ANTHROPOLOGIE • XLII/3 • pp. 227–241 • 2004

JIŘÍ A. SVOBODA

THE MIDDLE PALEOLITHIC OF SOUTHERN BAHARIYA OASIS, WESTERN DESERT, EGYPT

ABSTRACT: The georelief of southern Bahariya, shaped from the soft Tertiary sediments interlain by harder rocks, is structured into distinct "floors" and thus offers good potentials for study of Middle Paleolithic settlement strategies. Three aspects are important for location of the sites: secure water resources, lithic raw material outcrops, and positions granting a good overview. Accordingly, several types of Middle Paleolithic sites may be defined: the cummulative settlements at the playas, lithic workshops on the mountains, strategic hunting posts, and individual artifact occurrences. Given the lack of chronological framework of the Bahariyan Middle Paleolithic, the only trend that may be recognized is the development from the bifacial Acheulian handaxes towards the fine leafpoints (the latter associated with Mousterian points and flat-retouched sidescrapers), and probably, a tendency to reduction in size of the cores and flakes. Contrary to the sites in Negev and Cyrenaica, the Middle Paleolithic of northern Egypt shows no trends towards an increased blade production and to Upper Paleolithic technology in general.

KEY WORDS: Middle Paleolithic – Cummulative settlements – Lithic workshops – Episodic sites – Bahariya – Egypt

THE BAHARIYA OASIS

As all the other oases of Western Desert, Bahariya, located between N 27 48' and 28 30', and E 28 35' and 29 10', forms a larger depression in the desert plateau. It creates an oval 94 km long and 42 km wide, surrounded by marginal escarpments, while the valley floor is littered with numerous conical mountains, table mountains, and mountain ridges. The base of the depression lies about 120–130 m a.s.l., whereas the marginal escarpments rise about 150 m higher. Numerous springs, lakes, and fossil lacustrine deposits ("playas") in the valley floor indicate that the depression was considerably more humid in the past compared to the present day.

Whereas the marginal escarpments in the southern part of Bahariya are formed by Cretaceous limestone, with local outcrops of siliceous cobbles (cherts), the individual mountains are usually topped by various Eocene deposits, and some are caped (and protected from erosion) by solid ferrocrete sandstones and quartzites of Oligocene age. Both the chert and the quartzite were used as raw materials for lithic industries.

Unlike all the other oases in the Western Desert, which have already provided a wealth of Paleolithic evidence (Caton-Thompson 1946, Schild, Wendorf 1981), Bahariya was hitherto insufficiently surveyed from this viewpoint (Hassan 1979). Thus the establishment of the Paleolithic occupation and the outline of the settlement record was reserved to the actual survey project organized by the Czech Institute of Egyptology, Charles University, Prague, and joined by the Paleolithic and Paleoethnology Research Centre at the Institute of Archaeology, Brno (Bárta *et al*. 2004).

THE 2003–2004 SURVEY

The surveyed area reaches from Gebel Miteili Radwani in the north to Gebel Gharbi in the south, i.e., an area of about 30×20 km (*Figures 1* and *7*). Given the structured type of

FIGURE 1. The Acheulian occupation. Provisory map showing outlines of the Bir es-Showish Oasis, main roads, and the recorded finds of Acheulian artifacts (the southernmost one is Gart es-Sheikh). Compiled by V. Bruna.

landscape, the strategy of the survey was to explore a variety of georelief types, with special attention to ancient lakes (playas), the quartzite and chert outcrops, and the strategic locations within the landscape. The basal plain, including the dry *wadis* from episodic water erosion, was unattractive for human occupation. Especially the large areas of the plain covered by weathered plaques of sandstone and ferruginous sandstone were evidently avoided.

In 2003, coordinates of the artifacts finds and scatters were recorded using GPS garmin, and located in a map. During the 2004 season, the map was completed and more important concentrations (regular squares 104–604) were sampled and analysed in detail.

Representative artifacts, illustrated in this paper, are deposited at the Antiquities Department and Museum at Bawiti. The remaining lithic artifacts were studied on the site and left *in situ*.

Intact parts of the desert surface, unaffected by historic and modern settlement, are especially promising for this type of survey. It should be recalled that this type of survey in desert area not far from modern settlement has, at least partly, the character of a salvage project. As an example, a similar research was realised in the Abusir area near Cairo in 1987 (Svoboda 1993). Actually, the western part of the explored area, including the Middle Paleolithic sites, is destroyed by gravel exploitation and the desert surface in the southern part is at least partly damaged by car riding and in-blown refuse.

In the south of the Bahariya oasis, the following chronological/cultural stages are recorded (Bárta *et al*. 2004):

Acheulian: five isolated bifaces, two of them heavily eolised, found in considerable distances from each other on the Bir el-Showish plain and on the Gart es-Sheikh hill. The material is both quartzite and chert (*Figures 2–6*).

Middle Paleolithic with leaf-points: cummulative settlements at Umm el-Okhbain, Mannsaf, and Ain il-Khabata. The material is predominantly chert (*Figures 9–12*).

Undifferentiated Middle Paleolithic: quartzite workshops at Gebel el-Showish, Black Mountain, Unnamed Mountain, Miteili Radwani, and isolated artifacts on the basal plain (*Figures 14–16*).

Epipaleolithic/Neolithic: lowland settlements at Umm el-Okhbain, Mannsaf, Bir Ain Naga, and at two more playas in the region. A technologically related chert workshop for blades was recorded in the south, on the edge of the Gebel Gharbi escarpment.

Historical periods: Dynastic to Roman, a variety of chert and quartzite industries related to historical underground and surface structures.

THE MIDDLE PALEOLITHIC ARTIFACT DISTRIBUTION: SETTLEMENTS, WORKSHOPS, AND INDIVIDUAL ARTIFACTS

This paper focuses on the Middle Paleolithic horizon in general, which is most widely distributed across the landscape, and relatively well structured. Several site-types were identified and samples were analysed from each type:

Cummulative settlements (samples 204–404, 604). Artifact scatters with a high percentage of curated tools (10–20%) and a lower percentage of cores (6–12%) are located near the ancient water sources or on the nearby terraces. However, the artifacts in these areas are widely dispersed and thus their density is relatively low (0.2–1.3 artifacts per m^2).

Specialized lithic workshops (sample 104) were attached to the chert outcrops on the escarpment plateaus, or more frequently, to quartzite covers on tops of the isolated mountain ridges. Curated tools are almost absent here (less than 1%), and, surprisingly, the percentage of cores is not high either (about 5%). Density of the artifacts, predominantly flakes and blades, reaches the highest frequencies ever recorded in this region (about 24 artifacts per m^2).

Episodic sites (sample 504) lie on escarpment edges, without sufficient raw material and water sources, and these may possibly be interpreted as strategic hunting posts.

Single artifacts of Middle Paleolithic character are dispersed in considerable distances on the basal plain, terraces, and pediments across the surveyed landscape.

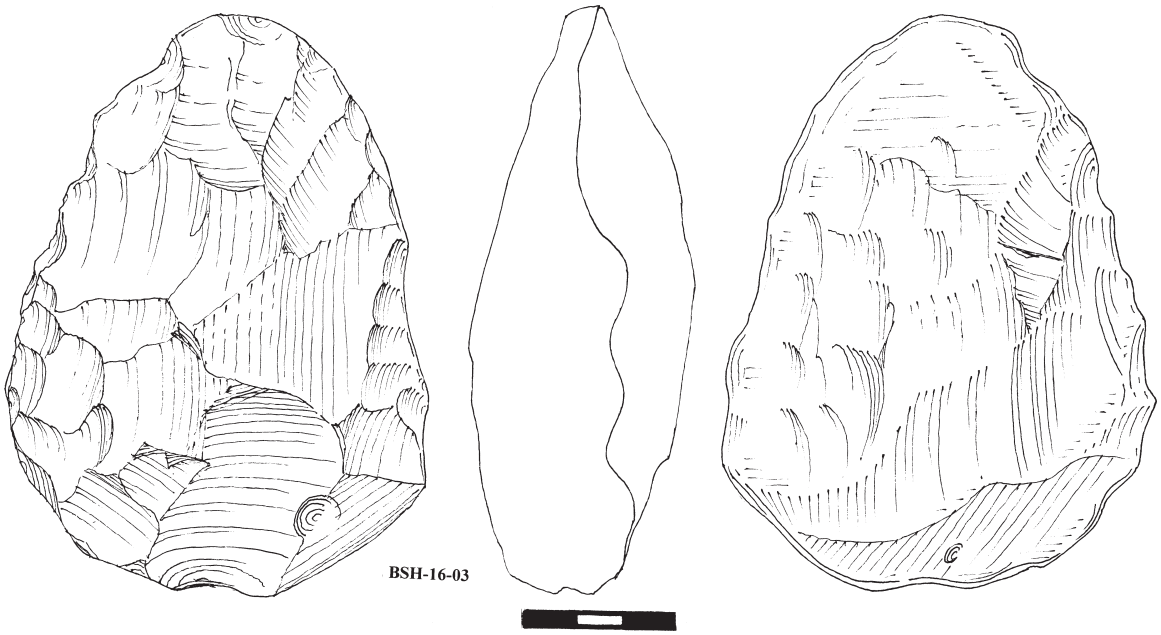


FIGURE 2. Acheulian handaxe, brownish chert, Bir el-Showish plain.

