

# Sinop Regional Archaeological Survey 1998-99: The Karasu Valley Survey

1998-1999 Yılları  
Sinop Bölgesel  
Arkeolojik Yüzey  
Araştırması  
Karasu Vadisi Yüzey  
Araştırması

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1998-1999 yıllarında, Sinop Bölgesel Arkeolojik Yüzey Araştırması Projesi Karasu ırmağı vadisini (Sinop İli) arkeolojik ve jeomorfolojik yüzey araştırmasını sistematik olarak yürütmüştür. Arkeolojik yüzey araştırması vadideki, çevresel ve topografik bakımdan çeşitli türdeki sekiz örnek alandaki incelemeyi içermektedir. Bu alanlar kıyı kesiminden, içerlerdeki vadi ağzına kadar 20 km geriye kadar uzanmaktadır. Her alan yoğun olarak örneklenmiş, arazinin topografik özellikleri göz önüne alınarak uzunlamasına kesitler halinde veriler toplanmış, çanak-çömlek yoğunluğu ve mal tiplerinin ayrımına göre tüm çanak-çömlek topluluğunun dijital görüntüsü çıkarılmıştır. Jeomorfolojik yüzey araştırması, toprak kullanımının tarihçesini ve yerleşme türlerini anlayabilmek için kıyı delta-sının evrimini tekrardan yapılandırmıştır. Osmanlı belgeleri araştırmaları ile 1571, İnebahtı savaşı sonrasında Sinop'ta başlatılan gemi yapım projesi hakkında veriler bulunmuştur. Bölgede yerel kaynakların yoğun olarak kullanılması vadinin arkeolojik kayıtlarını, jeomorfolojik tarihi ve demografinin gelişimini etkilemiştir.

## 1. Introduction

The Sinop Regional Archaeological Survey conducted archaeological and geomorphological surveys in the Karasu river (anc. "Ocherainos/ Ochosbanes/ Ochthomanes", see Talbert (ed.) 2000: map 84) valley during the 1998-99 seasons. The Karasu valley survey is the second of a series of systematic case studies that document patterns of settlement in the hinterland of Sinop,

Turkey. Sinop, located at the midpoint of the Turkish Black Sea coast, was the site of the first Milesian colony in the Southern Pontus, a capital of the Pontic Kingdom under Mithridates VI and one of the main stations for the Roman and Ottoman Black Sea fleets (Moreau 1959). Because of its position, natural resources and excellent harbor facilities Sinop has maintained a strategic place in Black Sea politics and trade over several millennia. The Sinop Regional

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Survey is one component of the Black Sea Trade Project, an interdisciplinary program that combines systematic survey and excavation on land with systematic underwater survey in order to study cultural and economic interaction, resource exploitation and cultural formation in the Black Sea (Hiebert et al., 1997). Sinop and its hinterland were chosen as the starting point for these investigations because of the port's pivotal role in Black Sea interaction.

The Karasu river valley is the deepest and broadest in the wild hinterland of Sinop, running from its headwaters behind the modern town of Erfelek to the sea. Agriculture has taken over the valley floor and lower elevations, but the great forests which furnished timber for shipbuilding from Classical to Ottoman times still dominate much of the western half of the peninsula and the highlands (fig. 2). During two seasons of systematic archaeological field survey in the Karasu valley 35 sites were documented in 192 tracts (fig. 3). A geomorphological coring survey documented the progradation of the Karasu delta by taking fifteen cores from different parts of the delta, with core depths ranging from seven to twelve meters. We must await the results of  $^{14}\text{C}$  analyses to establish firm dates, but the mouth of the valley has filled in over several thousand years, transforming it from an open water embayment into the colluvial plain of today. Although surveys of this and other parts of the Anatolian Black Sea coast have been published (İşin 1991; 1997; Kızıltan 1992; Dengate 1978), the Sinop Province Regional Survey is the first systematic survey to be conducted in this difficult region.

Eight parts of the valley were sampled by the survey (fig. 3): 1) the hills flanking the western delta (Aklıman); 2) the ridge overlooking the eastern side of the delta (Bostancı); 3) the slopes to the southeast (Osmaniye); 4) the hills to the west (Sarsı) and 5) south-west (Dibekli); and the western terraces overlooking the inner Karasu valley, from N-S: 6) Kılıçlı; 7) Hacıoğlu, and 8) Uzungürgen). Uneven distribution of modern far-

ming and forestry and burial of the valley floor under colluvial deposits restrict the choice of areas for systematic survey. The hills overlooking the delta from the north and southwest are covered in dense forest, offering no visibility. The western side of the inner valley is also heavily forested, frustrating systematic survey. Despite these constraints, the survey yielded strong patterning.

As in the Demirci valley survey of 1997 the survey examined recently plowed and planted fields in order to gather comparable data sets. In the Karasu valley survey, a team of six to nine fieldwalkers walked parallel transects and counted, weighed and photographed 100% of the ceramic and other evidence encountered on their transects. A grant from Tufts University enabled the survey to obtain an Olympus DL-600 digital camera. This allowed us to gather and organize ceramic data in a more systematic way than before while minimizing collection. This methodology allows us to record information about proportions of ceramic forms and ware types, although limiting field-walking to fields with strictly comparable levels of visibility restricts the extent of our coverage. We hope to compare the results of this limited sampling program against more extensive systematic survey data in future seasons, in an attempt to strike a balance the competing ideals of extensive ground coverage and high resolution sampling of material evidence.

The survey also made use of the knowledge provided by informants and inspected topographic features that are known to correspond with certain kinds of sites. Sites found in opportunistic investigations were not recorded together with survey tracts in order to decrease the biases in favor of highly visible settlement types. The results from the Karasu delta contrast dramatically with those conducted by our survey in the Demirci valley South of Sinop, suggesting a different relationship between inland and coastal parts of this valley<sup>1</sup>. The evidence from the Karasu survey will be summarized



period by period, emphasizing a number of important sites for each. Conspicuous trends in the record are highlighted, outlining the use of this valley through time. Then in a discussion section, we shall pull together the spatial patterns in land use, commenting on changing settlement patterns through time.

## 2.1 Pre-classical periods

The survey documented twelve pre-classical sites in and around the Karasu valley (fig. 2). Bronze Age settlement was widespread as in other parts of Sinop province, with clusters of sites apparent to the North of Sarsı köy and in the middle Karasu valley, near Kılıçlı and Hacıoğlu. A single Bronze Age site was documented on the coast at Ak Liman. This site has been badly disturbed by later alterations, but hand-made ceramics were scattered lightly over the surface. Prehistoric sites are more or less absent from the Karasu delta, contrasting sharply with the coast from Sinop to Gerze, where nearly a dozen sites are known. The hills overlooking the Akliman delta were almost entirely free of prehistoric ceramics, with the exception of Sarsı and Dibekli villages, overlooking tributary valleys to the Northwest and West respectively. A cluster of six prehistoric sites was observed around the modern village of Sarsı, and three in Dibekli. It is possible that rich estuary environments, now filled in, supported the concentration of sites in these parts of the valley.

