Tethering Stones from the Eastern Bank of the Third Cataract Region, Northern Sudan

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Introduction

Tethering stones form a part of a trap and consist of a stone and a cord/rope. The stones and rope vary in weight and length. The stone is usually elongated, and has a groove in the middle that runs all the way round. These grooves vary in width and depth. Some stones have bilateral notches instead of grooves. The grooves and notches mark a stone and distinguish it from others. Indeed, these man-made grooves and notches transform the stones from their natural form into functional objects. One end of the rope is tied to the stone along the groove, or is secured by the notches. The grooves and the notches are intended to secure the rope and prevent it from slipping. The other end of the rope is tied in a noose, which forms a loop by means of a slipknot. The loop can instantly tighten when the rope is pulled (El Mahi 2007, 37-38).

The first reports of these artefacts are found in an oral Arab legend recorded at the end of the 19th century in Algeria, and later shared throughout the central Sahara (De Colomb 1860; Soleillet 1877; Duclos *et al.* 1923; Morel 1952; 1982). Since then, such stones have frequently been recorded either as scattered objects or as representations in rock art scenes found in different areas of the Sahara, from Algeria to Egypt (Gallinaro and Di Lernia 2018, 1).

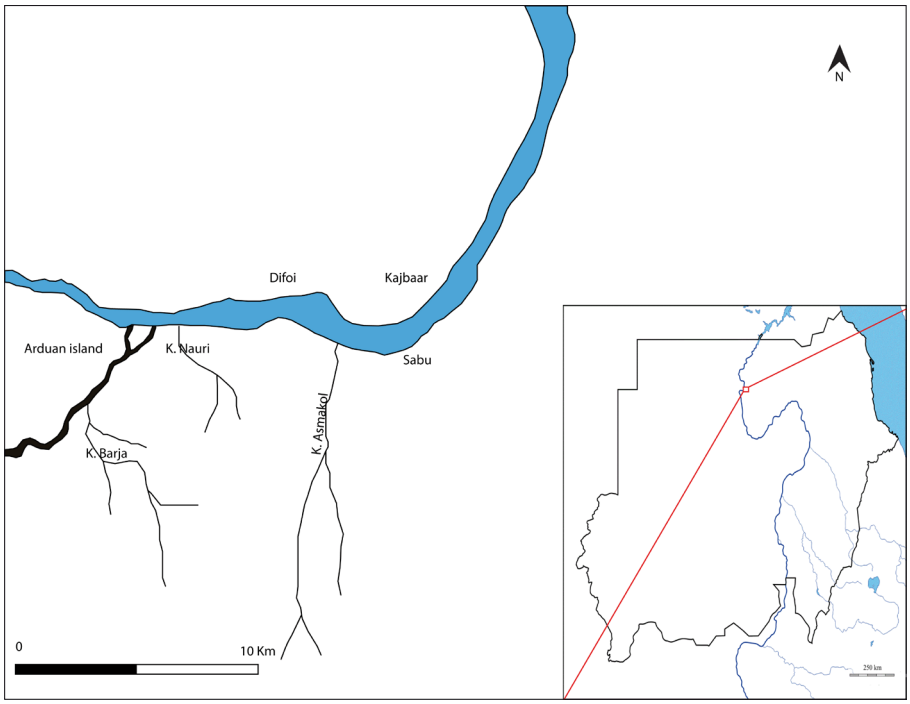
The area of study

The study area was located on the eastern bank of the Third Cataract region in northern Sudan, and includes three khors (Abdeen 2018) (Map 1):

1. Khor Barja: located in the eastern part of the village of Barja; many small drainage channels divide the khor into smaller parts.
2. Khor Nauri: located between Nauri and the village of Mashkiela; the khor runs east-south and connects with Khor Mashkiela after 2km.
3. Khor Asmakol: located on the southern bank of the Nile, the khor runs from south to north, and is dominated by sandstone. At its southern end, the khor is divided into two parts by small sandstone hills (eastern and western). In addition to a tethering stone (Plate 1), there are 464 rock drawings reported in the vicinity of this khor, one of which is oval shaped with a groove in the middle, and probably shows a tethering stone (Plate 2).

