



AHMED HAMID NASSR & MIROSŁAW MASOJĆ

THE EDAR PROJECT – ARCHAEOLOGICAL COLLABORATION OUTCOMES BETWEEN THE UNIVERSITY OF AL NEELAIN AND THE UNIVERSITY OF WROCLAW IN THE EASTERN DESERT, SUDAN

INTRODUCTION

Recent progress in the field of research of Sudanese prehistory has increased due to scientific initiatives being taken between foreign and local archaeological institutions. Moreover, the history of Sudanese archaeology demonstrates that major discoveries and advances have been achieved as a result of joint enterprises. Therefore, the Department of Archaeology at the University of Al Neelain, Sudan and the Institute of Archaeology at the University of Wrocław, Poland started a formal, scientific and didactic collaboration in 2013. The discoveries made during an initial survey conducted in the Eastern Desert, in the lower reaches of the Atbara river, about 70 km from the town of Atbara, encouraged both parties in establishing a joint research project with the primary focus on prehistory.

Thus, the collaboration was transformed into the *Eastern Desert Atbara River Project* (EDAR), established in 2016, by the authors of this paper. In 2016–2017, an archaeological survey had been undertaken by the University of Al Neelain, assisted by funds from the Ministry of Higher Education and Scientific Research Sudan (MHESR). This survey aimed at mapping the Stone Age sites within the EDAR area. In early 2017, a three-year joint project was established between the University of Wrocław, the University of Al Neelain, and the National Cooperation of Antiquities & Museums (NCAM). This project aims to recognise the oldest traces of hominins presence in the Pleistocene and the environmental context within the EDAR area. It is funded by the Polish National Science Centre (NCN) (Masojć, Nassr 2017).

THE EDAR PROJECT

The EDAR joint project is a research and educational enterprise, focusing on the archaeology of the stone

age in the Eastern Desert, in the lower reaches of the Atbara river. It was established due to following major factors:

- The presence of Early Stone Age (ESA) sites in the Eastern Desert indicates potential remains of the Acheulean hominins' migration towards the Red Sea coast and further to the North;
- The educational aspects of this collaboration involving the institutions from Sudan and Poland.

The first Palaeolithic sites were discovered in early 2014 (Nassr 2014). In late 2014 a joint exploration trip was conducted by the authors. Based on this initial field recognition, in 2015, a memorandum of understanding was signed between the Department of Archaeology, University of Al Neelain and the Institute of Archaeology, University of Wrocław. Since then several workshops, public lectures, and staff exchanges have been organized. In September 2016, the first comprehensive archaeological survey was undertaken in the EDAR area, funded by the MHESR. Systematic geoarchaeological investigations have already taken place in two of the following seasons: 2017 and 2018, financed exclusively by the NCN (grant number 2015/19/B/HS3/03652). Besides the two leading institutions, investigations are being conducted by an international team of scholars from various institutions who have been invited to the project, namely, NCAM, Shendi University (Sudan), Gdańsk Archaeological Museum (Poland), Korean Institute of Geoscience and Mineral Resources (KIGAM; Republic of Korea), Gyeongsang National University (Republic of Korea), IBS Center for Climate Physics (ICCP) of the National University of Busan (Republic of Korea). Laboratory analyses are being conducted by KIGAM as well as by several Polish laboratories. For the purpose of dissemination of the EDAR project results, a web page has been designed (<http://sudan.archeo.uni.wroc.pl/>).



The EDAR concession area, provided by the NCAM to the authors, stretches along the right bank of Atbara river, in the south of the city; from the Hudi depression in the north up to the Adarama area in the south and about 80 km from those points into the desert (Fig. 1).

The fundamental goals of the EDAR project are the recognition and recording of prehistoric sites and their paleoenvironmental context in the Eastern Desert, within the lower course area of the Atbara river. Every season, a field school for the students of archaeology is held simultaneous to the research work.

The EDAR project partially has a rescue purpose. Since an uncontrolled extraction for gold is being conducted in the Eastern Desert, most of the sites under investigation are seemingly being found within the mines and shafts constructed by these gold miners. Many of them have been completely destroyed and now are observable only in terms of mine piles.

HISTORY OF RESEARCH IN THE EASTERN DESERT

Although the archaeological fieldwork conducted in Sudan is rather extensive, the Eastern Desert remains generally an unexplored area. A few notes concerning the Atbara area include, the description of hand-axes from Khor Hudi (Arkell 1949: 34). In the upper part of the Atbara river, Arkell noted fossilised mammal bones, and early Acheulean stone tools from a high terrace of the Atbara river, upstream of the Butana Bridge (Arkell 1949: 35). In his book, Whiteman noted that Berry and Whiteman studied the exposed geological sections on the eastern bank of the river. They demonstrated that the river cuts into a thick series of sand, gravels, and clays, exposed from the bridge up to the plains, extending towards the Kassala area in the upper part of Atbara valley (Whiteman 1971: 47). A group of Palaeolithic sites described along the Atbara river, from the upper part, shows many bifacial stone artefacts (Chmielewski 1987). In 1966, Shiner and Chmielewski discovered several MSA sites during their archaeological survey in the adjacent steppe, near the town of Khashm el-Girba (Shiner & Chmielewski 1971: 58).

