



March 2010 Newsletter

Bioarchaeological Analysis of Historic Kormantse, Ghana

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Abstract

Human skeletal remains associated with 17th century artifacts were recovered during the latest excavations at Kormantse, Central Region, Ghana. The following is a preliminary bioarchaeological analysis, and in particular, it concerns data pertinent to demographics, dental and skeletal health, and human behavior extracted from the population sample. All three study areas of the site contain evidence of at least seven individuals and as many as nine. In Study Area 1 at least two adult individuals are represented from leg bones within this feature or area. One may have been a female with a body mass of 59.0 kg. Two teeth and eight skull fragments were recovered from Study Area 2. In Study Area 3 at least five individuals are present. One is likely a young adult (21-34 years of age at death) and the other is a sub-adult between 6-10 years of age at death. Further excavations at the site, and the continual study of their remains, will soon enhance our understanding of skeletal biology and mortuary patterns during the cultural establishment of historic Kormantse.

Introduction

The results of test excavations of the Kormantse historic site (Fig. 1) and the recovered artifacts have been briefly reported and discussed (Agorsah and Butler 2008) and were presented at the conference of the International Association for Caribbean Archaeology (IACA) (Agorsah 2009; Schaffer and Agorsah 2009). These preliminary results indicated the richness of the site and suggested several appropriate directions for further investigations and their implications for an understanding of the identities of those who played a crucial role in the colonial encounter along the Gold Coast (now Ghana). Interpretations of the material must wait until more data becomes available and provide a basis for additional analysis. The summer of 2007 archaeological study of the site of Kormantse was launched as part of a project to obtain data concerning the beginnings of the cultural identities of a significant portion of African Diaspora populations. Kormantse was the original site of the first British fort on the Gold Coast in the 1630s, and was used to facilitate the shipment of enslaved Africans to the New World. The 2007

field trip (Agorsah and Butler 2008) surveyed the site and its surroundings, commenced mapping of the main physical features of the site, and identified activity areas such as shrines, burial grounds, house structures, abandoned grinding stones, and other community areas as well delineation of the site boundaries.

