

# An archaeological study of Amboni limestone caves, Tanga Region in the northern coast of Tanzania

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## Abstract

*This paper presents the archaeological study undertaken at Amboni limestone caves in the northern coast of Tanzania. The study of the Amboni caves came as a follow up from the extensive archaeological works conducted by Professor Felix Chami and colleagues on the limestone caves of Tanzania offshore islands. The excavations by Chami and colleagues yielded ground-breaking archaeological evidence of the presence on the East African coast of a cultural sequence ranging from Stone Age to the present. This study aimed at establishing the cultural chronology and ascertaining its relationship with that of the islands limestone caves. This study demonstrated the existence of LSA materials, EIW pottery tradition, TIW pottery tradition, and later pottery traditions.*

## Introduction

This paper is a report of an archaeological excavation undertaken at Amboni limestone caves in Tanga Region, northern coast of Tanzania. The study was carried out for a Master degree dissertation. The principal objective of the study was to establish the cultural chronology of Amboni caves and ascertaining its relationship with the cultural sequence established from limestone caves on the Tanzanian off-shore islands of Zanzibar and Mafia. The excavation uncovered lithic materials (LSA) at the bottom layers whereas potsherds determined as EIW (most likely Kwale) and TIW were found above lithics and narrowly below the Swahili potsherds. A single sherd collected from the lowermost pottery level was suspected (uncertain) to be of pre-Iron Age tradition. The presence of LSA materials and those of Early Iron Working periods continue to support the long cultural sequence of the Swahili coast.

Amboni caves site (S 5° 04' E 39° 02') is located in the present Tanga District, Tanga Region in northeastern Tanzania. The site is situated about 8 km from Tanga Municipality, off Tanga-Mombasa road, lying along the banks of River Mkulumuzi whose ever green vegetation characterize the vegetation of the site. Amboni caves are one of the most famous tourist destinations both in the region and the country at large. Perhaps the caves are the most popularly known limestone caves in East Africa.

### **Environmental setting**

Tanga Region in which the Amboni caves are located lies between geographical coordinates 4° and 6° S and 37° and 39° E in the northeastern Tanzania (Figure 1). It is bordered by the Republic of Kenya to the North, Kilimanjaro Region to the North-West, Manyara Region to the West, Morogoro and Coast (Pwani) Regions to the South, and the Indian Ocean to the East. The Amboni caves area is underlain, in its entirety, by the Tanga limestone. The caves are concentrated between and along the gorges of Mkulumuzi and Sigi rivers all of which flow from the Usambara Mountains in the hinterland to the West and empty their waters into the Indian Ocean through Tanga Bay. Tanga limestone is believed to have been formed under the sea over 150 mya. Amboni limestone is purely 98% calcium carbonate (Marean and Shea, 1996; Smith, 1963). Both temperature and rainfall is moderate in the Tanga Region whereas lowlands experience the average temperature of 32°C and highlands 24°C while rainfall varies between 200 and 2000 mm. Due to high average rainfall (1500 mm) in Tanga District, the Amboni caves area has thick low-land tropical vegetation, especially, in areas unaffected by sisal cropping. Mkulumuzi and Sigi Rivers provide fresh water in the Area and the villagers use the waters for agricultural and domestic usage. The population of the two villages, Amboni and Kiomoni, is multiethnic but Digo is the dominant. The main economic activity of the population is cultivation of crops such as bananas, cassava, oranges, maize, spinach, and coconut. Cattle and goats are kept by few people. A large portion of the population is also involved in the quarrying of limestone that is taking place at both small and large scales.