The eastern part of Butana, close to Atbara river, where the LSA sites are listed into many cultural horizons, and compared to the Ethiopian Nilotic, to the Early Khartoum/Shaheinab in central Sudan, and to the Pre-Dynastic period in Egypt (Fattovich & Piperno 1981: 27). Additionally, much archaeological fieldwork in eastern Butana have been con-

ducted for a long time, and many LSA sites have been investigated there (Marks et al. 1987, El-Amin 1987). Late Prehistoric settlements have been discovered and studied, close to Atbara town, on the right bank of the Atbara river (Haaland & Magid 1991). Stratified material of early ceramic, microlithic, and polished stone tools were found from the sites (Haaland & Magid 1995). Late Neolithic sites and further, many Holocene cultural horizons have been recorded already by the Italian Mission around Kassala, within the presently ongoing research (Fattovich 1993, Manzo 2015).

In the middle section of the Atbara river valley, a Pleistocene deposit's sequence has been examined. Numerous fossils and Middle Pleistocene artefacts from fluvial deposits were also found (Abbate et al. 2010). The latest discovery of the Acheulean sites, along the Red Sea coast and in the mountains, are backing the research in the Eastern Desert and bringing in new data for the discussion of hominin migrations, through the green corridors of the Pleistocene landscapes (Beyin et al 2017, Kobusiewicz et al. in press).

Thus, the conclusion is that the upper part of the Atbara river was the focus area, along with Butana and eastern Sudan; only a single exploration has been conducted of the middle section, and the lower part remains an untouched area. This is the reason for establishing the EDAR research project. Furthermore, the results of previous research have revealed a clear picture of the late Stone Age, through the addition of long cultural horizons and terminology. The MSA have limited recognition from the classification of the stone artefacts, collected from the surface and the test excavations, the ESA were lacking as well. This, along with questions related to the reconstruction of the Pleistocene/Holocene environment are the factors of EDAR, using which the lower part of the Atbara river and the Eastern Desert are to be tested.

SURVEY OF THE EDAR AREA

The above presented state of research shows that knowledge regarding the area is still in its initial stages in many aspects. So far, 145 localities have been found within the EDAR concession (Fig. 2)¹. The EDAR concession area was divided into small geographical sectors, within which all the new sites were marked during the survey. The chosen sites were

¹ For a Gazetteer of all the EDAR sites found so far see: <http://sudan.archeo.uni.wroc.pl/>

