the basin. Because the object appeared first in the sand stratum, it was assigned Item ID (identification number) 09108A01 (for Operation 9, Level 10 [decimeters below original water-sediment interface], Locus 8, Artifact 1 from that context). After removing just two centimeters of the sand it became apparent that the bulk of the object was actually embedded in the underlying organic marl stratum; thus its ItemID was changed to 0910ZA01 after recovery.

Figure 1 is a photograph looking vertically down at the exposed portion of the object, *in situ* in the southwest quadrant of Operation 9. Approximately 15 cm west of the object we excavated an oak wood branch fragment, also embedded in the Locus Z marl at the same stratigraphic level; it was tagged as 0910ZW10 (nine other wood ecofacts already had been recovered from this locus and level). Like most of the wood

ecofacts and artifacts we have excavated from the anoxic waters of LSS, it was in excellent condition on recovery although completely lacking cellulose.

Prior to removing object 0910ZW10, we realized that it was a worked fragment of a deer antler; almost certainly *Odocoileus virginianus*, since more than half of all faunal material recovered from the basin of LSS represent bones of that species (Kozuch 1993). Also, from the exposed end it was apparent that this was a cylindrical fragment of an antler cut above the burr (i.e., a portion of the "beam"; MacGregor 1985:14). On its recovery we expected that any tines growing from this beam had been removed by some cutting or sawing technique. More than a dozen other deer antler fragments have been excavated from the LSS Basin in which the tines had been broken off to be further processed into projectile points; the remaining beam "blanks" were usually discarded but occasionally the blanks were used to make handles for other implements.

The artifact and the adjacent wood ecofact were recovered on June 17, 2004 and brought to the surface. We immediately noted a series of short (3-4 mm), parallel incisions along the artifact's concave side. There were 27 incisions in all and they appear to be purposeful marks. Figure 2 shows the obverse and reverse of 0910ZA01, with the parallel incisions visible in the former image. The artifact is ca. 8.5 cm in maximum length and after air drying has a weight of just over 53 grams. Visible on the reverse are discontinuous small patches of authigenic calcium carbonate. These patches are commonly found on solid objects that have been embedded in the LSS basin sediments for more than a few thousand years, but are only superficial. The artifact shows no sign of post-depositional modification of its structure or material; in other words, it is an original, unfossilized antler.

One tine projecting normal to the long axis of the artifact had been cut off (Figure 2), presumably at the same time as the other two cuts along the beam of this antler had been made. There are additional incisions and possible surface modifications on the obverse side that also appear to be artificial (e.g., two substantial incisions toward the distal end that look as if they were going to become circumferential cuts; see Figure 2, Left) but they are not discussed here.

Figure 3 shows end-on views of the two cuts that separated this section of antler from the rest of the beam at some point above its burr (MacGregor 1985: 55-57). The



Figure 1. Vertical underwater image taken June 16, 2004 of the antler artifact (910ZA01, initially identified as “8A01”) in situ. Its 2.5 cm-wide label is pinned into the marl sediment matrix with two bamboo skewers. Immediately to the left of this antler artifact is an arrow pointing to the oak branch fragment (0910ZW10), which was recovered and C-14 dated.



Figure 2. Antler Artifacts (0910ZA01) obverse (left) and reverse (right) images.

proximal end (left) is identified relative to the root of the beam at the deer skull pedicle; its maximum diameter of 26.8 mm is larger than that of the distal cut end (25.0 mm), which is further distinguished by showing on its cut-off end the spongy, cancellous tissue of the antler's interior. The depression in the proximal end is filled with a small volume of carbonate-cemented quartz sand from Locus 8. Finally, both ends shown in Figure 3 clearly show the series of five to ten short, straight chord cut-marks that together resulted in the circumcision and breaching of the dense outer surface so that this beam section of interest could be broken off by hand. The technique

by which these cuts were made is unknown, but we believe it may have involved a small wooden tool with a plant fiber bowstring combined with quartz sand as the abrasive.

In August of 2004 the oak wood branch excavated in direct association with the antler artifact was submitted to Beta Analytic for a standard radiometric date. Results were delivered in September as Beta-195280. The conventional radiocarbon age of 9240 ± 60 BP (Beta-195380; oak wood; $^{13}\text{C} = -28.4\%$) corresponds to a Cal BP date of 10,560 to 10,253 (2-sigma; Calib Rev. 6), indicating that this deposit dates to the late Paleoindian stage.