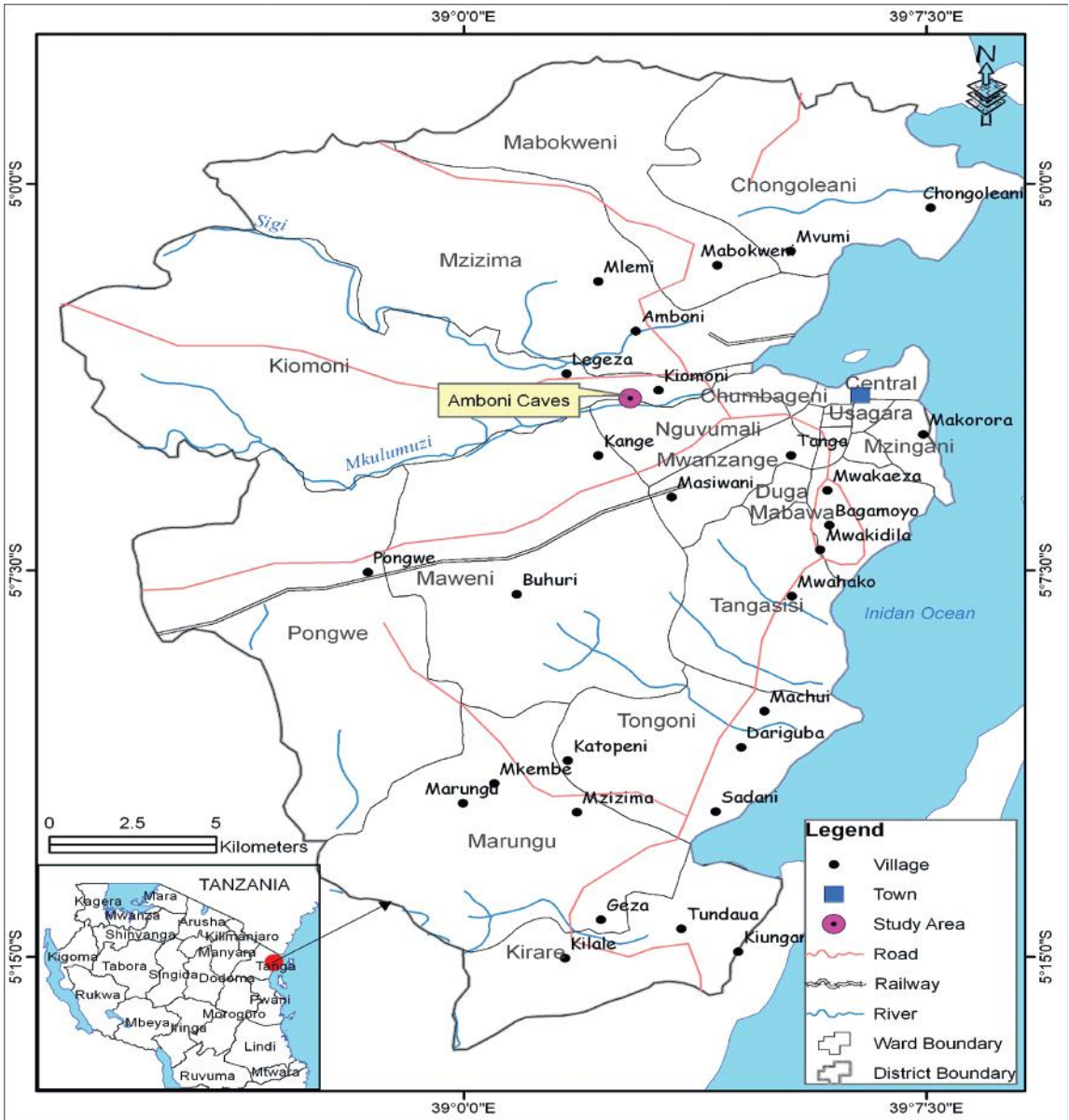


Figure 1: Map of Tanga District showing Amboni caves

## Archaeological background to the research

The decision to undertake this archaeological study at Amboni limestone caves emanated from discussions with Professor Felix Chami who has extensively explored limestone caves in the Tanzanian islands since the beginning of the last decade (Chami, 2001b, 2006, 2009; Chami & Wafula, 1999). The Limestone caves in Zanzibar and Mafia islands yielded incontrovertible archaeological evidence

that suggested the occurrence of prehistoric sequences on the Swahili coast (Chami, 2009). However, limestone caves on the mainland coast, opposite to the islands, were yet to be fully explored for a more comprehensive picture of the cultural history of the Swahili coast. This research gap formed, therefore, the basis for the proposal to carry this archaeological work at Amboni limestone caves.