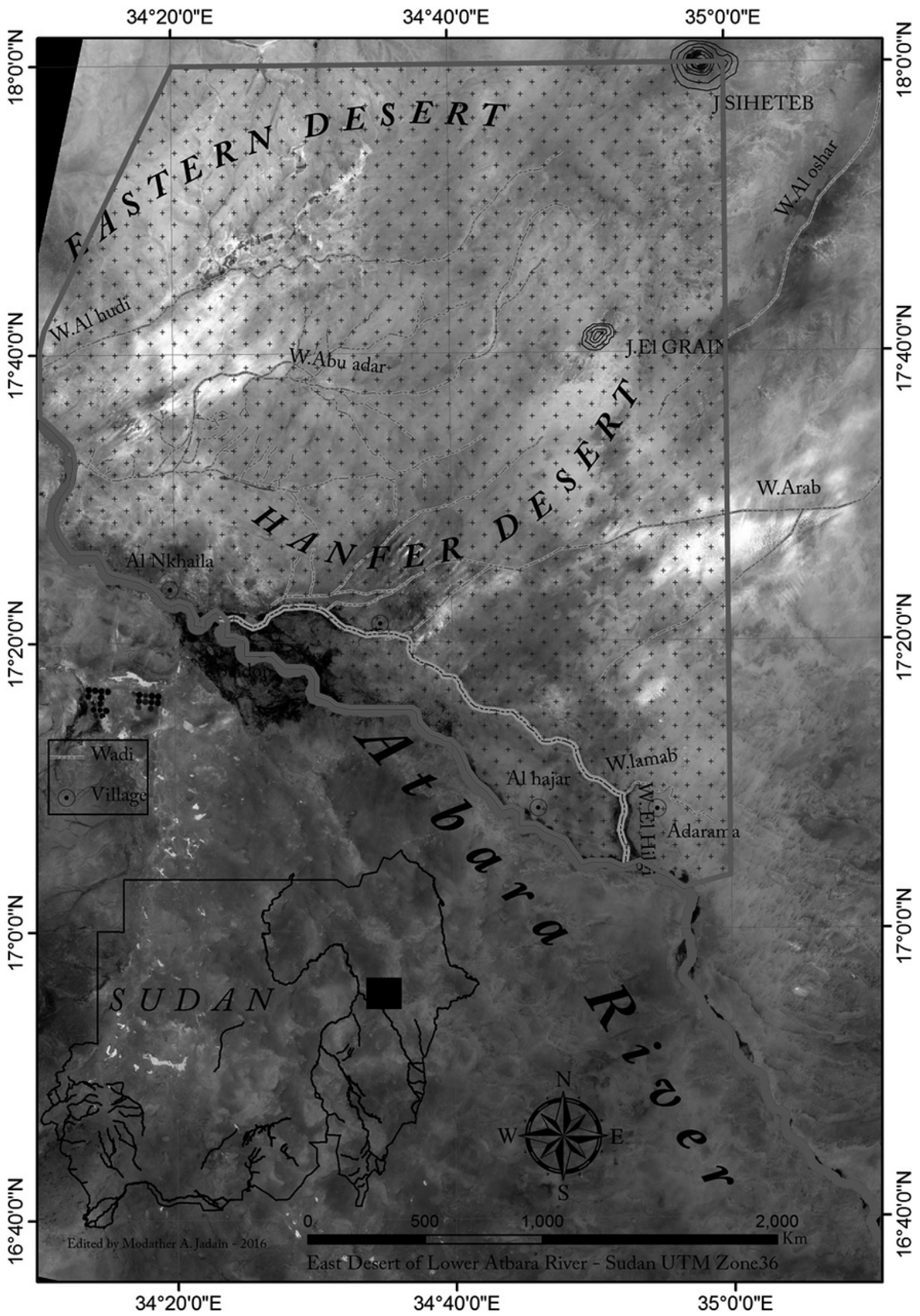


Fig. 1: Area of the EDAR project activity (drawing M. A. Jadain).

