Article

Archaeology of Holocene hunter-gatherers at the sixth Nile cataract, central Sudan

Données archéologiques sur les derniers chasseurs-cueilleurs près de la sixième cataracte du Nil au Soudan central

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Abstract

Jebel Sabaloka at the Sixth Nile Cataract has been known for its strategic importance in late prehistoric stone tool production in central Sudan. Since 2009, archaeological exploration on the west bank of the Nile has revealed a hierarchized settlement structure, with 30 sites of early to mid-Holocene dating. The key findings derive from two principal sites – Sphinx and Fox Hill – that are situated on large granite outcrops and provide evidence of robust occupation by hunter-gatherers of the Early Khartoum Complex (Khartoum Mesolithic, ca. 8,500–5,000 BC). One of the most intriguing elements at these Early Khartoum settlements is the presence of large hunter-gatherer burial grounds, which will enrich the discussions of the character, duration and structuring of these Mesolithic societies at both regional and supra-regional level.

Keywords: Jebel Sabaloka, Early Khartoum (Khartoum Mesolithic), settlement structure, human burials, material culture.

Résumé

Jebel Sabaloka, situé près de la sixième cataracte du Nil, est réputé pour son importance stratégique, liée à l’approvisionnement en matières premières lithiques au Soudan central. Les recherches archéologiques sur la rive gauche du Nil y ont révélé la présence de nombreuses traces d’occupations

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organisées et structurées dans une trentaine de localités datées de la première moitié de l’Holocène. Les découvertes clés proviennent de deux localités principales – le Sphinx (Sphinx) et le Mont du Renard (Fox Hill) – qui livrent les traces d’une occupation intensive par des groupes de chasseurs-cueilleurs associés à la culture Khartoum Ancient (Early Khartoum, ca. 8.500–5.000 av. J.-C.). Un des éléments les plus fascinants de ces localités est la présence de cimetières de chasseurs-cueilleurs qui viennent enrichir les débats sur la nature, la durée et la structuration de ces sociétés mésolithiques au niveau régionale et suprarégionale.

**Mots clefs**: Jebel Sabaloka, Mésolithique, structure d’occupations, sépultures humaines, culture matérielle.

**Introduction**

Jebel Sabaloka is a small mountain range of volcanic origin located about 80 km north of the confluence of the Blue and White Niles at Khartoum (Fig. 1). It emerges out of the monotonous desert plains and constitutes a conspicuous landmark in the otherwise sandstone landscape of central Sudan. The dark mass of the mountain, formed of tough and resistant volcanic rocks, is sliced in two unequal parts by the Nile which passes through the mountain in a straight-lined zig-zag gorge. At the point where the Nile emerges from the constriction, the smooth flow of the river is punctuated by the Sabaloka rapids – the smallest and the southernmost of the six Nile cataracts.

The strategic importance of this mountain, as the main source area for certain types of raw materials for stone tool production, had been suggested already by A. J. Arkell at the very beginning of prehistoric research in central Sudan. Nevertheless, archaeological exploration of this promising land was launched only in 2009, when the mission of the Charles University in Prague (Czech Republic) began investigating this region’s late prehistoric occupation.

The field research carried out since 2011 in a concession area extending along the west bank of the Nile in a zone 3–6 km in breadth, between the village of Tabya Hassaniya upstream of Sabaloka and the village of Al Huqna near the Sixth Nile Cataract (distance of 18 km), has revealed in this area a settlement system consisting of approximately 30 sites of the Early Khartoum Complex (or the Khartoum Mesolithic, ca. 8500–5000 BC) (Fig. 1). Most of these sites are restricted to two distinct landscape units: the Rocky Cities (4 × 1.2 km) in the north-western foothill zone some 4 km from the Nile, and the Lake Basin (2.5 × 2.5 km) in the south-western zone adjacent to the river. The sites are of different types and different ranking. We classify them in a two-level hierarchy consisting of residential sites with or without human burials (category A) and ephemeral locations and scatters attesting to limited spectrum of activities or short duration of occupation (category B). In this paper, we provide an insight into the archaeology of late hunter-gatherers at the Sixth Nile Cataract.

