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AN ARCHAEOLOGICAL SURVEY IN THE NORTHEASTERN PART OF THE FAYUM

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Introduction

Since 2003, the UCLA-RUG Fayum Project has obtained permission to carry out archaeological fieldwork in the northeastern part of the Fayum Depression. The concession area of the project runs between Kom Aushim (the ancient Karanis) in the east and Qasr el-Sagha in the west, and includes the northeastern shore of Lake Qarun in the south and the rocky terrain in the north which marks the northern fringe of the Fayum Depression. The 2003-2006 seasons' fieldwork concentrated on the eastern half of the concession area. It is 12 km wide east-west, and 20 km long north-south (fig. 1).

Archaeological fieldwork in this area has been conducted in the last century by Caton-Thompson and Gardner under the auspices of the British School of Archaeology in Egypt and the Royal Anthropological Institute of Great Britain and Ireland[1], a team of the Sapienza University of Rome led by Puglisi[2], the Combined Prehistoric Expedition led by Wendorf and Schild[3], a joint team of the Jagiellonian University in Cracow and the German Archaeological Institute in Cairo led by Ginter and Kozlowski[4], and Brewer from University of Illinois[5]. They have obtained good information about the archaeological site distribution and material culture which range from the Epipalaeolithic to the Roman period. The area has been known to contain a number of Epipalaeolithic and Neolithic sites which were dated to the 8th-5th millennia cal. BC, and has provided evidence for the earliest wheat/barley farming combined with sheep/goat herding in Egypt. The 2003-2006 survey area included two salient Neolithic occupation loci named Kom K and Kom W, as well as clusters of Neolithic granary pits named the Upper and Lower K Pits in the proximity of Kom K. These sites were excavated by

[1] G. CATON-THOMPSON and E.W. GARDNER, *The Desert Fayum* (London, 1934).

[2] S. PUGLISI, 'Missione per Ricerche Preistoriche in Egitto', *Origini* 1 (1967), 301-12.

[3] F. WENDORF and R. SCHILD, *Prehistory of the Nile Valley* (New York, 1976).

[4] J.K. KOZLOWSKI and B. GINTER, 'The Fayum Neolithic in the light of new discoveries', in: L. KRZYZANIAK and M. KOBUSIEWICZ (eds.), *Later Prehistory of the Nile Basin and the Sahara* (Poznań, 1989), 157-79.

[5] D.J. BREWER, *Fishermen, Hunters and Herders: Zooarchaeology in the Fayum, Egypt (ca. 8200-5000 bp)* (Oxford, 1989).

Fig. 1. Eastern half of the concession area.

Caton-Thompson in the 1920s, and the results were well published[6]. Notably, based on the lack of substantial dwelling remains, it has been argued that there was no clear evidence for year-round occupations in these loci despite the fact that the inhabitants lived on farming and herding at least as part of their subsistence.

Questions remain as to how the Fayum people have organised their residence and subsistence, and what type of mobility strategy enabled the people to continue traditional foraging on one hand, and to introduce farming and herding on the other, at the transition from the Epipalaeolithic to the Neolithic period. It was expected that these questions might be partially answered through reinvestigating the well-known Neolithic occupation loci, finding more Epipalaeolithic and Neolithic remains in their surroundings, and considering the patterns of land use and natural resource exploitation by Epipalaeolithic and Neolithic people in a wider environmental context.

[6] CATON-THOMPSON and GARDNER, *The Desert Fayum*.