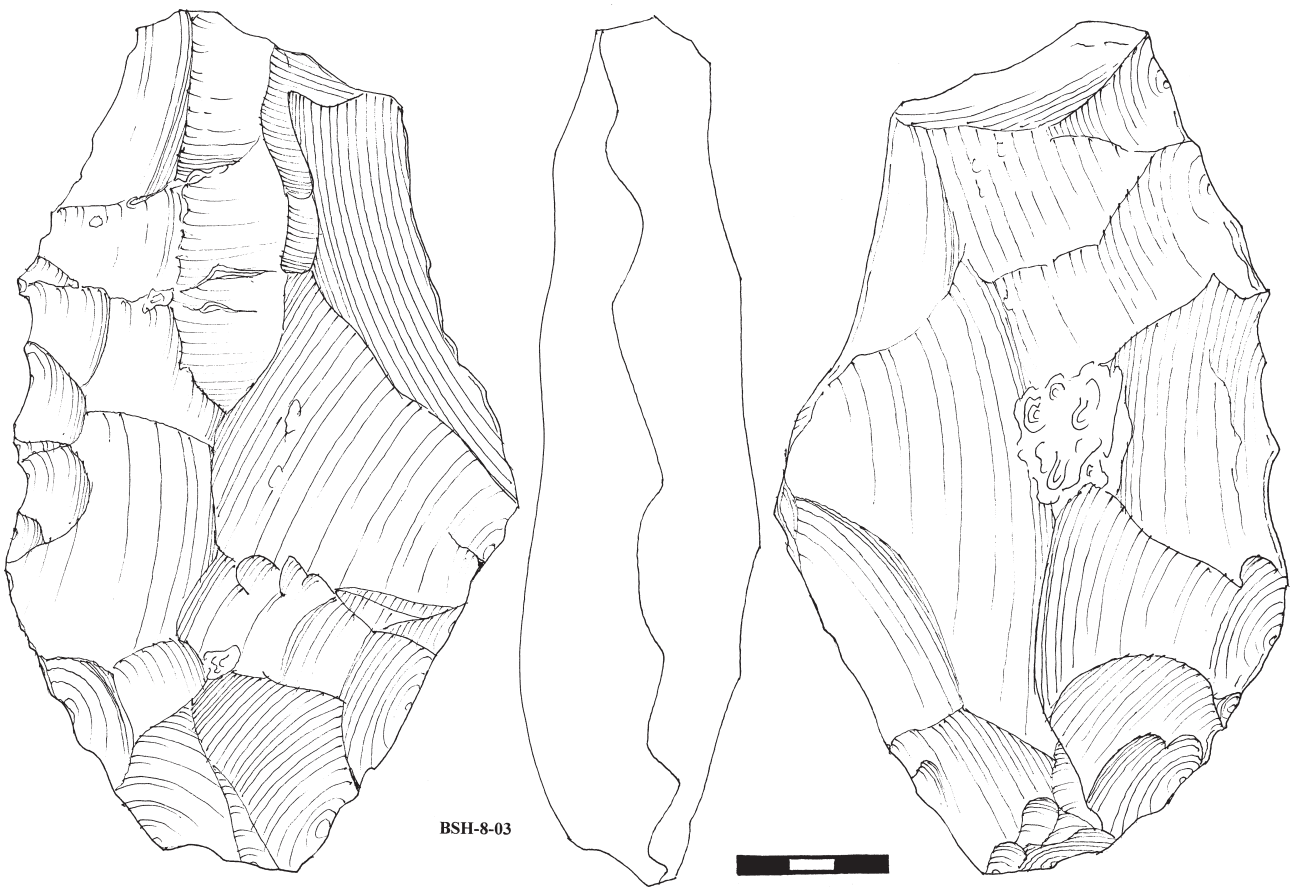


FIGURE 3. Acheulian handaxe, brownish chert, Bir el-Showish plain.

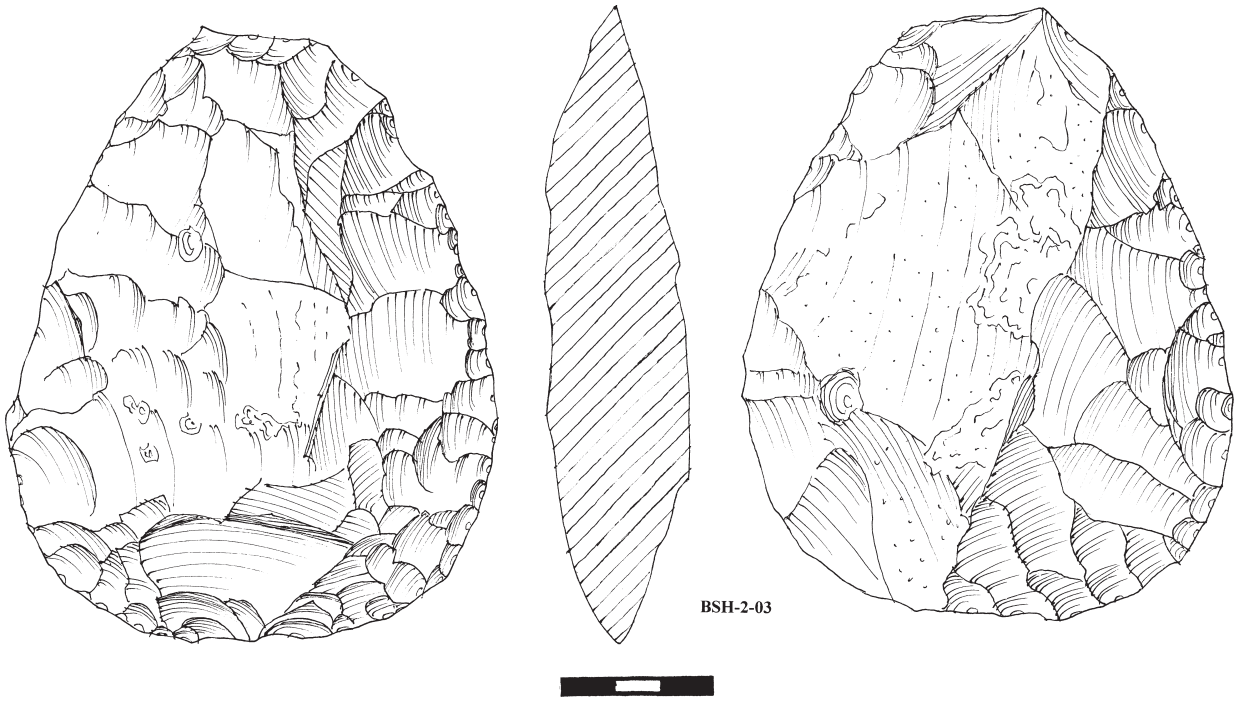


FIGURE 4. Acheulian handaxe, quartzite, Bir el-Showish plain.

