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The Early Holocene Archaeological Evidence (Site E-05-1) in Bargat El-Shab (Western Desert Egypt)

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Bargat El-Shab, situated in the southern part of the Western Desert in Egypt, is one of those places which have been drawing people's attention from the beginning of the Holocene. Numerous traces of human settlement have been registered on the eastern shore of a small palaeolake-playa, including a site dated to the climatic optimum of the Holocene. Features discovered during research initiated by the CPE at the beginning of the century, which include storage pits and hearths, held not only an abundance of stone artefacts and to a lesser extent ceramic artefacts in its fills, but also had exceptionally rich archaeological and archaeobotanical material. All this provided new and valuable information about the lives of hunter-gatherer communities / or Neolithic pastoral communities, representing the so-called El Nabta / Al Jerar variant of settlement in the Western Desert.

KEY-WORDS: Early Holocene, Western Desert, settlement, lithics, archaeobotany, archaeozoology

INTRODUCTION

The Bargat El-Shab Playa Basin is situated in the southern part of the Egyptian Western Desert (22°24'19"N, 30°37'44"E). This small playa is located around 150 km west of the Nile Valley (in the area of Abu Simbel), around 20 km south of Gebel Nabta.

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The desert road from Toshka to Uweinat passes around 15 km north of the location (Fig. 1). Bargat El-Shab (Mountain of shining stones) is the name of a mountain, or rather a small massif made of Nubian sandstone, which is a very distinctive landmark in this part of the desert. To the north of it lies a deflation basin trough, which in the past would have been filled by seasonal lakes – playa – during the humid periods of the Holocene. The site was discovered during one of the surveys organized by CPE at the end of the 20th century. Registered at the east edge of the basin at Bargat El-Shab Plata were the remains of rich Early and Middle Holocene settlement. Regular research was launched here in 2005 and has been ongoing at intervals to this day. The research was initially associated with the search for the oldest early Holocene settlement in the Western Desert, the so-called El Adam phase. In this article, we wish to present the results of the research conducted in the 2005–2006 and 2011–2012 time frame by the authors of this text within the scope of CPE at site E-05-1, which had only been referenced in literature earlier (Bobrowski *et al.*, 2010: 25–26).

SITE E-05-1

The Bargat El-Shab E-05-1 site is situated on the eastern edge of the basin, on a small elevated monadnock of Nubian sandstone and tertiary limestone covered with a layer of Pleistocene sands and winnowed Holocene Aeolian sediments. Traces of prehistoric settlement have been observed on a surface of around 3 ha, concentrated above all on two distinct summits of the above-mentioned monadnock. During the first season of research, two trenches labelled E-05-01/1 and E-05-01/2 were set up. Both are located in areas of the heaviest concentration of artefact material on the surface of the site. In addition, a small trench encompassing a well discovered near the excavation was set up and designated as E-05-1/Well 1 (Fig. 2). The results of the research conducted within trench 2, where the stratigraphy of the site was partially preserved, proved to be especially interesting. The features registered there were covered with a layer of heavily consolidated slope deposits in the form of sandy silts of a brown colour. Trench E-05-1/2, dimensions of 10 × 10 m (oriented along the NS axis), was situated on the northern summit of the above-mentioned monadnock.

The artefact material registered on the surface of the excavation (including the lithic assemblage and small bone fragments, ostrich egg shells, beads) was not evenly distributed on the surface of the excavation (Fig. 3). Materials obtained from the surface of the trench and the layers below, having a thickness of about 20 cm, were not homogeneous. The fact that artefacts representing various phases were found both on and directly below the site surface within a homogeneous layer of silty sand was the result of their having become intermixed due to the deflation of later occupation deposits.

Fig. 1. Map of Western Desert Egypt with location of Bargat El-Shab. Drawn: P. Wiktorowicz.

Features

On the surface, near the southern wall of the trench, the remains of only one hearth were observed in the form of a slightly elevated concentration of stones which were overheated and cracked as a result of fire (Hearth 1). Also registered were minor traces of burnt matter in the form of small fragments of charcoal and ash found further below under a layer of stones and scattered on a circular-like surface (with a diameter of about 300 cm). The hearth had a more compact shape in the basal section at around 5 cm below the surface of the site. As a result of the exploration of the SW part of the trench (Fig. 4), clear outlines of several features were observed at a level of about 15/25 cm below the surface, below the layer of heavily consolidated slope deposits mentioned earlier. In the central and northern parts of the researched area, the outline of two large storage pits was registered – Pit 1 and Pit 4 (fully excavated), and fragments of yet more pits – Pit 2, Pit 3 and Pit 5 (partially excavated) were discovered. Under Pit 1, we observed what was undoubtedly an older Hearth 3 (Fig. 5). A slightly more

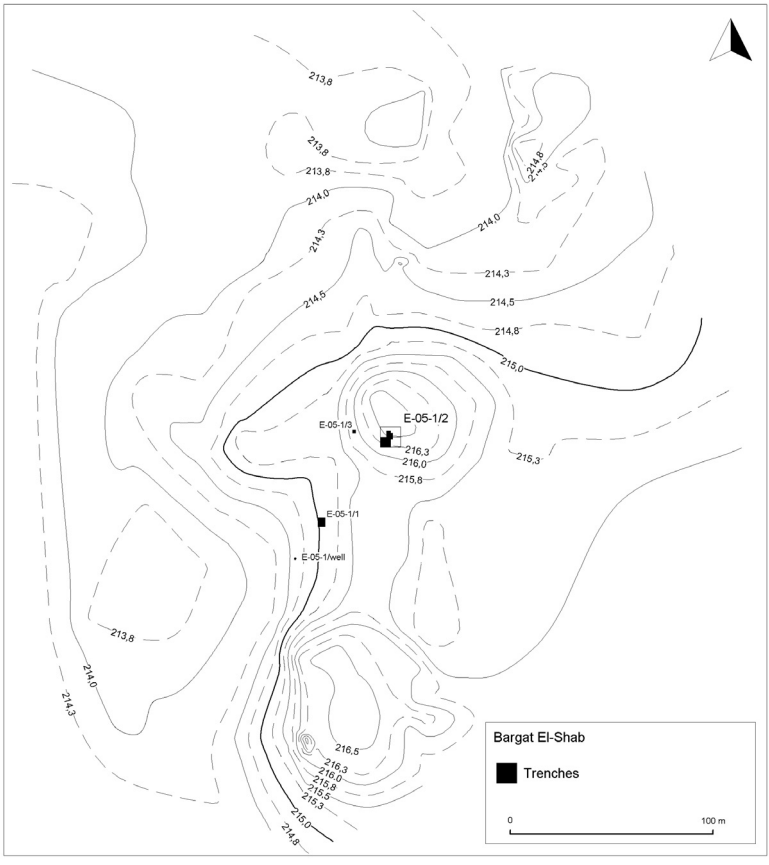

Fig. 2. Bargat El-Shab. Map of eastern edge of deflation basin of playa and location of site E-05-1. Drawn: P. Wiktorowicz.

complex layout was observed near Pit 4, where two hearths – Hearth 2 and Hearth 4 were located to the south, of which the latter clearly intersected the pit. Pit 4 was intersected by the pit of grave 1 (containing a child burial[1]) to the west, and this in turn was intersected from the west by Pit 5 (Fig. 6). The pits which had been fully excavated had an oval-shaped outline in plan and dimensions of 150 × 200 cm (Pit 1) and 250 × 160 cm (Pit 4). Both pits clearly expanded in the bottom section and had a bell-shaped vertical cross-section. Most likely only the base section of these features was preserved, and their depth in cross section currently reached 40 cm. Homogeneous fills consisted of slightly compacted grey-brownish sand with a mix of burnt matter and

[1] This feature was not explored at that time due to the lack of an anthropologist at the site.