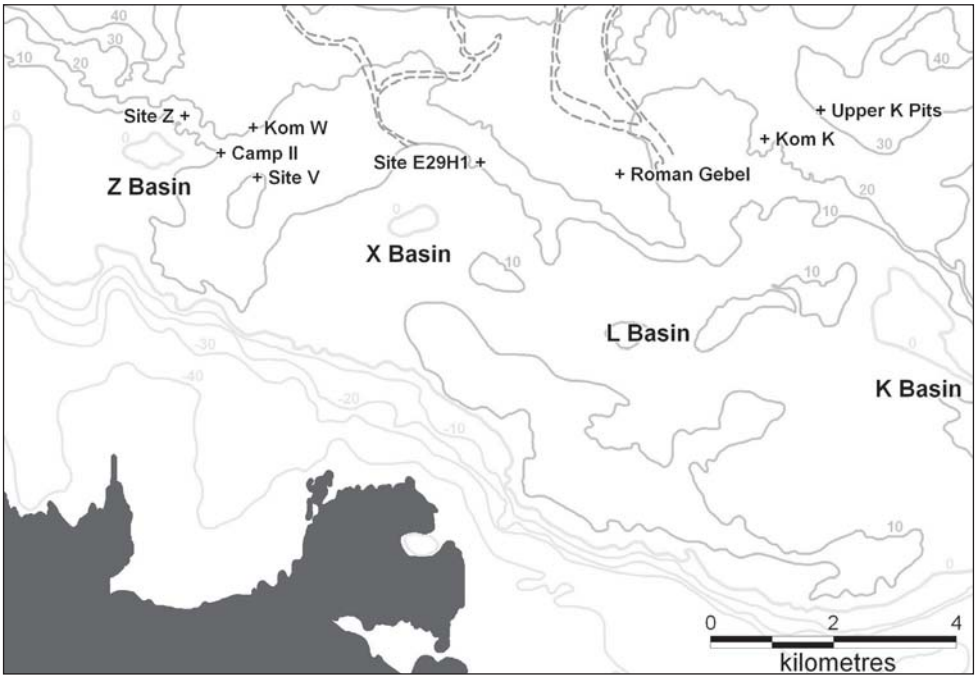

Fig. 2. Low desert in the eastern half of the concession area.

Area of survey

The low desert between the contour line of 40 m asl and the present lakeshore which is around 40 m bsl is where most of archaeological remains from the Epipalaeolithic to Ptolemaic and Roman periods have been found (fig. 2). This low desert records erosional and depositional events on the past lakeshores caused by wind and oscillating lake water. According to a reconstruction of lake level fluctuations in the Pleistocene and Holocene[7], the water margin of the lake has moved within this vertical range, and the lake level dropped drastically and remained lower than 0 m bsl after the Ptolemaic period.

In general, the low desert is covered by fine-grained alluvial and aeolian sand, but many parts of the low desert actually lack aeolian deposition of loose sand due to deflation. In places where deflation has been severe, fine-grained loose sand is blown

[7] F.A. HASSAN, G. TASSIE, R. FLOWER, M. HUGHES and M. HAMDEN, 'Modelling environmental and settlement change in the Fayum', *Egyptian Archaeology: The Bulletin of the Egypt Exploration Society* 29 (2006), 37-40.

away leaving a residual deposit of heavier and larger objects like flint fragments on the consolidated surface of alluvial sand deposits. Particularly the area around the 40 m asl contour line is marked by dense flint gravels, which are supposed to be the shingle beach of the Pleistocene lake[8].

Major topographic features in this low desert are four large basins which are aligned approximately 5 km away from the present lakeshore (fig. 2). They have been named by Caton-Thompson from the west to the east as the Z Basin, X Basin, L Basin, and K Basin respectively[9]. These basins were probably huge residual pools off the shore of the perennial lake, and would have been filled with water as long as the lake level was higher than 10-15 m asl. Light yellow to orange silty sediments with numerous white calcium carbonate pellets as well as mottled dark grey silty sediments, which mark the water margins in the past, are seen at many locations on the gentle slopes of the northern shores of the L Basin, X Basin and Z Basin. In addition, the peripheries of the Basin shores are often capped by white to light grey calcrete duricrusts of a few centimetres thick, which are indicative of the accumulation of soluble minerals deposited by evaporation, and there are also many calcified plant root casts in the duricrusts. Most archaeological remains of the Early-Middle Holocene have been found at elevations of 10-20 m asl around the Basin shores and have been associated with these features.

