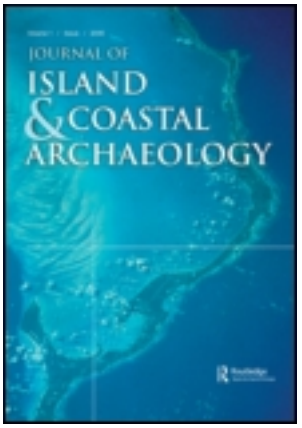

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Guinea Pigs in the Pre-Columbian West Indies

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ABSTRACT

In archaeology, human-introduced animals provide clues about social interaction and movement of past peoples. Zooarchaeological records in the Caribbean show that pre-Columbian people introduced several South American mammals to different islands. This article examines all reported pre-Columbian zooarchaeological records of domesticated guinea pigs (Cavia porcellus) *in the Caribbean. Thus far, 218 bone fragments have been identified from 18 sites on nine islands. To date, our analysis indicates that guinea pigs were introduced to the islands after AD 500, possibly to the Greater Antilles first. Almost all are recovered from midden contexts. The contexts of guinea pig remains suggest that these animals were consumed as food and not considered an exotic or high-status food source with restricted consumption or other non-food uses such as ritual animals. The spatial and temporal patterns of guinea pigs suggest that the animals may have been linked to social identity and new patterns of trade, interaction, or population movement between the Caribbean and South America during the second half of the Caribbean Ceramic Age. Documenting the distribution and social significance of guinea pigs in the pre-Columbian Caribbean contributes to our understanding of how and why people introduced animals to island settings.*

Keywords Caribbean, guinea pig, interaction, West Indies, zooarchaeology

INTRODUCTION

Among those working in island, circum-island, and coastal settings, studies of human population movement and the objects and animals that they carried with them have focused heavily on identifying patterns and dynamics of migration, colonization, and interaction (e.g., Erlandson and Fitzpatrick 2006; Fitzpatrick 2008; Fitzpatrick and Anderson 2008; Hofman et al. 2007, 2008; Keegan 1995; Kirch 1997). Increasingly, faunal remains have proven valuable in revealing diachronic patterns of human movement and interactions, particularly across bodies of water (e.g., Matisoo-Smith 2009; Storey et al. 2012, 2013). Sometime after AD 500, people began introducing domesticated guinea

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pigs (*Cavia porcellus*) from mainland South America into the Greater and Lesser Antillean Caribbean islands. Understanding the timing, possible routes, and motives for the pre-Columbian introduction of guinea pigs into the Caribbean can contribute to studies of human movement and behavior in the West Indian past.

Recent identifications of guinea pig remains from sites that expand the geographic distribution of the animals are challenging archaeologists to reconsider the significance and interpretive potential of these animals in Caribbean pre-Columbian history and archaeology (e.g., deFrance and LeFebvre 2009; Giovas et al. 2012). After an outline of guinea pig life history, domestication, and a brief review of Caribbean cultural chronology, we present an inventory of known zooarchaeological occurrences of guinea pig in the West Indies. Although guinea pig remains are widely distributed, we find that they are not ubiquitous and they occur primarily in midden contexts in contrast to the varied status and ritual roles of guinea pigs at some Central Andean sites (e.g., Rofes 2004; Sandweiss and Wing 1997). The introduction of guinea pigs has been examined from the perspective of island biogeography (Wing and Wing 1995), but here we consider the food and social roles the animals might have played. We suggest that guinea pigs served primarily culinary and social identity purposes in the West Indies. Our analysis also indicates that guinea pig specimens may be a good proxy for studying cultural interaction and possibly human migration, particularly in the later pre-Columbian past. We argue further that the timing of guinea pig distribution strongly suggests that a new wave of trade, interaction, or population movement took place during the second half of the Caribbean Ceramic Age (Hofman et al. 2008).

GUINEA PIG ORIGINS AND LIFE HISTORY

Guinea Pig Life History

Guinea pigs are familiar, docile animals that are commonly allowed to roam freely in Andean kitchens. The biology, nutrition, and ease of rearing make the guinea pig an ideal animal for transporting and introducing to the Caribbean islands. The following information is derived from the Peruvian Institute of Agronomy and Industrial Agriculture publication "Improve your production of guinea pigs" (INIAA 1992). Guinea pigs are relatively short-lived animals with an average life span of four to five years. Adult guinea pigs weight roughly two pounds and are high in protein (21%) and low in fat (8%). They are characterized by both high fertility and reproduction rates. Females reach sexual maturity usually between two and three months, but occasionally earlier. Gestation takes 59 to 67 days, followed by the birth of litters consisting of between two to five precocious offspring. The young may nurse, but they are mobile, their eyes are open, and they can take solid food by the end of their first day. Because guinea pigs can consume a range of leafy vegetation, they would have had few dietary difficulties in the Caribbean. Modern Andean guinea pigs are also fed cracked corn as a dietary supplement (S. deFrance, personal observation).

The greatest threats to guinea pigs are disease, predators, and fleas and other ectoparasites. Guinea pigs are prone to skin rashes (e.g., dermatitis) and salmonella (INIAA 1992). A variety of other ectoparasites, bacteria, and viral infections can also affect their health (Wagner and Manning 1976). Predation by dogs, raptors, and snakes would have been the greatest threat to guinea pigs living in the Caribbean.

Domestication and the Archaeological Record

The domesticated guinea pig (*Cavia porcellus*) is a small-medium sized hystricomorph rodent native to South America. Taxonomic estimates for guinea pigs range from five species (www.ITIS.gov) to eight (Nowak 1999). Native guinea pigs are widely distributed from Venezuela to Argentina (Stahl 2008). Genetic analysis of the wild species, *Cavia tschudii* and *Cavia aperea*, the presumed progenitors of the domesticated species, indicates that *C. tschudii* is

the ancestor of *C. porcellus* (Spotorno et al. 2004) with additional genetic manipulation after the introduction of guinea pigs outside of the Americas following European colonization (Spotorno et al. 2006).

The archaeological record from the Central Andes provides the best indications of the location, timing, and changes associated with domestication. Domesticated guinea pigs exhibit a number of osteological changes from their wild counterparts, particularly in cranial dimensions and sutures as well as in the mandibles (Weir 1974). Human selection favored larger sized guinea pigs than their wild relatives and eventually greater coat color and hair variety (Weir 1974). The oldest guinea pig remains occur in highland sites that date to ca. 7000 BC (Wing 1986). Experimentation with domestication may have begun as early as 5000 BC, with domestication evident by 2500 BC from highland sites in the region of Ayacucho, Peru (Wing 1986).

Guinea pigs are one of three mammals domesticated in the Central Andes in addition to llamas (*Lama glama*) and alpacas (*Vicugña pacos*). Dogs (*Canis lupus familiaris*) were fully domesticated when they accompanied human settlement of the Americas. Guinea pigs were used for food, ritual, and curative purposes (Rofes 2000, 2004; Rofes and Wheeler 2003; Sandweiss and Wing 1997). At the time of Spanish colonization and the height of the Inca Empire (late fifteenth century), guinea pigs were considered a high-status food (Garcilasco de la Vega 1966). In addition to cuisine, Inca sites also indicate that guinea pigs were used in mortuary offerings at Machu Picchu (Miller 2003) Ritual offerings and probable divination of complete guinea pigs was noted to have also been practiced at the Inca coastal site of Chincha (Sandweiss and Wing 1997).

In Ecuador, the adoption of guinea pigs by elites occurred by the second millennium BC in association with the establishment of trade networks for the exchange of thorny oyster shell (*Spondylus* spp.), a colorful marine bivalve used in bead and craft production (Stahl 2003). The best evidence for guinea pigs in the Northern Andes comes from Colombia where guinea pigs are associated with early altiplano sites (Izjereef 1978; Uribe 1977-1978). Guinea pigs are not reported from Colombian sites along the Caribbean coastal region. There are no records of guinea pig along the Venezuelan coast, although one guinea pig is reported from the inland site of Turen (AD 1200–1400) in northern Venezuela (Garson 1980).

