Targeting the Jamaican Ostionoid: The Blue Marlin Archaeological Project[1]

SABRINA R. RAMPERSAD

Status of Jamaican Prehistory and Redware Studies

The study of Jamaica's earliest prehistory has yet to receive concentrated and widespread attention from archaeologists. One reason for this is that, until recently, too few professional archaeologists have existed on the island, and fewer still have been tempted by, or equipped for, the study of the island's prehistory. This situation is changing gradually as university-trained archaeologists continue to emerge in Jamaica, nonetheless, such a positive development is counteracted by a persistent negative: professional archaeologists outside Jamaica have generally not addressed the island's rich prehistoric resource. Thus, within the entire Caribbean, Jamaica remains one of the least known islands prehistorically. Even within the Greater Antilles, knowledge of Jamaica's pre-Columbian peoples lags behind that of Cuba, Haiti, the Dominican Republic, and Puerto Rico.

The work of the Blue Marlin Archaeological Project on Jamaica's south coast (Figure 1)[2] is seeking to address the paucity of knowledge concerning the earliest known occupation of Jamaica, the Ostionan Ostionoid culture,[3] informally referred to as 'Redware.' This culture predated the arrival (on Jamaica) of the better-known Taíno (Meillacan) prehistoric populations by about two hundred years. The present archaeological remains of both cultures show that Jamaican Redware and Taíno peoples were two distinct cultural entities, at least in their early stages, although it is suspected—but not proven—that the Redware culture became assimilated into that of the Taíno through a process of social and cultural interaction over time. Thus, the Redware culture could well have evolved into what we now recognize as Taíno, without the intermediate stages of such development yet apparent in the thin archaeological record. At its outset, the Redware culture is distinct from the Taíno culture by the characteristics of its ceramics, its habitation preferences, and by its dietary habits. For example, the presence of red slipped or red painted ceramics in Redware assemblages (hence the term Redware) is not known in Taíno assemblages. These ceramics bear a fine sand temper in contrast to unslipped and unpainted Taíno wares with coarser tempers. The settlement pattern of Redware peoples at present reflects a coastal

orientation where people lived within 100 metres of the shoreline, while the later Taíno populations generally preferred inland locations on high ground overlooking the sea, although some coastal Taíno sites are known on Jamaica.

Figure 1a and 1b: Location of Blue Marlin site, 60 m from the sea

Fig 1a

Fig 1b

Only two radiocarbon dates (Vanderwal, 1968, p. 130; Keegan, 2000a, para. 2)[4] have been obtained for the Jamaican Redware, which presently place this cultural sequence between c. A.D. 650 and c. A.D. 850.[5] The Taíno culture is known by a more sizeable collection of radiocarbon dates from a number of sites, which place it between A.D. 800 to A.D. 1494. Thus, it was the later prehistoric peoples, the Taínos, whom Columbus met when he arrived on Jamaica, with all visible traces of the Redware peoples having disappeared by that time. The sparse archaeological record so far supports the disappearance of the Jamaican Redware culture within prehistoric time, and thus, Redware peoples were unseen, unaffected, and unrecorded by historic populations.

At the time of writing, no earlier culture, either ceramic or aceramic, predating the Redware sequence has been reported on Jamaica. It is likely that this circumstance is not an accurate reflection of prehistoric reality, since both ceramic and aceramic complexes have been found in pre-Ostionoid sequences on neighbouring islands of the Greater Antilles (Cuba, Hispaniola, Puerto Rico). Concerning the earliest occupation of Jamaica, one writer notes:

> It is quite remarkable that such a large land mass in the Americas went uncolonized for so long. It may well be that evidence of earlier occupations or at least visits will eventually come to light, for Jamaica is just beginning to receive the intensity of archaeological research that the other Greater Antillean islands have experienced (Wilson, 2007, p. 102).

What is more remarkable is that the date of the earliest migration to the Greater Antilles (from Central America), which populated this chain of islands, took place as early as c. 4000 B.C., leaving Jamaica apparently untouched.[6] Scholars working in Caribbean prehistory have advocated the possibility of pre-Ostionoid sites on Jamaica so frequently (e.g. Reid, 2009, p. 76; Wilson, 2007, p. 102) that its likelihood must now become a working assumption if the knowledge of Jamaican prehistory is to advance. The writer proposes, therefore, that pre-Ostionoid sites on Jamaica must be properly targetted through a program of systematic and intensive survey if they are to be located. No comprehensive archaeological survey of the Jamaican coastline has yet been undertaken, and this gap needs to be addressed within the context of Ostionoid archaeology. A survey of this type must be both archaeological and geological, taking into account the probable loss of coastal sites through land subsidence under the sea. Redware sites along the north

coast, known about forty years ago have already been lost in this manner (see table 1).

