History in Action, Vol. 3 No. 1, September 2012
ISSN: 2221-7886
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Marine Subsistence at St. John Site in Trinidad: A Preliminary Study

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***Key Words**:* St. John site (Trinidad); Ortoiroid; mollusks; shell midden; subsistence.

Introduction

This paper examines faunal samples from the shell midden site, St. John, in southwestern Trinidad. Dated to 5000 B.C., St. John and Banwari Trace are two of the oldest sites in the Caribbean. This paper seeks to (1) identify the various species found at the site and (2) determine both diet and resource habitats exploited by the Ortoiroid inhabitants of St. John. The identification of faunal samples from excavations in 2009 and 2010 was based on comparative research of specimens held in the Zoological Museum Collection (UWI), as well as published materials on zooarchaeology and Caribbean faunae. Among the primary animals identified were various species of mollusks, crab, mammals and fish. In general terms, the faunal analysis suggests that a diversity of terrestrial and marine species were procured by the Ortoiroid within a variety of resource habitats in close proximity to the site.

St. John Site and Environs

St. John is located on the island of Trinidad in the Caribbean, specifically in the St. Patrick county of Trinidad near the South Oropouche wetlands and the Gulf of Paria (UTM 1,128, 595 N/661,695 E [20N Naparima 1972]), (Figure 1). The site is located in the physiographic zone of Trinidad called the Southern Lowlands (Boomert 2000). This area represents a broad structural syncline filled with Miocene and Pliocene sands, silts, clays, and gravels, stretching from the Cedros Peninsula to Mayaro and the Cocal. To the west, the Southern Lowlands are drained by the Oropouche River which crosses the tidal mangrove swamp, before emptying itself into the Gulf of Paria. The site is located on land which is privately owned at the end of St. John Road, south of the Godineau River, and adjacent to the Godineau Swamp. The soil type is predominantly sandy loam, and vegetation on the site is comprised mainly of grass and sedges, with a number of trees in the general vicinity of the site.

The Ortoiroid were the earliest colonists to migrate into the Caribbean from South America. (Reid 2009: 21). According to Reid (2009), the Ortoiroid travelled to Trinidad from the Guianas, and there is evidence of their movement northward towards Puerto Rico. Twenty-five Ortoiroid sites have been identified in Trinidad and Tobago.

