



HAL
open science

Living among blacksmiths ? Preliminary archaeological results of the 2023 campaign at the Kpeta 2 settlement (Benin)

Delvoye Adrien, Caroline Robion-Brunner, Didier N'Dah, Camille Mangier, Gwenaël Hervé, Emmanuelle Delque-Količ, Julien Maintenant, N'Tcha Gérard Tidou Kouagou, Francois Leveque, Nestor Labiyi, et al.

► **To cite this version:**

Delvoye Adrien, Caroline Robion-Brunner, Didier N'Dah, Camille Mangier, Gwenaël Hervé, et al.. Living among blacksmiths ? Preliminary archaeological results of the 2023 campaign at the Kpeta 2 settlement (Benin). Nyame Akuma, 2025, 103. <hal-04810714v2>

HAL Id: hal-04810714

<https://hal.science/hal-04810714v2>

Submitted on 17 Jul 2025

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire HAL, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



HAL Authorization

LIVING AMONG BLACKSMITHS? PRELIMINARY ARCHAEOLOGICAL RESULTS OF THE 2023 CAMPAIGN AT THE KPETA 2 SETTLEMENT (BENIN)

Adrien Delvoye,¹ Caroline Robion-Brunner,² Didier N'Dah,³ Camille Mangier-Merceron,^{2,4}
Gwenaël Hervé,⁵ Emmanuelle Delqué-Kolic,⁶ Julien Maintenant,^{2,7} Gérard Tidouo Kouagou,^{2,3}
François Lévêque,⁸ Nestor Labiyi,³ Angelo Ayedoun Affolabi,³ Ibiwoumi Modeste Yenafo,³
Giorgia Ricci,² Iwikotan Arnaud Tchédé,³ and Charlotte Rejaud²

adrien.delvoye@unige.ch

¹ARCAN Laboratory, University of Geneva

²UT2J - CNRS UMR 5608 TRACES

³University of Abomey-Calavi

⁴Institut national de recherches archéologiques préventives

⁵LSCE/IPSL, CNRS UMR 8212 CEA UVSQ, Université Paris-Saclay

⁶LMC14, LSCE/IPSL, CNRS UMR 8212 CEA UVSQ, Université Paris-Saclay

⁷ACTER archéologie

⁸LIENSs, UMR 7266 CNRS - La Rochelle Université

Introduction

Since 2019, the AFRICA project 'Archéoméallurgie du Fer : Ressources, identités et commerce en Afrique' (led by C. Robion-Brunner, D. N'Dah and E. Batchana) has been investigating the place of iron in medieval and modern West African societies (Robion-Brunner *et al.* 2022; Robion-Brunner 2024). It documents the variability of resources, manufacturing techniques, distribution networks and consumption patterns. Beyond endogenous traditions, the project also aims to assess the extent of the importation of European iron, between the sixteenth and nineteenth centuries as part of the 'Atlantic' trade, and its impact on African iron-making activities. This research is carried out in two areas known for their significant iron production over the last millennium: the Bassar country in Togo and the Mono-Couffo region in Benin.

This article focuses on the second zone, where a group of metallurgical sites (slag heaps, eroded furnaces) and domestic occupations (anthropogenic

mounds, surface deposits) were identified during pedestrian surveys in the Aplahoué locality (Figure 1a). Among them is Kpeta 2, a mound located some 200 m south of the metallurgical waste pile named Kpeta 1 (Figure 1b). The latter was mainly used between the fourteenth and early fifteenth centuries. Today used for agriculture, the surface of Kpeta 2 is covered with numerous fragments of ceramics and macro-lithic tools (handstones, grinding slabs fragments). In 2021, a large concentration of contiguous sherds in an erosion zone to the north of Kpeta 2 mound suggested the presence of pavements. Documented from the northern Dendi region (Haour 2019) to the south of Benin (Randsborg & Merkyte 2009) and Nigeria (Roth *et al.* 2021; Roth 2023), these interior and exterior floor coverings are made up of pottery sherds laid out flat and/or on the side. Considering these remains, could Kpeta 2 correspond to an ancient settlement contemporary with the iron-smelting activities carried out on the neighboring Kpeta 1 site?



Figure 1. a) Location of Kpeta 2 settlement among the cluster of archaeometallurgical and domestic sites identified in the department of Couffo (Southern Benin) in the frame of the AFRICA project; b) detail on areas excavated in 2023. (GIS and topography by C. Mangier-Merceron.)