### **Survey and Excavation results**

The idea to carry out an archaeological study of Amboni caves was followed by a visit to the area in August 2012 before the actual fieldwork that began later in October. A thorough evaluation of the archaeological potential of the site was done and a spot suitable for excavation was highlighted. The fieldwork, therefore, involved mapping and excavation. A trench of 2 x 1 m with 1 x 1 m extension was established after mapping the site. The Datum Point was outside the cave and the trench was 20 m North-West at the entrance of the Amboni main cave (Figure 2). Excavation was done by arbitrary levels of 4 cm until it was completed at 165 cm for the large section and 185 cm for the 1 x 1 m extension. The trench yielded an array of cultural materials including lithics, potsherds, beads, and faunal remains. The upper levels to 30 cm below the surface are dominated by materials of most recent times (after 16<sup>th</sup> C) including post-Swahili sherds. However, a single white bead attributable to the Swahili period (A.D 1200-1500) was collected within this stratigraphic spit. There was also a high concentration of small bone remains of small rodent species and avian. Two sherds exhibiting red-ochre painting were uncovered between 35 and 40 cm below surface. Both pieces displayed features of carination along the determined vessel shoulders. These sherds marked the beginning of the recovery of Swahili cultural remains down the levels. Excavation levels between 41 and 56 cm below surface yielded only faunal remains such as small bones and snail shells and in some occasions associated with charcoal.

There was a constant recovery of pottery remains from 57 cm to 81 cm below the surface. The number was decreasing from top to bottom (see Table 1). A single body sherd was recovered between 85 and 89 cm (level 22) marking the end of pottery materials produced by the trench. Based on the fabric characterized by coarse-fine and largely blackish in colour, sherds recovered between 57 down

to 70 cm have been attributed to the Swahili cultural period. This assemblage included a single decorated rim sherd exhibiting a line of bold punctates along a short or vestigial neck (Figure 5-e). These are typical attributes of the Swahili tradition (see Chami, 1998). An observation was made for potsherds uncovered below 70 cm below the surface where there was a clear distinction in terms of fabric with those found in the upper levels (the Swahili wares). For instance, the fabric was finer and more reddish in colour. Some diagnosed rim sherds reflected vessels with thickened rims and a tendency towards beveling. It was obvious that the materials represented TIW (elongated necks with flaring rims) and EIW traditions. Lithic fragments (quartz and quartzite) come into the scene from 70 cm below the datum point. Meanwhile, bone remains made a notable change from small to medium/large size and bearing evidence of being burnt which was certain that they were processed by humans. Further, two isolated cheek teeth of probably primate mammals were collected from level 22 (85-89 cm). The association of potsherds determined as TIW and EIW with lithic flakes was fairly neat from 70 cm to 80 cm (see Table 1). The sediments of level 24 (93-97 cm) did not produce cultural materials. However, excavation proceeded and there was constant encounter of lithic flakes/debris down to 150 cm showing a significant decrease towards the bottom. After 150 cm below the surface excavation proceeded through sterile levels to 165 cm when the limestone basal rocks were hit at the 2 x 1 m section (Plate 1). Excavation continued in the extension section down the sterile layers to 185 cm below surface where it ended (Figure 3).



