



RESULTS OF A PILOT SURVEY STUDY IN THE REGION OF MUSHASH HUDRUJ, SOUTH EASTERN JORDAN

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ABSTRACT

Survey work was carried out in the region of Mushash Hudruj near the Jordanian- Saudi borders in 2004, 2005 and 2009. The finds of this project include a north Arabian inscription, a cairn, an animal trap, stone circles, flint mines and water harvesting systems. These features demonstrate that this region was utilized by pastoral nomads who depended purely on a mobile subsistence pattern, governed by the availability of pasture and water. This pattern of seasonal movement is still practiced by modern Bedouin who move mainly within the wadi system which have become the main areas of attraction for Bedouin since prehistoric times, and have played a major role in the survival of these groups and their flocks.

KEYWORDS: Bayir, Bedouin, Inscription, Hunting Trap, Wadi System.

INTRODUCTION

Since its establishment in 2004 the Eastern Bayir Archaeological Project has been investigating the transition from Neolithic to Chalcolithic in the central eastern desert of Jordan and the origins of nomadic pastoralism.

Field work for this project was undertaken in three field surveys conducted from late September to mid-October in 2004, 2005 and 2009 with the support of the University of Sydney and Al-Hussein Bin Talal University. The flat area in the north-eastern part of the region was explored first, but resulted in the discovery of very few sites. A larger site concentration, however, was found in the Qiān as-Siq, Rijlet Salim and Fkouk regions. The second season of the survey concentrated on the excavation of test squares in different sites and regions in order to obtain comparable stratified material and carbon samples. The third season was a very short one because of the difficult weather and concentrated on surveying the southern part of Qiān as-Siq area.

The sites discovered during this project are characterized by their structural remains, which include domestic structures and animal enclosures, Rujum (cairn) sites and water pools. The domestic structures and animal enclosures make up the main

bulk of data revealed by this survey.

The inscription was discovered in the last season in 2009 by the first researcher in the region of Mushash Hudruj, south of Wadi Hudruj. This is still one of the most attractive areas for modern bedouin because of the availability of water and pasture after the first rainfall in this part of the desert. The inscription was found on a Rujum built of large and medium size boulders on a small hill rising above the surrounding area. The Rujum diameter is less than three meters and was built above the surface soil without any archaeological deposits. This Rujum seems to be used as a land mark/ sign for travelling Bedouin in the area and no indications of any other function can be seen here. The Rujum overlooks the surrounding area where, in some areas to south, some possible circular structures with some flint tools can be found. Wadi Hudruj, the main wadi in the region, lies several kilometers to north of the inscription.

GEOGRAPHICAL SETTING

The Eastern Bayir region (Ard as-Swwan), lies between the higher altitude of Jibal al-Adhriyat to the south and south-west and the Sirhan depression to the north and north-east (Fig. 1). Throughout the region of Bayir there are surface scatters of calcareous-siliceous detritus which consist of sharp flints (Bender 1974: 6). Traditionally this region is known as Ard as-Swwan, or the flint-strewn land. In the south-eastern Bayir region there are scattered small mud flats or Qiān similar to the al-Jafr mud flat. This harsh and hostile region has a diverse landscape which includes mud flats, separated from each other by low hills, the rough and rocky area in the region of Fkouk, and flat areas strewn with flints along the border to the north. Most of this region is cut by wadis which run towards the north-east to join the Wadi as-Sirhan.

In the northern part above the Sirhan

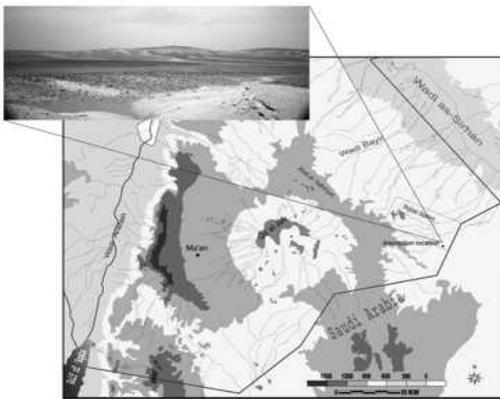


Figure 1: Map of southern Jordan showing the location of the inscription and the study area.

