THE SECOND PRELIMINARY REPORT OF THE SOUTH JORDAN IRON AGE II SURVEY AND EXCAVATION PROJECT (SJIAP): THE 2004, 2005 AND 2006 SEASONS OF SURFACE SURVEY

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Introduction

This report presents the results of the 2004, 2005 and 2006 seasons of surface survey in the area around the late Iron Age site of Khirbat ad-Dabba in southern Jordan. The survey covered an area of 400 km□located between Shawbak and Wādī Mūsā, focusing on the area between Bīr Khidad and Udhruḥ (see **Fig. 1**). Surface collection concentrated on sites identified from aerial photographs of the area (Royal Jordanian Geographical Centre 1:10,000 series), random sampling of field systems in the three environmental zones of the survey region, as well as revisiting previously surveyed sites. While the focus of the project is on the Iron Age archaeological remains in the area, the survey recorded the remains of all periods encountered.

Project Aims

The South Jordan Iron Age II Project (SJIAP) seeks to enhance our understanding of the nature of late Iron Age settlements in southern Jordan to serve as a basis for reassessing traditional models of late Iron Age society in the region.

Current models focus on the existence of ethnic groups, the very existence of which derives directly from historical sources. By thinking in terms of bounded, homogenous ethnic groups, such as the 'Edomites' in the case of southern Jordan, explanatory frameworks have been severely constricted. This approach has led to a circular, self-referential use of historical and archaeological evidence to produce a history of Iron Age southern Jordan. Traditional archaeological theory – which associates material culture with ethnic groups and relies on frameworks provided by literary evidence into which archaeological data can be placed – has been successfully challenged in other areas of archaeology but remains unquestioned in the study of Iron Age Jordan.

In addition, recent studies have criticised the interpretation of national or ethnic material culture groups in Iron Age southern Jordan, based on the increasing recognition of regional variation in the Iron Age ceramics from this area (Bienkowski 2001a, 2001b; Whiting 2007). Furthermore, the diverse patterning of ceramic use in Iron Age southern Jordan has demonstrated that, inasmuch as pottery is indicative of social practices, particular styles of pottery were integrated within local Iron Age social practices in a variety of ways, with sites and their inhabitants participating differently in the available material culture (Whiting 2007). This implies that we must think in terms not of a homogenous Iron Age 'culture', but of an Iron Age world that encompassed the coexistence of diverse communities and lifestyles, which could draw on particular types of pottery to greater or lesser degrees.

In line with these recent developments in Iron Age research on southern Jordan, SJIAP aims to provide a suitable dataset with which to explore these new ideas in more detail.

Fieldwork Strategy

In order to pursue these aims, the fieldwork strategy had a double emphasis, focusing on the one hand on the excavation of Khirbat ad-Dabba (Whiting *et al*. 2008), as well as the surface survey of a 400 km□area surrounding the site (**Fig. 1**). The survey area incorporated three environmental zones, including desert, rain-fed pla-

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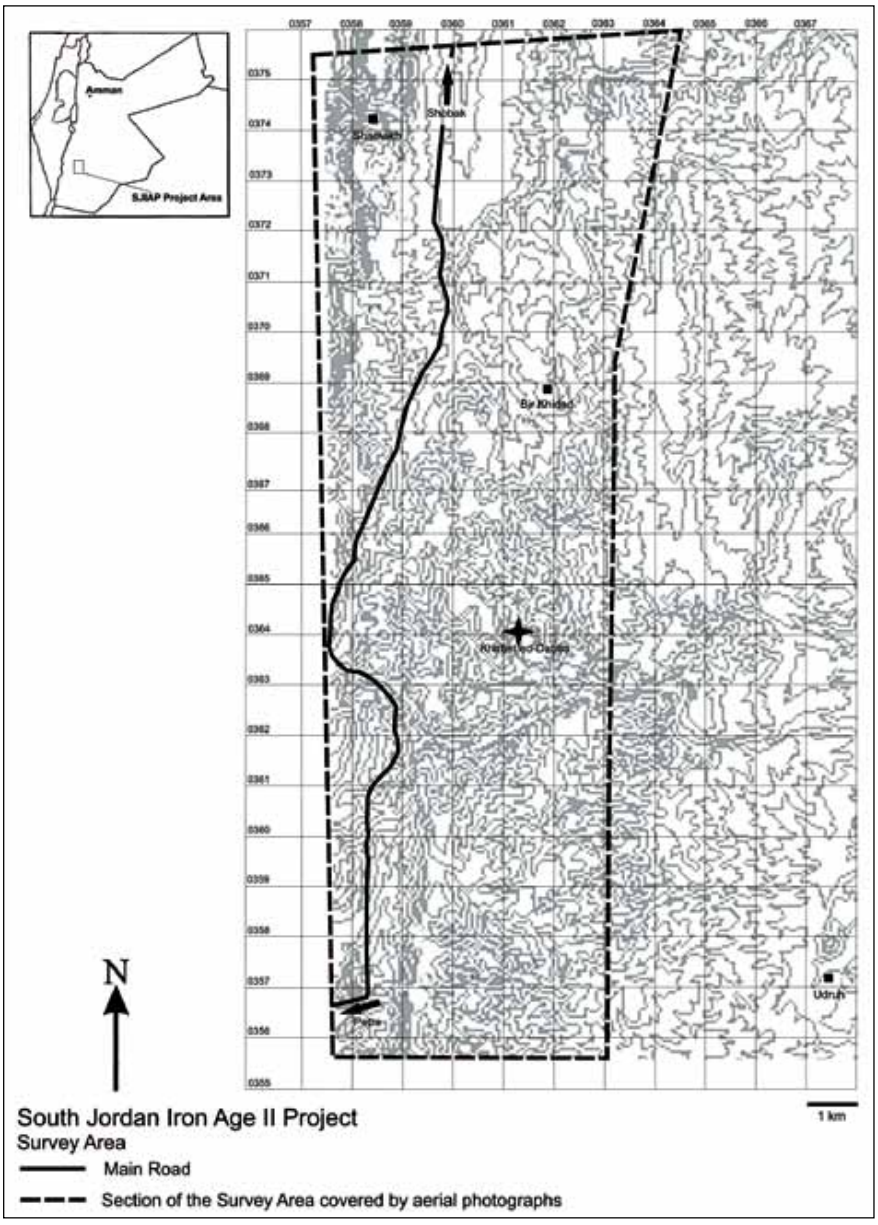


1. Map of the SJIAP survey area showing the location of Khirbat ad-Dabba.

teau and the Jordan Valley escarpment. Survey of sites in these three areas was to allow comparison of site type, size and associated pottery across these zones to assess potential settlement patterns and variation in landscape use with a particular focus on the Iron Age.

Ceramic samples from all sites were collected for dating purposes. Pottery from predominantly Iron Age sites were further sampled for Neutron Activation Analysis to allow ceramic production and distribution patterns to be analysed in combination with the ceramic data from the excavations at Khirbat ad-Dabba.

The combined use of excavation and survey was to allow a macro-scale (regional) and micro-scale (site-by-site) approach to enable a detailed contextual analysis of the dynamics of individual sites and their local environs to be undertaken. By combining different scales of analysis, the project not only investigates the nature of economic and social structures at individual sites, but places them within a regional context. As a result, this research has implications for modelling late Iron Age society on both a local and a regional scale. At a local scale, the research investigates the nature of Iron Age life-

ways at individual sites in southern Jordan. On a regional level, this research offers the opportunity to evaluate new and alternative models for understanding the nature of late Iron Age society in the southern Levant as a whole.

Methods of Surface Survey

The project area includes ploughed terraced fields, brush rangeland, olive groves, apple orchards and some built-up areas. It is topographically complex with deep wadi cuts, steep hill slopes and minor valleys, which combine to make intensive surface survey very difficult. The location of sites was therefore based on locating standing architectural remains from aerial photographs. This strategy proved highly successful since even very small or ephemeral structural remains were highly visible on the photographs, allowing a comprehensive record of sites in the area to be compiled. In addition, remains often overlooked by archaeological surveys such as irrigation systems, cairns, wall lines, field walls and terraces could be recorded directly from the photographs, allowing a more inclusive record of the archaeological landscape to be produced. The use of aerial photography therefore offered a fast and accurate way of mapping large-scale archaeological features such as field systems, water management structures and cairn clusters.

In addition to these standing remains, off-site transects were walked to find potential artefact scatters as well as smaller sites not visible on the photographs. Off-site transects were also walked in the vicinity of Iron Age sites. This was done in order to assess possible patterns in landscape use and farming practices in this period.

Sites identified on the aerial photographs were located in the field using maps (1:50,000 Arabic and English series) and hand-held GPS (Garmin ETREX). In addition to the off-site transects placed next to Iron Age sites (see above), additional off-site transects were placed so as to sample all the different environmental zones of the project area, incorporating a variety of topographical locations including hilltops, hillslopes, valley bottoms and undulating plains.

When a site was located, or an off-site location targeted, its position was marked by GPS, colour digital photographs were taken and the site was recorded by written description, measurements and sketches on a field recording form. The field recording form was a modified version of that used by the Sydney Cyprus Survey Project (Given and Knapp 2003: 25-58). All recorded data was entered into the project database to allow detailed analysis of site distribution patterns across the landscape. The results of the survey were mapped using GIS, with an emphasis on correlating this data with topographical, geological, hydrological, climatological, and vegetation information to allow detailed investigation of landscape use through time, especially with regard to the Iron Age period.

