

**OFF-SITE DISTRIBUTION AND
ARTEFACT VISIBILITY
IN THE CENTRAL NAMIB DESERT,
SOUTH WEST AFRICA / NAMIBIA**

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ABSTRACT

Four systematic transects covering a total of 150 000 m² through the different ecological zones of an area of the central Namib desert near Gobabeb demonstrated that surface archaeological finds in the area are related to microtopographic variations. Marked variations in archaeological visibility are probably more important than behavioural factors in controlling observable site and off-site distributions.

I. INTRODUCTION

The writer has been working on the palaeolithic surface artefact scatters of the Central Namib desert since 1977, trying to establish the chronological and typological variations within the material with the ultimate aim of reconstructing human utilisation of the Namib during the Pleistocene in relation to palaeoenvironmental change and alterations in resource availability (Shackley 1980, 1983). The first stage of this project was to identify and study a series of 'sites' (Fig. 1) located mainly in the dune sea south of the !Khuseb. A detailed, up-to-date progress report of this ongoing project has recently been completed (Shackley in press), which outlines some of the

major problems encountered, as well as plans for the future. In the course of the work, it has become increasingly obvious that the 'sites' which were being examined merely form nodal points in what is virtually a continuous off-site, low-density artefact scatter in some areas, but that not all the different ecological zones within the study area (gravel plains with rock outcrops, vegetated !Khuseb riverbed, interdune flats, rocky outcrops, barren linear dune streets, etc.) have equal archaeological visibility. Post-depositional geomorphic studies and their relationship to surface archaeology have been extensive in recent years, notably by Thomas (1975), Isaac and Harris (1975) and in the work of Foley (1981) in east Africa. The potential coevality of surface