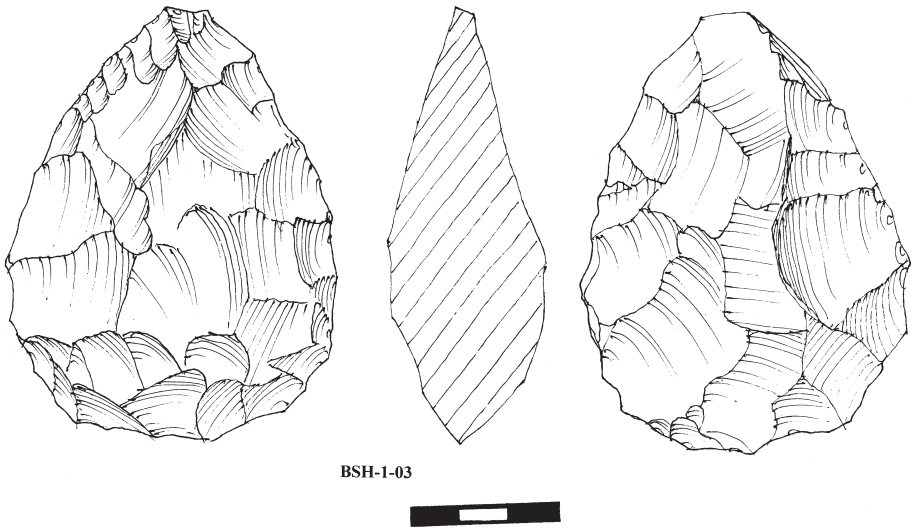


FIGURE 5. Acheulian handaxe, quartzite, Bir el-Showish plain.

CUMMULATIVE SETTLEMENTS AT THE PLAYAS

Umm el-Okhbain is an almost circular playa, a lacustrine deposit with characteristic *yardangs* on the surface, located in the centre of a pan-shaped depression at about 145 m a.s.l., and surrounded by isolated mountain peaks (*Figure 8*). Advantage of this area is that it remained undisturbed either by historical or modern occupations and activities. A small but relatively dense artifact scatter of Epipaleolithic age (sample 103: N 28.01365, E 28.65803) was recorded in the northern part. The Middle Paleolithic artifacts, in considerable distances from each other, are scattered all around the fossil lake (and some occur in the centre, on the surface of the lake deposit), but more dense occurrences flank the NW coast at about 30–50 m distance from the shoreline. Three accumulations, 204–404, each of 10×20 m, were selected for analysis in this area (N 28.01289, E 28.65702, N 28.01239, E 28.65663, N28.01216, E 28.65594, *Tables 1–3*). In all cases, the longer axis follows the ancient coastline. Even inside these selected

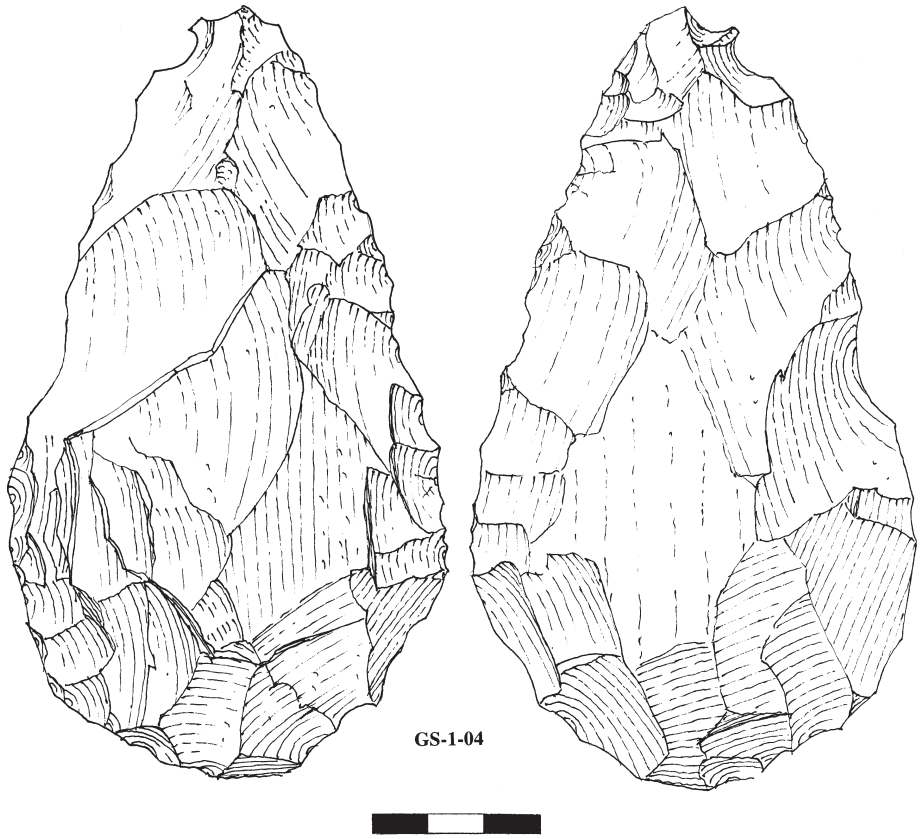


FIGURE 6. Acheulian handaxe, violet quartzite, Gart es-Sheikh.

TABLE 1. Review of cores.

Sample	**104**	**204**	**304**	**404**	**504**	**604**
Prepared raw material	1	–	–	–	–	–
Pre-core	2	–	–	–	–	–
Initial core	1	1	1	–	–	1
Flat unidirectional	2	–	–	–	1	–
Flat bidirectional	1	–	–	–	1	1
Flat multidirectional	1	–	–	–	–	1
Cubical	1	–	–	–	–	–
Other	1	–	–	–	–	2
Core residual	1	2	3	–	2	3
Total	**11**	**3**	**4**	**–**	**4**	**8**

TABLE 2. Review of flakes.

Sample	**104**	**204**	**304**	**404**	**504**	**604**
Cortical	11	4	–	1	5	4
Partly cortical	15	2	6	5	9	8
Non cortical	77	9	10	22	61	37
Preparation (corner) flakes	23	2	1	6	17	12
Crest flakes	1	–	1	–	–	–
Rejuvenation flakes	7	3	1	4	3	2
Levallois flakes	6	2	1	3	6	9
Pointed flakes	5	2	1	1	7	1
Chips	11	3	3	7	54	20
Total	**156**	**27**	**24**	**49**	**162**	**93**

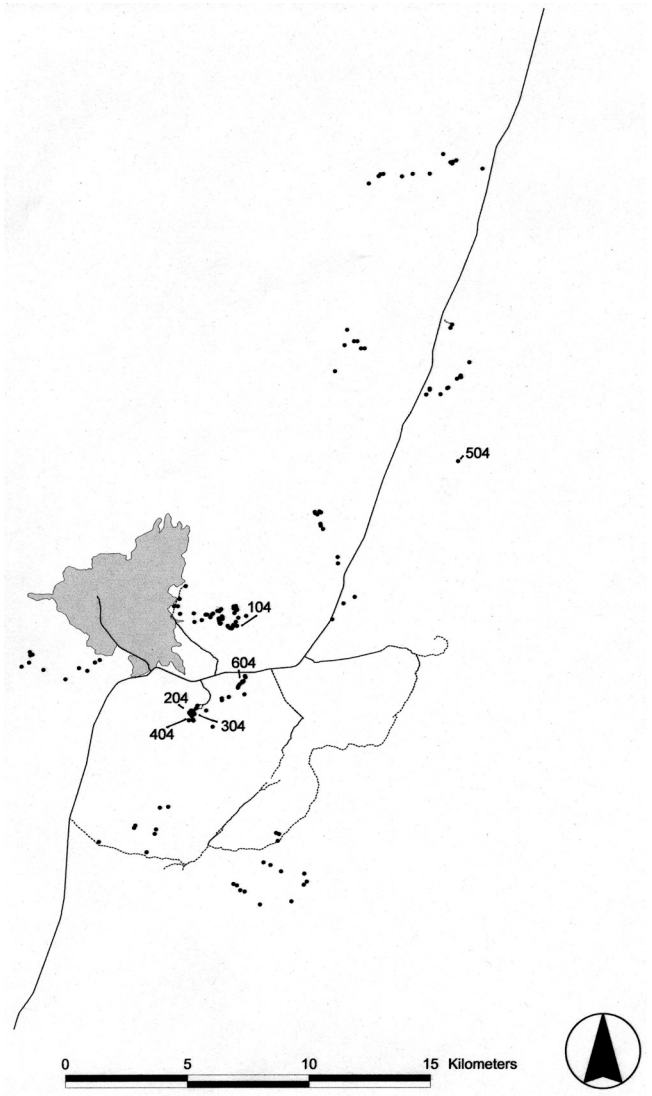


FIGURE 7. The Middle Paleolithic occupation. Provisory map of southern Bahariya Oasis, showing outlines of the Bir el-Showish Oasis, main roads, recorded finds of Middle Paleolithic artifacts, and the samples 104–604. Compiled by V. Bruna.

concentrations, however, the density of artifacts was relatively low (about 0.2–0.3 artifacts per square).

The raw material structure is composed by the majority of brownish to grayish chert, accompanied by brownish quartzite.

