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

Archaeological discoveries in the hills and coastline of the Red Sea State, Eastern Sudan 2016-2021. Preliminary report

Fakhri Hassan Abdallah Hassan

Introduction

Between 2016-2021,[1] the National Corporation for Antiquities and Museums (NCAM), Sudan, conducted multiple archaeological surveys in the hills and along the coastline of the Red Sea State, including the areas of Gebiet Al-Maadin, Derudeb, Garura, and Agig. These areas are affected by a lot of mining activities, especially for gold, chromium, and limestone, as well as other development projects. There are many companies that obtain licences from the government institutions that regulate mining work in Sudan (the Ministry of Energy and Mining). The Sudanese Mineral Resources Company is authorised to grant certificates and permits to these companies to engage in mining activity. The Ministry of Energy and Mining sends fieldwork teams to acquire geological and mineralogical resources without archaeologically examining the areas proposed for mining and without involving NCAM in the initial field visits to these areas, to ensure that the project land is free of archaeological remains. Some companies then face problems when they submit applications to the Management of Weapons, Ammunition and Explosives Department to certify the use of explosive materials in mining. Before permitting the use of explosives, this military institution requires companies to bring documents from NCAM guaranteeing there are no archaeological remains on the proposed land. In accordance with the provisions of the Antiquities Protection Law of 1999, NCAM does not grant permission to work before conducting an archaeological survey of the project land to ensure that it is free of archaeological remains. However, the absence of preliminary archaeological surveys prior to these development projects has led to the destruction of many archaeological sites in many different regions of Sudan, especially the hills and the Red Sea coast in eastern Sudan.

This paper aims to shed light on the results of multiple archaeological surveys carried out by NCAM in this area between 2016-2021. These surveys revealed many archaeological sites, including cemeteries and settlements associated with ancient mining sites during the Christian and Islamic periods in the Beja and Eastern Desert regions. In addition, several historical sites dating to the Anglo-Egyptian colonial period in Sudan were identified.

The survey work was carried out using a vehicle and on foot on a regular and irregular basis, depending on the nature of each area. The Global Positioning System programme (GPS) was used in the survey process to record the coordinates of the archaeological sites discovered and their distance from authorised mining zones of companies. The work also included the use of satellite images in detection operations and in determining the coordinates of archaeological sites. Due to the short period of the survey programme, the team was not able to conduct test excavations to compare results with other missions that have previously worked in this area.

The area

The Red Sea State is in eastern Sudan and encompasses an area of about 212,800km^2 between latitudes

[1] The survey team from NCAM included: Fakhri Hassan Abdallah Hassan (Field Director), Yassin Mohamed Saeed (Surveyor), Al-Tayeb Hassan Mohamed, and Magdy Mohamed Ahmed.

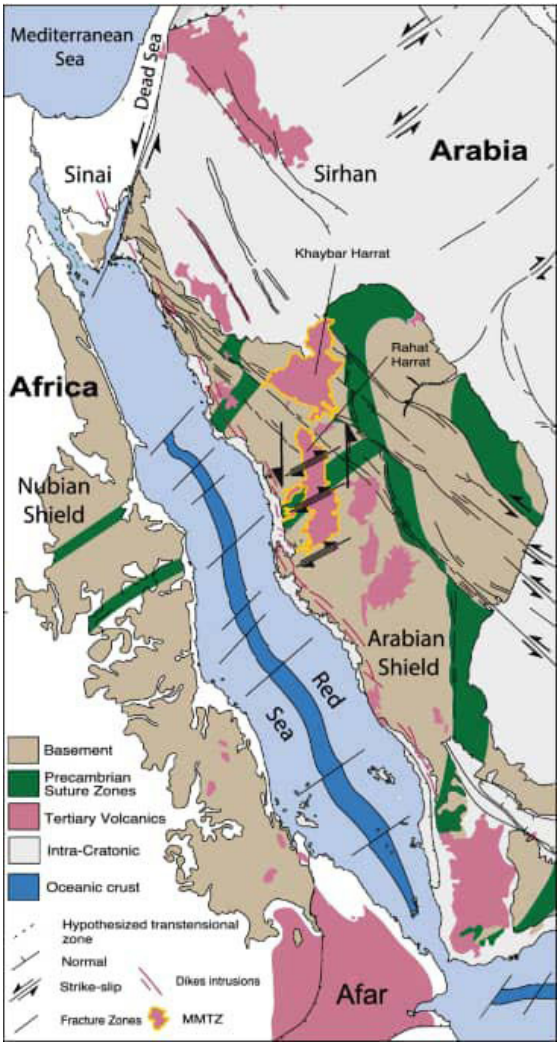


Figure 1. Simplified map showing the geology of Sudan (Creative Commons license, ar.m.wikipedia.org).

Figure 2. Satellite map showing the location of new archaeological sites concentrated in the Red Sea State (Google Maps 1/04/24).

23.3-17 north and longitudes 33.3-38.5. This large state borders the Kassala State, Eritrea, and the Red Sea coast on its eastern side, Egypt to the north, and the River Nile State to its west. The Red Sea Hills range between 300-1500m in height. It has the only sea port in Sudan, the country's gateway to the outside world, through Port Sudan, and is involved in both imports and exports via sea and air.

The geographical location of the Red Sea has played a vital role in the history of the countries that border it, forming a key link between civilizations in eastern, southern, northern and western Sudan on one side, and the civilizations of the Levant, Mesopotamia, Egypt and the Arabian Peninsula on the other. As such it has been a vital trading route for millennia, bringing goods from India and the Far East to the markets of Egypt and Europe (Zahran 2010, 104-110; Adam 2019, 481).

Geologically, this state has a complex tectonic history resulting in a large quantity of high quality rock and minerals being present (Figure 1). As such this area was exploited for its resources, particularly gold, by the ancietn Egyptians, who left behind milled quartz, pottery, graves and the houses of miners (Johnson 1999; Klemm, Klemm and Murr 2001). This mining continued until most of the high-grade gold was exhausted (Ismail and Linda 2017, 60).

