

Robert S. Carr, M. Yaşar Işcan and Richard A. Johnson

### Introduction

The purpose of this paper is to present information on and an analysis of a Late Archaic Period burial site. The excavation at the Santa Maria cemetery (8Da2132) was significant for several reasons. First, the site is among the earliest known prehistoric sites in southeastern Florida. Approximately six sites that date from the Late Archaic Period (ca. 4000 - 3000 B.P.) have been recorded in Dade County during the three year survey of the County's archaeological sites by the Metro-Dade Division of Historic Preservation. The Santa Maria site is one of three known Late Archaic Period Dade County sites which include human burials (a report on the salvage excavations of the other two cemeteries is currently in progress by authors Carr and Işcan).

Second, there has been a paucity of reports on the physical anthropology of prehistoric Indian populations in South Florida. Although human burials have been frequently encountered during excavations (e.g., Laxson 1959; Williams and Mowers 1977), information on the physical characteristics of these populations was lacking. This deficiency has been, in part, the result of a lack of available expertise to analyze the skeletal remains (Işcan and Miller-Shaivitz 1983).

The Santa Maria site was discovered in November, 1980, by the Metro-Dade Historic Preservation Division. Surface collections and uncontrolled subsurface testing revealed a small quantity of prehistoric

artifacts. In April, 1981, the developers began removing trees and author Carr observed a concentrated quantity of both prehistoric material and early 19th century historic artifacts on the southeastern corner of the tract. Subsequent test excavations indicated the presence of an early 19th century home site and a prehistoric habitation site upon the bluff adjacent to the bay.

Much of this site was destroyed when developers began excavations for the construction of a high-rise condominium. These construction activities were monitored to record any additional archaeological features that might be uncovered. It was soon apparent that at a distance beginning 50 m west of the habitation site, prehistoric human burials were being uncovered and destroyed during bulldozing. Despite cooperation from construction workers, little information could be recorded regarding these destroyed burials. Only a portion of one of these burials, designated Feature R, was observed in situ and this material was collected for radiocarbon dating. There is no estimate of the number of burials lost in the vicinity of Feature R (Figure 1).

Subsequently, in July 1981, two femora and several other fragmentary bones were noticed protruding from the south wall of the construction pit. The bones were situated within a deep natural solution hole at a depth of 92 cm below the present ground surface. Although most of the skeleton had already been removed by a backhoe, archaeological testing was

undertaken in an undisturbed area within the solution hole feature.

In addition to the partial burial, the test excavation yielded the remains of four other individuals. All of these burials were situated below piles of limestone rocks that appeared to have been intentionally placed upon the graves (Figure 2). The partial remains of another skeleton, designated as Feature R, were uncovered earlier by the bulldozer in an area approximately 50 m to the NE of the other burials. The skeletons, after being studied in situ, were transported to the Physical Anthropology Laboratory at Florida Atlantic University (Boca Raton) for further analysis. Organic materials, associated with the grave, were sent to the Geoarchaeology Research Center at the University of Miami for radiocarbon dating.

### Site Description

The Santa Maria site is located about 2.5 km south of the mouth of the Miami River on the oolitic limestone ridge that lies adjacent to Biscayne Bay. The limestone is a Pleistocene formation and the bluffs were once a conspicuous feature of the Atlantic Coastal Ridge of Dade County. The rock bluff is about 3 to 5 m above the bay at this location and is among southeastern Florida's highest elevations.

The limestone, within the vicinity of the site, was covered by a relatively thin mantle of organically-rich black soil. The depth of this soil generally varied from 10 to 30 cm; however, sediments were as deep as 125 cm in

