Research Note: Acheulian Sites near Bir Kiseiba in the Darb el Arba'in Desert, Egypt: New Data

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In 1997, my colleagues and I reported the discovery of an Acheulian site (KAS-1) near Bir Kiseiba in the Darb el Arba'in Desert of southwestern Egypt (Haynes et al., 1997). However, our investigation involved a limited assessment of the site's stratigraphy, and there was no archaeological excavation. In 1998, reconnaissance and a detailed surface investigation resulted in the discovery of Acheulian artifacts at 26 additional sites around a small plateau (Surface 2) about 6 km east of Bir Kiseiba (Figure 1 and Table I). Five of these sites are clusters of at least 20 artifacts and are worthy of archaeological excavation. The other sites may warrant excavation upon further investigation because the sedimentary matrix appears to be coming out from under the plateau surface instead of being inset against it as previously interpreted (Figure 2). This suggests that ~18 km^2 of a potential Acheulian landscape lies preserved below Surface 2.

Only one site, KAS-15, was mapped in the time available. Site KAS-15, located ~140 m SW of our 1986 backhoe trench line, is a cluster of ~184 artifacts extending down a gentle slope over ~190 m in a westerly (N80° W) direction from the upper edge of the plateau (Figure 2). The maximum width of the cluster is less than 100 m.

Most of the artifacts at KAS-15 are cleavers (38) and handaxes (30) made on large flakes. Other artifacts include choppers (5), cores (4), picks (2), chunks (26), spheroid (1), and flakes (71). Most are made from light yellowish-brown to brown orthoquartzite, with maroon and purple banding in some specimens. A few pieces are tan chert and fewer are dark-brown, ferruginous, manganiferous, silicified sandstone (FMSS).

All exposed surfaces of the artifacts at KAS-15 show moderate to strong eolian abrasion, and a few have been severely sandblasted. The bottoms of most of the quartzite artifacts show fresh to slightly etched flake scars with orangish-red staining, but a few show evidence of abrasions. Some of the few chert pieces reveal a

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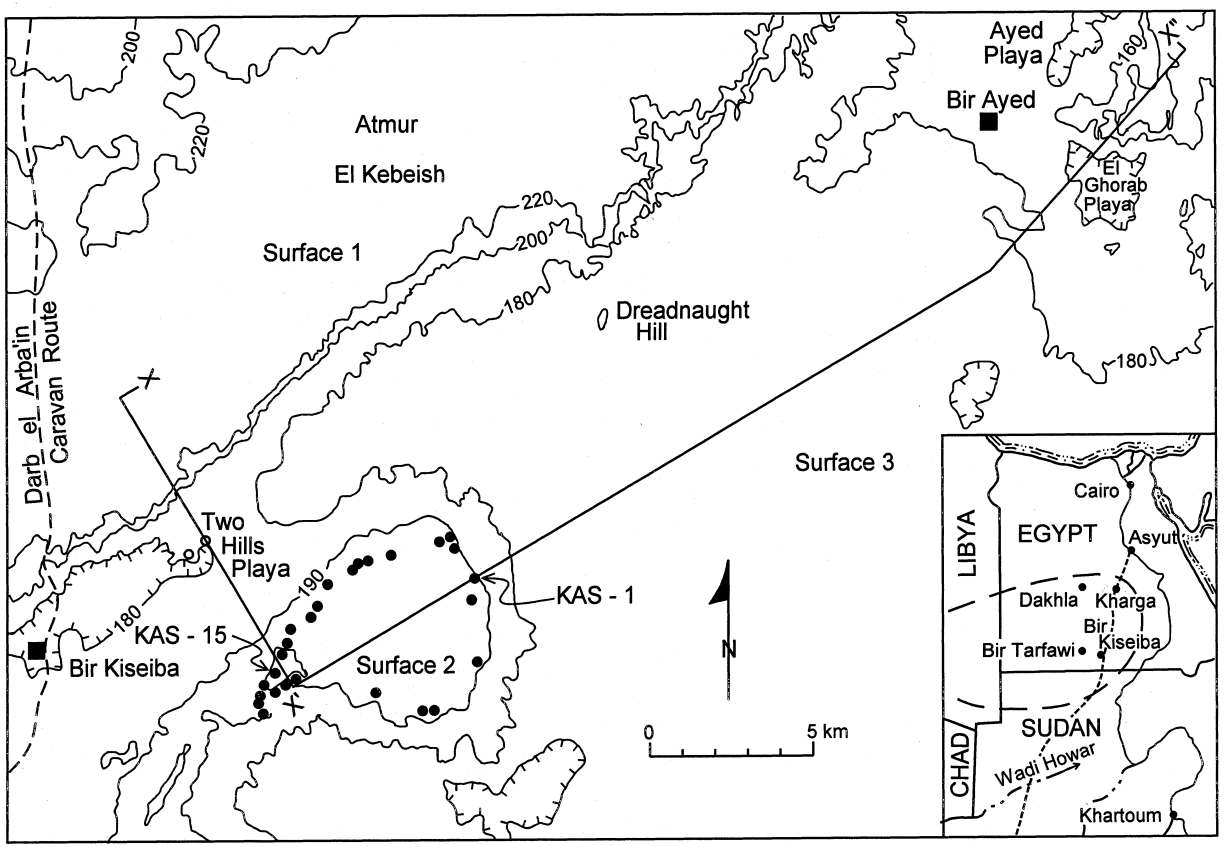

