

REPORT ON THE WADI ZIQLAB PROJECT 1986 SEASON OF EXCAVATIONS

by

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Introduction

In May of 1986 the first season of limited test excavations and phytogeographical survey, intended to complement 1981 survey work in the Wadi Ziqlab basin, accomplished three objectives.

Excavations at site WZ 22 involved small, quick soundings to test the hypothesis that this small sherd scatter was the site of an ancient pastoral camp. Excavations here encountered one feature, apparently a hearth, which could be a remnant of such a camp.

At site WZ 60, Khirbet Maḥrama, the purpose of excavations was to obtain a long, stratified sequence of lithics and ceramics that would be closely similar in their technology to material from the 1981 survey. Two small probes revealed more than two metres of cultural deposition on this site, and in the area of the probes most of the deposits belonged to the Early Bronze I and II periods, capped by deposits of Roman age. The site, which has an Ayyubid-Mamluk village on its summit, thus preserves well over 4000 years of the ceramic sequence.

Finally, the 1986 season allowed us to complete a great deal of the work that is required to improve our understanding of the ancient natural environment of Wadi Ziqlab. We began a programme of coring wet deposits for pollen sequences, made a collection of more than 500 species of plants that now occur in the wadi basin, and accumulated data on modern plant distributions that will help us to interpret the pollen data.

The 1981 Wadi Ziqlab Survey

The Wadi Ziqlab Project began in 1981 with a survey from 21 November to 19 December of that year (Banning and Faw-

cett 1983). The goal of that survey was to associate site locations with environmental variables in such a way as to reveal changes in pastoral and agricultural land use (Banning 1982; 1985). The ability of survey data, alone, to provide this type of information is limited by several problems.

One of the inevitable problems, if the survey is not accompanied by test excavations, is that it is frequently impossible to determine the functions of sites which the survey discovers (Banning 1985: 75-95). To meet all the goals of the Wadi Ziqlab Project it is crucial to be able to distinguish pastoral camps from various types of agricultural and special-purpose sites, and these distinctions are difficult at best when the only evidence comes from material lying on the modern surface.

If selected test excavations can provide subsurface data that strengthen or replace the assumptions of surface survey, then regional survey has the potential to tell us much more about economic development in ancient Jordan than could any number of excavations on large tells alone.

Identifying the course of agricultural and pastoral development in antiquity is a problem which is inherently rural. Excavated samples from large towns, like most of the tell sites in the southern Levant, may not be reliable indicators of the structure of subsistence systems. This is because central places may draw on very large agricultural and pastoral hinterlands, and import trade goods over large distances.

Only regional data from groups of small sites, such as campsites and farm outbuildings, that reflect the spatial organization of rural activities, will inform us in detail about the economic basis of ancient societies. A combination of regional survey and small excavations is one way to obtain such data.

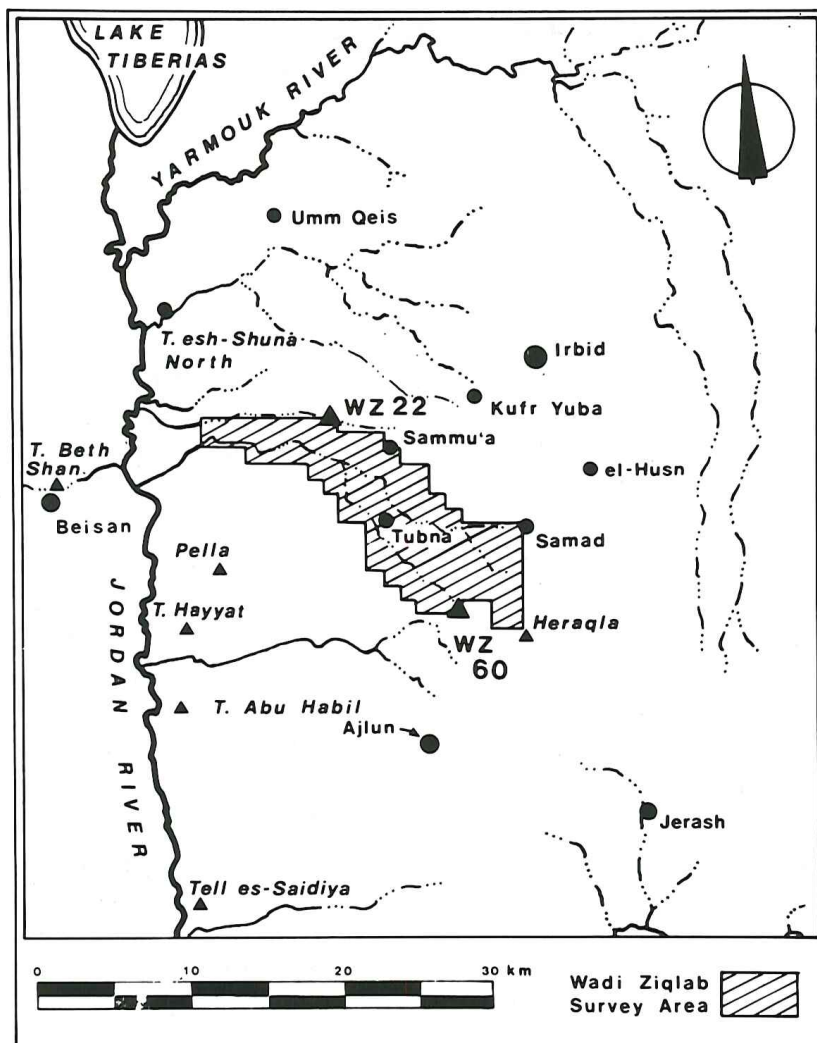


Fig. 1: Map of northwestern Jordan, showing sites WZ 22, WZ 60, and places mentioned in the text.

Another problem associated with using the data of the regional survey as evidence for changes in land use is that we cannot be certain that the physical environments of sites have not changed since antiquity. Provisional reconstruction of palaeoenvironments is of limited utility when it is based only on regional climatic and vegetation trends, on modern physiographic, topographic and edaphic features, on imperfect palynological evidence, and on infrequent references in historical literature (e.g., Banning 1985: 16-61).

Combining excavations with a programme of palaeoethnobotanical study and botanical survey would provide data on which to base a more reliable picture of humans' exploitation of the environment in antiquity.

PLANS FOR THE 1986 SEASON

The research plan for the 1986 season

of the Wadi Ziqlab Project had two distinct components, one of excavations and one of botanical investigations.

Excavations

Two sites were the target of excavations in the 1986 season (Fig. 1). Site WZ 22 was selected to test for the possible remnants of pastoral camping activity in late Roman and early Byzantine times. Site WZ 60, Khirbet Maḥrama, was selected for deep probes to recover local ceramic and lithic sequences and to look for faunal and ethnobotanical evidence for the storage and processing of agricultural and animal products on the site.

Botanical Research

Two palaeoethnobotanists on the staff initiated a research programme that will contribute to the reconstruction of the

palaeoenvironment of Wadi Ziqlab and the surrounding hill country. Ultimately this will involve a series of pollen cores as well as documentation of the modern distributions of pollen rain and natural vegetation. During 1986 much of the palaeoethnobotanists' time was spent on preliminary phytogeographical survey and collection of the plants currently growing in the Wadi Ziqlab basin, and associating them with different kinds of agricultural or other disturbance processes. They also began the coring programme by testing some pools on the plateau.

TESTING FOR A PASTORAL SITE, WZ 22

Searching for Archaeological Evidence of Pastoralists

Most archaeologists working in the Middle East have assumed that the material remains of pastoralists' camps are too few and too scant to be archaeologically recoverable (e.g., S. Smith 1978: 92; but cf. Juli 1978: 18-19). Prehistorians, meanwhile, routinely locate the temporary camps of Palaeolithic hunter-gatherers whose greater antiquity should correspond with a greater probability of natural destruction or deep burial.