Another topographic feature in the survey area higher than 30 m asl is the Gindi Plain (fig. 3). It is a vast plain named after an isolated sandstone outcrop of approximately 50 m high which is called Qarit el-Gindi. The Gindi Plain is covered by coarse-grained aeolian sand and relatively large rounded flint pebbles, subangular flint fragments, limestone fragments and fossil shells which have eroded out of local fossiliferous limestone. Further topographic features are two large wadis which run with a very gentle gradient from the rocky fringe of the Fayum Depression in the north towards the lake in the south through the Gindi Plain. The wadis mentioned here are dry stream beds which are for the most part only slightly lower than the surrounding terrain. The western wadi named "Wadi A" by the UCLA-RUG Fayum Project runs from the northwest diagonally between the X Basin and L Basin, and the eastern wadi named "Wadi B" runs straight and bends southeastwards between the L Basin and K Basin (fig. 3). It is not known exactly how heavily rain fell in the past, but it is probable that a certain amount of winter rainfall in the Early-Middle Holocene caused occasional surface runoff and played a role in creating this drainage system.

[8] CATON-THOMPSON and GARDNER, *The Desert Fayum*, pl. CIX; K.S. SANDFORD and W.J. ARKELL, *Paleolithic man and the Nile-Faiyum divide: A study of the region during Pliocene and Pleistocene times* (Chicago, 1929), folding map.

[9] CATON-THOMPSON and GARDNER, *The Desert Fayum*, pl. CIX.

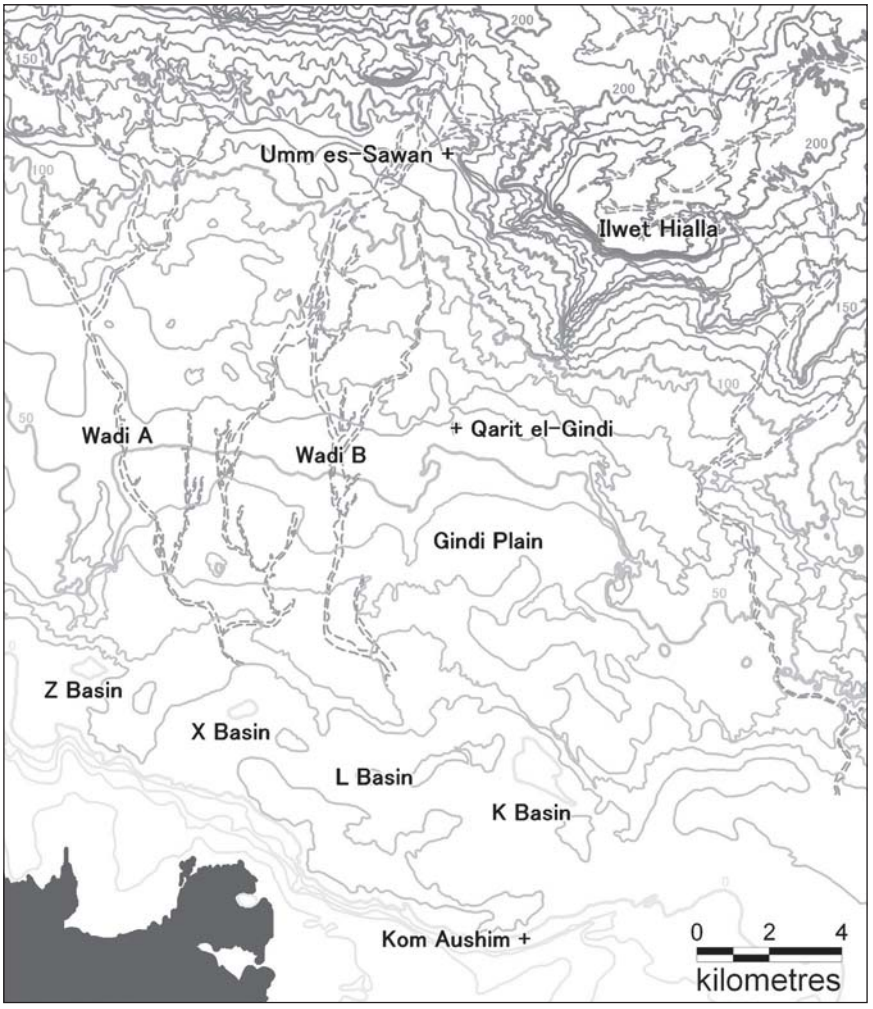

Fig. 3. Topography of the eastern half of the concession area.

