PART A: ADDENDUM

METHODOLOGY EMPLOYED FOR THE MADRA RIVER DELTA'S 1996 SURFACE SURVEY FIELDWORK

1. The 1996 intensive surface survey at Yeldeğirmentepe mound

Survey Methodology

The 1996 intensive surface survey of the Yeldeğirmentepe mound took place on 26-27 September. Following previous inspection in 1989-91 (Lambrianides, Spencer 1996: 179), the intention of the 1996 work was to adopt a more intensive and systematic approach to recording the surface cultural remains at the mound. The work was made a priority in 1996 as we had learnt that the mound was soon to be further disturbed and at least part of its surface covered with gravel.

There were a number of factors which had a bearing on the methodology of intensive collection adopted at the Yeldeğirmentepe mound. First, it was not possible to survey the area immediately west of the perimeter fence in 1996 as a valuable cash crop of cotton was spread across a wide area right up to the base of the mound. Our strategy was also guided by the geological and geomorphological surveys carried out up to 1995 (Kayan, Vardar 2007: 9-21; 2007a: 23-30). One conclusion from surface observations made during these surveys had been that it was only the immediate area of the mound itself (largely that now enclosed by the perimeter fence of the water-pumping station) where the prehistoric land surface was preserved. It appeared that post-antique alluvial deposition in the delta around the mound (deposition which is extensive throughout the delta) would render wider surface inspection for prehistoric remains fruitless.[1] This hypothesis was largely confirmed in the 1996 surface survey from the findings in the extensions of the survey to the south and east of the mound (as described below), and also by the results of work in 1997 when survey was possible over a significant wider area west of the mound. In the latter work, apart from a small concentration of EBA material immediately west and north of the mound (due to the cutting of the mound itself, see below), only Byzantine, Ottoman and modern cultural material was located in the broader area (see Gök-Gürhan 2007). It was therefore decided for the intensive survey methodology of 1996 to concentrate on the part of the mound now enclosed by the perimeter fence of the municipal water-pumping station.

There were additional difficulties created in surveying the site from the disturbed nature of the mound. First, even though the area within the fence was likely to retain parts of the ancient land surface, this had been heavily disturbed, initially by the building of the windmill, and subsequently by the water-pumping station which had replaced it. This disturbance became clear during the excavation, but the result of digging deep into the mound to locate the foundations of the modern buildings, together with the installation of the water pipes, also needed to be borne in mind for the surface survey and the interpretation of sherd densities in each area.[2] The area near the western end of the enclosure (i.e. the higher areas of the mound) were also heavily overgrown in the year when the survey was carried out, which made surface examination more difficult.

[1] The results of the geomorphological work around the mound in 1997 confirmed this initial hypothesis from the earlier geomorphological work, indicating that significant alluvial deposits had accumulated in this part of the delta since the EBA (see Kayan, Öner 2007).

[2] We understand that in order to locate the foundations for the current water pumping facility it was necessary to dig down approximately 10m into the mound. Presumably, similar significant disturbance had been caused also when the windmill had been built.

Fig. 1: Topographic plan of the Yeldeğirmentepe mound in the Madra River Delta, indicating the water-pumping station built on the highest point of the mound. (Source: The Madra Çay Delta Archaeological Project)

A further overall disturbance to the mound, as is clear from even a cursory look at any contour map of the mound (clear on Fig. 1, above), is the significant 'cut' running northeast-southwest, immediately to the west of the water-pumping building and enclosure, indicating that the mound has, in effect, been sliced in two. Nearly the whole of the western half of the mound has been destroyed, with a steep drop from what is now the summit of the mound along which the perimeter fence now runs, down to the fields to the west. Local inhabitants confirmed that approximately 50 years before the mound had indeed extended further to the west (perhaps for a further 40m – 50m), but that in order to flatten the land for agricultural use this part of the mound was gradually eroded and ploughed into, creating the topography now apparent.[3] As noted above, when surface inspection was possible in this area immediately to the west in 1997, it was not surprising, therefore, that artefacts including EBA sherds, shell and bone were visible in the immediate area below the 'cut' which would have been within the (now destroyed) western half of the mound.

In order to impose a systematic method of collection for the material, the area within the drilling station's perimeter fence was divided into four quadrants, with the two less disturbed Quadrants (1 and 4) divided into 10m grid squares. Total collections of cultural artefacts were made in the grid squares of Quadrants 2 and 3. The surfaces of Quadrants 2 and 3 were more disturbed due to the activity around the pumping station, and a collection of material was carried out in these areas without any attempt to sub-divide the areas further (see Fig. 2). In each area (grid square or quadrant), a total count of all artefacts was made, with collection of diagnostic pieces.

