

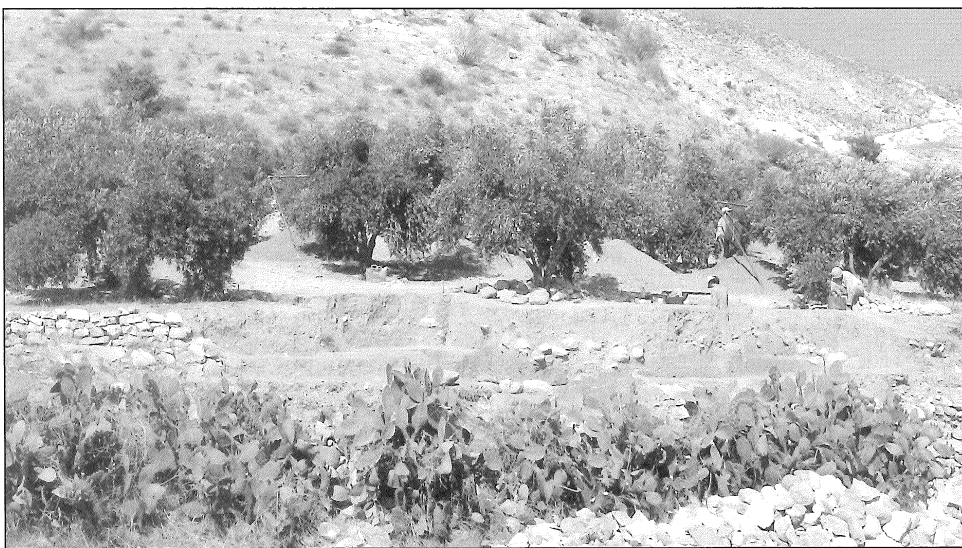
2005 EXCAVATIONS AT THE GEOMETRIC KEBARAN SITE OF 'UYŪN AL-ḤAMMĀM, AL-KŪRA DISTRICT, JORDAN

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From June 18-July 28, 2005, the Wādī Ziqlāb Project conducted excavations at the Geometric Kebaran encampment of 'Uyūn al-Ḥammām, located in al-Kūra District. Since 1981 the project has documented and excavated several Epipalaeolithic, Neolithic, Chalcolithic, and Early Bronze Age sites in Wādī Ziqlāb's drainage basin. Geoarchaeological survey of ancient river terraces and other landscape features in 2000 identified 'Uyūn al-Ḥammām as an exposed terrace section along a roadside exhibiting extremely high densities of stone tools, debitage, and faunal remains (Fig. 1.) Maher and Banning 2001). Two test trenches excavated into the edge of the terrace section on the north side of the road revealed diagnostic Geometric Kebaran artefacts within a distinctive Pleistocene palaeosol (Fig. 2: Areas H14 and H16). In 2001 and 2002,

we returned to the site to excavate a larger horizontal and vertical area on the terrace to determine the extent of the Epipalaeolithic deposits (Maher 2003, 2005b). In 2005, the Wādī Ziqlāb Project conducted a field season focussed on excavating human remains found in 2001 eroding out of the terrace section in Area H16.

