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**ON THE**  
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Cover photograph – “Little Ricky” - juvenile dolphin, San Salvador, Bahamas (courtesy of Sandra Voegeli, 2003)

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# VERTEBRATE ARCHAEOFAUNAL REMAINS FROM THE PIGEON CREEK SITE, SAN SALVADOR ISLAND, THE BAHAMAS

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## ABSTRACT

Archaeofaunal remains from the Pigeon Creek site (SS1), a Lucayan-Taíno site on San Salvador Island, the Bahamas, reveal a meat diet composed almost exclusively of marine fauna, especially reef fishes and mollusks (mainly *Codakia orbicularis*). Few remains of sea turtles, iguanas, birds, and hutias were recovered. As is the case for many coastal sites in the Bahamas and West Indies, the vertebrate remains are dominated by bones of parrotfishes (family Scaridae) and groupers (genus *Epinephelus*), fishes easily obtained from the nearby shallow reefs. The adjacent Pigeon Creek estuary, although an important source of various resources such as sea turtles and mollusks, appears to have provided little in the way of fishes. The study also reveals potential discrepancies in identifications of fishes due to taphonomy and interspecific variations in bone density which may have influenced interpretations of fish remains from other sites in the Caribbean.

## INTRODUCTION

A great deal has been written on the quantification of animal remains from archaeo-

logical sites in order to reconstruct the relative dietary contribution of different foods. Various measures of taxonomic abundance are employed in the study of vertebrate assemblages. Many zooarchaeologists have written about the relative merits of the methods used to derive these frequencies, but do not agree about which is the most informative or useful (Grayson 1984; Lyman 1994; Reitz and Wing 1999). Most studies, however, employ NISP (Number of Identified Specimens) and MNI (Minimum Number of Individuals). NISP reflects the number of identified skeletal fragments or elements per taxon (Lyman 1994: 100; Reitz and Wing 1999: 191-192). MNI, the smallest number of individual animals necessary to account for all skeletal specimens of a taxon (usually a species), is typically determined by counting the most frequent element of each taxon. Often, the most abundant elements are the best preserved, and thus, are the most easily identified remains in the archaeofaunal assemblage. MNI may or may not take left/right pairs, age, sex, and/or size into account (Lyman 1994:100; Reitz and Wing 1999: 194). Because faunal exploitation and consumption have figured significantly into models of prehistoric migration, colonization, and settlement of the Bahama archipelago (Carl-

son 1999; Keegan 1985, 1992), (Figure 1), it is important that an accurate picture of the archaeofaunal assemblages present at Lucayan sites be attained and that the quantitative measures used to arrive at taxonomic abundance are understood. This paper contributes to the discussion of how varying means of calculating NISP and MNI affect the interpretation of archaeofaunal remains by examining the vertebrate faunal remains from the Pigeon Creek site (SS1) on San Salvador, the Bahamas (Figure 2).

## A HISTORY OF BAHAMIAN ARCHAEOLOGY

The earliest evidence of the peopling of the Bahama islands dates to the A.D. 600-700s and is known from the Coralie site on Grand Turk (Carlson 1999: 52; Keegan 1997:21) in the southern part of the archipelago. By the A.D. 800-900s the Three Dog site on San Salvador in the central part of the archipelago was inhabited (Berman and Gnivecki 1995; Berman and Hutcheson 2000; Berman and Pearsall 2000) and by the A.D.900s, the Pink Wall site on New Providence in the northern Bahamas was settled (Bohon 1999: 33, 45). Columbus landed on Guanahani, believed to be the island of San Salvador (Keegan 1992, 1997). The earliest evidence of European trade goods is known from the Long Bay site on San Salvador (Hoffman 1987; Brill et al. 1987). By the time of Spanish exploration, the Lucayans inhabited each of the major islands. Sites chronometrically dated to the fifteenth century have been found throughout the archipelago on Middle Caicos (Keegan 1997: 49, 83), San Salvador (Rose 1987; Berman and Gnivecki 1995: 430; Berman and Hutcheson 2000: 422), and Grand Bahama (Berman and Pearsall 2000).