Figure 1. Map of the Bir Kiseiba area, Egypt, showing geomorphic surfaces 1, 2, and 3 and the location of 27 clusters (numbered counterclockwise from KAS-1) of Acheulian artifacts exposed around the periphery of Surface 2 (after Haynes et al., 1997: Figure 1).

Table I. List of surface scatters of Acheulian artifacts near Bir Kiseiba, Egypt.

Site	Description
KAS-1	See Haynes et al. (1997)
-2	Small surface scatter of artifacts
-3	Spheroids, handax, etc.
-4	Chunks and a handax of FMSS
-5	Large scatter of handaxes and cleaver on large flakes
-6	Chunks and at least 1 handax
-7	Handaxes, chunks, and spheroids
-8	Handaxes, chunks, and spheroids may be continuous with KAS-7
-9	Large concentration; made trenchshovel test pits
-10	Levalois point and handax on a flake
-11	3 handaxes and cleaver on large flakes and NL hearth with charcoal
-12	Handaxes and cleavers on red gravel
-13	2 handaxes and 2 cleavers
-14	Concentration of handaxes and cleavers
-15	Tite cluster of handaxes, cleavers, chunks, flakes, etc.
-16	Handaxes and cleavers
-17	Eolized handaxes and cleavers
-18	Eolized handaxes, cleavers, & spheroids
-19	Eolized artifacts
-20	Handaxes and cleavers
-21	Handaxes, cleavers, discoid
-22	Eolized handaxes and cleavers
-23	Eolized handaxes and cleavers
-24	Eolized handaxes and cleavers
-25	Cleaver, spheroid, and worn handax
-26	Handaxes, cleavers, spheroids, chunks, and flakes, etc.
-27	Handaxes, cleavers, etc.

later generation of flaking and probably are the result of post-Acheulian occupants of the region. A concentration of black FMSS within the cluster may be a Neolithic hearth. This interpretation is based upon similar concentrations in the area known to be Neolithic sites. Many exposed Acheulian artifacts are in loose sand and fine pebbly gravel of the active sand sheet that blankets much of the modern landscape. These were exposed around the edge of the plateau by erosion of a red paleosol with a strong cracking pattern (very coarse prismatic soil structure). The paleosol is developed in fluvial sand and gravel.

A soil test pit excavated in the artifact cluster at KAS-15, as well as 18 auger holes dug across the plateau, revealed that Surface 2 is underlain by a sequence of Pleistocene sands and gravels resting unconformably upon shale of the Cretaceous Dakhla Formation (Figure 2 and Table II). A basal unit of fine, yellow, soft to firm sand appears to be eolian and is overlain by soft to firm, fine to medium, light-brown sand overlain by reddish-brown, firm, stratified sands and gravels with the pedogenic structure mentioned earlier. This is overlain by light-brown, medium to coarse sand with medium to coarse prismatic structure capped by a vesicular A horizon ranging from 0.5 to 15 cm thick.