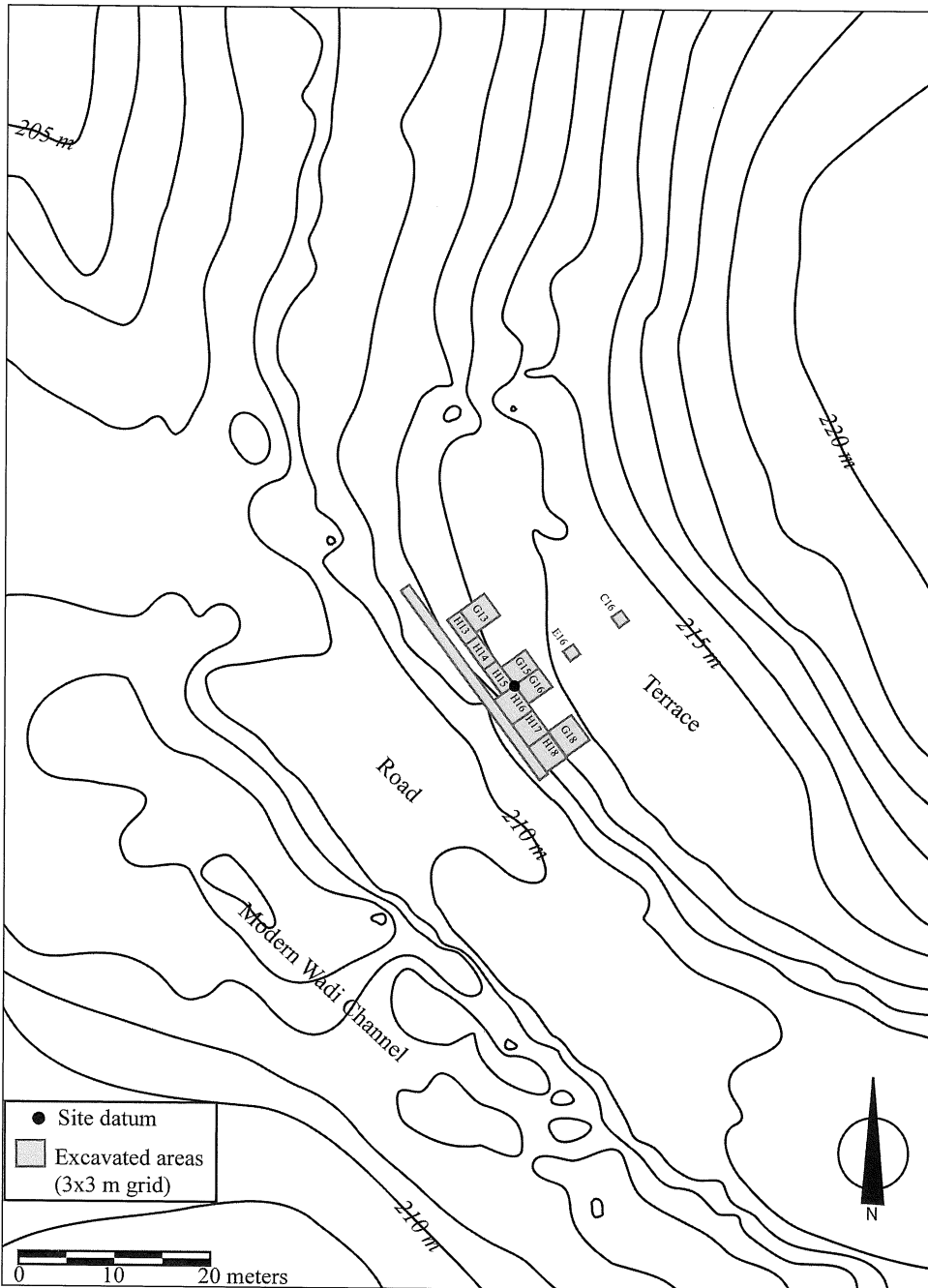
'Uyūn al-Ḥammām is a unique site because it exhibits characteristics not yet found at many contemporary sites in the Levant. In particular, the site is extremely rich in flint tools and debitage, ground stone implements, a wide diversity of faunal remains and, as we discovered in 2005, human remains; making it a unique and important Middle Epipalaeolithic site in Jordan. The presence of seven human interments of at least nine individuals¹ is a rare and important contribution to our understanding of Epipalaeo-



1. 'Uyūn al-Ḥammām terrace showing the location of our excavation areas.

1. Our preliminary analysis, based on the presence of diagnostic Geometric Kebaran (16,000-12,500 BP) flint and basalt tools and the lack of evidence for any other time period, suggests that most of the burials belong to the Geometric Kebaran period. A bone sample from the pelvis of one individual from Grave I produced a

radiocarbon date of 12,625±409 cal BC (TO-11704). However, definitive assignment of these skeletons to the Geometric Kebaran, or any other time period, must await further radiocarbon dating of bone samples collected from each skeleton.



2. Topographic map of 'Uyūn al-Ḥammām showing the location of all excavation areas.

lithic mortuary practices. The ongoing analysis of these skeletons and their burial contexts will provide critical data on prehistoric technology, health, diet, social organization, and ideology.