The role of guinea pigs in earlier states, formative societies, and earlier Andean cultures varied through time. In addition to the presence of presumed food remains of guinea pigs at sites predating the Inca state, including the Wari Empire (Andean Middle Horizon, AD 600–1000) (deFrance in press; Moseley et al. 2005), sacrificial animals are preserved at some earlier sites as well. The mortuary sacrifice of complete guinea pigs comes from the Wari site, Beringa, in southern Peru (Gladwell 2004). At the Late Intermediate Period (AD 1100–1450) site of El Yaral, the excavation of subfloor contexts from domestic structures produced remains of 112 naturally mummified guinea pigs that had been sacrificed by means such as beheading and throat slitting (Rofes 2000, 2004; Rofes and Wheeler 2003). Some of these animals were color coordinated to match sacrificed llamas and alpacas that they accompanied (Rofes and Wheeler 2003; Wheeler 1992; Wheeler et al. 1995). Some were accompanied by grave goods (e.g., sticks from the *molle* plant or coca leaves) or had coca leaves placed in their mouths (Rofes 2000, 2004). Desert conditions contributed to the excellent preservation of these offerings.

The Andean archaeological record indicates that guinea pig management practices were domestic and not elaborate. At some sites, segregated space that may have served as holding pens is present within domestic structures (e.g., Conrad and Webster 1989:401) or dung accumulations suggest household rearing (e.g., Van Buren 1993), but holding areas are often not present or identified. Because guinea pigs reproduce rapidly and are used primarily as food, the preference was to consume animals when they reached full body size, but were still young (e.g., one year of age). Guinea pig dung may have been used as fuel (Williams

et al. 2005), but since guinea pig provide no other secondary products, rearing them after they reached full size was not economical.

The guinea pig continues to be an animal of economic and cultural importance in the Central Andes (Ecuador, Peru, Bolivia). Guinea pigs are still used for traditional curing and divination (see Archetti 1997; Gade 1967; Morales 1995), although the antiquity of this practice is not known. The culinary role of the guinea pig is also important today, particularly in traditional societies; however, many people of Hispanic and mestizo descent disdain guinea pigs and will not eat them (see deFrance 2006; Weismantel 1988).

Although dimensional measurements are not recorded for the majority of the specimens to confirm that they are domesticates, the Caribbean introductions post-date the estimated time of domestication by several millennia. All analysts have reported the taxonomic identifications as *Cavia porcellus*. Following reported taxonomic information presented in published reports, we classify all introduced guinea pigs as domesticates rather than wild species.

CARIBBEAN CULTURE CHRONOLOGY AND HUMAN MIGRATIONS

Caribbean pre-Columbian archaeology has long focused on the study of human migration and culture history (Bullen 1964; Lovén 2010; Rouse 1986, 1992). The basic chronological framework focuses on periods of pre-Columbian colonization, migration, and culture development. There were essentially three pre-Columbian human migration episodes and cultures into the Caribbean: the Pre-Arawak (Archaic) cultures (ca. 4000–400 BC), Ceramic cultures (ca. 500 BC–AD 1500), and European conquerors (post-1492) (see Keegan et al. 2013).

Archaeological evidence, radiocarbon dates, and computer-generated seafaring simulations suggest that both the Pre-Arawak and Ceramic cultures may have settled the northern islands of the Caribbean, including Puerto Rico, before the southern islands of the Lesser Antilles (Callaghan 2001, 2003; Fitzpatrick 2006, 2013; Keegan 2000). Such studies demonstrate that pre-Columbian human colonization and subsequent migration did not necessarily follow a south to north stepping-stone route from the Lesser Antilles to the Greater Antilles. Recent research focusing on the provenance and movement of archaeological artifacts and raw materials (e.g., jadeitite [Garcia-Casco 2013] and agouti [Giovas et al. 2012]) during the Ceramic Age shows that human migration, interaction, and cultural development was not circumscribed to the archipelago. Rather, Caribbean peoples were involved in complex, continuous, and fluid migrations, travel, interaction, and socio-political alliances between and among the Caribbean islands, as well as with people in and from South America and possibly Central America (Callaghan 2011; Garcia-Casco 2013; Giovas et al. 2012; Hofman et al 2007; Keegan 2004; Rodríguez Ramos 2011).

Guinea pig does not appear archaeologically in the Caribbean until after AD 500, during the second half of the Ceramic Age. In the Greater Antilles this time period is often referred to as the Ostionoid and the appearance of guinea pig on Puerto Rico at this particular time is likely not a fortuitous coincidence. In addition to widespread interaction, migration, and movement of cultural material, the introduction of guinea pig coincides with the onset of many other cultural introductions and changes associated with the second half of the Ceramic Age. Among the Greater Antilles, people on Puerto Rico increasingly began moving westward and interfacing with groups on Hispaniola, and chiefdom-level social, political, and religious organization eventually emerged; including increased construction of stone-lined public spaces, emphasis on communal religious practice (Keegan 2000), and ritual use of hallucinogens at large sites (Newsom and Wing 2004) such as cohoba (Kaye 2010). In the Lesser Antilles, complex social and settlement hierarchies emerged, the number of settlements increased, and chiefdom-like organization developed (Crock and Petersen 2004; Hofman and Hoogland 2004).

In order to provide a region-wide frame of spatial and temporal reference for our discussion of prehistoric guinea pig and its

Table 1. **Post AD 500 culture chronology of the Greater and Lesser Antilles, West Indies, adapted from Rouse (1992) and Petersen et al. (2004).**

Series	Subseries	Date range	Island presence
Ostionoid	Elenan Ostionoid	AD 600–post-1492	Eastern Puerto Rico, Virgin Islands
	Ostionan Ostionoid	AD 600–1200	Jamaica, Eastern Cuba, Haiti, Dominican Republic, Western Puerto Rico
	Meillacan Ostionoid	AD 900–post-1492	Jamaica, Central Cuba, Haiti, Dominican Republic
	Chican Ostionoid	AD 1200–1492	Eastern Cuba, Haiti, Dominican Republic, Western and Eastern Puerto Rico, Virgin Islands
	Redondan Casimiroid*	AD 900–1200	Central Cuba
	Palmetto**	AD 800–post-1492	Bahamas, Turks and Caicos Islands
Troumassoid	Mamoran Troumassoid	AD 500/600–1500	Leeward Islands: Virgin Islands to Dominica
	Troumassan Troumassoid	AD 500/600–1000	Winward Islands: Dominica to Grenada
	Suazan Troumassoid	AD 1000–1500	Leeward/Windward Islands: Guadeloupe to Tobago

*The Redondan Casimiroid is a part of the Casimiroid Series with a date range of 2000 BC–AD 1200. This subseries overlapped with the Ostionoid series.

**Palmetto refers to a local pottery type exclusive to the Bahamas and Turks and Caicos Islands. Due to the homogenous nature of Palmetto style pottery, Rouse did not designate it as a subseries.

archaeological significance, we provide an abbreviated (post–AD 500) culture chronology of the Caribbean (Table 1) following Rouse (1992) and Petersen et al. (2004). We report the chronological affiliations of guinea pig remains provided by the investigators.

DISTRIBUTION AND ACCOUNTS OF PRE-COLUMBIAN GUINEA PIGS IN THE CARIBBEAN

At this time, zooarchaeological accounts report pre-Columbian guinea pig remains from 18 sites on nine Caribbean islands, including Jamaica, Hispaniola, Puerto Rico, Vieques, St. John, Antigua, Saint Lucia, Carriacou, and Curaçao (Figure 1). A total of 218 specimens (NISP) have been identified, comprising a minimum of 64 individuals (Tables 2 and 3). The majority of specimens (NISP = 198) are from adults.

