

ADDITIONAL INFORMATION AND OBSERVATIONS OF NEOLITHIC AL-BASĪṬ, WĀDĪ MŪSĀ, SOUTHERN JORDAN

Gary O. Rollefson,

With a contribution by Khairieh 'Amr

Introduction

In 1996 survey work associated with civic improvements in the Petra-Wādī Mūsā-aṭ-Ṭayyiba (البتراء - وادي موسى - الطيبة) area of southern Jordan recorded a number of Neolithic occurrences ('Amr *et al.* 1998). The most important of the Neolithic sites is al-Basīṭ (البسيط), a large settlement across the deep wādī from the Wādī Mūsā town centre (Site W8 in 'Amr *et al.* 1998: fig. 8; 'Amr and al-Momani 2001: fig. 6). The site covers approximately 7.5 hectares ('Amr, in press) and dates principally to the Late PPNB (LPPNB), placing it in the "megasite" phenomenon that characterized the Jordanian highlands in the late seventh millennium bc.

Excavations in two parts of the settlement produced evidence of domestic architecture and a rich chipped and ground stone assemblage (Fino 1998: 107); in the northern, uphill part of the site a probe into a house revealed at least two major depositional phases in just under two meters of depth (Fino 1998: fig. 3; Fino 1997). Farther south and downhill, monitoring of the excavation of trenches for laying water pipes and for the construction of foundations for a school noted at least three major PPNB architectural phases through some 6m of depth ('Amr, in press; 'Amr and al-Momani 2001: 262-264), and in the upper reaches and surface there is evidence for Pottery Neolithic and Early Bronze Age lithics and ceramics.

The waterline trenches showed that architecture was densely distributed, consisting of buildings with narrow spaces between them and small rooms constructed on trimmed, thin limestone blocks. Floors and walls were plastered, some painted red, and subfloor channels added to the similarities of the structures with nearby Baṣṭa (بسطة) ('Amr, in press: figs 2-5; 'Amr and al-Momani 2001: 263; cf. Nissen *et al.* 1987: figs. 4-4). A striking feature in one small room exposed in one trench was a standing stone more than a meter long with a ring of smaller stones circles the base ('Amr, in press: fig. 6; 'Amr and al-Momani 2001: fig. 12).

The survey and monitoring operations between 1996 and 2000 resulted in a corpus of artifacts that required analysis, and in 2001 the survey director Dr. Khairieh 'Amr offered the Neolithic material to me. In addition, permission was granted by Dr. Fawwaz al-Khraysheh to conduct a more intensive surface collection on the remnants of the site (which had been severely damaged by recent construction), as well as to dig through and sift a small volume (ca. 0.5 m³) of a backdirt pile from the excavations of the foundation of a new house near one of Fino's probes in the northern part of al-Basīṭ. This is a report on the combined results of the analysis of these collections.

The Chipped Stone Assemblage

Altogether more than 1500 chipped stone artifacts were collected since the beginning of the survey.¹ It was noted in the sorting process that raw material color and quality, edge freshness, technological features (platform types, amount of cortex, etc.), and other aspects indicated that more than one archaeological period was represented among the lithics. This suspicion was supported by the presence of pottery (probably EB, perhaps MB, and Iron Age; cf. 'Amr *et al.* 1998: 519) on the surface as well as some pottery of probably Late Neolithic period from one of the trenches (see 'Amr, below). Lithics were sorted into three groups: LPPNB, Chalco/EB, and "Unknown", which may have been principally Iron Age, although any period might be represented in this small cluster.

The Chalcolithic/EB and "Unknown" Groups

Table 1 presents the results of the sorting into post-Neolithic debitage classes, although admittedly it is possible that Pottery Neolithic chipped stone material might be included in both the Chalco/EB and "Unknown" counts. On the other hand, the extreme rarity of PN potsherds suggests that the contribution of PN lithics was probably minimal in either case.

1. This total does not include 1,442 pieces of debris and lithic shatter that were included in the earlier surface collections.

In Table 1, only the debris from the excavated backdirt pile (all LPPNB) is included in the totals.

Of note in Table 1 is the presence of Canaanean blades, which are generally taken to be representative of the Chalco/EB technological repertoire. The "Naviform" blade in the "unknown" column is an insecure identification and might be a blade struck from a non-Naviform opposed platform blade core. The "ordinary blade" category is represented by blades with relatively large, plain platforms and with no evidence of bidirectional removals from blade cores.²

Table 2 provides information on striking platforms on the debitage described in Table 1. Although between one fourth to one half of the platforms are missing, plain platforms obviously dominate, and only dihedral platforms occur in a relatively popular fashion. This circumstance once again mirrors conditions for post-PPNB lithic technologies, whether Chalco/EB (e.g. Savage and Rollefson 2001) or Pottery Neolithic (Rollefson 1990). One additional comment should be made concerning

Table 1: Debitage classes in the al-Basīṭ post-Neolithic assemblages.

Blank	Chalco/EB		Unknown	
	n	%	n	%
Ordinary blade	27	36.49	27	15.79
Naviform blade	0	0.00	1	0.58
Canaanean blade	5	6.76	0	0.00
Unknown blade	0	0.00	22	12.87
Bladelet	0	0.00	1	0.58
Flake	38	51.35	101	59.06
C.T.E.	0	0.00	3	1.75
Burin spall	0	0.00	2	1.17
Core	4	5.41	14	8.19
(Tools)	(19)	(25.33)	(23)	(13.45)
Subtotal	74	100.00	171	100.00
Unclassifiable	1	1.33	0	0.00
Total	75		171	

Table 2: Platform, types in the post-Neolithic assemblages from al-Basīṭ.

Type	Chalco/EB		"Unknown"	
	n	%	n	%
Plain	50	92.59	59	76.62
Dihedral	3	5.56	10	12.99
Multiple facet	1	1.85	5	6.49
Punctiform	0	0.00	3	3.90
Subtotal	54	100.00	77	100.00
Missing	17	(23.94)	80	(50.96)
Total	71		157	

the plain platform category: although platform dimensions were not measured in this analysis, it was striking how much broader and thicker the plain platforms in the Chalco/EB group (and to a lesser extent, in the "unknown" artifacts). Once again, broad, thick, and steep platforms are typical of post-PPNB periods (cf. Quintero *et al.* n.d.).

Cores were not numerous in the "post-Neolithic" group of artifacts (Table 3). The assignment of three cores to the Chalco/EB period was based on raw material type and freshness of edges and ridges. But the fact that 13 of the remaining 14 cores were non-descript flake or unclassifiable-cores suggests that some of them at least, might in fact be PPNB in age.

Tools in the collection are enumerated in Table 4, assigned to the Chalco/EB or "unknown" sub-assemblages on the basis of technological features of the blanks or the nature of the raw material. The limited counts do not provide for much interpretive

Table 3: Core types in the post-Neolithic assemblages at al-Basīṭ.

Type	Chalco/EB		"Unknown"	
	n	%	n	%
Prismatic blade	0	0.00	1	7.69
Flake	2	100.00	12	92.31
Subtotal	2	100.00	13	100.00
Unclassifiable	1	(33.3)	1	(7.14)
Total	3		14	

Table 4: Chipped stone tools (by type/class) in the post-Neolithic al-Basīṭ.

