

Archaeological research in the equatorial forest in the Democratic Republic of Congo
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Summary

Equatorial forests are often considered as inhospitable for humans and their ancestors as well as for archaeological research. Though that perception is changing, the archaeological record in the Democratic Republic of Congo remains scanty. A reassessment and especially georeferencing of old museum collections offers an interesting option despite a number of caveats. Collections accumulated during the colonial era consist primarily of chance finds of flaked and polished stone implements and to a lesser extent of ceramics. At the time these were considered as too recent for assessing the past. Pottery nevertheless has since proven to be fundamental for reconstructing 2500 years of occupation in the Inner Congo basin where lithic artifacts are rare. In the eastern part of the forest in DR Congo stone artifacts predominate among the chance finds as well as in excavated assemblages. The current state of affairs provides an incentive to continue river bound surveys and to initiate field work in collaboration with forestry projects focusing on the impact of human activities on the ecosystem.

Samenvatting

Archeologisch onderzoek in het evenaarswoud in de Democratische Republiek van Congo

Het evenaarswoud wordt vaak als ongastvrij beschouwd zowel voor de mens en zijn voorouders als voor het archeologisch onderzoek. Die perceptie verandert stilaan, maar in de Democratische Republiek van Congo ontbreken de nodige gegevens voor het uittekenen van de geschiedenis van menselijke bewoning. Een hernieuwde kritische studie met vooral het georeferenceren van oude museum collecties biedt een interessante piste. Die verzamelingen ontstonden tijdens de koloniale periode, en bestaan voor het grootste deel uit toevalsvondsten van gepolijste en bewerkte stenen artefacten en in veel mindere mate van aardewerk dat indertijd als te recent beschouwd werd voor een reconstructie van het verleden. Vaatwerk blijkt echter het fundament voor een 2500 jaar lange bewoningsgeschiedenis in het Centrale Congo-bekken terwijl lithisch materiaal er zo goed als afwezig is. In het oostelijke woud in de DRC domineren stenen werktuigen de oppervlakte vondsten en de opgravingen. De huidige stand van het onderzoek nodigt uit om de prospecties langs rivieren verder te zetten, en om veldwerk uit te bouwen in het kader van bosbouwprojecten die een evaluatie van de impact van menselijke activiteit op het ecosysteem beogen.

Résumé

Recherches archéologiques en forêt équatoriale en République démocratique du Congo.

Les forêts équatoriales sont souvent considérées comme peu accueillantes, tant pour l'homme et ses ancêtres que pour la recherche archéologique. Cette perception est en train de changer, mais en République démocratique du Congo les données sont encore insuffisantes pour reconstituer l'histoire de l'occupation humaine. Réexaminer et surtout géoréférencier les anciennes collections muséales représentent un moyen pour y remédier. Ces collections, accumulées lors de la période coloniale, sont issues en grande partie de trouvailles fortuites et contiennent avant tout des artefacts en pierre taillée et polie, au détriment de la poterie, considérée à l'époque comme trop récente pour reconstituer le passé. Néanmoins, il s'avère

précisément que la céramique a permis de reconstituer 2500 ans d'histoire dans la Cuvette centrale, tandis que la composante lithique in situ en reste quasi absente. C'est en effet le contraire de ce qui se présente dans la partie orientale du bloc forestier en RDC, où prédominent les artefacts en pierre taillée. Cet état de nos connaissances incite à poursuivre les prospections le long du réseau fluvial et à promouvoir celles menées en interaction avec des projets de foresterie destinés à identifier l'impact de l'activité humaine sur l'écosystème.

Keywords : museum collections, river bound surveys, Congo basin, pottery, flaked and polished stone artifacts

1. Equatorial Forest as a barrier to migrations and surveys?

The fascination for the impact of the equatorial forest on past and present human population patterns has taken on many forms in Central Africa. The effect on the broad question of evolution (Mercader 2002, 2003, Cornelissen 2013) provides one focus. A second issue - the settling of farmer communities - is often viewed through the lens of questions involving the Bantu-expansion (Eggert 2014, de Maret 2013 for general introductions and overviews). The current symbiosis between 'Pygmy' hunter-gatherers and mostly Bantu-speaking horti- and agriculturalists in the rain forest has been interpreted in a context which assumes that hunter-gatherers might not have been able to live off forest resources prior to the introduction of cultivated plants which insured access to sufficiently energy rich food during several months a year. This observation has challenged the view that Pygmies were direct descendants of prehistoric forest based hunter-gatherer communities.

Of course on this broad time scale the history of the forest itself remains crucial (Mercader 2002; 2003, pp.1-31). The concept of a primeval uniform biome inherited from a far distant past has long made way for the concept of a biome composed of a range of forest types, that like any other environment has experienced the impact of climate change (brief overview in Cornelissen 2013 pp.404-406 and Eggert 2014 pp.183-185, see also Morin-Rivat et al. 2014). Though empirical data and a substantive ecological record covering the entire region are not yet available, the perhaps oversimplified hypothesis of the fragmentation of the dense forest into forest refugia during periods with less precipitation or dry climate conditions and subsequent expansion during more moist conditions is generally accepted. At a minimum it is assumed that the floral composition of the forest changed in response to changing climatic conditions.

A fragmented forest would provide savanna corridors facilitating access for hominid and human communities. The more open environment might also have been similar to the original habitat of the groups migrating into and through the forest and thus would not necessitate a dramatic change in their subsistence strategies. The hypothesis of forest refugia has also been invoked to explain the isolation of human communities, for instance in the debate on the genetic relationship between the eastern and western Pygmy communities during the Last Glacial Maximum, their short stature and subsistence strategy (e.g. Batini et al. 2011a: 1100, 1107). In this scenario an ancient population would have been spread over the entire rain forest and become isolated into multiple groups when the forest itself fragmented into refuges during the Last Glacial Maximum. Such a separated population would have continued to evolve into two related branches and in the later Holocene interacted with newly arriving farmer populations. In this specific case corridors would not have encouraged migrations but rather acted as barriers. The retreating and expanding forest also provides a backdrop on the timing and mechanisms of the expansion in the Late Holocene of agricultural practice, of

pyrotechnology (pottery and iron metallurgy) and of the distribution of Bantu-languages over the vast area currently covered by forest (Bayon et al. 2012, Eggert 2014).

Reconstructing the vegetation history of the Equatorial forest and documenting population dynamics both suffer from a lack of data due to the poor preservation of organic matter in acid forest soils. While plant material such as phytoliths, charcoal and charred macro-fragments may survive, unfortunately such is not the case for animal and human bone. This fact explains the enormous impact that genetic studies have had over the last decades in reconstructing population dynamics based on current population patterning. Genetics certainly offer an important source of information, but this is often dependent on accurate and independent dating evidence for which the archaeological record remains pivotal.

The current extension and composition of the equatorial forest also has consequences for conducting archaeological field work. The sometimes very dense and closed vegetation renders pedestrian surveys difficult, and makes concentrations of flaked stone or landscape features such as man-made mounds, hard to recognize. Apart from various chance finds including those made during large scale earthworks for mining, there are fortunately alternatives that have proven to be very successful in this environment. These include river bound surveys and a combined approach of archaeology and forestry.

Vegetation maps such as that presented in Figure 1 pose two problems. First they are highly oversimplified, reducing various types of both forest and savanna into two broad categories. Secondly, they do not reflect past vegetation. The only assumption that can be made for older phases is that under similar humid climatic conditions the zone currently under forest serves as a rough proxy.

The archaeological record in the equatorial forest in DRC as explained below, has substantially improved since the late 1970, but the pre-1970 situation is interesting in light of some of the questions noted above. Collections and archives of the Royal Museum for Central Africa at Tervuren, Belgium (RMCA) are utilized here to construct an archaeological map. This paper focuses on the historical as well as current practices of conducting field work in the equatorial forest and more specifically on the contribution and significance of old museum collections.