[3] An extension of a further 40m – 50m to the mound in a westerly direction would be expected given the current contours on the east side of the mound, making in total a circular/oval form.

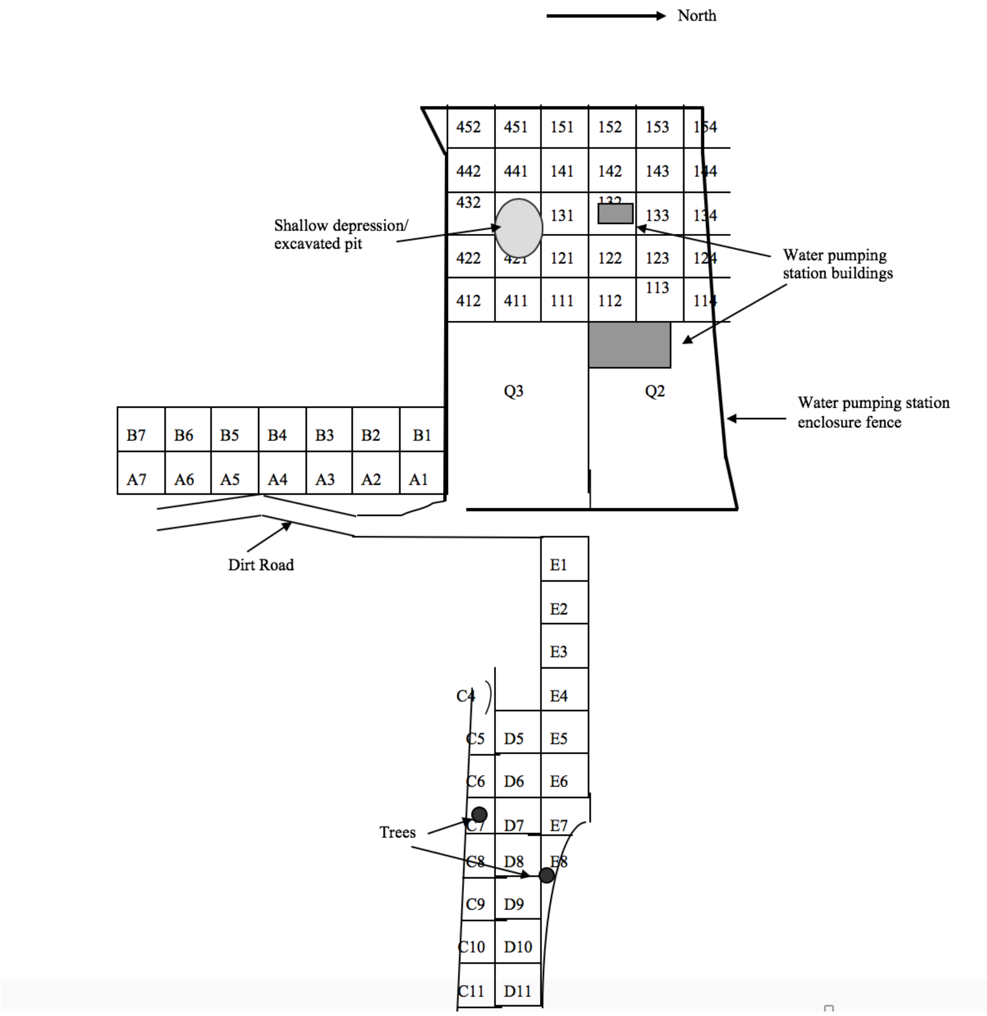

Fig. 2: Collection grid established over the Yeldeğirmentepe mound for the intensive surface survey. (Source: The Madra Çay Delta Archaeological Project)

To fully explore the surface scatters, the 'drop-off' in the density of surface material as one moved off the main area of the mound, and the relation to the geomorphological work around the mound, two extensions were made to the grid of the 1996 survey (as indicated on Fig. 2). A first of 70m x 20m, from the southeast corner of the fence immediately bordering the west side of the main dirt road running north-south beside the mound, intended to record the surface artefact scatter in the area where boreholes had been drilled in 1991 and 1995, both of which had located sub-surface deposits of cultural material (Lambrianides et al. 1996: 178-88; Kayan, Vardar 2007: 26-30; 2007a: 31-38, plate 11). A second extension to the grid was laid out and collected on the east side of the road which borders the mound. This latter area was chosen as a result of the conclusions reached in the geological and geomorphological survey which had hypothesised this area extending east of the mound may have been a causeway between the mound and the mainland in the EBA (at a time when the mound was a coastal location) (Kayan, Öner 2007: 36-37, plates 9-12).