The large number of adult specimens probably relates to better preservation of fused elements and ease of identification. Juvenile remains may be present, but can be difficult to distinguish from other rodents of similar size, such as hutia (*Isolobodon portoricensis*). Also, similar to guinea pig consumption in the Andes, the majority of adult elements may suggest targeted or preferred consumption of adult guinea pig.

The occurrence of guinea pig spans the Caribbean, although more guinea pig

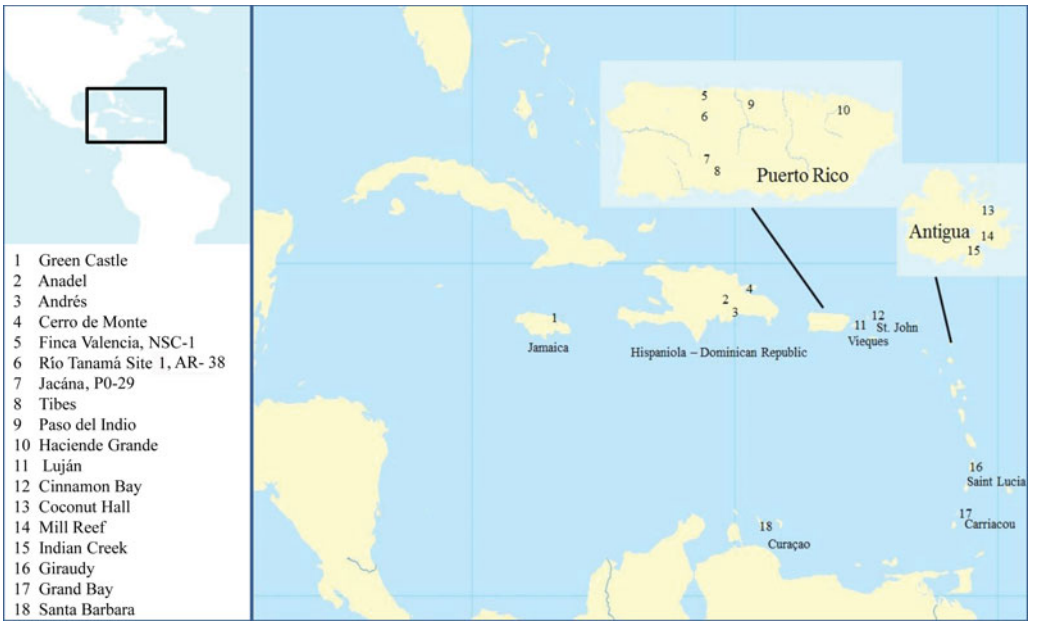

Figure 1. *Map showing distribution of reported guinea pig remains by site and island location (color figure available online).*

remains occur at Greater Antillean sites. Guinea pig remains are absent from some well-analyzed faunal assemblages deposited in later pre-Columbian times. Many of the guinea pig occurrences/records in the Caribbean were summarized previously by Newsom and Wing (2004) and include analysis by Elizabeth Wing, Irvy Quitmyer, and Laura Kozuch. We report these as well as more recently identified specimens.

Chronological placement of recorded specimens includes archaeological artifact associations, radiocarbon dating of associated artifacts or materials, or direct radiocarbon dating of elements. Regardless of dating technique, all current chronological evidence suggests that guinea pig did not enter the Caribbean until sometime after AD 500 (see deFrance and Newsom 2005; Newsom and Wing 2004; and Wing 2001, 2008). The earliest reported records of domestic guinea pig in the Caribbean are from three sites on Puerto Rico. Date ranges associated with guinea pig specimens from Finca Valencia (NCS-1), Jácana (PO-29), and Tibes suggest introduction to the Caribbean no earlier than approximately AD 600–900. Overall, archaeological records indicate that guinea pigs continued to be reared throughout the archipelago through late pre-Columbian history.

Contextually, cranial and post-cranial guinea pig remains are often recovered from mundane contexts, such as middens (Newsom and Wing 2004; Wing and Wing 1995). With the possible exceptions of the Cinnamon Bay site on St. John and Jácana on Puerto Rico, no guinea pigs remains have been associated with contexts unequivocally interpreted as ceremonial. The entire site of Cinnamon Bay and its various archaeological components are interpreted as a ceremonial complex (Wild 1999). However, the guinea pig remains were not recovered from isolated features suggestive of ritual internment. Cranial and post-cranial elements present at Cinnamon Bay do not suggest a specialized pattern of guinea pig use or deposition (Table 2).

Table 2. **Records of islands, sites, estimated date ranges, and skeletal elements of the Pre-Columbian guinea pig (*Cavia porcellus*) in the Caribbean.**

Island	Site	Reported date range(s)	Element	Portion	Side	NISP	Reference
Jamaica	Green Castle, STM25	>AD 1223	Humerus	Distal end shaft	—	1	1
	Green Castle, STM25	>AD 1223	Femur	Proximal end	—	1	1
	Green Castle, STM25	>AD 1223	Tibia	Proxmial shaft	—	1	1
	Green Castle, STM25	AD 1420–1616	Femur	Proximal end	—	1	1
Dominican Republic	Anadel	Unavailable	Unavailable	Unavailable	—	2	2
	Andrés, Boca Chica	Unavailable	Unavailable	Unavailable	—	1	3
	Cerro de Monte, Constanza	Unavailable	Unavailable	Unavailable	—	—	3
Puerto Rico	Finca Valencia*, NCS-1	AD 690–1281	Femur	Proximal 1/2	R	1	6,17
	Finca Valencia, NCS-1	AD 690–1281	Cranium	Maxilla fragment	R	1	6,17
	Finca Valencia, NCS-1	AD 690–1281	Cranium	Auditory bulla	R	1	6,17
	Finca Valencia, NCS-1	AD 690–1281	Cranium	Auditory bulla	L	1	6,17
	Finca Valencia, NCS-1	AD 1050–1383	Femur	Proximal 3/4	L	1	6,13,17
	Finca Valencia, NCS-1	AD 1050–1383	Femur	Proximal 1/4	R	1	6,13,17
	Finca Valencia, NCS-1	AD 1050–1383	Mandible	Anterior 2/3 w/ molar	L	1	6,13,17
	Finca Valencia, NCS-1	AD 1050–1383	Molar	Unreported	—	1	6,13,17
	Finca Valencia, NCS-1	AD 1050–1383	Tibia	Proximal 2/3	L	1	6,13,17
	Finca Valencia, NCS-1	AD 1226–1405	Mandible	Anterior 1/3 w/ incisor	L	1	6,13,17
	Finca Valencia, NCS-1	AD 1226–1405	Cranium	Fragment	—	1	6,13,17
	Finca Valencia, NCS-1	AD 1226–1405	Cranium	Maxilla w/ 3 molars	L	1	13,17
	Finca Valencia, NCS-1	AD 690–1281	Molar	Fragment	—	1	13,17
	Finca Valencia, NCS-1	AD 690–1281	Unavailable	Unavailable	—	32**	6,17
	Finca Valencia, NCS-1	AD 1000–post-1400	Mandible	Anterior 2/3 fragment	R	1	6,13,17

