URBANIZATION PROCESS AND SPATIAL ORGANIZATION IN KLAZOMENIAN KHORA FROM EARLY IRON AGE TO ROMAN PERIOD

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ABSTRACT

URBANIZATION PROCESS AND SPATIAL ORGANIZATION IN KLAZOMENIAN KHORA FROM EARLY IRON AGE TO ROMAN PERIOD

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The present study is an assessment of archaeological evidence obtained from systematical archaeological surveys conducted in the territory of Klazomenai, which is one of the Ionian poleis located on Urla-Çeşme peninsula at İzmir. The main objective of the study is to explain the polis formation process in Klazomenai from Early Iron Age to Roman period with the aid archaeological evidence in the light of historical and epigraphical evidence. I here discuss the polis formation through the concepts of urbanization and state formation, which are defined as the subset processes of polis formation within the context of the study.

The settlement patterns for each archaeological period from Early Iron Age period to Roman Period are defined with the aid of spatial analysis and GIS analysis are also integrated for determining the parameters for site choice for being able to explain the dynamics that caused the shifts in settlement patterns. Methods are applied for estimating the land potential and demographic trends as well, which are complementary concepts of settlement patterns.

Within the context of the work also Greek polis as a concept is discussed since the subject of the work is an Ionan polis. Archaeological survey as a method also discussed for being the method for obtaining the raw data of the work.

The study consists of mainly six chapters including the conclusion and three appendices. First chapter includes the scope and the objectives of the work as well as the nature of the evidence. In the second chapter the methods of analyses are explained and discussed. Third chapter is merely confined to discussions revolving around the concept of polis and the terminology used. Fourth chapter includes a brief history of settlement and the complementary archaeological evidence provided with the archaeological excavations conducted at the settlement center. Fifth chapter consists of the assessment of the evidence and the application of methods and results, whereas the final chapter is the conclusion of the study.

Key Words: Klazomenai, Urbanization, Settlement Patterns, Khora, Polis

ÖZ

ERKEN DEMİR ÇAĞI'NDAN ROMA DÖNEMİNE DEK KLAZOMENAI KHORA'SINDA KENTLEŞME SÜRECİ VE MEKANSAL DÜZEN

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Bu çalışma Klazomenai art-alanında gerçekleştirilmiş olan sistematik arkeolojik yüzey araştırmalarının sonuçlarının değerlendirmesinden oluşmaktadır. Klazomenai İzmir ili sınırları içinde yeralan Urla-Çeşme yarımadasında bulunan Ion polislerinden biridir. Çalışmanın temel amacı art-alanından elde edilenarkeolojik verileri yerleşim merkezinde yürütülen kazı çalışmalarından elde edilen arkeolojik verileri yazılı kaynaklar ve epigrafik veriler ışığında değerlendirerek Klazomenai için Erken Demir çağı'ndan Roma Dönemi'ne dek olan süreçte polis oluşumu sürecini açıklamaktır. Polis oluşum süreci kentleşme ve kurumsallaşma kavramları üzerinden açıklanmaktadır.

Erken Demir Çağı'ndan Roma Dönemi'ne dek olan süreçte her arkeolojik dönem için yerleşim düzenleri mekansal analizler ile tanımlanmıştır. CBS analizleri yer seçimine etken olan parametreleri belirlemek ve değişkenleri tanımlamak amacı ile kullanılmıştır. Çalışma kapsamında yerleşim düzenlerinin bir parçası olan arazi

kullanımı ve tarımsal kapasitenin yanısıra nüfus değişimlerine ilişkin analizler de gerçekleştirilmiştir.

Çalışmanın öznesini bir Ion polisi oluşturduğundan çalışmanın bir kısmı polis kavramı etrafında dönen tartışmalara, çalışmalara ve terminoloji sorunlarına ayrılmıştır. Çalışmanın ham verisi yüzey araştırması ile elde edildiğinden arkeolojik yüzey araştırması da bir metod olarak iredelenmiştir.

Çalışma toplam altı bölümden oluşmaktadır. İlk bölüm çalışmanın amaçlarını ve elde olan verinin niteliğinin tanımlanmasına ayrılmıştır. İkinci bölümde çalışmada kullanılan metodlar ve analizler açıklanmış ve tartışılmıştır. Üçüncü bölüm tamamıyla polis kavramı ve bu kavrama ilişkin terminolojiye dair tartışmalara ayrılmıştır. Dördüncü bölümde kısa bir yerleşim tarihçesi ile beraber yerleşim merkezinde yürütülen arkeolojik kazılarla elde edilen verilerin tanımı yer almaktadır. Beşinci bölüm verilerin değerlendirmesini ve analiz sonuçlarını içerir. Nihayet altıncı bölüm çalışmanın sonuçlarını kapsamaktadır.

Anahtar Kelimeler: Klazomenai, Kentleşme, Yerleşim Düzeni, Khora, Polis

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Elif KOPARAL,

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CHAPTER I

I.INTRODUCTION

I.1. The Scope and the Objectives of the study

Finley in his monumental work "Economy and Society in Ancient Greece" defines Graeco-Roman world as being more urbanized than any other society before the modern era[1], which refers to an exceptionally large urban population living in "town". However the archaeological surveys conducted at different parts of the Greek *koine* challenged this view in many respects.[2] The archaeological evidence provided with those field surveys revealed that the countryside has been inhabited heavily,[3] and this changed the perception of Greek *polis* significantly. The Greek *polis* in sense of settlement center as well as in sense of social and political structure maintained its central position as the symbol of "urbanization" and "civilization" in the context of euro-centric approach. However the archaeological discourses of the past three decades depending on the evidence from rural parts of the *polis* as well as the settlement center let us discuss the parameters of urbanization and the degree it achieved in different contexts by rejecting the singular model for Greek *polis*.

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[1] Finley 1981, 20.
[2] Bintliff, J.-A. Snodgrass 1985; Bintliff,J.-A. Snodgrass 1988; Keller-Wallace 1988; Lohmann 1993; J.C. Wright-J.F. Cherry-J.L. etal. 1990; Mee, C.B. - H.A. Forbes 1997; Jameson, M.H. C.N. Runnels, T.H. Van Andel 1994; Cavanagh, W., Cromwel, J., Catling, R.W.V., Shipley, G. 1996; Renfrew, C.-J.W Wagstaff 1982; Cherry, J.F.-J.L. Davis, E. Mantzourani 1991; Mc Donald, W.A.-G.R. Rapp 1972; Davis, J.L. -S.E. Alcock 1997.
[3] Hansen, M.H. 2002, 154; Foxhall, L. 2004, 249.

The term *polis* is very much related to the practice of "political life", which required a sort of centralized administrative system within itself. Man, declared Aristotle, is a *politikon zoon*, which is commonly translated 'political animal' but may be more accurately rendered 'citied person' meaning one who belongs to a city, with all the social and moral responsibility that citizenship implied and refers to the presence of institutionalization. Institutionalization is directly linked with state formation, which is another required aspect of the Greek *polis*. Urbanization and state formation are different processes yet both are linked with *polis* formation. Therefore the indicators of both processes should be distinguished from eachother.

Eventhough the state is a necessary component of the urbanization process, states may have existed without cities.[4] Yet both are dependent to eachother in some terms. The process of urbanization creates the cities and their territorries, which can be defined through tangible archaeological material whereas the state formation that created states is a more complex process to be defined with textual evidence or relatively more interpretative evidence. The *polis* is suggested to have became a state before the urbanization of its settlement[5], since the urbanization of the settlement center achieved through a kind of organized society and institutions.

This study aims to set the terms for state formation and urbanization specifically for Klazomenai by merging the evidence from its territory and the settlement center in the light of available textual evidence as well as determining the beginnings of those processes chronologically. Here I claim that the state formation process is not necessarily traced merely through epigraphical evidence or literary

[4] Trigger, B. 1972, 576-577.
[5] Sakelleriou 1989, 154.

source, but more solidly by the archaeological evidence from the territory. Basically organized urban layout, construction of fortification wall, striking coins requires an organized community and political institutions, therefore sets a terminus for the state formation. These criteria are most of the time requirements of urbanization as well. However the conscious organization of the *khora* pre-dates all of those above in terms of requiring a some kind of state organization. It may be formulated as state formation needs to be accomplished before the urbanization process, as the consecutive stages of *polis* formation. From quite a few examples we know that most *poleis* were not looking like cities. It would not be totally incorrect to claim that most *poleis* achieved urbanization –in terms of organized layout of settlement center-at a much later stage than the state formation or never took place for some.

This study suggests that the conscious organization of the *khora* has been achieved long before the organization of the settlement center in Klazomenai. The arrangement of the *khora*, which mainly aimed to claim on the territory is perhaps the earliest indicator of the state formation and determines the beginning of *polis* formation as a subset process. In other words the conscious organization of the *khora* provides us with the evidence for determining the beginning of *polis* formation chronologically.

The ancient Greek communities had no central administrative institution that they would achieve any sort of political, economic or social unity led by it, but they had a cultural unity hallmarked with *polis.* It is a significant concept that differentiated the Greeks from other contemporary ethnic groups[6], yet their homogeneity is arbitrary

[6] Vlassopoulos, K. 2007, 55.

in terms of social and economical contexts. The concept of Greek *polis* embraces many different types of settlements with communities which had different social and economical dynamics. On the other hand it seems likely that the political structure which emphasized the citizenship and the pluralistic *"democracy"* was the common feature of Greek *poleis*, which distinguished them from the Near Eastern centers and their so-called premise the Mycenean citadels. A kind of state formation was achieved by all the *poleis* whereas the degree and the process of urbanization varied from one place to another.

The approach of the present study is highly influenced by the discussions that took place during the last two decades, revolved around *"polis"* as a concept as well as the meticulous fieldwork conducted at mainland Greece and the islands that shed inestimable light to our knowledge about the settlement patterns of ancient Greek *poleis*.[7] However the evidence from both research areas remained disparate for most cases and did not yield to any definition of a singular model of *"polis"*. In fact the whole effort echoed a sentiment of Victor Ehrenberg who has stated in 1937 as "*Polis* is the abstract representative of an enourmous number of concrete independent states, widely differing in form and development". [8]

The internal dynamics that made the *poleis* survive differed markedly from each other, particularly on the basis economical terms. Such differentiation in economical terms inevitably might have yielded to a certain type of hierarchy on the basis of economy also. The element of dependence by small states on larger ones was

[7] See footnote 2.
[8] Ehrenberg, V. 1937, 147.

first stressed by H. J. Gehrke[9] and he also emphasized the variety of Greek *poleis* on the basis of economic criteria. He assumed that socio-economic factors described the degree of quantative development than its qualitative nature. It is remarkable that in his classification agriculture with various capacities is a stable component for all types of states whereas maritime trade is not a necessity. Excluding the states with a pronounced feature such as minerals, religious centers or *emporions* all had an economy primarily based on agriculture. Therefore the agricultural potential might have been the main determinant for the economical development of the states. In terms of socio-economic structure p*oleis* differed from each other in many aspects and there was not a single model that survived all the periods or emerged in the same way at geographies that dramatically differed from each other.

The main objective of the present study is to define Klazomenai as a Greek *polis* by explaining the process of *polis* formation through notions of urbanization, centralization and institutionalization from Early Iron Age to Roman Period. The core evidence of the study is provided by the systematical archaeological surveys conducted in the Klazomenian territory between 2006-2009. The results of the field work is integrated with the evidence from previous works and excavation as well as textual evidence and geographical data sets. The study primarily deals with defining the settlement patterns for archaeological periods extending from Early Iron Age to Roman period. Such evidence enables us to make basic comparisons of the settlement patterns on macro scales, which geographically includes mainland Greece, Islands and colonies and on micro scales with neighbour poleis of Klazomenai on Urla-Çeşme

[9] Gehrke 1986.

peninsula and Ionian region, wherever evidence is available. The shifts of settlement pattern from one period to another is attempted to be explained within the socio-political context by using historical and textual evidence and perhaps indirectly the geographical and topographic data for environmental references. The archaeological evidence related to the settlement center obtained with archaeological excavations provides a substructure for explaining the urbanization process and used as a complementary evidence for defining settlement patterns.

Table.1 Scope, objectives and the outcomes of the work

Scope of the Work	**Objectives of the Work**	***Major Expected Outcomes of the work***
**Determining the size, number, function and geographical position of sites within the territory of Klazomenai.* **Preparing an inventory of archaeological sites within the territory of Klazomenai.*	**Defining site hierarchy and settlement-patterns periodically.* **Defining the interaction of sites with their landscape.* **Defining the differentiation of settlement patterns and settlement structure.*	**Processual explanation of polis formation in Klazomenai.* **Explaining the shifts of settlement patterns in socio-economic contexts.* **Identifying the complex interactions of sites with their environment.*
Scientific Value of the Work in a Wider Scope		
**Presenting a significant case for investigating the homogeneity of poleis in micro scales and macro scales.* **Serves and contributes evidence to the discussions revolving around the process of polis formation in Northern Ionia specifically and Ionia at a larger scale.* **Serves and contributes evidence for the comparative studies for investigating the position of the region within the ancient Aegean dynamics.*		

I.2.Nature of Evidence

This study presents the results of the field survey conducted in years 2006-2009 at İzmir-Urla where Klazomenai is located. The first year of the work was confined to reconnaissance which aimed to make a documentation of the archaeological sites known to us from previous field works[10] as well as gathering together the relevant epigraphic evidence and literary sources. The next three years of the field work included the extensive survey of the entire region thought to be comprising the Klazomenian *khora*, which extended from Balıklıova to the northwest to Güzelbahçe to northeast, to the southern coast and intensive surveys at sampled micro-regions. The pace of modern urbanization in the region is one of the major problems that incapacitated the full range documentation of archaeological sites. As a matter of fact some of the archaeological sites documented by the previous works were either completely destructed by the modern construction activities or preserved partly that it was not fully possible to discern its extensions. For such cases the reports of the previous works are taken into account for estimating its size and dating.

The extensive surveys that covered the whole area enabled us to determine the distribution of forts, extra-urban cult places and even the border marks that defined the frontiers of the Klazomenian territory. Thus it was possible to exclude the disputed areas between Klazomenai and its neighbours Teos, Erythrai and Smyrna. Since time for field work and the number of surveyors are limitations for any survey project a

[10] Tuncel, R. 2008; Aydın, B. 2006; Tuna, N. 1989.

sampling strategy had to be applied for intensive survey. The sampling strategy was mainly based on the morphological features of the area and regarded the equal distribution of various morphologies such as coasts, hills, plains, valleys. Apart from the sampled areas on the basis of its morphology each site that has been documented by extensive survey with high potential of surface material surveyed with intensive survey methods. 1:100.000 and 1:25.000 scaled topographic maps[11] of the region used for extensive survey. For the sampled micro-regions and sites 1:5000 scaled cadastral maps[12] are used for intensive surveys wherever available, if not the aerial imageries with high resolution used for CitySurfGlobe project obtained from the İzmir Municipality[13].

Due to the nature of archaeological survey as methodology it is not possible to avoid fully from a synthetic classification of the data as well as leaving blanks to be filled. The core evidence consists of findspots – entire archaeological sites, architectural structures, off-site scatters. It is possible to discern 141 archaeological sites in this material. The sites located at disputed areas or the ones dated prior to Geometric period or later than Roman period are not included in this work. The surface materials from all sites are not consistent in terms of quantity and quality. The primary information for dating the sites consisted of collections of surface pottery with easily distinguishable diagnostic features of vessel form, surface treatment or decoration. Since a general classification is required for the spatial analysis of the sites, the sites are classified into macro archaeological periods, which are Late

[11] The 1:25,000 and 1:100,000 scaled topographic maps (1966) were possessed by TAÇDAM and was obtained from General Command of Mapping Turkey for survey project of Numan Tuna.
[12] 1.5000 scaled cadastral maps are all obtained from the local municipality of Urla-İzmir in NetCAD version.
[13] CitySurf Globe İzmir Project.

Geometric (760-650 BC), Early Archaic (650-546 BC), Late Archaic (546-500 BC), 5th century BC (500-400 BC) , Late Classical (400-323 BC), Hellenistic (323-146 BC), Roman periods (2nd c. BC-6th c. AD) –eventhough time is a spatial dimension. In fact the arrival of Greek speaking communities to the land of Klazomenai is dated into 12th-11th c. BC namely the Late Protogeometric period on the basis of archaeological excavations conducted at Protogeometric building located near Liman Tepe bastions at Klazomenai.[14] The building is highly likely to have functioned as a public building and refers to an organized and stratified society to some extent. However the fieldworks in the territory of Klazomenai did not yield to the discovery of any sites dated into either Protogeometric period or Early phases of Geometric period. Only at one of the sites Hacıgebeş (052) Middle Helladic III Gray Minyan pottery was revealed as burial gift by illegal digs. As a matter of fact we would never be aware of those findings eventhough intensive survey was conducted at the site. Therefore we may assume that the archaeological sites dated to Protogeometric period and early phases of Geometric period are not represented well in the corpus of the archaeological sites either for being few in number or the using context of pottery and its least representation on the surface. Site loss may be considered as another factor, since it is likely to find the settlements of those eras at rather inaccessible situations. Yet gives us an impetus to seek for the early traces of those migrants in future fieldworks. The earliest sites discovered in the territory are dated into Late Geometric period and perhaps this refers to a fact that prior to Late Geometric period settlements were either concentrated around the Bronze Age settlement and few were dispersed

[14] Aytaçlar, N. 2004.

around the *khora* without any conscious arrangement. Archaic period is assessed in two phases due to the hiatus determined at the settlement center which assumed to be lasted from 550 BC to 520/10 BC on the basis of the lacking Attic pottery of the period at any context neither from domestic contexts nor the *necropoleis*.[15] Therefore the sites are classified as Early Archaic and Late Archaic. 5th century BC is an enigmatic period for Klazomenai when the settlement center seems to be abandoned and the bulk of the population moved to Karantina island *(Pausanias VII.3.9)*. One of the main objectives of the survey design was to seek the 5th century settlements in the territory since the island is not likely to hold the whole population including the rural population of the previous period. However the number of the sites dated into 5th century BC are few in number and a basic population estimation reveales that almost 2/3 of the Archaic population is not represented with the survey data. The most important problem is our lack of knowledge about the 5th century local production pottery. We may assume the era as a time of political discomfort and pottery import may not be expected. Therefore some of the 5th century BC sites may not have been determined since the hiatus is defined with lack of Attic pottery at the settlement center. The duration of the hiatus is another issue, since depending on Attic pottery may be deceiving in terms of attributing long time spans to any type. Late Classical period begins with the end of "5th century BC hiatus" and lasts until 323 BC. For Hellenistic period general dating is taken into account and the sites are dated roughly into Hellenistic period without any precise distinctions of the phases. Roman period begins with 2nd c. BC and ends with 6th c. AD. We are well aware of the fact that it is

[15] Ersoy, Y. 2004, 55; Hürmüzlü, B. 2004,86.

a long time span and the pottery is only roughly classified as Roman pottery without any distinctions in phases. Therefore it is not possible to decide whether all the sites dated into Roman period were inhabited simultaneously until the Roman pottery is sorted more elaborately.

The assessment of the raw data provided with the systematic archaeological survey, yielded to the classification of the archaeological sites in terms of function, size, date and geographical features; "dots on maps"[16] which visualize the settlement distribution and the settlement patterns for each macro archaeological period; the distribution of sites on soil, rock, slope, elevation and aspect maps with the aid of ArcGIS programme; an insight about the borders of the Klazomenian *khora*. Archaeological survey is a methodology which provides us with overall evidence at regional scale in relatively short time. However it has considerable delimitations which precludes the full range documentation and therefore the data obtained from the field survey remains "synthetic" to some extent. Archaeological survey –even though provides us with a more overall information- is barely intact and provides us with a static image captured by the surveyors in a certain time of field work, which had been distorted by human and surface processes.

The quantity and the quality of surface material for each period is not consistent. The early phases of the multi-stratified sites are represented with no more than several sherds at most sites. Another relevant issue for the documentation of archaeological sites is the pace of urban development that took place at Urla since the early 1980's. Therefore the analysis are executed with the present data, but it should

[16] Bintliff, J. 2006, 13-32; Bintliff, J. 1999 (a).

be retained that probably some sites have left no remains due to the post depositional surface processes and modern construction activities. These factors determine to what extent functional analysis can be applied. The composition of archaeological remains at the first hand dependent on how they were formed since the depositional processes, which take place during the existence and abandonement of the site effect the site appearance. Post abandonment processes that effect the site appearance may either be cultural as farming or non-cultural like soil erosion.[17] Despite the deficiency of using fragmentary evidence for such conceptual discussion, intelligent assessment of the evidence provides us with significant hints of the *polis* formation in Klazomenai.

The land potential of the area is estimated for calculating the carrying capacity of the land by using soil types, soil depth values and slope values. For such estimation the present data is used by processing the geological map.[18] Although the geological changes occur over the course of million years –which is very long in terms of cultural shifts- it may happen all at once as well. The study region is at a geologically active area. The faultlines in North-South direction to the east and west, the hot springs at the North (İçmeler) and traces of the abrupt changes in the coastline which may be observed with eye from Gülbahçe to İskele point out big earthquakes that took place in antiquity. The most fertile lands of the present day which are large plains of Mandalan and Barbaros are highly likely to be lake basins. However the project was not devised for any environmental research, but just produced future prospects for such work. In conclusion the estimated agricultural potential is mostly based on the

[17] La Motta, V.-M.B.Schiffer 1999; Hayes, P.P. 1991, 81-92;Allen, M.M. 1991, 39-57.
[18] Geological map of the area 1:100,000 scale is obtained from MTA (General Directorate of Mineral Research and Exploration).

present land data configurated with ancient agricultural techniques –which is dry farm- and diet mainly based on grain consumption, which neglects other type of inputs such as sea food and products of terrace agriculture.

To sum up, like any survey data and the assessments using this data is likely to change with the introduction of new evidence. Yet the study still provides us with significant inferences about the settlement patterns of Klazomenai.

II. METHODS OF ANALYSES

II.1 Archaeological Survey as a Method

Archaeological survey has initially been used as a tool for singular aims, such as finding sites at which to excavate. The early projects in the Near East and then the ones conducted in mainland Greece after all recognized the significance and the potential of analysis covering all the archaeological sites in a given region for exposing the shifts in the settlement patterns that had changed over time and variety of temporal patterns.[19] The increasing use of archaeological survey allowed us to study areas and regions for which the written evidence is lacking[20] and enabled us to question the archaeological stereotypes related to Greek *polis* produced on singular models.

However archaeological data provided with systematic survey doesnot present us any insights about the society unless it is integrated with other evidence. Mostly the documented data has been typically embedded into idealized formal models of Christaller (1933) and Lösch (1954) which works out with settlement systems that are fully based on market economy and exhibits artificial images of site distribution.

The main goal of any archaeological work should be producing some sort of socio-historical information that would contribute to the explanation of long term social changes. All the site-work and assesment of data in fact should be serving one task which is defining the social systems and how they changed over time as well as

[19] Alcock, S. 1993.
[20] Jameson, M.H. et.al.1994.

the structural interaction of social practices and settlement systems. However archaeology is able to deal with the by-products of any social practices that constitutes the core of the history that was produced. Settlement systems and settlement patterns are dealing with the physical remains of human actions over generations produced through cultural practices, which are not necessarily conciously committed.[21] In the past two decades most of the survey projects were designed with the aims of producing knowledge about the social practices and social structures of the communities through the archaeological data collected with various systematical methods. On the other hand whatever the objectives of a survey project, the conclusions dealing with the interpretation of settlement and demographic trends are reaching as far as the quality of the survey data. The published survey results mostly do not go beyond the presentation of a classified form of archaeological sites, pottery catalogues and series of maps. Particularly the distribution maps create a deceptive view that depicts the sites as static points on a uniform plane, where the cultural and environmental landscape is stripped out.[22] Distribution maps and polygons reduce sites into a homogeneous group of objects whereas they have possibly differentiated from eachother with physical features. Despite all methodological criticisms, an alternating methodology is not presented yet. This unavaoidable presentation of the survey data generates a range of deficiencies in terms of revealing settlement patterns. The most important deficiency of distribution maps is that they present the positive data, the locations of the discovered sites as much as they suggest where the occupation was not to be found. Thus the interpretation on shifting settlement patterns

[21] Casana, J. 2003, 9.
[22] Brück, J.-M.Goodman 1999, 7; Alcock, S. 2000.

rely on that deficient data. These maps are rather present us the quality of the findings from sites which is relevant to the visibility at the first place. The inferences of history and social practices emerged from this available set of data generate more or less deceptive results.

Another most common criticism of archaeological survey as a method is about its capability of encompassing the full range of sites in a given region.[23] As a response solution to this criticism "Siteless Survey" developed as a method questioning the site as the object of study. This method took the landscape as a carpet of cultural remains and claimed to be more objective in defining the landscape.[24] The notion of "site" which have been the major object of archaeological surveys was replaced with the terms such as ADABS (Abnormal Density Above Background Scatter)[25] and the utilization of very systematic sampling methods were suggested. However the rejection of "site" as a notion in archaeological survey fails to expose the structure of settlement systems.[26]

Despite the full range of criticisms about archaeological survey as a method, a better methodology for presenting and interpreting the data at a regional scale not suggested yet. Therefore the biases of archaeological survey should be regarded while making inferences about the social and economic practices.

On the other hand survey is a very usefull tool for the documentation of archaeological sites for producing high ratio of knowledge in a much expeditious

[23] Pettegrew, D.K. 2001.
[24] Ebert, J.I. 1992; Millet, M. 1991.
[25] Millet, M. 1991.
[26] Banning, E.B. 2002.

fashion. In 1985, Bintliff and Snodgrass in their first report of Boeotian survey[27] suggested archaeological survey as the most practical method for the archaeological documentation against the steadily increasing pace of urban development in Greece. In fact this has been the case for the Ionian region as well. Specifically speaking about our study area, Urla has been one of the favorite settlements near the city of İzmir and the population increased dramatically in the past 30 years. Beginning with the early 1980's the construction activities and the sale of agricultural fields to contractors accelerated. This situation impeded the documentation of archaeological sites. Therefore one of the major aims of four-year project KLASP has been investigating the region entirely by extensive survey. Thus it was possible to make a full range documentation of archaeological sites at an optimum level covering the whole region.

II.2 Background and Methodology

Klazomenai is one of the Ionian poleis located on Urla-Çeşme peninsula together with other three Ionian poleis, which are Teos, Lebedos and Erythrai. Among them Klazomenai is the most thoroughly excavated one so far. The systematic archaeological excavations carried out at Urla-İskele vicinity since the beginnings of 1980's revealed the settlement layers from 6th millennium BC to Roman period. By the end of 4th century BC the settlement has been moved to Karantina Island and therefore the settlement layers of previous periods have been preserved intact until the present day despite their closeness to the surface level. The

[27] Bintliff,J.-A.Snodgrass 1985, 123-124.

excavations at the settlement center revealed the settlement layout from Calcolithic period to Roman period and provides us with the evidence in terms of determining the process of urbanization and state formation which required institutionalization and some sort of social organization defined with organized settlement layout and nucleated settlement.

However contemporary approach in archaeology requires us to investigate the territory of the *polis* center, which includes the natural resources, arable lands, villages, hamlets and farmsteads, necropoleis, forts, refuge settlements, cult places which are complementary elements of an urban center.

A four-year systematical archaeological survey was designed to investigate the territory of Klazomenai for obtaining data to produce evidence for explaining the process of urbanization and state formation by defining site hierarchy, settlement patterns and land use in Klazomenian territory. The obtained evidence also allowed us to reconstruct the military and ritual landscapes of Klazomenai as well as defining the frontiers of its territory. Providing insights about the complex interactions between the natural environment and cultural, social, political structures is possible through defining the settlement patterns and explaining the causes of the shifts on the basis of variables, inevitably with the delimitations caused by the survey methodology.

One of the main outcomes of the work is producing an inventory of archaeological sites in the given area. Urla-Çeşme peninsula, which is a setting for Teos, Erythrai and Klazomenai is under the serious threat of modern urbanization and the destruction of archaeological sites –particularly the second and third order

ones- is highly likely every passing year. Eventhough it has been an area that attracted researchers since the beginnings of 19th century, systematical territorial surveys designed with specific aims were not conducted in the region. Yet still the area was either included within the study area of extensive surveys[28] or one-man surveys without any methodology rather than documenting archaeological sites by obtaining information from the local people.

The first step of the study sees the reconaissence of the area for the documentation of archaeological sites at an optimum level. The entire survey area extended from Balıklıova to Korykos at the west while extending from Gülbahçe to Bademler at the east, including the southern coast as well. It has given us the chance to comprehend the topography of the region and to make an assumption about the natural frontiers of Klazomenian territory. The extensive survey yielded to the documentation of 212 archaeological sites diachronically. All the archaeological sites dated from Pre-historical periods to the Ottoman era entered to the database that is to be updated and used by the future researchers, constructed for the inventory of cultural heritage of the region. However for the analysis, the archaeological sites situated at the disputed areas between Klazomenai and Erythrai or Teos, which are situated roughly at Balıklıova and Southern coast extending from Teos to Aerae were eliminated. As a result 141 archaeological sites were discerned from the entire list of sites for the spatial analysis concerned with Klazomenian *khora*.

The reports of the previous researches, epigraphical and textual evidence were gathered to construct the sub-structure of the study. The history of the research

[28] Tuna, N.1989; IRERP (İzmir Region Excavations and Research Project)

in the area extends back to 18th century, represented with the notes of travellers. R. Chandler in 1764, B. Randolph in 1867, G. Dennis in 1883, S. Reinach in 1895 visited Urla and environs. However these notes gives us only a rough description of the area. Milioris's work published in 1957 presents a detailed description of topography, administrative and social structure of Urla and environs in the early 20th century as well as the location of some archaeological sites. In 1950's J. M. Cook carried out a research around Urla for his investigations based on the historical geography of Ionian poleis. His research resulted with the discovery of Liman Tepe mound and a tentative localization of Archaic and Classical settlement. He identified the hillock located to the northeast of Yıldıztepe as the acropolis and the plain extending to the north of the hillock as the Archaic settlement center inaccurately. The archaeological excavations in the area were initiated by G. P. Oikonomos in 1921-1922 at Monastırakia necropolis and Karantina İsland. In 1970 İzmir Archaeology Museum carried out salvage excavations at Kalabak necropolis. In 1979 the archaeological excavations at Klazomenai and Liman Tepe were undertaken by Ege University and Ankara University.

The archaeological surveys conducted by N. Tuna in the Ionian region during the summers of 1985 and 1986 documented archaeological sites in Urla region as well.[29] Previously documented archaeological sites were visited within the scope of this work. Their state of preservation is reported in detail and intensive survey conducted at those sites unless they were destructed by the modern urban development. Otherwise the data from previous researches taken for granted.

[29] Tuna, N. 1989.

The survey area reaches to 400 km² , but the *khora* comprises 350 km². With the inclusion of the islands which were indeed a significant part of the Klazomenian territory, its size reaches to 386 km². The intensive surveys on the mainland covered % 13 of the entire land. Due to governmental detentions we were not able to conduct research on Drymoussa, which is the largest and the most likely to be inhabited and used during the antiquity by Klazomenians and the tip of Menteş peninsula. Karantina island, which had been connected to the mainland via choma is not included within the scope of fieldwork since it has been investigated with survey and excavation thoroughly during the previous years. Pırnallı **(95)**, Yassıca **(96)**, Hekim **(113)**, Akçaada **(162)** and İncirli **(163)** islands are intensively surveyed, covering the entire land of them.

It is beyond doubt that the borders for the Klazomenian territory suggested on the basis of natural frontiers are tentative. However we had the chance to examine the hypothetical borders with archaeological evidence. *Strabon* states that Teos and Klazomenai were located on the isthmus which was connecting Erythrai peninsula to the motherland. He adds that Teos was located to the south whereas Klazomenai to the north *(XIV; 31-C 644)*. However this rough description is not sufficient for making suggestions about the extensions of the *khora*. On the other hand the Urla basin is a geological unit which is demarcated with the depression defined with Çiftlikdağı, Değirmendağı, Pertevpaşa dağı, Kocadağ, Sivricetepe and Çalıtepe, extending from Güzelbahçe to Seferihisar on the west. Strabon gives us a clue about the eastern border of the *khora* as well by saying that Hypokremnos stands at the border between Klazomenai and Erythrai. Eventhough the localization of

Hypokremnos is not clear, it might be Gülbahçe. The natural frontier defined with Gülbahçe and Barbaros plains as well as the mountain range formed with Canavardağ, Ulaşdıran, Keneli and Kıran reaching to Cılga cove and determines the western border of Klazomenian *khora*. The northern coast has apparently been controlled by Klazomenai whereas the southern coast might have belonged to Teian territory, but included in the study area as well to examine our hypothesis about disputed areas and frontiers. The entire study area was divided into 17 subregions at the first hand, however after we determined the borders of Klazomenian khora it turned out that 15. Balıklıova and 16. Azmak regions might have been disputed areas between Klazomenai, Erythrai and Teos. For this reason the sites documented in those two subregions are eliminated from the analysis.

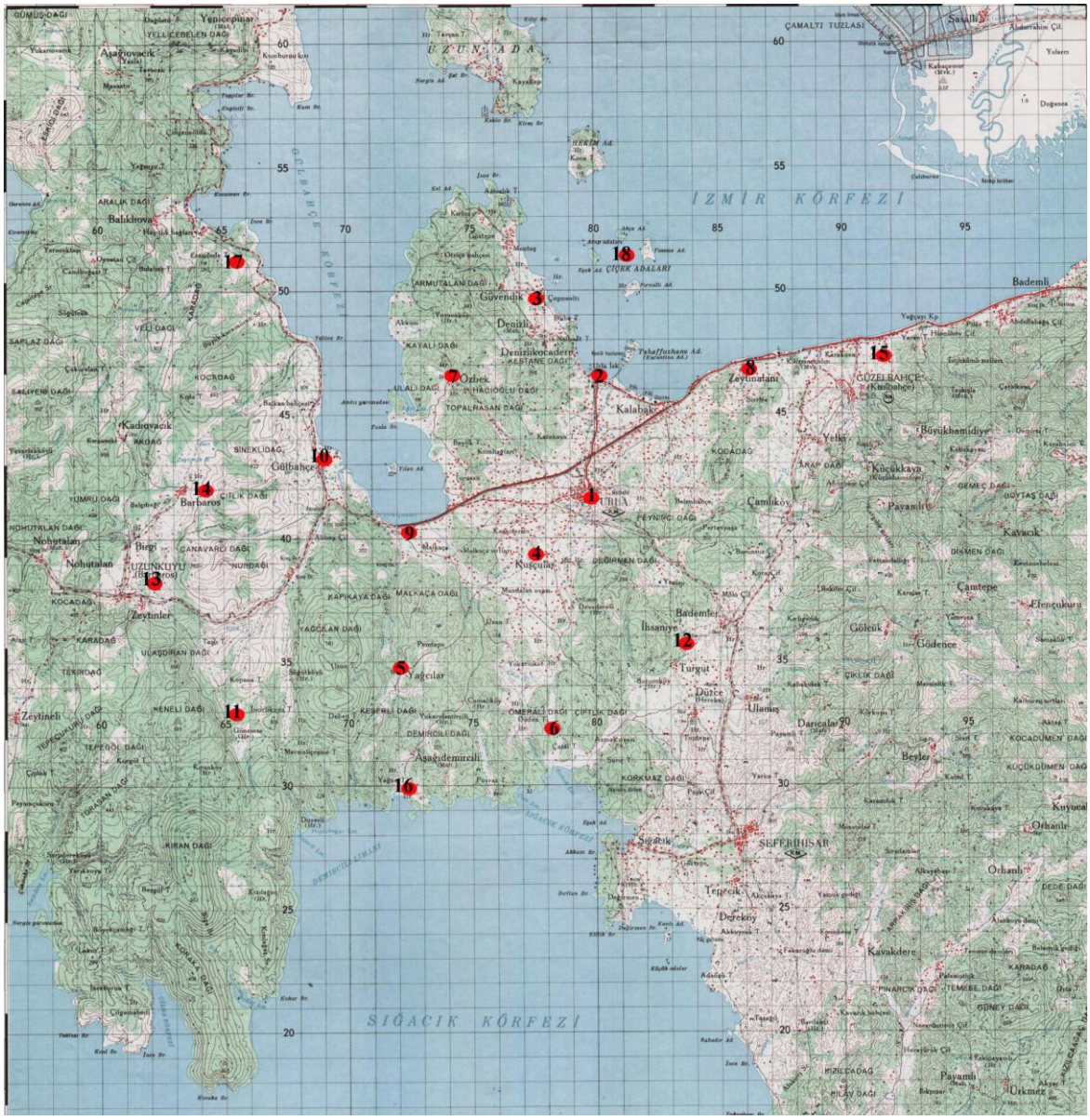

Figure.1 Subregions in the Study Area

1. Urla center
2. Urla İskele
3. Çeşmealtı
4. Kuşçular
5. Yağcılar
6. Çobanpınarı
7. Özbek
8. Zeytinalan-Kalabak
9. İçmeler
10. Gülbahçe
11. Söğüt – Kokar
12. Bademler-İhsaniye-Ovacık
13. Zeytinler-Uzunkuyu
14. Barbaros
15. Güzelbahçe
16. Azmak
17. Balıklıova
18.Urla Islands

In survey choices and decisions arise at many different scales related to the problematics of the project as well as due to the peculiar features of the survey area. Sampling strategy is perhaps the most critical step of the decision in any archaeological survey. The chosen fractions should be the representative of the whole as far as it is possible. Within the scope of the present work the sampling strategy for the choice of intensive survey areas primarily depended on the classification of typical geomorphologies such as hill, hillslope, plain, coast and valley. The equal distribution of typical geomorphologies taken into account within the total sampled area. Aside from that, 13 discrete sites, which were known to us from the extensive survey with either well defined margins or remarkable architecture or high potential of surface findings, namely Çiftliktepe **(142),** Yarentepe **(28),** Akçahisar **(33),** Adatepe **(43),** Tavşantepe W. **(71),** Tavşantepe E. **(72),** Küpalanı **(44),** Yemişliboğaz **(49),** Hacıgebeş **(52),** Burgaz **(101),** Özbek Metal Workshop **(11),** Yuvaca **(136),** Alibey Çiftliği **(51)** are also surveyed with intensive methods.

The sampled areas on the basis of geomorphological classification for intensive survey are Mandalan Plain, Mersinboğazı and Arapderesi **(Subregion: 5. Kuşçular)**; Çobanpınarı valley **(Subregion: 7. Çobanpınarı)**; Özbek coast **(Subregion: 8. Özbek)**; Sungurlu **(Subregion: 9. Zeytinalanı-Kalabak)**; Gülbahçe Coast **(Subregion: 11. Gülbahçe)**; Söğüt-Kokar valley **(Subregion: 12. Söğüt-Kokar)**; İhsaniye-Ovacık plain **(Subregion: 13. İhsaniye-Ovacık)**; Zeytinler-Uzunkuyu **(Subregion: 14. Zeytinler)**; Çayır plain **(Subregion: 2. İskele)**. The intensive survey conducted in these micro regions yielded to the discovery of 43 sites which comprised the 31% percent

of the total number of the sites. On the other hand together with the discrete sites mentioned above in total 70 sites are surveyed with intensive methods, which is the 50% of the total number of sites. The intensively surveyed area sizes up to 4508 ha, which comprises the 13% of the entire land of the khora.

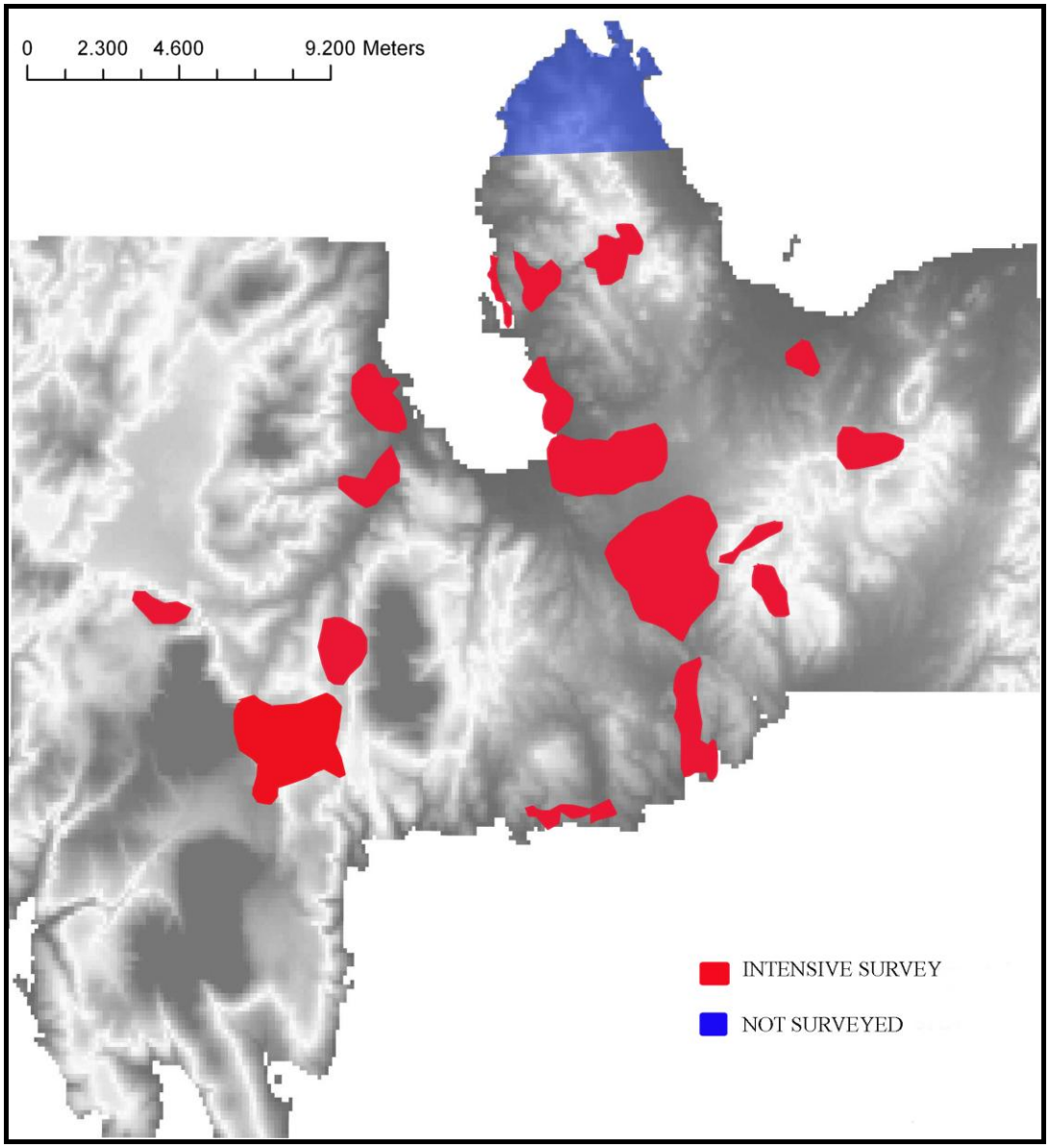

Figure.2 Map showing the intensive survey areas

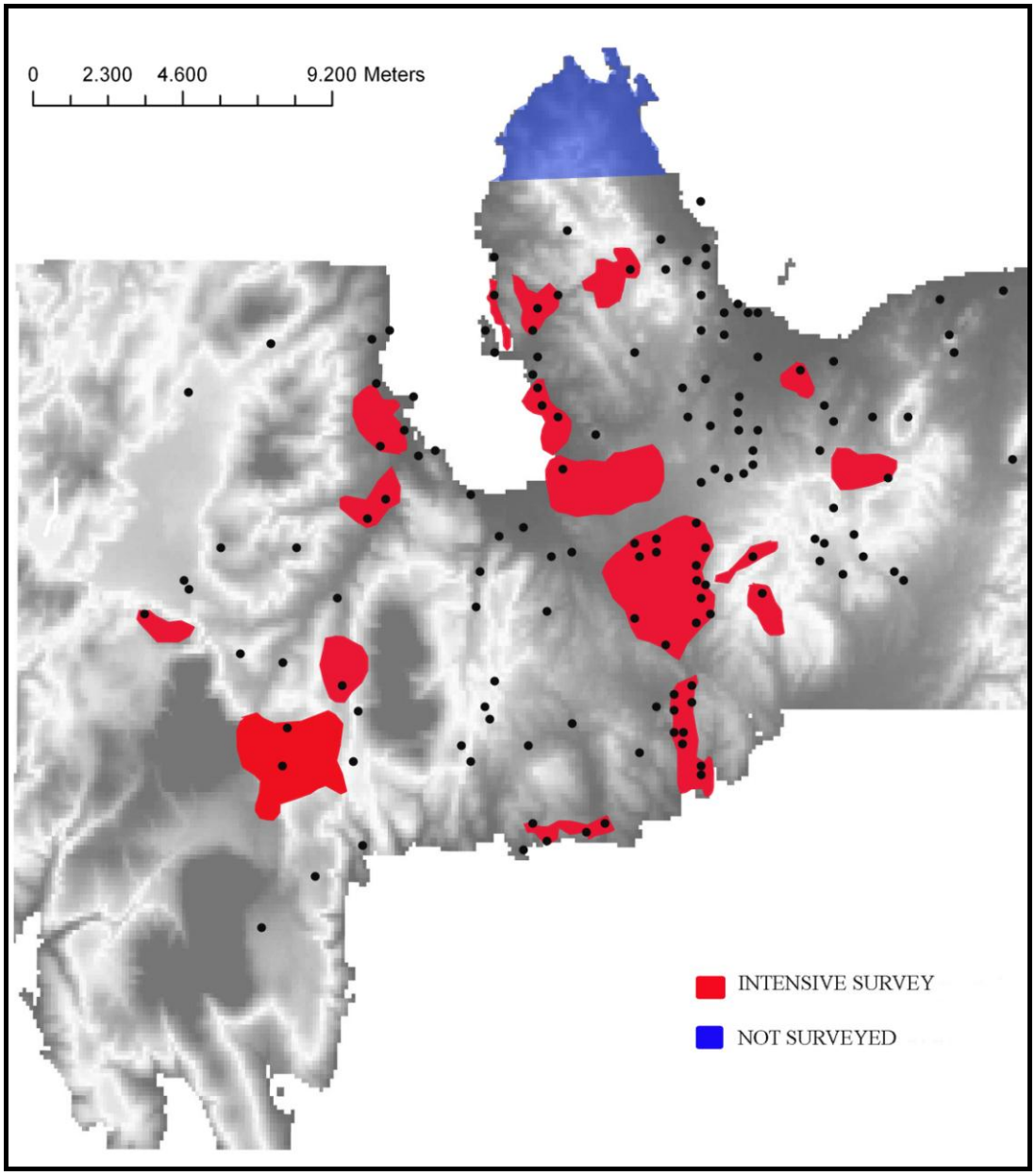

Figure.3 Map showing the sites documented in intensive survey areas

The units of intensive survey in each area were determined with field margins and micro morphologies within the site with the aid of 1:5000 scale cadastral maps[30] and satellite images[31], instead of applying grid system. The intensity of pottery, visibility, architectural features, state of preservation are documented for each unit. Each unit was surveyed with a team of 5 to 10

[30] Obtained from local municipality of Urla-İzmir in NetCAD version.
[31] Obtained from the Municipality of İzmir, aerial images used for CitySurf Globe project.

fieldwalkers at 15 m. intervals. One of the surveyors took the geographical reference in UTM with GPS, took photographs and filled the information sheet. All the diagnostic finds were collected in each unit and the undiagnostic ones were counted and noted for presenting a degree of surface material quantity.

II.3 Processing the Field Survey Data

The archaeological sites documented by field survey were all grouped on the basis of function, period and physical size. In terms of function all the documented archaeological sites were classified as settlement (*demes*, village, hamlet, farmstead), tumulus, fort, garrison, watchpost, refuge settlement, cult place, workshop or border mark and for some cases the site was classified into more than one function.

The settlements are classified into four on the basis of their physical size. Highest rank which is 4 only attributed to the *polis* center, Klazomenai located at İskele and Liman Tepe. The size of the 3rd order sites are larger than 10 ha., the size of the 2nd order sites vary from 3 ha. to 10 ha. and finally the size of the sites classified as 1 is smaller than 3 ha. For some sites we were able to suggest a definite size whereas for others due to the quality and the quantity of artifact scatters as well as destruction by modern urban development the suggested size remains to be tentative. The size is a significant variable in theoretical framework for determining the site hierarchy and settlement pattern. Assessments of the relative size of artifact scatters and intelligent interpretation of them is one of the challenging aspects of survey methodology, since the post

depositional processes are likely to either diminish or smear the surface findings.[32] This phenomenon is much more common at places where the pace of urban development is high due to the modern construction besides the post depositional processes of nature. It was one of the major problems in our study area.

While ranking the settlements for identifying the settlement hierarchy, aside from the 4th degree which is only attributed to the central settlement – the classification of actual sizes into three tiered category, calculated by taking the mean of the actual sizes. Such numerical grading is decisively used instead of using terms town, village, hamlet, framstead or *oikia, kome, demos, ethnos*. The correspondance of such terminology that classifies other forms of community rather than *polis* with modern perception of settlement hierarchy is very arbitrary.[33] The studies dealing with the settlement pattern of ancient Greece, classify settlements into three forms of habitation, which are first order sites towns and cities; second order sites villages and hamlets; third order sites farmsteads and homesteads.[34] In this classification first order and second order habitations comprise nucleated settlements whereas third orders are dispersed farmsteads or cluster of villas that form hamlets with low density of habitation.[35] The criteria drawing the line between these categories is very fuzzy and arbitrary. Since the ancient Greeks were rather focused on the political aspects of the community life, we can hardly speak of an ancient terminology that perfectly fits our classification of habitation.

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[32] Alcock, S. 1993, 58.
[33] Hansen, M.H.-T.H.Nielsen 2004, 76-78.
[34] Jameson, M.-C.N. Runnels,T.H. van Andel 1994, 375-383; Shipley, G. 1996, 218-219.
[35] Renfrew, C.-J.M.Wagstaff 1982, 251; Snodgrass, A. 1990, 127-128; Jameson, M.H. etal 1994, 253-254; Catling, R.W.V. 2002,187.

On the basis of surface findings all the sites are classified into nine macro archaeological periods, which are Prehistorical, Geometric, Early Archaic, Late Archaic, 5th century BC, Late Classical, Hellenistic, Roman and Byzantine. We are able to present a much more refined dating for Prehistorical sites, but since it is not one of the problematics of this work such dating is only mentioned in the catalogue. Since the Prehistorical and Byzantine periods are not one of the concerns of this study settlement pattern analysis are not executed for these periods. The identification of 5th century BC settlements is related to a specific problematic arised with the excavations at the settlement center of Klazomenai. The evidence from the excavations revealed a *hiatus* at the center that lasted for almost a century and attested with historical background and political events of the period.[36] The lack of archaeological material dated after 490 BC in domestic and burial contexts makes one think that the most of the inhabitants had abandoned the settlement center on the mainland. The textual evidence states that the Klazomenians had moved to Karantina Island after the Ionian Revolt that took place in 499 BC *(Pausanias 7.3.9).* Moving to the nearby islands during the times of political turmoil is not a specific phenomenon for Klazomenai. Athenians are known to have moved to Salamis and Aigina Islands during the Persian wars as well *(Herodotos 8.40-41, 51, 60).* However it was still required to be investigated if there were second order sites in the territory of Klazomenai other than Karantina Island that had been inhabited during the 5th century BC. As a matter of fact the survey within the territory of Klazomenai attested few number of sites that had

[36] Güngör,Ü. 2004.

been inhabited during this period and changed the archaeological view about this specific period. However the main issue about identifying 5th century settlements is that the local production of that era is not known since the hiatus on the mainland is determined due to the lack of well dated imported material.

In most of the cases it was not possible to determine the size of the early settlements at multi-stratified sites, since the early periods –for instance Late Geometric, Early Archaic and 5th century BC inhabitation were represented with only several findings. The representation of early cultural layers is flimsy in particular at sites where Roman settlement is present. In terms of determining increase and decrease of the physical size of the sites through the periods the lower cultural layers or in other words earlier periods can hardly be defined. Therefore on the basis of surface pottery distribution, eventhough the pottery is sorted well it is not possible to determine the growth or shrinkage of the settlements precisely except for few places. The physical size for different archaeological periods is determined on the basis of related pottery distribution wherever it was available. Otherwise the size of the sites are taken as a static variable for the analyses, since the quantity of the surface material limited us at most places.

The surface findings are studied at the lab for drawing and dating. As a natural outcome the number of surface findings from the fieldwork is abundant in number. The density and the number of surface scatters are entered to the database and all the diagnostic finds are drawn and dated. However in this study to avoid any complexity and redundancy only selected stereotype diagnostic pottery is included and used for dating. Otherwise a large portion of

the work would be confined to the definition and drawing of frequently repeating pottery types. Yet for each site a detailed documentary of surface findings is present to be the core material of future works, like any study focused on pottery that would shed light to our knowledge.

II.4 Integrated Analyses

The GIS analyses and statistical analyses are executed in the present study in order to find the correlation between the data collected from the study area and archaeological sites that are documented with field surveys. The results of the analyses are used to quantify the effect of the physical parameters such as topography, rock type and soil type on the site choice of the ancient settlements included in this work.