The Lucayans were the indigenous people of the Bahama archipelago. The Spanish referred to the islands as *Lucayos* and its inhabitants as *lukku*, "man", and *kairi*, "island", or *Lukku-kairi* (variants, *Luko-kayo*, *Luko-kaia(ri)*, *Lukuo-akaora*), and hence, the designation, Lucayan (Granberry 1955: 21-23; Lovén1935: 71). During the 700-800 years of occupation of the Bahama archipelago, Lucayan subsistence economy was based primarily on fishing, harvesting of mollusks, root crop agriculture, and arboriculture (Berman et al. 1999; Berman and Pearsall 2000; Keegan 1992, 1997). Non-local pottery and stone artifacts found in varying frequencies reflect contact with the Greater Antilles. At first these objects and raw materials were brought by early migrants from their homelands (Carlson 1999; Keegan 1992). During later occupations they were most likely obtained through trade, tribute, or gift exchange. No permanent, naturally-occurring siliceous



Figure 1: Map of the Caribbean and the Bahama Archipelago.

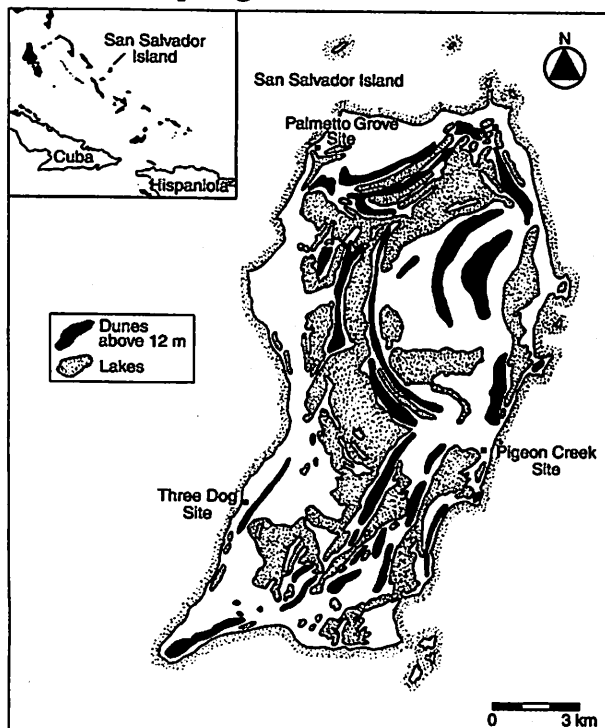


Figure 2: Map of San Salvador Island.

cryptocrystalline materials suitable for chipped stone tool manufacture occur on the islands and the Lucayan responded by manufacturing tools from shells of various marine mollusks, different kinds of limestone (Berman et al. 1999), and various kinds of wood (Berman and Pearsall 2000). The Lucayan made their pottery from the local pineapple loam clays and tempered it with crushed shell (Hoffman 1970; Sears and Sullivan 1978) or carbonate beach sand. Little evidence has been recovered on intra-site settlement structure, house size, and domestic organization, but several projects addressing these lacuna are now in progress (Berman and Gnivecki field notes; Blick 2003; Gnivecki (in preparation); Keegan 1997). After the A.D. 1100-1200s, aspects of Lucayan culture resemble the Taíno, so they are referred to as the Lucayan-Taíno from this period until their demise.

#### THE PIGEON CREEK SITE

The Pigeon Creek site is located at the northeastern end of Pigeon Creek, a tidal estuary, on the southeast coast of the windward side of San Salvador Island, Commonwealth of the Bahamas. The site is situated on the leeward slopes on top two northeastern-southeastern trending dunes that have a maximum elevation range of 3.0-5.5 m above sea level. South of the site, between the eastern side of Pigeon Creek and the Atlantic coast, the topography rises to 18.3 m above sea level. The site is optimally situated to access the resources of the estuary and the Atlantic waters. The Pigeon Creek estuary is fringed by a mangrove swamp (Smith 1993: 4, Map 2), while the vegetation of the site and the area bordering the eastern side of the tidal creek consists of a coastal thicket (Ibid., and pp. 8-10). The archaeological sediments have been disturbed horizontally and vertically in varying amounts by crab burrowing, root intrusion, and intermittent slash and burn cultivation.