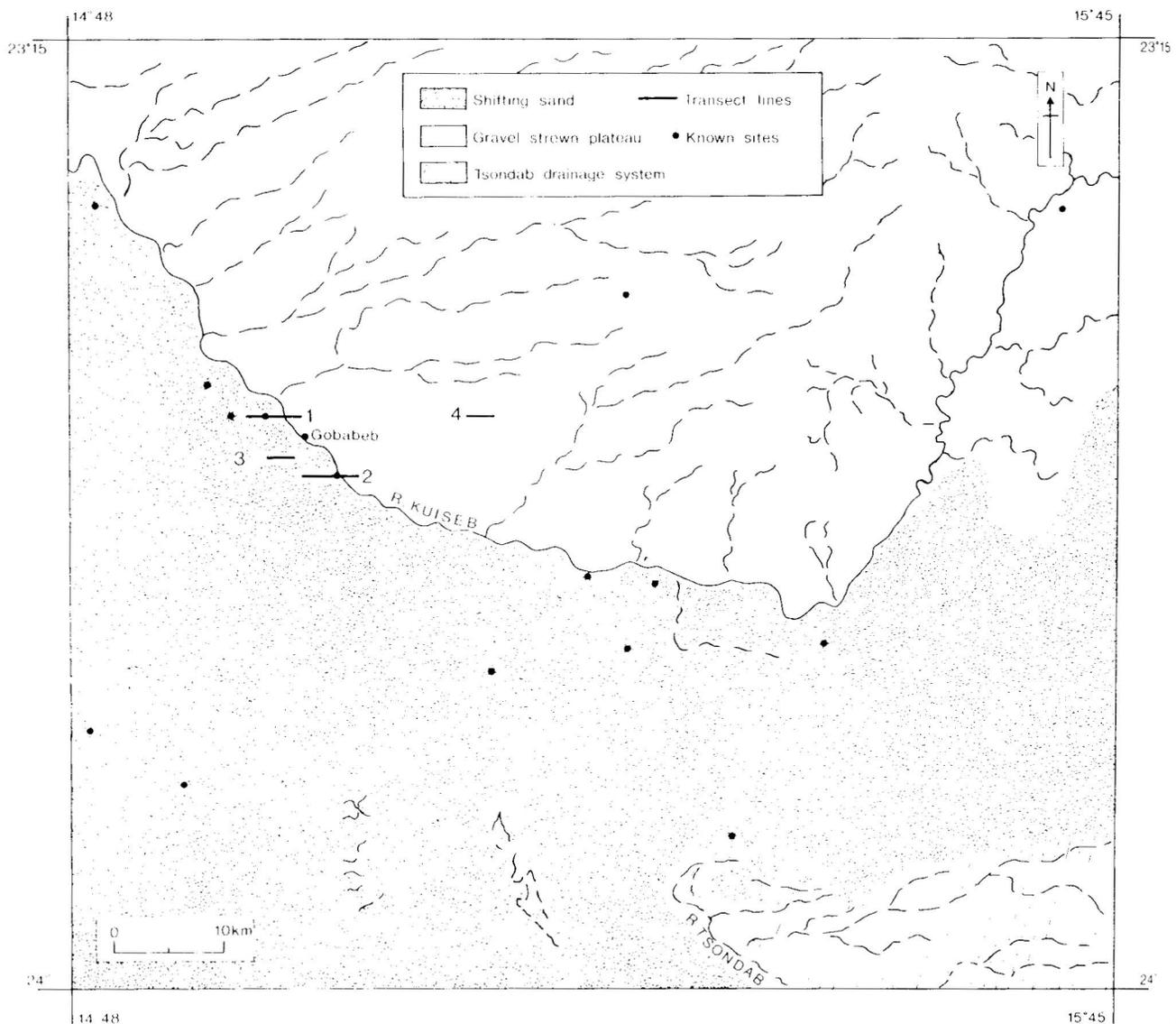


FIGURE 1. Location of the four transect lines, showing their relationship to the general topography of the area and to previously identified sites.

assemblages and their behavioural interpretation has also been considered (Judge *et al.* 1975; Parkington 1972). It was therefore decided to devote the 1983 field season in the central Namib to making a series of transects, totalling 15 km in length, across the area to examine the nature of this off-site artefact distribution and what topographic factors controlled it. A supplementary aim was to see whether, in the course of systematic on-foot traverses, new 'sites' would be found, and how the pattern discovered would compare with that already obtained by previous more nonprobabilistic survey methods. The data obtained will be used in the production of a model for the archaeological visibility and varying cultural activities at different points in time, calibrated where possible by a program of chronometric dating (Shackley in press).

II. METHODOLOGY

During August and September 1983, four transect lines were laid out (Fig. 1) within a reasonable working distance of Gobabeb, each consisting of a series of 50 x 50 m squares which were systematically paced over. The first two 5 km transects commenced at known sites, while the third and fourth, each 2.5 km long, were located in the gravel plains and crossing an interdune flat. All transects were aligned west-east and the recording methods used were the same. In each grid square a series of landscape variables were recorded (including sediment/rock type, state of erosion, compaction of surface, slope angle and direction, percentage and type of vegetation, presence of animal or modern human activity, etc.) using a system of coded variables on pro formas which were transferred to an Osborn 1 microcomputer either back at Gobabeb or running the machine from a vehicle battery. A similarly detailed record was made of all artefacts found, using a coded description based on the preliminary typology for the central Namib already established (Shackley in press) and of retouch, etc. This present paper merely presents a qualitative assessment of the information obtained, but the writer is at present engaged in producing software to handle the quantified data in preparation for a detailed analysis of the sites found during the course of this work.