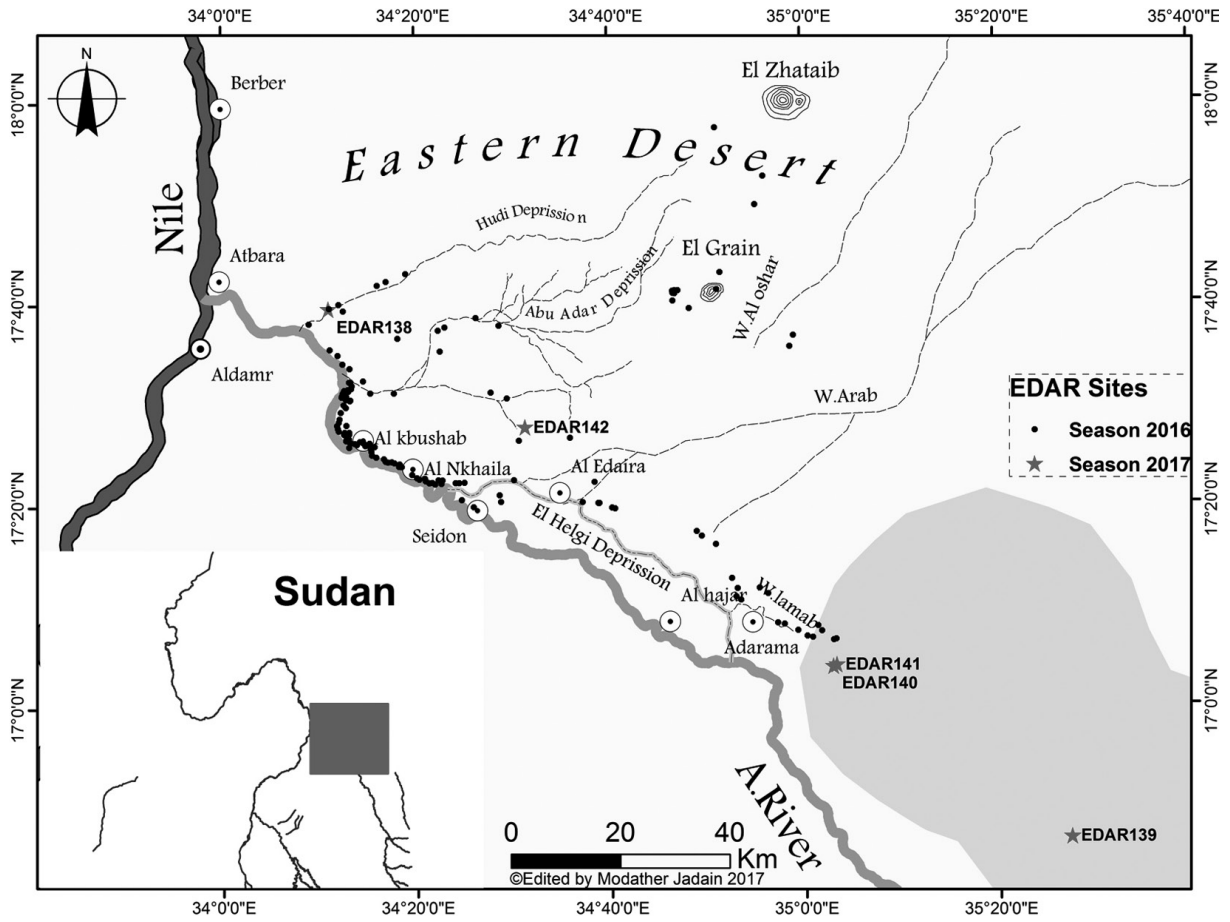


Fig. 2: Archaeological sites discovered within the EDAR area (drawing M. A. Jadain).

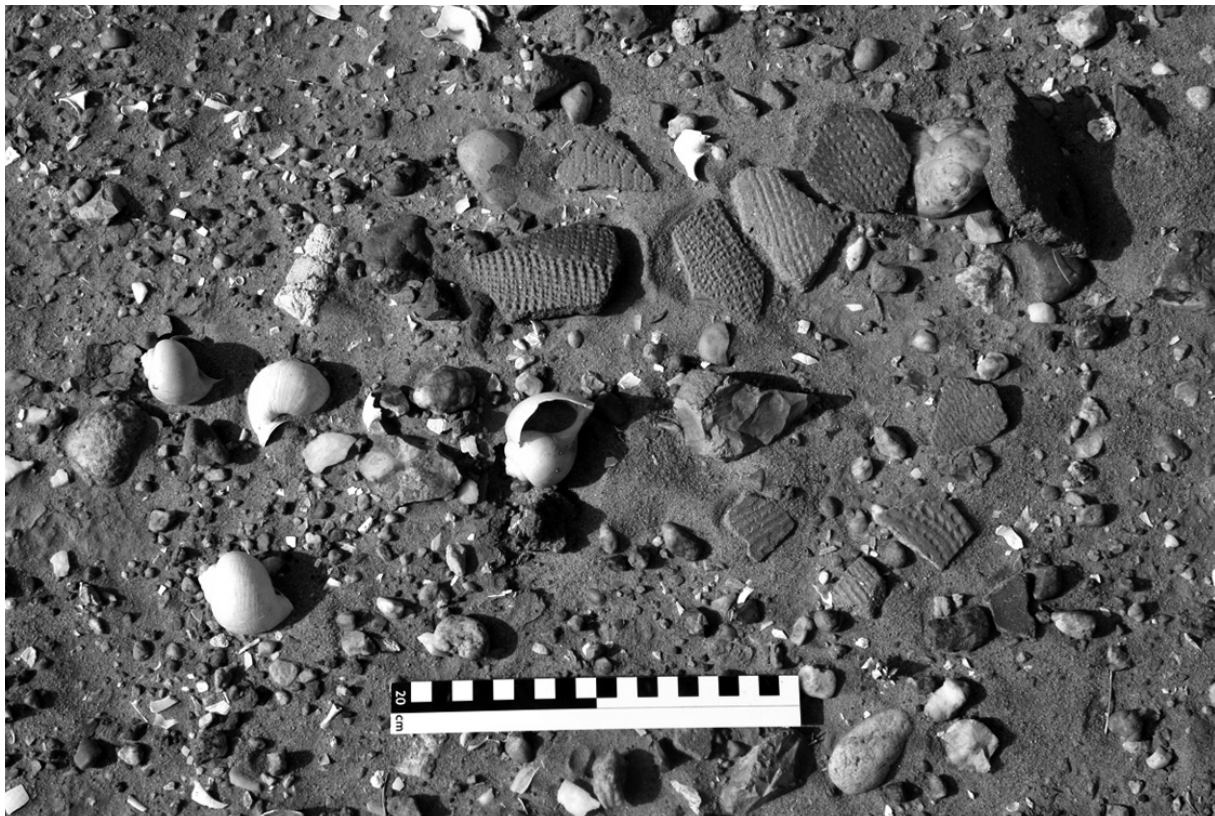


Fig. 3: Neolithic pottery from the site of EDAR 11.