Tethering stones from the Eastern Bank of the Third Cataract

A 4km^2 area was surveyed for tethering stones across Khor Barja, Nauri and Asmakol. Fifty-seven tethering stones were reported: 22 in Khor Barja (KB) (Table 1), 21 at Khor Nauri (KNU) (Table 2), and 14 at Khor Asmakol (KAS) (Table 3). All were situated in two geological settings; on the edges of Khors, and on a flat landscape.



Map 1. The area of study.

Method of classification

The method of classification for identifying tethering stones in the area of study was dependent upon three characteristics.

The raw materials

There are four materials used (Figure 1):

1. Granite tethering stones: these dominated in Khor Barja, representing *c.* 64%.
2. Basalt tethering stones: these dominated in Khor Nauri, representing *c.* 90%.
3. Sandstone tethering stones: these dominated in Khor Asmakol, representing *c.* 99%.
4. Ferricrete sandstone tethering stones: a few examples were reported in Khor Barja, representing *c.* 5%.

The shape

The morphological characteristics and general shape of the stone is very

No.	Coordinates	L. mm	W. mm	Type of rock	Treatment of groove
KB01	N 19°54'. 193.E 30°24'.596- Alt. 225 m	400	200	Basalt	Edge pecked
KB02	N 19°54'. 208.E 30°24'.599- Alt. 225 m	400	230	Granite	Edge pecked
KB03	N 19°54'. 243.E 30°24'.620- Alt. 215 m	270	140	Sandstone	Edge pecked
KB04	N 19°54'. 195.E 30°24'.596- Alt. 225 m	590	360	Granite	Edge pecked
KB05	N 19°54'. 169.E 30°24'.598- Alt. 221 m	500	330	Granite	Edge pecked
KB06	N 19°54'. 154.E 30°24'.600- Alt. 218 m	340	190	Granite	Edge pecked
KB07	N 19°54'. 087.E 30°24'.609- Alt. 212 m	490	230	Granite	Edge pecked
KB08	N 19°54'. 080.E 30°24'.623- Alt. 216 m	430	230	Granite	Edge pecked
KB09	N 19°54'. 044.E 30°24'.655- Alt. 215 m	430	250	Granite	Edge pecked
KB10	N 19°53'. 963.E 30°24'.819- Alt. 218 m	440	200	Basalt	Edge pecked
KB11	N 19°53'. 963.E 30°24'.820- Alt. 219 m	240	180	Granite	Edge pecked
KB12	N 19°53'. 973.E 30°24'.901- Alt. 221 m	390	200	Granite	Edge pecked
KB13	N 19°53'. 974.E 30°24'.913- Alt. 221 m	490	200	Basalt	Edge pecked
KB14	N 19°53'. 977.E 30°24'.925- Alt. 219 m	420	200	Granite	Edge pecked
KB15	N 19°53'. 958.E 30°24'.973- Alt. 222 m	490	200	Basalt	Edge pecked
KB16	N 19°53'. 950.E 30°24'.978- Alt. 219 m	440	200	Granite	Edge pecked
KB17	N 19°53'. 904.E 30°25'.036- Alt. 222 m	390	200	Basalt	Edge pecked
KB18	N 19°53'. 894.E 30°25'.042- Alt. 222 m	310	190	Basalt	Edge pecked
KB19	N 19°53'. 893.E 30°25'.046- Alt. 222 m	500	120	Granite	Edge pecked
KB20	N 19°54'. 012.E 30°24'.987- Alt. 222 m	490	200	F. Sandstone	Edge pecked
KB21	N 19°54'. 365.E 30°24'.947- Alt. 220 m	320	150	Granite	Edge pecked
KB22	N 19°54'. 548.E 30°24'.900- Alt. 212 m	380	220	Granite	Edge pecked

Table 1. List of tethering stones from Khor Barja.