Distribution of Jamaican Redware Sites

It is difficult to arrive at numbers of distinct Ostionoid sites in Jamaica, because of the tendency of scholars to count numbers of sites (in publication), without listing sites specifically by numeric and/or named designations. Including the new Blue Marlin site, nineteen Redware sites are known for certain, and these are listed in table 1. Most are habitation sites, but a few are caves used in prehistoric time for burial. An additional eight sites are mentioned by Lesley-Gail Atkinson (2006, p. 130), but their location and their nature can not be determined from the existing published literature. In table 1 the 'Lee designation' refers to the island-wide coding of sites by parish by James Lee between 1960 and 1980, and is included here for the benefit of those familiar with this site reference system. For others, it is better to go by the name of the site, although some names such as 'Alligator Pond' have been used more than once to refer to different sites in the same vicinity. Because of this, Lee's alphanumeric system is still useful for distinguishing those sites with duplicated place names discovered before 1980.

If the corpus of sites is plotted on a map, the result is that three distinct spatial clusters of Redware occupation emerge along the Jamaican coastline. One cluster occurs on the northern coast of St. Ann parish, a second in the southern adjacent parishes of Manchester and St. Elizabeth, and a third along the southwestern coastlines of Westmoreland and St. Elizabeth (Figure 2). I suggest that such a widely spaced distribution is 'suspicious', and is a good indication that Redware sites might well be found all around the island's coastline if an intensive systematic survey of the type proposed above were undertaken.

Other than the Blue Marlin site, only Paradise Park in Westmoreland has undergone systematic excavation in one season, with an additional season of test survey having been undertaken (see Keegan, 1998 and 2000a for reports). At Paradise Park, indications are that both Redware and Taíno peoples inhabited this locality, albeit in spatially distinct contexts. Recent analysis of shell remains from Paradise Park (Keegan *et al.* 2003) has begun to yield comparative information about how Jamaica's two prehistoric populations might have adapted differently within closely similar environments.

Table 1: Jamaican Redware habitation sites and burial caves

Site Name	Lee designation	Location	Status/notes	Publication
1. Alloa	A-4	St. Ann parish, north coast	Destroyed 1963, by highway construction	Vanderwal, 1968: 96
2. Little River	A-15	St. Ann parish, north coast	Type site for Redware culture. Destroyed; washed into sea	de Wolff, 1953; Vanderwal, 1968, 94, 96; Lee 1980, 597
3. Runaway Bay	A-30	St. Ann parish, north coast	Destroyed by construction	Lee, 1976, 2
4. Mammee Bay	None; not a Lee site	St. Ann parish, north coast	One of 12 sites discovered since 1980, after Lee's work	Atkinson, 2006, 130
5. Alligator Pond	E-1	St. Elizabeth parish, south coast	Storm damage has resulted in disturbed and unstratified deposits	Vanderwal, 1968, 96, 99
6. Black River	E-3	St. Elizabeth parish, south coast	Destroyed by building activity	Vanderwal, 1968, 100
7. Great Pedro Bay	E-4	St. Elizabeth parish, south coast	Completely covered by a sand dune	Vanderwal, 1968, 99; Lee, 1976, 3; Lee, 1979, 4; Lee 1980, 601
8. Alligator Pond	E-5	St. Elizabeth parish, south coast	Storm damage has resulted in disturbed and unstratified deposits as for E-1	Vanderwal, 1968, 96

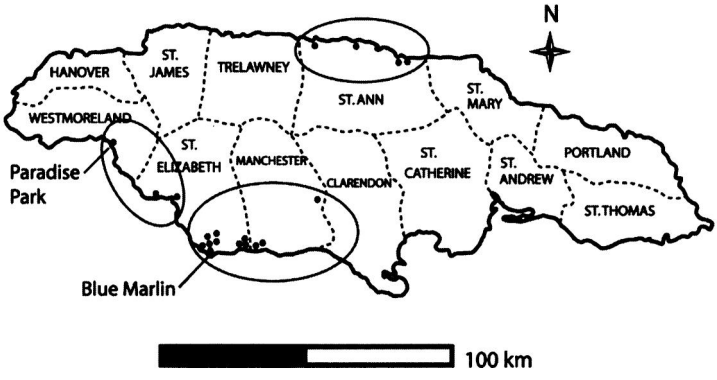
9. Parchment Cave	EC-5	St. Elizabeth parish, south coast	A Redware cave; pottery & skeletal material found	Lee, 1979, 1, 4
10. Longacre Point	E-6	St. Elizabeth parish, SW coast, between Luana Point and Black River	Status unknown. Excavated by Brother Michael in 1966	Lee, 1976, 3
11.	E-6	St. Elizabeth parish, south coast	Status unknown	Lee, 1976, 3
12. Baalbec	EC-10 (burial cave)	St. Elizabeth parish, far inland	Yielded turtle bowl and skeletal material	Lee, 1979, 1, 4-5
13. Calabash Bay	E-11	St. Elizabeth parish, south coast	Status unknown	Lee, 1976, 3; Lee, 1979, 3; Lee, 1980, 601
14. Sandy Bank	E-13	St. Elizabeth parish, south coast	1 km from shore on solid sandstone, not sand	Lee, 1979, 1
15. Blue Marlin	None: not a Lee site	St. Elizabeth parish, near Great Bay, south coast	Good condition	Rampersad, this article
16. Paradise Park	Designated W -11 but not by Lee (see Ebanks 1992)	Westmore-land parish, SW coast. One of 12 new sites discovered since 1980 after Lee's work	Good condition	Ebanks, n.d.; Keegan, 1998 & 2000a Atkinson, 2006, 130