As noted above, in 1996 it was not possible to survey intensively the area to the west of the mound where a valuable cash crop of cotton was located, since this would also have been chosen as a third extension to the collection grid. EBA material was observed here in more casual inspection in 1997 when the area was accessible. This material very close to this side of the mound included typical EBA ceramics similar to those found on the mound itself, *Cardium sp.* shells and also limpet shells were identified.

The findings from the 1996 intensive surface survey

Despite the heavily overgrown nature of the area within the perimeter fence (which allowed on average approximately 10% visibility within the grid squares), significant amounts of ceramic material were located throughout the grid. It was not possible to detect any meaningful spatial patterns in the densities across the gridded area within the perimeter fence, and the diagnostic material appeared to be nearly exclusively of EBA date. Bone fragments were retrieved, chiefly in the more central areas of the mound, findings which are not surprising given the burials of early-modern date later detected in the 1997 excavation trenches near the surface of the mound. Shell fragments were also found, but these were in far smaller numbers than the sometimes extremely large numbers found at the Hüyücektepe mound (see below), and again were largely recovered from the central area of the Yeldeğirmentepe mound.

In considering the surface survey collection methodology in relation to the geomorphological work at the site, one significant result was that the extensions to the survey grid to both the south and east of the mound indicated that densities of cultural artefacts did indeed drop immediately outside the central area of the mound within the water station's perimeter fence. Even with much better visibility in the survey grids in these two areas, there was only a very low density distribution of largely undiagnostic pieces. These findings seem to corroborate the geomorphological conclusions that the prehistoric land surfaces only exist today on the central areas of the Yeldeğirmentepe mound and, as one moves away from the mound, they are soon buried far underneath the current land surface of the MRD.

2. The 1996 intensive surface surveys at Hüyücektepe mound

Survey Methodology

In planning which method of surface survey to employ in the more detailed examination of the surface cultural remains at the Hüyücektepe mound in 1996, similar considerations were borne in mind as those referred to above regarding the Yeldeğirmentepe mound. In particular, the findings from the 1991 and 1995 geological and geomorphological surveys that significant alluvial deposition had occurred in the delta since the EBA guided our surface survey to focus on the mound itself rather than across the wider area. This logic was reinforced by the 1995 borehole drilled close to the southwest edge of the mound (Kayan, Vardar 2007a, Pl. 5, borehole '95-01') which had revealed that within some 90m of the edge of the west side of the mound – and some 80m beyond the edge of any significant scatter of cultural material visible on the surface – sub-surface anthropogenic material was already buried by some 4-5m of terrestrial deposits (Lambrianides and Spencer 1996: 184 and fig. 6). This evidence, showing clearly that even a short distance from the mound the ancient land surface of the delta was already deeply buried by later alluvial deposits led us to focus specifically on the mound itself for our analysis of surface cultural remains since it appeared any results from a wider survey in this specific part of the delta would have limit purpose and meaning.[4]

[4] What was also clear from the findings of Borehole 1 drilled in 1995 was that the buried extent of the cultural material at the mound was much greater than that apparent solely from the surface of the mound. In other words, if the findings from Borehole 1 could be taken as a reliable indicator of the extent of the cultural scatter, it implied that the actual diameter of the cultural scatter at the Hüyücektepe mound extended for approximately another 90m in this direction.

Fig. 3: Topographic plan of the Hüyücektepe mound in the Madra River Delta, indicating the water-pumping station built on the highest point of the mound. (Source: The Madra Çay Delta Archaeological Project.)

The project's intensive surface survey of the Hüyücektepe mound (Fig. 3) was carried out in September 1996, and the method chosen for this study was the method already used elsewhere in the Aegean in intensive survey projects where denser concentrations of surface cultural material are examined following initial, more extensive surface survey.[5] In this case, it was decided that the most suitable method of collection in order to maintain detailed spatial resolution for the material collected was the establishment of a 10m grid over the overall area of cultural material, divided into four 'quadrants' based upon a notional 'site centre' near the highest point of the mound (Figs. 4-5).[6] Within each square all cultural artefacts were counted and recorded, with diagnostic items being collected for further analysis. The range of artefacts at the site included large numbers of *Cardium sp*. shells (especially in central areas of the mound, see Fig. 4), a broader scatter of ceramics (Fig. 5) chipped and ground stone, together with finds of metallurgical and stone artefacts. The finds are discussed in detail in Part B of the main article.