III. THE TRANSECTS

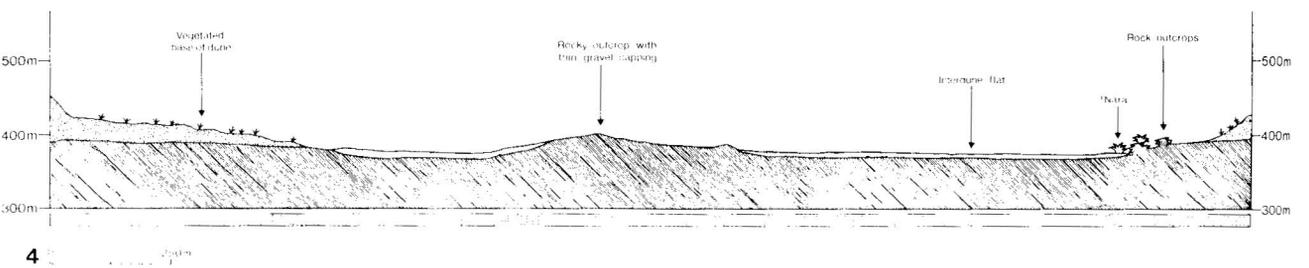
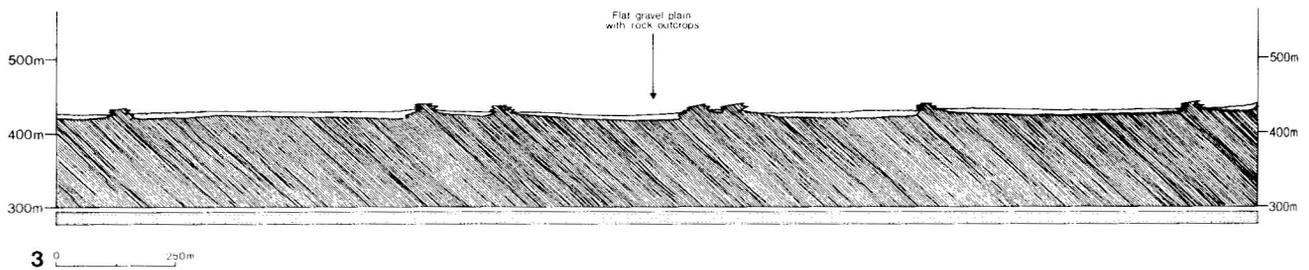
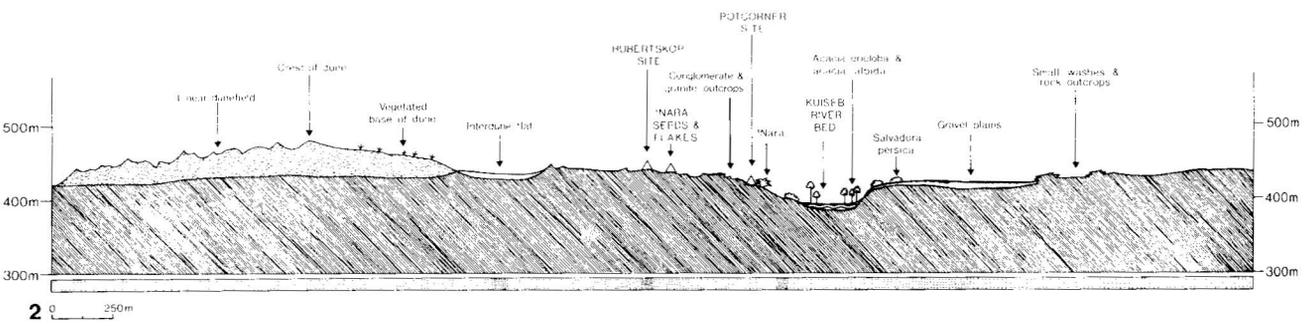
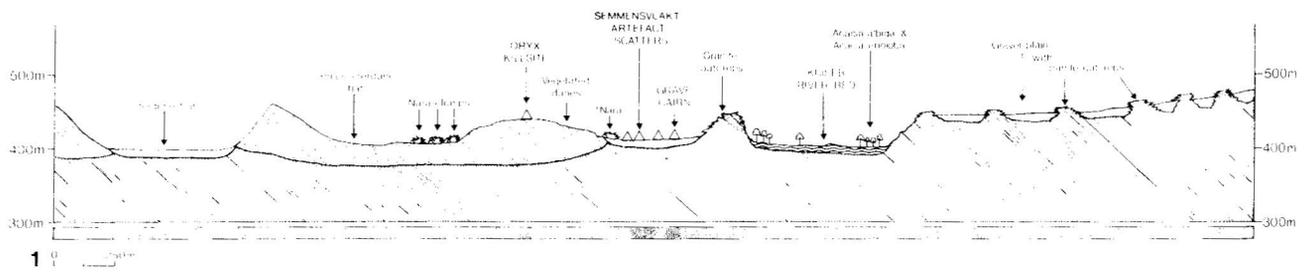
TRANSECT 1 (Fig. 2)