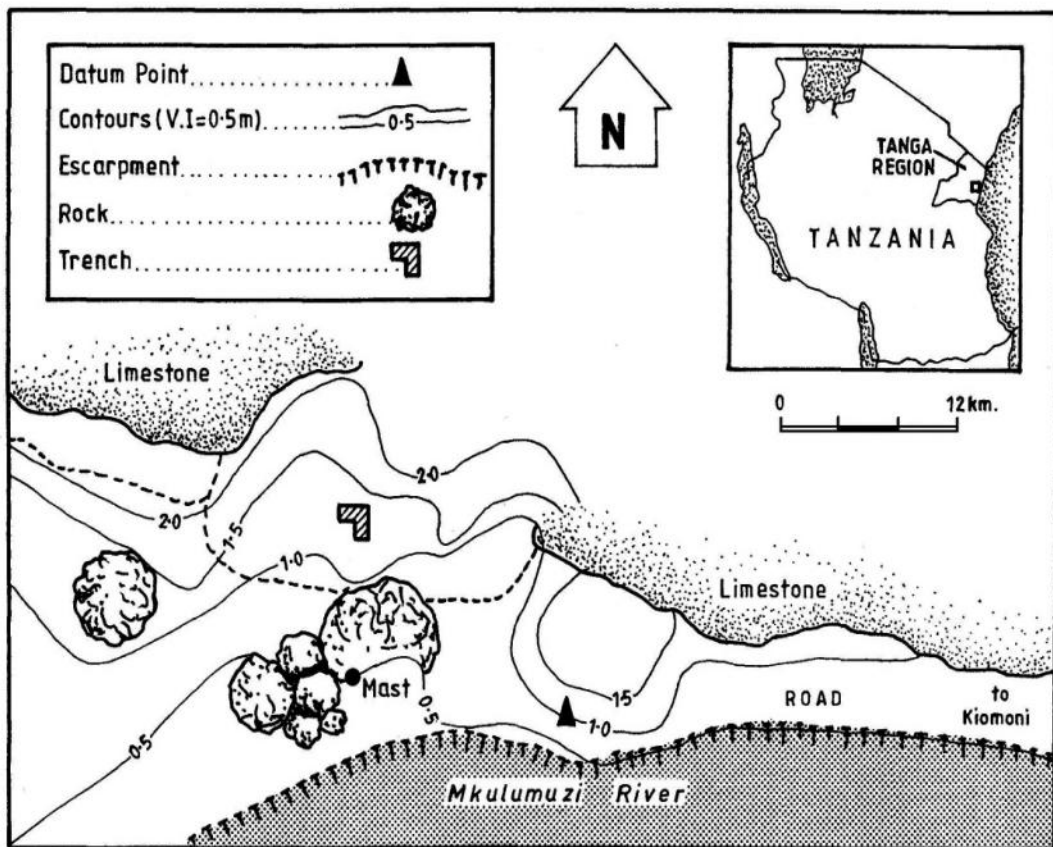


Figure 2: Map of the excavated site showing the trench



Plate 1: A stratigraphic view of the trench

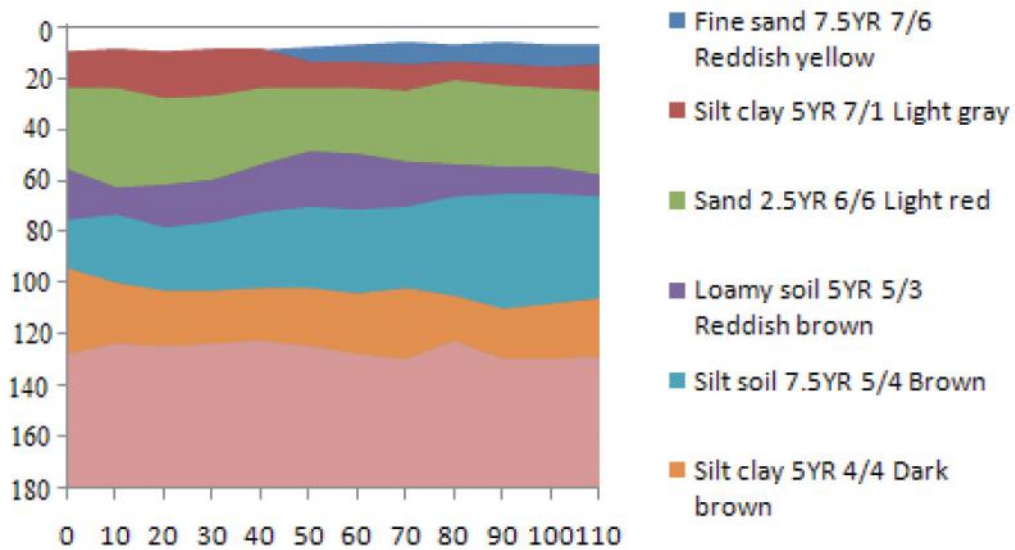


Figure 3: Northern Wall Profile

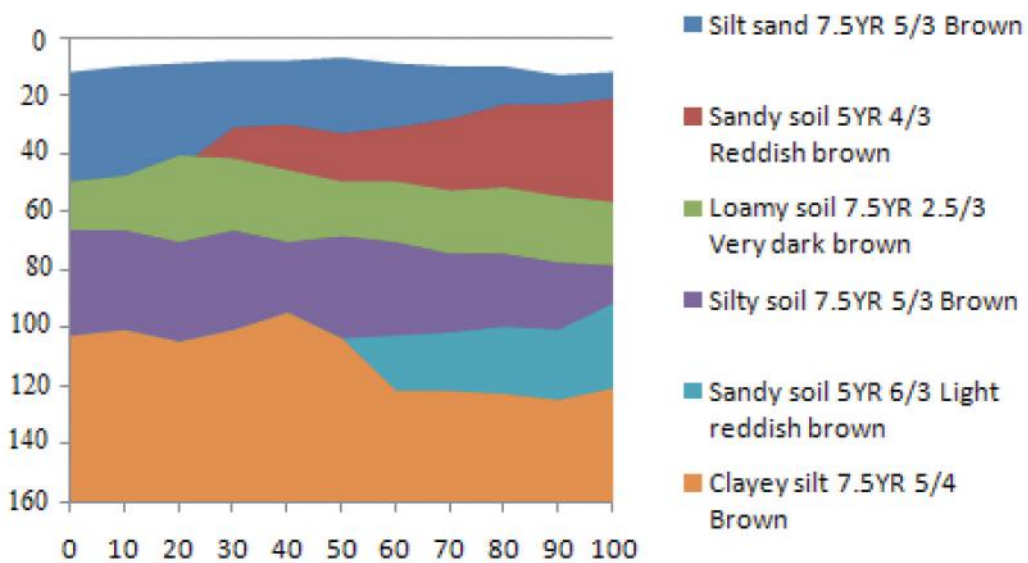


Figure 4: Northwestern Wall Profile

## Data analysis and discussion

The inventorying of materials collected from excavation showed that there were 55 potsherds, 2 beads, 227 bones (including two isolated teeth), 121 lithic materials, 26 fragments of snail shells, and 3 bullet cases. Materials collected from the excavation between 0 and 50 cm below the surface do not hold much archaeological significance. They seem to represent only very recent activities in the caves. Several bones of small rodent species and snail shells (land snails) fragments did not bear any strong indications of being food remnants from which past subsistence economy could be reconstructed.

Two sherds collected between 35 and 40 cm depicted some features of the Swahili tradition such as carination at the shoulder regions of the vessels and they are finely painted with red-ochre. A total of 43 sherds were collected between the depth of 50 cm and 72 cm of the trench. Only one sherd (Figure 5-e) is decorated and most diagnostic exhibiting a short neck bearing a single line of bold punctates. This, as pointed out earlier, is the characteristic attribute of the Swahili tradition. The fabric and paste of this sherd is not dissimilar with that of rest undecorated sherds being dominated by coarse sands. These potsherds and two beads have been classified as cultural materials of the Swahili period. The period when the Swahili culture flourished along the East African coast has been widely known to span from A.D 1000 to 1500 (Horton, 1996; Chami, 1998, 2009).