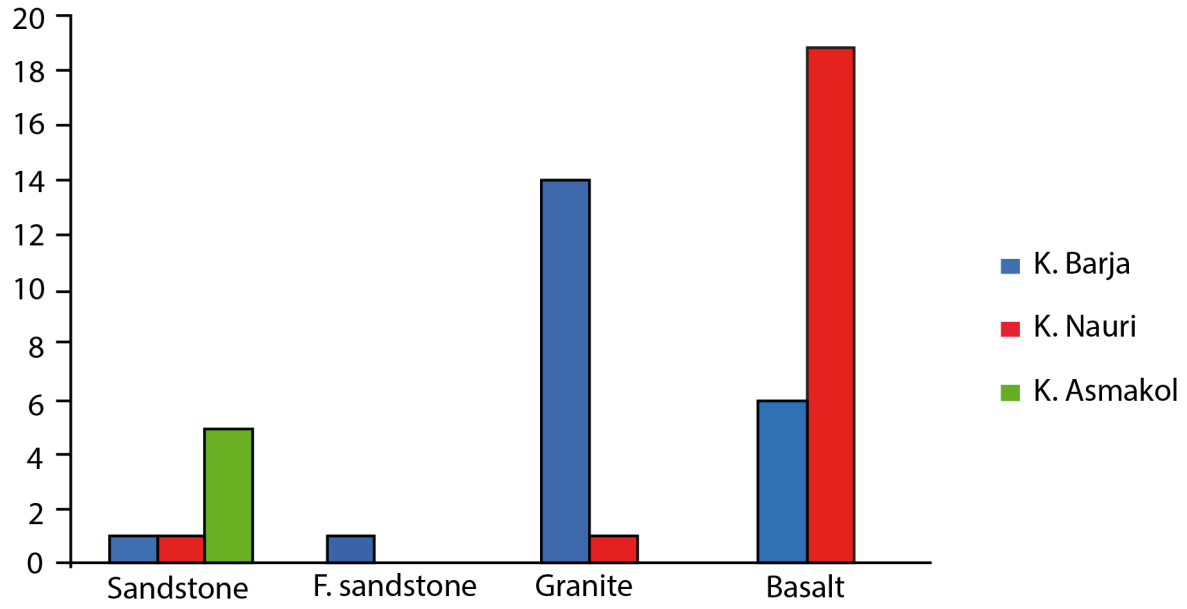


Figure 1. Raw materials of the tethering stones in the area of study.

No.	Coordinates	L. mm	W. mm	Type of Rock	Treatment of groove
KNU01	N 19°55'. 911.E 30°26'.620- Alt. 213 m	350	130	Basalt	Edge pecked
KNU02	N 19°55'. 800.E 30°26'.646- Alt. 215 m	350	220	Basalt	Edge pecked
KNU03	N 19°55'. 627.E 30°26'.803- Alt. 221 m	410	180	Basalt	Edge pecked
KNU04	N 19°55'. 568.E 30°26'.873- Alt. 222 m	350	230	Basalt	Edge pecked
KNU05	N 19°55'. 569.E 30°26'.879- Alt. 221 m	420	310	Basalt	Edge pecked
KNU06	N 19°55'. 533.E 30°26'.942- Alt. 221 m	410	160	Basalt	Edge pecked
KNU07	N 19°55'. 514.E 30°26'.942- Alt. 223 m	390	190	Basalt	Edge pecked
KNU08	N 19°55'. 480.E 30°27'.068- Alt. 221 m	440	260	Basalt	Edge pecked
KNU09	N 19°55'. 460.E 30°27'.073- Alt. 219 m	560	320	Basalt	Edge pecked
KNU10	N 19°55'. 380.E 30°27'.127- Alt. 220 m	500	220	Basalt	Edge pecked
KNU11	N 19°55'. 373.E 30°27'.106- Alt. 222 m	400	250	Basalt	Edge pecked
KNU12	N 19°55'. 389.E 30°27'.104-Alt.222 m	390	160	Basalt	Edge pecked
KNU13	N 19°55'. 391.E 30°27'.105-Alt.222 m	400	210	Basalt	Edge pecked
KNU14	N 19°55'. 392.E 30°27'.107-Alt.222 m	370	200	Basalt	Edge pecked
KNU15	N 19°55'. 347.E 30°27'.204-Alt.219 m	410	240	Basalt	Edge pecked
KNU16	N 19°55'. 349.E 30°27'.201-Alt.220 m	420	190	Basalt	Edge pecked
KNU17	N 19°55'. 337.E 30°27'.224-Alt.218 m	360	220	Basalt	Edge pecked
KNU18	N 19°55'. 329.E 30°27'.226- Alt.217 m	410	180	Basalt	Edge pecked
KNU19	N 19°55'. 322.E 30°27'.224 –Alt.216 m	410	160	Basalt	Edge pecked
KNU20	N 19°55'. 295.E 30°27'.238-Alt.219 m	540	260	Granite	Edge pecked
KNU21	N 19°55'. 279.E 30°27'.270-Alt.218 m	420	200	Sandstone	Edge pecked