If artefacts were present, these were collected to provide dating evidence. This was done by walking two or three transects laid across the site. The transects consisted of a series of 5 x 25m rectangles, up to a maximum total length of 100m, depending on the size of the site. Each transect was walked by a team member who collected and bagged finds separately according to each square. This allowed systematic collection of artefact samples in addition to an assessment of artefact density and potential variability in artefact distribution across the site by period.

Lithics were examined by H. Miller, human skeletal remains by T. Jakob, Nabataean to Early Islamic ceramics by I. Kehrberg and Prehistoric, Iron Age and Islamic pottery by C. Whiting. Preliminary statements on these analyses are presented below; full publication will appear in the final project report.

Investigation of the entire survey area was not possible as some parts were within enclosed olive groves, apple orchards and private ground. Other areas were covered by bedouin camps. The survey therefore concentrated on accessible areas of field and open ground.

Mapping

A base map for the survey area was produced, utilising the 1:50,000 Arabic series 3150IV map sheet as the primary map. However, when checking the co-ordinates of fixed points on the ground it became apparent that the GPS co-ordinates derived from satellites did not agree with the UTM co-ordinates derived from the map. Further research determined that the map was inaccurate in places and that the co-ordinates taken from the map may have been up to 200m away from the co-ordinates obtained from the GPS. This is a known problem encountered by

other survey teams (e.g. Mortensen 1993; Flanagan and McCreery 1995). It should be noted that the error on the map is variable, both on this particular map sheet and across Jordan. Therefore, there is no formula that can be applied to the GPS-derived co-ordinates to calculate the corresponding UTM map co-ordinates. The sites recorded by the survey should be located on the ground by GPS only, since the survey map is inaccurate by up to 200m in places.

All co-ordinates for the SJIAP survey sites derive from GPS readings, using the WGS 84 co-ordinate system, and are the true UTM co-ordinates for the archaeological sites identified. The accuracy of the GPS reading was usually within +/-5m, but occasionally increased to +/-6 or 7m. The level of accuracy was recorded in the field records.

Topography and Geology

The survey area stretched from the top of the Jordan Valley escarpment in the west, across the rain-fed plateau, to the edge of the desert in the east. It extended between ash-Shawbak in the north and Udhruḥ in the south. Deep wadis cut the plateau in the survey area including, from north to south, Wādī al-Halasa, Wādī Umm al-Waizat, Wādī al-'Arja, Wādī Ash'ar and Wādī Rumayl. The topography of the survey area therefore consists of steep hillslopes separated by minor valleys, as well as areas of undulating plain. The elevation of the plateau varies between 1400 and 1600m, dropping to between 1200 and 1400m along the escarpment and in the desert.

Across most of the survey area, the hill slopes and valleys have been extensively terraced for agriculture, giving them a stepped appearance. This terracing is in an excellent state of preservation owing to the fact that development of the land for housing and other purposes has hitherto been limited. This is changing however, especially along the desert edge where an increasing number of large apple orchards have destroyed sites which were visible on the aerial photographs prior to the orchards' establishment.

A wide variety of terracing methods are present, which include a variety of wall types as well as soil and stone banks. Field clearance cairns litter the landscape. Today the land is used for habitation, grazing, apple orchards, olive groves and ploughed fields.

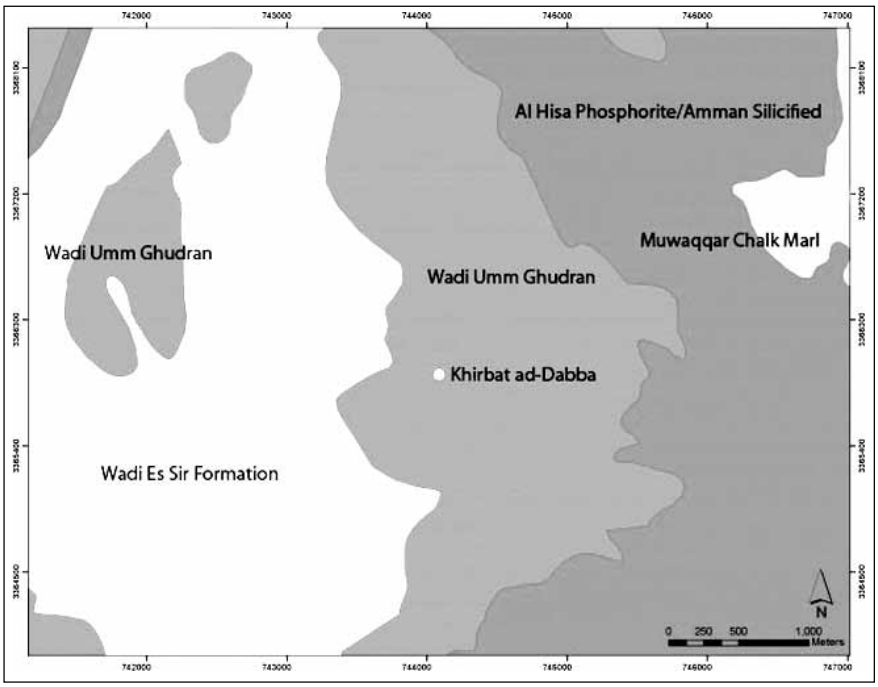
The geology of the project area[2] is dominated by the Wadi Umm Ghudran Formation (B1), which is composed of white chalk, chert and microcrystalline limestone concretions with phosphatic chert (see **Fig. 2**), and the Wadi as-Sir Formation (A7), which represents the lower part of the B2 A7 aquifer, one of the most important aquifer systems in Jordan (see **Fig. 2**). It is distinguished by dolomitic limestone with some gypsum in its upper parts. The Amman Silicified Limestone Formation (B2a), which is lithologically composed of dark gray to brown chert intercalated with limestone (see **Fig. 2**), is also present in the area. Marl and chalky dolomite laminas are also found within this formation, in addition to some phosphate granules in the uppermost parts. Lastly, the project area includes the Al Hasa Phosphorite Formation (B2b), which is composed of phosphatic chert, phosphatic limestone, phosphate, chalky limestone, micritic limestone, marl and oyster shells (see **Fig. 2**).

The soils in the survey area vary between undulating plains with a deep colluvial / aeolian mantle, which allows very intensive rain-fed arable cultivation as well as some tree crops, to moderate to steeply sloping lower colluvial foot-slopes within limestone hills with shallow to moderately deep colluvium, which supports rain-fed arable cultivation and brush rangeland. Soils on plateaux at the top of the escarpment and on upper slopes are mostly rocky and shallow with some deep colluvial pockets. This supports mainly brush rangeland, open natural forest and some tree crops. Steep-sided minor valleys and convex upper slopes have shallow and stony colluvium providing brush rangeland.

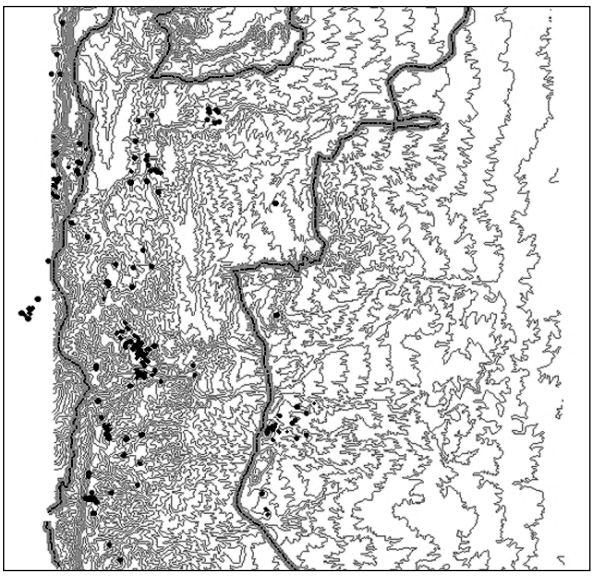
Overview of survey results

A total of 139 survey units were recorded in the survey (see **Fig. 3**). Many of these can be further subdivided since they were multi-featured sites (e.g. walled structure with a cistern), or repeat-featured sites (e.g. group of cairns).

2. Geological information on the project area was kindly provided by Marwan Raggad from the Department of Geology at the University of Jordan.



2. Map showing the main geological formations in the project area (by M. Raggad).



3. Plot of the survey units in the project area showing contours and environmental zone boundaries (by J. Bradbury).

Large examples of the latter were mapped by area rather than individual feature location (see below). Some units fell into more than one site type. A simple sum of the numbers of site types therefore does not equal the total number of sites found or units walked.

The following discussion presents a brief description and breakdown of the survey units by site type, although it must be emphasised that the interpretation of these is only at a preliminary stage and that the pottery and lithics – although analysed – have not yet been written up in final form.

Settlements

Transects were walked across a total of 30 sites classified as settlements. Sites were classified as such if they comprised of clusters of more than six separate structures. Not all of them are discussed in detail here, except to highlight a few of the best preserved examples which could clearly be dated by pottery.

Several substantial mediaeval sites were located, the largest of which was situated east of the modern settlement of Jarba, in the desert zone of the survey area (Unit 114). This settlement included 20 or more rectilinear structures built of limestone, flint and basalt blocks. Decorated and undecorated handmade mediaeval wares littered the surface (see Islamic pottery analysis below). Other mediaeval sites were found off the plateau edge and on the plateau. Mediaeval sites were thus equally spread across the different environmental zones of the survey area, but were usually situated near a spring.