The technology is Levallois in the broadest sense of the word. Cores are rare, and most of them are residuals of small size (the smallest being no more than 2–3 cm large). Dimensions of the flakes range between 2–3 per 5–6 cm, with a few exceptions (small chips of about 1.5 cm, and large flakes up to 10 cm). The mean breadth of blades is 2 cm, and the usual length does not exceed 6 cm. Few of the flakes and blades are Levallois (with prepared platforms) and pointed (a long and narrow blade from sample 404 is Epipaleolithic).

A selection of typical tool-types is illustrated (*Figures 9–10*). Sample 204 provided two Mousterian points (one of them with partial flat retouche from the ventral face), sidescrapers, a simple burin, and a retouched blade. Sample 304 included a broken tip of another Mousterian point, a simple burin, and a retouched blade. Sample 404 yielded an elongated leaf-point, pointed flakes, a thick sidescraper, and a splittered piece.

The Umm el-Okhbain playa is connected by a broad corridor with another playa, Mannsaf, also with the characteristic *yardangs*, and at about 145 m a.s.l. A more important find scatter was located about 150 m south of the visible shoreline of the playa. From this findspot, measuring 10×10 m, sample 604 was analysed (N28.02336, E28.67523). The industry (*Figure 11*), made of brown cherts and violet quartzites, included a leaf-point, two Mousterian points made on larger Levallois flakes, other Levallois flakes, sidescrapers, a simple burin, and truncated blades. Smaller flake finds and individual cores are dispersed in the dry valley corridor connecting the two playas, while the third, Unnamed playa in the adjacent depression provided no finds.

Comparative materials were recorded at other places in the area (*Figure 12*), as at Ain Umm Khabata (points, sidescraper) and Bir Ayin Naga (a point). However, not all of the playas recorded and surveyed in southern Bahariya in 2003–2004 provided automatically Middle Paleolithic artifacts of this type.

THE TOP-MOUNTAIN WORKSHOPS

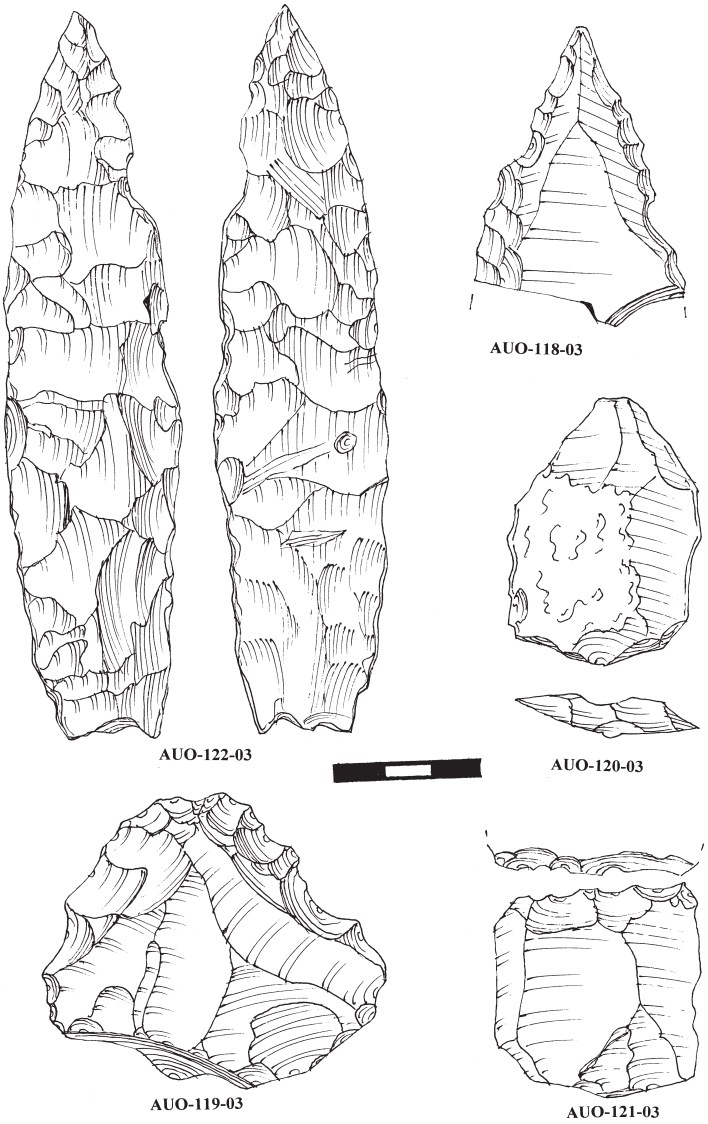
The densiest Middle Paleolithic artifact accumulations were recorded on the peaks of Gebel el-Showish, a dominant horseshoe-shaped mountain ridge located about 3 km east of the Bir-el-Showish area. The peak areas reach 270–280 m a.s.l. and form several smaller plateaus. The geomorphology suggests that at more favourable time-periods, the rainwater accumulated in the bow of the horseshoe, from where the ridge has been episodically

TABLE 3. Review of blades.

Sample	**104**	**204**	**304**	**404**	**504**	**604**
With cortical side	3	1	1	3	–	3
Non cortical	26	4	2	2	18	6
From core preparation	4	–	–	–	3	1
Crested blade	3	–	–	–	–	–
Levallois blade	3	–	–	–	4	2
Pointed blade	4	–	–	1	1	2
Total	**43**	**5**	**3**	**6**	**26**	**14**

FIGURE 8. View of the playa deposits and the *yardangs* at Umm el-Okhbain.

FIGURE 9. Middle Paleolithic with leafpoints, brownish chert. Sample 404, Umm el-Okhbain playa.



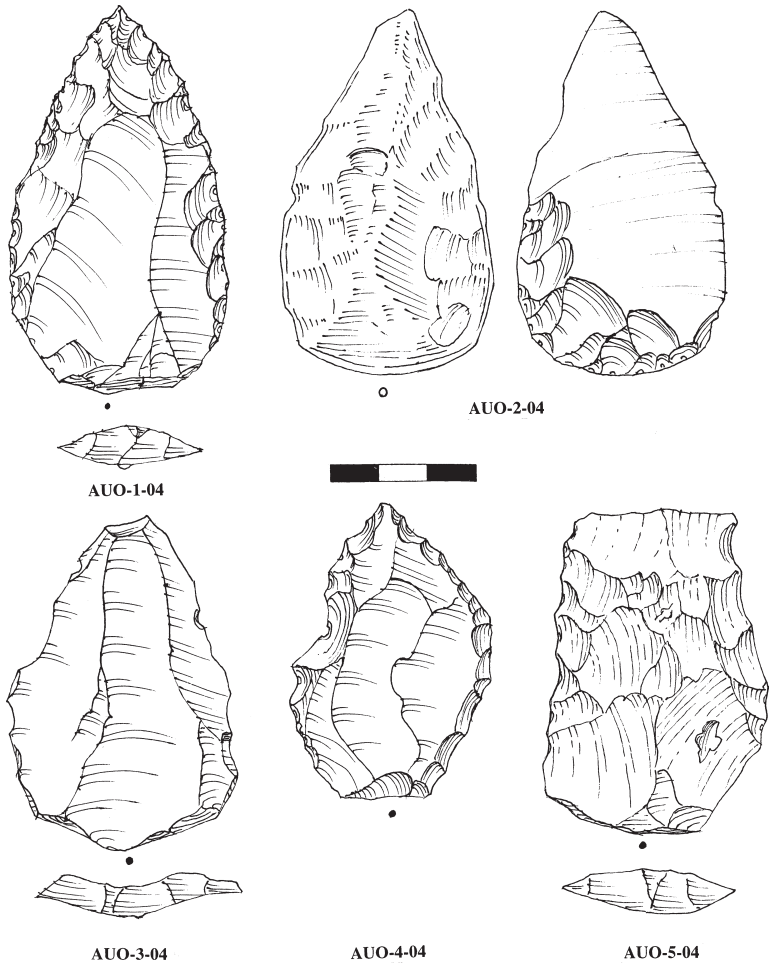


FIGURE 10. Middle Paleolithic with leafpoints, brownish chert. Sample 204, Umm el-Okhbain playa.

drained by steep and narrow *wadis*. Generally, however, the hilltop is dry.