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9 Suková L. and Varadzin L. 2012.
10 Varadzinová L. *et al.* in press.
using the findings from two major category A sites – Sphinx and Fox Hill – distinguished by robust evidence of late prehistoric occupation and by the presence of large hunter-gatherer burial grounds.

Fig. 1: jebel Sabaloka and the Sixth Nile Cataract in central Sudan: white line = research area of the Charles University Sabaloka Expedition on the west bank of the Nile; red cross = location of the Sixth Nile Cataract; white points = Early Khartoum sites identified in the area; red-and-white circles = the two principal sites presented in this paper (background: ESRI Base Map – World Imagery Source, Digital Globe (© Czech Institute of Egyptology, Faculty of Arts, Charles University /CIE/, drawn by L. Varadzin and L. Varadzinová).
Sphinx

The site of Sphinx (SBK.W-60) is located in the Rocky Cities (Fig. 1). It is situated at top of a hill formed of granite rocks and boulders (around 15 m above the surrounding terrain) the shape of which gave the site its name (Fig. 2). The roughly crescent-shaped settlement platform measures 793 m². It features three main parts – northern, central, and southern – and two narrow tongue-shaped areas called northern and southern shelters (Fig. 3). When first discovered in the autumn of 2011, the surface of the site was distinguished by the abundance of EKC finds that had accumulated on the surface in consequence of reduction of late prehistoric terrains through water and wind erosion by up to 0.90 m. In addition, a small number of pottery fragments dating to the Meroitic (ca. 300 BC – AD 350) or Post-Meroitic (ca. AD 350–550) and Funj (ca. AD 1500–1800) periods was recorded.

Between 2011 and 2015, 10 trenches of 48.95 m² in total, were explored, with their depth ranging from 0.1 m to 1.2 m below the present-day surface (Fig. 3). The excavated cultural remains fall only within the Khartoum Mesolithic, when the site had served as a settlement and, at a certain time, as a burial ground of hunter-gatherers.

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11 Varadzinová Suková L. et al. 2015.
The occupation of the site of Sphinx by the Early Khartoum hunter-gatherers spanned nearly three and half millennia – a published sequence of AMS 14C dates from the excavated trenches indicates that it began at ca. 8,200 cal BC and ended at ca. 5,000 cal BC. All parts of the site were used as a settlement\(^\text{13}\). The analysed faunal remains indicate the importance of aquatic resources and hunted and collected animals in the subsistence of the site’s occupants\(^\text{14}\). The assemblage studied so far includes abundant remains of catfish (Siluformes), Nile monitor (*Varanus niloticus*), Nile perch (*Lates niloticus*), catfish (*Synodontis* sp.) and small-sized antelopes (incl. oribi, *Ourebia ourebi*), followed by remains of tilapia (*Tilapia*), Nile crocodile (*Crocodylus niloticus*) and rock python (*Python sebae*), large-sized antelopes, bovines (*Bovidae*), catfish (*Clarias* sp.), cane rat (*Thryonomys* sp.) and hippopotamus (*Hippopotamus amphibius*). Less frequent or sporadic finds include medium-sized antelopes, pigs (*Sus*), hare (*Lepus* sp.), rock hyrax (*Procavia capensis*), aardvark (*Orycteropus afer*), carnivores (*Carnivora*), giraffe (*Giraffa camelopardalis*), rhinoceros (*Rhinocerotidae*), small lizards and other fish (*Gymnarchus, Mormyridae, Heterotis, Polypterus, Alestes, Schilbe*\(^\text{15}\).
As far as material culture is concerned, finds of all categories, so far recorded for the Khartoum Mesolithic, occur in high densities in the excavated deposits. Lithics are attested with about 5,300 pieces per m$^3$. About thirty thousand pieces have been analysed so far$^{16}$. The assemblage is dominated by quartz. Rock crystal, Sabaloka rhyolites and cherts are present in small and petrified wood and volcanic glass in very small quantities. Debitage makes nearly 95%, tools 2.5% and cores 2%. Among tools, crescents of different sizes and proportions take up around a half of the toolkit. The rest includes retouched bladelets and flakes, notches and denticulates, some microliths (especially triangles and trapezes) and extremely few burins and borers. Crescents were mostly done on flakes. There was also a bladelet production running mainly in the manufacture of microliths.