Finca Valencia, NCS-1	AD 1000–post-1400	Mandible	Complete	R	1	6,17
Finca Valencia, NCS-1	AD 1000–post-1400	Femur	Proximal 2/3	L	1	6,13,17
Finca Valencia, NCS-1	AD 1000–post-1400	Femur	Distal 1/3	L	1	6,13,17
Finca Valencia, NCS-1	AD 1000–post-1400	Ulna	Proximal 1/3	—	1	13,17
Finca Valencia, NCS-1	AD 1000–post-1400	Molars	Fragments	—	2	13,17
Finca Valencia, NCS-1	Post–AD 1400	Mandible	w/ 2 molars	R	1	6,17
Finca Valencia, NCS-1	Post–AD 1400	Mandible	Complete	R	1	6,17
Finca Valencia, NCS-1	Post–AD 1400	Innominate	Ilium 2/3 complete	L	1	6,17
Finca Valencia, NCS-1	Post–AD 1400	Incisor	Unreported	—	1	6,17
Finca Valencia, NCS-1	Post–AD 1400	Femur	Proximal 1/2	R	1	6,17
Finca Valencia, NCS-1	Post–AD 1400	Cranium	Fragment	—	1	6,13,17
Finca Valencia, NCS-1	Post–AD 1400	Molar	Unreported	—	1	6,13,17
Finca Valencia, NCS-1	Post–AD 1400	Femur	Complete	L	1	6,13,17
Finca Valencia, NCS-1	Post–AD 1400	Tibia	Distal 1/2	L	1	6,13,17
Finca Valencia, NCS-1	Post–AD 1400	Tibia	Distal 1/2	—	1	6,13,17
Finca Valencia, NCS-1	Post–AD 1400	Molars	Unreported	—	2	6,13,17
Finca Valencia, NCS-1	Post–AD 1400	Tibia	Proximal 1/4	—	1	6,13,17
Finca Valencia, NCS-1	Post–AD 1400	Mandible	Distal 2/3 w/ molar alveoli	L	1	6,13,17
Finca Valencia, NCS-1	Post–AD 1400	Cranium	Petrosal	L	2	6,13,17
Finca Valencia, NCS-1	Post–AD 1400	Cranium	Petrosal	R	1	6,13,17
Finca Valencia, NCS-1	Post–AD 1400	Humerus	Complete	R	1	6,13,17
Finca Valencia, NCS-1	Post–AD 1400	Humerus	Complete	L	1	6,13,17
Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Molars	Unreported	—	2	6,13,17
Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Cranium	Temporal	L	1	6,13,17
Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Humerus	Nearly complete	L	1	6,13,17

(Continued on next page)

Table 2. **Records of islands, sites, estimated date ranges, and skeletal elements of the Pre-Columbian guinea pig (*Cavia porcellus*) in the Caribbean. *(Continued)***

Island	Site	Reported date range(s)	Element	Portion	Side	NISP	Reference
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Femur	Proximal 3/4	—	1	6,13,17
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Tibia	Complete	R	1	6,13,17
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Tibia	Distal 3/4	R	2	6,13,17
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Tibia	Distal 3/4	L	1	6,13,17
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Tibia	Proximal 1/3	L	1	6,13,17
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Innominate	Ilium w/ partial acetabulum	L	2	6,13,17
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Innominate	Pelvis w/ acetabulum	R	2	6,13,17
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Sacrum	Unreported	—	1	6,13,17
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Mandible	1 w/ 2 molars	R	2	6,13,17
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Mandible	1 w/ molars	L	3	6,13,17
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Mandible	At symphysis	L	2	6,13,17
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Cranium	Maxilla w/ molars	L	1	6,13,17
	Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Molars	Unreported	—	7	6,13,17

Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Ulna	Proximal 2/3	R	2	6,13,17
Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Radius	Diaphysis	—	1	6,13,17
Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Radius	Proximal 1/2	—	1	6,13,17
Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Humerus	Complete	R	1	6,13,17
Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Humerus	Distal 3/4	R	1	6,13,17
Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Femur	Diaphysis	L	1	6,13,17
Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Femur	Diaphysis	R	1	6,13,17
Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Femur	Complete	R	1	6,13,17
Finca Valencia, NCS-1	AD 1173–1400/AD 1271–1620/AD 1048–1399	Cranium	Parietal fragment	—	1	6,13,17
Finca Valencia, NCS-1	AD 1270–1415/post–AD 1400	Mandible	Nearly complete	L	1	6,17
Finca Valencia, NCS-1	AD 1270–1415/post–AD 1400	Vertebra	Centrum fragment	—	1	6,17
Finca Valencia, NCS-1	AD 1270–1415/post–AD 1400	Cranium	Maxilla fragment w/ tooth	—	1	6,17
Finca Valencia, NCS-1	AD 1270–1415/post–AD 1400	Mandible	1/3 complete	R	1	6,17
Finca Valencia, NCS-1	AD 1270–1415/post–AD 1400	Mandible	1/3 complete	R	1	6,17
Finca Valencia, NCS-1	AD 1270–1415/post–AD 1400	Mandible	Anterior 1/3	L	1	6,17
Finca Valencia, NCS-1	AD 1270–1415/post–AD 1400	Cranium	Fragment	—	1	6,17
Finca Valencia, NCS-1	AD 1000–post-1400	Cranium	Maxilla w/ 5 molars	R,L	1	6,17
Finca Valencia, NCS-1	AD 1000–post-1400	Tibia	Proximal 2/3 diastema	R	1	6,17

(Continued on next page)

Table 2. **Records of islands, sites, estimated date ranges, and skeletal elements of the Pre-Columbian guinea pig (*Cavia porcellus*) in the Caribbean. *(Continued)***

Island	Site	Reported date range(s)	Element	Portion	Side	NISP	Reference
	Finca Valencia, NCS-1	AD 1000–post-1400	Other fragments	Fragments	—	—	6,17
	Finca Valencia, NCS-1	AD 1000–post-1400	Tibia	Whole	L	1	6,17
	Jácana, PO-29	AD 650–900/AD 1300–European contact	Cranium	Maxilla alveolus w/ zygomatic	R	1	9
	Jácana, PO-29	AD 650–900/AD 1300–European contact	Cranium	Interior auditory bulla fragment	R	1	9
	Jácana, PO-29	AD 650–900/AD 1300–European contact	Mandible	Nearly complete	L	1	9
	Jácana, PO-29	AD 650–900/AD 1300–European contact	Humerus	Distal	L	1	9
	Jácana, PO-29	AD 650–900/AD 1300–European contact	Innominate	Acetabulum w/ ilium	R	1	9
	Jácana, PO-29	AD 650–900/AD 1300–European contact	Cranium	Zygomatic anterior half	R	1	9
	Jácana, PO-29	AD 650–900/AD 1300–European contact	Astragalus	Complete	L	1	9
	Jácana, PO-29	AD 650–900/AD 1300–European contact	Mandible	Nearly complete	R	1	9
	Jácana, PO-29	AD 650–900/AD 1300–European contact	Mandible	Anterior 1/3	R	1	9
	Jácana, PO-29	AD 650–900/AD 1300–European contact	Cranium	Auditory bulla	L	1	9
	Jácana, PO-29	AD 650–900/AD 1300–European contact	Cranium	Interior auditory bulla fragment	L	1	9
	Jácana, PO-29	AD 650–900/AD 1300–European contact	Mandible	Complete	L	1	9

	Jácana, PO-29	AD 650–900	Mandible	Anterior 1/2	R	1	9
	Jácana, PO-29	AD 650–900	Femur	Nearly complete	R	1	9
	Jácana, PO-29	AD 650–900	Cranium	Auditory bulla	R	1	9
	Jácana, PO-29	AD 650–900	Innominate	Ischium w/ acetabulum	L	1	9
	Jácana, PO-29	AD 650–900	Cranium	Temporal zygomatic region	R	1	9
	Jácana, PO-29	AD 650–900	Mandible	>3/4	R	1	9
	Jácana, PO-29	AD 650–900	Humerus	Distal 3/4	R	1	9
	Jácana, PO-29	AD 650–900	Humerus	Distal 1/2	L	1	9
	Jácana, PO-29	AD 1300–European contact	Mandible	Nearly complete	L	1	9
	Jácana, PO-29	AD 650–900	Ulna	Nearly complete, missing distal end	L	1	9
	Tibes	AD 900–1200	Mandible	Anterior 1/4 to middle	R	1	7
	Tibes	AD 600–900	Mandible	Anterior 3/4,1/2	L	2	7
	Tibes	AD 600–900	Mandible	Anterior 1/2	R	1	7
	Tibes	AD 900–1200	Mandible	>3/4	R	1	7
	Tibes	AD 900–1200	Innominate	Acetabulum fragment	L	1	7
	Tibes	AD 600–900	Innominate	Acetabulum fragment, ilium	R	1	7
	Tibes	AD 900–1200	Tibia	Distal 1/4	R	1	7
	Hacienda Grande	AD 400–1500 (mixed component layers)	Unavailable	Unavailable	—	3	5
	Río Tanamá Site 1, AR-38	AD 1320–135, AD 1390–1490	Molar	Complete	—	1	4
	Paso del Indio	AD 1275–1420	Mandible	Nearly complete	R	1	8
Vieques	Luján	AD 1000–1300	Isolated cheek teeth	Unreported	—	3	10
	Luján	AD 1000–1300	Incisor	Unreported	—	1	10