The site of Maltepe at Hacıoğlu (fig. 4) was documented during 1998 as part of the central Karasu valley survey. The existence of Maltepe has been known since the surveys of Burney, and the site was published as part of the survey conducted by the Sinop Museum (Işın 1991; 1997). Conditions at the site have changed significantly in recent years, permitting the survey to record the extent the site and its material assemblages more precisely.

The site is associated with a low natural mound, a topographical feature commonly

associated with prehistoric settlements in Sinop region (fig. 4). In this case, the mound is about 50 m in diameter and 15 m in height. The occupied portion of the site was primarily on the adjacent terrace. The occupied area extends about 50 x 75 m making the area of primary scatter ca. 0.5 ha. Primary deposits have been disturbed by plowing on the mound itself and a terrace just below. On the mound a scatter of daub and ceramics was noted, together with a heavy concentration of chert blades, cores and limestone "bracelets" (figs. 7-9)<sup>2</sup>.

The blade industry at Hacıoğlu (fig. 7) is highly unusual for the Sinop region, appearing at few prehistoric sites. The most remarkable feature of this site is the prolific limestone bracelet industry, with dozens of examples found here in various states of completion (fig. 8). Işın recorded a group of similar bracelets, three finished (but broken) and one unfinished, at Çimbek tepe, which he assigns to the Chalcolithic period<sup>3</sup>. No chipped stone industry was reported by Işın at Çimbek tepe. A similar bracelet has been published in association with chipped stone by Marro et al. in their survey of Kastamonu region at Aceramic Neolithic Sokukayası<sup>4</sup>. Comparanda are generally associated with Neolithic sites in Anatolia and the Near East. The presence of this industry at Hacıoğlu in association with a Chalcolithic ceramic assemblage suggests three possibilities, not necessarily exclusive of one another: 1) this may be a multi-period site; 2) that the type may have continued in a long lasting tradition in the Pontus; or 3) perhaps that the estimated dates for the Sinopean Chalcolithic need to be raised. Further study and documentation of Hacıoğlu and its bracelet industry has been undertaken by A. Gantos.

The ceramics at Hacıoğlu date the site to the earlier prehistoric stages of Sinop region. The ceramic fabric and forms suggest that the assemblage belongs towards the beginning of the sequence. The unfortunate lack of independent dating or even excavation of stratified sequences makes the es-



establishment of even a relative chronology challenging. The range of types includes bowls and open-forms with horizontal tab-handles (fig. 9, lower right, compare to Işın 1997:pl.3.2 (Harmantepe). Straight-sided jars with horizontal loop handles (fig. 6 top right) have been documented by the Sinop Regional Survey at Chalcolithic Mezarlık tepe near the coast in 1997 (Doonan, Gantos Hiebert, Smart 1998). Vertical strap handles (top second from left, bottom left) have been found at Chalcolithic Ilyanın Yeri (Işın 1997: fig. 7.18). Examples of loom weights similar to those found at Hacıoğlu have been documented at Çimbiktepe, mentioned above (Işın 1997: pl. 8.23).

An Early - Middle Bronze Age site was documented at the site of Güllüavlu in the district of Nohutluk (Hacıoğlu). The site is just above the valley floor and was cut by bulldozers cutting a drainage ditch alongside the Erfelek road in 1998. The bulldozer cut reveals that the site was built on a mound of sterile soil, with huts and pits cut into the surface (fig. 10). The scatter on the undisturbed mound is about 50 m across, suggesting an occupied area of about 0.1 ha. The bulldozer cut also revealed a burial just beneath what may have been a pit for a house. This site is clearly more than an ordinary tumulus burial, given the extensive scatter of daub on the surface, ceramics from several time periods and a possible daub floor surface visible in the scarp.

The ceramics at the site are unusually diverse in style, suggesting widespread contacts. Many types common to the Sinopean EBA assemblage were found, including burnished wares with chaff temper and horizontal loop handles. Several unusual types were recovered as well, including what appears to be the head of a figurine decorated with punctuation in geometric patterns (fig. 11, compare to Ikiztepe 1988: pl. LV.13) and the foot of another larger figurine. Burnished wares with relief decoration invite comparison to Karanova VI examples, and red-brown burnished wares with incision to central Anatolian Middle

Bronze Age (MBA) types. Red burnished wares of MBA type including a fine "teapot" spout were also found suggesting early second millennium contacts with central Anatolia. Although ceramics of this type are not plentiful in Sinop province, evidence is growing for a widespread MBA in Sinop ili (for comparanda see Köşk Höyük, Işın 1997: pl.10.12-13). The Bronze Age ceramics of this site will be published in greater detail by A. Bauer.

## 2.2 Archaic-Hellenistic Periods

The multi-period site of Karapınar-Nohutluk, recorded on a terrace overlooking the Karasu river, suggests that it may be necessary to re-evaluate the commonly held hypothesis that the hinterland of Sinop was empty in the early first millennium BCE (fig. 5, no. 3). This multi-period occupation included Bronze Age, Archaic, Hellenistic and Roman phases. The ceramics included several parallels with the early destruction levels at Gordion, including a double loop handle from a globular amphora and a rim from a straight sided cup with an incised hatched lozenge (fig. 10)<sup>5</sup>. Chaff-tempered burnished hand-made ceramics suggest that this site had a prehistoric phase, although it will be necessary to carry out excavation in multi-period stratified sites before the chronology of the local burnished wares is secure.

Remains of the Hellenistic period were limited along the flanks of the Karasu delta, but a number of sites in the middle Karasu valley suggest limited expansion inland during this period. One potentially important site was recorded at Keserköy, where very little pottery was observed but traces of a stone built wall and Hellenistic roof tiles may indicate the presence of a non-residential structure, perhaps a military installation. A tumulus cemetery was recorded at Karagöl-Çandar in the hills overlooking the southwestern part of the delta. Hellenistic-Roman roof tiles were found in association with these tumuli, although no other ceramics were noted.



Settlement overlooking the Karasu delta was limited to near the coast. Most notably, a tumulus cemetery was documented on the land-ward side of the site of Akliman (ancient Harmene), adding at least half a dozen to the three tumuli documented in 1997 (Doonan, Gantos, Hiebert, Smart 1998). Each of the ten tumuli that were mapped and documented had been illegally excavated and a hole had been bored into the center of one (fig. 12). The Sinop authorities have been notified of these illegal excavations. The tumuli were 10-15 m in diameter and 3-4 m in height. With the exception of the tumulus chamber we published already (Doonan, et.al. 1999), there do not seem to have been stone-built tomb chambers within these tumuli. Both roof-tile burials and burial chambers composed of unfired mud-brick were documented within tumuli. Few ceramics were found in association with these tumuli. It is intriguing to speculate that this line of tumuli along the ridge marked a road which connected Harmene to inland sites at Sarsi and to the west. It is also possible that the tumuli were placed here so that they would be visible from the sea and Sinop itself. Other tumulus cemeteries were noted at Karacakese and Karagöl, overlooking the Karasu delta from the South, but these tumuli were impossible to date, given a general lack of ceramic and architectural material found in association with them.