Table.2 Software, Data Sets and Analysis used in the study

Software Packages (used for digitising and analysing)	**Data Sets**	***Analysis***
ArcGIS *MapINFO* *TNTMips*	*POI–UTM coordinates of sites* *Topographic:* *Elevation* *Slope* *Aspect* *Geological:* *Rock Type* *Soil Type*	*1.Morphological Analysis* *2.Rock Type Analysis* *3.Soil Type Analysis* *4.Distance Analysis* *5.Density Analysis* *6.Visibility Analysis*

The initial step of the analyses is obtaining the raw data, which includes SRTM map of the study area, Geological Map, Soil Map, Topographic Maps of 1:100,000 and 1:25,000, UTM coordinates of the archaeological sites. Each set of data is obtained from different sources and processed for the final set to be used in the analyses.

1.Morphological Analyses

Topography is a 3D representation of the Earth's surface on a 2D surface including the contour lines showing topographic features like mountains, plains, canyons and plateaus which are seen from overhead looking to ground. In the present work SRTM (Shuttle Radar Topography Mission) topographic data are used to identify elevation, slope and aspect values of the study area. SRTM is an international project pioneered by NGA and NASA used to obtain elevation data on a near-global scale to generate the most complete high resolution digital topographic database of the earth. SRTM with 90 pixel resolution and 16 m. vertical accuracy was taken during the 11 day flight with the Space Shuttle Endeavour in the year of 2000 (NASA SRTM 2004). In this study SRTM map is used determine the three topographic parameters, which are elevation, slope and aspect of the entire study area and the archaeological sites. SRTM data is processed with TNT software in order to produce initial elevation, slope and aspect maps of the entire region.

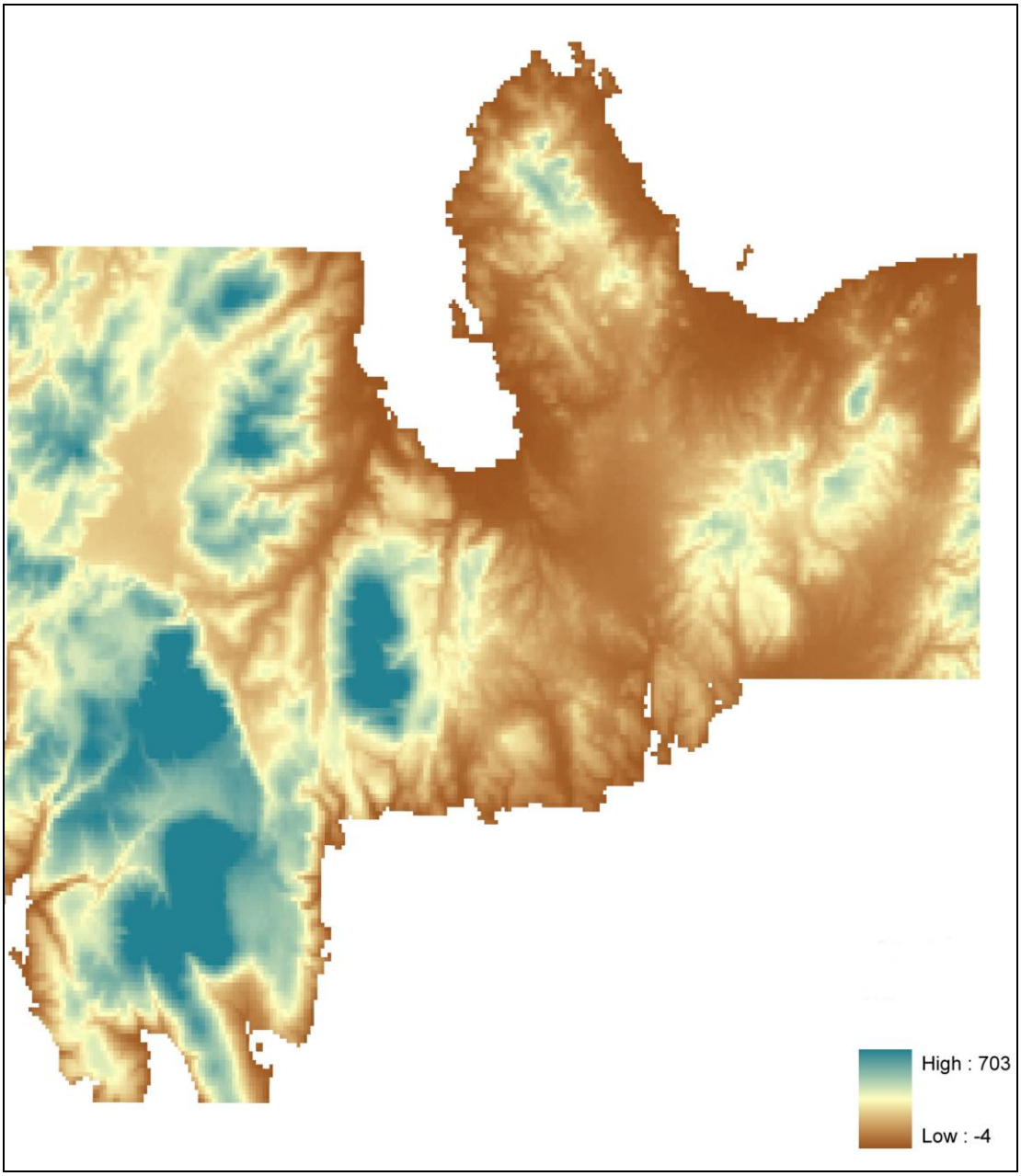


Figure.4 SRTM Map of the survey area

Elevation Map shows the elevation values of the study area that ranges from 0 to ca. 700 m. The histogram of the area is divided into 50 m. intervals from 0 to 700 m. The lowest elevations are dominant around the coastal parts in particular the northern coast and coastal plains to the north. On the other hand the highest elevations are observed further west and east that are defined by high hilltops formed by faultlines. More than 80% of the land elevation ranges between 0 to 300 m.

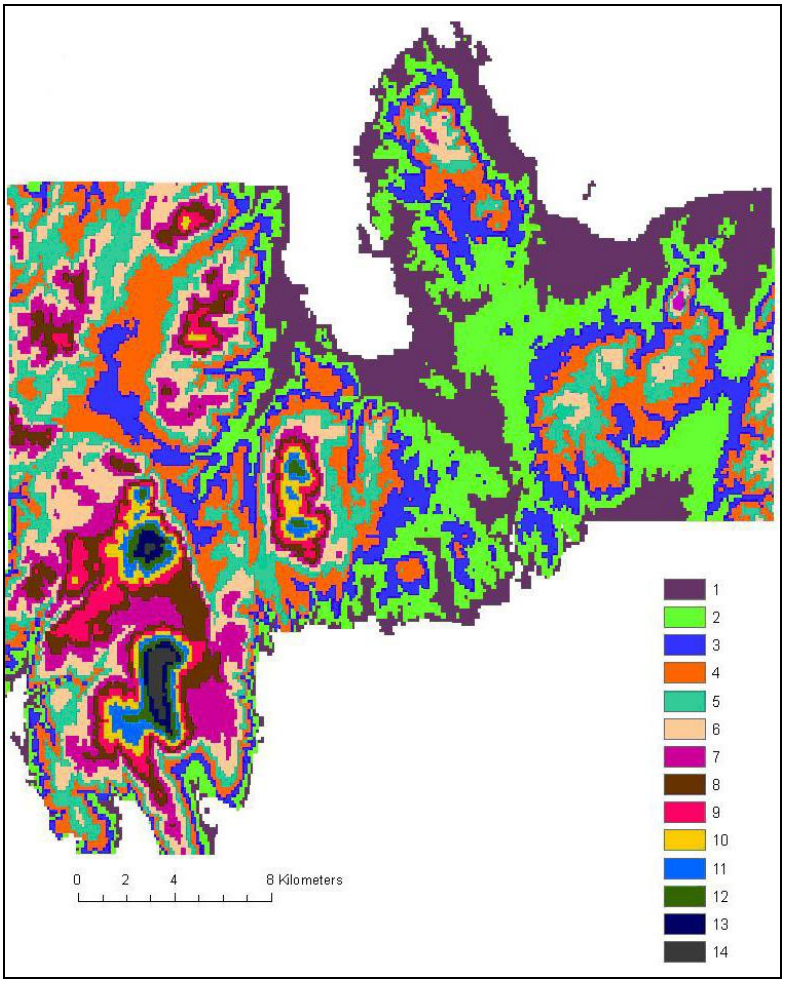
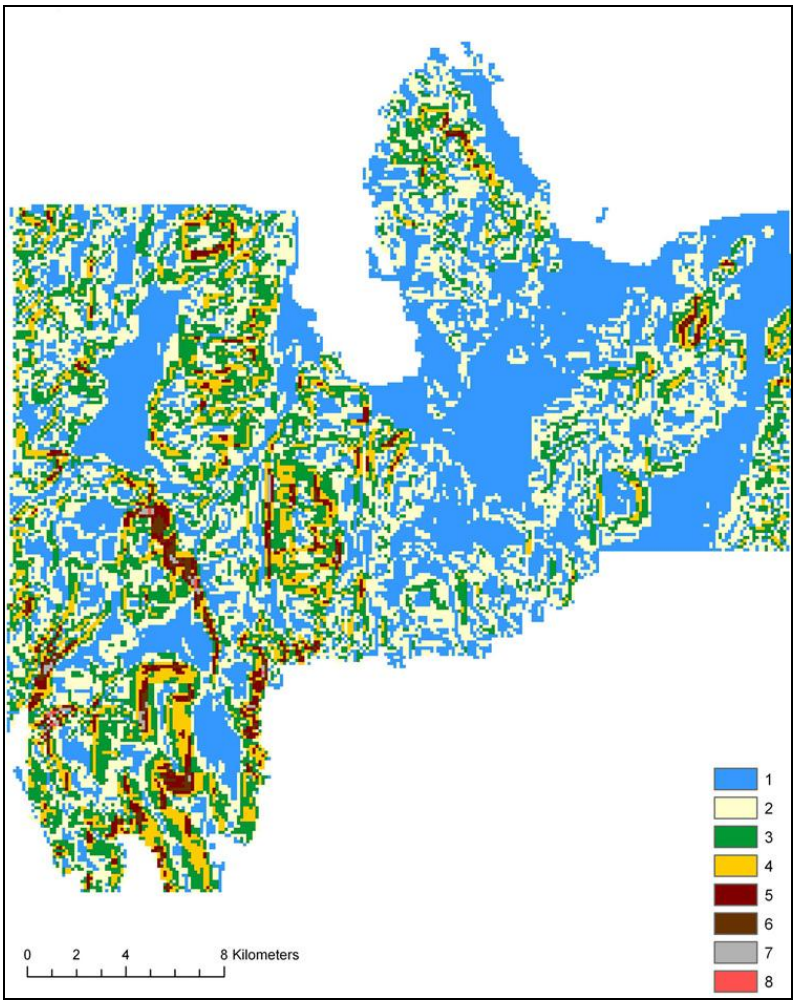


Figure.5 Elevation map of the survey area

Class	Elevation Values
1	0-50m.
2	51-100m.
3	101-150m.
4	151-200m.
5	201-250m.
6	251-300m.
7	301-350m.
8	351-400m.
9	401-450m.
10	451-500m.
11	501-550m.
12	551-600m.
13	601-650m.
14	651-700m.

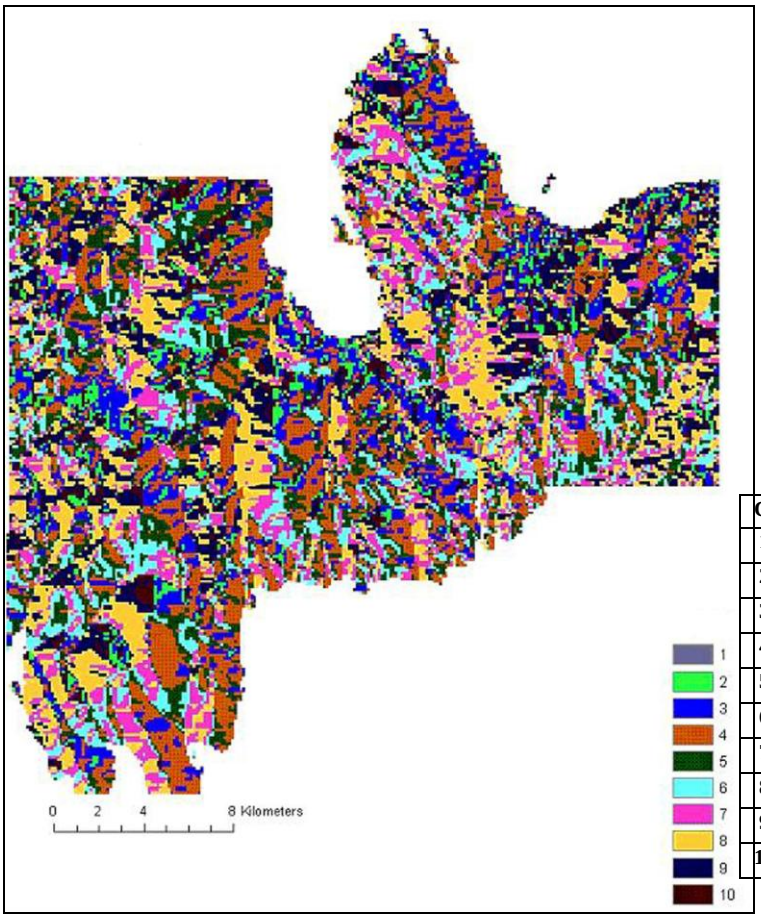
Slope Map shows the amount of surface inclination at any point. The histogram of the area ranges from 0 to 30 degrees. The values are classified into eight with 5 degrees intervals. 96.5% of the slope values of the entire land 0 to 25 degrees.



Class	Slope Values
1	0-5
2	5-10
3	10-15
4	15-20
5	20-25
6	25-30
7	30-35
8	35-40

Figure.6 Slope Map of the area

Aspect Map shows the direction of the slope that angles from 0 to 360 degrees. This range is divided into 10 including flat areas. Here 0 and 360 degrees refer to North, 90 to East, 180 to South and 270 to West. This range is divided into 8 intervals with 45 degrees. The flat areas where slope is 0 have no aspect value. Considering the flat areas as a separate interval the number of intervals are nine. The slope values less than 2 degrees are considered to be flat. As a result the nine intervals that will be used in the analysis are obtained to be North, Northeast, East, Southeast, South, Southwest, West, Northwest and flat.

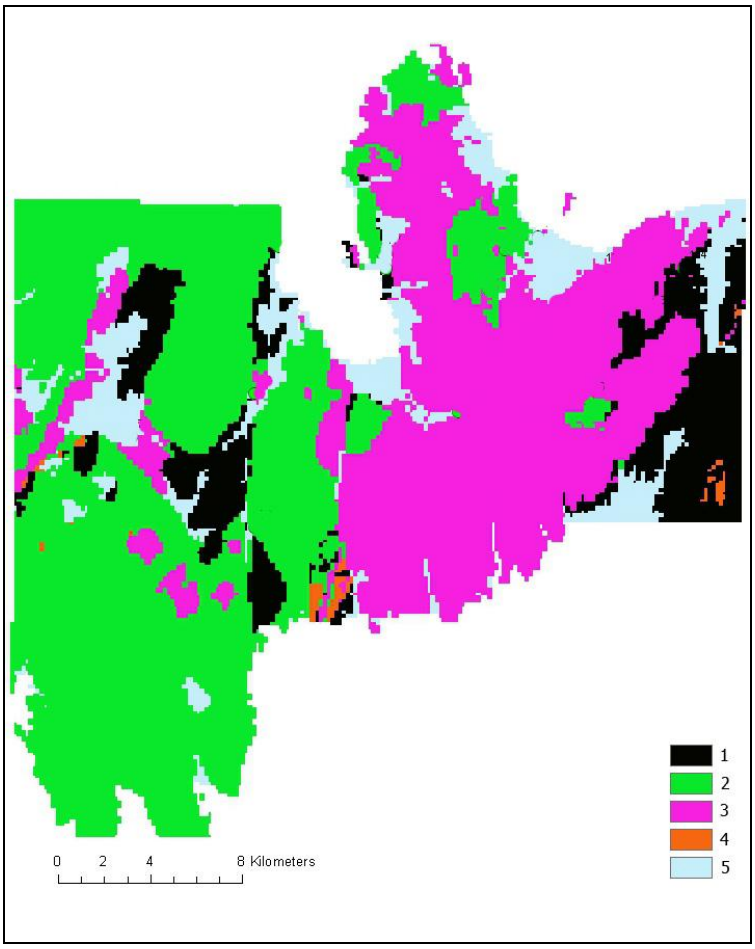


Class	Aspect Values
1	Flat
2	2-22.5 / N
3	22.5-67.5 / NE
4	67.5-112.5 / E
5	112.5-157.5 / SE
6	157.5-202.5 / S
7	202.5-247.5 / SW
8	247.5-292.5 / W
9	292.5-337.5 / NW
10	337.5-0 / N

Figure.7 Aspect Map of the area

2.Rock Data

The existing rock types in the given region are integrated in the analyses to investigate whether if certain rock types were preferred or avoided during site choice. The geological map of the area (1:500,000) obtained from MTA (General Directorate of Mineral Research and Exploration) processed for avoiding any complications, since it included more than 40 different rock units, which is a quite large number that would cause complications for further GIS applications and statistical analyses. Therefore the rock types are reclassified to reduce the number of rock classes. The rock types are reclassified according to age and rock types and the number of rock types reduced into five major classes.

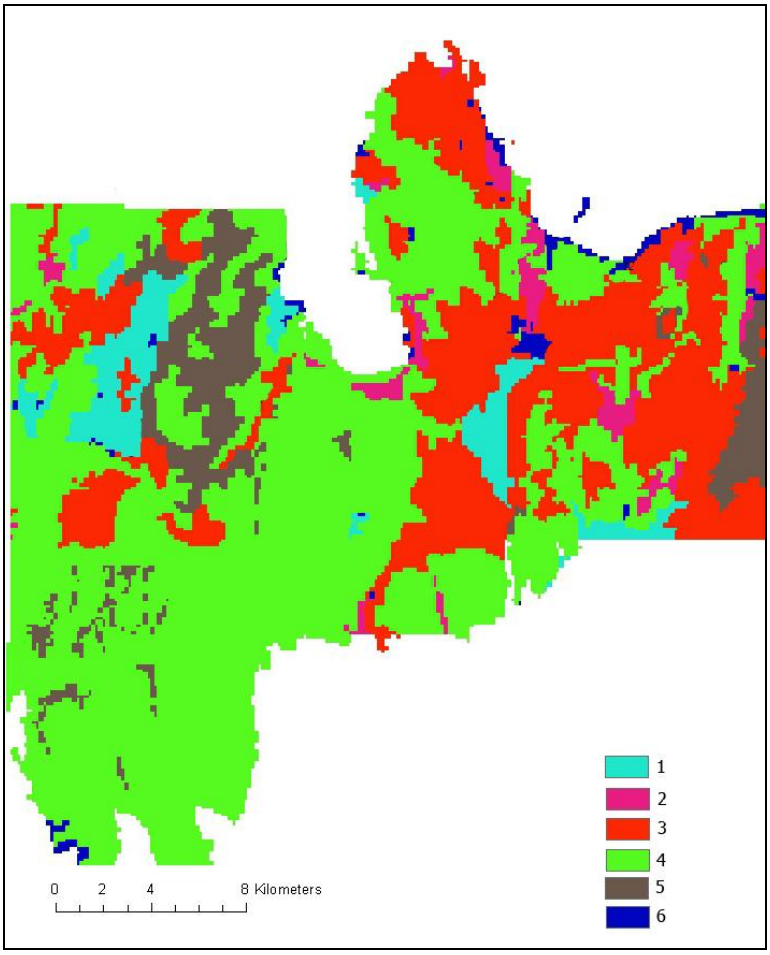


Class	Rock Type	Age
1	Mudstone, Sandstone, Gravel	E.Cretaceous, Cretaceous, L.Miocene
2	Tuff, Basalt, Tranchite, Andesite, Spilite	E.Miocene, L.Miocene
3	Limestone	L. Miocene, Mesosoic, Jurassic, Ladinian
4	Serpentine, Opholite, Manzonite, Diorite, Plate Dike	M. Miocene, E. Cretaceous
5	Alluvium	Quaternary

Figure.8 Rock Map of the area

3.Soil Data

Soil Map of the study area is obtained from General Directorie of Rural Services in vector format. Original soil map is reclassified to avoid complexity and the types of soil according to their depth classified into five major classes.



Class	Soil Thickness Values
1	x > 90 cm
2	90 >x> 50 cm
3	50 >x> 20 cm
4	20 >x> 0 cm
5	Barren Rock
6	No data

Figure.9 Soil Depth Map of the area

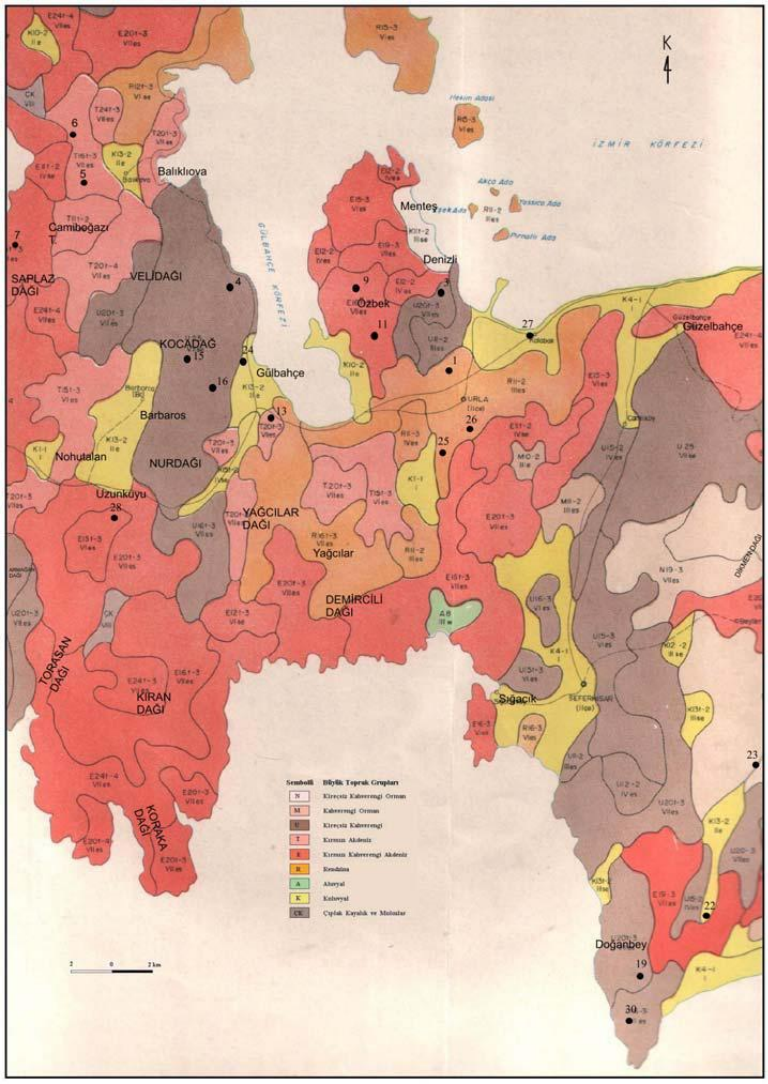


Figure.10 Soil Type Map of the area

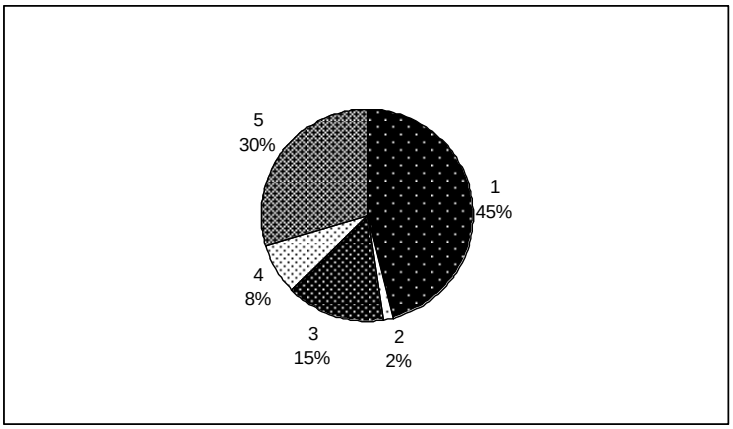


Figure.11 Distribution of Major Soil Types in Urla Basin
1.Red-Brown Meditterrenean
2.Brown forest without lime
3.Colluvial
4.Red Mediterrenean
5.Randzina

4.Distance Analysis

Distance analysis are applied to create an index for Nearest Neighbour analyses. For each macro archaeological period included in this work the distance to nearest neighbor and the distance to nearest neighbor of same size class calculated. In order to reach to precise calculations a program segment is written in BASIC language to determine the minimum distances between the archaeological sites. This analysis enabled us to determine whether the settlement patterns of each period were either clustered, dispersed or regular.

5.Density Analysis

Density analysis are executed for determining the maximum and minimum concentrations of the sites for each period. To find the concentration of the sites the frequency of sites over a grid system with intervals of 5km calculated. Density maps including the features like function and size produced for each archaeological period.

6.Visibility Analysis

Visibility analysis is executed only for the elements of the defensive network around the *khora* of Klazomenai, in order to test whether the forts and watchposts were visible to eachother and what portion of the land was visible from the point where the forts and watchposts were situated. By repeating the raytracing procedure in all directions a viewshed is produced.[37] The output of the analysis is a binary map including the visible and invisible parts. One of the

[37] Heywood etal 1998.

important parameters in this analysis is the viewing radius. Since the visibility distance is limited by the nature of human eye and the atmospheric effects, this radius is chosen as 2.5 km. Since the forts and watchposts are not preserved at their original level, 5m. is added to their height.

7.Spatial Analysis

Eventually the data and the analyses mentioned above are all used for spatial analysis. The analysis on morphologies of the given land and rock and soil data provided us with the distribution of types and classes and their percentages. The distribution of morphologies, rock and soil also calculated for sites and it is tested whether there were any significant preferences or shifts that could be pointing to any reasons in social, political or environmental context. The indices yielded with distance analysis used for Nearest Neighbour analysis which is perhaps the most common component of any settlement pattern study. The indices for the distance to nearest neighbor and nearest neighbor of same size category used to define the type of settlement pattern whether it was clustered, randomly dispersed or regularly dispersed –for each period. For the periods where the Nearest Neighbour value is statistically meaningfull or in other words non-random, which are Late Archaic, Late Classical, Hellenistic and Roman periods the site distribution is assessed with the principles of Central Place Theory.

Thiessen polygon maps are produced for each period and also separately for 1st order sites in Late Archaic, Late Classical, Hellenistic and Roman periods.

Land potential is another important component of spatial analysis which provides us with the evidence about the carrying capacity of the given land and used as a variable for population analyses. For estimating the suitable land for agriculture soil type, soil depth and slope maps are collided with the aid of ArcGIS program and the size of the land and its production capacity is estimated on the basis of growing staple crops plus terrace agriculture.

Demography is another necessary component for defining the settlement patterns. Population estimation is a dependent variable based on size whereas the factors that determine the size are independent variables. Like most of the pre-industrial communities the subsistency of most poleis depended on agriculture as much as trade. However the degree of this dependency changes from one to the other and this is directly linked with the size and the land potential of territory. Agricultural potential may have been reversely related to the degree of urbanization.[38] For determining the agricultural potential in Klazomenian territory the soil resources within the domain of each site used as an explanatory factor for the land use. Rock, elevation, slope and aspect values are taken as independent variables that determined the land choice for each site. These variables are evaluated with the political and social dynamics that are known from textual evidence for presenting a factual explanation for the causes of the shifts.

[38] Bintliff, J.L. 2002, 157-158.

III.PROLOGUE ON CONCEPTS AND TERMINOLOGY

As many recent scholars have pointed out *"polis"* as a term may be regarded as a re-fabricated concept appeared in late 19th century which cannot be correlated with a single geo-political phenomenon. It was embraced as the symbol of new "civilized" world image that has been created after the Industrial Development.[39] In the 18th century the context of thinking about Greek history changed due to the transformation of European discourses associated with the Enlightment.[40] Before the French Revolution Greek history was being perceived as part of the Persian history. After Greek history became an independent field of work the discussions focused on if antiquity completely differed from modernity and if so what were the differences. Greek history provided an example for the evolving societies of 18th century that had been a stage for serious crisis. This led to the translation of Greek liturgies and became a narrative that fostered the political arguments of the era.

Until the works of Adam Smith and John Millar the course of intellectual discussions was modernity versus antiquity. For the first time they attempted to explain the "development of civilization" from antiquity to modernity in a rather processual manner. This scheme anticipated a continuous development which defined the ancient societies as less complex agrarian societies. As Foucault argued all periods of history have possessed certain underlying conditions of truth that constituted the acceptable terms of the period. He also argues that these conditions of discourse have changed over

[39] Davies, J.K. 1997, 13; Vlassopoulos, K. 2007.
[40] Vlassopoulos, K. 2007, 22.

time in major and relatively sudden shifts from one periods episteme to another.[41]

The politicisation of Greek history was indeed related to the concept of *volkgeist* which depended on the unity of nation. That was perhaps one of the main misperceptions that oriented the later works on *"polis"*, since Greece was not a nation, but comprised a collection of independent Greek-speaking communities. These communities of different origin were linked by common language, religion and moral values but were rarely united and were in competition with one another. The political, social and economical discourses of European communities were reshaped through French Revolution and Industrial Revolution and yielded to the rise of nationalism which created a European identity. The supremacy of European nations over the eastern part of the world in terms of technology by the Industrial Revolution in 19th century, yielded to unsubstantial inferences under the influence of rising nationalism. The legacy of the eastern part of the world was fully ignored and the west was defined as an entity which had its own internal dynamics that triggered its development. Archaeological and anthropological work of the era gave a way to the racist theories by theories on Indo-Europeans[42], since archaeology cannot be emancipated from the political and social environment of the contemporary era.

The modern philosophy argued that world was actually advancing and through this evolution each society built the foundations of the predecessors, but superseded the ancestors. In this chain Greeks were inserted as an

[41] Foucault 1966 (2002).
[42] Vlassopoulos, K. 2007, 28.

independent field and this was the beginning of Eurocentric approach. The orient was perceived as a static past while the Greek history became an organic part of the European historical development. The imperialist movement created by the Industrial Revolution created a great distinction between east and west. The world history then was restricted to Greek and Roman history. The eastern contribution to world history was minimized and discredited with the invention of racial Indo-European discourse.[43]

Hellenika of Xenophon was taken as the basis for creating a history for the Greeks as a nation. However the history of Greeks was then restricted to the central Greece and Pelleponessos within a period that lasted from Solon to Aristoteles. Other Greek communities spread over the rest of Mediterranean were treated as colonies, but not an organic part of the Greek history. That was mainly owed to the lack of known textual evidence associated with the rest of the Greek *koine* as well as the political pattern that was followed which did not fit the newly created history.[44]

De Fustel's evolutionary and functionalist approach predicted city as an entity that developed through a series of revolutions. From this point of view Marx, Weber and Durkheim offered various classifications, which finally yielded to the Neo-evolutionists' classification band-tribe-chiefdom. De Fustel's approach was mainly criticized by Meyer, Beloch and Rostovtzeff for presenting *polis* a sole unit of analysis. Their fair reaction produced the analysis of *polis* in a wider sphere of Eastern Mediterranean. However Greek *polis* maintained its position as the distinguished. The discovery of Minoan and

[43] Bernal, M. 1987.
[44] Vlassopoulos, K. 2007, 43.

Mycenean civilizations did not changed the perception dramatically and the non-Greek elements of those were not pronounced for a long time.

The current orthodoxy formed after the war attributed *polis* as the organizing element of whole Greek religion and culture. After Finley presented his economic model that compared the redistributive system of Mycenaean palace and consumer city of *polis*, it became the key notion for ancient economical history.[45] The static description of *"polis"* was created as a consequence of these political processes that took place in the past two centuries.

The meticulous literature survey of various texts by *Copenhagen Polis Center* reached to the solid result that there is no definite way of defining *polis*.[46] Albeit the simple aim of the center expressed as *"finding out what the Greeks thought a polis was"*, the discussions centered on the concept of *"polis"* reached to a very advanced level yet stucked with the literal. There still very basic yet significant meanings can be discerned from ancient Greek sources; *"Polis"* meant the "settlement" and the "community" both.[47] Archaeological methods are deviced to comprehend the settlement, while the static yet usefull source of evidence, which are the ancient texts gives soul to the flesh.

The abstract features of *polis* have long been discussed and the tangible elements revealed through excavations were only fit into that picture provided by the literary sources and political discourses of the 19th century. Eventhough Greeks did not seem to have one unified model of the *polis*, pre-conceived notions for the physical aspects of *polis* were presented, which are a citadel,

[45] Polanyi, K. 1957; Finley, M.I. 1999 (1973); Austin, M.M.-P. Vidal Naquet 1977.
[46] Hansen, M.H. 1997, 5-12.
[47] Hansen, M.H. 1998, 15-33.

nucleated settlement and territory.[48] Archaeology has to deal with the physical aspects and even if these presented notions are not easy for the ears of progressive scholars of archaeology who fully reject such generalizations, it is a fact that these notions are generally valid for most poleis. So even if these may not be necessities for some exceptional cases these notions draw the baseline for the processes of centralization and institutionalization that yields to urbanization and state formation in most cases.

All these discussions reach to the consequence that as community, *poleis* might have had a general uniformity in terms of institutions, political instruments, social organization and cultural practices. On the other hand the settlements, the physical aspect of *polis,* were differentiated from eachother by various factors linked with geography and for some cases with the indigeneous cultures in which they had to fit in. Archaeology deals mostly with the physical *"polis"* which is the "settlement" and perhaps it is better to define the physical *"polis"* and then the abstract features should be correlated with that. In contrast with Braudel's approach which sees civilizations as distinct from accidents and vicissitudes that mark their development[49], history is created by the individual agents, each independent and dynamic. Regarding this, each *polis* should be assessed as an evolving entity and all the physical features should be defined at the first place for being able to explain the development of each *polis*. Speaking of physical aspects of *polis* it is clear that the evidence from its territory provides more information about its distinguishing features in terms of subsistence, agricultural potential, its share in trade and administrative system

[48] Sjögren,L. 2001, 3; Hansen, M.H. 1998, 16-34.
[49] Braudel 1993 (1963), 35.

as well as its development since the settlement centers mostly stand as the insignia of the Greek *polis culture*.

The *poleis* spread around a wide geography with different dynamics are widely accepted as a cultural and political extension of mainland Greece without questioning. Particularly the Greek *poleis* founded on the western fringe of Asia Minor has always been misperceived as the most matching offsprings of that synthetic "Greek City-state" model. Inevitably such analogies resulted with the detainment of comprehensive archaeological work in the region. Eventhough most of the Ionian settlements are being excavated for long years, only a few integrated a systematical archaeological survey to their projects. The homogeneity of Ionian *poleis* in terms of their internal dynamics as well as their correlation with eachother is one of the rarely investigated areas of archaeology. The textual evidence in fact gives us the impression that the diverse origins of Ionians were clearly followed by political disunity *(Herodotus I.146; I.149; I.170; V.36)*. Ionia seems to be a mere geographical description where independent states were located without any attempt for unification yet having a common council.[50]

This study deals with the correlation of Klazomenai with other Ionian cities only at few points where the evidence is available. Otherwise it is far from being able to present a comperative work dealing with Ionian *poleis* with a holistic view.

[50] Neville 1979, 268.

The major problem of the discussions revolving around *polis* is perhaps the gap between what Greeks thought a polis was and what modern historians think a *polis* is.[51] However it should be regarded as a solid fact that the Greeks were conscious of using the term *polis* for both the settlement and the community. The recent publications widely discussed this issue and the misusage of terminology. It is strongly emphasized by the publications of *Copenhagen Polis Center* that *polis* as a concept is confused with the term city-state.[52] The term was adopted from the terminology for the Near-Eastern and medieval city-states. In fact it was probably coined in 1885 as a rendering of the German term *Stadststaat* and that it is not necessarily linked with the concept of polis. It is rather used in connection with the Roman *Civitas.*[53] The term *city-state* cannot be used synonymously with *polis* since it refers to various types of self governing settlements from different geographies and its content is very vague. However polis as a concept cannot be totally divorced from the urban studies. On the other hand the features that distinguish polis from other urban centers should be determined. Therefore below some concepts that are related to "city" are discussed within the context of Greek *polis*, which are urbanization, economy and settlement pattern.

[51] Hansen, M.H. 1997.
[52] Hansen, M.H. 1995;1998; 2002; 2003; 2004.
[53] Hansen, M.H. 2003, 263.

III.1 Polis and Urbanization

Polis formation, town formation and state formation are different processes, which are mostly difficult to be distinguished from eachother within the context of Greek *polis*. In the end all of the three processes are more or less related to eachother in a more common sense. State formation may be defined as a subset of *polis* formation whereas including the use of executive power conformed to law in some sense. State formation is more practically defined with the shift from personal leadership to more impersonal institutional structures. Town formation is rather synonymous with the process of urbanization. Several criteria may be discerned from the corpus of Weberian approach in urbanization. The integrity of topography and administrative institutions; population of several thousand; division of labour and social stratification; some sort of public building/place; urban life style; central settlement with hinterland.[54] These criteria are likely to draw the baseline for urbanization within the context of Greek *polis* as well, yet the degree is an independent variable.

The origin of *polis* is another issue to be discussed. *Polis* has long been identified as a form of city-state or the descendant of Mycenean palaces. Euro-centric approach has defined *polis* as the offspring of Mycenean citadels and identified it as the contrary subject to the city-states of Near East, which were solely identified as military, imperial or religious centers. However the residential quarters and the settlement layout of those centers revealed with

[54] Davies, J.K.1997, 15-16.

excavations distorted this perception. The decipherment of Mycenaean texts revealed a centralized palace economy based on temple economy not differing dramatically from Near Eastern palace centers.[55] Therefore *polis* inherited very little from the Mycenean system. Its economical, political and social structures are hardly similar to Mycenean in general terms. The hallmarks of *polis*, which are singularity, solidarity and self sufficiency developed out of the forced isolation, poverty and insecurity of the times that followed Mycenean collapse.[56] The features that distinguish *polis* from other urban centers are mostly denoted with agora and citizenship which implied political and economical freedom to some extent in Greek society.

The term "polis" was an evolving one during the antiquity and keeps on evolving synthetically in the present day within the sphere of *polis* studies. Urbanization process within the context of Greek polis is being discussed on terms of modern perception. Most of the time the terms that are being discussed for the achievement of urban degree for a *polis* are rather universal than being confined to Greek *polis.* These are the organized settlement pattern which also sees the integration of the *khora,* as well as the division of land for workshops, residential quarters and necropoleis; presence of city wall, public spaces and monumental architecture; to be named in tribute lists and the presence of coinage, which of each are also arbitrary criteria for being a *polis*. It is true that for some cases they even altogether do not necessarily indicate to a high degree of urbanization. Contemporary urban studies sees the urbanized population as the essential factor of urbanization whereas this doesnot fit the

[55] Palmer, L.R. 1963, 95.
[56] Thomas, C.G.-C. Conant 1999, 120.

“urbanization process” of poleis whose subsistence were primarily based on agriculture. In fact, there we speak of two different concepts, which are “urbanization” and “centralization”. It is clear that the state formation or in other words institutionalization have not been accomplished synchronically in all *poleis* that were distributed in a wide geography. Some *poleis* accomplished to have central institutions and an elite class, but were not necessarily accompanied with an urbanized population. In most cases farmers and peasants were still the majority of the population and the economy was mainly based on agriculture rather than trade. Even though Ionian *poleis* were united under a league, they achieved different levels of “urbanization”, or some only achieved “centralization”. Perhaps the terms of the league treated ach polis equally as a member of it, but as components of the league they developed different patterns of subsistence. Commonly the settlement layout of a normal polis would have been consisted of a central settlement, hinterland and mostly a harbour. In the sense of state a typical *polis* would have had only one urban settlement which has been demarcated from its hinterland *(Khora)* with a circuit wall.[57]

The territory of large *poleis* might have had centers of civic subdivisions whereas some were merely centers of habitation or trade without any political institutions. In some cases the *polis* have had absorbed the neighbouring minor poleis in the political sense but those centers were still called a *polis*. As it was the case for instance for Myus, which was absorbed by

[57] Hansen, M.H.-T.H. Nielsen 2004, 138, footnote 17; *Aen. Tact. Prooem.* 1.7.1; 15.9; Xen. Hell. 5.2.4; Syll. 3.37-38; Teos (no.868).

Miletus and used for marble quarries only.[58] The direction of this process might have been varying though. For some cases the nucleated settlements within the territory of a polis might have acquired the *polis* title later. In this sense some of the nucleated settlements –even enclosed with a circuit wall are counted as *polis*, but might not be urban centers and subdued to another *polis*.[59]

Size of population is another issue for the degree of urbanization. On the basis of various examples it is not likely to be a dependent variable for a settlement to be classified as *polis*. Yet still most of the poleis seem to have had a population with four digits. Even the small ones as Koresia and Platatia had population around 1000 to 2000.

The pace of development in terms of urbanization differed from one place to another and it seems to be a long term process. The differences in settlement layout and degree of urbanization might have been caused by the varying features of socio-political organization. On the other hand the organization of the *khora* mostly dealt with agricultural activities.

The presence of a circuit wall and organized settlement layout are significant physical aspects for determining the centralization of a settlement for requring an organized society. After the collapse of the Mycenean system a new era of fortification began. The earliest evidence for defensive walls are found on Aegean Islands (Andros, Siphnos, Amorgos, Chios, Donousa, Crete) and Western Asia Minor (Smyrna, Melie, Iasos, Klazomenai?) dated around 9th

[58] Greaves, A. 2002, 137; Gorman, V.B. 2001, 44.
[59] In Boeotia Chorsiai, Siphai, Euthresis, Thisbai were small poleis with their own territory dependent on Thespiai, Hansen, M.H. 2006, 131. In our study region Daphnous and Aerae are likely to be dependent on Klazomenai and Teos in the same way, yet still mentioned as poleis in tribute lists.

and 8th centuries. On the other hand on the Greek mainland this phenomenon of new generation of fortification began with 7th century.[60]

In the sense of organized settlement layout the most apparent feature is the division of residential quarters and industrial quarters. Agrarian elements such as granaries, olive and wine presses were found in the settlement during late 8th and 7th centuries. Until the late Archaic period craft and industry carried out in domestic and cultic context.[61] Late Archaic period seems to be the turning point in terms of dramatic increase in production and the expelling of industrial sectors to the out of city wall. However the industrial production on large scales continued simulteneously with domestic production. The archaeological evidence from the settlement center of Klazomenai suggest the construction of a circuit wall in the 2nd half of 7th c. BC, on the area where the archaeological material in the fillings date to 9th century BC[62] and a conscious organization of settlement layout defining the differentiation of industrial quarters from the residential quarters in the early 6th century BC.[63]

[60] Crieelard, J.P. 2007, 363; Snodgrass, A. 1986; Lang, F. 1996, 21-54; Cobet, J. 1997.
[61] Crieelard, J.P. 2007, 362; Morris, I. 1991; 38-39.
[62] Ersoy, Y. Etal 2009, 187.
[63] Ersoy, Y. 2004, 53.;Koparal, E.-E. İplikçi, 2004.

III.2 Polis and Khora: Economy of Polis

The archaeological researches of the past thirty years are mostly designed with the perspective that rejects the position of urban center as a solitary source of evidence and integrates the territory of central places to their research designs. The polis centers are more commonly being assessed with their territories whose subsistence is dependent to. Old scholarship based on the determination of archaeological evidence such as city walls, agora or other public spaces that provides a static definition of *polis* lost its validity with the studies focused on the number of *poleis* varied in terms of size, function and geographies. The beginnings of *polis* and the dynamics that yielded to its appearance still remain to be a subject to be explored, which is only possible through the surveys as well as the excavations, in other words studies that see those settlements as a whole with its center and khora.

Auterkia is a classical term referring to economic self sufficiency, which was sought as a guarantee for being a *polis*. In the beginnings of the *polis* formation traditional ties and political issues might have played a more important role, but the increasing number of settlements mentioned as *polis* on the decrees and Attic Delos League tributes imply that economic self sufficiency changed the status of some settlements during the Classical period. Economic self sufficiency is perhaps the most necessary criteria for being a *polis*.

Attesting the economic independence is a difficult and complicated process. The *khora* of a *polis* must be well-defined since the economic

independence is very much based on the land use and agricultural activities as well as trade.

Aristotle in quite an utopist sense claims that a self sufficient Greek *polis* would be producing everything and containing any source of supply in its territory *(Politics VII, 1326.b29)*. In this sense few of the *poleis* would have achieved *auterkia* since Herodotus explains in detail the poverty of soil in mainland Greece. Obviously economic self-sufficiency was not achieved merely by the possession of material resources, but also by reaching to a certain degree of technological advance, standard of living, mode of subsistence and social organization which are directly linked to *polis* formation. The self sufficiency of *polis* should not be perceived as solitary entity surviving with its own sources. Eventhough independency of *polis* both in economical and political terms emphasized –yet arbitrary within the sphere of contemporary discussions- each *polis* had to create a some sort of network through trade with other poleis or other communities for achieving *auterkia*.

Conceptualizing *polis* created a new perception of it in terms of economic, social and political function and envisaged it as the settlement of elité consuming the sources of *khora* in a deceptive way. The aspects of ancient economies have long been discussed since the end of 19th century. Rodbertus' work entitled "Economic Life in Classical Antiquity, 1864-67" is perhaps the first detailed work dealing with ancient economy. In his suggested model market economy was fully eliminated and *"oikos"* the household economy presented as the backbone of economic life in Classical Antiquity. His primitivist arguments about ancient economy created a discussion ground for

the debates between Bücher and Meyer. Bücher (1893) didnot diverted much from Rodbertus' suggestions and reached to the conclusion that money and exchange played little role in ancient economy. Meyer (1895) challenged him by developing a model based on highly advanced system of transportation and exchange of commodities. Weber as the third generation on this debate eloborated the idea of self sufficient *oikos* economy and suggested that the agents of ancient economy could operate with sophisticated and complex systems yet being totally different from modern economies.[64] Rostovtzeff contributed to this discussion by defining the difference between modern and ancient economies by scale. He suggested that the economic institutions had developed in the antiquity and more or less operated in the same way but at a much smaller scale compared to modern times.[65] Polanyi and Finley eliminated the market economy from the ancient economy model as well. The deficiency of Polanyi's work mostly caused by his attempt to construct his work merely on analogies from etnographic studies of primitive economies in the modern world. He argued against the existence of any form of market economies in Classical Greece.[66] On the other hand Finley's attitude was mostly based on his political stance which refused the capitalist reading of Classical history.[67] His economic model was principally based upon self-sufficiency. The fundamental resource was agriculture and trade made a small contribution to it. The pitfall of Finley's model though was its totalitarian approach that ignored the geographical and chronological differences, since it continuously presented the

[64] Weber, M. 1922, Chapter 8.
[65] Rostovtzeff, M.I. 1926.
[66] Polanyi, K. 1957.
[67] Finley, M.I. 1981.

same major features from Archaic period to late antiquity.[68] He underemphasized the share of trade in ancient economy for three reasons which are the assumptions that production was more or less same everywhere, transport costs were high and only luxury goods were in circulation and the market was insufficient for this. He identified town as the consumer rather than manufacturer and linked the process of urbanization with a cultural process rather than an economical development. Pre-industrial and non-capitalist are vague definitions for the ancient economy. Finley was convinced that ancient Greek economy was not a market economy based on the principles of competition and law of supply and demand. The relationship between the urban and the rural sector was not considered in terms of acquisition, production and exchange of goods in ancient liturgy. Such theme was absent from the literature until the development of the modern science of political economy. Adam Smith in *Wealth of Nations* stated that gains of town and country are mutual and reciprocal and the division of labour advantageous to all different persons employed in the various occupations into which it was subdivided. He was challenged by Marx and Engels as, the division of labour inside a nation leads at first to the separation of industrial and commercial from agricultural labour and hence to the separation of town and country that yields a clash of interests between them.[69]

The increasing body of archaeological evidence changed the nature of these discussions by exposing the presence of market economy and long distance trade through shipwrecks, coin usage and geographical distribution of

[68] Andreau, J. 2002, 34.
[69] Finley, M.I. 1981, 6-7.

trade amphorae. But such evidence doesnot eliminate the household economy and the significance of agriculture. The misperception of the scholars was caused by ignoring the co-existence of both. The economic volume of the *poleis* dramatically differentiate from eachother. Therefore it is not possible to arrive at a decision on one model for the economy of ancient world. Some *poleis* had a larger capacity of trade and market economy whereas some others had an economy rather based on agriculture and household activities. It is not yet easy to make a clasification among the Greek *poleis* or Ionian *poleis*. Still though one can imagine that Teos, Phocaea, Smyrna, Erythrai and Miletus possessed a larger share in market economy and long distance trade due to the number of colonies founded by them, compared to Klazomenai. Klazomenai seems to have an economy primarily based on agriculture, but it is also likely that by the second half of the 6th century BC it has became more prominent in market economy and long distance trade.

The size is perhaps one of the most arbitrary aspect of the *khora*. It has been commonly embraced that one main characteristic of the territory of *polis* is its small size. Ruschenbush concluded that *"die normal polis"* had a territory whose size fall between 25 and 100 km2.[70] However a basic statistical work based on the size of territory of Hansen's work[71] that includes 1035 communities spread around a wide geography rather than being confined to mainland Greece, unlike Ruschenbush's reveals that colonies had larger territories than *poleis* in the Greek homeland. It is also stated that these were

[70] Ruschenbush, E. 1985.
[71] Hansen, M.H.-T.H. Nielsen 2004, 71-72.

often separated by areas settled by indigeneous communities, which perhaps refers to the disputed areas of Klazomenian territory in this work.

III.3 Settlement Structure and Settlement Pattern

A.Models of Settlement pattern

Although the concepts of "settlement structure", "settlement pattern" and "settlement system" are often used in the same archaeological context implying the same meaning, they are distinct terms referring to different concepts. Settlement structure means the internal organization of a settlement in terms of social and spatial aspects. Settlement pattern on the other hand refers to the distribution of settlements and sites in a particular region and also includes the information about the differing functions of the sites as well as their location in the landscape. Finally settlement system is a compilation of rules which governed the establishment of the settlement pattern and explains the relationship between the sites.[72]

The present study mostly deals with the concept of "settlement pattern" since the core data of the study comprised of number of archaeological sites discovered by archaeological survey in a given area which forms the territory of Klazomenai. In a wider scope, it deals with the concept of "settlement system" for explaining the network of the sites and their relation to eachother in the given landscape.

[72] Forkens, H. 1998.

First applications of settlement pattern analysis was conducted by J. Steward in 1930's for seeking the relation between regional settlement patterns, population size and environment. But the term "settlement pattern" was coined by the work of G. Willey in Viru Valley, Peru[73] in 1940's for reconstructing the socio-political organization, whose work also integrated the aerial photography and regional site distribution maps. In the mid 1960's the approach of New Archaeology refined the methodology and analytical tools of settlement pattern analysis and quantative methods were integrated for processing the spatial data.[74] In 1990's the use of GIS enabled us to handle the large and various data sets for the settlement pattern analysis.

Settlement pattern analysis were initially and mostly used to understand how a particular society used the available resources in its territory and aimed to reconstruct organization of societies and their interactions with the environment. The analytical techniques are mostly associated with the economical and environmental models, which sees the distribution of sites at the borders of ecological zones that assumes to be minimizing the effort to accesss the resources. Political models are based on the rank-size and assumes central places surrounded with second and third order settlements. Ethnographic analogies are frequently used for reconstructing the past social organizations but have serious pitfalls for disregarding the diverging socio-cultural dynamics of the past. Recently the settlement pattern analysis are more associated with other socio-cultural domains such as political networking, factionalism and ethnic behaviours as well as economy and environment.

[73] Tringham, R. 1972, xvix; Willey; G.R. 1953, 155.
[74] Binford, L.R.-S.R. Binford 1966.

Nearest Neighbour analysis is a simple quantative method for determining the type of settlement pattern. This quantative method attempts to measure the distribution according to whether they are clustered, random or regular. Random distribution is a pattern which has no discernible order and its causes are undeterminable.[75] Only non-randomness provides us with the information for making arguments about the socio-cultural, environmental and political agents of the past that formed the particular distribution. There are basically two forms of settlement patterns which are "nucleated" and "dispersed".[76] Forms of habitation refers to a type of ranking and enables us to determine the site hierarchy which is essential to comprehend the settlement pattern and the settlement system. The settlements are often classified into three forms of habitation, which are 1st order town or city, 2nd order village or hamlet and finally 3rd order farmsteads and homesteads.[77] Within this three tier classification towns/cities and villages/hamlets are nucleated and farmsteads/homesteads are dispersed.[78] The criteria for distinguishing the forms of settlement lies on function, physical size and size of population. The ranking of settlements is based on the physical size and population estimations, which is basically a variable dependent on the physical size. Therefore the criteria drawing the line between the settlement ranks is infact derived from one variable, which is physical size.

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[75] Hodder, I.-Orton, C. 1979, 54; Dacey, M.F. 1964, 63-67.
[76] Bintliff 1977, 113.
[77] Jameson, M.H.- C.N. Runnels- T.H. Van Andel (eds.) 1994, 375-383; Shipley, G. 1992, 218-219.
[78] Renfrew, C. – J.W.Wagstaff 1982, 251; Finley, M.I. 1987-9, 304; Snodgrass, A. 1990, 127-128, Jameson, M.H.- C.N. Runnels- T.H. Van Andel (eds.) 1994, 253-254; Catling, R.W.V. 2002, 187.