Fieldwork results

The fieldwork results from the study area include remains from different periods, including mining sites dating to the Anglo-Egyptian occupation of Sudan, indicating its strategic importance at that time. There is also a plethora of Islamic sites, including cemeteries and shrines. Other sites are older and represent mining settlements prior to the Islamic period. Our survey revealed a total of 16 archaeological sites in the studied area. Of these, 10 were cemeteries that were found on the sides and tops of the hills. These had different shapes and sizes, and include sites in the Wadi Al-Hamsana, Wadi Oni, Wadi Orshab (Sites (A) and (B)), Hillat Osman, Abergatab, Ait (Sites (A) and (B)), Al-Ganb Al-Awleeb, Khor Arbaat, and Jebel Shagroum. Six sites containing mining settlements were recorded, including the sites of Ali Hassay, Jebaal Al-Nimir, Kamarab Al-Sabba, and Mih-kak Someet (Figure 2). This paper will outline a preliminary description of these sites, based on the rapid field observations made during the short period available for fieldwork.

Mih-kak Someet[2]

The site was visited in September 2016, and is located north of Garura village, on the border between Sudan and Eritrea. The site is *c.* 400km south of Port Sudan. It has rocky granite hills; a large part of which were buried under shifting sand. The total area of the site is estimated at *c.* 400m^2. On the western side, it is bordered by the dirt road and modern cemeteries, with modern houses on the eastern side, *c.* 60m away. The visible areas of the site consist of three types. (A), the largest, contains traces of oval-shaped holes, which are fixed millstones indicating signs of use (Figure 3). Much of this is buried in shifting sand. According to the inhabitants of Garura village, there are carvings on the lower part of the rock, including a cup in which food was placed; an image like a sleeping pad or a pillow; and another of cups for coffee drinking, which reflect the importance of coffee in local culture. In addition, there is also a cavity at the bottom of the rock, which local stories suggest is a small cave; (B), a rock measuring *c.* 1.3x0.9m protruding above the surface. Lines engraved on the top of the rock indicate it was used in the manufacture of *Someet* beads, which in the past represented an important jewellery item presented as a gift or as a dowry to women upon marriage, with men also wearing them round the neck (Figure 4); (C), a small rock 2m east of (B) measuring about 0.6m on one side and showing some traces of use (Fakhri Hassan Abdallah Hassan 2016, 1-3).

The historian Mohamed Salih Dirar mentioned in his book *The History of the Habab and Hamasin Tribes in Sudan and Eretria* that the Garura area was associated with Sheikh Idris bin Yousif, the leader of the Mikal tribe in the middle of the 16th century (Dirar 1991, 157-159). Since the early Islamic period, Mih-kak Someet was a production area for makers of ornamental tools or jewellery from *Someet* stone (banded agate), which is a semi-precious stone brought from India and the Levant across the Red Sea by sailboats. Women would make tools to produce items – indeed it was said that the daughters of the Sheikh themselves worked on these items (Dirar 1991, 157-159). Suleiman Fayed Mohamed Fayed also mentions the importance of jewellery among the the Beni Amer tribes, especially the *Someet* necklace, which at that time represented the most expensive dowry offered to a woman, and an item that any prospective bridegroom had to bring (Figure 5) (Fayed 2015).

Al-Hamsana

This site is located on the Red Sea hills in Gebiet Al-Maadin, northeast of Port Sudan. The survey revealed an isolated burial mound, built of metamorphosed volcanic rocks. The superstructure was oval-shaped

[2] We were accompanied from Port Sudan to Garura by a team including: Engineer Mohamed Mahjoub, from the East Reconstruction Fund, Red Sea State Office; Idris Mohamed Ali Masmar, representative provost of the Mikal tribe (Bani Amer); Mohamed Ibrahim Suleiman, representative Native Administration of the Mikal tribe; and Omer Mohamed Ali, driver.

Figure 3. Traces of drilling on the top of the rock in Part (A) of Mih-kak Someet.

Figure 4. Engraved lines and traces of use on top of the granite stone in Part (B) of Mih-kak Someet.

Figure 5. A model of the *Someet* necklace with different colours (Dirar, Salih, Mohamed 1991).

Figure 6. An oval-shaped mound burial at Al-Hamsana.

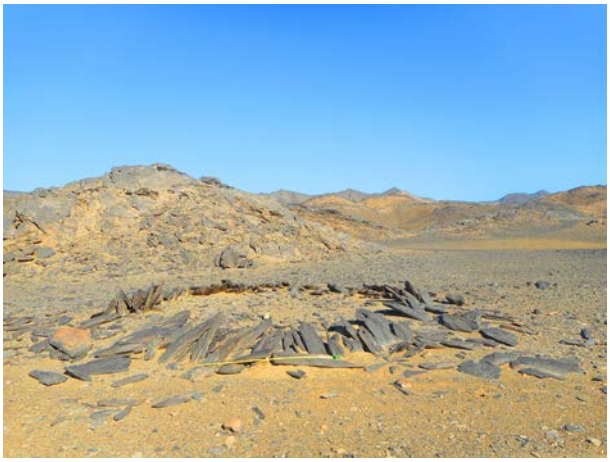


Figure 7. A cinder-block burial surrounded by a semi-circular ring of stones at Al-Hamsana.

Figure 8. A burial ground with Acratail tombs built of semi-circular stones at Wadi Oni.

with a *c.*6m diameter (Figure 6). About 150m away, two other burial mounds were found, again with stone oval superstructures, with diameters between 2-4m (Figure 7). These burials may date back to the pre-Islamic and early Islamic period in the Beja area (Fakhri Hassan Abdallah Hassan and Al-Tayeb Hassan Mohamed 2016, 2-5).

Wadi Oni

On the way back to Port Sudan, a large cemetery was found containing a group of tombs north of Oni village and near the Wadi Oni. This contains 30 oval mound Acratail burials, a style common in the Beja area, with diameters between 10-20m (Figure 8). The surveys and excavations carried out by NCAM in eastern Sudan in areas affected by the construction of the Setite Dam and the upper Atbara River revealed similar burials to these (Fakhri Hassan Abdallah Hassan and Al-Tayeb Hassan Mohamed 2016, 6).