Table 2. List of tethering stones from Khor Nauri.

No.	Coordinates	L. mm	W. mm	Type of rock	Treatment of groove
KAS01	N 19°53'. 648.E 30°29'.923-Alt.223 cm	270	200	Sandstone	Edge pecked
KAS02	N19°53'.792.E30°30'.053-Alt.223 cm	490	200	Sandstone	Edge pecked
KAS03	N19°53'.824.E30°30'.041-Alt.221 cm	490	290	Sandstone	Edge pecked
KAS04	N19°53'.829.E30°30'.046-Alt.222 cm	570	270	Sandstone	Edge pecked
KAS05	N19°53'.856.E30°30'.0583Alt.222cm	290	390	Sandstone	Edge pecked
KAS06	N19°53'.867.E30°30'.060-Alt.221 cm	440	340	Sandstone	Edge pecked
KAS07	N19°53'.871.E30°30'.0633Alt.220cm	360	200	Sandstone	Edge pecked
KAS08	N19°53'.872.E30°30'.060-Alt.220 cm	200	210	Sandstone	Edge pecked
T.S-KAS16	N19°54'.533.E30°29'.945-Alt.221 cm	290	140	Sandstone	Edge pecked
T.S- KAS17	N19°54'.649.E 30°29'.969-Alt.219cm	450	200	Sandstone	Incised
T.S-KAS18	N19°54'.518.E30°29'.974-Alt.219 cm	500	200	Sandstone	Edge pecked
T.S-KAS19	N19°54'.505.E30°29'.977-Alt.221 cm	460	270	Sandstone	Incised
T.S-KAS20	N19°54'.343.E30°30'.002-Alt.224 cm	200	80	Sandstone	Edge pecked
T.S-KAS21	N19°54'.746.E30°30'.116-Alt.218cm	520	220	Sandstone	//

Table 3. List of tethering stones from Khor Asmakol.

important, and tethering stones from the area of study were classified according to their shape. In Khor Barja, there were nine shapes (Figure 2). At Khor Nauri there were eight shapes (Figure 3) and in Khor Asmakol five shapes were reported (Figure 4). The shape differentiation may be due to the natural shape of available stones useful for tethering, as the trap mechanism depends upon the rope and groove, but also the weight of the stones.

The technique

Two techniques for manufacturing the stones are known: 1) pecking across the edges of the two ends of the middle part

Plate 1. Tethering stone from Khor Asmakol.

Plate 2. Rock art for tethering stone from site KAS-20 at Khor Asmakol.

of the stone 2) pecking and incising across the middle part of the stone to make a groove.