In an ideal model of settlement pattern one is larger than the others and serves as the major urban/political center of the whole region.[79] The second order settlements would serve as secondary centers with dispersed satellite settlements, which are presumably farmsteads. The number of second order settlements are expected to be less in number in relation to third order ones in a dendritic settlement pattern. In this sense the criteria for "town", which served as the major political/urban center is determined in relation to the size and population of second order settlements placed in its territory. Therefore there are no absolute figures to be suggested for the categories in term of the physical size and the population.[80] On the other hand all the sites of 5 ha. and more with a minimum population of 1000-1250, assuming 200-250 persons per ha. are classified as "town" in the modern scholarship.[81] These figures are arbitrary for classifying any settlement with a size of 5 ha. or more as town due to the changing variables of settlement systems in different regions. Yet sets a baseline for the category of "town" in a tripartite settlement hierarchy.

The survey results from different regions of Greece reaches to the conclusion that settlement patterns varied from one region to another, yet still determines some typical features. It is possible to suggest two major types, which of the first formed of small number of large poleis with large number of second order settlements in their territories whereas the second type includes large number of small poleis with few number of second order settlements in their territories. The first type is peculiar to Eastern part of Greece where polis

[79] Christaller, W. 1933; Whitley, P. 1972; Shipley, G. 1992, 223.
[80] Hansen, M.H.-T.H. Nielsen 2004, 74.
[81] Jameson, M.H.- C.N. Runnels- T.H. Van Andel (eds.) 1994, 549-550; Kolb 1984, 15.

emerged early[82] while the other is typical for Western Greece and Aegean Islands.[83] This yields to the conclusion that the degree of urbanization was inversely proportional with the physical size of the polis[84], where degree of urbanization is closely linked with the less number of people living in the countryside. The number of poleis in many regions are surprisingly high eventhough the second order settlements are attested as well. In Euboia and Argolis 30% of the nucleated settlements are classified as *polis*. In Boiotia 50% of the nucleated settlements attested by surveys are classified as *polis*. In Arkadia the percentage increases to 60 %; at East Lokris and Chalkidike *poleis* outnumber the smaller settlements; In Phokis and West Lokris almost all the nucleated settlements are *poleis*.[85] Very few number of villages or none between the *poleis* seem to be a common settlement pattern feature in mainland Greece. The factors that caused this phenomenon should be associated with the political conditions. It would not be surprising to find out that most of those *poleis* had attained the status of *polis* during 5th century BC. Perhaps most have been confered as *polis* after Attic-Delos league in order to collect taxes. Attica exceptionally had over 100 nucleated settlements.

Table.3 Distribution of Poleis at mainland Greece

	ARGOLİS	**ARKADİA**	**EUBOIA**	**MESSENIA**	**BOIOTIA**
No. of Prehellenistic Settlements not attested as Polis	18	31	35	7	42
No. of Poleis	11	40	14	10	25

[82] Euboia, Boeitia, Attica and Argolis.
[83] Hansen, M.H.-T.H. Nielsen 2004, 93.
[84] İbid.; Bintliff, J. 2002, 157.
[85] Hansen, M.H. 2002, 154.

For Asia Minor it is suggested that Ionia had a different system for having many second order settlements, from Mysia, Troas and Aiolis, where poleis outnumbered other type of settlements.[86] Below the figures for second order settlements and *poleis* are given for Ionia, Aiolis, Karia and Troas.[87] These figures indeed point out the dramatic difference in terms of settlement pattern in Ionia. It is beyond doubt that intensive surveys to be conducted in these regions will change the figures and most probably will contribute to the number of second order settlements and third order settlements, as it did for Klazomenai. Yet these figures yielded by literature survey still presents us a strong suggestion about the diversity of settlement patterns in Ionia in comparison with Troas, Aiolis and Karia.

Table.4 Distribution of Poleis at Anatolian Regions

	IONIA	**TROAS**	**AIOLIS**	**KARIA**
No. of Prehellenistic Settlements not attested as Polis	76	13	16	14
No. of Poleis	34	26	35	71

Early Archaic period was the time when state formation began, but not necessarily the urbanization in the sense of organization of the settlement center and the *khora*. Most Early Iron Age settlements were small with some exceptions like Athens, Knossos and Argos which occupied 50-100 ha. and housed populations with number of 3 and 4 digits.[88] Such settlement pattern might have continued until the Late Archaic period when urban layout changed

[86] Hansen, M.H.-T.H. Nielsen 2004, 93.
[87] Hansen, M.H.-T.H. Nielsen 2004.
[88] Morris, I. 1991, 29.

by separating the residential quarters and the production areas. Thucydides mentions Spartans as living in scattered villages as late as 5th c. (Thucydides 1.10.2). Although urbanization process took place at different degrees and rates at different places and despite the fact that archaeological evidence is fragmentary about the related issue, Late Archaic period can be suggested roughly for the beginnings of urbanization process. In this study it is discussed specifically for Klazomenai.

From 8th century to 5th century BC a remarkable increase in the number of sites as well as the population size took place. By the 5th century BC sites like Aegina, Metapontum, Samos, Athens and Miletus had a population around 40.000-60.000, whereas the majority lived in the city.[89] There were also regional differences in terms of the organization of the *khora*, which majorly related to defensive issues and agricultural practices. For instance Miletos' countryside was divided with landed estates[90]; land of Teos was divided by *pyrgoi* and *teiche* which were centers of agricultural production without a political center; at the land of Boiotia and E. Locris second order fortified villages were dispersed[91].

The territory of Ionian *poleis* are claimed to be defined with dendritic systems arranged with *pyrgoi* or large settlements functioning as agricultural centers for their own estates and *komai* linked to those. There was only one primary political and urban center.[92]

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[89] Crielaard, J.P. 2007, 361; Osborne, R. 1987, 46; Greaves, A.M. 2002, 100; Hansen, M.H.-T.H. Nielsen 2004, 135.
[90] Lohmann, H. 1997, 290-1.
[91] Snodgrass, A. 1986, 130.
[92] Balcer, J.M. 1979.

In the Hellenistic and Roman periods the features of the settlement patterns changed markedly, undoubtedly due to the shift to imperialistic political organization. The number of settlements classified as *komai* increased particularly in the eastern part of the Greek *koine*, which is also argued by epigraphical and literary sources.[93]

B.Terminology for Settlement Patterns

The terminology used for settlement hierarchy is quite confusing due to the non-correspondance of archaeological conclusions with textual sources. In fact the classification of settlements is not totally absent in the Greek liturgy. Aristoteles himself presents us such a classification by using the terms *oikia*, *kome* and *ethnos* (Pol.1252.1-6; 1252. 27-31). However since the Ancient Greek terminology was rather dealing with the political and socio-economical aspects of the communities Aristoteles' classification doesnot perfectly fits modern terms of settlement hierarchy.

First order sites do not cause any serious confusions since it merely refers to the political/urban center, which is undoubtedly polis. On the other hand the terminology remains to be puzzled for second and third order settlements. The most commonly used term is *"kome"* after *polis*, which does not necessarily refer to a village or a hamlet. It may be used as a term for a quarter of a town in some cases.[94] The number of *komai* are expected to outnumber the poleis in the sense of an ideal settlement pattern. It has been discussed that it was not the

[93] Hansen, M. H. (ed.) 2002, 156.
[94] Hansen 1995.

situation on the basis of textual sources and it has been suggested that the term was restricted to Dorian parts of Hellas. However the suggestion remains irrelevant since the synonymous term *demes* as well not used as frequent as *polis*.[95] *Demos* also is not a term that necessarily refers to village in contemporary sense, but rather denotes local community. Therefore both terms are relevant to the sub division of *polis* for some cases[96], yet still denotes small nucleated settlements for most.

Third order sites that are classified as farmsteads in the modern terminology are lack of any synonymous Greek terms. Yet several are suggested for denoting farmsteads, which are *chorion, aule, epaulia*.

The non correspondance of modern terminology with ancient Greek terms is caused by the fact that Greek terms were used for defining socio-economical classifications whereas the modern terminology focused on settlement pattern, which was not one of the concerns of ancient Greeks. In the sense of settlement pattern Greek terminology only separated urban from countryside but did not deal with the patterns -dispersed or nucleated- of settlements in the countryside. So far only one inscription dated into the Hellenistic period compatible with the modern tripartite hierarchy, which is the Antigonos' letter (300 BC) about the synoceism of Teos with Lebedos. The text mentions *komai* and *epaulia* as settlements outside the town.[97]

[95] Hansen, M.H.-T.H. Nielsen 2004, 92.
[96] İbid.
[97] İbid.

IV.SETTLEMENT HISTORY AND ARCHAEOLOGICAL EVIDENCE

Eventhough *Pausanias* claims the land of Klazomenai to be uninhabited prior to the arrival of Ionians, the excavations carried out at the mound of Liman Tepe clearly revealed that the site of Klazomenai has been inhabited since late Neolithic period.

[Pausanias,7.3.8] The cities of Clazomenae and Phocaea were not inhabited before the Ionians came to Asia. When the Ionians arrived, a wandering division of them sent for a leader, Parphorus, from the Colophonians, and founded under Mount Ida a city which shortly afterwards they abandoned, and returning to Ionia they founded Scyppium in the Colophonian territory.[7.3.9] They left of their own free-will Colophonian territory also, and so occupied the land which they still hold, and built on the mainland the city of Clazomenae. Later they crossed over to the island through their fear of the Persians. But in course of time Alexander the son of Philip was destined to make Clazomenae a peninsula by a mole from the mainland to the island. Of these Clazomenians the greater part were not Ionians, but Cleonaeans and Phliasians, who abandoned their cities when the Dorians had returned to Peloponnesus.

As it is quoted by Pausanias Klazomenians has settled later than other Ionian cities. The first settlers have preferred to inhabit around the core of the previous settlement, which is represented with abundant evidence of EBA and MBA at Liman Tepe mound. The first temporary settlement founded by Klazomenians is not localized yet. The text by *Pausanias* clearly states that the

Ionians led by Parphorus of Kolophon had founded a settlement under Mount Ida. The close relation of material from Klazomenai and Troy Level VIIb3 is mentioned significantly for supporting Thrace as a station during the migration and northern coast as the track referring to Hammond.[98] On the other hand the name "Ida" is closely affiliated with mother goddess cult, and the Korykos mountain located in the disputed area between Erythrai and Klazomenai has been a setting for Sybilles of Mother Goddess[99], and another opinion seeks the first setting of Klazomenai around Korykos near Erythrai border.[100]

The earliest traces of the permanent settlement at Klazomenai dated to the end of 11th century BC.[101] The excavations carried out on the southern slope of Liman Tepe mound revealed an apsidal building of Protogeometric period. The features of the building strongly imply that it has not served as a common dwelling, but rather a public place perhaps for cultic activities.[102] The presence of such a public building also implies social organization for this period, eventhough the archaeological evidence is very fragmentary to make a suggestion for an organized settlement pattern. The distribution of the Protogeometric finds extends in an area with a 350 meters radius covering an area ca. 35-40 ha., but the finds are very sporadic far from exposing an organized settlement layout, perhaps clusters of dwellings. Geometric period in Klazomenai is little known in terms of settlement pattern[103] or perhaps difficult to identify through material culture since Protogeometric tradition persisted

[98] Aytaçlar, N. 2004, 30; Hammond, N.G.L. 1995, 315.
[99] Akalın, A.G. 2008.
[100] Personal discussions with Ass. Prof. Ayşe Gül Akalın.
[101] Aytaçlar, N. 2004, 29.
[102] Aytaçlar, N. 2004, 19.
[103] Ersoy, Y.E. 2004, 43.

until the mid 8th century BC.[104] The severe tectonic changes has resulted with the sunk of coastline and part of the Archaic and the Geometric settlement is under water and not throughly investigated. The Geometric settlement extended towards south and southwest of Limantepe and there are also some architectural remains dated into 8th century BC.

Archaic period is well represented in terms of settlement pattern in Klazomenai. For the early stage of Archaic period there are at least two apsidal structures dated around 670 BC and 600/580 but may not be sufficient to argue for conscious urban planning during that period. The settlement layout for the Late Archaic period is quite clear. Due to the lack of well dated material and burials a hiatus is identified between 550-530.

Archaeological evidence reveals that Klazomenai has lived a revival during the last quarter of the 6th century BC. It is attested in terms of settlement pattern and small findings. The well organized settlement pattern divides the industrial quarters and the residential quarters properly. The workshops clearly point out mass production and rapid increase in production capacities. The increase in the quantity of trade amphorae refers to overseas trade and it is also coherent with the workshops that have expanded production capacity.

The following age, namely the 5th century BC is again defined with a hiatus at the settlement center. A century of political discomfort in Klazomenai begins with the Ionian Revolt against the Persians led by Miletos as it is for the entire Ionia. Political disunity of Ionians had characterized the “Ionian Revolt”. Aristogoras, the tyrant of Miletos who had been set up by Persians, tried to get

[104] Ersoy, Y.E. 2004, 44.

all Ionian states to rebel against Persians, but only some seem to to have done (Herodotus V.37).[105] Of the twelve Ionian states not all took part; Colophon and Lebedos are not mentioned anywhere and the role of Klazomenai is not clear and she was recaptured by Artaphernes and Otanes (Herodotus V.123). Ionian Revolt in 499 changed the political conditions for all of the Ionian cities. Following the suppression of Ionian Revolt in 499 Klazomenians moved to Karantina Island, which is not so far from the Klazomenai coast (Pausanias VII.3.9). 5th century BC is barely represented with the archaeological material, both architecture and small findings are extremely flimsy for this century. The textual evidence places Klazomenai on the Island of Karantina.[106] The archaeological survey conducted within the territory of Klazomenai was expected to produce a more intact picture about this period. In total 16 sites are likely to be inhabited during 5th century BC while there was almost complete silence at the settlement center on the mainland. However one should also regard the fact that this period can hardly be represented with archaeological material. Considering the political conditions of the period the settlements might have been dispersed within the *khora*, likely to be small in size and perhaps at inaccessible settings and not likely to possess workshops for pottery production in large quantities. The hiatus of 5th century on the mainland is identified with the lack of imported material and our knowledge about the local production during this period is almost nothing. For this reason some 5th century BC settlements distributed within the Klazomenian *khora* might have

[105] Neville, J. 1979, 273.
[106] For the discussions see Güngör, Ü. 2004.

not been identified and remains to be one of the specific objectives of the future researches in the region.

During the 5th century BC Klazomenai became a member of Attic Delos Union as it is mentioned in Attic Tribute Lists of 481, paying 1.5 talent annually. Klazomenai allied with Athens against Sparta-Persian alliance in the beginning, but then the disunified political attitudes divided the community of Klazomenai into two groups as democrats and oligarchs. This political division was clearly reflected by the settlement pattern. In 413 BC after the defeat of Athenians in Sicily, oligarchs moved to the mainland and founded Polichne (Thucydides 8.14.3). However they returned to the island right after Athens pulled herself upright, which took perhaps a year. However the oligarchs were persistent on leaving the island and refounded the settlement on the mainland, following the Athenian defeat against the Spartans in 405 BC. The name of the new settlement was Khyton which has an etymological meaning as earth heap, likely to be referring to the mound Liman Tepe. The name of Khyton is mentioned in an Athenian decree dated to 387 BC.[107] Ionian *poleis* were not able to gain back their independence fully between 499 and 334 BC. Persian defeat by Athenian Kimon in 467 BC and withdrawal of Persians didnot change the political conditions much for Ionians. The so-called independence after Eurymedeon did not change the fact that Ionians were still obliged to pay taxes both to Attic-Delos Union and Persian Empire. Pelleponnesian Wars clearly displayed that independence for Ionian states was not a realistic expectation. Sparta appeared as a third power in the political arena and the

[107] Engelmann,H.-R. Merkelbach 1972-73, No: 502; Tanrıver, C. 1989, 52.

Ionian States were totally stucked in between those super powers of the age. Following Khios, Erythrai, Lesbos and Euboea resigned from Attic-Delos Union and finally in 412 BC Klazomenai joined them. Oligarchs moved to Polichne on the mainland.[108] In the meantime Klazomenai and Erythrai tried to convince Teos, Aerae and Lebedos to join the riot against Athens.[109] However the riot led by Lesbos was suppressed by Athens immeadeately and Polichne that has been inhabited by rich oligarchs was captured by Athens. Oligarchs were sent back to the island, but the leaders of the riot fled to Daphnous (Thucydides 8.23.6). After the failure of the riot Spartan Astyokhos asked Klazomenians on the island to support oligarchs and their rejection was answered by Astyokhus' hostility. He attacked the island with his fleet, but due to the strong wind he was not able to capture the island *(Thucydides 8.31.2-4).*[110]

In 410 BC Athenians were settled enough to attempt for controlling Ionian states. In 405 BC Spartan Lysandros defeated Athenians and claimed on Hellespontus. However in 404 BC his efforts were impeded by Athens. Persian alliance with Sparta broke up in 401 BC and II. Artaxerxes had the impression that oligarchs has betrayed him. The oligarchs who were defenceless against the democrats asked for Spartan support. Sparta has declared war against Tissaphernes, the satrapy of Sardeis and defeated him in 396-395 BC. In 394 BC Spartans were then defeated by Persian fleets under the control of Athenian Conon. He brought political order to most of the city-states in Anatolia. He headed over Teos, Khios, Erythrai and Mytilene in favor of Perisans. A decree

[108] Debord, P. 1999, 204-205; Gehrke, H.J. 1985, 44.
[109] Debord, P. 1999, 206-207.
[110] Debord, P. 1999, 207.

dated to 397 BC declares that Spartans quitted supporting the oligarchs after the Pelleponnesian War. This resulted with the fall of the oligarchs and yielded to political turmoil in Greek *poleis* of Anatolia. Khyton, the well organized hippodamic settlement on the mainland might have been founded in 404 BC when the oligarchs were encouraged by the Spartans rise after they captured Athens. However it was shortly inhabited and perhaps abandoned right after the defeat of Spartans at Knidos in 394 BC.[111]

Artaxerxes II was aimed to set in order the political conditions in Eastern Mediterrenean. He wished to settle down his political affairs with Sparta and assigned Tribazos as Lydian Satrapy, who was a supporter of Laconia. In the meantime Antalkides was leading the Spartan army. In 387 BC Spartans as allies of Persians defeated Athenian fleets at Hellespontus. This prevented the pass of vessels carrying grain to Athens from Black Sea and Athenians decided to make peace with Spartans. Tiribazos gathered all the representatives of Greek *poleis* at Sardeis in 387/6 BC and declared the terms of Kings Peace.[112] Kings Peace determined the status of East Greek p*oleis* for the next fifty years, which sees the Persian hegemony over them.[113]

[Xenophon, Hellenica V.1.31] King Artaxerxes thinks it just that the cities in Asia should belong to him, as well as Klazomenai and Cyprus among the islands, and that the other Greek cities, both small and great, should be left independent, except Lemnos, Imbros, and Scyros; and these should belong, as of old, to the Athenians. But whichever of the two parties does not accept this

[111] Özbay, F. 2006, 37.
[112] Xenophon, Hell. V.1.31; Diodorus XIV.110.3-4.
[113] Xenophon, Hell. V.1.31; Ruzicka, S. 1983, 106-107.

peace, upon them I will make war, in company with those who desire this arrangement, both by land and by sea, with ships and with money.

The Peace of Antalcides clearly mentions Klazomenai as an island equally important as Cyprus for being strategicly located for controlling the Smyrna bay and perhaps keeping the Athenian allies who were greater in number under control.

An Athenian decree dated to 387 BC defines Klazomenai as a binary settlement and clearly states that the inhabitants of the island have lost their control on the land and the oligarchs of Khyton controlled the land.[114] Following the Kings Peace Athenian hegemony in East Greek ended and the Athenian allies lost their power. This gave chance the oligarchs to refound their settlement on the mainland. In between 366-356 BC Satrapy Revolts caused political discomfort in general. During this period Klazomenai was captured by a tyrant named Python by a cunning action.[115] He ruled the city during this period, but perhaps due to his repressive political attitude most of the inhabitants abandoned the settlement.

Satrapy Revolts were suppressed by the Persian King and this also ended the rule of Tyrant Python in Klazomenai. However the settlement on the mainland drastically diminished in the mean time. In 350 BC Philippe of Macedonia supported by Propontis, Byzantion and Periptos ended the Kings Peace period. Following his victory at Kharon in 338/37 BC Athenian hegemony was ceased and he became the initiator of Corinthian Union. Until Philippe's death in 336 BC the Greek *poleis* in Anatolia were entirely freed

[114] Tanrıver, C. 1989, 43-45.
[115] Olmstead, A.T. 1978, 421-422; Tanrıver, C.1989, 48-49.

from Persian sovereignity. His successor Alexander led the Greeks to end the Persian hegemony for good in 334 BC at Granicus.

After the cease of Persian hegemony Klazomenians abandoned the settlement on the mainland and continued to inhabit the island. For this reason Alexander might have buit a mole *(khoma)* from the mainland to the island *(Pausanias VII.3.9)*. The Hellenistic settlement on the island is not yet investigated throughly by archaeological excavations, but the surface findings and the test trenches attested the Hellenistic settlement on the island. The test trench revealed architectural remains dated into the second half of the 4th century BC below a perystyle house of Roman period. The terracotta figurines of Hellenistic period found at the Athena Polias temple situated on the northern tip of the island and a bronze thymaterion dated to early Hellenistic period are significant findings of the era.

The treaty of Apameia formulated at Rome over the year of 189 BC put an end to war between Rome and Antiochus in Syria. Rome has been reluctant to arbitrate the affairs of Greek *poleis*. But Rome was recognized by the Greek *poleis* as the new dominant power in the Mediterrenean. Klazomenai was one of the *poleis* whom independence was granted by Rome after the treaty.[116] After the treaty of Dardanos Klazomenai preserved its independence during the reign of Sulla and in 43 AD became under the rule of Brutus. Coins of Augustus period bear the title of *kristes* for Augustus due to his benefaction for the reconstruction of the city devastated by an earthquake. Hadrianus was given the same title for his actions of developing public facilities in the city.

[116] Ager, S.L. 1996, 268.

The settlement on the island was abandoned in 5th century AD. The Chalcedon Council in 451 AD and Hierokles lists in 530 AD refer to Klazomenai, which perhaps was located around Gülbahçe.

The archaeological evidence from Hellenistic and Roman period is rather flimsy due to the looting of building blocks in the later years. The remains of the theatre located to the north of the island can hardly be traced. The temple on the northern tip of the island was first investigated by Oikonomos and his reports state that the plan of the structure could hardly be identified since the bedrock is very close to the surface. Related small findings included terracotta figurines of seated women, black glazed pottery, megarian bowls and terra sigilata pottery fragments, which imply the long use of the temple. Oikonomos' excavations also revealed a double roomed large building dated into 400 AD. The traces of inhabitance on the mainland after the last quarter of the 4th century BC are very sporadic and meagre. These consist of a cistern on Liman Tepe mound, a rectangular structure and a well at FGT sector, Hellenistic waterpipes, remains of a Roman building and a cistern dated to late Roman/Early Byzantine period. It seems likely that the Hellenistic and Roman periods are characterized with dispersed farmsteads on the mainland.

V. SETTLEMENT PATTERNS IN KLAZOMENIAN KHORA

V.1. Cultural, Ritual and Political Landscapes of Klazomenai

V.1.1. Frontiers of Polis: Defining the Borders of Klazomenai

The recognition of territorial borders is directly linked with the claim on peripheral land and it was crucial for poleis particularly during the formation phase. The agricultural land of any Greek *polis* was an important resource and it was critical for its residents to define it. The borders were crucial symbolically and politically for the unity of *polis*. Eventhough the modern scholar presents us a fixed criteria for *polis* which included mainly the physical components of the urban center, literary evidence provides us with a more sound perspective for this case. For instance *Pausanias* names Panopeus as a *polis* even though she did not look like an urban center for not having political magistracies, a gymnasium, a theatre, an agora, public buildings, a water supply or regular housing of some complexity. *Pausanias* considered Panopeus a *polis* for two reasons, one that she qualified herself for representation in the Phocian assembly and the second and the relevant one to the subject of this chapter is- that she had boundaries dividing her land from that of other *poleis*.[117] In other words the notion of territory was crucial for all *poleis*, beginning with the formation phase perhaps due to the increasing population

[117] Cole, S.G. 1995, 292-326.

that yielded to new subsistence strategies depended on agricultural land, as it was widely discussed in the recent archaeological agenda.

Defining the borders of the *khora* for a *polis* in the archaeological context is not easy though, where the related intact epigraphic evidence is mostly unavailable. It is practically more possible to define the extensions of the urban center on the basis of the physical remains through excavation, but defining borders of the *khora* requires a different set of evidence. In the present work several sets of data used to define the extensions of the *khora.* I am also well aware of the fact that the borders are likely to change due to shifting political and economic conditions. However here the suggested borders are referring to the formation phase of Klazomenai and the land that has always been the core of the territory. The alterations of the borders are mentioned wherever the evidence is available.

The evidence used to define the borders of the Klazomenian khora include the placement of extra-urban sanctuaries, tumuli that might have served as the edifices of ancestry cult, border marks as well as the elements of defensive network and naturally the epigraphic evidence and topographical features that point out the natural frontiers. As it is already mentioned the suggested borders remain to be tentative due to the alterations caused by shifting political and economical conditions through the periods. However the core of the territory, the gist of the khora is likely to be defined by the natural frontiers and the *khora* of the most *poleis* comprise geographical units.

The suggested borders for Klazomenai in this study comprises more or less the heartland of the territory which had been used all through the history of

Klazomenai. By intersecting the distribution of elements of defensive network, extra-urban cult places, tumuli that had been used as markers of ancestry cult and border marks a viable margin is drawn around the territory of Klazomenai. This suggested map matches finely with the features of the topography as well.

V.1.2. Topographical Features

The terminology of political geography precisely defines the meanings of the terms *border, frontier* or *boundary,* which all refer to a terminus that marks the distinction between spaces of different kinds. But also may be relevant to a conceptual marker determined by political negotiations between adjoining states.[118] Most of the time the nature herself creates frontiers[119] and those are fully regarded for defining the distinction of two spaces geographically and conceptually. In most cases the territory around the *polis* was a geographical unit defined by rivers, coastlines, hilltops, mountain ranges or valleys, mostly due to the lack of technology to intrude the environment.

Natural frontiers determining the political borders were not uncommon in the antiquity. For instance *Herodotus (3.4.3)* mentions Nile valley as a natural frontier.[120] Mountains and rivers mostly marked the borderline between sites. Mountains were not perceived as a simple physical height, but rather a natural marker outside the inhabited area and cultivated space. *Oros* is an ancient term used to identify the distinguishing topographical feature that

[118] Stein, M.L. 2007, 14.
[119] Edlund, I.E.M. 1987, 37.
[120] Ober, J. 1985, 75.

fragmented the geography and formed a frontier, for example in a specifically Egyptian context it is desert in contrast with the fertile valley.[121] However in the Greek context it is synonymous with mountains. Mountains were also sources of raw material, location for hunting, pasturage and also during the warfare could function as temporary acropolis, also sanctuary for Zeus[122] and also commonly for Kybele.

The extensions of Klazomenian *khora* is suggested to be marked with natural frontiers and obstacles created by nature. Urla basin, which is a geographical unit, more or less comprises Klazomenian territory. *Strabon* states that Teos and Klazomenai were located on the isthmus that was connecting the peninsula on which Erythrai was located, to the mainland. Klazomenai was on the northern tip whereas Teos was situated to the south. He adds that the border between Erythrai and Klazomenai lied at the beginning point of the isthmus *(Strabon,XIV: 31-C 644),* which is commonly thought to be İçmeler, but perhaps Gülbahçe is a better suggestion on the basis of defensive network.

The depression extending from Güzelbahçe to Seferihisar[123] is margined with a range of hills and likely to set a frontier between Teos and Klazomenai. This depression is marked clearly with hilltops around 300 m.on the west. Azmak river, Çiftlikdağ, Değirmendağ, Pertevpaşa mountain, Kocadağ, Sivricetepe and Çalıtepe contours the western border of Klazomenai territory. This mountain range is a prominent topographical feature that draws the natural frontier with Smyrna and Teos to east with Klazomenai. To the

[121] Buxton, R.G.A. 1992, 2.
[122] Ibid, 3-5.
[123] Darkot, B.- M. Tuncel 1978, 95.

west the mountanious mass declining towards south to Cılga and Kokar coves is defined with Kırandağ, Kenelidağ and Velidağ whose heights exceed 600 meters and sets the natural frontier between the *khorai* of Klazomenai and Erythrai.

The hegemonic extensions of Klazomenian khora might have been determined by rather political trends since the natural obstacles are lacking in those areas where coastal plains are laid.

Figure.12 Topographic view of Urla Peninsula

V.1.3. Tumuli (Ancestry Cult?)

The practices employed to mark the territorial limits of a settlement were often linked with the religious and cultic context. The rise of the hero cults at mainland Greece during the Late Geometric Period and Early Archaic

period is related to this matter. The post-Mycenaean finds in Mycenaean tombs is a widely known archaeological phenomenon since the finds from the Bronze Age tombs at Prosymna, Argive Heraion published by Blegen.[124] Such deposit of findings clearly indicates the raising interest in hero cult and ancestors as have already been interpreted by Coldstream.[125] However the dynamics that led to the emergence of the practice are more complex in the social context. The first appearance of the ritual is contemporary with the rise of Greek *polis* in 8th and 7th century and bound up with the state formation. The phenomenon was directly related to the ideological needs of the early states and served to define the territorial borders of the settlement. Tombs of ancestors might have become locus of power where the internal conflicts could have been expressed and solved as well as the practice represented the claim on land.[126] The establishment of hero cults was an essential component in the process of state formation at the mainland Greece during the Early Archaic period. More specifically it was restricted to Attica and Argolid.[127] The question is what kind of practice might have replaced the hero cult in geographies that lacked Mycenaean heritage and whether such practice has ever been executed. Even though such analogous phenomenon is not a necessity between the mainland Greece and the rest of the *koine* in terms of ritual customs, one feature of Klazomenian ancient landscape is remniscence of the hero cult. The Archaic tumuli located at the fringes of the Klazomenian territory are likely to be marking its frontiers. The researches carried out at the close environs of the

[124] Blegen, C. 1939.
[125] Coldstream, J.N. 1977, 346-8.
[126] Alcock, S. 1991, 448.
[127] Whitley, J. 1988, 181.

settlement center at İskele have revealed the placement of tumuli around it, distributed on the hilltops[128] probably encircling the asty. The survey conducted at its territory displayed the same phenomenon at a larger scale where the tumuli surrounding the territory. **Dubatepe (1), Nalbanttepe (2), Kocadere (121)** and perhaps **, Dörtyol (5), Üçdeğirmen (17), Bozavlu (21)** marks the limits of the asty whereas **Adatepe (43), İçmetepe (45), Yemişliboğaz (49), Hacıgebeş (52), Andız (106)** and perhaps **Hırsızçeşme (41)** stands at the tips of the *khora*. Tumulus burial was used in Klazomenai only during the Archaic period and sometimes contained more than one burial. The burials were cremated or sarcophagi and all typically were covered with heaped earth and surrounded by a peribolos wall. Unfortunately all the tumuli were destructed by illegal digs. Amongst them only **Dubatepe (1)** and **Nalbanttepe (2)** tumuli were archaeologically recorded back in 1980's. The rest were harshly destructed and no archaeological material is available for a certain dating. Most of them were identified with heap of stones used to build the periboloi of the tumuli and could hardly be followed in terms of plan and size.

In conclusion it seems likely that the locations for those Archaic tumuli have been chosen intentionally to mark the extensions of the territory. In the social and political context the practice is similar to the reuse of Mycenaean tombs in Argolid and Attica. The dating of those tumuli seems likely to be contemporary with the state formation in Klazomenai. The placement of the

[128] Hürmüzlü, B. 2005, 47.

tumuli is unlikely to be coincidental and might have bound up with the ancestor cult and aimed to claim on land closely linked with state formation.

V.1.4. Extra-urban sanctuaries

Rituals are described as "determined modes of action"[129] or "stereotyped patterns of action"[130] or "performances of more or less invariant sequences of formal acts and utterances not encoded by the performers"[131] It is a way of communication that provides information about the performers and the situation served to maintain the order and the solidarity of a group, to disguise inequalties and helping to deal with anxieties.[132] Archaeologically it is not possible to recognize a sacred place unless a ritual is practiced there. Religion was the essential component of the *polis* and created its identity through religion. This caused some sanctuaries to become a focus for the self definition of the *polis* and sanctuaries served various specific functions, for instance sanctifying a frontier.[133] Speaking of Greek poleis religious and secular features of the state could not be divorced from eachother and in most cases the function of the sanctuaries was also political.

De Polignac was the first scholar who made a division between the sanctuaries according to their location in terms of spatial organization. His work grouped the sanctuaries as urban and extra-urban. By such spatial grouping his work attempted to demonstrate *polis* as a composition of urban

[129] Durkheim, E. 1915,36.
[130] Burkert, W. 1979, p.34.
[131] Rappoport, R.A. 1979, 175.
[132] Shanks, M.-C. Tilley 1992, 129-154.
[133] Sourvinou-Inwood, C. 1993, 10.

center and *khora* and stated that the extra urban sanctuaries were employed to integrate the rural land in to the polis territory.[134] His bipolar model asserted control of the countryside by planting extra mural sanctuaries. De Polignac pointed out that the sanctuaries located away from the urban center might have been centers of their own, prior to the formation of state and served as places of mediation and exchange between different communities. It had also been suggested that they have been points of contact between Greeks and non-Greeks.[135] If the subject could have been supported with rather solid evidence it would be helpful to understand the situation in Ionia in terms of ethnicity. However the subject is still very theoretical and required to be investigated.

The identification of center and periphery changed over time whereas the position of sanctuary and the identity of the deity stayed the same. Vallet also made a similar classification that named sanctuaries no more than 1 km from the city as sub-urban and those further away up to 40 km. as extra-urban.[136] Such terminology provides us with the knowledge about the geographical location of the sanctuary in reference to the urban center. However may also be misguiding in terms of function since cognitively the modern perception of ritual space does not match the ancient one. On the other hand such division has also been criticized for that the political power was not supposed to be linked to the notion of city as an urban center but rather with the political body wherever its members resided.[137]

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[134] De Polignac, F. 1995 (a).
[135] Edlund, E.I.M. 1987, 41.
[136] Vallet, G. 1968, 67-142.
[137] Polinskaya, I. 2006, 79.

The extra-urban sanctuaries were identified as the places of exchange and the resolution of conflicts. The sacred land possessed by such border sanctuaries was often left uncultivated but served as pasturage for the herds. They were mostly situated on the threshold to the territory, forming a geographical unit consisting of little plains surrounded by hills or mountains. The bipolar model of De Polignac, joins extra-urban sanctuary and the political center of the polis on an axis that traces a diagonal line across the plain which forms the heart of the territory and city on one side of the acropolis. But this model does not fit the settlement pattern of the Geometric period since then the settlement hierarchy was not formed yet. The interaction of settlements cannot be explained in terms of sovereignty or submission.[138]

Most of those cult places were located in eccentric positions that marked the outer limits of the land available for agriculture. Particularly the caves and groves on mountains and promontories were common settings for extra-urban sanctuary. Perhaps mountains are most obvious sacred spot in nature, which is visible from afar and evoking the sense of proximity to the gods.[139] Promontories with temples are a common feature of the ritual landscape in Greek *koine* as well.[140] The distribution of promontory sanctuaries follows two principles; one is that of the harbor sanctuary provides a safe cove for the sailors and secondly the geographical situation linked with the trade routes.[141] Caves were multifunctional as a feature of nature. They were used as shelter, water source, mine, quarry, dump, burial place, animal pen, execution

[138] De Polignac, F. 1995 (b), 4.
[139] Rutkowski, B. 1972.
[140] Semple, E. 1927, 1927, 353-386.
[141] Edlund, I.E.M. 1987, 48.

place or even for the disposal of the bodies *(Thuk. I, 134; Pausanias IV, 184 f.)* and also as sacred places. The textual evidence point out the use of groves as sanctuaries, but it is rather difficult to verify it in archaeological context on the present landscape.

During the Geometric period the plain was sparse and left indeterminate as fallow or pasture land. Such situation gave way to dense occupation with agricultural exploitation. De Polignac offers two models for explaining the town and country relationship within the context of cult places. He assigns mono-centric pattern to Athens alone and developed a bipolar model for other communities. The two poles were formed of city and territory; their social and political unity symbolized by the procession from urban center to rural margin enacted regularly in honor of the deity situated at the border. De Polignac's model sees the equation of center and periphery with order and disorder; civilization and wilderness according to structural paradigm.[142] However there are examples that challenge this model, for instance the procession between Miletos and Didyma. Epigraphic resource *(Milet I.3.133)* describes Molpoi procession between Miletos and Didyma which started at Panormos harbour and reached to the sanctuary of Apollo at Didyma. In this case the procession that took several days included some other religious sites between two points whereas it does not indicate a dichotomy, but rather a continuum *(SEG 15.682).*

The sanctuaries of this kind were placed relatively at inaccessible geographies for providing a space for the relation between men and gods

[142] Polinskaya, I. 2006, 85.

without mediation and in a rather uncivilized manner, also providing place for rituals. Commonly they also marked a political frontier. The spatial organization was not merely defined by the relationship of men to natural environment, but also relation between different groups.[143] Most of the cult sites of Geometric period were situated either in regions with dispersed settlement or else close to a shore or a port. The notion of frontiers was crucial due to the heavy demand for land. It was necessary for societies to strengthen their control over space for guaranteeing the exploitation of agricultural land by a certain group of people living there. Such possession was also crucial for the control of routes and defending the land.[144] There are some good examples which represent the function of such sanctuaries as border marks between different poleis. On the island of Rhodes Zeus Atabyrios sanctuary located on the highest point of the border zone separates Ialysos, Lindos and Kamiros. Artemis Limnatis is on the border between Messenia and Lacedaemon and both shared the possession of the cult *(Pausanias 4.41)*.[145] The other examples are Heraion at Argolis that lied between Argos, Mycenae and Tyrins; Aphrodision between Lato and Olonte at Crete. Some examples are known to be shared by two communities such as, Artemis Hymnia by Orchomenos and Mantinea in Boeotia; Artemis Hemerasia by Pheneos and Cleitor in Arcadia.

The changing economic aspects yielded to agrarian tension which shaped the spatial organization of nascent poleis and it avowed the common interest of people belonging to a certain group that lived there. By the way, the appropriation of a cult site marked the boundary of the relevant land and

[143] De Polignac, F. 1995 (a), 33.
[144] De Polignac, F. 1995 (a), 33-59.
[145] Mc Inerney, J. 2006, 50.

formed the basic step for unifying the components of a society into a single entity, which is polis.[146] The network of extra-urban sanctuaries articulated the territory of nascent poleis and creation of such network was a conscious response to the political and social needs of newly emerging poleis. The formation of such network on the other hand indicates that the limits of the territory were designated prior to the reaching the status of *polis* in the urban sense.

The possession of those cult sites did not only serve for agricultural activities. They might have been places where pastoral economy intersected with the agrarian. In many cases those sacred lands were left as neutral zones, frequently left uncultivated and used as a common pasture that was allowed for small flocks and herds. Elesunian land between Attica and Megara is such a well known example for that.[147] There is yet considerable corpus of inscriptions that attests the presence of leasing the *hiera khora.* The leased land often included buildings for human habitation and barns for animals.

A similar pattern may be assumed for Klazomenai on the basis of distribution of cult sites situated at the tips of its territory. Presumably the cultic places at **Korykos, Cılga, Söğüt (73), Inkaya (89)** and **Köytepe (74)** served for rituals not only for the residents of Klazomenai, but used as common spaces with neihbouring poleis, namely Erythrai, Teos and perhaps Smyrna.

Epigraphic evidence for the cults of Klazomenai is rare and fragmentary. Yet still few inscriptions as well as coin iconography refers to the presence of cults dedicated to certain deities and dated back to Archaic period.

[146] De Polignac, F. 1995 (a), 33-59.
[147] Mc Inerney, J. 2006, 52.

Fragmentary inscriptions found around Klazomenai reveal the presence of cults dedicated to Hermes[148], Athena Polias[149], Zeus Tropaiophoros[150], Zeus Soter and Herakles[151]. The coin iconography on the other hand depicts Kybele[152], Hermes[153], Zeus[154], Apollo[155], Athena[156], Artemis Ephesia[157].

Korykos is known as the setting of a sanctuary accompanied with a natural cave where rituals devoted to Kybele have been practiced, from the textual evidence.[158] The Kybele votives found in Erythrai imply the presence of Kybele cult, which seems likely to be related to Sybille myths. *Pausanias* mentions the seer women who lived in rocky places and grottos who were well respected by the society *(X.12). Strabon* also mentions a Sybille who was also from Erythrai *(XIV.I.34). Pausanias'* text indicate that Sybilles were born on **Korykos** mountain *(X.12).* The archaeological evidence related to this cult are the grottos and open air sanctuaries with niches that are clustered close towards **Korykos**.[159] **Korykos** (Kırandağı) is part of the mountanious mass that sets the natural frontier between Klazomenian and Erythraian teritorries. It is likely to be located at an inaccesible point. The setting of the sanctuary is not localized precisely yet and its location is not included in our working area permissioned

[148] Engelmann, H.-R. Merkelbach (eds) 1972-3: no:509; Jeffrey, L.H. 1951, 345 no:63; Simon, C.G. 1986, 64.
[149] Simon, C.G. 1986, 64. The Archaic temple located on Karantina island was identified as a shrine dedicated to Athena Polias by Oikonomos. He associated the Archaic deposit that included some Archaic figurines with an inscription found nearby referring to the cult of Athena Polias.
[150] Woodward 1927, 117 no:1; Simon, C.G. 1986, 64.
[151]Engelmann, H.-R. Merkelbach (eds) 1972-3, no:518-519; Simon, C.G. 1986, 64.
[152] Simon, C.G. 1986, 64; BMC Ionia32 (no.123-124), 33 (no.128), 35 (no.136)
[153] Simon, C.G. 1986, 64; BMC Ionia 28 (no.98, 100, 101)
[154] Simon 1986, C. G. 64; BMC Ionia 27 (no.87-91); 29 (no. 105,106)
[155] Simon 1986, C. G. 64; BMC Ionia17-31 (no.46-47)
[156] Simon 1986, C. G. 64; BMC Ionia 21-26 (no.32-45, 51-86)
[157] Simon 1986, C. G. 64.
[158] Akalın, A.G. 2008.
[159] Akalın, A.G. 2008.

by the Ministry on the basis of todays administrative borders. For this reason the evidence relies mostly on textual evidence and the limited survey work conducted by Erythrai team.

The cave situated at **Cılga** cove was known to us from previous surveys conducted in the area by N. Tuna, later the site was visited by H. Erkanal and Y. Ersoy as well. Erkanal published a short article presenting information about the sanctuary in a popular magazine.[160] It marks the southernwest tip of the Klazomenai territory. The southern coast of the peninsula is likely to be a disputed area between Teos and Klazomenai and it seems likely that it was mostly under the hegemony of Teos. However the southwest coasts with its indented and inaccesible coves might have stayed preserved from the hegemony of Erythrai, Teos and Klazomenai and rather remained as a common field between those since the political borders were not constantly determined by any law. The mentioned cave, which served as a cult space is situated to the west of **Cılga** cove and to the north of Inceburun hill, 150 m. above the sea level. The cave has a very narrow entrance opening to the front gallery, which is followed by the 16 m. long second gallery. There are three more galleries connected to this one and the total length of the cave is approximately 40 meters. In the front gallery there is a 2.5m. thick filling that included terracotta figurines that might be depicting Hekate. The pottery sherds found together with the figurines are dated to 6th-4th century BC.[161] It is known that a Sybille from Erythrai who has migrated to Cumae happened to serve Hekate.[162]

[160] Erkanal, H. 1995.
[161] Erkanal, H. 1995.
[162] Akalın, A.G. 2008.

Söğüt (73) is a natural cave used as a sanctuary presumably devoted to Kybele. It is located at Söğüt where also the ruins of an Ottoman village and an Archaic-Roman site are located. It is located within a valley of ca. 350 m. wide leading to Kokar cove and the specific location of the cave is more like a geographical pocket comprising a small colluvial plain that extends infront of the cave. It is within the mountainous mass that sets the natural frontier between Erythrai and Klazomenai. The cave has an entrance 11.5 m. wide and 20 m. high. Inside the cave a throne is carved on the wall with a cross on top of it. Due to the cross it would not be far from reality to suggest the use of the cave as a sanctuary during the Christian period, most probably for Virgin Mary. However the few fragments found on the surface indicate to the earlier usage of the cave. It seems likely that the original reliefs carved on the wall were modified during the Christian era. Below the cross there is a relief which resembles a throne and perhaps the original figure was a seated female. In front of the cave there is a wide plain area. This place is highly likely to be the sanctuary which was consecrated to the games of Alexander, which is described by Strabon as being situated to the north of Khalkideis at Khersonessos isthmus.[163]

Inkaya (89) cave is situated on top of Kocadağ, which is a high hilltop belonging to the range of hills that sets a natural frontier for Klazomenian khora to the east. The cave was visited by Klazomenai excavation team several times and surface findings were collected which reveal the long term use of the cave as a sanctuary from Geometric period- perhaps even prehistoric- to the

[163] Uhri, A.-A.K. Öz 2008.

Ottoman period. Such continuity should be linked with its function as a numinous place.[164]

Strabon (XIV.I.36) mentions an Apollon temple near Smyrna and hot springs which may be located as Balçova or İnciraltı. It is claimed to be the temple of Apollon Gryneus mentioned by Servius.[165] The setting of the temple is not localized.

Köytepe (74) is a hill nearby the Barbaros plain to the west of Klazomenian territory at Uzunkuyu-Zeytinler region. The hilltop is densely covered with maquis and pine trees and for this reason the surface visibility was very low during our visit to the site. Despite the low surface visibility we collected well preserved surface material which revealed the long term use of the site beginning with Neolithic period. The northern slope of the hill was destructed by the motorway construction. The villagers claimed that many archaeological finds were found during the construction but sent away without reporting the local government and the museum. In fact the presence of smuglers and quite a few number of trenches opened by them on the hill made us think that they were right. On top of the hill a destructed pithos burial was found. The pithos facing towards north is enclosed with a 40 cm thick wall. Around it burned bones and the sherds of a trifoil rimmed oinokhoe probably the burial gift, were found scattered. Oinokhoe is dated to the end of 4th c. BC. The most important find on this hill is the remains of a building laid out 15 m. in North-South direction, in East-West direction only 4 m. of the wall preserved. It was built of huge blocks without any mortar. The thickness of the

[164] Atalay, E. Ö. 1987.
[165] Simon, C. G. 1986, 64; Servius on Vergil, Aeneid 4.345.

walls reaches to 90 cm. The lack of use of mortar perhaps dates the building prior to Roman period. This place perhaps may be identified as the sanctuary of Zeus Olympios on the basis of an inscription recording such sanctuary found near Zeytinler and Pyrge.[166]

In 4th century BC Klazomenians consulted the Apollon at Delphi about a dispute that arosed after the death of Tachos who had founded a city near the sea named Leukai. The dispute between Kyme and Klazomenai was over the hegemony of Leukai, which contained a shrine dedicated to Apollon. The Pythia decided that it should be the one which should first offer sacrifice in Leukai and each side should start from their own city. The city was located much closer to Kyme, therefore the Cymeans assumed themselves advantageous. However Klazomenians forestalled them in performing sacrifice by chosing by lot from their own citizens to found a city near Leukai. They decided to hold an annual festival to bear its name which they called the Prophthaseia *(Diodoros, 15.18.1-2)*. But regarding the matter of ritual landscapes of Klazomenai it should be mentioned that in 4th century the borders of Klazomenai had been extended towards northeast and this region included a shrine dedicated to Apollon.

V.1.5. Defensive Network

The military strongholds placed on strategic locations on the borders and coasts within a defensive network for guarding the integrity of the *khora* is not a rare phenomenon. *Aristotle* suggests that borders should be contoured by

[166] Simon, C. G. 1986, 64; Engelmann, H.-R. Merkelbach (eds) 1972-3: no: 231.

mountains and that each part of the *khora* must be in visual contact with all other parts *(Pol.7.1327a)*. The visibility he is speaking of is only possible by the use of high hilltops –preferably crowned by a fort- situated on the fringes of the borders and coasts. In this context the Spartan forts in Messenia and border forts of Attica are known as earliest examples and dated to 5th and 4th century BC. Phyle, Gyphrokastro, Rhamnous, Sounion outline the borders of Attica, while Hysiai, Mycenae, Katingri, Kasarma and Asine are components of a similar defensive network around Argolid.[167] Another similar example of such a defensive network is geographically closer to Klazomenai is fortresses spread around the Smyrna plain that guarded the borders of Smyrna. The elevated hills around the plain might have been fortified as early as the Archaic period and the remnants of this defensive system remained to the present day in three clusters. First the towers and forts on Yamanlar mountain; the forts on the road to inland; and a single fort on the road to the south.[168]

Ober claims that the erection of fortresses and the presence of a defense system required organized troops and structures to support at least garrisons.[169] On the basis of textual evidence he offers a terminus for the use of light armed troops and the emergence of defensive networks around *poleis*. He quotes *Xenophon* for a dialogue between *Sokrates* and *Pericles* the younger on the subject of mountains used for defense *(Memorablia, 3.5.25-27)*. Since the date of the book is 371-62 BC, the second quarter of 4th century BC is offered as a terminus for the emergence of a regular system of defense.[170] The

[167] Winter 1971, 42.
[168] Akarca, A. 1972, 121.
[169] Ober, J. 1985, 75-76.
[170] Ober 1985, 77-78.

archaeological evidence is mostly supporting this too. The cases of Boiotia, East Phokis and Opountian Lokris show that there was a development in defensive networks from the second quarter of the 4th century BC.[171] So it is commonly accepted that fortified strongholds emerged earliest in 5th century BC and showed a rapid development in the mid 4th century BC. However this does not disprove the use of such forts or at least the use of hilltops for guarding the borders. Use of perishable material or the renovation of structures due to the developing defensive technologies may be encumbering us to prove the early phases of those in the archaeological context. Even the excavation of such sites may not be informative about the using phases of these forts since the soil depth is very shallow since they are rocky formations and a stratigraphy is hardly formed. So it is difficult to offer a certain date for the use of hilltops and forts.

Mountains and hilltops that served as border marks were yet more secure by the erection of fortresses. A regular system of border defense by a *polis* implied the utilization of an organized army to some extent with the support of garrisons and watch-posts on the borders. The political organization of Greek *poleis* in 5th century BC seem unlikely to consider such measures.[172] The defensive role of mountains had been developed in the 1st half of the 4th century BC and fortresses were regularly garrisoned by the *ephebes*, but the system fell into decay with the Hellenistic period.[173]

Defensible borders seemed original to *Xenophon* in the 360's but by the 3rd quarter of the century when *Aristotle* was writing the *Politics* it appeared

[171] Fossey, J. M. 1992.
[172] Ober, J. 1985, 76.
[173] Fowden 1988, 50.

obvious. Aristotle suggested that the khora be difficult to invade and easy march out from. We may assume that Aristotle means that borders should be mountainous. He also suggests that each part of the *khora* must be in visual contact with all other parts. This will render the *khora* most defensible since it will be easy to send military assistance to any threatened sector *(7.1327a)*. This was elucidated by *Aeneas Tacticus* who suggested *(16.16)* if one's territory is not easy to invade, but instead have few and narrow entrances. The defending general should prepare in advance by placing troops at the entrances of the country in order to oppose the enemy. The various units are to be kept in touch with another by means of utilizing fire signals.[174]

The emphasis placed by *Xenophon* and *Aristotle* upon fortifications as a subject for study and debate by politicians suggests that the subject of using fortifications to guard the countryside gave rise to a good deal of discussion in the 4th c. BC. *Platon*, in *Laws (6.760b-763b)* presents a carefully worked out plan for the protection of *khora* of his proposed state which emphasizes the use of special troops for preclusive frontier defense. The countryside of the state is to be divided into 12 districts each of the 12 tribes is to provide 5 *agronomoi* (market commissioners) and each group of five selects 12 men aged 25-30 to aid them in their duties. The units of 17 men serve for 2 years, spending one month a year in each district. The rural guardsmen were to undertake a variety of duties but foremost was defense of the country: In order to facilitate these tasks the guardsmen are empowered to commandeer the slaves or draft animals of the rural residents. The guardsmen are to be garrisoned on the highest and

[174] Ober, J. 1985, 78.

strongest position in each district *(8.848d-e)*. The final effect of all of these preparations was to prevent the enemy from ever crossing the borders into the khora of the state *(6.778e)*.[175]

The main points to note are *Plato's* conviction that the defense of the *polis* should be based on the frontiers and his plan for using young men engaged in receiving a military education as first line troops. *Aristotle* in *Politics* also suggested the establishment of a force of rural guardsmen although he is not so specific about their duties. The guardsmen are to be called *agronomoi* or *hyloroi* and their duties are similar to those of the *astynomoi* who are in charge of wall building, water supply and harbours in the city. *(Politics, 6.1321b)*

The ancient Greek terminology for the elements of defensive network refers to different types of strongholds. *Stratopedon* means a camp, *phrourion* corresponds with fort and *phroura* a garrison. *Pyrgos* is a single tower in the countryside and *charax* is simply a palisade.[176] *Stratopedon* were occupied by an army on campaign whether they were fortified or not. On the other hand *phrouria* were permanent strongholds and mostly accompanied with a *phroura*. Those forts might have remained same from Archaic period to Hellenistic period. Prior to that they might have been simply equipped as *charax* and probably relied mostly on the natural topography of the site, such as steep slopes and rocky cliffs.[177]

The presumptive borders of Klazomenai were also guarded by forts. The systematical archaeological surveys conducted within the territory of

[175] Ober, J. 1985, 79.
[176] Lawrence, A.W. 1979, 159.
[177] Winter, F.E. 1971, 55.