Type	Chalco/EB		Unknown	
	n	%	n	%
Burin	0	0.00	2	13.33
Truncation	0	0.00	1	6.67
Endscraper	1	8.33	4	26.67
Sidescraper	5	41.67	0	0.00
Denticulate	3	25.00	3	20.00
Borer	0	0.00	1	6.67
Chopper	1	8.33	0	0.00
Wedge	0	0.00	3	20.00
Backed blade	1	8.33	0	0.00
Other	1	8.33	1	6.67
Subtotal	12	100.0	15	100.00
Retouched flake	1	(5.26)	1	(4.35)
Retouched blade	5	(26.32)	5	(21.74)
Utilized piece	1	(5.26)	2	(8.70)
Total	19		23	

2. In all discussions about blade production, blades are defined on a technological basis and has no dependence on a metric

relationship between length and width.

potential beyond noting that there is a relatively broad range represented and that no specialization is apparent.

The Late PPNB Collections

More than 1300 chipped stone artifacts were classified as LPPNB in age. Table 5 provides a breakdown of the LPPNB sample into debitage classes. The second and third columns (n and %) represent absolute and relative frequencies of the combined sample of the surface collection and the artifacts recovered from the sifted backdirt mentioned earlier; the last two columns (n' and %') refer only to the surface collection (information on the backdirt sample can be found in Rollefson and Parker 2002). Blades and bladelets dominate both samples, with flakes accounting for only 10-30%.

Of particular interest here are the high values for bladelets, which in LPPNB samples at 'Ayn Ghazāl ranged from 1.5-4.4% (Rollefson and Kafafi 1996: table 1; Rollefson *et al.* 1992: table 2). It was clear for the backdirt sample that bladelets were a special focus (ca. 30%) of lithic production due to the specialized activity associated with large number of drills that dominated the tool kit there. But even with the removal of the backdirt sample, the %' figure indicates that there is still an elevated level of bladelets, suggesting that the activity focus was not limited to the particular region around the source of the backdirt.

One final comment on Table 5: "limestone flakes" of considerable size were somewhat numerous (the quantity in Table 5 is not representative of the abundance of limestone flakes on the surface). These are clearly associated with the dressing of wall stones used in the construction of houses at al-Basīt.

Platform types are presented in Table 6, and these figures are typical of an LPPNB assemblage. Although plain platforms are still relatively numerous, they are less than half as popular as in the post-Neolithic groups (Table 2). Furthermore, although the dimensions of platforms were not measured, there is a perceptible reduction in size of plain platforms in the LPPNB sample. The diminished numbers of plain platforms were replaced by a manifest swing towards a larger representation of punctiform platforms on naviform blades.

Cores in the LPPNB sample were not only more numerous, they were much more varied (Table 7, which includes cores from the backdirt sample as well). Blade cores of all kinds make up 80% of the collection, and naviform cores were particularly important (Figs. 1a, 2a). Among the other blade cores were some that had opposed platforms (Fig.

1b), but they did not have the kind of preparation, dimensions, and maintenance typical of naviform blade cores (cf. Wilke and Quintero 1994; also see Gebel in Gebel and Bienert 1997: 242). The three prismatic blade cores were carefully made, although the "other" blade cores were more *ad hoc* in manufacture. Finally, in view of the high importance of bladelets in the debitage, it is not surprising to see three bladelet cores (e.g. Fig. 2d), al-

Table 5: Debitage Classes in the LPPNB assemblages from al-Basīt.

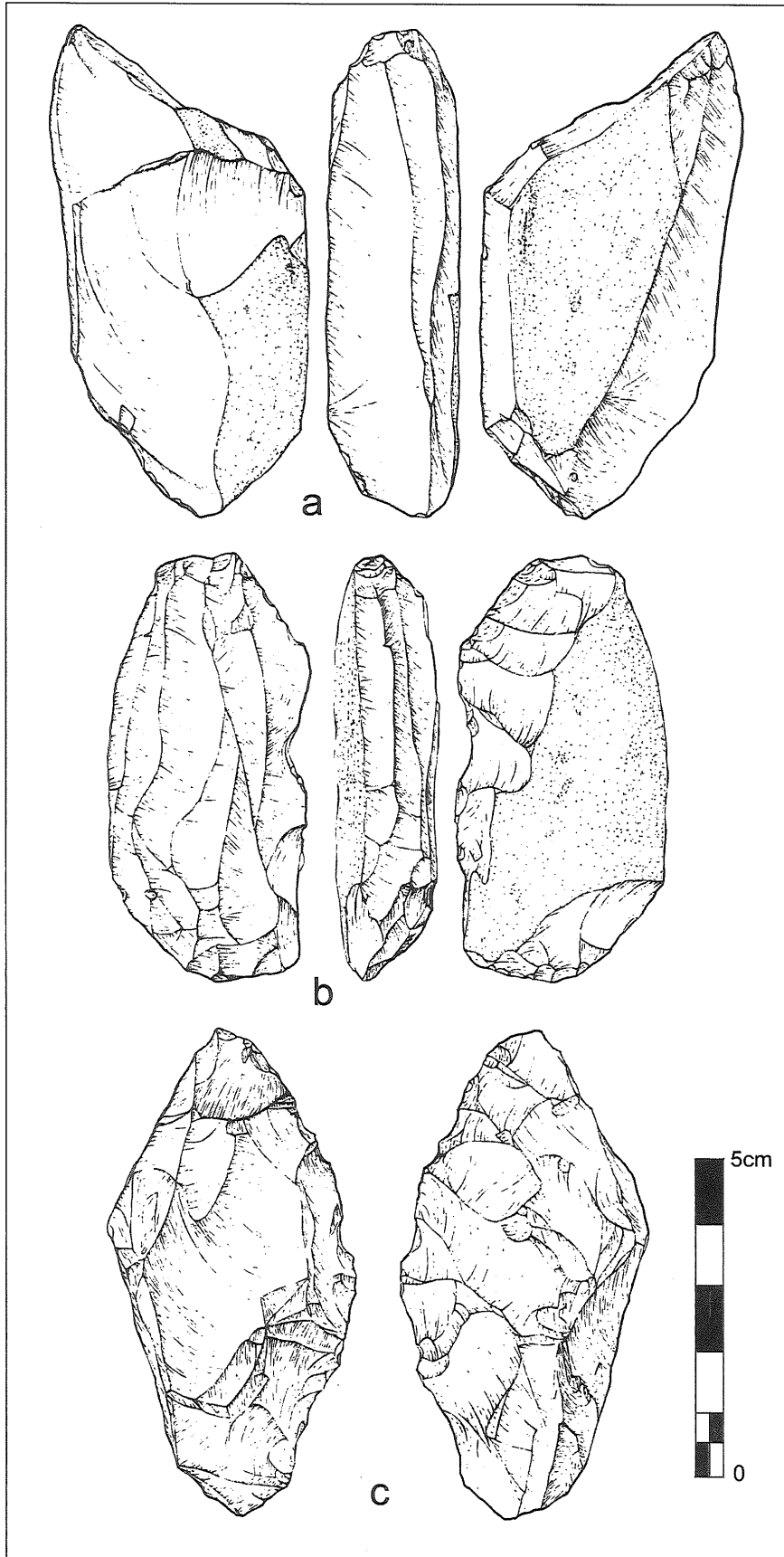
Blank	LPPNB		LPPNB'	
	n	%	n'	%'
Ordinary blade	79	6.33	20	5.63
Naviform blade	304	24.34	152	42.82
Unknown blade	64	5.12	21	5.92
Bladelet	354	28.34	79	22.25
Flake	360	28.82	34	9.58
C.T.E.	36	2.88	8	2.25
Burin spall	9	0.72	2	0.56
Core	43	3.44	39	10.99
(Tools)	(362)	(28.55)	(166)	(46.76)
Subtotal	1249	100.00	355	100.00
Microflake	6	0.46	6	1.52
Debris	13	0.99	13	3.28
Unclassifiable	21	1.60	2	0.56
Limestone flake	20	1.53	20	5.63
Total	1309		396	

Table 6: Platform types in the LPPNB assemblage at al-Basīt.

