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Front cover. General view of Site WNP-J-22\1, Al-Jabalain, White Nile State. Photo by Hamad Mohammed Hamdeen.

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# Archaeological and paleoenvironmental survey in the White Nile state (first season, 2022)

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## Introduction

The archaeological and paleoenvironmental survey in the White Nile state is a collaborative project between the Department of Archaeology, the University of Al Neelian, the General Administration of Tourism and Antiquities White Nile, and the National Corporation for Antiquities and Museums (NCAM). The project focused on two main areas: Ad-Douiem on the western bank, and Al-Jabalain on the eastern bank of the White Nile. The main objective was to search for archaeological sites in the central and south White Nile state. Special attention was paid to palaeo-environmental data (e.g., paleochannels, zooarchaeological and archaeobotanical data, etc.) and Mesolithic, Neolithic, Meroitic, and Christian sites. These are extensively distributed across the landscape. We also intend to conduct ethnoarchaeological research. The project aims to examine the archaeological potential of the area through survey, excavation, analysis and applied multidisciplinary approaches.

## Previous archaeological activities in the White Nile state

Historically, only a small number of projects have been carried out in the White Nile area. In 1939 Arkell carried out a series of excavations around Kosti, which yielded remains datable to the early Meroitic period (Arkell 1950, 40), while the Sudanese Antiquities Authority under Marshall and Adam (1953, 140) excavated el-Ushra on the western bank of the White Nile, south of Omdurman, and in el-Getaina. Crawford (1953, 2.29) also mentioned the existence of a Christian period archaeological site in the el-Geteina area around this time. Later, some sondages were made by Clark at the site of Jebel et Tomat (Clark 1973) and Shabona (Clark 1989), while paleoenvironmental studies for the White Nile were undertaken by Adamson (Adamson *et al.* 1982). Further to the south, Else Kleppe worked in the area of Malakal in 1976 (Eisa 2002b), and Haaland and el-Mahi undertook archaeological activities between Jebel et Tomat and Rabak (Haaland and el-Mahi 1984). Gisema (1992) also carried out an archaeological survey and dug test pits between el-Geteina and el-Dueim.

In 1997, a joint project between NCAM and the University of Khartoum was started to conduct an archaeological survey on the east bank of the White Nile, directed by the late Khidir Adam Eisa (Eisa 1997, 1998; 1999; 2000; 2002a; 2002b; 2004; 2015). This was the first project to map, document, and record the sites using GPS. The results of this project confirmed that area from Khartoum up el-Kawa was rich in archaeological sites dating from the Prehistoric, Napatan, Meroitic, Christian and Islamic periods. During this project, much Mesolithic and Neolithic site material was studied from the area between el-Kalakla and Jebel Awlia (Sadig 1999; 2004).

The Italian Archaeological Mission project in the area south of Omdurman also explored many prehistoric and historic sites (Salvatori and Usai 2006; 2009; Salvatori *et al.* 2011; 2018; Usai and Salvatori 2002; 2005; 2019; Usai *et al.* 2010; 2014). Adam (2015) published a preliminary report of archaeological survey results on Aba Island. Evidence of the spread of Meroitic civilisation in the White Nile region, and whether this was due to political influence or cultural diffusion, was discussed by Abdalla (2015; 2021; 2023). Finally, Abdelhadi (2018) surveyed the east bank between Um Jar and El- Kawa and reported seven archaeological sites dating from the prehistoric to Islamic periods.

## Archaeological survey in Ad-Douiem and Al-Jabalain

Between October and December 2022, we conducted an archaeological survey around Ad-Douiem city. The survey focused on villages: Al-Hijair, Al-Dahloub, Alminadreeb, Al Buga'a Al Mubarka, and Abu Gumri. In Al-Jabalain, the survey focused on the area of Kilo Arbaa and Sheikh Abu Al-Dakhira. Seventeen archaeological sites were discovered in the first season (Figure 1). These included settlements, graves, and cupules, dating to Mesolithic, Neolithic, Meroitic, post-Meroitic, Christian, and Islamic periods. The main fieldwork methodology was to conduct a comprehensive archaeological survey by walking, with archaeological materials systematically collected from the sites. Finds included scatters of surface pottery, stone tools, beads and animal remains, while landscape data, photographic documentation, mapping, satellite images, drawings and GPS coordinates were recorded.