Klazomenai exposed a fortified settlement and four border forts at the frontiers of Klazomenian *khora*.[178] The positioning of those forts perfectly collides with the assumed borders, which is defined on the basis of other type evidence. The dating for all the elements of the defensive network is not certain due to the lack of diagnostic surface material. The architectural features mostly do not provide us certain dates. However the remains of the forts and the network of recent history represents a palimpsest of all periods.

The elements of the defensive network around the Klazomenian *khora* guarding its integrity are Dubatepe **(1)**, Yarentepe **(28),** Akçahisar **(33),** Yemişliboğaz **(49),** Hacıgebeş **(52)**, Sivricetepe **(54)** and Cinderesi **(78)**.

The northern tip of the territory is contoured with sea and **Dubatepe (1)**, a steep hilltop, is likely to be the fortress controlling the sea traffic at that direction. On top of the hill a tumulus with a radius 1.50 m is situated. It is destructed, but the krepis wall is partly preserved. Few scattered coarse ware sherds were found around it, but unfortunately none is diagnostic. A stone slab used as sarchophagus lid is found also. Eventhough none of the surface findings were datable the type of the burial gives us sufficient evidence to date it into the Archaic period. Tumuli built by heaping earth on top of pits in which terracotta sarcophagi were placed were typical for Klazomenai in the Archaic period. The remnants of an enclosed wall 10 by 8.5 meters assumed to belong to a fortification system on the hilltop. The thickness of the wall reaches to 1.50 m on the north facing the sea while 60 cm on the sides. This fortification

[178] Ersoy,Y.-E. Koparal 2006.

system is believed to be dated prior to Hellenistic period since the centralized political authority yielded to peaceful conditions in the region.

Yarentepe (28) is situated on the southern tip of Klazomenai territory on the border with Teos. It is a long narrow hill covering an area of 4 ha. and enclosed with a robust city wall. Yarentepe was previously studied by N. Tuna[179] in 1988 and its topographic plan was drawn by him. The surface findings at Yarentepe were collected systematically. Before it was thought that the earliest occupation at Yarentepe dated to 7th c. BC. But we found out that it was occupied as early as MBA and LBA. In fact Yarentepe is well known to the excavators of Klazomenai and it is assumed to be Daphnous which served as a refuge for some Klazomenians who revolted against Attic Delos Union after the Sicily defeat in 413 BC *(Xenophon, Hellenika I, 1-10).* Yarentepe controls the Çobanpınar valley, which is situated just across Sığacık cove of Teos. The survey in that valley revealed the presence of minor settlements from Archaic to Roman period. Yarentepe is likely to be an important settlement during the Geometric period, perhaps a settlement for a different group. In the later periods particularly during the Classical period served as a fortified safety place. The presence of pottery dated to the 5th c. BC indicates that it has been one of the places where Klazomenians were settled during the Persian invasion, when there was a complete silence at the city center.

The presence of a stronghold at **Akçahisar (33)** is reported by previous researches.[180] Today the site is situated within an extensive palm tree farm and vineyards. The recent landscaping of the area seems to have destructed the well

[179] Tuna, N. 1989, 279-294.
[180] Aydın, B. 2006, 96, 99; No:52.

preserved remains of the massive walls. Yet still at the edge of the vineyards looking over the hilltop at the slopes the ashlar masonry blocks are visible. The architecture is defined as Late Classical-Early Hellenistic by the previous researchers. The upper settlement layer is dated into the Roman period and characterized with the negative architecture of a presumably farm house, which is accompanied with an olive oil press installation. Both the olive press and the dwelling is on the bedrock and the traces hewn on the bedrock are clear.

Yemişliboğaz (49) gives the impression of a fortified settlement from the satellite images, but likely to be a refuge of 2 ha. surrounded by a simple wall of heaped stones. Most probably the stone foundation of heaped stones encircling the site was topped with fences of perishable material. It looks over the southern coast which is likely to be under the Teian hegemony. Within the walls of heaped stones at several points pile of stones look like the remains of tumuli.

Hacıgebeş (52) is a hill located to the west of Klazomenai on the way to Gülbahçe. The hilltop is looking over a plain formed by silting that might have been a cove with a protected port. It seems like a suitable place for the first Ionian settlers with its natural features. It is commonly known that the Ionian settlements were all founded on peninsulas with a protected cove – probably due to the conflicts with the local ones- and one can imagine that this place perfectly met the expectations of the first Ionian migrants. There is a necropolis accompanied with a small fortified settlement of 4 ha. on top of the hill looking over the cove. The findings from the tombs are dated to LBA and Early Iron Age. 3 cist graves and 2 pithos burials were already opened and

naturally the grave gifts were robbed. The fortified settlement is looking over the plain and might have been controlling the traffic on that side, the road from Klazomenai to Erythrai. On the southwestern slopes of the hill archaic tumuli are placed and the area is divided into sections by walls that can be traced on the surface The surface findings dated to Classical, Hellenistic, Roman and Byzantine periods indicate to the use of this site in later periods

Sivricetepe (54) is crowned with a medieval fortress and a chapel. However the surface findings reveal that this hill supposed to serve as a post from Bronze Ages to Byzantine era. Sivricetepe might have been the post on the eastern frontier of Klazomenai on the border between Smyrna and Klazomenai. This hilltop looks over the wide plain between Smyrna and Klazomenai. And while looking over the plain one can imagine the troops of Alyattes, the Lydian King moving towards Klazomenai passing this plain.

Cinderesi (79) to the northwest of Klazomenai between Balıklıova and Gülbahçe is a low hilltop of volcanic rock. On the hill a fortification of polygonal walls situated and it looks over Gülbahçe cove. The diagnostic sherds scattered around dated from the Bronze ages to Byzantine era indicating long usage of the fortress. Cinderesi is likely to be the last post before stepping into Erythrai territory and Balıklıova might be the disputed area between two poleis Erythrai and Klazomenai.

The visibility analysis revealed that to northwest Hacıgebeş **(052)** and Cinderesi **(079)** were visible to eachother, whereas to southeast Akçahisar **(033)** and Yarentepe **(028)** were visible to eachother. If it is not a coincidence we may speak of a very wisely organized defensive system around the *khora* of

Klazomenai, enclosing the territory either with forts visible to eachother or mountainous masses in between forts. At the places where forts are not visible to eachother topography creates obstacles with ranges of hills. So the forts are visible to eachother only at the areas where access into the *khora* could not be prevented by any kind of obstacles. Even though the surveys did not yield to any, it may be assumed that more watchposts we situated on the ranges of hills.

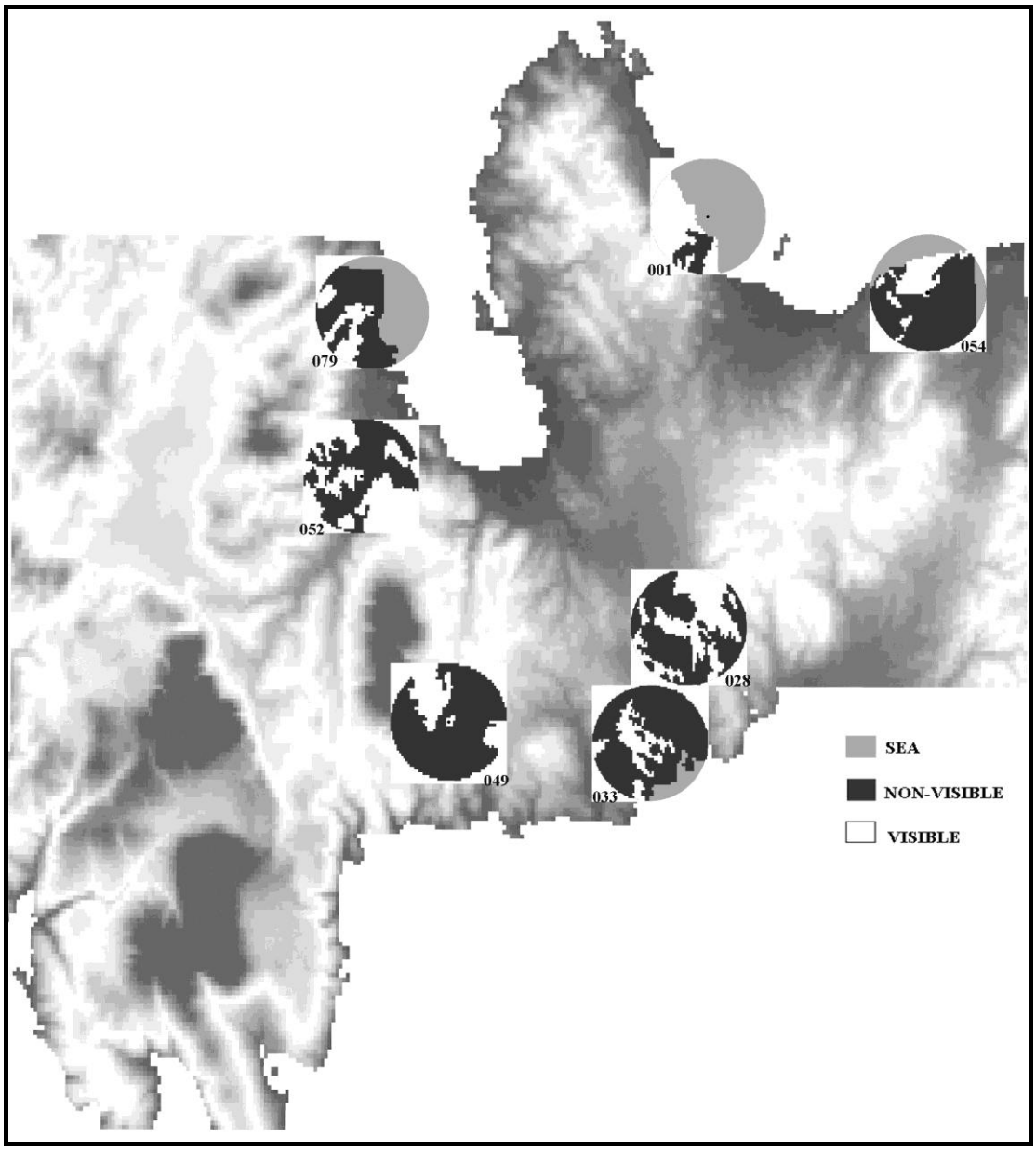

Figure.13 Visibility Map of Forts and Watchposts around the Klazomenian Territory

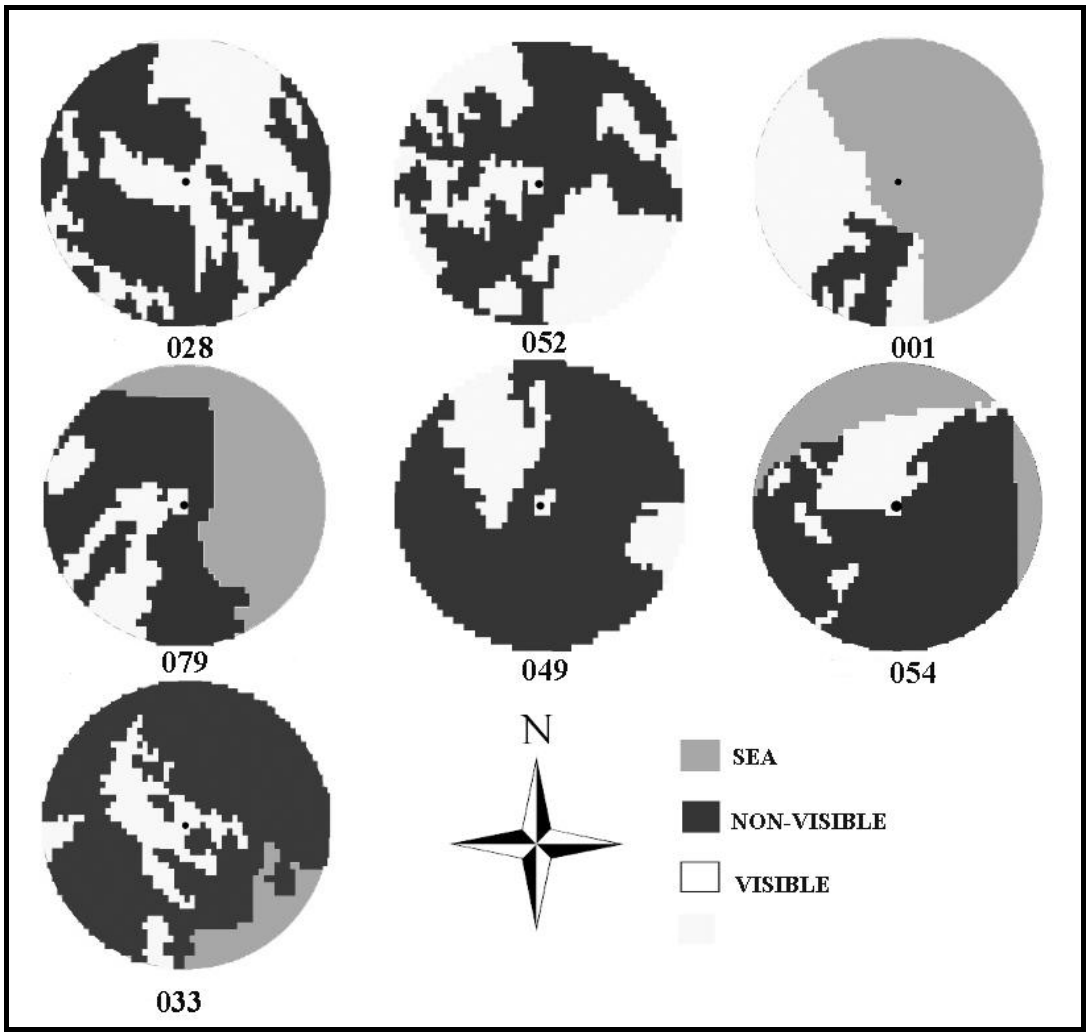

Figure.14 Results of Viewshed Analysis

FORTS	NONVISIBLE	VISIBLE	TOTAL	SEA	**NV %**	**V %**	**S %**
001	195	504	699	1127	**10.7**	**27.6**	**61.7**
028	1023	783	1806	20	**56.0**	**42.9**	**1.1**
033	1127	523	1650	176	**61.7**	**28.6**	**9.6**
049	1444	379	1823	3	**79.1**	**20.9**	**0.0**
052	1026	800	1826	0	**56.2**	**43.8**	**0.0**
054	1148	303	1451	375	**62.9**	**16.6**	**20.5**
079	822	277	1099	727	**45.0**	**15.2**	**39.8**

Table.5 Results of Visibility of Forts and Watchposts around the Klazomenian Territory

V.1.6. Border Marks

"Horos" is simply a boundary marker that has been used for various purposes The original meaning of "opoc" is boundary[181], but the inscriptions bearing "opoc" found in different contexts within the Greek *koine*.[182] The use of *horoi* in the Attic context may have varied from a boundary stone to a simple marker standing in a visible way reserved for a special purpose. Inscribed *horoi* developed along with literacy for new employments as with 4th century BC types of hypothecation.[183] These markers inscribed on bedrock, rocks or marble plates all protected the integrity of the property public or private at different contexts. They could be marking the borders of *khora*, a public land, a private field or a temenos of a deity.

The rupestral inscriptions in the plains and mountains marked the shrines, farms, mines, tombs and other properties. Such ones composed of "opoc" accompanied with informative inscriptions referring to the type of property[184], epithet of the property, name of the divine[185] or human owner[186], prohibition, warning or dimensions of the property. They could have been used for the division of *trittys* within the settlement[187] or even the organization of a city.[188]. Marking the borders of a polis with boundary stones (horoi) is a common phenomenon within the ancient Greek koine (Xen. Hell. 4.4.6).[189]

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[181] Engelmann, H.-R. Merkelbach (eds) 1971: 97-98.
[182] Athenian Agora Vol.19; Oliver, J.H. 1963.
[183] Oliver, J. H. 1963, 143.
[184] Ober, J. 1981, 77.
[185] Vanderpool, E. 1966.
[186] Vanderpool, E. 1970.
[187] Stanton, G.R. 1984.
[188] Traill, J. 1982.
[189] Hansen, M.H.-T.H. Nielsen 2004, 70.

The borderland between *poleis* sometimes called *ge methoria (Thuc.2.27.2; 4.56.2)* or *ta methoria (Thuc. 2.18, 5.3.5)* which literally meant "between the *horoi*". Yet still the term *ta methoria* is indefinitive, but for the case in Thucydides refers to Oinoe which was both "in Attica" and "in methoria between Attica and Boeotia". [190] It is a good case for the fortified settlements situated between the borders as well as the settlements that have changed status, but above all for the consciousness regarding the borders of the poleis.

The use of *horoi* is thought to be dated before the literate times, but the evidence is very speculative. Yet still it is well known that they are mentioned in early literature such as *Illiad (XII.421-423; XXI.404-405)* and *Solon (Ath. Pol. XII.4-5).*[191] The earliest archaeological evidence for the use of *horoi* is from the 2nd half of the 6th century BC in Athens and it was in use through the Roman times. The attempt to date horoi is highly speculative. A dated typological sequence for rock-cut letter forms is lacking in the sources.[192] Most of those inscriptions are dated on the basis of letter forms which is highly tentative most of the time. It is attempted to date all the horoi to 4th century BC by associating it with the policies of the era for reorganizing the borders of Attic demes[193], but not on sound and safe grounds.

The fieldwork conducted within the territory of Klazomenai yielded to the discovery of three rupestral inscriptions. In fact the discovery of those was not left to chance. After determining the borders of Klazomenian *khora*

[190] Ober, J. 1995, 111.
[191] Athenian Agora Vol.19.
[192] Ober, J. 1995, 116.
[193] Traill, J. 1986; Traill, J. 1982; Lauter, H. 1992; Stanton, G.R. 1984; Lohmann, H. 1992.

tentatively on the basis of topographical features that point out the natural frontiers, the hypothetic frontiers were examined with the distribution of extra-urban cult centers, tumuli and the elements of defensive network as already explained above. Then the work was focused on high mountanious areas situated at the tips of the territory for finding the boundary marks if they have remained or ever present. Long day walks and conversations with shepherds repaid our expectations. Two of the border marks are composed of letters "OP" and situated at Gülbahçe region, one **(102)** on top of the hill located to the south of Hacıgebeş **(52)** and the other one **(103)** on top of the Hacıgebeş hill. **103** is accompanied with three more bordermarks composed of single letter "O", all four are placed on a line equidistant from each other ca. 50 meters, all carved on obtrusive rocks on the high plain. The third border mark **(110)** is composed of four letters "OPOC" and situated on a high hilltop carved on the edge of bedrock protruding markedly at Balıklıdere region near İhsaniye. The location of all three bordermarks collide with the suggested borders of Klazomenian territory marked with natural frontiers to the west and east.

The *horoi* of Klazomenai are simple inscriptions that lacked any informative inscriptions, placed on clearly visible big rocks standing on outlying high plains on the hilltops. Their dimension is ca. 20 cm. and carved on bedrock. These *horoi* are highly likely to be determining the borders of the Klazomenian *khora,* due to their locality and lacking of any informative inscriptions referring to any other use. It is very difficult to suggest a precise date for them since none of the letters provide us with such evidence that refer to periodic change, except for "ς" on **110,** which is commonly written as "Ξ" or

"Σ" on examples later than 4th century.[194] Perhaps the most similar example to Klazomenian *horoi* are the ones in Mykale[195] used as border markers for the *khora.* Yet still not exactly same, one incribed "OPA" and the other is "ΘP".

V.1.7. Epigraphical and Textual Evidence

There are two epigraphic findings that give us an idea about the borders of Klazomenai khora. Both inscriptions are about royal arbitrations and border conflicts. The first one is a fragmentary marble stele found in the Askylepion on Kos. The inscription contains the Koan record of a boundary dispute between Teos and Klazomenai. It is dated to the last quarter of the 4th century BC.[196] If this settlement between Klazomenai and Teos took place in Antigonos' reign, just before 301, perhaps it was connected to the synoceism of Teos and Lebedos. It may be that proposed shifting of populations would have inspired the Teians to try to expand their territory. However there are no comments on the exact location of the settlement that was the subject of conflict between Teos and Klazomenai. Though Demircili-Aerae is likely to be the place.

Another inscription which is at Berlin Statliche Museum tells us about the border conflict between Klazomenai and Temnos that took place in the first half of the 2nd c. BC. The marble block, inscribed with two separate decrees one on each side, perhaps discovered at Klazomenai. The first of the two documents in the Doric dialect, is a decree of Knidos publishing the judgment

[194] Merritt 1960, Pl.50 no:77; SEG XXI, 104.
[195] Lohmann, H. 1997, abb.2, 3.
[196] Ager, S.L. 1991; Pugliese Caratelli, G. 1978; SEG XXXVI, No: 1040, (1986).

reached by certain Knidians in an arbitration between Temnos and Klazomenai.[197] This arbitration was largely concerned with charges that the two states were pressing against eachother in the aftermath of a war between them that was only recently over. The second text in koine is perhaps the Klazomenian copy of what was apparently a joint agreement between Temnos and Klazomenai regarding future arbitration between them. Nevertheless there was another charge outstanding, one that the Temnitans had levelled against the Klazomenian. This accusation seems to have dealt with the trespass and violation of a sacred precinct, perhaps in territory that Temnos considered to be its own. Clearly, however part of the required procedure was the production of reliable proof or witnesses; the Knidians dismissed the charges against the Klazomenians when the Temnitans were unable to give any proof of their claim. The Temnitan accusations appear to have risen from the secondhand information given them by some other people; perhaps this accounts for their inability to produce proof.[198] This inscription on the other hand is telling us that Klazomenai was controlling the Northern sea and the islands most probably for trade activities and this disturbed Temnitans who were living right across the bay.

The dual nature of Klazomenai in terms of settlement pattern had been caused by the internal conflicts. The stasis between the Athens' allies who lived on the Karantina island and the inhabitants of Chyton who were oligarchs had given direction to the politics of Klazomenai. Karantina island had been a significant part of the urban settlement of Klazomenai. The small islands in the

[197] Ager, S. L. 1996, no:71

[198]Hermann, P. 1979, 249-271; SEG XXIX, 1130; cf Bulletin 1980,438; Piejko, F. 1986, 95-97; SEG XXXVI, 1040.

gulf known to be inhabited and used for agricultural activities as well *(Thucydides 8.31.13)*. However the inclusion of Drymoussa to Klazomenian territory is arbitrary. The inference that adds Drymoussa to the territory of Klazomenai is based on the statement of *(Thucydides 8.31.13)* which denotes that Klazomenians had evacuated some of their possessions to the island in 412 BC, when they were plundered by the Persian fleet. However as we know from *(Polybius 21.46.5)* Drymoussa was granted as a *dorea* to Klazomenians as a term of Treaty of Apamea in 188 BC.[199]

In the beginnings of 4th century Klazomenai had attempted to expand its territory towards northeast. During the times of crisis the Klazomenians would depart to the island of Karantina. In 412 during the secession from the Athenian Empire Klazomenians moved to Polichne on the mainland *(Thucydides 8.14.3)*. When Athens regained the authority over Klazomenai the democrats moved to the island again whereas the oligarchs departed to Daphnous. In 408/7 BC Athens have been trying to settle down the bonds with Klazomenai *(Thucydides 8.23.6)*. The drift of Klazomenians from the island to mainland was used as a ruse and Klazomenians claimed a *peraea* near the mouth of Hermos after 385 BC *(Diodorus 15.18.3)*. The name of the settlement is not mentioned in the texts, but likely to have synoceised with Leukai. The purpose of that claim was associated with the lack of sufficient grain in Klazomenai. It was rich in olives and grapes, but not in grains which was the main nutrition in those days. The source of the grain might have been close environs such as Smyrna, Phocaea or even Chios, but not Black Sea or Egypt

[199] Meadows, A. R. 2009, 252.

(Aristotle, Oeconomica, II.16.1348b). In 380's Klazomenai had hard times to enter the harbours of neighbours. Therefore it needed a *peraea* in that area, but in late 380's Klazomenai was in war with Kyme over the recently founded city of Leukai *(Diodorus 15.18.1-2)*. The silver and gold coins of Klazomenai bearing Apollo/swan are assumed to be strucked fo the mercenaries employed by Klazomenai during that war. This assumption is fairly based on the fact that this type of coins have been strucked very briefly and never repeated.[200]

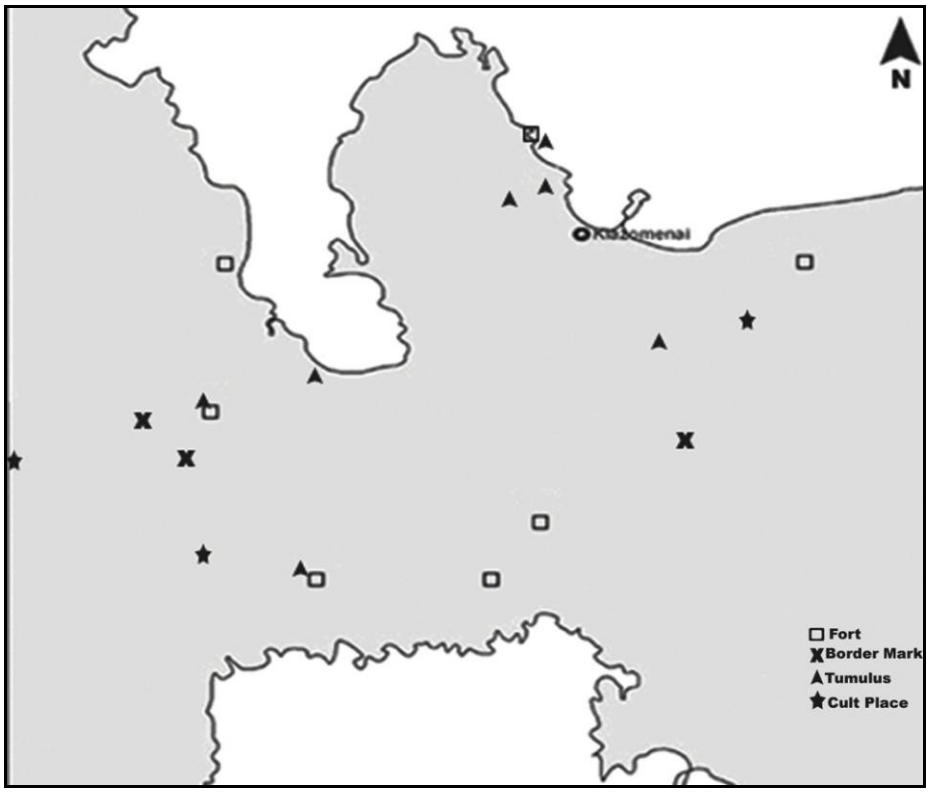

Figure.15 Distribution of forts, border marks, tumuli and cult places marking the borders of Klazomenian Territory

[200] Meadows, A. R. 2009, 253; Kinns 1989, 183-193.

V.2. Land Use and Agricultural Potential of Klazomenai

V.2.1.Environmental Setting and Geology

Klazomenai is located on Urla-Çeşme peninsula together with Erythrai, Teos and Lebedos. The peninsula covers an area of ca. 1500 square kilometers. The western tip of the peninsula is only 7 km. distanced from the Khios island. The eastern side of the peninsula is contoured with the depression extending from Güzelbahçe to Sığacık cove. At the present day the peninsula is a setting for Karaburun, Çeşme, Urla and Seferihisar. The plate of the peninsula is inclined towards north and the northern coast is formed of coastal plains and gentle slopes extending towards the sea, whereas the southern coast consists of indented coastline of rocky cliffs, narrow valleys and narrow shores. The sunken land into the sea can be observed by eye all through the northern shore line particularly at Gülbahçe and İskele where coastal plains are situated. Scientific research at the sunken shoreline at İskele is conducted by Liman Tepe team.[201]

The peninsula is characterized with depressions and mountain ranges extending in North-South direction.[202] The morphologies of the peninsula are mainly classified into coasts, low basins and high hilltops.[203] The coasts has been shaped by the tectonic changes during the Neogene[204] and they are very indented and decorated with small islands.[205] The sea transgression that took

[201] Goodman, B. et.al.2008.
[202] Darkot, B.- M. Tuncel 1978, 94.
[203] Mater, B. 1982, 31.
[204] Mater, B. 1982, 32.
[205] Ardel, A. 1961, 68; Darkot, B.- M.Tuncel 1978, 94.

place by the end of Holocene gave its final shape to the coasts.[206] The shallow coasts were filled with silt carried by rivers and formed the coastal plains of the peninsula.[207] Gülbahçe, Balıklıova, Ilıca, Kalabak and Azmak are those coastal plains suitable for settlements and agricultural activities as it is indicated by settlement distribution and settlement density in the region throughout the history. Hillslope plains in other words *piedmonts* is another typical morphology of the peninsula. These plains were formed in 4th period by the accumulation of alluvions carried by rivers from elevated basins. Çeşmealtı region is very typical for this type of morphology.[208]

The high plains and hills on the peninsula are formed of limestone, schist and fyisch composed in 2nd period; rock cliffs composed in 1st period and andesite and tufa composed in 3rd period. These mountain ranges extend in North-South direction and the low basins dividing the elevated masses filled with alluvium and lake sediments.[209] The depression extending from Güzelbahçe to Seferihisar in North-South direction is defined with high hilltops consisted of limestone and andesite exceeding 300 meters.[210] Urla basin is contoured with this depression on the east and sets a natural frontier for Klazomenian territory. Urla basin is in fact a geographical unit contoured by high hilltops on the west laid in North-South direction. This neogene basin is consisted of limestone, marl and gravel of 30-100 meters heights. It is defined with coastal plains on the North and islands close to its northern coast.[211] Urla

[206] Kayan, İ. 1997, 436; Goodman, B. 2006.
[207] Ardel,A. 1961, 73, 77; Mater, B. 1982, 33-35.
[208] Ardel, A. 1961, 72; Mater, B. 1982, 36-38.
[209] Ardel, A. 1961, 70-72; Darkot, B.- M.Tuncel 1978, 94.
[210] Ardel, A. 1961, 72-73; Darkot, B. - M.Tuncel 1978, 14; Mater, B. 1982, 37.
[211] Ardel, A. 1961, 72-73; Mater, B. 1982, 37.

neogene basin is characterized with limestone and volcanic hilltops on the northwest. Mandalan, Malgaca are the large plains of the basin. A faultline on the northwestern tip extending towards southern coasts of Gülbahçe forms the hot springs at İçmeler.[212]

The narrowest part of the peninsula is 12 km from İçmeler to Demircili. Karaburun located to the northwest of Urla basin is defined with high mountanious area and masses where only a very narrow coastline exists. The highest hilltop of the peninsula, Akdağ is about 1200 meters is located in this area. This mountanious mass declines towards south where limestone masses of 2nd period are located. These are Kıran dağı (Korykos), Kenelidağ and Velidağ whose heights exceed 600 meters. The range of hills extend towards south to Cılga and Kokar coves form geographical pockets isolated from eachother. Nohutalan and Barbaros are two largest depressions and geographical units located in the mountanious area at Korykos and there also situated two carstic lakes.[213] Urla basin forms the territory of Klazomenai with minor alterations and contoured definitively by the depression at the east (Güzelbahçe-Sığacık) and mountanious area of Korykos on the west. The northern coast with the islands was definitely included within its territory whereas the southern coast was a disputable area with its powerfull neighbour Teos.

The coastal changes caused by sea transgression during the Holocene period[214] played a significant role in the settlement history of Liman Tepe and Klazomenai settlements. Eventhough it may be assumed that the coastal

[212] Ardel, A. 1961, 74; Mater, B. 1982, 37-38.
[213] Ardel, A. 1961, 75; Mater, B. 1982, 39-40.
[214] Kayan, I. 1997, 735; Goodman, B. 2006.

changes effected both western and eastern coasts of the Menteş peninsula by eye observation a work specifically focused on the coast of Klazomenai produced scientific results.[215] It is demonstrated that the character of the coastline in the environs of İskele has changed significantly during the Holocene. Following the high sea level stand approximately 6500 BP, there were extensive lagoons and wetlands that overtime became infilled and ultimately terresterial.[216] This specific area is described as a terresterial environment characterized by a gradual coastal plain that meets a low relief of volcanic mountain range elevated 200-300 meters, 5 km from the coast.[217] The bedrock majorly consists of neogene limestones and marls. There are no major rivers, but small year round ones flow from the mountains to the sea with greater outflow compared to none outflow months of summer season. Precipation ranges from 600 mm-1300 mm, the majority of which falls between September and May. The shoreline of Klazomenai consists of rocky to coarse beaches. Bathymetry of the coast immeadetely adjacent to the site is measured and it is a gradual slope to approximately 15 m depths to 150 m. There is a 40 m contour 3 km north of the shoreline.[218] The posidonia meadows parallel to the shoreline indicate either coastal stabilization or absence of river erosion.[219] The current surface environment is unreliable for predicting the location of natural or man made coastal features due to the modifications. Natural river courses have been altered for irrigating agricultural fields along the coastal plateu. The peninsula is not rich for hydrology, where most of the

[215] Goodman, B. 2006.
[216] Goodman, B. etal. 2008, 1279.
[217] Goodman, B. 2006, 7; Brinkman, G. 1970; Goodman, B. etal. 2008, 1270.
[218] Goodman, B. 2006, 8; Aksu, A.E. etal. 1987, fig.1.4.
[219] Aksu, A.E. etal. 1987, 11.

streams are dry most of the year. Almost all are short and flood streams. Constantly flowing rivers are very few and fed by carstic springs.[220] There is not a network of watercourses at the peninsula, the main streams are Havuzlu, Çakal and Pınarlı.[221]

The core drills demonstrated that the coastal environment in this specific area consisted of marine transgression from an estimated 9000 to 6000 BP, followed by sea level rise deceleration. The deceleration resulted with coastal sediment that reached to 1m below sea level in the peresent day. The construction of the causeway during the Hellenistic period might have accelerated the process of coastal progradation towards the east. At approximately 3000 years BP the brackish marine lagoon areas east of the site became freshwater, indicating final closure and isolation of the area from marine influence.[222] This periods coincides with the transition from LBA to Early Iron Age which is represented with meagre material culture in archaeological context.

In terms of subregions determined by us on the basis of geological units, mostly shows consistency on the basis of rock types as well. **I.Urla center** is the most populated and urbanized fragment of the whole territory. There located in total 17 sites **(Site No: 5, 7, 8, 10, 12, 13, 14, 15, 16, 17, 20, 27, 106, 109, 139, 140, 141)** and the area mostly consists of limestone , which is indeed typical rock type for entire Urla basin. It is a colluvial plain encircled with low hilltops and the 11 of the sites are situated on those hilltops and slopes **(Site No: 5, 7, 8, 10, 12, 13, 14, 15, 16, 17, 27)** whereas the rest of the

[220] Mater, B. 1982, 43.
[221] Mater, B. 1982, 44.
[222] Goodman, B. etal. 2009, 100.

settlements **(Site No: 20, 106, 109, 139, 140,141)** are located at agriculturally fertile land pockets.

II.Urla İskele is the subregion where the urban center of Klazomenai and Liman Tepe are located and it is a coastal alluvial plain forming a geographical unit. There located 7 sites **(Site No: 3, 4, 6, 18, 124, 142, 143)**. The survey conducted around the alluvial plain on the hilltops to the west of it and to the east on the limestone flat area. 5 of the sites **(Site No: 3, 4, 6, 142, 143)** are located to the east on volcanic cliff formations consisting of tuff, basalt and andesite. 2 of the sites **(Site No: 18, 124)** are located to the east of the urban center on the coastal plain where the soil thickness reaches to 50 cm and of limestone formation where agricultural fields are located in the present day.

III. Çeşmealtı was chosen as a subregion rather for being a geographical location. There located 6 sites **(Site No: 1, 2, 19, 21, 121, 144).** The rock type of the entire area is volcanic tuff, basalt and andesite. All the sites except one **(Site no: 21)** are situated on volcanic hilltops**. 21. Bozavlu** is a small geological pocket comprised of a colluvial plain encircled with volcanic cliffs, where the soil thickness is 50 cm and it is a fertile land where agricultural activities take place during the present day.

IV.Kuşçular is a subregion which comprises a large plain encircled with ranges of low hilltops. There are located 18 sites **(Site No: 9, 22, 23, 24, 25, 26, 28, 33, 43, 66, 67, 68, 69, 70, 71, 72, 164, 165)**. The sites are entirely situated on limestone bedrock except one **(Site No: 43)**, which comprises a hillock of limestone and a pocket of alluvium plain. Within this subregion three

micro regions were sampled for intensive survey, which are Mandalan Plain, Mersin Boğazı and Arapderesi. Mandalan is a plain where the soil thickness reaches to 90cm. İn the present day this area is intensively used for agricultural activities. The intensive survey in this area yielded to 5 archaeological sites which are all located at the periphery of the plain **(Site No: 66, 67, 68, 69, 70)**. There were no surface findings at the central part of the plain. This observation becomes important with the information that the plain was a marshy area only 30 years ago, which might have been a setting for a lake in the antiquity, or perhaps the alluvial deposits sealed the archaeological layers and that is why there are no surface findings. Mandalan Plain is suggested for a geoarchaeological study, where the bore drills would shed light to the presence of archaeological sites on the plain and its geological features as well. The other two areas sampled for intensive survey are Mersin Boğazı and Arapderesi, which are both secluded narrow straits. İntensive surveys in those two areas revealed the presence of archaeological sites in both as well as the agricultural terraces which might have been used in the antiquity. Within the subregion in general 8 of the sites **(Site No: 9, 22, 25, 26, 28, 33, 43, 73)** are located on limestone hilltops and slopes. Aside from the Mandalan plain 4 sites **(Site No: 23, 24, 43, 72)** are situated on pockets of plains convenient for agriculture.

V.Yağcılar is a subregion mainly consisting of high plateaus and range of hills. There are located 11 archaeological sites **(Site No: 46, 47, 48, 49, 50, 64, 65, 105, 146, 156, 157)**. Except two **(Site No: 49, 105)**, all the sites are situated on limestone bedrock. **Site No: 49** which is a temporary settlement

which might have been used for defensive purposes is situated on a low hilltop of volcanic formation consisting of tuff, basalt and andesite. **Site No: 105**, which is a Late Roman-Byzantine settlement is situated on sandstone – gravel deposits. **Site No: 46, 47, 49, 50, 105** are located on high plateaus whereas **Site No: 48, 146, 156, 157** are situated on hilltops. **Site No: 64, 65** are situated in narrow straits where pockets of fertile land are available.

VI. Çobanpınarı is a narrow valley extending from the hilltop where Yarentepe **(Site No: 28)** is located towards the Azmak shore. This area was sampled for intensive survey and the site work yielded to the discovery of 9 sites **(Site No: 29, 31, 32, 145, 151, 158, 159, 160, 161)**. The whole area comprises a geographical unit situated on bedrock of limestone. 7 of the sites **(Site No: 29, 32, 145, 158, 159, 160, 161)** are situated on the convenient hilltops and slopes at the both sides of the valley. Two of the sites **(Site No: 31, 151)** are located on the valley basin.

VII.Özbek Coast and Plain is a subregion where 15 sites are located **(Sites No: 11, 36, 37, 38, 39, 58, 59, 60, 61, 62, 63, 101, 118, 119, 136)**. The rock types in this area are volcanic tuff/basalt/andesite, limestone, alluvium and a small portion is sandstone/gravel. Except tuff/basalt there is almost an equal distribution of sites on each rock type. Typical morphologies of the area are hillslopes, coastal plains and pockets of colluvial plains. 5 of the sites **(Site No: 11, 60, 61, 62, 63)** are situated on the gentle slopes of the hills on the shoreline, facing towards west. Another five **(Site No: 36, 37, 38, 58, 59)** are located on the narrow pockets of plain areas on the narrow shoreline. The rest of the sites

(Site No: 101, 118, 119, 136) are distributed on the pockets of colluvial plains among the ranges of hills.

Nine sites are located at the sub-region **VIII. Zeytinalan-Kalabak (Site No: 53, 54, 55, 89, 107, 108, 122, 123, 134).** The major rocktype of this subregion is limestone as it is for the entire Urla basin. Two of the sites are located on bedrock of sandstone/gravel **(Site No: 122, 134)** and one is located on alluvium deposit **(Site No: 53)** whereas the rest on limestone. This area is the northernmost point of the depression that sets a natural frontier for Klazomenian khora to the east and it is contoured with range of high hilltops. Five of the sites are **(Site No: 54, 55, 89, 108, 134)** are situated on hilltops that margin the depression. One of the sites is located on the coastal plain **(Site No: 53)** and the others are distributed to small pockets of colluvial plains amongst the mountanious area **(Site No:107, 122, 123)**.

IX.İçmeler subregion infact comprises the Malkaca plain which is an alluvial plain on the coast. There are four sites **(Site No: 41, 42, 44, 45)** located at the periphery of the plain. On the plain no surface findings are documented. This is perhaps related to the same phenomenon with Mandalan plain, where the archaeological layers are sealed with alluvial deposits.

X.Gülbahçe coast and plain is a subregion where 10 sites are located **(Site No: 51, 52, 78, 79, 80, 81, 92, 114, 115, 117)**. The area comprises alluvial deposits, volcanic cliffs and sandstone/gravel deposits. **Sites No: 80, 81, 92, 117** are located on the alluvial plain on the coast and the sunken coastline is visible to the eye clearly from the sections which reveal archaeological deposits. **Site No: 51** is located just by an inlet that has been filled with the

alluvium and the site itself is situated on the alluvial plain. **Site no:52** is located on top of a high hill of limestone formation. **Site No: 78, 79, 114** are on hilltops of volcanic formation consisting of tuff and basalt. **Site No: 114** is accompanied with an agricultural land **Site No: 115** where surface material was in abundance and situated on alluvial deposits. The presence of surface findings though mostly wornout is perhaps due to the phenomenon of using pottery sherds as manure.[223]

XI.Söğüt-Kokar is a subregion where 8 sites are located **(Site No: 73, 126, 127, 128, 130, 131, 132, 133)**. It is the mountanious area which margins the natural frontier of Klazomenian khora to the west. This area was sampled for intensive survey and yielded to only 8 sites. This is due to the small portion of land convenient for inhabitance. This region is characterized with high hilltops and pockets of alluvial deposits among them. The majority of the rock type is sandstone/gravel but not preferred. Tuff/basalt rock type is equally prevalent and five sites **(Site No: 73, 126, 131, 132, 133)** are located on this rock type where soil thickness reaches to 50 cm probably due to the fertility of volcanic land. **Sites No: 127, 130** are located on alluvial deposits and only one site on sandstone/gravel deposits **(Site No: 128)**.

XII.İhsaniye-Ovacık is a subregion where 9 sites are located **(Site No: 82, 83, 84, 85, 86, 87, 88, 111, 112)**. It is sampled as an intensive survey area. The area is defined with the depression and range of hill that margined the eastern frontier of Klazomenian khora. The sites are distributed mainly on pockets of flat areas amongst the high hilltops. The primary rock type is

[223] Bintliff, J.-A.Snodgrass 1988, 508.

limestone, but there is a small plain where soil thickness reaches to 90 cm on tuff/basalt bedstone. Two of the sites **(Site No: 87,88)** are located on this pocket of plain convenient for agriculture. **Site No: 83** is located on high mountain top of limestone formation where ancient terrace walls built of large limestone blocks extend on the slopes. The rest of the sites are situated on small colluvial plains among the hills of limestone.

At **XIII.Uzunkuyu-Zeytinler** four of the sites are documented **(Sites No: 74, 75, 77, 104)**. This area is located to the south of Barbaros Plain and it is the westernmost part of the territory. **Sites No: 74, 104** are situated on high hilltops of volcanic formation where bedrock is tuff/basalt. **Sites No: 75, 77** are located at the very southern edge of Barbaros plain on colluvial deposits where the soil thickness exceeds 90 cm.

XIV.Barbaros subregion is located to the north of Barbaros Plain and two sites are documented here **(Site No: 116, 125)**. **Site No: 125** is known to us from the previous researches (IRERP) and published.[224] It is a prehistorical site which was also inhabited during the Byzantine era. The site is located at the northern periphery of Barbaros plain on a hill of sandstone and gravel. Our surveys on the Barbaros plain which is a colluvial plain did not yield to any sites, since it has been the setting for a carstic lake probably. The presence of a Neolithic site by Mandalan Plain **(Site No:68)** and presence of two neolithic sites **(Site No: 74, 125)** by Barbaros Plain and their locality at the peripheries of these plains reminiscent of the tendency of Neolithic communities settled by lakes.

[224] Tuncel, R. 2008, 582.

V.2.2.Land Use and Agricultural Potential in Urla basin

An examination of the agricultural potential is necessary for explaining the growth, location and distribution of the settlements, in other words explaining one of the major dynamics that created the settlement patterns and enables us to speculate on subsistence strategies. The distribution maps and spatial analysis sees the land as a homogeneous plain and solely regards the distance as the main variable to create a settlement model based on economy. The variations to be caused by topographical features and natural resources are neglected in most spatial analysis. Therefore an evaluation of the land potential together with the site distribution for each period presents us evidence about the land use for each period.

The formula for estimating the land potential basically sees the calculation of production capacity whereas all the cultivable land was devoted to growing staple crops and estimating the number of people on the basis of a static consumption model. In fact such analysis should be directed at discovering the potential uses of different qualities of land. The required data is derived from the present situation unless there is available evidence to determine the impacts of diachronic changes in environment and technology.

It is assumed that the land use of the antiquity was similar to the land use of recent past before the introduction of modern agricultural techniques. The prevalent diet that lasted from the Bronze Ages to present day more or less remained same in the Aegean world.[225] Grain has always been the major part of

[225] Brothwell, D.-P. Brothwell 1969; Angel, L.J 1972, 94-95; Vickery, K.F. 1936, 86.

the diet, in particular barley and wheat.[226] Rye was introduced by the Classical period.[227] Sheep, boar, pig and cattle were consumed whereas fish was a more common source of nutrition especially for ordinary people.[228] Prior to the Late Classical period it seems likely that Klazomenai was self-sufficient in terms of grain production. An epigraphic text tells us that Klazomenians have imported grain from Phocaea by the mid 4th century BC.[229]

It may be assumed that the flat plains of Mandalan, Malkaca and perhaps Barbaros were used commonly for grain production as well as the small pockets of flat land where soil potential was high whereas the slopes were confined to viniculture and olive trees. Relatively steep slopes might have served as meadows. The significant population fluctuations that point to an increase in population size and the number of settlements during the Late Archaic period, Late Classical period and Roman period might have yielded to diffuse exploitation of the land with an increasing pace.

The ancient use of agricultural terraces for viniculture is difficult to define in terms of production capacity and its economic input for our study area since they have been used prevalently until the recent past. The dating of agricultural terraces is a common phenomenon and discussion since it is impossible to say how long it was used before it was abandoned. In the antiquity terracing was evidently a small scale operation carried out by the members of a household since most terraces are accompanied with a farm.[230] However the production of trade amphorae and their distribution tells us that

[226] Forbes, H.A. 1955,86.
[227] Forbes, H.A. 1955, 87
[228] Forbes, H.A. 1955, 96
[229] Forsters, E.S. 1920, ii.16.1348b.
[230] Rackham,O.-J.A. Moody 1992, 126.

Klazomenai had a significant share in wine and olive oil production and therefore the slope areas around the settlement clusters have been used for this purpose.[231] The construction of an olive oil installation with an expanded production capacity and the increased production of trade amphorae by the Late Archaic period implies that Klazomenai had a larger share in trade which would yield to an expanded agricultural activity associated with olive and grapes.[232]

It seems likely that the extension of forests and moor was much higher in the antiquity. It is not possible to make a definite statement about the exploitation of forests for fuel in the antiquity, yet it can be assumed that the increase in the population as well as use of wood for industrial productions had an impact on deforestation of the area. Animal husbandry is another issue that has side effects on deforestation, but the evidence is lacking to make an assumption. However the highlands situated to the east and west of the basin seem to be available meadows for goat and sheep husbandry. The phenomenon of extra-urban cult places is associated with the common use of the meadows beginning with the Early Iron Age[233] and the distribution of cult places around the *khora* of Klazomenai may be indicator for this issue.

Soil types, soil thickness and slope values are the major parameters for estimating the agricultural potential of the area. However the estimations are calculated on the basis of the present situation in the area. Therefore the results remain to be theoretical.

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[231] Sezgin, Y. 2009, 49.
[232] Koparal-İplikçi 2004.
[233] De Polignac, F. 1995 (a).

Major soil types within the khora of Klazomenai are classified into five categories. Reddish brown Mediterrenean (Terra Rossa) soil has the largest share in soil distribution with a ratio of 46%. This coarse textured and loamy soil is very fertile and most suitable for grain farming. Limefree brown forest soil is a marginal type which is only seen at the eastern coast of Menteş peninsula and comprises only 2% of the soil distribution. The rock type for this region is defined as alluvium. This type of soil is dark colored and rich in organic inclusions and humus. It is suitable for farming. Colluvial deposits share the 15% of the soil distribution. Colluvium is defined as loose bodies of sediment agglomerated at the bottom of low grade slopes transported by gravity. This coarse textured soil is suitable for vineyards and orchards. Red Mediterrenean or in other words terra rossa soil is 8% of the soils in Urla basin. This loamy type of soil includes high amounts of organic particles and have a coarse texture. It is particularly forms on bedrocks of limestone and konglomera which is the most common rock type in Urla basin.Randzina is the second most prevalent type of soil with 29% ratio, which is loamy and and crateceous, including high percentage of humus. This type of soil is mostly found at lake deposits, basins and suitable for farming.

Soil type is not a sole parameter for the suitability of agriculture. Therefore the slope values and soil depth values are taken into account for mapping the arable land. Soil depth values are classified into five. First three classes which include the soil depths changing from more than 20 cm to more than 90 cm are regarded as suitable for farming.

Slope values are classified into eight classes with 5 degrees intervals. Only first two classes which include slope values upto 10 degrees are regarded as suitable for agricultural activities.

By overmapping the suitable lands of soil depth, slope and soil types the total size and the distribution of arable land within the Klazomenai khora is estimated as 128 km2, which comprises the 36,6 % of the entire territory. The land use statistics for Urla in 1995 shows that 18% of the land was confined to agricultural activities whereas the 8% was used as meadows and 8% for other purposes. 66% of the entire land is covered with forests and moor. 40% of the agricultural land was used for olives, 29% was confined to crops, 25% used as meadows, 4% used for growing vegetables, 1% for grapes and 1% for fruits.[234] Milioris tells us that before 1922 42,6 % of the agricultural land was used for viniculture, therefore it is apparent that terraces for viniculture were not used after 1920's or rather replaced with olive groves.[235] Another source for the land-use of the recent past is provided by the periodicals of *"T.C. Ziraat Bankası Müşavirler Kurulu İstatistik Yayınları"* from 1952-56 to 1971.[236] Vital Cuinet's *La Turqie d'Asie* (1890) also gives us an idea about the land use in Urla by the end of 19th century.

The ratio of the agricultural land from 1995 statistics is 18%; Cuinet's report 59.4%; and our estimation based on the soil depth values and slope values is 36.6%, which excludes the terrace agriculture that presumably had a significantly large share in ancient agriculture.

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[234] The Agricultural Department of İzmir.
[235] Milioris, N.E. 1965.
[236]Türkiye Tarımsal Üretim Değeri Ortalaması, T.C. Ziraat Bankası Müşavirler Kurulu İstatistik Yayınları 1952-1971, Ankara.

The initial step for estimating the "supportive capacity" of sites requires to determine the catchment area of sites.[237] Site Catchment analysis take "distance" as the most important determinant of land use which is considered to be effective on cost.[238] The suggested figures are various such as 1 km, 2 km, 2.4 km radius mostly without any justification, but an hour walking.[239] Higgs and Vita Finzi took the figures for distance and set the absolute limits for the territory to be exploited by subsistence farmers at 5 km, which is suggested as an hour walking.[240] Yet still such analysis requires more information related to the potential uses of land with various qualities within the given land. The land basically should be classified as agricultural, pasture or waste at the first hand. The more refined classification of the land depends on several more aspects which are rock type, soil type, slope and morphology. These are derived from an examination of the modern situation unless there is evidence for making inferences about the effects of diachronic changes in environment and technology.

This study doesnot include the results of a study that produced evidence to establish the effects of environmental changes on the regional basis. Therefore the estimations are based on the examination of the modern situation of the land. The evidence is fragmentary and includes land use statistics of Urla region for the year 1995 and scanty evidence about olives and grapes which is

[237] Sanders, G.D.R.1984, 251-262.
[238] Chisholm, M. 1962, 73.
[239] Jarman, M.R etal. 1982, 158; Vita Finzi, C.-E. Higgs.1970.
[240] Vita Finzi, C.-E. Higgs 1970.

obtained from Milioris[241] as well as the GIS analysis conducted by us for determining the soil types, rock types and slope, elevation, aspect values.