Discussion

Tethering stones were distributed across many regions and areas. In the Sahara, tethering stones were first reported between Kufra, Gebel Dalma and the western slope of Gilf Kebir (Pachur 1982). Tethering stones were also embedded in sediments from the large Wadi Wassa alluvial fan on the eastern edge of the Gilf Kebir, and a large concentration of tethering stones were found at Farafra. At Abu Muharik, 149 tethering stones were recorded. Three or four tethering stones are regularly found in shallow Karst hollows where the sparse vegetation still provides food for gazelles. In the eastern Burg et Tuyur, 14 tethering stones weighing 12-18kg were scattered over an area of about 80 x 100m, at the transition between the sandy alluvial plain and sandstone outcrops. In the Wadi Fesh-Fesh, numerous tethering stones were found on lake carbonates, the top of which were dated to *c.* 1800 BC (3805 BP) At the north-west prolongation of Laguia Arbain valley, Gabriel (1986) counted more than 19 tethering stones over a 48km stretch. North of Nukheila, a tethering stone was found in the immediate vicinity of a pottery vessel. Thermoluminescent dating of the ceramic pot yielded an age of *c.* 5850-5400 BC (7880-7415 BP). Tethering stones were also found in the western and southern Wadi Howar (Pachur 1991), and two more were found at the foot of the Burg et Tuyur ridge, beneath a rock engraving of a bovine (Newbold and Shaw 1928). Peroschi *et al.* (2014) reported many tethering stones during their survey around the massif of Jebel Uweinat along with other stone structures, such as tumuli, stone alignments, and hearths.

In the western Third Cataract region, more than 37 stones were reported (Hamdeen 2018). In the el-Ga'ab depression, western Dongola, more than 500 tethering stones were reported on the edge of khors and lakes (Tahir 2014), and south of the el-Ga'ab depression in the el-Golied area, five tethering stones were reported on the edge of the el-Golied plain (Hamdeen 2017).

More than 370 tethering stones were reported in the SARS AGE (Sudan Archaeological Research Society-Anglo-German Expedition) concession in the Fourth Cataract Region, and were between 300-600mm long, and oval, rectangular, or irregular in shape. They weighed between 8-25kg (Gabriel 2012, 83-90).

According to Lohwasser (2013) tethering stones were found in the Wadi Abu Dom situated south of the Fourth Cataract region, closely associated with paths of medieval rock art. These stones were used to tie up valuable cattle or camels. South of the Wadi Abu Dom, at the site 10-U-19 in the el-Salha area south of Omdurman, a tethering stone was found (Usai and Salvatori 2002), and during an archaeological survey along the Berber-Suakin caravan route, one tethering stone was reported at site BSAS 14 (Bashir 2017, 207).

Outside Africa, in the Mushash Hudruj region in south-eastern Jordan, a possible prehistoric animal trap was found at one of the small wadis near its conjunction with the Wadi Hudruj (Tarawneh *et al.* 2012). This animal trap contained a large, grooved stone, identified as a tethering stone, which was found alongside a wall crossing the wadi. The elongated rock was grooved in the middle, and a rope was fixed firmly around the groove. The other end of the rope was tied to create a slipknot; the loop would tighten if the rope was pulled by an animal. In Oman, many tethering stones have been reported, dating to the 7th millennium BC (El Mahi 2007).

Scholars have suggested different functions for these stones. Pachur (1982) suggested that they functioned as a fetter for grazing animals, especially cattle – the animal was still able to move around, but prevented from strangulation. Gabriel (2012) interprets tethering stones from both prehistoric and historic times as anchor-points for fastening ropes, though their exact function – the other end of the rope, as it were – is still a matter of debate: were they used to brace tents in the wind; to affix traps, to prevent captured animals from escaping; or for the tethering of domestic animals, to keep them near campsites or huts (Gabriel 1986; Le Quellec 1990; Lutz and Lutz 1993; Morel 1982)? Ziegert (1978) reported 40 tethering stones similar to those found in the Libyan desert, and suggested that their function should be considered in the context of hut building.