### 2.3 Roman and Byzantine periods

The Roman period was the most widespread pre-modern occupation of the Karasu valley, with 15 sites documented in 1998-99. As in earlier periods, the Nohutluk area of the central Karasu valley showed extensive Roman settlement, including Karapınar, one of the largest Roman sites found outside of Sinop port. Background scatters of Roman date were widespread as well in the central valley. All of the Hellenistic sites showed continuity into Roman times, and several new sites added to them. The expansion of Roman settlement inland in this period may relate to an expansion of the timber industry and intensifies exploitation of

other forest resources (fruit, nuts), with farming following land clearance.

The most significant Roman site recorded in the inner valley was at Karapınar, a terrace on the ridge defining the eastern side of the Karasu valley (fig. 5). The site is at least 5 ha in extent, including a number of areas with distinct assemblages. The ceramic and tile scatter on the surface is one of the highest density recorded to date in Sinop province, and includes an unusually broad range of fine wares (fig. 15).

The ceramics correspond to local types, although the assemblage from Karapınar shows considerable diversity for an inland site. Most of the medium and fine wares were made without the black sand temper characteristic of local wares produced on the coast. It is possible that some of this pottery was produced on-site, since a considerable portion of the Eastern part of the site was covered with kiln debris. A hollow figurine base "D" shaped in cross section was found in a scatter of medium and fine wares near the center of the scatter. A pair of nude feet can still be made out oriented approximately 15° off-center. The assemblage is predominantly mid-late Imperial period, 1<sup>st</sup> – 4<sup>th</sup> centuries AD. The concentration of fine wares including the figurine may mark a domestic area or associated refuse scatter. About 100 m south of the scatter a concentration of human bone and terracotta tiles marks a cemetery. Little pottery was found in association with these burials, although a twisted polychrome glass bracelet suggests that at least some of the graves were Roman. The cemetery is quite extensive and it is not unlikely that the area was re-used for the same purpose in later times.

The flanks of the Karasu delta showed a pattern similar to that observed for the Hellenistic period: settlement very close to the coast and little settlement overlooking the delta. One possible exception was a small site at Karagöl, however the rest of the southeastern ridge was nearly barren of pre-Ottoman sites and background scatter. Sarsi,



tucked in a tributary valley on the western side of the delta, had evidence of some Roman settlement, although not nearly as extensive as in the middle Karasu valley. Three small Roman sites (< 1 ha) were defined in Sarsı during 1998. It may be that small Roman settlements clustered around access ways: Sarsı is not distant from the Roman coastal sites of Saraycık and Cartaköyü. It is possible that a Roman communication route connected the Sarsı with the sites of Harmene and Saraycık, to the northeast and west respectively.

## 2.4 Ottoman period

The survey recorded eleven sites that can be assigned to the Ottoman period, for the most part small scatters associated with known villages. The villages of Eski Dibekli, Karacakese and Nohutluk showed significant evidence of occupation. Aklıman port may have been occupied by a combined Muslim-Orthodox population, since a Muslim cemetery was documented on the mainland and a small church was recorded on Sariada, a stone's throw off the coast (fig. 17). Evidence of quarrying for stone blocks, measuring about 0.5 x 1.3 m (l x w, depth not measurable), possibly used for Sinop port's defensive walls, was also documented at Aklıman (fig. 18). No datable evidence was associated with these quarries, and it is hoped that closer study of the masonry of the city walls can demonstrate during which periods stones of this size and composition were being utilized. Follow up investigation of these results will make use of the ongoing documentary research into the Ottoman structure of Sinop region. It is hoped that comparing the documentary and survey evidence it will be possible to develop a range of signatures that Ottoman settlements of different sizes and purposes left in the archaeological record.

## 3. Geomorphological Work in the Aklıman Valley (M. Besonen)

During the 1998-1999 field seasons, we conducted geomorphologic work in the lo-

wer Aklıman valley west of Sinop obtaining fifteen sediment cores in total. Our goal with this study has been to document the extent and chronology of geomorphic and paleoenvironmental change in the valley over the past 5,000 years. Work from the 1998 season documented an overall regressive coastal sedimentary sequence in the valley recording shallow marine and nearshore environments succeeded by terrestrial ones. Work from the 1999 season has allowed us to refine the stratigraphy, and examine several questions which remained unanswered following work from the previous season. In particular, we hoped to document the maximum inland extent of the sea into the valley in the past, and the nature and evolution of the Aksaz Sazlığı.

Field methodology during both seasons was similar. Sediment cores were retrieved by means of a portable, hand-operated, three centimeter diameter Eijkelkamp gouge auger. Core locations and depths of penetration are indicated in Figure 19. Physical sedimentological properties of the cores including composition, color, grain size, structure, consistence, and the presence of other macro-observable characteristics were logged in the field. High-resolution subsampling (approximately every ten centimeters) of the stratigraphy was undertaken for laboratory analyses back in the U.S.

Laboratory analyses include dual-frequency magnetic susceptibility, loss-on-ignition analysis, grain-size analysis on a Coulter Laser Particle Counter, and microfossil analysis. Results from these analyses in conjunction with information obtained from the sediment coring program allow us to characterize the sediments, determine their most probable environment of deposition, and reconstruct the changing paleogeography. Macroscopic organic matter was obtained from many points in the stratigraphy, and when the dates from AMS radiocarbon analysis are available, the samples will provide absolute chronological control for the geomorphic changes we are documenting. Samples suitable for pollen analy-



sis have been gathered and will provide a basis for discussing changing conditions of forest and agricultural exploitation.

There are three main tributary valleys which splay out from the coastline and together compose the Akliman valley. A fence diagram using 12 of the 15 sediment cores demonstrates the general distribution of shallow subsurface stratigraphy in these tributary valleys (Fig. 13). Fluvial sedimentation dominates within the valley of the Karasu river (southeasternmost tributary valley), and east of the modern river mouth along the coast. This suggests that the river mouth and deltaic sedimentation were primarily focused towards the eastern half of the Akliman Valley in the past. This perfectly concurs with observations about the direction of longshore transport at the coast. A series of abandoned river mouths east of the modern mouth of the Karasu, and the current orientation of the mouth of the Karasu, as well as the mouth of the river which drains the Aksaz Sazlığı all strongly suggest that longshore transport along the coast is from the ESE to the WNW. As the Karasu river mouth prograded out of its tributary valley, the constant bias of longshore transport shifted its direction consistently towards to west to its present location. Regarding the inland extent of the sea in the past, stratigraphy in core S-99-03 demonstrates that it reached at least as far as the location of this core. We were unable to obtain a core further inland in the center of this tributary valley, but the topography suggests that the sea may have also extended up to another 1.5 kilometers upvalley from this point. Also of interest in this region is the feature noted as "Karagöl Mvk." on the 1:25,000 scale topographic map. Cores S-98-04, S-99-02, and S-98-06 all penetrated the deposit left by this feature which appears to have been a brackish, organic rich swamp that came into existence as sedimentation at the river mouth shifted westward.