In 2021, test survey consisting of one 3x2 m unit was carried out by N. Labiyi and students from the University of Abomey-Calavi. This provided the first opportunity to test the site's potential. This work confirmed the presence of an ancient pavement made up of flat sherds, approximately 0.15-0.25 m below the surface, continuing westwards under the berm. It rested on a dark layer about 0.40 m thick, containing many small

smithing slags. Two sets of bones were also discovered in the lower levels. The first, corresponding to animal remains, lay some 0.55 m below the surface. The second set was human and associated with a burial pit dug between 0.75 m and 0.85 m below the pavement level. Radiocarbon dating of charcoal taken from the profiles placed these remains between the early fourteenth and seventeenth centuries (Table 1).

Table 1. List of samples and related C14 radiocarbon datations from Kpeta 2 after the 2021 campaign

Lab Code	Sample	Radiocarbon date	Calibrated age (2-sigma)*
Muse23027/ECHo5538	Human bone apatite (US 1007)	360 ± 20 BP	1496 CE (95.4%) 1640 CE
SacA66213	Charcoal from slag (US 1011)	460 ± 30 BP	1430 CE (84.2%) 1504 CE 1593 CE (11.3%) 1616 CE
SacA66214	Charcoal from slag (US 1011)	590 ± 30 BP	1322 CE (21.1%) 1350 CE 1388 CE (74.3%) 1437 CE
SacA66215	Charcoal from slag (US 1011)	665 ± 30 BP	1296 CE (95.4%) 1399 CE
SacA66216	Charcoal from sediment associated with the pavement	410 ± 30 BP	1451 CE (52.4%) 1515 CE 1540 CE (43.0%) 1627 CE

*OxCal v4,4,4 Bronk Ramsey (2009); r:5 / Atmospheric data from Hogg *et al.* 2020

Methodology

Nevertheless, fundamental points remained to be clarified. The main objectives of the 2023 campaign in Kpeta 2 were to determine the occupation chronology and to provide a preliminary overview of the site's spatial organization. To this end, our excavation strategy combined information gathered from both test pits and extensive surveys in different areas of the mound. These investigations were guided by a geomagnetic survey conducted by F. Lévêque, during which only two low-intensity anomalies were detected in the western part of the mound that may be related to hammer-scale.

Two excavation sectors were then opened. The first, located to the north of the mound and comprised of the first test pit realized in 2021, led to a 48 m² excavation area (see Figure 1b). This resulted from the combination of three adjacent areas of 21 m², 15 m² and 12 m² (Areas 1, 2, 4) that were successively opened to follow the pavement extension. The reopening of the 2021 test pit also allowed us to record the stratigraphy in the upper portion of the site. Simultaneously, a second 40 m² area was opened on the south-western edge of the mound (Area 3) where there is a relatively steep slope. Excavations in this part of the site were aimed at providing a better understanding of its extent and stratigraphy. A 2x1 m test pit was opened for this purpose.

In 2023, the manual recording of remains (ground plans and profiles) was supplemented by photogrammetric surveys, enabling the creation of 3D models and orthophotographs. This method facilitated the cre-

ation of detailed plans and saved precious time during fieldwork if the density of archaeological remains was important.

Excavations on the top of the mound

First, the reopening of the 2021 test pit allowed us to reassess the stratigraphy of this upper part of the site. This work revealed that the pavement level (St. 1) rests on eight anthropogenic layers, themselves probably contained in an artificial depression (US 1004a-St. 14) dug on top of the natural substrate (US 1005). This depression could correspond to the pavement's extension and its immediate surroundings. The stratigraphy directly below pavement St. 1 contained two beds of clayey sediment (US 1013 and 1013bis) separated by a horizontal level of small slag nodules (US 1011), interspersed on either side with two thicker clay-loam layers (US 1003bis and US 1004b). It could materialize foundation and/or circulation levels predating this pavement.

The reexamination of this test pit clarified the presence of human bones discovered in 2021, 1 m below the surface. These were contained in a rectangular cavity at least 70 cm wide, slightly bulging at its western end (US 1008a-St. 13). This pit is continued by a vertical shaft which opening was observed at the bottom of US 1003 bis but may be slightly higher (base US 2026). The deep lateral pit (US 1010b) and the funerary shaft (US 1007) show two distinct moments of filling. On the surface, this funerary structure is marked by a small upright stone, initially included in a rectangular orange earthen clayey mass measuring 1x0.6 m (Figure 2,



Figure 3a, c). Radiocarbon dating of a bone fragment placed the individual's death between the end of the fifteenth and the first half of the seventeenth centuries

(see Table 1). A similar device for sealing and marking the burial on surface may have been discovered to the south of the excavation area (St. 7).