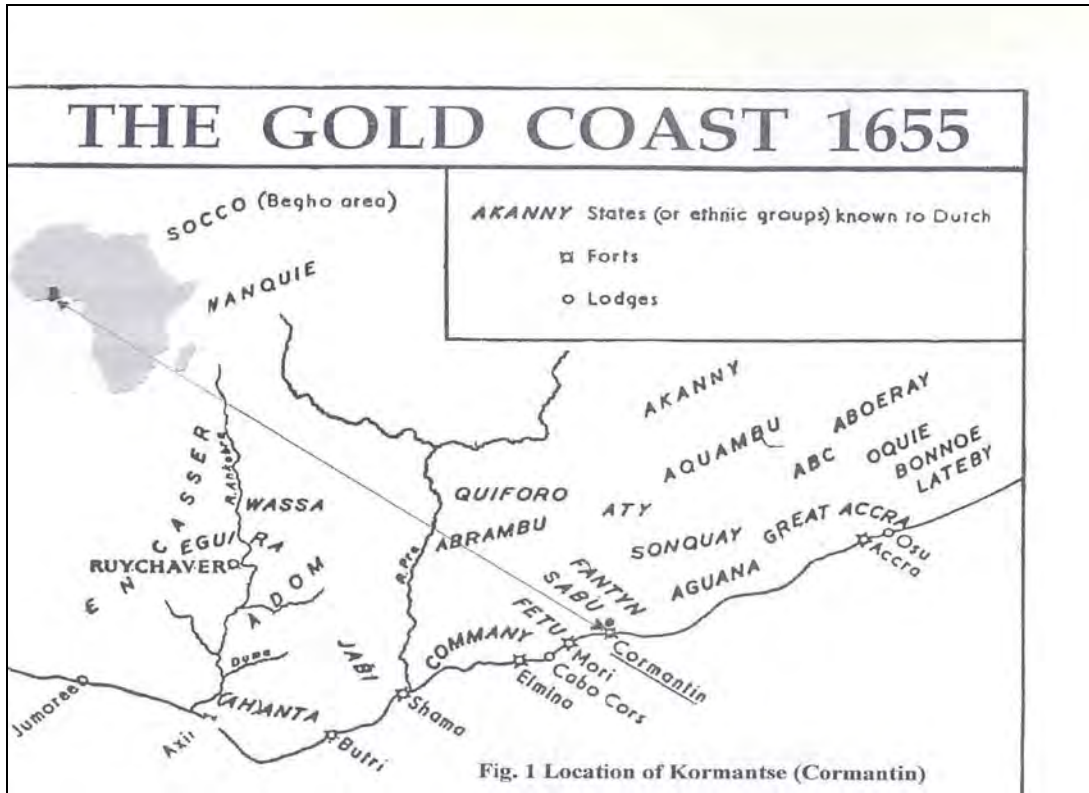


Figure 1.

Kormantse is protected on all sides except the northeastern side by deep depressions. To the south and west of Kormantse and on another hill on the coast is Fort Amsterdam. That facility represented a new location given by the Etsi people for a new British Fort which bore the name Kormantse. The Dutch later captured the fort from the British, renovated and renamed it as Fort Amsterdam. A village surrounding the fort area was later developed and named as Abandze, meaning “under the fort.”

During the preliminary study the site was divided into three major areas for archaeological purposes. Material discussed in this article is related to burials derived from those areas (Fig 2). Study Areas 1 and 2 coincide with the area inhabited by the Etsi, said to be indigenous to the settlement, and Study Area 3 represents the area in and around an individual's

garden and a very small area. The west end of Study Area 1, which is the highest point of the settlement, was the location of a British fort that was never completed; to the west of it was the local burial area of the original site. Study Area 2 consists mainly of many old mud or wattle and daub houses, mostly in ruins, several piles of iron ore and slag, family and community shrines and abandoned large grinding stones. This is the open center of the site. Study Area 3 is to the extreme south east of the settlement and is a garden area preserved by one of the elders of the Etsi clan of the old village. These divisions are significant in terms of distribution of structural features, family houses, activity areas, and other archaeological remains at the site.

Kormantse Study Areas

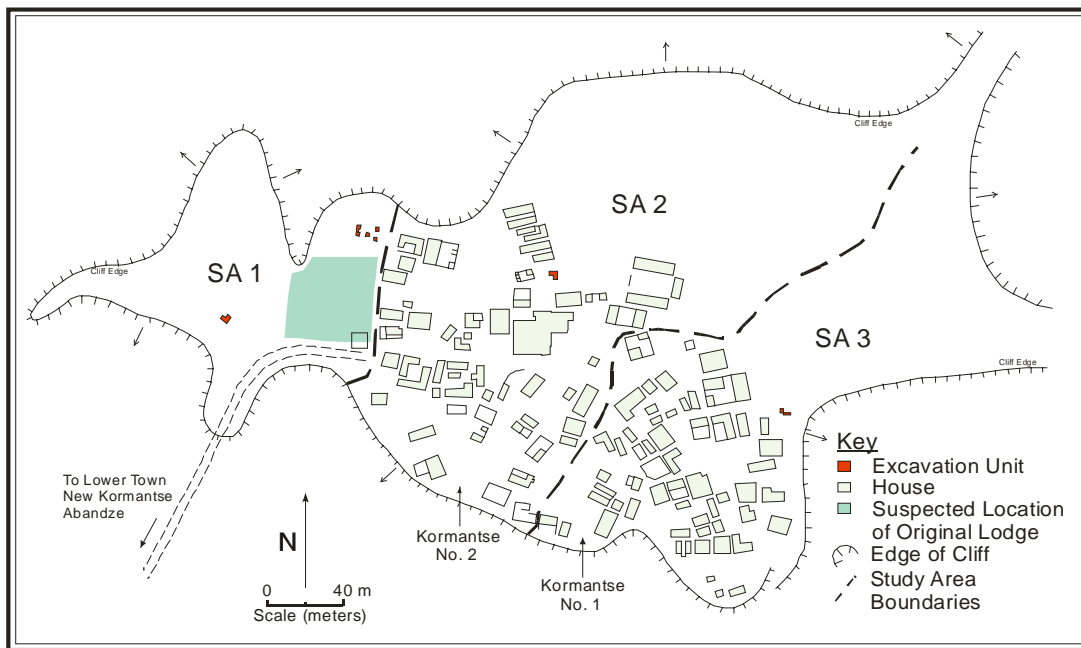


Figure 2.