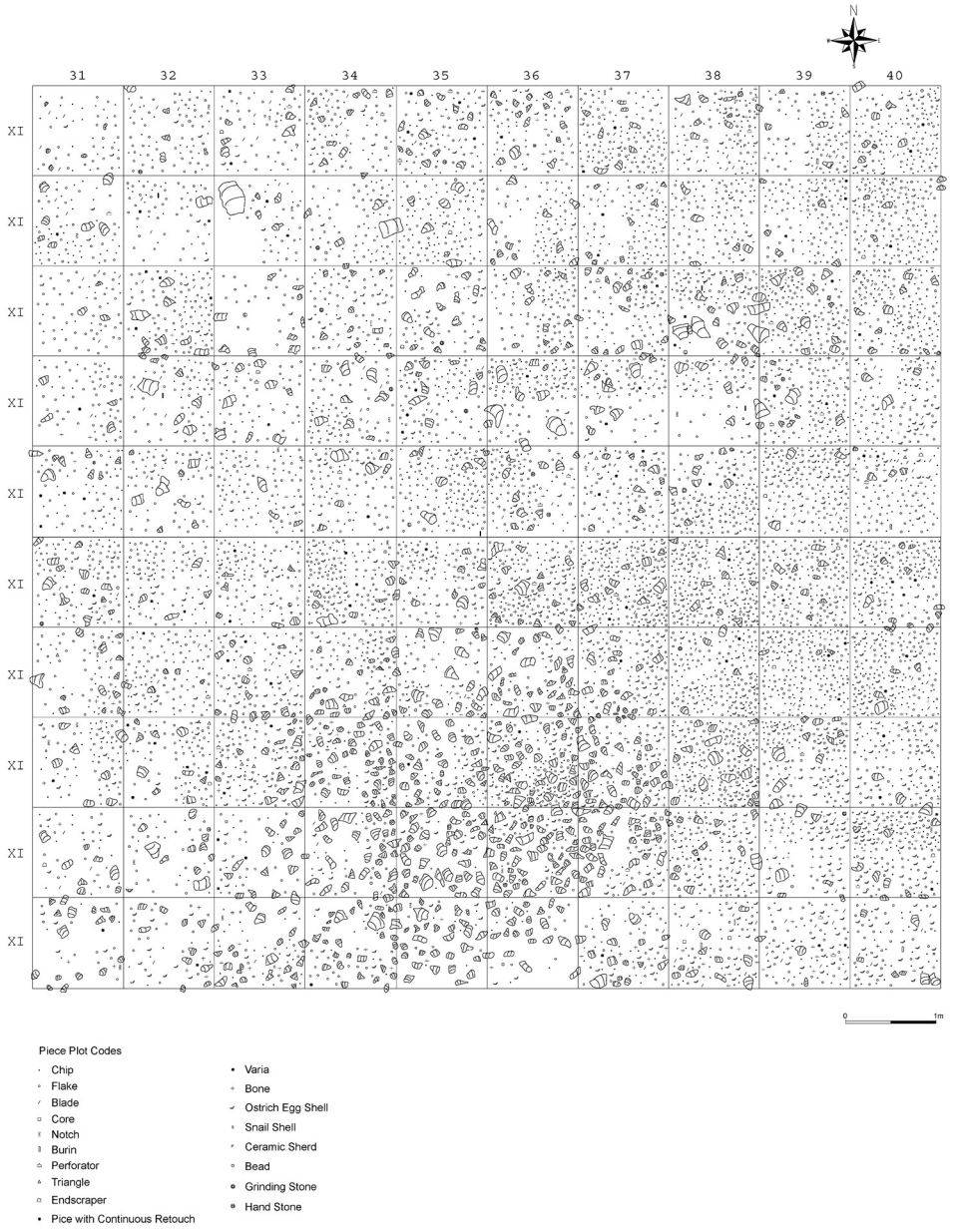

Fig. 3. Bargat El-Shab. Site E-05-1/2. Scatter Pattern of surface collection of studied area in 2005. Drawn: P. Bobrowski and P. Szejnoga.

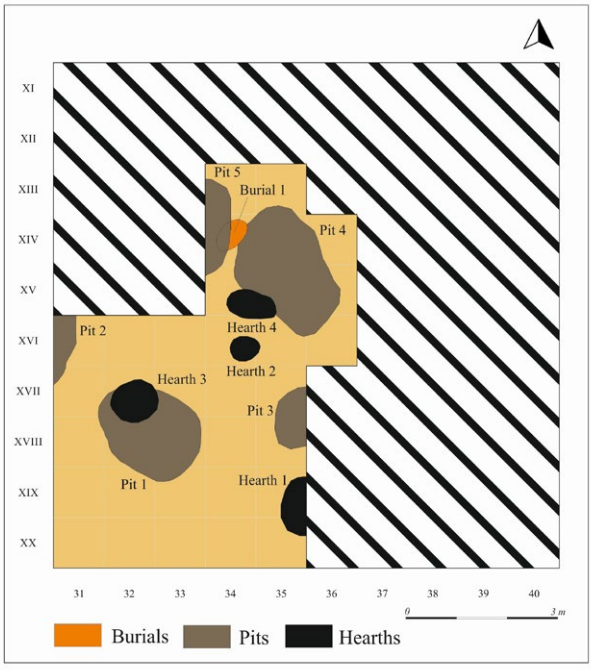

Fig. 4. Bargat El-Shab. Map of south western part of site E-05-1/2, studied in 2006 and 2011–2012. Drawn: P. Bobrowski and P. Wiktorowicz.

charred plant macro particles. The partially excavated pits: Pit 2, Pit 3[2] and Pit 5, had analogous cross-sections and fills (Fig. 5). The hearths were mostly circular or oval in shape and ranged from 50 cm in diameter (Hearth 2) to over 100 cm (Hearth 4). They all had a trough-like vertical cross-section, while their depth reached 20 cm. The hearth fills consisted of strongly consolidated dark grey sand mixed with ash and charcoal. Red-brown layers of highly consolidated calcinated sand mixed with charcoal were observed within Hearths 2 and 4.

Artefacts

The registered features had an unusually rich set of stone artefacts, macroscopic plant remains, animal bones and bone artefacts.

[2] In Pit no. 3, an interbedding was observed in the profile in form of a thin layer of light grey sand with a thickness of 6 cm, which may indicate a minimum of two phases of use of this feature.

