

THE 1998 EXCAVATIONS AT 'AYN GHAZĀL: A PRELIMINARY REPORT

by

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Introduction

A small private donation to the Freunde von 'Ayn Ghazāl, e.V.,¹ matching funds from Yarmouk University, and support from the Department of Antiquities of Jordan made it possible to conduct a short and focused season of excavations at 'Ayn Ghazāl in the summer of 1998. A small crew of seven staff members and several volunteers excavated from 20 June to 20 July.

The principal aim of the season was to sample what appeared to be *in situ* sediments in several small caves or rockshelters along the lowest limestone outcrops in the East Field at an elevation just under 725m asl (Fig. 1). Five areas were selected and numbered 1-5; one of the rockshelters turned out to be too shallow to have any appreciable deposits, so attention centered on

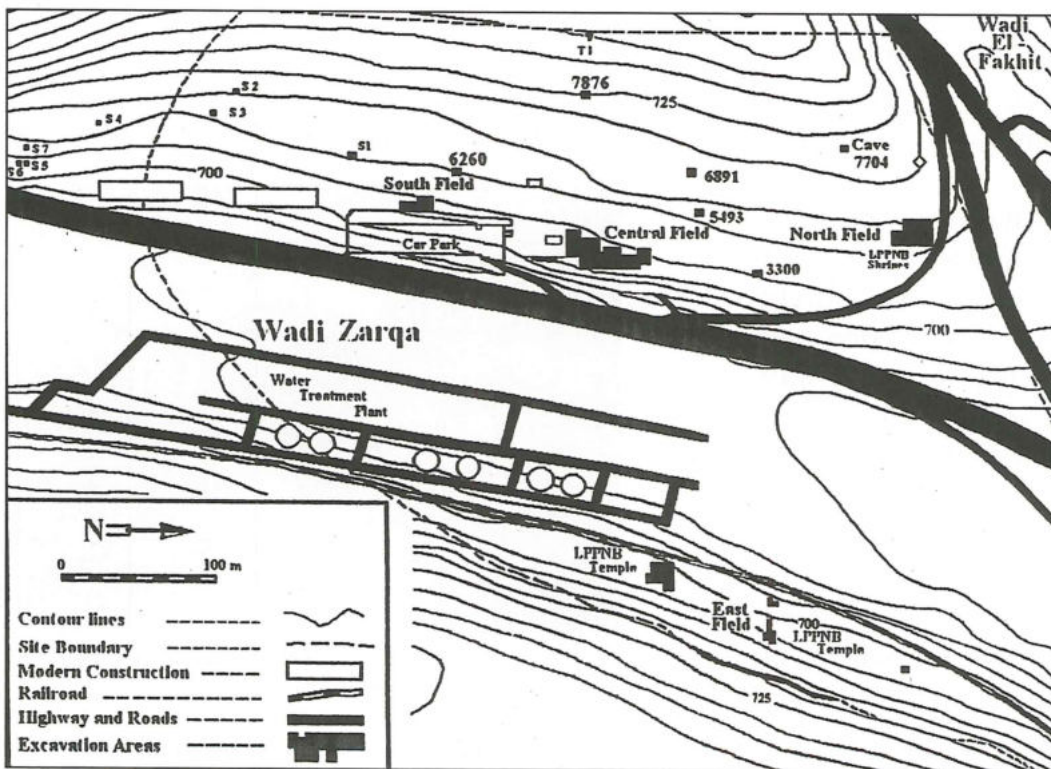
Caves 1 and 3-5 (Fig. 2).

In the event that excavations in the caves were unprofitable, contingency plans included the investigation of a long wall emerging just above the soil in the northern part of the East Field (Squares N and O in Fig. 2). In addition, we intended to probe the area just to the north of Sqs. F28/G28, where remains of a substantial building were exposed in 1996 (Sq. G29 in Fig. 2; cf. Rollefson and Kafafi 1997: 32-33).