Orshab Valley

Here we conducted an exploratory archaeological survey of the gold mining area of the Orshab Mining Company, at Gebiet Al-Maadin, to ensure that the project land was free of archaeological remains. First, we conducted an archaeological survey of the mining sites by walking along the company's own paths and through the natural valleys that led to the mining area, due to the ruggedness of the region, which has many mountain ranges and no paved roads. After completing the survey, it was decided to conduct a further survey of the northern and eastern parts, which are located far from the mines. This exploration revealed nine archaeological sites, mostly stone mound burials on the tops and sides of mountains. Other sites included ancient stone mining settlements, again on the mountain slopes, as well as sites dating to the Anglo-Egyptian occupation of Sudan (Fakhri Hassan Abdallah Hassan 2018, 1-2). These sites are described below.

Orshab-A

This site is located 5km south of the Orshab mining site near the Orshab Valley stream. A cemetery was found containing about 20 circular and oval-shaped stone mounds with diameters ranging between 2-8m, mostly located on the tops and sides of hills. Islamic burials were also found here, possibly dating back to the pre-Islamic period in the Beja region (Figure 9). This site is considered one of the most important discovered during the survey, due to the presence of multiple different patterns and shapes in tomb superstructures, indicating that it was in use over an extended period of time (Fakhri Hassan Abdallah Hassan 2018, 5-6).

Orshab-B

Approximately 2km from the modern mining sites and close to the entrance to the company's Orshab mining camp, eight isolated stone mounds, measuring 2-5m in diameter, were discovered, over an area of 800x500m^2 (Figure 10). An additional Acratail circular mound measuring 5m in diameter was also found isolated about 500m away, close to the stream in Wadi Orshab. However, this burial was destroyed, perhaps by gold hunters (Figure 11). The phenomenon of Acratail burials has been frequently noted during surveys in the Red Sea Hills, and the distribution of these remains requires further study (Fakhri Hassan Abdallah Hassan 2018, 6-7).

Hillat Oman

This site is located *c.* 500m north of Hillat Oman, on the side and top of the hills, close to the Wadi Orshab stream. Here we found 20 isolated circular and oval graves, (Figures 12 a and b) with diameters between 10 and 20m (Fakhri Hassan Abdallah Hassan 2018, 7-8).

Abergatab

Figure 9 a and b. A general view of the cemeteries at Wadi Orshab site -A, showing cinder-block burials; some of them were destroyed, perhaps by gold-mining.

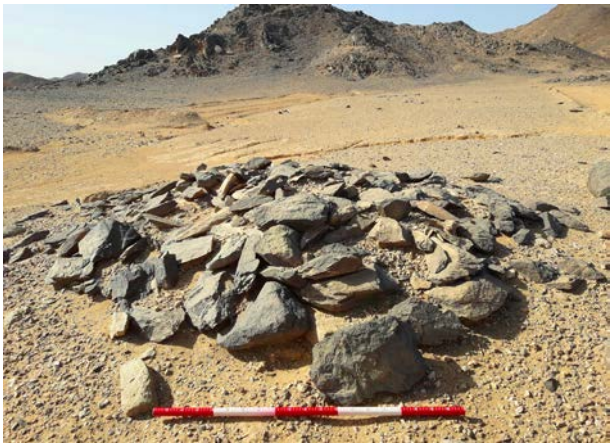


Figure 10. A semi-circular burial mound with a stone superstructure at Wadi Orshab Site-B.

Figure 11. An isolated Acratail gravel burial at Wadi Orshab.

Figure 12 a and b. Oval and circular shape burials at Hillat Oman.

On the eastern side of the Abergatab valley stream, we discovered isolated stone graves on the top of one of the hills, with diameters ranging between 2-5m (Figure 13). In the middle of the valley, we also found a circular grave with a diameter of *c.* 11m, with small white stones spread over its surface. It is usually a group of small graves surrounded by a circular ring. This appears in the distribution of white stones with regular shapes (Figure 14). Approximately 500m west of Wadi Abergatab, a large Islamic cemetery was found containing approximately 40 tombs decorated with white pebbles in the middle and tombstones at the head (Figure 15). An old concrete building was also found, being used by one of the mining companies, that was constructed during Anglo-Egyptian occupation of Sudan (Figure 16). This building is historically important, but due to resident guests at the time of the survey, we were not able to document it in any detail. This must be a priority of any future visit (Fakhri Hassan Abdallah Hassan 2018, 9).

Ali Hassay

The site has the foundations of stone buildings found on the slope of Blindalutib hill, east of Wadi Al-Sarahab (Figure 17). The number of rooms is estimated at about 40, of different sizes, with lengths between 6-8m and widths between 4-6m. This type of building is very rare in the region and so this site requires detailed study in the future (Figure 18 a and b). These buildings may have belonged to miners working in the area in the pre-Islamic period. In addition, four oval shaped stone tombs were found in the middle of these stone buildings, with diameters between 2-5m. About 5km north of the village of Ali Hassay and near the Wadi al-Sarahab stream another isolated circular mound grave was found on the top of a hill with a diameter of *c.*3m (Figure 19) (Fakhri Hassan Abdallah Hassan 2018, 10-12).

Jebaal Al-Nimir

About 7km northeast of the Jebaal Al-Nimir market (Soug Jebaal Al-Nimir), we found the remains of a stone settlement, located on the mountain slope, with about 30 buildings of varying sizes. The local people called these the 'Al-Anag Houses', and believe that they belonged to unknown ancient peoples (Figure 20 a and b). Parallels for these buildings are known along the Red Sea coast and hill region as well as in the Eastern Desert, so these may have been houses for gold miners at the end of the Christian period and the beginning of the Islamic period in the Beja region (Fakhri Hassan Abdallah Hassan 2018, 12-13).

The term 'Al-Anag' occurs in many folklore tales. Modern communities often believe that archaeological sites are cemeteries and dwellings for this group. The Al-Anag are also said to have founded the Funj state. The origin of the Funj is uncertain, particularly as the region south of Sennar has received a much greater level of attention by archaeologists and linguists than other parts of the country (Hassan 2012, 53). From an archaeological viewpoint, we cannot link the Al-Anag to any particular cultural group and they do not occur in any textual sources.