The alignment of this transect was chosen to bisect the Oryx (gemsbok) kill site (23°32' S; 15°01' E), first reported by Sandelowsky (1976) and consisting

of a mixed assemblage of artefacts varying from large, broken clasts to small quartz flakes, covering an area some 5000 m² and associated with fragments of gemsbok bones. A date of 12 800 ± 140 (Pta-2596) was obtained from the site which had included the remains of a hearth and was multi-functional (kill, butchery and food preparation). It is located near the termination of mobile end dunes some 2 km from the !Khuseb riverbed which provided some of the raw materials for its artefacts. The artefact scatter is at present disseminated around hummocks of sand consolidated by *Stipagrostis sabulicola* but the writer, observing the distribution since 1978, has noted marked changes in the microtopography of the area due to sand and vegetation shift, so that the appearance of the site and spatial relationships of the material change each year. It is still possible to find conjoining flakes indicating transported primary context, and artefact density reaches a maximum of 27/m² on the actual site, although an overall density of 0.14/m² was observed for the 2 500 m² of the site covered by the transect grid square.

Moving west along the transect line, it was observed that some stone had moved down the shallow east-west slope over the crest of the vegetated end dune, but this scatter finished within 100 m of the site although a few isolated artefacts were noted on calcretes within the minor interdune flats. The !nara (*Acanthosicyos horrida*) clumps west of the site had not been recently utilised and had no associated artefacts, stone values remaining low or absent where the beginnings of pedogenesis could be observed on the calcretes. The large interdune flat towards the western end of the transect had a mixed gravel/calcrete surface with many abraded quartz clasts, some of which might represent eroded artefacts. On the western side of the flat, going up the lee slope through vegetated dune and nearing the crest, no artefacts were observed.

A quite different picture emerged from the section of the transect between the Oryx kill site and the riverbed. None of the artefacts from the Oryx site had migrated eastwards, although the slope was quite steep, and for more than 350 m the transect line crossed steep vegetated mobile end dunes, archaeologically sterile, with the dune descending sharply to the riverbed south-east of the transect line. At one point a large !nara clump (some 5 m high) had consolidated the end dune, the !nara being partially in flower and showing evidence of recent trampling and utilisation, probably by Topnaar Hottentots from the nearby village of Soutrivier who still make use of the nutritious seeds which make up one third of the volume of !nara melon (Dentlinger 1977). In 1981 the writer observed a group of these Topnaars loading donkeys with !nara from a clump to the east of the transect area near !Khomabes vleii.



ARTIFACT DENSITY AS NO. OF ARTIFACTS/500 ²	KEY
0	ROCK
1	SAND
1-5	GRAVEL AND CALCIFER
5-10	A. ALBA SEDIMENT
10-20	NARA
20-50	SALVADORA PERSICA
50-100	A. ALBA TERRELLA & ACALIA ALBIDA
100+	SITES

FIGURE 2. (1-4) Observed artefact density along the transect lines, correlated with surface topography.