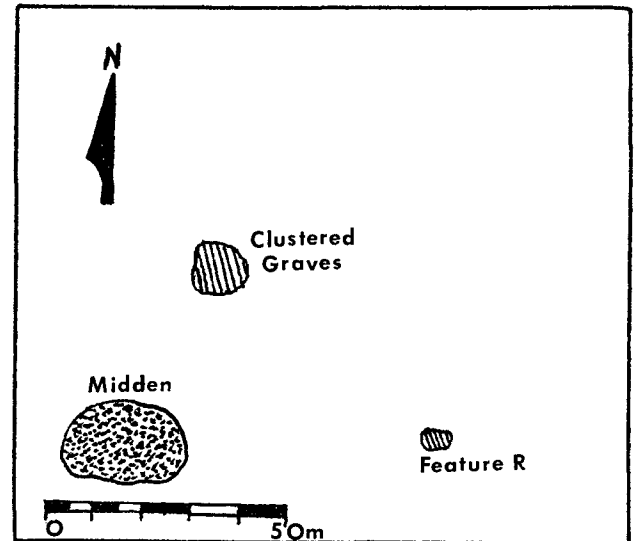
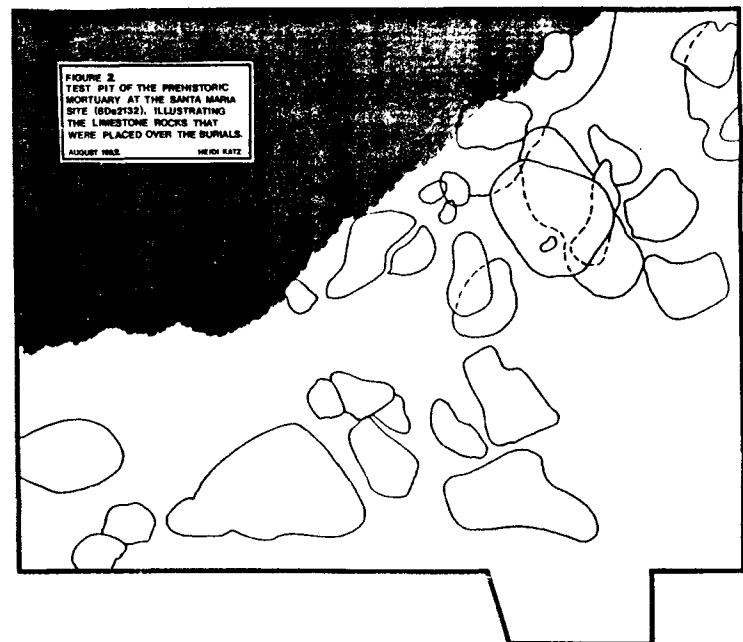


FIGURE 1. Map of 8Da2132 site area. (Note: The map being provided by the authors was lost in the mail and unavailable at press time. This substitute map was prepared from information in the text on the relative locations of the midden, Feature R and the Grave cluster.



many of the solution holes that occurred throughout the tract.

The site was situated within a hardwood hammock. During historic times this hammock extended from the Miami River southward to Coconut Grove, a distance of 11 km. Most of the vegetation had been cleared from the tract before the time of the survey. In the early 1900s, sediment from the bottom of Biscayne Bay was pumped onto the tract, particularly along the eastern side of the bluff. This sandy fill had an extensive admixture of lucine (*Lincina* spp.) shell, a factor which could have added confusion to the archaeological interpretation since lucine shells are often associated with coastal prehistoric sites in the area.

#### Radiocarbon Analysis

Five radiocarbon dates were determined for the site. The samples were composed of human bone, soil and marine shell (Table 1). The dates indicated a chronological range of ca. 2780 B.P. - 3110 B.P. for the burials. The only date outside of this range was the charcoal used for test sample UM-2409, which provided a corrected date of 4890  $\pm$  100 B.P. However, these charcoal flecks were intermixed with the burial pit soil, and may have been the result of a fire that predated the time of burial. The other two radiocarbon samples from this burial were elements which are obviously part of the interment, human bone and a marine shell tool, and their dates were consistent with the date range described above.

Radiometric age was calculated relative to 0.95x the NBS oxalic acid radiocarbon dating standard. Quoted precision is one standard deviation and include only the counting errors on the unknown sample, background and modern standard. Ages were calculated using a Libby C-14 half-life of 5568 years. Stable isotope ratios were measured relative to PDB and the corrected age took into account C-13 fractionation in nature by normalizing to -25 per mil. A 410 year reservoir correction was applied to the carbonate sample in order to offset the postulated depletion with the well-mixed layer of the ocean in these latitudes. The chronological range stated above reflects interpretations of C-14 dates using recent dendrochronological revisions (Klein et al. 1982). The complete set of radiocarbon samples is presented in Table 1.

#### Burials and Human Remains

The salvage excavation of this site produced human remains of six individuals. Five of these were uncovered within the test pit situated within a deep solution hole. The burials removed during the test pit excavation were located south of the southern wall of the construction pit. Construction activities had removed and then refilled about one-third of the area within the test pit. The depth of the burials ranged between 83 cm to 117 cm below the surface elevation. The top of the upper level of limestone rocks placed above the graves was about 55 cm below the surface.

