

# THE FIRST PRELIMINARY REPORT OF THE WĀDĪ AR-RAYYĀN ARCHAEOLOGICAL PROJECT<sup>1</sup>: THE SURVEY OF AL-KHAWĀRIJ

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## Introduction

Over the last twenty-five years, since the Hennessy's excavations at Tulaylāt al-Ghassūl, there has been renewed interest in the protohistoric development of Jordan, and the Chalcolithic period in particular. Hennessy's excavations sought to address specific questions concerning the development of the site of al-Ghassūl, the 'type site' of the Chalcolithic, and the ways in which Chalcolithic communities managed their environment. Excavations since this time, both at al-Ghassūl and elsewhere, have enabled a much broader understanding of the period within the Jordan Valley. Much less attention has been paid to the upland regions.

With notable exceptions (Ibrahim 1972, 1974, 1975; Lamprichs 1998; Banning *et al.* 1998, 2004) most excavations in Jordan have concentrated on lowland areas (e.g. al-Ghassūl, Abū Hāmid etc.). These lowland excavations have clearly demonstrated the importance of olive cultivation during the Chalcolithic (Neef 1990; Meadows 2001). We know that olives tend to grow best at higher altitudes and this would suggest that high altitude regions were widely exploited in the Chalcolithic, and yet high altitude regions have remained under-explored. The Wādī ar-Rayyān Archaeological Project (WRAP) aims to redress the imbalance.

During the Wādī al-Yābis survey conducted by Jonathan Mabry and Gaetano Palumbo (Mabry and

Palumbo 1988; Palumbo *et al.* 1990) two Chalco-Early Bronze Age sites were located – Jilmit ash-Shariyya (WY 120) and al-Khawārij (WY 116)<sup>7</sup>. These sites form the basis of WRAP, begun by the University of Sydney in 2003. The site of al-Khawārij is located 1.75km from the modern village of Ḥalāwa on a wide flat terrace overlooking the Wādī an Nawm, while Jilmit ash-Shariyya lies on the opposite side of the Wādī an-Nawm in a modern olive grove near Tall ar-Rās. The area was surveyed by Nelson Glueck in his early surveys of the region (Glueck 1951). While Glueck mentions the classical period remains at Dayr al-Ḥalāwa (his site 235) and the dolmen field, he appears to have missed the Chalcolithic site associated with it (1951: 223-224).

During a first visit to both sites in 2001 a considerable number of rock-cut pits and installations on the surface were noted, in addition to Chalco-EBA ceramics, and a large number of chipped stone tools and groundstone pieces. Al-Khawārij appeared to be the larger of the two sites and was not affected by modern olive cultivation. It was clear that the site held considerable potential for excavation that could provide evidence for agricultural processing and ancient olive cultivation<sup>8</sup>.

## A First Season of Work

The first season of work<sup>9</sup> consisted of an intensive survey of al-Khawārij in November-

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7. I would like to thank Jonathan Mabry and Gaetano Palumbo for their kind assistance and advice while setting up the project.  
8. For further discussion of research ideas see Lovell (2002).  
9. Dr. Jaimie Lovell (Director), Mr. Adeib I. Abu Shmeis (Dept of Antiquities Representative), Dr. Bruce McLaren (Field Director), Mr. Kerry Platt (Surveyor), Mr. Angus Browne (Archaeologist and photographer), Mr. Tobias Richter (Chipped stone), Mr. Jamie Fraser (Archaeologist and draftsperson), Ms. Melissa Kennedy (Student and draftsperson), Ms. I. Katherine McRae (Student, ground stone and draftsperson), Mrs. Patty Henderson (Assistant) and Mr. Aladdin Madi (Camp Manager). Special thanks to Kat McRae, Mel Kennedy and Jamie Fraser for the drawings reproduced here.

December 2003. The aim was to map the frequency of artefact scatters and to produce a detailed map of the visible surface features. As we indicated above, a number of surface features had already been noted during previous visits to the site and it was therefore important to measure the extent and frequency of these features in order to help define the boundaries of the site. In addition, a detailed map of these features will allow later excavated material to be more easily contextualised.

A subsequent aim was to plot any evidence of artefacts dating to periods other than the Chalco-EB. In previous visits to the site Byzantine sherds were noted only in very small numbers but nevertheless it was considered important to be able to reduce the risk of excavating in areas where there may be later material. Thus the objective of this season was to isolate clean scatters of Chalco-EB material where there were significant surface features in order to best locate areas for excavation in 2004. A subsidiary, but nonetheless vital, objective was to talk to all local land-owners regarding future excavation.

### Methodology

Given that we wished to establish artefact frequency it was important to generate a consistent measure of artefact numbers. Thus each unit of the survey area had to be dealt with in exactly the same way with walkers spaced evenly across the units. It was decided to grid the site into 50 x 50m units, and to walk each unit spaced 10m apart. The grid was established first by the surveyor and an assistant. Corner points for each 50 x 50m unit were marked in spray paint and a survey ribbon was tied to a nearby tree. While it was important that grid numbers were clearly legible, every effort was made to make as little impact on the environment as possible.