Measuring approximately 8.4 hectares in area (Rose 1982:131, 1987:325), the Pigeon Creek site is one of the largest and most complex sites in the archipelago and the biggest site on San Salvador. Marjorie Pratt (1974a, b) ex-

cavated parts of the dune crest (dune #1) located at the site's northern boundary in 1973-1974. Richard Rose (1982, 1987) expanded excavations to the south. Between 1995-1999, the Wake Forest University archaeology field school, under the direction of Berman and Gnivecki, conducted excavations to the east, west, and south of the Pratt and Rose work. In 1997 a joint Appalachian State University/Wake Forest University field school extended the excavations to the second dune to the east, where an occupation predating that of dune #1 was found.

Nine radiocarbon dates exist for the site. All but two of these dates were obtained before calibration methods in radiocarbon dating were refined. Thus, the uncalibrated dates should be regarded with caution. Seven dates from dune #1 indicate that the site was occupied from A.D. 1100-1560 (Berman and Hutcheson 2000: 422; Rose 1987: 325). Berman and Gnivecki obtained a date of cal. A.D. 1435-1635 (cal. A.D. 1480) (calibrated at two sigma) (Berman and Hutcheson 2000: 422) from a midden located south of the Pratt and Rose excavations. The archaeofaunal data presented here are from that feature. Berman and Gnivecki secured a date of cal. A.D. 895-1170 (A.D. 1015) (calibrated at two sigma) (Berman and Hutcheson 2000: 421) from dune #2. Rose (1987: 331) also procured one date from the Loyalist (English occupation) period from dune #1, while another sample, which yielded a date of A.D. 596, is regarded by Rose (1982: 133) as being too early an occupation. We believe that the site may have been occupied as early as this because the Three Dog site, located on the eastern side of the island, produced a similar radiocarbon date (Berman and Gnivecki 1995: 430). Further work will be directed toward ascertaining the antiquity of the occupation.

#### ANALYTICAL METHODS

##### Sampling and Retrieval

Marjorie and Peter Pratt as well as Richard Rose used ¼" (6.35 mm) mesh screens to retrieve artifacts and ecofacts. Following the

protocol established at the Three Dog Site by Berman and Gnivecki in 1984, all cultural deposits were sieved through 1/16" (1.59 mm) mesh screens, while noncultural sediments were sieved through 1/4" (6.35 mm) mesh screens. Excavations were carried down to the sterile zone in arbitrary 10 cm intervals within natural levels. Fine screening continued for 20 cm into the sterile level; frequently, shovel test pits were dug into the sterile zones for 50-100 cm to ensure that no other cultural remains were present. The excavation yielded thousands of ceramics, wood charcoal, and molluscan and stone tool fragments, and many thousands of vertebrate and molluscan specimens. The majority of bones were recovered through screening; several were found *in situ*. This study uses the recovered archaeofaunal remains from the 1996 and 1997 Wake Forest University and 1979-1986 Richard Rose excavations.

#### Identification and Quantification

Specimens were sorted by vertebrate class; most of the recovered vertebrate remains are fish bones. Both NISP and MNI for all identified taxa were calculated. With the exception of certain samples, only cranial elements of fishes were used in the identification and quantification of fish taxa. Potential biases resulting from this sampling method are discussed below. Identifications were made with reference to the vertebrate osteological comparative collections of Appalachian State University and the University of Tennessee. The skeletal element and vertebrate taxon represented by each specimen in the chosen sample, as well as observations of taphonomic effects such as burning and artificial modification were recorded.