RADIOCARBON SAMPLE NO.	SAMPLE PROVENIENCE	APPARENT C-14 AGE YEARS B.P.±	C-13/C-12	C-14 AGE CORRECTED FOR FRACTIONATION
UM-2406	Soil from cranium of Individual No. 3	3000±110	-18.89 0/00	3100±110
UM-2407	Soil adjacent to cranium of No. 2	2870±60	-20.13 0/00	2950±60
UM-2409	Charcoal from Feature R	4890±100	-24.97 0/00	4890±100
UM-2410	Human Bone from Feature R	2850±70	-13.47 0/00	3040±70
UM-2411	Strombus tool from	2990±70	0/00	2990±80 <sup>1</sup>

1. No C-13/C-12 ratio measured. Assumed 0 0/00 (marine shell). When combined with reservoir correction for South Florida correction factors cancel.

TABLE 1. Radiocarbon Sample, Location and Corrected C-14 Age.

MEASUREMENTS AND INDICES	No. 2 (female) (25-30 yr.)	No. 3 (female) (30-35 yr.)	No. 4 (male) (25-30 yr.)
Cranial Length	--	180	174
Cranial Breadth	134	141	135
Minimum Frontal Breadth	--	88	82
Maximum Frontal Breadth	127	116	104
Basion-Bregma Height	--	133 (7)	--
Porion-Bregma Height	109	114	102
Left Parietal Thickness	5	5	9
Bicondylar Breadth	--	118	--
Bigonal Breadth	--	96	--
Gonion-Symphysion Length	--	80	--
Cranial Index	--	78.33 (Mesocranic)	77.59 (Mesocranic)
Mean Porion-Height Index	--	71.03 (Medium)	66.02 (Low)
Fronto-Parietal Index	--	62.41 (Stenometopic)	60.74 (Stenometopic)

TABLE 2. Measurements (in mm) and Indices of the Santa Maria Crania.

MEASUREMENTS	I <sub>1</sub>	I <sub>2</sub>	C	P <sub>1</sub>	P <sub>2</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
<u>Maxilla</u>								
No. 3								
MD <sup>1</sup>	6.9	3.5 <sup>2</sup>	4.2	4.1	4.1	9.2 <sup>3</sup>	8.9	8.2
				7.5	8.5	9.2	11.3	10.1
BL	3.5	1.5 <sup>2</sup>	2.5	1.9	1.6		2.9	4.1
No. 5								
MD						10.2	8.8	9.2
BL						12.0	12.5	11.0
CH						3.8	3.6	5.0
<u>Mandible</u>								
No. 2								
MD				7.1		9.7		
BL				5.8		10.1		
CH				2.9		3.1		
No. 3								
MD			4.1	4.3	4.0	8.6	8.2	9.5 <sup>3</sup>
BL			6.1	6.6	9.8	9.0	9.0	9.9 <sup>3</sup>
CH			3.8	1.8	1.7	0.2	0.2	4.2 <sup>3</sup>

1. MD refers to mesio-distal; BL to bucco-lingual; CH to crown height measurements.

2. Peg-shaped incisor.

3. Taken from the right side; others taken from the left side.

TABLE 3. Dental Measurements (in mm) of the Santa Maria Crania.