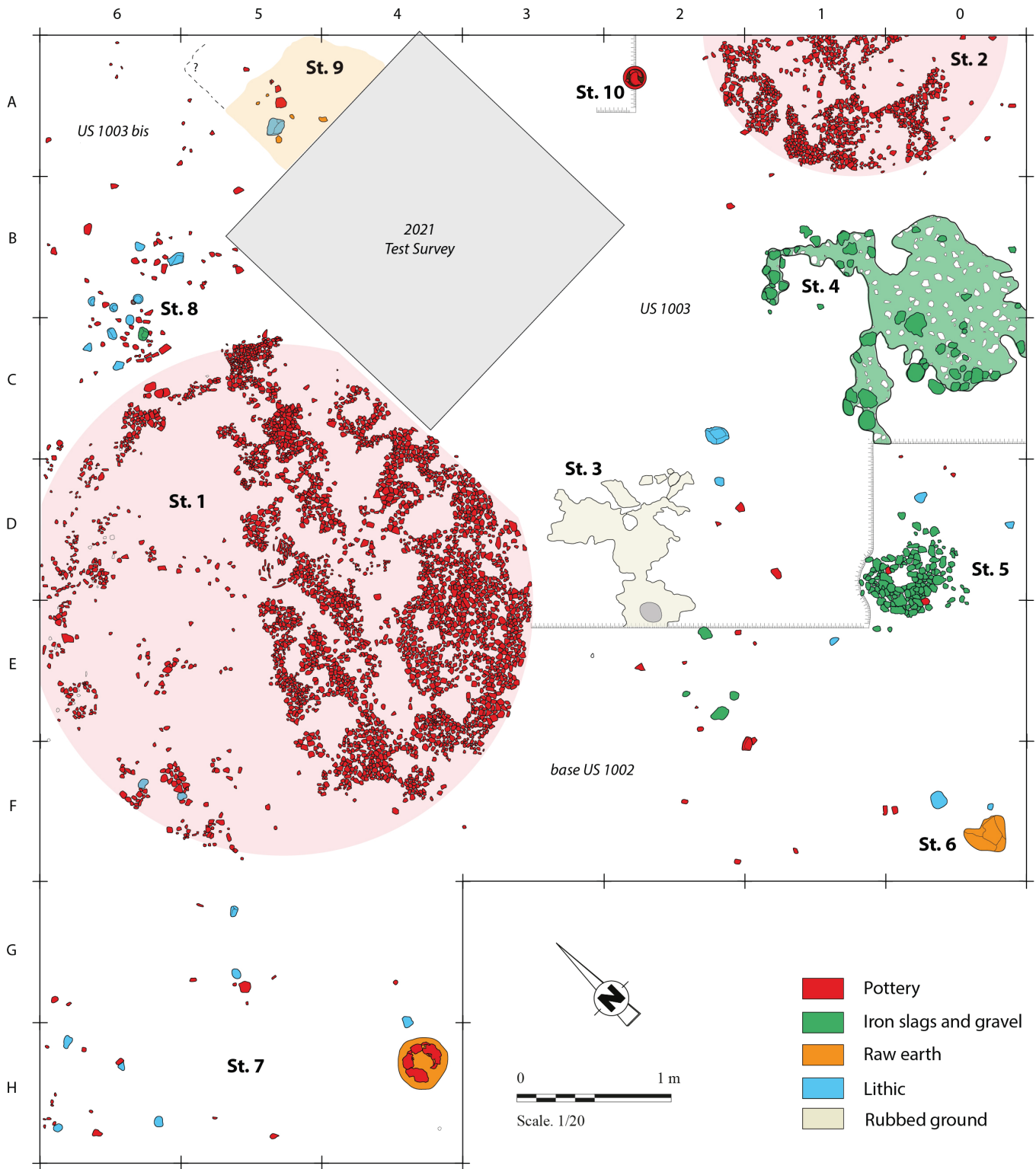


Figure 2. Plan of archaeological structures excavated on top of Kpeta 2 at the end of the 2023 campaign. The two red oval-shaped forms represent the estimated extension of ceramic pavements St. 1 and St. 2. (Drawings and CAD by A. Delvoye and C. Mangier-Merceron.)