[5] For a summary of these collection strategies, see notes 2-3 of the main article text.
[6] Ibid.

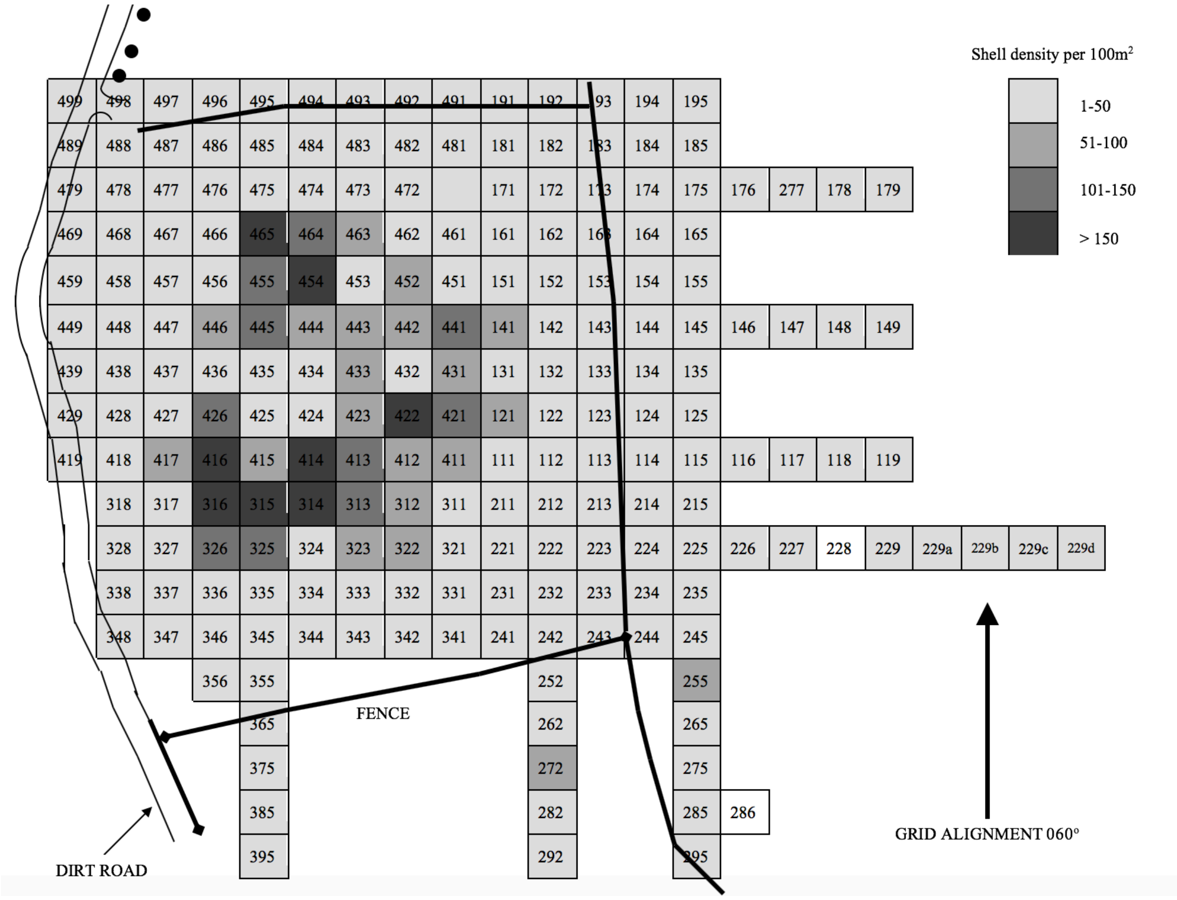

Fig. 4: Density of shell fragments found in the Hüyücektepe intensive surface survey. (Source: The Madra Çay Delta Archaeological Project.)