The flat calcrete col with schist and quartz outcrops to the east of the !nara clumps produced a new and potentially important site, Semmensvlakt, consisting of an extensive surface artefact scatter containing several discrete artefact concentrations, possibly of different dates, within the Late Stone Age. Ostrich eggshell beads had been manufactured, and use made of imported fine-grained rocks including amphibolite, together with identifiable animal bone, some being lightly cemented into the calcrete surface. The location of this site, on an area of flat ground just above the riverbed, exactly parallels #Hing-#hais and Potcorner (Shackley in press) and a detailed examination of the area is planned for 1985. No pottery was observed but there was ample evidence of stone tool manufacturing technologies together with a high object density (reaching 25/m² in concentrations).

High values for stone artefact densities were observed over this entire area and one grid square included a grave cairn (not investigated) of a type whose presence was noted by Sandelowsky (1974). Stone values > 2 were observed even on the steep rocky slopes descending to the riverbed, providing a marked contrast with the riverbed itself, fringed by dead *Acacia*, whose deposits, much reworked by fluvial and human activity (both pedestrian and vehicular, including the grazing of cattle and goat) were archaeologically sterile. Throughout the entire width of the river at this point (650 m) no archaeological material was observed. The eastern bank, marked by steep granite outcrops, led out onto the level, featureless flat gravel plains north of the !Khuseb which extend some 100 km to the escarpment. Occasional small granite outcrops were correlated with sparse scatters of material, probably of variable date; indeed, one assemblage (in the lee of a large granite boulder) included broken bottles, animal bone and modern human excrement.

TRANSECT 2

It was decided to test the observed negative correlation between artefact density in high dunes, gravel plains and riverbed, and positive correlation between artefact density, !nara clumps and riverside locations by selecting another transect line which bisected all the ecological zones on a west-east axis, through a known archaeological site (Potcorner, 23°33' S; 15°05' E, Fig. 1) to see if these correlations were repeated. Potcorner was located on a small terrace, some 8 m above the river !Khuseb with a surface artefact scatter consisting mainly of quartz debitage, pottery and charcoal which gave a radiocarbon date of 320 ± 50 BP (Pta-3254). The 5 m transect line bisected the site and led westwards up a steep granite

scarp slope with !nara clumps in places where the dunes interdigitated with rock. Groups of artefacts, generally quartz flakes, were observed near fruiting outcrops of !nara and scatters of !nara also occurred. Some working of quartz and quartzite clasts in the Oswater conglomerates (Ward *et al.* 1983) which outcrop above Potcorner had taken place, and small concentrations of !nara seeds occurred at distances of over 500 m from the !nara, humanly transported up the steep slope. One such occurrence was found in the lee of a large granite boulder overlooking the !Khuseb which consisted of a small group of seeds, representing 1-2 !nara, and a group of quartz flakes, clearly the result of a single food-exploitation event. The condition of the !nara seeds was variable and they are doubtless of different ages, but none appeared to have passed through the digestive systems of jackals, unlike the single seed observed in Transect 3 (below). The possibility of obtaining radiocarbon dates for these small scatters, using a particle accelerator, is being explored as it might illustrate the chronological range of !nara exploitation. Several discrete concentrations of artefacts were observed on this high ground, some with conjoining material. One large new site, Hubertskop, with an estimated area of 2 500 m² was identified for examination in 1985, and seemed to be Late Stone Age in date but with a surprisingly high percentage of finished tools on quartz, debitage, !nara seeds, ostrich eggshell, microliths and imported fine-grained rocks with maximum density of 30 artefacts/m². The site occurs on a relatively flat area on top of a granite outcrop, with a clear view in all directions, close proximity to !nara bushes and at the transition between interdune flat, dunes and rocky outcrops leading down to the river. The scatter of working debris from Hubertskop tailed away westwards after 200 m although there was a light scatter of quartz working debris in the interdune flat and some small collections of !nara seeds near rock outcrops. The amount of material decreased to nil as the transect line approached the vegetated base of the dune at the other side of the flat, and no further objects were observed in the remaining 1 400 m of the transect which crossed the end of a barren linear dune street, with a sequence of small scarps, crests and lee slopes and some clumps of !nara in the middle.