Materials and Methods

A total of sixteen unique field specimens identified were recovered (Appendix 1). The remains appear to have been susceptible to various taphonomic changes. The skeletal remains were macroscopically analyzed utilizing standard procedures for adult and juvenile osteological analysis (Baker et al. 2004; Buikstra and Ubelaker 1994; Scheuer and Black 2000; Ubelaker 1999). Skeletal element, side, and segment were identified when possible and recorded to locate the most common skeletal element to calculate the minimum number of individuals (MNI) for

each area. Aspects of health, diet, and disease were assessed using previously published literature in gross skeletal (Aufderheide and Rodríguez-Martín 1998; Ortner 2003) and oral-dental pathology (Hillson 1995). Body mass from femoral head diameter was calculated by taking the mean value of three different discriminatory functions (Grine et al. 1995; McHenry 1992, Ruff et al. 1997). This method has been shown to present the researcher with the best linear unbiased estimate (Auerbach and Ruff 2004).

Results

The Kormantse Sample

All three areas of the site contain evidence of at least seven individuals and as many as nine (MNI=7-9; see Table 1). At least two adult individuals are represented from leg bones within Study Area 1. One may have been a female with a body mass of 59.0 kg. Two teeth and eight skull fragments were recovered from Study Area 2. In Study Area 3 at least five individuals were present. One is likely a young adult (21-34 years of age at death) and the other a sub-adult between 6-10 years of age at death. These estimates are fairly conservative and as the context is better understood, a more accurate determination can be made. All three Study Areas (i.e., 1, 2, 3) are treated as distinct features or mortuary components; thus, a minimum number of individuals (MNI) is calculated for each area as a unit and then added together to provide a total for all three features as a whole. This article is organized appropriately by levels and arranged by study area.

Study Area 1 (SA 1)

Surface specimens were sixteen and from level one of E18/20 were fourteen and contained a total of four teeth: three upper and lower molars (LM²; LM₁ and RM₁ respectively) as well as one left central incisor (LI¹) – all indicative of at least one adult individual. Specimens at or around 1.8 meters in depth (#5 and #6) from the mechanical excavation area and water tank operation yielded at least two adult individuals as evidenced by the number of leg bones present. Fragments from specimen #5 even matched with those of specimen #6. An accurate assessment of long bones was the result of this investigation: a right ulna, left tibia, left femur, and two right femora corroborated the assessment.

One adult individual (#6) is estimated to be a female when employing a method to

estimate sex from the vertical diameter of the femoral head from a modern Nigerian sample (Asala et al. 1998). The measurement extrapolated from the femoral head (41.6 millimeters (mm)) was also utilized to estimate body mass at 59.0 kg. The value reported here is the average of three major studies with discriminatory functions related to body mass estimation. The values from each study and mean are provided in Table 2. The large quantity of beads around the waste, knee, neck and ankle areas imply a female burial. The presence of bones belonging to a juvenile also raises questions about the association between the two.

Table 1. MNI calculations for each area independently.

Study Area	Specimens	Excavation Unit(s)	MNI	Age-at-death/Sex
1	5-6, 14, 16	-	2	Both adults; One may be female
2	1-4, 8, 13	M30, M32	2	Adult and likely one subadult (8 years +/- 24 months)
3	7, 9, 10-12, 15	R21, S24, Q22	5	Two adults and three subadults: one is 5-9 years of age; the other two are younger (both approx. 2 years +/- 24 months)

Table 2. Results of body mass estimation using calculations from each study.

Source	Body Mass Estimation (kg)
McHenry 1992	53.2
Grine et al. 1995	57.8
Ruff et al. 1997	65.8
<i>Mean</i>	<i>59.0</i>

Other metric measurements of relevance to skeletal biology were retrieved from the proximal aspect of a right femur (#5). Two measurements, the anterior posterior (A-P; 24.6 mm) and medial-lateral sub-trochanteric diameters (M-L; 26.9mm) were extracted to compute a platymeric index (91.3). This index gauges the shape of distal lower limb. A larger sample of femora would provide a better understanding of lower limb morphology. For comparison the mean platymeric index for 17th century English individuals is 85.0.