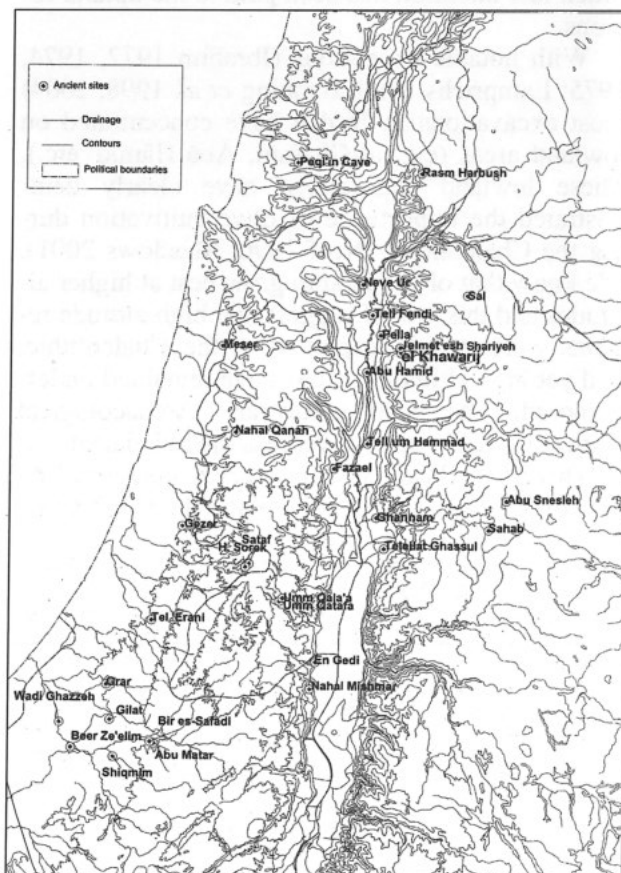
Units were named according to their northeast corner point. A team member was positioned at 5m, 15m, 25m, 35m and 45m from the southwest to southeast corner of the unit and each team member was equipped with a plastic bag and a 'tally counter'. The team members then walked in a northerly direction along their transect, remaining 10m apart. The tally counters were used to count every artefact noted by the team member within the space 1m to the west and 1m to the east of their transect line (thus the team member was only counting artefacts within a 50 x 2m area, and of a total unit (2500m<sup>2</sup>) only 500m<sup>2</sup> was actually covered and 'counted', *i.e.* a unit consisted of 5 transects, equivalent to area of 50 x 10m). The counts of artefacts for whole units therefore provides a fig-

ure for the density of artefacts across the landscape. A selective sample of the artefacts was collected for the typological and chronological study.

In addition to counting artefacts any features (visible surface fixtures, for instance a wall, a dolmen or any cut in the bedrock like a cup-hole or a vat) within the unit were located on a sketch plan by the field director and later planned and/or plotted. By the end of the 5 weeks an area of 2.35ha was intensively surveyed in this way (*i.e.* 94 units) and ca 900 features were recorded.

### Results

Al-Khawārij appears to exhibit artefacts along the length and breadth of the long terrace described by Palumbo *et al.* in their original preliminary publication (1990: 101). We felt confident that we had located the extent of major occupation as significant drop-off in artefact densities was noted at the edges of our survey area (Fig. 1). We highlighted three major areas where dense artefact scatters coincided with the remains of rectilinear structures. However, it is likely that the Chalco-EB inhabitants used land well beyond the survey area. Certainly some of the rock cut features and extant



1. Map of southern Levant showing location of al-Khawārij and Jilmit ash-Shariya, Wādī ar-Rayyān.

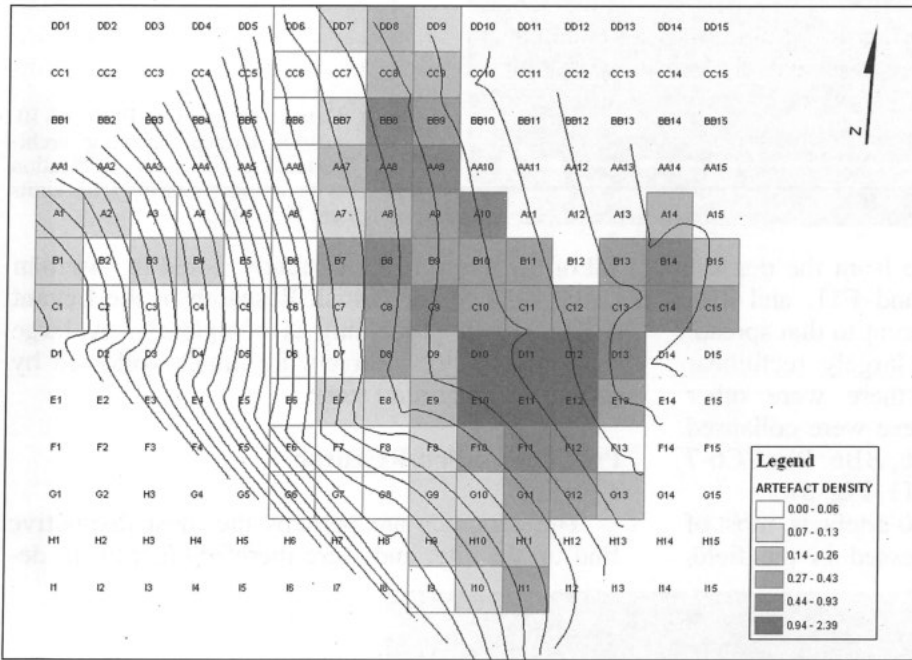
walls date to post EBA times, and there is evidence of Byzantine cisterns and wellheads within our survey area, but the vast majority of artefacts recovered dated to the Chalco-EB periods.

The area was certainly used by locals while we were conducting the survey. We met several shepherds and local farmers who made use of the land during our time there, and by the end of our survey winter ploughing was just beginning (see below).

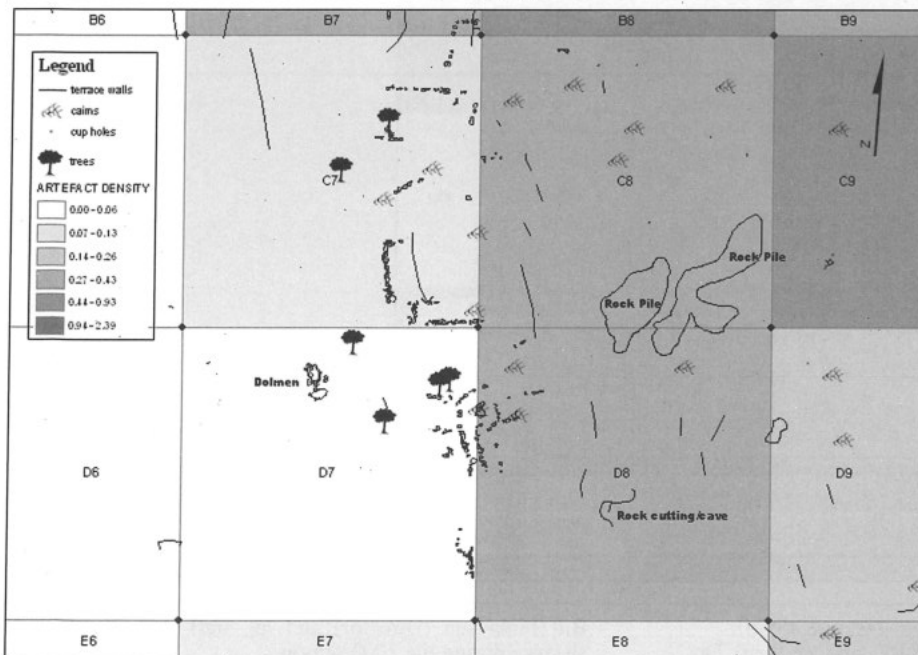
As can be clearly seen from (Fig. 2), the units with the highest densities of artefacts were D10, D11, D12, E10, E11 and E12. These units were located in the southern portion of the site, divided