The highest parts of the mountain are protected from erosion by weathered remains of solid crusts of siliceous and ferrocrete sandstones and quartzites (*Figure 13*). Several types of raw materials outcrop in these areas:

– Dark brown to violet quartzite, the most widely dispersed raw material, and one preferentially used in the Middle Paleolithic tool production;
– Light brown to yellow quartzite, forming isolated outcrops, rather neglected during the Middle Paleolithic (a type preferred for production of picks during historical periods);
– Violet quartzite of lower quality, more eolised, and if used for artifacts, suggesting a more "archaic" appearance;
– Brownish to reddish cherts.

Inside the concentrations at the raw material outcrops, the flakes, fragments, and cores are clustered verbally "one on another". The majority are made of the dark brown quartzite, and a smaller portion of the brown cherts. Thus the raw material composition on the mountains is reverse to the one recorded around the playas.

Artifacts of the same type also occur within the slope debris below, and, as smaller scatters, on the lower terraces of Gebel el-Showish (230–240 m a.s.l.), whereas the single artifacts, widely dispersed over basal plain (130–160 m a.s.l.), are predominantly made of the brownish-reddish cherts.

Technologically, most of the cores from the workshops are Levallois, flat in section, and of rounded, rectangular, or triangular shapes (*Figures 14–15*). The mean dimensions range around 8×5×2 cm. The both surfaces are more or less carefully prepared. There are prepared pre-forms, but the majority are cores reduced by one or more unipolar strikes. Some of the flat cores are discoid. More voluminous cores are less regular in shape. Given the relatively high proportion of blades, the absence of blade cores is striking (a typical recurrent Levallois blade core was found at another site, Miteili Radwani).

The flakes and blades are mostly Levallois, some possess well prepared striking platforms, and the shapes are ovoid, quadrangular, or pointed (*Figure 16*). Dimensionally, the flakes range from the smallest chips of 1 per 1 cm to flakes of around 5 per 4 cm, and to the largest ones reaching up to 10 per 10 cm. There are two groups of blades: the small ones, about 1 cm wide and up to 5 cm long, and larger

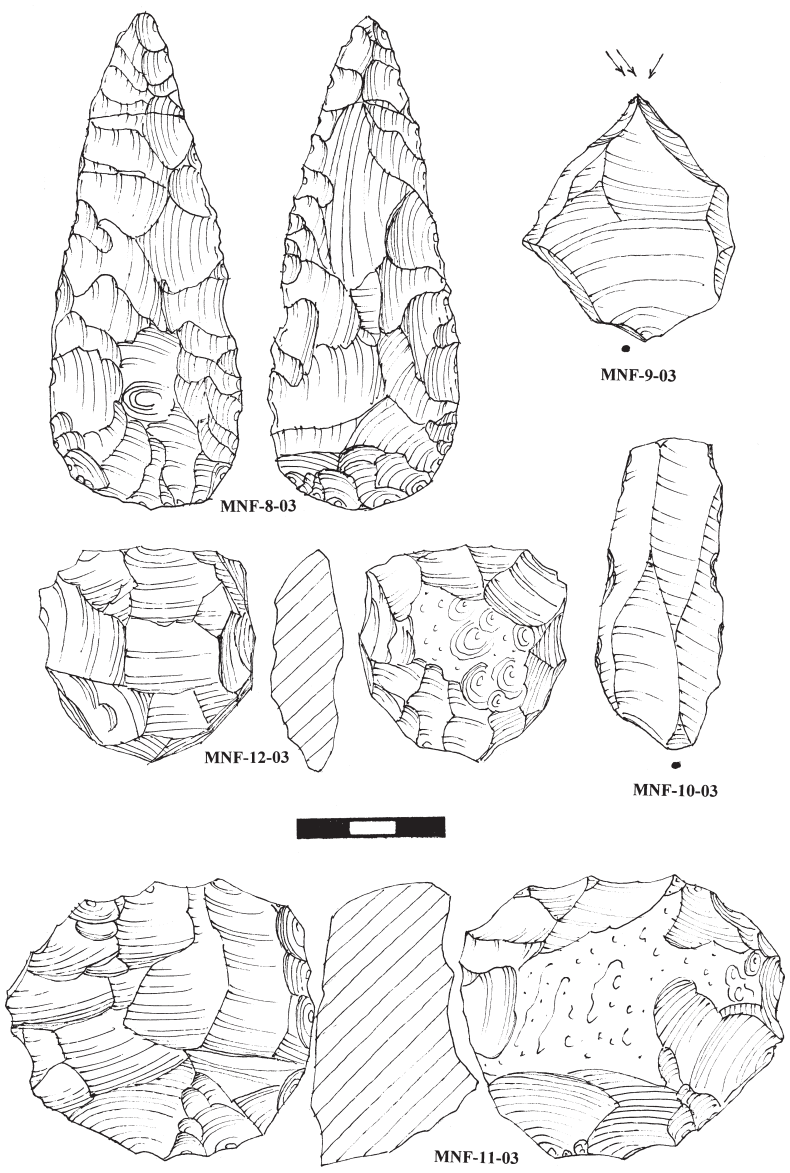


FIGURE 11. Middle Paleolithic with leafpoints, brownish chert. Sample 604, Mannsaf playa.

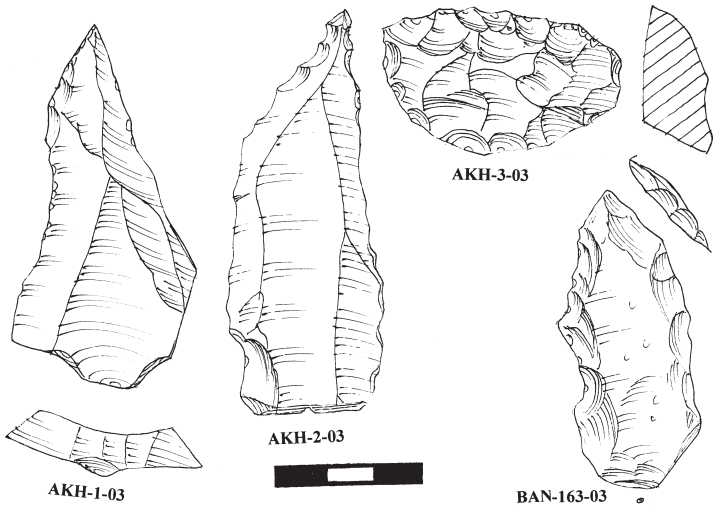


FIGURE 12. Middle Paleolithic, selected artifacts, brownish chert. Ain el-Khabata and Bir Ain Naga.

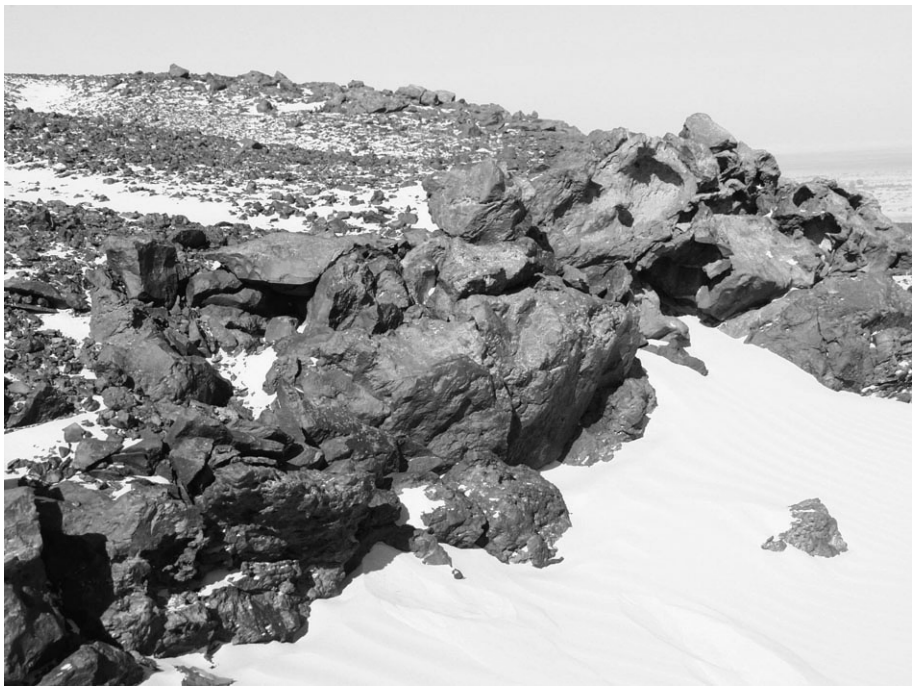


FIGURE 13. Quartzite outcrops on top of the Gebel el-Showish mountain ridge.