The Cave Excavations

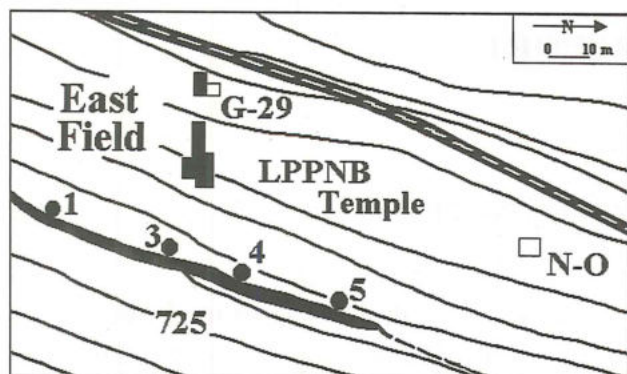
Cave 1

Cave 1 was the southernmost of the openings into the limestone bedrock. The cave was approximately 1.6m wide and 0.8m high at the mouth, but the cave expanded inside to an unknown degree (Fig.3). Excavations ex-

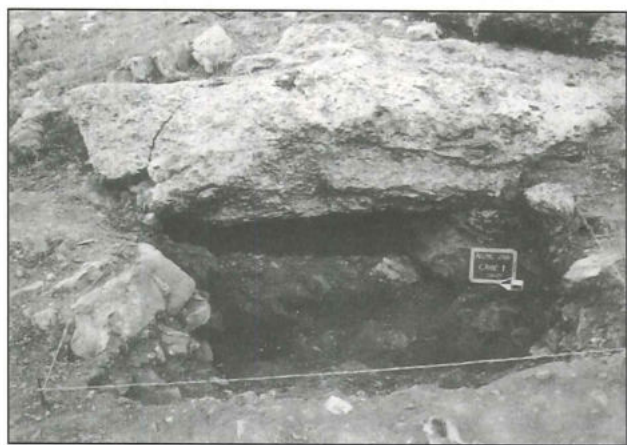


1. Site map of 'Ayn Ghazāl. The 1998 excavation areas are located near the "725" contour marker in the lower right part of the map (see Fig. 2). (Drawing after M. Bataineh).

1. A not-for-profit charitable organization in Germany.



2. Detail of the site map indicating location of the caves and excavation trenches.



3. Cave 1 just at the beginning of excavation; scale is 10 cm long.

tended into the hillside about 1.3m from the cave entrance, and deposits reached a thickness of nearly two meters, although bedrock was not reached. The roof of the cave was heavily blackened, evidently with soot from fires.²

There was a clear stratigraphic sequence of sediments inside, but artifacts were rare and undiagnostic, consisting almost entirely of unretouched flint flakes, animal bone, and scattered fragments of human bone. A wall 55cm thick, made of large natural stones, partially closed the entrance for nearly a meter of depth, suggesting that the cave may have been used as a burial crypt (based on the results of Cave 5; see below). No artifacts that could date any of the strata were recovered, but on the basis of the sequences in the other caves, it is likely that the sam-

2. The soot need not have been from ancient fires: a small space between the uppermost layer of sediment and the cave ceiling could have allowed

pled layers are all post-Neolithic. After two weeks of unpromising work in the cave, the excavations were suspended, and the crew moved on to another area of the site.

Cave 3

Cave 3 (Fig. 4) had a very narrow opening (ca. 50cm wide, 65cm high), but the interior developed into two tubes, one that continued in an easterly direction and the other that angled off towards the NE. Stratigraphy was not as clearly defined in these small chambers, and no diagnostic artifacts were retrieved from the sediments. Bird and mammal bones were moderately abundant, especially in the uppermost layers, but the skeletal elements that were present suggest that the cave had been used by scavengers which had dragged parts of animals into this protective setting. Bedrock was reached in the central tube, and deposits did not exceed 40 cm. Work was closed in this unrewarding cave after 10 days.

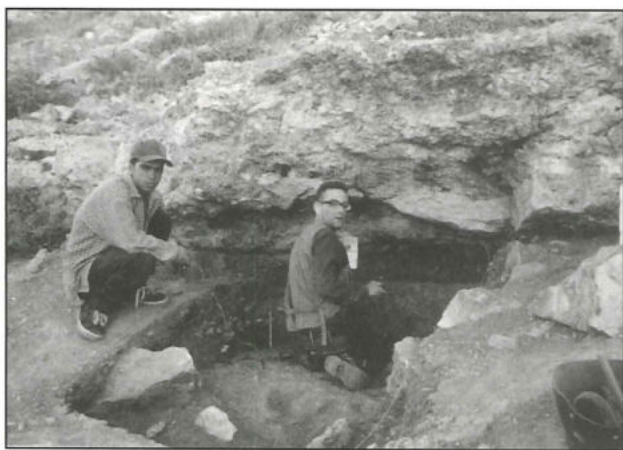
Cave 4

Cave 4 was actually a very shallow rock-shelter, 1.8m wide and 0.50m high, whose back wall was only 1.10m from the edge of the overhang (Fig. 5). The layered sediments were also relatively thin, not exceeding



4. The opening of Cave 3 after excavation was completed.

smoke from fires to blacken the interior at almost any time in the ancient to recent past.