The Site of 'Uyūn al-Ḥammām (WZ 148)

Situated on an ancient river terrace adjacent to the present-day wadi bed, it lies at an elevation of 200m a.s.l. (Fig. 1). Approximately one-third of the site has been destroyed by recent construction of a paved road to the village of Tubna, while incision of the wadi channel has also cut into the site from the south. However, the site is estimated to cover an area of at least

1500m² based on the remaining distribution of artefacts along the exposed terrace section and in our test trenches.

Discussed in detail elsewhere (Maher 2005a), the site's stratigraphy exhibits an uppermost Holocene-age deposit consisting of approximately 70cm of light-brown, silty colluvium that contains Roman/Byzantine remains. Two Roman/Byzantine field walls follow the contours of the terrace and the colluvium also contains several cooking pot sherds and glass fragments. Underlying the Holocene colluvium is a distinctive dark, red palaeosol containing high densities of Geometric Kebaran artefacts. The uppermost

portions of the palaeosol have been redeposited from upslope but the lower portions are intact and contain *in situ* lithic, faunal, and human remains (Maher 2003). The boundary between the Holocene colluvium and Pleistocene palaeosol is marked by an abrupt erosional unconformity and, presumably, an unknown thickness of the palaeosol (and perhaps artefact-bearing horizons) was lost to erosional processes in antiquity.

Excavation Methods

In 2005, the project reopened excavation areas G15, G16, H15 and H16 and opened new excavation areas H17, H18, G18 in order to expose a large contiguous area for detecting spatial patterning of features and burials (Fig. 2; see (Maher 2005b)). Similar to previous years, the 2005 excavations employed a nominal 3 x 3m grid, subdivided into smaller units (1x1m and 50x50cm) where dictated by the presence of features, such as pits and architecture. Vertical subdivisions or spits of 5, 10 or 20cm were used depending on the excavation context. We screened 100% of excavated deposits through 3mm mesh. Samples were systematically collected from every excavation context for micro-artefacts, micro-fauna, botanical remains, micromorphology, and soil analyses.

Roman/Byzantine and Other Possible Occupations

The Holocene sediment found on the terrace surface represents a combination of accumulated mass movement events and bulldozing of the nearby hillslope to flatten out the terrace for farming. It contains a very low density of Roman/Byzantine artefacts (mainly fragments of cooking pots, glass containers and beads) and the remnants of two small field walls the foundations of which sit upon the uppermost Epipalaeolithic deposits. The field walls were constructed parallel to the contours of the terrace edge and presumably stabilised the slope against erosion. Prior to road construction, the terrace was almost twice as large as today and provided an extensive flat surface suitable for farming (and prehistoric habitation).

This year, we discovered a third substantial Byzantine wall (Fig. 3). This well-built wall is a double-leaf, rubble-filled construction. The

presence of several cooking potsherds from the north side of the wall along with the absence of pottery on the south side suggests that the wall may have served as a retaining wall for the terrace or formed part of a larger, as yet unexcavated, structure.

In 2002, during excavation of a circular rock feature (Maher 2005b) we recovered two highly-fragmented Late Neolithic potsherds from immediately above the first rocks of the feature. The fill inside the rock feature contained only Geometric Kebaran material and a secondary human burial (Grave II described below). Although the burial is found within Geometric Kebaran deposits and there seems to be no macroscopic indications of admixture between the Epipalaeolithic-bearing horizons in the palaeosol and the overlying Holocene colluvium, samples have been taken for radiocarbon dating and micromorphological analyses to help confirm the age and context of the burial. No other Late Neolithic material was found in any portion of the site excavated to-date. However, a highly disturbed Late Neolithic and Bronze Age occu-



3. A portion of a Roman/Byzantine wall found within the Holocene colluvium overlying the Epipalaeolithic-bearing palaeosol.

pation (WZ310) was documented by the Wādi Ziqḷāb Project approximately 300m to the east of 'Uyūn al-Ḥammām, and the Late Neolithic site of Ṭabaqat al-Būma is located 500m to the east (Banning 1992, 1995, 1999; Banning and Siggers 1997; Banning *et al.* 1996, 1989).