A large number of Roman / Byzantine settlements were found, the most notable of which included Units 68, 75 and 119. All of these

settlements consisted of clusters of rectilinear structures of different internal layouts, often associated with cisterns, threshing floors and enclosure walls. Many of these structures were well-built of square-hewn stone blocks. Roman / Byzantine remains were found in all environmental zones of the survey area. In addition, they were located in a range of different topographical locations within these zones, such as hill-tops, wadi bottoms and hill slopes.

Nabataean settlement sites were ubiquitous in the survey area, being located in all of the environmental zones and in different topographical locations. Several smaller settlements comprised of 6 - 10 rectilinear structures were located on the hill slopes close to Khirbat ad-Dabba, including Unit 44. More extensive settlements located in wadi bottoms next springs are, for example, represented by Units 8 and 79. These consisted of extensive well-preserved remains, comprising more than 10 rectilinear structures. The layout of some Nabataean sites differed, for example, by incorporating a large round structure alongside rectilinear building remains such as Unit 49. This hints at different site functions, an issue which will be explored through the pottery analysis.

Several Iron Age sites were found located off the edge of the plateau, including Units 69 and 121. Many of these were located on top of small spurs with steep slopes on their south, west and north sides. They consisted of clusters of rectilinear structures, sometimes associated with threshing floors and wall lines. Iron Age sites such as Unit 20 were also situated in the desert zone of the survey area. Iron Age sites on the plateau ranged widely in layout, hinting at a wide variety of functions. Unit 25, for example, represented a simple cluster of rectilinear structures on a low hill in a valley, while Unit 139 was a very large site with the remains of large well-built rectilinear structures surrounded by a wall and a possible gateway on a high spur surrounded by steep cliffs.

The remains of a possible Chalcolithic / Early Bronze Age settlement were found in Unit 53. It comprised of a series of rectilinear structures and an extensive Chalcolithic / Early Bronze Age pottery scatter to the east of the structures. These remains were possibly associated with a several large stone cairns. Some of these cairns had been bulldozed resulting in the presence of human remains along the walked transects (see human skeletal remains report below). A Chalcolithic / Early Bronze Age pottery scatter, possibly associated with some rectilinear structures, was also found in Unit 114 down-slope from the mediaeval settlement of al-Jarba (see above).

Artefact Scatters

Considering the size of the survey area very few artefact scatters were found. There was a general background 'noise' of pottery sherds and lithics, but there were only a few dense artefact scatters that might represent occupation.

A very extensive Lower Palaeolithic lithic scatter was recovered from Unit 55 in the northern part of the survey area (see lithics report below). It covered a large area and formed part of the large lithic surface accumulated in the Fjaje area previously identified by Rollefson (1981).

A smaller, but much denser Early PPNA lithic scatter was recovered from Unit 116 (see lithics report below). It was located on a small knoll in the centre of the large wadi east of modern al-Jarba. The knoll was flat-topped and measured *ca* 50-75m in length. Lithics were the only artefacts recovered from the top of the knoll.

A small concentration of Chalcolithic / Early Bronze Age sherds was noted around a large stone cairn in Unit 52. The cairn represented a large tumulus tomb measuring *ca* 12 by 6m in size. It comprised of a retaining wall which enclosed several internal cists, all of which had been constructed from massive flint blocks. The cairn had been badly damaged by bulldozing on its north and east sides. The tomb was quite big, but resembled many others recorded in the survey. This one was distinct from the others because human remains from the cairn had been exposed by the bulldozing (see skeletal report below).

Another Chalcolithic / Early Bronze Age pottery scatter was recovered from Unit 53 (see also settlements above). The scatter was located adjacent to several stone cairns, rectilinear structures and field walls.

Cisterns

Nine cistern sites were located in the survey area. Several cisterns were found in association with settlement sites or related to structural re-

mains. A number of cisterns were also found in isolation, often surrounded by an enclosure wall which delimited an open space around the cistern mouth. Others were enclosed within a small structure. Other examples include Unit 13 which comprised three heavily damaged cisterns on a high hilltop. Each cistern mouth was enclosed by a circular wall.

Threshing Floors

Ten threshing floors were located within the survey area. These floors comprised of an area of exposed bedrock enclosed by low rubble walls. Most of them were in association with structural remains or settlement sites, but many of them were also found in isolation surrounded only by arable land. Some threshing floors were associated with rock-cut features such as cup holes (e.g. Unit 134), while ground stone objects were found in association with others (e.g. Unit 26). Unit 64 represented a threshing floor in association with a cistern and a single structure.

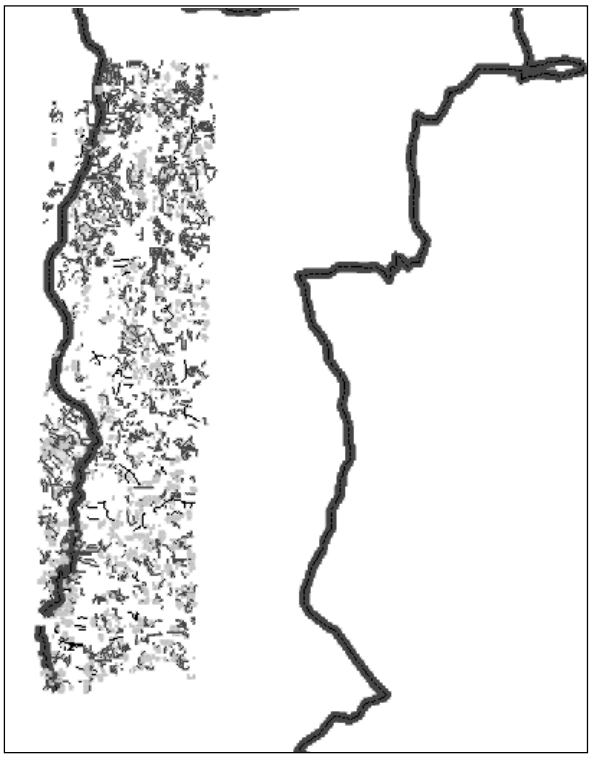
Single Structures

11 units represented single structures. These included large well-built, multi-roomed rectangular structures with internal sub-divisions represented by Units 32, 65, 73, 80 and 85 for example. These sites were always associated with Classical pottery and may have represented farmsteads.

Simple single-room structures dating to a variety of periods were also found. Units 7, 22 and 51, for example, represented isolated rectilinear buildings situated on high hill-tops and probably dated to the Iron Age. Units 18 and 117 were similar structures situated in the desert zone of the survey area and were associated with exclusively Classical pottery. These sites may have formed part of the Roman *limes*. A small square structure in Unit 54 was associated with exclusively Chalcolithic / Early Bronze Age pottery.

Wall Lines

Many wall lines were noted in the survey area. These represented field walls, terrace walls, water management walls and wall lines of unknown function. Due to their number and sometimes immense length, they were largely recorded from the aerial photographs and plotted using GIS (see **Fig. 4**). Ten of the more



4. Plot of field walls (light gray), long wall lines (dark gray) and cairns (lightest gray) mapped from aerial photographs, showing environmental zone boundaries (by J. Bradbury).

prominent walls that may have been associated with water management or cairns were recorded separately.

Unit 70, for example, represented a long ephemeral wall line extending across a hilltop with associated cists and a megalithic structure constructed across / as part of it (their stratigraphical relationship could not be discerned). Unit 61 represented a substantial well-built wall running adjacent to a wadi channel and ending in the remains of a dam, which would have blocked the channel where it narrowed to control water flow down the wadi. A long, low wall line with no identifiable function was also identified as part of Unit 59. It extended across the ridgeline of a hill and was associated with cists. All along the wall stones were placed upright which were visible against the skyline from a distance.

Off-site Transects

62 off-site transects were walked by teams spaced at 5 m intervals. It is interesting that these revealed very little that was not already

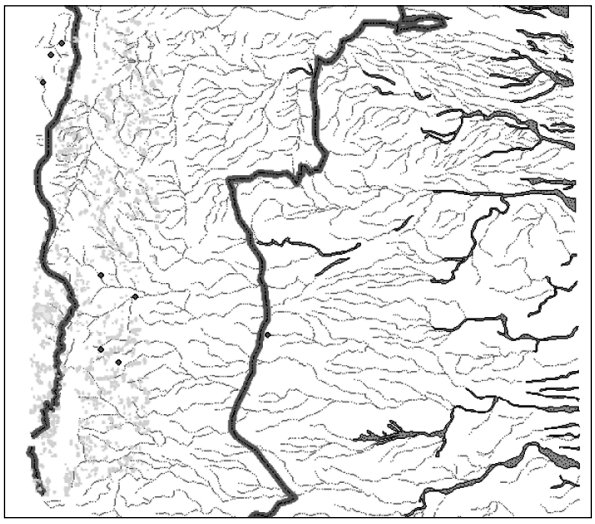
identified from the aerial photographs, suggesting that the archaeological record for the Iron Age onwards, as identified from aerial photographs, is fairly complete.