Leaving the Potcorner site going eastwards, the transect descended a steep scarp slope to the riverbed, with heavy *Acacia* vegetation at the edges, but no artefacts were visible during the crossing of the riverbed (only 300 m wide at this point) although on the eastern bank, where sloping dissected alluvial flats bordered by *Salvadora* bushes (Fig. 2) marked the edge of the gravel plains, a few artefact concentrations were observed. These stopped some 400 m up the eastern bank with the transition from riverside

flats to true gravel plain with surface scatters of natural quartz gravels. The plains at this point were covered in modern tracks, mostly Topnaar carts going towards the nearby settlement of Natab, but throughout the remaining 1 250 m of the transect line, which crossed a series of small washes, stone and quartz outcrops, no artefacts were observed.

TRANSECT 3

This consistent lack of material on the gravel plains, except in close proximity to the riverbed, seemed so surprising that a third transect was laid out in a west-east direction across the gravel plains near Gobabeb (Figs. 1, 2). Fifty grid squares were examined, each 2 500 m², and no artefacts were found with the exception of one battered !nara seed which had probably been digested by a jackal. The gravel plains in this area, although rather featureless, present a stable surface and ample supplies of toolmaking material in the occasional outcrops of quartz, yet despite detailed examination, no archaeological material could be found, although there was evidence of modern activity in the presence of animal and vehicle tracks.

TRANSECT 4

The fourth transect, again aligned west-east, was taken across an area of interdune flat south of Gobabeb (Figs. 1, 2) to test the hypothesis that material tended to be concentrated at the base of dunes. The line was worked from east to west, starting from the crest of a linear dune and descending downslope to the edge of the interdune flat; no artefacts were observed actually on the dunes but small concentrations occurred at the base of the dune associated with !nara and quartz outcrops. This scatter thinned out over an area of gravelly interdune flat, punctuated by rocky outcrops in the middle where isolated artefacts were observed. Towards the western side of this extensive interdune flat the gravel became finer, transitional to an area of unstable sand at the base of the vegetated dune, but only two small groups of artefacts were noted, both associated with patches of pedogenic calcrete and light gravels. No objects were observed throughout the rest of the transect line which reached up to the crest of a linear dune.

IV. CONCLUSIONS

An examination of the artefact densities represented graphically in Fig. 2 illustrates many observations

made in the transect descriptions. The absence of material on the gravel plains is clear for all four transects, especially interesting since the gravel plains present the most solid substrate in the area and thus might be expected to have a high archaeological visibility. The only stratified sites yet excavated in the central Namib, Mirabib Hill Shelter (Sandelowsky 1977), Messum 1 (Wendt 1972 and Richter, this volume), Falls Rock Shelter (Kinahan, this volume) are either in the gravel plains or mountains, such as the Brandberg, associated with them, and one would therefore expect a scatter of material across them, between the granite kopjes in the east of the area and the riverbed, reflecting the movement of early communities between different types of resources. Any hunter-gatherer community with a semi-permanent camp at Mirabib, for example, would also have a series of shorter-term function-related sites in order to exploit the flora and fauna of the gravel plains, which must always have been considerably more plentiful than that of the dune sea. One is therefore faced with two possibilities; either that the complete absence of material indicates that no activities leaving archaeological traces took place north of the !Khuseb during the entire Pleistocene, with the exception of semi-permanent occupation, or else that the material is there but archaeologically invisible. The first suggestion seems unlikely since some hunting must have been carried out in the area, but it is possible that, since the transect lines were all located reasonably near to the riverbed, hunting and plant food gathering were either carried out near the !Khuseb or at a greater distance away, near Mirabib, leaving a sterile area in between which would have been rather uncomfortable to camp on. This suggestion will be tested in 1985 by transects centered on Mirabib itself. The second possibility, that the artefacts are archaeologically invisible, is most interesting. Not only is there no stone but there is no organic material either; no bits of ostrich eggshell, no bone, no !nara seeds. Such material could be removed by scavengers but it could also be removed by natural processes of erosion such as wind-sorting of light organic artefacts. Much of the surface of the gravel plains consists of calcretes and gravels which are in places very heavily weathered and heavy rolling of quartz objects, combined with the solution and reprecipitation of silica on their surface, may make them archaeologically very difficult to detect. Indeed, in some places outcrops of vein quartz appear to have been worked for toolmaking but the lumps of quartz produced contain no features to suggest that they have been worked by man. However, if the hunters in question merely sought informal tools for some purpose, utilising unretouched flakes, the occurrence of such flakes lying on an outcrop of natural quartz would be archaeologically invisible. Observations on the quartz-using OvaTjimba people of the