Figure 3. Antler Artifacts (0910ZA01) proximal end-on view (left) and distal end-on view (right).

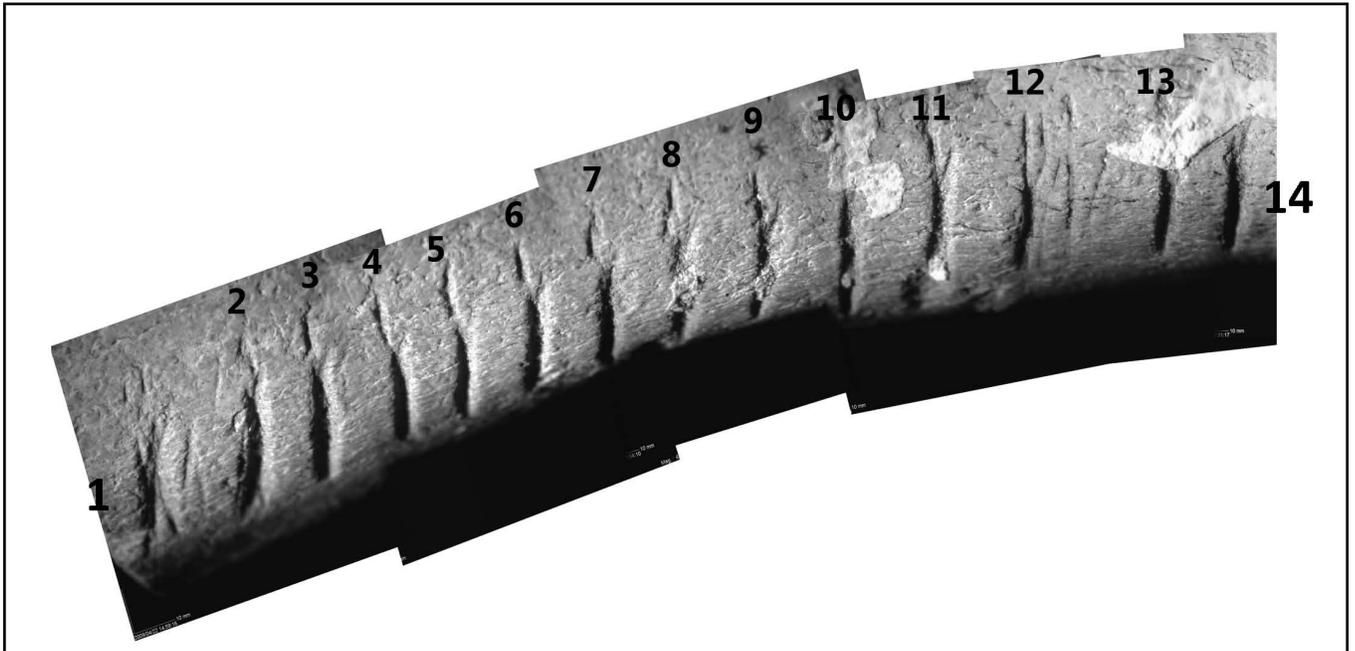


Figure 4. Composite (stitched) image showing the proximal (left) half of two parallel pairs (large and small) of incisions along concave surface of the antler artifact (0910ZA01). The pairs of incisions are identified as 1-14.

The short, parallel incisions along the concave side of the antler artifact are visible in the left image of Figure 2; they are unique with regards to other wood, bone and antler items recovered to date from LSS. This incised surface was examined and photographed at 3x and 6x magnification using a Wild reflected-light stereoscopic microscope equipped with a USB digital microscope eyepiece (1.3 Megapixels); illumination was from a high-intensity LED light source shining from the proximal end at a low angle. Nine images were stitched together to form a continuous composite image of the incisions. Figure 4 shows the left half of the composite image, from the proximal end to the middle of the artifact

(incisions 1-14) and Figure 5 shows the other half of the set (incisions 15-26), which ends where a large chip of the antler cortex was broken off prior to deposition. The end of that chip appears to terminate at what would have been another parallel incision (27), as discussed below.