5. Cave 4 during the excavation.

about 0.35m. Just above bedrock a double burial appeared, including an adult and child or infant. The adult was lying on its right side, with the head towards the north and the face towards the west. The skull rested on the right hand; the left hand may have once covered the face. Three potsherds were found in association, but they were not diagnostic pieces. It appears that the burials are post-Neolithic in age.

The bone preservation for both individuals was poor, so measures were taken to stabilize the material *in situ*. The following morning, when we returned to the field, vandals had thoroughly obliterated the burials, presumably looking for associated articles of commercial value. Since bedrock and the back wall had been reached, work was suspended in Cave 4 after two weeks of investigation.

Cave 5

Cave 5 was the largest and most productive of the caves we investigated in 1998 (Fig. 6). The interior was low, with a space only 1.3m between the ceiling and bedrock. Just inside the cave the distance between the north and south walls was approximately 2.5m near the front, but the width appeared to be reduced as the chamber continued eastward into the hillside. Two openings led into the cave: "5A" was a small, almost circular hole about 60cm in diameter; about 1.5m to the north was the main entrance, "5B",



6. Cave 5, with entrance 5A to the right and Entrance 5B to the left.

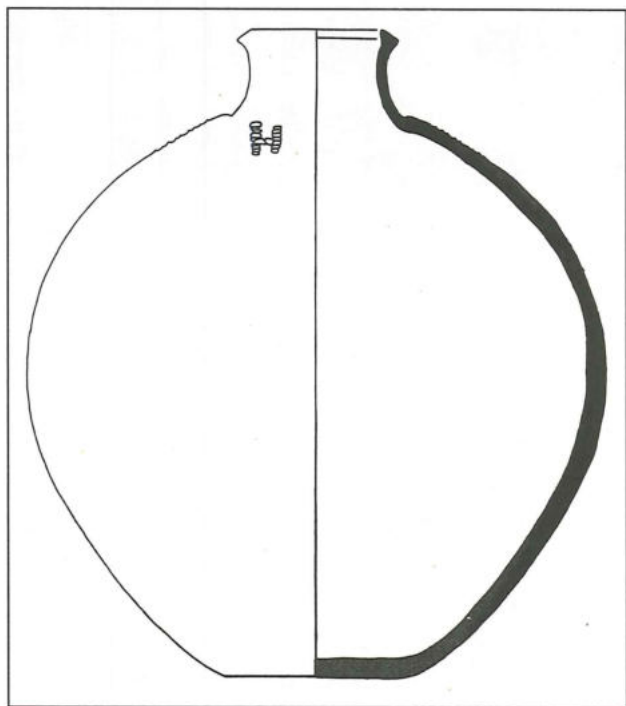
which was ca. 2.10m wide and 1.3 m high.

The uppermost 50cm of cave fill included and rolled and fresh chipped stone artifacts. The sediment varied from very fine water-laid silt to coarse, gravelly material, and in general all this appears to represent deposits that had washed into the cave, both from the front opening and perhaps also through small vents in the cave ceiling. The many animal bones in these layers probably were introduced by carnivores or scavengers.

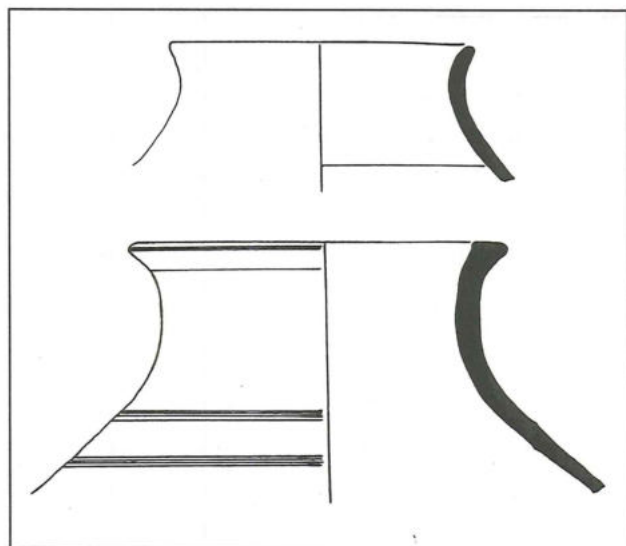
But the lowest 20 - 30cm of dirt contained the remains of at least six human burials above and below a thin stone slab pavement. The interments, which were extremely friable due to the saturated nature of the soil, probably accumulated over a considerable time span (a generation? more?). All of the burials were probably secondary, or at least earlier burials were pushed aside when later bodies were placed in the cave. One of the intriguing aspects of the burials was the inclusion of substantial numbers of animal bones as intentional (?) grave goods, including sizeable quantities of equids, sheep/goat, and other large fauna. Analysis of the faunal remains has not been concluded, but it may be interesting to see what skeletal elements were included with the humans. Remains of a stone wall were found at the front of the cave, probably rebuilt after each of the burials (cf. Cave 1 above).