The middle tributary valley in which sediment core S-99-05 was taken is also dominated by fluvial sedimentation, and given its narrow width, this is not unexpected. Howe-

ver, the sea did extend back into at least the entrance of this valley at some point in the past given evidence from the stratigraphy in sediment core S-99-04. This core consists of deposits from a brackish marsh (brackish microfossils noted when sampling for C-14 analyses) overlain by possibly nearshore shallow marine sediments, and capped by several meters of fluvial sedimentation. Some topographic issues exist with the interpretation of the middle unit as being a nearshore shallow marine deposit, but these will be resolved by examination of detailed 1:5000 scale topographic maps we have recently gained access to, as well as dedicated microfossil analyses. When sea level rise submerged the marsh here is unknown, but can be determined with a radiocarbon date on macroscopic marsh vegetation.

The tributary valley of the Aksaz Sazlığı is dominated by shallow marine muds overlain by marsh sediments, and a modern fluvial cap. Field conditions during the 1999 season permitted us to reach more towards the center of this valley with sediment core S-99-07 than was possible during the previous field season. We have not yet completed detailed microfossil analyses on sediment cores from this tributary, but the samples from core S-98-05 deeper in the valley were generally barren of calcareous microfossils. However, core S-98-02 contains abundant brackish micro- and macrofossils along its length, and we expect to document a clear marine signal in microfossil samples from S-99-07.

Regarding the relative sequence of geomorphic evolution in the valley, we suggest the following scenario which can be revised and given absolute dates once we submit organic samples for radiocarbon analysis. At some point in the past, the sea reached back into all the tributary valleys probably about as far back as the area that is currently delimited by the very flat valley bottom (yellow area in Fig. 20; same as the area delimited by the 10 m contour line). Fluvial sedimentation began to fill in the Karasu river and middle tributary valleys



while the tributary valley of the Aksaz Sazlığı remained open to marine influence. During this time, sedimentation from the Karasu river delta front was focused towards the eastern side of the whole Aklıman valley. As the Karasu river delta front prograded, the constant influence of longshore transport towards the WNW gradually pushed the river mouth to its present location leaving a series of abandoned river mouths along the way. Within the last kilometer of coastal progradation, the longshore transport began to constrict the entrance to the tributary valley of the Aksaz Sazlığı. By this time, the Aksaz Sazlığı probably existed as a marsh. Subsequently, this area continued to fill in evolving into the very low-lying, marshy floodplain that exists today.

As more data is generated from our lab analyses, and radiocarbon dating results become available, we expect to provide clearer details and absolute dates to the geomorphic changes recorded in the sediment cores.

#### 4. Ottoman archival research (A. Yaycıoğlu)

The ship-building project initiated following the battle of Lepanto in 1571 and its impact on the topographic and demographic structure of both port and hinterland are of particular interest. To date it has been possible to examine a number of sultanic writs housed in Istanbul, which docu-

ment the wood-cutting industry in the hinterland of Sinop and neighboring regions to supply the ship-building. During the late sixteenth and early seventeenth centuries state agents were sent as far as Samsun and Trabzon to procure timber for use in Sinop. Some agents were dispatched to nearby Demirci, 15 km to the South of the port. These agents complained that the wood there was not suitable for building large warships. Undoubtedly, the timber in Demirci had been in use before, maybe for small-size boats. The shipbuilding district at the port, called Tershane was exclusively populated by Greeks. A progress report on this survey of the sultanic writs is in preparation (Yaycıoğlu forthcoming). Research on the other writs in Istanbul will continue, providing important documentary support for the archeological field work.

#### 5. Discussion

The table below illustrates the dramatic difference between the coastal (Aklıman, Bostancılı) areas, the inland slopes overlooking the Karasu delta (Osmaniye, Sarsı) and the inner Karasu valley (Hacıoğlu, Uzungürge) settlement patterns. Although modern use of these landscapes differ dramatically, surveyed fields included in this tabulation are all comparable in terms of visibility. The very high density of the ceramics in the Hacıoğlu zone is to some degree due to the presence of several large Roman and Ottoman sites which produced tremen-

District name	area surveyed	avg. density	proximity ranking			predominant types (listed in order of frequency)
			Sinop p	East	North h	
Hacıoğlu	142580 m <sup>2</sup>	1205	5	2	7	R, O, Br
Sarsı	58920 m <sup>2</sup>	398	7	8	4	R, Br
Uzungürge	52250 m <sup>2</sup>	320	8	1	8	R, O, Br
Bostancılı	188330 m <sup>2</sup>	107	1	3	2	O, H/R
Kılıçlı	42690 m <sup>2</sup>	93	4	4	8	O, Br
Dibekli	284560 m <sup>2</sup>	50	6	6	3	O, Br
Osmaniye	77700 m <sup>2</sup>	21	2	5	5	modern
Aklıman	103150 m <sup>2</sup>	10	3	7	1	H/R, O, Br

Table 1: Relative ceramic densities for eight sample zones in the Karasu valley.



dous amounts of ceramic debris. A few tracts at the Karapınar site yielded densities over 100,000 sherds/ha. It is necessary to take the fact that Hellenistic, Roman and Ottoman settlement patterns tend to overwhelm the assemblages of other periods. In part this is why the full documentation of tract assemblages with digital photography is so important.

Despite these factors that demand cautious consideration of the raw numbers, several clear patterns emerge in the data. It is clear, with the exception of Harmene and one small site at Bostancılı, the outer flanks of the Karasu valley were sparsely settled before modern times. The same goes for the southeastern flanks of the delta (Osmaniye, Karagöl and Kılıçlı). We have shown that the delta was an unhealthy marsh which frustrated transportation and offered little or no arable land until quite recently. Perhaps the sparse settlement in this area lies behind the proverb mentioned by Strabo (XII.iii.10) that those with nothing to do build the walls of Harmene. After all, there is no need to defend an empty hinterland with a wall.