from the terrace by a gully that ran down to the Wādī an-Nawm. Occupation of the site was therefore not limited to the flat terrace (where high densities were also recorded in units B8, C8 and C9 and BB8 and AA8-9), but extended south of the gully on this slightly higher spur, which overlooked the wadi and the northern area of the site. These two areas came to be referred to as 'the terrace' and 'the spur'.

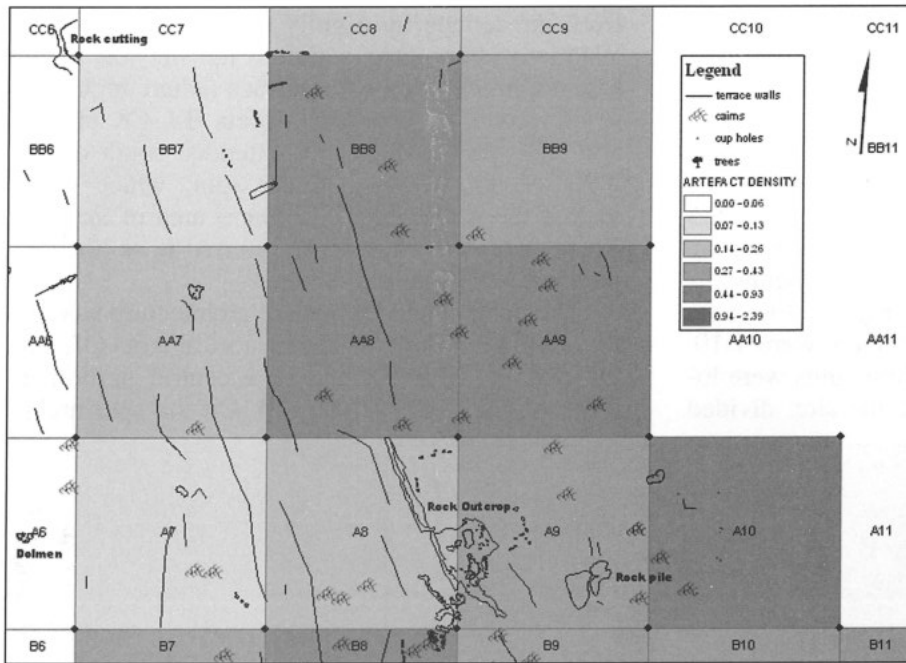
The main concentrations of architecture were in the southern portion of the terrace, in units C7, C8, D7 and D8 (Fig. 3), and in a central portion in units A8, B8 and A9 (Fig. 4). On the spur archi-



2. Plan of al-Khawārij survey area, showing units shaded according to artefact densities (note contours are 35 m apart and schematic, derived from EDM points and units are 50 x 50m).



3. Detail of units C7-8 and D7-8, southern terrace, showing architectural remains in association with artefact density (NB Units are 50 x 50m).



4. Detail of units BB7-9-A7-10, central terrace, showing architectural remains in association with artefact density (NB Units are 50 x 50m).

texture was visible up the slope from the densest artefact spread (units E10-11 and F11, and also G10 and G11 – Fig. 5) and adjacent to that spread. In addition to these traces of largely rectilinear stone architectural features<sup>10</sup>, there were other stone built features of note. These were collapsed dolmens (noted in units A6, AA6, BB6, B7, CC6-7 and D7) and cairn tombs (unit F11, Fig. 5).

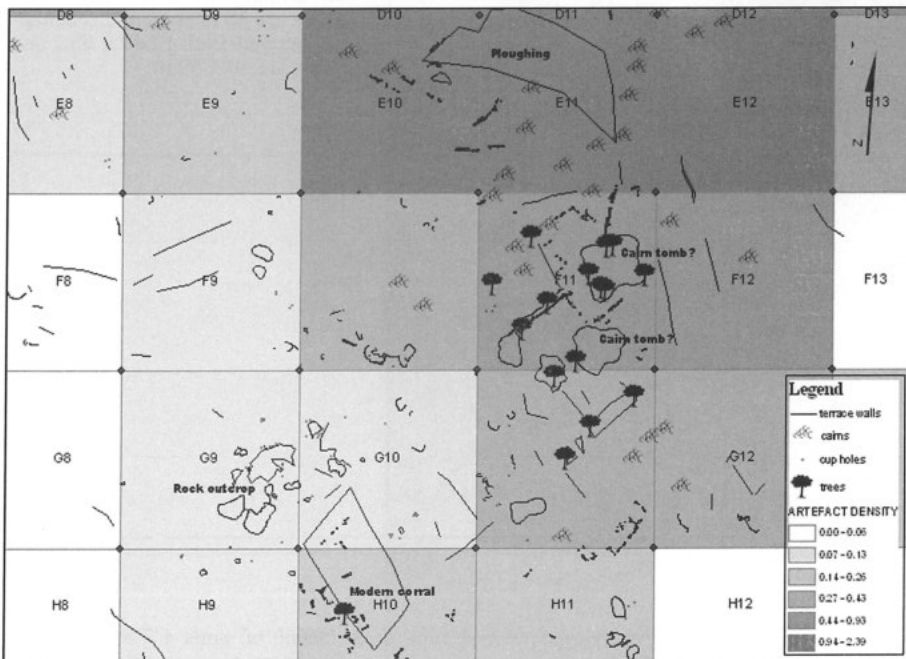
In total we collected circa 900 artefacts, most of which were preliminarily processed in the field.