The land potential estimations are mainly based on growing staple crop which is grain and consumption of grain. However the statistic documentaries about the agriculture in Urla clearly show that even in recent past grain has never been the major agricultural crop in the area. We already know that grain supply was a problematic issue for Klazomenai *(Aristotle, Oeconomica, II.16.1348b)*.[242] Therefore the estimation based on grain agriculture/grain consumption below remains to be theoretical. The final figure of maximum population to be fed on the basis of land potential estimation is reached with the addition of income from terrace agriculture. The maximum limit of population to be fed by the arable land in Klazomenian khora can be estimated by calculating the production and consumption ratios.[243] The average productivity of major grain is 940-600 kg (gross), 85% net with hoe cultivation, 67% net with plough cultivation per ha/year.[244] 17% of the net production was reserved for seed in hoe cultivation and for draft animals feeding in plough cultivation.[245] Average grain consumption for 1 person/kg/year is approximately 200 kg.[246] Each year 50% of outer grain fields were bare fallowed.[247] A household of 5 persons can cultivate maximum 2,5 ha/year in hoe cultivation[248] and 5 ha/year in plough cultivation.[249]

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[241] Milioris, N.E. 1965.
[242] Meadows, A.R. 2009, 252.
[243] Blanton, R. 2004, 211.
[244] Bintliff, J.- A. Snodgrass 1985, 123-61; Davis, J.L. 1991. Gallant, T.W. 1991. Halstead, P. 1981, 318. Jameson, M.H. 1977-78, 131. Jameson etal 1994, 283.
[245] Stirling, P. 1965, 85.
[246] Foxhall, L.-Forbes, H.A. 1982, 69; Jameson, M.H. 1977-78, 131
[247] Halstead, P. 1987, 82.
[248] Gallant, T.W. 1991, 51. Manning, S. 1994, 236. White, K.D. 1970, 336.

The land potential is estimated with different variables. First sees 12,800 ha. as the only arable land since the entire area with a soil depth more than 20 cm is taken into account and slope upto maximum 10 degrees where the input of terrace agriculture is assumed to be included. For the second estimation the land where slope is upto 20 degrees is included, which is almost ¼ of the estimated arable land which is 3200 ha.

Total size of the arable land within the *khora* of Klazomenai is approximately 12,800 ha. If we assume that viniculture was replaced with olive groves after 1920's we can take 56% as a figure for grapes and olives in total which yields to 7168 ha. 44% of the arable land, which yields to 5632 ha. was then confined to crops. 50% of the agricultural field for crops is left for fallow each year. So 2816 ha. were cultivated each year. The annual average production amount for grains maximum 940 to 600 kg/ha/year. The net production amount changes due to the type of agricultural activity. With hoe cultivation 84% of the grain is net produced. Therefore the total annual production changes from 2,223,513 kg to 1,419,264 kg. 17% of the production reserved for seeds, so the amount of net production ranges between 1,845,15 kg – 1,177,989 kg. One person consumes 200 kg grains per year. As a result the total production of grains produced per year can feed from 9227 people to 5889 people.

With plough cultivation only 67% of the grain is net produced. Therefore the annual production amount is 1,773,516 kg- 1,132,032 kg. 17% reserved for draft animals so the amount of net production ranges

[249] White, K.D. 1970, 336. Kehoe, D.P. 1988.

between1,472,018 kg to 939,586. The total amount of crops per year feeds 7360-4697 people.

We assume that 7168 ha were confined to olives and grapes. 50% of the vineyards are separated for young vineyards since each vineyard gives crop only for 50 years. This yields to the use of 3584 ha. 35% of the vineyard is used for the producers and labourers. 2329 ha net used for production. 1 ha produces 80 amphorae of wine, whereas 1 amphora holds 19,44 lt.

2329 x 80 x 19,44 = 3,622,060 lt.

The income of vineyards ratio to grain fields is 4 to 1. So 2329 ha equals to 9316 ha in terms of income. 9316 ha feeds 19,485 people to 30,527 people with hoe cultivation and 15,541 people to 24,348 people with plough cultivation. So the total size of the population to be fed by the arable land within the Klazomenian *khora* changes from 20,508 to 39,754 people.

Table.6 Land Potential Estimation on the basis of Grain Agriculture

Size of arable land = 12,800 ha.	
56% of the arable land confined to olive/vineyards = 7168 ha.	
44% of the arable land confined to grain = 5632 ha.	
50% left for fallow annually = 2816 ha.	
Annual average production of grains 940-600 kg/ha/year	
Net Production/Hoe Cultivation 84%	Net Production/Plough Cultivation 67%
2,223,513 kg- 1,419,264 kg	1,773,516 kg- 1,132,032 kg
17% reserved for seed	17% reserved for draft animals
1,845,15 kg – 1,177,989 kg	1,472,018 kg – 939,586
1 person consumes 200 kg/year	
9227- 5889 people	7360-4697 people

Table.7 Land Potential Estimation on the basis of Terrace Agriculture

Size of land for olive /vineyards = 7168 ha.	
50% separated for young vineyards = 3584 ha.	
35% confined to producers and labourers = 2329 ha.	
1 to 4 ratio income = 9316 ha.	
Annual average production of grains 940-600 kg/ha/year	
Net Production/Hoe Cultivation 84%	Net Production/Plough Cultivation 67%
7,355,913 kg - 4,695,264 kg	5,867,216 kg – 3,745,032 kg
17% reserved for seed	17% reserved for draft animals
6,105,407 kg – 3,897,069 kg	4,869,789 kg – 3,108,376
1 person consumes 200 kg/year	
30,527-19,485 people	24,348-15,541 people

Estimated total population:
600 kg/year – Plough cultivation = 20,508 p.
600 kg/year – Hoe cultivation = 25,374 p.
940 kg/year –Plough cultivation = 31,708 p.
940 kg/year – Hoe cultivation = 39,754 p.

Total population range: 20,508 – 39,754 people

Total size of the arable land within the khora of Klazomenai is approximately 12,800 ha. This estimation sees soil depth over 20 cm and 0-10 degrees. 50% of the agricultural field left for fallow annually. So 6400 ha were cultivated each year. The annual average production amount for grains changes from maximum 940 to 600 kg/ha/year. The net production amount changes due to the type of agricultural activity. With hoe cultivation 84% of the grain is net produced. Therefore the total annual production changes from 3,225,65 kg to 5,053,440 kg. 17% reserved for seed and the net production reduced to 4,194,355 kg- 2,677,248 kg. One person consumes 200 kg grains per year. As a result the total production of grains produced with hoe cultivation per year can feed from 20,971 to 13,386 people.

With plough cultivation only 67% of the grain is net produced. Therefore the annual production amount is 2,572,800 kg or 4,030,720 kg. 17% reserved for draft animals, the tota amount of net production reduced to

3,345,497 kg-2,135,424 kg. The total amount of crops per year feeds 16,727 – 10,677 people.

Addition to that figure the land with slope degree upto 20 degrees with minimum 20 cm soil depth is assumed to be used for terrace agriculture which yields up to 3200 ha, which is almost 25% of the arable land for grain agriculture. 50% of the vineyards are separated for young vineyards since each vineyard gives crop only for 50 years. This yields to the use of 1600 ha. 35% of the vineyard is used for the producers and labourers. 1040 ha net used for production. 1 ha produces 80 amphorae of wine, whereas 1 amphora holds 19,44 lt.

1040 x 80 x 19,44 = 1,617,408 lt.

The income of vineyards ratio to grain fields is 4 to 1. So 1040 ha equals to 4160 ha in terms of income. 4160 ha feeds 13,631 – 8701 people with hoe cultivation and 10,872 - 6940 people with plough cultivation. So the total size of population to be fed ranges between 17,617 – 34,602.

Table.8 Land Potential Estimation on the basis of Grain Agriculture on the Entire Arable Land

Size of arable land = 12,800 ha.	
50% left for fallow annually = 6400 ha.	
Annual average production of grains 940-600 kg/ha/year	
Net Production/Hoe Cultivation 84%	Net Production/Plough Cultivation 67%
5,053,440 kg – 3,225,600 kg	4,030,720 kg – 2,572,800 kg
17% reserved for seed	17% reserved for draft animals
4,194,355 kg- 2,677,248 kg	3,345,497 kg-2,135,424 kg
1 person consumes 200 kg/year	
20,971 – 13,386 people	16,727 – 10,677 people

Table.9 Land Potential Estimation with the Addition of more Steep Slopes for Terrace Agriculture

Size of land for terrace agriculture = 3200 ha.	
50% separated for young vineyards = 1600 ha.	
35% confined to producers and labourers = 1040 ha.	
1 to 4 ratio income = 4160 ha.	
Annual average production of grains 940-600 kg/ha/year	
Net Production/Hoe Cultivation 84%	Net Production/Plough Cultivation 67%
3,284,736 kg – 2,096,640 kg	2,619,968 kg-1,672,320 kg
17% reserved for seed	17% reserved for draft animals
2,726,330 kg – 1,740,211 kg	2,174,573 kg - 1,388,025 kg
1 person consumes 200 kg/year	
13,631 – 8701 people	10,872 - 6940 people

Estimated total population:
600 kg/year – Plough cultivation = 17,617 p.
600 kg/year – Hoe cultivation = 22,087 p.
940 kg/year –Plough cultivation = 27,599 p.
940 kg/year – Hoe cultivation = 34,602 p.

Total population range: 17,617 – 34,602 people

To sum up the carrying capacity of Klazomenian *khora* is calculated with different variables. The average production of grain is taken as maximum 940 kg/ha/year and minimum 600 kg/ha/year. Each amount of annual production calculated according to two different agricultural techniques, which are hoe cultivation and plough cultivation both dry farming. In the first method the vneyards and olive groves are included in the calculated arable land which had maximum slope value of 10 degrees with minimum soil depth 20 cm. and 56% of the agricultural land assumed to be confined to vineyards and olive groves, which fits the agricultural patterns of Urla basin better since grain has never been the major crop in the area now or in the past. Such estimation with

variables 600 kg/ha to 940 kg/ha grain production yields upto a carrying capacity ranging between 20,508 people and 39,754 people.

Second metod of calculation confines the arable land estimated on the basis of slope values upto 10 degrees entirely to grain production and the land with slope degrees from 10 to 20 degrees with minimum 20 cm soil depth confined to agricultural terracing. Such estimation with variables 600 kg/ha to 940 kg/ha grain production yields upto a carrying capacity ranging between 17,617 people and 34,602 people. Since the land potential estimations are basically aims to reach the maximum figure we may take the carrying potential of Klazomenai territory as 39,754 people.

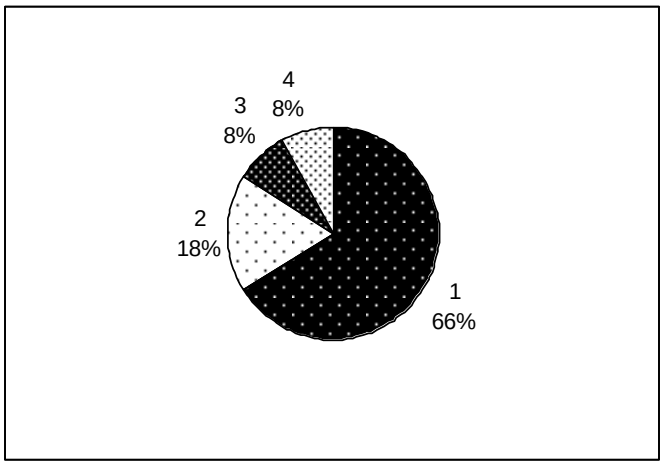

Figure.16 Landuse in Urla (1995)
1. Forests and moor
2. Agricultural Fields
3. Meadows
4. Other

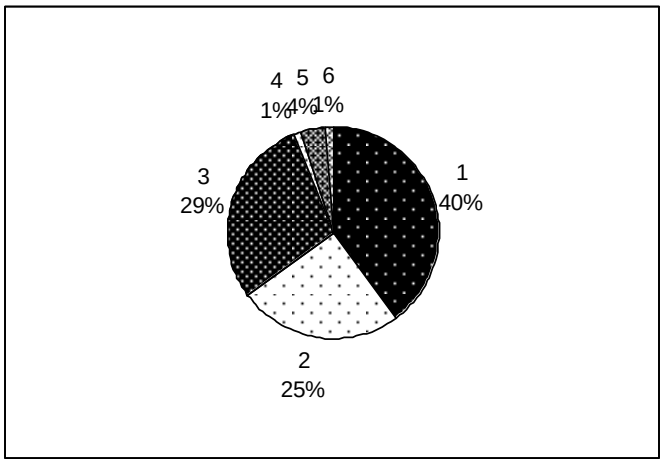

Figure.17 The distribution of crops in agricultural fields in Urla (1995)
1. Olives (8846 ha.)
2. Meadows (5560 ha.)
3. Crops (6433 ha.)
4. Grapes (297 ha.)
5. Vegetables (917 ha.)
6. Fruits (238 ha.)

- **Milioris = 9500 ha. for viniculture in 1922**
-

Table.10 Distribution of Amount of Crops Raised in Urla (tons)

	Milioris (tons)	***2000 (tons)***
Grains		*4680*
Wheat		*2240*
Clover		*1500*
Vegetables		*20.385*
Grapes	20.000	*990*
Olives	684	*18.825*
Fruit		*824*

Table.11 Distribution of Amount of Crops Raised in Urla (tons) in Vital Cuinet's *La Turqie d'Asie* (1890)

Agricultural Land	220 km2	%59.4
Meadows	60 km2	%16.3
Mountains	83 km2	%22.4
Forests	7 km2	%1.9
Total Area	370 km2	%100
Population	26,668 p.	

Table.12 Distribution of Amount of Crops Raised in Urla (tons) in 1922-1971, T.C. Ziraat Bankası Müşavirler Kurulu Başkanlığı İstatistik Yayınları No:6-15

	1922*	**1952-56**	**1963**	**1965**	**1966**	**1967**	**1968**	**1969**	**1971**
Olives	684	944.9	1625	1650	4000	3400	3500	450	150
Citrus		14.8	441.6	66.3	75	84	81	54	66
Figs		-	-	-	20	20	50	25	20
Grapes	20,000	895.9	1771.7	331.2	3500	4521	6600	4490	4500
Cotton		92,9	56,5	69,4	40	7	-	-	-
Tobacco		4084.7	21,463.1	21,979.6	2564	2654	2447	1854	1908
Wheat		306.1	1264	1682	1500	1500	2000	1800	1700
Barley		*194.9*	*306.6*	*351.4*	*500*	*450*	*575*	*800*	*650*

*The amounts of products for 1922 are taken from Milioris

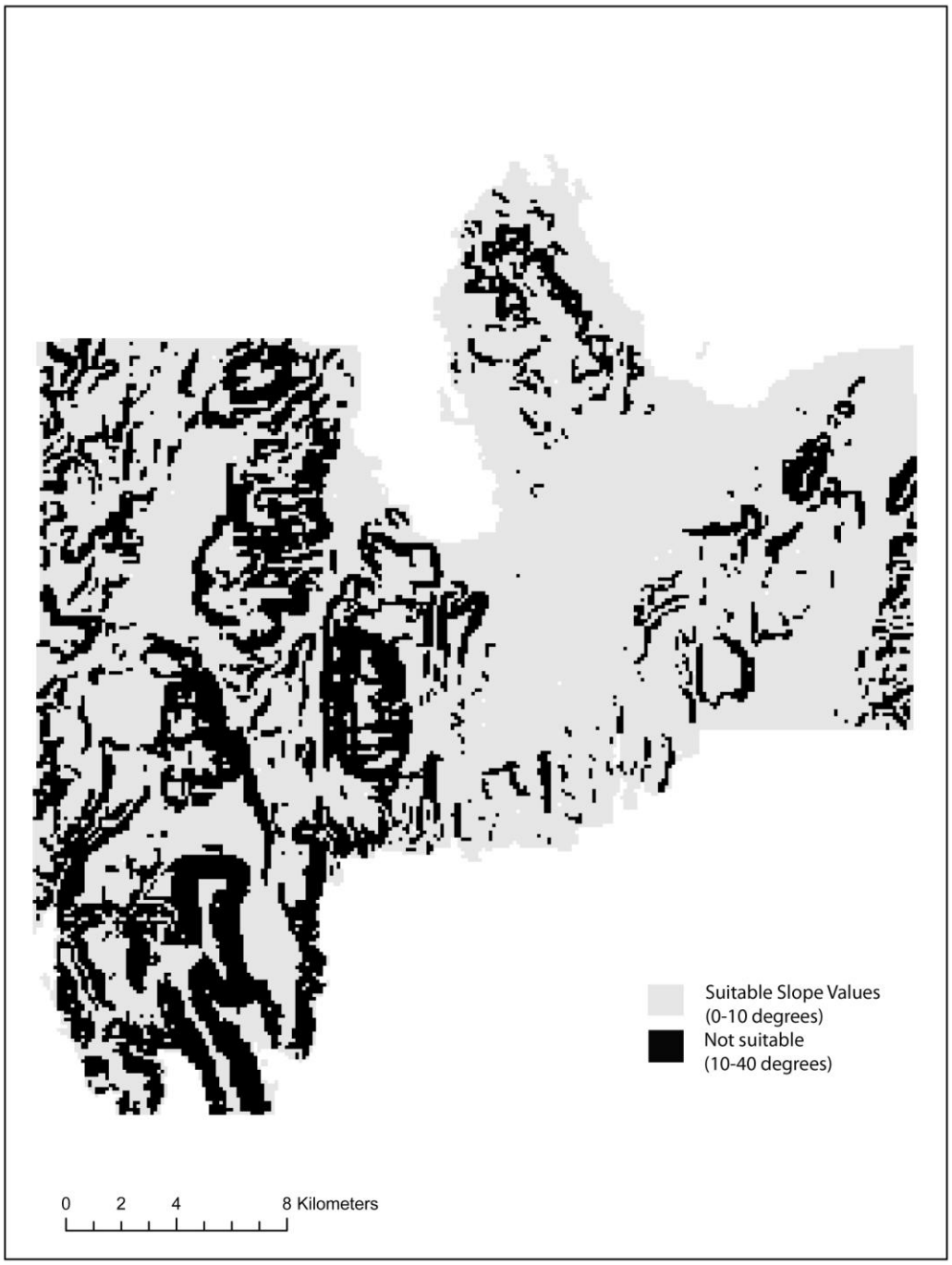

Figure.18 Slope map for suitable land

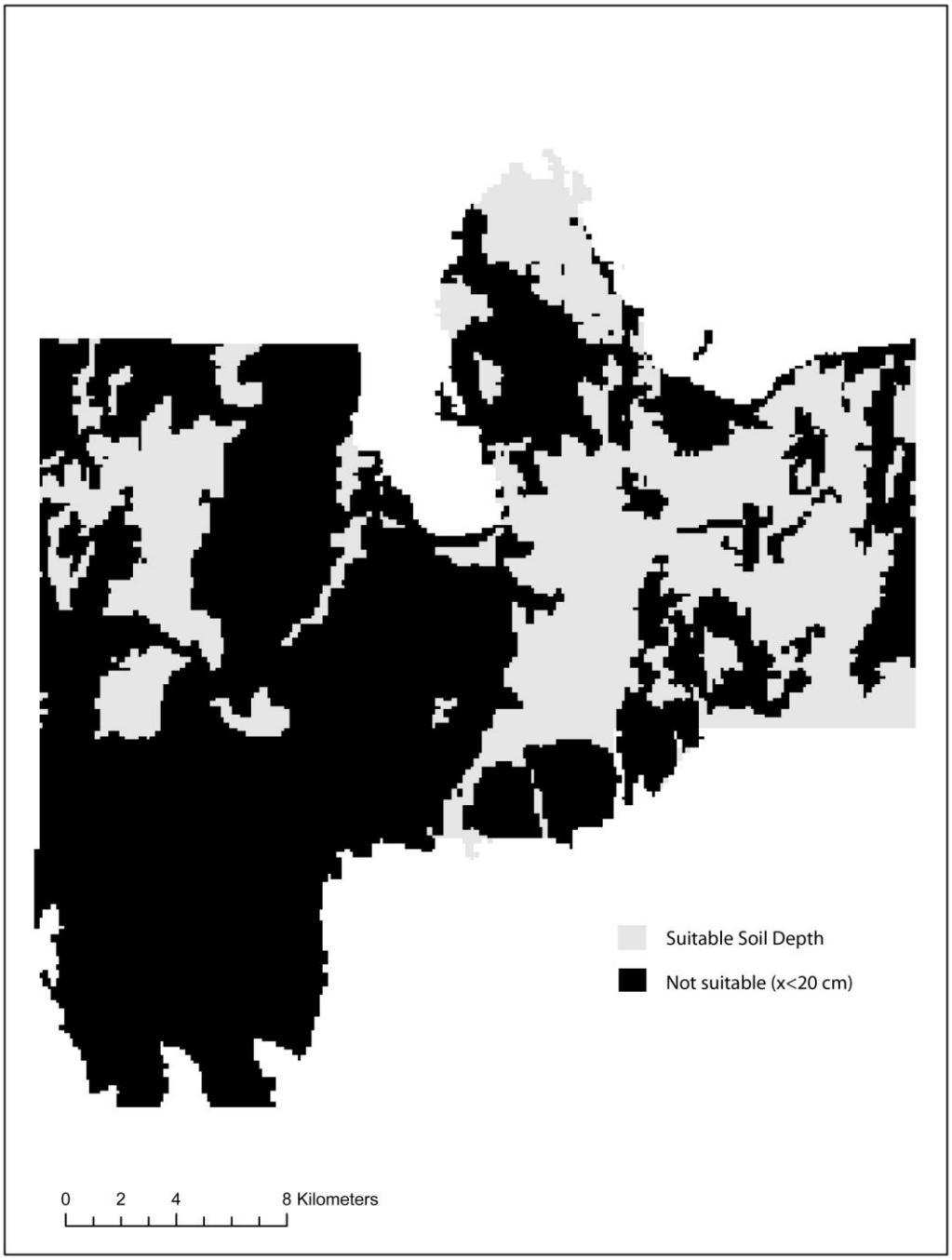

Figure.19 Soil map for suitable land

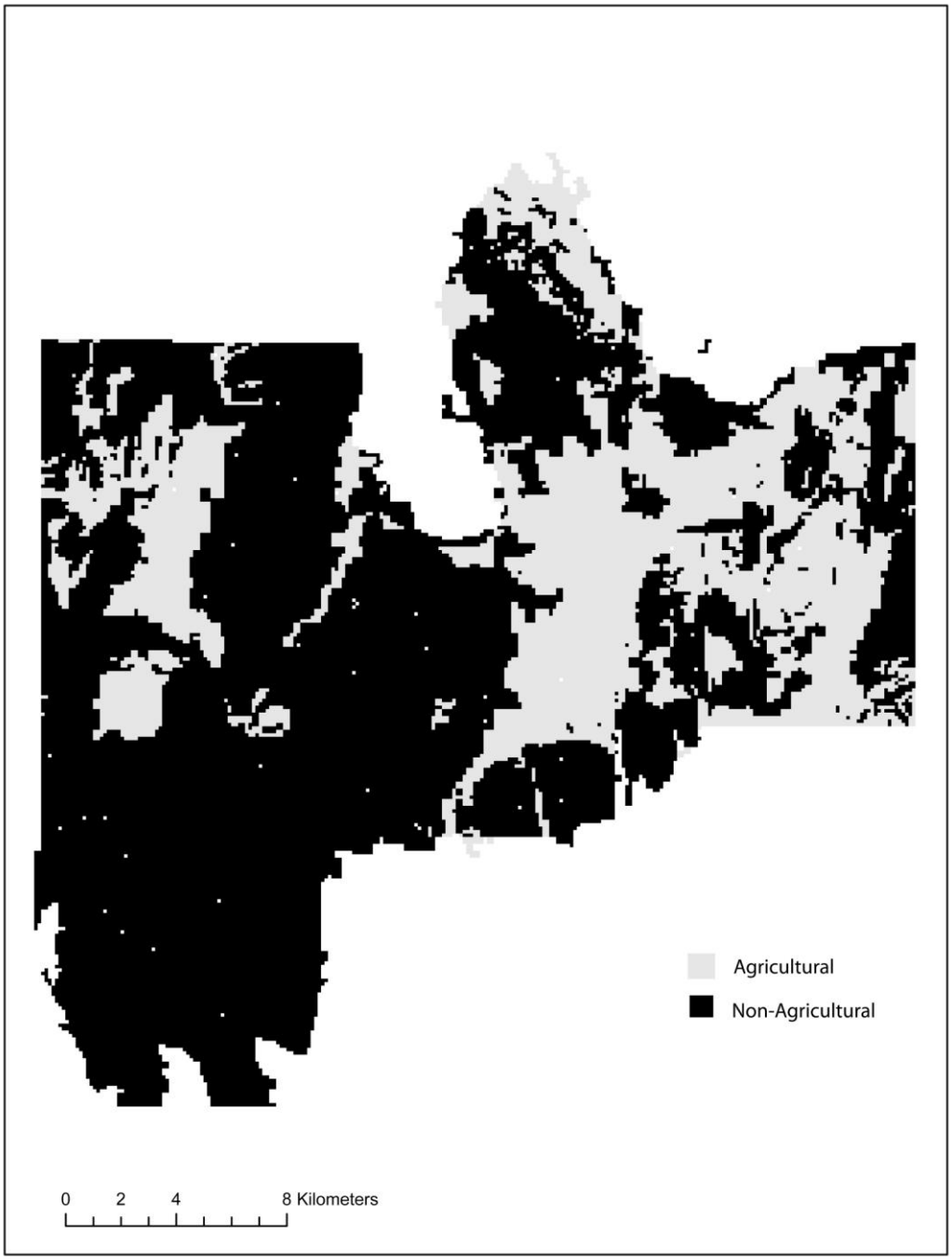

Figure.20 The intersection map of suitable slope values and soil depth values.

V.3. Demographic Trends of Klazomenai

V.3.1. Methods in Population Studies

Estimating the size and the distribution of a society's population is an essential part of any work that attempts to reconstruct an ancient culture. There are basically more than several methods used in order to yield a population figure, which mostly based on the density of habitation co-efficients or on the availability of natural resources.

Population estimation is closely linked with reconstructing settlement patterns in a given region. It provides information about the social and economic organization of the society. The shifts in demographic trends also explain changes in economic and social contexts.

The reconstruction of settlement patterns are based on majorly three variables, which are environmental changes, cultural interaction and finally alterations in population density.[250] Population growth was understood as an important factor linked with the process of urbanization and increasing population density is accepted as a trigger effect for the shift from pastoralism to agriculture.[251] The focus of the population studies deal with how the political history and the power shift are reflected by population increase as well as urbanism and economy.[252] Population is defined as a variable that controls the degree of site density that can lead to greater competition between sites for land and possibly

[250] Carter, H. 1983, 2.
[251] Trigger, B. 1989, 7.
[252] Bintliff, J. 1997, 1.

result with greater uniformity in spacing.[253] In other words the degree of urbanisation is often associated with the growth of population. For this reason the new approaches in archaeology deals with the estimation of population sizes by collaborating with the methods of demography and statistics. However the accuracy of these methods is very much arbitrary since archaeology is a science, which deals with so many intangible variables such as social and cultural constraints. Population is a key element for understanding the cultural process by shedding a light to relationship between population and potential carrying capacity. On the other hand the status of the site should be identified precisely for such studies, since the importance of it is not necessarily relevant to the population density. For instance the significance of cult centers cannot be assessed on the basis of the number of inhabitants, but the service it provides.[254]

The task of population estimation in archaeology remains to be a very difficult and a theoretical one. There are basically two approaches for the population estimations. First one deals with the archaeological data, whilst the other one is based on the potential carrying capacity of the land in terms of size and resources mostly using the contemporary data. The first one seems quite fruitful for the estimations to be done for a single site. It is necessary to gather the archaeological data of the living quarters and burial grounds as precise as possible for each particular period. Assessment of occupied floor areas are potentially the most accurate means of achieving population figures rather than the burial grounds, since the graves are used for long time spans and reused.

[253] Butzer, K.W. 1972, 215.
[254] Rihhl, T.E.- A.G. Wilson 1994, p.63.

The calculations based on cemeteries and burial grounds do not necessarily represent the population as a whole but provides rather a cumulative population. The evidence from the burial grounds at Klazomenai is significant for making inferences about the burial customs and perhaps ethnicity and social structure, but on the other hand very fragmentary for making population estimations.[255]

The classic hypothesis formulated by T. H. Malthus was adapted to population studies in archaeology even if it was formulated for the world population in general. His argument foresees that the humankind's reproductive capacity far exceeds the available food supplies and for this reason the population growth results with competition that causes famine, war and misery. The Malthusian thesis has influenced the archaeological perspective significantly and it was claimed by many scholars that the capacity of land, technology and other resources limited the population growth. The pessimistic viewpoint of Malthusian approach was alternated by E. Boserup, who stated that population growth would require more food per unit of land and this process would be resulted with the development in technology such as intensified agriculture.[256]

The estimation methods based on density of habitation employs a density co-efficient per square hectare and multiplies that coefficient by the size of the area.[257] The co-efficient figure is analogically derived from pre-industrial settlements. The major weakness of the method derives from the false assumption of the uniformity of settlements. The method fully ignores the fact

[255] Ulusoy,P. 2010.
[256] Boserup, E. 1981; 1976; 1965.
[257] Broshi, M.-R.Gophna 1984, 41-42; Stone, E.C. 1987 2-3; Shiloh, Y. 1980, 29.

that the density of occupation changes according to the function or the hierarchical status of the site. 150/200 people/ha is a constant figure that is commonly suggested. However a simple survey of demographic statistics of the recent past clearly show that the use of such figure would yield to extremely exaggerated results. For instance a case from the present study clearly reveals the exaggerated value for the population size calculated with this fixed figure. The population size given for Gönemise village **(131)** by Milioris is 100-150 people and the extension of surface scatters exceed 10 ha. This is due to the dispersed fashion of the settlement layout. So the population size calculated with the constant figure of 200 person/ha would be at least 2000 people, which is more than 10 times of the population size presented by Milioris.[258] Gönemise **(131)** is one of the good examples for testing the validity of this method for our study area. This village has been inhabited from Late Roman period to Ottoman era. The surface scatters and the remains of the dwellings are well preserved on the surface. It is located in a secluded valley and not destructed much. For all those reasons it is possible to test the method and compare the yielded figure with the official records. Perhaps 150/200 persons/ha may be used as a constant coefficient for the urban centers, but not for villages or hamlets.

Estimating the population size on the basis of land potential is another method. It is basically based on the fact that the number of people inhabiting a site cannot exceed the carrying capacity of the land in pre-industrial societies.[259] This method calculates the upper limit of the population size that

[258] Milioris,N.E. 1965.
[259] Rosen, B. 1986, 23-29;Vita-Finzi 1978, 71-87.

would be fed by the resources of the given land. The weakness of the method is that the full exploitation of all resources is not necessary. The previous chapter includes a series of calculations for land potential and the upper limit of the total population size to be supported by the land potential of the given area. The estimation is solely based on agricultural sources and ignores the other type of economical inputs that would compensate the needs of populations larger than the carrying capacity. As it is already discussed Klazomenai couldnot produce sufficient amount of grain for its population and imported, but olive oil and wine production had a significant economical input. Therefore it is not striking to reach population figures exceeding the carrying capacity suggested on the basis of agricultural potential.

Each archaeological case has its own specific nature and data sets to be used for population estimations varying from Attic-Delos tribute lists to tablets. The population studies for Crete during LMIII A/B is very much based on the study of Linear B tablets. However the author accepts the fact that the assumptions and the final estimates would inevitably be subject to uncertainty. The data used for that study includes historical population levels, the capacity of islanders to be self sufficient, components of diet based on the archaeological evidence and Linear B tablets as well as the survey data. The survey results reveal that the island was sparsely inhabited during LM III A/B.[260] One of the earliest works for the population estimation for Crete was done by Renfrew in 1970's. His study was based on the number of archaeological sites on the island and he has assessed an average population for

[260] Firth, R.J. 1994-95, 33-55.

each site. He suggested that LBA population of Crete was 256,000. However his suggestion was challenged with the non-uniformity of the archaeological sites. The multiplier of continuous habitation was introduced by his study in order to reflect the significant changes in population. Ecological study of ancient Greek world provides a basis for the estimation also. The carrying capacity of a region is distinguished between two different definitions. The equilibrium population level at which fertility and mortality rates are equal in that region and number of people who can be sustained by that region.[261] The use of census data seems likely to produce substantial results for population in number, but it should be considered that the nomadic and isolated groups as well as the women, children and even different ethnics might not be included in the record.[262]

The study that has been done in Messenia aimed to make a prediction about the regional population in order to answer the questions relevant to differential distribution of the population over the landscape with non-uniform features and to shed a light to the understanding of population distribution in terms of social and economic aspects. Linear B tablets provided significant evidence, based on that it was estimated that the population of Messenia ranged from 80,000 to 120,000. Renfrew's formula based on the average site density for Messenia at 69 sites per 1000 square meters was adapted. Then the result was multiplied by a correction factor of 2, allowing for sites that remain undiscovered or completely destroyed. A second correction factor of 0.75 to adjust for the likelihood that all sites were not inhabited contemporarily. His estimated site

[261] Ibid. 35.
[262] Ibid. 37.

size average was 2ha with an average settlement density of 300 persons per hectare.[263]

The population studies for Boeotia were revised by J. Bintliff.[264] The previous study which has also been done by himself was based on the survey data gathered from 21 square kilometres. The new data from survey results covers an area of 40 square kilometres. The sites those were smaller than 10 ha were excluded. In the study 16 cities, 37 villages and 16 hypothetical villages were assessed. For the calculations Kolb's suggestion that only 56% of an ancient Greek city would serve for domestic spaces while the rest would be public, commercial and religious spaces.[265] The size of the newly added cities were not known properly, but their status was determined and a constant predicted size were added to the calculation according to their status. The final estimation is 131,985 for 586.6 ha.[266]

For Zagros and Nea Nikomedia the approximations are based on the proportion of population of the site to land size rather than estimations based on number of people per living space. Flannery's conclusion about the early villages of Near East, which suggests one to four ha land size was accepted as applicable to Greek cities. Nea Nikomedia falls in the middle range of that with 2.4 ha and the population size is assumed to be 100-360.[267]

An ethno-archaeological study done in Iran offers interesting results, but one example is not sufficient to accept the results applicable as a formula. The study is based on the basic relationship between population and space. The

[263] Carothers, J.-WA Mc Donald 1979, 433-35.
[264] Bintliff, J. 1997 (b).
[265] Kolb, F. 1984.
[266] Bintliff, J. 1997(a), 232-235
[267] Jacobsen, T.W. 1981, 311-313.

mean roofed area for one person is determined as 36 square meters, the mean population per settlement as 305, mean area as 2 ha and the mean density as 153 people per ha.[268]

For Olynthus the population estimation is partially based on the amount of tribute paid to Athens. Besides the number of houses was taken as a data to calculate the population of a part of the city anakismos. The estimated number of houses was 500 and the average population predicted to be around 2500. Excluding the slaves the number of people living in one house was calculated as four or five. On the other hand a household was assumed to be around 10 including the slaves by Hoepfner. Ten to twelve people were estimated per house in Priene where houses are smaller than Olynthus.[269]

The early work of C. Roebuck, "The Ionian Trade and Colonization" include population estimations for Ionian cities. He states that the figures given by Herodotus for the Ionian fleet at the Battle of Lade can be regarded as a basis to estimate the number of Greek population excluding slaves around 5th c BC. 200 men for each warship and 1:4 ratio of men to total population the size of the population was calculated for Miletus, Priene, Myus, Teos, Chios, Erythrae, Phocaea, Lesbos and Samos. Klazomenai, Kolophon, Ephesus and Lebedos were not represented in that study since their lands were occupied by the Persians. The total number suggested for Ionia region is approximately 320,000. The population size of the cities that were not represented was estimated by analogy. Klazomenai accepted as of moderate size compared with Priene and a number of 9000 people suggested to live at Klazomenai during the

[268] Sumner, W.M. 1989, 631-641.
[269] Cahill, N. 2002, 37-44.

5th c BC. The accuracy of estimations is highly likely to be arbitrary as it was already stressed by the author himself also.[270]

The Athenian Tribute lists are used as a source for estimating the population size of the *poleis* on the basis of the assumptions for how much *drachme* paid per person. The tribute lists are also assessed for a more general classification of poleis who has been a member of the Delos League. The poleis who paid less than 5 talents are assumed to have been large villages in terms of function whose economy was basically based on agriculture whereas trade was a marginal part of it. The *poleis* who paid more than 5 talents are suggested to be towns with a population larger than could be supported by local agriculture and had a share in overseas trade.[271] Making suggestion about the population size of Klazomenai on the basis of the amount of the tribute paid to the league may be confusing for Klazomenai, since the amount of tribute changed dramatically. Yet suits the general classification of Pounds[272] in many terms by mostly not exceeding 5 talents, 2000 drachme with an exception in year 416/5. In this classification we can identify Klazomenai as a middle sized *polis* whose economy was mostly based on the agriculture, yet had a modest share in overseas trade.

Klazomenai is recorded in Athenian tribute lists from 454/3 (IG$_{I}$3.259.IV.21) to 416/15 (IG$_{I}$3.289.I.39). She paid a tribute of 1.5 talents until 427/6 (IG$_{I}$3.284.6) when it was raised to 5 talents, 2000 drachme. In 416/15 it was raised to 15 talents IG$_{I}$3.289.I.39).[273]

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[270] Roebuck, C. 1959, 21-23.
[271] Pounds, N.J.G. 1969, 145.
[272] İbid.
[273] Hansen, M.H.- T.H.Nielsen 2004, 1076.

Klazomenai broke up with the league in 412 and moved the urban center from Karantina Island to Polikhne on the mainland *(Thucydides 8.14.3)*. Within the same year Athens won back Klazomenai and a major part of the population moved back to the island when anti-Athenian faction fled to Daphnous *(Thucydides 8.23.6)*. Spartans failed to conquer the island and Klazomenai remained an ally of Athens in 410 BC *(Xen. Hell. 1.1.10-11)*. The *statis* apparently had an effect on the amount of tribute paid to the league by Klazomenai. In 427/6 when the tribute of Klazomenai increased from 1,5 talents to 5 talents was not a time of general increase. It is explained by the visit of Athenian naval squadron to Klazomenai and Erythrai while Mytilene war was still going on and welcomed with enthusiasm by Klazomenian *demos*. Therefore it may be assumed that Klazomenian *demos* was fully committed to Athenian alliance.[274]

Estimating the population size on the basis of tribute lists depends on the amount paid per person. A simple calculation made for poleis at Khalcidike suggests 1 talent to be paid for 750 people.[275] On the other hand the more commonly accepted figure sees 1.5 drachme per person.[276] Therefore we may assume that the *phoros* that represents whole *demos* was paid as 5 talents, 2000 drachme, whereas the low amount of *phoros* 1,5 talent was due to the *stasis* between democrats and oligarchs.

[274] Cook, J.M. 1961, 14.
[275] Pounds, N.J.G. 1969, 142.
[276] Tuna, N. 1983, 112, fn.207.

1 talent = 6000 drachme	►	***5 talent + 2000 drachme = 32,000 drachme***
1. For 1 talent/750 person	►	*4000 persons*
2. For 1,5 drachme /person	►	*21,333 persons*

If we make the same calculation over 1,5 talents paid by Klazomenai for a longer period the size of the population decreases to 1075 for the first assumption for the amount of *phoros* per person and to 6000 for the second assumption. It is clear that such estimation fully depending on the Tribute lists is mostly deceptive.

The second method sees the calculation of density of population per hectare. This method commonly accepts 150/200 person/ha. The size of Karantina island which hold the bulk of population during the Persian wars and later during the Hellenistic and Roman times is ca. 32 ha. Clearly we cannot expect the island to have a sufficient land potential for the whole population. It may be assumed that the other small islands and some parts of the mainland have been used for agriculture. The calculation below yields to maximum number of people to be settled on the island.

200 p/ha co-efficient	►	*32 x 200 = 6400 persons*

On the other hand we can also suggest a tentative size for the urban center on the mainland encircled with a fortification wall. The hypothetic alignment of the fortification wall, encircles ca. 16 ha. The extension of the *asty* including the necropoleis and industrial quarters as well reaches to ca. 64 ha. If it is

assumed that only 56% of the urban center was used for residence[277], only 9 ha. was used as domestic space. It is assumed that 80% of the whole population lived at the urban center at a *polis* which achieved to state formation and urbanization to some degree.[278]

9. 200 = 1800 person
x.80 /100 = 1800 person ***x: 2250 person***

Another method for estimating the population size depends on division of agricultural land among the citizens.[279] According to its principle the members of the elite class could own 18 ha. of agricultural land where as the normal citizens could own maximum 4.5 ha. Regarding the social stratification we may assume that half of the normal citizens only owned 1 ha. of agricultural land and they were occupied with different artizanships, military duties etc. The arable land of Klazomenian khora is approximately 12,800 ha. We may assume that the élite were around 200 people. They would own 3600 ha. and the rest of the arable land which is 9200 ha. in size was divided among the normal citizens. Half of these would own 4.5 ha. and the other half 1 ha. This sums upto 4622 households which yields to 22,488 people. With the addition of elite class of 200 and 15% slaves and metics the whole population rises up to 26,691 people. This population figure is consistent with the population size suggested on the basis of maximum land potential which is 39,754 people.

[277] Carter, J.C. etal 2004, 137.
[278] Gehrke, H.J. 1986, 19.
[279] Cooper-Burford, A. 1977, 172.

200 p/ha coefficient ► *200 x 18 = 3600 ha.*
The land owned by elites subtracted from the whole arable land ► *12,800 ha – 3600 ha = 9200 ha.*
Regarding the social stratigraphy half of the "normal" citizens are assumed to own 1 ha. *9200 / 2 = 4600 ha.*
The number of people owned 4.5 ha *4600 / 4.5 ha = 1022 households* *1022 x 4 = 4088 persons*
The number of people owned 1 ha. *4600 / 1 ha = 4600 households* *4600 x 4 = 18,400 persons*
Total number of the citizens *200 + 4088 + 18,400 = 22,688*
15% of the population is slaves and metics *22,688 + 4003 = 26,691 persons*

The weakness of all these methods arise from the fact that they all present a static demographic figure for all periods. The population estimation depending on the land division and land potential seems to be providing the most reasonable demographic figure. However it is the maximum size of population to be supported. The survey results clearly showed that the number and size of the settlements have changed dramatically through the periods and for that reason a static demographic figure cannot be taken as a standard value that would be valid for all periods. This present work deals with a long time span which included seven macro archaeological periods from Late Geometric period to Roman period and aimed to define and explain the shifts. Therefore the evidence related to settlement distribution and settlement hierarchy together

with the statistics of the recent past may provide us with more factual demographic trends of the region.

V.3.2. Methodology in Estimating the Population of Klazomenai

In the previous chapter a brief discussion about the population studies in archaeology and some cases using various methods and the pitfalls of those methods are presented. For estimating the population of Klazomenai the evidence from the territory is going to be used for calculating the size of rural population on the basis of the evidence from the territory, in order to determine the shifts and fluctuations in population through the archaeological periods. Using the Ottoman period enrollments for making analogies for population size is recently getting widely accepted by the scholars. In this study a detailed study of Ottoman records which are "Tahrir Defteri" is lacking, but the second hand information recorded by Milioris is used to make such analogies. Almost all the places mentioned by Milioris are also the subject of this work and has been inhabited until the Ottoman period. Therefore the size of the sites for Byzantine and Ottoman era determined by field survey are taken as a variable to suggest a coefficient per hectare by using the population figures presented by Milioris, instead of using the constant coefficient 150p/ha.[280]

The records of Milioris in *"Vourla in Asia Minor"* tells us that 1st order settlements had a population ranged between 1000-2000, 2nd order ones had a population changing between 100 and 600. For the farmsteads and hamlets we may assume 1 ha. can be cultivated by 5 people and produces 500 kg grain.

[280] Milioris, N.E. 1965.

%17 of the grain was reserved for seeds and draft for animals and this equals to 415 kg grains net which would feed approximately 2 to 3 people. If we add the additional productions such as olive/wine production we may multiply this figure with three which yields up to maximum 9-10 people. Therefore we can take 10 p/ha for the farmsteads and hamlets. Instead of suggesting a constant figure for each category of settlement hierarchy, the actual size of each settlement is used to make an assumption for the size of population for justifying the range of figures changing from 1000 to 2000 or from 100 to 600. A comparison of the population sizes of 1920's with the physical size of the settlements determined by archaeological survey yields to the result that the density of person per hectare might have been ca. 10 for 3rd order settlements, ca. 65 for 2nd order settlements. This number increases to 150 for the 1st order sites.

The rural population for each period calculated with both the coefficients suggested above and also with constant coefficient 150p/ha which commonly accepted for population studies. The urban population is also estimated by two different calculations. The size of the central settlement which is tentatively known to us from the excavations is used as a variable 16 ha. Only 56% of the central place is assumed to be used for domestic spaces. For Late Geometric period since there was no urban center yet, the extension of Late Geometric finds taken into account. Due to the sporadic nature of the finds 100p/ha taken as coefficient for estimating the so-called urban population who inhabited the central place.

From Early Archaic period to Late Classical period the tentative alignment of the city wall is used as an evidence for estimating the size of the urban center encircled with city wall. It is 16 ha. and only 56% percent of it assumed to be used for domestic spaces, which is 9 ha. 200p./ha is taken as the coefficient per hectare and the calculated figure, 1800 person added upto to the yielded rural population. For 5th c. BC it is known that the mainland was abandoned and the bulk of the population moved to the island. A roughly done field survey and several test trenches opened on the island do not provide us with any evidence to make inferences about the size of the settlement on the island. Therefore the population figure estimated for Late Archaic period is also used for the next period. The other small islands in particular Pırnallı and Yassıca might have been inhabited also as it is substantiated by few archaeological material.

For Hellenistic and Roman period the urban center had moved to the island again. It is difficult to make an assumption for the settlement size on the island but it is likely that it was situated on the northwestern tip of the island extending within an area of 15 ha. due to the presence of Roman villas, a theatre building, remains of pottery kiln and rough surveys.

The statistics show that from 1920's to 1980's with minor alterations ca. 60% of the population lived at the urban center. For most poleis it is suggested that 80% of the population lived at urban center[281], but economical and social structures of *poleis* dramatically differ from eachother. Therefore regarding the fact that economy of Klazomenai was mainly based on agriculture and that it

[281]Gehrke, H.J. 1986, 19.

was a *polis* of moderate size where degree of urbanization is arbitrary 60% of the whole population is preferably assumed to be comprising the urban population.

Table.13 The distribution of urban and rural population from 1927 to 1980

Years	**Total Population**	**Urban Population**	**% urban population**	**Rural Population**	**% rural population**
1927	15.548	8936	57.5	6612	42.5
1935	17.073	9961	58	7112	42
1940	17.858	10.330	58	7528	42
1945	18.415	10.206	55.5	8209	45.5
1980	26.066	14.416	55	11.650	45

Table.14 The population figures of villages from Milioris and DEİ 1981

Village	**Milioris**	**1981**
Kızılca	200-250	-
Kocadere	200	-
Denizli	200	-
Güvendik	200	-
Özbek	600	2118
Kuşçular	200	1632
Sarıabdallar	200	-
Devederesi	150-200	-
Kamanlı	400	-
Çamlı	300	-
Yelki	600	-
Kilizman	450	-
Menteş	150-200	-
Kokar	150-200	-
Oturca	250	-
Gülbahçe	2000	2470
Yağcılar	500	828
Söğüt	300	-
Gönemise	100-150	-

Method 1: 60 % urban population, 40% rural population.

However this method again provides us with a static figure since the estimation is based on the size of the urban center.

Method 2: 10p. for 3rd order sites; 65p./ha. for 2nd order sites; 150p./ha.for 1st order sites. The size of the rural population is added upto estimated urban population.

Method 3: The rural population is calculated for each settlement by taking 150p./ha. as a constant figure. The size of the rural population is added upto estimated urban population.

All three methods are executed for calculating the population size of each archaeological period instead of preferring one for being able to test the methodology. The author of the present work strongly believes in the controversial nature of population studies, therefore the primary aim of this chapter is reaching to a reasonable conclusion about the demographic fluctuations and shifts through the archaeological periods instead of presenting numerical figures for the population size. For this reason the population size is calculated for each macro period with all suggested three methods and in the end the figures are applied to graphic charts to make visible the shifts in demography through the periods.

A.Late Geometric Period

Late Geometric period is very problematic in terms of settlement size due to the difficulty of determining the extension of Geometric pottery on the surface. It is assumed that the size of the none of the settlements exceeded 5 ha. and it is taken as the maximum size for the rural settlements.

Table.15 Population Estimation for Late Geometric Period

Site No.	**Size class/ Size (ha.)**	**10/65/150 p/ha**	**150 p/ha**
13	2/(3 ha.)	195	300
20	1/(1ha.)	10	100
28	2/(3 ha.)	195	300
40	1/(1 ha.)	10	100
52	2/(4 ha.)	260	400
55	2/(4.5 ha.)	292	450
64	2/(3 ha.)	195	300
72	1/(2 ha.)	20	200
74	2/(5 ha.)	325	500
101	2/(3 ha.)	195	300
123	2/(5 ha.)	325	500
126	2/(4 ha.)	260	400
136	2/ (5 ha.)	325	500
142	1/(1 ha.)	10	100
Total rural Population		2617	4450

I. Geometric finds are found within 10 ha. in a very sporadic fashion. Therefore the coefficient is taken as 100 p/ha. 10 x 100 = 1000 (urban population). Regarding that 60% lived at the central place the total population yields upto approximately 1700 people.

II. Rural population calculated with hierarchical coefficients sums upto 2617. The sum of rural and urban population yields upto 3617.

III. Rural population calculated with constant coefficient100 p/ha sums upto 4450. The sum of rural and urban population yields upto 5450.

B.Early Archaic Period:

Table.16 Population Estimation for Early Archaic Period

Site No.	**Size class/ Size (ha.)**	**10/65/150 p/ha**	**150 p/ha**
6	2/ (4 ha.)	260	600
8	2/ (4 ha.)	260	600
13	2/ (5 ha.)	325	750
15	1/ (1.2 ha.)	12	180
17	1/ (1.3 ha.)	13	195
20	1/ (1 ha.)	10	150
21	2/ (8 ha.)	520	1200
24	1/ (1 ha.)	10	150
26	1/ (0.8 ha.)	8	120
28	2/ (4 ha.)	260	600
32	1/ (1 ha.)	10	150
33	1/ (1 ha.)	10	150
40	1/ (1 ha.)	10	150
41	1/ (1 ha.)	10	150

Table.16 cont.			
43	1/ (1 ha.)	10	150
49	2/ (3.5 ha.)	227	525
51	2/ (5ha.)	325	750
52	2/ (4.5 ha.)	292	675
64	2/ (6 ha.)	390	900
72	1/ (2 ha.)	20	300
74	2/ (9 ha.)	585	1350
83	1/ (1.5 ha.)	15	225
101	2/ (3 ha.)	195	450
123	2/ (6 ha.)	390	900
124	2/ (9 ha.)	585	1350
126	2/ (4 ha.)	260	600
136	2/ (8 ha.)	520	1200
Total rural population		5532	14,520

I. The size of the urban center enclosed with wall on the basis of tentative alignment is 16 ha. Assuming that 56% was used for residential quarters 9 ha was domestic space. 9x200 = 1800 (urban population) Regarding that 60% lived at the central place the total population yields upto 3000 people.

II. Rural population calculated with hierarchical coefficients sums upto 5532. The sum of rural and urban population yields upto 7332.

III. Rural population calculated with constant coefficient150 p/ha sums upto 14,520. The sum of rural and urban population yields upto 17,320.

C.Late Archaic Period:

Table.17 Population Estimation for Late Archaic Period

Site No.	**Size class/ Size (ha.)**	**10/65/150 p/ha**	**150 p/ha**
6	2/ (4 ha.)	260	600
7	1 (1.4 ha.)	14	210
8	2/ (4ha.)	260	600
13	2/ (5 ha.)	325	750
15	1/ (1.2 ha.)	12	180
17	1/ (1.3 ha.)	13	195
20	1/ (1 ha.)	10	150
21	2/ (8 ha.)	520	1200
23	1/ (1 ha.)	10	150
24	1/ (1 ha.)	10	150
26	1/ (0.8 ha.)	8	120
27	2/ (6 ha.)	390	900
28	2/ (4 ha.)	260	600
29	1/ (0.4 ha.)	4	60
32	1/ (1 ha.)	10	150
33	1/ (1 ha.)	10	150
40	1/ (1 ha.)	10	150
41	1/ (1 ha.)	10	150
42	1/ (1 ha.)	10	150
43	1/ (1 ha.)	10	150
44	3/ (16 ha.)	2400	2400
47	2/ (6 ha.)	390	900
49	2/ (3.5 ha.)	227	525
52	2/ (4.5 ha.)	292	675

Table.17 cont.			
55	2/ (4.5 ha.)	292	675
60	1/ (2 ha.)	20	300
61	1/ (2 ha.)	20	300
62	3/ (10 ha.)	1500	1500
63	2/ (5 ha.)	325	750
64	2/ (6 ha.)	390	900
65	1/ (1 ha.)	10	150
66	3/ (15 ha.)	2250	2250
69	1/ (2 ha.)	20	300
70	2/ (8 ha.)	520	1200
72	1/ (2 ha.)	20	300
74	2/ (9 ha.)	585	1350
77	1/ (1 ha.)	10	150
79	2/ (5 ha.)	325	750
81	3/ (10 ha.)	1500	1500
83	1/ (1.5 ha.)	15	225
85	2/ (4.5 ha.)	292	675
86	1/ (3 ha.)	30	450
88	1/ (1.5 ha.)	15	225
101	3/ (20 ha.)	3750	3750
104	2/ (2 ha.)	20	300
107	1/ (2 ha.)	20	300
108	1/ (3 ha.)	30	450
117	2/ (5 ha.)	325	750
118	2/ (9 ha.)	585	1350
119	3/ (15 ha.)	2250	2250
122	2/ (10 ha.)	650	1500

Table.17 cont.			
123	2/ (6 ha.)	390	900
124	2/ (9 ha.)	585	1350
126	2/ (4 ha.)	260	600
128	2/ (3 ha.)	195	450
132	3/ (15 ha.)	2250	2250
136	2/ (8 ha.)	520	1200
139	2/ (3 ha.)	195	450
142	1/ (1 ha.)	10	150
143	1/ (1 ha.)	10	150
145	1/ (1 ha.)	10	150
151	1/ (1 ha.)	10	150
160	1/ (1 ha.)	10	150
161	3/ (10)	1500	1500
164	1/ (1 ha.)	10	150
Total rural Population		27,189 p.	45,465 p.