Cultural heritage management

The recent expansion of irrigation canals and farmland into the low desert and the mining of hard clay outcrops around the K Basin and L Basin, and the quarrying of basalt outcrops in the northeastern ridge of the Fayum Depression are rapidly destroying the environment. Therefore, the survey had to be undertaken with an explicit objective of cultural heritage management. Even though special attention was paid to prehistoric

archaeological remains, the fieldwork project started from assessing the present condition of the area and the spatial distribution of archaeological remains by a walking survey, while locating previously-published sites and recording any other archaeological and geological features that were encountered. Based on the initial assessment of the importance of recorded archaeological remains and the impact of modern land use activities on their preservation, the priority for further archaeological research and heritage management was determined.

Field observations of the survey area

K Basin-L Basin area

The K Basin-L Basin area is defined as the area to the north of the L Basin and K Basin including modern farmland and the low desert. At present, the L Basin and K Basin are transformed into reservoir and farmland and are cultivated, as are the areas to the north of both Basins. In spite of the problem of water shortage and soil salination, farmland and water canals are still being extended further 2 km northwards and destroying desert environments.

Kom K is located in the low desert to the northwest of the K Basin (fig. 2). At present, Kom K is in the middle of cultivated farmland, but still retains its shape as a very low mound. Many plough tracks and remains of grape cultivation are visible on the Kom, and scatters of artefacts including large flint cobbles, flint debitage products, and pottery sherds are seen in between the tracks around the highest elevation in the centre of the Kom. These artefact scatters are apparently those that were excavated and left there by Caton-Thompson and thereafter ploughed.

Approximately 1 km to the northeast of Kom K, an extensive ridge built of hard clay runs over 3 km from the northwest to the southeast. Presently an asphalt road and the concrete and stone-built canals run parallel at the foot of this ridge. The surface of the ridge is covered by coarse-grained aeolian sand with many abraded flint gravels and fossilised shells. Caton-Thompson and Gardner have reported that the Upper K Pits were spread in an area of approximately 180 m long by 45 m wide on top of a projecting northwestern spur of this ridge named the K Ridge at an elevation of approximately 30 m asl at the highest (fig. 2), whereas the Lower K Pits were distributed further westwards at lower elevations of around 20 m asl[10]. A number of circular shallow depressions of less than 1 m in diameter are still visible on the surface of the higher ridge, and a bifacially-retouched, serrated sickle blade was collected on the surface. Therefore, this locality is certainly the Upper K Pits. Comparison of the present topography with the map of the Upper K Pits made by Caton-Thompson and

[10] CATON-THOMPSON and GARDNER, *The Desert Fayum*, 41.

Gardner[11] showed that a concentration of shallow depressions presently seen on the ridge corresponded to a major concentration of granary pits on their map. However, it is also recognised that the most obvious of those depressions are not prehistoric granary pits but are probably later robbers' pits. The location of the original pits excavated by Caton-Thompson is often indicated only by a circular clearance which has a lower density of flint gravels.

The K Ridge is at present in the early stage of development by the Egyptian government, and is being destroyed by activities such as digging deep canals, scraping surface gravels, and paving roads with flint cobbles which are transported from elsewhere. The Upper K Pits are presently divided into two parts by a deep canal running north-south. The eastern part which contains the major concentration of pits mentioned above is not severely disturbed by modern activities because this part is higher and more undulating than surrounding areas and thus less suitable for cultivation. The western part is the place where an isolated pit numbered 67 has been found by Caton-Thompson. In this western part, many intact pits which had been overlooked by Caton-Thompson were found[12].

The exact location of the Lower K Pits is not clear, because Caton-Thompson did not publish the map and plan of the Lower K Pits but described the site only briefly[13]. The supposed location of the Lower K Pits is covered by flint gravels and loose sand, and seems to be more heavily eroded than the area of the Upper K Pits, as Caton-Thompson has already noted. No depressions of a granary pit size can be found on the surface. It is also probable that the supposed location of the Lower K Pits has been mostly destroyed by the canals mentioned above.