17. Anderson	None: not a Lee site	Manchester. One of 12 new sites discovered since 1980 after Lee's work	Status unknown. (Near Alligator Pond, M-4)	Atkinson, 2006, 130
18. Bottom Bay, a.k.a. Alligator Pond	a.k.a. M-4	Manchester parish, south coast; 180m from sea	Partially or wholly covered by sand dunes. Excavated by Vanderwal.	Vanderwal, 1968, 96, 99; Lee, 1976, 3; Lee, 1979, 2; Lee, 1980, 597
19. Porus Manchester	None: not a Lee site	Manchester. One of 12 new sites discovered since 1980 after Lee's work.	Status unknown	Atkinson, 2006, 130
20-27	Eight additional sites found after 1980.	Locations undetermin-able from published literature	Uunknown	Atkinson, 2006, 130

The Blue Marlin Site

The Blue Marlin site is located at latitude 17° 52' 1.81" N and longitude 77° 44' 25.77" S. The area designated an archaeological site (see Figure 1b, white outline) is an undeveloped portion of a two-acre beach resort property on the south coast of Jamaica in the Great Bay/Treasure Beach region. As a prime resort area, the property surrounding the site is occupied by holiday cottages and other guest amenities, and in addition, plans are underway for the future development of the area now designated an archaeological site. This area (Figure 1b, white outline), is presently fenced off from the remainder of the property, and it is this factor that has determined the site's archaeological boundaries, since the rest of the property is off limits for field investigation. With development plans underway, time is of the essence in the investigation of this site, but it should be noted that the landowners are keenly interested in developing the archaeological resource on their property; they have in fact granted permission for its investigation over a three-year period.

Fig 2: Distribution of Redware sites in Jamaica



Until 2007 no formal archaeological investigation had yet been undertaken on any part of the property, although it has long been known from the avocational interests of the former landowner, who undertook limited, informal excavations, that the two acres of land is rich in Redware cultural remains. In addition, years of surface collecting by the landowners, past and present, have yielded an impressive private collection of prehistoric artifacts (ceramics and stone tools), although, unfortunately, none of this material has yet been published.

In January 2007, the writer first visited and confirmed that the Blue Marlin property did belong to the small corpus of sites in Jamaica that contains Redware material. This assessment was informed by a fieldwalking survey of the fenced perimeter or site, which yielded surface finds of Redware sherds as well as small amounts of prehistoric lithic material. Most importantly, I have determined by now that the Blue Marlin property was not listed in any past archaeological surveys, particularly those of Dr. James Lee. It is not to be confused with the E–4 site at Great Bay (see table 1), near the Blue Marlin property and already noted by Lee. The Blue Marlin site is therefore a new addition to the known corpus of Jamaican Redware sites (table 1). The first formal archaeological excavation began there in August 2007.

The site's location within 60 m of the coastline fits the general profile given by Lee for Redware sites in Jamaica (Lee, 1979, p. 2). Its proximity to the beach, as the faunal material will show (below), no doubt facilitated the exploitation of coastal food resources. Also consistent with Lee's profiling is a shallow cultural deposit of only 30–45 cm deep, making it typical amongst the known Redware deposits on the island. The site is both shallow and stratigraphically

uncomplicated, with two brief layers of cultural deposition immediately overlying the virgin subsoil. Minor amounts of historic material (British colonial) were recovered within the top few centimetres only, but for the most part the site is 'pure' Redware with no evidence of a later Taíno occupation within or around the excavated area.

The 2007 field season has established that the Blue Marlin site was certainly a place of habitation for at least a small population of Redware people. In the single (2 m x 2 m) trench opened in 2007 a compacted floor surface of a prehistoric structure was uncovered along the eastern borders of the unit, indicating the presence of an ancient settlement in the northern portion of the site. Three small postholes (8–10 cm in diameter) were also found in the basal levels of the trench, forming a partial circular patterning underneath the floor and thus indicating the presence of a rounded structure. Sectioning of these three features unfortunately yielded little material evidence, however, by their small and shallow dimensions, it is assumed that a small or light-framed structure is represented. Further efforts to uncover the entire floor surface and its associated postholes were left unfinished until the 2008 season, when it is hoped more of the feature can be found, excavated, and recorded.

The Blue Marlin Ceramics

Within the short two-week excavation season (cut short by hurricane Dean), 2,207 ceramic sherds were recovered and 220 or ten per cent found to be diagnostics (rims, bases and handles). Such a small number of diagnostic sherds is not considered representative of the entire pottery assemblage of the population that once occupied this site, and it will take at least another season of data collection to acquire a more representative sample. Nonetheless, the diagnostics recovered so far are being formally drawn and used to begin a typological sequence of forms. In the absence of formal typological studies on Jamaican redware, the justification for using this type of classificatory system is to arrive at a definition of Jamaican redware by documenting its forms and eventually its fabric types. It is hoped that in time absolute dates can be assigned to specific forms and fabrics and that Jamaican redware will be able to stand, first, on its own within its internally defined chronology, and secondly within the wider comparative context of Ostionoid sequences from other islands of the Greater Antilles.