The Geometric Kebaran Occupation

The Geometric Kebaran deposits have been described in detail elsewhere (Maher 2005a, 2005b); here, I will limit discussion to new findings from the 2005 field season.

The Chipped Stone Assemblage

Our 2005 excavations recovered a large number of chipped stone artefacts, including more than 4000 tools and cores (Fig. 4). On-site flint knapping is evidenced by our preliminary analysis of debitage types showing that all stages of tool reduction are well represented, including a range of core in various stages of use, primary debitage, core trimming and rejuvenation debitage, and partially and finished tools.

In general, the lithic material from this season is consistent with our previous analyses (Maher *et al.* 2002; Maher 2005a, 2005b), with an apparent emphasis on the production of microlithic tools. Complete and incomplete (those with one end unretouched, whether snapped intentionally or unintentionally) trapeze/rectangles are, by far, the most dominant tool class. Trapezes and rectangles form one continuous tool class and, indeed, many pieces exhibit one end retouched at a right angle (rectangle), while the other end is retouched at an oblique angle (trapeze). Backed bladelet fragments, which could be broken or unfinished trapeze/rectangles, are also common. Other microlithic tools include small numbers of asymmetrical trapezes (type B), partially and completely backed bladelets and, more rarely, triangles, lunates, and obliquely truncated and backed bladelets. Blade tools, including well-made single and double endscrapers and burins on truncations are the most common non-microlithic tools.

Much of the lithic material is made on a fine-quality, light brown or tan-coloured flint outcropping from the nearby limestone hills. Indeed, most raw material types documented over four years of excavation are immediately available from either the limestone hills or from the

wadi channel adjacent to the site. In addition, a very small percentage of tools (<1%) are made on a very fine-quality, lustrous, pink or purple flint that has no known source in Wādi Ziqḷāb. The unusually lustrous sheen displayed by some tools made on this flint suggests that it may have undergone heat treatment prior to knapping (some debitage and two cores are also made on this flint type).

The presence of all types of debitage in high densities, representing all stages of tools production, indicates that a large proportion of tool manufacture occurred on-site. Small single-platform, pyramidal bladelet cores and blade and bladelet fragments are particularly abundant and highlight a lithic technology focussed on the production of large quantities of blades retouched into endscrapers and bladelets shaped into trapeze/rectangles — both classic tool types of the Geometric Kebaran.