Attempts to account for the apparent absence of pastoral camps in the archaeological record, by suggesting that pastoralists do not use pottery and are especially thorough in packing up belongings when they migrate, are not supported by ethnographic or ethnohistoric examples. In the early 19th century Arabian bedouin used "earthen" coffee pots (Burckhardt 1829: 91) and cooking pots (*Ibid.*: 90). Modern pastoral camps, although often leaving few permanent traces, in many cases show abundant evidence of occupation in the form of features, dung accumulations, disturbance of the natural plant communities, and trash (Banning and Köhler-Rollefson 1986). Among the refuse is the ubiquitous potsherd (Banning and Köhler-Rollefson 1983; 1986; Scholfield 1948; Juli 1978: 115-16; Miragliuolo 1979: 211-219).

Pre-Islamic Arabic poetry often refers to the poet's arrival at a long-abandoned, wind-swept camp, where there are still traces of the *aawari* (cattle enclosure), *nu'i* (packed-earth mound or ditch for diverting rain water away from the tent), and bedding platform (e.g., an-Nabighah 1968: 2-5).

Alois Musil (1927: 80-81; 1928: 66, 78) reflects this poetic tradition in his writing, while Doughty (1936: 328) speculates that ancient circles of flagstones which he saw near Teyma were the winter camps of pre-Islamic Arabs. Certainly the more recent camps were abundantly evident:

We pass sometimes a *dar el-Arab*, or old worn camping ground... These dars are where the wild stones have been gathered aside, and there is a clear room to build the worsted booths, and for their cattle to lie down in: they remain doubtless from the old generations (Doughty 1936: 428-429).

Edelberg (1966/7: 396-398) notes the sites of ancient pastoral camps in Luristan which had distinctive hearths and stone outlines. Ethnoarchaeological observations in Wadi el-Ḥasa in 1979 and in the Beida region in 1982 included abundant evidence of stone bedding platforms, ovens, chicken coops and animal enclosures at almost all abandoned camps except those in agricultural fields (Banning and Köhler-Rollefson 1983: 375-379; 1986).

While it is true that many pastoral camps are almost impossible to recognise even a year later, especially when sited in agricultural fields subject to plowing, the almost total escape of this site category from archaeological scrutiny is due instead to the fact that most surveys in the Middle East have been designed to locate village mounds and not campsites (Hole 1979: 200-201). Clearly pastoral camps do indeed leave material traces in many, although not all, instances. The real problems are the difficulty of discovery and poor state of preservation of many of these sites, and the difficulty of distinguishing them from other types of sherd scatters.

Early in the 1981 season, the Wadi Ziqlab Survey discovered a low-density sherd scatter almost entirely contained by a rectangle of stones, measuring about 4m x 5m (Pl. LIII,1). A few undiagnostic flint flakes, apparently dating no earlier than the Neolithic and possibly much later, also occurred within this rectangle. The site was a small terrace-like flat area near the top of a wooded ridge, and overlooked Wadi Taiyiba to the North. No evidence for modern use of the site was apparent, and the close association between the border of stones and the scatter of sherds and lithics suggested that they were contemporaneous. The rectangle was reminiscent of the stones modern Bedouin sometimes employ to weigh down tent flaps (Doughty 1936: 267), although the size and shape of the rectangle does not match those of modern tents in the area.

This site was selected as the first target in a series of test excavations which the Wadi Ziqlab Project will undertake. The facts that it showed some evidence of "architecture," that the stone rectangle appeared to be associated with the ancient pottery, and that there were no visible signs of plowing on the site suggested that it had a higher than average probability of being an undisturbed campsite.

When the project's advance team arrived in 1986, it found that the site had been plowed recently. There was no more sign of the stone rectangle, which presumably was destroyed by plowing, and a crop occupied the area where the rectangle was thought to have been.

Consequently, operations were transferred to a terrace-like step immediately below the crop, where there was also a low-density scatter (Pls. LIII,2 and LIV,1). Here there were no signs of cultivation, and the step or ledge was wide enough to accommodate one or more tents easily, along with their guy-ropes. A short, but

from the higher, cultivated ridge. This escarpment would have sheltered any tents that might have been pitched on the ledge. In general, the slope, exposure and density of vegetation cover of the ledge were similar to those observed in modern pastoral campsites on plateau-tops near Beidha (e.g., Banning and Köhler-Rollefson 1983: Pl. 84). A pathway currently used by shepherds from the village of Jenin eṣ-Ṣafa leads through this scatter down to the channel of Wadi Taiyiba (Pl. LIV,2).

Distribution of the Test Probes

Seven test probes were excavated to sterile subsoil on the ledge below the area of the now destroyed WZ 22 stone rectangle. Six of these were clustered in the low-density sherd scatter immediately below, designated WZ 22A, and one trench was located in front of a rockshelter some 50m to the west, an area designated WZ 22D Rockshelter.

By superimposing an arbitrary one-metre grid on the cluster WZ 22A and selecting a spatially random sample within it, we determined the positions of six excavation areas (Fig. 2). Five of these were one-metre squares designated, by the coordinates of their southwest corners,¹ Areas 1138, 2328, 3030, 3128, and 3817. The sixth was a trench, 0.5m x 3.0m in extent, designated 5216 after the coordinates of the grid intersection nearest its southwestern corner. The trench's southeast corner lay at grid intersection 5316 while its northeast corner was at intersection 5319.

Results of Excavations

Sherd Scatter WZ 22A: The test probes in Areas 1138, 2328, 3030, 3128, 3817 and 5216 encountered no undisturbed features that could be attributed to ancient

1. The first two digits refer to distance eastward along the x-axis in metres; the last two digits refer to distance northward along the y-axis in metres.

The zero-point is at an iron bench mark near some large boulders just outside the western periphery of scatter WZ 22A.

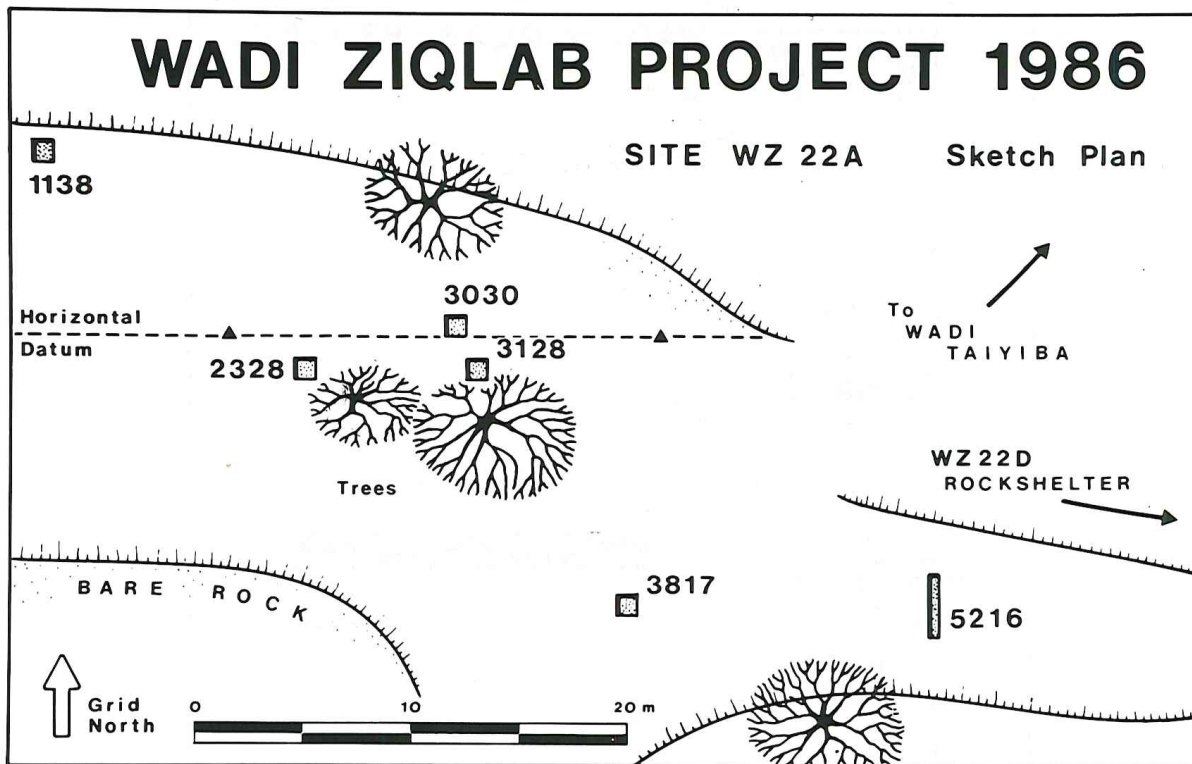


Fig. 2: Sketch plan showing the layout of test probes in WZ 22A.

camping activity. The sherds were evenly distributed, in most cases, in a locus which we interpret as a plow zone. In two instances the subsoil was scarred by parallel grooves that are probably plow marks (Pl. LV,1). Presumably this plowing, some time in the past, obliterated any living floors or features that may have been present at WZ 22A.