Pottery was also present in good measure,

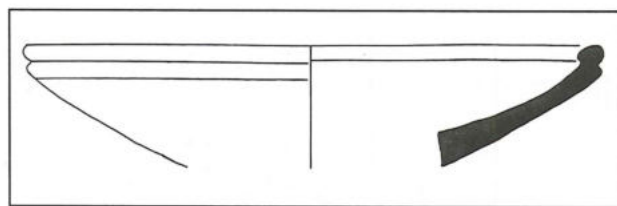
but a chronological assessment of the ceramics remains elusive³; it seems probable that the material is post-Neolithic in age, a judgement that is supported by the find of a long copper/bronze "toggle pin" lying on bedrock under the burials (cf. Prag 1971:



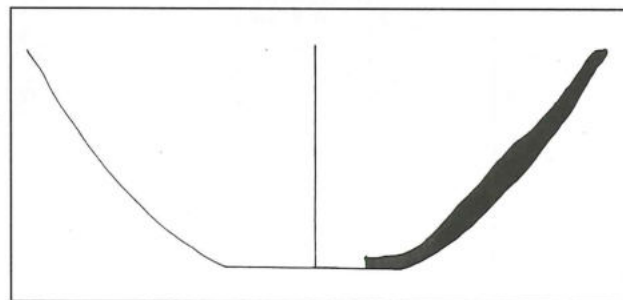
7. From Cave 5, Jar (35 cm high, 30 cm diameter) with a H-shaped thumb-impressed design on the shoulder. All of the ceramics in Cave 5 were associated with human burials.



8. Hand-made (above) and wheel-made (below) jars from Cave 5. Rim diameter of is 10 cm for the upper jar and 13 cm for the lower jar.



9. Wheel-made shallow bowl from Cave 5, with a rim diameter of 25 cm.



10. Hand-made pot with a base diameter of 9 cm from Cave 5.

249-250; Fig. 56, 10, 12-13).

It is possible, even probable, that additional post-Neolithic burials remain in Cave 5 (as well as in Cave 1), but in view of the limited budget and narrow goals of the AG98 season, we abandoned work in Cave 5 after reaching bedrock more than 4m into the hillside from the cave entrance; the deposits continued back into the hillside for an undetermined distance.

Squares N-O 46/47: The Terrace Wall

During the 1996 excavation season a north-south stone alignment running several meters along and parallel to the slope appeared just above the surface in the northern half of the East Field (cf. Fig. 2, "N-O"). Only one course of stones was visible, and the line of stones was curvilinear, possibly reflecting a building or some sort of enclosure. As the work in Caves 1 and 4 was ended, efforts were transferred to this wall to determine the purpose of the construction.

Over several weeks' excavation, more than 5m of the wall was exposed to a depth of nearly a meter down to the stabilized ash

3. We would like to thank Dr Kay Prag for giving of her valuable time to examine the pottery from Caves 4 and 5.

gray surface on which the wall had been constructed. Several occupation surfaces had been cut through by the wall makers, and the wall consisted of at least 6 courses at the northern end. The construction of the wall, which evidently was made as a terrace retaining wall, seems to have taken place over at least three separate episodes, based on the shapes of stones used and their arrangements. Throughout the more than 15 m² of excavated area, not a single diagnostic artifact was found (despite numerous chipped stone artifacts recovered from the sediments), but its location near the surface, and the situation in other parts of the East Field, strongly argue for a LPPNB age for the wall. Neither in the area above nor below the wall was any architecture found to indicate what the terrace wall protected.