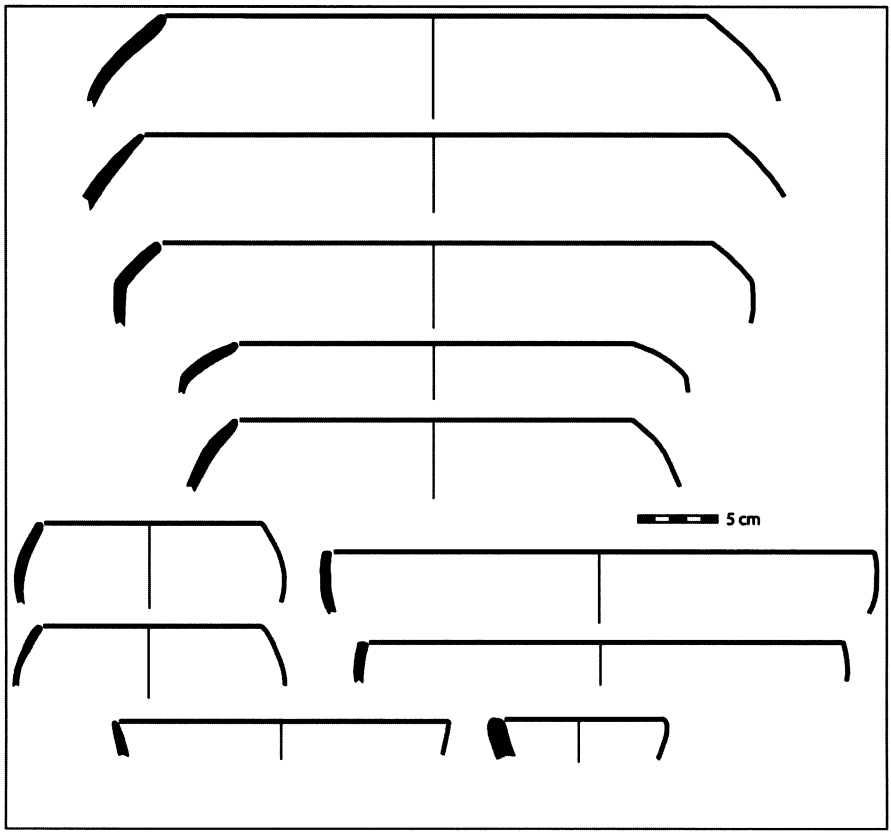
The pottery is hand-made (not wheel-made), thin, hard, smooth on both surfaces, very well fired, and thus typical of most other Ostionoid assemblages throughout the Greater Antilles. The fine texture sets it apart from the much

coarser Taíno wares, supporting the consistent observation of a more superior ceramic tradition amongst the earlier (pre-Taíno) ceramic-using peoples of the Greater Antilles.

The Blue Marlin forms thus far show a preference for inwardly curving bowls and pan-like vessels of a variety of sizes (Figure 3), although straight-sided open forms are present among some smaller vessels (Figure 3, lower).

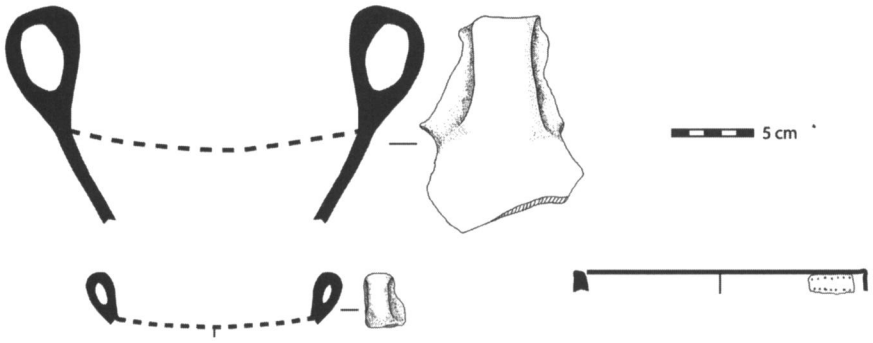
All are likely domestic forms intended for food preparation, storage, or eating purposes. The most striking vessels are undoubtedly the handled wares of either round or elliptical shape (Figure 4). From studies of Puerto Rican Redware ceramics, loop-shaped handles as seen here are a feature of early Ostionoid sequences (Espenshade, 2000, p. 4), and are a distinguishing feature of the early Ostionoid expansion within the Greater Antilles. Other features of the Blue Marlin

Figure 3: Domestic wares: Large pans and bowls



ceramics that suggest an early Ostionoid sequence are the relative rarity of decoration on vessels, and the low occurrence of burnished or semi-burnished sherds.