The settlement pattern in the western part of the valley (Sarsı), shows a higher settlement density than Akliman and Bostancılı. Several prehistoric sites are not included in the surveyed area, because they were documented in an opportunistic survey rather than as part of the systematic survey. The density of sites in this part of the valley was relatively high in the Bronze age, Roman and Ottoman times. These sites were not very large in any period. We have suggested elsewhere that a Roman road may have run through this district past a series of man-made borings into a water-bearing limestone outcrop at Mağara. It is likely that this feature was part of a project to bring water to Sinop in the early second century CE, suggested by Pliny the younger in a letter to Trajan (*Pliny, Ep. X.90-91*). The marshy Karasu delta made it impossible to use the spring as a source for Sinope (Donan and Gantos forthcoming).

The pass between the inner Karasu valley and the delta (Osmaniye and Kılıçlı) show very low ceramic densities as well. In sharp contrast, the inner Karasu, near the modern villages of Hacıoğlu and Uzungurgen were densely settled in several periods. Pre-historic settlement in this part of the valley appears to have been widespread, continuing into the first millennium BCE. As in other inland areas, Greek Classical and Hellenistic settlement are very limited.

No single topographic variable appears to control density of ceramics. In table 2 each zone is ranked according to proximity to Sinop, the East coast and the North coast. The ranking of ceramic density against rankings of proximity to Sinop and to the North coast (i.e. the mouth of the river) are not statistically related<sup>7</sup>. Two notable exceptions are the multi-period site of Harmene and a small Hellenistic, Roman and Ottoman site at Akdoğan (Bostancılı). Harmene was a small port dependent on Sinop, according to ancient sources (Xenophon VI.1.15; Strabo XII.iii.10). The Akdoğan-Bostancılı site was most likely a small coastal compound on the fringes of the Western suburbs of Sinop<sup>8</sup>. In contrast, there does appear to be a correlation between proximity to the East coast and ceramic density<sup>9</sup>, suggesting that the expansion of forestry and agricultural industries along that coast in Hellenistic and Roman times extended at least up to the Karasu watershed. The high density of ceramics in Sarsı probably are due to a relatively isolated zone of settlement, perhaps connected by a road to Harmene and the western coast of the Sinop promontory.

In general, Hellenistic expansion was for the most part limited to coastal areas. It may be that the settlement of the province was linked to the exploitation of Sinop's famed timber resources. Deforestation in Hellenistic times would have spread along the coast South of Sinope, followed by agricultural settlement. As the quality timber on the coasts was depleted, inland sources would have become more attractive, and after



timber was cut, agriculturalists could move into the newly cleared land (Doonan forthcoming a). The site of Karapınar was probably the most important center in this area during Roman times, given its large size and rich, varied ceramic assemblages. Roman and Ottoman occupation appear widespread, and it is possible that the modern pattern of non-nucleated villages spread widely through the landscape was the case in Roman and Ottoman times. Undoubtedly one or several roads ran by or through Karapınar. Given the number of sites overlooking the river on the eastern flank, it is very likely that a North-South road wound along this ridge. Since the ceramic densities in the Kılıçlı-Osmaniye districts is very low<sup>10</sup>, it is unlikely that a road ran along this ridge towards Sinop. More plausible might be a route that ran East-West through Karapınar running along the ridge towards modern Çiftlik. This road could have crossed the Karasu and continued West, passing through the Dibekli area as it headed to several sites along the West coast. French (1986) has argued that a Roman coastal road passed İstefan (ancient Stephane), and the road we are postulating here would have crossed the Sinop Promontory before connecting with such a coastal road.

## 6. Concluding remarks:

The systematic survey of the Karasu valley succeeded in documenting a distinctive settlement pattern along the flanks overlooking the delta and related inland zones. Our results can be contrasted effectively with those obtained in the 1997 season in the Demirci valley because we have been careful to maintain comparable levels of visibility within a topographically diverse sampling program. In 2000 the Black Sea Trade Project initiated what we hope to be a series of soundings in the region with exca-

vations at the port of Sinop. In future seasons we expect to examine the Karasu valley with a more extensive sampling program in order to test the results of the intensive data collection methodology outlined here against a more extensive survey design with increased sample size and less intensive data collection within individual tracts. In addition, we expect to expand our multi-scalar survey into different environments and topographic zones in and outside of Sinop province to build a series comparable case studies that will help us to understand the productive and settlement patterns that supported the most important port on the south coast of the Black Sea.

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## NOTES

1. For a discussion of the Survey's methodology and preliminary report of the 1997 results, see Doonan, Gantos, Hiebert and Smart 1999.
2. The limestone "bracelets" may in some cases be weights or mace heads. The commonly accepted term.
3. Işın 1997: pl. 8.13-15, 24. Işın interpreted a limestone blank as a grinding stone.
4. C. Marro, A. Özdoğan and A. Tibet, "Prospection Archeologique Franco-Turque dans la Region de Kastamonu (Mer Noire). Premier Rapport Preliminaire," *Anatolia Antiqua* IV, 1996, 273-90, see p. 279; fig. 5; Pl. L6.
5. For comparanda see Sams 1994: pl. 57. Large round mouthed jugs, #631 medium red ware with incised hatched lozenge design near rim. From destruction level (ca. 700 BC). Also see pl. 119. Open mouthed amphoras/ kraters, double handles (#s 909, 910 A,B esp.).

6. The surveyed Aklıman zone does not include the site of Harmene, which has very low visibility because of Ottoman and more recent improvement of the harbor area and dense forest covering the rest of the site.
7.  $\chi^2 = 14.67$  and  $14.97$  for the correlation between density ranking and proximity to Sinop and the North coast respectively. The  $\chi^2$  score at a 0.05 level of confidence is  $14.06$ .
8. The western suburbs of Sinope were apparently very sparse and limited in comparison to the dense settlement which spread along the coast to the South (i.e. the East coast of Sinop promontory).
9.  $\chi^2 = 6.31$  for the correlation between density ranking and proximity to the East coast.
10. It should be noted here that the vast majority of ceramics recorded in the Kılıçlı area are Ottoman in date.