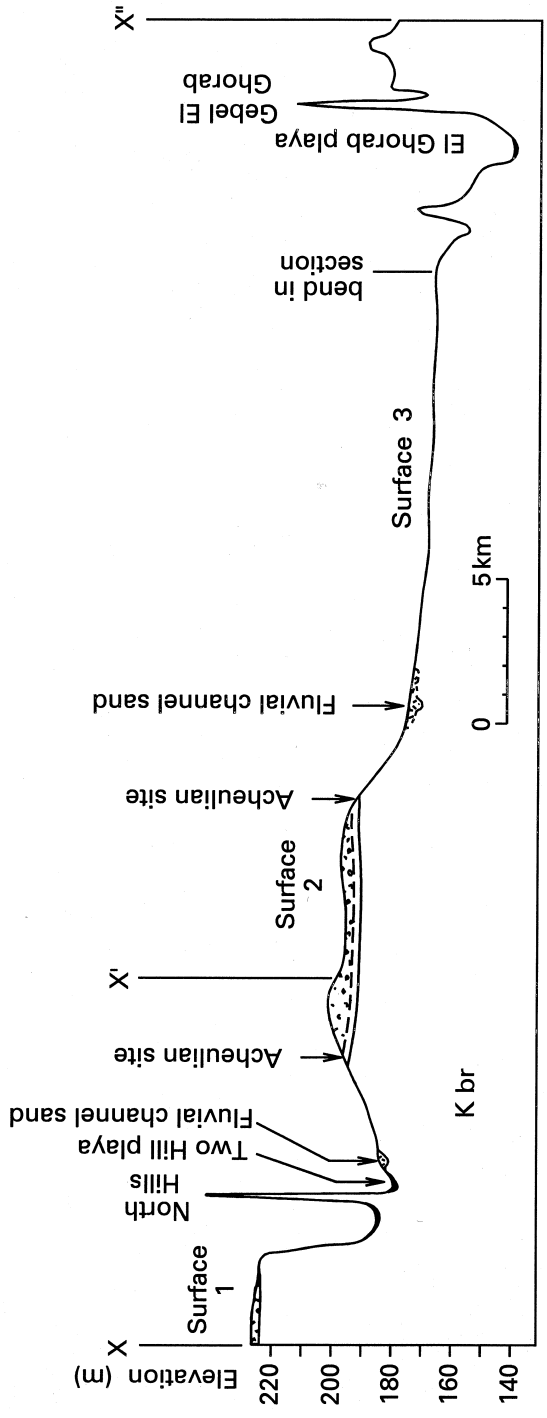

Figure 2. Geological cross section x–x'–x" of the Bir Kiseiba area (Figure 1) showing the stratigraphic position of Acheulian artifacts (broken line under Surface 2) with respect to other surfaces. Surface occurrences of Middle Paleolithic artifacts appear to be associated with the fluvial channel sands, and Neolithic artifacts are associated with the playa deposits (after Haynes et al., 1997: Figure 2).

Table II. Stratigraphy of test pits and auger holes from NW of KAS-15 to SE of KAS-21.