Figure 4: Handled cooking wares and decorated sherd



Blue Marlin Shell Industries

It is generally well understood that prehistoric peoples in the Caribbean exploited shell resources as a food source, but more significant for the Blue Marlin site is the use of shell as tools. There is evidence that a number of different tool types were made on a select variety of shells, notably *Strombus gigas* (queen conch), *Codaika orbicularis* (tiger lucine), and *Cittarium pica* (West Indian top shell). Tool types identified from the 2007 shell assemblage include

(1) gouges (Figure 5), including one attractive incised example (Figure 6)

(2) spoons or scoops made from the lip of a conch (figure 7),

(3) possible hammers made from entire juvenile conch, showing beveled tips from heavy use (Figure 8),

(4) Scrapers made on tiger lucine and West Indian top shell (Figures 9 and 10 respectively),

(5) Planing tool made from a half-sectioned body of conch shell (Figure 11).

(6) Possible drills made from the internal columella of the queen conch (Figure 12).

Figure 5: Gouges made from conch

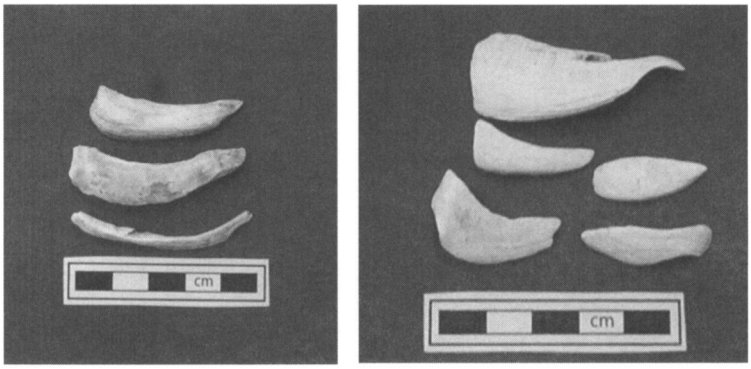


Figure 6: Decorated (incised) tool from conch

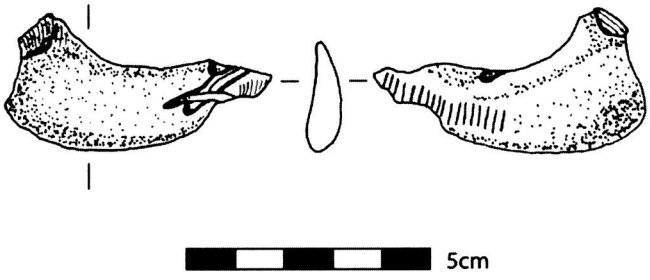


Figure 7: *Strombus gigas* scoops and spoons

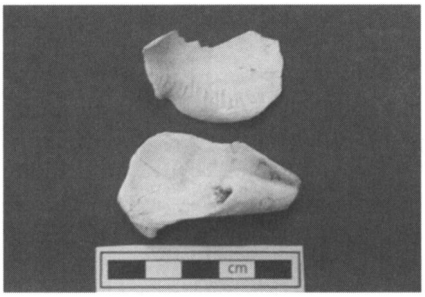


Figure 8: *Strombus gigas* hammers

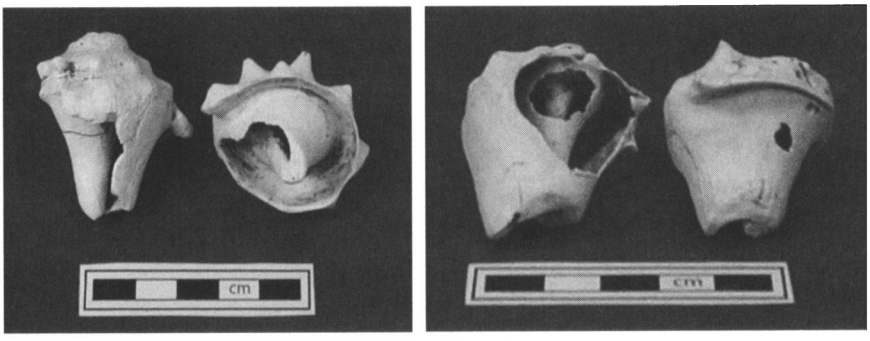


Figure 9: *Codakia orbicularis* scraper

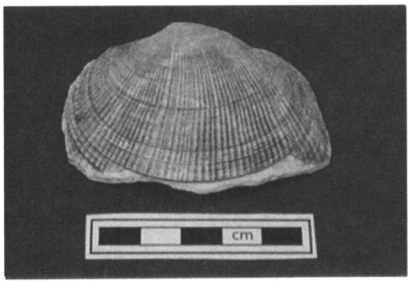


Figure10: *Cittarium pica* scraper

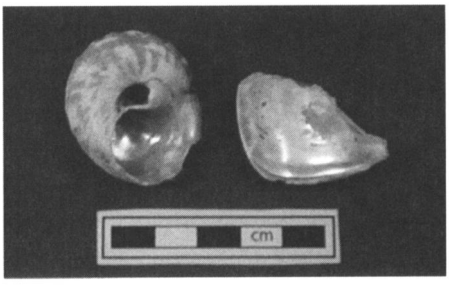


Figure 11: *Strombus gigas* plane

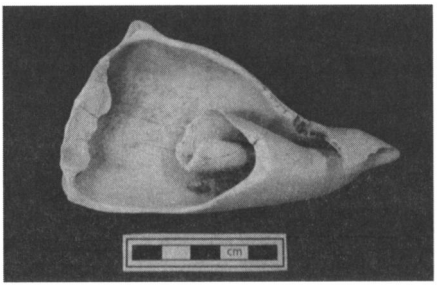
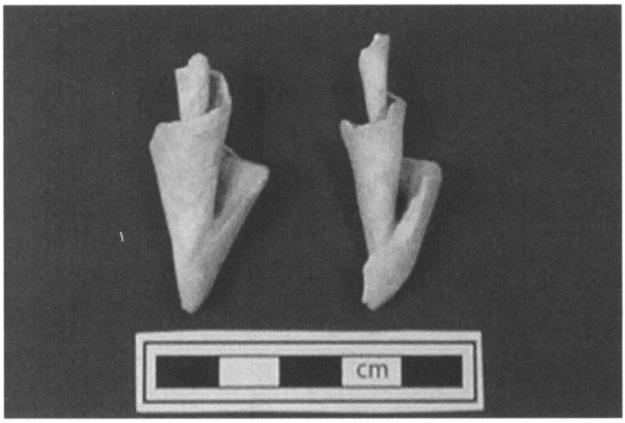


Figure 12: *Strombus gigas,* possible drills



From analyses of contemporary shell assemblages on other islands of the Greater Antilles (O'Day & Keegan, 2001) it is possible to conclude that the shell implements found at the Blue Marlin site are 'expedient' (O'Day & Keegan, 2001) rather than formal tools; that is, the shell was merely broken or cut into the desired shape and without further reduction or other modification was used for the task(s) required. This impromptu use of shell tools has important implications for the economic interpretation of this culture. Clearly a minimum amount of energy was expended in the production of shell tools, which might be a function of the high availability of this raw material within the environment. There would have been little need to curate (keep, maintain, and reuse) tool forms for long periods of time, and when forms became worn or broken, new forms could be produced as replacements readily and quickly. Much more needs to be