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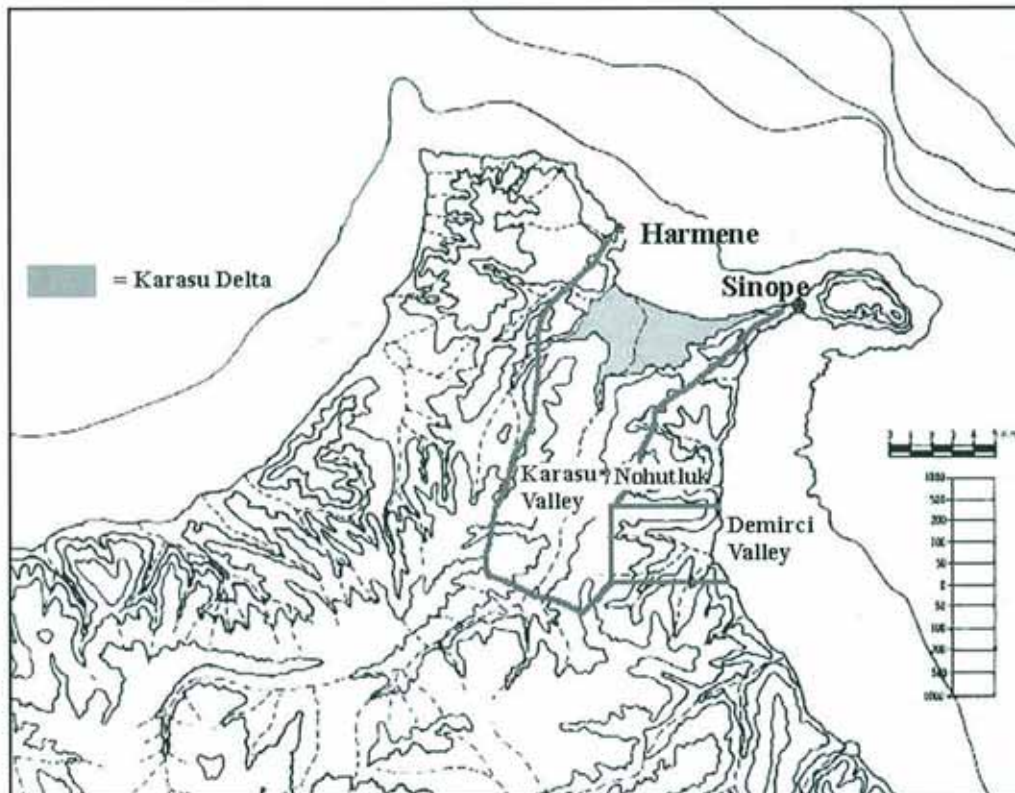


Fig. 1: Sinop promontory including the zones of the Demirci (1997) and Karasu (1998-99) valley surveys.

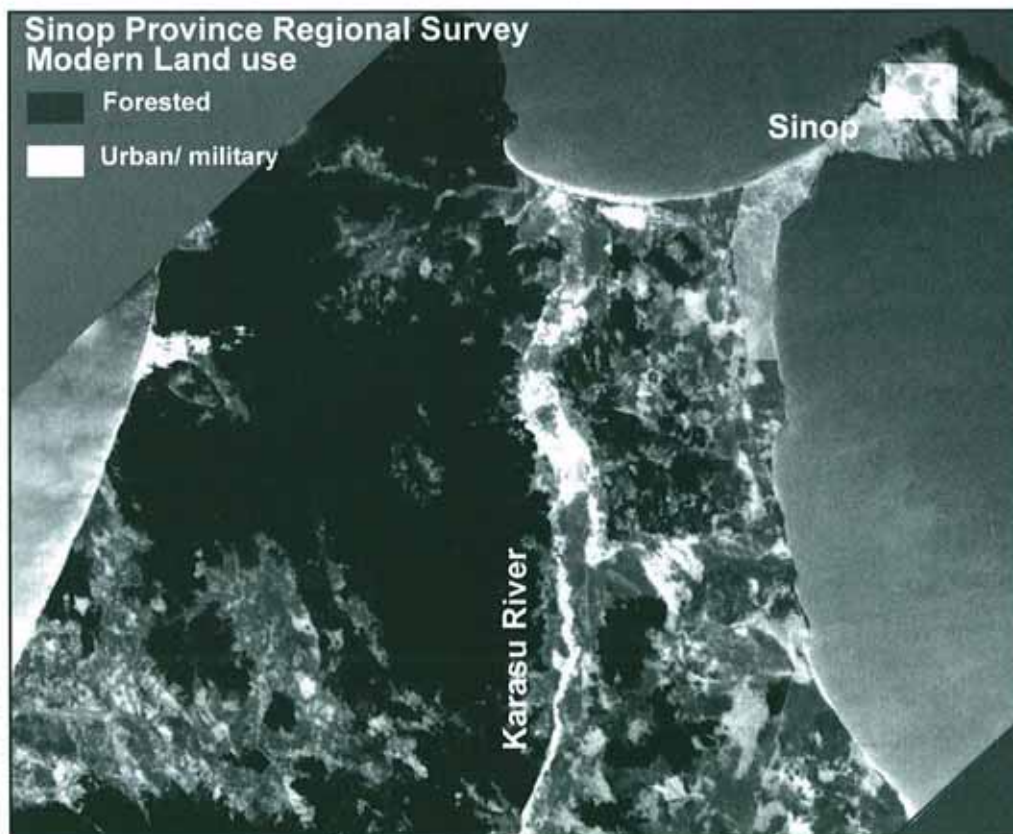


Fig. 2: Modern land use on the Sinop Promontory. The highlighted areas are occupied by the modern urban area or military installations, while the dark areas are densely forested.