#### VERTEBRATES IDENTIFIED

##### Class Mammalia (Mammals)

Only three specimens representing two species of mammal were identified. These include a tibia and mandibular incisor of Bahamian hutia (*Geocapromys ingrahami*) and a maxilla with first and second molars of Norway

rat (*Rattus norvegicus*) (Figure 3). Remains of the Bahamian hutia regularly show up, although in trace amounts, in archaeofaunal assemblages of the Bahamas; the hutia was likely consumed by the Pigeon Creek site residents. The mandibular incisor exhibits significant polishing on the occlusal surface and may have been used as a tool. The Norway rat was introduced to the Bahamas by Europeans and thus, represents a recent intrusion to the archaeological deposits.

##### Class Aves (Birds)

Only two specimens of bird bone were identified among the archaeofaunal remains. These include the diaphysis of a long bone of a small bird and part of a mandible of a heron (NISP = 1) (family Ardeidae). Typically, few bird remains are present in the prehistoric archaeofaunal assemblages of the Bahamas (e.g., Berman 1994; Wing 2001). Although Carlson (1999) identified 296 specimens from the Coralie site on Grand Turk, and O'Day (2002: 5) identified 33 specimens from Ia góra on Middle Caicos, they constitute less than 1% of the total NISP for each site. Based on the NISP, birds do not appear to have contributed much to the diets of native islanders. It is possible, however, that especially smaller birds were consumed in their entirety (see Speck 1946) and their archaeological representation thus significantly reduced. Certain birds may have been exploited exclusively for their plumage (e.g., for feather head-dresses) thus possibly precluding their deposition among food refuse.

##### Class Reptilia (Reptiles)

The San Salvador Island rock iguana (*Cyclura rileyi*) is represented by 16 specimens from various parts of the skeleton. Probably once abundant on the island, iguanas undoubtedly provided some relief to the predominantly marine-based diet of the site's inhabitants. They constitute a regular, but relatively insignificant component of Bahamian archaeofaunal as-

	<i>Common Name</i>	<i>NISP</i>	<i>Subtotal</i>
<b>Mammals:</b>			
Geocapromys ingrahami	Bahamian Hutia	2	
Rattus norvegicus	Norway Rat	1	
			3
<b>Fishes:</b>			
<i>Carcharhinus</i> sp.	Requiem Shark	1	
<i>Holocentrus adscensionis</i>	Squirrelfish	1	
<i>Epinephelus guttatus</i>	Red Hind	1	
<i>Epinephelus morio</i>	Black Grouper	1	
<i>Epinephelus striatus</i>	Nassau Grouper	1	
<i>Epinephelus</i> sp.	Grouper	115	
<i>Trachinotus</i> sp.	Pompano	1	
Carangidae	Jack	1	
<i>Lutjanus apodus</i>	Schoolmaster	2	
<i>Lutjanus</i> sp.	Snapper	6	
<i>Haemulon album</i>	Margate	1	
<i>Haemulon</i> sp.	Grunt	1	
<i>Acanthurus</i> sp.	Tang	2	
<i>Lachnolaimus maximum</i>	Hogfish	13	
<i>Scarus</i> sp.	Parrotfish	180	
<i>Sparisoma viridae</i>	Stoplight Parrotfish	1	
<i>Sparisoma</i> sp.	Parrotfish	64	
Scaridae	Parrotfish	240	
<i>Sphyræna barracuda</i>	Barracuda	2	
<i>Balistes vetula</i>	Queen Triggerfish	2	
<i>Balistes</i> sp.	Triggerfish	12	
Osteichthyes	Bony Fish	1	
			649
<b>Lizards:</b>			
<i>Cyclura rileyi</i>	Rock Iguana	16	
Squamata	Lizard	1	
			17
<b>Sea Turtles:</b>			
Cheloniidae	Sea Turtle	126	
			126
<b>Birds:</b>			
Ardeidae	Heron	1	
Small Aves	Small Bird	1	
			2
<b>Total</b>			<b>797</b>

Table 1. Number of Identified Specimens (NISP) per Vertebrate Taxon, Identified on the Basis of Cranial Elements, Pigeon Creek Site, San Salvador, Bahamas.

emblages. In addition to iguana, one unidentified small lizard is represented by a dentary and may indicate a depositional intrusion.