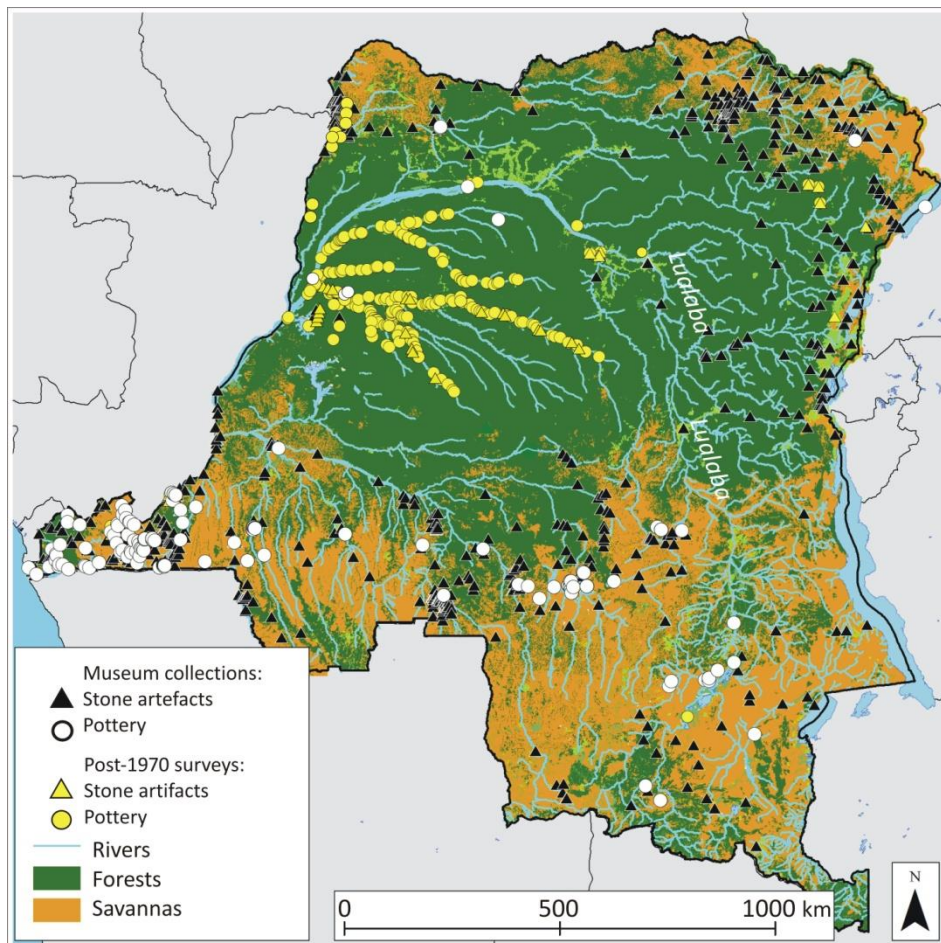


Figure 1. Map of the DRC showing the distribution of archaeological sites in forests and savannas. © RMCA.

2. Origin and sources of the archaeological map of the equatorial forest in DRC.

2.1. The potential of museum collections

A first step in order to assess the potential of an area for interpreting past population patterns is to draw a map which incorporates available data. Despite the fact that surface finds lack an established chronological and cultural context, isolated stone artifacts and pottery sherds remain an indication of past activities. As such they provide a first source for developing working hypotheses. The pre-1960 collections and by extension the archives of the Royal Museum for Central Africa (RMCA) contain undated chance finds accumulated over the last century that come predominantly from the Democratic Republic of Congo. The then Museum of Belgian Congo^[1] encouraged people residing in the colony for various non-archaeological reasons - missionaries, administrators, mining companies, road- and railway constructors – to collect. The Ministry of Colonies also commissioned surveys in order to enrich the collections. Two of these large surveys were conducted by M. Bequaert who was in charge of Section of Anthropology and Prehistoric Sciences from 1937 to 1958. At the southern fringes of the forest in the mining area of the Kwango and Kasai, he excavated at various sites and obtained a number of prehistoric artifacts collected and curated by mining companies and individuals. These materials as well as those from the area south of 4° S, have only been recently screened by the RMCA for lithic material but not for pottery and therefore

are not included in the overview below. For an extensive bibliography of Bequaert on his field work, the reader is referred to <http://www.african-archaeology.net/biblio/bibliordc.html>.

Sites from these early museum collections are in the process of being georeferenced and reexamined for their content. This is an institutional but time-consuming project. To date, approximately 60% have been screened and although exceptions cannot be precluded, the broad picture they offer will probably not be significantly altered; most sites documented in the old museum collections yielded lithic artifacts, are located in the southern savanna-forest mosaic and at the eastern edge of the Equatorial forest in DRC, and thus outside of the forest per se (Figure 1). The very weak presence of pottery in the museum collections is to some extent explained by the then current definitions of prehistory, protohistory and ethnography. The latter discipline focused “on the inhabitants at the time of their discovery by Europeans, prehistory on traces left by humans having lived there before the local protohistorical and historical periods” (between “ ” translated from Bequaert 1952, p.47 “*III. L’ethnographie et la préhistoire congolaises. Les deux sciences ont leur domaine propre. La première considère surtout les habitants du Congo à l’époque de la découverte par les Européens ; la seconde relève et étudie les vestiges laissés par les humains établis dans cette contrée avant les époques locales protohistorique et historique* »). From the perspective of the RMCA, pottery held an intermediate position between prehistoric and ethnographic collections. Often but not systematically, artifacts found in the ground ended up in the prehistoric collections while items found with or bought from local people were integrated into ethnographic collections. Polished axes were considered a true mixture of both (Bequaert 1952, p.47); their manufacturing was regarded as Neolithic and therefore suited for the prehistoric collections while the then contemporary practice of manipulating them as charms was seen as part of the ethnographic record.

2.2. Post 1970 systematic surveys in the forest

After 1960 archaeological research was transformed and shifted towards international and multidisciplinary campaigns which included major dating components, the goal of which were to establish an empirical chronological and cultural framework based on field data. Extrapolation from a European based and hence biased pre-, proto-, and historical sequence was de-emphasized. One reason for this is the difficulty of fitting the Central African data into a European-derived framework. An illustration of this is the term Neolithic. In Europe it evokes an image of sedentary village communities practicing agriculture and animal husbandry and to some extent also relying on hunting and gathering, and producing pottery and polished stone implements. The debate on whether or not all elements need to be present is particularly thorny in the equatorial forest where organic material such as animal bone as the main source for identifying domesticates or any animal food is not preserved in the acid tropical soils. While plant remains stand a better chance of survival, presumed staple foods such as yams and other tubers leave little to no recognizable traces. As will be apparent from the analysis below, even the most resistant feature of the archaeological record – stone implements – plays hard to get in the forested environments of the DRC. Pottery finds continue to accumulate and have become the best guide in identifying sites in forested environments, but the oldest of these assemblages are rarely associated with flaked or polished stone or with metal implements. Hence there is no consensus among archaeologists working in the forest on the cultural affiliation of the oldest pottery groups and their linkage with either lithic- or metal-defined industries. Oslisly et al. (2013) define their Group 2 as “Neolithic” dating between the second half of the 2nd millennium to the 1st century AD on the coast of Gabon and Congo. They argue that the term “Neolithic Stage” explains best “the

phase between the Late Stone Age and the Early Iron Age where people started to become sedentary, worked and polished stone tools, and made the first pottery. They used stone hoes and axes to create the first forms of slash-and-burn agriculture, which likely represented the first impacts on the forest.” de Maret (2013) uses the concept of a “From Stone to Metal Age” whereas Eggert (2014, p.187) sees this as no alternative to the term and concept of “Neolithic” because the end of the Stone Age and the beginning of the Iron Age are equally undefined and in need of further research, so a transitional phase is at best premature. Both he and Hans-Peter Wotzka (1995, see also Kahlheber et al. 2014) consider the oldest pottery group in the Inner Congo-Basin as Early Iron Age, dating to the second half of the 1st millennium BC or between 400 and 200 BC.

Uncertainty regarding the nature of the “Neolithic” and examination of the numerous polished implements that had accumulated in the collections of the RMCA from the northern parts of the forest (Van Noten 1968), lead F. Van Noten (responsible for the former Section of Prehistory and Archaeology from 1968 until 1987) to conduct an overland survey in the winter of 1972-1973. His survey was commissioned by the then newly founded *Institut des Musées nationaux du Congo* (IMNC) and its goal was not to enrich the collections in Tervuren, but to look for sites that could be dated and excavated in order to understand the background of the many polished implements both in the Ubangi and the Uele region (Figure 2). The questions of early migrations and if the forest was colonized prior to farming communities subsequently provided the incentive for J. Mercader to prospect from 1993 to 1995 for rock shelters north of Epulu in the Ituri forest. He located over 50 sites in an 8,5 km² area and eventually test-excavated ten rock shelters (Mercader 2002, p.94). Combining phytolith based environmental reconstructions with analysis of archaeological material, he firmly established that Later Stone Age communities producing a microlithic industry on quartz lived here in a forested environment at the end of the Pleistocene some 18 000 years ago and that they continued to do so during the Holocene (Mercader 2003, Mercader et al. 2000, 2001).

A turning point in the archaeological exploration of the Equatorial forest in the Inner Congo Basin in DRC were the river bound surveys conducted by M. Eggert between 1977 and 1987 (Eggert 2014 and references therein). As the map in Figure 1 (see also Wotzka 1995 & <http://www.fstafrika.phil-fak.uni-koeln.de/9199.html?&L=1>) shows, the area contained multiple pottery bearing sites stretching along all the rivers prospected. The rich river network in the equatorial forest provided a means of access for archaeological survey, navigating upstream as far as possible, with land based excursions where the riverbanks were high enough. In the villages people were interviewed and recent cuts in the landscape including pits dug for various purposes, were inspected for pottery. Samples thus collected were studied on board and during the return downstream from the end point on the chosen river. Test pits were dug in the villages where the most promising finds were identified. More than 4000 km were covered this way (Eggert 1987, 1992, 1993, 2005, 2014, Wotzka 1995). A team lead by Wotzka is currently continuing the study and analysis of their finds collected between 1977 and 1987 (Kahlheber et al. 2014) as well as initiating new archaeological and especially archaeobotanical research in the Inner Congo basin to further establish the environment at the time of the occupation and its potential for subsistence related activities. Because of this successful river bound approach the section of Heritage Studies of the RMCA took part in the Boyekoli Ebale Congo River expedition in 2010. We had the opportunity of locating sites on the lower Lomami, Itimbiri and Aruwimi rivers (Livingstone et al. 2011), and during a follow-up small scale survey in 2013 also on the Lindi-river north of Kisangani (Cornelissen et al. 2013).