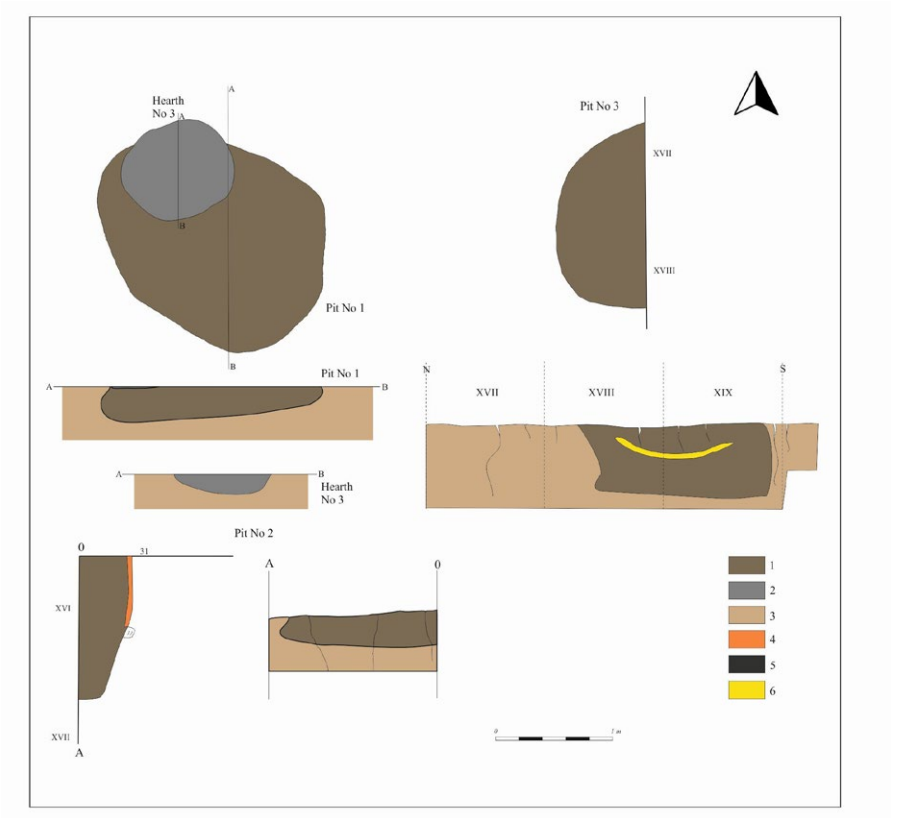

Fig. 5. Bargat El-Shab. Plans and profiles of pits 1, 2, 3 and hearth 3. Key: 1 – grey-brownish sand with mix burnt matter and charred macroscopic plant remains; 2 – strongly consolidated dark grey sand mixed with ash and charcoal; 3 – heavily cemented sediment-brown sandy silt; 4 – red brown heavily consolidated calcinated sand with charcoal; 5 – charcoals; 6 – light grey sand. Drawn: P. Bobrowski. Computer graphics: P. Wiktorowicz.

Lithics

Stone materials constitute the most numerous group of artefacts. In total, over 16,000 artefacts made of stone raw materials were registered within the E-05-1/2 trench. The largest number of artefacts was collected on the surface of the trench from an area spanning 100 m². These included 218 tools, 83 cores and 8638 debitage pieces (Fig. 3). In the section of the trench where excavation work was conducted, there were 39 tools, 13 cores and 4524 debitage pieces, while a total of 3176 stone artefacts, including 30 cores and 28 tools, were obtained from the fills of the features.

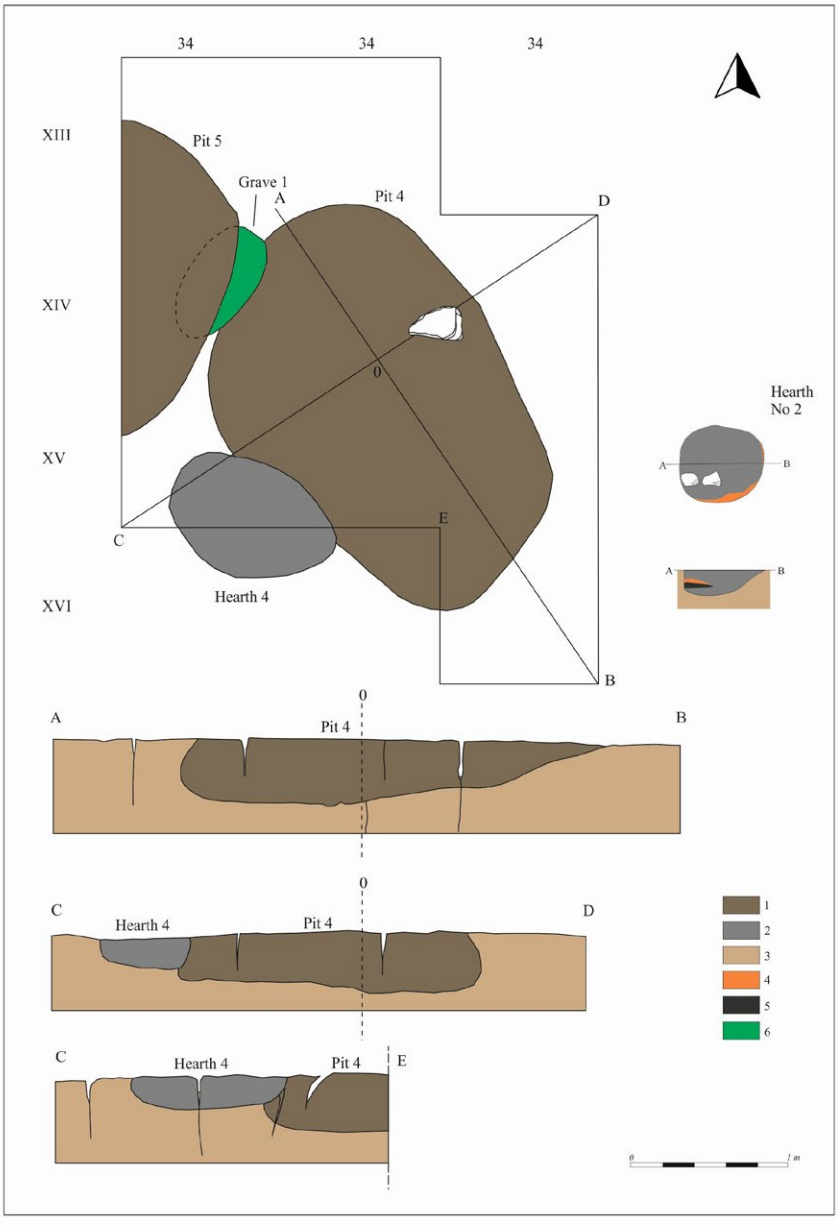

Fig. 6. Bargat El-Shab. Plans and profiles of pits 4, 5 and hearths 2, 4.
Key: 1 – grey-brownish sand with mix burnt matter and charred plant macroremains; 2 – strongly consolidated dark grey sand mixed with ash and charcoal; 3 – heavily cemented sediment-brown sandy silt; 4 – red brown heavily consolidated calcinated sand with charcoal; 5 – charcoals; 6 – pit of grave 1.
Drawn: P. Bobrowski. Computer graphics: P. Wiktorowicz.

The assemblage from the surface presents a large degree of variation in terms of the stone raw materials that were recorded (quartz, Egyptian flint, chert, quartzitic sandstone, petrified wood and ferruginous sandstone) along with another six varieties of stone used only occasionally (chalcedony, sandstone, agate, granite calcite and basalt). A relatively uniform technology appears to have been used in the production of blanks within each raw material category. A single platform core was prevalent primarily for flakes and less often blades. The group of tools recorded was also varied and included both older-type tools (el Adam phase), such as endscrapers on flakes, notches and denticulate made of sandstone and quartzitic sandstone as well as later-type tools, such as perforators made primarily from blade blanks of Egyptian flint, chert, fossilized wood, as well as a significant number of microlithic tools, primarily triangles made of flint and chert (Fig. 7).

The most homogenous material was recovered from the excavated features (Table 1). The most representative group are artefacts found in the largest Pit 1 (Fig. 8) and Pit 4 (Figs. 9–10) as well as the partially investigated Pit 3 (Figs. 11–12). These artefacts essentially duplicate the list of stone raw materials recorded on the surface. Quartz and Egyptian flint were the dominant raw materials in all of them. The percentage of quartz in individual clusters ranged from about 52% (Pit 1) to 88% (Pit 4), while the percentage of flint ranged from nearly 9% (Pit 4) to over 35% (Pit 1). The percentage of raw materials such as chert or petrified wood is less significant and even more marginal in the case of other materials.

Table 1. Bargat El-Shab. Site E-05-1/2. Frequencies of different categories of stone artefacts in excavated features.