depression the altitude reaches 1,100 metres in the Harra region, but drops to 500 metres above sea level at the south-eastern edge of Wadi as-Sirhan (Bender 1974: 6). This is also the case in south-western Wadi as-Sirhan where the altitude reaches 1,000 metres above sea level at Jibal al-Adhriyat located between Jafr and Bayir. Strictly speaking the Wadi as-Sirhan is a depression, not a Wadi. This depression receives water from the east, north, and west from several Wadis (Al-Sudairi 1995: 7). The as-Sirhan depression is considered to be the largest oasis in northern Arabia and its location and abundant water resources still support extensive areas of agriculture (Al-Sudairi 1995: 7), especially wadis around Bayir running in a north east direction towards as-Sirhan depression such as Wadi Bayir, Wadi al-Hasah, and Wadi al-Abyad (Fig. 1). Landscape of this region is harsh, dry and extremely hostile. As the barren flint-strew land does not support any grazing activities, the wadis have become the main areas of attraction for Bedouin since prehistoric times, and have played major role in the survival of these groups and their flocks. The length of these wadis supported the long distance movement of these groups in the wadi beds. This is also supported by the location of discovered sites, which lie on the sides of the wadis in order to benefit from the available resources.

Most of the country including the Eastern Bayir forms a part of the Saharo-Arabian climatic zone. This region receives about 50 millimetres of rainfall which supports limited vegetation, especially given the poor soils of the desert (Al-Eisawi 1985: 51). Plants usually grow only in the wadi beds in Eastern Bayir¹.

ACCOUNTS OF TRAVELLERS

The area where the inscription was found is rarely mentioned by historical resources and early travellers; however the area of Bayir is repeatedly mentioned by travellers

and historical sources due to its location on the trade routes and the abundant water from its wells. Al-Asfahani (reported by Musil 1927: 324) in his book mentioned that Amir ibn Al-Harith in his march against Bani Murrah passed through the Bayir wells. In his Diwan, Hatim at-Tai (reported by Musil 1927: 324) also came across a camp in the area of 'Abair', which sounds like Bayir in the Arabic meaning. Musil mentioned in his trip of 1909 the wells of Bayir, and an area between Kaf and Bayir with a palm garden and two blockhouses (Musil 1927: 325). Ihsan al-Maqdisi reported fresh water wells in 'Wbyir' which he described as a delightful open plain area (Al-Maqddasi 1967: 253, 250). It is also mentioned by Yaqut al-Hamawi in his Mujam when he recorded the name of a watering place near Syria and not too far from al-Ajfur recently named Jafr (singular from Ajfur) (al-Hamawi 1977: 49). The study area is mentioned in some 19th century sources written by western travellers. Wallin in 1845 was one of the earliest western travellers to visit the Bayir region and he is the only one who crossed the area of Eastern Bayir in a west-east direction, from Tafila (Wallin 1979: 331). In this journey Wallin visited Wadi Bayir and its wells or what he described as ponds. From Wadi Bayir he continued to the east, crossing the area of Fkouk and the southern part of a series of wadis such as Wadi al-Hasah, Wadi Gharra, Wadi al-Abyad, and Wadi Abyiad (Wallin 1979: 136). In 1862 Palgrave crossed the area from Ma'an to Wadi as-Sirhan and also mentioned the plentiful wells which were obviously the main attraction for the numerous Bedouin tents mentioned by him in the area of Wadi as-Sirhan (Freeth and Winstone 1978: 160). Palgrave's main interest, however, was the Bedouin in *the area rather than the area itself: "the men of the land, rather than the land of the men, were my main object of research and principal study"* (Palgrave 1865).