Kamarab Al-Sabba

Kamarab Al-Sabba is located in the Gebiet Al-Maadin area, which has seen vast amounts of both legal and illegal mining since the Anglo-Egyptian colonial period. This site contains the remains of concrete mining structures, including rooms and gold processing plants (Figure 21), possibly dating back to Anglo-Egyptian presence in the area. We also found raised stone basins (Figures 22-23), showing the stages of gold processing here. Regular gold mining operations are still ongoing today (Fakhri Hassan Abdallah Hassan 2018, 13-14). An isolated burial was also found nearby (Figure 24).

Ait Site-A

This site is located close to Ait village, 22km northeast of Port Sudan on the road leading to Ait, Mohamed Qul, and Dungonab (Figure 25). This area is famous for its large quantities of limestone (Figure 26). Here we found an isolated cemetery located east of Wadi Ait, containing ten stone mound tombs ranging in

Figure 13. A Mound burial at Abergatab.

Figure 14. Large circular burial at Abergatab.

Figure 15. An Islamic cemetery west of Wadi Abergatab, showing tombstones.

Figure 16. A concrete building for one of the mining companies at Abergatab region during the period of Anglo-Egyptian rule in Sudan.

Figure 17. Aerial satellite image showing the distribution of stone building foundations at Ali Hassay.

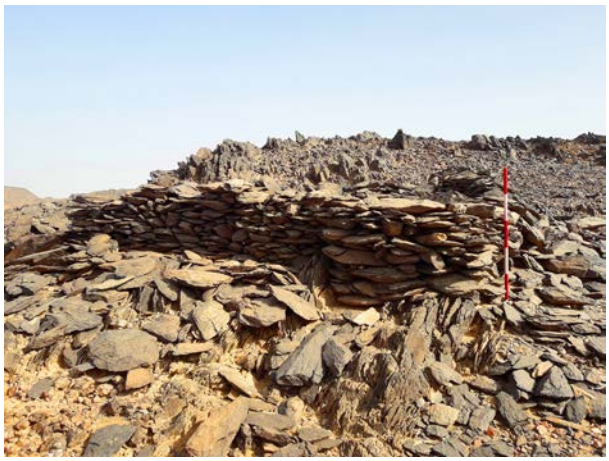


Figure 18 a and b. Remains of stone buildings from ancient mining sites at of Blindalutib Mountain from Ali Hassay.

Figure 19. An Acratail mound burial near to Wadi Al-Sarahab, Beja pre-Islamic.

diameter between 5-8m (Figure 27), spread over an area of *c.*400x200m (Fakhri Hassan Abdallah Hassan 2021, 1-2).

Ait Site -B

This site is located north of Ait Quarries (Al-Mahajir) in the Gebiet Al-Maadin area. The surveyed area is *c.*420x200m. In the eastern section of the site, we found six burials, five of which are circular in shape and one oval. The largest has dimensions of *c.*5x4m and a height of *c*0.5m, and the smallest has a diameter of *c.*2.3m and a height of *c.*0.3m (Figures 28 and 29). The date of these burials is uncertain, as no surface finds were recovered (Fakhri Hassan Abdallah Hassan and Yassin Mohamed Saeed 2021, 1-4).

Al-Genb Al-Aoleeb

Al-Genab al-Aoleeb is located *c.* 15km to the southwest of Port Sudan, near Khor Arbaat (Figure 29). Archaeological surveys in this area revealed a cemetery containing 14 burials, which could be classified into three types. A) Mound burials whose superstructure consists of stones in an oval shape, with eight burials with diameters ranging between 4-8m. This type of burial is the most numerous and largest in size in the cemetery; B) The circular tombs surrounded by a ring of black volcanic stones. There are three burials of this type, with diameters ranging between 2-5m; C) One Islamic burial found in the northern part of the site (Figures 30-31) (Fakhri Hassan Abdallah Hassan and Yassin Mohamed Saeed 2019, 1-3).

Khor Arbaat

The site is located about 12km southwest of Port Sudan. We discovered a large cemetery containing 40 tombs of different shapes and sizes extending along Khor Arbaat on both banks (Figure 32) on a flat plain surrounded by hills on the northeast and southwest sides. Perhaps these burials date to multiple historical periods, including post-Meroitic, pre-Islamic, or Islamic (Figure 33a and b) (Fakhri Hassan Abdallah Hassan and Yassin Mohamed Saeed 2019, 5-6).

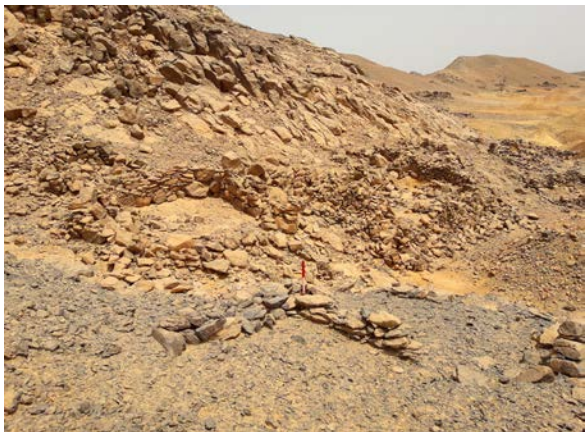


Figure 20 a and b. The remains of stone buildings and rectangular foundations on the northeastern side, and the remains of a wall and square-shaped rooms on the northern side at Jebaal Al-Nimir.

Figure 21. A general view of the remains of mining buildings at Kamarab Al-Sabba.

Figure 22. Remains of a circular concrete building at Kamarab Al-Sabba.

Figure 23. A rectangular concrete basin in the northern corner of Kamarab Al-Sabba.