Figure 3. a) General view of the northern sector where a concentration of grinders and pottery (St. 8) (b) have been found between ceramic pavement St. 1 and the funerary stela St. 9 (c). (Photos by A. Delvoe.)

Most of the archaeological remains and structures discovered in 2023 seem, however, to be domestic in nature, as the two ceramic pavements illustrate. The most important is St. 1. This oval-shape structure of 3.5x3.4 m is mainly made up of sherds laying down, including red-slipped elements (see Figure 4a, b). A few impressions of roulette or incised decorations are occasionally visible, as well as some rims. Clearing of the structure reveals two distinct states of preservation, separated by a central and rectilinear demarcation. While the eastern part of the pavement is well preserved overall, its western side is very degraded. The depressions in the form of contiguous furrows could indicate disturbance due to agricultural activities (Figure 4c). The pavement edges are slightly higher than its center (Figure 4d), possibly resulting from repeated trappings on the paved area. Circular depressions (8 to 20 cm in diameter) - sometimes grouped

in pairs and carefully framed by sherds - suggest the use of stakes or posts, and therefore a covered space (Figure 4e). A second pavement (St. 2) was identified about 3 m to the east, on the edge of the excavation zone. The visible part of this pavement also forms an oval shape made of flat sherds. Its edges are elevated and include several circular features (8 to 14 cm in diameter) similar to stakeholes or postholes.

Two structures made up of iron slags were discovered to the southwest of pavement St. 2. The first is an aggregate of decimetric blocks comprised in a sediment rich in slag gravel (St. 4). The north of this structure shows blocks aligned along two perpendicular axes, and a few superimposed blocks on two to three levels on its southern part. St. 4 is located in a depression at least 15 cm deep. The second structure corresponds to a small circular concentration of centimetric nodules carefully arranged around a central