northern Kaokoveld attest to this informal type of quartz working in the recent past. It may, therefore, be that the material is archaeologically invisible but the lack of even a solitary potsherd would suggest that it probably never existed and that for some reason this area of the gravel plains is devoid of the ubiquitous off-site scatter that Foley (1981) claimed for most semi-desert areas.

The increase in material near the riverbed is not surprising, since not only does it seem likely that the !Khuseb and other Namib watercourses functioned as 'through routes' from coast to Escarpment (Shackley in press), but the !Khuseb was also a source of water, game and plant foods (!nara). The fact that the new sites discovered in the course of the survey are all on the western bank is interesting, since all the modern Topnaar settlements are on the eastern side. This observation may be connected with the general absence of material from the gravel plains, but a cause for it has yet to be determined. It is not, however, surprising that no artefacts were recovered from the riverbed itself as the deposits are continually being reworked; nor would one expect any permanent encampments in the riverbed itself, but, as found, on flat areas slightly above the river. This preferred locality has been noted before for the sites of Potcorner and ≠Hing-≠hais (Shackley in press) and the newly-discovered Semmensvlakt site is clearly related to the same requirements. Both Potcorner and Semmensvlakt occur near !nara bushes, and at ≠Hing-≠hais there is an excellent source of toolmaking raw materials in an outcrop of the Oswater Conglomerate. These three sites are all Late Stone Age, as are Hubertskop (see above) and many of the small scatters of quartz artefacts fringing interdune flats.

The lack of material in mobile dune sand, either on the crests of linear ridges or in sand that is partly anchored by vegetation, is again not surprising, since the likelihood of such assemblages being revealed on an unstable surface is remote. Even in the one exception, the Oryx kill site (see above) the surface distribution has changed dramatically over the past few years and in the immediate future it is quite possible that sand will cover the material altogether. In addition, it is unlikely that kill or butchery activity would take place in deep dunes, confining human activity, in the main, to the interdune flats or river edges. This concentration of evidence near the !Khuseb is presumably related to the factors listed above, and the relative paucity of sites in the deep dunes accounted for by the difficult terrain. There is, however, a scatter of material along the fringes of the interdune flats indicating that the hunters did occasionally move some distance from the !Khuseb, and evidence from Acheulean sites of mid-Pleistocene

date (Shackley in press) suggests that this movement was related to the availability of ephemeral water. The paucity of material in the dunes is therefore a result of several factors; firstly of very low-density utilisation of the area, and secondly of archaeological visibility (it was noted above that artefacts were common in dune sand only when the sand had been partly consolidated by pedogenesis).

This survey indicates some of the types of bias inherent in attempting to study the palaeolithic archaeology of the central Namib. It also suggests that systematic traversing of the area, although very arduous and slow, not only reveals new sites but aids in understanding the nature of sites which have already been discovered. Reconstructing the 'classic' settlement model for a hunter-gatherer society, involving a series of function-related sites occupied for different periods of time requires statistically accurate field surveys calibrated by absolute dates. It also requires some attention to be paid to sources of bias in the data. In the case of the central Namib, proximity to the !Khuseb or some major natural resource will bias the distribution of material, and before any absolute site or off-site frequencies are calculated, the site taphonomy and general archaeological visibility in relation to the nature of the substrate are clearly going to be of prime importance.

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