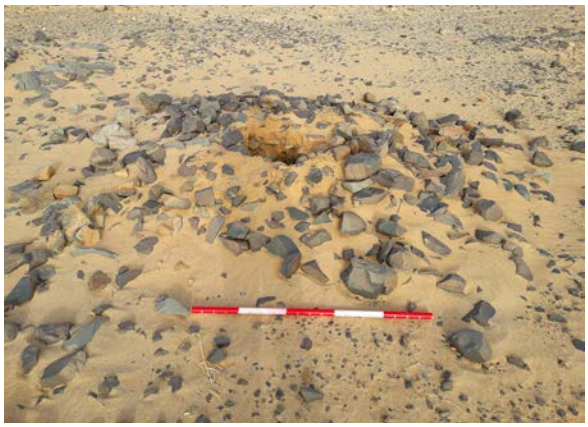


Figure 24. An isolated burial with its superstructure destroyed, found near Kamarab Al-Sabba.

Figure 26. Wadi Ait stream showing limestone strata.

Figure 27. Tumuli at Wadi Ait burial Site-A.

Jebel Shagroum

Jebel Shagroum is located in the Derudeb area of the Red Sea State, close to the national road linking the states of eastern Sudan, Gadarif, Kassala, and the Red Sea. In 2018, the first visit to the site was carried out by a team from NCAM.[3] They conducted an archaeological survey of the site, which extends 250x150m, on the south side of Wadi Derudeb and to the east of the watercourse (Figues 34 and 35). The survey revealed a cemetery containing about 26 oval and circular burials, spread around the Shagroum foothills, with diameters ranging between 2-4m, dating back to the pre-Islamic period in the Beja region (Figure 36 a-f). In addition, they found six Islamic burials on the western side of the slope of Jebel Shagroum (Gazafi *et al.*

[3] The team included: Gadzafi Yousif Ishaq Archaeologist (Senior Museum Curator), Yassin Mohamed Saeed (Surveyor), and Ahmed Ibrahim Al-Arabi (Antiquities inspector).

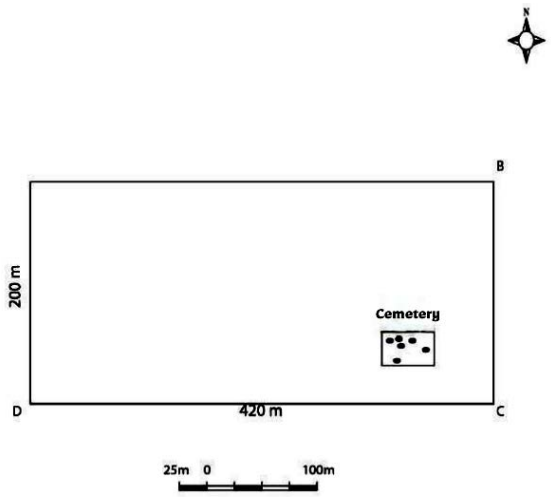
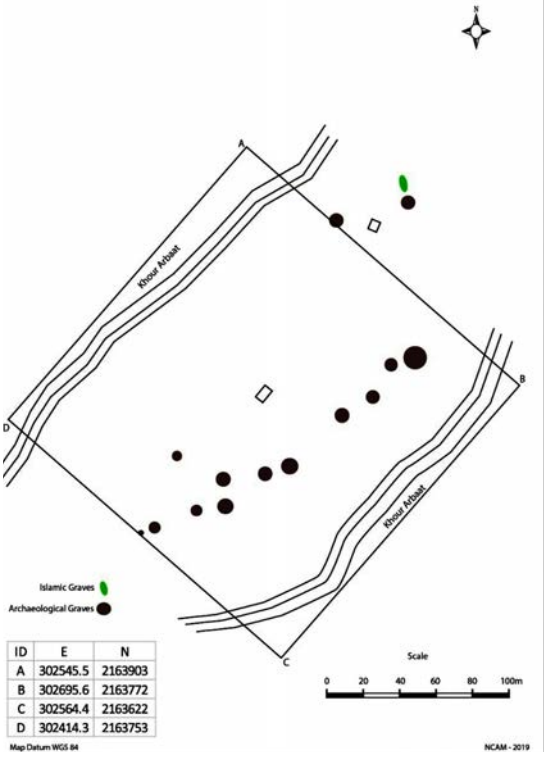


Figure 28. A sketch showing the distribution of burials at Ait - Site B, modified from Yassin Mohamed Saeed 2021.

Figure 29. A general view showing the distribution and shapes of the burial at Ait - Site B.



ID	E	N
A	302545.5	2163903
B	302695.6	2163772
C	302564.4	2163622
D	302414.3	2163753

Figure 30. Distribution of burials at Al-Genab Al-Aoleeb modified from Yassin Mohamed Saeed 2021.

2018).

In 2020, a second survey was conducted by another NCAM team.[4] This survey explored an area of *c.*660m north-south to the north of Jebel Shagroum, a flat rocky area serving as an extension of the Jebel Shagroum chain. No archaeological materials were found on the surface here (Fakhri Hassan Abdallah Hassan and Yassin Mohamed Saeed 2020, 2).

Discussion

The NCAM archaeological surveys in the Red Sea hills and coastal area revealed many important archaeological sites showing the longstanding traditions and culture among the Beja community and their changing funerary practices. These surveys revealed the spread of cemeteries over a number of hills, either as groups or as isolated burials, generally on the slopes and tops of the hills or on river banks. Many settlement sites were also found, located near ancient mining sites, some of which are still being used today, either legally or illegally. The absence of archaeological finds on the surfaces of these sites, such as pottery, was notable.

Previous fieldwork, both national and international, have conducted surveys and rescue excavations in this region, but these were generally very small scale and across a vast area – the Red Sea Coast alone is over 780m in length. This area urgently needs more archaeological surveys to cover the areas that are still unexplored. The sites in this region can be classified as below.

[4] The team consisted of Yassin Mohamed Saeed (Surveyor) and Fakhri Hassan Abdallah (Antiquities inspector).

Figure 31. A general view showing the distribution of burials at Al-Genab Al-Aoleeb. Burials are circular and of various sizes surrounded by a ring of stones, with oval gravel burials.