Non-metric traits located in areas of the skeleton can be interpreted as inherited familial characteristics, results of environmental adaptation, or results of occupational-related or gender role-related stress during life. In specific reference to the morphology of the femur, a number of

non-metric traits are identified usually around the anterior-superior femoral neck region (Finnegan 1978:24; Kostick 1963). In terms of the remains recovered from the Kormantse excavations, the proximal end of one left femur has plaque formation likely extending from an area of the articular surface that is slightly bulged (see Fig. 3). It may have been the region of a Poirier's facet and a subsequent bony ridge formed extending distally down the anterior neck (Kostick 1963; Finnegan and Faust 1974; Finnegan 1978:24). These types of scars on bones have been amassed by Kennedy (1989:149) and Capasso and colleagues (1998) as indications of hip hyper-flexion that is often seen in habitual activities such as squatting. Squatting facets have been interpreted, with documentation from modern ethnographic studies, as a marker of the skeleton enduring repetitive squatting activities as would be related to working on a farm with a hoe. It may also be the site of increased vascular and ligament integrity. So as more activity is placed on the hip joint, stronger ligaments develop causing the ridge demarcated by white arrows in Figure 3. This may provide us with a clue to some of the daily activities that a person would have conducted at Kormantse during British fortification.



Figure 3.

Study Area 2 (SA 2)

Two teeth were recovered from the specimen labeled surface #8. This included an adult left upper lateral incisor (LI²; this matches with the teeth from specimen #13, Burial 1) and the upper right second molar (RM²) of a subadult around eight years of age at death (+/- 24 months).

Eight skull fragments were present in specimen #1, half of which could be identified. Fragments of the occipital, parietal, temporal, and sphenoid were documented from at least one individual. The temporo-mastoid region was fairly intact but a sex assessment from this

fragment would yield a biased estimation and this fragment has been presently assigned as sex indeterminate.

Specimen #2 consisted of many long bone fragments and a few skull fragments. Four vertebrae were identified: three centra (some look like cervical fragments) and one positively identified fragment of the axis (dens). A fragment of an adult mandible was also identified containing at least three anterior tooth crypts and slight periodontal abscess. The specimens of the M30 (M32) extension #3 consisted of fragments of long bones shafts and epiphyses. Bones of the knee (left patella) and foot (left and right tali) were located. These bones appear porous and maybe immature in age. They possibly represent those of a juvenile around the same age-at-death of the tooth that was recovered.

Remains from specimen #4 were housed parts of the left knee (patella), and feet (left and right naviculars; third cuneiform) were identified. Some of the human skeletal remains were generally made up of bones of the arm and hands. Long bone fragments were abundant and axial elements were present. One fragment appeared to be the distal end of a humerus or radius. Three vertebrae fragments were identified as well as a bone of the hand (scaphoid). Lastly, specimen #13 (Burial 1) contained a total of 28 teeth from one individual. All teeth were present, mostly in the form of the entire enamel surface (the roots seem to have disintegrated likely from burial environment), with those absent being three lower incisors (LI₂, LI₁, and RI₁). As aforementioned, the left upper lateral incisor (LI²) was recovered from specimen #8.

Study Area 3 (SA 3)

A total of five individuals are represented in Study Area 3. At least two adults are represented by teeth and tooth fragments as well as three sub-adults: two aged 1-5 years and one aged 6-10 years. Specimen #7 contained some heavily fragmented and weathered long bones of the legs. Most if not all of the fragments are not diagnostic enough to orient element, side and segment, therefore a more accurate inventory is near impossible to generate. Evidence of the thorax was identified in the form of the vertebral aspect of a rib. This specimen references specimen #10, specifically teeth, but to whose teeth belong to these long bones is indeterminate pending further contextual information. Specimen #9 contained two adult teeth: a lower premolar and an adult left upper third molar (LM³). Specimen #10 contained 27 total teeth (16 subadult teeth, 11 of which are deciduous or baby teeth; and, 11 adult teeth). Specimen #11 was

made up of seven total teeth (2 subadult teeth, both deciduous; and, five adult teeth). Specimen #12 housed one tooth, an adult right second upper molar (RM²). Specimen #15 contained twelve teeth (5 subadult teeth, all permanent; and, 7 adult teeth).