Potsherds uncovered from 75 to 89 cm were very few ( $n=7$ ) and quite distinct from those of the preceding levels. All these are hard and to a large degree fine in fabric compared to those explained as Swahili wares. Three sherds depicted fine dark red fabric and the rims are characteristically thick and clearly showing at least two bevels. There was no doubt in attributing the sherds to the EIW tradition suggesting that EIW tradition exists at Amboni caves. EIW has been adopted to represent the cultural period when iron smelting is attested in eastern Africa (Chami, 1994). This tradition first appeared in the Great Lakes region around the middle of the last Millennium B.C and by the third century A.D it had reached southern Africa (Phillipson, 1976; Chami, 1998). The spread of this tradition to the wider region of eastern and southern Africa has allegedly been associated with the movement of Bantu speakers.



Kwale tradition (EIW phase two) was thought to be the earliest EIW tradition on the coast (Soper, 1967). However, Limbo, the earliest phase of EIW, has been recognized from the central coast of Tanzania nullifying such earlier hypothesis (Chami, 1994). EIW tradition is now divisible into three successive phases of Limbo (200 B.C-A.D 200), Kwale tradition (A.D 200-400), and Mwangia tradition (A.D 400-600) (Chami, 1998, 2009; Haaland and Msuya, 2000). Sites with Kwale pottery wares have been discovered in the Usambara Mountains west of Amboni caves in the immediate hinterland (Soper, 1967). During the preliminary visit to the site we went as far as Maramba about 25-30 km off the Tanga coastal littoral and in a short surface survey we observed a concentration of Kwale pottery remains near Maramba Secondary School. The presence of Kwale pottery at Amboni caves concurs with the radiocarbon date of A.D 360 which Soper (1967) believed was early for his TIW cultural horizon.