(Continued on next page)

Table 2. **Records of islands, sites, estimated date ranges, and skeletal elements of the Pre-Columbian guinea pig (*Cavia porcellus*) in the Caribbean. *(Continued)***

Island	Site	Range(s)	Element	Portion	Side	NISP	Reference
	Luján	AD 1000–1300	Mandible	w/ 2 posterior cheek teeth	R	1	10
	Luján	AD 1000–1300	Mandible	Unreported	L	1	10
	Luján	AD 1000–1300	Mandible	Unreported	R	1	10
	Luján	AD 1000–1300	Cranium	Auditory bulla	R	1	10
	Luján	AD 1000–1300	Ilium	Unreported	L	1	10
	Luján	AD 1000-1300	Femur	Distal end fused, distal and shaft	L	1	10
	Luján	AD 1000–1300	Femur	Distal fragment, unfused very thin bone		1	10
	Luján	AD 1000–1300	3rd metatarsus	Unreported	—	1	10
	Luján	AD 1000–1300	Mandible	Anterior 3/4	R	1	10
	Luján	AD 1000–1300	Mandible	Anterior 1/4	L	1	10
	Luján	AD 1000–1300	Molar	Unreported	—	1	10
	Luján	AD 1000–1300	Femur	Proximal 1/4	R	1	10
	Luján	AD 1000–1300	Mandible/maxilla	Tooth row fragment	—	1	10
	Luján	AD 1000–1300	Tibia	Midshaft	—	1	10
	Luján	AD 1000-1300	Tibia	Distal 1/3	—	1	10
St. John	Cinnamon Bay	Post–AD 1000	Cheek teeth	Unreported	—	10	11
	Cinnamon Bay	Post–AD 1000	Cranium	Maxilla	R	1	11
	Cinnamon Bay	AD 1300–1485	Mandible	Unreported	R	1	11
	Cinnamon Bay	Post–AD 1000	Mandibles	Unreported	L	3	11
	Cinnamon Bay	AD 1300–1485	Cranium	Auditory bulla	R	1	11
	Cinnamon Bay	AD 1300–1485	Humerus	Distal plus shaft	L	1	11
	Cinnamon Bay	Post–AD 1000	Humerus	Distal end	R	1	11
	Cinnamon Bay	Post–AD 1000	Radius***	Unreported	—	1	11
	Cinnamon Bay	AD 1300–1485	Radius	Distal plus shaft	—	1	11

	Cinnamon Bay	AD 1300–1485	Ulna	Proximal articulation plus shaft	R	1	11
	Cinnamon Bay	Post–AD 1000	Ulna	Proximal	L	1	11
	Cinnamon Bay	Post–AD 1000	Femur	proximal end femur head	L	1	11
	Cinnamon Bay	Post–AD 1000	Femur	Distal end plus shaft	R	1	11
	Cinnamon Bay	Post–AD 1000	Tibia	Distal and shaft	R	1	11
Antigua	Mill Reef	Post–AD 1150	Unavailable	Unavailable	—	—	14
	Indian Creek	AD 825, 840, 880, 950	Mandible	Unavailable	R	—	5,6,13
	Coconut Hall, PE-15	AD 1035, AD 1045	Mandible	Diastema with tooth row	L	1	12
	Coconut Hall, PE-15	AD 1035, AD 1045	Calcaneus	Complete	L	1	12
Saint Lucia	Giraudy	AD 1200–1400	Atlas	Complete	—	1	15
Carriacou****	Grand Bay	AD 985–1030	Cranium	Maxilla	L	1	16
	Grand Bay	AD 985–1030	Cranium	Maxilla	R	1	16
	Grand Bay	AD 985–1030	Cranium	Zygomatic arch	L	1	16
	Grand Bay	AD 985–1030	Cranium	Zygomatic arch	R	1	16
Curaçao	Santa Barbara	“Late prehistory”	Mandible	With 2 cheek teeth	R	1	6,13
	Santa Barbara	“Late prehistory”	Humerus	Nearly complete, missing proximal	L	1	6,13
	Santa Barbara	“Late prehistory”	Ilium	Unreported	R	1	6,13

(Continued on next page)

Table 2. **Records of islands, sites, estimated date ranges, and skeletal elements of the Pre-Columbian guinea pig (*Cavia porcellus*) in the Caribbean. *(Continued)***

Island	Site	Reported date range(s)	Element	Portion	Side	NISP	Reference
	Santa Barbara	"Late prehistory"	Femur	Complete shaft	R	1	6,13
					Total	218	

References:

1: Allgood (2000); Allsworth-Jones and Wesler (2001).
2: Miller (1929 as cited by Wing 1996).
3: Rimoli (1976 as cited by Wing 1996).
4: Carlson (2008).
5: Wing (1990).
6: Quitmyer and Kozuch (1996); Wing (1996).
7: deFrance et al. (2010).
8: Singleton (2012).
9: DuChemin et al. (2010).
10: Quitmyer and Wing (2001).
11: Data on file Florida Museum of Natural History; Quitmyer (2003); Wild (1999).
12: Healy et al. (2003); Data on file with authors.
13: Data on file Florida Museum of Natural History.
14: Wing et al. (1968).
15: Phulgence (2007).
16: Giovas et al. (2012).
17: Solís Magaña and Rodríguez (2000).

*Date ranges calibrated using OxCal Version 4.2 (2013), http://c14.arch.ox.ac.uk/oxcal/OxCal.html (Bronk Ramsey 1995).

**Specimens unavailable for confirmation.

***Radius specimen is recorded as cf. *Cavia* sp.

****At time of publication, guinea pig specimens from Grand Bay were identified to Genus level. Additional analysis and comparison confirm *Cavia porcellus* identification.

Jácana is a large site in south central Puerto Rico with multiple periods of occupation beginning around AD 400. Jácana contains a plaza, a midden mound, habitation areas, human burials, and a stone-lined *batey* (a public space on some Caribbean sites associated with ceremonial activities) (Espenshade 2012). Because all of the elements recovered from Jácana are from deposits associated with the stone-carved *batey* walls, DuChemin (2013) interprets the faunal remains from these contexts as ceremonial or ritual refuse. However, similar to Cinnamon Bay, the guinea pig remains were not recovered as articulated individuals or internments (see DuChemin et al. 2010).

In addition, at the site of Río Tanamá 1, AR-38, on Puerto Rico, a single guinea pig molar was recovered from a posthole feature, indicating an association with a structure. However, there is no evidence suggesting special ritual significance of the context or guinea pig specimen (Carlson 2008), such as isolated whole guinea pig internments or other features containing guinea pig teeth.

Archaeological Records of Guinea Pigs

The following description of pre-Columbian guinea pig remains in the Caribbean begins with the westernmost islands of the Greater Antilles followed by evidence from the Lesser Antilles and the ABC islands (Table 2). Jamaica is the westernmost Caribbean island with recorded guinea pig remains. All specimens are from Green Castle, STM25, a Taino site dating to ca. AD 1075–1250 to AD 1440–1550 (Allsworth-Jones and Wesler 2001). Allgood (2000) reports four guinea pig specimens, including one humerus, two femora, and one tibia. At least three individual guinea pigs were recovered from midden contexts. None are directly associated with features or other contexts of known function.