In addition, the off-site transects revealed a general background 'noise' of Nabataean to Late Byzantine / Early Islamic ceramics. This attests to the occurrence of midden spread from the Classical period onwards, since very little Iron Age pottery was found outside the immediate vicinity of Iron Age sites. This is in contrast to Iron Age sites in the north of Jordan where midden spread was attested (e.g. at Tall al-'Umayrī). Mediaeval and post-mediaeval wares were also much more site specific, possibly indicating that midden spread was not used in these periods or that changes had taken place in ceramic disposal. Not enough Chalcolithic / Early Bronze Age pottery was found to identify patterns in its distribution.

Apart from the specific lithic scatters discussed above, the chipped stone also formed a general background 'noise' of material across the landscape. Most of these lithics were very difficult to date since they consisted for the most part of undiagnostic flakes which could have been produced in any period.

Cairns and Cairn Fields

The entire survey area was densely covered with stone cairns of a variety of types and sizes. An impression of their sheer density is provided by the distribution map produced by mapping the cairns straight off the aerial photographs (see **Fig. 5**). This proved very straightforward as they were clearly visible on the photographs. Eight of the most interesting cairn clusters were ground-checked and recorded in more detail. Three of these were further subjected to a detailed cairn survey, the results of which are presented below.



5. Plot of cairns mapped from aerial photographs of the project area, showing environmental zone boundaries (by J. Bradbury).

Cairn Survey (JF)

During the 2004 and 2005 field seasons, SJIAP noted thousands of rubble cairns (*rujm*) throughout the survey area. These cairns are probably monumental funerary structures, given parallels with cairn-tombs elsewhere in southern Jordan (e.g. Creighton *et al*. 2007: 115-124; Fujii 2004), and the fact that, in 2005, SJIAP found human remains in two cairns partially destroyed by bulldozing (see human skeletal remains report below). The large number and extensive distribution of cairns in the Sharra highlands may therefore constitute a vast and highly visible mortuary landscape. A special cairn survey was created as part of the 2006 field season in order to document the various types of cairns present in the area, and to articulate patterns in their distribution[3].

The cairn survey investigated three "survey units", each measuring 2km north-south by 3.5km east-west. These units included areas with varying densities of cairns in different topographic locations:

1. Survey Unit 1 extended east of a large radio tower at UTM 741898E 3358789N, and included a dense concentration of large, rubble tumuli running along the ridge and slopes of Jabal Zubayra;
2. Survey Unit 2 centred around Khirbat ad-Dabba itself, and contained a more dispersed spread of smaller cairns;

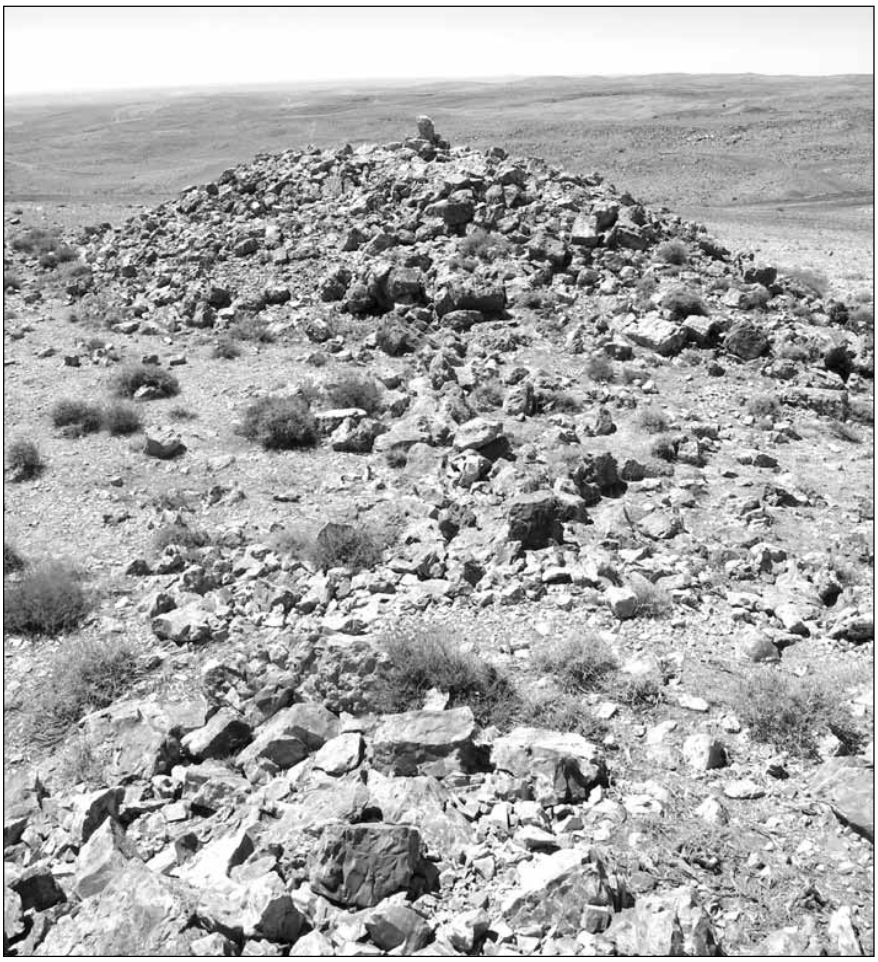
3. The survey was led by James Fraser (University of Sydney) as part of his postgraduate research into megaliths in Jordan. The team consisted of Anne-Marie Beavis, Guadalupe Cincunegui and Ngaire Richards (all of the University of Sydney) and Holly Miller (University of Liverpool). The fieldwork was funded by the Carlyle Greenwell Bequest, as well as a Grant-in-Aid from the Near Eastern Archaeology Foundation, both of the University of Sydney.

3. Survey Unit 3 covered gentler, cultivated slopes immediately north of ash-Shawbak. This area has a lower density of cairns than the other two areas, but included one cairn (UTM 747571E 3377881N) from which the previous SJIAP survey had retrieved human remains.

Over 500 features were mapped using a differential GPS, and each feature was documented on a comprehensive recording sheet. These sheets contained fields for each cairn's size, shape, structural characteristics (including wall-lines, kerbing and cists), and the composition of the tumulus itself. The nature of each cairn's location was also recorded, including its topographic and geomorphological setting, as well as its visual relationship with other cairns and with topographic features in the surrounding landscape. Select examples were drawn, and soundings were excavated in seven structures. Several different types of cairn were noted, as well as other archaeological features including cists, stone circles and wall-lines.

The survey also mapped several hundred piles of rubble "field-clearance". The identification of a cairn-tomb as opposed to a pile of field-clearance presents a critical methodological problem, one also encountered (but not fully resolved) in the nearby survey at Wādī Faynān (Creighton *et al*. 2007: 115). For our purposes, if a rubble pile exhibited no apparent structural or architectural features, then it was mapped as "field-clearance". This distinction is coarse at best, although generally the distribution of "field clearance" piles corresponds to areas under cultivation. If, however, the cairn displayed any form of structural design (such as kerbing, interior wall-lines or cists), or if it was found in an area unsuitable for cultivation, then the cairn was mapped as a potential cairn-tomb and recorded in detail. The following discussion briefly outlines some of the main types of monuments found during the survey.

1) The most striking type of cairns are "megalithic cairns", so-called because of the large, angular chert blocks (up to 50 by 50 by 30cm) used to construct their tumuli. Megalithic cairns are circular or ovoid in shape and, on average, *ca* 15 by 15m in size and *ca* 2m high (**Fig. 6**). These features rarely contain any apparent internal architecture, although rectangular burial chambers are evident in a few robbed examples. Occasionally a low stone enclosure had been built against the side of a megalithic cairn, and several cairns are joined by low walls. Almost all these cairns were found clustered along the ridgeline of Jabal Zubayra in Survey Unit 1, with excellent views to the marginal eastern desert fringes. One cairn, which sits within the main group of cairns on the ridgeline, was significantly larger than the rest, measuring 27 by 27m and *ca* 9m high. This particular cairn is visible from everywhere else on the ridge, and it may have served as a visual reference point (**Fig. 7**). A large wall with up to six courses runs for 40 m along the northern side of the Jabal Zubayra ridge, defining the northern extent of this particular cluster of megalithic cairns.
2) "Rubble cairns" are stylistically similar to megalithic cairns, although their tumuli consist of smaller rocks cleared from the surrounding area. Most of these features are *ca* 10 by 15m in size, and stand 0.5-2m high, although they can be as large as 30 by 30m and as small as 5 by 5m. These cairns are usually ovoid and run down-slope. Their highest point is always at the upper-slope end, which is commonly defined by a curved kerbing of larger rocks that occasionally encloses the entire tumulus, as shown in **Fig. 8**. Several examples contain possible square or rectangular cists. Although less striking than the "megalithic cairns", the "rubble cairns" are far more ubiquitous, found almost everywhere in the surveyed area. In Survey Unit 1, they scatter along the slopes east of Jabal Zubayra, while in Survey Unit 2 they concentrate on a ridge west of Khirbat ad-Dabba. The few rubble cairns in Survey Unit 3 were isolated monuments found on the tops of gentle ridges and knolls.
3) "Stone rings" are another common feature. These consist of low, circular enclosures no larger than *ca* 5m in diameter and no more than two courses high. These features are not covered by a tumulus and do not appear to contain any central cist of chamber, although this remains to be clarified by excavation. Most "stone rings" were found on the ridge west of Khirbat ad-Dabba in a large cluster



6. Two "megalithic cairns" joined by a small wall (photograph by J. Fraser).

7. View down the Jabal Zubayra ridge, facing east. Largest megalithic cairn in centre (photograph by J. Fraser).

of rubble cairns in Survey Unit 2.