Two sherds exhibited fine reddish brown fabric different from those recognized as EIW. The surfaces of the sherds are not finely finished instead they are rough. One sherd depicts the shape of vessels with long necks and flaring rims which are dominant features of the TIW tradition that emerges after EIW (Chami, 1994; Haaland and Msuya, 2000). The finding of TIW sherd is by no means a new discovery at Amboni. It was reported by Soper (1967) who recovered two rim sherds with incised decorations (*Incised ware*). A radiocarbon date of A.D 360 was obtained for Amboni, and according to Soper (1967:31) it seemed improbably early for the tradition. On the East African coast, TIW tradition has been dated to begin from A.D 500 and declines at around A.D 800 (Chami, 1994, 2009). It is the tradition which succeeded the EIW tradition on the East African coast. This tradition is probably the most wide-spread of all the East African pottery traditions. It is not known for certain whether the TIW sherds from Amboni caves represent an early or a late phase. This is particularly because of the fragmentary nature of the evidence and lack of radiocarbon dating of the finds.

A single body sherd collected between 85 cm and 89 cm below surface has not been identified for certain. The surface of the sherd is hard with fine red fabric. The inner surface of this sherd is black probably resulting from post making uses. The outer surface carries some impressions produced by weathering of

coarse particles that formed the paste of the sherd. Such scars are in a pattern that looks like an intentional decoration. Some whitish clay material is observable from weathering damages of the inner surface. This sherd has been tentatively attributed to pre-iron age ceramic traditions probably Neolithic or simply Stone Age pottery.

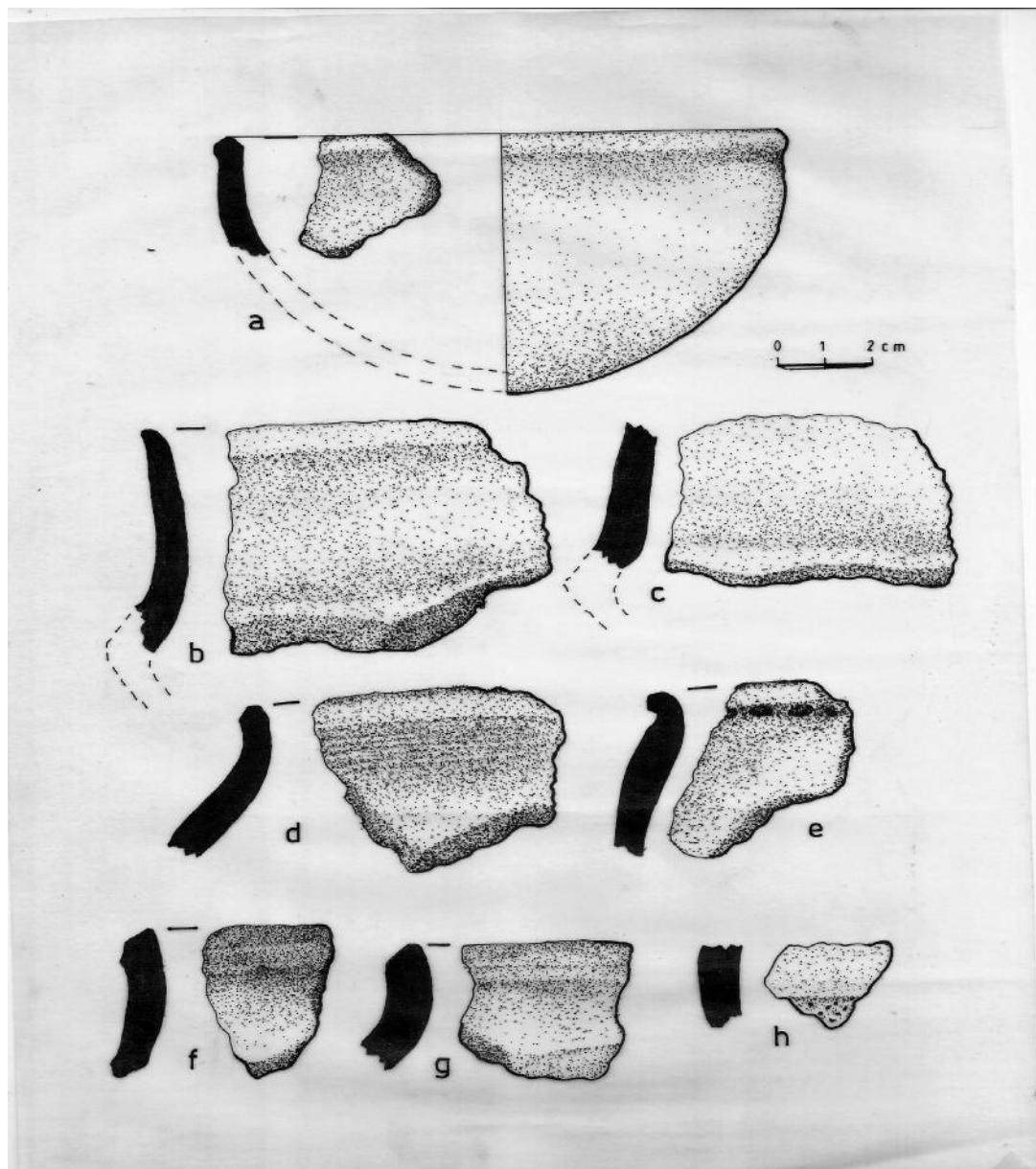
The association of pottery, faunal remains, and lithics between 70 and 90 cm below the surface was quite interesting. Potsherds of TIW, EIW, and a possible Stone Age pottery are of substantial significance. Faunal remains included bones of large or medium sized ruminant mammals which showed evidence of being burnt indicating that they were processed by humans. Some bones were identified to skeletal part from which they originate. These included a proximal scapular, a third left phalanx, and a rib fragment (Plate 2). Based on the measurements of the scapula (34.5 mm) it is more likely that the bones belong to ungulate mammal most likely a Topi of which size of the scapula is 34 mm (Walker, 1985). Ovicaprids have scapulae smaller than that size while those of cattle are larger than that ruling out the initial belief that the bones could represent the domesticated animal species. Charcoal was quite abundant and soil sediments too ashy. Two isolated cheek teeth were collected from the northwestern extension between 85 and 90 cm below the surface. The teeth suggestively belong to primate mammals possibly monkey.