Evidence of prehistoric guinea pigs on Hispaniola is reported from archaeological sites in central and eastern Dominican Republic. There is little published information regarding numbers of specimens, archaeological context, absolute dates, or time periods, but in an unpublished report, Wing (1996) offers a concise summary of archaeological guinea pig specimens previously identified on Hispaniola. In the review of Miller (1929), Wing (1996) states that the Anadel site produced two guinea pig individuals. Citing Rimoli (1976), Wing (1996) reports one guinea pig specimen from Andrés, Boca Chica and "various specimens" from Cerro de Monte, Constanza. According to Wing (1996), Miller (1929) doubted the prehistoric origins of the guinea pig remains from the Anadel site due to the possible mixture of prehistoric and historic contexts. Conversely, Wing (1996) notes that Rimoli (1976) believed that the late prehistoric guinea pig finds from Andrés and Cerro de Monte were pre-Columbian. There are no recent analyses of faunal remains from these or other sites on Hispaniola that confirm the pre-Columbian antiquity of guinea pig on the island.

The greatest frequencies of pre-Columbian guinea pig remains in the Caribbean are from six sites on Puerto Rico (Newsom and Wing 2004). The Finca Valencia site, NCS-1, in northwestern Puerto Rico (ca. AD 1000–1500) (Solís Magaña and Rodríguez 2000), contains the most guinea pig specimens thus far identified at one site. Originally reported as an NISP of 98 (Wing 1996), reexamination of the collections and data indicates 121 guinea pig specimens from a minimum of 20 individuals (MNI) are present, all from midden context (data on file Florida Museum of Natural History; Wing 1996). Wing (1996) suggests that the quantity of guinea pig remains at NCS-1 may indicate that the site served as a distribution center for the animal to other sites and/or islands.

Jácana, PO-29, located in inland south-central Puerto Rico along the Portugués River, has an abundant record of pre-Columbian guinea pig remains (NISP = 22) (DuChemin 2013; DuChemin et al. 2010). There are three periods of Ceramic Age occupation reported for Jácana: AD 400–650, AD 650–900, and AD 1300-European Contact, with most occupation dating to the later two time periods prior to European contact. During the second and third occupations, the site grew from a smaller village

Table 3. **Pre-Columbian guinea pig (*Cavia porcellus*) minimum number of individuals recorded in the Caribbean.**

Island	Site	MNI
Jamaica	Green Castle, STM25	3
Dominican Republic	Anadel	2
	Andrés, Boca Chica	—
	Cerro de Monte, Constanza	—
Puerto Rico	Finca Valencia, NCS-1	20
	Jácana, PO-29	10
	Tibes	4
	Hacienda Grande	1
	Río Tanamá, AR-38	1
	Paso del Indio	1
Vieques	Luján	4
St. John	Cinnamon Bay	11
Antigua	Mill Reef	2
	Indian Creek	1
	Coconut Hall, PE-15	1
Saint Lucia	Giraudy	1
Carriacou	Grand Bay	1
Curaçao	Santa Barbara	1
	Total	64

Hash mark (—) denotes unrecorded or unavailable data.

into a larger more socially complex landscape, including a plaza, midden mound, expanded habitation areas, burials, and a large *batey* with walls consisting of carved stones (Espenshade 2012). A total of 22 specimens comprising 10 individuals were identified in undisturbed pre-Columbian contexts (DuChemin 2013; DuChemin et al. 2010). All specimens were recovered from trench excavations associated with the large *batey* and are present throughout site occupation approximately AD 650–900 (NISP = 5, MNI = 2), a combination AD 650–900/AD 1300–European Contact (NISP = 16, MNI = 7), and AD 1300–European Contact (NISP = 1, MNI = 1). DuChemin (2013) interprets these remains as probable ceremonial refuse due to their proximity to *batey* walls. The abundance of guinea pig remains in *batey*-associated contexts may be suggestive of social significance (DuChemin et al. 2010), although this conclusion may be an artifact of sampling bias because excavations were primarily concentrated around the *batey*.

Five kilometers southeast of Jácana is the Tibes site. Tibes is a multi-component site that began as a late Saladoid (ca. AD 400–600) village and through time developed into a ceremonial center (ca. AD 900) before its apparent abandonment by AD 1200 (Curet 2010; Curet et al. 2006; Zayas and Curet 2010). Eight specimens and a minimum of four individuals have been recorded exclusively from post–AD 600 contexts (deFrance et al. 2010). Guinea pig is present at Tibes during times of construction, spatial changes, population increase, and social developments; however, all guinea pig remains are from midden contexts and a possible structure of unknown function and are not obviously associated with evidence of ceremonial or ritual activity (deFrance 2010). DeFrance (2010) argues that while the small quantity of guinea pig remains at Tibes

may indicate restricted access to the animal, the archaeological contexts do not suggest high-status or ritualized consumption (*contra* Curet and Pestle 2010).

The Hacienda Grande site is located in northeast Puerto Rico. Three guinea pig specimens, representing one individual, were recovered from 20 to 40 cm of "superficial layers of mixed cultural periods" with a date range of AD 400–1500 (Wing 1990). At the time of Wing's (1990) report, guinea pig remains were atypical and not yet discovered in the southern Lesser Antilles. Coupled with the upper layer contexts of the finds, Wing (1990) was uncertain whether they were of pre-Columbian or historic affiliation.

The Río Tanamá Site 1, AR-38, on the north coast of Puerto Rico has one recorded guinea pig specimen, a molar (Carlson 2008). Unlike other guinea pig finds in the Caribbean that are from midden contexts, the tooth was recovered from a posthole feature associated with a structure. The age range of the feature is AD 1320–1350 and AD 1390–1490, 2 sigma (Carlson 2008). Although found in an architectural feature, there is no evidence to suggest non-culinary or non-dietary significance. Perhaps future excavations will reveal patterns of guinea pig remains associated with posthole features and thus clearly indicate supra-culinary significance to the animal in such archaeological contexts.

The Paso del Indio site, VB-4, a pre-Columbian village site in north-central Puerto Rico, contains one guinea pig specimen. Radiocarbon dates indicate that the Ceramic Age occupation spans from AD 450 to 1500 (Walker 2005). One right mandible was identified (Singleton 2012) with an associated radiocarbon date range of AD 1275–1420 (Walker 2005). The faunal sample was recovered from an area rich in artifacts (Singleton 2012; Walker 2005); however, no description of associated features or other contextual information indicating function are presented. Other than this one context that was analyzed as part of a graduate student class project, the large faunal assemblage from this site has not been examined.

East of Puerto Rico on Vieques Island, 19 guinea pig specimens (MNI = 4) were identified at the Luján site (Quitmyer and Wing 2001). All specimens are from midden contexts dating to AD 1000–1300.

Along the eastern boundary of the Greater Antilles, on the north shore of St. John, 25 pre-Columbian guinea pig specimens were identified from the site of Cinnamon Bay, a late Ceramic Age Taino site dating from AD 1000 to 1490 (Quitmyer 2003; Wild 1999). Cinnamon Bay is interpreted as a ceremonial/sacred place that was the location of a Taino religious structure or temple (*caney*) at the time of European contact (Wild 1999). The guinea pig present at Cinnamon Bay may be the strongest contextual exception to their remains being recovered from otherwise mundane contexts, such as middens. All of the guinea pig recovered from Cinnamon Bay are directly associated with contexts interpreted as reflecting Taino elite and ceremonial activities; including ceremonial pottery types and species specific shell piles (Wild 1999). If guinea pigs and other fauna were components of ritual offerings made during ancestor worship as suggested by Wild (1999:307), the guinea pig bones themselves do not indicate special treatment prior to deposition, but may be considered *special* based on contextual associations (see Walker 1995).