The search for anomalies in the forest vegetation provides another means to identify past human activities. This technique has been successfully applied in locating sites in the Lopé reserve and the Chaillu massif in Gabon using *Aucoumea klaineana* (Oslisly & White 2003, p. 82). In recent years it has come to be realized that understanding past anthropogenic and climatic influences on the tropical forest has relevance for developing policies for sustainable forestry management (for an illustration of this, see www.CoForchange.eu). The combination of archaeology and archaeobotany has proven particularly successful in reconstructing forest history in southern Cameroon and the northern Republic of Congo (Morin-Rivat et al. 2014) and for documenting past population patterns.

Based on both past research and research now in progress, the archaeology of forest in the DRC can be subdivided into two broad regions, to the east and to the west of a line running from 25° E in the north and following the course of the Lualaba river to the south (Figure 1). The eastern half includes the Ituri forest, the western half the Congo-river and its northern tributaries as well as its southern tributaries in the Inner Congo Basin.

While from one perspective this subdivision is arbitrary and archaeologically irrelevant, however, the distinctions do reflect the difference in survey strategies. The western half is documented by a combination of museum collections and river bound surveys whereas in the eastern half the archaeological record comes from museum collections and pedestrian surveys. Museum objects collected in the course of mining activities constitute a significant portion of assemblages in the eastern half of the forest, but less so in the western part as will be explained below. Also, the museum collections are in the process of reassessment and for the eastern half there is more information available at this time.

3. Archaeological sites in the forest east of the Lualaba River

3.1. Stone artifacts

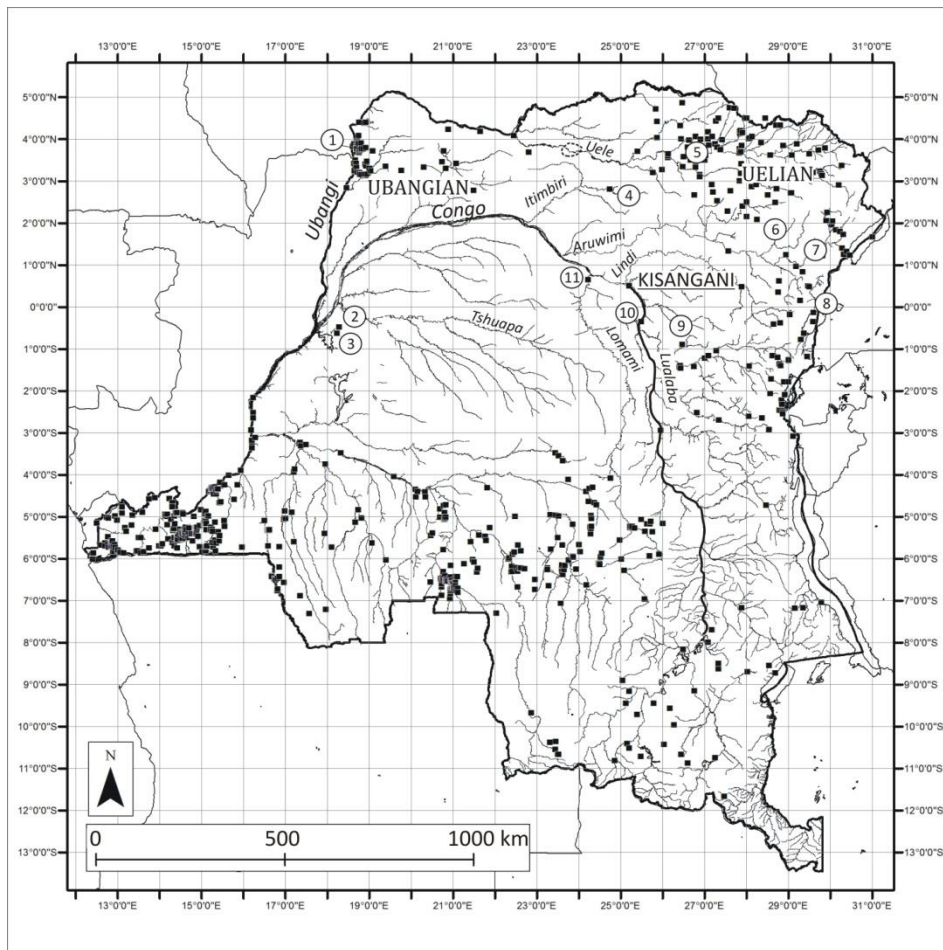


Figure 2. Map of the DRC showing locations of stone artefacts in the collections of the Royal Museum for Central Africa (RMCA) and sites mentioned in the text: 1. Motenge-Boma, 2. Bokala, 3. Mooto, 4. Buta, 5. Buru, 6. Ituri rock shelters, 7. Matupi, 8. Semliki valley, 9. Angumu, 10. Ebiutuku and 11. Lileke. © RMCA.

In the northeastern segment of the equatorial forest 309 find spots from the museum collections have been analyzed in detail and together with the few well documented, excavated and dated sites provide a foundation to reconstruct Late Pleistocene population dynamics (Cornelissen in press). The collections contain predominantly easily recognizable stone implements such as the polished axes in hematite (Figure 3) which were among the first finds reported from the area (Stainier 1899). They were named Uelian after the river which crosses through the region (on the Uelian see Van Noten 1968, 1982). In an attempt to reconstruct the context of these exquisite polished hematite implements F. Van Noten excavated along the small Buru-river in 1972 in an area where many of these polished artifacts had been found (Figure 2). Charcoal found amidst an assemblage of hematite debris, iron slag and tuyères was dated to the 17th to 19th century (Van Noten & Van Noten 1974). According to Van Noten this date corroborates the ethnographic observation that in the early 20th century elderly people in the area remembered the activity of stone polishing (de Calonne-Beaufaict 1921, p. 136). However, the date remains uninformative on the ancient origins of the technology.



Figure 3. Polished Uelian implements, found in northeastern DRC and stored in the RMCA collections. Line-drawings from Van Noten, 1968. Left: Figure 1 (19.1 x 5.3 x 4.0 cm). Right: top Figure 23 (12.1 x 4.4 x 3.3 cm) and bottom Figure 21 (7.8 x 5.7 x 3.3 cm). Photos © RMCA.

Bored stones or *kwés* (Figure 4), hammer- and grindstones, large bifacially flaked tools including foliates are also present as well as a number of unspecified but clearly flaked stone artifacts (Cornelissen in press). In individual locations only rarely was flaking debris or more than one artifact collected. Many of the collections were made during the intensive mining operations that took place in the eastern part of the DRC at the end of the 19th century. A map showing the extent of the mining concessions and permits for explorations in existence on June 30 1960 (Gilsoul & Massart 1962 and Figure 5) reveals that these are concentrated in the eastern and southern parts of the Belgian Congo to the east of the Lualaba river, and that the area including the Inner Congo basin west of the Lualaba river was closed for public mining prospection. This explains the use of the Lualaba river as an artificial division in the discussion here.



Figure 4. Bored stones from northeastern DRC, decorated (rare) (left, Ø: 10 cm, H: 5.1 cm) and undecorated (right, Ø: 14.1 cm, H: 8.9 cm). Both were found during mining activities in the Kilo-Moto area and are stored in the RMCA-collections. © RMCA.