Pottery is attested with 590 pieces per m$^3$ and includes a total of 8,670 sherds analysed so far$^{17}$. The size of the potsherds is too small to allow either estimations of minimum

$^{16}$ Kapustka K. 2017, with figures.
$^{17}$ Garcea E. A. A. 2017; Garcea E. A. A. et al. 2020.
numbers of individual (MNI) pots, or descriptions of complete profiles of the vessels. The assemblage is of the typical Early Khartoum style and is largely decorated using five different techniques: rocker stamp, incision, simple impressions, alternately pivoting stamp, and roulette (Fig. 4). The results of analyses and classification of the ceramics from Trench 7 in the southern part of the settlement indicate a preserved sequence that makes it possible to reconstruct the diachronic development of techniques and patterns of decoration at this site, particularly in the earlier period (see above)\(^{18}\).

**Ground stone artefacts** are attested with 14 pieces per m\(^3\). So far, a random collection of 769 pieces has been studied\(^{19}\). Upper and lower grinders make 99 % of the collection, while rubbers, stone rings and unidentifiable ground stones represent around 1 %. Lower grinders (50.7 % of all the ground stone artefacts) show some variability and include simple flat and basin-like types. They were found mostly in fragments, in many cases broken deliberately. Interestingly, functional pieces or large fragments of querns had been used to cover some human burials\(^{20}\).

**Bone artefacts** are attested with more than 70 pieces (Fig. 5: 1–4). Undecorated tools as awls, points, sticks, perforators, etc. predominate (50 fragments). Items for personal decoration are represented by six tubular beads and one ring\(^{21}\). The collection also includes 16 decorated fragments of unknown function. The usual cross-hatching prevails (e.g., Fig. 5: 4). It was applied also on a unique, approximately 20-centimetre-long, stick found in four fragments (Fig. 5: 3). Another singular artefact is a kind of spatula with a broadened and flattened end, which was decorated with a series of hatchings (Fig. 5: 1)\(^{22}\).

**Ostrich eggshell beads** constitute one of the richest collections so far reported from Early Khartoum sites\(^{23}\). More than 800 pieces, obtained through excavation, include beads as well as bead preforms and blanks (Fig. 5: 5). The so far unearthed remains of bead production are confined to the southern part of the site where they fall within the earliest phase of occupation. At that time, beads, with a diameter between 5 and 13 mm, were fabricated and used. In the later phases, the diameter is abruptly reduced to 5 to 9 mm. A change in dimensions of prehistoric OES beads may be a useful chronological marker, not only at Sabaloka.

Artefacts on *mother of pearl* are represented by seven pendants and two decorative circles with or without incised pattern, respectively, with all these finds, coming from the southern part of the site (Fig. 5: 6)\(^{24}\).

\(^{19}\) Řídký J. 2017, with figures.
\(^{22}\) Suková L. and Varadzin L. 2012, plate 12.
\(^{24}\) Varadžinová L. and Varadzin L. 2017, plate 13.
Fig. 5: Sphinx. Decorative artefacts on bone (1–4), ostrich eggshell (5), mother of pearl (6), and mica (7) (© CIE, photo by Martin Frouz – 1, 2, 3; Petr Košárek – 4; Ladislav Varadzin – 5; Petr Pokorny – 6, 7).

Pigment is attested from the beginning of occupation and in comparatively large quantities all over the site. Red colour prevails, but yellow and white are also present.