WZ 22D Rockshelter: Here, a test probe of 3m x 0.5m intersected one cultural feature, apparently a hearth (Fig. 3, Pl. LV,2), in addition to more of the parallel ridged marks which are probably the result of plowing activity on the site. The plow zone again removed or mixed most ancient cultural material, but the hearth or shallow ash-pit, locus 004, was buried deeply enough that only its top and northern edge were cut by the sloping plow zone (locus 002, Fig. 4), leaving the lower part intact. A narrow animal burrow, meanwhile, cut through the centre of the ash-pit. A sample of ashy soil from the portion of this feature that appeared uncontaminated by the animal burrow was saved for analysis.

Summary of Results

Parallel ridging of the subsoil in two

probes is evidence that plowing has taken place on the site. One partially intact feature, however, was uncovered by our sample of seven probes (eight square metres). This could be a peripheral hearth of an ancient pastoral camp on the site or, more probably, a vestige of a shepherd's use of the rockshelter for temporary shelter. Such isolated hearths, often accompanied by a windscreen perpendicular to the rockshelter, were a common site-type in the Beidha Ethnoarchaeological Survey (Banning and Köhler-Rollefson 1983). Late Roman and early Byzantine sherds are present in the plow zone, but in this instance we cannot definitely ascribe the sherd scatter to pastoral settlement.

Implications for Pastoral Research

Most of the Wadi Ziqlab's area is even more likely to have been plowed over in the past than this relatively remote ridge. A large sample of small, quickly excavated probes distributed among many potential pastoral sites, and in areas favoured by modern pastoralists, may be the best means for locating an undisturbed camp in the Ziqlab basin.

Two strategies may improve the prob-

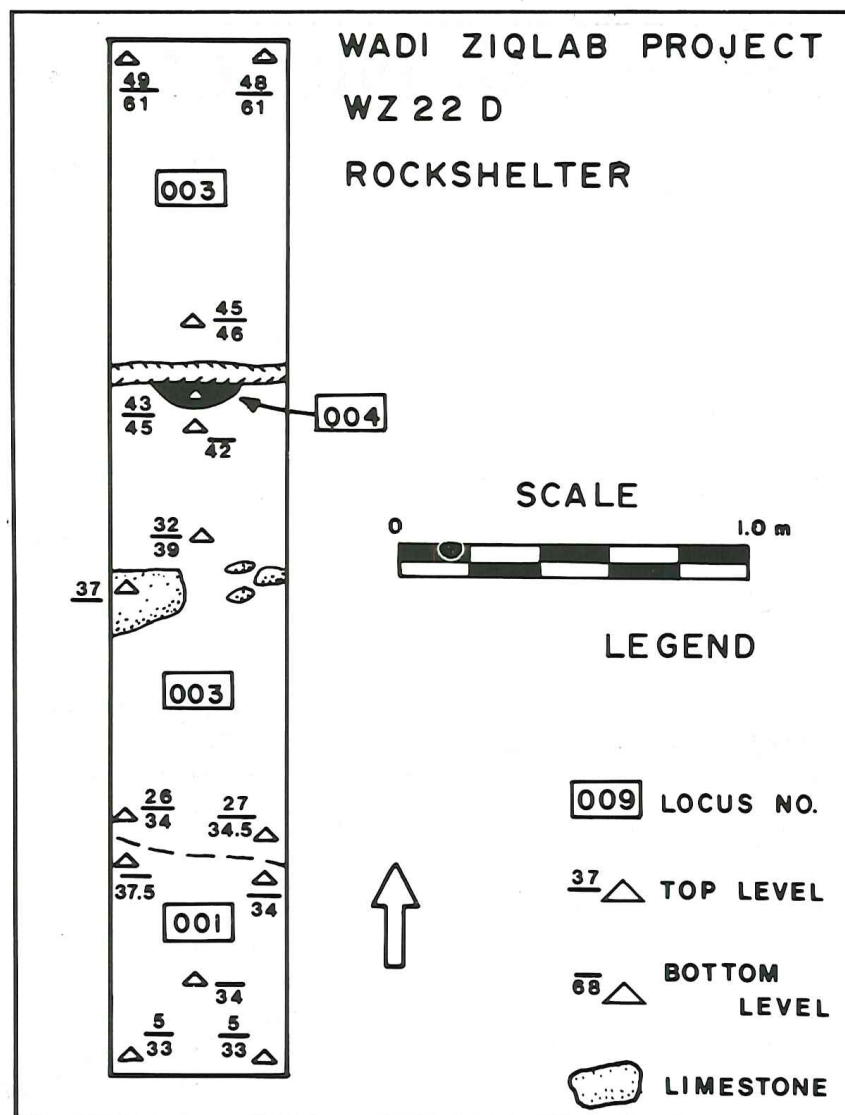


Fig. 3: Top plan of trench in front of rockshelter, WZ 22D, showing remnant of hearth, locus 004.

ability of encountering undisturbed camp sites in future test soundings. One is to conduct excavations on the sites of modern tent sites, that may have been used repeatedly over many years. The other is to test one or more other sites which show traces of "architectural" features, such as a stone enclosure at site WZ 68 or a circle marked by anomalous vegetation in Wadi Tayyiba, below site WZ 22 (Pl. LVI,1). These both occur in very isolated areas, without access by road, and the former is also covered by dense oak forest. These factors would complicate the logistics of excavations on the sites, but their investigation by small probes is a practical possibility.

TESTING FOR A LITHIC AND CERAMIC SEQUENCE, WZ 60

Testing an agricultural settlement site

with a long sequence of occupation would accomplish several objectives for the Wadi Ziqlab Project.

One of these was to provide detailed information on the local ceramic sequence for the purpose of chronological typology. Much of the sherd collection from the 1981 survey consisted of small, "undiagnostic" body sherds and sherds which, although broadly diagnostic, would not provide very precise chronological information. Most of the ceramic sample provided little information on form, forcing us to rely rather heavily on wares and forming technology for diagnostic traits. Diagnostic sherds pre-dating the Middle Bronze II period were particularly wanting. A better sample of pottery, from stratified contexts, would increase the usefulness of the survey pottery by providing a key to the local fabrics and tempers and by providing more com-