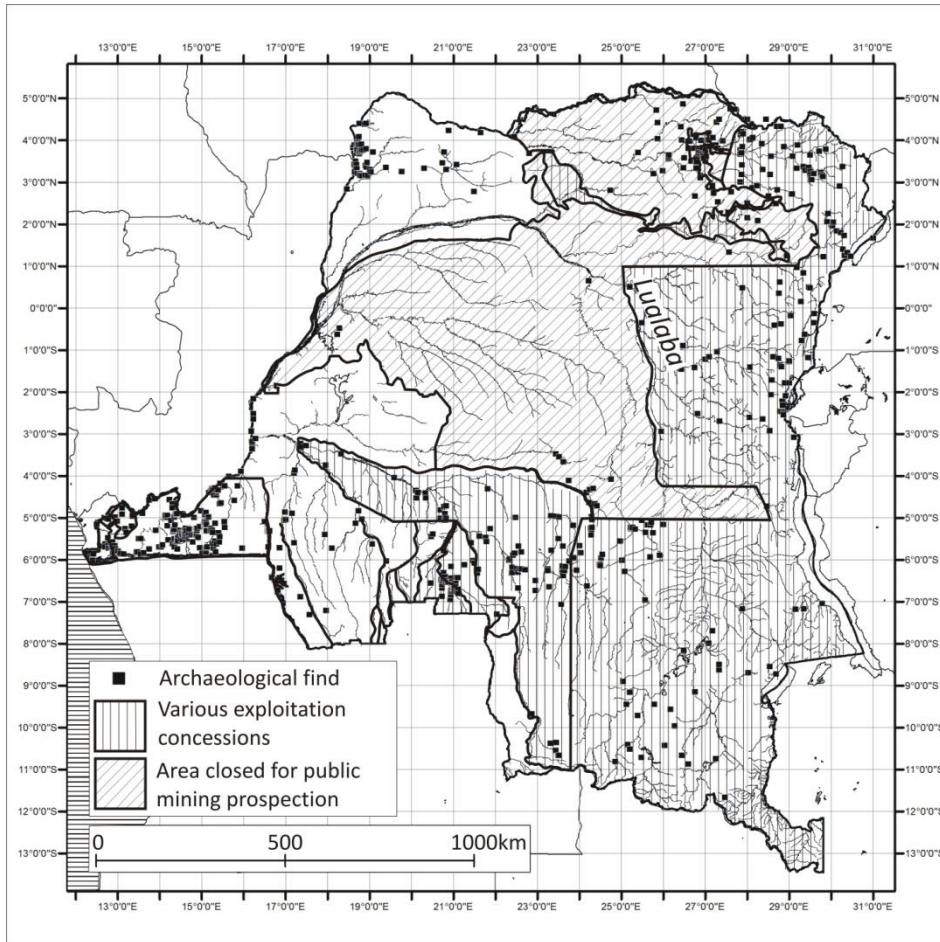


Figure 5. Map of the DRC showing the extension of mining concessions in 1960, simplified after Gilsoul & Massart 1962. Legend : author's translation of 'Concessions d'exploitation – Uitbatingsconcessies' and of 'Région fermée à la prospection publique des mines – voor openbare mijnprospectie gesloten gebieden'.

Although the undated finds include bifacial implements that can be considered Lupemban (Figure 6) chronological context is lacking. Sites attributed to the Lupemban have been dated elsewhere to anywhere between the Middle to the Later Pleistocene, or from more than 250 000 to 12 000 years ago. (Taylor 2011, Figure 7). There is however a general consensus to consider the Lupemban as a Middle Pleistocene Middle Stone Age industry rather than a Later Pleistocene Late Stone Age complex.



Figure 6. Bifacially flaked implements of Lupemban affiliation, including lanceolates, all found during mining activities on the Lusimbe river, except for the lower, left, which was found in the Minindi valley, DRC, RMCA collections. © RMCA.

A comparison of distribution patterns indicates that the area in which bifacially trimmed Lupemban-like lanceolates, are found is larger and penetrates deeper into the forest to the West than that which contains dated and undated Later Stone Age microlithic quartz assemblages (Cornelissen 2013 and references therein, in press). All these latter sites appear restricted to the eastern region - east of 28°E AND between 2°N and 3°S. The fact that there are proportionally fewer quartz assemblages among the chance finds can be explained by their low visibility to the untrained eye. However the absence of bifacially flaked implements or Lupemban artifacts among the dated and excavated assemblages is harder to explain. Another clear fact is that the microlithic quartz assemblages are in use at the end of the Pleistocene. All the key sites in the Ituri forest (Mercader 2003, Van Noten 1977) and in the nearby Semliki valley at Ishango (de Heinzelin 1957, Brooks & Smith 1987) continued to be occupied during the Holocene despite hiatuses in sedimentation and in accumulation of artifacts. During these periods of occupation the environment went through a variety of climatically induced changes; at Matupi the open vegetation graded into forest sometime between 14000 and 3000 years ago (Van Neer 1989).

3.2. Pottery

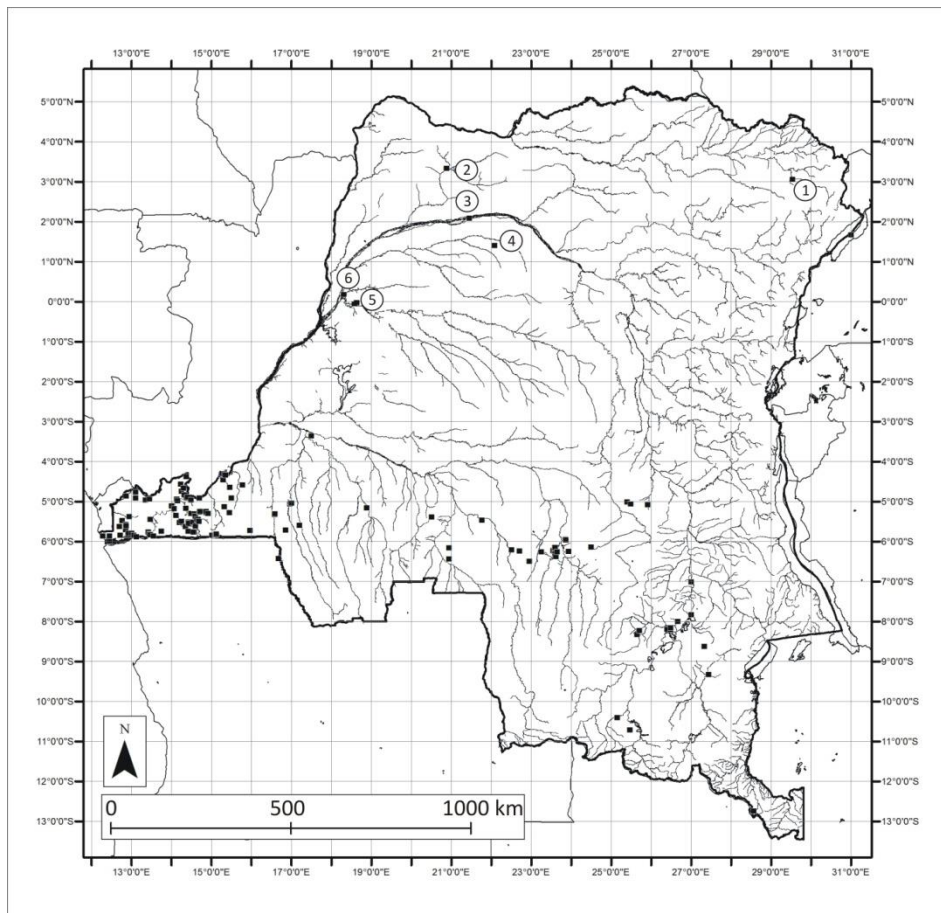


Figure 7. Map of the DRC showing locations of pottery stored in the collections of the RMCA and sites mentioned in the text: 1. Watsa, 2. Businga, 3. Gundji, 4. Bolofa, 5. Bokuma and 6. Eala © RMCA.

Pottery is not particularly well documented in the eastern forested area (Figures 1 and 7). In the museum collections there is only one instance so far reported and the circumstances of discovery are far from clear. For the few pottery sherds accessioned by the RMCA in 1931, the register only mentions that they were exported from Watsa (PO-15107). An exchange of letters in 1936 between J. Colette of the Museum and Gerard, the territorial administrator at the time, did not yield any additional information. Rather, doubt was cast on whether these sherds in fact were sent through Watsa. Their cultural affiliation is under analysis. At the few excavated and dated rock shelter sites north of Epulu in the Ituri forest, the pottery is of relatively recent date. Three radiocarbon dates yield here an age of around 1000 BP for the earliest occurrence of pottery (Mercader et al. 2000, p.167). Various decoration styles include a geometric design made by both carved wooden and flexible roulettes (Mercader et al. 2000, p.171) concentrated on the upper third of the vessels, mostly on the outer surface. Stylistic parallels for this Late Iron Age ware (Mercader et al. 2000, p. 172) are to be found in the unpublished upper layers of the Matupi cave (Figure 8) and further east in Uganda, but they do not seem to bear any resemblance with the western styles identified in the Inner Congo Basin.



Figure 8. Late Iron Age decorated sherds found in the top layers of the Matupi Cave, DRC. The decoration on the small sherd on the left (max. 4.9 cm) consists of impressions and tracing with a stylus. The large sherd on the right (max. 11.5 cm) has rolled impressions with a carved wooden roulette. © RMCA.

3.3. Site distribution patterns

A consistent phenomenon observed in the spatial distribution patterns of various technological and typological features of stone artifacts be they polished or flaked, bored, unspecified, microlithic industries on quartz, Lupemban lanceolates in various raw materials, there are no sites reported from the forest to the east and north of Kisangani (Figure 2). Sites south of Angumu yielded either Lupemban or bifacially trimmed artifacts or unspecified flaked stone, but polished tools, microlithic industries on quartz or any other raw material and pottery are equally absent in the forested region east of the Lualaba.

4. Archaeological sites in the forest west of the Lualaba River

4.1. Stone artifacts

To the West the museum collections become even more uninformative regarding the occupation of the equatorial forest. In part, this is explained by the absence of commercial mining concessions west of the Lualaba River (Figure 5). Thus one of the richest sources for chance finds was not available. The area was not entirely devoid of geological explorations. In the eastern part the geologist André Lombard explored a vast area of Central Africa including the Central Cuvette for the mining exploration company Remina (Evrard 1957 and Figure 9). He frequently collected lithic artifacts of which a considerable number ended up in the archaeological collections at the RMCA. Except for two uncharacteristic chert artifacts found at Kindu and two heavily patinated, probably natural flakes collected near Kisangani, his surveys along the major river banks in the eastern half of the cuvette did, however, not yield flaked or polished stone or pottery.