All of the artefacts are currently stored in ‘Ammān at the Council for British Research in the Levant (CBRL) until processing is complete<sup>11</sup>. A large proportion of the artefacts are lithics, followed by ceramics and ground stone.

**Post-Excavation Research**

*Ceramics*

The ceramics are perhaps the most distinctive find on the site, and were therefore helpful in de-



5. Detail of units E9-12 – H9-12, spur, showing architectural remains in association with artefact density (NB Units are 50 x 50m).

10. We did locate one circular wall feature (feature 455/6).

11. The WRAP is affiliated with the CBRL, and we thank Dr.

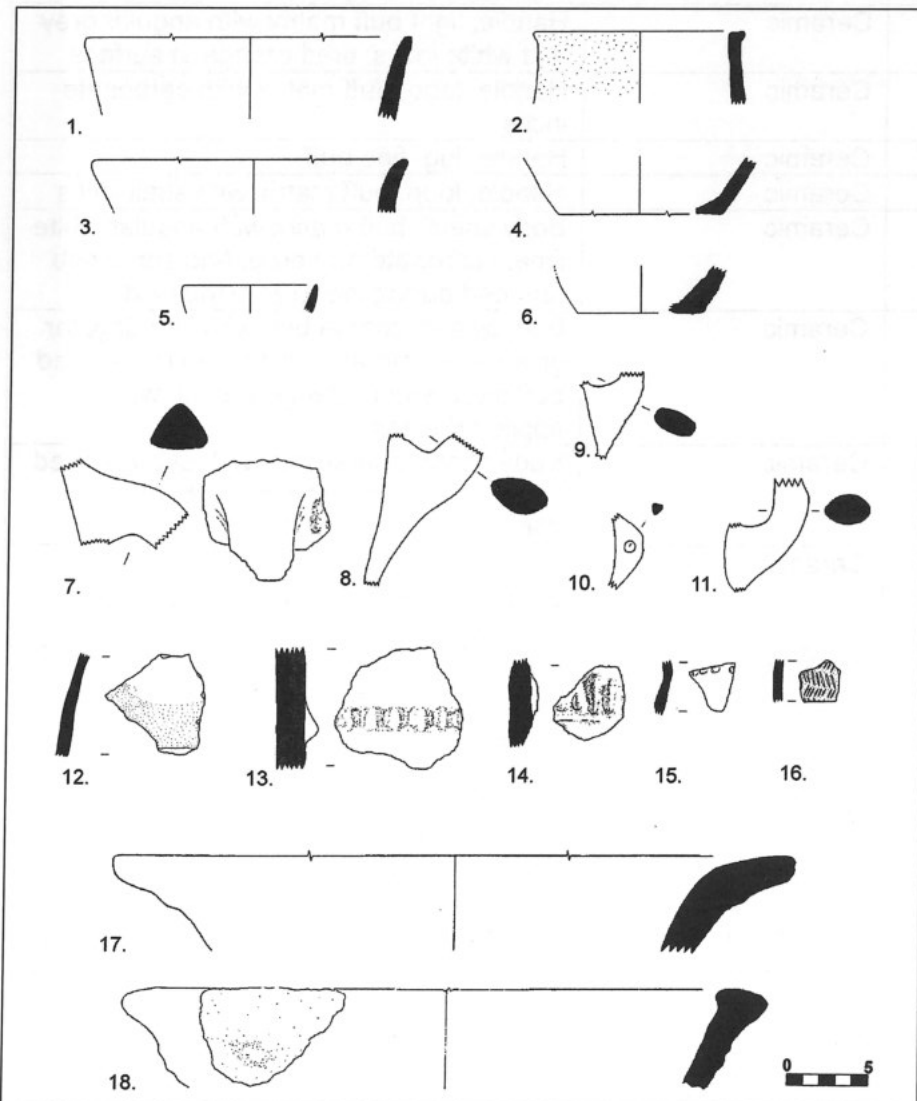
Bill Finlayson (Director) and his staff for valuable assistance during the 2003 season.



termining the date of artefact scatters in general. However, as is common in survey work, the ceramics were often highly abraded by plough-agriculture or affected by other surface processes. The orange-red fabrics made up most of the ceramics and this possibly accounts for the fact that they were less common in the survey sample; they may have been difficult to see against the *terra rosa* soil. The distinction between the latest Chalcolithic and earliest Early Bronze Age continues to be illusive. Material from survey is notoriously difficult to date precisely and practitioners often fall back on 'Chalco-EB', thus creating a wealth of sites that span a very long time period. It is suggested here that this site may relate to other sites in the Wādī al-'Arab that Hanbury-Tenison tentatively termed "post Ghassulian" (Hanbury-Tenison *et al.* 1984). 'Diagnostic' pieces within our sample were extremely infrequent and paint and slip rarely survived. Nevertheless it was possible to preliminarily

date most sherds, via their fabric and manufacture, on the basis of comparison with nearby tall sites and sequences.

The majority of the sherds were dated to the late prehistoric. While in some cases it was possible to place them clearly within a late Chalcolithic phase, in other cases the term Chalco-EB was used. Within the diagnostic Chalcolithic and Chalco-EB material the most commonly identified types were jars (Fig. 6: 3, 16-17) and handles (Fig. 6: 7-11), these made up 90% of the collected sample. Whilst this may have been affected by visibility on the ground, it seemed to be mirrored by the number of body sherds from jars (Fig. 6: 13-14). Bowls (Fig. 6: 5) and basins (Fig. 6: 1) were also noted. Painted (Fig. 6: 12) and incised/slipped pieces (see Fig. 6: 16) were rare, the latter perhaps argue for a limited earlier Late Neolithic/Early Chalcolithic use of the site. In terms of spatial distribution there was a heavier concentration of ceramic artefacts in the