Among the many amorphous pieces of mica, there are a few bigger pieces worked into regular shapes (Fig. 5: 7). Their function is not clear, and we consider them as pendants, patches or small mirrors.

These categories of material culture attest to a wide range of activities, with production, consumption and discard of certain categories, showing clear preferences for particular parts of the site in different periods. Of interest is the local origin of all materials employed on the site – no exotic elements have been noted so far. Also, the analysed archaeo-fauna from the excavated deposits includes, exclusively, local species available within a few kilometres from the site, though in different seasons of the year, which points to an all-year-round occupation of the site. This evidence, together with the thickness of the preserved archaeological deposit of up to 1.2 metre, suggests a high degree of sedentariness of the local inhabitants, at least in some phases of existence of the site. The same frame is clearly indicated by the presence of a large burial ground.

The evidence of use of the site as a burial ground comes from the southern platform and the northern shelter where remains of more than 40 individuals were uncovered in five trenches 42.25 m² in size (Fig. 3). Most of them constituted more or less complete burials in situ. But there were also frequent finds of human bones in secondary positions, with most, if not all, of them deriving from disturbed or destroyed primary deposits (Fig. 6). Based on

the spatial distribution and density of the uncovered burials and with a view to erosional processes, we estimate some 400 individuals to have been buried at the site. If this assumption is correct, Sphinx would range among the largest early Holocene burial grounds of prehistoric hunter-gatherers in Africa.

The deceased were interred in oval-shaped burial pits. There was a strong tendency to place the cadavers directly onto the bedrock (in the form of solid granite rock or eluvium) irrespective of its depth below the ground. Thus, the depth of burials varied from several centimetres to around one metre below the present ground-surface. In some cases, granite stones encircled or separated the corpses. Sometimes, stones were placed directly over the heads or the postcranial parts, as if to mark or protect the remains.

An extended period of use of the space for funerary activity is suggested by frequent cutting of earlier graves by later ones. This suggests that the exact location of burials was not always known. In some cases, long bones from disturbed burials were found carefully arranged around later inhumations (Fig. 6: red points). Elsewhere, they were pushed aside to make space for new interments.

Fig. 6: Sphinx, Trench 6. Primary inhumations (B.35, B.40–B.43, B.44 and B.45) and redeposited remains from disturbed burials – cranium B.36 and long bones marked with red dots and arranged around B.41 (© CIE, photo by L. Varadzin, updated by L. Varadzinova).
The bodies lack uniformity as to orientation and positioning (Fig. 7). Nevertheless, all the individuals in primary position have their lower legs flexed, heels tend to be drawn close to the pelvis and hands pulled in front of the face. The degree of flexion, between spine and femur, varies considerably and includes also a very tightly contracted position that was difficult to attain without wrapping or binding (e.g., Fig. 6: B.40; Fig. 7: B.10). Apart from one hyper-contracted individual interred with the face and chins to the ground (Fig. 6: B.41), the deceased were placed, preferably, on the side or on their back, with legs to the left or to the right – there was no apparent preference for either of the sides.

Fig. 7: Sphinx, Trench 2. Varied orientation and flexion of B.4, B.10 and B.11 (© CIE, photo by L. Varadzin).

The first anthropological insights suggest a limited selection of the deceased based on the age-at-death and the gender. The mortality profile of the population follows theoretical rates of S. Ledermann with the quasi absence of children from the age group (5–9) and adolescents (10–14/15–19). Although present, perinatal and young children (0–1) and (1–4), are clearly underrepresented, following the same theoretical mortality pattern, suggesting a negative selection toward young immature individuals in the parts of the burial ground excavated.

Ledermann S. 1969.
Burial goods are not frequent and include several cases of shells of Nile bivalves, groundstone artefacts and lithics found directly on some cadavers (e.g., Fig. 6: B.40). As the burial ground was located in an area, previously used for settlement, many of the artefacts found in the fills of graves are random intrusions.