Type	n	%
Plain	199	32.52
Dihedral	41	6.70
Multiple facet	39	6.37
Punctiform	333	54.41
Subtotal	612	100.00
Missing	639	(51.08)
Total	1251	

Table 7: Core types in the LPPNB assemblage at al-Basīt.

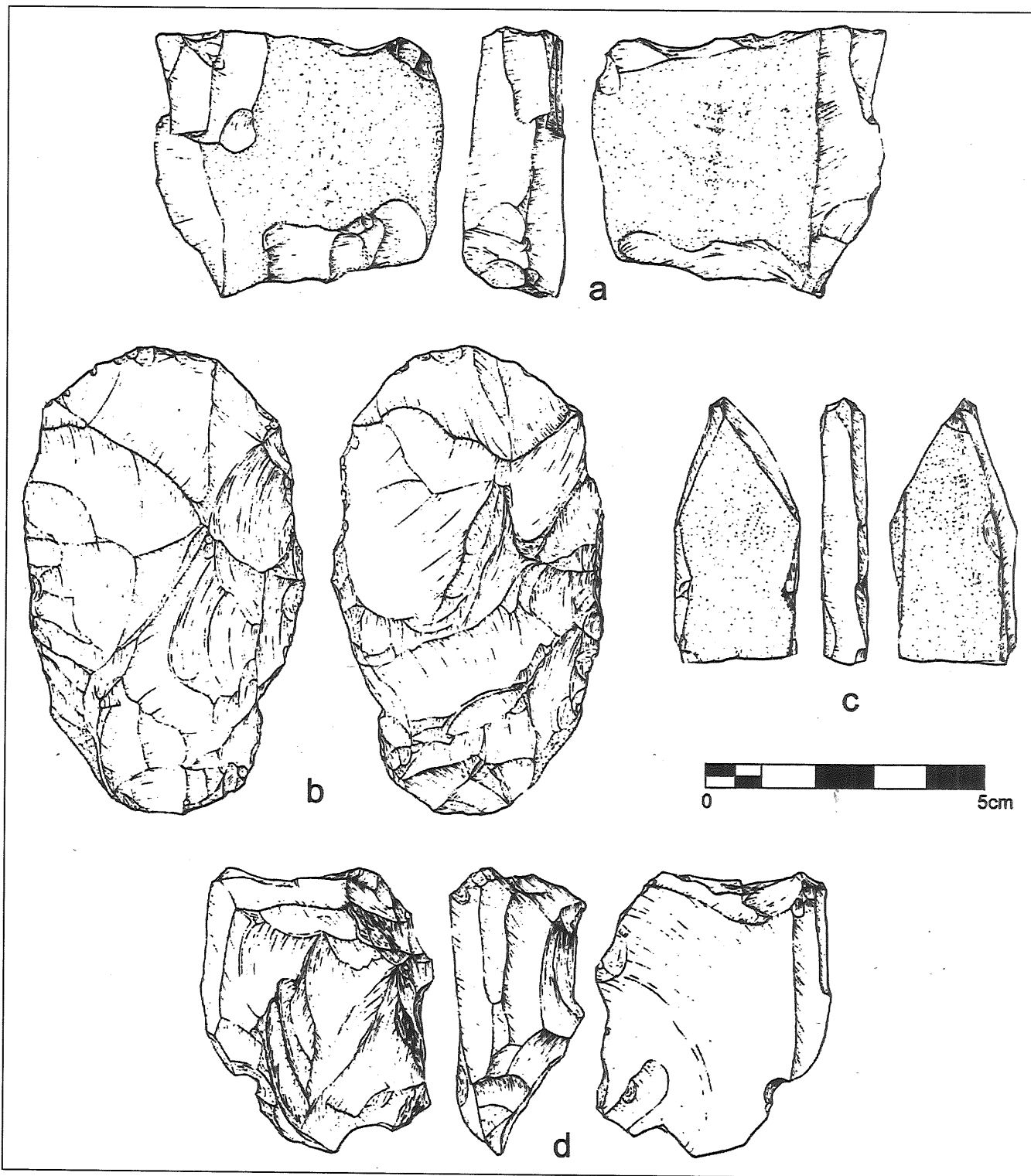
Type	n	%
Naviform bladelet	2	7.70
Naviform blade	11	42.31
Bidirectional, non-Naviform blade	4	15.38
Prismatic blade	3	11.54
Other bladelet	1	3.85
Flake	5	19.23
Subtotal	26	100.00
Tested piece	3	(8.82)
Unclassifiable	1	(2.94)
Hammerstone	4	(11.76)
Total	34	



1. a. Naviform blade core; b. bidirectional, non-Naviform blade core; c. pick (drawings: Qais Tweissi).

though two of these thin tabular pieces are typical miniature versions of naviform techniques (Fig.

2c) that seem to be restricted to southern Jordan (cf. Baird 2001: 645).



2. a. Naviform blade core; b. tranchet axe; c. "micronaviform" bladelet core (8mm thick); d. bladelet core on a flake (drawings: Qais Tweissi).

The LPPNB chipped stone tools both are abundant and represent a broad array of types/functions (Table 8). Projectile points (Fig. 3a-e) are generally rare and sometimes fragmentary, but they are in keeping with retouch styles common to the period. Burins were also relatively scarce, even when the backdirt sample is not considered (the %' column). Heavy duty tools, including tranchet axes (Fig. 2b)

and picks (Fig. 1c) were by no means scarce. Knives (Fig. 4b-e) were more common; as has been commented before (Rollefson and Kafafi 1997: 44-45), some of these "knives" might in fact be unglossed sickles (e.g. Fig. 4f-g), as described by Quintero *et al.* (1997). The overwhelming plurality of tools consists of the drill/borer class (cf. Rollefson and Parker 2002). Even when the drills

from the restricted backdirt sample are removed from consideration, drills (Fig. 5) still account for more than two-fifths of the formal tools, adding additional support to the debitage data that al-Basīṭ was deeply involved in a specialized occupation.

Of the classifiable blanks (n=193), 80 % of the drills were made on bladelets (Fig. 5d-h, o), although some larger examples were made on blades (Fig. 5a-c, i-n), all of which is similar to MPPNB and LPPNB drills at ‘Ayn Ghazāl (cf. Rollefson 1984: fig. 2a; see Baird 2001: 645). Drills in the northeastern desert area of Jordan occurred predominantly on burin spalls (Rollefson *et al.* 1999; cf. Baird 2001).

The Groundstone Assemblage

Surface groundstone artifacts were by no means uncommon (Table 9), although it is very difficult to assign groundstone artifacts to any particular time period. Several of the handstones were found in association with a few potsherds in the upper reaches of the trenches excavated for water and wastewater lines (‘Amr, unpublished data), and a couple were also found in the LPPNB backdirt sifted in 2001. For the moment, these items are lumped together with the undated surface material in Table 9.

Although the groundstone/milling stone artifacts were typed according to Wright’s system (Wright 1992; cf. Wright in Gebel and Bienert 1997), detailed distinctions were not considered important in the present discussion and are therefore not included in Table 9. Of interest are the items associated with red ochre, including two stone vessels and two handstones; four of the highly glossed polishing pebbles (small flint cobbles whose cortex had been eroded away through rubbing) were heavily coated with red ochre, emphasizing the value of this mineral for polishing purposes. What was being polished with the pebbles remains unknown, but red floors at ‘Ayn Ghazāl were often polished to a high shine, and similar polishing pebbles were found at that site as well (e.g. Rollefson and Simmons 1985: table 5).