Feature	Cores	Tools	Debitage	Total
Pit 1	–	3	265	**268**
Pit 2	–	–	5	**5**
Pit 3	5	7	682	**694**
Pit 4	25	16	2114	**2155**
Pit 5	–	3	140	**143**
Hearth 2	–	1	7	**8**
Hearth 3	–	–	32	**32**
Hearth 4	–	1	13	**14**
Total	**30**	**28**	**3118**	**3176**

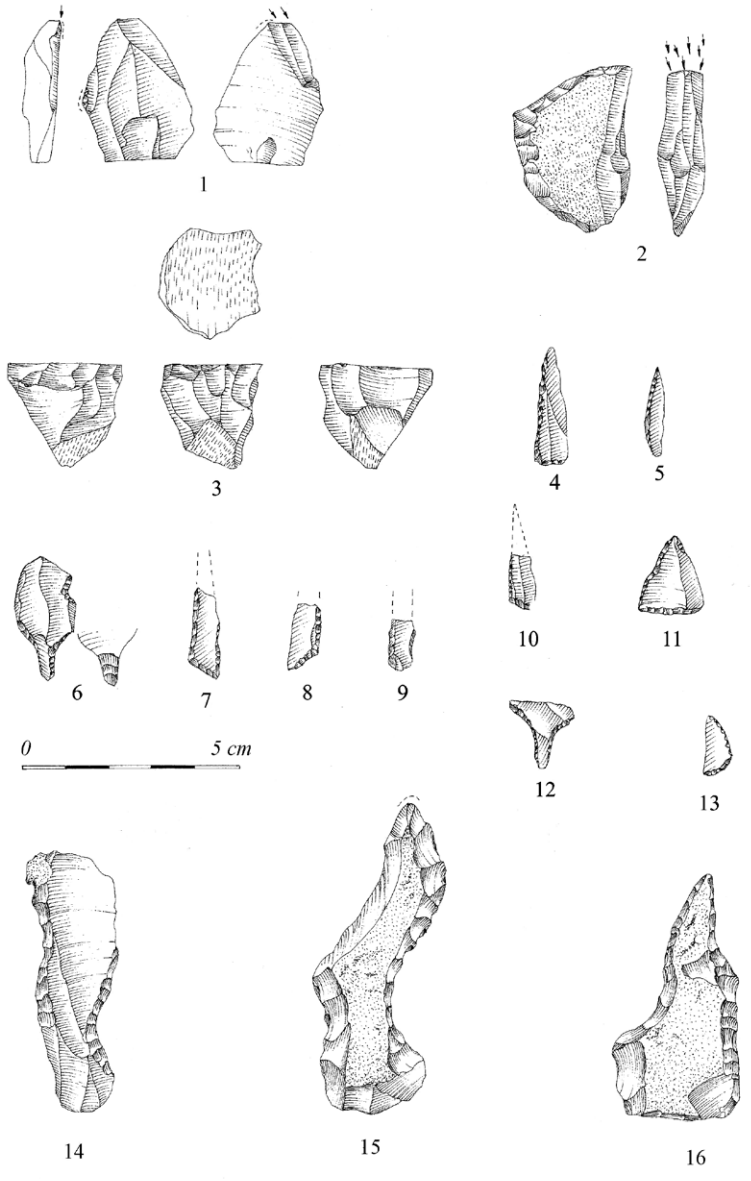

Fig. 7. Bargat El-Shab. Site E-05-1/2. Core and retouched tools from surface collection.
1, 2 – burins; 3 – core; 4, 7, 8, 9, 10, 11– triangles; 5, 13 – arch-backed piece;
6 – point; 12 – trapeze; 14 – notched piece; 15, 16 – notched piece + perforator.
Drawn: P. Bobrowski and M. Puszkarski. Computer graphics: P. Rutkowska.

Regardless of the type of raw material, stone artefacts were usually small, and their maximum size did not exceed 50 mm. In terms of quartz exploitation in the three above mentioned features, small pieces of core exploitation, such as chips or chunks and unspecified forms of cores, flakes and blades were prevalent. Among the specified specimens, the most numerous were flakes originating from single platform cores and primary flakes.[3] Blades and flakes from double platform multi-platform cores were of incidental frequency. Non-oriented forms and waste were also prevalent among the flint pieces found in Pit 1, Pit 3 and Pit 4. The majority of oriented debitage comprised flakes separated from single platform cores.[4] Individual pieces of small blades (not exceeding 30 mm in length) originating from single platform cores were recorded in all pits. Flakes from reoriented cores were also found only occasionally. A few debitage pieces of other raw materials were also separated from the single platform cores. An small number of cores were recorded in the features, with the vast majority of them in fragmented state or having non-oriented forms.

The basic raw material in tool manufacture was Egyptian flint.[5] The most numerous and typologically diverse set of tools was found within Pit 4 (Table 2). An endscraper with a symmetrically circular, slightly denticulate scraping blade (Fig. 9:11), two notched blades and a combined tool – perforator + notched blade were recorded (Fig. 9:9–10, 12). Inserts included a segment with retouch and an obtuse triangle measuring 20 × 5 × 4 mm (Fig. 9:13–14). The most numerous category in the group of tools were retouched blades and flakes (Fig 9:5, 7–8). A varied set of tools was also recorded in Pit 3 (Table 2; Fig. 11), including a combined tool made of a blade from a double platform core and a double endscraper. A single segment was also recorded within Pit 1 (Fig. 8:2), while an obtuse triangle was found in Hearth 2 (Fig. 8:10).

Stone implements

Within the examined area of trench 2, several dozen fragments of macrolithic tools were found both on the surface and within the layers, constituting mainly the lower or upper fragments of grinding stones. Thirteen pieces were recorded in the fills of the features. Prevalent here were fragments of oval discoidal pestles with rounded

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3 The largest collection of flakes from single platform cores with similar metric values was recorded in Pits 3 and 4. Their size ranges from 16 × 20 × 4 mm to 32 × 28 × 9 mm, with an average length of 23 mm, a width of 19 mm and a thickness of 6 mm (Pit 4). Primary flakes were slightly larger in size.

4 The pieces found in Pit 3 and Pit 4 were for the most part short with their width wider than the length, which is reflected in the average dimensions: length 19 mm, width 24 mm and thickness 5 mm. The dimensions of the smallest flake found in Pit 4 were 10 × 21 × 5 mm, while the largest was 25 × 30 × 5 mm. Most of the pieces had lisse buts.

5 Out of the 31 tools found within all examined features, 25 were made of flint, 2 of quartz (fragment of segment – Pit 1 and retouched flake – Pit 4) and 1 of petrified wood (double back perforator – Pit 3), chert (segment – Pit 4), chalcedony (perforator – Pit 5) and quarzitic sandstone (notch – Pit 5).

edges on both sides and on both working surfaces (Figs. 10:1; 12:3). Lower fragments of querns were less common (Pit 4 and Pit 5). In addition, two oval-shaped polishing stones featuring a single highly polished surface were found (Pit 5). Almost all the tools were made of fine-grained sandstone in various colours. Exceptions included a grinder with a pestle made of quartzitic sandstone found in Pit 3. A piece measuring 82 × 87 × 56 mm had traces of heavy smoothing on a single flat surface and fractures on the edges and on the flat surface. Remains of ochre were observed on its surface (Fig. 13). Two small lumps of ochre were also found in the same feature. In addition, small lumps of limonite or limonite tablets were found in the features in Pit 1 (1) and in Pit 4 (3), as well as talc in Pit 4. Two extremely interesting macrolithic tools were found within the layer adjacent to the pits (Pit 4 and Pit 5), made of petrified wood and flint. Both were probably used as shovels for digging pits (Fig. 14:A, B).

Table 2. Bargat El-Shab. Site E-05-1/2. Frequencies of different types of retouched tools in excavated features.