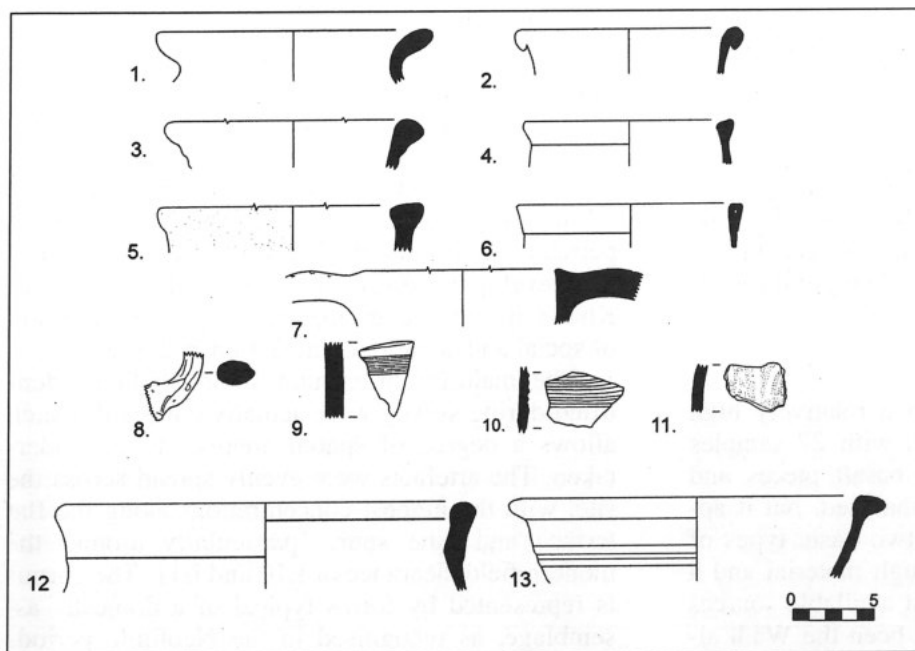
6. Chalcolithic - Early Bronze Age ceramics from al-Khawārij.

Figure	Unit	Cat No	Artefact Category	Description
6.1	D10	50	Ceramic	Basin, coarse orange buff matrix with shell incl.s
6.2	BB8	34	Ceramic	Jar / fen. stand, buff matrix with angular carbonate, red grog and shell incl.s; traces of red slip ext.
6.3	D12	54	Ceramic	Jar, necked, buff fabric
6.4	D11	155	Ceramic	Base, flat, fine buff with small sub rounded grey and white incl.s; orange slip ext./int.
6.5	D9	100	Ceramic	Bowl, small, orange buff with some small sub rounded white lime and carbonate incl.s
6.6	B9	36	Ceramic	Base, rough, buff matrix with many shell and carbonate incl.s; fired greyish at core
6.7	C11	130	Ceramic	Handle, coarse buff with many large sub angular grey carbonates and white lime incl.s and some red incl.s; applied / impressed dec. ext
6.8	B9	15	Ceramic	Handle, light buff matrix with angular grey and white incl.s; fired orange at surface
6.9	B9	6	Ceramic	Handle, loop, buff matrix with carbonate incl.s
6.10	D11	183	Ceramic	Handle, lug, fine buff
6.11	B8	86	Ceramic	Handle, loop, buff matrix with shell incl.s
6.12	C15	81	Ceramic	Body sherd, buff matrix with angular white lime, carbonate and grog, and some sub rounded quartz incl.; red bands ext.
6.13	E12	58	Ceramic	Body sherd, coarse buff with sub angular grey carbonate and white lime incl.s; fired buff throughout, orange slip int. with applied dec ext.
6.14	A9	26	Ceramic	Body sherd, coarse buff with sub rounded and sub angular chert incl.s thumb imp dec
6.15	C8	47	Ceramic	Body sherd, dark grey buff matrix with angular white lime and grog incl.; fired orange at core, incised dot dec. ext
6.16	+	172	Ceramic	Body sherd, buff matrix with basalt incl.s; fired orange at surf int, incised dec. and red slipped ext
6.17	A8	93	Ceramic	Jar, storage, coarse buff
6.18	AA9	8	Ceramic	Jar, storage, coarse orange - grey buff with large carbonate incl.s and applied imp. dec., traces of self slip.

south of the site (units D-H), but despite this there was approximately the same proportion of open to closed vessels in each area.

**Figure 7** shows a sample of the later material, ranging from the Middle Bronze to the more recent periods. Parallels, where available, are listed

against the caption in the table. In terms of spatial distribution across the site the highest concentration of Roman/Byzantine sherds came from the top of the hill overlooking the terrace (A2-3 and B1-3), but there were also some higher concentrations on the spur that largely corresponded with the plough



7. Later period ceramics from al-Khawārij.

Figure	Unit	Cat No	Artefact Category	Description
7.1	E12	61	Ceramic	Jar, outflaring rim, fairly finely levigated buff fabric, MBA(?)
7.2	E12	85	Ceramic	Jar, tall neck, fairly finely levigated buff fabric, IA(?), cf <i>Pella II</i> pl. 52.15; 67.8
7.3	E12	151	Ceramic	Jar, tall neck, fairly finely levigated buff fabric, MBA Amiran 1969: pl. 32.1
7.4	AA8	13	Ceramic	Jar, short neck, hard fired orange buff with grey core, Byzantine, cf <i>Pella II</i> 111.2
7.5	D10	57	Ceramic	Rim, African Red Slip, Roman
7.6	B1	14	Ceramic	Jar, rim? Hard fired orange buff with grey core Late Hellenistic - Byz (?), cf <i>Pella II</i> 78.8
7.7	F11	153	Ceramic	Jar, handled, hard fired orange buff, Byzantine (?)
7.8	B2	19	Ceramic	Handle, loop frag., creamy orange buff, Roman / Byzantine (?)
7.9	A2	2	Ceramic	Body sherd, biscuit buff fabric with combed incision, <i>Pella II</i> pl. 26.13
7.10	B8	48	Ceramic	Body sherd, hard biscuit fired orange, grey at core, ribbed surface, Byzantine
7.11	+	162	Ceramic	Body sherd, buff with white slip and brown painted dec, Mamluk
7.12	E12	87	Ceramic	Jar, hard fired buff, IA, see <i>Pella II</i> p. 51.1/4
7.13	AA7	168	Ceramic	Bowl, Orange buff, grey ext, mod./medieval (?)

zone and unit B14. In no case was there architecture that could be associated with these concentrations. We also encountered a small amount of Middle-Late Bronze Age and some Iron Age ma-

terial. This was much more localised, especially around the units of E11, F11 and G11-12 suggesting that the architecture noted in G11 and H11 (Fig. 5) may, in fact, date to a later period.

