Tethering stones in Kedurma, Nile Third Cataract in the Sudan

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Introduction

This report summarizes the findings regarding tethering stones identified as part of the University of Khartoum Archaeological Project at Kedurma in northern Sudan in May 2021. This fieldwork was carried out in the eastern hinterlands of Kedurma through the generous support of the British Institute in Eastern Africa (BIEA). The archaeological survey in the eastern hinterlands of Kedurma is a part of the larger project 'The Meroitic Townsite of Kedurma: Archaeology, Environment, Landscape and Population Movement', directed by the Department of Archaeology, University of Khartoum since 2019. A part of this work is a survey of an area to the east of the Nile, which is an open area connected to the Meroitic site of Kedurma by the big Wadi. The survey reported here focuses on an area of about 40 square km. The aim of this paper is to present the main features of tethering stones mapped and recorded in the area in different contexts. It also aims to discuss their function, on the basis of a correlation between available archaeological and geomorphological data. Tethering stones were made and used by prehistoric hunters during the Mesolithic Period (El Mahi 2007; 2014). Their physiographic position and distribution have been identified in association with Holocene lacustrine, semi-lacustrine, and fluvial deposits (Pachur 1991:16).

Figure 1. The landscape of Third Cataract Region. (By author; derived from Sudan Survey Authority (SSA) 2018.)

Tethering stones

Tethering stones form part of a trap that consists of a stone and a cord/rope. This tool is made of stone slabs or boulders of different sizes, and its principal characteristics are weight and raw material, with notches or grooves along the median diameter to block a rope (El Mahi 2007: 37-62). The grooves and notches are found in the middle of the stone and vary in depth and width. Grooves and bilateral notches are located centrally to serve a particular purpose; namely, to attach the rope securely to the stone (El Mahi 2014: 10; 2007: 37-62).

Tethering stones have been reported in various parts of Africa and Asia. Thousands of them have been reported in a vast area in the Sahara and along the Nile corridor (Allard-Huard 1993; Gallinaro & di Lernia 2018: 1; Newbold & Shaw 1928; El Mahi 2007: 38). In fact, tethering stones were reported in different parts of central and northern Sudan, and reported as isolated artefacts at the west and east banks of the Third Cataract Region, el-Ga'ab depression at western Dongola, el-Golied area, and the Fourth Cataract area (Hamdeen 2018; Osman 2018; Hamdeen *et al* 2019; Tahir 2014; Gabriel 2012: 83-90). Moreover, tethering stones were reported along with medieval rock art in the Wadi Abu Dom south of the Fourth Cataract region, closely associated with the ancient tracks along the banks of the wadi and described as devices to tie up valuable cattle or camels south of the Wadi Abu Dom (Lohwasser 2013: 428-429). Again, tethering stones were found south of Omdurman area (Usai & Salvatori 2002) and reported as a single stone during the survey of the Berber-Suakin caravan route (Bashir 2017: 207).

Previous studies of tethering stones have shown different aspects in past human life when it comes to physical interactions with the environment and subsistence practices (cf. Gallinaro & di Lernia 2018: 16; El Mahi 2007: 53; Sciuto 2018: 12). These stones have been interpreted as hunting devices, mainly on the basis of a large rock art repertoire depicting these artefacts, mostly in association with wild game. Several authors have also proposed that tethering stones were used to tame wild animals (e.g., El Mahi 2014: 9-13; 2007: 37; Jelinek 1985; Gallinaro *et al* 2018). These interpretations are supported by a few ethnographic sources reported from different African contexts including the Tuareg people who inhabiting the central Saharan massifs and other Eastern Sahara tribes (Gallinaro & di Lernia 2018: 2) . Their use for tethering domestic animals has also been considered. Moreover, Pachur (1991)'s interpretation of collected archaeological materials from Gabriel in the Eastern Sahara, suggests that tethering stones might have been used as a fetter of grazing animals, especially cattle, a practice that still exists today among herders in the region. Tethering an animal's leg to the stone allowed the animal to move, but prevented it from straying. It is also been suggested that these were used as building materials, for stone structures or as counterweights for tents, though this is commonly considered a secondary re-use (cf. Gallinaro & di Lernia 2018: 2).