The northern shore of the L Basin is marked by a flat brownish limestone escarpment, which was named Gebel L by Caton-Thompson[14]. She has reported that there were one Neolithic surface site named Site L on the southern spur of Gebel L, and one Old Kingdom site named Kom IV and one Roman site named the Roman Gebel (fig. 2) on the flat top of Gebel L[15]. The eastern half of the northern spur of Gebel L is at present occupied by modern farmland, and an archaeological survey was not possible. The southwestern part of Gebel L is occupied by two large military hangars, which were abandoned many years ago and are presently not in use. Its surroundings are flattened, and military rubbish is widely scattered. At the southeastern end of this limestone escarpment approximately 500 m to the east of the military hangars, wide

[11] *Ibid*., pl. XXIV.

[12] M. Schepers, R. Cappers and I. Heijnen, 'Neolithische graanopslag in de Fayum', *Paleo-Aktueel* 17 (2006), 55-62; W. Wendrich and R. Cappers, 'Egypt's earliest granaries: evidence from the Fayum', *Egyptian Archaeology: The Bulletin of the Egypt Exploration Society* 27 (2005), 12-15.

[13] Caton-Thompson and Gardner, *The Desert Fayum*, 52-4.

[14] *Ibid*., 73.

[15] *Ibid*., 73f, 97-100, and 158.

scatters of lithic artefacts were located on the flat surface. The southern spur of this flat area is covered by lithic artefacts as well as pottery sherds of not only Neolithic but also later periods, though there are no pottery sherds on top of the flat area. It is likely that this area was flattened by military bulldozers and surface artefacts were removed downslope to the south. Kom IV must be located somewhere around here, but it seems to have been destroyed by this activity. The north of the military hangars is presently uncultivated plots divided by dry ditches (fig. 4). A noticeable limestone outcrop in the middle of the uncultivated plots is the Roman Gebel. Several supposedly rock-cut graves are present, but they are badly damaged by robbers' pits and shelters made by local people. Scatters of Roman pottery sherds are seen around the outcrop.

A large part of the L Basin is presently transformed into two reservoirs, and its surroundings are marshland and farmland. The northern fringe of the L Basin exhibits the extensive exposure of diatomaceous earth, and diatomite blocks are being quarried by mining machines. The accumulation of diatomaceous earth as seen on the walls of the quarry is more than 2 m thick, and this suggests that the bottom of the L Basin has been filled with water for a considerable length of time. Caton-Thompson has recorded

Fig. 4. Overview of uncultivated plots in the L Basin area from the Roman Gebel.

an unnamed Epipalaeolithic site on the southern shore of the L Basin[16], but this site is probably in the middle of farmland, and could not be located. Further to the south of the L Basin reservoirs are large mining sites. Bulldozers and mining machines are levelling and digging outcrops of hard clay and shale, and dumper trucks are transporting tons of rubble on dirt tracks to nearby ceramic factories.

In summary, the K Basin-L Basin area is disturbed or destroyed so severely by modern land use activities that it is difficult to reconstruct the original environment. Therefore, this area is not suitable for understanding the spatial distribution of human occupation loci and natural resources and for considering human behavioural patterns in the given environment in the past. However, individual archaeological sites which survived recent surface disturbance but are presently under threat of destruction still deserve a further study and are in pressing need of protection.

X Basin area

The area around the X Basin includes a large prehistoric site on its northeastern shore. This site has been indicated on the map and described briefly by Caton-Thompson[17], and has later been investigated and named Site E29H1 (fig. 2) by the Combined Prehistoric Expedition[18]. However, little was known about other parts of the X Basin area before the UCLA/RUG Fayum Project surveyed the entire stretch of the Basin shore.