In general, it may be stated that our impression is that while Chalco-EB material was found right across the site, the later material is present as very low density 'background noise' in most areas. There are some areas where higher concentrations of MB-LB and Iron material were found (southern spur area), and Roman/Byzantine material was slightly more prevalent on the hill top area and on the very tip of the spur, where a late period well-head was also located.

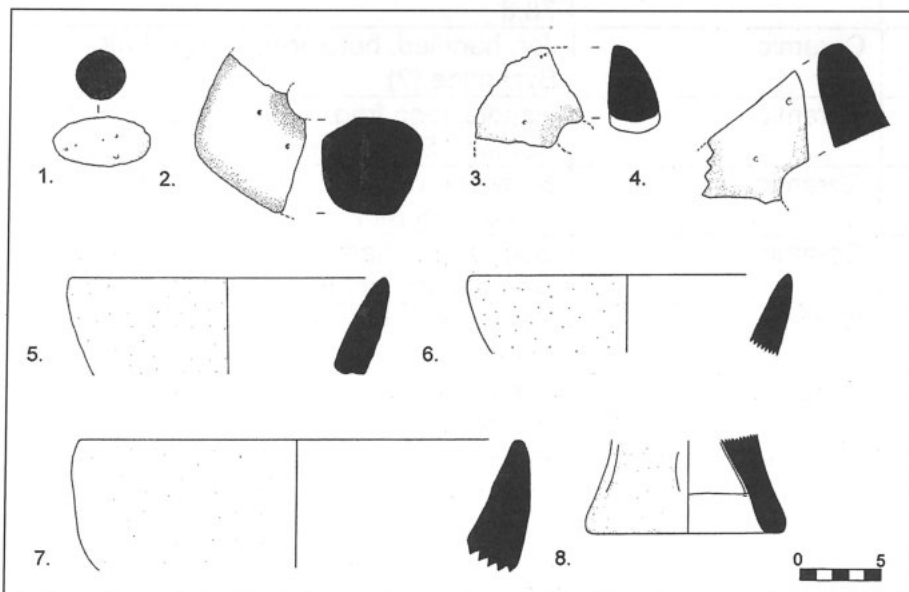
### Ground Stone

There appears to have been a relatively high number of ground stone items, with 27 samples picked up. Most of these are basalt pieces and have not yet been adequately analysed, but it appears that the corpus includes two basic types of raw material: a large-pored, rough material and a finer grained-basalt. The closest available sources for basalt would probably have been the Wādī al-'Arab and Sal outcrops (see Philip and Williams-Thorpe 1993: 15, fig. 1), although it is clear from recent work on basalt provenance that sites of this period are procuring at least some of their basalt or basalt vessels from sources well beyond their normal catchment area (Philip and Williams-Thorpe 2001).

In general the large-pored material noted above appears to have been used for large querns, but it was also picked up in the form of small fragments. The finer grained material appears to have been more commonly observed in bowls and fenestrated stands. This is consistent with other Chalcolithic-

Early Bronze Age assemblages where the very porous material appears to be reserved for querns (see Philip and Williams-Thorpe 2001: 26), agricultural tools and occasionally grinding stones and pestles (see also Epstein 1998: 231ff). Given the increasingly complex picture of procurement and production of ground stone in the later prehistoric periods (Philip and Williams-Thorpe 1993, 2001) the developing study of the ground stone at al-Khawārij will be an important aspect in the study of social and economic interaction at the site.

The majority of ground stone artefacts identified during survey were actually collected, which allows a degree of spatial analysis to be undertaken. The artefacts were evenly spread across the site, with the highest concentrations along the flat terrace and "the spur," particularly around the modern field clearance of E10 and E11. The corpus is represented by forms typical of a domestic assemblage, as recognised in the Neolithic periods (Wright 1993, 2000), but as yet inadequately examined in a Chalcolithic-Early Bronze Age context<sup>12</sup>. Among the items collected were a number of V-shaped bowl fragments, typical of the Chalcolithic (Fig. 8: 5-6), rounded bowls (Fig. 8: 7), loom-weights or *dibble* sticks/'digging-stick weights' (Fig. 8: 2-3; cf Epstein 1998: 236), a grinding pellet (Fig. 8: 1) and a fenestrated stand (Fig. 8: 8). It should be noted that most of the bowl fragments were rims, however one – as yet – unidentified fragment may be identified as the foot of a fenestrated or "footed" bowl another form confined to the Chalcolithic.



8. Ground stone from al-Khawārij.

12. Although note Wright *et al.* in press.



Figure	Unit	Cat. No.	Artefact category	Description
8.1	A14	94	Ground stone	Basalt pounder or pellet shaped piece
8.2	B9	7	Ground stone	Squared perforated basalt piece, loom weight (?)
8.3	A9	25	Ground stone	Perforated basalt piece, loom weight (?)
8.4	B7	90	Ground stone	Squared perforated basalt door socket or loom weight
8.5	AA9	9	Ground stone	Fine basalt V-shaped bowl, rim abraded
8.6	C15	182	Ground stone	Fine basalt V-shaped bowl
8.7	D8	91	Ground stone	Basalt round-sided bowl
8.8	C9	10	Ground stone	Basalt fenestrated stand

Despite the variation of ground stone vessels and tools collected from al-Khawārij the corpus is best represented by 'V'-shaped or rounded bowls and querns. The majority of quern fragments, with the three perforated pieces, were collected along the flat terrace. Querns were produced specifically for the purpose of milling and it has been postulated that variations of these were used as crushing basins in the production of oil (Epstein 1993: 136). Given the porous nature of the quern fragments collected from al-Khawārij this is unlikely, however all of the quern fragments were collected from areas near to rock outcrops with cup holes and vats spread across the terrace. The highest concentration of bowls on the other hand is along "the spur" and all bowls were picked up in squares with associated architecture. The fenestrated stand was collected just east of two rock piles in C8. It is possible these are cairn tombs similar to those in F11 and the presence of the fenestrated stand may be significant.