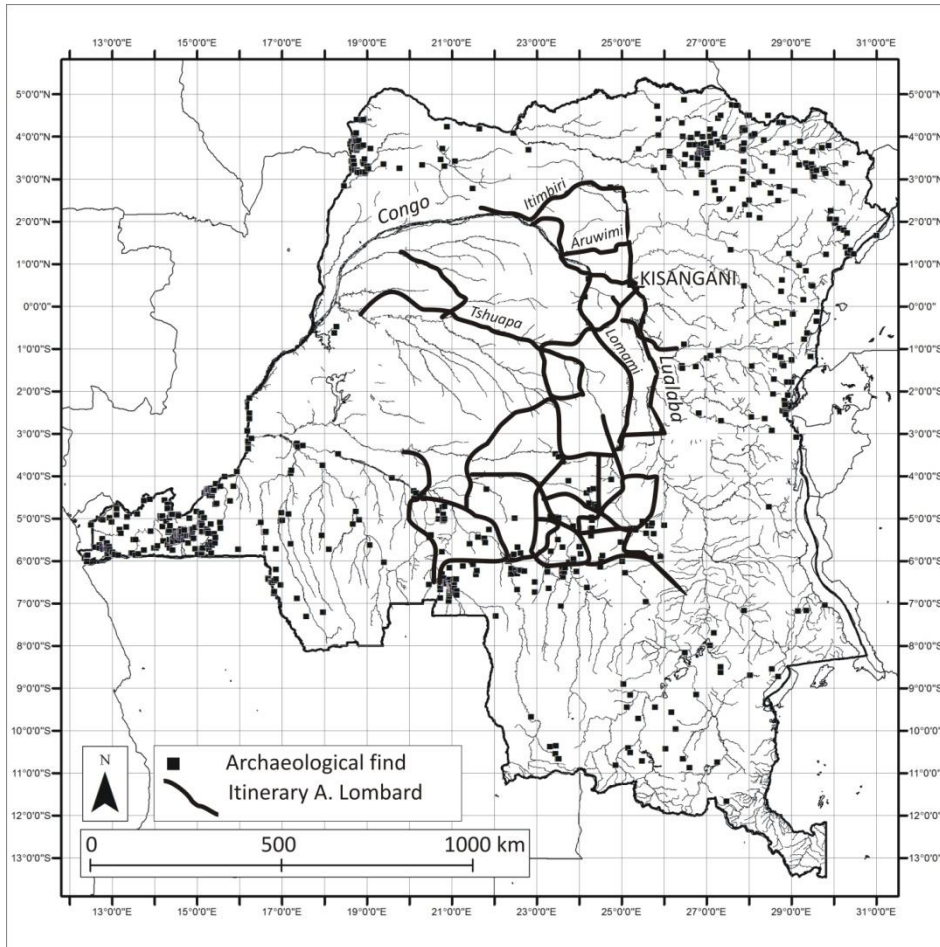


Figure 9. Map of the DRC showing archaeological finds and the itinerary of the geologist A. Lombard (May 1952 – February 1954) who also collected stone artifacts, after Figure 6 in Evrard 1957.

A. Tavernier, a postmaster who was stationed for a portion of his career at Kisangani, collected stones in the vicinity of Kisangani, of which only a few can be considered as flaked artifacts. He also found a small bifacially flaked “mango-kernel” in a silicified mudstone at the bridge over the small Ebiutuku river. A single small polished axe from Kisangani has been published (Menghin 1926). From further north of Kisangani no flaked stone has been recorded (Figure 2); various localities in the Buta territory yielded a total of eleven polished implements which were donated to the museum by A. Jacob, a territorial administrator. These are a western outlier of the dense cluster of finds of similar polished “Uelian” axes collected in the northeastern savanna-forest mosaic.

From the Ubangi area or the northwestern corner of the tropical forest grading into savanna (Figure 2), the museum collections contain essentially polished implements or axes that differ from the Uelian series. These ‘Ubangian’ axes (Figure 10) are made of locally available greenstones, and as in the northeastern part, contemporary use for various reasons has been documented (Bequaert 1940, p. 112-113). Bequaert (1940) provides a detailed map of the various locations where polished axes were collected between the Ubangi and Lua rivers. Van Noten surveyed the area during his expedition in 1972 (Van Noten 1977-1978). He collected another sample of small polished axes from the surface and in the villages, but test pits at Motenge-Boma where many axes were found on the surface did not yield any artifacts in situ except for late roulette decorated pottery (Van Noten 1982, p.58). A test pit

that he dug in the cave of Hau near Gemena revealed a sequence of possibly Middle Stone Age, Later Stone Age and Iron Age. Unfortunately, the site remains undated (Van Noten 1977-1978, p.75) and no polished axes were found in situ.



Figure 10. Polished Ubangian stone axes, DRC. The specimen on the left has grooves related to subsequent use for different purposes. © RMCA.

For the interior of the Congo Basin and along the Congo River itself, the museum collections offer very meager evidence. In fact there are only three occurrences of flaked stone artifacts (Figure 2) and two sites with pottery (Figure 7 and see below).

The most eastern site is Lileke on the Lomami river. The 55 lithic artifacts at the RMCA were originally part of a larger collection brought from DRC to Europe by Reverend Father Hermann Kohl in 1914. They had been found at a depth of 50 cm in ash layers and were described and published by O. Menghin in 1926. Most of the artifacts in silicified mudstone or a fine grained sandstone are cortical flakes, except for one possible scraper, a small pick of 7 cm and 7 unfinished flaked axes with no traces of polish. The smallest measures 6 cm and the largest 13 cm. All flaked axes have a particularly thick shiny black patina on both faces. The raw material must have been available in some layered form hardly thicker than 4 cm. There is mention of one fragment of pottery described as crude and badly fired ware of yellow brown color (Menghin 1926, p. 840), but the sherd is not illustrated nor did it enter the collections of the RMCA. Later surveys during the Ebale Congo River expedition on the Lower Lomami confirmed the in situ association between pottery and flaked stone artifacts at Ilambi Moke and Yandjambi (Smith et al. 2011). These lithic artifacts are quite similar in raw material, expedient flaking techniques and bifacially trimmed tools to those that were reported from Likele. Chronological and cultural affiliation of the pottery is under study.

The most western “sites” are Bokala and Mooto (Bequaert 1945, 1955, see also Fiedler & Preuss 1985, Preuss & Fiedler 1984). At each a local inhabitant gave a single flaked stone artifact to a passerby. The first artifact is a leaf-shaped bifacial point (Figure 11 left, PO-23636) that was given by the wife of the village chief to Mr Charles Mischler (Bequaert

1945; RMCA - AP file 119) who passed through Bokala early 1936. The woman had found the stone when looking in the swamp forest for fossil copal resin. Mischler sent the object to the Museum in Tervuren. When asked for further information he explained that prehistoric tools were rare in the region of Wendji near Bolengi which lie south of Mbandaka on the Congo river. Mischler had been prospecting and collecting copal resin since 1932, but had never found an artifact himself. One person in his service did remember that he knew of others who had found similar stones, but that they had thrown them away not knowing what use to make of them (letter from Mischler to the museum 5.07.1936, PA[²]-119). At the time of its publication the implement was considered typical of the Tumbian culture (Bequaert 1945, p. 357), a generic name to indicate anything prehistoric in the Congo.

During his second survey in Congo in 1951, M. Bequaert received from one of his contacts, R.F. H. van Moorsel, a small leaf shaped arrowhead (Figure 11 right, PO-63357), with marginal bifacial retouch on a fine sandstone. A small note stored with the piece at Tervuren reveals that H. van Moorsel himself received the artifact from Alex Lohest who in his turn had received it at the mission post of the Lazarist Fathers at Bikoro where it had been received from a person living in the area. The local finder had stated that there were other pieces at 1 meter below surface (PA-546).



Figure 11. The two only lithic artefacts in the RMCA collections from the interior of the Congo Basin, DRC. Left: leaf-shaped bifacially flaked point in polymorphic sandstone (10.4 x 4.0 x 1.1 cm) from Bokala and right: small leaf-shaped arrowhead in fine sandstone (4.5 x 2.7 x 0.9 cm) from Mooto. © RMCA.