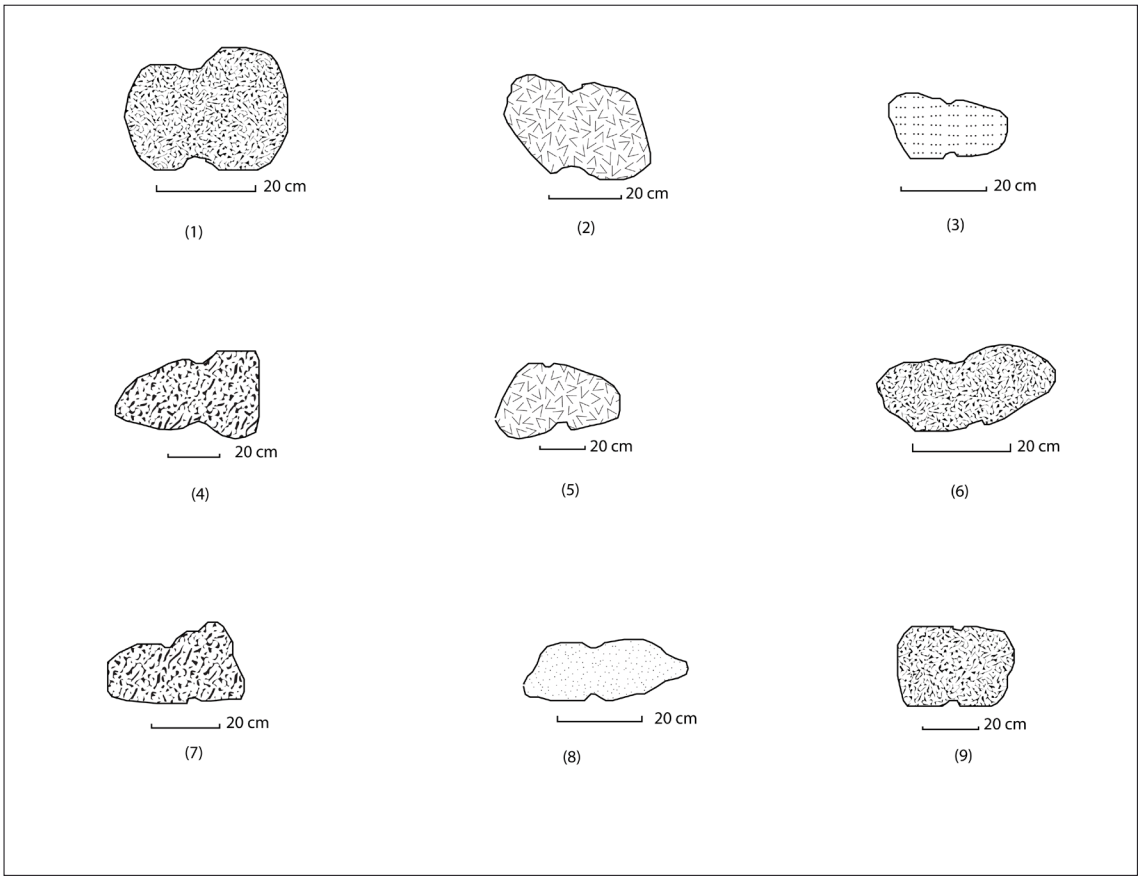


Figure 2. Shapes of tethering stones from Khor Barja.