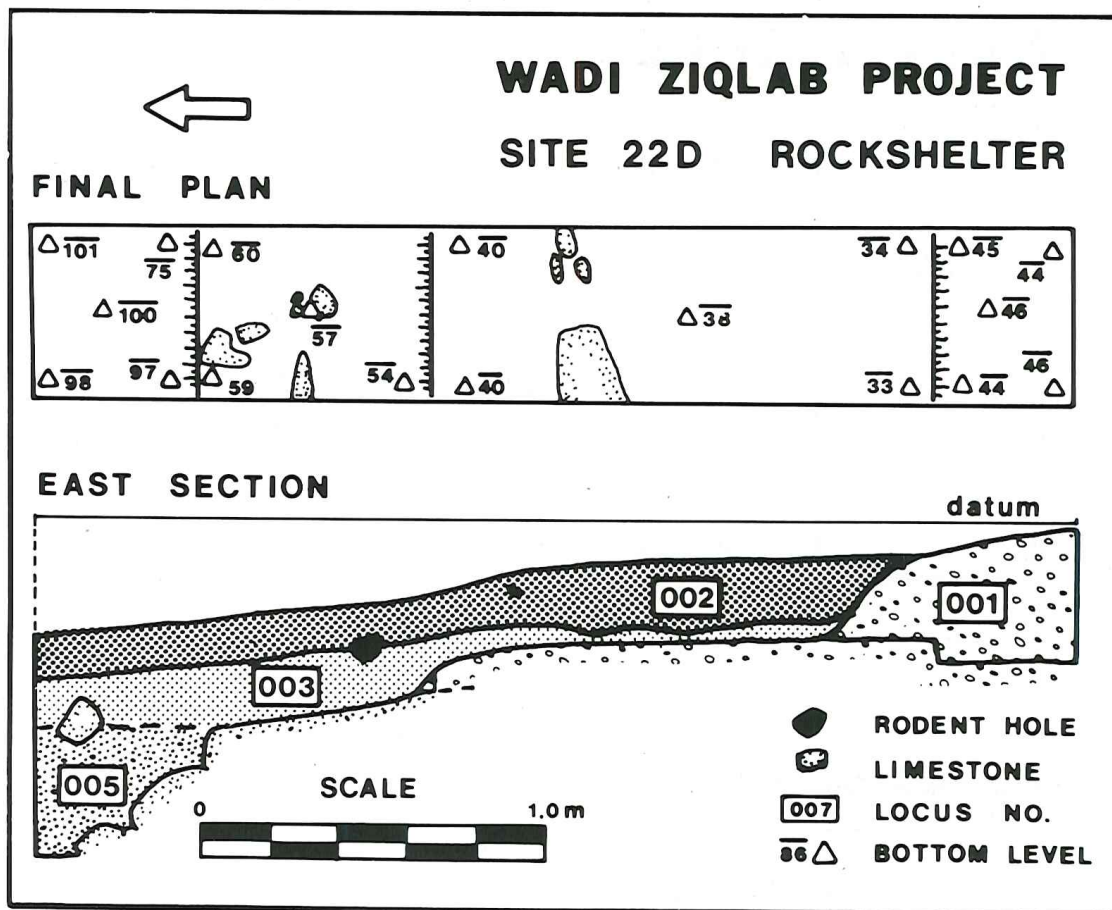


Fig. 4: Final plan and east section of trench in front of rockshelter, WZ 22D.

plete examples of forms.

Similar problems existed where many of the lithics from the 1981 survey were concerned. Lithic industries dating after the Pre-pottery Neolithic B period have received little attention in Jordan relative to earlier industries. As a result many lithic scatters dating to "late" periods are difficult to incorporate into studies of settlement systems represented, in the main, by sherd scatters and sites with traces of architecture. Analysis of complete assemblages, in stratified contexts, would be a step toward dating some of these lithic scatters more closely and fitting them into regional settlement frameworks.

Testing Site WZ 60, Khirbet Maḥrama

The original plans for the 1986 season called for testing at Site WZ 37, about 6 km west of Site WZ 22, which could represent an ancient farm site. On returning to Wadi Ziqlab in 1986, however, we found that a new paved road leading to site WZ 60, previously difficult of access, made it a

logistically better candidate for these tests (Fig. 5, Pl. LVI,2). Furthermore, construction of this road had involved a cut along the northwestern edge of the site, exposing two to three metres of cultural deposits and tombs ranging from the Early Bronze Age through the late Roman period. This cut both facilitated our own probes and provided an attraction to tomb-robbers and pot-hunters, so we felt compelled to give the site some immediate attention to supplement emergency excavations by the Department of Antiquities. That the site presented clear physical evidence of a sequence extending at least from the Early Bronze Age to Medieval times (a substantial Ayyubid/Mamluk village occupies the top of the site), was another factor contributing to our interest in the site.

To obtain ceramic and lithic sequences as quickly as possible we located probes in two locations along the road cut, where we would not have to remove very large volumes of soil to reach the earliest cultural deposits. In each excavation area, arbitrarily labelled Areas A and B, excava-

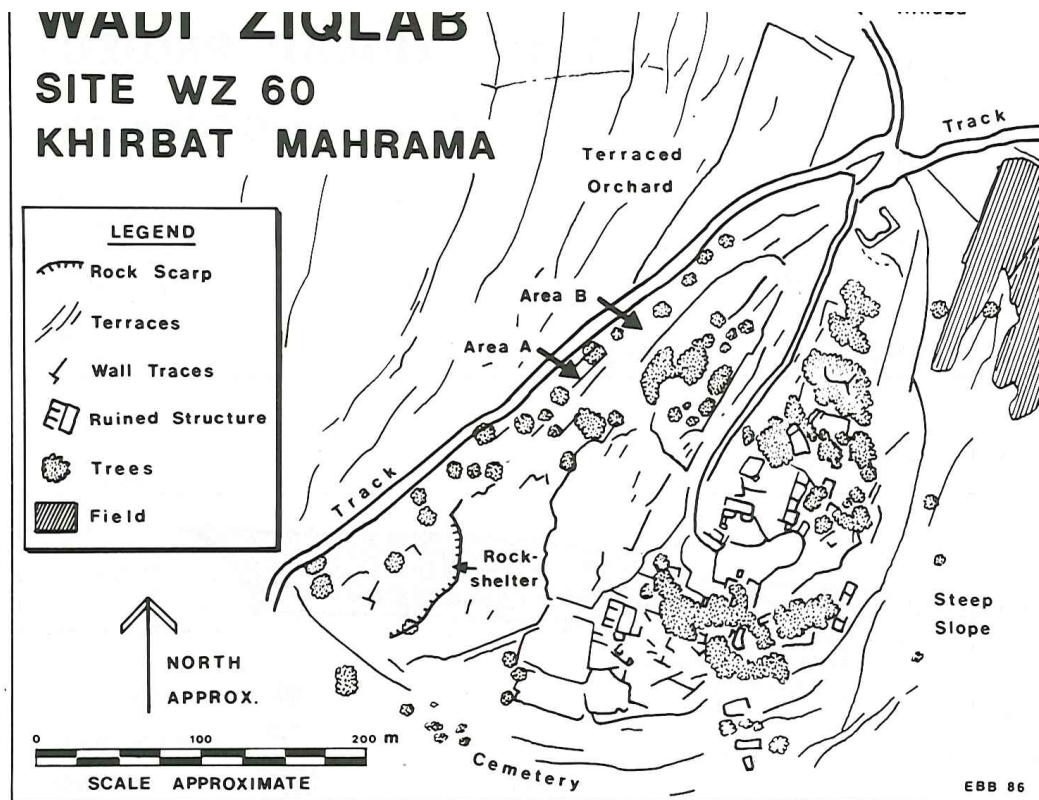


Fig. 5: Aerial view of site WZ 60, Khirbat Maḥrama, based on 1978 aerial photograph. The track along the northwestern edge of the site was widened to make a road in 1985.

tion began with a shallow slit trench measuring one by two metres and oriented perpendicular to the road cut. We expected this trench to provide an adequate sample of the uppermost cultural material on the northwest part of the site. It was followed by extension of the excavation along a two-metre width of the cut face, and cut into this face only 30-60 cm. Again, to minimize the volume of earth we would have to remove, we stepped this portion of the trench every 30 cm or so. The areas, as a result, appear as two L-shaped, step-trenches one metre wide at their southern ends and two metres wide at their northern ends. As excavation progressed we abandoned the upper portions of the "L" and concentrated on completing excavation of the cut face itself (Figs. 6, 7, Pl. LVII,1; LVII,2). The deepest deposits, therefore, were exposed only in very narrow areas along the two-metre stretches of the road-cut.

The Stratigraphic Context of the Lithics and Ceramics

The stratigraphic sequences of Areas

A and B at WZ 60, when taken together, appear to document most of the occupational episodes on the site from the Early Bronze I through late Roman periods. While Ayyubid/Mamluk sherds are present on the surface in low densities near these areas, the probes do not penetrate undisturbed Medieval deposits. Most of the Medieval occupation appears to be on the top and southern slopes of the site, where substantial architectural remains are evident.