I. Since here the size of the urban center is taken as a constant variable the size of the urban population is same with the previous period, so the total population. 1800 (urban population) and 3000 (Total population)

II. Rural population calculated with hierarchical coefficients sums upto 27,189. The sum of rural and urban population yields upto 28,989.

III. Rural population calculated with constant coefficient150 p/ha sums upto 45,465. The sum of rural and urban population yields upto 47,265.

D.5th Century BC:

Table.18 Population Estimation for 5th c. BC Period

Site No.	**Size class/ Size (ha.)**	**10/65/150 p/ha**	**150 p/ha**
8	2/ (4 ha.)	260	600
15	1/ (1.2 ha.)	12	180
28	2/ (4ha.)	260	600
52	2/ (4.5 ha.)	292	675
63	2/ (5ha.)	325	750
66	2/ (9 ha.)	585	1350
77	1/ (1 ha.)	10	150
79	2/ (5 ha.)	325	750
86	1/ (2 ha.)	20	300
101	2/ (5 ha.)	325	750
119	2/ (5 ha.)	325	750
123	2/ (6 ha.)	390	900
124	2/ (9 ha.)	585	1350
134	2/ (8 ha.)	520	1200
136	2/ (8 ha.)	520	1200
143	1/ (1 ha.)	10	150
164	1/ (1 ha.)	10	150
Total rural Population		4774 p.	11,805 p.

I. The bulk of the population has moved to Karantina island during 5th c. BC. The size of the island is 32 ha, but it seems likely that the settlement was concentrated on the northwestern tip of the island within an area of 15 ha. Assuming that 56% of the area was allotted to domestic spaces ca. 8,5 ha was

used for inhabitance. 8,5x150 = 1275. Regarding that 60% lived at the central place the total population yields upto 2125 people.

II. Rural population calculated with hierarchical coefficients sums upto 4774. The sum of rural and urban population yields upto 6049.

III. Rural population calculated with constant coefficient150 p/ha sums upto 11,805. The sum of rural and urban population yields upto 13,080.

E.Late Classical Period:

Table.19 Population Estimation for Late Classical Period

Site No.	**Size class/ Size (ha.)**	**10/65/150 p/ha**	**150 p/ha**
6	2/ (4 ha.)	260	600
10	2/ (3.5 ha.)	227	525
12	2/ (6 ha.)	390	900
13	2/ (5 ha.)	325	750
15	1/ (1.2 ha.)	12	180
18	2/ (5 ha.)	325	750
21	2/ (8 ha.)	520	1200
26	1/ (0.8 ha.)	8	120
27	2/ (6 ha.)	390	900
28	2/ (4 ha.)	260	600
29	1/ (0.4 ha.)	4	60
32	1/ (1 ha.)	10	150
33	1/ (1 ha.)	10	150
37	2/ (5 ha.)	325	750
40	1/ (1 ha.)	10	150
42	1/ (1 ha.)	10	150

Table.19 cont.			
43	2/ (3 ha.)	195	450
44	3/ (16 ha.)	2400	2400
47	2/ (6 ha.)	390	900
51	2/ (5 ha.)	325	750
53	2/ (3 ha.)	195	450
55	2/ (4.5 ha.)	292	675
59	2/ (6 ha.)	390	900
60	1/ (2 ha.)	20	300
61	1/ (2 ha.)	20	300
62	3/ (10 ha.)	1500	1500
63	2/ (5 ha.)	325	750
64	2/ (6 ha.)	390	900
66	3/ (15 ha.)	2250	2250
67	2/ (4 ha.)	260	600
68	1/ (1 ha.)	10	150
70	2/ (8 ha.)	520	1200
71	1/ (2 ha.)	20	300
72	1/ (2 ha.)	20	300
74	2/ (9 ha.)	585	1350
79	2/ (5 ha.)	325	750
81	3/ (10 ha.)	1500	1500
86	1/ (3 ha.)	30	450
88	1/ (1.5 ha.)	15	225
101	3/ (20 ha.)	3000	3750
104	1/ (3 ha.)	30	450
107	1/ (2 ha.)	20	300
108	1/ (3 ha.)	30	450

Table.19 cont.			
114	1/ (2 ha.)	20	300
118	2/ (9 ha.)	585	1350
119	3/ (15 ha.)	2250	2250
122	2/ (9 ha.)	585	1350
123	2/ (6 ha.)	390	900
124	2/ (9 ha.)	585	1350
132	3/ (15 ha.)	2250	2250
136	2/ (8 ha.)	520	1200
139	2/ (3 ha.)	195	450
140	2/ (5 ha.)	325	750
141	2/ (5 ha.)	325	750
142	1/ (1 ha.)	10	150
160	1/ (1 ha.)	10	150
161	3/ (10 ha.)	1500	1500
164	1/ (1 ha.)	10	150
Total rural Population		27,703 p.	47,085 p.

I. Since here the size of the urban center is taken as a constant variable the size of the urban population is same with Late Archaic period, so the total population. 1800 (urban population) and 3000 (Total population)

II. Rural population calculated with hierarchical coefficients sums upto 27,703. The sum of rural and urban population yields upto 29,503.

III. Rural population calculated with constant coefficient150 p/ha sums upto 47,085. The sum of rural and urban population yields upto 48,885.

F.Hellenistic Period:

Table.20 Population Estimation for Hellenistic Period

Site No.	**Size class/ Size (ha.)**	**10/65/150 p/ha**	**150 p/ha**
10	2/ (3.5 ha.)	227	525
11	2/ (3.5 ha.)	227	525
12	2/ (6 ha.)	390	900
13	2/ (5 ha.)	325	750
18	2/ (5 ha.)	325	750
21	2/ (8 ha.)	520	1200
26	1/ 0.8 ha.)	8	120
27	2/ (6 ha.)	390	900
33	1/ (1 ha.)	10	150
40	1/ (1 ha.)	10	150
42	1/ (1 ha.)	10	150
44	3/ (16 ha.)	2400	2400
46	1/ (1 ha.)	10	150
51	2/ (5 ha)	325	750
55	2/ (4.5 ha.)	292	675
59	2/ (6 ha.)	390	900
60	2/ (2 ha.)	20	300
61	1/ (2 ha.)	20	300
62	3/ (10 ha.)	1500	1500
63	2/ (5 ha.)	325	750
64	2/ (6 ha.)	390	900
66	3/ (15 ha.)	2250	2250
67	2/ (4 ha.)	260	600
74	2/ (9 ha.)	585	1350

Table.20 cont.			
77	1/ (1 ha.)	10	150
79	2/ (5 ha.)	325	750
81	3/ (10 ha.)	1500	1500
86	1/ (2 ha.)	20	300
101	3/ (25 ha.)	3750	3750
115	3/ (20 ha.)	3000	3000
117	2/ (5 ha.)	325	750
118	2/ (9 ha.)	585	1350
119	3/ (15 ha.)	2250	2250
122	2/ (9 ha.)	650	1350
132	3/ (15 ha.)	2250	2250
136	2/ (8 ha.)	520	1200
140	2/ (5 ha.)	325	750
160	1/ (1 ha.)	10	150
161	3/ (10 ha.)	1500	1500
164	1/ (1 ha.)	10	150
Total rural Population		28,239 p.	40,095 p.

I. The bulk of the population has moved to Karantina island during Hellenistic period. The size of the island is 32 ha, but it seems likely that the settlement was concentrated on the northwestern tip of the island within an area of 15 ha. Assuming that 56% of the area was allotted to domestic spaces ca. 8,5 ha was used for inhabitance. 200 p/ha taken as coefficient 8,5x200 = 1700. Regarding that 60% lived at the central place the total population yields upto 2833 people.

II. Rural population calculated with hierarchical coefficients sums upto 28,239. The sum of rural and urban population yields upto 29,939.

III. Rural population calculated with constant coefficient150 p/ha sums upto 40,095. The sum of rural and urban population yields upto 41,795.

G.Roman Period:

Table.21 Population Estimation for Roman Period

Site No.	**Size class/ Size (ha.)**	**10/65/150 p/ha**	**150 p/ha**
5	2/ (4 ha.)	260	600
10	2/ (3.5 ha.)	227	525
11	2/ (3.5 ha.)	227	525
12	2/ (6 ha.)	390	900
13	2/ (5 ha.)	325	750
15	1/ (1.2 ha.)	12	180
16	2/ (6 ha.)	390	900
17	1/ (1.3 ha.)	13	195
18	2/ (5 ha.)	325	750
19	1/ (3 ha.)	30	450
20	1/ (1 ha.)	10	150
21	2/ (8 ha.)	520	1200
22	1/ (1 ha.)	10	150
23	1/ (1 ha.)	10	150
24	1/ (1 ha.)	10	150
25	1/ (1 ha.)	10	150
26	1/ (0.8 ha.)	8	120
27	2/ (6 ha.)	390	900

Table.21 cont.			
29	1/ (0.4 ha.)	4	60
31	1/ (1 ha.)	10	150
32	1/ (1 ha.)	10	150
33	1/ (1 ha.)	10	150
36	2/ (5 ha.)	325	750
37	2/ (5 ha.)	325	750
38	2/ (3 ha.)	195	450
39	2/ (5 ha.)	325	750
41	1/ (1 ha.)	10	150
42	1/ (1 ha.)	10	150
43	2/ (3 ha.)	195	450
44	3/ (16 ha.)	2400	2400
46	1/ (1 ha.)	10	150
47	2/ (6 ha.)	390	900
48	2/ (3 ha.)	195	450
49	2/ (3.5 ha.)	227	525
50	1/ (1 ha.)	10	150
51	2/ (5 ha.)	325	750
52	2/ (4.5 ha.)	292	675
53	2/ (3 ha.)	195	450
55	2/ (4.5 ha.)	292	675
58	1/ (2 ha.)	20	300
59	2/ (6 ha.)	390	900
60	1/ (2 ha.)	20	300
61	1/ (2 ha.)	20	300
62	3/ (10 ha.)	1500	1500
63	2/ (5 ha.)	325	750

Table.21 cont.			
64	2/ (6 ha.)	390	900
65	1/ (1 ha.)	10	150
66	3/ (15 ha.)	2250	2250
67	2/ (4 ha.)	260	600
68	1/ (1 ha.)	20	150
69	1/ (1 ha.)	20	150
70	2/ (8 ha.)	520	1200
71	1/ (2 ha.)	20	300
72	1/ (2 ha.)	20	300
75	1/ (1 ha.)	10	150
77	1/ (1 ha.)	10	150
79	2/ (5 ha.)	325	750
80	2/ (6 ha.)	390	900
81	3/ (10 ha.)	1500	1500
82	2/ (4 ha.)	260	600
83	1/ (1.5 ha.)	15	225
84	1/ (2 ha.)	20	300
85	2/ (4.5 ha.)	292	675
86	1/ (3 ha.)	30	450
87	1/ (1 ha.)	10	150
88	1/ (1.5 ha.)	15	225
92	1/ (1 ha.)	10	150
101	3/ (25 ha.)	3750	3750
104	1/ (3 ha.)	30	450
105	2/ (2 ha.)	20	300
107	1/ (2 ha.)	20	300
108	1/ (3 ha.)	30	450

Table.21 cont.			
109	1/ (1 ha.)	10	150
111	1/ (1 ha.)	10	150
112	1/ (1 ha.)	10	150
114	1/ (2 ha.)	20	300
115	3/ (20 ha.)	3000	3000
116	1/ (2 ha.)	20	300
117	2/ (5 ha.)	325	750
119	3/ (15 ha.)	2250	2250
122	2/ (9 ha.)	585	1350
123	2/ (6 ha.)	390	900
124	2/ (9 ha.)	585	1350
126	2/ (4 ha.)	260	600
127	2/ (5 ha.)	325	750
128	2/ (3 ha.)	195	450
129	2/ (4 ha.)	260	600
130	2/ (3 ha.)	195	450
131	3/ (20 ha.)	3000	3000
132	3/ (15 ha.)	2250	2250
133	2/ (5 ha.)	325	750
134	2/ (8 ha.)	520	1200
136	2/ (8 ha.)	520	1200
139	2/ (3 ha.)	195	450
140	2/ (5 ha.)	325	750
141	2/ (5 ha.)	325	750
145	1/ (1 ha.)	10	150
146	2/ (3 ha.)	195	450
151	1/ (1 ha.)	10	150

Table.21 cont.			
156	1/ (1 ha.)	10	150
157	1/ (1 ha.)	10	150
160	1/ (1 ha.)	10	150
161	3/ (10 ha.)	1500	1500
164	1/ (1 ha.)	10	150
165	1(1 ha.)	10	150
Total rural Population		39,109	68,205

I. The central settlement remained on the island during Roman period. The size of the island is 32 ha, but it seems likely that the settlement was concentrated on the northwestern tip of the island within an area of 15 ha. Assuming that 56% of the area was allotted to domestic spaces ca. 8,5 ha was used for inhabitance. 200 p/ha taken as coefficient 8,5x200 = 1700. Regarding that 60% lived at the central place the total population yields upto 2833 people.

II. Rural population calculated with hierarchical coefficients sums upto 39,109. The sum of rural and urban population yields upto 40,809.

III. Rural population calculated with constant coefficient150 p/ha sums upto 68,205. The sum of rural and urban population yields upto 69,905.

V.3.3.Concluding Remarks on Demographical Trends of Klazomenai from Late Geometric Period to Roman Period:

In conclusion basically with three methods using different types of variables and coefficients, the population of Klazomenai attempted to be estimated for all macro archaeological periods taken into consideration in this study. Eventhough all three methods are used here for calculating the population size of Klazomenai for each period I would like to conclude this chapter with a short commentary on the results and the applied methods. The first method **(I)** takes the physical size of the urban center as the constant variable and for that reason even if more intelligent choices are employed for the density p/ha as coefficients the results are more or less static. The method is simply based on the principle that 60% lived at the urban center, which means 40% comprises the rural population. So we can test the method reversely by using the survey data as the constant variable, the estimated rural population as the 40% of the total population, and figures increase upto inacceptably high numbers such as 6 digit numbers from Late Archaic period. These results naturally cast a suspicion on the reliability of results apart from the static figures. Third method **(III)** yields to very high numbers of population for using 150 p/ha as the constant variable for density. In fact it doesnot make any sense to attribute the same density to settlements which clearly differ from eachother in function and settlement pattern. This method totally rejects the site hierarchy and treats all the settlements very synthetically with mechanical procedures of statistics. I would eliminate this method with most clear conscious. Second

method **(II)** provides us with the most reasonable results. Site hieracrchy is taken into account and the density coefficients for each type of settlement – farmsteads, hamlets/villages, large villages/demes- is calculated on the basis of evidence from Ottoman records with more than several examples. The added urban population is estimated by regarding the political context of the era as well archaeological evidence.

The results point out that Late Geometric community was not more than 4000 people and the population increased with a reasonable ratio into the Early Archaic period. The most dramatic increase took place during the Late Archaic period, which was indeed a turning point in the urbanization process and the arrangement of the territory with the introduction of a new administrative system. 5th century BC is hallmarked with a dramatic decrease in the population size, which is reduced to the population of Early Archaic period, like the baby boom of Late Archaic has never taken place. It is well known that it was an era of political turmoil for Klazomenai and the urban center was almost completely abandoned during 5th century BC and the bulk of the population has moved to Karantina island. The excavations both at the urban center on the mainland and the island proved that. The field surveys conducted at the territory of Klazomenai were expected to produce more solid evidence about the settlements that has been inhabited during 5th century BC, but unfortunately did not yield to sufficient number of settlements. This may be due to the fact that dating of 5th century settlements are based on several types Attic material and we are lack of evidence about the local productions of the period. The population estimations in this work based on the documented sites

in the territory, it seems like almost 2/3 of the population who lived in the territory of Klazomenai during Late Archaic period has abandoned the territory as well as the urban settlement. The puzzling point about the demographic trends that the population size of the Late Classical period following 5th century BC was restored to the size of Late Archaic period. The deneoument of people generating the 2/3 of the population is inexplicable. Perhaps the 5th century BC hiatus is only a synthetically created one based on the lack of certain pottery types and it did not last as long as it is assumed to be. Or perhaps we should seek for more 5th century settlements at the inaccessible parts of the territory, focus on the subject specifically. In conclusion 5th century BC more or less remains to be an enigmatic phenomenon for the history of Klazomenai. The population size of Hellenistic period doesnot differ from Late Classical period dramatically and we cannot speak of a significant rate in population increase for Roman period as well. The significant fluctuations from Late Geometric period to Late Classical period had been succeeded with feeble increments in population from Late Classical period to Roman period. The size of the urban population for Hellenistic and Roman period is almost the half of the previous periods as it can be surmised from the fact that the urban center was moved to Karantina island. This is an expected phenomenon due to the changing political conditions which shifted from independent polis states to a centralized administration and Klazomenai seems to be have a larger rural population in Hellenistic and Roman periods which indicates a decline in urbanization degree.

Table.22 Results of the Population Estimations with each method for each period

PERIODS	**I**	**II**	**III**
1) Late Geometric	1700	2712	4087
2) Early Archaic	3000	5499	12,990
3) Late Archaic	3000	21,741	35,448
4) 5th c. BC	2125	4536	9810
5) Late Classical	3000	22,127	36,663
6) Hellenistic	2833	22,454	31,346
7) Roman	2823	30,606	52,428

*The population figures below II. and III. columns are the results multiplied with correction factor 0.75 considering that the all the sites were not inhabited simultaneoulsy.

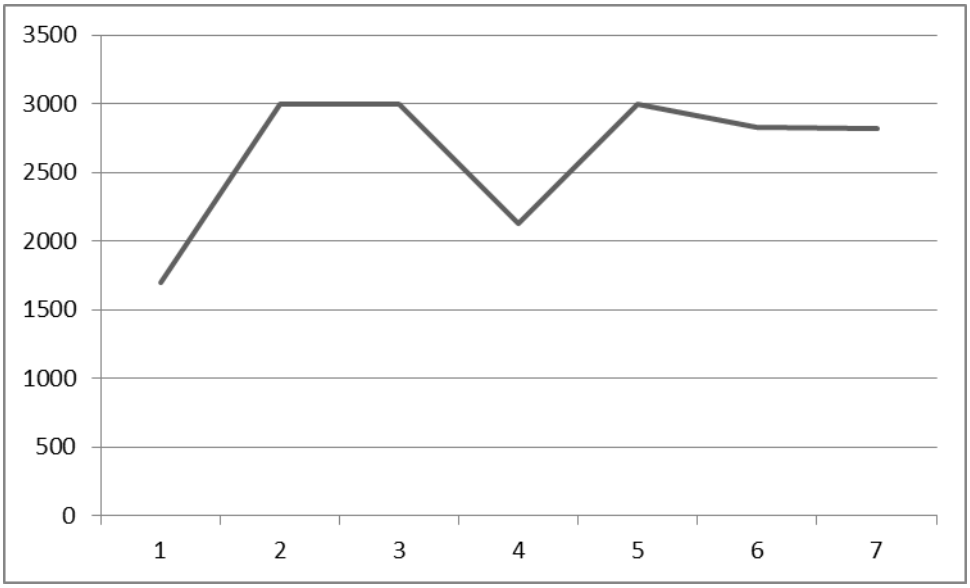

Figure.21 Graphic showing the population fluctuations estimated with Method I.

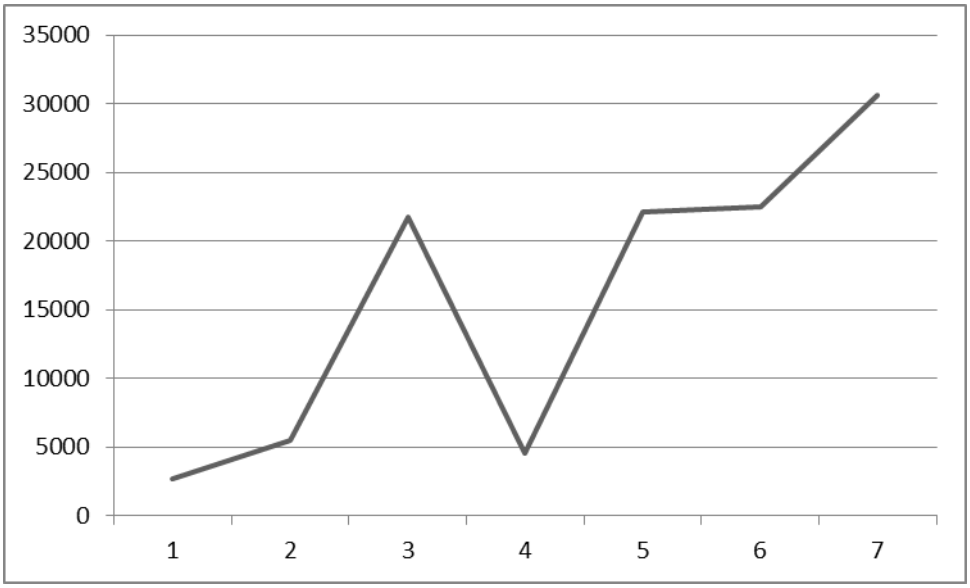

Figure.22 Graphic showing the population fluctuations estimated with Method II.

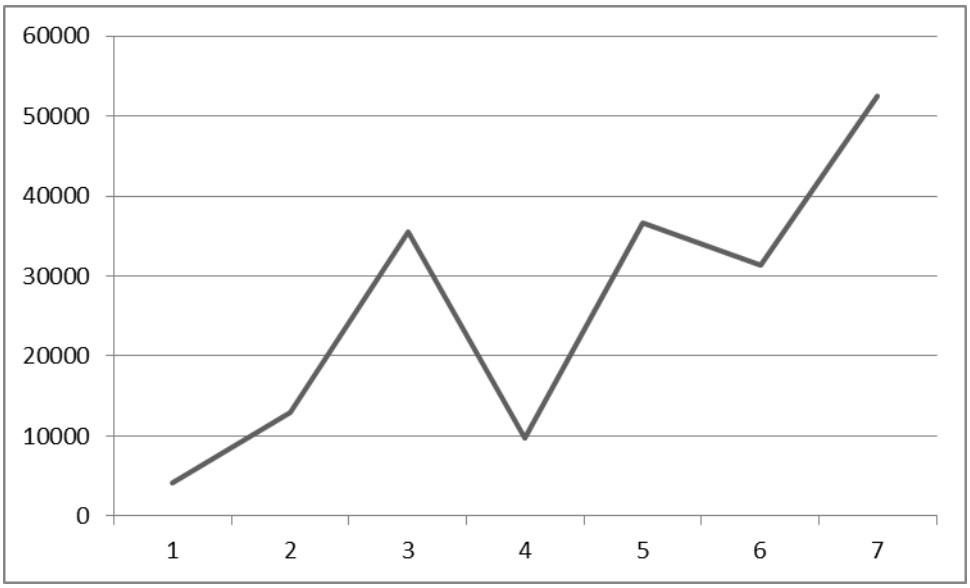

Figure.23 Graphic showing the population fluctuations estimated with Method III.

V.4.Site Hierarchy and Spatial Distribution of Settlements in Klazomenian Khora

This chapter is confined to the description of site distribution for each archaeological period in the given region. The sites are classified into function and size in each thiessen polygon map and density map showing the site distribution in order to visualize the social, economic and administrative networks they created in the Klazomenian *khora*.

Density maps show the parts of the territory where the sites were agglomerated whereas the thiessen polygons determined the domain of each site. Nearest neighbor analysis are executed for each period for determining the basic feature of the settlement pattern whether it was clustered or dispersed and whether it was randomly or regularly distributed. Nearest neighbour values of each period are calculated at two different steps; first the distance to nearest neighbour and secondly the distance to the nearest neighbour of the same size category.

Each section below includes the Nearest Neighbour indices, Thiessen polygon maps and density maps of each archaeological period. This chapter is also aimed to shed a light to the formation of administrative system in the Klazomenian *khora*. The inferences and conclusions reached in this chapter are re-assessed with the conclusions reached for land use and demography in the previous chapters in order to make a comprehensive definition of polis formation in Klazomenai in the last chapter.

A.Late Geometric Period

Late Geometric period is the most problematic and arbitrary phase of settlement history in terms of survey results, in Klazomenai. The findings denoting Late Geometric period were found at 18 sites; Yıldıztepe **(4)**, 1000 Konut **(13)**, Malaş **(20)**, Yarentepe **(28)**, Saraçtepe **(40)**, İçmetepe **(45)**, Hacıgebeş **(52)**, Çalıtepe **(55)**, Osmanbey **(64)**,Tavşantepe East **(72)**, Söğüt Cave **(73)**, Köytepe **(74)**, Inkaya **(89)**, Burgaz **(101)**, Kekliktepe **(123)**, Söğüt **(126)**, Yuvaca **(136)**, Çiftliktepe **(142)**. The surface findings dated to Late Geometric period are not more than several for most cases and for this reason it is not possible to determine the extension of the Late Geometric settlements. Therefore the physical size of the settlements are infered from the extension of surface findings and topographical features of the sites and used as a constant figure for all periods for most cases. However for the Late Geometric period the size of the settlements are not expected to exceed 10 ha. since the centralization and the urbanization processes were at the very beginning. For most cases the settlement pattern was not even nucleated. Therefore all the settlements for this period are classified as 2nd and 3rd order ones. Amongst those Yıldıztepe **(4)** is a necropolis and close to the settlement center of Klazomenai, which was presumably used as a necropolis during the Geometric period as well.[282] Söğüt Cave **(73)** and Inkaya **(89)** are both natural caves situated at the fringes of the Klazomenian *khora* and served as cult centers, perhaps accompanied with a small settlement.

[282] Güngör, Ü. 2006.

The evidence from the central settlement of Klazomenai is meagre and mostly consist of sporadic findings. The apsidal building exposed at FGT sector and related findings dated into EPG-MPG suggest the end of 11th c. BC or the first half of 10th c. BC for the colonization of the site by Ionians.[283] The LBA layers are severely destructed at Liman Tepe mound and therefore it is difficult define the transition from the Late Bronze Age settlement to Early Iron Age settlement. The Protogeometric and Geometric finds are extended from Liman Tepe to FGT, MGT and HBT sectors in a very sporadic fashion. The first settlement of Greek colonizers was concentrated at the settlement center. Regarding the fact that the first colonists had preferred to inhabit the site and the environs of the previous settlement of LBA at the settlement center, a tendency is sought for the Late Geometric sites in the territory to be found at LBA settlements. However such transition is determined only at Yarentepe **(28)** and perhaps at Hacıgebeş **(52)**.

One of the major outcomes about the spatial distribution of Late Geometric sites is that the sites may be grouped into two in terms of their distance to Klazomenai settlement center. Yıldıztepe **(4)**, 1000 Konut **(13)**, Malaş **(20)**, Saraçtepe **(40)**, Burgaz **(101)**, Kekliktepe **(123)** and Çiftliktepe **(142)** are situated within an area of 4 km radius from the settlement center of Klazomenai whereas the others Yarentepe **(28)**, İçmetepe **(45)**, Hacıgebeş **(52)**, Çalıtepe **(55)**, Osmanbey **(64)**, Tavşantepe East **(72)**, Söğüt Cave **(73)**, Köytepe **(74)**, Inkaya **(89)**, Söğüt **(126)**, Yuvaca **(136)** are situated at the fringes of the Klazomenian territory. Such settlement pattern may be referring to a conscious

[283]Aytaçlar, N. 2004.

choice of site aimed to put claim on the borders of the territory as early as the Geometric period. The second group of settlements situated at the fringes of the territory reveal a consistency in terms of topography. They are all situated on hilltops watching over the land. On the other hand the sites located within a diameter of 4 km. from the settlement center may be determining the extension of the *asty*, which includes the totality of the urban buildings and spaces out of the city wall.

The Nearest Neighbour analysis applied at two steps for Geometric period, first only for the first group of settlements situated at the environs of the settlement center within a diameter of 4 km. for being able to test the regular distribution tendency. The total area assumed to be forming the *asty* covers 17km². And the Rn value indicates a tendency towards regular spacing. However the number of the sites used for the calculation is much less than the reccomended number of samples used for Nearest Neighbour Analysis. The regular distribution of the sites around the settlement center at Liman Tepe and Klazomenai can even be observed by eye.

Table.23 Nearest Neighbour Values for settlements close to the urban settlement in Late Geometric Period

Site No.	NNA (km)	NN Site No.
4	1.39	142
13	1.57	20
20	1.57	13
40	2.14	20
101	2.37	142
123	2.92	4

X˚=1.9

Rn= 1.9 / 0.5 x √17/7 = 2.4

The second step of the nearest neighbour analysis includes all the settlements for determining the settlement pattern for the entire territory. In this step the two cult centers Söğüt **(73)** and Inkaya **(89)** are excluded from the calculation for not being sure about a permanent settlement accompanied with the cult center. Yıldıztepe **(4)** is also excluded since it is regarded as one of the settlements that should be evaluated with the settlements at İskele region, which are represented with the sporadic finds. These dispersed settlements are expected to be unified by the end of Late Geometric period and Early Archaic period and formed the nucleated settlement of Klazomenai.

In total the analysis of the 15 settlements revealed a tendency towards regular distribution both for the distance analysis to all settlements and distance to the same size category.

Table.24 Nearest Neighbour Values for Late Geometric Period

No.	Size	NNA(km)	NN N	NNB(km)	NN No
13	2	1.57	20	2.92	13
20	1	1.57	13	2.14	40
28	2	2.39	72	9.22	123
40	1	2.14	20	2.14	20
45	1	3.77	52	7.95	72
52	2	3.77	45	6.63	64
55	2	6.62	123	6.62	123
64	2	4.72	28	4.72	28
72	1	2.39	28	7.95	45
74	2	8.08	126	8.08	126

Table.24 cont.					
101	2	2.36	136	2.36	136
123	2	2.92	13	2.92	13
126	2	8.08	74	8.08	74
136	2	2.36	101	2.36	101
142	1	2.61	20	2.61	20
		X˚=3.69		X˚=5.11	

Rn1= 3.69 / 0.5 x √350/13 = 1.42 (Tendency towards regular spacing)

Rn2= 5.11 / 0.5 x √350/13 = 1.97 (Regular spacing)

In conclusion for Late Geometric period we can assume that a conscious planning and organization of the territory has begun, which regarded to determine the borders as well. Another noteworthy conclusion here is that the organization of the territory predates the organization of the settlement center. Therefore it may be claimed that the state formation process is perhaps linked with the organization of the *khora* and presents a terminus for it. Such phenomenon supports the approach that the *polis* cannot survive without its *khora* and that *polis* and *khora* is a unity.

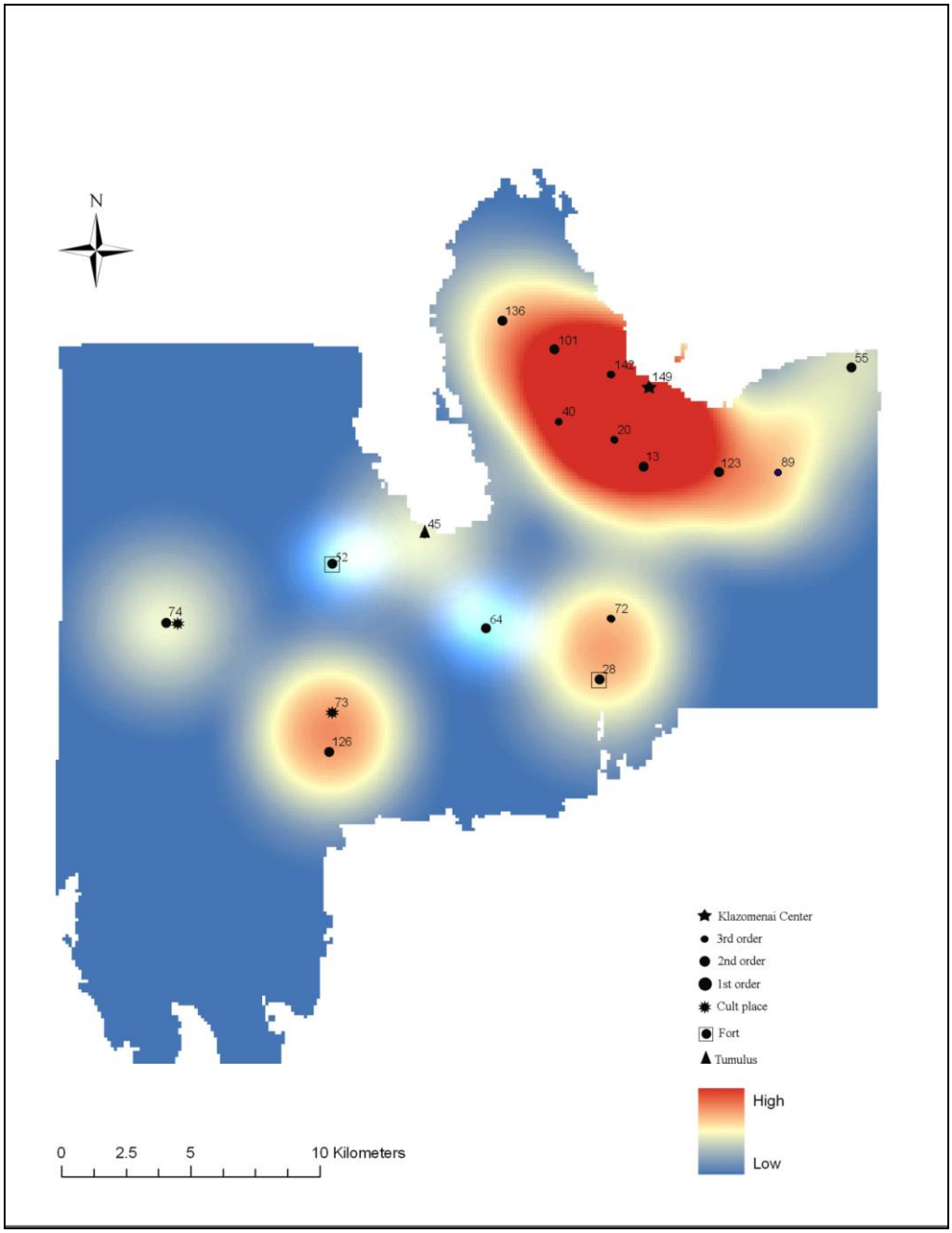

Figure.24 Density Map – Late Geometric Period

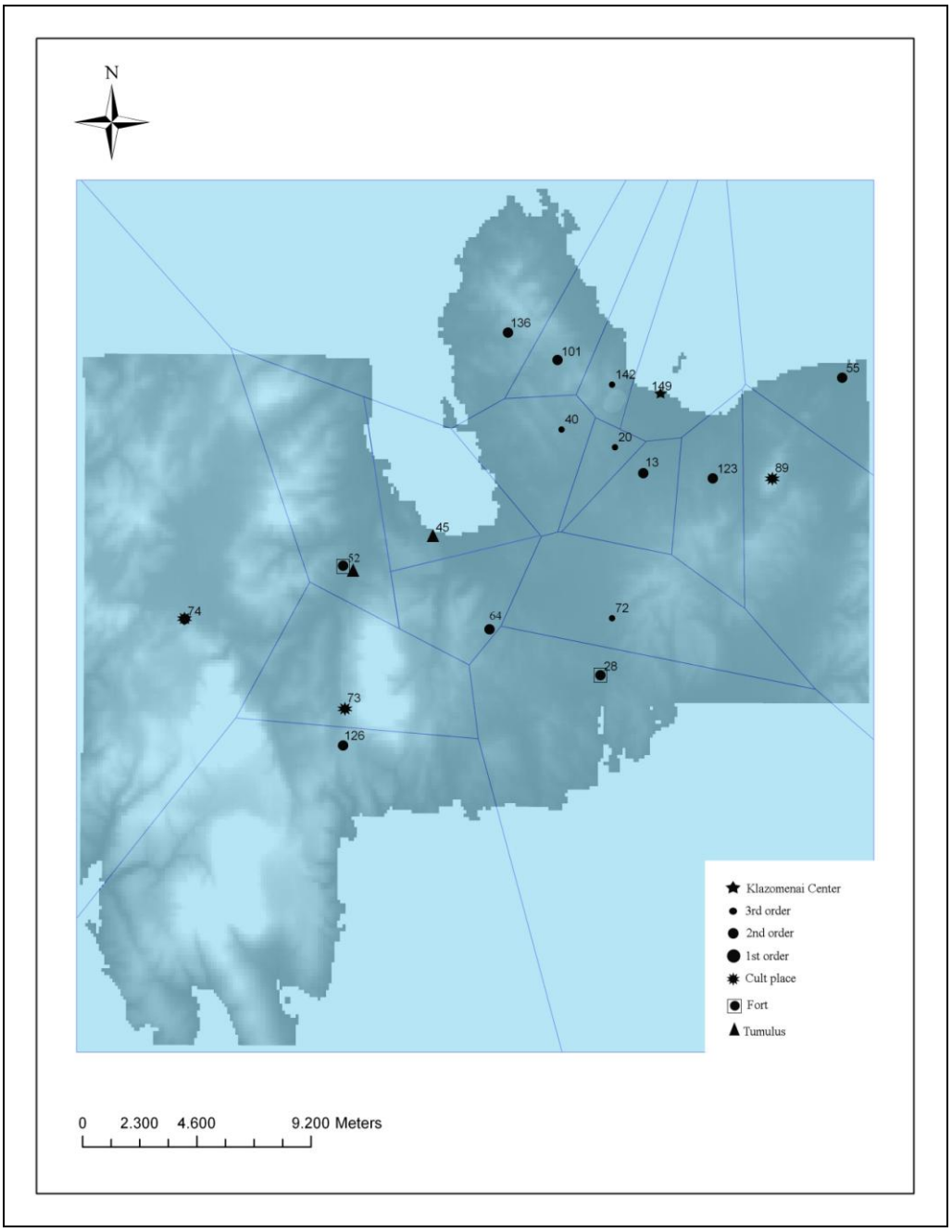

Figure.25 Thiessen Polygon Map– Late Geometric Period

B.Early Archaic Period

The excavations at the settlement center of Klazomenai determined the presence of a hiatus that lasted from 545 BC to 530 BC on the basis of lacking material dated into that period. The main issue for the Archaic period was to distinguish the early and late phases of the period, since at most sites the quantity and the quality of the surface findings are poor. Yet it is still possible to classify 27 sites as Early Archaic on the basis of either surface findings or for being possessed with a fort, tumulus or a cult center assuming that defensive network and ritual landscape has been formed during the Early Archaic period. The previous period namely Late Geometric period is represented only in 18 sites, whereas the number of Early Archaic sites increase upto 37, which of only 27 are settlements. The transition from Late Geometric period to Early Archaic period could be attested at 12 of those sites which are namely Yıldıztepe **(4)**, Binkonutlar **(13),** Malaş **(20)**,Yarentepe **(28)**, Saraçtepe **(40)**, Alibey **(51)**, Hacıgebeş **(52)**, Tavşantepe E **(72)**, Burgaz **(101)**, Kavcıhacı **(123)**, Söğüt **(126)**, Yuvaca **(136)**. The physical size of none of these settlements exceeded 10 ha on the basis of the extension of the related archaeological material. 15 of the Early Archaic sites are classified as 2nd order, whereas 12 of those are smaller than 3 ha and classified as 3rd order sites.

During the Early Archaic period surprisingly there are no settlements at the western half of the Menteş peninsula, but the settlements are clustered around settlement center at İskele and alined along the mountainous range that sets the natural frontier of Klazomenain territory to the east. For the Early Archaic

period we can speak of 4 clusters of settlements. Apparently the frontiers have been marked with the fortified settlements and cult places. Most of the sites of the Early Archaic period are clustered around the settlement center. The second cluster is situated on the Mandalan plain to the south and the third is situated around İçmeler and Gülbahçe region and the last cluster is situated to the western frontier.

In conclusion Early phase of the Archaic period seems to be not dramatically differing from the conditions of the Late Geometric period. The increase in the number and the size of settlements do not imply a breaking point. None of the sites of Early Archaic period are classified into 1st order sites. However the number of 2nd order sites are more than 3rd order ones unexpectedly, perhaps due to the "site loss" factor caused by survey methodology or surface processes. In any case the number and the size of nucleated settlements create a settlement pattern not very different from the settlement pattern of Late Geometric period.

Table.25 Nearest Neighbour Values for Early Archaic Period

No.	Size	NNA(km)	NN No	NNB(km)	NN No
6	2	1,51	21	1,51	21
8	2	0,67	20	2,08	13
13	2	1,04	17	2,92	123
15	1	1,37	13	1,55	17
17	1	1,04	13	1,55	15
20	1	0,67	8	1,41	17
21	2	1,51	6	1,51	6

Table.25 cont.					
24	1	1,03	72	1,03	72
26	1	1,13	28	1,90	72
28	2	1,13	26	4,72	64
32	1	1,31	28	1,54	33
33	1	1,54	32	1,54	32
40	1	1,62	8	2,14	20
41	1	2,27	43	2,27	43
43	1	2,11	64	2,27	41
49	2	3,26	126	3,26	126
51	2	0.90	52	0.90	52
52	2	0.90	51	0.90	51
64	2	2,11	43	4,72	28
72	1	1,03	24	1,03	24
74	2	6,82	52	6,82	52
83	1	2,69	123	3,07	15
101	2	2,36	136	2,36	136
123	2	1,86	124	1,86	124
124	2	1,86	123	1,86	123
126	2	3,26	49	3,26	49
136	2	2,36	101	2,36	101

Xº=1.82 Xº=2,59

Rn= 1.82 / 0.5 x √350/27 = 1,00 (Random)

Rn= 2,30 / 0.5 x √350/27 = 1,8 (Tendency towards regular spacing)

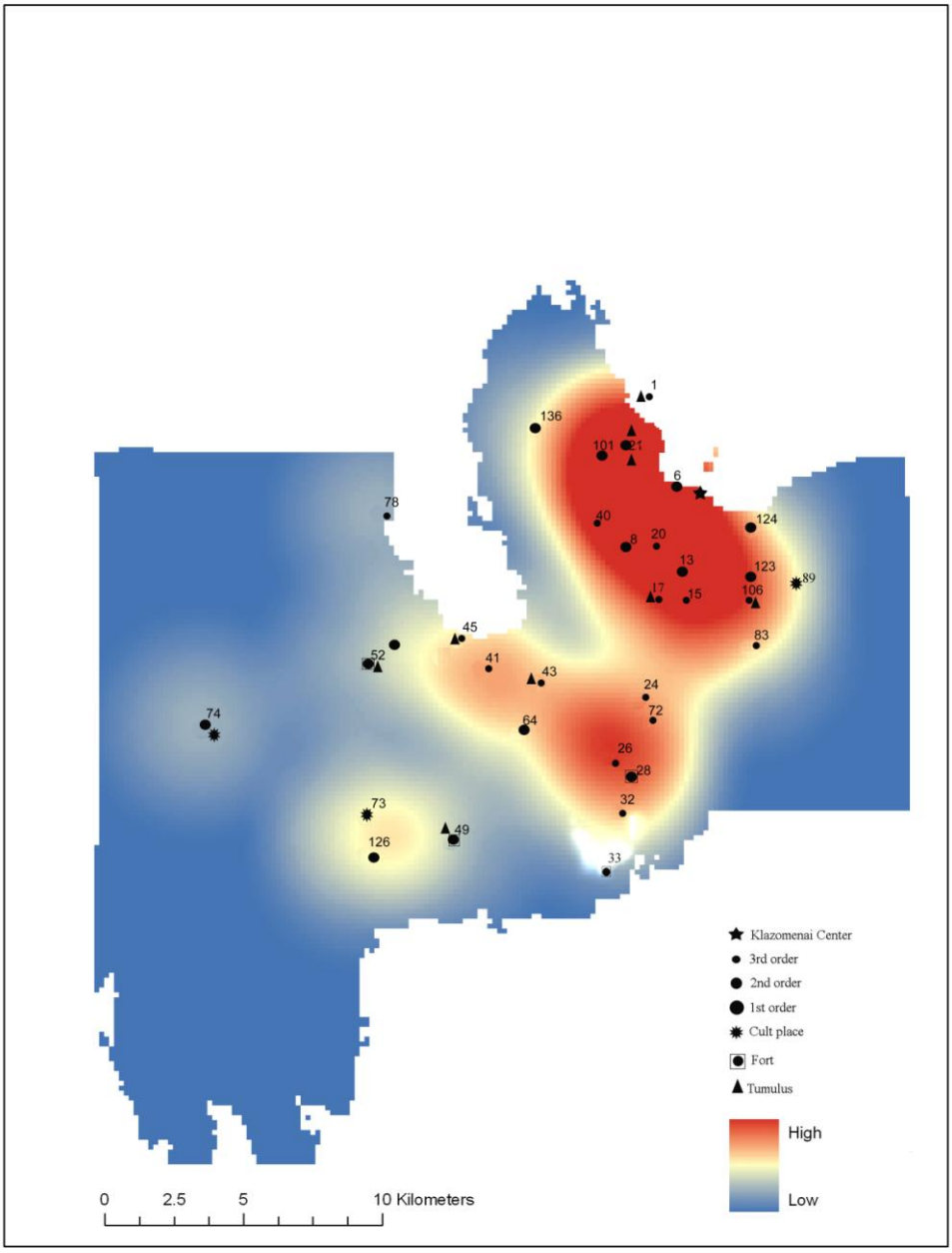

Figure.26 Density Map – Early Archaic

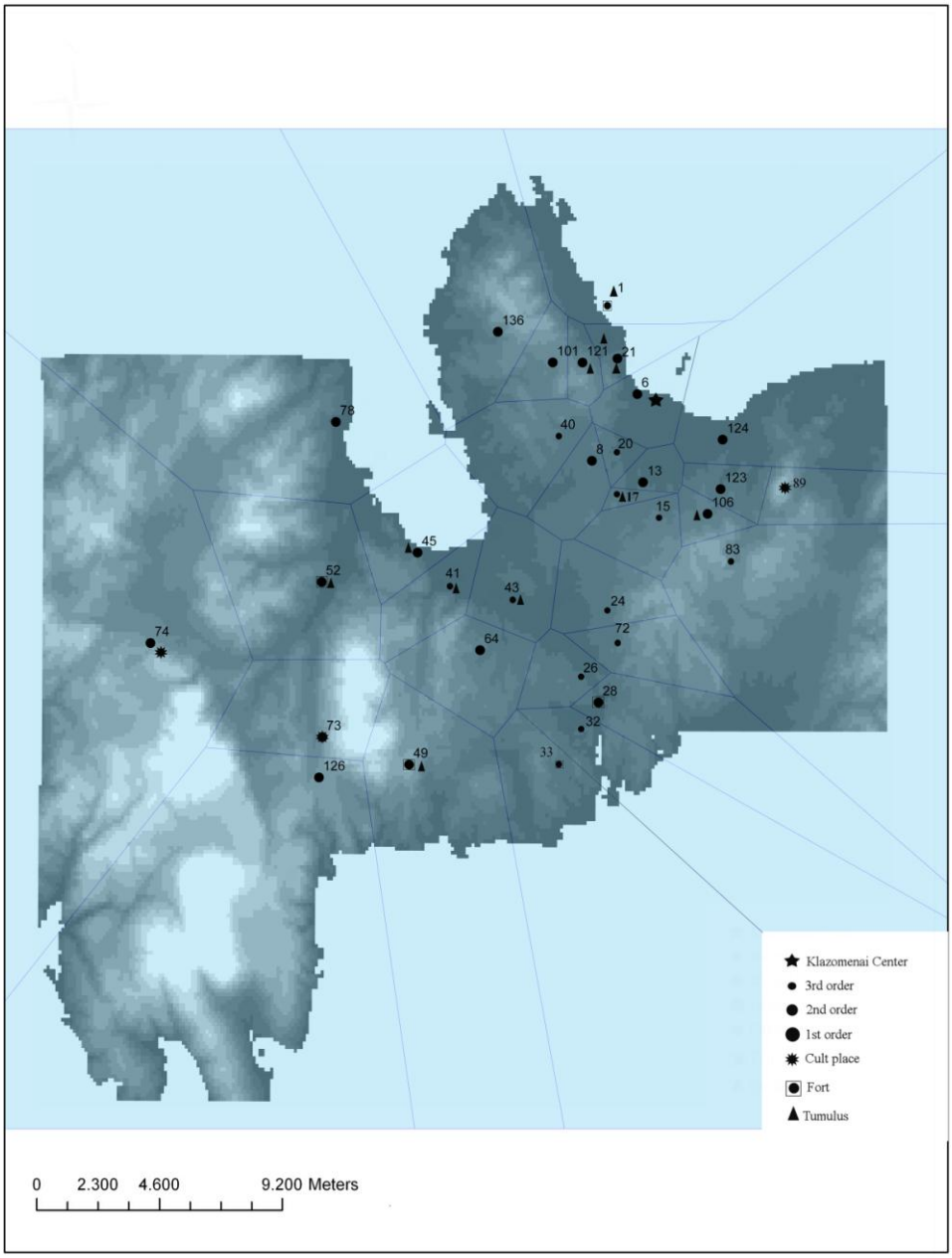

Figure.27 Thiessen Polygon Map – Early Archaic

C. Late Archaic Period

In total 76 sites are dated into the Late Archaic period. The Late Archaic period is represented with the abrupt increase in the number of settlements. Perhaps we can assume that the dramatic increase in the number of settlements and the diffuse use of the territory took place during the Late Archaic period. This phenomenon was concurrent with the significant changes in the settlement layout of the central settlement of Klazomenai, where the residential quarters and industrial quarters were clearly demarcated from eachother; fortification wall was either built or renewed. This dramatic increase in the number of the sites point out the diffuse use of the entire territory as well as the increasing population.

The Nearest Neighbour values for Late Archaic period reveal that the view has not changed dramatically in terms of settlement pattern type despite the dramatic increase in the number of settlements. The Rn value for distance to nearest neighbour is 1,05 which points out a random distribution of settlements. On the other hand the Rn value for the distance to nearest neighbour of same size for Late Archaic is 1,8 which implies a significant tendency towards regular spacing of the settlements.

I have already argued that the organization of the territory have been initiated by the Late Geometric period. During the Early Archaic period it seems highly likely that the defensive network around the territory has been accomplished by regarding the convenient features of its topography as well as the ritual and political landscapes which are represented with the conscious placing of cult centers, elements of defensive network and tumuli. Therefore it

may be concluded that by Late Archaic period the conscious arrangement of the territory has been accomplished and the organization of the urban settlement layout has just been initiated at the settlement center.

Late Archaic period is characterized with the significant increase in the number of settlements, which rised up to 66 from 27. Amongst those 9 settlements are classified as 1st order sites; Yarentepe **(28)**, Küpalanı **(44)**, Gerçinektepe **(62)**, Mandalan 1 **(66)**, Değirmen **(81)**, Burgaz **(101)**, Özbek Ovası **(119)**, Manastır **(132)**, Çobanpınarı 9 **(161)**. The number of 2nd order sites are 24 **(6, 8, 13, 21, 27, 47, 49, 52, 55, 63, 64, 70, 72, 79, 85, 117, 118, 122, 123, 124, 126, 128, 136, 139)**, whereas the 3rd order sites are 32 **(7, 15, 17, 20, 23, 24, 26, 29, 32, 33, 40, 41, 42, 43, 60, 61, 65, 69, 72, 77, 83, 86, 88, 104, 107, 108, 142, 143, 145, 151, 160, 164)** in number, and as expected more than 2nd order ones.

Amongst the 1st order sites of Late Archaic period only Yarentepe **(28)** and Burgaz **(101)** have been inhabited previously and the rest seem to be founded during Late Archaic period according to the survey results. The 1st order sites of Late Archaic period continued to be inhabited into the Roman period. Their distribution over the land shows a regular spacing and the site choice might have been consciously committed for the arrangement of *khora for* administrative aims. The main difference from the Early Archaic period to Late Archaic period is the foundation of 1st order sites and their distribution that implies a regular organization of the land.