### Archaeological sites in Ad-Douiem

**Site WNP-D-22\1: N 13 49.18 - E 32 17.18**

*Settlement-Cemetery\ Mesolithic- Neolithic*

The site was reported in 2013 by the General Administration of Tourism and Antiquities, White Nile state. It was situated between farmlands in the eastern part of Alminadreeb village, located about 22km south of Ad-Douiem city and 3.5km west of the White Nile. The site was divided into two main parts, the eastern kom and the western kom (Figure 2). On the surface of the eastern kom there are many archaeological and organic materials. On top of this kom, there is also a school that was built in the 1970s for the village children. Unfortunately, these buildings destroyed the top of the site but many archaeological and organic features were still recorded *in situ* around the edges of the site. Later in the 1980s, the people of Alminadreeb village destroyed the eastern part of the site by collecting the soil for house building, so the western Kom is today under the village houses, but we can still clearly observe archaeological and biological materials on the surface. On the surface of the site, much Mesolithic and Neolithic pottery was recorded, including pieces decorated with wavy lines, dotted wavy lines, zigzags, and incisions. Lithic tools, grind stones, beads, 20 fragments of bone harpoon, a ring stone, and animal remains were also found, as well as some human graves (Figures 2-4).

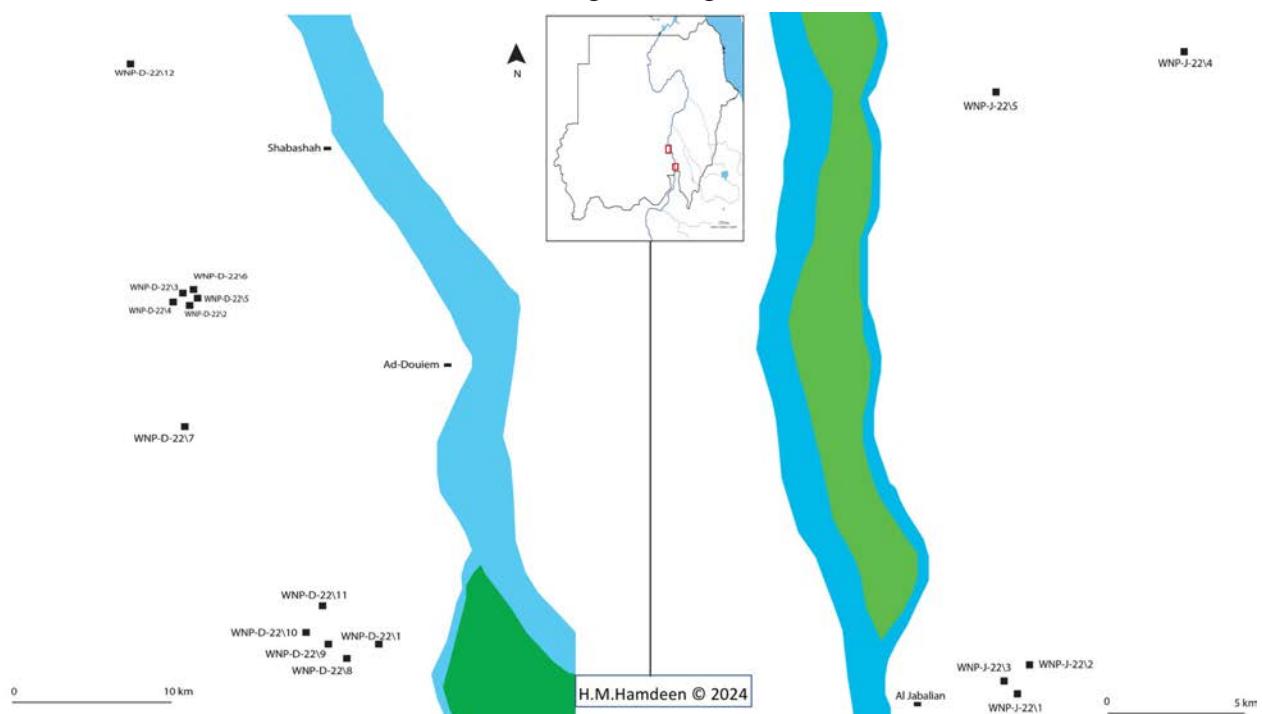


Figure 1. Archaeological sites that were discovered at Ad-Douiem and Al-Jabalain.

**Site WNP-D-22\2:** N 14 30.41 -E 32 09.53

*Settlement\Neolithic*

The site was located east of Al Hijair on a flat area composed of some sand and gravel. On the surface many pottery sherds were found that probably date back to the Neolithic period, in addition to numerous grind stones and lithic tools. Three small structures, probably graves, were also recorded.

**Site WNP-D-22\3:** N 14 01.49-E 32 09.42

*Settlement\ Neolithic*

The site was located to the east of Al-Hijair, and north-west of Site WNP-D-22\5. Some archaeological materials were recorded on the surface including Neolithic pottery, bones, and lithic tools.