The large prehistoric site mentioned above is even at present a quite visible wide distribution of numerous archaeological remains such as many concentrations of sandstone and limestone cobbles, which are remains of hearths, as well as several distinct concentrations of lithic artefacts and animal bones (fig. 5). These numerous archaeological remains are spread at elevations of approximately 9-13 m asl on the gentle slope of light yellow silty sediments thinly covered by fine-grained aeolian sand. The spatial extent of this distribution is approximately 100 m by 300 m in oval, extending from the northwest to the southeast, and both the northwestern and southeastern ends are marked by narrow colluvial fans. Judging from the location of two hillocks and a colluvial fan indicated on the sketch map made by the Combined Prehistoric Expedition[19], there is no doubt that Site E29H1 corresponds to this area.

As has been reported, the majority of lithic artefacts presently scattered in the western part of Site E29H1 seems to be Epipalaeolithic and looks fresh, whereas more heavily abraded Neolithic lithic artefacts are sparsely scattered in the periphery[20]. Concentrations of the archaeological remains are at present particularly dense in the

[16] *Ibid*., 74, pls. CXII and CXIII.
[17] *Ibid*.
[18] WENDORF and SCHILD, *Prehistory of the Nile Valley*, 182-99.
[19] *Ibid*., fig. 121.
[20] *Ibid*., 182 ff.

Fig. 5. Concentration of lithic artefacts and animal bones on the X Basin shore.

Fig. 6. Overview of Kom W.

eastern part of Site E29H1. This may be because those remains have not been collected by the Combined Prehistoric Expedition.

Another relatively sparse scatter of Epipalaeolithic and Neolithic artefacts was found approximately 500 m to the southeast of Site E29H1. Heavily abraded lithic artefacts and seemingly fresh lithic artefacts are mixed up in coarse-grained sand with many flint fragments. The lithic artefacts include both Epipalaeolithic and Neolithic ones, but it is hard to discern the boundaries between Epipalaeolithic and Neolithic artefact scatters. This site seems to have suffered from complex alluvial and colluvial events, and is divided from Site E29H1 by a narrow colluvial fan which stretches from the higher elevation. A further relatively sparse scatter of Epipalaeolithic and Neolithic artefacts was found approximately 200 m to the northwest of Site E29H1 across a narrow colluvial fan and at the same elevation. This area is covered by thicker accumulation of fine-grained aeolian sand, and hence surface archaeological remains are obscured.

On the whole, the northern-northeastern shore of the X Basin on the contour lines of around 9-13 m asl is occupied by these three large archaeological sites separated by colluvial fans. The total width of the three sites is approximately 2 km. It may be said that the entire stretch of the shore has been densely inhabited or repeatedly visited by both Epipalaeolithic and Neolithic people.

In summary, the X Basin area is not severely disturbed by modern land use activities. As described above, archaeological remains in this area have not sufficiently been recorded by Caton-Thompson and other researchers, or have not been investigated and published at all. Therefore, the detailed study of these remains is a priority for the project.

Z Basin area

The Z basin area includes a number of Epipalaeolithic and Neolithic sites such as Kom W, Site V, Site Z, and Camp II (fig. 2), which have been thoroughly reported by Caton-Thompson[21]. Most of them are located on the east side of the Z Basin, but little has been reported about other parts of the area. Therefore, the entire area was surveyed.

Archaeological remains of the Z Basin area are not disturbed severely by modern destructive activities such as canal and ditch digging. Most of the previously investigated archaeological sites are still identifiable by comparing the present topography with previous researchers' maps and descriptions. More importantly, there are many surface archaeological remains which have never been studied and published. Therefore, the Z Basin area is an ideal place for the study of the palaeoenvironment and prehistoric human land use activities. Kom W is definitely a focal point of study on

[21] CATON-THOMPSON and GARDNER, *The Desert Fayum*, 22-36 and 75-9.