Some comment on the “pounders” is also called for here. In all cases the pounders were spherical or subspherical in shape, and often they bore heavily battered angular facets around the entire surface. In their replication experiments, Wilke and Quintero have noted that faceted and beveled hammerstones were efficient tools for the shaping of milling stones (metate-like grinding slabs, mortars, and pestles), and this observation appears to apply here (Wilke and Quintero 1996: 254-255). The mace head (Fig. 6b) is made of limestone and measures 4.3cm in height and 4.5cm in diameter.

Most of the stone vessels are made of soft limestone (one was made of sandstone) and reflect a broad variety of shape and size, ranging from deep bowls to shallow platter-like pieces (Fig. 7a-d). One of the vessels, made of a hard limestone, was a broad (ca. 60cm diameter) and shallow basin of unknown use (Fig. 8). A basin of similar size and shape was recovered from the excavations at LPPNB Wadi Fidan 1 in 1999 (personal observation).

Table 8: Chipped stone tool classes in the LPPNB assemblages from al-Basīṭ.

Type	LPPNB		LPPNB'	
	n	%	n'	%'
Projectile point	11	3.57	6	5.31
Sickle	3	0.97	2	1.77
Burin	13	4.22	7	6.20
Truncation	3	0.97	1	0.89
Endscraper	5	1.62	3	2.65
Sidescraper	9	2.92	5	4.42
Notch	5	1.62	3	2.65
Denticulate	4	1.30	3	2.65
Drill/borer	182	59.09	49	43.36
Axe/adze	4	1.30	4	3.54
Pick	6	1.95	6	5.31
Chopper	4	1.30	4	3.54
Wedge	1	0.32	1	0.89
Unifacial knife	25	8.12	14	12.39
Backed blade	1	0.32	1	0.89
Backed bladelet	2	0.65	0	0.00
Tanged blade	1	0.32	1	0.89
Other	4	1.30	3	2.65
Subtotal	308	100.00	113	100.00
Retouched flake/blade	32	(1.93)	15	(10.56)
Retouched bladelet	1	(0.28)	0	(0.00)
Utilized piece	18	(4.97)	13	(9.15)
Unclassifiable	3	(0.83)	1	(0.70)
Total	362		142	

Table 9: Groundstone and milling stone artifacts from the al-Basīṭ collection. ** refers to number with red ochre stains.

Type	n	%	o**
Quern/slabs	2	2.44	-
Handstones (hs)	25	30.49	1
Pestles(ps)	2	2.44	-
Pounders(pd)	33	40.23	-
Combination hd/ps/pd	5	6.10	1
Polishing pebbles	6	7.32	4
Loomweight	1	1.22	-
Macehead	1	1.22	-
Stone vessels	6	7.32	2
Other*	1	1.22	-
Total	82	100.00	

* Flint cobble fragment with red ochre stains

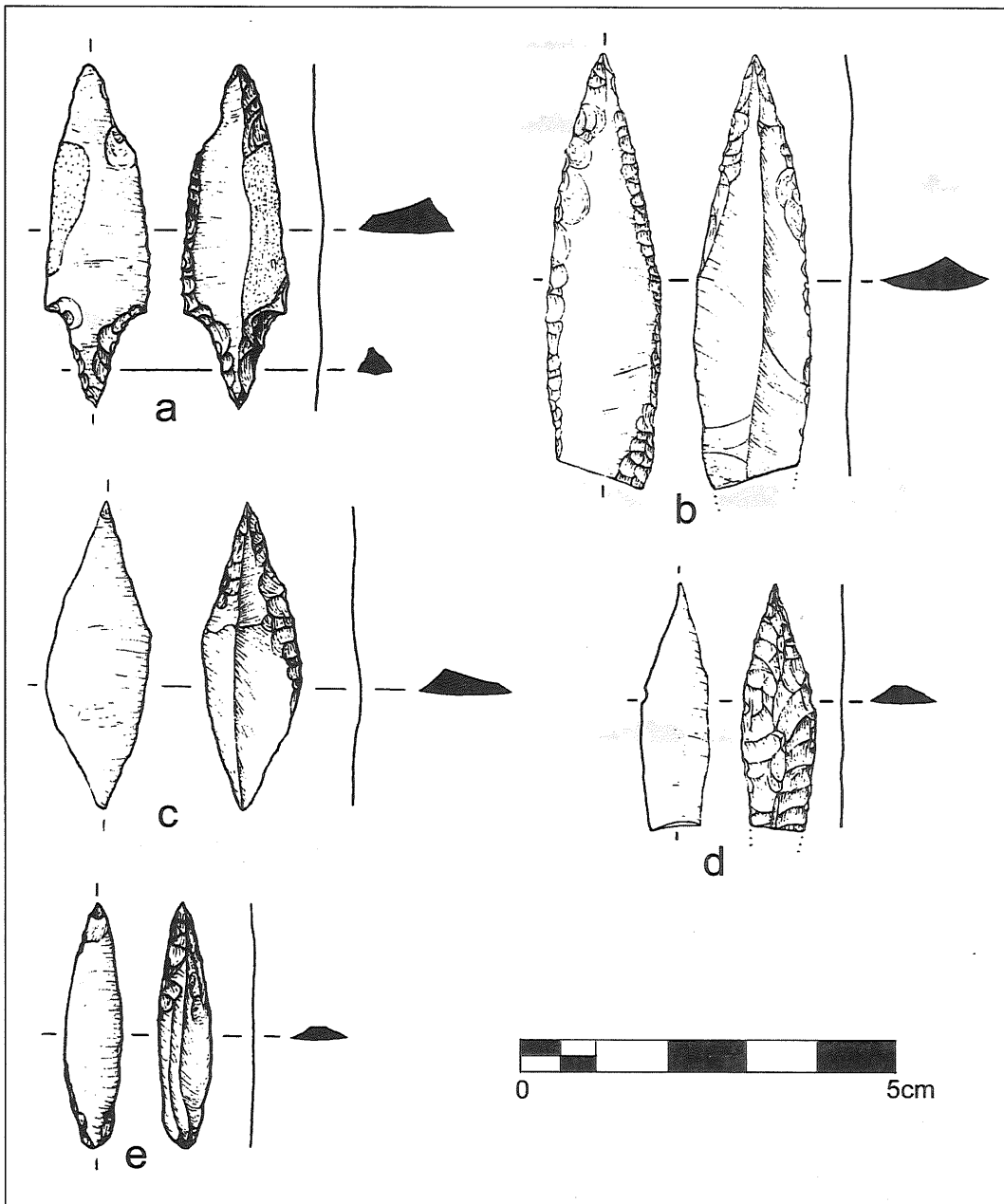
Ornaments and Small Finds

Table 10 presents a list of the artifacts that do not conveniently fit into the other categories of the first nine tables. A broken bone tool was found, a spatula fragment. Among the remaining pieces are artifacts presumably of personal adornment, including sandstone "bracelets" (Fig. 6c-d) common in the LPPB (Gebel and Bienert 1997: 252-257; Rollefson *et al.* 1990: 103 and table 10), as well as beads, pendants, and a possible finger ring of bone, mother-of-pearl, and shells. The three land snail beads are identical in style and production technique to LPPNB examples at 'Ayn Ghazāl (Rollefson *et al.* 1993: 123 and fig. 13). The perforated