Table.26 Nearest Neighbour Values for Late Archaic Period

No.	Size	NNA(km)	NN No	NNB(km)	NN No
6	2	1,0	142	1,51	21
7	1	0,58	15	0,58	15
8	2	0,67	20	2,08	13
13	2	0,67	139	0,67	139
15	1	0,58	7	0,58	7
17	1	1,04	13	1,55	15
20	1	0,67	8	1,41	17
21	2	1,11	142	1,51	6
23	1	0,52	72	0,55	24
24	1	0,55	23	0,55	23
26	1	1,13	28	1,90	72
27	2	0,70	7	1,89	139
28	3	1,13	26	3.20	161
29	1	0,10	151	0,10	151
32	1	0,42	145	0,42	145
33	1	1,42	160	1,42	160
40	1	1,62	8	2,20	143
41	1	0,82	42	0,82	42
42	1	0,82	41	0,82	41
43	1	0,60	65	0,60	65
44	3	1,53	60	2,18	62
47	2	2,25	49	2,25	49
49	2	2,25	47	2,25	47
51	2	0.90	52	0.90	52

Table.26 cont.					
52	2	0.90	52	0.90	52
55	2	5,56	107	5,60	124
60	1	1,53	44	1,37	61
61	1	0,81	62	1,37	60
62	3	0,81	61	2,18	119
63	2	0,71	119	4,02	136
64	2	1,79	65	2,74	70
65	1	0,60	43	0,60	43
66	3	0,57	69	3,58	44
69	1	0,57	66	1,36	69
70	2	1,23	26	2,36	28
72	1	0,52	23	0,52	23
74	2	1,16	77	10,13	132
77	1	1,16	74	1,74	104
79	2	1,76	117	1,76	117
81	3	1,46	117	10,33	74
83	1	1,17	86	1,17	86
85	2	2,38	88	2,96	122
86	1	0,72	88	0,72	88
88	1	0,72	86	0,72	86
101	3	2,42	21	3,77	119
104	1	1,74	77	1,74	77
107	1	1,32	123	1,64	108
108	1	0,57	123	1,64	107
117	2	1,46	81	1,76	79

Table.26 cont.					
118	2	0,80	119	2,62	136
119	3	0,71	63	2,18	62
122	2	1,80	83	2,49	123
123	2	0,57	108	1,86	124
124	2	1,41	108	1,86	123
126	2	3,26	49	3,26	49
128	2	2,58	77	4,96	126
132	3	3,81	126	3,81	126
136	2	2,36	101	2,62	118
139	2	0,67	13	0,67	13
142	1	1,01	6	1,05	143
143	1	1,05	142	1,05	142
145	1	0,42	32	0,42	32
151	1	0,10	29	0,10	29
160	1	0,20	151	0,20	151
161	3	1,34	160	7,21	66
164	1	1,70	24	1,70	24

Xº=1.21 Xº=2.07

Rn= 1.21 / 0.5 x √350/66 = 1.05 Random

Rn= 2.07 / 0.5 x √350/66 = 1.80 Tendency towards regular

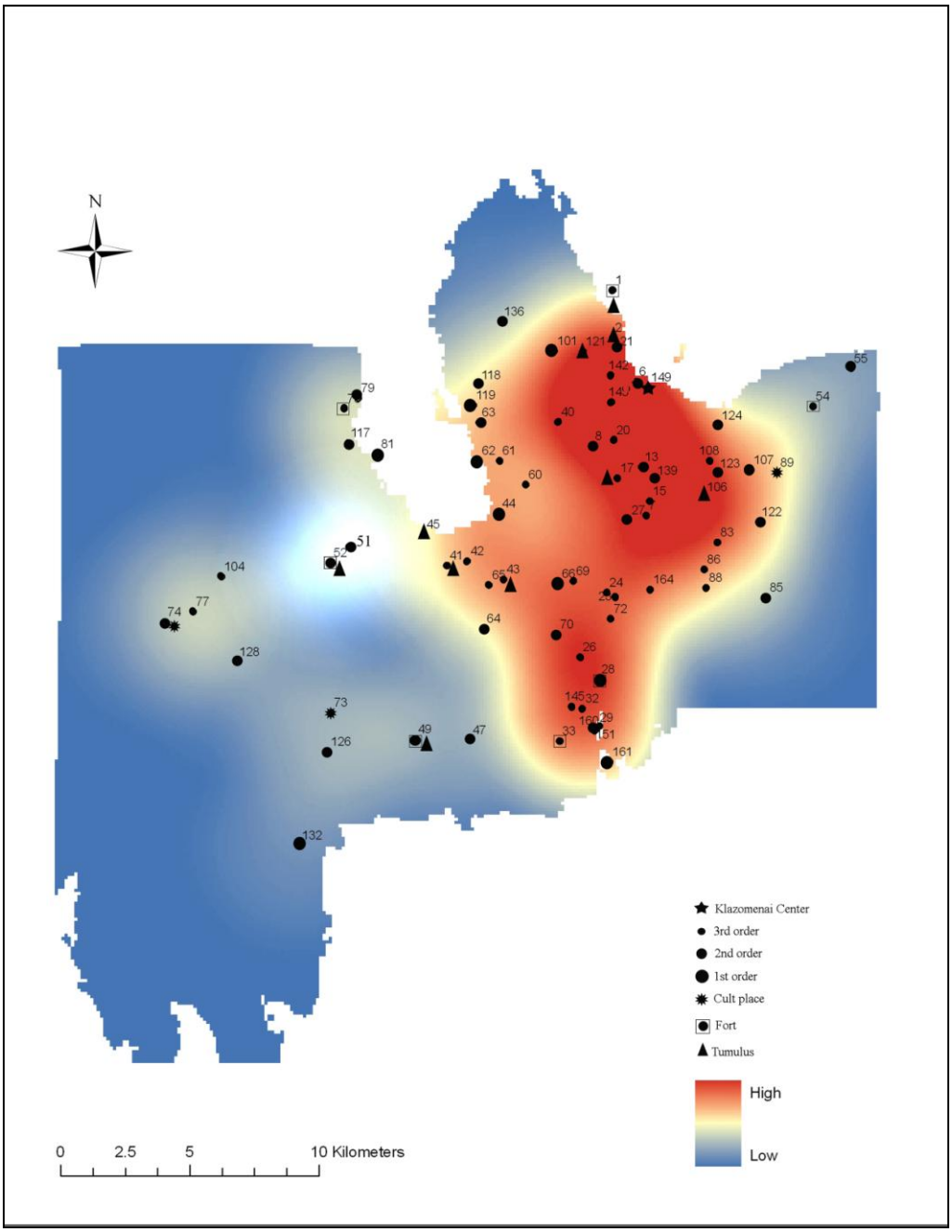

Figure.28 Density Map – Late Archaic

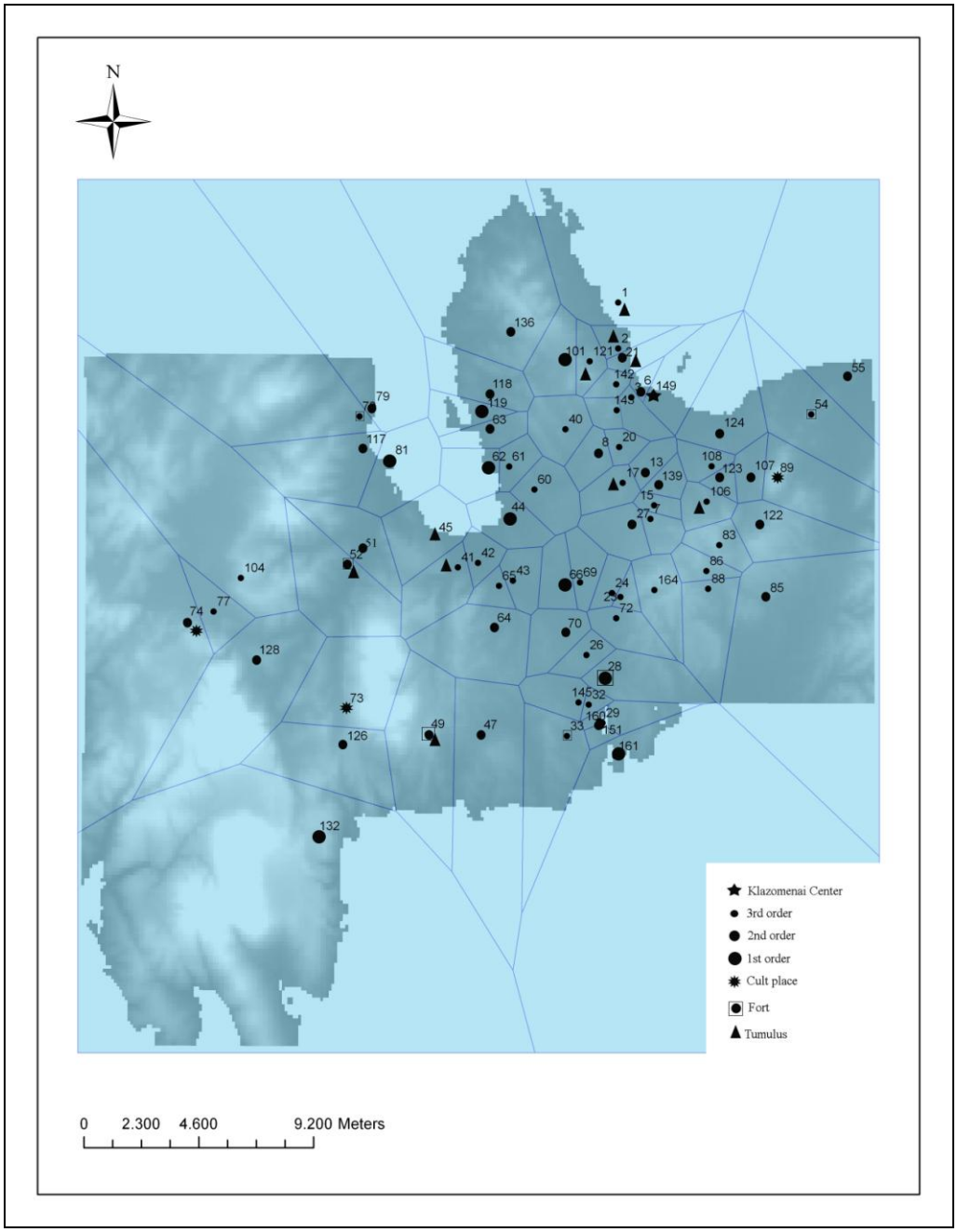

Figure.29 Thiessen Polygon Map – Late Archaic Period

D. 5th Century BC

5th century BC is evaluated as a separate phase for the settlement patterns of Klazomenian territory, since it is the most enigmatic period for the settlement history of Klazomenai. It is a common phenomenon that the Ionian Revolt that took place between 499-494 BC had an impact on the history of Ionian cities, which lasted for a century. This impact is reflected with the hiatus determined at the settlement center of Klazomenai. The occupation seems to be interrupted during 5th c. BC and the beginning of the hiatus is marked with a burned layer at FGT and MGT sectors. The lack of pottery dated into 5th century BC at the industrial quarters as well as the burial grounds proves the sudden break in the occupation. In this sense the archaeological evidence supports the statement of Pausanias (VII.3.9) about the Klazomenians who moved to the island with the fear of Persians. The test trench opened on the Karantina Island attested the presence of 5th century BC occupation. The archaeological surveys conducted in the territory seeked the traces of occupation in the rural area. The difficulty is caused by the fact that little is known about the local pottery production of the era for a precise dating. The hiatus at the settlement center on the mainland defined with the lack of Attic material dated into this period. The examination of local Ionian material is not of much help. Most of the pottery forms known from Late Archaic deposits on the mainland might have been continued to be produced almost in the same fashion.[284]

Therefore it was extremely difficult to discern the 5th century BC sites from the corpus of the Archaic sites. In total 21 sites are dated into 5th century

[284] Güngör, Ü. 2004.

BC. All the sites have been occupied during Late Archaic period as well except Tınaztepe **(134)**, where the surface material is very scanty and 5th century is proposed on the basis of a single fragment. The number of settlements decreased from 65 to 17 during the 5th century BC. It is difficult to make any comments about the size of the settlements for 5th c. BC since at most places the period is represented with several findings and it is not possible to determine its extension.

The nearest neighbour indices reveal a tendency towards random distribution for the distance to nearest neighbor. For the distance to nearest neighbor of same size the Rn value points out a perfectly regular distribution.

5th century BC hiatus remains to be an enigmatic archaeological problem for Klazomenai. The most important issue is how long the hiatus had lasted. There is solid archaeological evidence from the settlement center and Karantina Island that proves the sudden break in the occupation of the mainland and the movement of the population to Karantina Island. However as it is already discussed in Chapter III.3.2.D neither the area of the island nor the totality of settlements documented in the surveys seem to be providing sufficient space for the Klazomenian *demos.* It seems like 2/3 of the population lived at other places or the view yielded by the surveys is quite deceptive and we must keep on seeking other 5th c. BC settlements that might have been lacking in our corpus of sites either due to site loss factor or misdating of pottery.

Table.27 Nearest Neighbour Values for 5th c. BC Period

No.	Size	NNA(km)	NN No	NNB(km)	NN No
8	2	1,85	143	4,48	63
15	1	2,81	123	3,40	86
28	2	4,02	66	11,32	52
52	2	5,65	77	6,48	79
63	2	0,71	119	4,48	8
66	1	3,55	164	3,55	164
77	1	5,65	52	14,20	66
79	2	6,48	52	6,48	52
86	1	2,23	164	2,23	164
101	3	2,36	136	3,77	119
119	3	0,71	63	3,77	101
123	2	1,86	124	1,86	124
124	2	1,86	123	1,86	123
134	2	3,59	124	3,59	124
136	2	2,36	101	4,02	63
143	1	1,85	8	4,12	15
164	1	2,23	86	2,23	86

Xº=2,9 Xº=4,8

Rn= 2,9 / 0.5 x √350/17 = 1.3 (Tendency towards regular)
Rn= 4,8 / 0.5 x √350/17 = 2,0 (Regular)

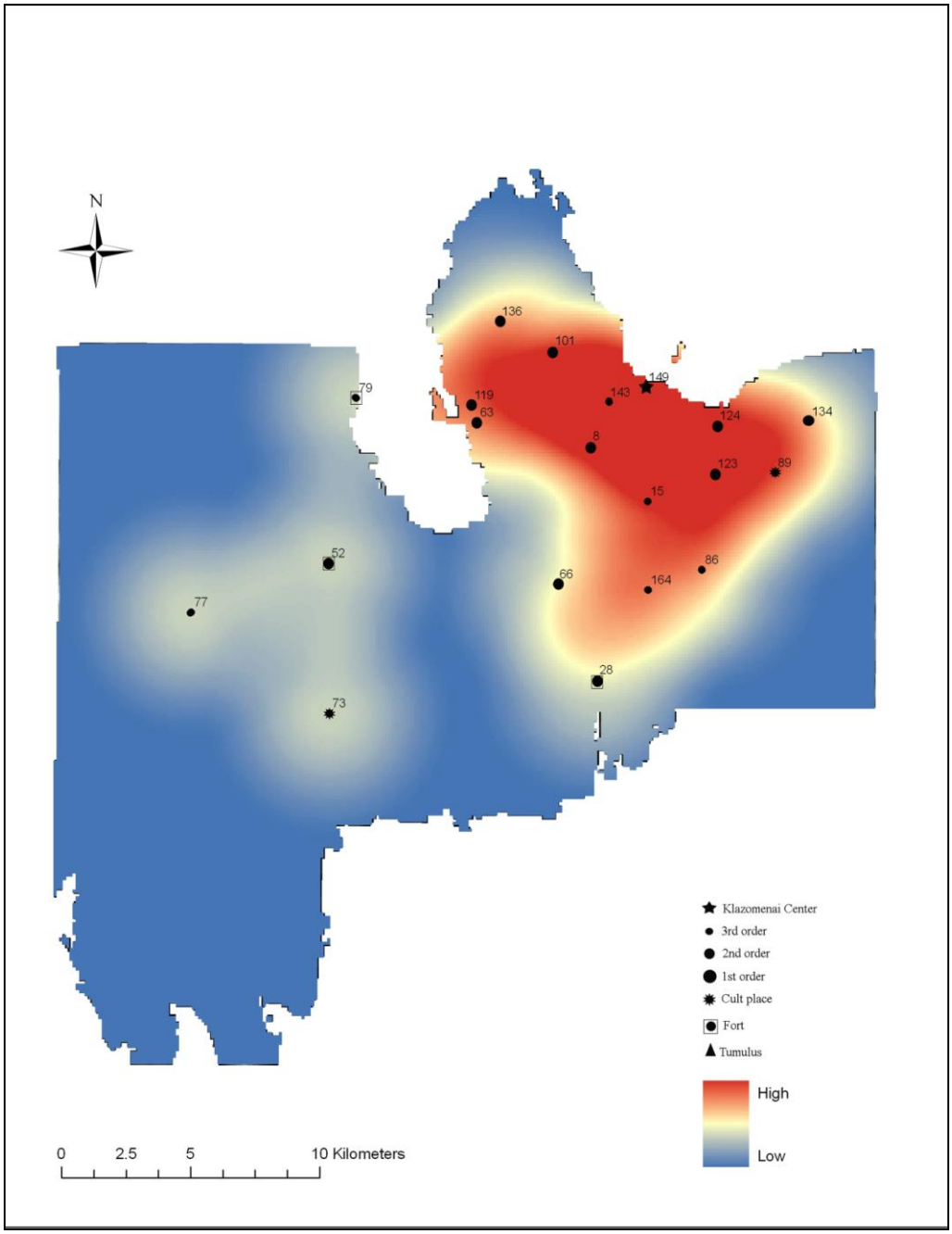

Figure.30 Density Map – 5th c. BC

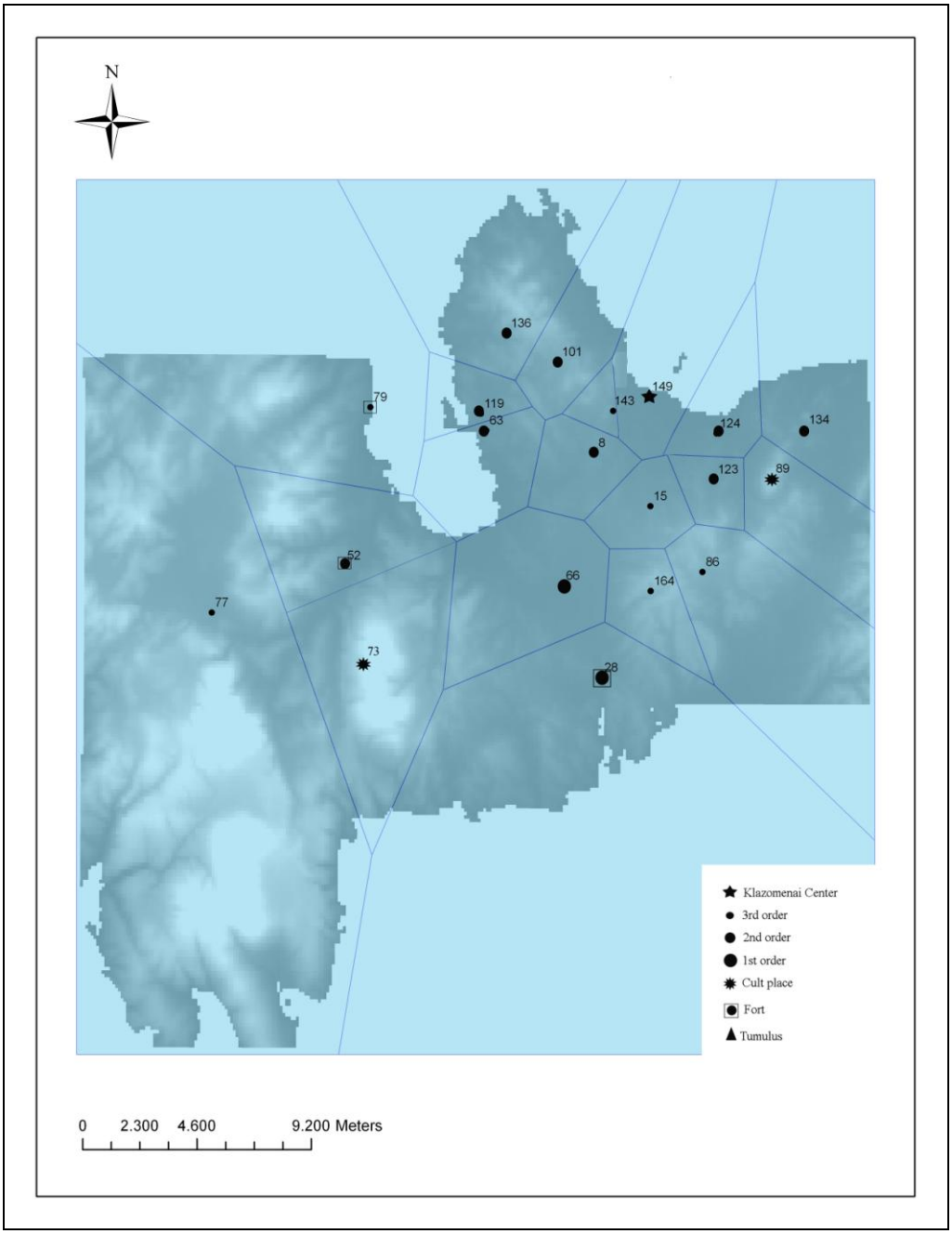

Figure.31 Thiessen Polygon Map – 5th century BC

E. Late Classical Period

In total 66 sites are dated into Late Classical period and 58 of those are classified as settlement. The transition from Late Archaic period to Late Classical period without any hiatus during the 5th c. BC is followed at 13 sites **(15; 28; 32; 63; 66; 79; 86; 101;119; 123; 124; 136; 164)**. On the other hand 32 of the sites has been inhabited both during the Late Archaic and Late Classical periods with a hiatus during the 5th c. BC **(6; 13; 21; 26; 27; 29; 32; 33; 40; 42; 43; 47; 55; 60; 61; 62; 64; 70; 72; 74; 81; 88; 104; 107; 108; 118; 122; 132; 139; 142; 160; 161)**. 13 of the Late Classical period settlements have not been inhabited previously **(10; 12; 18; 37; 44; 51; 53; 59; 67; 68; 71; 114; 141)**. Disregarding the 5th century phenomenon the number of the settlements decreased from 66 to 58, from Late Archaic period to Late Classical period.

The Rn value for nearest neighbour 1.18 which shows a slight tendency towards regular spacing, on the other hand the Rn value for nearest neighbour of the same size is 2.1 which points out the perfectly regular distribution of the settlements.

The number of 1st order sites are 8 in number **(44, 62, 66, 81, 119, 132, 161)** and regularly distributed over the given area. The number of 2nd order ones are 28 in number **(6, 10, 12, 13, 18, 21, 27, 28, 37, 47, 51, 53, 55, 59, 63, 64, 67, 70, 74, 79, 118, 122, 123, 124, 136, 139, 140, 141)** and the number of 3rd order settlements reach up to 22 **(15, 26, 29, 32, 33, 40, 42, 43, 60, 61, 68, 71, 72, 86, 88, 104, 107, 108, 114, 142, 160, 164)**.

A large percentage of the settlements are clustered on the plain extending from north to south at the center of the territory and few are situated at the

fringes. 18 of the settlements from Late Archaic to Late Classical period were abandoned **(7, 8, 17, 23, 24, 41, 49, 65, 69,77, 83, 85, 117, 126, 128, 143, 145, 151)** and 14 of those settlements were 3rd order sites. On the other hand 11 new settlements have been founded **(10, 12, 18, 37, 51, 53, 59, 68, 71, 114, 141)** and 11 of those were 2nd order sites. Therefore we may conclude that those settlements that have been abandoned were absorbed by larger 2nd order settlements. In fact it is clear that the number of 2nd order sites are more in number than 3rd order sites and this dramatically differs from the site hierarchy of Late Archaic period.

Table.28 Nearest Neighbour Values for Late Classical Period

No.	***Size***	***NNA(km)***	***NN No***	***NNB(km)***	***NN No***
6	*2*	*1,01*	*142*	*1,51*	*21*
10	*2*	*0,36*	*27*	*0,36*	*27*
12	*2*	*1,31*	*40*	*2,88*	*13*
13	*2*	*0,67*	*139*	*0,67*	*139*
15	*1*	*0,88*	*139*	*2,79*	*108*
18	*2*	*0,98*	*124*	*0,98*	*124*
21	*2*	*1,11*	*142*	*1,51*	*6*
26	*1*	*1,13*	*28*	*1,42*	*71*
27	*2*	*0,36*	*10*	*0,36*	*10*
28	*2*	*1,31*	*32*	*2,36*	*70*
29	*1*	*0,30*	*160*	*0,30*	*160*
32	*1*	*0,69*	*29*	*0,69*	*29*
33	*1*	*1,39*	*29*	*1,39*	*29*

Table.28 cont.					
37	*2*	*1,26*	*119*	*1,34*	*63*
40	*1*	*1,31*	*12*	*2,71*	*61*
42	*1*	*1,58*	*43*	*1,58*	*43*
43	*1*	*1,58*	*42*	*1,58*	*42*
44	*3*	*1,53*	*60*	*2,18*	*62*
47	*2*	*3,47*	*33*	*4,29*	*64*
51	*2*	*8,05*	*74*	*8,05*	*74*
53	*2*	*1,88*	*55*	*1,88*	*55*
55	*2*	*1,88*	*53*	*1,88*	*53*
59	*2*	*0,74*	*62*	*1,37*	*60*
60	*1*	*1,37*	*61*	*1,37*	*61*
61	*1*	*0,81*	*62*	*1,37*	*60*
62	*3*	*0,81*	*61*	*2,18*	*119*
63	*2*	*0,71*	*119*	*0,86*	*59*
64	*2*	*2,11*	*43*	*2,74*	*70*
66	*3*	*0,34*	*67*	*3,58*	*44*
67	*2*	*0,34*	*66*	*2,32*	*70*
68	*1*	*0,65*	*67*	*2,78*	*43*
70	*2*	*1,23*	*26*	*2,74*	*64*
71	*1*	*0,71*	*72*	*0,71*	*72*
72	*1*	*0,71*	*71*	*0,71*	*71*
74	*2*	*2,80*	*104*	*8,05*	*51*
79	*2*	*2,71*	*81*	*11,42*	*74*
81	*3*	*1,24*	*114*	*6,32*	*44*
86	*1*	*0,72*	*88*	*0,72*	*88*

Table.28 cont.					
88	*1*	*0,72*	*86*	*0,72*	*86*
101	*3*	*2,36*	*136*	*3,77*	*119*
104	*1*	*2,80*	*74*	*7,29*	*114*
107	*1*	*1,32*	*123*	*1,64*	*108*
108	*1*	*0,57*	*123*	*1,64*	*107*
114	*1*	*1,24*	*81*	*3,96*	*42*
118	*2*	*0,80*	*119*	*1,45*	*63*
119	*3*	*0,71*	*63*	*3,77*	*101*
122	*2*	*2,03*	*107*	*2,49*	*123*
123	*2*	*0,57*	*108*	*1,86*	*124*
124	*2*	*0,98*	*18*	*0,98*	*18*
132	*3*	*7,76*	*47*	*15,14*	*81*
136	*2*	*2,36*	*101*	*2,62*	*118*
139	*2*	*0,67*	*13*	*0,67*	*13*
140	*2*	*0,65*	*10*	*0,65*	*10*
141	*2*	*1,45*	*18*	*1,45*	*18*
142	*1*	*1,01*	*6*	*2,73*	*40*
160	*1*	*0,30*	*29*	*0,30*	*29*
161	*3*	*1,34*	*160*	*7,21*	*66*
164	*1*	*2,16*	*88*	*2,16*	*88*

Xº=1,45 Xº=2,65

Rn= 1,45 / 0.5 x √350/58 = 1.18 (Tendency towards regular)

Rn= 2,65/ 0.5 x √350/58 = 2,17 (Regular)

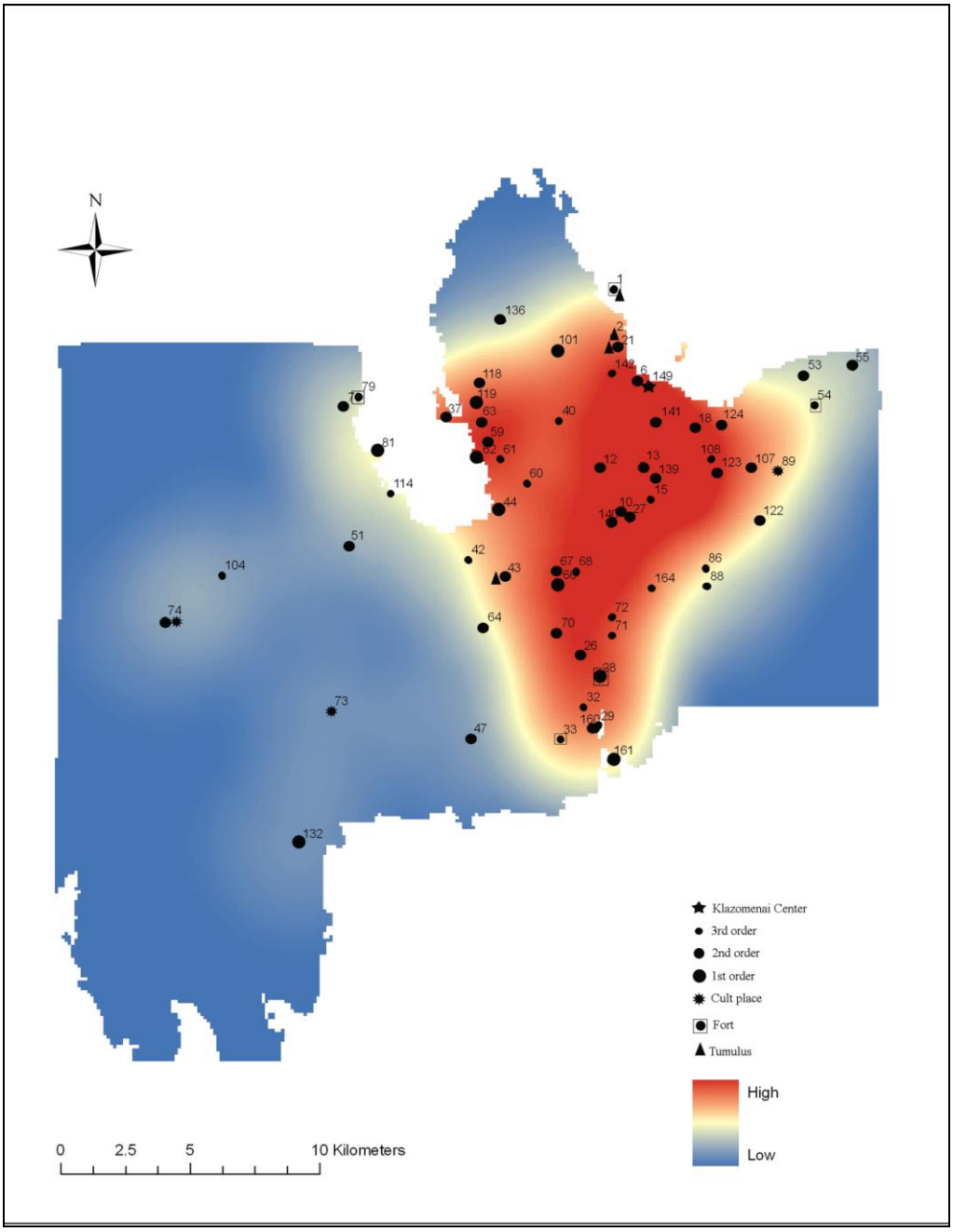

Figure.32 Density Map – Late Classical Period

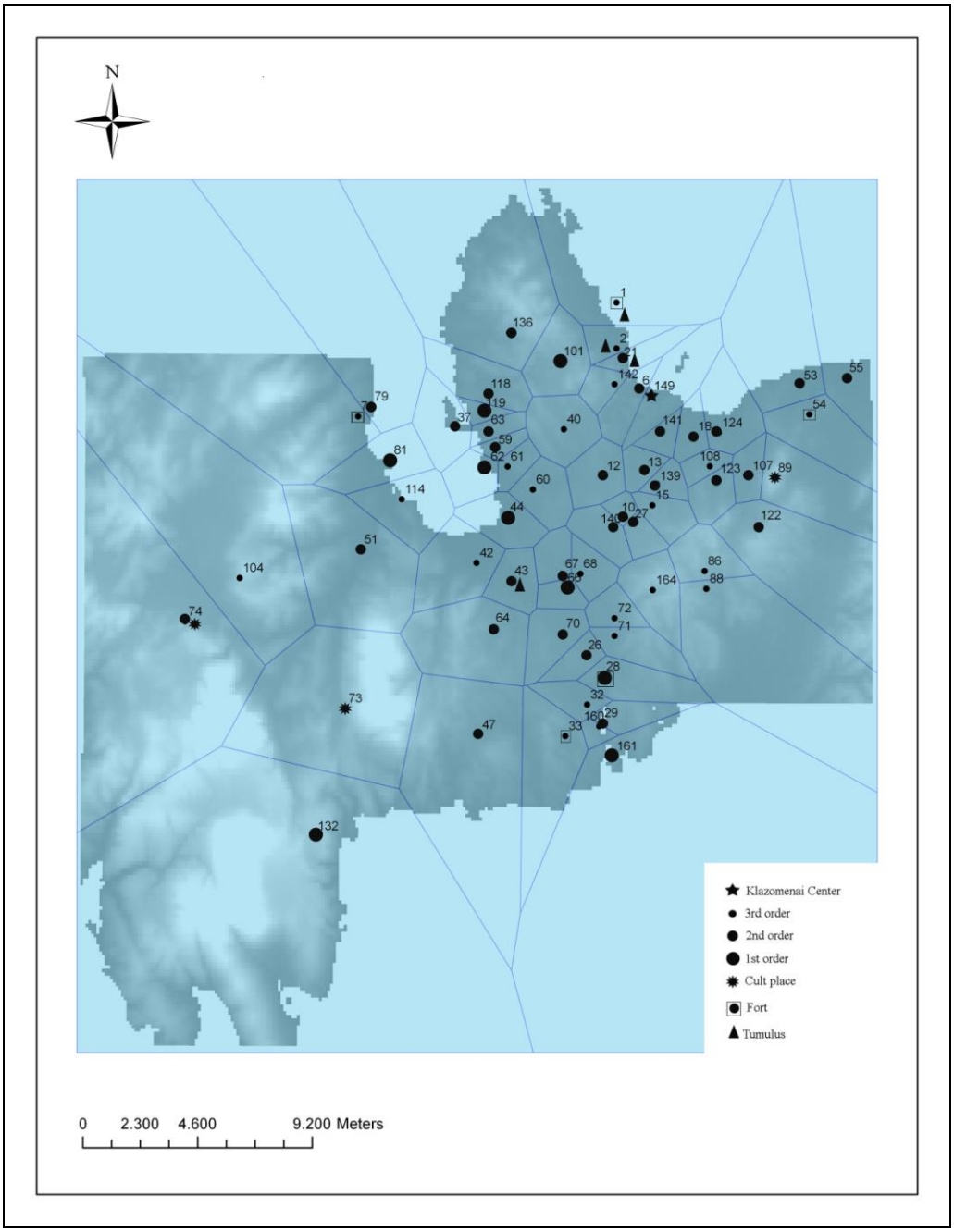

Figure.33 Thiessen Polygon Map – Late Classical Period

F.Hellenistic Period

In total 42 sites are dated into the Hellenistic period and 38 of those are settlements. The number of settlements decreased from 58 to 38 from Late Classical period to Hellenistic period. The 1st order sites that have been founded during Late Archaic period **(44, 62, 66, 81, 101, 119, 132, 161)** continued to be inhabited into Late Classical period and also into Hellenistic period as well with one addition, which is Çiftlikovası **(115)**. The transition from Late Classical period to Hellenistic period was attested at 33 settlements **(10, 12, 13, 18, 21, 27, 33, 40, 42, 44, 51, 55, 59, 61, 62, 63, 64, 66, 67, 74, 79, 81, 86, 101, 118, 119, 122, 132, 136, 140, 160, 161, 164).** The number of 3rd order sites decreased dramatically during Hellenistic period in comparison with Late Classical period, which was then 22 in number. For Hellenistic period only 9 settlements are classified as 3rd order site **(33, 40, 42, 46, 61, 77, 86, 160, 164).** The decrease in the number of settlements particularly the small number of 3rd order sites imply synoeceism of settlements, which was indeed the characteristic feature of urbanization during Hellenistic period. The Thiessen polygon maps of Late Classical period and Hellenistic period are overlapped for a simple analysis of understanding which settlements have been synoecised. The table shows the Hellenistic settlements in the first column that might have synoecised with the settlements shown in the third column.

Table.29 Synoecised setllements during Hellenistic Period

Settlement no.	**Size**	**Settlement No.**	**Size**
13	2	**15 / 139**	1 / 2
18	2	**107 / 108 / 123 / 124 / 141**	1 / 1/ 2 / 2 /2
21	2	**6 / 142**	2 / 1
42	1	**43**	1
44	3	**60**	1
55	2	**53**	2
66	3	**68 / 70**	1 / 2
86	1	**88**	1
119	3	**37**	2
160	1	**29**	1
161	3	**26 / 28 / 32**	1 / 2 / 1
164	1	**71 / 72**	1 / 1

Three settlements of Late Classical period have been relocated during Hellenistic period, which are Yörükevi **(46),** Dedemezarı **(77),** Çiftlikovası **(115)**. And two settlements have been founded, which are Gülbahçe **(117)** and Özbek Metal İşliği **(11)**.

The Rn value for nearest neighbour is 1,26 which shows a tendency towards regular spacing and Rn value for nearest neighbour of same size class is 2,2 which points out a perfectly regular distribution of settlements.

Table.30 Nearest Neighbour Values for Late Classical Period

No.	*Size*	*NNA(km)*	*NN No*	*NNB(km)*	*NN No*
10	*2*	*0,36*	*27*	*0,36*	*27*
11	*2*	*1,40*	*118*	*1,40*	*118*
12	*2*	*1,31*	*40*	*2,88*	*13*
13	*2*	*2,48*	*18*	*2,48*	*18*
18	*2*	*2,48*	*13*	*2,48*	*13*

Table.30 cont.					
21	*2*	*2,42*	*101*	*4,59*	*136*
26	*1*	*1,13*	*28*	*1,42*	*71*
27	*2*	*0,36*	*10*	*0,36*	*10*
33	*1*	*1,42*	*160*	*1,42*	*160*
40	*1*	*1,31*	*12*	*2,71*	*61*
42	*1*	*2,22*	*44*	*6,28*	*46*
44	*3*	*2,22*	*42*	*2,18*	*62*
46	*1*	*2,35*	*33*	*2,35*	*33*
51	*2*	*2,28*	*115*	*4,31*	*117*
55	*2*	*6,55*	*18*	*6,55*	*18*
59	*2*	*0,74*	*62*	*0,86*	*63*
60	*1*	*1,37*	*61*	*1,37*	*61*
61	*1*	*0,81*	*62*	*4,09*	*42*
62	*3*	*0,81*	*61*	*2,18*	*119*
63	*2*	*0,71*	*119*	*0,86*	*59*
64	*2*	*2,82*	*42*	*3,53*	*67*
66	*3*	*0,34*	*67*	*3,58*	*44*
67	*2*	*0,34*	*66*	*2,76*	*140*
74	*2*	*1,16*	*77*	*8,05*	*51*
77	*1*	*1,16*	*74*	*12,70*	*46*
79	*2*	*1,76*	*117*	*1,76*	*117*
81	*3*	*1,46*	*117*	*1,65*	*115*
86	*1*	*2,23*	*164*	*2,23*	*164*
101	*3*	*2,42*	*21*	*3,77*	*119*
115	*3*	*2,28*	*51*	*1,65*	*81*

Table.30 cont.					
117	*2*	*1,76*	*79*	*1,76*	*79*
118	*2*	*1,40*	*11*	*1,40*	*11*
119	*3*	*0,71*	*63*	*3,77*	*101*
122	*2*	*2,82*	*86*	*4,38*	*18*
132	*3*	*9,30*	*46*	*12,44*	*161*
136	*2*	*2,36*	*101*	*2,62*	*118*
140	*2*	*0,65*	*10*	*0,65*	*10*
160	*1*	*0,30*	*29*	*0,30*	*29*
161	*3*	*1,34*	*160*	*7,21*	*66*
164	*1*	*2,23*	*86*	*2,23*	*86*

Xº=1,9 Xº=3,3

Rn= 1,9 / 0.5 x √350/38 = 1.26 (Tendency towards regular spacing)

Rn= 3,3/ 0.5 x √350/38 = 2,2 (Regular)

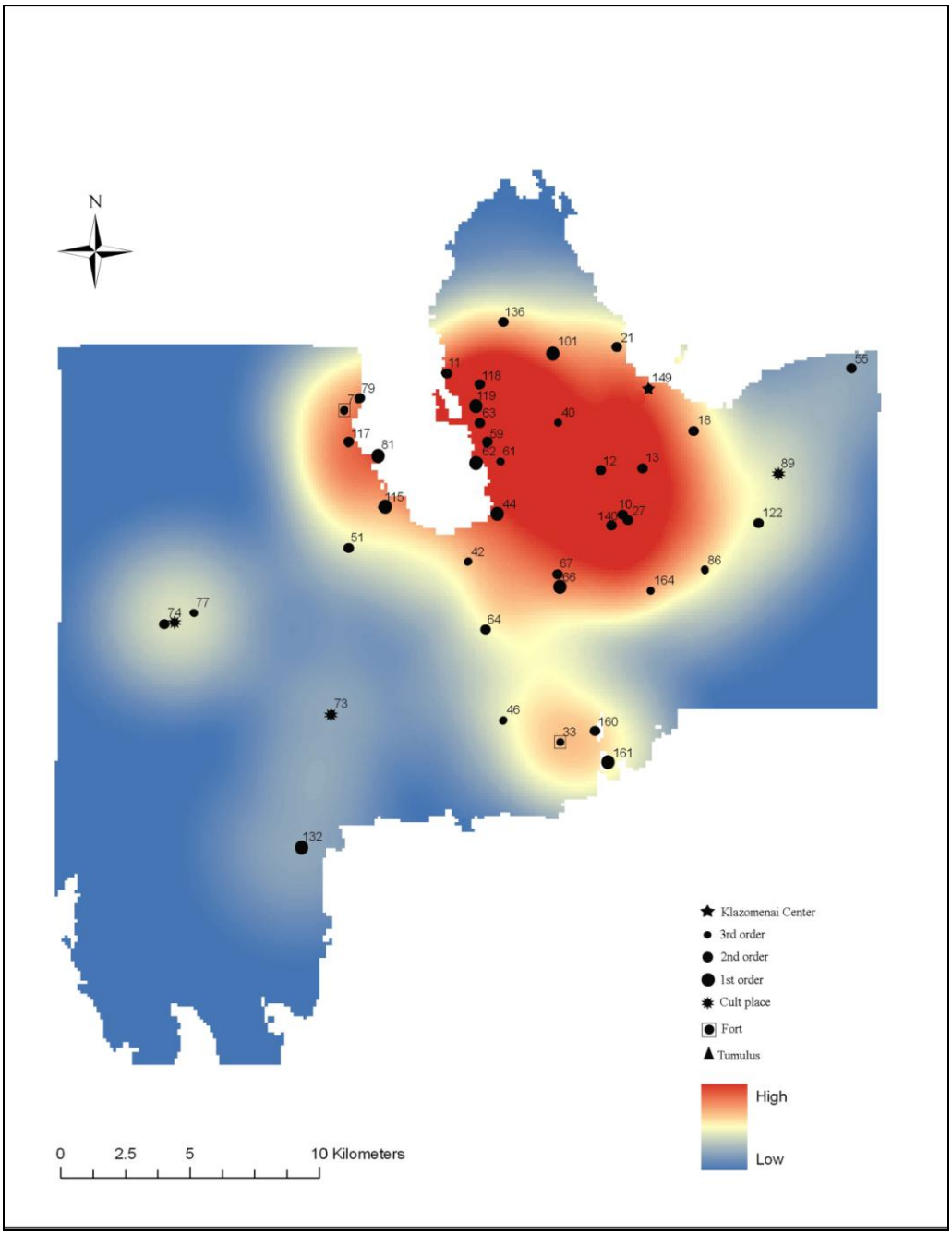

Figure.34 Density Map – Hellenistic Period

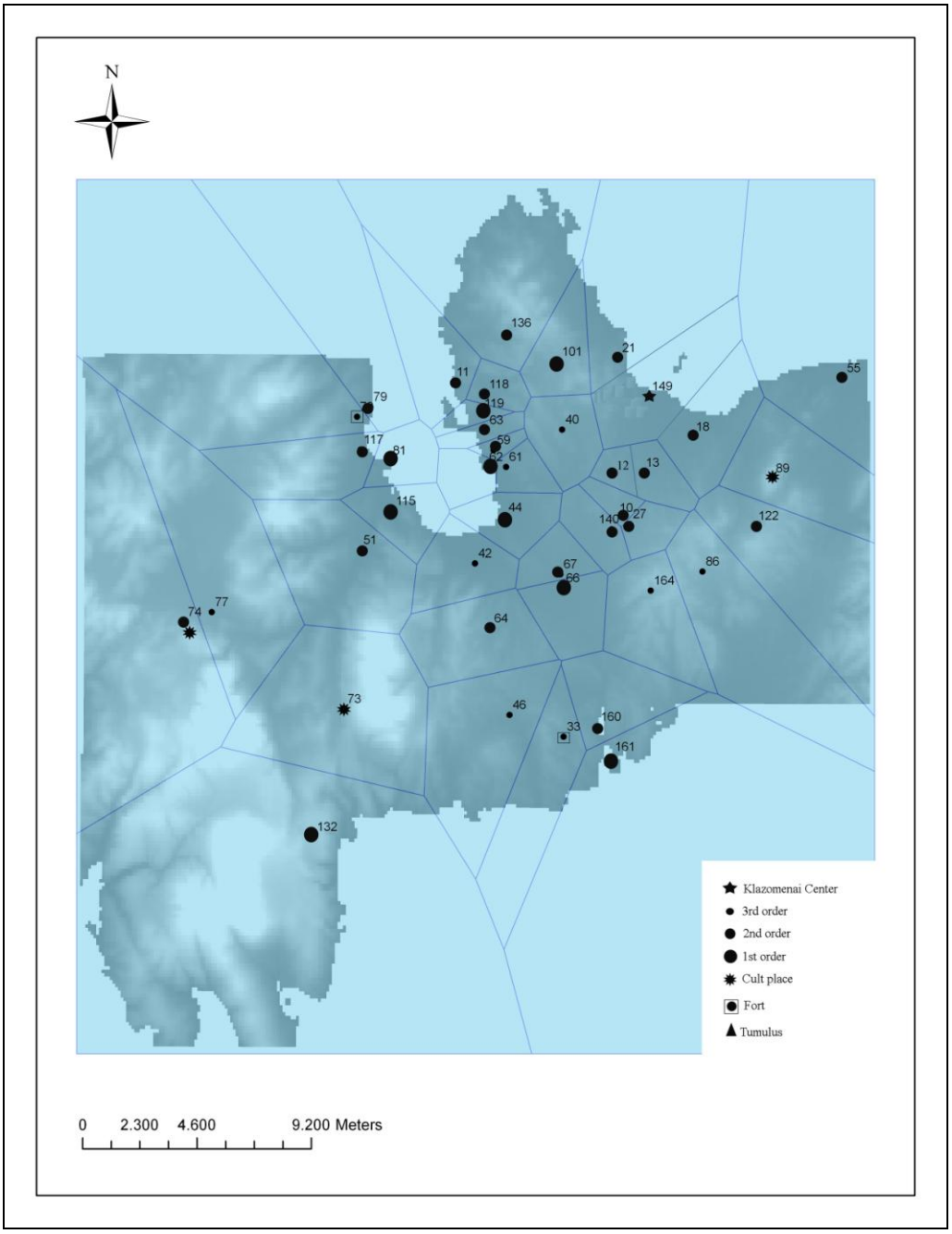

Figure.35 Thiessen Polygon Map – Hellenistic Period

G.Roman Period

On the basis of surface material in total 115 sites are dated into Roman period. The pottery of Roman period and Byzantine era are the most abundant material in means of surface material. 105 of those sites are classified as settlements, which shows a dramatic increase in the number of settlements from 38 to 105. Amongst those 10 of them are classified as first order sites **(44, 62, 66, 81, 101, 115, 119, 131, 132, 161).** The occupation of 1st order sites that have been founded during Late Archaic period continued into Roman period and from Hellenistic period to Roman period one new 1st order site has been founded, which is Gönemise **(131)**. The transition from Hellenistic period to Roman period is followed in 37 settlements **(10, 11, 12, 13, 18, 21, 27, 33, 42, 44, 46, 51, 55, 59, 61, 62, 63, 64, 66, 67, 73, 77, 79, 81, 86, 101, 115, 117, 118, 119, 122, 132, 136, 140, 160, 161, 164).** In total 44 sites are classified as 2nd order and 51 are classified as 3rd order sites. These figures imply a dramatic change in the settlement pattern from Hellenistic to Roman period The 1st order settlements continued to be occupied since Late Archaic period, but the number of 2nd order sites increased from 22 to 44 whereas the number of 3rd order dispersed settlements increased from 9 to 51. The settlement pattern of the Roman period conflicts with the policy of the Hellenistic period which saw the synoceism of third and second order sites. Some of the settlements, apart from the ones where transition from Hellenistic to Roman period detested were re-founded or newly founded during the Roman period. The settlement pattern of

the Roman period refers to the diffuse use of the land and particularly to intensive agricultural activity.

The Rn value for nearest neighbor is 1.08, which shows a random distribution and Rn value for nearest neighbor of same size is 1.7 which points out a significant tendency towards regular distribution.

Table.31 Nearest Neighbour Values for Roman Period

No.	*Size*	*NNA(km)*	*NN No*	*NNB(km)*	*NN No*
5	*2*	*0,40*	*13*	*0,40*	*13*
10	*2*	*0,36*	*27*	*0,36*	*27*
11	*2*	*1,18*	*38*	*1,40*	*118*
12	*2*	*1,65*	*20*	*2,67*	*5*
13	*2*	*0,40*	*5*	*0,40*	*5*
15	*1*	*0,88*	*139*	*1,55*	*17*
16	*2*	*0,41*	*27*	*0,41*	*27*
17	*1*	*1,04*	*13*	*1,41*	*20*
18	*2*	*0,98*	*124*	*0,98*	*124*
19	*1*	*1,06*	*101*	*3,10*	*20*
20	*1*	*1,23*	*5*	*1,41*	*17*
21	*2*	*1,97*	*19*	*3,32*	*141*
22	*1*	*0,44*	*23*	*0,44*	*23*
23	*1*	*0,44*	*22*	*0,44*	*22*
24	*1*	*0,55*	*23*	*0,55*	*23*
25	*1*	*0,63*	*24*	*0,63*	*24*
26	*1*	*1,23*	*70*	*1,42*	*71*
27	*2*	*0,36*	*10*	*0,36*	*10*

Table.31 cont.					
29	*1*	*0,10*	*151*	*0,10*	*151*
31	*1*	*0,36*	*161*	*1,03*	*160*
32	*1*	*0,42*	*145*	*0,42*	*145*
33	*1*	*1,42*	*160*	*1,42*	*160*
36	*2*	*0,43*	*37*	*0,43*	*37*
37	*2*	*0,43*	*36*	*0,43*	*36*
38	*1*	*1,18*	*11*	*3,79*	*58*
39	*2*	*0,91*	*118*	*0,91*	*118*
41	*1*	*0,82*	*42*	*0,82*	*42*
42	*1*	*0,82*	*41*	*0,82*	*41*
43	*1*	*0,60*	*65*	*0,60*	*65*
44	*3*	*1,53*	*60*	*2,18*	*62*
46	*1*	*1,54*	*47*	*2,44*	*157*
47	*2*	*1,47*	*157*	*1,92*	*105*
48	*2*	*0,97*	*50*	*2,67*	*49*
49	*2*	*0,41*	*105*	*0,41*	*105*
50	*1*	*0,45*	*157*	*0,45*	*157*
51	*2*	*0,89*	*52*	*0,89*	*52*
52	*2*	*0,89*	*51*	*0,89*	*51*
53	*2*	*1,79*	*134*	*1,79*	*134*
55	*2*	*1,88*	*53*	*1,88*	*53*
58	*1*	*0,44*	*63*	*1,39*	*61*
59	*2*	*0,54*	*58*	*0,86*	*63*
60	*1*	*1,53*	*44*	*1,37*	*61*
61	*1*	*0,81*	*62*	*1,37*	*60*

Table.31 cont.