In the northern Lesser Antilles, three sites on Antigua are reported to have pre-Columbian guinea pig remains. At the east coast site of Mill Reef, Wing et al. (1968) reported two guinea pig individuals (NISP unrecorded) from upper layers of excavation. Mill Reef was a village occupied from approximately AD 500 to 1150 (Wing et al. 1968). However, the guinea pig specimens post-date AD 1150 and were recovered from within the upper 12-inches (30.5 cm) of excavation (Wing et al. 1968). As described by Wing et al. (1968), the remains are likely from mixed contexts, precluding a definite temporal designation (see also Hoffman 1963). Wing (1996) also notes the identification of one pre-Columbian guinea pig from midden context at the Indian Creek site, a pre-Columbian settlement located on the southeastern coast of Antigua.

More recently, two pre-Columbian guinea pig specimens representing one

individual were recorded from the Coconut Hall site, PE-15, a coastal village and shell midden on the east coast of Antigua (Healy et al. 2003). Two radiocarbon dates place site occupation ca. AD 1035 and AD 1045 (Healy et al. 2003).

From the Giraudy site located on the southern tip of Saint Lucia (Hofman et al. 2004), one guinea pig atlas was identified in a recently excavated faunal sample (deFrance and LeFebvre 2009; Phulgence 2007). The deposit is relatively late, dating to approximately AD 1200–1400 (Phulgence 2007).

In the Grenadines, on the east coast of Carriacou, one guinea pig individual (NISP = 4) was identified from the Grand Bay site (Giovas et al. 2012). Grand Bay is a village site with several features and extensive midden dating to ca. AD 400–1400. Four guinea pig cranial elements were recovered from midden contexts. Direct radiocarbon dating of a guinea pig maxilla specimen indicates a date range of cal. AD 985–1030 (Giovas et al. 2012).

The southernmost island site with reported pre-Columbian guinea pig remains is the Santa Barbara site on Curaçao (Newsom and Wing 2004; Wing 1996). Based on skeletal measurements, Newsom and Wing (2004) describe the guinea pig specimens (NISP = 4) as being from one young individual.

Records also indicate that at several Caribbean sites with guinea pig remains, other introduced mammals include hutia (*Isolobodon portoricensis*), agouti (*Dasyprocta* sp.), and opossum (*Didelphis* sp.). Despite a relatively broad distribution of guinea pig at pre-Columbian sites, there are several well-excavated and well-analyzed faunal assemblages from Caribbean sites with no guinea pig remains reported. From the Greater Antilles and Virgin Islands these include the sites of En Bas Saline (Haiti) (Deagan 2004), Maisabel (Puerto Rico) (deFrance 1988), and the Tutu Site (St. Thomas) (Wing et al. 2002). The distribution in the Lesser Antilles is just as patchy, with no guinea pig specimens reported in well-studied faunal assemblages from several sites including Golden Rock (St. Eustatius) (van der Klift 1992), sites on Anguilla (Carder et al. 2007), the Trants site (Monserrat) (Reitz 1994), Pearls (Grenada) (Newsom and Wing 2004:87, 225, 226; Stokes 1990), or Tanki Flip (Aruba) (Grouard 1997; Versteeg and Rostain 1997). No guinea pig remains are reported from sites on any of the Bahamian or Turks & Caicos Islands, despite several well-analyzed faunal assemblages (Carlson 1999; deFrance 1991; Duchemin 2005; Morsink 2012), although Bahamian hutias (*Geocapromys ingrahami*) occur in some of these assemblages.

DISCUSSION

The Guinea Pig as a Proxy for Human Movement and Interaction

As is the case with several other mammals (e.g., agouti and opossum) in the Caribbean (Giovas et al. 2012; Newsom and Wing 2004), there is no archaeological evidence for the non-anthropogenic introduction of domestic guinea pig or fossil records of its wild progenitors in the region. People intentionally introduced guinea pig to the Caribbean and therefore, guinea pigs can be viewed as proxies for studying human movement and interaction. Our review of the geographic and temporal distribution of guinea pig remains in the Caribbean indicates a relatively late pre-Columbian introduction into the region, perhaps signifying a time of increased interactions with South American populations that commenced with the onset of the Ostionoid. The guinea pig records provide a new line of evidence supporting interpretations of dynamic interaction and trade with the South American mainland.

The earliest dated archaeological contexts with guinea pigs are associated with post–AD 600 contexts on Puerto Rico. There are no guinea pigs remains associated with the earliest migration of Ceramic Age settlers (ca. 500 BC–AD 500) into the island archipelago nor are there pre-Arawak guinea pig remains. Although guinea pigs were present in late prehistory and possibly described in ethnohistorical accounts (see Newsom and Wing 2004:205), there are no early Spanish colonial sites with guinea pig remains (e.g., Puerto Real (Reitz 1986;

Reitz and McEwen 1995)). Isotopic analysis of guinea pig specimens from a late sixteenth-century/early seventeenth-century Belgian context indicate that the earliest European guinea pigs thus far known originated from the Central Andes (Pigiere et al. 2012); therefore, the animals may not have been very common in the Caribbean at the time of Spanish contact.

The chronology of guinea pig remains supports scenarios of direct migration and interaction between South America and the northern islands of the Greater Antilles, as well as multi-scalar patterns of trade and interaction throughout the island chain (e.g., Crock and Petersen 2004; Fitzpatrick et al. 2010). Because the earliest occurrences and greatest number of guinea pig remains thus far are from sites on Puerto Rico we suggest that the animal was first introduced to this island and then transported westward and southward. There is no indication of a stepping stone introduction of the animal through the Lesser Antilles from mainland South America. However, this observation may be a factor of sampling bias because of the larger scale of excavations and analysis of faunal assemblages from some village and ceremonial sites on Puerto Rico (e.g., deFrance et al. 2010; DuChemin et al. 2010; Singleton 2012; Wing 1996). To the west, guinea pig has not been identified at pre-Columbian sites on Cuba (Lourdes Pérez Iglesias, personal communication). Despite analysis of faunal remains from Tobago (Steadman and Jones 2006), there are no records of guinea pigs from either Trinidad or Tobago that suggest the animal was present on these land masses when they were contiguous with mainland South America.

Identifying the South American origin of Caribbean guinea pigs remains elusive due to the absence of contemporaneous South American sites from which animal introductions might have taken place. Venezuela and Colombia are traditionally considered the best launching points for people or trade objects entering the Caribbean with recognition of trade and exchange beyond the Caribbean Basin (see Curet and Hauser 2011; Hofman and Bright 2010; Hofman et al. 2007; Rodríguez Ramos 2010a, 2010b). At this time, there are no South American sites with guinea pig dating to roughly AD 500–600, the possible time of initial Caribbean introduction.

Despite the gaps in our knowledge pertaining to the origin of Caribbean guinea pig, the occurrence of guinea pigs in post–AD 500 contexts exclusively adds significant support to the proposition that migration, trade and/or interaction with South America increased or was fundamentally changed during this time period. The introduction and translocation of guinea pigs suggests that external or extra-local cultural forces strongly influenced the emergence of Ostionoid cultural traits in the Caribbean. Cultural changes in ceramics and other material during the second half of the Ceramic Age do not appear to originate exclusively from interactions or influence from pre-Arawak populations nor from the earlier Ceramic Age (Saladoid) culture alone. We do not know whether guinea pigs were traded down-the-line as objects or whether people accompanied them as colonists who settled in the islands as well. Either explanation indicates that broader influences, likely from the South American mainland, impacted Caribbean cultural development after AD 500.

The Guinea Pig as Food

The majority of guinea pig remains in the Caribbean suggest that they were used as a source of food not necessarily tied to elite consumption or ritual activity. Except for the single tooth from the Río Tanamá 1 site, AR-38, all occur in midden or contexts with other food remains. The guinea pig remains found at Puerto Rican sites that contain public ceremonial spaces, such as *bateys*, ball courts, or plazas (e.g., Tibes and Jácana) occur alongside an array of other vertebrate and invertebrate taxa interpreted as quotidian food fare (deFrance et al. 2010; DuChemin et al. 2010). There are no interments of whole guinea pigs, no evidence of sacrifices, and no iconographic representations of guinea pig on ceramics or other media that would indicate a non-food use such as those documented in the Central Andes.