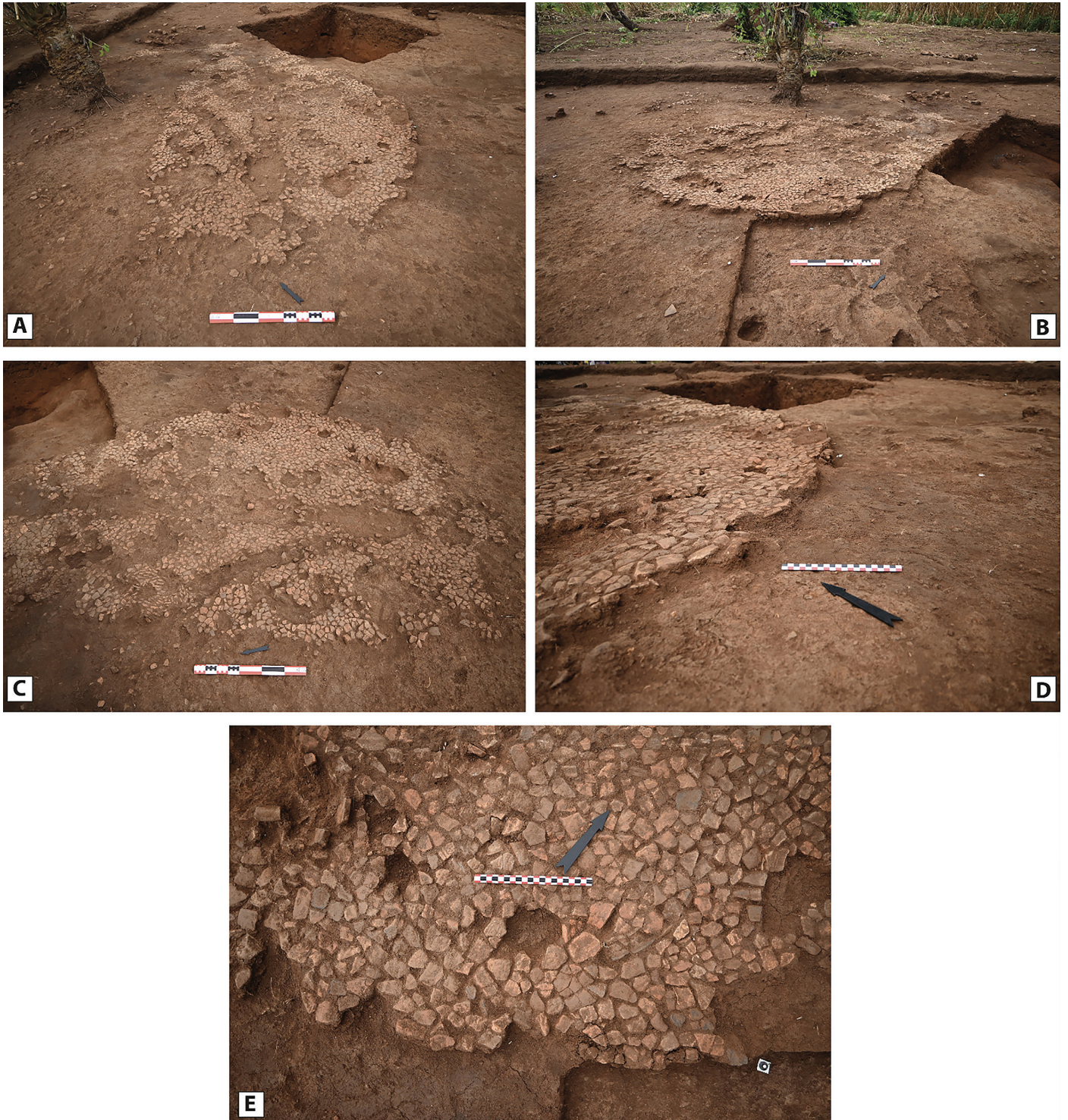


Figure 4. a, b) Extension of ceramic pavement St. 1; c) detail on its degraded parts. The edges of its eastern side appear slightly higher than the interior (d) just above the external rubbed ground (e) and reveals postholes. (Photos by A. Delvoye.)

depression (St. 5). While St. 5 seems to mark a post-hole, St. 4 could be a slag dump or a disturbed domestic structure, such as the base of a granary.

All these structures rest on defined levels, marked in particular by a compact and laminated floor evoking an outside circulation level (St. 3) directly adjacent to the St. 1 paved area. Further excavations should determine its extension. Furthermore, various concentrations of one to eight elements were recorded, notably near pavement St. 1 (St. 7 and 8). These consist of entire or fragmented handstones and pottery, sometimes referring to several depositional episodes. Indeed, St. 8 is first marked by the deposition of a carinated pot, then two lithic pieces, and finally a set of five spherical handstones and a very small truncated cone-shaped pot with a central depression (see Figure 3b). The proximity of this deposit to the St. 9 funerary structure, and the fact that this ceramic is seen by local people as a pottery used in voodoo rites, interrogates about its purpose.

A similar question arises for a whole pot (St. 10) discovered in the immediate vicinity of pavement St. 2, and which was held upright by a small slag nodule placed at its base. It contained animal bones, covered by two large sherds with morphological traits reminiscent of potter's scrapping tools. Similar examples have been documented in tombs 1 and 2 at the Kana-Damehouégbo site, south-east of Abomey (Merkyte & Randsborg 2009; Randsborg & Merkyte 2009: 115-116).

Excavations on the slope: Area 3

The test survey realized in the eastern corner of Area 3 reveals a very similar stratigraphic organization as to the upper part of the mound, at least for the upper levels (Figure 5a). The first in situ archaeological structures are located at the top of US 1003. These are sealed by US 1001 and 1002, and are very thick due to the slope on this side of the mound. These two erosion layers, deposited after the site was abandoned, contained numerous remains of ceramic vessels and fauna.

In the lower levels, a high concentration of iron slag blocks and gravel appeared at the top of US 1003, marking the upper fill level of a large pit (Fosse 1-St. 2) cut into the natural substrate and sloping steeply to the southwest (US 1006) (see Figure 5b, c). Several circular depressions on the surface of US 1006 may correspond to postholes. The creation of St. 2 may be contemporary with a second hollow structure (Fosse 2, US

1008 a - St. 3) located behind the former but which was identified only on the western side of the test survey. The detection of several episodes of filling allowed for the partially reconstitution of the formation process of these structures. In fact, the sealing of St. 3 appears to be contemporary with a first filling of St. 2. Both structures are then totally or partially covered by a red clay layer containing few small iron slags (US 1007). St. 2 is then filled with iron slag blocks (see Figure 5b, c).