	Feature					
Type of Tool	**Pit 1**	**Pit 3**	**Pit 4**	**Pit 5**	**Hearth 2**	**Hearth 4**
End scraper	–	1	1	–	–	–
Notch	–	–	2	1	–	–
Borer	–	1	–	1	–	–
Perforator	–	1	–	1	–	–
Denticulate	–	1	–	–	–	–
Segment	1	–	1	–	–	–
Triangle	–	–	1	–	1	–
Retouched Flake	1	–	3	–	–	1
Retouched Blade	1	2	6	–	–	–
Combined tool	–	1	1	–	–	–
Fragments of tool	–	–	1	–	–	–
Total	**3**	**7**	**16**	**3**	**1**	**1**

Pottery

Only a few fragments of ceramic vessels were registered within the surveyed part of site. Within the layers, three not very characteristic vessel fragments were found, and five more were discovered within the features. All had polished surfaces, were brown (in various shades) or red in colour, and had admixtures of various-sized granite / granodiorite pieces in the ceramic fabric. In Pit 4, three fragments of vessels were found, including one rather uncharacteristic fragment of a rim (Fig. 10:2), and two decorated body fragments (Fig. 10:4–5). Both had the Rocker Stamp motif with very regular impressions relating to R1 according to (Nelson *et al.*, 2002: 27; Gatto 2002: 69–70). A single sherd with a Stem and Leaf motif – type R5 (Nelson *et al.*, 2002: 27; Gatto 2002: 69–70; Fig. 12:1) was found. A small fragment of a vessel without an ornament was also recovered from Pit 5.

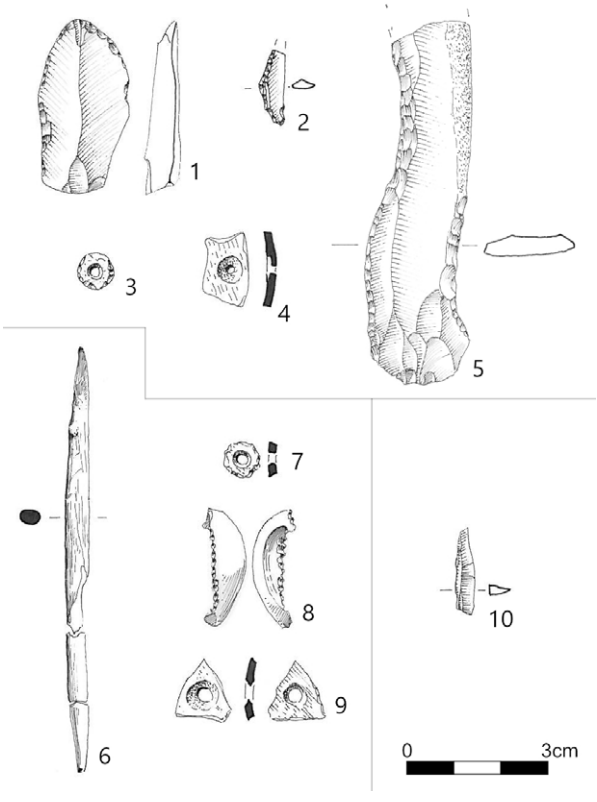

Fig. 8. Bargat el Shab. Site E-05-1/2. Retouched tools and bone and shell implements from pit 1 and hearth 2, 3. Pit 1: 1– retouched piece; 2 – segment; 5 – notched piece; 3 – ostrich egg shell bead; 4 – bead preform. Hearth 3: 6 – bone point, 7, 9 – egg shell bead and preform; 8 – cowry shell fragment. Hearth 2: 10 – triangle.
Drawn: P. Bobrowski and M. Puszkarski. Computer graphics: P. Rutkowska.

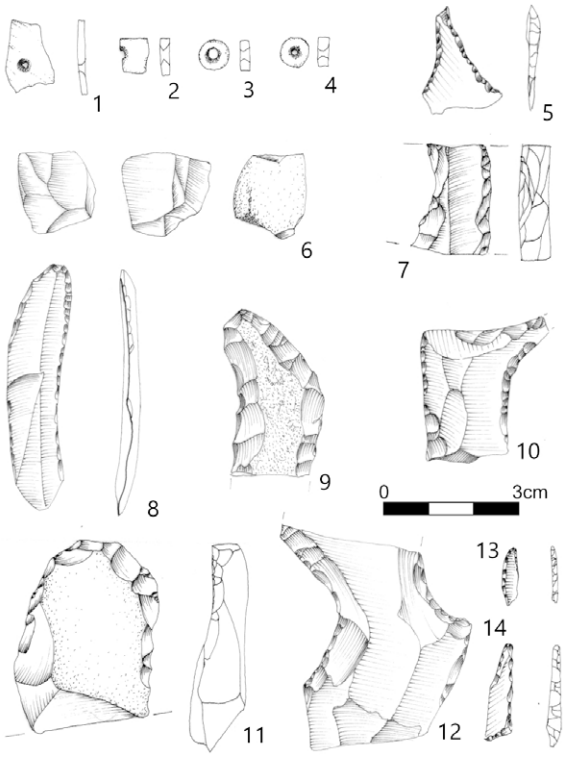

Fig. 9. Bargat El-Shab. Site E-05-1/2. Retouched tools and shell implements from pit 4. 1–4 – ostrich egg shell bead and performs; 5 – trapeze; 6 – core; 7, 12 – fragment of notched piece; 8, 9 – retouched piece; 10 – perforator; 11– end-scraper; 13 – segment; 14 – triangle. Drawn: P. Bobrowski and M. Puszkarski. Computer graphics: P. Rutkowska.

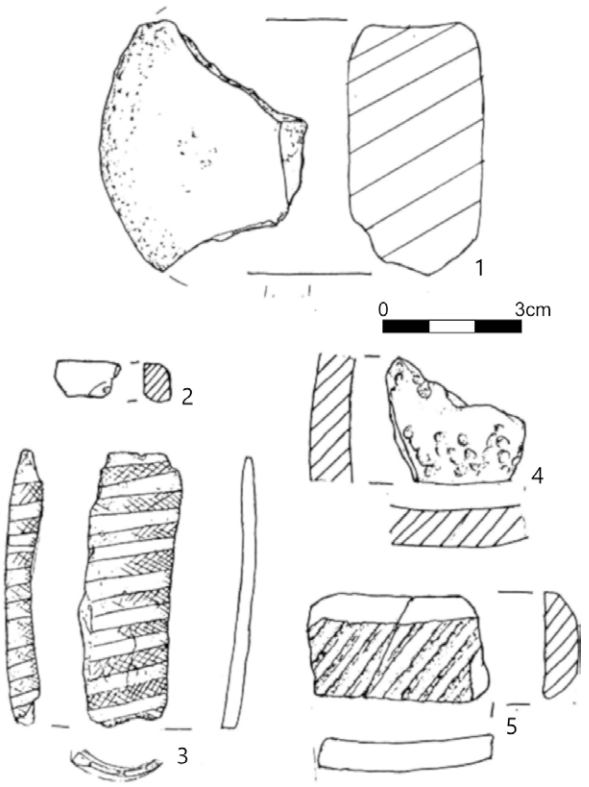

Fig. 10. Bargat El-Shab. Site E-05-1/2. Lithic tool, pottery and bone implement from pit 4. 1 – fragment of grinding stone; 2, 4, 5 – pottery; 3 – decorated bone object. Drawn: P. Rutkowska and M. Jórdeczka. Computer graphics: P. Rutkowska.

Personal adornments

One of the most common categories of artefacts found during the survey work were fragments of ostrich eggs, semi-finished products and ready-made beads. Within the excavated features, a total of 36 finished beads (Hearth 3, Pit 1, Pit 3, Pit 4) and 22 semi-finished products were distinguished (Figs. 8:3–4, 7, 9; 9:1–4; 11:3).[6] In the immediate vicinity of the excavation on the surface, a calibrator[7] probably used to manufacture beeds from ostrich was found.