said about this important class of evidence. Determining tool use from any material type is a more involved process than simple observation with the naked eye. Rather, one requires microscopic use-wear analysis of the working edges in order to define patterns of wear that might indicate use on specific materials, such as wood, stone, etc. Use-wear analysis, therefore, has the potential of determining likely tasks employed by the shell implements recovered from the site, and this is the direction in which further analysis of this tool kit is likely to proceed.

Significantly, some shell types seem never to have been used as tools, and their appearance on the site in large numbers attest to their exploitation as a food source only. These species include *Arca zebra* (turkey wing), *Donax denticulatus* (common Caribbean donax), *Fissurella nodosa* (knobby keyhole limpet), and various varieties of *Pleurodonte* or land snail.

Faunal Remains

A small faunal assemblage of about 350 bone fragments has been recovered thus far from the site. This material has undergone preliminary analysis, with the following broad groups emerging:[7]

Pisces	7%
Cheloniidae/Trachemys terrapen	77%
Aves	0.9%
Geocapromys brownii	4%
Unidentified	10.4%

Clearly the overwhelming majority of the bone material is that of turtle (with exact species yet to be confirmed), indicating a heavy exploitation of this class of fauna. *Cheloniidae* represents the family of sea turtles, while *Trachemys terrapen* is the Jamaican Slider Turtle, a freshwater species endemic to Jamaica and presently endangered. It still inhabits the wetter regions of the southern coast of Jamaica as in prehistory, in environments ranging from permanent and seasonal ponds, to caves that hold water during the dry season, as well as streams. It is not known to inhabit the mangrove regions of the island. It is most interesting that at Paradise Park, turtle remains also dominate the faunal assemblage, although the species and their exact proportions have yet to be reported.

The remains of bird *(Aves)* are thought to be a natural occurrence in the site and not necessarily a result of cultural activity, since a few bones only were uncovered at the top levels of the subsoil. Given the coastal orientation of the site, it is surprising that so little fish remains have been recovered, despite careful dry sieving (1/8-inch mesh size) to collect such remains in the field. Similarly, the low recovery of *Geocapromys brownii* or the Jamaican hutia (coney) is equally surprising, as this is a species known to have been more heavily exploited by the Taíno prehistoric populations on the island.