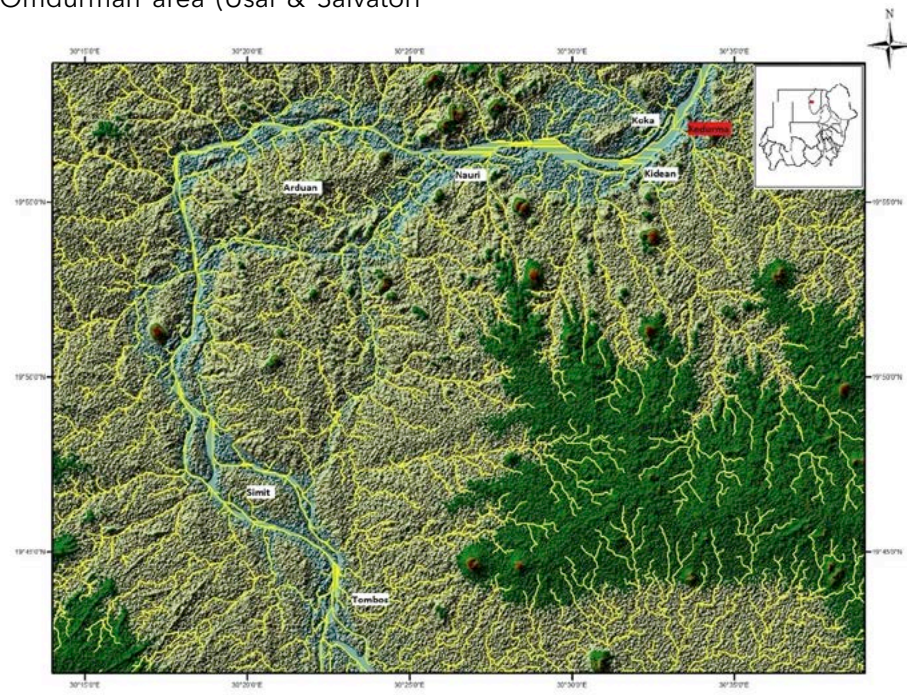

Figure 2. General view of the Wadi Kedurma. (By author.)

The Kedurma study area

The Kedurma area, is about 10 km south of Delgo and 9 km north of the Kajbar rapids (cf. Figure 1). This region begins 60 km beyond Dongola, after the alluvial plain of Kerma. It is six km downstream from Kerma Reach and extends to about 700 km from the villages of Hannik (west bank). It is at the same distance from Tombos (east bank) and south to Jebel Dosha. It is also on the west bank and Wawa (east bank) in the north (cf. Osman & Edwards 2012: 37).

The geographic subdivisions of the region and its geological formations consist of a pre-Cambrian basement complex and enclosed by Nubian sandstone. The basement complex consists of sedimentary rocks, as well as a variety of igneous and metamorphic rocks. This includes a variety of conglomerate, grit, sandstone, and mudstone (Whiteman 1971: 54-55). This area is located within the desert region of the northern Sudan with a minimal rainfall of less than 50 mm of rain annually, hence is largely devoid of vegetation (cf. Edwards 1989: 19). The harsh climate of the desert area affects water sustainability. The only permanent water resource in the area is the Nile, which crosses the region north to south and comprises many series of rapids forming what is known the Third Cataract (cf. Osman 2004: 34). The first series of the rapids is located just after Simit and Musul islands. Beyond Arduan, the Nile is diverted to the east by rocky ground of which Jebel Gorgod forms part, then passes Nauri two jebels before reaching Fareig on its right. The Kagbar falls are a little further down than Geddi and Sabu on the right bank. Just after Geddi, the Nile has turned from an easterly direction towards the north, passing Delgo on the right bank and Sesebi on the left. Beyond its confluence after Abu Sari, the Nile turns again towards the west, passes Tinari and Koya, then resumes its northerly direction before reaching Solib and Sedeinga. (Allard-Huard 1993: 24).

The geology of the study area is characterized by wadis. There are significant wadis running from the north to south such as Wadi Sabu, Barga, and from the east-west such as Wadi Kedurma. Most of the wadis in the area have different tributaries locally known as 'Eids'. The vegetation cover along these extended terraces consists of acacia trees and some grasses concentrated on the wadi banks and in scattered areas between the gravel terraces. The general landscape of the area of Wadi Kedurma is characterized by isolated mountain ranges to the east. Desert lands and water courses have made it a natural corridor with favorable environmental conditions suitable for human occupation but also for east-west interaction.

Research findings

The survey reported here identified 35 archaeological sites of varying sizes. Samples of surface artefacts including pottery were collected. Sites and any diagnostic materials were recorded via written description, photographs, GPS readings, and preliminary sketch maps, and were plotted on GIS distributed maps, allowing for the identification of the spots to be allocated to particular technological phases across the landscape. In doing so, some important trends have begun to emerge related to the development of Paleolithic sites in the area including the identification of twelve new sites. These sites include rock shelters and open sites. The sites located along the foothills or the flat area are usually near paleo-channels. Twelve additional sites show evidence of tombs, which are small mounds or rounded stone structures distributed in flat or hilltop areas. Large amounts of rock drawings were also found and recorded at the sandstone plateaus in the area of the wadi, which can possibly be an indicator of the paleo-environmental conditions in the area. Three other sites were recorded as salsifies 'fossils' showing the remains of big trees that have existed in the area. Tethering stones and grinder tools were recorded in large amounts, especially in the flat areas at the bottom edges of the Wadi (Figure 3).