4) "Stone circles" were much larger enclosures, some up to 30m in diameter. They consist of a low circle of roughly aligned rocks or, more commonly, piled-up rubble. These structures may be nothing more than modern animal corrals. However, the two largest circles were found on the ridge-top immediately south of Jabal Zubayra, an area that seems unnecessarily exposed for an animal pen. Rather, like stone circles elsewhere in Jordan (Scheltema 2008: 21-23), these features may have been associated with the surrounding rubble cairns and the field of megalithic cairns on Jabal Zubayra opposite.
5) The few "rectangular structures" found during the survey were all located on low spurs running east from the Jabal Zubayra ridge. These structures are *ca* 30 by 8m in size, and stand *ca* 2m high in three or four courses. The outer walls are constructed of large rocks, whereas the interior space is filled by rubble and soil. Many features have traces of interior architecture, probably platforms, although this can only be confirmed through excavation. Large and medium rocks usually fill the interior of the smaller, lower rectangular structures.

8. "Rubble cairn" enclosed by a ring-wall (photograph by J. Fraser).

6) "Cists" are rectangular or, less commonly, circular features in which low vertical slabs enclose a chamber usually no bigger than 1.5 by 1.5m. Most cists were found in Survey Unit 3, and are lined with upright brown and orange chert slabs. While small rock cairns cover some cists, most had been robbed or were heavily deflated.

Many more types and sub-types of cairns and other features were found during the cairn survey. Given the nature of these monuments, however, there comes a point where detailed typological distinctions become blurred. As Creighton *et al*. (2007: 115) observed when recording similar features in the Wādī Faynān, many features are destroyed or degraded to such a degree that their original form is lost, whereas others have been significantly re-used, often as field-clearance, and can not be identified as tombs with any certainty at all. Ultimately, the identification of most structures as "cairn-tombs" can only be substantiated through excavation. Small soundings, however, fail to adequately reveal the architectural complexities concealed beneath the vast rubble tumuli. The cairn survey opened several 2 by 2m soundings in seven megalithic and rubble cairns, but these excavations were inconclusive. While these small exposures did reveal several additional wall-lines hidden below the tumuli (**Fig. 9**), they were not able to show how these architectural features were integrated within the structure as a whole, let alone identify areas within each tumulus with a high probability of yielding material culture or human remains.

9. Sounding through the tumulus of a rubble cairn, showing an outer ring-wall (photograph by J. Fraser)

Consequently, the chronology of these megalithic structures remains ambiguous, a situation not helped by the paucity of surface material in the cairn-fields. Other cairns in Jordan have been dated to the late-prehistoric periods, as in Wādī Faynān (Creighton *et al*. 2007: 122) and the Jafr basin (Fujii 2004). Nevertheless, we must assume that cairns were constructed over a long period of time, particularly as cairns have been found with material dating to as early as the PPN (Rosen *et al*. 2007) and as late as the Classical (Bradbury 2009) periods.

Human Skeletal Remains (TJ)

Incomplete human remains were recorded in two locations during the 2005 season of the SJIAP survey. Unit 53 yielded scattered human

remains from two ditches adjacent to a bulldozed track. Parts of this track had cut through the middle of a stone cairn. The skeletal remains from Unit 52 were found scattered over the northern aspect of a bulldozed stone cairn. None of the skeletal remains were *in situ* and, therefore, their chronological age and archaeological context cannot be established. However, their location and pottery found in the vicinity indicates a possible Chalcolithic / Early Bronze Age date.

The remains of at least four individuals were analysed macroscopically prior to reburial. Two young-middle adult (26-35 years) individuals, both probably female, were found in Unit 52. One individual had experienced trauma to a lumbar vertebra (spondylolysis). One adult, probably a male, was found in Unit 53 and had joint degeneration of the right shoulder. Unit 53 also produced a neonatal individual represented only by an incomplete femur.

The following report includes an inventory of all anatomical elements, their state of preservation, minimum number of individuals (MNI), age and sex estimation, metric and non-metric traits, as well as macroscopically observed pathological changes, following recommendations for data collection outlined by Buikstra and Ubelaker (1994). All measurements were taken with a pair of sliding callipers (OMC Fontana Inox-Temp) and are given in mm.

Unit 52

Inventory

Skull

Not present.

Axial skeleton

Three thoracic vertebrae (two with body and neural arch, one with neural arch only).

One lumbar vertebra, possibly L5 (complete, but inferior articular facets missing due to spondylolysis – see pathological changes).

Sacrum (complete).

Two ribs (one complete right, one left with costal head – rib 11 or 12).

Appendicular skeleton

Radius (left proximal end and proximal third of diaphysis).

Pelvis (fragment of right ilium with auricular surface, part of acetabulum and iliac crest).

1st metatarsal (left, complete).

5th metatarsal (left, proximal end and diaphysis).

Preservation

All bones retain their original cortex with only small fragments missing; the ilium displays some cracks and shows minor flaking. Prolonged exposure to sunlight has bleached the bones to an off-white colour. However, the body and sternal end of the complete rib, as well as the isolated neural arch are stained slightly darker. These were the elements retrieved from underneath stones.

MNI

Although no duplication of skeletal elements occurred, the sacrum and ilium do not join together. In addition, the body of the lumbar vertebra is too large to fit the sacral promontory. This indicates that at least two individuals are present.

Sex

Ilium with preauricular sulcus and wide greater sciatic notch.
Sacrum with wide triangular shape, articular surface with ilium extends from S1-S2, inferior aspect with distinctive anterior curve.
All bones are of gracile appearance with smooth muscle insertions.
All sexually diagnostic skeletal remains indicate possible female sex for both individuals.

Age

Auricular surface with few visible grooves and ridges: Phase 2 (25 - 29 years), Lovejoy *et al*. (1985).
Sternal rib end shallow with well-defined margins: Stage 3 (24 - 28), Loth and İşcan (1989).
Iliac crest fused, but epiphyseal line visible.
Sacrum: S1-S2 recently fused.
All vertebral and costal epiphyses fully fused; vertebral bodies with faint grooves
All diagnostic elements indicate young - middle adult age (26-35 years).

Metrical data

Sacral promontory width: 31.5 mm.
Sacral width: 81.0 mm.
Lumbar body – inferior width: 42.5 mm.
1st metatarsal length: 39.8 mm.

1st metatarsal – proximal articular facet height: 23.5 mm.

Non-metric traits

The sacrum has an additional articular facet on each side located on the superior aspect of the ala.

Pathological changes

All three thoracic neural arches show beginning of ossification of the ligamentum flavum. The lumbar vertebra is missing its inferior articular facets – a pathological lesion known as complete bilateral spondylolysis, which is taught to be traumatic in origin, but which also requires an underlying congenital defect to occur. Modern clinical data indicates that this condition is more commonly seen in young professional athletes, such as gymnasts. The fracture line at the pars interarticularis shows remodelled new bone formation indicative of some instability due to the pathological condition. The anterior aspect of the superior margin of the vertebral body shows remodelled new bone formation extending onto the anterior aspect of the body. In addition, the anterior margin of the inferior body displays some remodelled new bone formation. This indicates forward slipping of the unstable vertebra on its neighbour, a severe complication of spondylolysis known as spondylolisthesis (Aufderheide and Rodríguez-Martín, 1998).

The posterior aspect of the first sacral element shows evidence of sacralization of the last lumbar vertebra in the form of rudimentary visible inferior articular facets and the sacrum consists of only four sacral elements. This congenital condition was probably asymptomatic during life, causing little or no problems.

Unit 53

Inventory

Skull

Two joining fragments of frontal bone – right side with parts of temporal line and coronal suture.
Fragment of left parietal bone with coronal and sagittal sutures (bregma).
Fragment of right temporal bone with mastoid process and external acoustic meatus.
Fragment of right sphenoid bone – greater wing with temporal suture.

Axial skeleton

Unsided rib fragment.

Appendicular skeleton

Scapula – right side with glenoid fossa and part of coracoid process.
Humerus – right side, distal third of diaphysis.
Ulna – right side, proximal third of diaphysis.
Femur – right side, middle and proximal third of diaphysis and distal articulation.
Two femur diaphysis fragments.
Femur – diaphysis (non-adult individual).
5th right metatarsal – complete.

Preservation

Bone colour is off-white, consistent with their exposure to sunlight due to bulldozing of the burial mound. Cortical integrity is mainly good, but severe flaking and fragmentation has occurred.

MNI

The presence of a non-adult femur fragment indicates that the remains of at least two individuals are present. The adult bones show no duplication of elements, but the presence of more than one individual cannot be ruled out.

Sex

The only sexually diagnostic element is the temporal bone with a large, robust mastoid process and pronounced suprameatal crest, both indicating possible male sex.

The linea aspera of the femur is robust and shows well-developed muscle attachments, again, indicating possible male sex.

The bicondylar width measurement of the femur indicates possible male sex. However, as population-specific measurements are unknown, this remains speculation.

Age

No age-diagnostic features are present for the adult skeletal remains; all epiphysis are fused indicating an age of 20+ years.