#### Family Cheloniidae (Sea Turtles)

Sea turtles of the family Cheloniidae are represented by 126 specimens, and consist primarily of small fragments of the carapace and plastron. Most of the fragments are burnt and were recovered from the earlier occupation on dune #2, where at least one turtle was roasted in its shell. Sea turtles, especially nesting females, frequent the adjacent estuary and beach.

#### Class Pisces (Fishes)

A minimum of 14 species of fish is represented by the 649 cranial elements identified. An additional two species were identified exclusively by vertebrae. Remains of parrotfishes (Family Scaridae NISP = 240) and two genera: *Scarus* (NISP = 180) and *Sparisoma* (NISP = 65) and groupers (genus *Epinephelus*) (NISP = 117) are especially abundant, as they are in many West Indian archaeofaunal assemblages (Wing 1994). The fishes represented are primarily ones associated with the reef habitat of the adjacent Atlantic Ocean. These include parrotfishes (NISP = 485), groupers (NISP = 117), while tangs (NISP = 2), hogfishes (NISP = 13), snappers (NISP = 6), squirrelfishes (NISP = 1), and triggerfishes (NISP = 12) collectively constitute an NISP = 34. Groups more typical of the inshore and estuarine waters adjacent to the site such as sharks, rays, bonefishes, and jacks are underrepresented. Only one vertebra each of a ray (Dasyatidae) and a bonefish (*Albula vulpes*) were identified among the vertebrae from the E23S102 sample (see below).

#### ISSUES PERTAINING TO IDENTIFICATION

In conducting this analysis we were concerned that preservation and identification bias may have favored the identification of certain body parts; in particular, the very distinctive trophic bones (dentaries, premaxillaries, and pharyngeals) of parrotfishes, thus inflating their

representation relative to other taxa characterized by less robust or distinctive osteology. With this in mind, an attempt was made to identify minimally the family of fishes represented by each vertebra from one 1.0 by 1.0 meter unit, E23S102. We chose this sample because the unit yielded numerous fish bones and cranial elements identified to a variety of taxa (Table 2). Whyte noted that the remains of the family Dasyatidae (rays) and of the families Scaridae (parrotfishes), Acanthuridae (surgeonfishes), Serranidae (groupers/sea basses), Albulidae (bonefishes), and Sphyrinae (barracudas) are readily identifiable, while those of other families represented in the assemblage are not. The identification of vertebrae added four taxa (family Dasyatidae (rays), *Albula vulpes* (bonefish), *Haemulon* sp. (Margate), and *Sphyrina barracuda*) to the list and significantly increased the representation of others (*Acanthurus* sp. (Tang)). Taxa represented by cranial elements, but not by vertebrae in the sample include only triggerfish (*Balistes* sp.) (NISP = 14), whose vertebrae are quite delicate in comparison to those of other taxa.

By adding the vertebrae to the analysis, significant changes in relative taxonomic abundance based on NISP for Excavation Unit E23S102 are realized (Figure 4). Some taxa such as parrotfishes (family Scaridae) remain almost the same in relative abundance because their vertebrae are equally as distinctive as their cranial elements. The serranids (groupers and other sea basses), however, are more than twice reduced in relative abundance either because their vertebrae are less distinguishable from their close relatives (e.g., Lutjanidae), or are more likely to fragment.