Square G-29

The purpose of the excavation in Sq. G-29 was to see if the LPPNB building whose rooms exposed in Sqs. F-28 and F-29 in 1996 continued towards the north. It did not. Instead, a courtyard area with extremely dense concentrations of ash, artifacts, animal bone, and fire-cracked rock were encountered, bordered on the north by a courtyard wall approximately 0.5m thick and preserved to 0.75m in height. The edges of a couple of superimposed stone-ringed firepits appear to signal the sources of much if not all the burned material, which seems to have been produced on an almost industrial scale.

On the northern side of the courtyard wall, in another open area with a well-defined, stabilized ashy LPPNB surface, a tableau of a small but deep stone-ringed fire-pit and a nearby cultic installation was un-

covered (Fig. 11). The cult-related feature consisted of a small (ca. 20cm diameter) circular stone surrounded by six angular limestone slabs. Immediately to the south was an array of four standing stones about 35-40cm high arranged in a semicircle; none of the standing or flat stones showed any evidence of burning. The situation is reminiscent of the hearth-and-stone combinations revealed in the East Field LPPNB "temples" in 1995 and 1996⁴ (Rollefson and Kafafi 1996; 1997). No buildings were found associated with this ensemble in 1998, although search will be conducted in future seasons.

Finally in Sq. G-29, a deep probe 1.5 x 1.5m was placed near the western end of the courtyard wall. This excavation reached a depth of almost 3.0m below the modern surface, and near the base of the probe larger naviform cores and blades signaled the presence of MPPNB occupation. Sterile soil may have been reached on the last day of work,



11. The cultic installation in Square G-29 is at right center, with four "standing stones" forming a semicircle around a circular arrangement of seven flat stones. A courtyard wall is behind (above) the installation, and a tumble of several large stones is to the left of the feature.

4. In earlier publications the southern "lower" temple was described as a PPNC structure on the basis of architectural "style" (Rollefson and Kafafi 1996: 20-22 and Rollefson and Kafafi 1997: 28-30). A radiocarbon date for a sample from the floor of this building yielded a date of 6130 ± 65 bc (uncalibrated), which is clearly LPPNB in age. In fact,

there now seems to be little evidence of any PPNC architecture in the East Field. We acknowledge our gratitude to the University of Arizona NSF accelerator dating program for this and several other dates, and to Drs A.J. Jelinek and Douglas Donahue for their assistance.

although this is only a tentative observation at the moment. Rich samples of charcoal throughout the depth of the probe promise to provide a well-documented sequence of dates for this part of the site's use.

Square F-28

The work in Sq. G-29 demonstrated that the building found in F-29 in 1996 did not extend northward, but we were still not certain if the western room exposed two years ago therefore represented the NW corner of the structure. A small unit was opened in Sq. F-28 to help determine the circumstances.

Sq. F-28 had been almost entirely destroyed in the 1980s by the construction of a sewer line, but short stubs of wall stones projected westward from Sq. F-29 into F-28, demonstrating that the building did continue towards the west; just how far will never be known as a result of the sewer line destruction.

Archaeological Samples

The smaller scale of excavation in 1998 is reflected in the reduced numbers of artifacts, particularly animal bones and chipped stone debitage and tools. The faunal remains have not been studied so far, but the results of sorting the chipped stone pieces are tabulated in Table 1 (debitage classes) and Table 2 (tool types). For the debitage

categories, there is a slightly higher ordinary blade to naviform blade ratio (bottom of Table 1) in the N-O squares, which might suggest that the material derives from very late in the LPPNB period (cf. Rollefson 1997: 20). The flake tools from the different areas (Table 2) do not show much in the way of meaningful comparison. It should be noted that the sickle blade category includes both glossed and unglossed forms (cf. Quintero *et al.* 1997).

Bone tools and small finds are presented in Table 3. Beyond the bronze toggle pin described above, there is little remarkable in the 1998 assemblage. Polished limestone "bracelets" (or rings) are common in the LPPNB at 'Ayn Ghazāl and contemporaneous Jordanian sites. The fossil shark tooth mentioned in Table 3 continues a collection behavior noted among the East Field LPPNB residents in earlier seasons (e.g. Rollefson and Kafafi 1996: Table 6).

Discussion

The limited fieldwork at 'Ayn Ghazāl in 1998 had mixed results in terms of the goals set before the season began. The Neolithic use of caves was dramatically attested by the finds at Nahal Hemar (Bar-Yosef and Alon 1988), and there was a slight indication that Cave 7704, on 'Ayn Ghazāl's western bank of Wādī az-Zarqā', later used by Byzantine

Table 1. Absolute counts (above) and percentages (below) of debitage from *in situ* deposits of the 1998 season in the East Field of 'Ayn Ghazāl. (OB= "ordinary blade"; NB = naviform blade; Blt = bladelet, Fl = flake; CT = core trimming element; BS = burin spall; Mic = microflake, Deb = debris; Oth = other; Cor = core).