HISTORY OF RESEARCH

In the Jafr area, some of the early archaeological studies were carried out by Rhotert in the south-east at Kilwa and Jebel Tubaiq (Rhotert 1938: 62-65). A later study, conducted by Huckriede and Wiesemann (1968), noted the presence of upper Palaeolithic and Middle Palaeolithic sites near the area of Jafr. Research has also been undertaken recently in the Jafr Basin and Northern Jafr by Quintero, Wilke and Rolleson (1998, 2002). Many prehistoric sites were recorded, dating from the Lower Palaeolithic, Middle Palaeolithic, Epipalaeolithic, Neolithic and late Chalcolithic-Early Bronze age periods (Quintero *et al.* 2002: 37, 46; Quintero and Wilke 1998: 118). No studies were undertaken in the vast region of eastern Bayir. A palaeo-anthropological survey was carried out in 1981 by Rolston and Rolleson. They examined the Wadi Bayir region and recorded Lower Palaeolithic and some Neolithic material, but no traces of habitation sites were found (Rolston and Rolleson 1982: 215). A short survey was carried out at the eastern part of Wadi Hudruj near the inscription location and resulted in the discovery of some prehistoric sites (Wasse and Rolleson 2005). Another survey was carried out at Wadi as-Sahab al-Abyad. The team recorded several prehistoric sites dated to the late Chalcolithic-Early Bronze ages (Mahasneh and Gebel 2008).

WATER HARVESTING SYSTEM

The wadis have been used by Bedouins from the late prehistoric periods until the present, and architectural remains were found in the wadis and the surrounding areas associated with retouched flint tools, particularly tabular scrapers of the late Chalcolithic-Early Bronze ages. No water resources are available in this region except for the Mushash. Mushash are holes dug in the wadi sands or pebbles to find fresh

water running above bedrock (Fig. 2). It appears that this system has been in use since at least the early Islamic period. It is clearly described by Al-Maqdissi in his journey which he finished in the year 985 AD. He reported this method of obtaining water after his description of Aqaba (Ailah) but before he mentioned Bayir and its wells (Al-Maqddasi 1967: 253, 250). This method is also used in the Negev desert by Bedouin (Levy and Alon (1987: 59). This way of obtaining water in the barren desert of eastern Jordan and north-west Saudi Arabia clearly confirms the main role of the wadis in this part of the desert as an attraction for wild animals and humans with their flocks for thousands of years. As the arteries of life in the desert, they provided pasture for flocks, fresh water to drink and also attracted wild game to hunt (Tarawneh 2007: 11-12).



Figure 2: Mushash at Wadi Hudruj in close proximity to the Jordanian-Saudi border.

PASTORAL NOMAD SITES

Fak Abu Taur, Rijlet Salim and Qiān as-Siq are the core areas of this survey. A total of sixty eight sites were recorded throughout the systematic survey. The recorded sites consist of Rujums (mounds), similar to the one where the inscription was found, and a single or several large and small semi-circular structures separated and or connected together with smaller rooms attached to some of them from inside or outside. These structures range in size

from a few meters up to more than thirty meters in internal dimension. The larger of these structures were possibly used as animal enclosures and the smaller ones were used as domestic areas after installing a tent on top of them. They might also have been used sometimes to separate the animals, particularly when there were large numbers. The small rooms attached to the main walls were more likely used for storage because of their small size and possibly for sleeping and small animal separation. Structures with internal divisions were recorded at some sites.

Artefacts were collected from both inside the structures and in the immediate vicinity around them. At some sites, tools were mainly concentrated in areas outside the structures. The larger flint assemblages were collected from the larger sites while minor numbers of tools were collected from the small sites (Fig. 3). This suggests that these sites had a short period of occupation and that limited range of activities took place there. Arrowheads are absent from the Late Neolithic-Early Chalcolithic sites in the eastern Bayir region. No pottery has been found at any of these sites during the course of this survey.

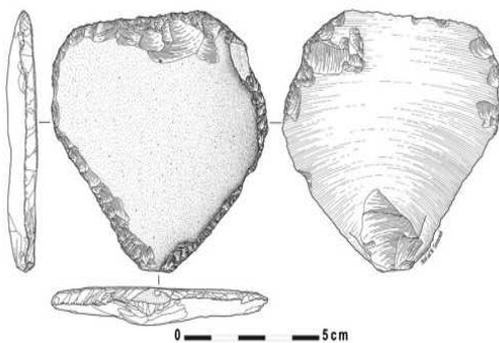


Figure 3: Tabular Scraper from Fak Abu Taur 3.