The non-adult femoral diaphysis derives from an individual of neonatal to 6 months of age (Ubelaker 1989). However, its state of preservation does not allow for secure length measurement and, with the population unknown, the age of this individual can only be given as an approximation.

Metric data

Non-adult femur length: 88.5 mm (not complete).
Femur – bicondylar width: 74.0 mm.
Scapula – glenoid fossa length: 42.5 mm; width: 31.5 mm (since the glenoid fossa displays degenerative change, these measurements should not be used to assess the sex of this individual).
5th metatarsal length: 69.0 mm (head-styloid process).

Non-metric traits

None observable.

Pathological changes

The right glenoid fossa shows evidence of remodelled new bone formation around its entire margin, especially on the posterior aspect. This additional new bone formation has led to contour changes of the joint's articular surface and is indicative of joint degeneration (Aufderheide and Rodríguez-Martín 1998).

Iron Age Ceramics (CMW)

The Iron Age ceramics collected during the SJIAP survey are generally similar to the pottery from known Iron Age sites in the area, and fit in well with Oakeshott's classification of the late Iron Age ceramics in southern Jordan (Oakeshott 1978). The formal classification of the Iron Age pottery therefore followed the terminology used by Oakeshott (1978).

Although all the Iron Age ceramics from the survey have been analysed in full, only a basic discussion of fabrics and forms is presented here to provide a sense of the nature of the survey pottery. Parallels and a detailed breakdown of fabric, form and surface treatment according to context type and excavation area will appear in the final report.

Much of the Iron Age pottery recovered throughout the investigation consisted of the standard range of bowl, jar, jug, and cooking pot forms found at late Iron Age sites in southern Jordan. In addition, a considerable number of 'Negev ware' vessels were present. The range of vessel types was however much more restricted than the range recovered through excavations at Khirbat ad-Dabba, which formed the focal point of the project (Whiting *et al*. 2008). Whether this was due to difference in site size or site function, or both, remains a central question and one which will be address in the final report.

Decoration is present mainly in the form of painted bands applied in combinations of red, white, and black paint on both the interior and exterior of vessels. Geometric designs in the same paint colours are also present on certain vessel forms, although less commonly. Similarly less common are slipping and burnishing, as well as plastic decoration in the form of denticulated edges applied to the rims of flat open bowls. The majority of decoration was applied to bowls. In general, there was less decoration on the survey pottery compared to the material excavated at Khirbat ad-Dabba.

Fabrics were generally similar to other Iron Age sites in the area, the majority of vessels falling into the fabric category described by Oakeshott (1978: 59-61) as Fabric 1. The main inclusion in this fabric is calcite, followed by basalt, quartz and grog. Size, quantity and frequency of inclusions varies from well levigated fine wares to coarse wares. The fine to medium versions of Fabric 1 were used for bowls, jugs and juglets, while the coarsest version was used for storage jars. Cooking pots were almost all produced from Fabric 3c (Oakeshott 1978). The clay in this fabric has a high silica content, with quartz forming the main inclusion. The rough, handmade 'Negev ware' vessels were all produced from medium to coarse versions of Fabric 1, with the methods of construction and firing lending it a distinctive coarse appearance and feel. Several other fabrics were present in the assemblage, but occurred much less commonly. All fabric types will be described in detail in the final report.

Further study of the Iron Age fabrics is represented by the preliminary results of Neutron Activation Analysis (NAA)[4] of the Iron Age survey ceramics (Boulanger and Glascock 2008). This study has identified a compositional macrogroup which can be tentatively associated with ceramic production in the region around the Iron Age site of Khirbat ad-Dabba, which formed the

4. This study is being undertaken jointly with Benjamin Porter (University of California, Berkeley) the full results of which will be published in the final report.

focus of the SJIAP excavation project (Boulanger and Glascock 2008: 7; Whiting *et al*. 2008). The ceramic samples representing this group all derived from sites located less than 2km from Khirbat ad-Dabba. Ceramics from survey sites located more than 7km away from Khirbat ad-Dabba did not fall within this macrogroup.

Several small clusters of samples were identifiable within the macrogroup, suggesting that further sampling may yet reveal that the macrogroup is really composed of multiple similar, though discreet, compositional groups (Boulanger and Glascock 2008: 7). Unfortunately, at this preliminary stage of the analysis, the number of samples in any one of these clusters is too small to warrant establishing distinct compositional groups. Further sampling of Iron Age ceramics from the region is underway to facilitate examination and refinement of these small clusters into smaller context-specific compositional groups.

In addition, some small clusters of outlying samples appear to reflect compositional similarity suggestive of similar raw materials (Boulanger and Glascock 2008: 7). The low overall number of samples comprising these *proto*-compositional groups is however too small to permit statistical evaluation. Additional sampling of Iron Age pottery from the project area is therefore underway to assess the significance of these tentative associations.

Prehistoric, Mediaeval and Post-Mediaeval ceramics (CW)

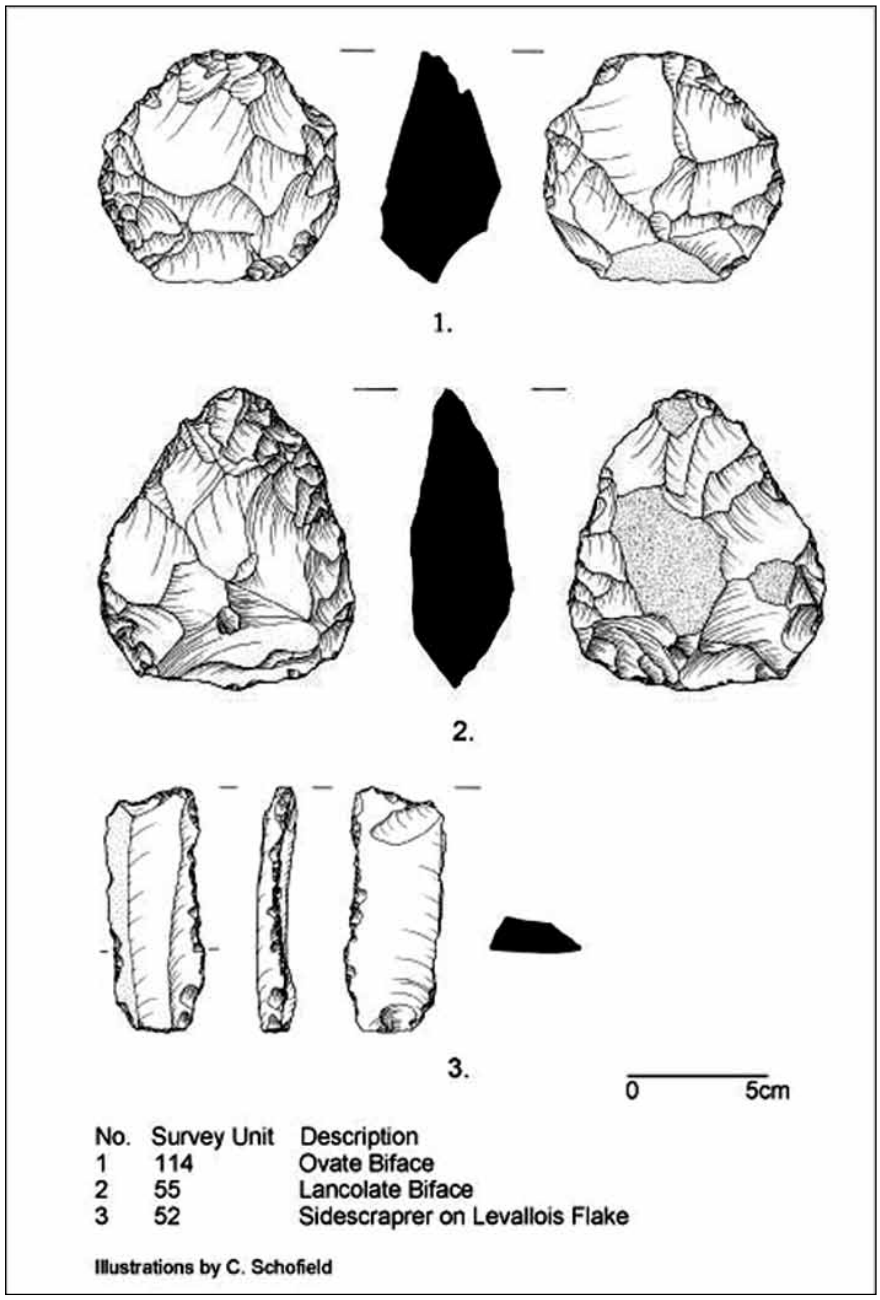
Chalcolithic / Early Bronze Age pottery was found at a relatively small number of sites across the survey area. These sites were usually single-phase with very little later material. Mediaeval and Post-Mediaeval wares were found at a greater number of sites. These were sometimes single-phase sites, but Mediaeval and Post-Mediaeval material also occurred on sites dominated by earlier material. At the time of writing, analysis of this material is underway by Charlotte Whiting at the CBRL.

Lithics (HM)

Chipped stone artefacts were catalogued at the CBRL, Amman, following the 2006 season. Every piece of chipped stone observed within each transect was collected, resulting in a sample of 6,217 artefacts. Each was categorised according to standard chipped stone blank type (flake, blade, core, etc), any retouch was recorded and tool typology assigned. Culturally diagnostic pieces, whether on the basis of typology or technology, were recorded accordingly; tool types, core reduction and flake production strategies were taken into account. The degree of mixing of artefacts from different cultural periods in a transect assemblage was assessed through variability in these criteria, as well as variation in artefact abrasion and patination. A full review of this material will be published in the final survey report. This overview outlines the general nature of chipped stone material recovered in the survey area as a whole, as well as some of the more notable assemblages.