Bone and shell implements

Found within the Hearth 3 was a bone point (spindle-shaped), sharpened on both ends, 105 mm long and maximum 4 mm in diameter. It was probably made from a bone of a large ruminant (Fig. 8:6).

An exceptional find is a small fragment of a richly decorated object, probably made from a bone of a small ruminant, perhaps an antelope. It is probably a type of plaque, pendant or other object with a rectangular shape and an curved section, measuring 66 × 20 × 4 mm. The ornament has alternating parallel, slightly diagonal stripes, with a smooth surface or a diagonal chequered hatching. Along one of the edges, the hatching pattern also passes into smooth stripes. The object most likely also had a drilled hole in its lower (damaged) part (Figs. 10:3; 14:C). A damaged fragment of a cowrie shell with traces of treatment (Fig. 8:8) and of a Nile oyster was found in the fill of Hearth 3.

Animal remains

A total of 1154 remains of animal origin were found within the E-05-1/2 trench. They were spread over the surface of the site as well as in its layers and in features. Osteological remains were almost completely mineralised and light in colour (ranging from beige to white and grey). Their high fragility and brittleness indicated a significant loss of organic components – collagen. Their poor state of preservation was reflected by the low percentage of identified remains (Table 3).[8]

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6 Most were found within Pit 4: 25 beads and 10 semi-finished products. 7 beads and 6 semi-finished products were found in Pit 3. Individual pieces were also found within Hearth 3, as well as Pit 1 and Pit 5. The smallest piece was 5 mm in diameter with a 2 mm diameter hole, while the largest was 8 mm in diameter with a 3 mm diameter hole. However, the vast majority (especially the pieces found in Pit 4) had standardized dimensions of 6 mm and 3 mm respectively, and were drilled on one side. Pieces drilled from both sides were the exception. There were also very few beads with rough denticulate edges.

7 See: Connor 1984: 239; Jórdeczka *et al.*, 2013: 275–276.

8 Animal remains are preserved much longer on the surface in a desert environment than in a more humid climate. The skeleton of a large mammal ultimately decomposes in the course of 25 years (Denys 2002). Fractures usually appear in long bones, parallel to the long axis on the shaft (diaphysis), forming an irregular mosaic on the epiphysis. The surface of the bone is flaky. These type of fractures were noted in bone material from the Bargat site. Most of the remains from the "unidentified" category were in the form of long "splinters", being a result of the fracturing of the long bone shaft. Yet it was the next taphonomic stage – the deposit of the remains in silt – that had a decisive influence on the preservation of the osteological material.

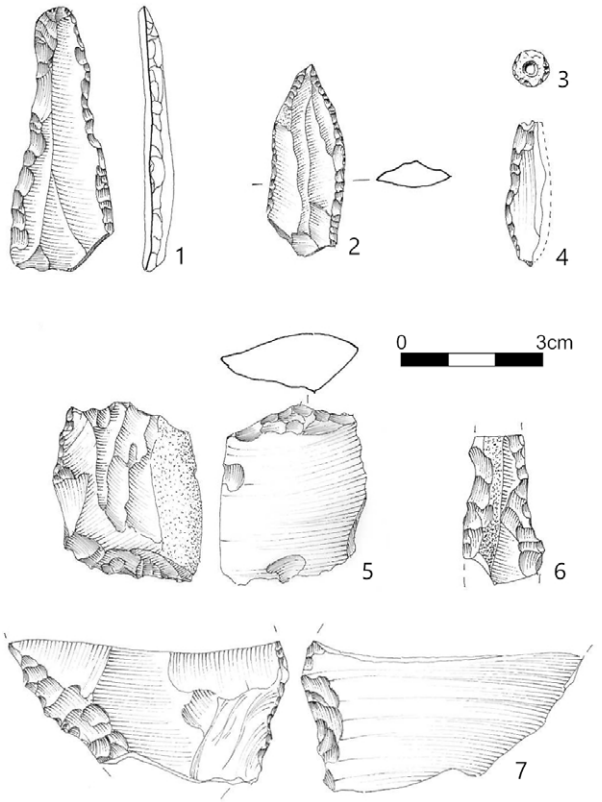

Fig. 11. Bargat El-Shab. Site E-05-1/2. Retouched tools and bone and shell implements from pit 3: 1 – endscraper + denticulated blade; 2 – perforator; 3 – ostrich egg shell bead; 4 – fragment of doubleback perforator; 5 – endscraper; 6 – fragment of denticulated blade; 7 – denticulated flake. Drawn: P. Bobrowski and M. Puszkarski. Computer graphics: P. Rutkowska.

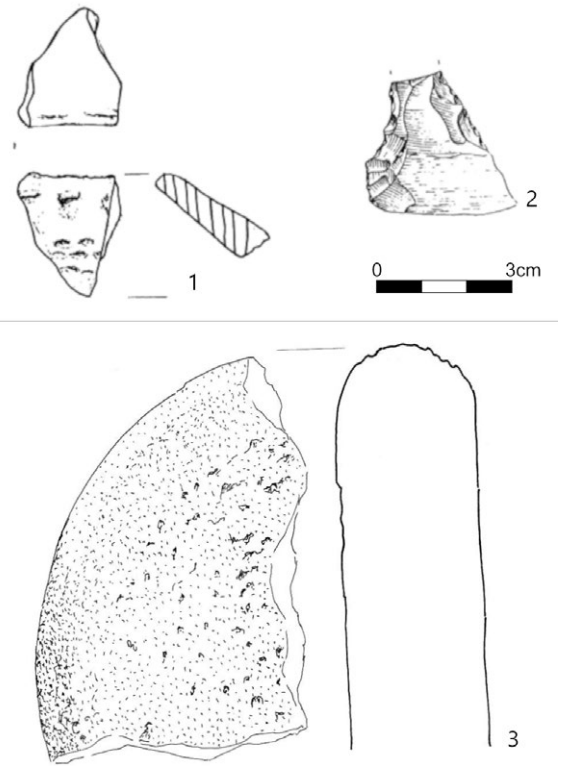

Fig. 12. Bargat El-Shab. Site E-05-1/2. Retouched tools and bone and shell implements from hearth 4 and pit 3. Harth 4: 1 – pottery; 2 – retouched piece; Pit 3: 3 – fragment of grinding stone. Drawn: P. Rutkowska and M. Jórdeczka. Computer graphics: P. Rutkowska.

Table 3. Bargat El-Shab. Site E-05-1/2. Species distribution of animal remains. A – from surfaces and layers; B – from excavated features.