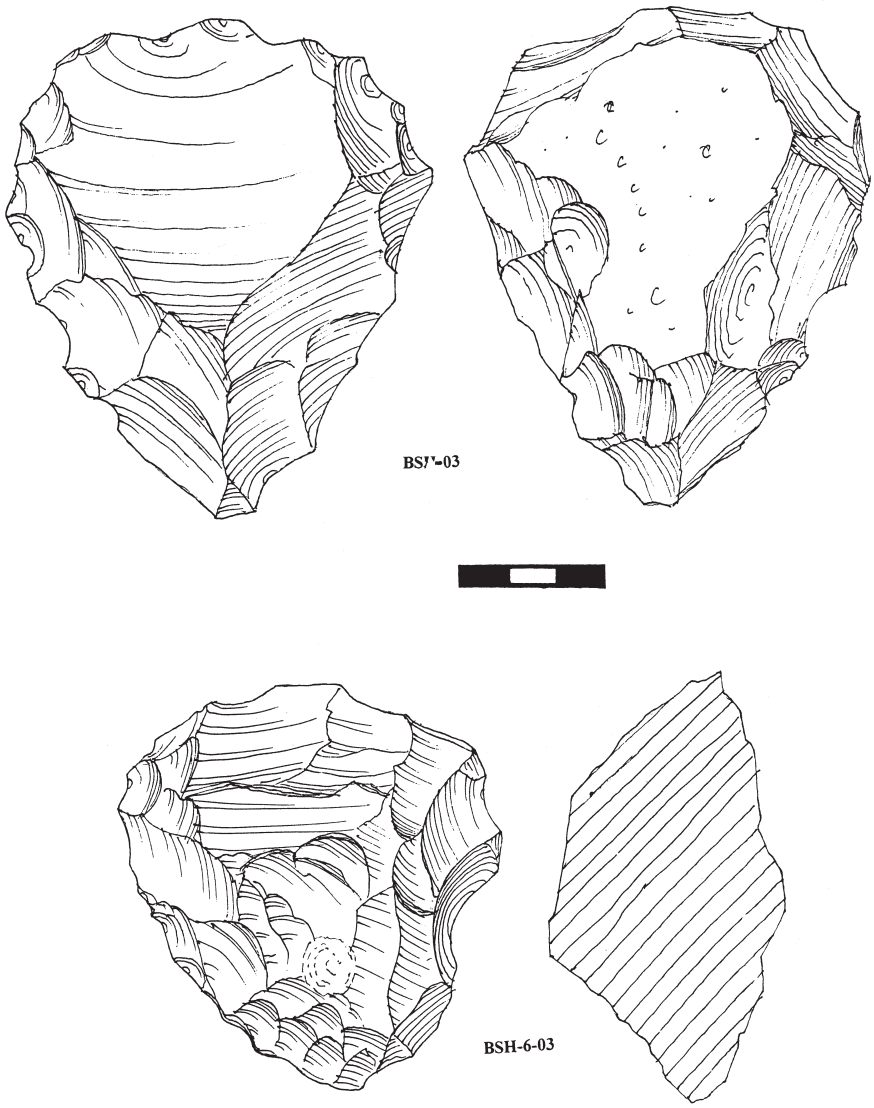


FIGURE 14. Middle Paleolithic workshops, selected cores. Gebel el-Showish.

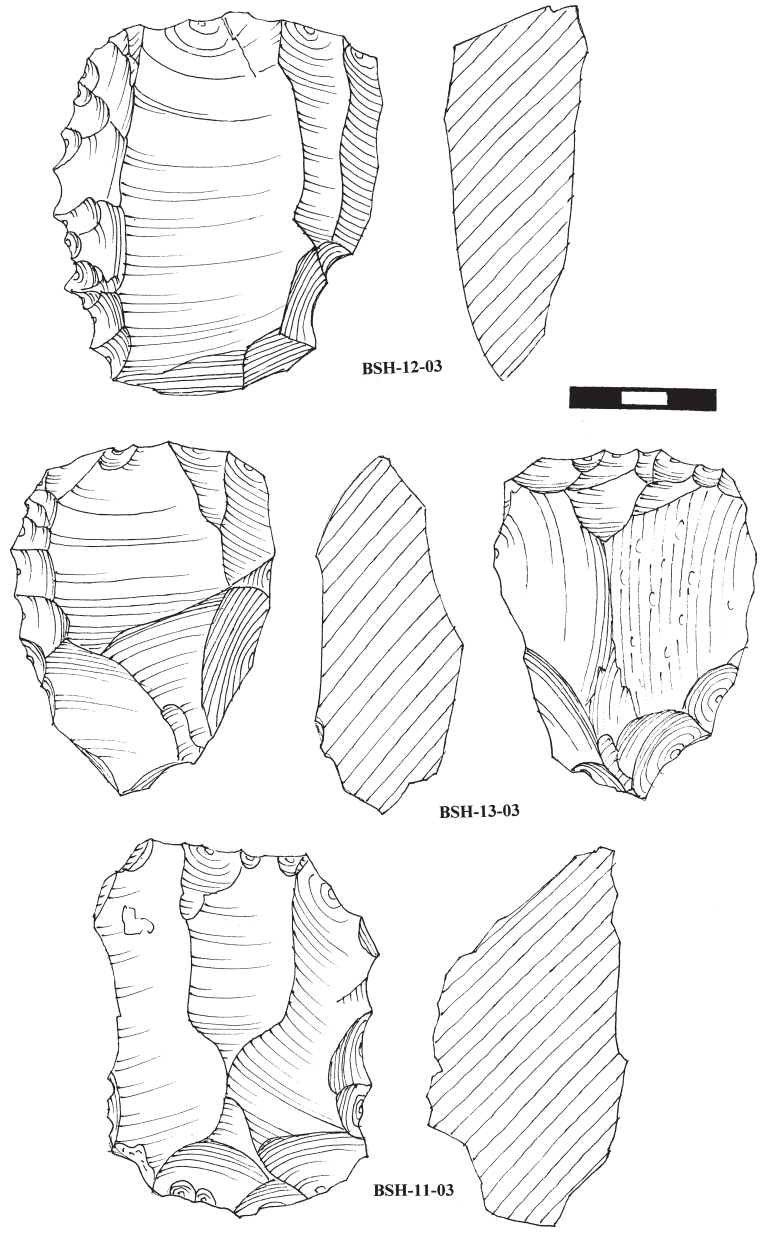


FIGURE 15. Middle Paleolithic workshops, selected cores. Gebel el-Showish.

ones, 1–3 cm wide and up to 8–10 cm long. Exceptionally, blades up to 4 cm wide and 12 cm long were recorded.

Without taking in account the irregular marginal retouches, the real retouched tools are extremely rare in this context: a few irregular bifacial implements (possible leafpoints preforms), questionable burins, rare marginal retouches, notches and denticulates (*Figure 16*).

A statistically evaluated sample was collected from site 104 which is a square of 3×3 m (N 28.04334, E 28.67118), at 282 m a.s.l. It is in one of the top areas attached to the bow of the mountain's "horseshoe". The typical dark brown to violet quartzite outcrops at place, while a smaller outcrop of a reddish chert is present nearby. The artifacts form a accumulation 20–30 m wide, descending on a slight slope from the outcrops towards the saddle. Altogether 212 artifacts were recorded within the analyzed 9 m^2, which makes the mean artifact density 23.6 artifacts per square. The statistical composition of this sample is given in *Tables 1–4*.

Another, smaller workshop of a similar character was recorded on the top platform of the "Black Mountain", a dominant ridge located about 6 km further to the NE (320 m a.s.l., N 28.08534, E 28.70290). The artifacts formed an accumulation of 20 m in diameter on the top, and were also dispersed in the slope debris below. The other surveyed mountains with quartzite and chert outcrops had no artifacts at all, or just isolated finds and find scatters (the Unnamed Table Mountain, N28.14929, E28.71766, Miteili Radwani, N28.21853, E28.74949 and around).

A small atelier was recorded (and left *in situ*) on the plateau of the Gebel el-Gharbi escarpment (250 m a.s.l.,

TABLE 4. Retouched tools.

Sample	104	204	304	404	504	604
Irregularly retouched	n	–	–	–	4	3
Leaf-point	–	–	–	1	–	1
Mousterian point	–	2	1	1	–	2
Sidescraper	–	3	–	1	–	1
Endscraper	–	–	–	–	1	–
Notch	1	–	1	1	1	3
Denticulated tool	1	1	–	–	–	–
Splittered piece	–	–	–	1	–	–
Retouched blade	–	1	1	1	1	–
Truncated blade	–	–	–	–	–	2
Burin	–	1	1	–	–	1
Bec	–	–	–	–	1	–
Total	**2**	**8**	**4**	**6**	**8**	**13**

TABLE 5. Summary table.