Open area excavations conducted in this sector yielded a wide range of archaeological remains and structures, complementing data from the adjacent test pit (see Figure 5b). Considering the important thickness of US 1001 at the bottom of Kpeta 2 (nearly 80 cm), excavations in this part of the mound were only continued up to row AB. Upper levels (US 1000, 1001 and 1002) contained a large quantity of material, probably originating from the upper parts of Kpeta 2: fragments of pottery, fauna, as well as a few ferrous alloy objects, pipe fragments and cowrie shells. The last two categories are of particular interest as they may reflect long-distance exchanges. Among them, cowrie shells undoubtedly stand as emblematic remains of these ancient trade networks. Twelve of them were discovered in these recent levels. A preliminary analysis shows that eleven cowries belong to the species *Monetaria moneta*, compared with one *Monetaria annulus* uncovered in the surface US 1000 (Christie *et al.* 2019). While the latter were used extensively by European merchants trading on the coasts of Africa from the sixteenth century onwards, their mere presence can hardly be considered as a reliable chronological marker (Haour & Christie 2019: 315). US 1000 and 1001 also yielded four pipe fragments. Although two elements with truncated cone-shaped bases are likely to have been produced locally, two white-paste fragments were imported from Europe.

Extensive surveys also revealed two highly degraded portions of ceramic pavement (St. 1, US 2001 - St. 5, US 2003) at the top of US 1003. Their stratigraphic position was equivalent to the iron slag concentration forming the upper filling of St. 1. These degraded ceramic pavements, similar to the well-preserved architectural features identified in the upper part of the mound, are located on either side of a circular hearth approximately 13 cm in diameter and 10 cm deep (St. 4, US 2002) with a handstone and a lithic piece on its edges. Two probable postholes were also