Whatever cutting technique was used to separate this section of the antler beam certainly also could have been used to make the “major” set of 27 parallel incisions shown in Figures 4 and 5. They are all between 5 and 6 mm long and less than 1 mm deep so that they do not usually penetrate the outer cortex; the average spacing from one to the next is 2.4 mm. Although the larger incisions 1-14 (Figure 4) were cut

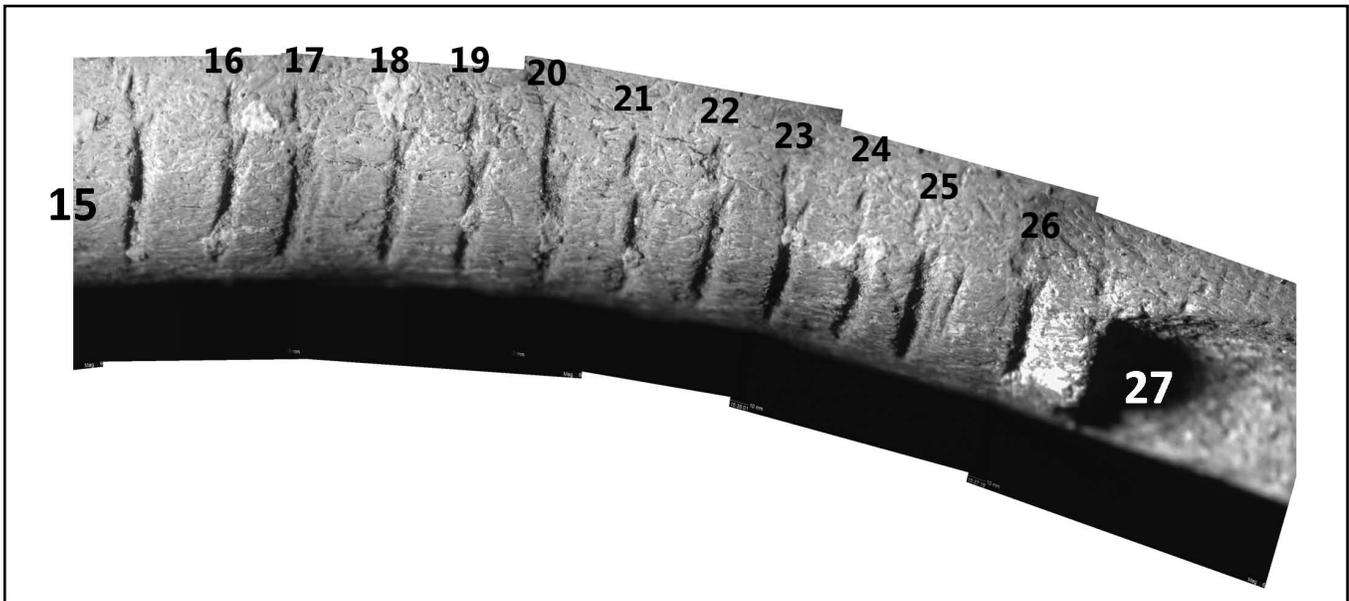


Figure 5. Composite (stitched) image showing the distal (right) half of two parallel pairs (large and small) of incisions along concave surface of the antler artifact (0910ZA01). The pairs of incisions are identified as 15 - 27.