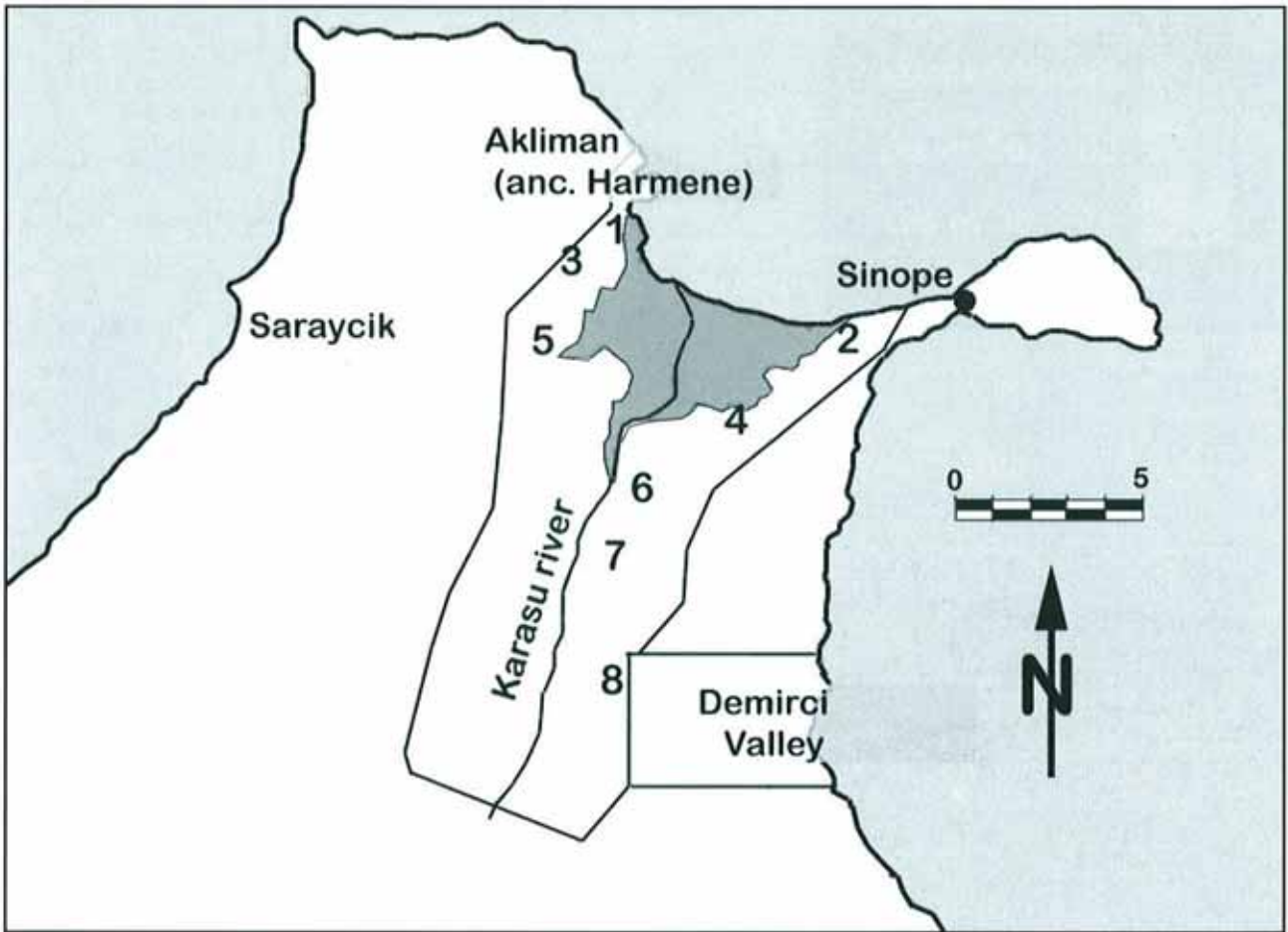


Fig. 3: Zones within the Karasu valley. 1) Akliman, 2) Bostancılı, 3) Sarsı, 4) Osmaniye, 5, Dibekli, 6, Kılıçlı, 7) Hacıoğlu and 8) Uzungürten.

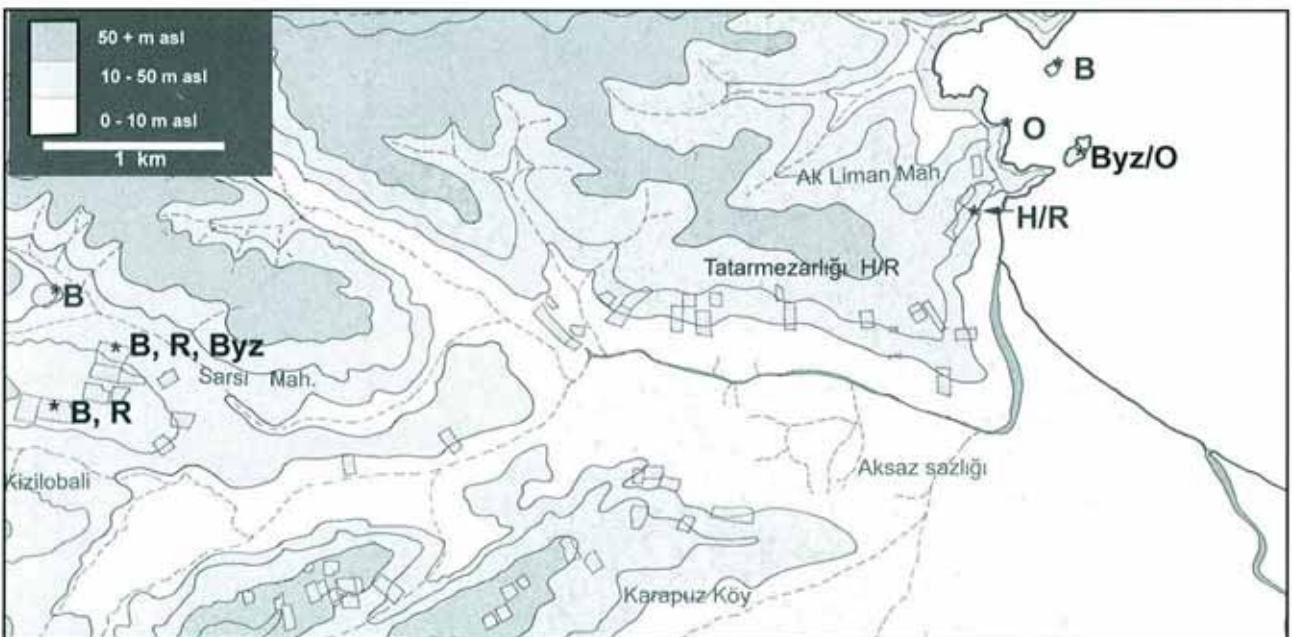


Fig. 4: The Northwest part of the Karasu valley, including Akliman (anc. Harmene) and Sarsı village. Akliman was inhabited from pre-colonial times through Ottoman. A tumulus for this settlement (probably Hellenistic and Roman periods) was recorded at Tatarmezarlığı. Extensive pre-colonial and Roman settlement was recorded in Sarsı village.