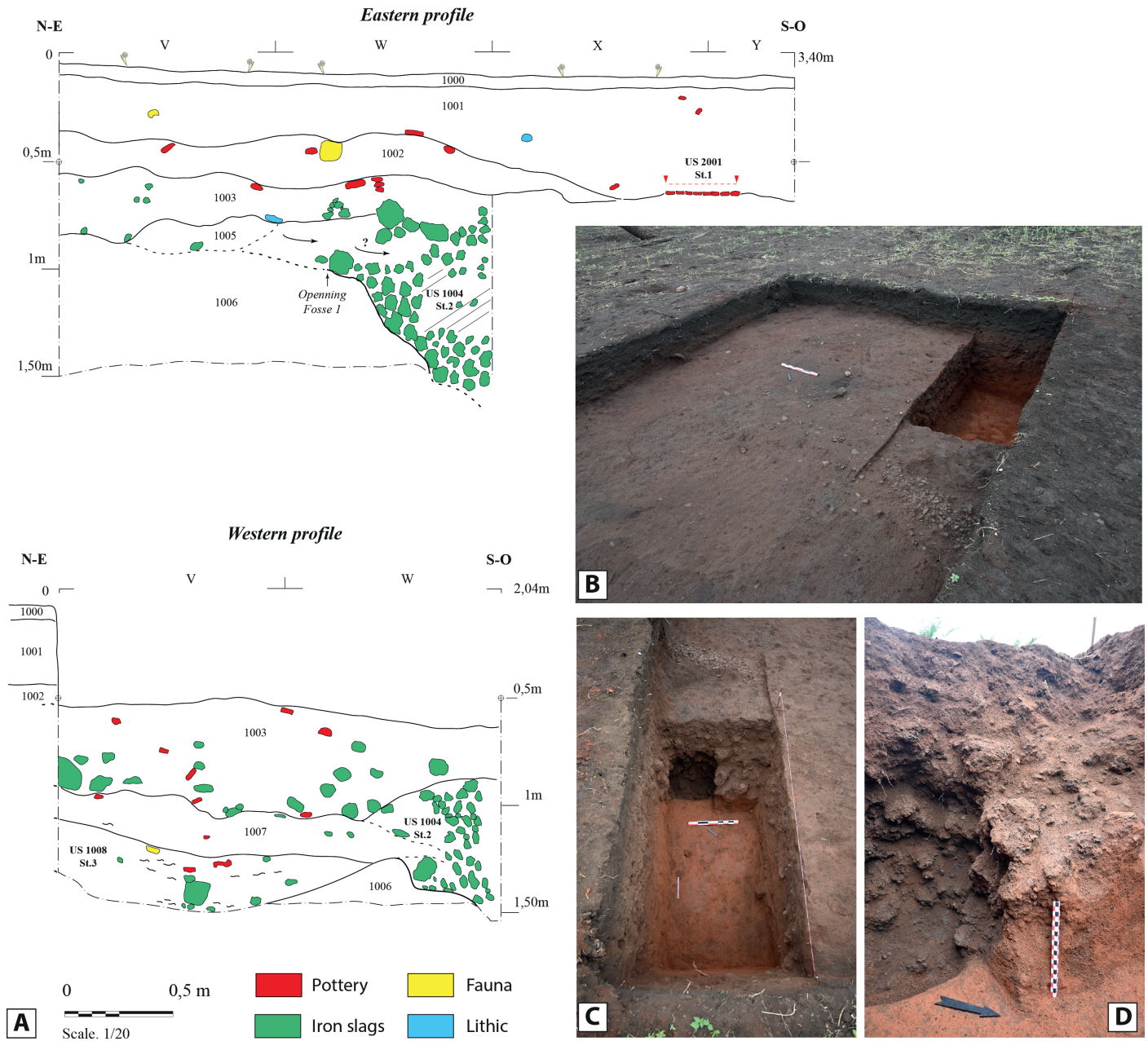


Figure 5. a, b) Stratigraphy recorded from the north-eastern test survey; c, d) revealing the presence of a large depression (Fosse 1) filled with iron slags. (Drawings, CAD and photos by A. Delvoye and C. Mangier-Merceron.)

uncovered in the lower part of Area 3 (St. 6, US 2004 and St. 7, US 2007). All these structures were overlain by US 1001 and 1002, two major erosion layers containing large quantities of material coming from the upper parts of the mound.

Conclusion and perspectives

Preliminary results from the 2023 field season underline the great archaeological potential of Kpeta 2 for

documenting the lifestyles of people living around the Gulf of Guinea between the medieval and modern periods. The spatial proximity and synchronicity of radiocarbon dates of Kpeta 2 with nearby metallurgical sites such as Kpeta 1 also suggest that this settlement may have been occupied by ancient blacksmiths. The omnipresence of iron slags on this site, sometimes employed in some architectural structures, could be another clue for such an interpretation.

Moreover, the good preservation of ceramic pavements, hearths, external floors and concentrations of furniture (pottery, macro-lithic tools) allows us to discern with great precision that these were domestic spaces. The presence of one or more funerary structures and perhaps ritual deposits nonetheless raises questions about the function(s) of this site: could Kpeta 2 be considered a settlement with integrated funerary or ritual structures? Such an association between the living and the dead would not be surprising in a region where it is not uncommon to bury some deceased under a room floor or in the courtyard of a compound (Haour 2019), and to integrate ritual altars into domestic spaces (see Sewane 2003, 2004; Insoll *et al.* 2013).

Future research at Kpeta 2 will aim to explore these aspects in greater detail, as well as the spatial organization of the occupation and its chronological extension. This latter point should shortly benefit from results of radiocarbon dating carried out on samples collected during the 2023 campaign. From a methodological point of view, the acquisition of such archaeological documentation is only possible by conducting large open-area excavations. Future research will therefore focus on extending excavation areas, particularly at the top of the mound, in order to gain a better understanding of the extent and structuration of the upper levels of occupation corresponding to the paved areas. In this sector, a geo-archaeological study will need to verify the hypothesis of prepared and maintained outside floors. A similar approach could be extended on the slopes and in the lower part of the mound to verify the extent of the recent occupation, as well as the form and function of earlier structures.

From ceramics to macro-lithic tools, from faunal remains to metallic objects, the detailed study of the Kpeta 2 material culture will also stand as a major challenge of our research over the coming years. Beyond their own characteristics, some of these items bear witness to exogenous relations, enabling us to assess more precisely the impact on African societies of the development of trade relations with European merchants from the sixteenth century onwards. Other elements, such as funerary and ritual practices, could make it possible to trace back cultural beliefs whose historical depth is still difficult to apprehend.