The implications of this experiment are profound. Most notably, it indicates that archaeofaunal identifications that ignore the tedious vertebrae (e.g., Leach 1986) and focus on very distinctive cranial elements such as trophic bones with teeth result in a serious bias against identification of taxa characterized by weak cranial bones. The latter include, among others, bonefish (*Albula vulpes*) and tangs (family Acanthuridae). A concomitant bias results in



Taxon	NISP	NISP	MNI	MNI
	Skull Bones	Vertebrae	Skull Bones	Pterygiophores
Dasyatidae (Rays)	0	1	0	n/a
Albulidae (Bonefishes)	0	1	0	n/a
Serranidae (Sea Basses)	12	9	4	n/a
Lutjanidae (Snappers)	2	5	1	n/a
Haemulidae (Grunts)	0	1	0	n/a
Acanthuridae (Tangs)	2	36	1	10
Labridae (Wrasses)	2	2	1	n/a
Scaridae (Parrotfishes)	74	243	17	n/a
Sphyraenidae (Barracuds)	0	1	0	n/a
Balistidae (Triggerfishes)	4	0	1	n/a

NISP = number of identified specimens.

MNI = minimum number of individuals.

Table 2. Representation of Fish Families in Excavation Unit E23S102 by Including Vertebrae in Taxonomic Identification.

favor of identification of groups with highly distinctive and preservable trophic bones such as parrotfishes (family Scaridae) and wrasses (family Labridae).

Unfortunately, many reports of Caribbean archaeofaunal assemblages do not provide detailed discussion of identification procedures and it is thus impossible for readers to determine if identification biases may have resulted due to differential intra-skeletal or interspecific bone density or other factors. Many researchers choose not to attempt identification of vertebrae because they are overly numerous and “notoriously difficult” to identify (Winter and Wing 1995: 426). Indeed, some zooarchaeologists (e.g., Leach 1986) limit their identifications of fish remains to only a few skull bones. Colley (1990: 215) notes that because different features of the vertebrae need to be checked, they are typically more complicated to identify than other bones.

Had the identification of fish remains from the Pigeon Creek site been limited to the bones of the skull, two taxa (rays and bonefishes) would not have made “the grocery list.” Tangs (*Acanthurus* sp.), which may constitute

25% of individual fish represented, are only barely represented by cranial elements. Tangs, in fact, are most readily identified by their durable and distinctive dorsal and anal fin spine and pterygiophore complexes. Note that an estimate of the minimum number of individual fish per genus based on skull bones represented in the E23S102 sample places parrotfishes (Scaridae) and groupers (Serranidae) at the top of the list, with the remaining families (Lutjanidae, Labridae, Acanthuridae, and Balistidae) represented by only one individual (Tables 1 & 2). However, if we were to use the distinctive first anal and dorsal spines and pterygiophores of Acanthuridae (six dorsals and ten annals) from Unit E23S102, 10 individual fish, as opposed to one, would be identified. This would place Acanthuridae above Serranidae and only second to Scaridae in relative taxonomic abundance! The implications of these findings go beyond simple numbers; accurate reconstructions of relative dietary importance of species, modes and places of fish procurement by humans, and food processing behaviors, to name a few, rely upon the validity of derived indices of relative taxonomic abundance.

Considering depositional, preservational, recovery, and identification biases in consort, estimates of relative taxonomic abundance based upon any index for ichthyofaunal assemblages in the West Indies must be regarded as suspect. The archaeofauna may provide some basis for comparative analysis, provided the different contexts within and among sites are understood, and if there is control for the depositional, preservational, recovery, and identification biases. Nichol and Wild (1984:37) provide the warning that in dealing with ichthyofaunal assemblages, the zooarchaeologist "can never be sure that the sample is representative of the whole deposit, but, almost inevitably, will still proceed as though it were."

#### MODIFIED BONE

Two forms of artificial modification of bone were observed. These include evidence of burning and the fabrication of bones into tools or utensils. No specimens exhibited evidence of carnivore or rodent gnawing. Evidence of carnivore gnawing is extremely difficult to recognize on small fish bones, however, and its lack should not be taken as an indication of the absence of dogs during site occupation or post-occupation.

One lower pharyngeal mill of an unusually large parrotfish (genus *Scarus*), recovered from unit E27S101 at a depth of 20-30 cm, had the articular processes removed and its elliptical margin ground smooth. The specimen is 55 mm long by 34 mm wide. Its naturally rasp-like occlusal surface may have been used as a rasp or grater.