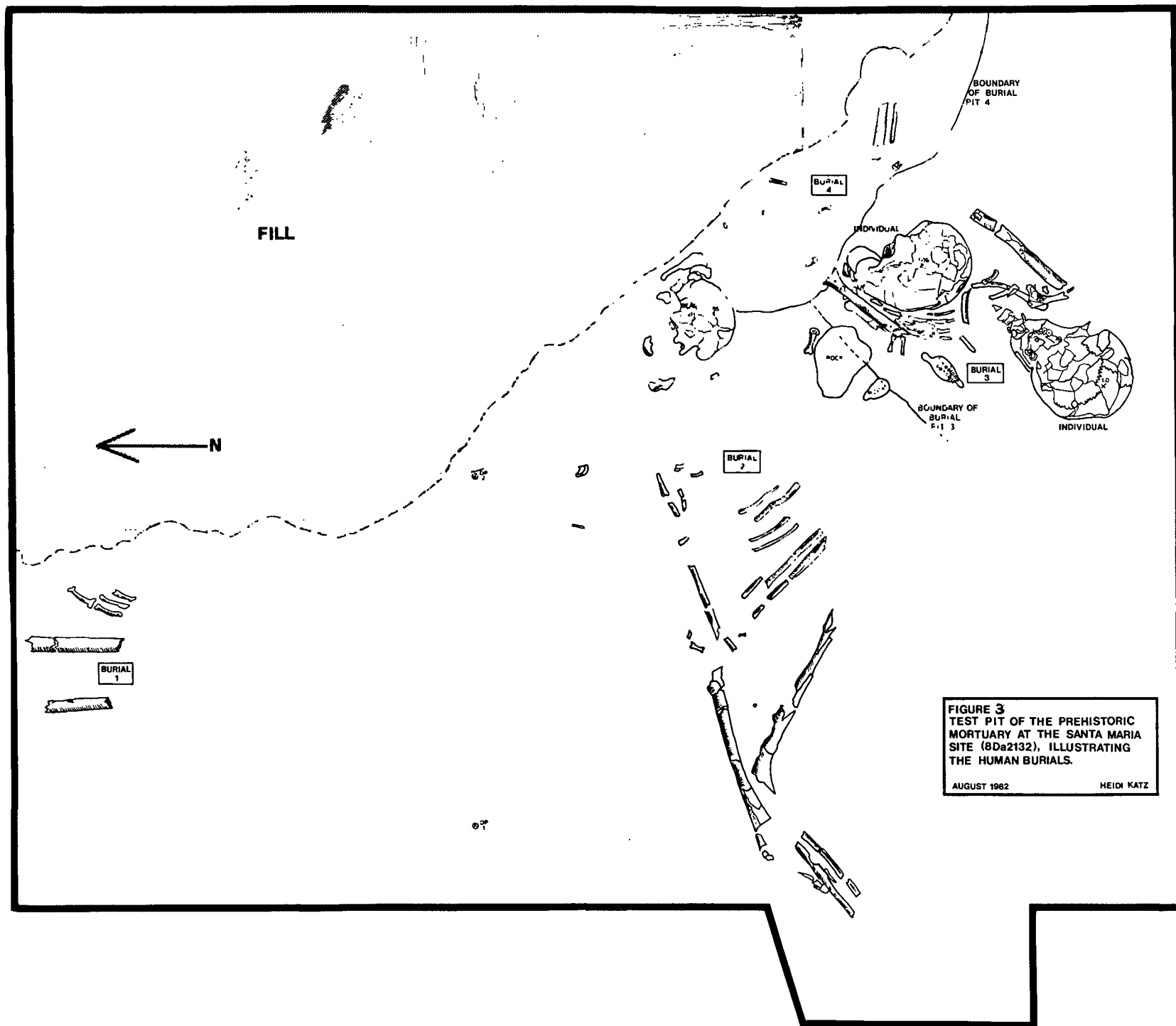
## Burial 1

This burial contained the remains of one individual, catalogued and mapped as Individual No. 1. This skeleton was represented by only two femora and several metatarsal bones (Figure 3). The rest of the burial had been removed by a backhoe. Unfortunately, these remaining bones were removed by the property's security guard (who was trying to be helpful) before a full osteological analysis was made. However, the original observations indicated that this individual was buried in a prone (primary extended) position.

## Burial 2

This burial was located about 1.5 m south of Burial 1. The skeleton of this burial was not disturbed by the construction activity. The body (Individual No. 2) was situated along an east-west axis, with the face turned eastward. The grave soil was a black humic type similar to the surrounding sediments and no grave pit could be delineated, although the rocks on top roughly approximate an outline of the burial. Though severely fragmented, the bones were sufficiently articulate to indicate a primary, partially flexed interment. The only artifacts associated with this individual are two bone beads, one situated upon the top of the skull (possibly a forelock bead), the other near the chest. A small fossilized shark's tooth about 3 cm in length, without any apparent modification, was found 10 cm south of the cranium.

Following reconstruction, a partial skull and a few



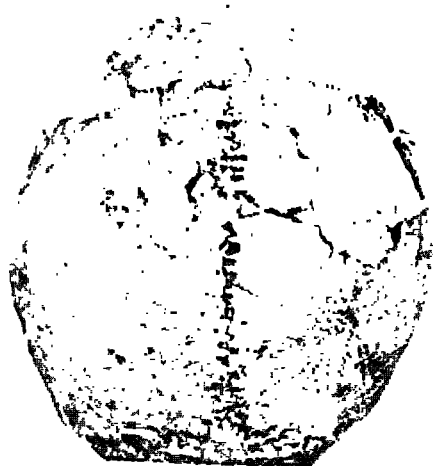


FIGURE 4. Individual No. 2. Cranium.  
Norma verticalis.



FIGURE 7. Individual No. 3. Cranium.  
Norma verticalis.



FIGURE 5. Individual No. 2. Cranium.  
Norma lateralis.



FIGURE 6. Individual No. 3 (lower)  
and No. 4 (upper) in situ.



FIGURE 8. Individual No. 3. Cranium.  
Norma lateralis.



FIGURE 9. Individual No. 3. Cranium.  
Norma facialis.



FIGURE 10. Individual No. 3. Maxillary and  
Mandibular dentition.



FIGURE 11. Individual No. 4. Cranium.  
Norma verticalis.