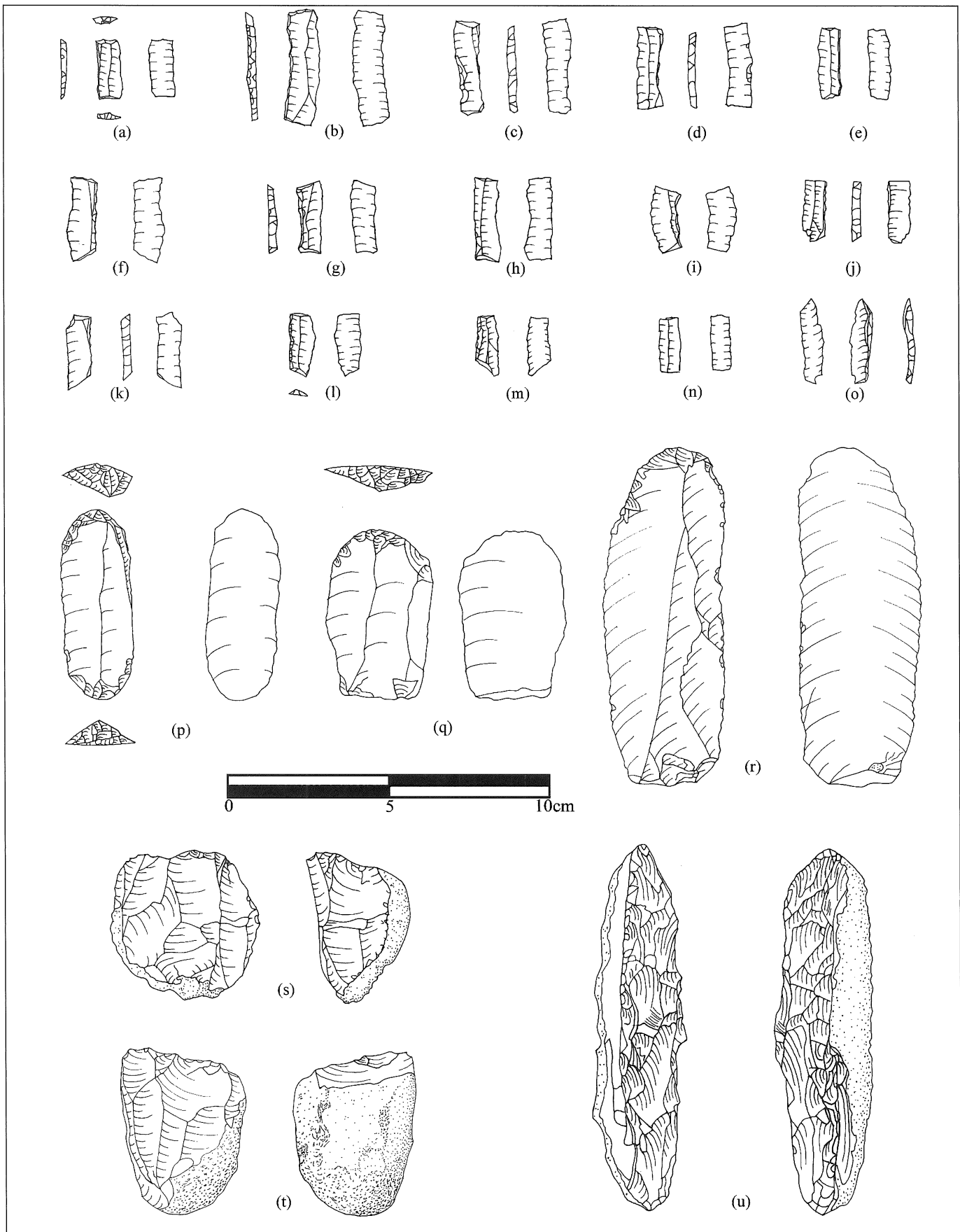
Groundstone Tools

Complete groundstone tools from this season included two elongate, narrow basalt pestles, one broad basalt pestle, a small circular basalt handstone, and one large limestone pounding stone. We also recovered several broken basalt pestles and handstones. The circular handstone and one of the narrow pestles were found approximately 50cm from the skeleton in Grave I, but not in direct association. A broken basalt pestle and the limestone pounder were found within Grave I (Fig. 5).

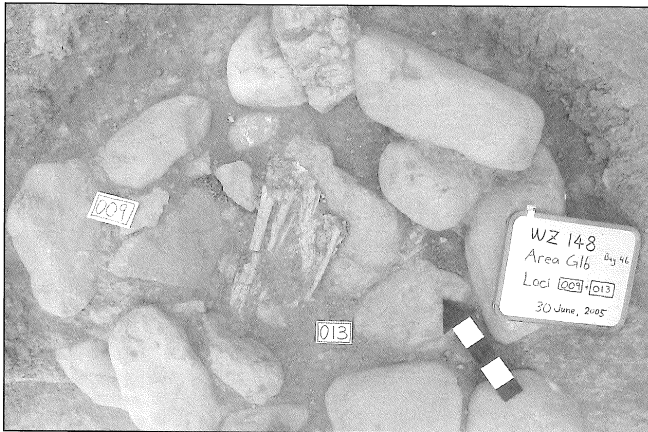
Other Objects

Prior to 2005, only a small number of mollusc shells, bone and shell beads, worked bone objects, and fossilized bivalve shells had been recovered from the site (Maher 2005a, 2005b). In 2005, we recovered five fragments of bivalve shell (Mediterranean or Red Sea), two fossilized bivalve shells, one broken bone bead, and two possible broken stone beads. None of the shell fragments show any macroscopic signs of modification or wear; however, these objects are currently undergoing species identification and further analysis.