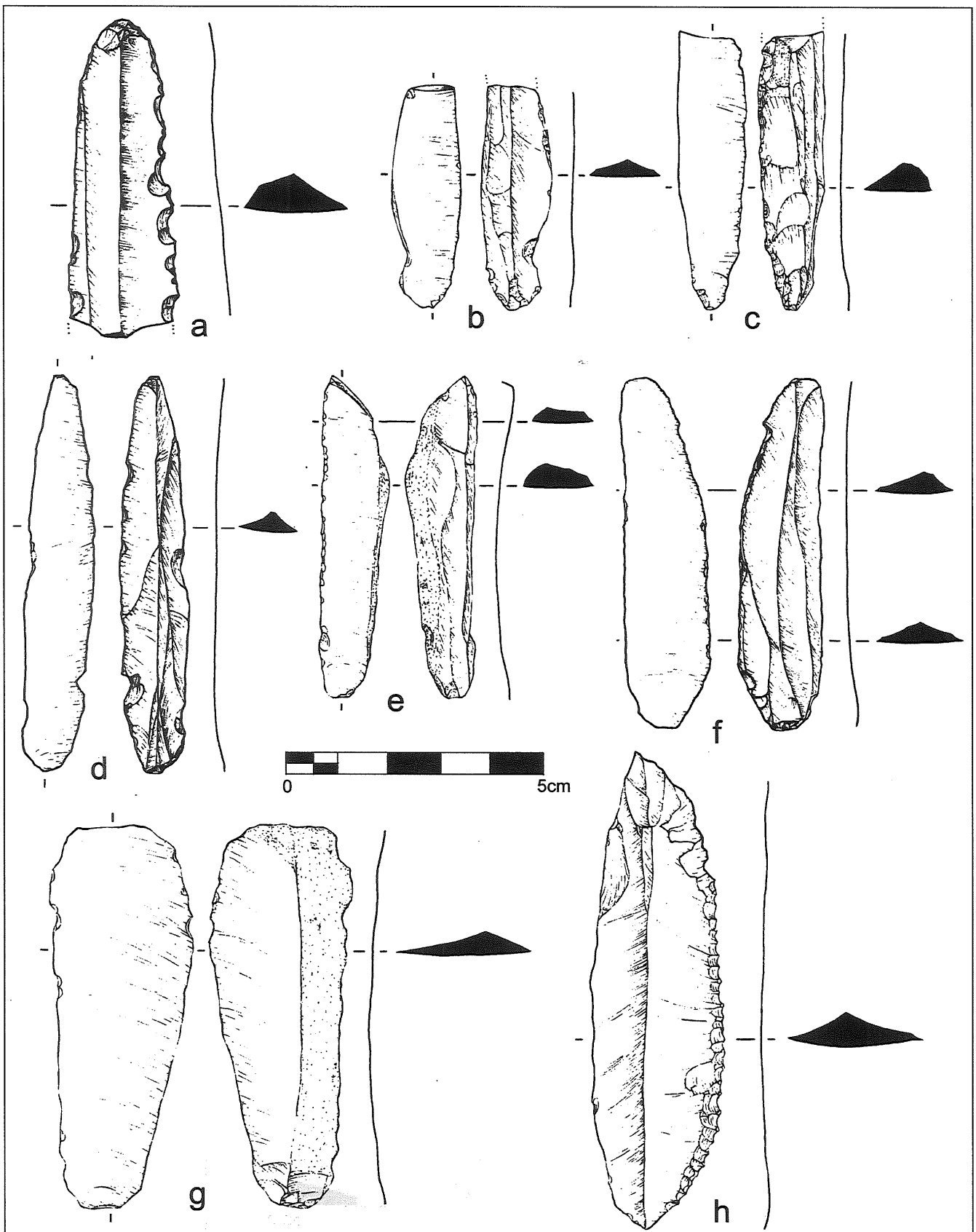
sandstone cylinder (4.7cm x 2.5cm, Fig. 6a) and the ovate sandstone object (7.7cm x 3.0cm) have no immediately apparent utilitarian functions, but they also have no other obvious meaning either. The small (ca. 1-2cm diameter) quartz crystals are not apparently modified, but they are still striking in terms of their clarity and possible attraction to the residents of al-Basīṭ, and the microfossil is also an item of possible intrigue to the people of the settlement.

A Neolithic Pottery Vessel from al-Basīṭ
(Khairieh 'Amr)

The only Neolithic pottery vessel from al-Basīṭ (Fig. 6e) was retrieved from inside a shallow pit in



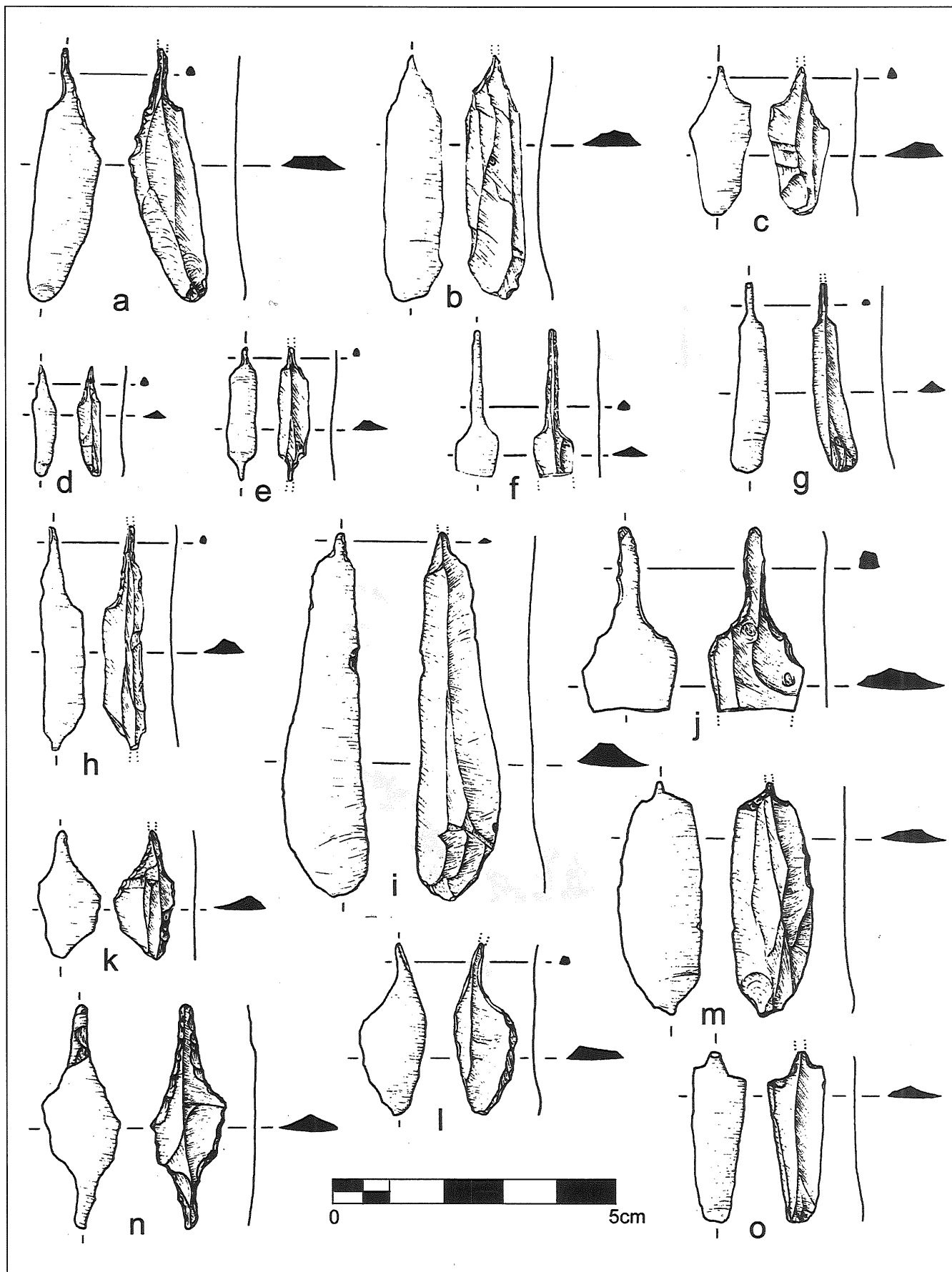
3. a-e. projectile points (drawings: Qais Tweissi).