FIGURE 12. Individual No. 4. Cranium.  
Norma lateralis.

postcranial skeletal elements were available for measurement and analysis (Figures 4 and 5). The reconstructed skull is composed of both parietal bones, the occipital, the right temporal and the posterior half of the frontal bones. The face and mandible are too fragmentary to mend. All teeth, except a mandibular molar and premolar, are missing. The post-cranial skeletal remains are composed of long bones, without corresponding epiphyses, and a few hand bones. Based on this evidence, the sex is suggested to be female with a possible age range of 25-30 years, as estimated from the degree of the dental attrition and the cranial sutural closure.

### Burial 3

This primary interment was found about one meter below the present surface. It contained two individuals (Nos. 3 and 4) whose remains had been disturbed by construction activities. The bones of the lower extremities had been removed by the backhoe.

The position and association of the two individuals is of particular interest. During the excavation, it was observed that the cranium of No. 4 was placed upon the lower chest of No. 3 (Figure 6). Individual No. 3 was partially within the tan pamlico sand that underlies the black humic soil and the bones are relatively well preserved. The right hand of No. 3 was in close proximity with the cranium of Individual No. 4. This latter individual is represented by only a skull, which includes the entire cap and the temporal sides. The mandible and face were missing.

The only artifact associated with this grave is a flat oolitic limestone rock 13 cm in length and 2 cm thick, which appears to have two flattened knobs at each end. The general form of the artifact suggests a pendant, but its condition was so eroded from leaching by ground water that it could not be removed intact. It was located about 20 cm north of the skull of No. 3.

A portion of a grave pit outline was revealed during the excavation. The outline of the pit suggested the grave for Individuals Nos. 3 and 4 had been dug separately from that of Individual No. 2. The lowest depth of the former grave was 117 cm below the present surface elevation.

Of the two individuals found in this burial, No. 3 is better preserved than No. 4. The skull of No. 3 includes all the bones except the zygomatic arches, the orbital regions and the base (Figures 7, 8, and 9). The mandible is also complete (Figure 10) except for the right condylar process. Of the postcranial skeleton, the proximal half of the right and the distal half of the left humeri, and fragments of the forearm are present. Several of the right and left metacarpals are also relatively well preserved. This individual is identified as a female based on attributes of the cranial and postcranial skeletal remains. The skull is pedomorphic and has developed parietal and frontal eminences. Mastoid processes are small. The supramastoid crest is intermediate in size. Estimation of the age is about 30 to 35 years as determined from the degree of the cranial



suture fusion and dental wear.

The second individual (No. 4) in this burial is identified as a male of 30 to 35 years (Figures 11 and 12). As stated previously, this individual is represented only by a partial skull; no post-cranial elements were present.

#### Burial 4

This burial was located on the edge of the construction fill area. The existence of an individual (No. 5) was determined from the presence of three isolated maxillary molars and several unidentifiable bone fragments. These specimens were originally suspected to be associated with No. 4. However, careful evaluation of the soil-stained color of the bones, approximate age, dental wear and pattern and location in the burial site indicated that this individual is different from the others. This specimen is of an undetermined sex with a possible age of 25-30 years, as suggested from the tooth size and the degree of dental attrition.

#### Feature R

This burial contained one individual represented by a single tibia and several fragments of foot bones. As pointed out earlier it was originally discovered when a bulldozer destroyed the other parts of the skeleton. An in situ analysis of this burial was carried out and the remains were photographed and recorded. A heavily eroded Strombus celt or scraper was recovered about 5 cm from the tibia. Fish bones were intermixed with the burial pit soil.

#### Physical Characteristics

All of the available standard osteometric measurements were taken of the skulls of Nos. 2, 3, and 4 (Table 2). All of the specimens are mesocranic (round headed), as might be expected. However, earlier Indians of the New World appeared to be more dolichocranic (long headed) than the more recent ones (Hoyme and Bass 1962). The findings corresponded with the sample from the Republic Groves site, also an Archaic Period Indian burial site (Saunders 1972; Wharton et al. 1981). Among the measurements and indices, the most interesting one is the relationship of the cranial height (porion-bragmon) to the length and breadth of the skull. Individuals Nos. 3 and 4 differ from each other. The former specimen has a greater cranial height than the latter. Furthermore, the height of No. 2 is similar to that of No. 4.