Assessment of the Blue Marlin Site

The shallowness of the habitation remains at the Blue Marlin site indicates one or more factors: a small population living on the site, a short period of occupation, and/or a seasonal occupation based on the availability of desired marine resources. It is yet to be determined whether the site might have been a seasonal rather than a permanent settlement, however, the recovery of more faunal and shell species will be instrumental in determining this, as will a better definition of the structure type and construction. Indications are, from other Redware

complexes in the Greater Antilles, that these people were not nomadic or even semi-sedentary, and that they did settle in permanent communities. The shallowness of their habitation sites, also observed outside of Jamaica, has been explained by the rapid expansion of Ostionan groups out of Puerto Rico and across the islands of the Greater Antilles, including Jamaica (Keegan, 2000b, p. 150). Thus the speed at which the Ostionan expansion took place could well have resulted in "settlements that were small and widely scattered" (Keegan, 2000b, p. 150) throughout the northern Caribbean.

Economically there is little evidence for hunting as a means of subsistence at the Blue Marlin site, as attested by the virtual lack of land mammals (Jamaican coney only) and their small percentage. Small flakes of chert, which are likely indications of hunting activity, have been found in this site, but their numbers are minimal at best. This material is undergoing analysis, but its scarcity does not support extensive hunting pursuits. As indicated, this contrasts sharply with the Taíno inland populations who exploited a larger proportion of the Jamaican coney, and whose sites exhibit a more abundant lithic repertoire than at the Blue Marlin site. Furthermore, there is a de-emphasis of the fishing economy at Blue Marlin, in contrast to the well-represented fishing complexes in the later Taíno sequences on the island. Instead, we see an overrepresentation of the sea turtle, suggesting that, in addition to shell foods (and perhaps in preference to shell foods), turtle was a main source of protein in this population's diet. Although little can be said yet about the nature of procurement of food at this site, one need not assume a knowledge of deep sea fishing for the exploitation of sea turtle; females of most species would have been easy prey when they ventured onto shore to lay their eggs, particularly between May and October as they migrated to their annual nesting beaches.[8] At this time they could be caught easily with the bare hands by overturning them onto their backs.[9] In addition, we can assume that eggs, when deposited by turtles onto dry land, were harvested for food by Redware peoples.[10] although this aspect of subsistence would leave little trace in the archaeological record. A seashore type of exploitation such as this, tied into the reproductive cycle of a species, would tend to support a seasonal occupation for the Blue Marlin site. We should therefore entertain the theory that the shallow nature of Redware sites in general and of the Blue Marlin site in particular might be tied into a regular seasonal exploitation of the sea turtle as a main food supply for these early prehistoric peoples. More remains to be said about Jamaican Redware turtle exploitation once exact species of these reptiles are identified through formal faunal analysis.

A shoreline subsistence pattern for the Blue Marlin culture is further supported by all of the shell species encountered thus far, which are inter-tidal, shore oriented, and/or seagrass varieties. Mangrove exploitation is not represented here, which again contrasts sharply with known Taíno patterns of subsistence. The Redware preference for seagrass exploitation and the Taíno preference for mangrove swamps have been suggested through the shell assemblages at Paradise Park (Keegan, Portell, & Slapcinsky, 2003). A comparison of mollusc species from both settlement sequences at Paradise Park has shown that the Ostionoid phase of occupation is dominated by species preferring seagrass habitats, while the Meillacan occupation was characterized by mangrove species of molluscs.

It is possible to think in terms of shell technology on this site, in addition to the use of shell as a food source, due to the obvious and visible patterns of wear on many specimens used as tools. It seems logical that early Redware populations on Jamaica would have maximized their exploitation of an abundant shell resource, which was not yet depleted by over-harvesting.[11] All species of shell found on the site could have been collected easily by hand or with simple digging tools without requiring complex tools or specialized fishing techniques. It is assumed that the shell technology is oriented toward tasks or utilitarian work done in the daily lives of these people within their settlement contexts.

Lastly, certain elements of the ceramic assemblage already show affinities in form with other ceramic assemblages in the Greater Antilles, particularly with some early forms on Puerto Rico (see for e.g. Espenshade, 2000). This situation holds promise for establishing continuity between Jamaica's Redware peoples and other Redware populations in the Greater Antilles. No doubt, greater numbers of ceramic and other cultural correlations can be made in time, which would then allow for a realistic assessment of the 'origins' of the Redware culture on Jamaica. It is in fact more accurate to speak of the 'arrival' of Ostionoid culture on Jamaica rather than an 'origin', since it is known by now that the Ostionoid phenomenon is a distillation of at least two broad cultural entities (Central American and Amazonian) that coalesced in the Greater Antilles c. A.D. 600. During the process of Ostionan cultural evolution several island varieties of the complex were created from regional transformations over hundreds of years until the evolution of the Meillacan (Taíno) sequences. Thus, prehistory in Jamaica is entirely a Greater Antillean or northern Caribbean development restricted to the evolution of prehistoric cultures within this region of the Caribbean. In time we may be able to define all or most of the cultural affinities with Ostionoid populations of the Greater Antilles, however, an additional challenge archaeologically will be in

determining the unique indigenous aspects of the Jamaican Ostionoid that are different from its Greater Antillean counterparts.