Trench	OB	NB	Blt	Fl	CT	BS	Mic	Deb	Oth	Cor	Tool	Total
G 29	224	194	25	1329	15	6	122	160	4	99	(314)	2178
N-O 46/47	216	146	43	1153	27	18	184	256	9	21	(214)	2073
Total	440	340	68	2482	42	24	306	416	13	120	(528)	4251

G 29	10.28	8.91	1.15	61.02	0.69	0.28	5.60	7.35	0.18	4.54	(14.42)	100.00
N-O 46/47	10.42	7.04	2.07	55.62	1.30	0.87	8.88	12.35	0.43	1.01	(10.32)	99.99
Average	10.35	8.00	1.60	58.39	0.99	0.56	7.20	9.79	0.31	2.82	(12.42)	100.01

G 29	53.59	46.41
N-O 46/47	59.67	40.33

Table 2. Tools from *in situ* deposits from the 1998 season in the 'Ayn Ghazāl East Field areas.

Tool Class	G 29		N-O 46/47	
	n	%	n	%
Projectile point	5	2.81	2	1.41
Sickle	24	13.48	12	8.45
Burin	16	8.99	35	24.65
Truncation	5	2.81	5	3.52
Endscraper	11	6.18	1	0.70
Sidescraper	44	24.72	22	15.49
Notch	14	7.87	10	7.04
Denticulate	12	6.74	15	10.56
Perforator	5	2.81	14	9.86
Drill/Borer	8	4.49	5	3.52
Biface	4	2.25	2	1.41
Axe/Adze	1	0.56	1	0.70
Chisel	1	0.56	0	0.00
Chopper	4	2.25	1	0.70
Wedge	1	0.56	0	0.00
Knife	4	2.25	4	2.82
Backed blade	0	0.00	2	1.41
Tanged blade	5	2.81	2	1.41
Other	14	7.87	9	6.34
Subtotal	178	100.00	142	100.00
Retouched flake	37	(12.17)	20	(9.35)
Retouched blade	33	(10.86)	20	(9.35)
Utilized piece	55	(18.09)	25	(11.68)
Unclassifiable	1	(0.33)	7	(3.27)
Total	304		214	

residents as a burial crypt, had also served some function for the Neolithic people at the settlement (cf. Kafafi, Rollefson, and Simmons 1990: 11-13). The caves sampled in 1998 showed no evidence of Neolithic use, although it appears probable that Cave 5 had been cleared of earlier sediments before it was used for the post-Neolithic burials. It is likely that the same situation pertains for Cave 1. Nevertheless, it is possible that Ground Penetrating Radar (GPR) might locate Neolithic caves that were hidden from later Bronze Age populations, and this will be a priority for future field work.

The ritual focus of the East Field was strengthened by the location of the small cult feature in G-29, and one wonders if it is possible that the East Field may have lost any earlier residential function sometime in the LPPNB for a more religious orientation.

Table 3. Bone tools and small finds from the 1998 season at 'Ayn Ghazāl.

Material	G-29	N-O	Caves	Total
Bone awl	8	2	1	11
Bone spatula fragments	1	1		2
Double-pointed needle	1			1
Worked bone fragment	2			2
Polished stone "bracelet"	2	4		6
Groundstone				1
Limestone disk	1			1
Loaf-shaped handstone	1			1
Scoria/pumice fragment	1		1	1
Bronze toggle pin				
mother-of-pearl fragment	1			1
Perforated land snail			1	1
Fossil shark tooth		1		1

At the moment we have located three buildings that likely served religious purposes (the two LPPNB "temples" and an apsidal house; cf. Rollefson 1998), and it is not clear if the other architecture that is partially exposed might have had non-domestic purposes. Although much remains to be investigated in the "main" settlement on the west bank, the East Field continues to represent a potential treasure trove of LPPNB ritual activity, and we intend to pursue intensive research in this part of 'Ayn Ghazāl.

Acknowledgement

The season would not have been possible without the generous contribution by Mrs. Bettina Haas of Darmstadt, Germany, and we are very grateful for her support. We also thank Dr Kay Prag, who took valuable time from her research to look over the pottery from the cave excavations. We would also like to express our appreciation for the help provided by the Department of Antiquities.

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