Dental dimensions of Individual Nos. 2, 3 and 5 were taken from the available teeth (Table 3). As seen in this table, No. 2 is represented by a left mandibular first premolar and first molar. Individual No. 3 has all of the maxillary teeth except the left first molar which was extracted during life and all of the mandibular teeth with the exception of the loss of the left third molar and the central incisors. As the odontometric dimensions indicate, there was little sexual dimorphism in this population. This finding agrees with measurements recovered for Indians of later periods in Florida prehistory (Brilliant and Işcan 1982). Further

analysis of the dental dimensions indicated that first molars of the maxilla and the third molars of the mandible are larger than molars of the other. The second molars of both jaws are in general smallest. In general, the size of the teeth of the Santa Maria individuals is smaller than some of the more recent prehistoric Indians of peninsular Florida. (Snow 1962; Brilliant and Işcan 1982).

Dental wear, as measured by the height of the crown, ranged from moderate to extreme. The teeth of the two females (Nos. 2 and 3) are worn more than the male (No. 5). Age difference might account in part for this sexual variation. This extreme attrition has been commonly observed in other Indian populations (Saunders 1972; Hoyme and Bass 1962). Dental wear and health will be discussed later in the paper.

The post-cranial skeletal morphology and dimensions could only be analyzed from the remains of Nos. 2 and 3. Individual No. 2 is the most complete of the two. Based on the femur (lacking the epiphyses), the stature of this female is estimated to be about 149 cm calculated by the regression formula developed by Steele (1970). Midshaft dimensions of the femur are 24 mm (anteroposterior) and 23 mm (transverse). The same dimensions taken from the nutrient foramen level of the tibia are 29 mm and 19 mm, respectively. The tibial dimensions provided an index of flatness of 61.4, classifying the individual as platycnemical. Such a flat tibia was observed in about 25 percent of an inland Archaic

population of Central Florida (Saunders 1972). Although the real cause of bone flattening is still being investigated, inheritance, muscular activity, pathology and even habitual squatting or kneeling are among the hypotheses so far proposed (Brothwell 1981; Oettking 1930). For No. 2, this could have been because of a pathological condition. Most of the long bones suffered from a severe infectious disease, as described later in this paper.

The post-cranial skeleton of No. 3 consists of fragmentary long bones of the upper extremity. This individual appears to have a body size similar to No. 2, although cranial morphology varied. Individual No. 2 has a relatively small skull with smooth muscle attachment areas, while that of No. 3 is somewhat more robust. Individual No. 3 had a well-developed occipital chignon, large mastoid processes and pronounced skull. The same female (No. 3) also has a greater cranial height than the male (No. 4). The male skull has smoother muscle attachment areas and a more curved occipital region.

### Paleopathology

The health status of this sample population is analyzed in three general categories dental pathology, osteopathology and environmentally induced conditions.

The dental health can best be determined from Individual No. 3 (Fig. 10). An analysis of this individual indicates that four teeth (mandibular central incisors and left second incisor, and maxillary left, first molars), were extracted

during life. All the remaining teeth show extreme dental wear, the degree of which is rated to be at Stage 3 or 4 according to the scale developed by Anderson (1968). The wear pattern in the teeth of Individuals No. 2 and No. 5 is rated to be at Stage 2 (crown flattened). The dental wear in a similar age category seems to be less in the Archaic population of the Republic Groves site (Saunders 1972). Although the individuals of the present site do not show any evidence of caries and hypercementosis, periodontal disease and abscesses were common. The individual which shows clear evidence of periodontal disease and apical abscess is No. 3. In this individual, bone resorption was observed around the alveoli of all the teeth and the distance between the enamel of the crown and the alveolar process averaged 5 mm indicating the severity of the periodontal lesion. This amount of resorption was about twice that of a normal contemporary individual. In the same individual, apical abscesses were observed in the alveoli of the left second molar and right first molar in the mandible and left second molar and right first molar in the maxilla.

Another interesting aspect of the dentition was seen in No. 3 (Figure 10). In this individual, the first right maxillary molar is worn from the buccal side and the buccal half of the occlusal surface more so than the lingual surface. This wear pattern was a result of the shifting of the crown from the normal position to the lingual side of the jaw. In the mandible of the same individual the opposing molar

shift is not as pronounced as the maxillary one. Such a wear pattern was also described in the Republic Grove site (Saunders 1972). However, the direction of wear was at the opposite side; that is, the buccal side was less worn than the lingual side.

The dentition of No. 5 shows the presence of an interproximal groove between the second and third molars. This small groove usually has been attributed to the habitual process of removing the debris of meat and other fibrous food by a toothpick or a similar device, a procedure that was frequently observed among the American Indians (Schultz 1977; Ubelaker et al. 1972) as well as postulated for Florida Archaic Indians (Saunders 1972).