Evidence of burning is distributed evenly among the taxa represented in the assemblage with the exception of sea turtles (Cheloniidae). Over 95% of the sea turtle remains, nearly all representing portions of the shell are charred. This suggests that sea turtles were cooked in their shells or that their shells were used as cooking containers for other foods. Evidence of burning was observed on only 5% of the fish bones identified and likely resulted from the deposition of bones in fires or accidental ex-

posure of previously deposited bone to subsequent cooking or agricultural fires (Walters 1988).

#### DISCUSSION

The archaeofaunal specimens recovered by Wake Forest University (1996-1997) and Richard Rose (1979-1986) excavations on the first dune represent accretional food refuse resulting from daily subsistence activities of the village inhabitants between A.D.1100 and the fifteenth century. The meat diet consisted primarily of reef fishes, especially parrotfishes, groupers, and tangs, but also included sea turtles, mollusks, land crabs, iguanas, hutias, and possibly, birds. We did not recover evidence of the domestic dog.

It appears that the Pigeon Creek lagoon was the source of the many molluscan remains that consist mainly of *Codakia orbicularis*, while the reef west of the site in the Atlantic Ocean, provided most of the fish. Hutias and iguanas were probably obtained on an encounter basis during inland gardening or foraging. As Elizabeth S. Wing (1994, 2001) and Wing and Reitz (1982) have argued for other sites in the Caribbean, most reef fishes were captured using traps. Certain of the larger parrotfishes and hogfishes may have been speared, while larger groupers and barracudas may have been speared or hooked. Despite the use of fine-mesh (1.59 mm) screens by the Wake Forest University excavations, no specimens representing small schooling fishes such as mojarras or anchovies, which can be captured in nets, were found. Whyte (1999) observed and caught these fish in waters adjacent to the site.

Analysis of the vertical distributions of specimens by taxonomic assignment reveals a slight but insignificant increase in predatory fish taxa (groupers and snappers) and an even distribution of non-predatory fish taxa (parrotfishes) over time (from lower to upper excavation levels) (Figure 5). This suggests stable fish populations and/or unchanging or slightly modified dietary preferences. However, considering that the very dense trophic bones of parrotfishes render them less subject to diagenesis, the pattern is more likely a product of preservation bias

than of changes in human diet such as increasing emphasis on predatory fishes. Moreover, the extensive burrowing of land crabs on the site has resulted in vertical and horizontal homogenization of the site's deposits. Note, for example, that the sea turtle remains associated with a single hearth feature on the second dune were recovered from the surface to a depth of 30 cm. This vertical spread is undoubtedly the result of post-depositional "craburbation" of the site's loose sandy matrix; the slight differences in taxonomic frequencies observed in Unit E23S102 are also due to these disturbances.

In summary, the Pigeon Creek site occupants' meat diet, which was composed of diverse marine and estuarine resources and few terrestrial and avian faunas, resembled the vertebrate fauna recorded from other sites on San Salvador (Winter and Wing 1995). Even though

the site is located at the head of an estuary, and its inhabitants had access to deep water, the zooarchaeological evidence supports the Wing and Reitz (1982) postulate that West Indian societies concentrated their fishing on the reefs. The next steps to understanding the archaeofaunal remains is to expand the research to include the remainder of the excavated materials from the Pigeon Creek site, examine the means by which taxonomic abundance was derived at other sites in the Bahama archipelago, and explain the observed variation.

<i>Fish Family</i>	<i>0 – 10 cm</i>	<i>10 – 20 cm</i>	<i>20 – 30 cm</i>	<i>30 – 40 cm</i>
Serranidae (Groupers)	12	22	7	7
Lutjanidae (Snappers)	2	2	1	1
Acanthuridae (Tangs)	0	1	0.5	0
Labridae (Hogfishes)	2	3	2	1
Scaridae (Parrotfishes)	81	73	87	87
Balistidae (Triggerfishes)	3	1	2	3

*Table 3. Vertical Distribution (%) of Fish Remains by Family, Excavation Unit E23S102, Pigeon Creek Site, San Salvador, Bahamas.*

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