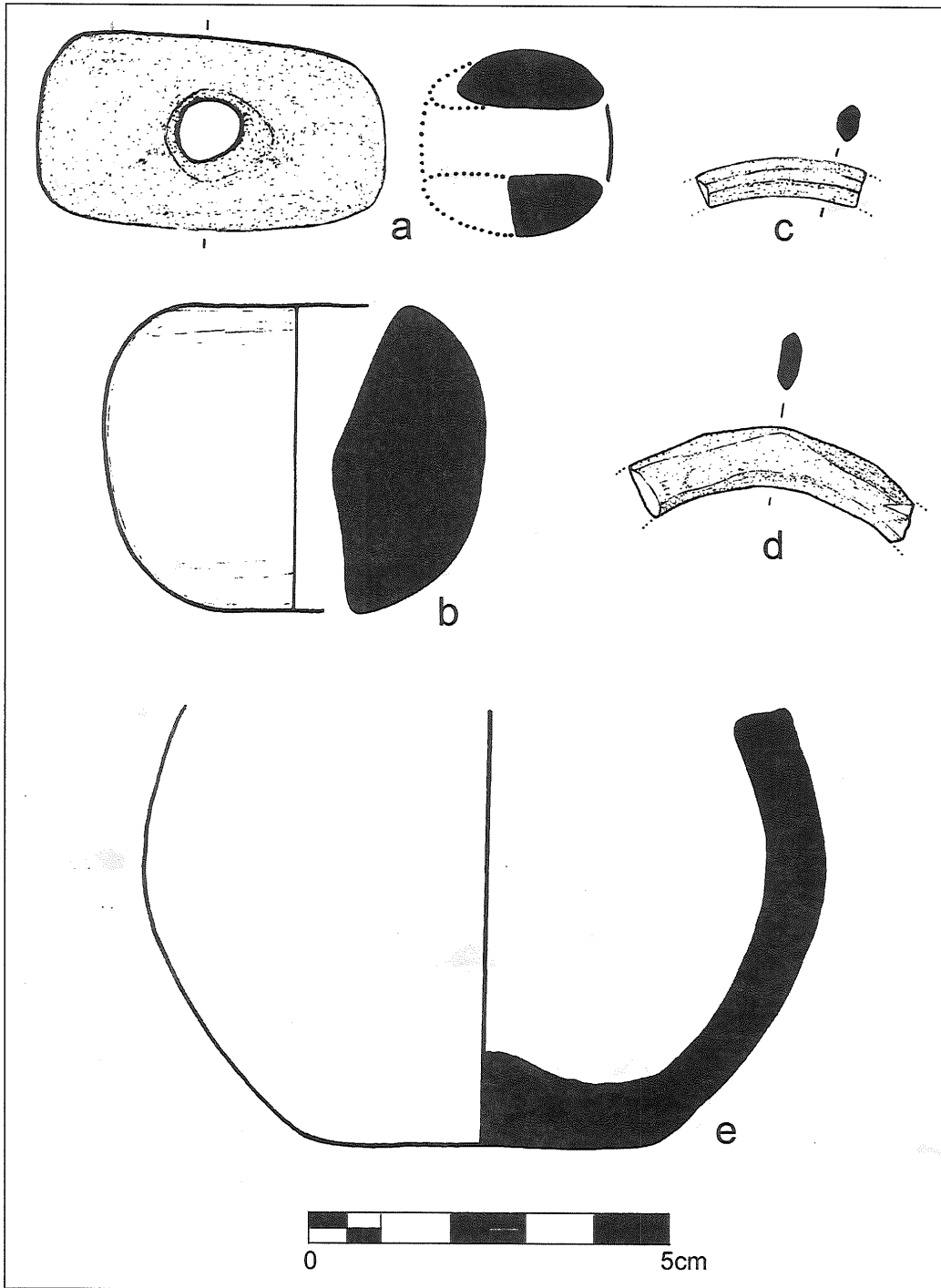
4. a. denticulated blade; b, d. tanged knives; c. knife; e. naturally-backed knife; f, g. knives or unglossed sickles; h. glossed, denticulated sickle blade (drawings: Qais Tweissi).

the west-central part of the site. The pit (Ba02) was recorded on 10 October 1998 during the archaeo-

logical work on the "Wādī Mūsā Water Supply and Wastewater Project". It was found cut by the



5. a-o. drills and borers (drawings: Qais Tweissi).



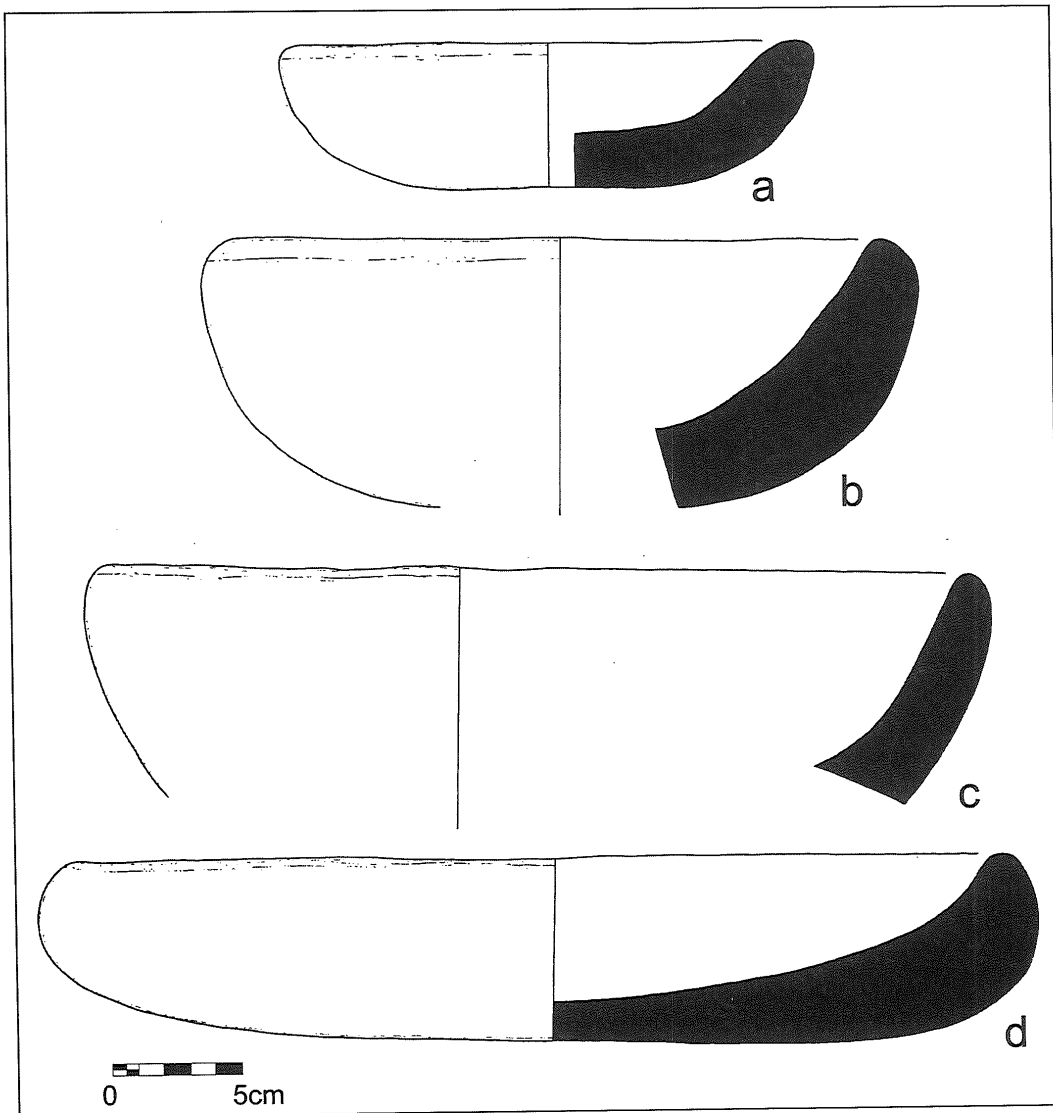
6. a. perforated sandstone object; b. mace head; c-d. sandstone "bracelet" fragments; e. Pottery Neolithic pot (drawings: Qais Tweiissi except for 6e, by Hala Suyuf).