Although the number of individual skeletons is small, several specimens have lesions worth considering. The paleopathology of the sample is best illustrated by the condition of No. 2 (Figures 13 and 14). The most obvious disease is represented by the presence of a nonspecific infection affecting the femora, tibiae, left ulna and frontal bone. The condition was morphologically very similar to osteomyelitis, a disease that includes osteomyelitis itself, osteitis and periosteitis (Steinbock 1976; Ortner and Putschar 1981).

The general characteristics of these long bones included a subperiosteal new bone mass caused by bone apposition indicating the presence of involucrum. Every affected bone showed multiple cloacae or crater-like drainage holes through which pus could enter



FIGURE 13. Individual No. 2. Osteomyelitic lesion involving femora, tibia and ulna.



FIGURE 14. Individual No. 2. Probable osteomyelitic lesion of the frontal bone and several depressions of the frontal bone.

other tissues. However, no sequestrum was observed. From these multiple cloacae and involucra, it is obvious that the disease was in a chronic stage of development.

This suppurative osteomyelitis has been associated with Staphylococcus aureus (Steinbock 1976). The organism enters the body indirectly (hematogenous osteomyelitis) through the bloodstream into the nutrient artery of the long bones or directly as a result of trauma (e.g., fracture of a bone) or hemorrhage. In general, the focus of infection is at the metaphysis of a long bone. From this point, the disease can spread into the epiphysis and the adjacent synovial cavity. This kind of infection is caused by an indirect exposure of an individual to bacteria (Steinbock 1976).

In Individual No. 2, this indirect exposure causation was not the case since the metaphyses of the affected areas seem normal but the shaft itself was affected. This observation, as also pointed out by Steinbock (1976), may have been due to direct exposure to bacteria. As can be judged from the severity of the lesion, the point of infection was probably both the left femur and left ulna. In addition, individual No. 2 also has various small circular structures with a diameter of about 3 to 5 mm and more than a millimeter in depth. These circular depressions are present in all of the bones affected by osteomyelitis and yet no clearcut relationship could be established. It is possible that these circular structures are the result of a post-mortem condition, such as from insects.

Arthropathology is probably the most commonly observed skeletal problem in human history (Brothwell 1981). Presence of a degenerative joint disease was reported for several sites in Florida (Saunders 1972; Snow 1962). In the Santa Maria collection, a severe case of osteophytosis was seen in the left inferior articular facet of the atlas of Individual No. 3 (Figure 15). The degree and the morphology of the lesion suggest that there was a bone-to-bone contact with the axis and other cervical vertebrae. This specimen also lacked the other vertebrae. From this observation, it is possible that the osteomyelitic lesion and cervical arthropathy were related, although both conditions could have occurred independently of each other.

Another interesting aspect of this sample is the cranial trauma in Individual No. 4. This individual is represented by only a partial cranium. The cranium was broken in such a way that violent trauma may explain the condition (Figure 16). The right parietal bone near the lambdoid suture seems to be cut in a posterior-anterior direction. The cut mark is about 12 cm long running from the squamosal suture to the sagittal suture. The affected area on the reconstructed skull and loose bone fragments does not show any bone healing reaction, indicating that the individual died soon after the trauma. Furthermore, the cut pattern in this skull is similar to those made by a sharp instrument (Brothwell 1981). This cranium was found as an "artifact" in association with Individual No. 3. It should also be mentioned that a skull



FIGURE 15. Individual No. 3. Osteoarthritic atlas. Inferior articular facet.



FIGURE 16. Individual No. 4. Evidence of possible trauma on the right parietal bone.

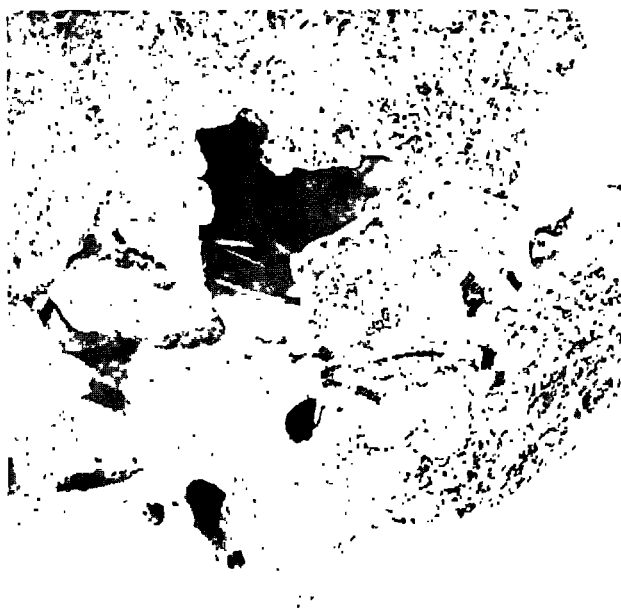


FIGURE 17. Individual No. 4. A canal penetrating through the supramastoid crest.