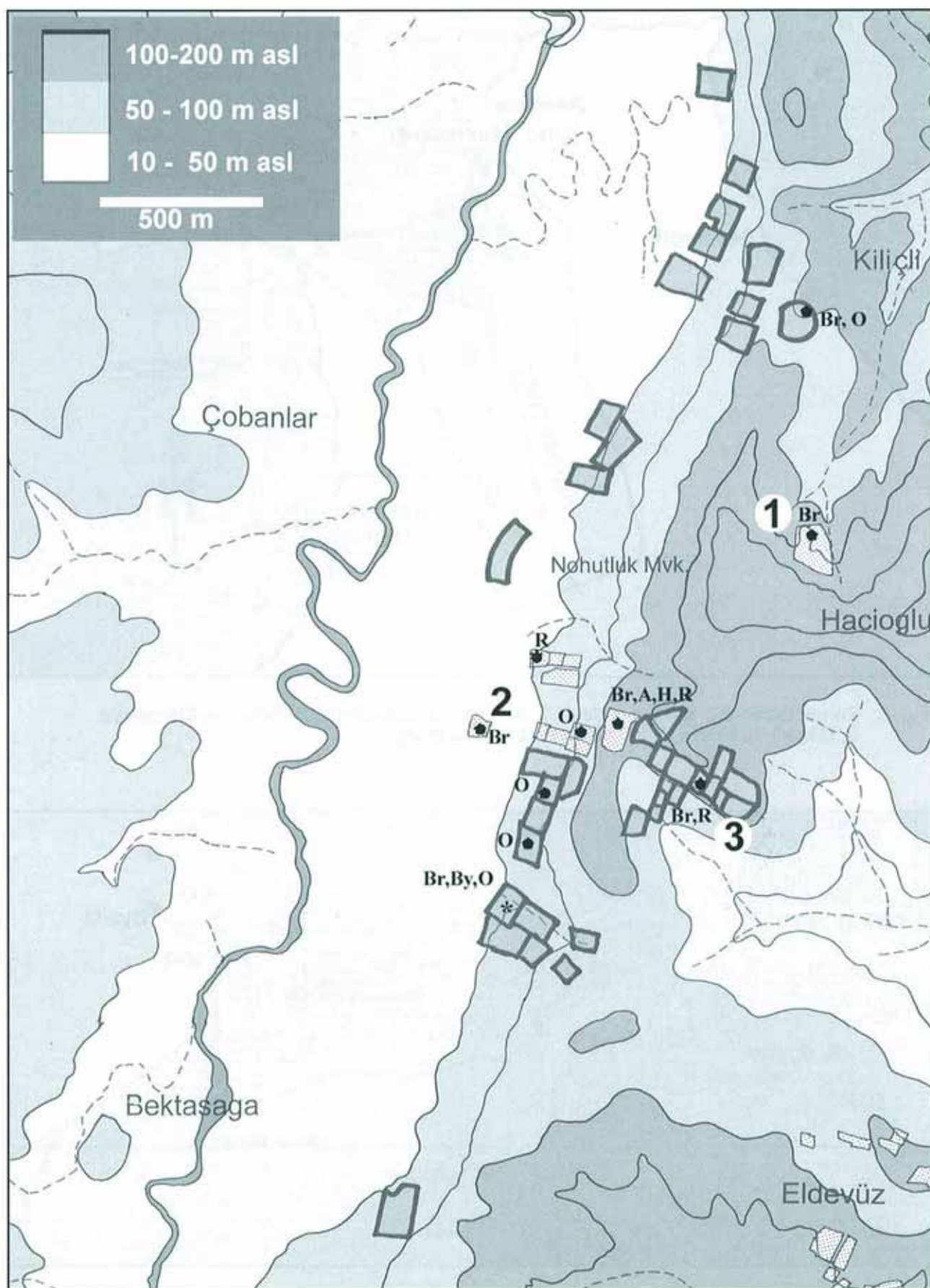


Fig. 5: The inner Karasu river valley, including the Kılıçlı, Hacıoğlu and Uzungürden areas. It was surveyed because the western side is too heavily forested to sample. Sites named in the text include: 1. Maltepe-Hacıoğlu; 2. Nohutluk (BA); 3. Karapınar





Fig. 6: The site of Maltepe-Hacıoğlu including the mound on the left and the terrace to its right.



Fig. 7: Chipped stone, cores and a knapping tool from Hacıoğlu.





Fig. 8: Limestone bracelets and blanks from Maltepe- Hacıoğlu.



Fig. 9: Pottery sherds from Maltepe at Hacıoğlu.





Fig. 10: EBA-MBA site at Güllüavlu. (Nohutluk), bulldozer cut.



Fig. 11: Pot sherds from Güllüavlu (Nohutluk), including two figurines (left and right) and a relief-decorated EBA body sherd.





Fig. 12: Prehistoric-Roman site at Nohutluk, overlooking the Karasu valley from the West.



Fig. 13: Pot sherds from Nohutluk, L98.20-22 (cup fragment w/ hatched lozenge marked with arrow).





Fig. 14: Robbed-out tumulus from the cemetery South of Akliman (Harmene).





Fig. 15: Roman ceramics from Karapınar. The figurine base is marked 1.

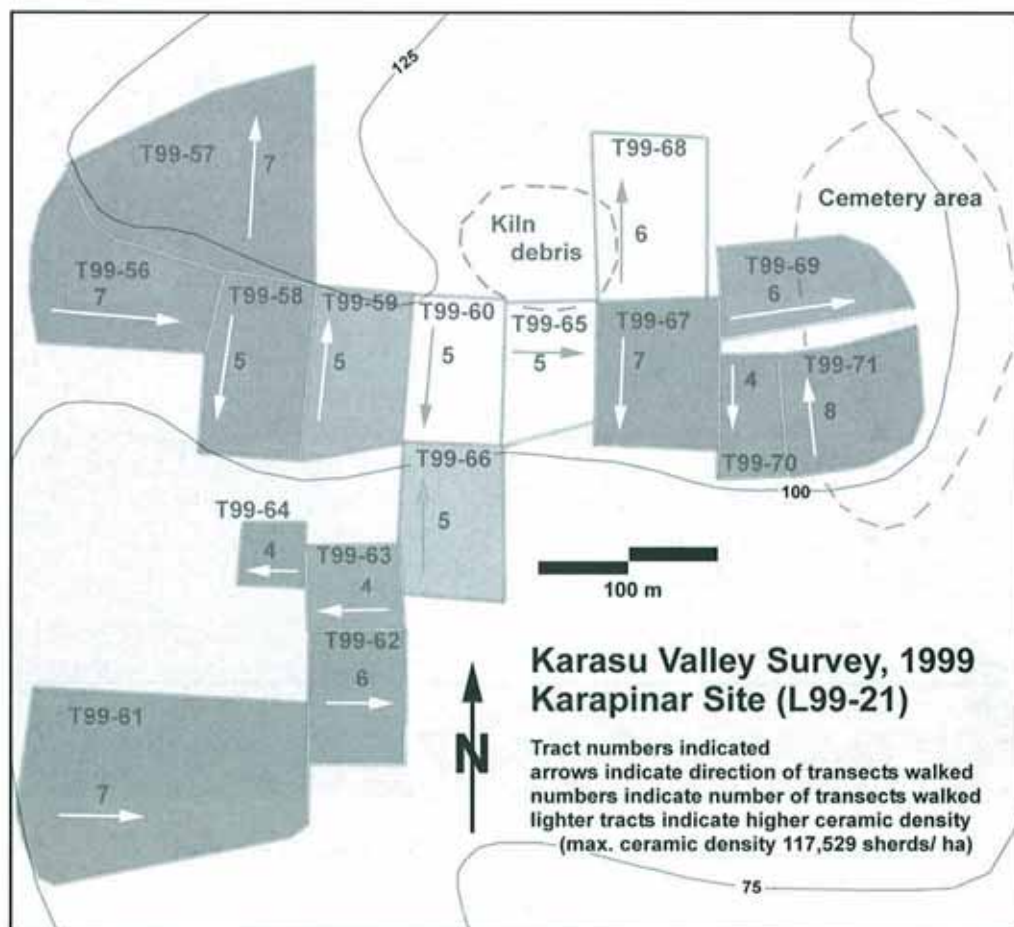


Fig. 16: Distribution of finds over the site of Karapınar.





Fig. 17: Church on Sariada, Akliman (scale 1 meter).



Fig. 18: Stone quarries at Akliman (scale 1 meter).