SURFACE AND LAYERS		
Taxa	**n**	**%**
Bos spp. (domestica cattle?)	48	16.5
Gazela dorkas	94	32.3
Gazela dama	0	–
Ovis/Capra	3	1.0
Lepus capensis	19	6.5
Ostrich eggshell	114	39.2
Zoothecus	13	4.4
NISP	291	100/31.6
Unidentified	629	68.4
Total	**920**	**100**

FEATURES							
		Pit			**Hearth**		
Taxa	**n**	**1**	**3**	**4**	**2**	**3**	**%**
Bos spp. (domesticated cattle?)	12	12	–	–	–	–	15.2
Gazela dorkas	36	24	4	3	2	3	45.5
Gazela dama	2	–	2	–	–	–	2.5
Ovis/Capra	0	–	–	–	–	–	-
Lepus capensis	27	19	2	–	6	–	34.2
Ostrich eggshell	–	–	–	–	–	–	-
Zoothecus	2	2	–	–	–	–	2.5
NISP	79	–	–	–	–	–	100/33.8
Unidentified	155	122	9	8	3	13	66,2
Total	**234**	**179**	**17**	**11**	**11**	**16**	**100**

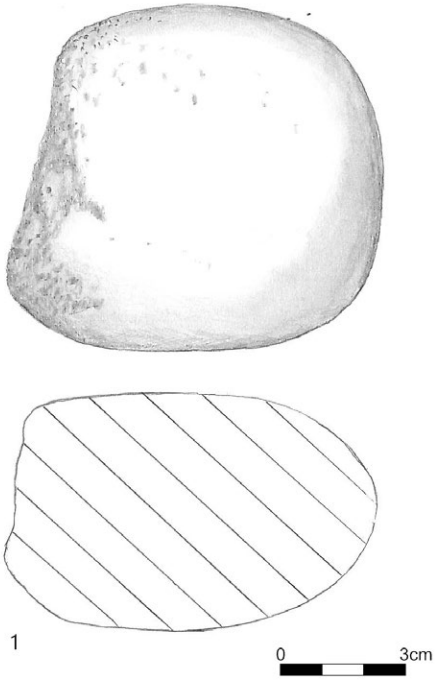

Fig. 13. Bargat El-Shab. Site E-05-1/2. Pit 3: Grinding stone and pestle of quartzitic sandstone. Drawn: M. Jórdeczka.

Fig. 14. Bargat El-Shab. Site E-05-1/2. Retouched tools and bone implement from layers and pit 4. Layers: A–B – macrolithic tools made of petrified wood and flint; Pit 4: C – decorated bone object. Photo: M. Jórdeczka.

Mammal (*Mammalia*) skeletal elements predominated in the faunal material from the area of the Bargat site. Apart from that, fragments of eggshell of the common ostrich (*Struthio camelus*) as well as fragments and entire shells of land snails (*Zoothecus* sp.) were noted.

During archaeozoological analysis, the collections of remains originating from the site surface and from the fills of features were examined separately. Both in the layers and in the features (Table 3), the dorcas gazelle (*Gazella dorcas*) was the most frequently occurring species. The second most numerous group of remains on the surface of the site and in the layers consisted of fragments of ostrich eggs, while the second largest group in the fills of features was made up of fragments of cape hare skeletons (*Lepus capensis*). Interestingly, in both collections the bone remains of the *Bos* species, or cattle, appeared in similar proportion. The high level of destruction of the remains did not allow for their unambiguous identification as to whether they were remains of a wild species or of domesticated cattle. Only a few fragments of the skeletons of domesticated small ruminants – sheep and goats – were noted in the layers and on the surface. Also, a few bone fragments of the dama gazelle were noted though only in the features (*Gazella dama*). Snail shells were more numerous on the surface and in layers than in feature fills.

Although the anatomical distribution of the most represented species was influenced by many taphonomic factors, the obtained data clearly indicate the post-consumption nature of the mammalian remains. This is evidenced by the high proportion of remains from the most attractive (in terms of consumption) parts of the carcass (trunk, proximal parts of the limbs). The high percentage of "head" remains was affected by the teeth, as elements which are well-preserved and relatively easy to identify. The presence of phalanges (digital bones) in the anatomical distribution of the individual species should be emphasized here. Their presence proves that at all stages, the division of the carcass was carried out within the site. This was the case with small animals like the dorcas gazelle and the hare. Yet we observe a different situation in the case of cattle. The lack of digital bones suggests that the initial stages of division, such as skinning, were carried out outside the surveyed area, most likely at the animal slaughter site. Yet the imbalance of remains between the thoracic and pelvic limb indicates that the most abundant and most caloric parts of the large animal carcass were brought to the site.

Comparing the species distribution of remains from surfaces and underground features, we can hypothesize that the material on the surface is a set derived from eroded layers. The main part of the osteological assemblage originated from one settlement phase. This is indicated not only by very similar taxonomic lists but also by the proportions in which individual species were recorded. It is likely that only the remains of sheep and goats are from the later phase of settlement of this area.

Plant remains

Samples designated for archaeobotanical research were collected primarily from explored pits and hearths.[9] The diaspores and wood remains present in the examined material appeared in charred form and were for the most part relatively well-preserved, which allowed their taxonomic identification. Some of the specimens showed traces of secondary mechanical damage and deformation on the surface, probably caused by high temperatures (Lityńska-Zając and Wasylikowa 2005: 208). Individual diaspores were crushed and appeared in fragments. Charcoal pieces usually had a well-preserved anatomical structure, although there were also signs of damage on the surface. The few uncharred specimens that look fresh, such as straw fragments of Poaceae indet. and the fruit of the *Taraxacum* sp. with the remains of pappus, are most likely modern-day impurities, probably resulting from the transport of diaspores by the wind.

Based on the preserved plant remains, wild sorghum kernels *Sorghum bicolor* subsp. *arundinaceum* were determined, as well as fruit and seeds of *Capparis decidua, Schouwia* sp., *Ziziphus* sp.*, Echinochloa colona*, *Astragalus vogelli* and *Astragalus* type and undermined speciemes from the families: Cyperaceae indet., Poaceae indet. and Fabaceae indet. In terms of quantity, the remains of *Capparis* and *Ziziphus* were predominant in the examined material. Charcoal fragments showed relatively little diversification in terms of taxonomy. Found here were wood from the tamarisk *Tamarix* sp., acacia *Acacia* sp. and jujube *Ziziphus spina-christi* (Table 4).

In addition to paleoecological data, plant materials provide information on human activity. This includes the definition of the strategy applied by prehistoric communities to meet their basic needs to obtain food, among other things (Van der Veen 2006; López-Dóriga 2012). Based on the data collected in Bargat El-Shab and numerous sites near Nabta Playa, we can assume that some of the plants mentioned were seasonally gathered by the inhabitants of the former site. Some of these plants were collected and stored as food reserves, such the seeds of various species from the grasses family *Poaceae*. Wild grasses have relatively large and farinaceous caryopses which contain large amounts of starch, as well as carbohydrates, protein, fat and fibre. Other foods, such as the ripe fruit of the *Ziziphus* may be consumed raw. Similarly, the fruit of the *Capparis* could be eaten raw without any special preparation needed (El Hadidi 1985; Wasylikowa 1997; Fahmy 2014; Lucarini 2014; Lucarini and Radini 2015; Lityńska-Zając and Wasylikowa 2018). Most of the charcoal found probably constitutes the remains of fuel (Asouti and Austin 2005) used by the inhabitants of the sites. We can assume that wood was gathered in the direct vicinity of human settlements.

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[9] The laboratory analyses and identification of macroscopic plant remains extracted in the field laboratory were carried out in accordance with the procedures used in archeobotany (e.g., Wasylikowa 1997; Lityńska-Zając 2010).

Table 4. Bargat El-Shab. Site E-05-1/2. List of macroscopic plant remains and their distribution in excavated features.

