Middle Stone Age Sites in the tropical forests of Equatorial Guinea

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Introduction

Equatorial Guinea has remained archaeological terra incognita for the last three decades. Before 1968, some exploratory survey and excavation in the Spanish colonial capital of Malabo on the offshore island of Bioko was carried out by Dr. J. Martinez Santa-Olalla (1947), Gonzalez and Hernandez (1958), Panyella and Sabater (1959), and Martin del Molino (1960). However, the continental part of the country remained unknown except for limited surface survey undertaken in 1959 (Perramon 1968) and, then, in 1985 (Clist 1987, in press). The latter was limited to the coastal regions, the former included a brief exploration inland on the Mbin River. Since no archaeological research was ever resumed after this central African country reached its independence in 1968, the archaeological expedition conducted by Mercader and Marti from June to October 1998 which is reported here represents the first extensive archaeological survey and excavation program carried out in Equatorial Guinea in the last 31 years.

This expedition was limited to the Monte Alen National Park and its immediate vicinity (Figure 1), in the continental province of Centro-Sur, within the administrative divisions of Niefang and Evinayong. The goals of this campaign were to evaluate the nature of the existing archaeological resources and to establish an initial archaeological and palaeoenvironmental sequence. During this field season a total of 72 localities were surveyed: 20 rockshelters and 52 open air sites. Of these 72 locales, test digging was carried out in three caves and an extensive excavation at one open air site. Although Later Stone Age assemblages have been retrieved from one of the cave sites, overall results suggest that the Centro-Sur province is remarkably rich in open air sites of Middle Stone Age affiliation. To date, no MSA sites located deep in the forest belt had been extensively excavated using an interdisciplinary perspective. Therefore, recent archaeological research in Equatorial Guinea represents an interesting addition to the archaeology of the African tropical forest and to our knowledge of the African origin of modern humans.

In sum, archaeological evidence from the forested lowlands of Equatorial Guinea indicates that human occupation, exploitation, and anthropogenic impact on central African forest biomes date back many millennia and that tropical forest environments may not be the backwater stage for human evolution and cultural development that is often assumed.

Context

Archaeological research within Monte Alen National Park took place through varied geological, vegetational, attitudinal, and topographic contexts. East of the Uoro River, in the granitic uplands, a broken topography was encountered. Altitude ranged from 700 m to >1,000 m a.s.l. As shown in Figure 2 (Martinez-Torres and Riaza, 1996), the geological configuration east of the Uoro river provides gneiss from the Basal Complex and granitoids/greenstone belts from the Congo Craton.

The Uoro River flows through the Uoro Tectonic Rift, an interesting geological feature formed after N-S distensive forces created a tectonic basin 90 km long and 14 km wide filled with Miocene clays and Quaternary fluvial deposits. Topography within the rift is flat or undulating, with very gentle slopes and altitudes between 300-550 m a.s.l. Twenty caves and seventeen open air sites were discovered through surface survey east of the Uoro River, within the gneiss and granite domains. In addition, thirty-five open air sites were found inside the Uoro Tectonic Rift, along the logging road from Niefang to Bata.
Figure 1. Location of archaeological sites in Monte Alen National Park, Continental Equatorial Guinea. Graphic: R. Marti and J. Mercader.
Although Equatorial Guinea has a wet and humid equatorial climatic regime year round, significant annual variations occur within the continental region of this country (Figure 3). All sites considered in this study receive precipitation between 2,500 mm to >3,500 mm. Some locations to the north, east, and northwest of the study area observe two periods with a considerable decrease in rainfall; namely, in December/January and July/August.

The phytogeographical setting of continental Equatorial Guinea comprises eight different habitat types and nine forest zones (Lejoly 1998). On the one hand, Ecuato-Guinean forests are part of the wider Guineo-Congolian forest band that continues north and south towards SW Cameroon and Gabon, respectively. But, on the other hand, the tropical forests of Equatorial Guinea represent a transitional spectrum of forest formations between Cameroon and Gabon in which an unknown number of plants (total species richness falls around 4,000 species, Lejoly 1998) create two distinct botanical gradients east/west and north/south (Van Reeth 1997; Lejoly 1998). In this context, the archaeological sites studied by Mercader and Martí fall within two vegetation categories (Figure 4): “tropical dense forest” of the Uoro Tectonic Rift and “tropical dense forest” of the Niefang/Monte Alen massifs. The first category is characterized by an Atlantic component, while the second category has a continental component to it similar to that found in other locations of the Central Congo Basin. Accordingly, several members of the Burseraceae family dominate botanical spectra west of the Uoro River, while several members of the Euphorbiaceae/Caesalpiniaaceae families make up most botanical inventories east of the Uoro.
Figure 3. Climatic features in Continental Equatorial Guinea, based on data provided by Curef (European Union). Graphic: J. Mercader.