Physiographic area	ESA	MSA	LSA	Kushite	Total
Atbara River bank	-	17	4	57	78
Elhudi depression	3	4	1	1	9
Abu Adar depression	2	6	3	4	15
Elgrian mountain area	5	2	1	1	9
Elhelgi depression	-	7	6	2	15
Atbara Paleo-lake	-	6	13	-	19
Total	10	42	28	65	145

Tab. 1: Summarized results of the survey within the EDAR concession

then surveyed in detail, including the mapping of the scatter patterns of artefacts on selected surfaces. Recognition of the stratigraphy and the distribution of artefacts on the chosen sites was realised using small test excavations.

The survey conducted within the EDAR concession resulted in the discovery of numerous Palaeolithic sites. A majority of them date back to the MSA, but there is a constant presence of Acheulean sites as well as LSA localities. Post Stone Age human occupation of the area was also considerably significant (Tab. 1).

The survey carried out in the northern part of the EDAR concession – the Hudi depression – resulted in the recording of sites primarily close to the Atbara river, i.e. the lower part of Wadi el-Hudi. Several Palaeolithic sites had been found there, essentially Acheulean and MSA sites, with hand-axes and Levallois products, respectively (EDAR 1, 100, 138, 143).

South of the Hudi depression there is the Abu Adar depression with several MSA sites, thus garnering prime focus. Additional Neolithic and MSA sites were recorded east of the village of Eldabora, sites such as EDAR 56, 57. Also an interesting Neolithic site was found there – EDAR 11 (Fig. 3). The Levallois flake and core represented the MSA material from the site surface, with wavy line and Shaheinab type ceramics identified from the surface and from excavation. One test excavation executed on the site revealed its stratified character and an abundance of lithics and organic material, within particular layers, down to a depth of 1.2 m.

The eastern part of the concession has been explored since 2014. Here, a vast surface Acheulean site, EDAR 06, was discovered with lithic materials scattered on the surface, over an area exceeding 4 hectares (Nassr 2014). A whole cluster of Acheulean sites located close to EDAR 06 were recorded:

EDAR 7, 16, 17, 130, 131, 132, 133. The sites show an accumulation of Acheulean products on the surface (Fig. 4). This area is now under investigation, including both the surface sites, such as EDAR 06, as well as stratified Acheulean sites found within the gold miners' shafts, such as EDAR 132, 133, 135.

Several Neolithic sites have been found on fields of sand dunes, stretching between Jebel Elgrian and the Alzahataib mountains, containing microlithics, Shaheinab type ceramics, and grinding stones. At the foot of the Alzahataib hills, a field of tumuli and an early, circular Islamic cemetery were also documented (Fig. 5).

The survey realised along the actual Atbara river bank revealed numerous archaeological sites, including MSA workshops (EDAR 34, 56, 57, 59 and 98) as well as tumulus graves, debris of Medieval settlement and heaps of salt productions (EDAR 64–96).

The El Helgi depression is located in the southern part of the concession. It stretches along the present Atbara river and its paleochannel, going parallel between the Adarama and the Seidon areas. On the eastern margin of the depression, north-east from the paleochannel, several heavily eroded MSA sites, in form of small and dense concentrations of lithics and fragmented bones, were discovered (EDAR 36–40, 42–46).