Correlation of the deposits in Areas A and B is still only provisional. The deposits in Area B, in general, are later in date than those in Area A, although the areas overlap stratigraphically. In the road-cut between the two areas, the boulder-filled locus B.006 appears to extend in a southwesterly direction until it thins out near the top of Area A. It appears to be roughly contemporary with locus A.002. Although other loci cannot be traced so clearly between the two areas without cleaning the roadcut substantially, similarities in matrix and stratigraphic position suggest that B.007 may be roughly contemporary with

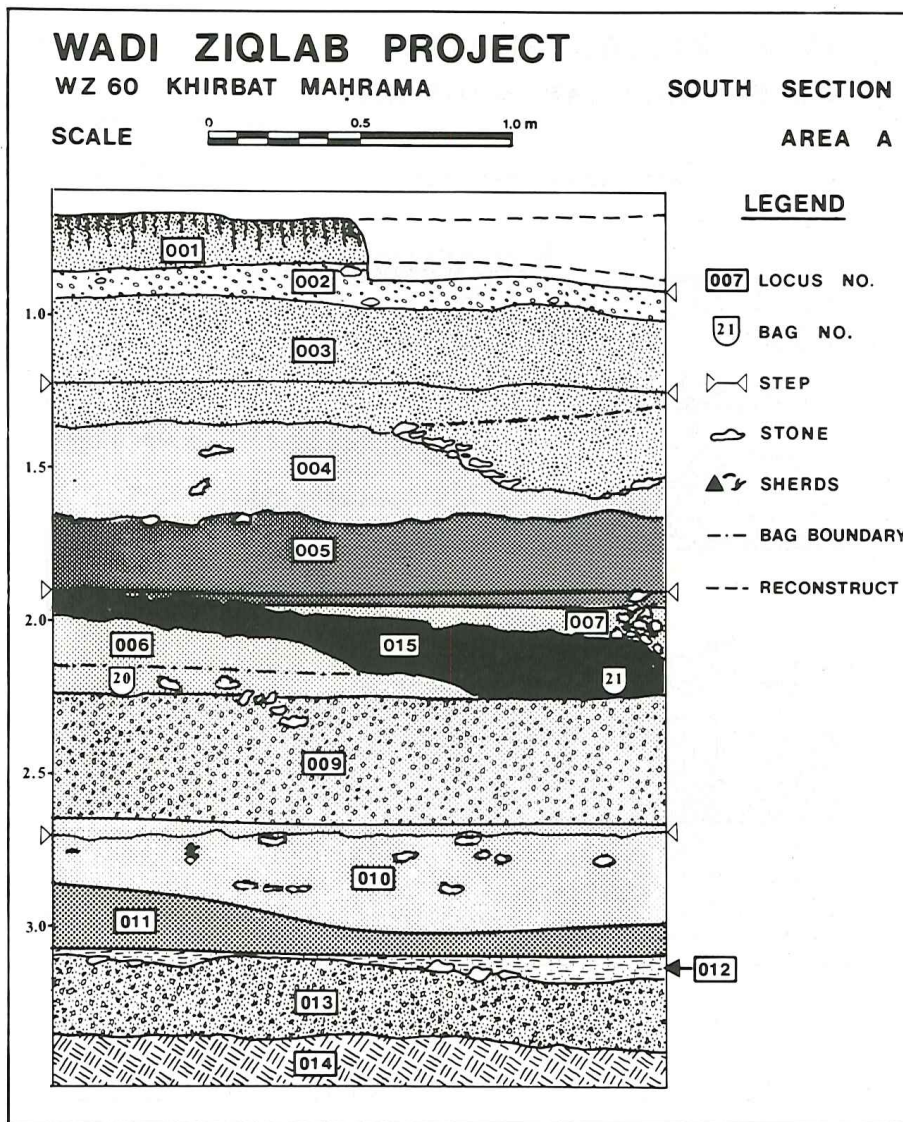


Fig. 6: South section of Area A at WZ 60.

A.004, and B.008 close in date to A.005, A.015 or A.006.

Most of the deposits in these two probes appear to be fills, and consequently mixing of early artifacts with later ones is common. As a result we do not have as "clean" assemblages of pottery and lithics as we would like. As a result, it is impossible to be certain to what degree a decline in the frequency of "grain-wash" sherds, for example, is due to declining popularity or to the admixture of sherds from earlier deposits.

Medieval materials collected in 1986 came from the surface and are probably associated with the well preserved architectural features on top of the site (Pl. LVIII-LIX).

E.B. Banning

Lithics Recovered in the 1986 Season

One of the goals of the 1986 season of investigations in Wadi Ziqlab was to accumulate evidence that would help us interpret lithic scatters, discovered by the 1981 survey, that appear to belong to "late" periods: the Neolithic, Bronze and Iron Ages, and the Roman Period. Lithics of the last 5,000 years have received much less attention in Jordan than those of the Paleolithic. The lack of "diagnostic" artifacts on many of the survey's scatters has precluded satisfactory analysis of site locations for periods during which we might expect specialized activity areas, involving the use of cutting tools, to have occurred. Study of complete assemblages from excavations in the region would contribute to fuller understanding of changes in the local

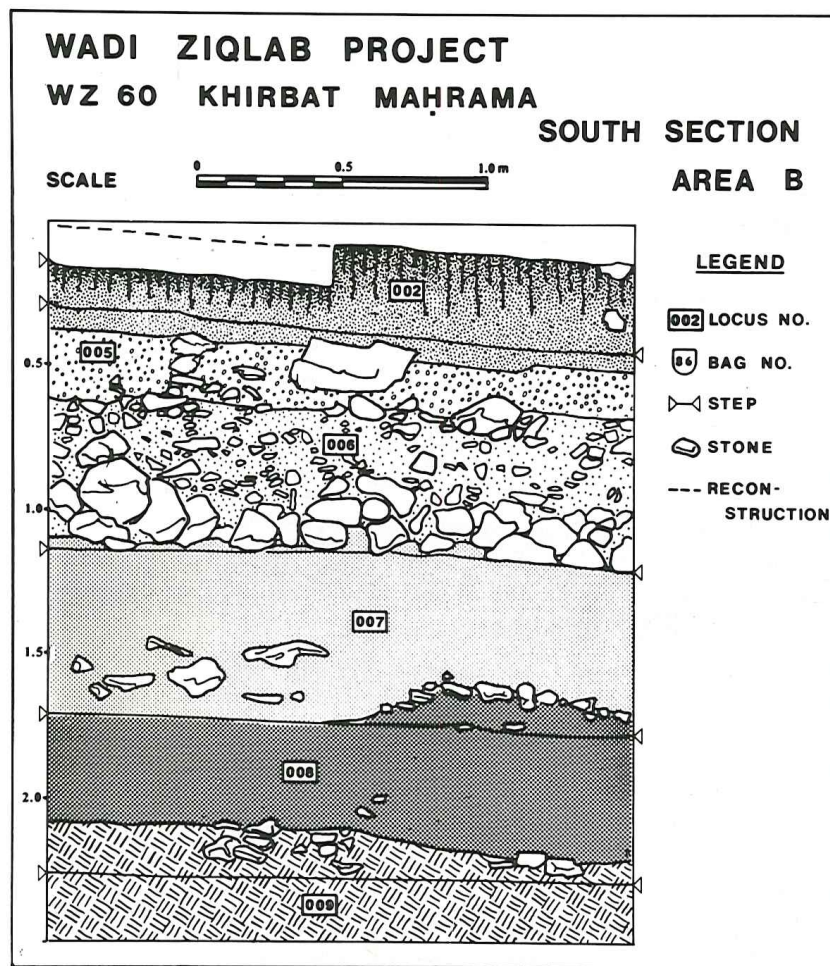


Fig. 7: South section of Area B at WZ 60.

industries that might also be recognizable in some of the surface collections.

We would expect our recovery of lithics, including small chips of lithic waste, to be fairly complete in our soundings at site WZ 22 and in Area A of site WZ 60. In the former all baskets of earth were screened through ¼-inch mesh; in the latter, every other basket, at a minimum, was screened through the mesh to provide us with a representative sample of the debitage. In Area B at site WZ 60, on the other hand, screening was rare. We expected differences in the recovery of small chips in the two areas to provide some indication of how much small material is missing from Area B. In the final publication of the WZ 60 excavations the basket lists will show exactly which baskets were screened.