Taxa name	Kind of remains	Hearth			Pit			Total
		2	3	4	3	4	5	
Astragalus vogelli	seed	–	–	–	–	1		**1**
Capparis decidua	seed	–	–	2	–	7	4	**13**
Echinochloa colona	grain	–	–	2	–	1	1	**4**
Schouwia purpurea	seed	–	–	–	2	1	1	**4**
Sorghum bicolor subsp. *arundinaceum*	grain	–	–	–	1	–	1	**2**
Astragalus typ	fruit	–	–	–	1	–	–	**1**
Ziziphus sp.	seed	–	–	–	–	2	–	**2**
Cyperaceae indet.	grain	–	–	–	–	3	1	**4**
Fabaceae indet.	seed	–	–	–	–	1	–	**1**
Poaceae indet.	grain	–	–	–	–	2	–	**2**
Ziziphus sp.	fruit	–	–	–	2	34	–	**36**
Ziziphus spina-christi	charcoal	1	–	7	–	4	–	**12**
Acacia sp.	charcoal	1	–	8	–	21	22	**52**
Tamarix sp.	charcoal	11	9	108	–	209	–	**337**
Unidentified	seed	–	5	1	–	2	–	**8**
Unidentified	bark	4	–	–	–	1	–	**5**
Unidentified	thorn	–	–	–	–	1	–	**1**
Unidentified	charcoal	12	21	75	1196	6948	400	**8652**
Total		**29**	**35**	**203**	**1202**	**7238**	**430**	**9137**

ABSOLUTE CHRONOLOGY

The analysis of charcoal and plant macroremains registered in most of the features investigated enabled us to obtain a series of carbon dates, which in turn helped to determine their absolute chronology. Hearth 3 – 7940±50 BP (Poz-43808); Pit 3 – 7880±40 BP (Poz-43809); Pit 1 – 7860±40 BP (Poz-43806); Hearth 2 – 7790±40 BP (Poz-43807); Pit 4 – 7760±40 BP (Poz-54709); Pit 5 – 7435±35 BP (Poz-54708). Calibration of the dates allows us to place the settlement mainly in the first half of the seventh millennium cal BC, therefore during the Holocene climate optimum in the region. The features can thus be associated with the final settlement of the Early Holocene of the El Nabta / Al Jerar variant (Fig. 15).

THE SITE IN CONTEXT

The remains of the site recorded at site E-05-1 within trench 2, dated based both on the comparative method and absolute chronology, perfectly fits the image of Early Holocene settlement of the El Nabta/Al Jerar settlement phase in the Nabta – Kiseiba region. The specific architecture of the site with the remains of numerous pits and hearths, as well as the artefacts (lithic assemblage, vessel ceramics, bone products) and the specific structure of archeozoological and archeobotanical remains has numerous analogies in

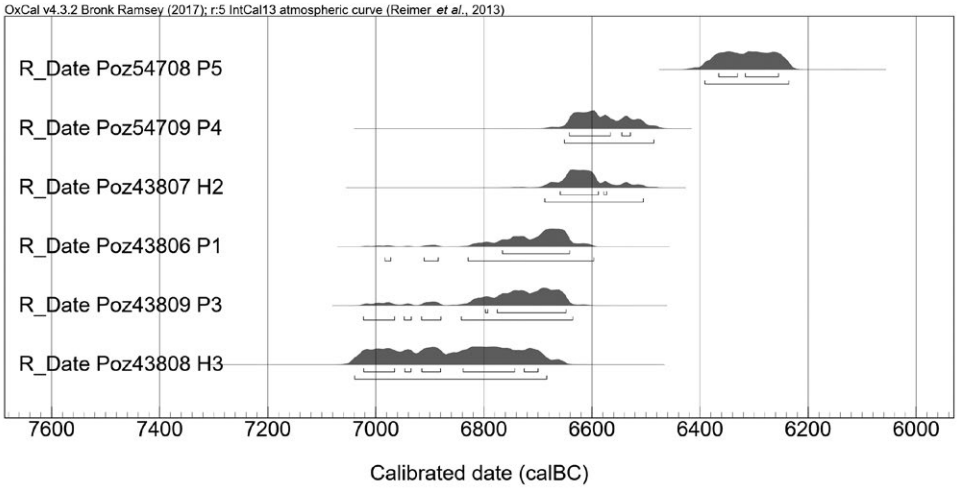

Fig. 15. Bargat El-Shab. Site E-05-1/2. Absolute chronology of excavated features. Results of calibration 14C dates (Poznan Radiocarbon Laboratory).

this area of the Western Desert (Close 1992; Close and Wendorf 1992; Wendorf and Close 1992; Wendorf *et al.*, 1992; Wasylikowa *et al.*, 1993; 1995; 1997; Wasylikowa and Mitka 1998). Features of similar form, and above all distinctive bell-shaped pits, but also hearths were discovered in the Nabta Playa region, at sites E-75-6 (Królik and Schild 2001) and in various locations at site E-91-1 (Wendorf *et al.*, 2001) and E-92-7 (Królik and Fiedorczuk 2001). In terms of the structure of the raw materials, as well as from a technological and typological perspective, the lithic assemblage from the site at Bargat is comparable to those of the previously-mentioned sites. Analogies can be found in the artefacts from Pits 1 and 3 and Hearth 3 to the material from the so-called Horizon B at site E-75-6 associated with El Nabta type settlement (Królik and Schild 2001: 117–142). On the other hand, the remaining features, above all those from Pits 4 and 5 and are similar to material of Horizons A and C at the site associated with Al Jerar settlement (Królik and Schild 2001: 111–117, 142–146). Two vessel fragments of the so-called type R1 with the Rocker Stamp motif which were found in the fills of Pit 4 appear above all in the Al Jerar phase (Gatto 2002: 70). Meanwhile, the Stem and Leaf ornament motif – type R5, which appears on a single fragment from Hearth 4, was featured on vessel ceramics during the El Nabta and Al Jerar phases (Gatto 2002: 70).

SUMMARY

The site at Berget El-Sheb is located in the driest part of the Sahara, where irregular precipitation currently occurs once every few years. A direct consequence of the weather conditions and edaphic environment prevalent in the region discussed is very scarce vegetation, limited to a few trees and very few herbaceous plants growing near springs (e.g., Bornkamm 1986; Mitka and Wasylikowa 1995; Wasylikowa and Mitka 1998). The results of surveys at site E-05-1 clearly indicate that in 7000 cal BC, during the Holocene climatic optimum, the Bargat el Shab region featured dry Sahel conditions and a semi-arid climate. It was a place which was settled multiple times by nomadic Epipaleolithic / Neolithic (?) peoples representing the El Nabta / Al Jerar settlement variant; this has been confirmed by comparative, relative as well as absolute chronology. The key factor allowing for long-term settlement was access to fresh drinking water. The conditions prevailing at the shores of the lake and beds of seasonal rivers were beneficial to growth of relatively lush vegetation which provided food for people and animals (fodder?), as well as fuel. The use of plants as food is confirmed by the discovery of querns and pestles. The analysis of animal remains from the Neolithic site in Bargat El-Shab, albeit of a relatively tentative manner, provided essential data about the ecosystem and the adaptive strategies and exploration of fauna inhabiting the area. Wild animals: gazelles (dorcas and dama) and hares were the main sources of meat. However, archeozoological materials do not provide any

clear convincing information as to whether cattle at the site was wild or domesticated. On the one hand, the image of the exploitation of fauna formulated on the basis of analysis results are well in line with existing opinions on Early Holocene pastoral communities (e.g., Osypińska 2018). Herds of ruminants (cattle, sheep and goats) which required great effort to maintain, were rather the source of in vivo benefit: capital, milk or manure. Very often cattle in particle played a cultural and sacral role. The meat of breeding animals in such communities is eaten only occasionally. The first choice in terms of a source of meat is game, or in this case gazelles and hares. In such a situation, the osteological materials from the Bargat El-Shab site reflect such a type of environmental exploration and model of ruminant breeding. On the other hand, at this phase of the research, we have to agree with the arguments regarding the domestication of cattle and hence the neolithization of the Western Desert that were recently presented by Michael Brass (2018: 108). He suggests:

> "… a different perspective on the hydroclimatic conditions there during the early Holocene. It, together with revisiting the botanical data, strongly indicates that the early Holocene ecology at Nabta Playa – Bir Kiseiba was capable of supporting both small game animals such as hares, medium-sized bovids beyond gazelles such as hartebeest and wild Bos, and other semi-arid adapted animals. The lithic assemblages too are similar to hunter-gatherer toolkits, possessing no significant distinguishing features indicative of herding (Kuper and Kröpelin 2006; Riemer 2007)".

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