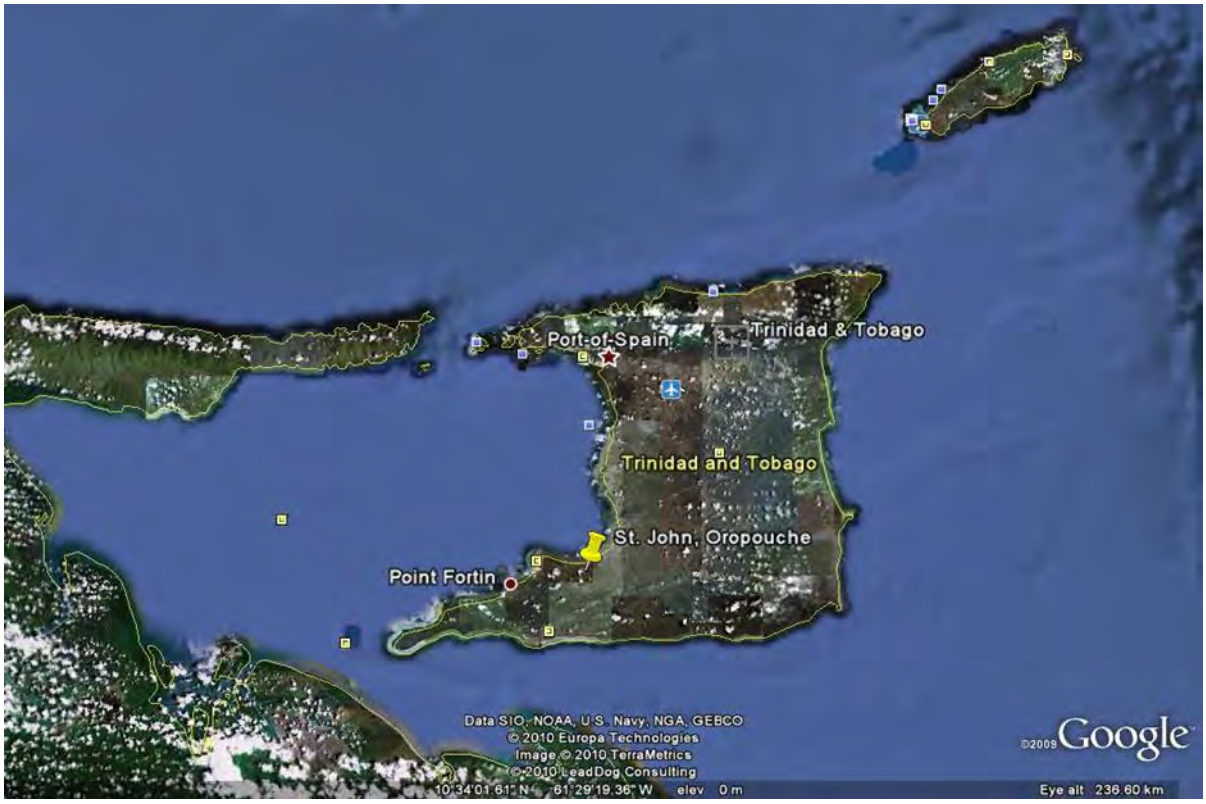

Figure 1: Map showing location of SPA 11 in Trinidad

Of particular interest in this study is the Godineau River which feeds the Godineau Swamp, and then discharges into the Gulf of Paria. This river is about 3 kilometers from the St. John site. Given their closeness to the site, both the Godineau River and the Gulf of Paria would conceivably have been important resource habitats for the Ortoiroids of St. John.

Methodology

Zoological samples used in this study were excavated at St. John in February, March and October 2009, and March and April 2010. These excavated materials were sorted according to excavation units (See Figure 2) and levels within these units. The contents of each bag was sorted according to species or family and then counted. Specimens were identified using comparative samples from the Zoology Museum in the Department of Life Sciences at The University of the West Indies (UWI), St. Augustine, and this was done in consultation with the Zoology Museum Curator, Mr. Mike Rutherford. Both hard copy and online zoological sources were referenced by the author. Both the minimum number of individuals (MNI) and the number of identified specimens (NISP) were the primary methods used to analyse the samples.

Figure 2: Photo of Excavation Units at SPA 11

Faunal Subsistence and Economy

Biofacts examined included mollusks, crab chelae, fish bones, mammalian limb bones, jaw bones (with and without teeth) and a number of unidentified bone fragments. The following is a list of the species identified in the sample (Table 1). Photographs of some of the identified specimens are depicted as Figures 3 to 6:

VERTEBRATES	NOTES
Mammals	
Mazama americana trinitatis	Red Brocket Deer. These animals live in forests. Edible.
Tayassu tajacu	Collared Peccary/'Wild pig'. Forest dwelling mammals. A source of meat/protein.
Cuniculus paca	Paca. Herbivorous rodent eaten in Trinidad.
Dasypus novemcinctus	Tatu or armadillo. Inhabits forest and brush environments. Edible.
Dasyprocta agouti	Agouti. Herbivorous rodent found in forested areas. Popular exotic meat.
Didelphis marsupialis insularis	Manicou. A rodent that inhabits forested/bushy areas.