No. of sample	104	204	304	404	504	604
Altitude (m a.s.l.)	282	150	150	150	253	148
Degrees North	28.04334	28.01289	28.01239	28.01216	28.10967	28.02336
Degrees East	28.67118	28.65702	28.65663	28.65594	28.75500	28.67523
Analyzed area (m)	3×3	10×20	10×20	10×20	4×7	10×10
Total artifacts	212	43	35	61	200	128
Artifact density (per m^2)	23.6	0.2	0.2	0.3	7.1	1.3
Ilam	22.9	15.6	11.1	10.9	19.4	13.1
Cores (%)	5.2	7.0	11.4	–	2.0	6.3
Flakes (%)	73.6	62.8	68.6	80.4	81.0	72.6
Blades (%)	20.3	11.6	8.6	9.8	13.0	10.9
Retouched tools (%)	0.9	18.6	11.4	9.8	4	10.2

N 28.03465, E 28.59660), SW of Bir el-Showish. The working area, about 1.5 m in diameter, was attached to outcrops of a light-to-green banded chert. There was a large initial core in the centre, surrounded by about 10 large Levallois flakes, not refitting together. Other Levallois artifacts were dispersed on this plane in considerable distances from each other.

In the light of comparison with the other mountain workshops, it seems that the importance and utility of Gebel el-Showish lies not only in the raw material outcrops themselves (which were available on the other elevations as well), but also in its dominant position over the Bir el-Showish lake area.

These workshops cannot be more precisely dated within the Middle Paleolithic and we labelled them Undifferentiated Middle Paleolithic. It is probable that they were used during a longer time-span than the playa settlements.

AN EPISODE ON TOP OF A TABLE MOUNTAIN

The "White Mountain" is an elevated limestone plateau at about 250 m a.s.l., mostly without human occupation traces. Actually, it is not visited by humans, so that the ancient surfaces remain untouched. The limestone is very poor in lithic raw materials – the only local source represents very rare nodules of dark brown chert, only a few cm in size. Only rainwater could have been available at the site during more favourable episodes, as suggested by the erosional ridges on slopes. Nevertheless, an undisturbed artifact accumulation was located at a strategic location at the southern edge of the escarpment (site 504, N 28.10967, E 28.7550). Size of the documented area was 4×7 m, with the longer axis oriented from W to E. The mean density is 7.1 artifacts per square (*Figure 17*).

Dominant lithic material at this site was the dark brown chert, accompanied by a smaller quantity of a light greyish stripped chert. The main and easternmost concentration was a circle of 2 m in diameter composed mostly by non-cortical flakes, blades, and chips. Cores are represented only by small residuals. The majority of the flakes have about 3 per 4 cm in size, and the blades about 2 per 5 cm (a blade of 3 per 9 cm is an exception). A smaller concentration, about 1 m in diameter, was adjacent to the west. The flakes here are slightly larger (5 per 6 cm) and cortical flakes are more frequent. Still further to the west, outside the concentrations, lied two flat cores, the largest at this site (7 per 8 cm and 6 per 7 cm). Finally, about 6 m from the main concentration, lied an isolated find of a large pointed flake

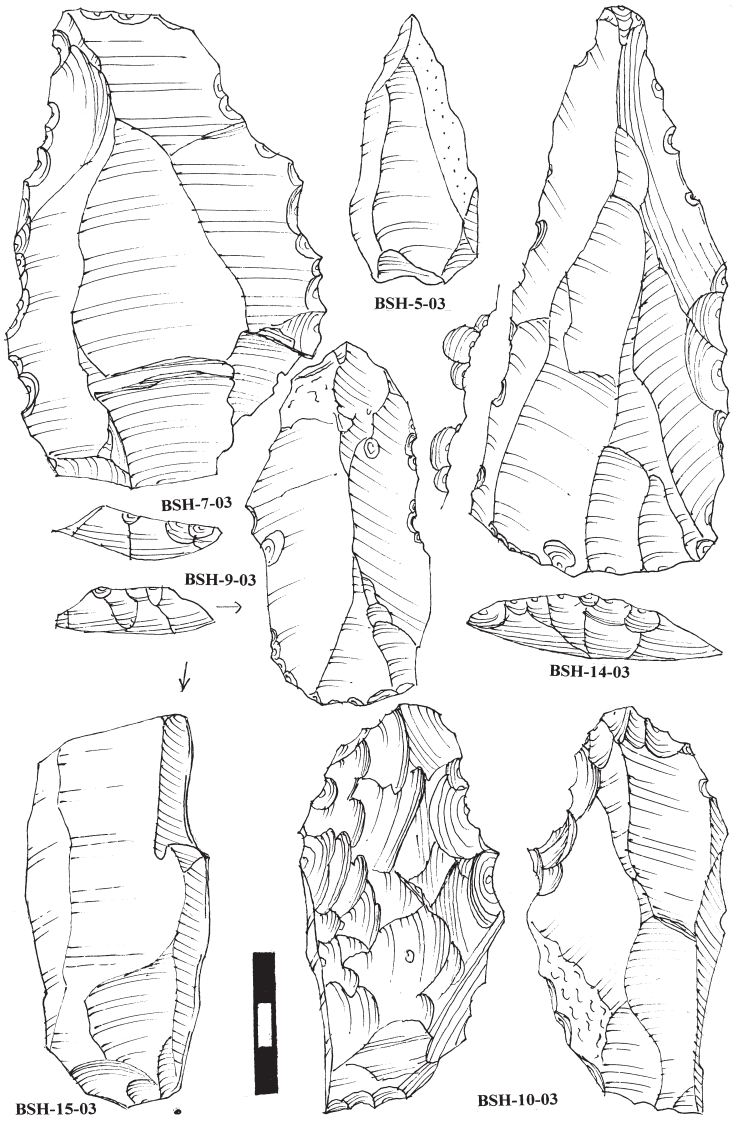


FIGURE 16. Middle Paleolithic workshops, selected flakes and retouched artifacts. Gebel el-Showish.

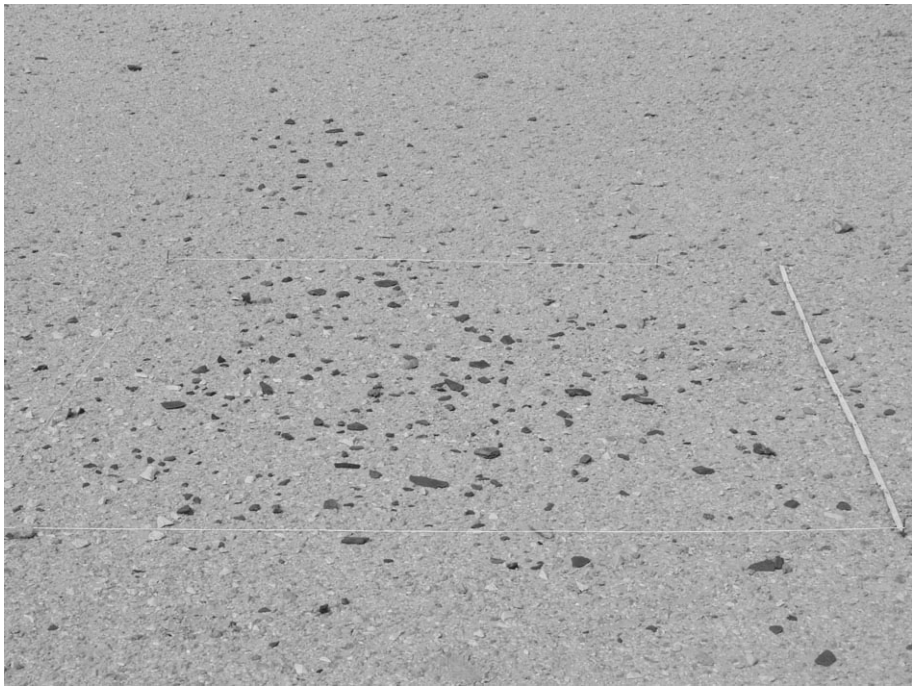


FIGURE 17. Episodic find scatter on top of the White Mountain. The diameter is 2 m.

of Levallois type, 7 per 12 cm, possibly the most important artifact at the site.