Methods

Site discovery started out by interviewing local hunters with a knowledge of existing caves, to then proceed onto foot travel to the sites following forest paths. As the authors traveled to visit and evaluate these cavities, open air sites along forest paths were also discovered, mostly along road cuts, in present villages, trails, abandoned and current farming plots, etc. In all cases, GPS coordinates, route to the site, surrounding geography, geology, vegetation, distance to water, site features, deposit
Figure 4. Botanical characteristics east and west of the Uoro Rift, after Van Reeth (1997) and Lejoly (1998). Graphic: J. Mercader.

WEST TO EAST VEGETATION TRANSECT
CONTINENTAL EQUATORIAL GUINEA

WEST OF THE UORO RIFT
Tropical dense forest,
Atlantic features, main families:
Burseraceae (12%), Caesalpiniaeae (8.8%), Olacaceae (8.4%)
Euphorbiaceae (7.3%)

EAST OF THE UORO RIFT
Tropical dense forest,
continental features; main families:
Euphorbiaceae (13.4%), Caesalpiniaeae (12.1%),
Burseraceae (11.5%), Olacaceae (10.2%)

scale: 220 km

WEST

EAST

CANOPY HEIGHT
AND
FOREST STRUCTURE
(color, pH, water content), and surface materials were described. In addition video and photographic documentation were taken.

The basic digging unit was a 1 m² pit. This was divided into 16 twenty five cm² units, so that any artifact's position lost during the excavation had a maximum relocation error of 12.5 cm. Homogeneous deposits were dug by 3 cm spits, while stratigraphic layers were used when possible. All pieces recovered in situ were plotted in three dimensions, together with orientation, position and dip. All deposits were wet sieved through a 1.81 mm mesh. One square of 25 cm² was sieved through a 0.513 mm mesh for a closer inspection of the deposit. Similarly, one 25 cm² unit per spit was weighed. For every 25 cm, of depth, pH, water content, and color were assessed.

Field sampling for lab analysis included: (1) recovery of macrobotanical remains; (2) collection of charcoal samples by direct retrieval or, in those cases where rapid detection during excavation was not possible because of charcoal size, by applying a 0.513 mm wet sieve to then sort the washed sediment under a magnifying lens in search of charcoal flecks that could be datable through AMS C14 technique; and (3) column sediment sampling for phytolith, starch, diatom, geological, and soil analysis.

Results

Rockshelters

Cavity features such as size, cardinal orientation, backwall and ceiling characteristics, and overall suitability for human occupation are optimal; however, archaeological occurrences in the cave sites of Monte Alen National Park are very scarce, whether on the surface or in depth. Three caves were test excavated: Esamelan (gneiss), Ndubu (granitoid), and Akuaken (granitoid) (Figure 1). Only Esamelan Cave did provide quartzdebitage from the LSA, but, even in this case artificial evidence is rare and bedrock is encountered after 30-50 cm of depth.

Since two out of three archaeological interventions failed to retrieve evidence of ancient human occupation from Monte Alen caves, it can be suggested that, at least during the current geomorphological cycle of cave creation and destruction, local populations seem not to have occupied rock shelters often enough to create an endurable archaeological record. This situation greatly differs from what it is known about other central African regions (e.g. Ituri forest, Mercader, 1997) where very similar cavities have experienced intense occupation episodes since the Upper Pleistocene onwards. Given that archaeological research in neighboring Gabon and Cameroon seems to suggest similar situations to what we found in Equatorial Guinea, it can be hypothesized that, during the Upper Pleistocene and Holocene, there have been differential cave occupation patterns throughout the Congo Basin.

Open air sites

Seventeen open sites were discovered east of the Uoro River, along the road from Niefang to Bicurga onto Misergue (Figure 1). Then, 35 open sites were discovered west of the Uoro River, along the road from Niefang to Mosumu towards Bata. A total of 52 sites point out that there is a considerable richness in open air archaeological occurrences in this part of Equatorial Guinea. Most archaeological assemblages were embedded in the upper half of gravel layers, visible along road cuts. All sites east of the Uoro River provide only quartz industries of unclear techno-typological affiliation, mostly debris from the MSA and/or LSA. All sites west of the Uoro River, however, provide diverse MSA bifacial assemblages on several raw materials (mostly quartz, quartzite, and pegmatite; eventually exotic flint) where drills, spear points, and scrapers are the most common tools. It is possible that all assemblages both east and west of the Uoro be contemporaneous MSA occurrences, and that their techno-typological differences come from a differential access to raw materials. But it is also possible that the accounted differences for open sites on both sides of the Uoro River are due to chronological differences.