	Edible.
Reptiles	
Iguana iguana	Green Iguana. Diurnal lizard, eaten in the Caribbean.
Fish	
Scombridae	Mackerels, tunas. Tropical, marine fish. Edible.
Serranidae	Grouper. Includes a variety of pelagic, marine fish. Edible.
Ariidae	Catfish. They live in fresh, brackish and sea water. Edible.
INVERTEBRATES	
Crustaceans	
Cardisoma gunahumi	Blue Land Crab. Abundant in coastal regions. Edible.
Mollusks	
Neritina piratica	Nerite. Algae eating, marine snails. They live in shallow fresh/brackish water. Edible.
Neritina usnea	Nerite. Algae eating, marine snails. They live in shallow fresh/brackish water. Edible.
Neritina zebra	Nerite. Algae eating, marine snails. They live in shallow fresh/brackish water. Edible.
Pomacea glauca	Apple snail. Amphibious, dwelling in fresh/brackish water.
Marisa cornuarietis	Giant ramshorn snail. Lives in shallow fresh/brackish water in ponds, swamps.
Crassostrea rhizophorae	Mangrove oyster. Found in swampy environments. A major contributor of protein to Ortoiroid diet.
Melongena melongena	Caribbean Crown Conch. Carnivorous. Inhabits the intertidal zone. Edible.
Thais trinitatensis	Rock shell. Inhabits rocky intertidal zones.
Tivela mactroides	Trigonal Tivela. These bivalves live in sandy ocean floors.
Codakia orbiculata	Dwarf Tiger Lucina. Marine/brackish water bivalve.
Phacoides pectinatus	Thick Lucine. Found in both marine waters and the intertidal zone. Significant contributor of protein to Ortoiroid diet.
Plekocheilus aurissciuri	Land Snail. Not nutritionally beneficial.

Table 1: List of Species Identified in the Sample

Figure 3: Photograph of Nerites from SPA 11

Figure 4: Photograph of *Phacoides pectinatus* from Unit 1, 50-60cm

Figure 5: Photograph of limb bones of *Tayassu tajacu*

Discussion

The flora and fauna of Trinidad are similar to those of South America. Accordingly, certain dietary and hunting customs of the Ortoiroid and their ancestors would have likely continued when they settled Trinidad (Reid 2009: 14). After closely examining the zooarchaeological materials from St. John, a number of patterns were discerned by the author.

The range of ecofacts recovered from St. John suggests that the Ortoiroid inhabitants had a diverse subsistence pattern, involving the exploitation of a number of ecosystems. Mollusks comprise over 80% of the faunal remains examined in this study. The MNI (minimum number of individuals) revealed that there are 1740 individual mollusk fragments of *Phacoides pectinatus* (Reitz,Wing 1987: 191). *P. pectinatus* are present in the littoral zone, and *Crassostrea rhizophorae* in the swamp habitat throughout the year. This suggests that they were fished year-round, and were preferred to other mollusks in the sample, probably because they contain more edible and nutritious flesh.

In Unit 1 (level 30-40cm), 81 *P. pectinatus* fragments were recovered, while 39 *P. pectinatus* fragments were recovered from Unit 2 (level 30-40 cm). There is a marked increase in the number of *P. pectinatus* in Unit 3 (30-40cm level); 1128, with 928 of these being unbroken valves. Notably, the greater abundance of this species in Unit 3 is due to the larger size of this unit. It measures 2m x 2m while Units 1 and 2 measure 1m x 1m. It can be inferred that this species was a favorite of the Ortoiroid people, given its ubiquity in all three units excavated.

The second largest amount of *P. pectinatus* was 714 in Unit 1, 40-50cm. In total, this species (3480 pieces) outnumbered all the other mollusks found in Unit 1. *C. rhizophorae* is the second most populous species in the sample (2599 pieces). This may result from the greater amount of edible flesh it contains when compared with other species and smaller mollusks. *Neritina piratica* is the third most abundant species (2100 pieces). Their large number at St. John suggests that they could have been consumed, despite their small size (Boomert 2000: 80). Their abundance may be a result of their small size and smooth, sturdy, rounded shell which made them more resistant than other mollusks, such as the *Pomacea glauca*, to cracking and disintegration. The negligible presence of the terrestrial gastropod *Plekocheilus aurissciuri* (*P. glaber*) (land snail) may simply be a result of its chance movement and lack of substantial edible or nutritional material. Water-dwelling, coastal mollusks such as the *Melongena melongena, Codakia orbiculata* and the *Tivela mactroides* are also rare in the sample, and were probably unintentionally transported to the site by the Ortoiroid from a fishing trip.

The above tables indicate that bivalves *C. rhizophorae* (oyster), *P. pectinatus* (thick lucine), and *Cardisoma gunahumi* (crab) were the favoured invertebrates consumed by the Ortoiroid inhabitants of St. John. Notably, many fish bones are very small and thin, and therefore much more susceptible to decay than the larger, more resilient mammalian bones and mollusk shells during the millennia since Ortoiroid occupation.