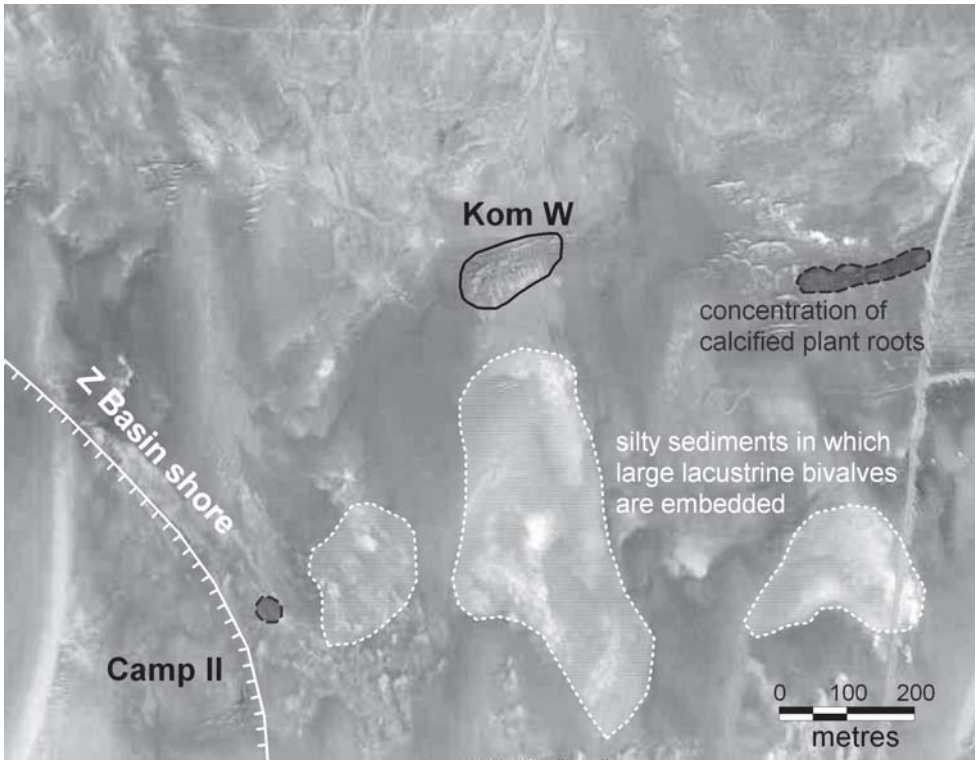

Fig. 7. Area around Kom W.

the Neolithic lifeway in this area. Kom W is presently an isolated, huge excavation dump surrounded by flat desert (fig. 6). The surface of Kom W is thinly covered by fine-grained aeolian sand, but the traces of Caton-Thompson's excavation trenches (Strips A-T)[22] are still visible, and a great number of lithic artefacts and pottery sherds discarded by Caton-Thompson remain scattered on the surface.

A survey around Kom W revealed that Kom W was in a strategically quite favourable location (fig. 7). Although Kom W is approximately 600 m away from the Z Basin shore to the southwest, the vast flat area between Kom W and the Z Basin shore would have been inundated in summer as suggested by large lacustrine bivalves embedded in the silty sediments in this area, and the wadable area of seasonally rising water could have been good fishing grounds from summer to autumn. It is probable that part of this vast flat area contained water in residual pools for some length of time even after

[22] *Ibid*., pls. III, IV and V.

the seasonal high water receded from the flat area in autumn. The residual pools must have given extra opportunities of catching fish trapped there. Even when the seasonal high water completely receded, it is probable that the Basin contained water throughout a year and provided the Kom W inhabitants with drinking water and the opportunities of sedge and reed harvesting, fishing, shellfish collecting, and fowling from winter to spring.

As evidenced by concentrations of calcified plant roots, the margins of seasonally rising water near Kom W would have been fringed with sedges and shrubs. These must have provided shade and shelter to wildlife as well as humans, and must have provided the Kom W inhabitants with not only edible rhizomes and seeds but also timbers and fibres for building and craft working, and fuels for warming, cooking and pottery firing. As suggested by the surface finds of the bones of hartebeest and hippopotamus, this flat area would have become grassland from autumn to spring, and large sedentary herbivores would have wandered and have been hunted there. Part of this vast flat area may have been used for farming, as speculated by Caton-Thompson[23]. In addition, the area in the northeast of Kom W may possibly have collected surface runoff water provided by winter rainfall, and such finds as a flint sickle blade suggest that this area has also been used for farming.