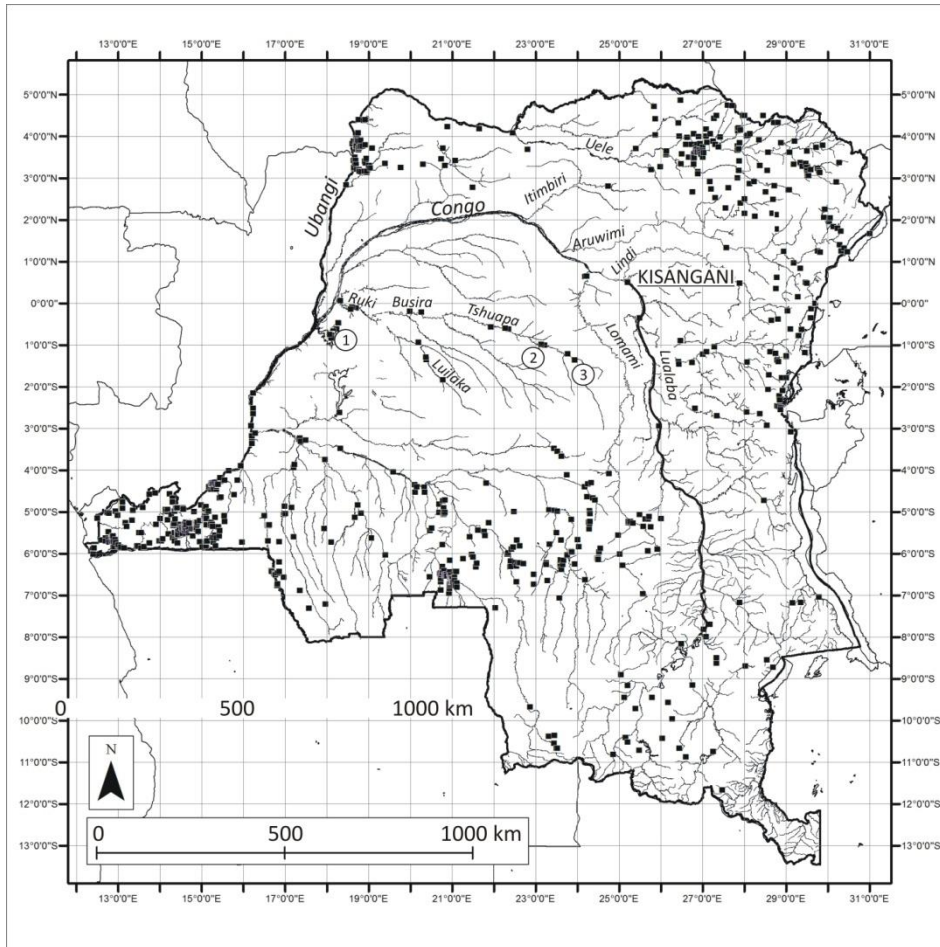


Figure 12. Map of the DRC showing locations of stone artefacts from the collections of the RMCA, and from surveys conducted by J. Preuss in 1982-1983 in the Inner Congo Basin. Sites and localities mentioned in the text: 1. Lac Tumba, 2. Yalola and 3. Boyombo. © RMCA.

Some lithics were found during the River Reconnaissance Surveys by J. Preuss in 1982 and 1983 albeit neither in association with pottery nor in situ. The artifacts lay on the surface of the moderately sloping sand and fine gravel eastern shore of Lac Tumba at 16 localities, and at another 19 locations on the Ruki, Lulaka, Busira and Tshuapa rivers (Figure 12). The most typical type is a projectile point made of quartzite and similar to those in the museum collections. Cores, flakes and unmodified waste are also present (Preuss & Fiedler 1984, Fiedler & Preuss 1985). Assemblages made on milky vein quartz were located further east on the Tshuapa river at Yalola and Boyombo and, as J. Preuss observed, only quartz flakes could be identified as artifacts based on their great number and their typologically unambiguous forms (Fiedler & Preuss 1985, p.181). Since the artifacts were resting on sands that have been dated to 24,500 to 38,500 years (Fiedler & Preuss 1985, p.182), they are estimated to postdate their deposition. In the Inner Congo Basin course and fine grained quartzites of sufficient size for tool production are apparently absent. According to Fiedler they might have been imported from areas as far as 200 to 250 km to the south. Finally, a single polished adze in quartzite was collected at Ibonzi on Lac Tumba.

4.2. Pottery

The early museum collections contain only one instance of pottery from the Ubangi area (PO-41770-41776). It was collected at Businga (Figure 7) and donated by Reverend Father R. Mortier who is also responsible for a collection of 33 polished axes. From his descriptions in the archives (PA-194.1) the pottery may in fact have been found at the bottom of a pit-structure or in a soil horizon. The cultural affiliation is under study. Later surveys along the banks of the Ubangi river and 100 km upstream on the Lua river (Figure 13) yielded pottery of the Batalimo-Maluba tradition (Eggert 1987 and currently under study by D. Seidensticker). Though many polished axes were reported from the area (Ubangian see 4.1.) none were found in association with Batalimo-Maluba pottery along the Ubangi and Lua rivers. This is at odds with the site of Batilimo on the Lobaye river in the Central African Republic where similar polished axes did occur in association with pottery dating to the first centuries AD (de Bayle des Hermens 1975, see also Eggert 1987).

Pottery from the interior of the Congo Basin and along the Congo river itself is to date documented in five instances in the RMCA collections (Figure 7). These are chance finds made by missionaries and private persons. From Eala on the Ruki river 5 sherds were donated by G. Couteaux. They were found at a depth of 30 – 40 below surface in a periodically inundated forest situated downstream from Eala on the left bank of the Ruki (PO-44709-44713 and PA-0.410). Two sites are present at Bokuma further upstream on the same river. A single small pot (PO-61284) was part of a donation by Reverend Father Hulstaert to the Ethnography section at the museum. There is no further information available in the archives, except that the pot would have been found in a riverbed. This is most likely the reason for its internal transfer to the prehistoric collections. Reverend Father Lootens sent an assemblage (OP-59548-59863, PA.0.730) that was collected at the old local cemetery that became incorporated into the Catholic mission at Bokuma. The pots were considered to be older than 1910, the year the mission post was constructed, and possibly of Nkundo-Mongo manufacturing to whom belonged the old cemetery. Five pottery sherds from Bolofa (or Bolafa) (PO-83959/1-5) were found at 1m below surface along the Lopori river. They were donated by Ms de Rudder Batz in 1972. At Gundji near Lisala pottery was found at a depth of 50 cm. They were collected by J. Huyé who transmitted them sometime between 1946 and 1949 to E. Darteville, conservator at the Museum.

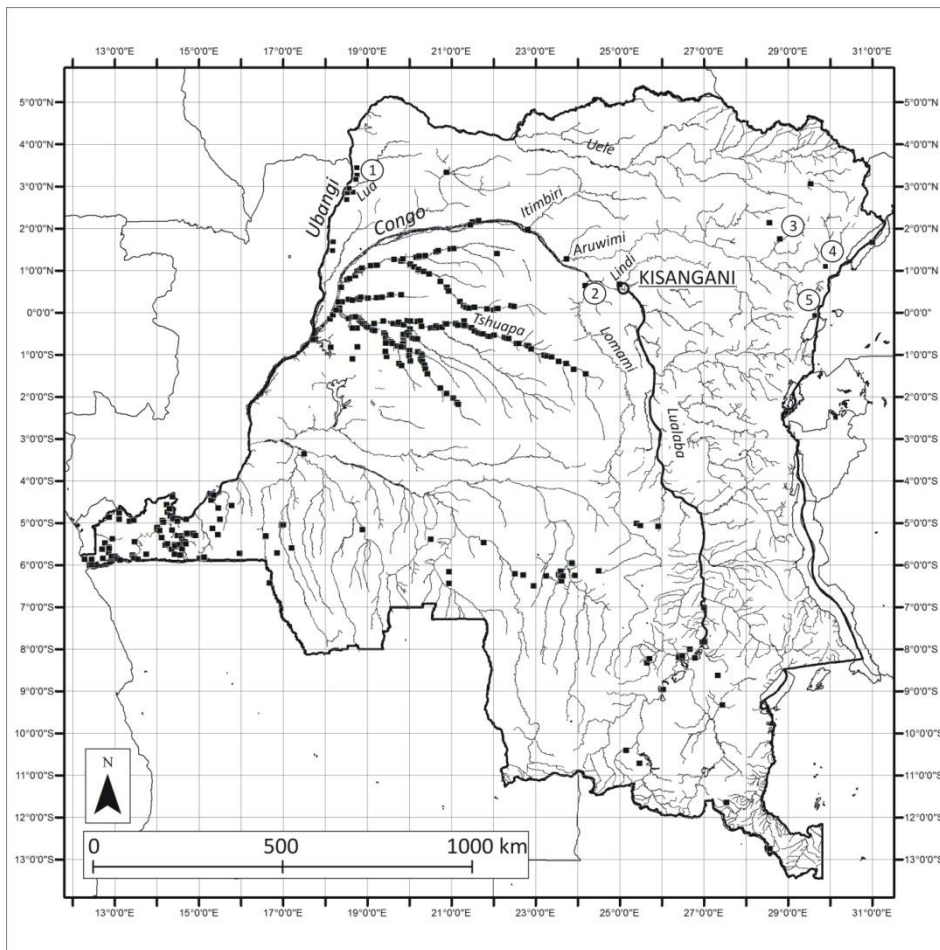


Figure 13. Map of the DRC showing locations of pottery stored in the collections of the RMCA, as well as of pottery from surveys conducted by M. Eggert between 1977 and 1987 in the Inner Congo Basin and Ubangi region, by J. Mercader between 1993 and 1995 in the Ituri forest and by A. Livingstone Smith & E. Cornelissen in 2010 and 2013 around Kisangani. Sites and localities mentioned in the text: 1. Motenge-Boma, 2. Ilambi Moke, 3. Ituri rock shelters, 4. Matupi and 5. Semliki valley. © RMCA.