Several sites were discovered in the eastern part of Wadi Hudruj near the Saudi border in the area where the inscription was found. These sites are mostly prehistoric, and many modern Bedouin camps are

scattered in the area as well as a few Rujum sites of possibly later periods. Sites were discovered during Wasse and Rollefson's (2005) survey at Wadi Hudruj. Several other sites were noted during our exploration of the area south of Wadi Hudruj which includes circular structures and a small, mine for tabular scrapers beside two circular structures (Fig. 4). The available evidence from several sites in the region support the dating of these sites to the Late Neolithic- Early Chalcolithic period but the prospect of the reuse of some of these sites in later periods is likely. This evidence is based on Carbon 14 analysis which ranges from 7018 ± 41 BP. (Wk18114) to 6256 ± 48 BP. (Wk18110) (Calibrated).



Figure 4: Tabular scraper core from Mushash Hudruj.

HUNTING TRAP

A possible prehistoric animal trap was found at one of the small wadis before its conjunction with Wadi Hudruj. This animal trap contains a large, grooved stone, called a Tethering Stone, that was found alongside a wall crossing the Wadi (Fig. 5). The elongated rock is 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 will tighten if the rope was pulled by an animal. This technique has been found in North Africa and in Oman and interpreted for the same function and dated to the seventh



Figure 5: Hunting trap using a Tethering Stone from Mushash Hudruj.

millennium BC. (El-Mahi, 2007). It is also likely that it was used as a place for grazing animals such as horses in later periods.

A NORTH ARABIAN INSCRIPTION

The North Arabian inscription was discovered during a survey conducted in eastern Bayer by the authors in the summer of 2009. It is carefully incised on a limestone block and the whole text measures 47 x 18 cm, using a sharp tool. The size of the letters is almost regular. The first line is written on the top left-hand corner of the stone, whereas the lines run boustrophedon (Fig. 6).

The inscription is of the north Arabian type (Thamudic E). This group of texts is dated to the period between the first century BC. and the third century AD. The inscription under discussion provided personal names; all of which are of the simple form and do not contain any theophoric ones (names that bearing a deity) (Fig. 7). Its contents are similar to other north Arabian inscriptions uncovered in the southern parts of Jordan and the northern parts of Arabia that mentions the name of the pre-Islamic goddess Allāt twice: one in remembering a person and the second one in cursing the person who may destroy or damage the text (Maani and Sadaqa, 2003). These two formulae are attested frequently in such texts (e.g, Al-Theeb 1999, 181).

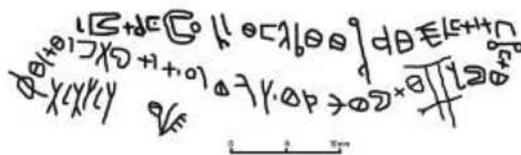


Figure 6: Illustration of the inscription.



Figure 7: Inscription from Mushash Hudruj.

Reading:

Lmty bn m'hr wbyh wwgd wdkrt lt bgrt wmhz wtm whd wnhk wl'nt lt mhbl wtšwq' l'hlh

Translation:

By Mty son of M'hr and (he) has moved the camp and found, and Allāt remembered Bgrt and Mhz and Tm and Hd and Nhk and may Allāt curse the destroyer, and (he) looked forward to his family.

Commentary:

This inscription is dedicated by *Mty son of M'hr*. *Mty* is a common personal name in Pre-Islamic Arabian inscriptions (fourth century BC. to third century AD.) and is either derived from the root *mātā* which means "to walk rapidly" (Harding 1971: 527), or derived from the root "*Matt*" that means "prolonged or extended his life" (Al-Theeb 2003: 39). On the other hand, Littmann (1943: 327) suggests that *Mty* is an Arabic name derived from the Arabic root *Mata* that means "to spread". The name is attested frequently in north Arabian inscriptions (Oxtoby 1986: 24, 84; King 1990: 544) and Nabataean (Al-Theeb 1999: 131).