Lithic materials were encountered and it was clear that their accumulation is not accidental. They comprised of several flakes and chips of quartz and quartzite mainly from river cobbles. The distribution of these materials by level, from 70 cm below surface, was quite consistent and to a large extent associated with potsherds of EIW and TIW periods. The assemblage of lithic artifacts is predominantly cores and core fragments (50.4%) while retouched tools category is made up of only 1.7% suggesting that the site was mainly used for manufacturing tools. The cores are all bipolar reflecting the use of bipolar technique to produce tools. Bipolar technology was very popular during the Late Stone Age (LSA) (Renfrew & Bahn, 2008). This Stone Age tradition has been attested and dated to c. 30,000 years ago in Kuumbi cave Zanzibar (Chami, 2009). The association of pottery materials and lithic artifacts suggests contemporary occupations of the caves

by EIA and stone using communities. This phenomenon, however, has been interpreted elsewhere as a product of later anthropogenic activities (Chami, 1996; Walz, 2010). The only cultural materials encountered below 90 cm down to 150 cm are lithics. Although they decreased radically, they consistently appear throughout up to 150 cm where they completely disappear and the sediments become sterile. By this stratigraphic distribution it is argued that the cave was settled first by Neolithic or LSA communities. It has not been known whether the animal bones, associated with EIW pottery and lithics, had been used by Neolithic or EIA peoples.

Level	Depth	Pottery	Bones	Teeth	Lithics
15	57-61	10	-	-	-
16	61-65	15	12	-	-
17	65-69	10	-	-	-
18	69-73	8	7	-	5
19	73-77	3	14	-	19
20	77-81	3	16	-	14
21	81-85	-	8	-	18
22	85-89	1	13	2	27
23	89-93	-	8	-	11

*Table 1: Inventory of excavated materials*



(a) EIW bowl with one bevel, (b) and (c) are SW with carinations, (d) TIW vessel with a flaring rim and neck grooves, (e) SW with Punctates on the vestigial neck, (f) & (g) are EIW beveled vessels. And (h) is Post-SW with oblique stamps

Figure 5: Illustrated sherds from Amboni caves



*From left to right: a proximal Scapula (Topi?); 3rd left Phalanx; and a Rib fragment.*

*Plate 2: Identified skeletal parts*

## **Conclusion**

Cultural materials uncovered from excavation of Amboni cave reflect a cultural sequence which ranges from the LSA to near modern times. This established cultural sequence of Amboni caves is a small part of the archaeological picture of the East African coast whose greater antiquity is vigorously being revealed but is as yet to be fully accepted. This picture is roughly comparable to, though a little younger than, that established from the limestone caves of the Tanzanian off-shore islands of Zanzibar and Mafia.



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