NOTES

1. I am pleased to acknowledge suggestions given by Thera Edwards for improving the distribution map (Figure 2), and the assistance of James Robertson and Maaike Lesparre-De Waal for their reviews of this paper. Versions of the paper were presented at the Archaeological Society of Jamaica's sixth symposium on April 10, 2008, and at a Department of History and Archaeology faculty/graduate seminar at UWI in Jamaica, on April 18, 2008. Funding for the Blue Marlin Archaeological Project has been granted by the Research Committee of UWI, Mona, to whom I extend sincere thanks.

2. I acknowledge the use of 'Google Earth' for the production of the satellite image seen in Figure 1b. All other photographs, maps, and illustrations in the article are by the author.

3. The culture is named for the type site of Ostiones in Puerto Rico. The nomenclature is part of Irving Rouse's chronology, developed for the prehistoric sequences of all the Caribbean islands (Rouse, 1992).

4. From Vanderwal, 1968 the complete calibrated date is A.D. 650 ± 120, obtained from the Little River site in St. Ann (see also table 1 of this article); from Keegan, 2000a, no calibration was reported for the date of A.D. 850.

5. New radiocarbon dates will soon be available from the Blue Marlin site, as samples have been sent to the Beta Analytic Radiocarbon Dating laboratory, Miami, FL for radiocarbon dating.

6. Multiple accounts of prehistoric migrations into the Caribbean region exist by now. For some of these discussions see, e.g., Keegan 2000b, Wilson 2007, and Reid 2009.

7. The groups *Pisces, Cheloniidae,* and *Aves* require species differentiation by a faunal specialist, a task soon to be addressed.

8. See Smith, 2000, chapter 3 for discussions of the seasonal behaviour of sea turtles on and around the Cayman Islands in historic times.

9. See Smith, *ibid.,* for colourful accounts of sea turtles caught in this manner in historic times.

10. In historic times, turtle eggs were a "prized source of nourishment" (Smith, 2000, p. 65).

11. The depletion of a number of endemic plant and animal species by prehistoric populations is a well-documented fact for many of the Caribbean islands, including Jamaica. See Wilson, 2007, p. 34 for a general discussion.

REFERENCES

Atkinson, L.-G. (Ed.). (2006). *The earliest inhabitants: The dynamics of the Jamaican Taíno.* Kingston: University of the West Indies Press.

De Wolff, M. W. (1953). Excavations in Jamaica. *American Antiquity, 18,* (3), 230–238.

Ebanks, R. (n.d.). Paradise Park Amerindian (Arawak Indian) site at Paradise Park, Ferris Cross, Savanna-la-Mar, parish of Westmoreland, Jamaica. W. I. A report of site survey and test excavations carried out between February and June 1991. Unpublished raw data. In the University of the West Indies Main Library, West Indies Collection, Kingston, Jamaica.

Espenshade, C. T. (2000). Reconstructing household vessel assemblages and site duration at an early Ostionoid site from south-central Puerto Rico. *Journal of Caribbean Archaeology, 1,* 1–22.

Keegan, W. (1998). Caribbean archaeology at the Florida Museum of Natural History http //:www.flmnh.ufl. edu/caribarch/jamaicparpark.htm

Keegan, W. (2000a). Caribbean archaeology at the Florida Museum of Natural History: Paradise Park, 2000. Retrieved September 1, 2008, from http //:www.flmnh.ufl. edu/caribarch/ParadisePark.htm.

Keegan, W. (2000b). West Indian archaeology. 3. Ceramic age. *Journal of Archaeological Research, 8,* (2), 135–167.

Keegan, W., Portell, R. G., & Slapcinsky, J. (2003). Changes in invertebrate taxa at two pre-Columbian sites in southwestern Jamaica, AD 800–1617. *Journal of Archaeological Science, 32,* (12), 1577–1617.

Lee, J. W. (1976). Jamaican redware. *Archaeology Jamaica, 76,* (2), 1–5.

Lee, J. W. (1979). The Jamaican redware culture. *Archaeology Jamaica, 79,* (1), 1–5.

Lee, J. W. (1980). Jamaican Redware. In S. M. Lewenstein (Ed.), *Proceedings of the Eighth International Congress for the Study of the Pre-Columbian Cultures of the Lesser Antilles* (pp. 597–609). Tempe, AZ: Arizona State University.

O'Day, S. J. & Keegan, W. (2001). Expedient shell tools from the northern West Indies. *Latin American Antiquity, 12,* (3), 274–290.

Reid, B. A. (2009). *Myths and Realities of Caribbean History.* Tuscaloosa, Al.: the University of Alabama Press

Rouse, I. (1992). *The Tainos: Rise and decline of the people who greeted Columbus.* New Haven, CT: Yale University Press.

Smith, R. C. (2000). *The maritime heritage of the Cayman Islands.* Gainesville, FL: University Press of Florida.

Vanderwal, R. L. (1968). *The prehistory of Jamaica: A ceramic study.* Unpublished master's thesis, University of Wisconsin-Milwaukee, Milwaukee, WI.

Wilson, S. M. (2007). *The archaeology of the Caribbean.* Cambridge: Cambridge University Press.