northern section of the Wastewater Line A-16A-24.1-2, its top at 1.04m below the surface. The width of the pit as showing in the section is 92cm, and its interior depth is 29cm. The interior is covered with mud and plaster layers, making up a thickness at the bottom of 12cm. It had been cut into an earlier stone-built structure that shows signs of an intense fire (walls burnt, much ash and brick-red strata). We also recorded several structures in the vicinity that belong to the same phase as the pit, the tops of which are at ca. 70cm below the present surface. They are preserved up to ca. 75cm

in height and they all have mud floors lying above the structures of the earlier (LPPNB) phase.

The pottery vessel is a small jar, broken with the whole of the rim and parts of the body missing. Hand-made starting with a flat base, the body was then built up vertically (vertical pulling marks are evident on the interior). The vessel has a rough unfinished exterior.

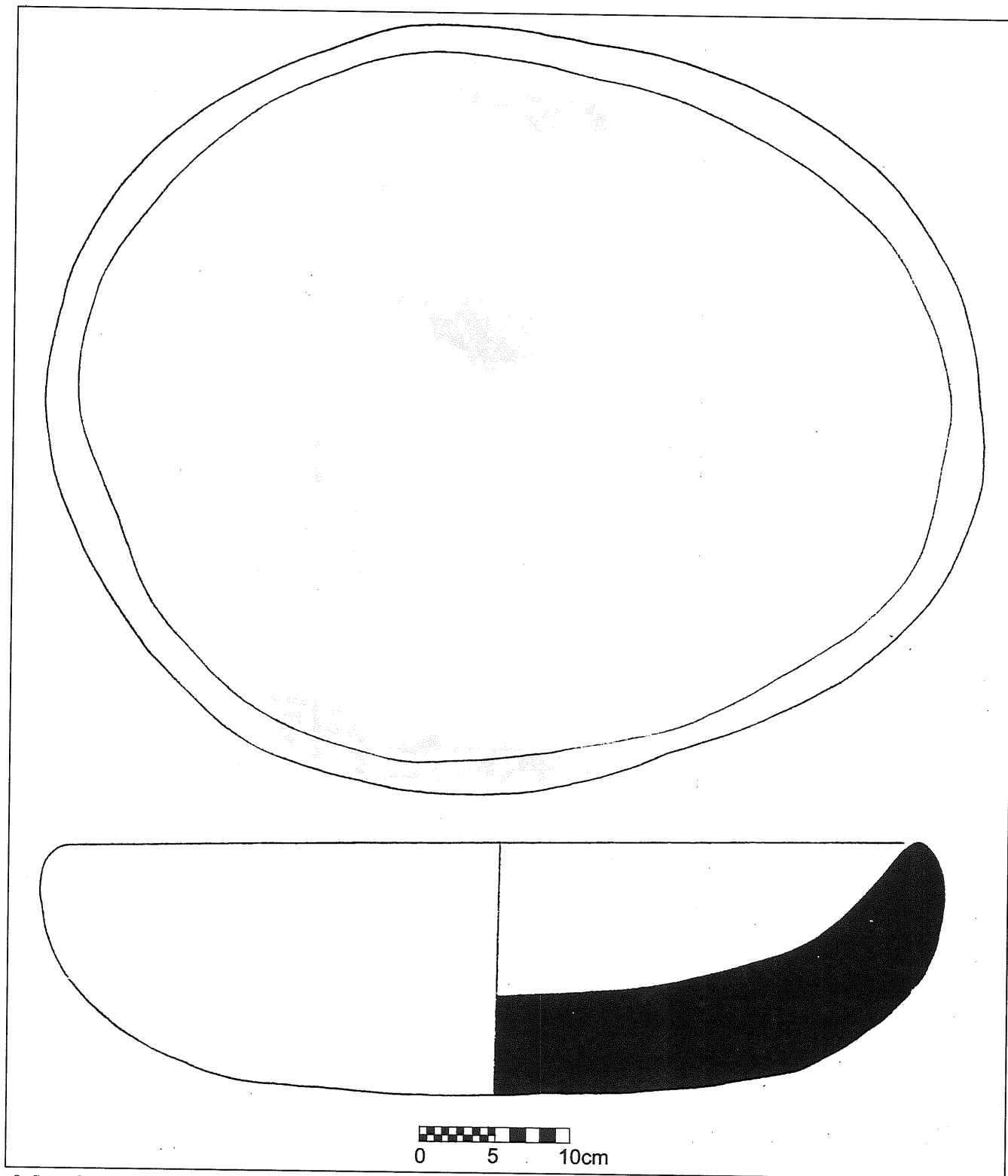
The ware is coarse with numerous small - medium white (lime), grey (flint) and red (grog?) inclusions, and some small-medium angular voids. The



7. Stone vessels from al-Basī
(drawings: Qais Tweisī).

Table 10: Ornaments and small finds from al-Basī.

Item	Raw material	n	Comments
"Bracelets"	Sandstone	2	
Perforated cylinder	Sandstone	1	Resembles a small "hammer head"
Rubber	Hematite	3	Two are gritty, one is not gritty
Malachite fragment	Malachite	1	
Egg-shaped stone	Sandstone	1	Utilitarian?
Pendant	Marine shell	3	Conical
Pendant	Mother-of-pearl	2	Fragments; one drilled
Pendant	Bone	1	Or spacer bead?
Bead	Land snail	3	Cf. Rollefson, Kafafi & Simmons 1993: Fig. 13
Bead	Stone	1	
Beads?	Marine shell	3	Fragments; similar to marine shell pendant above
"Finger ring"	Bone	1	Fragment
Crystal	Quartz	2	Fragments
Spatula	Bone	1	Fragment
Microfossil	Shell	1	



8. Stone basin 60cm in maximum dimension (drawing: Ahmed al-Momani).

firing is uneven: the exterior and ~3mm of the outer section are mainly 2.5YR 6/6 light red, with a large patch of 5YR 4/1 dark grey – 5YR 6/1 grey/ light grey – 5YR 6/3 light reddish brown; the interior and inner section are 5YR 6/1 grey/ light grey at the base – 5YR 7/3 pink at the upper wall. The vessel is fired to medium hardness.

Discussion

The Late PPNB was a period of dramatic response to the tumultuous events of the later MPPNB throughout the southern Levant, when long-occupied farming settlements in Palestine and the Jordan Valley were abandoned. Jordan witnessed a major population explosion and immense

towns grew in Jordan's highlands as a consequence (Rollefson 1992; Quintero, Rollefson and Wilke, in press; Gebel, in press).