Site WZ 22

A small quantity of flint flakes and

shatter were recovered from the test probes (WZ 22A) and the rockshelter trench (WZ 22D). Much of the shatter may be non-cultural. No diagnostic pieces were excavated and therefore it is impossible to date the lithic deposit using a type-fossil approach. The small number of excavated retouched pieces consist of non-formalized notches or "utilized" edges. Determining whether these are culturally modified or the result of ancient or modern trampling by the hooves of livestock is at present impossible (see Betts 1978; Bordes 1979: 57-58; Miller 1982). Cores or other diagnostic waste that might provide information on methods of blank production are missing. Little, therefore, can be said about techniques of core reduction at this site.

Site WZ 60, Khirbet Maḥrama

A relatively large sample of lithic waste, given the volume of deposit excavated, was recovered from WZ 60. This

included cores, flakes, blades, shatter and basalt thresher elements. Retouched tools, blades and utilized blade segments were not common in the sample. A very high proportion of all the material exhibits heat crazing and pot-lid fracture, indicating burning or exposure to high temperatures.

Brief Description of the Industries:

Preliminary examination of the assemblage suggests the presence of two distinctive lithic technologies. One focuses on the production of specialized blades for use in the manufacture of sickle elements; the other involves the production of non-formalized, casually used tools, predominantly notches, rare denticulates, utilized flakes and core-scrapers (Table 1).

The blade technology is similar to the specialized Early Bronze Canaanean sickle blade technology reported by Rosen (1983; cf. Neuville 1930; 1934; 1934-5; Crowfoot 1948). Complete blades are rare (N=3) in the collection and were only found in the lower loci of Area A in the excavated sample. These blades have the parallel sides, double arris and prepared platform characteristic of Canaanean blades. None of these blades exhibits signs of utilization or sickle sheen. Only one exhausted core with the remnants of two blade scars was recovered from one of the lower loci (A.010) in Area A.

Sickle elements as a group are the most common (N=14) tool form present at the site. The most common forms are snapped blade segments lacking any kind of retouch (N=8), with the majority bearing sickle sheen. Retouch of one of the lateral edges occurs on four pieces. A very few specimens exhibit the fine denticulations which Rosen (1983: 18-20) has interpreted as resharpening. It is not clear, however, how one can distinguish in many cases between resharpening and purposeful initial edge modification. One specimen (WZ60.A.22.1) does exhibit retouch over which sheen has not been developed, although sheen is present outside the flake scars producing the retouch. This indicates that the retouch occurred after the piece had been used.

The second lithic technology observed in 1986 was the production of irregular blades and flakes of apparently local flint. This 'local' flint is generally of poor flaking quality (either brecciodal or exhibiting bedding planes) and ranges from mottled blue/dark grey to brown/white in colour (Table 2). The blanks made on this material are rarely heavily modified by retouch. Most were used in their unmodified form to produce nibbled or utilized edges or were only slightly modified to produce notches and irregular denticulates. Excavations in 1986 also recovered a small sample of what appear to be core-scrapers made on chunks or heavy flakes (cf. Schick 1978: 60, 61). Although it is often difficult to make distinctions between "core-scrapers" used as tools and exhausted flake cores (relatively numerous in the sample), these "core-scrapers" exhibit deep notching, producing a very jagged edge which distinguishes them from the exhausted cores with heavily step-fractured edges. Flakes could still be produced from the former, but not easily from the latter.

Fan scrapers, that have been associated with the Canaanean blade industry (Amiran 1978; Hennessy 1967; Hours 1979), were not recovered from the site, supporting Rosen's (1983: 16) contention that there is no necessary relationship between these two tool forms.

Stratigraphic Distribution:

The stratigraphic profile revealed by the roadcut at Khirbet Maḥrama indicates that Area B is for the most part stratigraphically above Area A. Although the sample of tool forms from the site is quite small, there is some suggestion of stratigraphic differences in artifact content. The two Canaanean blades found in the excavation were recovered from the lower loci in Area A. Unretouched and resharpened sickle elements are found throughout the middle portion of the Area A profile, while three elements with retouch opposite the sickle edge are found in Area B, and only one in the upper portion (locus A.002) of Area A. This pattern of change from unmodified Canaanean blades and unre-

Table 1: Tool types from 1986 excavations at WZ 60 by locus

Area A

<i>Tool Type:</i>	<i>Locus</i>												
	001	002	003	004	005	006	007	008	009	010	011	012	013
Core Scraper					1				1				1
Other Scrapers	1												1
Notched Flakes	5	1	2				1						
Denticulated Blade Frag.	1									1			
Utilized	3			1	1	1							
Sickle Elements*													
Type A				1					1				
Type B		1											
Type C	1				2				1				
Canaanese Blades										1		1	
Cores	4		2		1					1			

Area B

<i>Tool Type:</i>	<i>Locus</i>			
	002	006	007	009
Core Scrapers	2	1	2	
Other Scrapers				1
Notched Flakes	2			2
Denticulated Blade Frag.				
Utilized		1	1	1
Sickle Elements*				
Type A				
Type B	1	1		1
Type C	1	3		
Canaanese Blades				
Cores			1	
Basalt Thresher Elements		2		

* Sickle Element Type A = Retouched sickle edge
 Type B = Retouch opposite sickle edge
 Type C = Unretouched blade segment

Table 2: Tool types from 1986 excavations at WZ 60 by raw material class

<i>Tool Type:</i>	<i>Raw Material Class</i>								
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>
Cores	1		2	1	1	1	1	1	1
Core Scrapers	1	3	2	1	1	1			
Other Scrapers				1		1			
Notched Flakes		6	2	4	1		1		
Denticulated Blade Frag.							1	1	
Utilized	1		4	1	1	2			
Sickle Elements*									
Type A							1	1	
Type B	2			1					
Type C	2	1					5	1	
Canaanese Blades	3								

Raw Material Class Definition:

Given the variability in definitions of flint and chert the term flint has been used although some of this material would likely be classified as chert by some analysts.

1. Fine grained brown highly siliceous flint
2. Purplish/pink flint (possibly heated)
3. Blue-grey/white/black mottled brecciodal flint
4. Fine grained olive gray flint
5. Brown-white mottled flint
6. Fine grained light gray flint
7. Fine grained dark gray flint
8. Brown striped flint
9. Cream brown flint

consistent with known patterns of change from Early Bronze I through to the Middle Bronze Age (Amiran 1978: Rosen 1983: 18).

Retouched tools are most common in the upper loci of Area A. This area contained all but one of the cores recovered from the site, while five of the eight core scrapers were found in Area B. This may suggest that the core-scrapers are in fact cores of a slightly different form than those found in Area A. The only threshing sledge elements found in excavation also come from Area B, in an upper stratum dating to the Roman period.

Raw Material and Locus of Knapping:

Table 2 provides data on the raw material types from which the different tool classes were made. The table illustrates the strong tendency for the sickle elements and Canaanite blades to be made on fine-grained material with various brown materials predominating. This contrasts sharply with the lower quality of the material used in the production of the flake tools, a pattern identical to that observed at Arad by Schick (1978: 62). The very low frequency of blades, either fragmentary or whole, recovered from the site, coupled with the near absence of blade cores and the fact that the blades are made from relatively uncommon raw materials might suggest that the blades were not made on site. Preliminary examination of the unretouched debitage from the site reveals the presence, albeit in small quantities, of flakes and chunks of raw material which is visually indistinguishable from that used in the manufacture of the blades. This fact, in addition to the presence of one exhausted blade core of fine-grained brown material, indicates knapping of the brown flint on site. The low incidence of this raw material suggests that the material was not local but was imported either as raw blocks or cores and then worked by specialists on the site. The scarcity of blade cores from this industry (*cf.* Hours 1979:58, for the rarity of cores of this industry) is most probably the result of economical use of imported,

distinction between the flake tools made on 'local' flint of highly variable quality which occurs in great quantity in the waste debitage, suggests the hypothesis that the sickle blanks were produced by specialist activity while the flake tools were produced as needed by the ultimate user from readily available material.