Red ochre appears to have been used somewhat extensively on-site and we found several pieces of red and orange ochre from all excavation areas, including the burial contexts. How-



4. Chipped stone tools and cores from 'Uyūn al-Ḥammām, including trapeze/rectangles (a-h), incomplete trapeze/rectangles (i-m), backed bladelet fragments (n), obliquely truncated and backed bladelets (o), endscrapers (p-r), single-platform cores (s-t), and heavy-duty tools (u) (drawn by R. Stebelsky).



5. Grave II: secondary burial within stone-lined and stone-filled feature (Homo 4).

ever, the ochre is extremely fragile and, in many cases, takes the form of small chunks in the soil which disintegrated upon excavation. Sources of red or orange ochre have yet to be discovered in Wādī Ziqlāb, despite many years of survey and excavation in the area.

Faunal Remains

Similar to previous excavation seasons, we recovered a large quantity of faunal material (Maher 2005a, 2005b). The majority of it comes from reworked contexts in the uppermost levels and from ~50cm into the *in situ* Epipalaeolithic-bearing horizons (loci 003, 004, 005, and 006). Species identification and taphonomic observations are hindered somewhat by the extremely fragmentary and carbonate-encrusted nature of the material. Despite taphonomic and preservation issues, the proportions and types of identified material are consistent with Geometric Kebaran assemblages documented elsewhere (Bar-Oz and Dayan 2002; Bar-Oz *et al.* 1999, 2003; Humphrey 2003; Munro 2003; Tchernov 1998; Uerpman 1981). Specifically, a preliminary analysis of identifiable species by E. Humphrey of the University of Toronto indicates a relatively wide species breadth, but with some focus on medium and large mammals such as deer, hartebeest, equids, ibex, and gazelle. *Gazella* sp., *Cervus elaphus*, *Cervidae* sp., hartebeest (*Alcephalus*), and *Avies* were particularly abundant.

Human Remains

The 2005 field season was focussed largely on the exposure and excavation of human remains

first uncovered in 2001 and 2002 (Maher 2005a, 2005b). Jay Stock of the Leverhulme Centre for Human Evolutionary Studies (LCHES), University of Cambridge, directed the excavation and analyses of all human remains.

By far the most significant findings of our 2005 field season revolved around both the excavation of the known human remains (Grave I) and the discovery and excavation of several new human burials (Graves II-VII). Aside from the bundle burial in the circular rock feature mentioned above (Grave II), we uncovered a further five human interments, bringing the total number of known burials to seven; some of which are secondary interments including multiple individuals (MNI of nine individuals, to-date). Our preliminary assessment of the skeletons' morphological features, stratigraphic contexts, and association with only Geometric Kebaran artefacts strongly suggests that they all date to sometime within the Geometric Kebaran period, between 16-12.5 BP. A radiocarbon date on a pelvic fragment from one individual in Grave I produced a date of 12,625 ± 409 cal BC (TO-11704). However, securely dating each skeleton remains a high priority. Bone samples were taken from each skeleton for radiocarbon dating and detailed analyses of all the human remains will be conducted under the supervision of Jay Stock. It is hoped that the analysis of these important finds will provide valuable insights into the age of the skeletons, as well as prehistoric subsistence activities and health. Human remains from this period are extremely rare and the presence of such a large number of individuals at one location will only serve to enhance our understanding of past social, economic, mortuary and ideological practices. A summary of the graves excavated in 2005 is presented below.

Grave I: Primary burial and secondary human bones (Homos 1-3)

Grave I, partially uncovered in 2001 and 2002 (Maher 2005b), was by far the most complicated grave excavated in 2005. Situated approximately 60cm deep into the Geometric Kebaran horizons in Area H16 was the primary interment of an adult accompanied by groundstone and flint tools and animal bones. Isolated, disarticulated bones of at least one other adult and a child suggest that either this primary interment disturbed

an earlier grave(s) or partial skeletons from two other individuals were included with this grave as secondary inclusions. The articulated skeleton was damaged by erosion and road construction such that only the lower limbs and fragments of the pelvis survived. The upper portion of the body had already been cut by road construction, but two mandibular fragments were found eroding out of the section with the pelvis and femur removed in 2002 (Maher 2005b).