Data recovered from the site clearly indicate that Unit 1 contained the most *Neritina usnea* and *Thais trinitatensis*; Unit 2 had the most fish bone fragments and *C. guanhumi* while Unit 3 contained a higher concentration of *N. piratica*, *N. zebra*, *C. rhizophorae*, *P. pectinatus*, *P. glauca*, *P. aurissciuri (P. glaber)* and mammal bone fragments than the other units, probably because of its larger size. Of all the fragments counted (± 35), Unit 1 had 3622, Unit 2 had 3009 and Unit 3 contained 5683. Importantly, the units are not very far apart, and it is therefore possible that the variations in quantity and type of faunal remains per unit are simply the result of opportunistic harvesting of animals resulting in random disposal. Conversely, such variance

might reflect a change in diet based upon the seasonality of specific foods consumed by the Ortoiroid inhabitants.

The number of *C. guanhumi* claws represents approximately 418.75 crabs. It should be noted that the MNI of crabs being represented by the chelae counted is not exact since some claws were not whole nor arranged to create complete chelipeds. According to Davis (1987:36), in zooarchaeology, animals whose bones were subjected to greater fragmentation tend to be over represented. This could be the case with the crab chelae, which represents approximately 14% of the faunal remains in the St. John sample. Most of the chelae in the sample are cut on either end, signifying the application of food processing techniques. It should also be noted that crabs are common in coastal and swampy areas, both of which are within walking distance from St. John.

There are seven (7) different tetrapods found at St. John, including six (6) species of mammals and the *Iguana iguana*. This group is second in number to the mollusks (9 species identified). The mammalian remains comprise 4.593% of the sample. These animals could have been hunted in the mangrove forests found in Godineau (Kenny 2000). As is the case today, such mammals would have been hunted for their meat. Some mammal limb bones in the sample show evidence of longitudinal and cross-sectional cutting at the epiphysis, indicating marrow extraction, which has been an important food source since prehistoric times (Price 2007).

Figure 6: Photograph of mammal bone with longitudinal cut for marrow extraction, Unit 2, 10-20cm

Fish bones in the sample represent three (3) families and less than 1% (0.855%) of the faunal specimens tallied. The *Ariidae* family of catfish could be sought in rivers or even in estuarine areas which are within the catchment area of St. John. A catchment area describes a zone around a habitation site, often within a 10 kilometre radius of the site, from which the inhabitants sourced commodities such as food. Fishes were probably caught by line fishing, spear fishing or even by hand. There are also bones belonging to the *Scombridae* and *Serranidae* families. The presence of these pelagic fish implies that the Ortoiroid could have possessed the knowledge to construct and maneuver more specialised equipment such as pirogues.

Conclusions

This study has identified the types of faunae that were deposited in the Ortoiroid shell midden at St. John. Mollusks make up 80.91% of the sample (Table 1), significantly outnumbering the other types of faunal species. Crustaceans, mammals and fish comprise the remaining portion of the sample. Their presence suggests that the Ortoiroids exploited diverse food resource areas (both aquatic and terrestrial areas within a 5 km radius of the site).

Species	Totals	% of Total
Mollusks	9935	80.91
Crustacean	1675	13.641
Mammal bones	564	4.593
Fish bones	105	0.855
Pieces counted	12279	

Table 2: Species Percentile Table

The data accumulated indicate that the Ortoiroid at St. John tended to harvest marine species, such as *Scombridae* and inshore mollusks like the *P. pectinatus* more frequently than freshwater fishes.

This study shows that the Ortoiroid effectively utilised nearby resource habitats but showed a marked preference for mollusks over terrestrial species. The low percentage of mammal bones in the sample versus the high percentage of mollusks could be a result of the sedentary nature of the mollusks and their easily accessible habitats such as the Godineau Swamp. Such sedentary behavior makes them easier to locate and gather (probably by hand), whereas hunting mammals requires more time, skill and refined tools than those found at St. John.

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