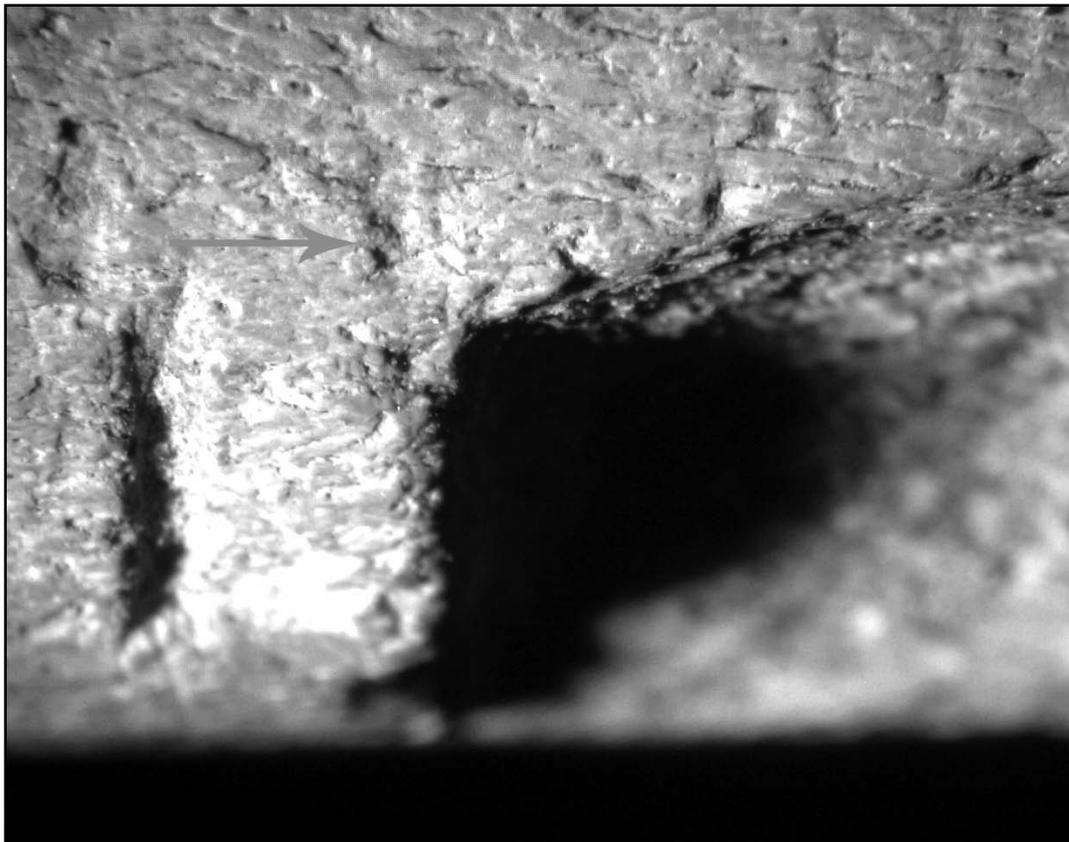


Figure 6. Close-up of the pit left by the missing chip from the distal end of the artifact. There is a trace of a possible secondary incision remaining above the pit at a distance of 1.9 mm (arrow) from the remaining half of Incision 27.

at an angle of some 10-20 degrees relative to the proximal end circumcission, large incisions 15-27, from the middle to the chip at the distal end (Figure 5), are closer to being normal to the artifact's long axis. Two of the larger incisions on the left half – 1 and 13 – show multiple shallow cuts; the same is true of Incision 25 on the right half. Although speculative, we assume the similarity of shape, orientation and general execution of the 26 major incisions (with a probable 27th mostly missing) suggest they were all made at the same time with the same tool.

Of equal importance to characterizing this artifact is that each one of the 27 major incisions is associated with a much smaller, shallower and less well-defined incision cut on approximately the same circumferential outer diameter of the antler segment. Incisions 3-8 of Figure 4 show this most clearly. With some exceptions the smaller cuts appear less well-defined toward the distal end of the object, but there is little doubt that two “cutting events” are recorded on this object.

Initially we speculated that these two sets represent the beginning of a sequence of production of 26 disks of antler that, individually, would be further worked and used for some other purpose. However, the artisan who made these incisions would have realized the major obstruction created by the location of the partially-removed central tine, so this does not seem a viable hypothesis.

The alternative that almost everyone who examines this artifact mentions involves some sort of measuring device. Figure 6 focuses on the chip broken from the cortex on the distal end of the artifact. We see the trace of a minor incision located above the pit where the cortex was chipped away; it is about 2 mm away from the (faint) trace of the minor incision associated with major incision 27, marking the end of the pit.

If this does mark the location of a now-missing pair of major and minor incisions that were broken away on the chip, that would make a total of at least 28, which is close to the number of days (29.5) in an average lunar cycle. Although speculative, this hypothesis involves the idea that each major-minor pair of incisions marks a sun-moon cycle of twenty-four hours.

The near-vertical orientation of this antler artifact as excavated indicates that it was inserted into the marl sediment since it could not attain that position naturally. Since 2004, excavation of another 2-x-2 meter unit immediately downslope of Operation 9 has exposed several wooden artifacts as well as a gourd fragment. All these artifacts appear to represent items purposely discarded, possibly in shallow water as the spring level was rising. Artifact 0910ZA01 is curated (temporarily) at the Rosenstiel School of Marine and Atmospheric Science, University of Miami, pending the construction of an on-site research center at Little Salt Spring (planned for 2012).

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