Elev. (m.)	Location	Strata	Thickness (cm)
	TAM 98 pit	Pebble spread[a]	1
	Auger Hole 15	Vesicular horizon (Av)	8
		Transitional zone	3
		Red sandy fine pebble alluvium	40
		Red find sand with dispersed granules	90
		Yellowish brown fine sand, harder with depth and with FMSS plate	90
		Kunkar nodules at 230 cm	
1.31	86BHT-26	Pebble spread	1
		Vesicular horizon (Av)	9
		Transitional zone	3
		Red pebbly sand	20+
1.37	Test pit 1		
	Auger Hole 14	Pebble spread	1
		Vesicular horizon (Av)	15
		Reddish brown sandy pebble gravel to pebbly sand	50
		Orange red fine sand	90
		Light brown fine to medium fluvial sand	45
		Light brown very hard fine to medium sand	10
		White shale (bedrock) at 210 cm	
1.13	Test pit 2	Pebble sheet	1
		Vesicular horizon (Av)	9
		Transitional	3
		Light yellowish-brown (tan) pebbly sand	20+
0.83	Test pit 3	Pebble Sheet	1
		Vesicular horizon (Av)	9
		Transitional zone	5
		Reddish-brown pebbly fine to medium sand	20+
0.74	Test pit 4	Pebble spread	1
		Transitional zone with anhydrite	1
		Pebbly fine to medium sand	20+
0.45	Test pit 5	Pebble Spread	1
	Auger Hole 13	Light reddish brown fine to medium sand and fine to medium pebble gravel	30
		Reddish brown pebbly fine to medium sand that gets lighter, finer, and firmer with depth	240
		Bedrock at 275 cm	5
+0.32	Test pit 6	Pebble spread	1
		Vesicular horizon (Av)	2
		Transitional zone with anhydrite	4
		Fine sand to fine pebbly gravel	20+
0.25	Test pit 7	Pebble spread	1
		Vesicular horizon (Av)	9
		Transitional zone	5
		Red sandy pebbly gravel	20+

Table II. Stratigraphy of test pits and auger holes from NW of KAS-15 to SE of KAS-21. *(Continued)*

Elev. (m.)	Location	Strata	Thickness (cm)
0.20	Test pit 8	Pebble spread	1
	Auger Hole 12	Vesicular horizon (Av)	10
		Red sandy fine pebble gravel	90
		Red pebbly sand	100
		Light yellowish brown fine eolian sand	40
		Light yellowish brown hard eolian sand	11
		White shale (bedrock) at 252 cm	
0.11	Test pit 9	Pebble spread	1
	Auger Hole 11	Vesicular horizon (Av)	1
		Light brown fine pebbly fine to medium sand	20
		Red sandy gravel	35
		Light yellowish brown fine to medium pebbly sand	285
		Sandy polished pebble gravel	10
		White shale (bedrock) at 355 cm	
−0.21	Test pit 10	Pebble spread	1
	Auger Hole 10	Light brown laminated fine sand	8
		Light reddish brown fine pebbly fine to medium sand	40
		Reddish brown fine to medium sand that gets lighter and harder with depth	200
		White sandy mudstone (bedrock) at 250 cm	
	Trash pit	Pebble spread	
	~15 m NE	Reddish brown firm friable fine pebble gravel	60
	of pitline	Orange brown pebbly sand	80
	Auger Hole 9	Light brown firm to medium sand gets lighter and harder with depth	123
		Total depth is 263 cm	
−0.57	Test pit 11	Pebble Spread	1
	Auger Hole 8	Light brown fine platy fine sand	2
		Yellowish brown fine sand that got too hard to auger at 166 cm	163
	DLJ pit	Pebble spread	1
	Auger Hole 7	Reddish brown firm friable fine to medium sand with dispersed granules	60
		Color gets lighter and finer with depth	109
		Light orange brown fine sand with dispersed granules	95
		Tan firm to hard fine sand	29
		White mudstone (bedrock) at 294 cm	
−1.17	Test pit 12	Pebble spread	1
	Auger Hole 6	Laminated sand sheet with vesicular horizon	1
		Orange brown fine to medium sand with dispersed granules	30
		Gets finer and lighter with depth to FMSS plate	100
		Mudstone (bedrock) at 144 cm	12

(Continued)

Table II. Stratigraphy of test pits and auger holes from NW of KAS-15 to SE of KAS-21. *(Continued)*