**Site WNP-D-22\4:** N 14 01.45-E 32 09.30

*Settlement\Mesolithic-Neolithic*

The site was located on a small hill locally called Da'abat Abu Goroon. The surface was rich in archaeological artefacts. This encompassed Mesolithic and Neolithic pottery sherds with different decorations including wavy and dotted lines. Lithic tools included flakes, blades, scrapers, as well as animal and human bones, and grinding stones (Figures 5 and 6).

**Site WNP-D-22\5:** N 14 01.44-E 32 09.5

*Settlement-Qubba-cemetery\Prehistoric-Christian-Islamic*

The site was located on a small hill. It can be divided into parts based on the surface finds. In one area, prehistoric materials were found including pottery sherds, shells, and lithic tools, as well as much Christian and Islamic pottery. It is likely that this area was reused as a cemetery, with c.17 Islamic graves/ oval or semi-circular stone structures found, measuring between 4x2m, 3x1m, and 1x1m. The second part of the site was used as a modern Islamic cemetery, and includes the Qubba of Shiekh Rabieh (Figure 7).

**Site WNP-D-22\6:** N 14 01.55-E 32 09.45

*Cupules-settlement\Prehistoric?*

The site was located on the small rocky outcrop to the north-west of sites WNP-D-22\5. More than 12 cupules were found on the surface, in addition to a few prehistoric pottery sherds, probably Neolithic, and lithic tools (Figure 8).

**Site WNP-D-22\7:** N 13 56.00-E 32 10.15

*Settlement-graves\Prehistoric-historic*

The site was located on a high hill known locally as Qoz Al-Danga. East of Al-Dahloub village, the site had a very high density of archaeological materials on the surface including grindstones (different types and sizes) pottery sherds, hammer stones, lithic tools, arrowheads, polished handaxes, ring stones, beads, shells, and animal bones, as well as traces of human skeletons in the northern part of the site. Unfortunately, much of the site was destroyed by construction of a road, tillage, and the expansion of agricultural land (Figures 9-11).

**Site WNP-D-22\8:** N 13 48.37-E 32 16.22

*Settlement\ Mesolithic-Neolithic*

The site was located in the south part of Al Buga'a Al Mubarka and south-west of Site WNP-D-22\1. It is situated on a small gravelly\sandy hill not far from the recent Wad Al Triafy cemetery. On the surface, some Mesolithic and Neolithic pottery sherds were collected as well as lithic tools, fragments of grindstones, and animal bones (Figures 12 and 13).



Figure 2. General view of Site WNP-D-22\1.



Figure 3. Surface collections from Site WNP-D-22\1; a, b, and c: pottery sherds with different decoration and types, d: fragments of bone harpoon, e: hippo molar, f: beads, g: fish remains, h: shell, i: lithic tools, j: ring stone, j: grinding stone



Figure 4. Human skeletal remains on the surface of Site WNP-D-22\1.



Figure 5. General view of Site WNP-D-22\4.



Figure 6. Pottery sherds from Site WNP-D-22\4.



Figure 7. General view of Site WNP-D-22\5.



Figure 8. Cupules at Site WNP-D-22\6.



Figure 9. General view of Site WNP-D-22\7.



Figure 10. Human skeletal remains at Site WNP-D-22\7



Figure 12. General view of Site WNP-D-22\8.



Figure 11. Grinding stones from Site WNP-D-22\7 of different types and shapes.



Figure 13. Pottery sherds from Site WNP-D-22\8.

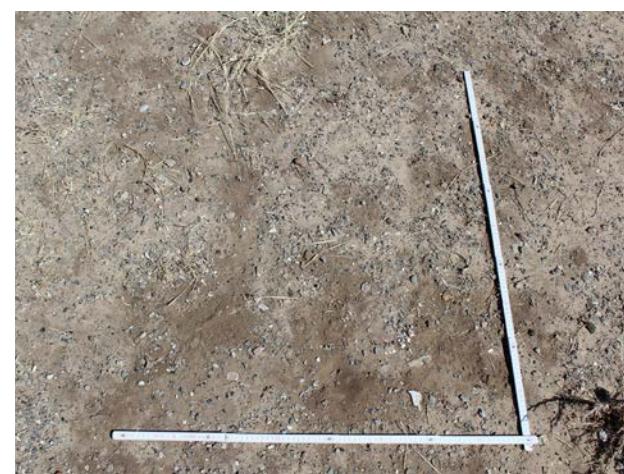


Figure 14. Human skeletal remains from Site WNP-D-22\9.



Figure 15. Pottery sherds from site WNP-D-22\9.