The River Reconnaissance Project conducted between 1977 and 1987 by M. Eggert irrevocably altered the archaeological picture for the Inner Congo basin (Figures 12 and 13). While the pottery from his surveys was excavated and found in careful arrangements, refuse pits and could be dated, the smaller number of lithics are all surface finds which remain undated. The pottery was classified by Hans-Peter Wotzka (1995) into six large traditions and 35 style groups based on shape and decoration. The western tradition of which Imbonga is the oldest and Ikenge the most recent expression, includes twenty different styles, the Tshuapa tradition six and one possibly additional style while the four other traditions are each composed of two different style groups (Wotzka 1995). The oldest pottery or Imbonga style dates from the period between ca. 400 and 100 BC and is mainly flat based. While decoration techniques include grooving, incision, impression and appliqué, most characteristic are comb-stamped and incised zigzag patterns. (Eggert 1992, p.130-131). The chance Bokuma material in the old museum collections belongs to the Imbonga style (Figure 15). A quite remarkable characteristic (Eggert 1987, Kahlheber et al. 2014, p.483, Wotzka 1995) is the arrangement of pottery sherds and intact vessels in densely packed assemblages, interspersed with laterite lumps in circular pits of approximately 1 m diameter and an average depth of 1.7m. The precise purpose of these careful arrangements remains unknown. Though neither iron tools

nor flaked or polished stone tools were found in association with Imbonga pottery structures, the oldest pottery in the rainforest is tentatively associated with the Early Iron Age (Eggert 2014, Kahlheber et al. 2014, Wotzka 1995). Its geographic distribution is restricted to the rivers in the Western half of the Inner Congo Basin (Figure 14).

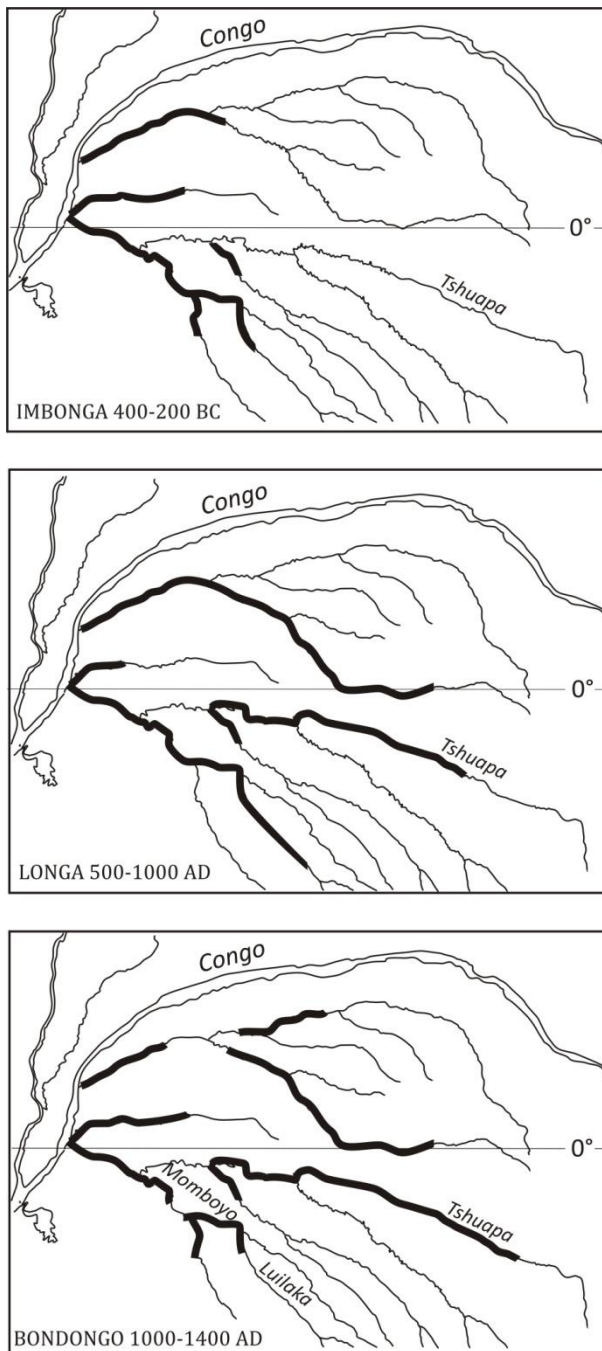


Figure 14. Geographical distribution of selected pottery style groups, simplified after Wotzka 1995.



Figure 15. Imbonga ware from Bokuma near Mbandaka, DRC, RMCA collections. All show the typical decoration of zig-zag rocking blade impressions covering the entire vessel, including the flat base. This style is dated to between ca. 400 and 100 BC. © RMCA.

Analysis of archaeobotanical samples collected at one of the Imbonga sites (Kahlheber et al. 2014) reveals a diet that included cultivated pearl millet as well as tree derived edible fruit and a range of grasses and herbs that might have been consumed as leafy vegetables. Though the current relative humidity of the rain forest is too high for pearl millet, which is not cultivated in the Inner Congo Basin today, there is evidence that at the time of Imbonga settlement the mature forests were interspersed with seemingly exclusively climatically induced lighter forest (Kahlheber et al. 2014, p.501).

The later pottery traditions such as Longa dated between 500 and 1000 AD and Bondongo dated between 1000 and 1400 AD cover the same area but they extend more deeply into the Congo Inner Basin. Some style groups have a more restricted distribution: the Bekongo group, contemporaneous to the Bondongo group (Figure 14), occurs only on the upper Momboyo and Luilaka rivers. Taken together these pottery traditions indicate “an expansive upstream process of settlement by culturally related populations who have been inhabiting the whole area under the Congo bend up to the present.” (quoted from Kahlheber et al. 2014, p. 481).

Our own surveys during the Ebale Congo River expedition on the Lower Aruwimi, Itimbiri and Lomami (Smith et al. 2011) and Lindi (Figure 16 and Cornelissen et al. 2013) added an eastern extension to the phenomenon of densely packed fragmented pottery and complete vessels in pits, and in stratigraphic horizons. This material is currently under study

to establish its chronology and cultural affiliations and to compare it to the pottery sequences of the Inner Congo Basin.

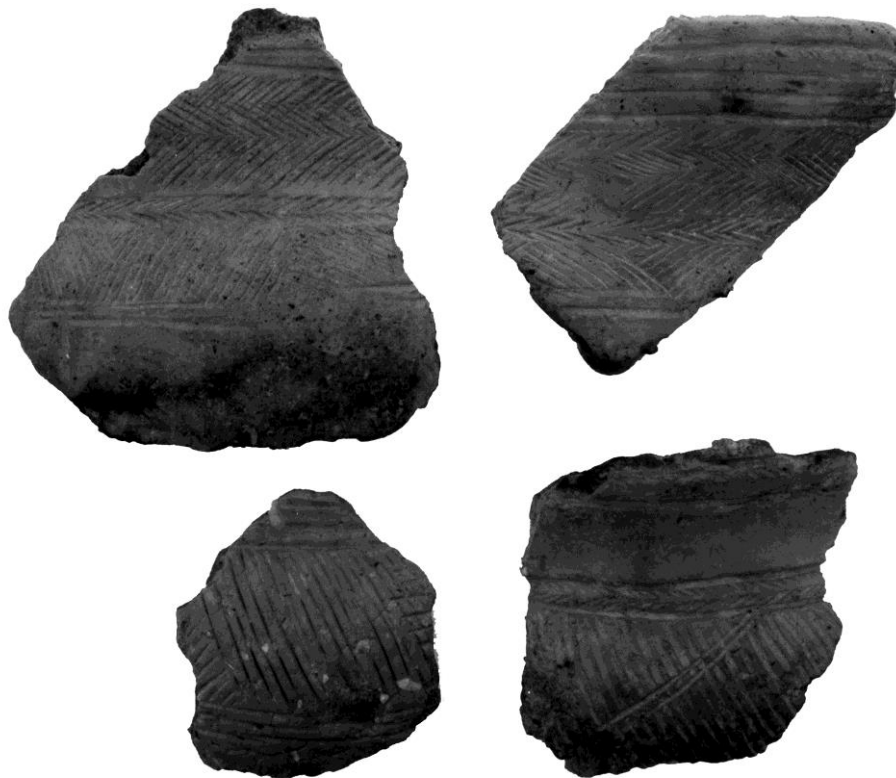


Figure 16. Sherds from Baombi II on the Lindi river, DRC, found in a stack of pots dating to the 1st century BC/AD. Decoration consists of various arrangements of tracing with a stylus on the upper part of the pots. All have a flat undecorated base. Sherd top left: max. 11.2 cm and bottom left: max. 7.8 cm. © RMCA.