Elev. (m.)	Location	Strata	Thickness (cm)
−1.75	Test pit 13	Pebble spread	1
	Auger Hole 5	Reddish brown firm friable fine sand	40
		Yellowish brown fine eolian sand to FMSS plate and flake	240
		Light yellowish brown fine eolian sand	39
		Fine friable white sandstone bedrock at 320 cm	
−1.96	Test pit 14	Stage 0 sand sheet[b]	1
	Auger Hole 4	Orange brown firm friable fine to medium calcarious sand with	123
		$CaCO_3$ nodules up to 15 mm maximum dimension. Becomes light yellowish brown with depth	
		Light yellowish brown well sorted fine sand	91
		Gray shale (bedrock) at 216 cm	
−2.45	Test pit 14	Stage 1 sand sheet	2
	Auger Hole 4	Light brown firm friable to hard fine to medium very calcarious sand becoming light yellowish brown with depth	130
		Bedrock at 133 cm	
−2.87	Test pit 16	Stage 1 sand sheet with 1 cm AV horizon	4
	Auger Hole 1	Light brown sandy fine pebble gravel	1
		Light brown firm friable fine to medium sand with dispersed coarse grains	56
		Grayish-white shale (bedrock) at 62 cm	
	Auger Hole 2	Stage 1 sand sheet	2
		Light yellowish brown fine to medium firm friable to hard sand	28
		Grayish-white shale (bedrock) at 31 cm.	
−3.09	Test pit 17	Stage 0 sand sheet	2
		Reddish brown laminated pebbly sand	5
			1
−3.46	Test pit 18	Stage 0 sand sheet	4
		Grayish-white soft shale (bedrock) at 5 cm	

[a] Pebble spread is used instead of armor because fine to medium pebbles are spaced several diameters apart (Haynes et al., 1998) rather than being closer together as with armoring.
[b] Incipient pedogenesis in the Sand Sheet has been classified according to the degree of cohesion. The stages of pedogenesis are as follows: stage 0 = no cohesion; stage 1 = very weak cohesion; stage 2 = weak cohesion with ped development (see Haynes, this issue).

The Acheulian artifacts at KAS-15 appear to be associated with the light-brown sand that underlies the red paleosol and overlies the fine eolian (?) sand. A fresh (unabraded) quartzite flake was recovered in auger hole #5 (TP #13) at a depth of 240 cm near the contact with the brown sand and the fine yellow sand.

Based on the new data, the sandy matrix containing the Acheulian artifacts is not inset against the red gravel (Kiseiba alloformation) as shown in Figure 6 of Haynes et al. (1997), but, in fact, extends under it. Therefore, the probability of finding *in situ* Acheulian sites less than 2.5 m below Surface 2 is quite high. Fur-

Table III. KAS-15 test pit line.

Loc.	Elev.	Dist. (m)	Bng.	Loc.
86BHT-27	+1.31	126	N36W	TAM98
TAM 98		164	N38W	86 BHT-26
86BHT-26	+1.31	111	N54W	CVHTP#1
TP#1	+1.37	91	N52W	TP#2
TP#2	+1.13	69	N52W	TP#3
TP#3	+0.83	54	N49W	TP#4
TP#4	+0.74	51	N53W	TP#5
TP#5	+0.45	40	N56W	TP#6
TP#6	+0.32	34	N68W	TP#7
TP#7	+0.25	39	N68W	TP#8
TP#8	+0.20	31	N68W	TP#9
TP#9	+0.11	36	N68W	TP#10
TP#10	−0.21	37	N68W	TP#11
TP#11	−0.57	13	N68W	NE side DLJ pit
TP#11	−0.57	19	N68W	Chaining pin
TP#12	−1.17	24	N68W	Chaining pin
TP#13	−1.75	33	N68W	TP#12
TP#14	−1.96	11	N68W	TP#13
TP#15	−2.45	24	N68W	TP#14
TP#16	−2.87	20	N68W	TP#15
TP#17	−3.09	10	N68W	TP#16
TP#18	−3.46	19	N68W	TP#17

thermore, SIR-C Space Shuttle Imaging Radar shows a mottled light-gray pattern that may reflect buried topography, and a linear dark pattern (Figure 3 of Haynes et al., 1997) may be a buried drainage. The relation of the Acheulian sites to paleodrainages could be quite informative. Also, because the artifact-bearing sediments are calcareous, bone preservation may be good, though no bone has been found in the surface exposures.

Haynes et al. (1997) noted that sandy sediments containing Acheulian artifacts at Site KAS-1 were collected for optically stimulated luminescence (OSL) dating, but that the OSL age was pending. Stephen Stokes (personal communication, 1998) recently completed the OSL analysis and reports an age of > 500,000 yr B.P.

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