As the human bones and teeth were found to contain no or insufficient amount of collagen for reliable AMS \(^{14}\text{C}\) dating, for the time being the burials are attributed to the Khartoum Mesolithic based on archaeological evidence. Nevertheless, systematic dating of the burial ground based on enamel bioapatite has been in progress since 2017, and the results will be presented in one of the upcoming publications.

It is not common to find such a limited space that have been used for a long series of interments among early Holocene hunter-gatherers. Among other things, this suggests that the burial ground may have been used by a particular human group, for which it played an important role in determining its identity and in its social stabilisation. The irregular spatial distribution and the diverse ways of positioning the bodies may indicate an erratic use of the burial site, or – rather – our difficulties to grasp the dynamics of burial rite through time. In any case, the burial ground is clearly devoid of any marks of social stratification.

**Fox Hill**

The site of Fox Hill (SBK.W-20) is located mere 4 km to the southeast of Sphinx and about 1.2 km to the west of the Nile (see Fig. 1). It dominates the Lake Basin area which was influenced in late prehistory by the existence of a seasonal lake and by the proximity of the Nile. Compared to Sphinx, it is a much bigger granite outcrop with 16 terraces and platforms (11,650 m\(^2\) in total) situated between 2 and 29 m above the surrounding terrain (Fig. 8a; see also Fig. 13). At least four of the terraces (n° 1, 3, 10 and 13) feature as high densities of surface finds as Sphinx. Unlike the latter site, however, Fox Hill was intensively occupied also during the Early (Shaheinab) Neolithic (ca. 5000–3800 BC).

The site was explored during four field campaigns when small test pits were excavated on most of the platforms in 2011 and 2012 and a larger-scale excavation carried out in 2011–2012 and 2017–2018 in two of the most significant areas – Terraces 1 and 3. As exploration of the site is still in progress, no more than a cursory glance at it can be presented.

During the Khartoum Mesolithic, the focus of occupation was obviously on Terrace 3 (Fig. 8c). Just as at Sphinx, the northern and central parts of this terrace contain only settlement remains, while the southern part features settlement remains intermingled with human burials (Fig. 9).

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28 See also Varadzinová L. and Varadzin L. 2017, plate 10.
29 Suková L. and Varadzin L. 2012; Varadzinová L. and Varadzin L. 2017, table 1, figure 1.
30 The analyses have been performed by Stanley H. Ambrose from the University of Illinois at Urbana-Champaign.
31 Suková L. and Varadzin L. 2012.
32 Suková L. and Varadzin L. 2012.
Three trenches (33 m² in total) opened in the southern part of Terrace 3 were found to contain 26 primary inhumations in addition to disturbed or redeposited remains of so far unspecified number of individuals (Figs. 10 and 11). Among them, males and females, as well as adults with very small children are represented. The burial ground shares general characteristics with that at Sphinx: high density indicating considerable size of the burial ground, again possibly of a community character; clustering of burials; deposition onto bedrock; multiple superimpositions; varied orientation and position; use of stones over the head or body; and diverse redepositing of skeletal remains.

Nevertheless, there are several things that are different. Above all, it is the presence (in at least six cases) of stone piles created over some burials (Fig. 10), so far unattested in the Sudanese prehistory. Then, it is the unequivocal presence of burial goods in some burials, namely of Nile bivalves (2 cases; Fig. 12), ostrich eggshell beads (1 case), and leg and other

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Fig. 9: Fox Hill, Terrace 3, Trench 21. Level close to the bedrock; F – feature; B – burial; L – locus (© CIE, photo by L. Varadzin).

Fig. 10: Fox Hill, Terrace 3, eastern part of Trench 22. Six stone piles covering remains of human burials, view from east (© CIE, photo by L. Varadzin).
Fig. 11: Fox Hill, Terrace 3, western part of Trench 22. Uppermost level of burials and remains of other redeposited or unassigned individuals, view from east (© CIE, photo by L. Varadzin).