Much of the survey area lies within the locality of modern ash-Shawbak and, as a result, many of the artefacts recovered throughout the investigation were related to the Lower Palaeolithic. A large lithic surface is known to have accumulated in the Fjaje area, owing to repeated visits by hunters exploiting seasonal migrations of herds over the Jordanian highlands (Rollefson 1981). Most of these artefacts, largely bifaces but also limited numbers of cores and flaking debitage, can be securely attributed to the Late Acheulean period in terms of both technology and typology (see **Fig. 10**). Surface patination and significant post-depositional abrasion on some pieces also indicates their antiquity. Unmodified Levallois flakes, reworked core-tools, irregularly retouched pieces and flake blanks were often recovered in conjunction with the more recognisable elements of the Palaeolithic tool kit; the assemblages from many of the transects are largely homogeneous.

By far the most notable material from the 2006 survey was a high density scatter from Unit 116 (see **Fig. 11**). 2,655 artefacts were recovered from an area covering 250 m□This assemblage consisted largely of artefacts made on a very high quality fine grained, grey flint; in terms of the raw materials recovered in the survey this is unique. No other surface finds were recovered and the scatter did not appear to be related to any other cultural features in the area. Typologically, single platform pyramidal bladelet cores and a number of backed Helwan type bladelets, as well as the general technological



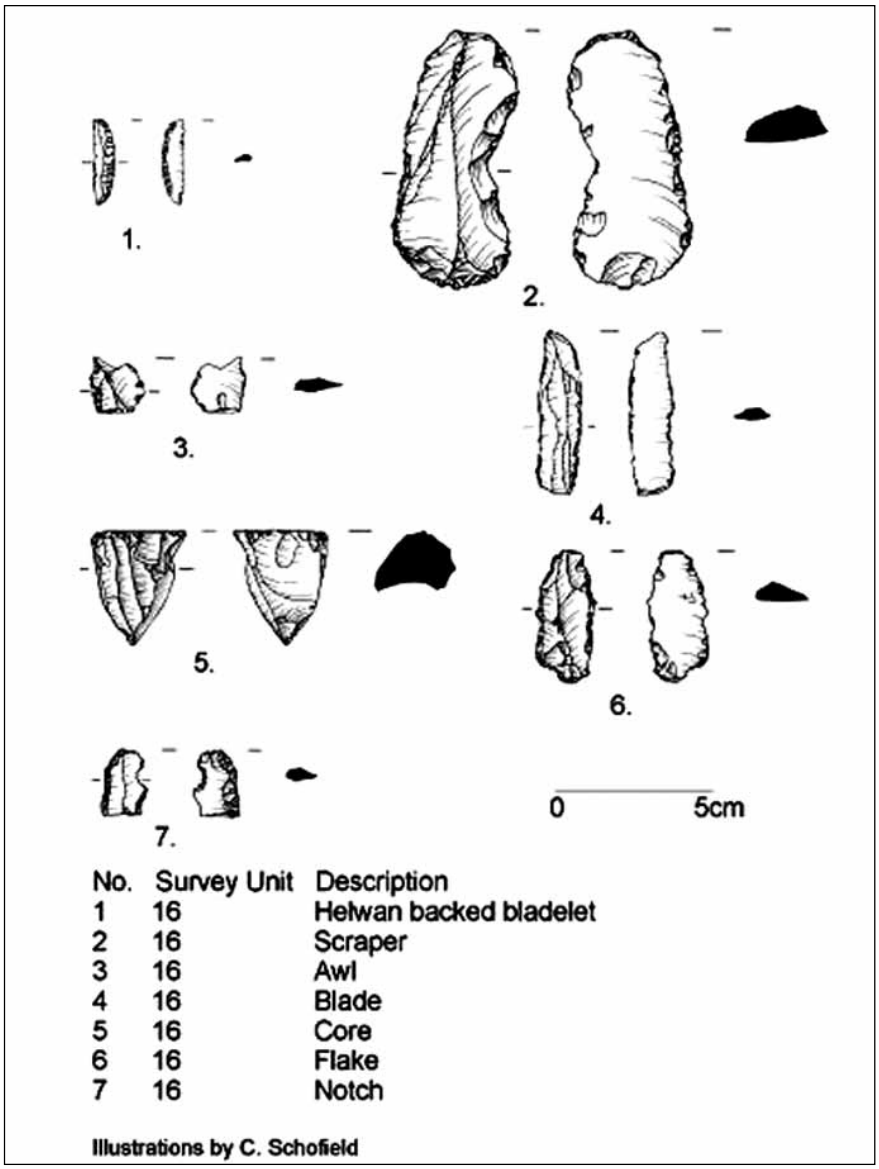
10. Selection of Late Acheulean lithics (1 - 3) (illustrations by C. Schofield).

nature of the assemblage as a whole, indicate an Early PPNA date for this assemblage.

The survey material as a whole had few culturally diagnostic retouched pieces or technologies in evidence. Similarly, low proportions of retouched pieces in some areas made chronological designations difficult. In general, the chipped stone remains reflect continued use of the landscape throughout prehistory from the high intensity of the Middle Palaeolithic, to the seemingly isolated remains of groups from the Neolithic and Chalcolithic periods, and into later prehistory.

Nabataean to Early Islamic Ceramics (IK)
Surveyed Settlement Sites

The settlement sites selected here are representative of clusters with a high density of Classical-periods pottery. Whilst survey clusters cannot speak of occupancy as such, the pottery and their specific chronological-cum-period types indicate concentrated passage or intensive



11. Selection of Early PPNA lithics (1 - 7) (illustrations by C. Schofield).

use of the site. The clusters for each site (**Table 1**) show that the prominent diagnostic pottery dates to the Nabataean Early Roman period (1st and early 2nd century AD).[5] The numerical ranking of periods shared by the sites is reflected in **Table 2**. As in **Table 1**, Early Roman Nabataean common and fine ware pottery [cow, fw] is the largest diagnostic group represented in 7 out of 10 sites.

The second group dates to the 1st century BC/AD, isolated under this category in preference to Late Hellenistic/Early Roman or Nabataean decorated and plain fine wares (Schmid 2003). This group is mostly made up of painted and plain fine ware which is not necessarily characteristic for each location with Classical pottery clusters. However, sites 6, 8 and 29 (see **Fig. 1**) are representative of clusters made up of these

5. At this point I have not applied specific dates as the pottery is not stratified and in situ contexts (transects) cannot provide relative numerical sequencing for closer dating; a definition by generic cultural periods within the Nabataean repertoire appears the least biased approach. It does not preclude closer definition in the course of studies. On this see also Gerber's comments with regard to the Nabataean "coarse ware" [my common ware] and the necessity of broadly defined dating (Gerber 2001). The chronological-cultural phasing of Jordan has been followed.

Table 1: SJIAP Site Nos. 6, 8, 28, 29, 31, 114, 121, 134: diagnostic sherds.

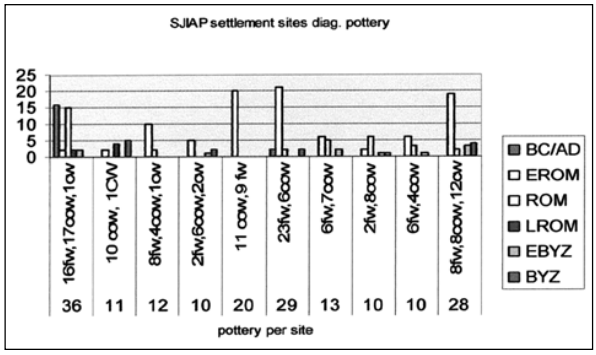
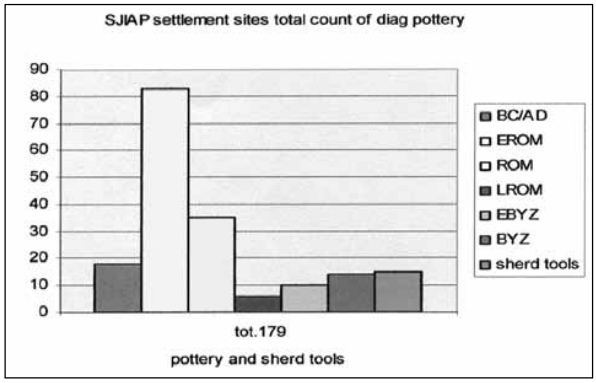


Table 2: Ratios of classical diagnostic pottery.



earlier types. The Roman period, broadly fitting within the 2nd and transition to the 3rd century AD, takes second place among the settlement site clusters.

The Late Roman (3rd-4th) and Early Byzantine (4th-5th) periods occur at seven sites; the generic Byzantine periods pottery (4th/5th-6th/7th) is present at four sites. Except for two sites (sites 8, 134), these later periods pottery are not prominent among the diagnostic sherds. This picture will change slightly when the body-sherds count is included in the final study. But the overall findings of predominantly Nabataean pottery from the floruit earlier Roman and Roman periods - reinforced by **Tables 3** and **4** of single sites 29 and 6 – will not alter significantly. It allows a tentative suggestion that settlement sites with least scatter of Prehistoric and Islamic pottery tend to fit mostly within these main historical and cultural periods of Nabataean hegemony reflected in the Nabataean Hinterland in general.