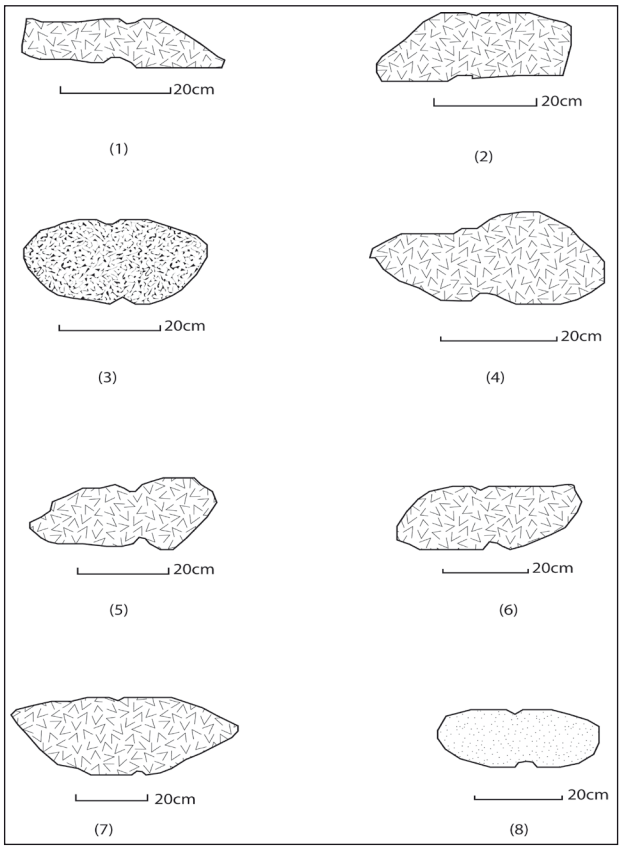


Figure 3. Shapes of tethering stones from Khor Nauri.

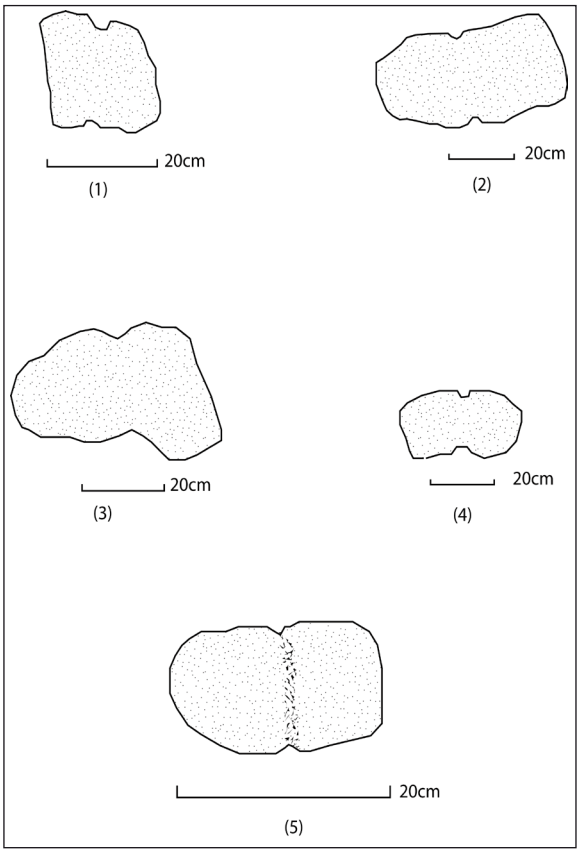


Figure 4. Shapes of tethering stones from Khor Asmakol.

Evidence of the use of these stones in settlements has been reported, and excavations on the Nile terrace at Maadi, Egypt, have revealed a tethering stone with the rope still attached (Ritzkana and Seeher 1989).

Jelinek (1985; 1985b) examined three rock art pictures of a bull attached to tethering stones from Wadi Tilizahern in southwestern Massak Settafet, and noted that the bull had short curved horns. Its leg was in a tethering stone trap, suggesting that this was a trapped wild animal. The assumption that this was a wild animal was based entirely on the function ascribed to the 'tethering stone'. The strange position of one figure's head in relation to the bull's mouth instead suggests a domesticated animal.

In the area of study, tethering stones were probably used for hunting animals. Rock art from Khor Asmakol (Abdeen 2018) and Wadi Gorgod suggests that many savanna fauna were present in the Third Cataract region during the early, middle and late Holocene. Beside the palaeo-environmental indicators, some scholars suggest that tethering stones could be used as palaeo-economic indicators. Hamdeen (2017; 2018) suggests that the technique of using tethering stones as a hunting method appears during the early Holocene period, and their function is not to kill animals, but to disable their movements, allowing for the arrest or entrapment of live animals. This perhaps played a major role in the live animal trade between ancient Sudan and civilisations such as Egypt and Rome, and may have included elephants, giraffes, gazelles, lions etc. It is possible that this trade began as early as the 3rd millennium BC, and continued through to the Medieval and Islamic periods.

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