Fig. 12: Fox Hill, Terrace 3, Trench 21. B.6 provided with Nile bivalves (© CIE, photo by L. Varadzin).
parts of body of a large mammal (1 case)\(^{35}\). Last, but not least, it is the probable occurrence of Neolithic burials, which is suggested, \textit{inter alia}, by the presence of stone beads around the remains of a small child that had superimposed two other burials\(^{36}\).

Fig. 13: site of Fox Hill (SBK.W-20) in the Lake Basin area, view from west; the arrow marks the position of Terrace 1 (© CIE, photo by L. Varadzinová).

Fig. 14: Fox Hill, Terrace 1, Trench 26. Northern section with a 1.2-metre-thick deposit of horizontally-laid layers (© CIE, photo by L. Varadzin).


\(^{36}\) Varadzinová L. \textit{et al.} 2019, Figure 8d–e; Varadzinová L. and Varadzin L. 2020, figure 4f–g.
On Terrace 1, situated some 7 metres below Terrace 3 (Figs. 8a, 8b and 13), a sequence of horizontally-laid layers with coarse and fine fraction alternating, containing large amounts of river shells (whole ones) and very little settlement debris, were uncovered in four trenches excavated in the lower parts of the terrace (Fig. 14). The sequence is tentatively interpreted as consisting of exogenous sediments, transported onto the site with a great velocity – possibly during (extremely?) high floods. These deposits, situated some 8 to 10 metres above the level of the current high floods, could indicate that especially during the early Holocene Terrace 1 was uninhabitable – at least during some periods of the year – and may have been used only for deposition of waste, as was suggested for the upper parts of this terrace already in 2012\textsuperscript{37}. Further investigations are needed to ascertain whether this finding is of importance for reconstruction of the Nile floods in prehistory and for understanding of the evidence of occupation in the Lake Basin area.

**Conclusion**

The presence of human burials constitutes one of the characteristics of what we designate as category A sites in the settlement hierarchy in the western part of Jebel Sabaloka. This has been proved with the sites of Sphinx and Fox Hill, clearly ranging among the most significant late prehistoric sites in the research area. The very presence of community burial grounds attests to a stable form of settlement around Jebel Sabaloka before the introduction of domesticates.

The existence of the two community burial grounds in such a proximity brings to the fore the question of the very relation between the people occupying Sphinx and Fox Hill in terms of chronology and, as the case may be, in terms of their social relations. Another burning question is the degree of biological affinity between the Mesolithic and the Neolithic people buried at Fox Hill, at the same place and thus possibly respecting the same burial ground. This question may offer a new insight into an old problem of the so-called Neolithisation.

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\textsuperscript{37} Suková L. and Varadzin L. 2012.
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ملخص

يشتهر جبل سابالوكا الذي يقع بالقرب من الشلال السادس لنهر النيل بأهميته الإستراتيجية في توريد المواد الخام للصناعة الحجرية في وسط السودان. وقد كشفت الأبحاث الأثرية عن وجود العديد من آثار الاستيطان المنظم على الضفة اليسرى لنهر النيل، بما يقارب 30 موقعًا يعود إلى النصف الأول من الهولوسين. جاءت النتائج الرئيسية لحد الآن من موقعين مركزين - أبو الهول وجبل الثعلب - وهما يوفران دليلاً على احتلال مكثف من قبل الصيادين-القطافين المرتبطين بثقافة الخرطوم القديمة (الخرطوم المبكر، حوالي 5000 قبل الميلاد) في أبو الهول، وكذلك أوائل رعاة العصر الحجري الحديث شاهيناب (حوالي 5000 - 3800 قبل الميلاد) في جبل الثعلب. ويعتبر وجود مدافن الصيادين-القطافين من أكثر السمات المميزة لهذه المستوطنات، فهي تساهم في إثراء النقاشات حول طبيعة وفترة وهيكلة مجتمعات العصر الحجري الوسيط على المستوى الإقليمي وما فوقه.

الكلمات المفتاحية: جبل سابالوكا، العصر الحجري الوسيط، هيكل الاستيطان، مدافن بشرية، ثقافة مادية.