For comparison, the domestic dog (*Canis lupus familiaris*) is the only other domesticated animal to be recovered from pre-Columbian archaeological sites in the Caribbean (Newsom and Wing 2004:204). Caribbean dog remains are most commonly found as complete interments associated with human burials (Wing 2008). To date, guinea pig has not been recovered from human burial contexts or as purposefully isolated interments.

While we cannot rule out that guinea pig specimens recovered thus far, including those from Cinnamon Bay, Jácana, and the post hole feature at Río Tanamá 1, were not ritually significant or indicative of specialized consumption or use, we argue that the most parsimonious interpretation of archaeological contexts and patterns of deposition (i.e., middens) suggest that in general guinea pigs did not serve functions beyond food (see also Wing 2008). If guinea pigs did serve as ritual or special animals, then is appears their remains were discarded with other trash (*contra* Walker 1995). Thus discerning ritual or supra-culinary function will remain challenging (e.g., Grant 2002). Future excavations and analysis, particularly analysis of associated material goods found with guinea pig remains may prove otherwise. For example, at present, the Cinnamon Bay guinea pig specimens represent the best example of contexts suggestive of elite ceremonial or ritual use of guinea pig in conjunction with other animals and artifacts.

Furthermore, whether guinea pigs were a high-status food restricted to elite members of society or used as a feast food is open to debate. Deposits that are unequivocally feasting contexts are uncommon in the Caribbean. Some of the sites where feasting contexts have been identified do not contain any guinea pig remains (e.g., En Bas Saline, Deagan 2004; Newsom and Wing 2004:159). Although caution is needed when interpreting negative evidence, the absence of guinea pigs from some of the most extensively excavated and analyzed sites may indicate that the guinea pig did not serve as a preferred feast food. For example, the Taino village and Spanish contact period site of En Bas Saline on Hispaniola has some of the strongest evidence for elite versus non-elite food (Deagan 2004) and yet guinea pigs are absent. In contrast to the proposition by Curet and Pestle (2010) that guinea pigs at Tibes were an elite food due to high fat content and their exotic status, we propose that these animals were food items, but not inherently supra-culinary ones. Although guinea pigs exhibit high fertility and fecundity, they are lower in fat than many fish species common at Caribbean sites (deFrance 2013). Much better contextual associations are needed before either culinary value as elite, feast food, or ritual animals can be established. For now, we see no evidence that guinea pigs fulfilled the multiple social roles (e.g., offerings, sacrifices, curing) that are found in the Central Andes.

It is also worth noting that as a domesticated food source, it is probable that guinea pigs were tended and protected from predators such as raptors, dogs, and snakes; however, no archaeological evidence for tending has been identified. Because guinea pigs do not climb well, tending might have only required segregated space with low walls or guinea pig pens. Also, no areas of concentrated guinea pig dung suggestive of group tending and breeding have been identified in the Caribbean, but this may be a factor of preservation in tropical climates. The quantities of archaeological remains do not suggest that guinea pigs were tended and reared to be released on the islands and become a naturalized food source. It is also possible that other rodents, including the extinct and extant hutias (*Isolobodon portoricensis*), agoutis (*Dasyprocta* sp.), and rice rats (Oryzomyini), were transported between islands and might have been a tended food source as well. Native populations of non-domesticated hutias (*Geocapromys* spp.) are present on Jamaica, Cuba, and some of the Bahamian islands (Woods and Kilpatrick 2005).

Guinea Pigs and Cultural Identity

Food is not only necessary for biological survival; it is also fundamental to cultural development and success (Gosden 1999). As such, food is a formidable factor in how people identify politically and socially (Curtin

1992). Food, food animals, and food habits can be very powerful in establishing and demonstrating identity (Atalay and Hastorf 2006; Jones 2009:143). Identity defines who we are and how we differ from others (Twiss 2007). It is a fluid and contextually dependent concept that is both self-defined by individuals and shared by aggregated individuals who form communities (Lewis 2007).

In the absence of abundant empirical evidence indicating that Caribbean guinea pigs were an exclusively high-status exotic used in ritual ceremony or as elite food, what significance can be deemed from their restricted geography, temporal distribution, and contexts of archaeological deposition? We hypothesize that guinea pigs were initially affiliated with post–AD 500 populations as a possible food-based marker of cultural identity and social interaction with South America, but not necessarily social status.

We have suggested that the disparate distribution of guinea pig may relate to spheres of human interaction and patterns of migration. In relation to identity, guinea pig may have been imported and introduced as an exotic marker of South American heritage, connection, or influence. Similar to studies focused on artifact provenance and movement (e.g., Fitzpatrick et al. 2008, 2009; Garcia-Casco et al. 2013), testing this suggestion will require nuanced, contextual, and holistic studies aimed at identifying the origin of guinea pig remains (i.e., directly from a South American source or a Caribbean-bred population) and their relationships to other categories of material culture and evidence of human migration, interaction, and/or trade.

After its introduction, the distribution of guinea pigs apparently spread southward from the northern Greater Antilles. We suggest some groups either traveled bringing the animals with them or they traded them to people with whom they shared some cultural values (see Newsom and Wing 2004:210). The distribution pattern of guinea pigs may indicate that these animals played a role in creating identity by distinguishing people through their possession and use of food animals (*sensu* Scott 1996). Just as significant, not possessing guinea pigs may also have been an indication of cultural identity when distinguishing people through the animals that they reared and consumed. In this sense, access to and use of guinea pig may have been restricted between communities. However, until further evidence is provided to refute a model of equal availability within a community, we suggest that all members of a given community were able to consume guinea pigs if they were present. Future studies may also suggest that other Caribbean mammals (e.g., hutias, rice rats, agoutis) fulfilled a similar role and provide comparative data to test our suggestion.

Although we hypothesize that guinea pigs may have been linked to expressions of cultural identity, we acknowledge that much more work and research is necessary in order to understand the potential reason(s) for the introduction, subsequent spread, and their adoption by some and not others in the Caribbean after AD 500. However, placing the punctuated appearance and patchy distribution of guinea pig within the regional cultural and social milieu of the second half of the Ceramic Age—a period rife with cultural change and complex patterns of Circum-Caribbean migration, interaction, and trade/exchange—we believe that guinea pig remains may provide an ideal line of evidence through which to study the relationship between food and identity during Caribbean pre-Columbian history.

CONCLUSIONS

Sometime after AD 500, humans transported and introduced domesticated guinea pigs from South America to the Caribbean. Our analysis of the occurrence, context, and temporal affiliation of all known guinea pig remains from the Caribbean suggests that the animal arrived first on Puerto Rico during the second half of the Ceramic Age and then spread westward and southward. When considered as a proxy for studying human movement, the contemporaneous appearance of guinea pigs on some islands in the archipelago indicates external interaction spheres that merit further study (e.g., Hofman and Bright 2010; Hofman et al. 2007).

The role of the guinea pig in the Caribbean appears to have been primarily as a food item. The absence of guinea pigs from many sites with well-preserved and well-analyzed faunal assemblages may reflect rejection of the animal as a food source rather than sampling biases or taphonomic processes. There are no indications that guinea pigs were used as ritual offerings (burial or otherwise), sacrifices, or for curing purposes as they were in the Central Andean region. Although guinea pigs were exotic to the Caribbean, the contexts of their discovery suggest that they were not restricted food animals. We see no strong evidence that guinea pigs were an elite or high-status food that was used only by the upper echelon of society. Rather, the cultural role of guinea pigs may have been as a food marker of social identity and cultural affiliation.

Understanding the possible role of guinea pigs in establishing unique aspects of Caribbean social identity requires continued documentation of their remains and the contexts of recovery as well as the analysis of associated material culture and direct radiocarbon dating of guinea pig remains. Future excavations and faunal analyses in the Caribbean will help to achieve that goal.

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