A total of 153 tethering stones were identified and recorded throughout the surveyed area (Figure 4). The location of these tools was recorded using GPS, their length and width were measured, and their weight and geographical position were hand-plotted on preliminary field maps. It is worth noting that all the tethering stones are isolated finds and located in the bottom and edges of the wadi and its tributaries. These spots shared common advantages. The depression is a geomorphological feature particularly suited to retaining moisture and is characterized by the presence of a denser vegetation cover i.e., discontinuous grass cover.

Water erosion over the specimens may have altered the original appearance of the tethering stones (cf. El Mahi 2007: 40). Most of the artifacts were found at the bottom of the wadi, which suggests the existence of a denser vegetation cover that is considered the only green areas in the wadi till today.

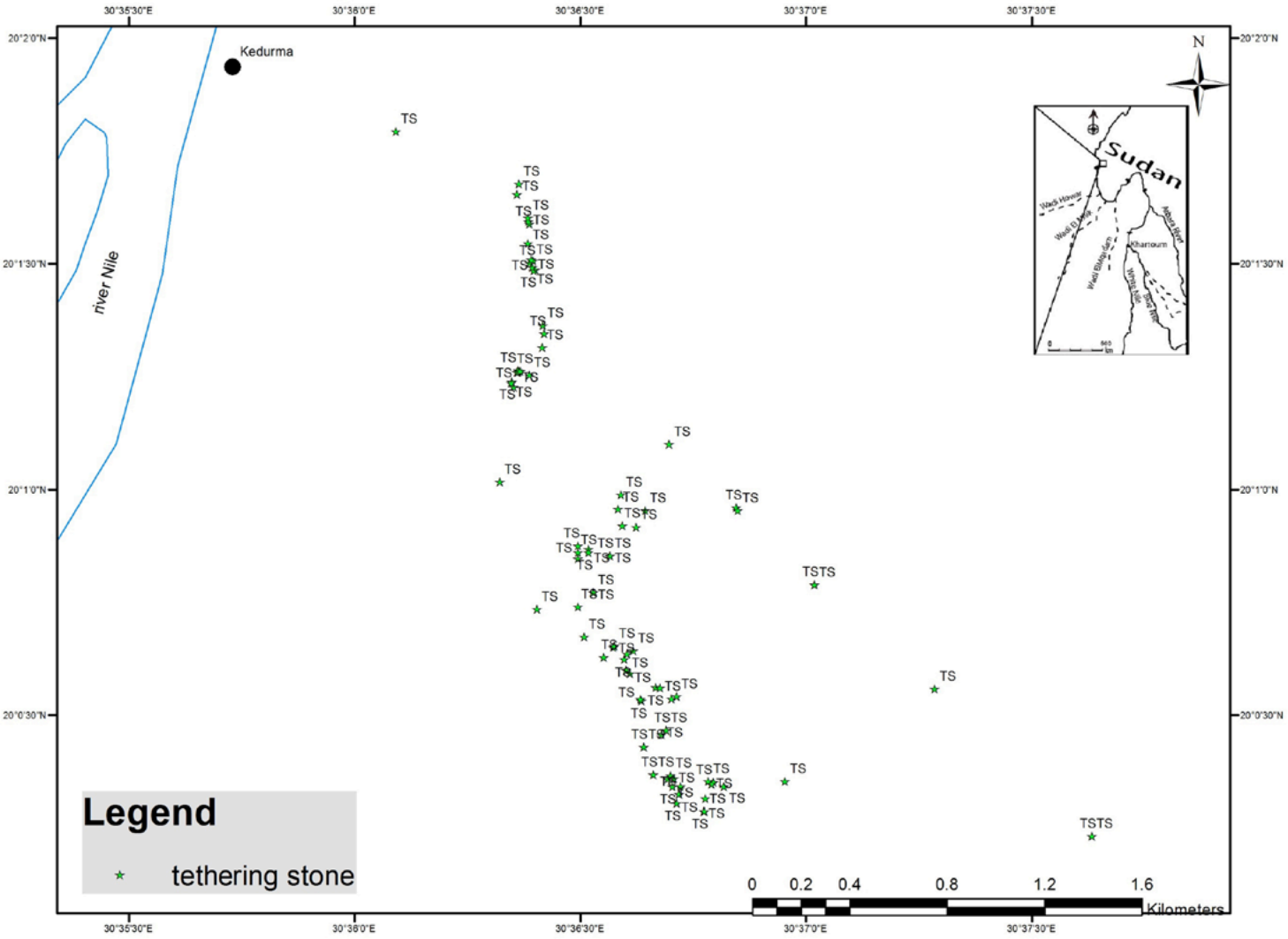

Figure 3. Spatial distribution of tethering stones in the study area. (By author; derived from Google Earth.)