In short, apart from rock materials for making various tools, vital natural resources like drinking water and fuels, as well as wild food resources which are aggregated seasonally and are renewed yearly, seem to have been almost constantly available within easy walking distance of Kom W. Given these conditions, it is assumed that Kom W was a year-round residential base, and that the daily foraging of the Kom W inhabitants was in a radial pattern. Further research around Kom W would confirm or refute this assumption. A remaining question is where rock materials like flint cobbles and petrified wood nodules for making hand-held tools and sandstone slabs for making querns, all of which have commonly been found not only at Kom W but also at many other Neolithic sites came from. These rocks do not naturally occur in the sandy basin environments. A survey in the Gindi Plain and the northern rocky escarpments served to answer this question.

Gindi Plain, Umm es-Sawan, and Ilwet Hialla

As mentioned earlier, Wadi B runs through the Gindi Plain from the northeast while cutting through a high sandstone plateau of approximately 150-200 m asl. A plateau on the east side of Wadi B is called Umm es-Sawan (fig. 3). Umm es-Sawan is the western extension of the highest elevation in this area called Ilwet Hialla[24]. Ilwet Hialla

[23] *Ibid.*, 75.
[24] SANDFORD and ARKELL, *Paleolithic man*, map.

Fig. 8. Petrified wood splinters at Umm es-Sawan.

Fig. 9. Sandstone slabs and cobbles at Umm es-Sawan.

is an Oligocene plateau which marks the northeastern boundary of the Fayum Depression, and stretches east-west. It forms steep cliffs and slopes on its southern face. The surface on top of this plateau is covered by enormous scatters of large petrified wood nodules and their splinters (fig. 8) and fine/coarse-grained black sandstone slabs and cobbles (fig. 9) as well as flint pebbles of elongated or irregular shape. It is probable that this plateau was the nearest and major source of petrified wood and sandstone which have commonly been utilised by prehistoric people in the lakeshore habitat.

As for the source of flint, some possible locations were found. Elongated flint pebbles of less than 7 cm long which have commonly been used as raw material for making tools in the Epipalaeolithic are abundant on escarpments approximately 1-3 km to the north of the X Basin and Z Basin (fig. 10). However, flint cobbles of larger than fist size which have been used as raw material for making tools or used as hammers in the Epipalaeolithic and Neolithic do not occur anywhere in the Gindi Plain. The nearest source of such flint cobbles was located at a Pliocene deposit a few kilometres to the northeast of Ilwet Hialla.

Fig. 10. Escarpments to the north of the Z Basin.

An important discovery in Wadi B is a concentration of Epipalaeolithic lithic artefacts on a high wadi bank, which is located approximately 1 km to the southwest of Umm es-Sawan. The findspot is located on an edge of the eastern bank overlooking the wadi bed to the northwest. The surface of the bank is covered by flint gravels and fine-grained aeolian sand. On this surface, 105 pieces of lithic artefacts including a number of bladelet cores but few retouched tools were concentrated within an approximately 5 m radius. Neither structural remains such as hearths or hut circles nor faunal remains were found in the surroundings. Considering such an odd situation and the location with a fine view, it is presumed that this was a watching station or hunting stand where Epipalaeolithic hunters sat down and made tools while watching for game animals in the wadi.

The Gindi Plain and the northern rocky terrain of the Fayum Depression have not been well studied, and their potential importance for a better understanding of the Fayum inhabitants' land use activities and mobility is very high. In particular, it is quite likely that Wadi B was used as a road which connected the lakeshore and the northern rocky terrain since the Epipalaeolithic and that various rock materials were transported to the lakeshore habitat by way of Wadi B.

Final remarks

The 2003-2006 seasons' fieldwork achieved its initial objectives of making a GIS based inventory of the present condition of the area, determining the priority of further archaeological research and heritage management, and developing ideas about the land use activities and mobility range of the prehistoric people of the Fayum. The project has started excavations at Kom W and Kom K since 2006 in order to obtain more archaeological data from previously uninvestigated layers, and is at the same time seeking a way to protect these important sites from plundering and destruction. Furthermore, the project has begun to broaden its scope of heritage management from individual sites to the entire landscape. The pressure of continuing development and destruction in the Fayum requires a careful balancing of academic research objectives and rescue goals.

Acknowledgements

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