Since the human remains from this grave were highly disturbed the actual number of individuals represented is conservative. The articulated lower half of the primary interment is Homo 1. The skull and parts of the pelvis are missing, making an assessment of the sex of the individual inconclusive at present. We have also found the disarticulated remains of another left femur, a clavicle, a left scapula fragment, a radius and an ulna. These are all consistent in age and other morphological features and may belong to only one individual. Until we have fully analysed all of the remains from this grave (ongoing at LCHES) we assume an MNI of one individual (Homo 2). However, the proximal femur of a subadult (Homo 3) brings the MNI from Grave III to three individuals.

Unfortunately, no burial pit(s) is discernible and the surrounding Epipalaeolithic-bearing soil appears no different from that immediately surrounding the skeleton. Consequently, associating grave goods with the human remains is difficult. A large limestone poulder, a basalt pestle fragment, trapeze/rectangles, endscrapers, cores, a possible worked piece of horn core or antler, and the partial skull of a small canid were either in direct contact with the primary interment or found within the same ochre-rich area in immediate proximity with the remains. A basalt cylindrical pestle and circular hand stone were found 50cm away from the grave, but not in direct association.

Grave II: Secondary burial in circular pit (Homo 4)

In Area G16, we discovered the secondary interment of select long bones and cranium of an adolescent or gracile adult within a stone-lined and stone-filled feature, probably a pit (Fig. 5). The pit was approximately 1m in diameter and more than 1.5m deep and the sediment inside

consisted of the distinctive, red palaeosol containing only Geometric Kebaran material. There is no macroscopic evidence of mixture with the overlying Holocene colluvium; however, several samples from inside and outside of the feature were taken for micromorphological analysis. The long bones were discovered lying on a large, flat rock under the second course of stone rubble inside the feature, while the skull was found directly below the rock. The stone-lined feature continued in depth for another ~75cm.

Grave III: Single adult burial (Homo 5)

In Area G18, we discovered the primary interment of an adult in extended position and facing east (Fig. 6). Both the hands and feet were missing, probably due to later disturbance. The skeleton was almost complete; missing some vertebrae, most of the pelvis, and the hands and feet. A fully erupted and worn lower M3 suggests an adult age. The skeleton was oriented north-south with the left arm folded up over the chest and the right arm extended along the right side.

A trapeze/rectangle was found directly underneath the right humeral head, an unworked cobble was found directly over the missing pelvis, and two other angular, unworked cobbles were found over the face and at the back of the cranium. No burial pit was discernible and trapeze/rectangles and other flint tools were found throughout the surrounding sediment.

Grave IV: Single adult burial (Homo 6)

Approximately 1m to the southwest of Grave I, we discovered the relatively complete, primary interment of an adult in extended position (Fig. 7). The skeleton was oriented SW-NE with the right arm flexed over the lower torso, the



6. Grave III: primary burial of adult (Homo 5).



7. Grave IV: close-up of the upper portion of Homo 6 (primary burial of an adult).

legs slightly bent eastwards and the head turned towards the left shoulder. The skeleton was very fragmentary as a result of its proximity to the terrace edge and the some of the vertebrae and the hand and feet bones are missing. No burial pit was discernible.

Figure 7 is a close-up photograph of the upper portion of the skeleton. Two fragments of basalt groundstone vessels and a flint endscraper were discovered by the pelvis and the distal phalange of a medium-sized mammal was found in the neck region.

Grave V: Secondary adult burial (Homo 7)

The secondary burial of an adult or adolescent, consisting of portions of the cranium and some long bones, was found in Area G18 approximately 2.5m south of Grave III. Accompanying the human remains were several long bones from a medium-sized mammal. The skeleton was highly fragmentary because of the later construction of an overlying Roman/Byzantine field wall composed of large, undressed boulders. The bones are roughly aligned with the head to the north and long bones to the south.

Again, no associated burial pit was identified macroscopically. Samples of bone were collected for radiocarbon dating.