Thus, there seems to be a structuration of artifacts from the west to the east according to size and type, with the dominant flake and the larger cores in the west, and accumulations of smaller flakes and chips in the east. More precise dating of the site in frame of the Middle Paleolithic is not possible.

DISCUSSION: FUNCTION VERSUS CHRONOLOGY

Interpretative potential of the Middle Paleolithic, a type of industry too widely distributed over large surfaces of the North African desert landscapes, is usually considered with despect in the archaeological literature. Nevertheless, the georelief of southern Bahariya, shaped from the soft Tertiary sediments interlain by harder rocks, is structured into distinct "floors" and thus offers good potentials for study of hunter-gatherers' settlement strategies.

Three aspects of settlement strategy are important for location of the sites: secure water resources, lithic raw material outcrops, and positions granting a good overview. The variability of Middle Paleolithic site-types recorded in the Bahariya oasis raises the classical question of chronological versus functional difference.

Given the delimited character of the Middle Paleolithic occupations at the playas and the undifferentiated character of the workshops on the mountains, one may ask how far these are interrelated, and whether the morphological differences recorded in the artifacts reflect the classical settlement/workshop dichotomy. Naturally, human presence and activity at the lithic material outcrops is archaeologically more "visible" than anywhere else, with the effect of a certain deformation if one aims to compare artifact densities.

Evidence from three neighbouring areas is especially important for chronology of the Bahariya Middle Paleolithic and Middle-to-Upper Paleolithic relationships: the excavations realised by Marks in the Negev (Marks 1977), the work done by the Belgian team in Upper Egypt (Paulissen, Vermeersch 1987, Vermeersch *et al*. 1990, van Peer 1998, 2004), and the cave stratigraphies in Cyrenaica, studied lastly by McBurney (1967). Whereas the Negev sites (Boker Tachtit) demonstrate a gradual transition from the Middle towards the Initial Upper Paleolithic technologies, the Upper Egypt sites illustrate a rupture (Nazlet Khater) or coexistence of the late Middle Paleolithic and developped Upper Paleolithic (Taramsa). The Haua Fteah cave in Cyrenaica (similarly to certain cave sites in the Levant) suggests a complex change towards the Upper Paleolithic, with an early appearance of blade industries. The last mentioned cave site, which is huge in dimension and hitherto studied by a spatially restricted trenching only, calls urgently for a more systematic archaeological revision and exploration that would correspond to the importance of this unique site in the frame of the North African Paleolithic record.

Additional Middle Paleolithic materials are available from the oases of Fayyoum and Kharga (Caton-Thompson 1946), Dakhla (Marlow, Mills 2000), Bir Sahara and Bir Tarfawi (Schild, Wendorf 1981), from similarly oriented surveys at Abusir and in the Fezzan (Svoboda 1980, 1993), etc.

In the light of this comparative evidence, the scarcely documented Acheulian horizon in southern Bahariya may be compared to other Saharan sites. It is limited to a few typical artifacts from the Bir el-Showish plain, which, judging from the different eolisation and raw material, are probably not contemporary. The type of location – a large plain slightly sloping from an active oasis towards a mountain ridge – is quite typical for North African Acheulian sites in general.

Considerably more important is the Middle Paleolithic horizon with leafpoints, as recorded at the Umm el-Okhbain and Mannsaf playas, and at a few other places in southern Bahariya. The composition of the other tool-types, including retouched blades, sidescrapers, endscrapers, and Mousterian points, is typically Middle Paleolithic. Technologically, flat Levallois cores dominate, and some are quite small, without any visible tendencies towards more voluminous core types, to usage of crested blades, and to the blade production in general (Ilam remains between 10–16).

The leafpoints, as the most remarkable artifact type in southern Bahariya, are recorded in the context of Saharan Aterian. At Bir Sahara and Bir Tarfawi, Aterian elements appeared early in the Middle Paleolithic, whereas in the Maghreb, the appearance of the typical Aterian is expected around 40 ky or later, but there is a lack of precision at these dates. A comparably late dating estimate for the Bahariyan Middle Paleolithic would be in accord with the smaller dimensions of a part of the cores and flakes, which are traditionally considered as "late" in Nubia and Egypt (Vignard 1923, Caton-Thompson 1946, Marks 1968).

The workshops on the mountain tops result most probably from a long-term exploitation process. The generally Levallois character of the production points to the Middle Paleolithic in the broadest sense of the word, but some of the "archaic" flakes on the one hand, and the few crested blades and smaller bladelets on the other, point to a higher technological variability than was recorded at the playa settlements. Certainly, some of the bifacial preforms correlate at least a part of this workshop activity to the Middle Paleolithic with leafpoints, which is the most extended horizon of occupation on the basal plain. However, the quartzites originating from the mountain's outcrops are rarely encountered at the playas. In addition, and surprisingly, the blade index in the workshops is higher than in the settlements (Ilam = 23). Thus, and contrary to our possible expectations, there is no evidence of a direct import of products down from the mountains.

Given the lack of chronological framework of the Bahariyan Middle Paleolithic, the only trend that may be recognized is the development from the bifacial Acheulian handaxes towards the fine leafpoints (the latter associated

with Mousterian points and flat-retouched sidescrapers), and probably, a tendency to reduction in size of the cores and flakes. Contrary to the sites in Negev and Cyrenaica, the Middle Paleolithic of northern Egypt shows no trends towards an increased blade productions nor to Upper Paleolithic technology. Because of absence of archaeological evidence after the Middle Palaeolithic and before the Epipaleolithic at Bahariya, there remains the possibility of a longer persistence of the Middle Paleolithic in this region.

ACKNOWLEDGEMENTS

This research was realised in the frame of archaeological survey project organized by the Czech Institute of Egyptology, Charles University, Prague and I am indebted to Miroslav Verner and Miroslav Bárta for their invitation to participate. The research permission was granted by the Permanent Committee of the Supreme Council of the Antiquities, Egypt.

REFERENCES

BÁRTA M., BRUNA V., SVOBODA J. A., VERNER M., 2004: El-Hayez, Bahariya oasis, Egypt. 1st survey report by the Czech Institute of Egyptology. *Přehled výzkumů* 44: 11–16.

CATON-THOMPSON G., 1946: The Levalloisian industries of Egypt. *Proceedings of the Prehistoric Society* 12: 57–120.

HASSAN F. A., 1979: Archaeological explorations at Bahariya Oasis and the West Delta, Egypt. *Curr. Anthrop.* 22: 806.

MARKS, A. 1968: The Khormusan: An Upper Pleistocene industry in Sudanese Nubia. In: F. Wendorf (Ed.): *The Prehistory of Nubia.* Vol. I. Pp. 315–391. Dallas, Southern Methodist UP.

MARKS A. (Ed.), 1977: *Prehistory and Paleoenvironment in the Central Negev, Israel. Volume 2: The Avdat/Aqev Area*. Dallas, Southern Methodist UP. 349 pp.

McBURNEY C. B. M., 1967: *The Haua Fteah (Cyrenaica) and the Stone Age of the South-East Mediterranean*. Cambridge University Press. 387 pp.

PAULISSEN E., VERMEERSCH P., 1987: Earth, man and climate in the Egyptian Nile valley during the Pleistocene. In: A. Close (Ed.): *Prehistory of Arid North Africa*. Pp. 29–67. Dallas, Southern Methodist UP.

SCHILD R., WENDORF F., 1981: *The Prehistory of an Egyptian Oasis*. PAN, Wroclaw, Warszawa, Kraków, Gdańsk, Lodź. 259 pp.

SVOBODA J., 1980: Le gisement acheuléen de Germa, Wadi Ajjal, Libye. *Anthropologie* 18, 2: 209–224.

SVOBODA J., 1993: Lithic industries from Abusir, Lower Egypt. *Origini* 17: 167–219.

VAN PEER P., 1998: The Nile corridor and the Out-of-Africa model. *Curr. Anthrop.* 39: S115–140.

VERMEERSCH P., PAULISSEN E., VAN PEER P., 1990: Le paléolithique de la vallée du Nil égyptien. *L'Anthropologie* 94: 435–458.

VIGNARD E., 1923: Une nouvelle industrie lithique: le Sebilien. *Bulletin de l'Institut français d'Archéologie orientale* 22: 1–76.

Jiří A. Svoboda
Institute of Archaeology, AS ČR
Centre for Paleolithic and Paleoethnological Research
CZ-691 29 Dolní Věstonice, Czech Republic
E-mail: svoboda@iabrno.cz