Figure 4. Selected samples of tethering stones from the study area. (By author.)

The main characteristics of tethering stones in terms of size, weight, shape and find spot have been considered here, both from a landscape perspective as well as individual scale. All tethering stones reported here were made from sandstone from local outcrops allowing us to estimate their weight based on size and the specific gravity of sandstone. Most of the species were made of ferricrete sandstone (92%) while a few examples were made of pure sandstone (3.9%) and granite (3.3%). For each, weight, material, and groove type were recorded as well as intra-site features (Figures 5-6). The analysis of the data confirms the medium variability of the tethering stones in terms of size, weight and shape. The estimated weights, using the recorded dimensions, vary widely from 1.5-60 kg.

The stones vary in length (20-50 cm), width (15-35 cm), and weight. However, we can isolate and discuss some significant trends in their principal features. The weights, calculated by estimated dimensions, vary widely from 1.5 kg to 60 kg. They were grouped into three classes, defined on the basis of the distribution frequencies. The three categories accounted for a majority of tethering stones (1.5-20 kg, 21-40 kg, and 41-63 kg). Most of the artefacts were slightly grooved (70%), with fewer heavily grooved ones (30%).

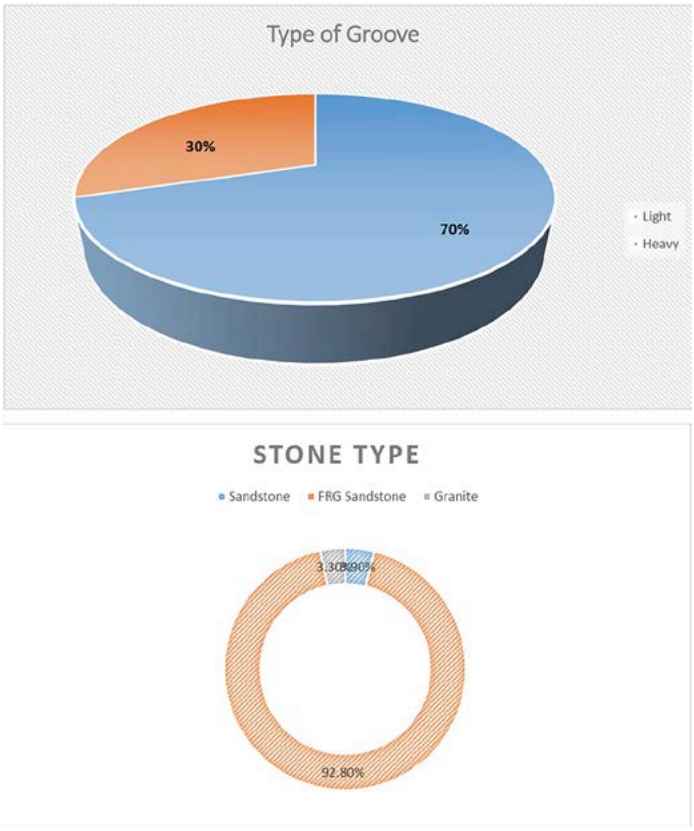

Figure 5. Pie chart for type of groove and stone type. (By author.)

Figure 6. Pie chart for find spot and weight. (By author.)

Discussion

The archaeological survey of Kedurma eastern hinterlands has yielded information of great importance in relation to the eastern desert and its archaeological and cultural contexts. The surveyed area has proven to be extremely rich in archaeological remains especially of the Lower and Middle Paleolithic Periods. This includes the tethering stones found in this study area located in spots likely chosen to trap animals by prehistoric hunters.

A significant correlation between these artefacts and some of the principal geomorphological features suggest the locations were selected for the benefits of the vegetation cover inside the wadi that would be used to attract wild animals. El Mahi (2001: 27; 2010: 298; 2014: 13) stated that the success of traps requires some types of specific environmental conditions such as topography and suitable vegetation cover. The tethering stones retrieved from the surveyed area have varied weights (1.5-63 kg), (cf. Figure 5). It is possible that the weight of the stones bears a significance such as the animals' size (cf. El Mahi 2007: 52). The size of these tethering stones indicates that they were for hunting medium size animals as inferred from depictions on rock drawings in North Africa.

Additionally, it is evident that tethering stones vary in terms of size and shape in response to factors like cord size and length. The important relationship between stone weight and cord length has been demonstrated (cf. El Mahi 2007: 37-62). In essence, the smaller the stone, the longer the cord whereas large heavy stones are tethered by short cords (cf. El Mahi 2007: 52; 2014: 13). Future studies may shed light on the distribution of these artefacts and their significance in terms of ranging patterns of the hunted animals. It is hoped that this study can further future investigations of the distribution patterns of tethering stones in the area which may indicate economic activities and animal density in the past.

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