The name *M'hr* which has been found elsewhere in south and north Arabian inscriptions is derived from the Arabic root

ʿĀhir, which means "immoral, adulterer" (Harding 1971: 446, 557). These two names are followed by three verbs: *bhy*, *wgd* and *dkrt*. The first verb *bhy* is attested in north Arabian inscriptions meaning "moved the camp" (Winnett 1957: 148) "*castra movit*" (CIS 1951: 307, 320). *Wgd* is another verb that is common in pre-Islamic Arabian inscriptions (Littmann 1943: 4) and is attested also in Arabic (Ibn Manzour *Wgd*).

The formulaic expression *wdkrt lt* is attested in other Safaitic inscriptions. The verb *dkr* is attested in north Arabic, Aramaic and other Semitic languages. It has two meanings: "mention" and "remember". It is attested frequently in north Arabic inscriptions (King 1990: 684; Clark 1980: 1, 2, 3; Littmann 1943: 85). The verb here is an active form and the suffixed "t" is a first connected pronoun "subject", *Lt* is a name of goddess "object" (Maani and Sadaqa 2003: 649) and the whole expression is translated therefore as "may Allāt remembers" (Winnett and Harding 1978: 1903).

Allāt was one of the major deities venerated by the Pre-Islamic Arabs and her name, either simple or in the theophoric form, is attested among various nations in the ancient Near East including the Babylonians and Ugaritic (Segert 1976: 179), Phoenicians (Tomback 1978: 21), Palmyrene (Stark 1971: 15; Kaizer 2002: 99; Retsö 2003: 604), and in north Arabian inscriptions (Jaussen and Savignac 1909-14: 777). It was the superior goddess at Wadi Rum and in the Hawran during the Nabataean period (Healey 2001: 119). Remembrance and mentioning of persons before gods and goddesses is a blessing act. Many Semitic inscriptions mention remembrance of persons before gods, and these supplication formulae were common to Semites. Allāt is found in many forms in Semitic inscriptions such as Allāt and *Lt*. It was mentioned in classical sources from different periods and it is equivalent of Aphrodite (Winnett and Reed 1970: 78).

Bgrt

This name may be read either *Bgrt* or *Rgrt* due to similarities in reading the two letters b and r. The name *Bgrt* is attested in many forms in Safaitic: *bgrt*, *abgr*, *bgyr* and *bgrh* (Harding 1971: 93). Additionally, names derived from the word *Rgrt* are also common in North Arabic inscriptions (Harding 1971: 270). *Mhz* is a name that has not been previously reported in Safaitic.

Tm

This name well known as an Arabic personal name and may be vocalized as *Taim* or *Tayym* and is widely attested in Safaitic (Harding 1971: 86), Thamudic (King 1990: 483-4; Shatnawi 2003: 659), Lihyanite (Jaussen and Savignac 1909-14: 194), South Arabic (*Répertoire d' épigraphie Sémitique* 3751), Hatran (Abbadī 1983: 173), Palmyrene (Stark 1971: 117) and Nabataean (Al-Khraysheh 1986: 189). *Taim* is also attested in Arabic meaning "servant" (Ibn Manzour *Taim*). *Tm* is a name also of a Safaitic tribe (Ar-Rousan 1987: 282).

Hd

This name may be vocalized as *Hadd* (Littmann 1943: 187). It is common in north Arabic inscriptions derived from the root *Hd* that means "to be sharp" (Harding 1971; Winnett and Harding 1978: 148). It appears in the form *Hdw* in Nabataean (Negev 1991: 28) and appears in the discovered regional Greek inscriptions (Littmann 1943: 314).

Nhk

This name appears in this form in North Arabic inscriptions (Shatnawi 2003: 747) and appears also in various forms in north Arabic inscriptions is derived from the words *Nahik* and *ʿnhk* (Winnett and Reed 1970: 334) which mean "very strong" (Littmann 1943: 299).