In summary, the lithic assemblage from WZ 60 indicates that the inhabitants of the site produced non-specialized tool blanks and tools used in a variety of casual cutting and scraping activities. At the same time they used specialized blades, which may have been made by specialists at the site from imported raw material, in the production of sickle elements (*cf.* Schick 1978: 62). Stratigraphic evidence confirms the position of the Canaanite blade industry in the Early Bronze I and the replacement of unretouched blade segments by retouched forms later in the Early Bronze Age.

Further work at WZ 60 should seek to investigate the extent to which the material for sickle blades was imported and to examine the context of use and manufacture of the more "casual" industry. The former research problem will require study of local flint outcrops and potential quarry sites in the Wadi Ziqlab region, an activity which the project's geologist can help to carry out, and comparisons with flint materials from other sites. Neutron activation analysis of these materials may help to characterize them further, and to identify their sources. The second research problem will require further excavation at site WZ 60. The present sample of lithics from WZ 60 comes from a very small area of what is predominantly fill; any conclusions drawn from it, therefore, are at best tenuous until a larger sample from areas of household occupation and undisturbed refuse deposits has been examined.

Miscellaneous Stone Artifacts:

Apart from cutting/scraping lithics and the waste from their production, stone artifacts from the 1986 excavations at WZ 60 include cube-shaped, basalt chunks that

appear to be the teeth of threshing sledges (locus B.006), limestone tesserae (locus A.001), and a surface find of a broken basalt grinding stone. The thresher elements and tesserae occurred in deposits dating to the Roman period. Other thresher elements occurred on the surface near Area A. Possibly they were produced by breaking up disused basalt grinders.

P. Sheppard

PRELIMINARY REPORT ON THE CERAMICS

The two probes in Areas A and B on WZ 60 provide the first direct stratigraphic evidence for the sequence of ceramic forms and wares within the Wadi Ziqlab basin. The pottery from site WZ 22A is all either from surface contexts or from a disturbed upper deposit that we interpret as a plow zone, and is not particularly useful for original typological work.

Early Bronze I Pottery

The lowest deposits in Area A appear to offer uncontaminated EB I contexts. In locus A.013 "grain wash" or "band painting" appears to be almost the exclusive surface treatment in our admittedly small sample. This form of surface decoration consists of a very sloppy red, red-yellow or red-brown wash, apparently applied with a "multiple brush" in diagonally intersecting strokes (Glueck 1946; 1951: 253-4; Amiran 1969: 41). Continuous burnishing on brown exterior surfaces and vertical paint strokes occur rarely as alternative treatments. In loci A.012 and A.011 grain-wash sherds are much less common, in spite of the ceramic richness of these small deposits. Nonetheless they contain sherds that belong broadly to the EB I period, and a few specifically to the "EB IB" tradition, with parallels at Tell Kufr Yuba (Glueck 1951: 493-5), Deir es-Sa'anah (Ibid: 458-65), Tell Umm Hammad esh-Sharqiya, Stage II (Helms 1984: 47-49), Tell esh-Shunah North level III (de Contenson 1960: 25-28), Tell es-Sa'idiyah (Ibid: 49-57) and Tell el-Far'ah North (de Vaux

1947: 400-405). Clear examples of Proto-Urban C or "Esdraelon ware," usually quite common on sites in northern Palestine, appear to be absent at WZ 60. Whether this absence is due to regional circumscription of the ware or to our small sample size is uncertain.

Among the relatively few diagnostic sherds from these loci, the hole mouth rims include simple thickened forms, with rounded, squared, grooved (Fig. 8:1) or bevelled profiles. Ledge handles are large, simple and rounded (*cf.* de Contenson 1960: Fig. 12:9; Helms 1984: Fig. 14: 16-17; de Vaux 1947: Figs. 2:21; 5:22), and small, hemispherical cups or bowls both here and in some overlying loci show the typical EB IB pattern of narrow, vertical stripes of red or red-brown paint (*cf.* Helms 1984: Fig. 14:5; Amiran 1969: Pl. 9:9; Parr 1956: Figs. 13, 14). There are no examples of incision, thumb-impression, or molding, with the exception of a surface find that could be a thick "Proto-Urban D" rim (*cf.* Helms 1984: Figs. 15:3, 15:7).

Early Bronze IC-II Pottery

Loci A.010, A.009, A.006, A.015, A.007, A.005, A.004 and A.003 in Area A, and loci B.008 and B.007 in Area B, appear to be uncontaminated EB IIC and EB II deposits, with admixtures of earlier EB I material. All are probably artificial fills with the possible exceptions of A.015, A.005 and B.008, where the presence of dark organic soil and charcoal fragments, and the frequency of bone, suggest that these may represent rubbish deposits.

A sample of more than 2000 sherds from these loci provides much better comparative material than for the EB I stratum. It includes most of the forms common in this period. The most common is the large hole mouth jar, with flat base and a wide variety of thickened or tapering rims (Fig. 8:2-4). The ledge handles of these vessels are simple and rounded, and there are still abundant examples of grain-wash or sloppy, continuous red wash on their exteriors. Small hemispherical bowls also appear (*cf.* Fig. 8:13), most undecorated but a few with the narrow, vertical arrange-