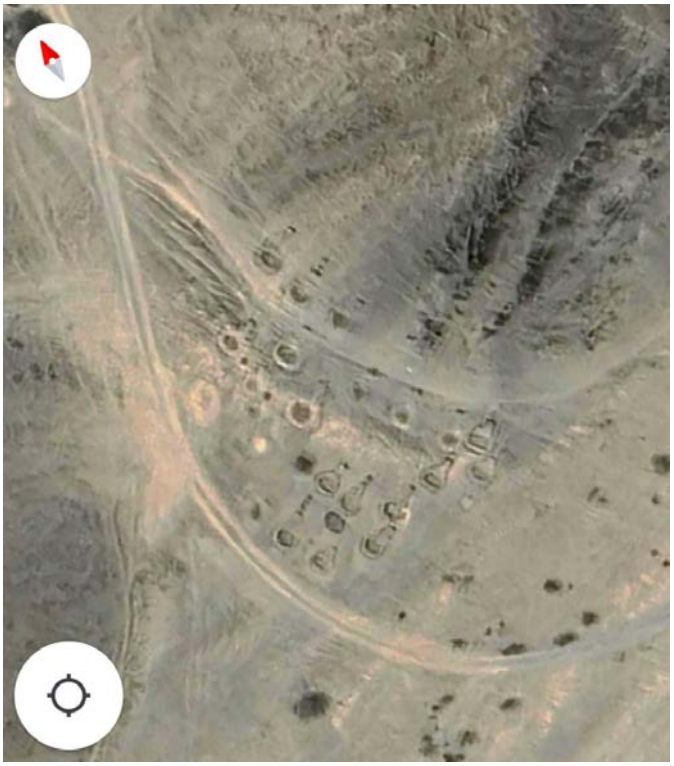


Figure 32. Satellite images showing the location of the Khor Arbaat burials.

The Cemeteries

Four distinct burial styles were noted during the surveys.

A) Pile burials, known as 'Acratail' among the Beja. These have a semi-circular or oval superstructure, between 4-8m. Examples were found at Wadi Oni, Orshab-B and Ali Hassay near to Wadi Al-Sarahab.

B) Burials with a semi-circular superstructure of varying diameter. This type was found at Al-Genab Al-Aoleeb and Jebel Shagroum.

C) Examples with a cinder block superstructure of varying diameter and height, found across the region.

D) Islamic tombs, characterised by a circular wall containing a burial ground or a group of tombs within this perimeter, with white pebbles scattered on their surface, or with a an oval stone structure with pebbles scattered on the surface and tombstones on top.

Examples were found at a number of sites, including Khor Arbaat, Hillat Oman, and Jebel Shagroum among others. This type was particularly widespread and changing styles of these superstructures indicate long periods of occupation.

This area is still little understood. The only long-term research project has been at the UNESCO site of Suakin (Breen *et al.* 2011; Smith *et al.* 2012; Phillips and Smith 2014). Both Beja and Islamic archaeology in Sudan are understudied, with only limited work conducted on this period (e.g., Crowfoot 1911; Kwatoko 1993a; 1993b; Seeger *et al.* 2006; Smith 2006; Adam 2019; Haour and Abdelrahman 2021). As such, these surveys are of immense importance to understanding the history of this region.

An important example of this is the nine Acratail burials found in this area. This name means 'Roman grave' in Beja and has also been called a 'fishtail' burial by researchers (Adam 2018, 192), but these are little discussed in the literature. The variety of Islamic burial types is also notable. Some may have been pilgrimage burials, but larger pre-Islamic tombs were also discovered and attest to a long history of occupation in the region – a particularly large necropolis consisting of more than 50 mounds at the Onib Crater may even represent a royal burial ground for the Beja (Sadr *et al.* 1998, 83-84). Exploring these rural areas is important as both classical

Figure 33 a and b. A general view showing the distribution and shapes of the burials at the Khor Arbaat site.