One open air site, Mosumu, in the southern end of the Uoro Rift, was chosen for extensive excavation as an exceptional example of occupation at the open in this part of Equatorial Guinea. Reasons that favored this choice included: Mosumu's great extension, density of artifacts per m², variety of raw materials, and techno-typological affiliation as a "Lupemban" MSA site with abundant evidence of bifacial technologies and pressure flaking on sizeable spear points.
Mosumu

The archaeological site of Mosumu is located at the Fang village of Mosumu II, on the logging road from Niefang to Bata, 25 km SE of Niefang. Surface archaeological remains spread over most of the modern village, although their highest concentration occurs at the center of it (Figure 5). Currently a 900 m² mound, the archaeological site of Mosumu must have had a wider extension in the past, given that recent road construction has destroyed the eastern part of the site. Located on a hilltop, both the ancient site and the modern village have easy access to four water sources running through the lower foot slopes.

Twenty two m² were excavated (Table 1) in 10 different pits. The size of these excavation pits ranged from 0.5 m² to 6 m². Two main stratigraphic units have been distinguished (Figure 6): Layer 1 is the basal archaeological unit. Sediments are made up of ferralitic gravel; also sand, silt, and clay. Sedimentary sorting within layer 1 according to gravel size has been noticed, so that layer 1's upper subunit contains large gravel (mostly 2-5 cm, but eventually up to 15 cm), while layer 1's lower subunit provides fine gravel of 1-2 cm. The latter subunit directly overlays bedrock. Layer 2 is laid above layer 1 and is composed of fine sand, silt, and clay. Very rarely small gravel.
Given the preliminary stage of our analysis, it cannot be determined yet if the origin of this sedimentary package is fluvial or colluvial (hill wash?), if there is a stratigraphic unconformity between layers, if these sedimentary changes throughout the section could indicate former climatic change, or if the taphonomic integrity of these deposits is archaeologically acceptable. Total site depth is 2.0 m. Archaeological remains have been recovered from the entire sedimentary package; however, MSA materials concentrate on the upper subunit of layer 1. Archaeological materials include mostly stone artifacts (approx. 22,000debitage remains) (Figure 7); but also charcoal.

Perhaps most remarkable is the presumably early occurrence of finely chiseled spear points (6-12 cm. length), bifacially worked by pressure flaking, similar to Solutrean points of the Old World. There are also bifacial scrapers and drills. A remarkable aspect in some of these technological complexes is that their finely chipped bifacial spear points, probably fabricated for medium to large game killing and processing, could precede similar technologies from elsewhere. If true, then, common assumptions about the initial development of complex stone tool technologies in the Old World by the earliest modern human populations needs rethinking. Materials excavated by Mercader and Marti may provide some firm data on settlement, environment, subsistence, and technological development in a tropical forest context at the time when modern humans in possession of a sophisticated stone tool technology were still colonizing Europe. If, as suggested above, modern humans settled lowland tropical rain forests before or at the same time as the temperate regions of the Old World, it is arguable that tropical forests were not always left aside in the global Pleistocene expansion, and therefore, that common presumptions on the late settlement of these marginal zones and their supposed deleterious effects on human cultural developments are not valid.

Footnote
1. Fieldwork was funded by the National Science Foundation, USA, through its “High Risk Exploratory Research Program” (SBR 9812972), by the Spanish Ministry of Education and Culture, and by the Swan Fund (Pitt Rivers
Table I. Water content, pH, and color of sediments through the section of Mosumu site.

### Water content

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Figure 7. Middle Stone Age artifacts from Mosumu: points, drills, scrapers.

Museum, Oxford, UK.) Additional logistic support was kindly provided by Ecofac and Curef (European Union). Research permits for survey, excavation, and temporary export of materials were obtained, among others, from the following Ecuato-Guinean authorities: Ministerio de Cultura (97-577-024), Seguridad Nacional (97-478-112), and Policía Nacional (Jefatura de Batallon). This research could have not been undertaken without the support and encouragement of Dr. Alison Brooks.

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