At the time when the survey was carried out, much of the central area of the mound was reasonably clear of ground-level vegetation. Hence, the 'visibility' readings taken for the grid squares in this main field were consistently high apart from a limited number of squares. A few young olive trees had been planted in the main field which comprised the central area of the mound, and many more were intensively cultivated in the field south-west of this field bordering the dirt road which ran all along the northern edge of the mound.[7] The field to the south of these two fields possessed much more mature olive trees and was freshly ploughed.[8]

[7] It appeared that when the dirt road was formed it must have deliberately skirted the northern edge of the mound and did not cut through the surface cultural scatter, since examinations in fields to the north of it revealed no cultural artefacts at all.
[8] This field is the one which in the survey constituted the edges of the grid in Quadrants 1 and 2. The nature of the deep ploughing in this area probably led to enhanced sherd counts in these areas since the counts in the many of the more central areas of Quadrants 1 and 2 (e.g. the line of grid squares ranging from 193 down to 243) began to lessen significantly before the edge of the main field was reached.

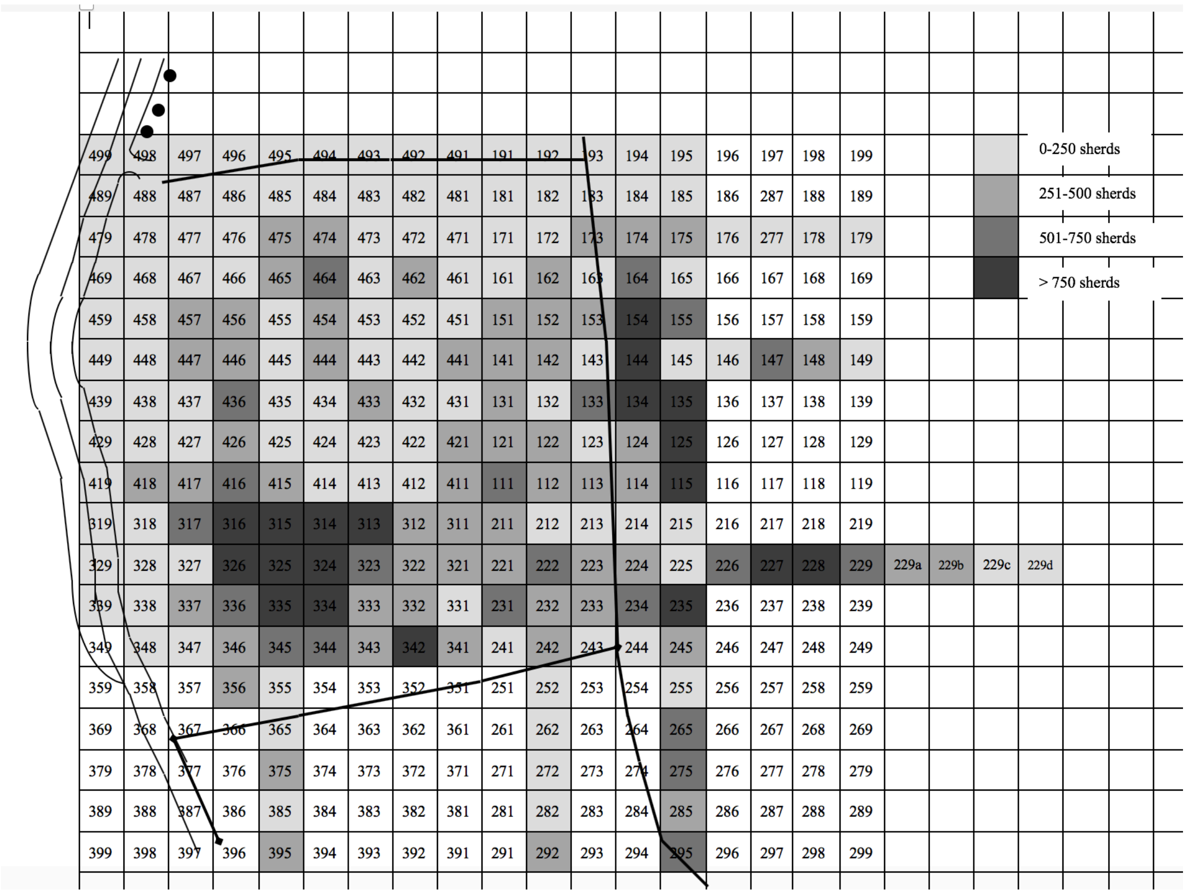

Fig. 5: Density of ceramic sherds found in the Hüyücektepe intensive surface survey. (Source: The Madra Çay Delta Archaeological Project.)