Surveyed Non-Settlement Sites / field contexts

Table 3 illustrates the numerical pattern of

Table 3: SJIAP diagnostic sherds from field transects.

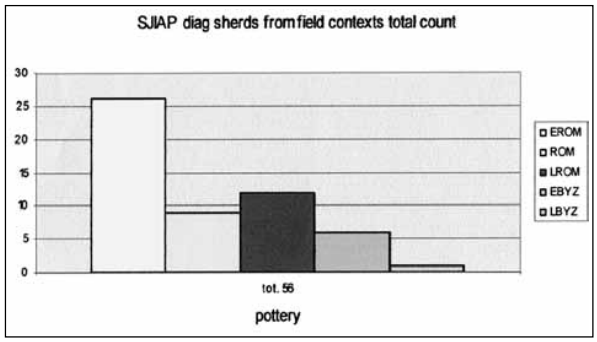
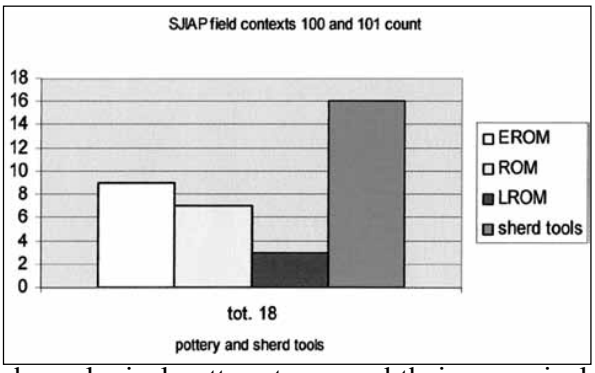


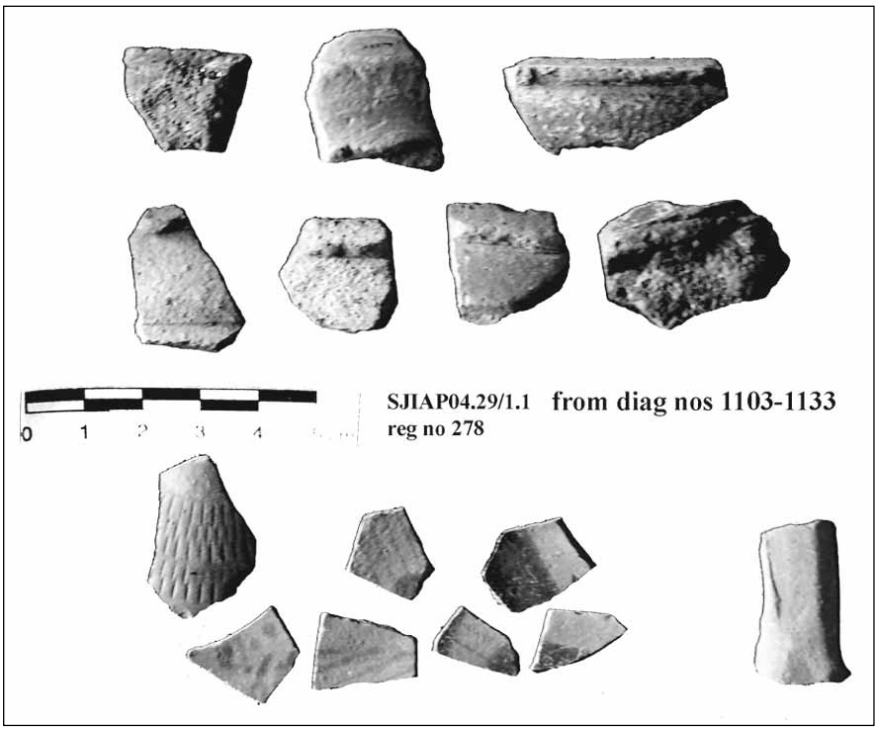
Table 4: SJIAP field transects 100 and 101, diagnostic pottery and sherd tools.



chronological pottery types and their numerical distribution. The dominant features are in first place the Early Roman, and in second and third place the Roman and Late Roman period pottery types. As before with the settlement sites, the Early Byzantine pottery is accounted for. **Table 4** shows a shift in ratios between the different cultural wares on two field sites numbers 100 and 101, and also a large proportion of "sherd-tools" (Kehrberg 1992, 1995).

To conclude this preliminary working report, **Fig. 13** is an apt representative of these "sherd-tools" showing that sherds where not just employed but made into a tool for specific tasks: such work in progress is demonstrated in **Fig 5**. **Fig. 4** illustrates that knapping was similar and in many cases identical to the manufacture of stone tools (Kehrberg 1992, 1995). The survey cannot date these tools other than providing the *post quem* by the ware of these pottery sherds. They could have been made in any period contemporary or subsequent to the floruit Nabataean dominance of the area.

The survey has provided a rich source for a detailed study of the pottery sherd tool industry first introduced by the author with assemblages



12. Site 29/1.1 illustrates the standard range of wares and types also reflected in the tables and found at other sites and contexts of the SJIAP survey (Image by I. Kehrberg).

13. Sherd tool from Settlement Site 134 (Image by I. Kehrberg).

from the Jarash excavations (kehrberg 1992, 1995).

Conclusions

The use of aerial photographs to identify areas of interest for sampling proved highly successful in this topographically complex landscape. A number of large Iron Age sites were found, in addition to various well-preserved classical and mediaeval sites, substantial pottery scatters dating to the Chalcolithic / Early Bronze Age, and lithic scatters dated to the Palaeolithic and Neolithic periods. The results of the survey were mapped using GIS, with an emphasis on correlating this data with topographical, geological, hydrological, climatological, and vegetational information to allow detailed investigation of landscape use through time, especially with regard to the Iron Age II period.

Various Iron Age settlement types and sizes were observed. These were located across the landscape in different topographical locations, ranging from undulating plains of arable land, hilltops on the plateau, the desert, and off the edge of the escarpment. The site types encountered included settlement sites comprised of clusters of rectilinear structures situated within undulating arable land, large single rectilinear structures on hilltops, well-built clusters of rectilinear structures enclosed by large walls (e.g. Khirbat ad-Dabba and Unit 139) and smaller clusters of rectilinear buildings.

Nabataean to Late Byzantine / Early Islamic remains also included a variety of site types and sizes in a variety of locations in the landscape. Sites included those of an agricultural nature, such as farmsteads and settlements of various sizes, as well as those with a potentially administrative function such as watchtowers, sites at control points along routes, and forts. Remains of these periods were extremely well-preserved and are well suited for future landscape studies

relating to the Nabataean, Roman and Byzantine periods, rather than the urban studies which have predominated to date.

Mediaeval and Post-Mediaeval remains were mainly located next to springs and wells. In many instances, they also formed part of extant settlements such as Bīr Khidad and Shamakh for example. Compared to the number of Iron Age and Nabataean to Late Byzantine / Early Islamic sites, relatively few Mediaeval to Post-Mediaeval sites were identified.

The same applied to prehistoric sites. While Palaeolithic to Bronze Age sites were represented by a few flint and / or pottery scatters, relatively few sites of these periods were found in the survey area. This was probably due in large part to the survey methodology, which was focused on locating Iron Age remains and therefore did not concentrate on the kind of locations likely to produce prehistoric remains.

Off-site transects revealed very little that was not already identified from the aerial photographs, suggesting that the archaeological record from the Iron Age onwards, as identified through aerial photographs, was fairly complete.

Off-site transects also revealed that Iron Age material culture was very much focused on settlement sites with little material deriving from off-site transects. Although more Mediaeval and Post-Mediaeval material was found in off-site transects, the same general rule applied to these periods as well. This is in contrast to the Nabataean to Late Byzantine / Early Islamic periods, evidence for which was found across the landscape as a general background 'noise' in all of the off-site transects. This attests to the occurrence of midden spread from the Classical period onwards, since very little Iron Age pottery was found outside the immediate vicinity of Iron Age sites.

Off-site transects, as well as mapping directly from the aerial photographs, revealed extensive remains of field systems (terraces and field walls), water management systems (cisterns, wells and water management walls) and cairn clusters, which could be for interment and / or ritual and / or agricultural purposes.

Although analysis of the multi-period remains found in the survey reveals interesting changes in landscape use and settlement patterns through time, combination of the results of the Iron Age surface survey with the results of the excavations at Khirbat ad-Dabba allows an analysis of Iron Age society on a broader scale.

Comparison of Iron Age site types, site size and site location (incorporating Neutron Activation Analysis of ceramic fabrics and clay samples from Khirbat ad-Dabba and the survey sites) provides important information on the production, consumption and distribution of ceramic vessels. Through this, specific activities associated with ceramic vessels such as food preparation, storage and serving are elucidated. These activities resonate in several spheres, including residential / non-residential complexes, household / centralised production, and the consumption and exchange of goods.

In combination with analyses of all other categories of find, the Neutron Activation Analysis will allow the project to address key issues such as the materiality of everyday life and the economic, social, and political functioning of communities during the Iron Age – research questions which until now have received little attention. By doing so, the project hopes to reassess traditional understandings of the Iron Age in the southern Levant.

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