FIGURE 18. Individual No. 3. Incomplete tunnels forming a circular pattern on the left parietal bone.

cap artifact is described by Willey (1949) from the Belle Glade site. At the Belle Glade site, the entire calva was removed and posteriorly sawed just below the occipital protuberance. This description does not coincide with the skull of this study.

In addition to the cranial trauma and dental peculiarities, the Santa Maria site presents several other challenging problems that deserve analysis. Circular structures, mostly visible on the crania, are present in the forms of holes (No. 4), tunnels (No. 3), and depressions (No. 2). The depressions were described in the paleopathology of the latter individual. Since an association between the disease and the structures has not been established, other factors need to be considered as possibly having caused these structures. However, roots and insects are not thought to be responsible for the depressions, since these factors would cause a different type of deterioration on the skeleton. The holes of cranium No. 4 were observed in the right parietal and left temporal bone near the parieto-mastoid suture (Figure 17). Both of the holes penetrated into the cranial cavity and caused extensive damage in the interior surface of the bones involved. It is thought that these structures were made by plant roots. This view is based on the presence of several rootlets in the holes.

Individual No. 3 is the most interesting of all. This individual contained six incomplete tunnels on the left parietal bone (Figure 18). The tunnels formed an oval or rectangular shape and appeared

to have been made by "drilling." A survey of the literature did not yield any archaeological or ethnographical examples to suggest a cultural origin for these drilled "tunnels" (Işcan et al. 1982). The only study that described similar "tunnels" was made by Miller (1975). Although Miller's study did not show any illustrative support, the tunnels were also smoothly made and he considered them man-made. In the case of Individual No. 3, tunnels were first thought to be made by insects (Işcan et al. 1982). However, this possibility seems remote since the skull was not an ideal place for insects to lay eggs or to nest because of the hardness of bone tissue. Plant roots, also, are not thought to be the causative factor since the tunnels are incomplete and the bone was not damaged in any way.

### Discussion and Conclusion

South Florida's prehistoric mortuary patterns have been briefly discussed by Goggin (1949), who noted a wide variety of patterns that included both primary and secondary interments within both burial mounds and middens. The Santa Maria burials present mortuary traits quite distinctive from those previously known in South Florida. First, these burials were deliberately interred within natural solution holes. Afterwards, oolitic limestone rocks were piled on top of the graves. Possibly, the rocks upon the graves were markers or used to keep predators from disturbing the bodies.

The Santa Maria cemetery includes mortuary traits that raise questions about ritual mortuary behavior. First the

only complete skeleton, Individual No. 2, is missing her feet. Despite careful excavation and observation of the area of the burial pit where the feet should have been situated, there was absolutely no evidence of any bones, deteriorated or preserved, within that area of the pit. It is the authors' belief that the feet were removed prior to interment (but it is not known whether this removal was by the individuals conducting the interment or the result of enemy groups killing individuals and removing their hands and feet for placement as trophies, on sticks). Second, the cervical vertebrae were missing from all of the burials. This general absence of vertebrae is also true of burials from two other Late Archaic cemeteries, 8Da1082 and 8Da1053, the remains from which are now being analyzed by Carr and Işcan. The absence of the vertebrae and the feet may be attributed to ritual behavior of unknown significance. However, one possibility is that it was an attempt to "cripple" or deter the dead from any return to the world of the living. These speculations are offered here to encourage other investigators to consider these types of mortuary patterns when excavating South Florida cemeteries.

Perhaps the most intriguing element of the Santa Maria burials is the cranium that was situated in front of the lower chest of Individual No. 3. This cranium (Individual No. 4) may have been an ancestral heirloom such as from a relative of Individual No. 3. It could also represent a trophy skull, a murder victim resulting from tribal conflict. This latter hypothesis is given an increased

possibility of being accurate by the nature of the trauma on the cranium that suggests death by a blow to the head. Additionally, the distinct morphology of this cranium suggests it may be from a population that is different from the other interments of the cemetery. The custom of retaining single skulls as trophies within burials is also proposed by Sears (1956) from the Kolomoki site in Georgia.

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- Robert S. Carr  
Metro-Dade County Historic Preservation Division  
111 SW 5th Avenue, Suite 101  
Miami, Florida 33130
- M. Yaşar Işcan  
Department of Anthropology  
Florida Atlantic University  
Boca Raton, Florida 33431
- Richard A. Johnson  
Geoarchaeological Research Center  
Department of Geology  
University of Miami  
Coral Gables, Florida 33124