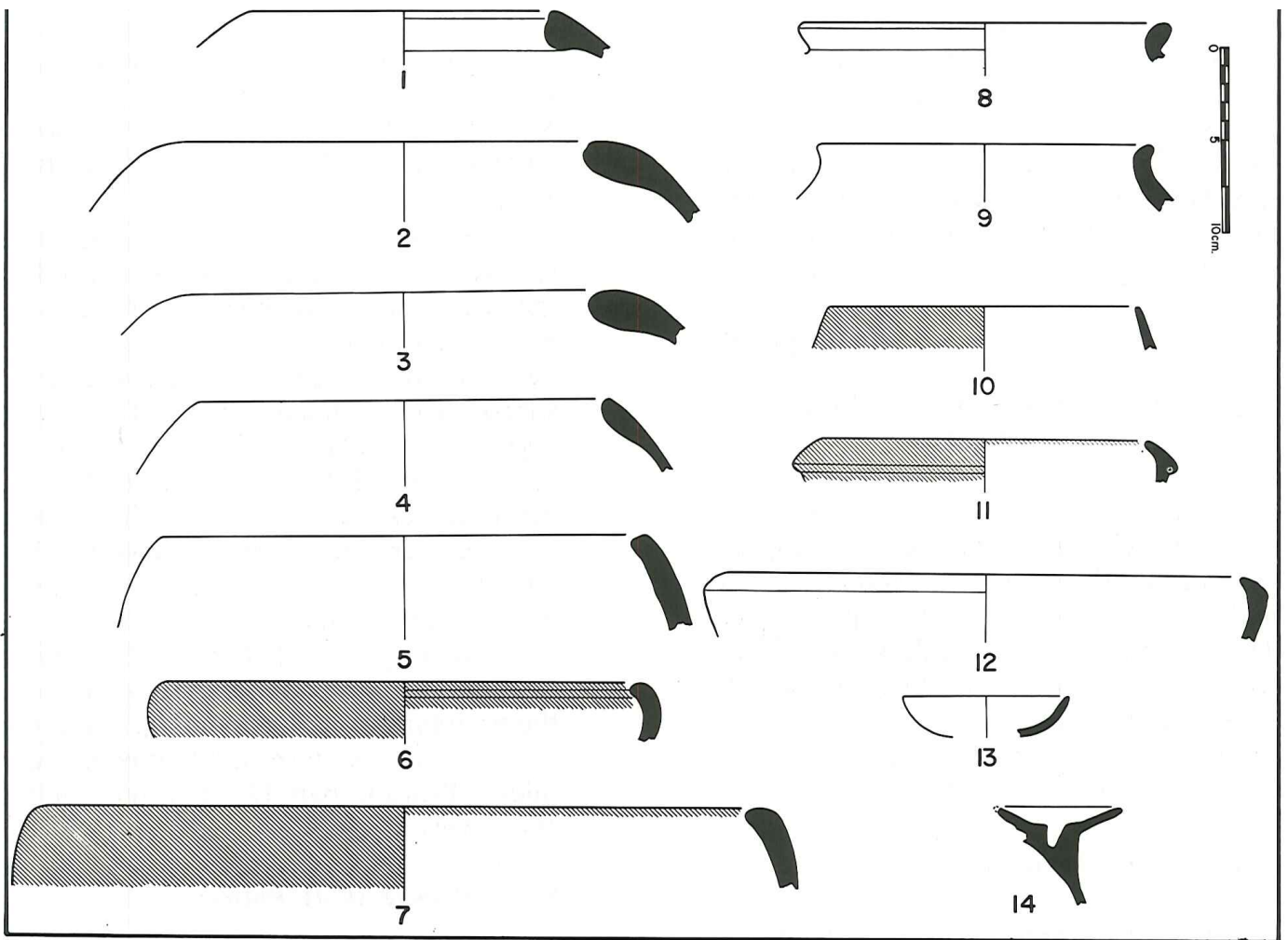


Fig. 8: Early Bronze Age pottery from 1986 excavations at WZ 60. No. 1 is from locus A.012, Nos. 2 and 3 from locus A.010, No. 4 from locus A.005, No. 9 from locus B.009, Nos. 5, 6, 8, 11 and 14 from locus B.007, and No. 13 from locus A.002 (Drawing, Julia Pfaff).

ments of red-brown stripes common in EB IB, and others with exterior red or brown burnished surfaces. Exterior net-burnish and net-painting is a common treatment.

Hellenistic-Roman Period Pottery

Hellenistic or Early Roman sherds occur in loci A.001 and A.002 in Area A and from B.006 to the surface in Area B. In most bags there is an admixture of some Iron Age and many Early Bronze Age sherds.

Among the diagnostic sherds of this period are rims and strap handles from deep red cooking pots or casseroles (Lapp 1961: 186-88, 191), terra sigillata or imitations (Kenyon 1957: 281-357; Hayes 1972), and rims of various thin-walled jars (Lapp 1961: 146-8, 152; Sauer 1973: 18, 20) and craters (Lapp 1961: 169-70). Ribbed body

sherds in a hard red or pinkish cream ware were common, but span a much broader chronological unit.

Medieval Pottery

While the probes in Areas A and B, excavated in 1986, did not recover medieval pottery, much of this pottery occurs in our surface samples from site WZ 60.

Most of this is the coarsely tempered cream ware, with red-brown or yellow-brown painted geometric decoration, that we broadly classify as "Ayyubid-Mamluk" (Sauer 1973: 53-56). It appears to be slab-built or coil-built in most instances, and voids left by organic temper are often clearly visible. Large bowls and globular jars with cylindrical necks are common forms.

E.B. Banning

PRELIMINARY REPORT ON
FAUNAL REMAINS FROM KHIRBET
MAHRAMA (WZ 60)

A total of 329 bone fragments were recovered from excavations at Site WZ 60, Khirbet Maḥrama, during the 1986 field season. Area A, where all but the uppermost deposits appear to be Early Bronze I-II in date, yielded the bulk of the material (76.29%). This is perhaps a function of the fact that almost all excavated material from Area A was screened through a ¼-inch mesh. Further, Area B, although containing Early Bronze Age deposits in its lower loci, did have more recent material as overburden. The more recent deposits contained relatively little bone. All material from the Early Bronze Age levels showed taphonomic processes that are to be expected in a limestone region. Various stages of fossilization were evident. As well, accretions of calcium carbonate, in conglomeration with small particles from the surrounding matrix, covered the surfaces of many specimens. It is possible that such a process masked smaller specimens, thus causing them to be overlooked during the excavation procedure.

Regardless of the possible bias in bone recovery, those specimens retrieved did provide a modest but surprisingly revealing picture of animal utilization, considering the small size of the collection. Consistent is the use of various *Bovidae* (*Bos*, *Capra* and/or *Ovis*), illustrating reliance on domesticated species. The few indications of *Gazella dorcus*, however, and their dispersal in the deposits (loci A.009, A.012 and B.007) suggests that hunting was not absent from the economic activities of the site's inhabitants.

Excluding five marine shell fragments (B.007:1, B.004:4) that have yet to be identified by genus and species, two shark's teeth (in loci B.005, B.009) that are possible fossils from the surrounding limestone deposits, and two units of dubious provenience containing eleven fragments, (Table 3) summarizes the material from the site by area and locus.

Further work must examine the exact

nature of the taphonomic processes at this site. The problem of the shark's teeth must be resolved and we must trace the marine shell specimens to possible sources in either the Mediterranean or Red Sea.

R.R. Dods

PRELIMINARY REPORT ON THE
BOTANICAL SURVEY

During the 1986 season of the Wadi Ziqlab Project, two objectives determined a palaeoethnobotanical contribution.

Primarily we hoped to recover and use archaeobotanical remains to define human plant-using activities in the past and to recover information on the ancient regional environment. To recover these remains we employed soil flotation and pollen coring methods. Few samples from restricted areas made bucket flotation practical using a small (approximately 300-micron) mesh. A Livingston corer was used to test wet sediments for pollen in the eastern portion of the Ziqlab basin.

Our other aim is to provide an interpretive link between different plant associations and corresponding pollen spectra or charred plant remains. A priority this season was to begin a phytogeographic survey of contemporary environment in the Wadi Ziqlab to define plant associations that might be associated in the archaeological record. We made an inventory of plant species in Wadi Ziqlab, noting locations and associations with other plants and such variables as soil type, exposure, and drainage. Following quantification studies, the vegetation survey will provide a model for interpreting pollen samples. To quantify pollen rain we took surface samples from inventoried plant communities. After analysis and quantification, such samples will help to calibrate the pollen spectra for actual vegetation cover. Furthermore, we collected appropriate plant tissues to supplement a comparative collection for identifying archaeological material.

During the vegetation survey, we collected data to test assumptions about plant associations, particularly weed/crop com-

Table 3: Faunal fragments from 1986 excavations at site WZ 60, by locus

Area A

	<i>Locus</i>											
	001	002	003	004	005	007	008	009	010	011	012	013
<i>Bovidae</i>											1	
<i>Bos</i>								2				
<i>Capra</i>												
<i>Ovis</i>												1
<i>Capra/Ovis</i>	3		5	5	3	3	2	1	2		4	
<i>Gazella dorcus</i>				1				1			1	
Mammal species	28	16	15	55	28	3	13	17	6	1	2	2
<i>Aves</i>	2	2		1				2				
<i>Helicidae</i>					1							
<i>Levantina caesareana</i>												
Unknown		5			1	1		2				
Total	33	23	20	62	33	7	15	25	8	1	8	3

Area B

	000	001	002	003	004	005	006	007	008	009	Total
<i>Bovidae</i>	1							1			3
<i>Bos</i>								2			4
<i>Capra</i>										1	1
<i>Ovis</i>											1
<i>Capra/Ovis</i>								5	1		34
<i>Gazella dorcus</i>								1			4
Mammal species	2		1				15	22	10	6	242
<i>Aves</i>											7
<i>Helicidae</i>							1				2
<i>Levantina caesareana</i>			2				1				3
Unknown								1			10
Total	3	0	3	0	0	0	17	32	11	7	311

position in dry-farmed mountain areas, forest, cleared forest, and pasture compositions. We also obtained a few flotation samples and pollen cores, all now awaiting laboratory analysis. With extensive collection and analysis of archaeological material in seasons to come, we are now prepared to document human activities and interaction with plant resources in the Wadi Ziqlab basin.

S.G. Monckton
J. McCorriston

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The Field Staff for 1986 included Mark Campbell (Photographer and Draftsman), Robin Dods (Area Supervisor and Faunal Analyst), Howard Kim (Square Supervisor), Joy McCorriston (Palaeoethnobotanist), Stephen Monckton (Paleoethnobotanist), Peter Sheppard (Area Supervisor and Lithics Analyst), and Hikmat Ṭa'ani (Area Supervisor and Department Representative).

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