**Site WNP-D-22\9: N 13 49.28 - E 32 15.16**

*Settlement\graves\Mesolithic-Neolithic*

The site is located north-west of Site WNP-D-22\8 on a hill between farmland. Mesolithic and Neolithic pottery sherds were found on the surface as well as lithic tools, grindstones, hammer stones, and animal remains. Some human skeletal remains were also recorded on the surface (Figures 14-16).

**Site WNP-D-22\10: N 13 49.35-E 32 15.02**

*Settlement\cemetery\Mesolithic- Neolithic*

The site was situated northwest of Site WNP-D-22\9 on a high hill known locally as Qoz Alnabt. Mesolithic and Neolithic pottery sherds were found on the surface as well as lithic tools, grindstones, and animal remains including fish, shells and large mammals (Figures 17-19).

**Site WNP-D- 22\11: N 13 50.36-E 32 15.29**

*Settlement\cemetery\Mesolithic-Neolithic-Meroitic?-Christian?*

The site is located in the east part of the Abu Gumri village, and in the southwest part, there is a modern cemetery. On the surface, many pottery sherds dating to the Mesolithic/Neolithic period as well as late Meroitic or Christian sherds were collected, along with hammer stones, lithic tools, shells, and animal remains. In addition some graves were identified on the surface (Figures 20-23).

**Site WNP-D- 22\12:N 14 10.32- E032 06.96**

*Settlement\cemetery\stone structures\Prehistory-Islamic*

The Arashkoul area is located in the Al-Douiem locality, about 27km north-west of Ad-Douiem, and about 1km southwest of Arashkoul village on the edge of the Arashkul Mountains. There are 23 stone structures with varying shapes and sizes. Their measurements ranged between 3-1.8m long and 1.5-1.8m wide. Material included Islamic pottery sherds, grindstones and a few lithic tools on the surface. Some parts of the site were eroded by water damage and modern cultural layers (Figures 24-28).



Figure 16. Pottery sherds from site WNP-D-22\9.



Figure 17. General view of Site WNP-D-22\10.



Figure 18. Lithic tools from Site WNP-D-22\10.



Figure 19. Pottery sherds from Sites WNP-D-22\10.



Figure 20. General view of Site WNP-D-22\11.



Figure 21. Human skeletal remains from Site NP-D-22\11.



Figure 22. Pottery sherds from Site WNP-D-22\11.



Figure 23. Pottery sherds from Site WNP-D-22\11.



Figure 24. General view of Site WNP-D-22\12.



Figure 25. Stone structure from Site WNP-D-22\12.



Figure 26. Stratigraphy of Site WNP-D-22\12.



Figure 27. Pottery sherds from Site WNP-D-22\12.



Figure 28. More pottery sherds from Site WNP-D-22\12.



Figure 29. General view of Site WNP-J-22\1.

## Archaeological sites in Al-Jabalain

### Site WNP-J-22\1: N 12 36.26-E032 50.35

*Settlement\cemetery\rock cupules and graffiti\Neolithic-Meroitic-post-Meroitic?*

This site is located in the Kilo Arbaa area (Kilo 4), about 80km south of the city of Rabak, in the Al-Jabalain locality. The site was recorded in 2010 during the first reconnaissance visit carried out by the General Administration of Tourism and Antiquities, White Nile. The site can be divided into three parts: the first is the settlement area, which was located in the south and east parts of the jebel, with the archaeological materials distributed over an area of approximately 400m from west to east on the edge of the foot of the jebel. On the surface of the site, different types of pottery with various decorative patterns were identified. In addition, some Neolithic pottery and lithic tools were recorded, as well as ceramic spindle whorls. The second part of the site is located on the east side, where some graves were reported, but unfortunately, most were destroyed. The third part was located about 150m south of the jebel on a small outcrop. Two groups of cupules were recorded: the first group containing 103 and the second 33. In addition, there were more than 18 incised lines on the small rocks, which have probably been used for polishing. Unfortunately, much of the site was destroyed by local people, collecting soil for building houses and making hafirs to manage water sources for animals. Some parts of the site show cultural layers of 2m deep (Figures 29-36). During the first reconnaissance visit in 2010 local people gave the team complete jars that had been dug up and collected by them from the site settlement area, and during our survey, pottery sherds with the same decoration pattern were recovered from the same area (Figure 37).

### Site WNP-J-22\2: N 12 37.01-E032 50.53

*Cupules\ Prehistoric?*

The site is located to the northeast of Site WNP-J-22\1 on a high outcrop, and encompassed four cupules. No archaeological remains were found during this reconnaissance survey.