Acknowledgements

This research was made possible thanks to the financial support of the Ministry for Europe and Foreign Affairs and the French Embassy in Benin. Our gratitude goes to Mr. Marc Vیزی, Ambassador of France to Benin, and his collaborators Ms. Isabelle Le Guellec and Mr. Guillaume Da for their continued support. This project also received financial support from the CNRS through the MITI interdisciplinary programs (TIMA and OBTAAIN projects). Radiocarbon analyses on charcoals were acquired thanks to the ARTEMIS national radiocarbon AMS measurement programme at Laboratoire de Mesure 14C (LMC14) in the CEA Institute at Saclay. We are grateful to Lisa Garbé, Olivier Tombret and François Thil for courtesy preparation and radiocarbon measurement of the bone fragment on the ECHoMI-CADAS AMS device. The constant administrative and logistical support of the University of Abomey-Calavi was also decisive. During fieldwork, excavations benefited from the motivation of a team of eleven workers living around Kpeta 2. We extend our warmest thanks to them.

References cited

- Bronk Ramsey, C.
2009. 'Bayesian analysis of radiocarbon dates'. *Radiocarbon* 51 (1): 337-360.
- Christie, A.C., Grant, A. & Haour, A.
2019. 'Cataloging cowries: A standardized strategy to record six key species of cowrie shell from the West African archaeological record'. *African Archaeological Review* 36: 479-504. DOI: <https://doi.org/10.1007/s10437-019-09351-z>
- Haour, A. (ed.).
2019. *Two Thousand Years in Dendi, Northern Benin: Archaeology, History and Memory*. Leiden/Boston: Brill.
- Haour, A. & Christie, A.
2019. 'Cowries in the archaeology of West Africa: the present picture'. *Azania: Archaeological Research in Africa* 54 (3): 287-321. DOI: <https://doi.org/10.1080/0067270X.2019.1648726>



- Hogg, A., Heaton, T., Hua, Q., Palmer, J., Turney, C., Southon, J., Bayliss, A., Blackwell, P., Boswijk, G., Bronk Ramsey, C., Petchey, F., Reimer, P., Reimer, R., & Wacker, L.
2020. 'SHCal20 Southern Hemisphere calibration, 0-55,000 years cal BP'. *Radiocarbon* 62 (4): 759-778. DOI: <https://doi.org/10.1017/RDC.2020.59>
- Insoll, T., MacLean, R. & Kankpeyeng, B.
2013. *Temporalising anthropology: Archaeology in the Talensi Tong Hills, Northern Ghana*. Frankfurt am Main: Africa Magna Verlag.
- Merkyte, I. & Randsborg, K.
2009. Graves from Dahomey: Beliefs, Ritual and Society in Ancient Benin. *Journal of African Archaeology* 7 (1): 55-77. DOI: <https://doi.org/10.3213/1612-1651-10126>
- Randsborg, K. & Merkyte, I. (eds)
2009. *Benin Archaeology. The Ancient Kingdoms*. Oxford: Wiley-Blackwell.
- Robion-Brunner, C., Coustures, M.-P., Dugast, S., Tchete-Gbandi, A. & Béziat, D.
2022. 'Origins and stages in the diversity of ironmaking techniques in West Africa: the case of iron production in Bassar country (northern Togo) from the 13th to the 20th centuries'. *Afriques. Debates, Methods and Fields of History* 13. DOI: <https://doi.org/10.4000/afriques.3408>
- Robion-Brunner, C.
2024. 'Contribution of paleometallurgical data to the history of West African societies during the Ghâna, Mâli, Gao and Mossi kingdoms'. *Afriques. Debates, Methods and Fields of History* 14. DOI: <https://doi.org/10.4000/afriques.4008>
- Roth, L.
2023. 'Paver Ifé : Archéologies et espaces connectés d'un centre urbain ouest-africain (1000-1400 CE)'. Ph.D. thesis, Università degli studi di Pavia/Université Paris 1 Panthéon-Sorbonne.
- Roth, L., Chouin, G. & Ogunfolakan, A.
2021. 'Lost in space? Reconstructing Frank Willett's excavations at Ita Yemoo, Ile-Ife, Nigeria: Rescue excavations (1957-1958) and trench XIV (1962-1963)'. *Afrique: Archéologie & Arts* 17: 77-114. DOI: <https://doi.org/10.4000/aaa.3328>
- Sewane, D.
2003. *Le Souffle du mort : la tragédie de la mort chez le Batãmmariba du Togo et du Bénin*. Paris: Pocket.
2004. *Les Batãmmariba, le peuple voyant : carnets d'une ethnologue*. Paris: La Martinière.