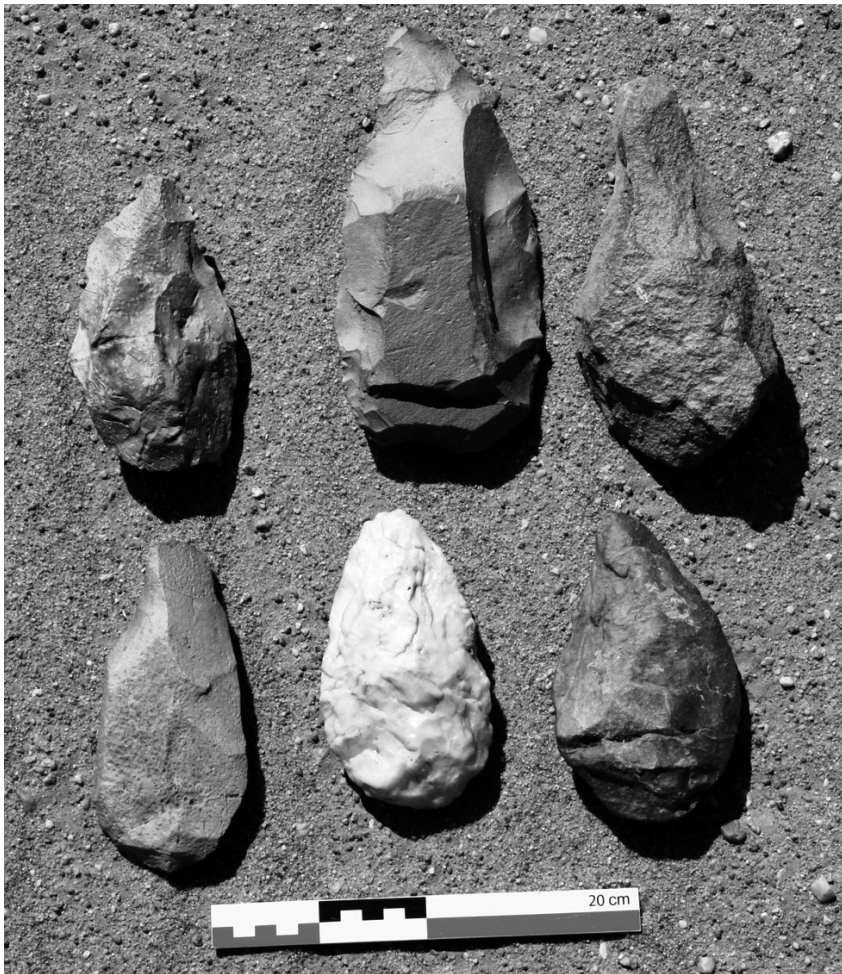


Fig. 4: Acheulean hand-axes from the surface of EDAR 16 site.



Fig. 5: Early Islamic graveyard on the site of EDAR 20.



Fig. 6: Example of gold miners' shafts within the EDAR area.

East from the El Helgi depression, a huge margin of a lacustrine basin is located, containing Holocene lake sediments together with several LSA remains, with microlithic, Shaheinab type ceramics, accumulated on its shores (EDAR 47–49, 51–55). The sites are heavily eroded, and the artefacts are spread over huge areas along the lake shore sediments. The area constitutes an important micro-region for potential future studies on the Holocene paleo-environment and human occupation. The presence of Pre-Holocene sediments and archaeological remains have not been excluded, and the importance of this area is especially significant due to the good preservation of organic remains.

THE EDAR PROJECT CHALLENGES

The destruction of the desert's landscape due to uncontrolled, hard-machinery gold mining is currently ongoing in vast areas of the Sudanese deserts. The Eastern Desert, including the area of the EDAR concession, is also threatened by this (Fig. 6). Innumerable, deep miners' shafts change the whole landscape, especially in the area close to depressions in

the desert, such as the areas of Wadi Aloschar, Abu Adar, and Jebel Elgrian. Mines cover a big part of the desert and are sometimes really spacious, with up to 200 x 300m and a depth reaching 30m even. Moreover, intensive agricultural development is also taking place in the area, from the Atbara river bank to more than 50km into the Eastern Desert. Both activities are not only destructive for the modern desert landscape but also for the archaeology of the region. Even though many prehistoric sites are being found, they are already either in the miners' debris or on the meliorating sediment hills.

Gold mines currently cover vast areas between the Atbara river and the Red Sea. Since this process seems to be rather unstoppable, one of the challenges for the survival of the prehistoric heritage is informing and educating people involved in mining. Employing those people in archaeological works is one of the solutions, along with the delivery of public lectures, conducting workshops, and alerting local media publications about the archaeological importance of the area. These activities should potentially create at least the awareness of the local history and the regional heritage and its importance.



CONCLUSION

The discovered Pleistocene sites, attributed to the ESA and the MSA are primarily located in the eastern part of the EDAR concession and the Elhudi depression, close to the Atbara river bank. LSA sites dominate the western part of the area. Most of the sites are highly eroded and only a few of them provide materials from stratified contexts, such as in the case of the sites along the Abu Adar depression – EDAR 11 and EDAR 25. Late MSA and early LSA sites from the margin of the paleolake and the Elhelgi depression are also heavily eroded.

Judging from the results of our work, it can be concluded that within the EDAR concession there is an important potential for prehistoric studies which could possibly bring forth valuable data on a trans-regional scale. Acheulean stone artefacts have been found there within stratigraphic contexts (EDAR 6, 7, 133, 135). This makes it possible to obtain optically stimulated luminescence dating for this settlement, which in North-East Africa is still at an unsatisfactory level (de la Torre 2016). Furthermore, MSA sites are being found not only on the surface but also in the gold miners' shafts in dateable deposits, which is also rare for this part of the continent (Wendorf et al. 1993; Van Peer et al. 2003; Osypiński & Osypińska 2015; Masojć et al. 2017). As a preliminary observation we can state that within the EDAR concession, assemblages of the Nubian Levallois technology are present, which is recognised, for instance, from the adjacent Bayuda desert (Masojć 2010, 2018) or the Nile valley (Marks 1970; Wendorf 1968). Epipaleolithic and Neolithic stone tools demonstrate an analogy to sites found from eastern Butana and the upper part of the Atbara river (Fattovich et al. 1984; Marks et al. 1987; El-Amin 1987; Chmielewski 1987).