### Site WNP-J-22\3: N 12 36.48-E032 50.52

*Settlement\Mesolithic\Neolithic\historic?*

The site is located to the north of Site WNP-J-22\1. Many Neolithic and later pottery sherds were recovered from the surface of the site, as well as grindstones, microlithic tools, and beads (Figures 38 and 39).

### Site WNP-J-22\4: N 12 50.19-E032 54.2

*Settlement\Meroitic\post-Meroitic\Christian?*

The site is located to the east of the village of Sheikh Abu Al-Dakhira, within an agricultural project. It is divided by an agricultural road into a northern and southern part. The surface is covered with pottery sherds, as well as grindstones, hammer stones, and shells. This site has largely been destroyed by road construction and the expansion and reclamation of agricultural land (Figures 40-42).

### Site WNP-J-22\5: N 12 49.21-E032 50.12

*Settlement\stone structure\Mesolithic\Neolithic\historic ?*

The site is located southwest of the village of Abu Al-Dakhira, on the northern part of the foot of the mountain Abu Al-Dakhira. The surface is covered with many prehistoric pottery sherds as well as later, probably Meroitic and Christian, pottery sherds. Lithic tools, grindstones, hammer stones, polished handaxes, and 35 cupules were also identified. In addition a circular stone structure with a diameter of c.1.3m was found (Figures 43-48).



Figure 30. Some destroyed parts of Site WNP-J-22\1.



Figure 31. Stratigraphy of Site WNP-J-22\1.



Figure 32. General view of the outcrop and the third part of the site.



Figure 33. Cupules from Site WNP-J-22\1.



Figure 34. Scratched lines from the third part of Site WNP-J-22\1.



Figure 35. Ceramic spindle whorls from Site WNP-J-22\1.



Figure 36. Pottery sherds from Site WNP-J-22\1 with different types of decoration.



Figure 37. Complete vessels from Site WNP-J-22\1.



Figure 38. General view of Site WNP-J-22-3.



Figure 39. Pottery sherds from Site WNP-J-22-3.



Figure 40. General view of Site WNP-J-22\4.

project and Professor in the Department of Archaeology, University of Al Neelain, for his help, comments, and support for this project until the last days of his life. We want to thank all the Government ministries and administrations in the White Nile State who facilitated the mission's tasks in the locality of Kosti, Rabak, Ad-Douiem, Al-Jabalain and El-Geteina. Special thanks go to Alomda Babkier Alomda Alzien and all the people in Alminadreeb village for their generous hospitality to our team. Also, our thanks go to the administration of the University of Bakht Al Ruda for their help, welcome, and hosting of the members of the team. Our thanks also go to the offices of Antiquity in Ad-Douiem, Al-Jabalain and El-Geteina.

## Conclusion

The above discussed region of central and south White Nile state is a particularly promising archaeological region in Central Sudan. The results of the archaeological survey in this unexplored area show that the White Nile had a deep cultural history from the prehistoric to the Islamic period. The preliminary study of the materials from these sites revealed a considerable amount of material dating from the Mesolithic, Neolithic, Meroitic, post-Meroitic, Christian, and Islamic periods. We can observe a close similarity between these sites and other sites in central Sudan such as the area between El-Kalakla and Jebel Awlia (Sadig 1999; 2004), Al-Khiday (Salvatori *et al.* 2014), Jebel Moya (Addison 1949; Brass pers. comm.) and el-Dirwa and el-Diwaihaia, all of which date to the Meroitic period (Eisa 2004), and El -Mongara, which dates to the Christian period (Gisema 1992). Some areas have a clear concentration of archaeological remains while they are scarcer in others. Generally we found settlements, cemeteries, and rock cupules.

The sites from the Ad-Douiem and Al-Jabalain areas have been and continue to be affected by various natural and human activities such as agricultural land expansion and the collection of soil for building houses. Future archaeological works, surveys, excavation, and more analytical study can enhance our knowledge about the types of sites, distribution, and dating, and will contribute to a better understanding of the archaeology and heritage of this region.

## Acknowledgments

Special thanks to the late Professor Khidir Adam Eisa, the consultant and national expert for our



Figure 41. Pottery sherds from Site WNP-J-22\4.



Figure 42. Grinding and hammer stones from site WNP-J-22\4.



Figure 43. General view of Site WNP-J-22\5.



Figure 44. Stone structure from Site WNP-J-22\5.



Figure 45. Cupules from Site WNP-J-22\5.



Figure 46. Pottery sherds from Site WNP-J-22\5.



Figure 47. Pottery sherds from Site WNP-J-22\5.



Figure 48. Polished handaxe from Site WNP-J-22\5.

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