### Chipped Stone

The chipped stone material represents the majority of materials collected. Every effort was made to analyse their character and spatial distribution. Thus far nearly two thirds of the material has been completely analysed<sup>13</sup>, and the majority of these pieces were broken or fragmentary which sometimes precluded full typological classification. As noted above, this is probably a result of recent plough or other agricultural processes. There was also evidence of thermal damage on a large number of pieces from grass fires or agricultural burn-

off. By contrast there is little evidence of rolling or abrasion. Therefore displacement is unlikely to have affected the general spatial patterning of artefacts.

The majority of artefacts appear to have been made from locally available raw materials<sup>14</sup>. A mid-grey yellow/ pink flint of good quality appears to be predominant and occurs locally in nodules of between 100-200mm. Other materials used were more variable and occur in differing frequencies, but were, for the most part, also available locally. The nature of the pick-up precludes statistical patterning but it is possible that an orange-brown, coarse flint was preferred for the manufacture of axes and chisels.

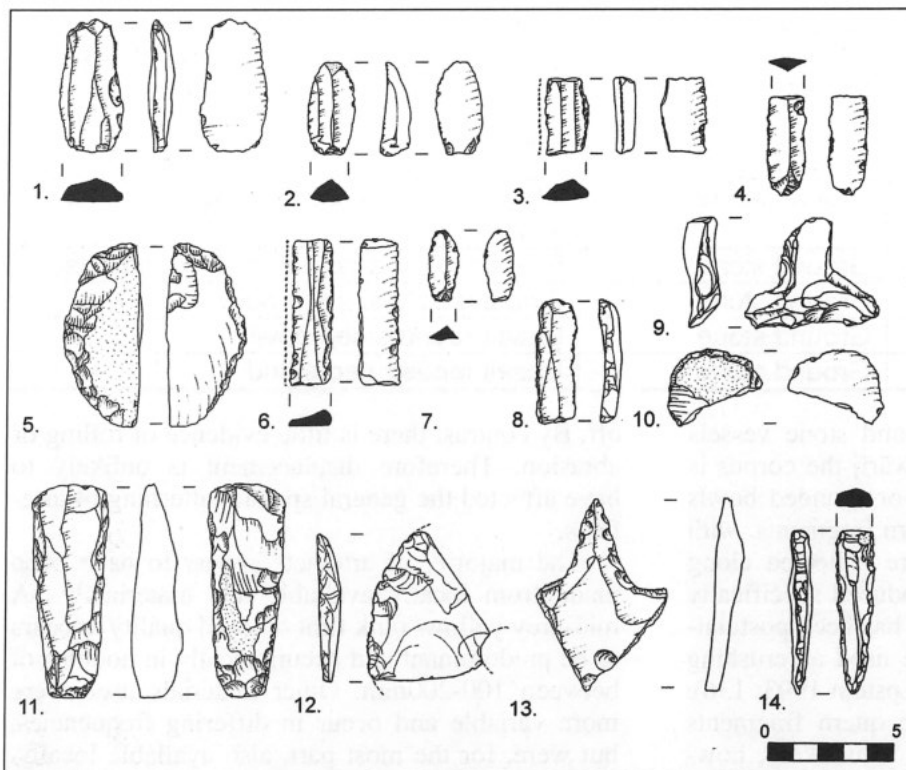
A total of 460 retouched pieces were collected, and although the assemblage was dominated by 'ad hoc' tools, a number of more formal tool types were also present. Backed and unbacked blades were the single most abundant type (see Fig. 9: 1, 2, 4). A few regular, fairly narrow blades (often referred to as 'Canaanite blades') were identified<sup>15</sup> as well as 2 arched-backed blades, and some 15 straight-backed blades (Fig. 9: 8). The vast majority were simply retouched blades. Bladelets were also present (Fig. 9: 7), with one example identified as a microendscraper<sup>16</sup>. Sickles and segments (e.g. Fig. 9: 3, 6) were identified via the presence of gloss. Both backed and unbacked sickle blades were present. Most backed sickles were prismatic, double truncated segments displaying gloss and use-related, fine retouch along the non-backed edge. This would seem to point to a Chalcolithic date (see Rosen 1997: 60).

13. The typological classification is based on Rosen (1997: 40), while attribute description is orientated on Inizan *et al.* (1992). Due to the strategy little can be said about the technological aspect of chipped stone tool production. This will be addressed via the examination of the excavated assemblage.

14. The local character of the assemblage was determined by a brief raw material survey of the Wādī an-Nawm. Nodules of materials used on site occur here in exposed wadi

sections and on the floor of the wadi bed. Identification was based on hand-lens observation and colour comparisons of the parent material and the cortex. Although this method can be seen as a fairly rough analysis (Odell 2003) it is nevertheless likely that the identified localities were locations of raw material procurement.

15. For a discussion of 'Canaanite' blades within Chalcolithic contexts see Rowan and Levy 1994, but see also Rosen 1997: 101, n. 2.



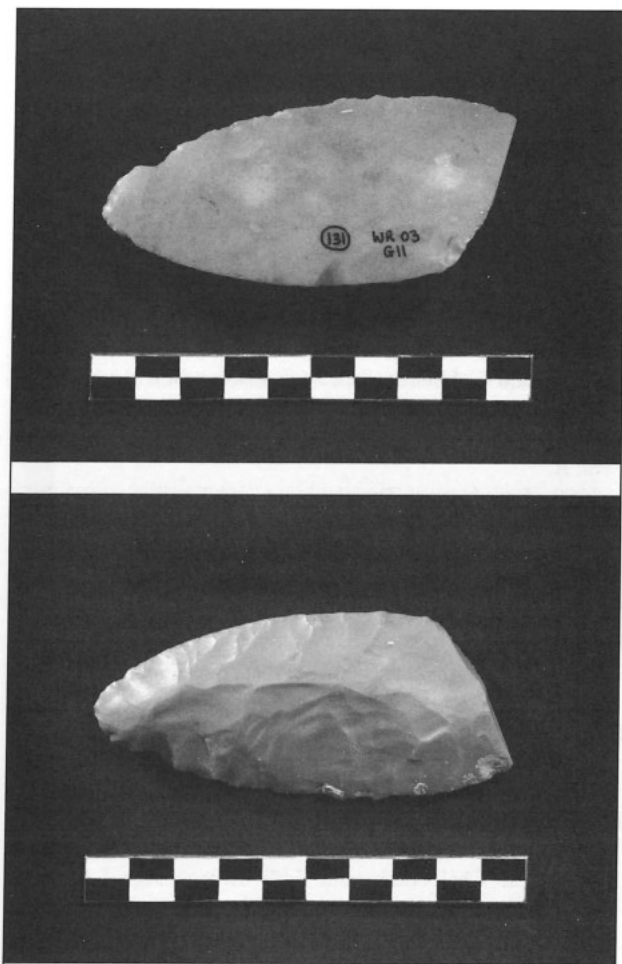
9. Lithics from al-Khawārij.