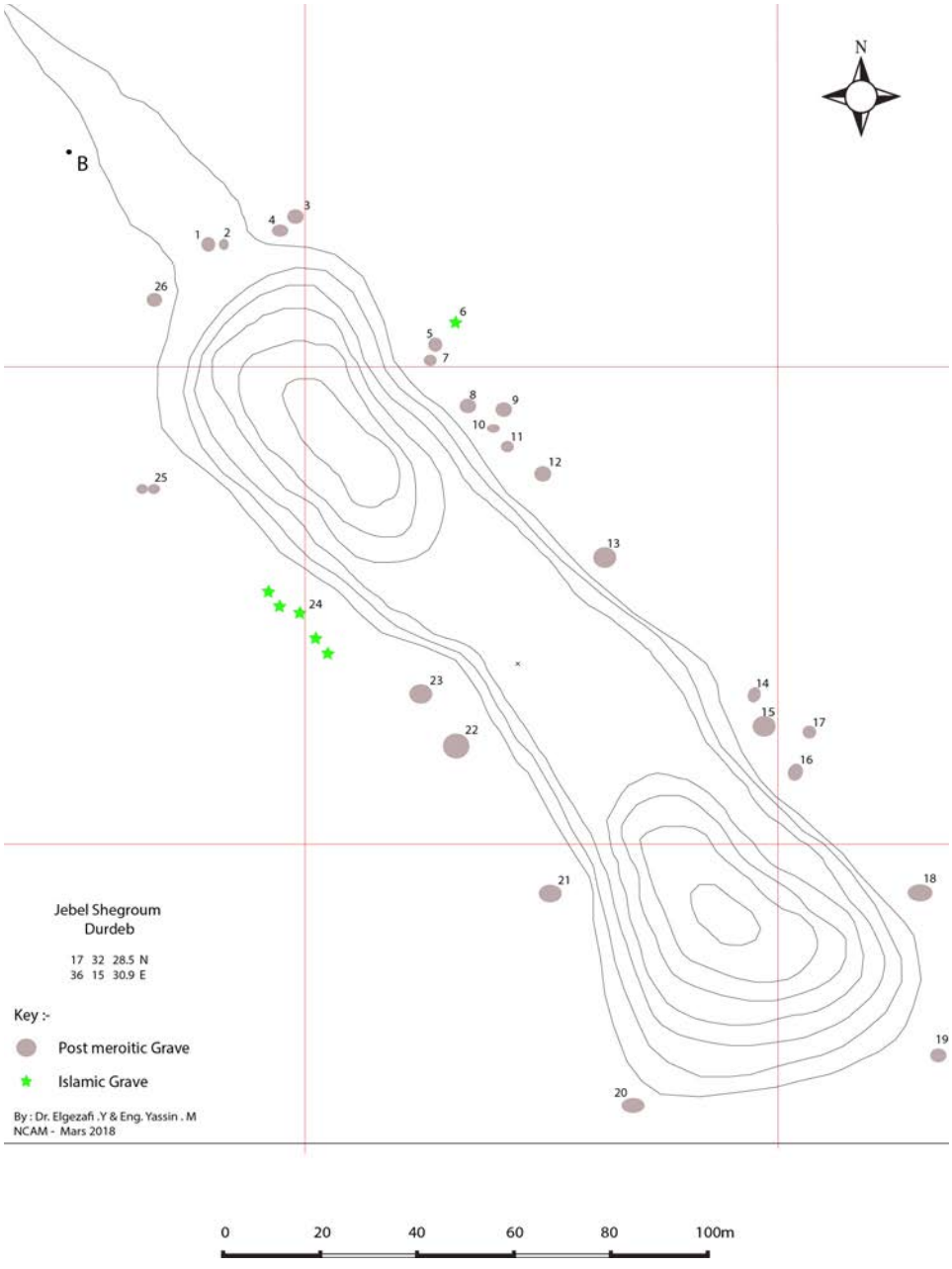


Figure 34. Map showing the locations of the burials around Jebel Shagroum and the area that was surveyed on the northern side of the mountain. Modified from Yassin Mohamed Saeed 2018; 2020.

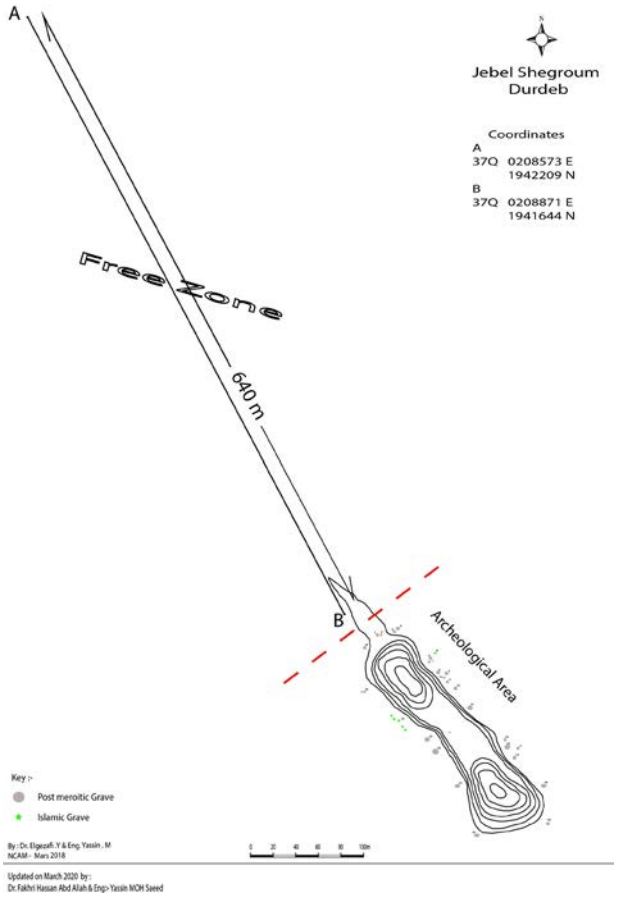


Figure 35. Map showing the locations of the burials around Jebel Shagroum and the area that was surveyed on the northern side of the mountain. Modified after Yassin Mohamed Saeed 2018; 2020.

and Arabic sources note that the Beja kings, while having cities on the river, lived in the desert (Davies and Welsby 2020, 65).

Many large cemeteries have been discovered in Eastern Sudan in recent years (Sadr et al. 1995; 1997; 1998; 1999; Magid *et al.* 1995), which contextualise the remains found in this survey. These are generally large tumulus cemeteries with circular superstructures built of local stone, or smaller ring-cairn graves. Many are flat on top and lined with large vertical stone slabs around the outmost stone circle. The burials are mostly 3-10m in diameter, although the examples in the Onib Crater are much larger. Karim Sadr calls this type of tomb circular platform tumuli (Sadr *et al.* 1995. 212, Lassányi 2010, 599), and they are particularly common in the Wadi Allaqi and the Wadi Gabgaba, with similar tombs also excavated to the south at Mendillo-Shamadi, although with few dateable finds. A large ring-cairn cemetery was also found near the port of Berenike (Kennedy 2001; Lassányi 2010, 599). Finds include decorated handmade pottery similar to material found at Bi'r Minayh in Egypt (Sadr *et al.* 1995, 221, fig. 25), and in one case gold and emerald jewellery (Sadr *et al.* 1995, 212-221). Radiocarbon dating material from one of these burials gave a date of 7th–8th Century BC (Sadr *et al.* 1995, 227; Lassányi 2010, 600).

Interestingly, some of these burials are located close to Islamic cemeteries, suggesting a sense of kinship between groups regardless of conversion. At the intersection of the Khor Haderat with the Khor Mirdieb, large circular platform tombs, probably dating to the pre-Islamic Beja, were located 250m from Muslim graves (Davies and Welsby 2020, 64). These were positioned near dry-stone wall burials, some with stones stacked vertically on the edge of the grave, similar to Megalithic monuments in Europe and North Africa (Adam 2018, 192).

In the 3rd season of the Western Periphery of the Red Sea project (WPRS), graves were found in the Melhab Basin (Agig district) resembling examples at Mahal Teglinos near Kassala, dating to the early 3rd - early 2nd millennium BC (Beyin *et al.* 2023, 71), indicating widespread contact across the region. The majority of sites found during the Berber-Suakin Archaeological Project (BSAP) are also cemeteries, again showing a mix of large cemeteries and isolated mound graves, located along the edges of hills or wadis (Bashir 2021, 201).