Grave VI: Primary adult burial (Homo 8)

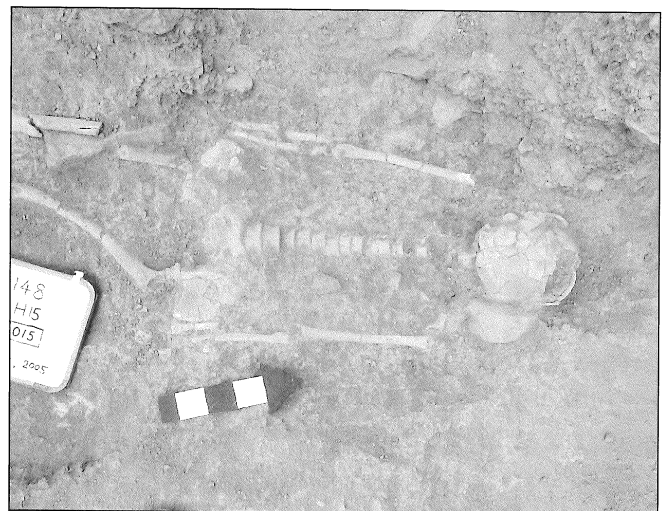
The articulated lower limbs of an adult skeleton were discovered extending from the walls of an excavation trench. Unfortunately, the presence of a large olive tree immediately above the skeleton prevented its complete excavation. Samples of the exposed lower limbs were collected for radiocarbon dating.

Grave VII: Primary adult burial (Homo 9)

Only 1m to the west of Grave IV was the primary interment of an adult female in extended position (**Fig. 8**). Post-depositional disturbance badly damaged the skeleton, particularly in the area of the skull and the hands and feet are missing. In addition, several large rocks were associated with the skeleton, including one over the head, one below the right femur, and one inclined alongside the skull. Notably, this was the only burial in which the head appears to have been intentionally tilted forward and down.

Micromorphology

Over 30 *in situ* blocks of sediment were collected for micromorphological analysis from several Geometric Kebaran contexts in 2001 and 2002 in order to assess site-formation processes. The results from these seasons have been discussed in detail elsewhere (Maher 2005a). A further 60 samples were collected in 2005 from all Epipalaeolithic-bearing horizons. In particu-



8. Grave VII: primary burial of adult (Homo 9).

lar, our analyses focus on contexts associated with the human remains, including identifying any burial pits and resolving potential functions for the circular rock feature (i.e., as a storage pit).

Conservation of the Site

The archaeological remains at 'Uyūn al-Ḥammām are subject to ongoing erosional processes through exposure along the terrace edge adjacent to the road. The rapid erosion of the roadcut poses considerable risk to the important Epipalaeolithic deposits, and particularly to any potential remaining burials. Consequently, we have constructed an undressed stone terrace wall running along the roadcut for 25m to retain our backfill and to discourage further erosion of the prehistoric deposits.

Conclusions

Previous excavations have provided a glimpse of the types of activities that took place on-site, including flint-knapping activities, processing plant materials (indirectly through the presence of groundstone), and the processing of wild game. Our preliminary analysis of the material from the 2005 field season remains consistent with these interpretations regarding the types of on-site activities, including a focus on producing trapeze/rectangles, presumably for composite hunting or other tools. The abundance of gazelle, ibex, deer, and wild cattle in the faunal assemblages suggests their importance within the subsistence economy. One radiocarbon date on the human remains from Grave I suggests that the site was used as a burial ground towards the end of the Geometric Kebaran phase, around 12.6 cal BC. 'Uyūn al-Ḥammām appears to have been an important site for multiple reasons. The density of material suggests it was occupied repeatedly over several generations as a favourite locale. The presence of at least seven human graves is unprecedented for the Geometric Kebaran period, and may suggest use of the site as a burial ground.

Our 2005 excavations focussed on the excavation of seven human burials, containing the remains of at least nine individuals. Isolated human remains found eroding out of the terrace section less than 8m to the west of the excavated suggest at least one more individual (*Homo 10*)

and the possibility of further burials. The presence of so many burials at one site, within a time period when human remains in any form are extremely rare, may suggest the importance of 'Uyūn al-Ḥammām as a place of burial. Our analysis of the chipped stone tools confirms a Geometric Kebaran age for the occupation of the site, and the tools produced are similar to those found at many other contemporary sites in southern and eastern Jordan. Further analyses of the material and human remains will contribute greatly to our understanding of this important Epipalaeolithic site.

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