4.3. Site distribution patterns

River bound surveys have fortunately filled in the archaeological blank in the museum collections for the rainforest west of the Lualaba river. The River Reconnaissance Project has provided a continuous population record based on pottery for the last 2500 years for the Inner Congo basin. The extreme paucity of polished and flaked stone artifacts collected during recent field work, however, points to a reality that cannot be explained solely by colonial collecting strategies which favored lithics over pottery or by the absence of mining activities which enhanced opportunities for chance finds. The forest north of the Congo River may present the same pattern, but there are few materials from this area in the RMCA collections and the region has not been the focus of either large or small scale recent surveys.

5. Mining and forestry, allies and threats for documenting human population in the equatorial forest

As this overview indicates, a substantial proportion of the museum collections and information on past inhabitants of the equatorial forest derive from activities preceding or accompanying mining activities. These have contributed to the composition of the

archaeological collections at the Royal Museum for Central Africa. From the areas where mining concessions were issued in the 20th century many archaeological occurrences are documented, primarily in the northeastern, eastern and southern parts of the DRC. The finds consist of numerous stone implements, most of which are easily recognizable and clearly cultural: flaked, polished and bored stones. Quite often they were collected at considerable depths below surface. The Inner Congo Basin and most of the forest west of the Lualaba river was not open to public mining. To some extent the presence and absence of concessions have shaped our views on the prehistoric and historic settlement of the forest. On the other hand, the informal colonial period network of individuals interested in prehistory, did not yield indications of ancient occupation in large areas presently under forest cover on both sides of the Lualaba river.

The preponderance of lithic artifacts as compared to pottery or metal objects in the old museum collections is related to the interpretation of history and prehistory at the time. Pottery was considered “ethnographic” and of fairly recent manufacture whereas stone artifacts were considered to belong undoubtedly to the past. Later systematic archaeological river bound surveys and survey in conjunction with programs on sustainable forestry management, have nevertheless proven the potential of today’s densely forested regions especially in the Inner and northwestern Congo basin, to produce considerable archaeological evidence on at least the last 2500 years of human occupation.

Forestry surveys conducted to understand the history and regeneration patterns of the rain forest have a high potential for providing relevant archaeological insight because they can yield crucial information on the type of environment at the time of settlement. This alliance between forestry and archaeology also offers a less intrusive way of obtaining below ground data in forested regions. Open mines turn over the top soil to such an extent that it is highly unlikely that features like those recovered during the river bound surveys will be observed. Pit structures and elaborate pottery arrangements usually are found immediately below surface up to a depth of maximum 2 m. In many areas industrial and artisanal mining represent a threat to the buried archaeological record but at the same time they offer a unique opportunity to document it. From our perspective combining archaeological reconnaissance to geological exploration for mining permits would offer an ideal approach through which data might be collected. The intensification of surveying and prospecting for potential mining in the Inner Congo Basin (<http://portals.flexicadastre.com/drc/en/>) is a fact. Applications have been granted for the period 2014 to 2019 to prospect for gold, diamond, iron and mercury around Boende. Boende is situated in the heartland of nine of the pottery groups identified in that area, and these span 2000 years of human settlement (maps 5-7, 9, 11-15 in Wotzka1995). The challenge remains on how to raise awareness amongst stake holders like mining companies, artisanal miners, geologists, and the various ministries. There are unfortunately a number of practical considerations that discourage such collaborations.

In DRC requests for archaeological surveys and fieldwork are processed by the *Institut des Musées nationaux du Congo* to which all applications for research permits and authorizations must be submitted. The final approval comes from the Ministry which includes Arts and Culture components. This implies a different treatment of field work compared to that of other surveys for biodiversity or earth sciences. In university collaboration or cooperation programs on biodiversity topics permits are issued by the Ministry of Higher and University Education and Scientific Research. For specific geological fieldwork, permits come from the Ministry of Mining. If any of these surveys are to take place in a national park or reserve under the control of the Ministry of Environment, Nature Conservation and Tourism, a complementary permit is also needed. Although there is a strong rationale for multiple administrative entities with complementary areas of responsibility, this does not encourage an interdisciplinary approach of fieldwork or any program which includes both cultural and

natural aspects such as the study of ancient populations of the Equatorial forest. The fact that archaeological excavations including sieving can look very similar to and can be confused with artisanal mining does not inspire confidence in the villages situated in the mining areas.

For Congolese archaeologists it is hard to initiate or follow up on prior research due to the lack of structural funding of the National Museums (IMNC) of DRC, as well as due to the absence of a formal university education in archaeology. Archaeology is limited to general introductions to students in History or in Anthropology. Therefore the number of professionally trained archaeologists remains extremely low in DR Congo. The RMCA has provided three month long training sessions at the RMCA to train the trainers, and organized a the pilot project in 2011 of a two-weeks' field school (Cornelissen 2012). Unfortunately such programs necessitate co-financing and sustainability that the IMNC cannot ensure. Although short term initiatives are instrumental in drawing attention to structural problems such as lack of formal university training or the fragmented approach in field work, they cannot provide structural alternatives to formal university training or financing partner institutes.

For the Royal Museum for Central Africa, exploiting existing data from the collections and archives, analysing the various sites in the museum collections and providing the archaeological maps with description on the institutional website, and hopefully also on a website of a Congolese counterpart will be the challenging task for years to come. We will continue to combine this with opportunity driven fieldwork, systematic river bound surveys and intensifying collaboration with the forestry sector as well as small scale capacity building in order to protect and enhance the visibility of archaeological cultural heritage in this vast and densely forested region.

Acknowledgements

The reassessment and georeferencing of the museum collections is a “work in progress”. The project has greatly benefited over the years from the input of various colleagues and students. I would like to thank in particular Nadine Devleeschouwer and Alexander Vral for their assistance in exploring archives and collections, and Alexandre Livingstone Smith for his patience and help in producing maps under ArchView and for sharing my interest in field work along the Congo River near Kisangani. John Yellen kindly accepted to revise the English.

Captions for figures.

Figure 1. Map of the DRC showing the distribution of archaeological sites in forests and savannas. © RMCA.

Figure 2. Map of the DRC showing locations of stone artefacts in the collections of the Royal Museum for Central Africa (RMCA) and sites mentioned in the text: 1. Motenge-Boma, 2. Bokala, 3. Mooto, 4. Buta, 5. Buru, 6. Ituri rock shelters, 7. Matupi, 8. Semliki valley, 9. Angumu, 10. Ebiutuku and 11. Lileke. © RMCA.

Figure 3. Polished Uelian implements, found in northeastern DRC and stored in the RMCA collections. Line-drawings from Van Noten, 1968. Left: Figure 1 (19.1 x 5.3 x 4.0 cm). Right: top Figure 23 (12.1 x 4.4 x 3.3 cm) and bottom Figure 21 (7.8 x 5.7 x 3.3 cm). Photos © RMCA.

Figure 4. Bored stones from northeastern DRC, decorated (rare) (left, Ø: 10 cm, H: 5.1 cm) and undecorated (right, Ø: 14.1 cm, H: 8.9 cm). Both were found during mining activities in the Kilo-Moto area and are stored in the RMCA-collections. © RMCA.

- Figure 5. Map of the DRC showing the extension of mining concessions in 1960, simplified after Gilsoul & Massart 1962. Legend : author's translation of 'Concessions d'exploitation – Uitbatingconcessies' and of 'Région fermée à la prospection publique des mines – voor openbare mijnprospectie gesloten gebieden'.
- Figure 6. Bifacially flaked implements of Lupemban affiliation, including lanceolates, all found during mining activities on the Lusimbe river, except for the lower, left, which was found in the Minindi valley, DRC, RMCA collections. © RMCA.
- Figure 7. Map of the DRC showing locations of pottery stored in the collections of the RMCA and sites mentioned in the text: 1. Watsa, 2. Businga, 3. Gundji, 4. Bolofa, 5. Bokuma and 6. Eala © RMCA.
- Figure 8. Late Iron Age decorated sherds found in the top layers of the Matupi Cave, DRC. The decoration on the small sherd on the left (max. 4.9 cm) consists of impressions and tracing with a stylus. The large sherd on the right (max. 11.5 cm) has rolled impressions with a carved wooden roulette. © RMCA.
- Figure 9. Map of the DRC showing archaeological finds and the itinerary of the geologist A. Lombard (May 1952 – February 1954) who also collected stone artifacts, after Figure 6 in Evrard 1957.
- Figure 10. Polished Ubangian stone axes, DRC. The specimen on the left has grooves related to subsequent use for different purposes. © RMCA.
- Figure 11. The two only lithic artefacts in the RMCA collections from the interior of the Congo Basin, DRC. Left: leaf-shaped bifacially flaked point in polymorphic sandstone (10.4 x 4.0 x 1.1 cm) from Bokala and right: small leaf-shaped arrowhead in fine sandstone (4.5 x 2.7 x 0.9 cm) from Mooto. © RMCA.
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¹The name of the institute was originally The Museum of Congo in 1898, became successively The Museum of Belgian Congo in 1908, the Royal Museum of Belgian Congo in 1952 and finally the Royal Museum for Central Africa in 1960. On the history of the museum, Couttenier 2010.

² PA and PO are short for Prehistory Archives and Prehistory Objects, used in Collection Management and Archives at the Royal Museum for Central Africa.