Summary Observations

The human and other skeletal remains from the preliminary study contribute to a growing body of evidence of the characteristics of individuals who were members of past populations targeted at Kormantse for abduction into the trans-Atlantic slave trade and related Diaspora. More intensive analysis of bones and teeth, along with assembly of biological profiles, metric and non-metric traits, will hopefully, like the African Burial ground evidence, become one of the best sources of such evidence. Initially it appeared that from Study Area 1, the water tank area excavation (see Fig. 2), that there was evidence of at least two adult individuals. Two right femurs are present. The measurement from a femoral head diameter indicated that at least one was a female. Study Area 2 had at least two individuals as well: one adult, as evidenced by a near complete recovery of adult teeth, and likely a sub-adult 6-10 years of age-at-death. From Study Area 3 more than several teeth and enamel fragments identified appear to represent at least five individuals: at least 2, may be 3 adults, and certainly 3 sub-adults, including one 6-10 years and two 1-5 years of age at death. This preliminary analysis shows a total of nine individuals, representing five adults (one may have been female) and four sub-adults.

The long unbroken occupation of Kormantse adds more hope to these results that a range of such finds will help in the identification of some of the individuals and their places of origin. Additionally such an assemblage should bring substantial and substantive evidence to bear on our interpretation of the populations with Kormantse connections. It is obvious from the preliminary study that much evidence awaits the archaeologist at Kormantse that will become most significant for our interpretation of the encounter of cultures during the colonial era in Africa and the African Diaspora. Archaeological study of the Kormantse site, as a focal point and outlet for the movement of populations from the interior and the coastal areas into the New World covered in these studies, will considerably connect and align studies of the colonial period along the coast and the interior. Many scholarly discussions about Africa and the African Diaspora have referred to Kormantse as a place of pride of many Diaspora societies to associate with, but little is known about its material culture, colonial populations, and how they negotiated their survival

in the colonial encounter. Understanding the characteristics of those populations and their culture groups in West Africa continues to be a challenge, and they remain to many researchers as an “imaginary” reference population. As a primary population catchment and dispersal point for those passing through to the African Diaspora, the Kormantse site represents one of the nexus points where Diaspora cultural formations and bonding began. Such West African locations need to be more closely examined in our search for cultural and population connections as we reconstruct the colonial history of Africa and the African Diaspora.

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Note

* William Schaffer is a PhD Student at the Center for Bioarchaeological Research, School of Human Evolution and Social Change at Arizona State University, Tempe, Arizona, and E. Kofi Agorsah is a Professor of Black Studies and International Studies and Chair of Black Studies, Portland State University, Portland, Oregon. Historic Kormantse Project funded by the National Science Foundation.

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Appendix

Appendix 1. Contextual information from receptacles containing specimens.

Specimen	Area	Level	Unit	Description	Depth
1	2	4	M30	Appears to be from skull area – with lots of beads and all teeth recovered (see specimen #...).	36cm
2	2	4	M30	-	1.36m
3	2	4	M32	Appears to be extension of burial observed in M30. Beads found in parts of unit.	1.38m
4	2	4	M30	-	-
5	1	-	-	Recovered from mechanical excavation by contract officer for erection of public water tank; associated with smoking pipes and local ceramics.	1.8m
6	1	-	-	Mechanically excavated water tank construction; associated with smoking pipes and local ceramics; area of original British fortification of 1600s. Could be for more than one individual. Fragmentary – not counted. Burial appears disturbed – lots of beads and smoking pipes uncovered – lots of teeth (see Specimen 10).	1.8m
7	3	2	R21/S21		45-55cm
8	2	Surface	-	-	-
9	3	Surface	-	-	-
10	3	1	R21	Burial 2	-
11	3	1	S21	-	-
12	3	1	Q22	-	-
13	2	4	M30	Burial 1, jaw area with nails, smoking pipe in mouth and a snuff bottle on the side (head area); lots of beads and pipes and local ceramics.	1.8m
14	1	1	-	-	1.8m
15	3	1	R21	Water screened	-
16	1	Surface	-	-	-

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