Al-Basīṭ was one of the LPPNB towns that mushroomed in southern Jordan in the latter half of the seventh millennium (uncalibrated). The proximity to Baṣṭa and Ba'ja suggests that there would have been relatively intense communication among all three settlements, a supposition that is strengthened by similarities in architecture and artifact inventories. A small collection of animal bones from the backdirt sifting turned out to be mostly caprines, but sheep were not present (A. Wasse, personal communication), although sampling problems may explain this departure from Baṣṭa (Becker 1991), Ba'ja (Gebel and Bienert 1997: 257), and aṣ-Ṣifiya (Mahasneh 1997: 211). Fino briefly mentions animal bones from his probes (Fino 1998: 106), and analysis of these larger samples might shed more reliable light on the faunal inventory.

Unfortunately, so much construction has been undertaken across the former Neolithic site that little remains for additional archaeological investigation. Nevertheless, we are planning a small-scale effort to investigate the "standing stone room" environs in and near the wastewater trench in the near future, and one area just under a hectare in area is also a candidate for future exploration.

Acknowledgments

I would like to warmly thank Dr. Fawwaz al-Khraysheh, Director-General, and Dr. Khairieh 'Amr of the Department of Antiquities, for the providing me with the opportunity to undertake the research reported in this study. I also am indebted to Nazeh Fino for his help and encouragement. Matthew C. Parker of Whitman College assisted enthusiastically in the recovery and processing of the surface collections and the backdirt sample. And I would also like to express my gratitude to Dr. Pierre Bikai and Dr. Patricia Bikai for providing laboratory facilities and equipment for this project, as well as their advice and warm friendship.

G.O. Rollefson
Department of Anthropology
Whitman College
Walla Walla, Washington 99362
U.S.A.

Bibliography

- 'Amr, K.
in press A Note on the Discoveries at al-Baseet During the Implementation of the 'Wadi Musa

Water Supply and Wastewater Project". In H.-D. Bienert, H.G.K. Gebel and R. Neef (eds.), *Central Settlements in Neolithic Jordan*. Proceedings of the Symposium Held in Petra, July 1997. Berlin: ex oriente.

- 'Amr, K. and al-Momani, A.
2001 Preliminary Report on the Archaeological Component of the Wadi Musa Water Supply and Wastewater Project (1998-2000). *ADAJ* 45: 253-285.
'Amr, K., al-Momani, A., Farajat, S. and Falahat, H.
1998 Archaeological Survey of the Wadi Musa Water Supply and Wastewater Project Area. *ADAJ* 42: 503-548.
Baird, D.
2001 The Analysis of Chipped Stone. Pp. 639-651 in B. MacDonald, R. Adams and P. Bienkowski (eds.), *The Archaeology of Jordan*. Sheffield: Sheffield Academic Press.
Becker, C.
1991 The Analysis of Mammalian Bones from Basta, a Pre-pottery Neolithic Site in Jordan: Problems and Potential. *Paléorient* 17(1): 59-75.
Fino, N.
1997 Al-Baseet, a New LPPNB Site Found in Wadi Musa, Southern Jordan. *Neo-Lithics* 3/97: 13-14.
1998 Al-Basīṭ Neolithic Site in Southern Jordan. *ADAJ* 42: 103-111.
Gebel, H.G.K.
in press Core and Corridor Areas of the Spread of Large Complex Settlement Organization in Jordan. In H.-D. Bienert, H.G.K. Gebel and R. Neef (eds.), *Central Settlements in Neolithic Jordan*. Proceedings of the Symposium Held in Petra, July 1997. Berlin: ex oriente.
Gebel, H.G.K. and Bienert, H.-D.
1997 Ba'ja Hidden in the Petra Mountains: Preliminary Report on the 1997 Excavations. Pp. 221-262 in H.G.K. Gebel, Z. Kafafi and G.O. Rollefson (eds.), *The Prehistory of Jordan II. Perspectives from 1997*. Berlin: ex oriente.
Mahasneh, H.
1997 The 1995 Season at the Neolithic Site of es-Sifiya, Wadi Mujib, Jordan. Pp. 203-214 in H.G.K. Gebel, Z. Kafafi and G.O. Rollefson (eds.), *The Prehistory of Jordan II. Perspectives from 1997*. Berlin: ex oriente.
Nissen, H., Muheisen, M. and Gebel, H.G.
1987 Report on the First Two Seasons of Excavation at Basta (1986-1987). *ADAJ* 31: 79-119.
Quintero, L.A., Rollefson, G.O. and Wilke, P.J.
in press Highland Towns and Desert Settlements: Origins of Nomadic Pastoralism in the Jordanian Neolithic. In H.-D. Bienert, H.G.K. Gebel and R. Neef (eds.), *Central Settlements in Neolithic Jordan*. Proceedings of the Symposium Held in Petra, July 1997. Berlin: ex oriente.
Quintero, L.A., Wilke, P.G. and Waines, J.G.
1997 Pragmatic Studies of Near Eastern Neolithic

- Sickle Blades. Pp. 263-287 in H.G.K. Gebel, Z. Kafafi and G.O. Rollefson (eds.), *The Prehistory of Jordan II. Perspectives from 1997*. Berlin: ex oriente.
- Quintero, L., Wilke, P. and Rollefson, G.
n.d. From Flint Mine to Fan Scraper: The Late Prehistoric Jafr Industrial Complex. *BASOR* (in press).
- Rollefson, G.
1984 'Ain Ghazal: An Early Neolithic Community in Highland Jordan, Near Amman. *BASOR* 255: 3-14.
1990 Neolithic Chipped Stone Technology at 'Ain Ghazal, Jordan: The Status of the PPNC Phase. *Paléorient* 16(1): 119-124.
1992 Neolithic Settlement Patterns in Northern Jordan and Palestine. Pp. 123-127 in *SHAJ* 5. Amman: Department of Antiquities.
- Rollefson, G. and Kafafi, Z.
1996 The 1995 Season at 'Ayn Ghazal: Preliminary Report. *ADAJ* 40: 11-28.
1997 The 1996 Season at 'Ayn Ghazal: Preliminary Report. *ADAJ* 41: 27-48.
- Rollefson, G., Kafafi, Z. and Simmons, A.
1990 The Neolithic Village of 'Ain Ghazal, Jordan: Preliminary Report on the 1988 Season. *BASOR Supplement* 27: 95-116.
1993 The Neolithic Village of 'Ain Ghazal, Jordan: Preliminary Report on the 1989 Season. *AASOR* 51: 107-126.
- Rollefson, G. and Parker, M.
2002 Craft Specialization at al-Basit, Wadi Musa, Southern Jordan. *Neo-Lithics* 1/02: 21-23.
- Rollefson, G., Quintero, L. and Wilke, P.
1999 Bawwab al-Ghazal: Preliminary Report on the Testing Season 1998. *Neo-Lithics* 1/99: 2-4.
- Rollefson, G. and Simmons, A.
1985 The Neolithic Village of 'Ain Ghazal, Jordan: Preliminary Report on the 1983 Season. *BASOR Supplement* 23: 35-52.
- Rollefson, G., Simmons, A. and Kafafi, Z.
1992 Neolithic Cultures at 'Ain Ghazal, Jordan. *JFA* 19(4): 443-470.
- Savage, S. and Rollefson, G.
2001 The Moab Archaeological Resources Survey: Some Results from the 2000 Field Season. *ADAJ* 45: 217-236.
- Wilke, P. and Quintero, L.
1996 Near Eastern Millstone Production: Insight From Research in the Arid Southwestern United States. Pp. 243-260 in S.K. Kozlowski and H.G.K. Gebel (eds.), *Neolithic Chipped Stone Industries of the Fertile Crescent and Their Contemporaries in Adjacent Regions*. Berlin: ex oriente.
- Wright, K.
1992 A Classification System for Ground Stone Tools from the Prehistoric Levant. *Paléorient* 18(2): 53-81.