Wl'nt lt

The verb *l'n* is attested in north Arabic inscriptions meaning "to curse" (Littmann 1943: 360; King 1990: 685). This verb is attested also in Hebrew (Koehler and Baumgartner 1995: 485) and Arabic (Ibn Manzour *l'n*) meaning "to curse" also.

Curse formulae are common in North Arabic inscriptions. This includes the use of the following verbs *l'n* "curse", *'wr* "may he become blind" (Littmann 1943: 334), *nq't* "may the evil eye be on him" (Winnett and Harding 1978: 56) and "*nqmt*" "grant vengeance" (Winnett and Harding 1978: 1219).

mhbl

The word *mhbl* occurs frequently in north Arabic inscriptions meaning "he who destroys" (Littmann 1943: 257). It is originated from the verb *hbl* that means "to mess up, damage" (Winnett and Harding 1978: 181). This word is attested in Hebrew (Koehler 271), Aramaic (Hoftijzer and Jongeling 1995: 344) and Arabic (Ibn Manzour *hbl*).

wtšwq

This verb is attested frequently in north Arabic inscriptions (CIS 1951: 1537, 1539, 1970) meaning "was filled with longing" (Winnett and Harding 1978: 1105) as well as in Arabic meaning "he longed for" (Ibn Manzour *šwq*).

hlh

hlh means "his family" and this word is common in north Arabic inscriptions (Harding 1952: 132; King 1990: 42).

CONCLUSIONS

The number of sites discovered and the periods they represent indicate that the study area was utilized by pastoral nomads from the Late Neolithic and Early Chalcolithic periods through the pre-Islamic periods until recent days. The field survey has confirmed that this movable pattern of settlement which is highlighted in the inscription was the most prominent one through the ages as no evidence for permanent settlement was uncovered so far in the region under consideration. This pastoral nomadism seems to stress animal husbandry along patterned migration routes exploiting marginal environments. These groups occupied different regions

which enjoyed a diversity of resources and environment during the year. Some regions were chosen carefully for pastoral camps during the heat of summer and others to protect against the freezing winter of the desert. Possible animal traps were also recorded as a second source of income at some periods of occupation in this region.

This pattern of seasonal movement in southern Jordan could not be successful without the availability of pasture and water. These two main resources were available in the eastern Bayir wadi system. These wadis drain the rainfall in the southern mountainous area towards Wadi as-Sirhan, which supports the vegetation cover within their courses and also creates water pools, *Gudran'*, that hold water for a long period of time. Another possible source of water for Bedouin during this period is the *Mushash* or *Thamayl* which are holes dug in the wadi sands or pebbles to find fresh water.

The inscription, together with supporting environmental, archaeological, historic, and ethnographic evidence, indicates that eastern Bayir region was utilized by pastoral nomads from the Late Neolithic and Early Chalcolithic periods through the classical periods until recent days.

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¹ Hammada vegetation covers most of the Sahara-Arabian region, including run-off hammada where vegetation is restricted to wadi beds and area where water accumulate.

This type exists in all the wadis of the eastern region such as Rijlet Salim, Wadi al-Abyad, Wadi Gharra, Wadi Sammaddah and Wadi Hudruj. Species of this type include *Retama raetum*, *Tamarix species*, *atriplex halimus*, *Peganum harmala*, *Artemisia herba-alba* and *Anabasis articulate* (Al-'Eisawi 1985: 55). No vegetation covers the mud flat of Qiān as-Siq as the hard soil prevents plants from surviving (Al-'Eisawi 1985: 56). The region has been under continuous Bedouin encampment for centuries. The ancient and modern occupation is largely due to the availability of water and pasture, which varies from one year to another. These encampments

are also affected by overgrazing in the area caused by the large number of sheep, goats and animals. This can sometimes result in the abandonment of an area for a year or two in some drier seasons. However, the large number of wadis and their long course, offer alternate areas and make it easier for the Bedouin, especially with the availability of the Gudran and Mushash Water. Overgrazing sometimes forces Bedouin groups to change their encampment region to a new area with better pasture in the same season.

² For a discussion see Al-Theeb 1999: the introduction.

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