The EDAR project is an ongoing project, therefore, only the initial outcomes and aspects can be presently mentioned. Field and laboratory training for students, from both universities involved in the project, can be emphasized upon. However, the archaeological exploration of a so-far, rather unknown area, and the discovery and documentation of prehistoric sites of different chronological horizons in this area far from the Nile valley, is most essential. Especially the discovery of several stratified Palaeolithic horizons from the miners' shafts have to be highlighted as their study is significant for global prehistory. All the details of the scientific results of the EDAR project will be presented in several publications (Masojć et al. in prep.).

BIBLIOGRAPHY

- Abbate E., Albianelli A., Awad A., Billi P., Deleino M., Ferretti M., Fillippi O., Gallai G., Ghinassi M., Lauritzen S., Vetro D., Navarro B., Martini F., Napolleone G., Bedri O., Papini M., Rook L., Sagri M. 2010. Pleistocene environments and human presence in the middle Atbara valley (Khashm El Girba, Eastern Sudan), *Palaeogeography, Palaeoclimatology, Palaeoecology*, 292: 12–34.
- Arkell A.J. 1949. *The Old Stone Age in the Anglo-Egyptian Sudan*. Sudan Antiquities Service Occasional Papers No. 1. Khartoum.
- Beyin A., Chauhan P.R., Nassr A. 2017. New discovery of Acheulean occupation in the Red Sea coastal region of the Sudan, *Evolutionary Anthropology* 26: 255–257.
- Chmielewski W. 1987. The Pleistocene and Early Holocene Archaeological Sites on the Atbara and Blue Nile in Eastern Sudan. *Przegląd Archeologiczny* 34: 5–48.
- de la Torre I. 2016. The origins of the Acheulean: past and present perspectives on a major transition in human evolution. *Philosophical Transactions of the Royal Society of London B Biological Sciences* 371, 20150245.
- El-Amin Y. 1987. Terminal Paleolithic Blade Assemblage from El Girba, Eastern Sudan, Reprinted from *Azania*. Volume 11. Nairobi, Kenya: 343–361.
- Fattovich R. 1993. Excavation at Mahal Teghions (Kassala) (1984–1988). Preliminary Report. *Kush* 16: 178–192.
- Fattovich R., Marks A., Mohammed-Ali A. 1984. The Archaeology of the Eastern Sahel, Sudan: Preliminary Results. *The African Archaeological Review*, Vol. 2: 173–188.
- Fattovich R., Piperno M. 1981. Survey of the Gash Delta – November 1980. *Nyame Akuma*, 19: 26–30.
- Haaland R. & Magid A.A. 1991. Atbara research project: The field seasons of 1985, 1987, 1989, and 1990. *Nyame Akuma*, 35: 36–43.
- Kobusiewicz M., Bobrowski P., Jórdeczka M., Chłódnicki M. in press. Gebel Karaiweb and Bir Nurayet (Sudan). The oldest settlement in the Red Sea Mountains, In: J. Kabaciński, M. Chłódnicki, M. Kobusiewicz (Eds.), *Desert and the Nile. Late Prehistory of the Nile Basin and the Sahara*, *Studies in African Archaeology* 15, Poznań.
- Manzo A. 2015. Italian Archaeological Expedition to the Eastern Sudan of the Università degli Studi di Napoli “L’Orientale”. Preliminary Report of the 2014 Field Season, B. Genito (ed), *Newsletter di Archeologia CISA*, Volume 6: 231–240.
- Marks A.E. 1970. Pre-ceramic sites. (The Scandinavian joint expedition to Sudanese Nubia 2). Helsinki 1970.
- Marks A.E., Peters J., Van Neer W. 1987. Late Pleistocene and Early Holocene occupations in the Upper Atbara river valley, Sudan. *Prehistory of Arid North Africa*