How these areas may have interacted with each other is uncertain. Work by the Italian Archaeological Expedition to the Eastern Sudan of the University of Naples 'L'Orientale' is currently exploring the Kassala region in order to get a better knowledge of the relationships between Eastern Sudan and Upper Nubia, to investigate the possible relationships between the cultures of Eastern Sudan, the Red Sea coast and the Eastern Desert (Manzo *et al.* 2011, 1-2; 2012, 1).

Figure 36 a-f. The distribution and shapes of the tombs at the Jabal Shagroum site: oval-shaped gravels, and oval-shaped tombs (Acratail), in addition to Islamic tombs with semi-circular and oval shapes. Some of these at Jebel Shagroum have tombstones.

Excavations on 10 tombs shaped like truncated cones with a diameter of 5-6m and a heigh of 1m (Davies and Welsby 2020, 14), and a circular platform mound dating to the 8th century AD (Davies and Welsby 2020, 9), further emphasise the variety of funerary practice in this area during the pre-Islamic Beja period and indicate that the Beja still controlled the Eastern Desert at this time. Religious practice at this time is uncertain; although textual evidence suggests the Beja were involved in fighting Islamic forces, the discovery of an Arab grave, marked by two large stelae and according to Islamic burial custom, on a collapsed platform mound, suggest some level of conversion (Davies and Welsby 2020, 14). Most sites seem to show long periods of intense activity, particularly those close to mining areas (Davies and Welsby 2020, 62-63). In the Wadi Amur, for example, the cemetery at the north end of the site generally contains Islamic burials whereas to the south, we see a variety of different burial types including simple round 'mound' tumuli and 'ring' burials with a stela facing East (Krzywinski 2012; Lassányi 2012, 297; Manzo *et al.* 2011, 19-23; Adam 2019, 494-496, Cooper 2021). Other long occupation cemeteries are noted at Alitiatib (Cooper 2021, 122).

This growing body of evidence from cemeteries suggests long periods of occupation in the Eastern Desert and Red Sea Hills, with communities converting to Christianity and then Islam but remaining in the same area. Growing evidence of settlements is perhaps evidence of a movement by nomadic groups towards sedentism (Lassányi 2010, 602).

Mining Settlements

Many ancient mining sites were noted in the survey, dating to multiple periods. These take the form of stone structures, which we found at the sites of Ali Hassay and southeast of Jebaal Al-Nimir, and which may date back to the pre-Islamic and the early Islamic periods. Other sites contained concrete buildings and can be dated to the Anglo-Egyptian period in Sudan, including Kamarab Al-Sabba and the concrete building in the Abergatab area.

A large number of sites dating between the 4th-6th century AD are documented across the Eastern Desert (Lassányi 2010, 600). Mining settlements are particularly common and easily recognised, including the large gold mining settlement at Bir Umm Fawakhir in the Wadi Hammamat dating to the 5th-6th centuries, and settlements in the Mons Smaragdinus regions, including Sikait and Nugrus, between the 4th-6th centuries AD. The mines at Deraheib were probably also in use (Sadr *et al.* 1999); however, no textual sources have been found at these sites and so it is unlikely that there was any written administration here (Lassányi 2010, 600). This increase in settlement activity may suggest changes in economic strategy among these communities, perhaps indicating a move towards semi-sedentism, and seems related to the emergence of a new Blemmyean-Beja state in the 1st millennium AD (Cooper 2021, 122).

In the Wadi Nesari, the discovery of a large dry-stone building full of quartz fragments was probably a production workshop, with intensive mining in the Islamic periods leading to a greater exploitation of the quartz resources and the abandonment of the nearby settlement (Davies and Welsby 2020, 62-63). Several similar mining centres have been discovered across this region, for example close to Jebel Kefayeb (Davies and Welsby 2020, 36). The structures identified in our survey add to the impression of the Eastern Desert as a hive of mining activity in the medieval period.

Conclusion

Archaeological surveys carried out by NCAM in the hills and coastal areas of the Red Sea State have located many important archaeological sites that need to be preserved. The frequent cemetery sites, unattached to settlements, may have belonged to ancient traders or herders, since pastoral nomadism was important among the inhabitants of the Eastern Desert. Although stone tombs are common in the Middle Nile Region across all periods, these examples are distinct from those found in Upper and Lower

Nubia, and even Atbara, and are instead similar to examples from Port Sudan. Acratail graves in particular are typical of this region.

Archaeological research, especially cemetery archaeology that shows a consistent funerary culture, can inform us of polities unmentioned in textual sources, and help identify the presence of nomadic elites and political clusters in pastoralist settings, even if they are difficult to map archaeologically. These can fill a gap in our knowledge of this region in the medieval period.

Sudanese heritage has been exposed to many threats in recent decades, caused by economic and political changes including the construction of dams, goldmining, building of factories and urban sprawl, spread of agricultural land and political turmoil. The Red Sea State contains many archaeological sites that are currently at risk from such threats, as is intangible heritage such as songs and oral traditions, particularly in Sinkat and Arkaweet.

In the near future, rescue excavations must be conducted at a number of sites adjacent to mining sites so that we can study and document them in the required scientific manner and record them on the Sudanese Antiquities Map. The entire region of eastern Sudan is still poorly represented in scholarship and understudied by archaeologists, meaning little is known of communities living along the southern and northern borders of Ethiopia, from the Rahad River, Atbara, Setite mountain and hill areas, the Red Sea coast, and the Ethiopian plateau. It is also noted that there are large development projects in the Red Sea State, especially in mining, in areas that have not been inspected for archaeological remains. This has the potential to greatly harm the antiquities and lead to the loss of the cultural heritage of the people of the region. There must be preliminary archaeological surveys of the project land when planning development projects, so that the history of our ancestors is not lost. We also noticed that a large number of archaeological sites, particularly cemeteries, had been plundered and destroyed by people hunting for gold. There are also archaeological and historical sites located on the route of the proposed road linking the state capital (Port Sudan), the city of Suakin, Tokar and Agig to Eritrea. The most important of these is Mih-kak Someet near Garura village. This is clear evidence confirming that no preliminary archaeological studies took place preceding the implementation of projects on the ground. It is essential to create a map of archaeological sites in the state, which can be a basic reference for when undertaking any development project in the state.

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