Figure	Unit	Cat No.	Artefact category	Description
9.1	E12	1246	Lithic	Simple, non-prismatic retouched blade
9.2	E12	1209	Lithic	Simple retouched blade
9.3	D12	1359	Lithic	Backed and truncated sickle blade segment
9.4	E12	1248	Lithic	Prismatic, simple retouched blade
9.5	D10	1204	Lithic	Tabular scraper-knife
9.6	B8	1254	Lithic	Backed and truncated sickle blade segment
9.7	B7	1262	Lithic	Retouched bladelet
9.8	E10	1010	Lithic	Straight-backed blade
9.9	D11	(184)	Lithic	T-shaped piece
9.10	E10	1263	Lithic	Tabular scraper fragment
9.11	+	1217	Lithic	Straight edge axe
9.12	E12	(171)	Lithic	Holed Disc
9.13	G11	1231	Lithic	Drill
9.14	C10	(140)	Lithic	Chisel

Borers (Fig. 9: 13) and scrapers were present in moderate numbers. Amongst the borer group a microlithic drill is notable. This appears as somewhat unusual as such pieces are commonly thought to be restricted to Gaza and the Negev (Rosen 1997: 71). Tabular scrapers (Fig. 9: 5, 10) appear in a variety of forms, although not in large numbers, and are all made of the same raw material – a local dark – brown nodular flint. The classification of these pieces was sometimes difficult due to their often fragmentary nature. No classic fanscrapers were

found.

Three unifacial invasively retouched knives were collected. All of these knives were remarkably uniform in colour and showed a high complexity of the dorsal removals. Both these aspects in addition with the absence of macroscopic use-wear may indicate that these artefacts had a special significance and may have had a non-utilitarian function. The finest example (Fig. 10) was found in unit G11, in close proximity to the cairn tombs (see Fig. 5).



10. Unifacial knife, from unit G11.

The other notable class is the discs and holed tools (Fig. 9: 12). These rare artefacts are restricted to the Chalcolithic period (see Noy in Epstein 1998: 282-3). Their frequency at al-Khawārij (5 pieces evenly spread across the site) reinforces the Chalcolithic date of the assemblage. All of these tools were made from locally available material. 63 scrapers, 43 notches and denticulates, and 107 retouched flakes or pieces have been recorded in the survey collection. There is a great deal of variation across these 3 classes in form, as well as location of retouch types and retouch location.

Celts are common, particularly chisels (Fig. 9: 14), but also axes (Fig. 9: 11) and adzes. In one case we have a miniature axe from unit E12, north-east of the cairn tombs, which appears unused. The celts appear to have been made on site from local materials (evidenced by the presence of roughouts) and may have been connected with the agricultural or horticultural activity at the site. Levy has suggested these pieces were used as parts of hoes (Levy 1995: 230). However their relative size appears unsuitable for this kind of function. Based on

the working hypothesis that settlement at al-Khawārij may be related to olive production one might be tempted to think that these tools were involved in pruning trees, digging or other activities typical of this kind of horticulture.

Apart from a few isolated Middle Palaeolithic tools, as well as one 'T'-shaped artefact (Fig. 9: 9) that may date to the early Islamic period (see Betts in Helms 1990: 159-168), the material is generally late prehistoric. The abundance of non-formal tools, such as simple retouched flakes, scrapers and notches/denticulates in conjunction with the presence of straight-backed, prismatic sickle blades and holed discs is consistent with a Chalcolithic assemblage. The low frequency of narrow, elongated prismatic blades, often referred to as 'Cananean blades', may indicate a transitional phase.

In the context of the sampling strategy, reliance on spatial patterns is clearly unwarranted, nevertheless some intriguing patterns did emerge that may repay evaluation during the later study of material from excavated contexts. For instance, it seems that the more northerly squares (DD-D) turned out significantly higher numbers of sickle blades when compared to the collection of materials from the spur to the south (squares E-I). In fact only one unbacked glossed blade was picked up in F9. This may relate to a higher intensity of harvesting or plant cutting activity towards the northern area of the site. In addition, celt roughouts only occur in the northern section of the site in areas AA8-9 and BB9, and C10, D8 and D10-11. Given that the overall frequencies of chipped stone artefacts indicate a high level of activity, or at least disposal, in this area it may be that one part of the lithic manufacture took place here. However, evidence for lithic production, apart from the celt roughouts, is ambiguous at this stage.

## Discussion

The process of intensive site walking was extremely valuable in developing intimate knowledge of the site itself and issues that will direct later excavations. This is not to say that patterns on the surface are expected to reflect a direct relationship with the material below the surface. Indeed it is expected that more recent events in the life of the landscape will have considerably influenced taphonomy. For instance, the highest densities of artefacts were noted in the units that are known to be under cultivation today. The plough clearly has had a considerable effect on artefact visibility. Equally, modern activity has affected architectural remains, as the highest densities of stone cairns correlate with the edges of regions with the most



frequent architectural remains (units B8-9, AA8-9 and E11). Beyond this there will be other local geographic and geological issues that will influence erosion and artefact displacement.

The true value of field walking will only be tested with extensive excavation across all areas of the site. The foregoing discussion has pointed to valuable research questions and has underlined the potential of the site. It is our hope that excavations in 2004 will be able to further contribute to the question of late prehistoric olive production and the Chalco-EBA transition.

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