- (Essays in Honor of Fred Wendorf) (A.E. Close ed.), Southern Methodist Press, Dallas: 137–61.
- Masoć M. 2010. First note on the discovery of a stratified Palaeolithic site from the Bayuda Desert (N-Sudan) within MAG concession. *Der Antike Sudan. MittSAG* 21: 63–70.
- Masoć M. 2018. Lithic Materials from a Late Nubian Complex Middle Stone Age Site in the Bayuda Desert: Goat Mountain. In: Lohwasser A., Karberg T., Auenmüller (Eds.) *Bayuda Studies. Proceedings of the First International Conference on the Archaeology of the Bayuda Desert in Sudan*, Harrassowitz Verlag, Wiesbaden, *Meroitica* 27: 503–536.
- Masoć M., Kusiak J., Standzikowski K., Paner H., Kuc M., Parafiniuk M., Szmit M. 2017. OSL/IRSL estimation for Nubian Complex Middle Stone Age settlement from Bayuda Desert in Sudan, *Journal of Archaeological Science: Reports* 16: 391–396.
- Masoć M., Nassr N., Kim J.Y., Krupa-Kurzynowska J., Sohn Y.K., Szmit M., Kim J.Ch., Kim J.S., Wieczorek M., Timmermann A. in prep., *Saharan green corridors and Middle Pleistocene hominins' migrations across the Eastern Desert, Sudan*.
- Masoć M., Nassr A.H. 2017. Górnicy złota na tropie homo erectus w Sudanie, *Archeologia Żywa* 1 (63): 59–63.
- Nassr A.H. 2014. Large cutting tools Variations of Early Sudan Paleolithic from site of Jebel Elgrian east of Lower Atbara, *Der antike Sudan. MittSAG* 25: 105–123.
- Osypiński P., Osypińska M. 2015. Optimal adjustment or cultural backwardness? New data on the latest Levallois industries in the Nile Valley. *Quaternary International* 408: 90–105.
- Shiner L., Chmielewski W. 1971. The Khashm el Girba area. In: Shiner, L. (ed.), *The prehistory and geology of Northern Sudan. Parts 1 und 11. Report to the National Science Foundation Grant GS 1192*: 293–305.
- Van Peer P., Fullagar R., Stokes S., Bailey R. M., Moeyersons J., Steenhoudt F., Geerts A., Vanderbeken T., De Dapper M., Geus F., 2003. The Early to Middle Stone Age Transition and the Emergence of Modern Human Behaviour at site 8-B-11, Sai Island, Sudan. *Journal of Human Evolution* 45: 187–193.
- Wendorf F. 1968. (ed.): *Prehistory of Nubia. Volume I*. Dallas.
- Wendorf F., Schild R., Close A.E. and Associates (Eds.), 1993. *Egypt During the Last Interglacial: The Middle Paleolithic of Bir Tarfawi and Bir Sahara East*. Plenum Press, New York and London.
- Whitemann A.J. 1971. *The Geology of the Sudan Republic*, Clarendon Press, Oxford.

ZUSAMMENFASSUNG

Wissenschaftliche Initiativen zwischen ausländischen und lokalen archäologischen Institutionen haben viel zum Fortschritt in der Erforschung der sudanesischen Urgeschichte beigetragen. Die Geschichte der Sudanarchäologie zeigt zudem, dass große Entdeckungen und Erkenntnisse meist Ergebnisse von Gemeinschaftsunternehmungen sind. Aus diesem Grund begann 2013 die wissenschaftliche und didaktische Zusammenarbeit des „Department of Archaeology“ der Al Neelain Universität im Sudan und des „Institute of Archaeology“ der Universität von Wrocław in Polen.

Die Entdeckungen bei einem Surveys in der Ostwüste im Unterlauf des Atbara, etwa 70 km von der Stadt Atbara entfernt, haben beide Parteien ermutigt, ein gemeinsames Forschungsprojekt mit dem Fokus auf der Urgeschichte zu initialisieren.

So entstand 2016 das *Eastern Desert Atbara River Project* (EDAR) unter der Leitung der beiden Autoren. 2016/17 wurde ein Survey von der Al Neelain Universität durchgeführt, der vom „Ministry of Higher Education and Scientific Research Sudan (MHESR)“ finanziert wurde. Er hatte zum Ziel, die steinzeitlichen Fundplätze in dem von EDAR erfassten Areal zu kartieren. Im Frühjahr 2017 wurde dann ein weiteres dreijähriges Projekt der Universität von Wrocław, der Al Neelain Universität und der „National Cooperation of Antiquities & Museums (NCAM)“ verankert, das die ältesten Spuren der pleistozänen hominiden Präsenz und des Umweltkontextes in der Region erfassen sollte. Dies wird vom „Polish National Science Centre (NCN)“ gefördert (Masoć, Nassr 2017).

Dieser Aufsatz stellt die Rolle der Region, die durch das EDAR-Projekt abgedeckt wird, für die Urgeschichte Nordostafrikas vor und dokumentiert die Ergebnisse der archäologischen Surveys 2016 und 2017. Dabei wurde ein Cluster von pleistozänen Fundplätzen entdeckt, die sich dem Acheulean, aber auch dem Mittelpaläolithikum sowie der jüngeren Steinzeit zuordnen lassen. Außerdem wurden meroitische, post-meroitische und spätmittelalterliche Fundstätten verzeichnet.