62	*3*	*0,81*	*61*	*2,18*	*44*
63	*2*	*0,44*	*58*	*0,86*	*59*
64	*2*	*1,79*	*65*	*2,16*	*146*
65	*1*	*0,60*	*43*	*0,60*	*43*
66	*3*	*0,34*	*67*	*3,58*	*44*
67	*2*	*0,34*	*66*	*2,76*	*140*
68	*1*	*0,34*	*69*	*0,34*	*69*
69	*1*	*0,34*	*68*	*0,34*	*68*
70	*2*	*1,23*	*26*	*2,74*	*64*
71	*1*	*0,71*	*72*	*0,71*	*72*
72	*1*	*0,52*	*23*	*0,52*	*23*
75	*1*	*0,33*	*77*	*0,33*	*77*
77	*1*	*0,33*	*75*	*0,33*	*75*
79	*2*	*1,76*	*117*	*1,76*	*117*
80	*2*	*0,74*	*81*	*1,74*	*117*
81	*3*	*0,74*	*80*	*1,65*	*115*
82	*2*	*0,44*	*85*	*0,44*	*85*
83	*1*	*1,12*	*84*	*1,12*	*84*
84	*1*	*0,78*	*111*	*0,78*	*111*
85	*2*	*0,44*	*82*	*0,44*	*82*
86	*1*	*0,10*	*87*	*0,10*	*87*
87	*1*	*0,10*	*86*	*0,10*	*86*
88	*1*	*0,62*	*87*	*0,62*	*87*
92	*1*	*0,98*	*80*	*1,34*	*115*
101	*3*	*1,06*	*19*	*3,77*	*119*

Table.31 cont.					
104	*1*	*1,43*	*75*	*1,43*	*75*
105	*2*	*0,41*	*49*	*0,41*	*49*
107	*1*	*1,32*	*123*	*1,64*	*108*
108	*1*	*0,57*	*123*	*1,64*	*107*
109	*1*	*0,96*	*25*	*0,96*	*25*
111	*1*	*0,78*	*84*	*0,78*	*84*
112	*1*	*3,75*	*134*	*4,43*	*107*
114	*1*	*0,58*	*115*	*1,57*	*92*
115	*3*	*0,58*	*114*	*1,24*	*81*
116	*1*	*3,70*	*79*	*4,59*	*92*
117	*2*	*1,46*	*81*	*1,74*	*80*
119	*3*	*0,80*	*118*	*3,77*	*101*
122	*2*	*1,80*	*83*	*2,96*	*85*
123	*2*	*0,57*	*108*	*1,86*	*124*
124	*2*	*0,98*	*18*	*0,98*	*18*
126	*2*	*2,19*	*131*	*2,49*	*127*
127	*2*	*2,07*	*129*	*2,07*	*129*
128	*2*	*1,35*	*129*	*1,35*	*129*
129	*2*	*1,35*	*128*	*1,35*	*128*
130	*1*	*1,18*	*131*	*5,33*	*77*
131	*3*	*3,72*	*132*	*3,72*	*132*
132	*3*	*2,43*	*133*	*2,43*	*133*
133	*2*	*2,43*	*132*	*2,43*	*132*
134	*2*	*1,79*	*53*	*1,79*	*53*
136	*2*	*2,04*	*39*	*2,04*	*39*

Table.31 cont.					
139	*2*	*0,67*	*13*	*0,67*	*13*
140	*2*	*0,65*	*10*	*0,65*	*10*
141	*2*	*1,45*	*18*	*1,45*	*18*
145	*1*	*0,42*	*32*	*0,42*	*32*
146	*2*	*0,96*	*156*	*2,16*	*64*
151	*1*	*0,10*	*29*	*0,10*	*29*
156	*1*	*0,96*	*146*	*1,46*	*41*
157	*1*	*0,45*	*50*	*0,45*	*50*
160	*1*	*0,20*	*151*	*0,20*	*151*
161	*3*	*0,36*	*31*	*7,21*	*66*
164	*1*	*0,90*	*165*	*0,90*	*165*
165	*1*	*0,90*	*164*	*0,90*	*164*

Xº=1 Xº=1,56

Rn= 1 / 0.5 x √350/103 = 1,08 (Random)

Rn= 1,56/ 0.5 x √350/103 = 1,7 (Signifcant tendency towards regular)

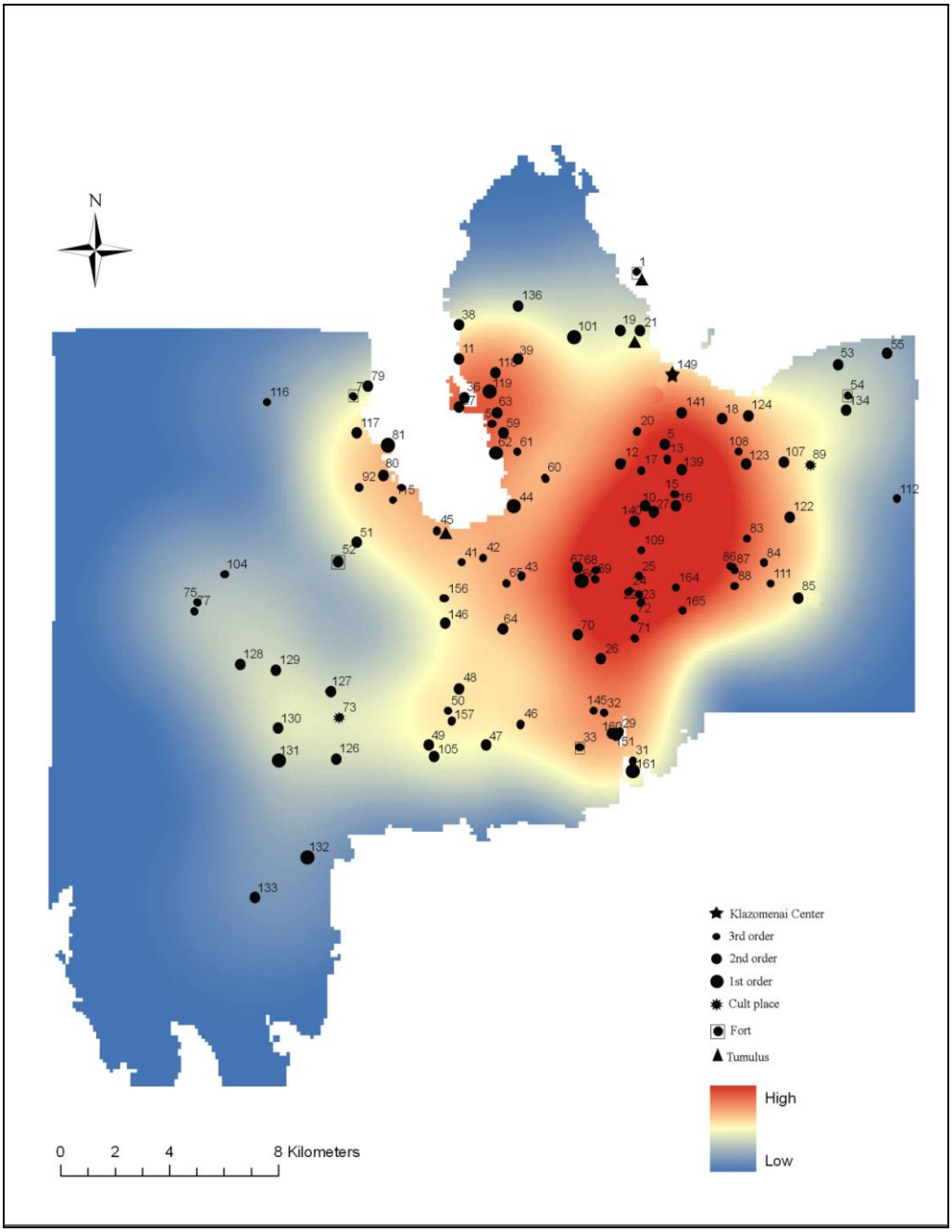

Figure.36 Density Map – Roman Period

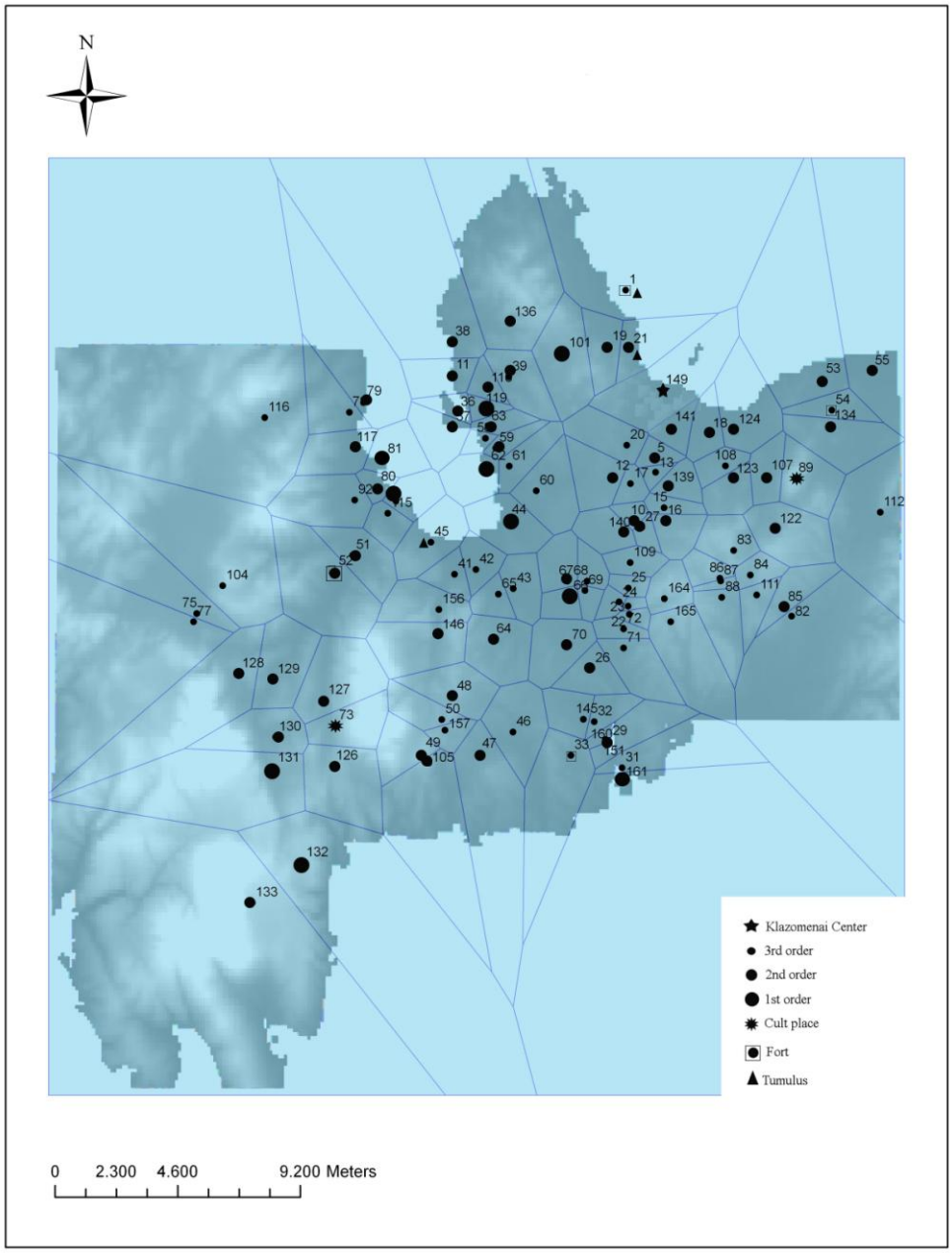

Figure.37 Thiessen Polygon Map – Roman Period

V.5. Correlation of Size, Agricultural Potential and Urbanization

This section includes basic exercises to seek the significance of settlement size in correlation with agricultural potential and degree of urbanization. The series of tables and graphics below are used to determine whether size of settlement was a significant factor in means of agricultural potential, political power and urbanization degree. The analyses are executed only for Late Archaic, Late Classical, Hellenistic and Roman periods where the nearest neighbor value (Rn) is non-random and definitive, when nascent polis achieved and maintained some sort of urbanization. At the first hand for the two steps of analyses Thiessen polygon maps for each settlement and thiessen polygon maps only for 1st order sites *(demes-like primary settlements)* are prepared. In the analyses Thiessen polygons are deliberately preferred to be used in spite of the fact that its use is being criticized and it is replaced with 1 km – 2.5 km radius circles around the settlements for showing the domain of the influence and exploitation area, since the distance between some sites are less than 1 km. However in each domain area maximum 2.5 km. radius circles are applied for not reaching to exaggerated sizes for domain areas. Some sites are isolated at the fringes at the territory and naturally depending only on Thiessen polygons yields to extremely large areas for one settlement, which does not make any sense. 2.5 km radius is taken as the standard 1 hour walk from the settlement center.

Thiessen polygon maps for all settlements collided with the map of the region showing suitable land for agriculture with the aid of ArcGIS for calculating the size of the domain area and agricultural land within the domain of each site. In the second step Thiessen polygon maps of only 1st order sites collided with the map of the region showing the suitable land for agriculture for calculating the size of the agricultural land within the domain area of each central place. Finally the Thiessen polygon maps of 1st order sites collided with Thiessen polygon maps of all sites for determining the number of secondary sites (small villages, hamlets and farmsteads) within the domain area of each 1st order site. The procedure repeated for the archaeological periods taken into account for these analyses, namely Late Archaic, Late Classical, Hellenistic and Roman periods.

Scatter diagrams are used to check the significance of correlation between different variables;

1.Size of settlement (all the sites) vs Size of agricultural land

2.Size of settlement (only 1st order) vs Size of domain area

3.Size of settlement (only 1st order) vs Size of agricultural land within domain area

4.Size of settlement (only 1st order) vs no. of secondary sites within the domain area

5.Size of agricultural land within the domain area vs no. of secondary sites within the domain area.

The analyses clearly showed that there is no significant correlation between the size of the settlement and agricultural potential. This means

settlement size was not an important variable in means of agricultural production. There is no significant correlation between the size of the central places and the number of secondary sites within their domains which imply that size was not an important variable in political context as well. This insignificance of size in means of agricultural potential and political context does not differentiate through the periods. The size of the agricultural land within the domain area of each central place has a significant correlation with the number of secondary sites within the domain area. Therefore it may be claimed that agricultural potential was an important determinant for the 2nd and 3rd order sites but not for 1st order sites. 1st order sites motly had plus functions such as food process –perhaps in large capacities, served as port, close to cult places and mostly served for the administrative system introduced in Late Archaic for diffuse use and order of the territory.

In this work I was very much abstained to use the ancient terms for the classification and definition of archaeological sites. Here *demes* is another one. “Demes system" is well known in Attic context, but should be handled cautiously for our region due to the lacking textual and epigraphic evidence. However the lack of such evidence should not retain us from making suggestions at the same time. In conclusion, the correlation analyses revealed that settlement size was not a significant factor for either agricultural activities or administrative aspects. The secondary settlements were agglomerated at the parts of the khora with high agricultural potential. On the other hand agricultural potential was not a collimator factor for the land choice of 1st order sites. The spatial distribution of those primary

settlements over the khora with almost a perfect regular spacing reminiscent of a demes system, which would enable the diffuse use and the control of the territory by the central settlement. All these primary settlements, which were eight in number during Late Archaic period and increased to ten in Roman period might have been service centers and market places for the secondary settlements within their domain area. It is apparent that this was an administrative system introduced by Late Archaic period and maintained with minor modifications into Roman period. In many aspects it resembles the *demes* system well known from Attica during Late Archaic period. It may be prospectively suggested that the emergence of this administrative system is an important discussion subject perhaps in the light of new evidence to be provided. In the mean time here we can only claim upon the resemblance of the system to demes system and call it *demes-like*. In terms of historical context it is again a very interesting coincidence that it is contemporary with the reforms of Darius linked with the re-organization of tribute system.[285]

[285] Briant, P. 2002, 137-138.

A.Late Archaic Period

Table.32 Agricultural Land and Domain Area Ratios for Late Archaic Period settlements

Site No.	Size (ha)	Agricultural Land in Domain Area (ha)	Non-Agricultural Land in Domain Area (ha)	Total land in domain (ha)	% of agricultural land	% of non-agricultural land
6	4,00	31,89	14,78	46,67	68,33083	31,66917
7	1,40	192,9	63,38	256,28	75,26924	24,73076
8	4,00	257,95	68,22	326,17	79,08453	20,91547
13	5,00	166,37	64,21	230,58	72,15283	27,84717
15	1,20	90,24	43,7	133,94	67,37345	32,62655
17	1,30	186,4	120,82	307,22	60,67313	39,32687
20	1,00	118,91	32,22	151,13	78,68061	21,31939
21	8,00	129,56	120,02	249,58	51,91121	48,08879
23	1,00	207,56	0	207,56	100	0
24	1,00	51,61	64,86	116,47	44,31184	55,68816
26	1,00	258,04	0	258,04	100	0
27	6,00	427,76	16,85	444,61	96,21016	3,789838
28	4,00	267,3	438,41	705,71	37,87675	62,12325
29	0,40	89,61	226,35	315,96	28,36118	71,63882
32	1,00	83,42	23,9	107,32	77,73015	22,26985
33	1,00	94,89	659,19	754,08	12,58355	87,41645
40	1,00	124,2	394,59	518,79	23,94032	76,05968
41	1,00	10,76	620,62	631,38	1,704203	98,2958
42	1,00	110,68	111,6	222,28	49,79305	50,20695
43	1,00	193,65	178,34	371,99	52,05785	47,94215
44	16,00	256,59	183,62	440,21	58,28809	41,71191
47	6,00	338,19	914,71	1252,9	26,99258	73,00742
49	3,50	57,9	1318,3	1376,2	4,207237	95,79276
51	5,00	132,14	550,17	682,31	19,36656	80,63344
52	4,00	142,53	1258,32	1400,85	10,17454	89,82546
55	4,50	502,34	299,42	801,76	62,65466	37,34534
60	2,00	425,7	79,71	505,41	84,22865	15,77135
61	2,00	139,48	114,57	254,05	54,90258	45,09742
62	10,00	22,56	28,29	50,85	44,36578	55,63422
63	5,00	63,87	191,78	255,65	24,98338	75,01662
64	6,00	218,19	980,01	1198,2	18,20981	81,79019
65	1,00	0	179,79	179,79	0	100
66	15,00	311,73	76,3	388,03	80,33657	19,66343
69	2,00	316,23	0	316,23	100	0

Table.32 cont.						
70	8,00	488,79	0	488,79	100	0
72	2,00	251,48	168,9	420,38	59,82207	40,17793
74	9,00	826,75	367,42	1194,17	69,23219	30,76781
77	1,00	268,14	119,77	387,91	69,12428	30,87572
79	5,00	45,12	1412,23	1457,35	3,09603	96,90397
81	10,00	116,62	248,48	365,1	31,94193	68,05807
83	1,50	202,77	127,32	330,09	61,4287	38,5713
85	4,50	1556	195,16	1751,16	88,85539	11,14461
86	2,00	225,59	51,17	276,76	81,51106	18,48894
88	1,50	292,54	485,98	778,52	37,57643	62,42357
101	20,00	91,21	682,81	774,02	11,78393	88,21607
104	3,00	358,2	965,6	1323,8	27,05847	72,94153
107	2,00	208,79	58,44	267,23	78,1312	21,8688
108	2,50	194,35	46,2	240,55	80,79401	19,20599
117	5,00	155,38	917,29	1072,67	14,48535	85,51465
118	9,00	154,87	345,39	500,26	30,9579	69,0421
119	15,00	45	163,04	208,04	21,63046	78,36954
122	9,00	624,4	259,63	884,03	70,63109	29,36891
123	6,00	284,79	132,77	417,56	68,20337	31,79663
124	9,00	291,74	242,86	534,6	54,57164	45,42836
126	4,00	2	1367,5	1369,5	0,146039	99,85396
128	3,00	211,19	1545,92	1757,11	12,01917	87,98083
132	15,00	0	1774,5	1774,5	0	100
136	8,00	390,56	1206,44	1597	24,45585	75,54415
139	3,00	175	0,53	175,53	99,69806	0,301943
142	1,00	53,5	93,39	146,89	36,42181	63,57819
143	1,00	68,8	120,97	189,77	36,25441	63,74559
145	0,30	306,7	49,93	356,63	85,9995	14,0005
151	1,00	14,15	87,83	101,98	13,87527	86,12473
160	5,00	35,8	32,93	68,73	52,08788	47,91212
161	10,00	483,43	360,18	843,61	57,30492	42,69508
164	1,00	207,04	375,53	582,57	35,53908	64,46092
54	3,00	634,04	330,29	964,33	65,74928	34,25072
73	3,00	56,31	1264,18	1320,49	4,264326	95,73567
	310,60	15342,20	25037,63	40379,83		

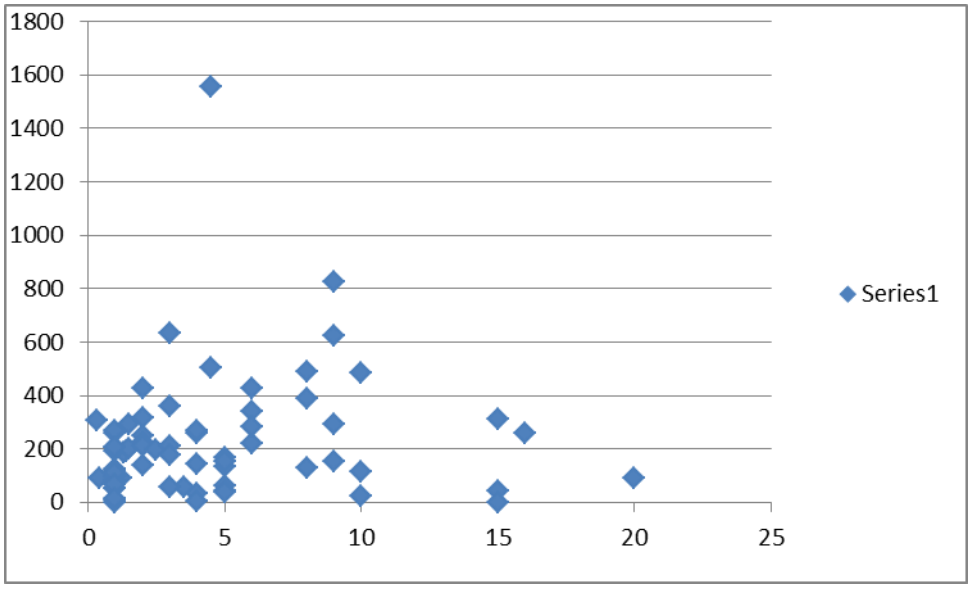

Figure.38 Size vs Agricultural Land – Late Archaic Period

Table.33 Agricultural Land, Domain Area Ratios and Number of Secondary Sites for 1st order sites of Late Archaic Period

Site No.	Size/ (ha)	Total Area (ha)	Agricultural Land (ha)	Non-agricultural land (ha)	% of Agricultural	% of Non-agricultural	2nd order sites	3rd order sites
44	16	2888	1394	1494	48.2	51.8	-	6
62	10	622	384	238	61.7	38.3	-	1
66	15	6000	2700	3300	45	55	4	11
81	10	4200	798	3402	19	81	5	2
101	20	1893	482	1411	25.4	74.6	2	2
119	15	1047	336	711	32	68	2	-
132	15	3700	173	3527	4.5	95.5	3	-
161	10	3790	1404	2386	37	63	3	5

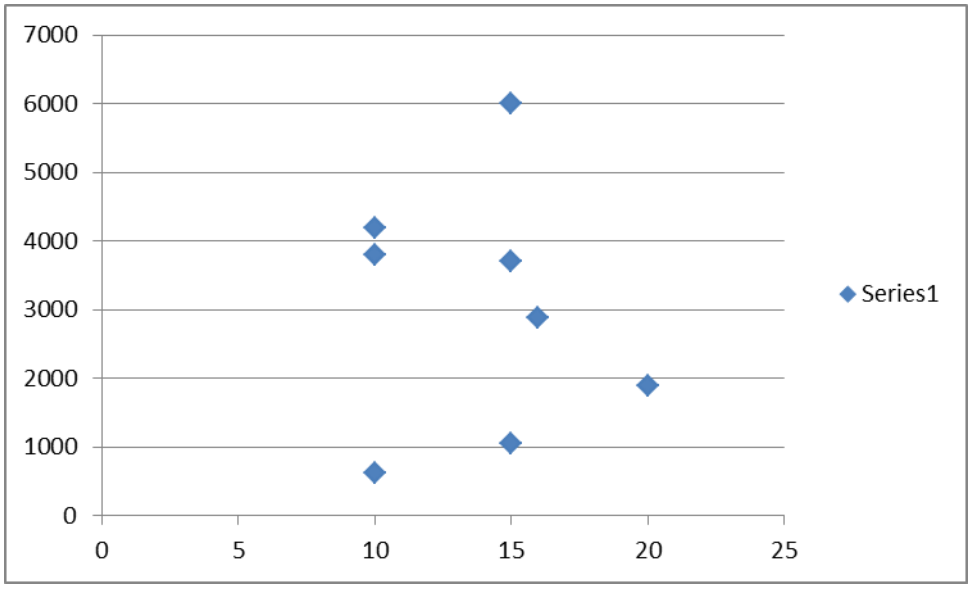

Figure.39 Size vs. Size of Domain Land – Late Archaic Period

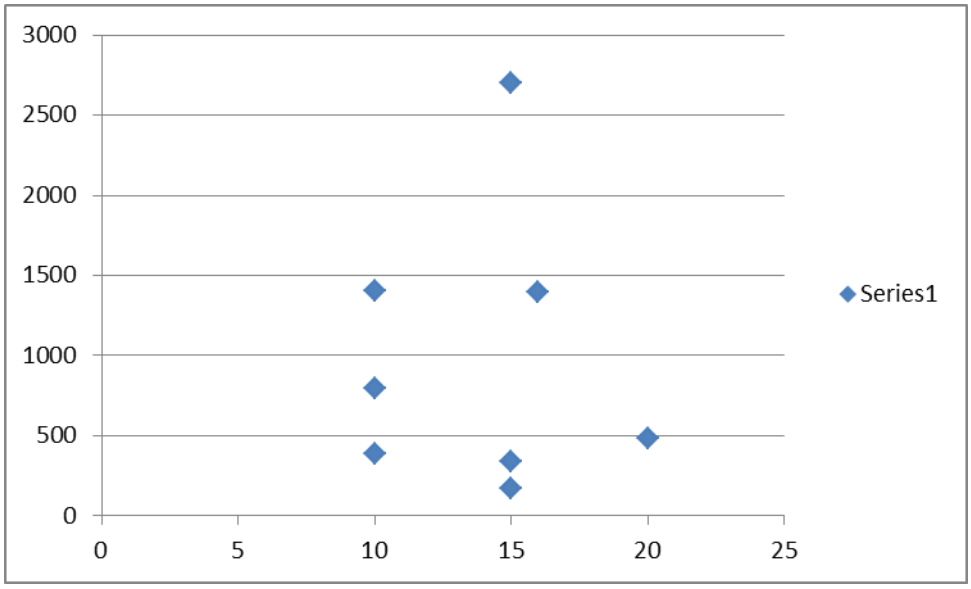

Figure.40 Size vs Size of Agricultural Land within Domain Area – Late Archaic Period

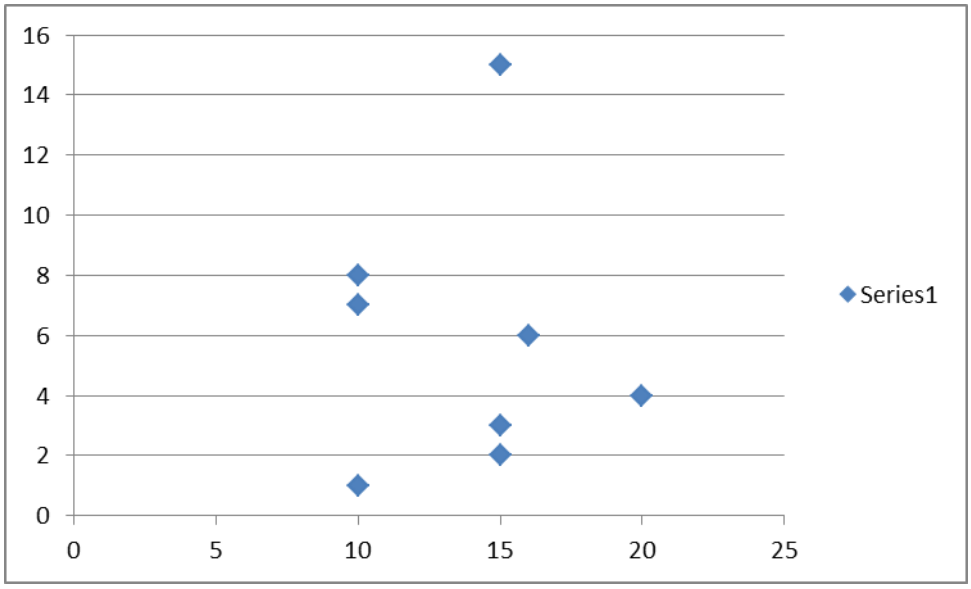

Figure.41 Size vs No of Secondary Sites within Domain Area – Late Archaic Period

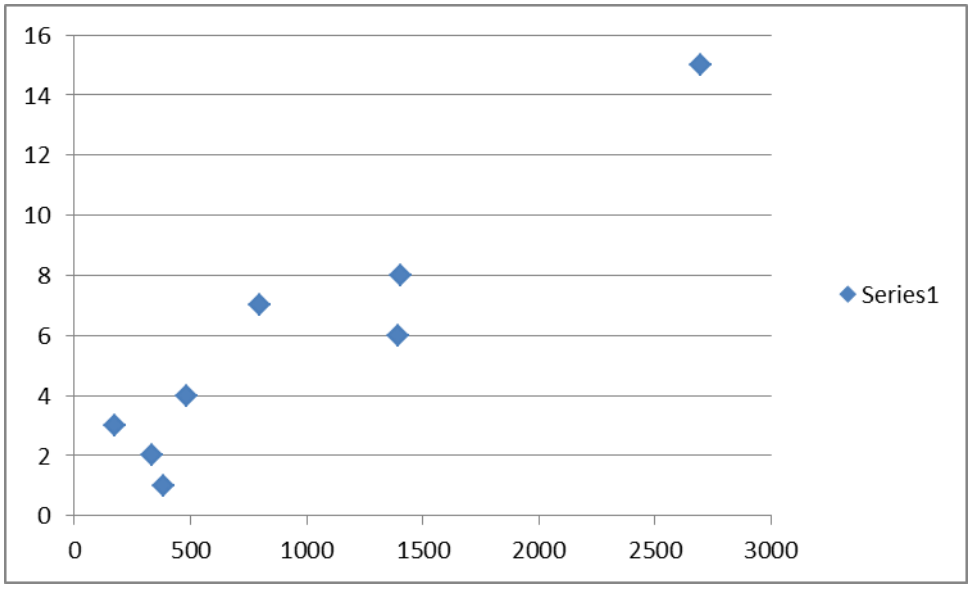

Figure.42 Size of Agricultural Land within Domain Area vs No of Secondary Sites within Domain Area – Late Archaic Period

B.Late Classical Period

Table.34 Agricultural Land and Domain Area Ratios for Late Classical Period settlements

Site No.	Size (ha)	Agricultural Land (ha)	Non-Agricultural Land (ha)	Total land in domain (ha)	% of agricultural land	% of non-agricultural lan
6	4	175,66	187,06	362,72	48,42854	51,57146
10	3,5	46,99	37,5	84,49	55,61605	44,38395
12	6	324,99	136,64	461,63	70,40054	29,59946
13	5	208,74	34,31	243,05	85,88356	14,11644
15	1,2	235,88	119,47	355,35	66,37963	33,62037
18	5	50,85	187,72	238,57	21,3145	78,6855
21	8	129,56	120,02	249,58	51,91121	48,08879
26	0,8	276,98	0	276,98	100	0
27	6	175,85	20	195,85	89,7881	10,2119
28	4	374,79	336,44	711,23	52,69603	47,30397
29	0,4	48,48	388,02	436,5	11,10653	88,89347
32	1	301,1	13	314,1	95,86119	4,138809
33	1	237,02	794,74	1031,76	22,9724	77,0276
37	5	29,53	63,85	93,38	31,62347	68,37653
40	1	217,18	493,26	710,44	30,56979	69,43021
42	1	180,45	723,55	904	19,96128	80,03872
43	3	263,79	172,21	436	60,50229	39,49771
44	16	244,84	148,13	392,97	62,30501	37,69499
47	6	746,12	1604,61	2350,73	31,73993	68,26007
51	5	326,02	2066,3	2392,32	13,62778	86,37222
53	3	194,3	159,2	353,5	54,96464	45,03536
55	4,5	257,82	199,28	457,1	56,40341	43,59659
59	6	21,85	115,49	137,34	15,90942	84,09058
60	2	384,34	88,38	472,72	81,30394	18,69606
61	2	58,73	128,36	187,09	31,39131	68,60869
62	10	16,64	37,16	53,8	30,92937	69,07063
63	5	13	126	139	9,352518	90,64748
64	6	1237,89	223,23	1461,12	84,72199	15,27801
66	15	179,88	63,61	243,49	73,87572	26,12428
67	4	260,28	0	260,28	100	0
68	1	403,35	0	403,35	100	0
70	8	481,77	0	481,77	100	0
71	2	215,57	266,13	481,7	44,75192	55,24808
72	2	226,03	48,85	274,88	82,22861	17,77139

Table.34 cont.

74	9	826,75	367,42	1194,17	69,23219	30,76781
79	5	0	1405	1405	0	100
81	10	186,49	196,32	382,81	48,71607	51,28393
86	3	408,9	201,05	609,95	67,03828	32,96172
88	1,5	1048,21	339,38	1387,59	75,54177	24,45823
101	20	91,25	682,77	774,02	11,7891	88,2109
104	3	1175,88	940,12	2116	55,57089	44,42911
107	2	193,27	68,33	261,6	73,87997	26,12003
108	3	155,92	0	155,92	100	0
114	2	89	407,05	496,05	17,94174	82,05826
118	9	107,03	422,83	529,86	20,19968	79,80032
119	15	18,14	98,08	116,22	15,60833	84,39167
122	9	1105,92	735,08	1841	60,0717	39,9283
123	6	307,83	80,21	388,04	79,32945	20,67055
124	9	259,82	101,97	361,79	71,81514	28,18486
132	15	0	1774,5	1774,5	0	100
136	8	455,26	853,06	1308,32	34,7973	65,2027
139	3	239,95	0	239,95	100	0
140	5	391,86	0	391,86	100	0
141	5	47,26	136,27	183,53	25,75056	74,24944
142	1	61,41	137,35	198,76	30,89656	69,10344
160	1	30	82,35	112,35	26,70227	73,29773
161	10	84,93	305,82	390,75	21,73512	78,26488
164	1	304,33	369,3	673,63	45,17762	54,82238
	308,9	16135,38	8807,08	34942,46		

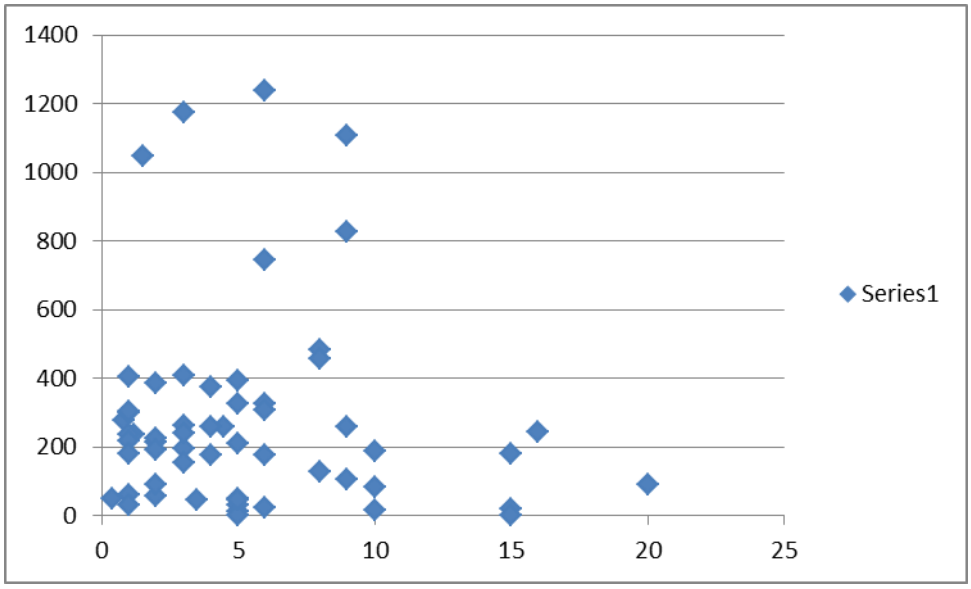

Figure.43 Size vs Agricultural Land – Late Classical Period

Table.35 Agricultural Land, Domain Area Ratios and Number of Secondary Sites for 1st order sites of Late Classical Period

Site No.	Size/ (ha)	Total Area (ha)	Agricultural Land (ha)	Non-agricultural land (ha)	% of Agricultural	% of Non-agricultural	2nd order sites	3rd order sites
44	16	2888	1394	1494	48.2	51.8	1	2
62	10	622	384	238	61.7	38.3	1	1
66	15	6000	2700	3300	45	55	8	7
81	10	4200	798	3402	19	81	2	2
101	20	1893	482	1411	25.4	74.6	2	2
119	15	1047	336	711	32	68	3	-
132	15	3700	173	3527	4.5	95.5	-	-
161	10	3790	1404	2386	37	63	3	4

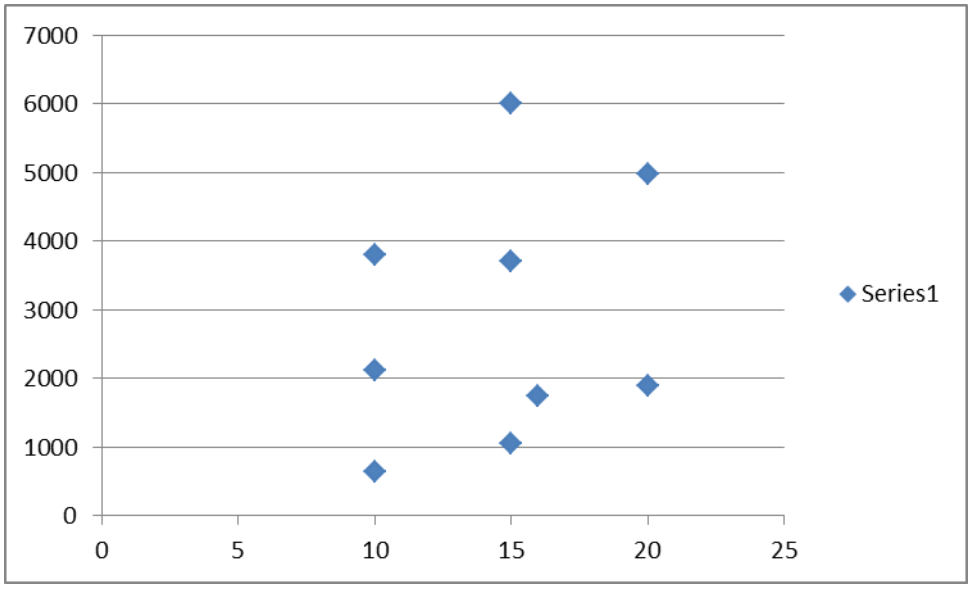

Figure.44 Size vs. Size of Domain Land – Late Classical Period

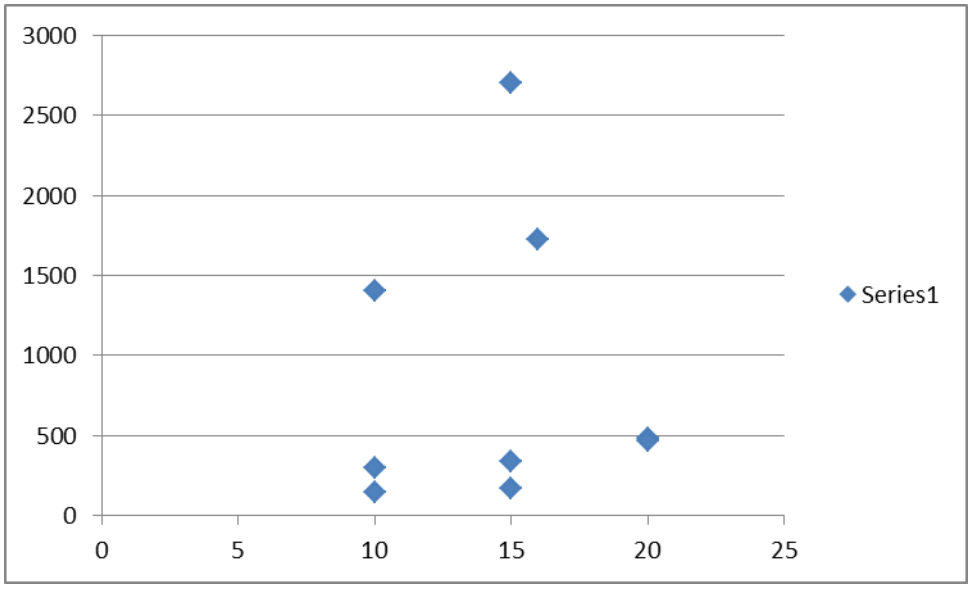

Figure.45 Size vs Size of Agricultural Land within Domain Area – Late Classical Period

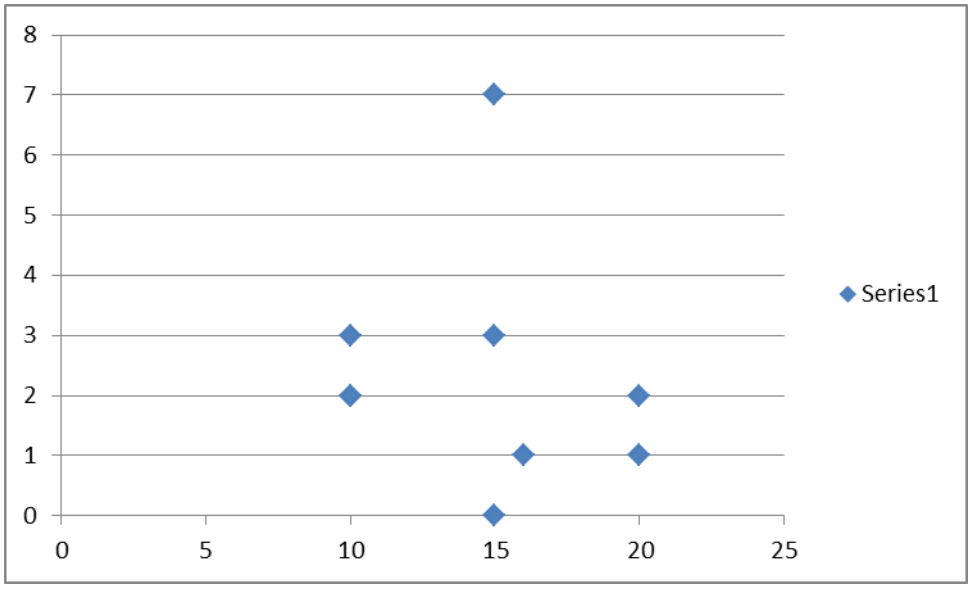

Figure.46 Size vs No of Secondary Sites within Domain Area – Late Classical Period

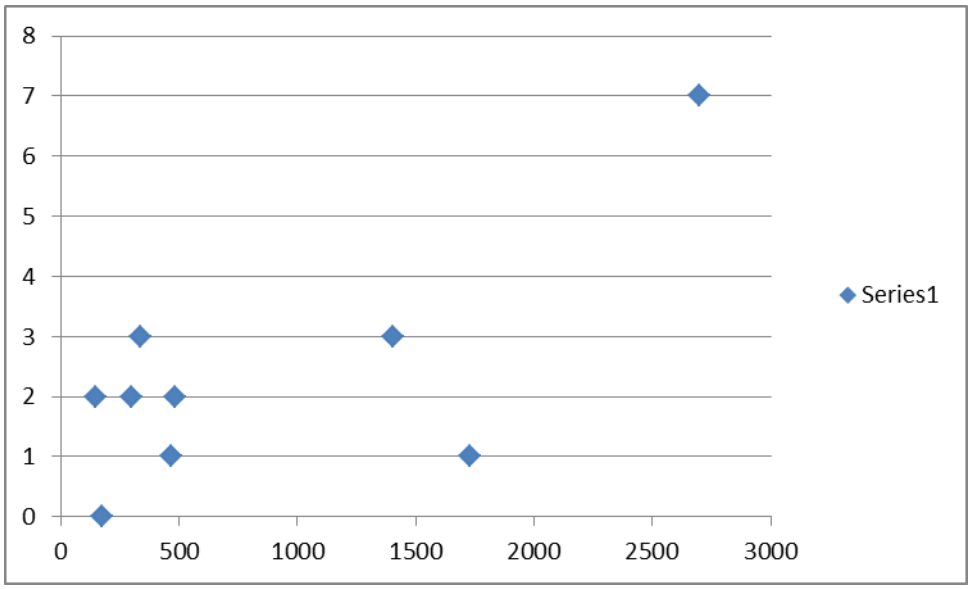

Figure.47 Size of Agricultural Land within Domain Area vs No of Secondary Sites within Domain Area – Late Classical Period

C.Hellenistic Period

Table.36 Agricultural Land and Domain Area Ratios for Hellenistic Period settlements

Site No.	Size (ha)	Agricultural Land (ha)	Non-Agricultural Land (ha)	Total land in domain (ha)	% of agricultural land	% of non-agricultural lan
10	3,5	184,12	67,92	252,04	73,0519	26,9481
11	3,5	138,65	135,21	273,86	50,62806	49,37194
12	6	192,93	71,32	264,25	73,01041	26,98959
13	5	429,19	29,43	458,62	93,58292	6,417077
18	5	563,75	458,45	1022,2	55,15066	44,84934
21	8	219,08	295,72	514,8	42,55633	57,44367
26	0,8	258,04	0	258,04	100	0
27	6	328,78	77,06	405,84	81,01222	18,98778
33	1	368,52	555,93	924,45	39,8637	60,1363
40	1	407,12	492,9	900,02	45,23455	54,76545
42	1	198,83	834,72	1033,55	19,23758	80,76242
44	16	440,39	126,01	566,4	77,75247	22,24753
46	1	721,99	1587,09	2309,08	31,26743	68,73257
51	5	292,6	2300,17	2592,77	11,28523	88,71477
55	4,5	738,13	481,65	1219,78	60,51337	39,48663
59	6	32,89	56,84	89,73	36,65441	63,34559
60	2	105,82	63,92	169,74	62,34241	37,65759
61	2	105,69	104,3	209,99	50,33097	49,66903
62	10	12	40,61	52,61	22,80935	77,19065
63	5	22,79	114,71	137,5	16,57455	83,42545
64	6	391,36	1161,96	1553,32	25,19507	74,80493
66	15	311,73	76,3	388,03	80,33657	19,66343
67	4	451,47	78,23	529,7	85,23126	14,76874
74	9	830,26	1882,18	2712,44	30,60934	69,39066
77	1	1127,6	1438,4	2566	43,94388	56,05612
79	5	45,12	100,61	145,73	30,96137	69,03863
81	10	61,55	103,3	164,85	37,33697	62,66303
86	2	1172,96	366,04	1539	76,21572	23,78428
101	25	230,95	695,23	926,18	24,93576	75,06424
115	20	110,17	603,8	713,97	15,43062	84,56938
117	5	229,93	1055,07	1285	17,89339	82,10661
118	9	86,93	227,14	314,07	27,67854	72,32146
119	15	25	211,68	236,68	10,56279	89,43721
122	9	1227,27	177,83	1405,1	87,34396	12,65604

Table.36 cont.						
132	15	0	1774	1774	0	100
136	8	455,26	853,06	1308,32	34,7973	65,2027
140	5	578,22	0	578,22	100	0
160	1	511,03	760,08	1271,11	40,20344	59,79656
161	10	158,63	353,41	512,04	30,98	69,02
164	1	632,51	913,49	1546	40,91268	59,08732
	267,3	14399,26	20725,77	35125,03		

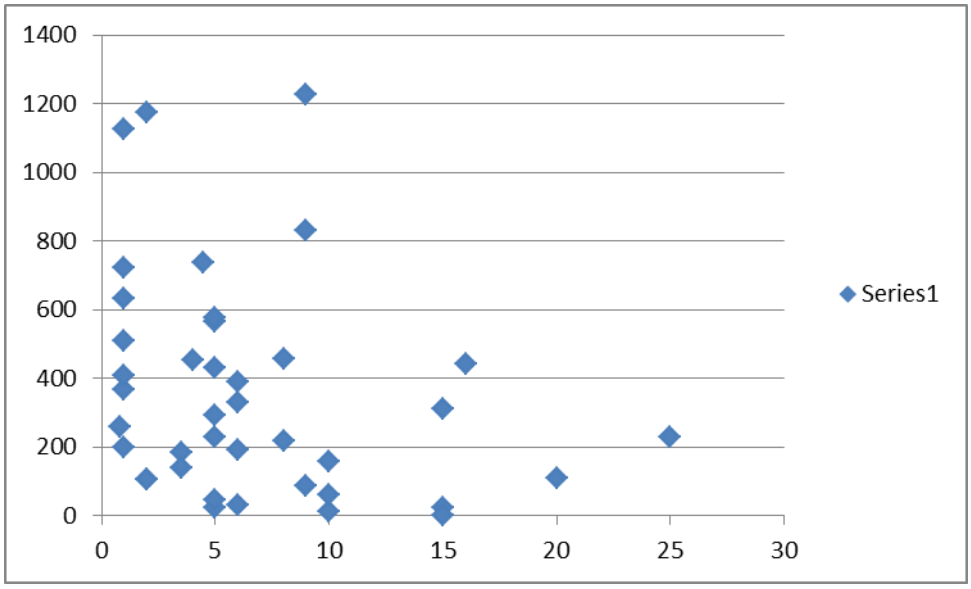

Figure.48 Size vs Agricultural Land – Hellenistic Period

Table.37 Agricultural Land, Domain Area Ratios and Number of Secondary Sites for 1st order sites of Hellenistic Period

Site No.	Size/ (ha)	Total Area (ha)	Agricultural Land (ha)	Non-agricultural land (ha)	% of Agricultural	% of Non-agricultural	2nd order sites	3rd order sites
44	16	1747	1727	320	98	2	-	1
62	10	643	297	346	46	54	1	1
66	15	6000	2700	3300	45	55	5	2
81	10	2108	147	1961	7	93	2	-
101	20	1893	482	1411	25.4	74.6	2	-
115	20	4970	468	4502	9.4	90.6	1	-
119	15	1047	336	711	32	68	3	-
132	15	3700	173	3527	4.6	95.4	-	-
161	10	3790	1404	2386	37	63	1	2

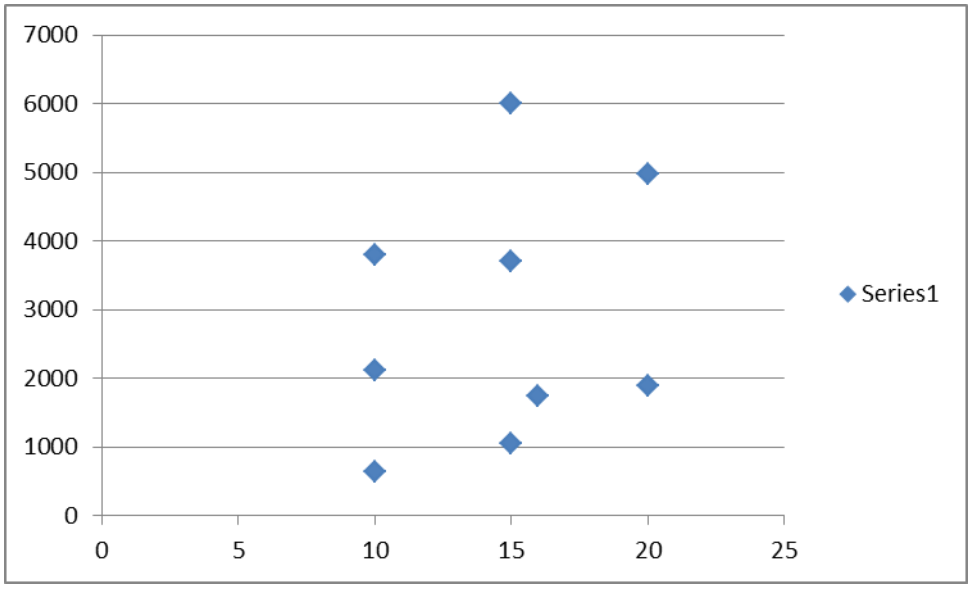

Figure.49 Size vs. Size of Domain Land – Hellenistic Period

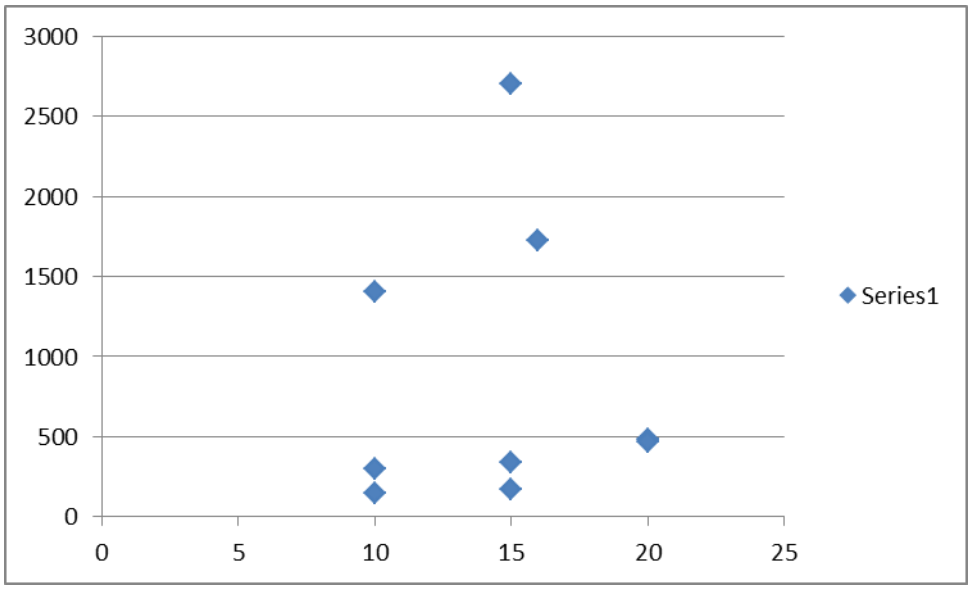

Figure.50 Size vs Size of Agricultural Land within Domain Area – Hellenistic Period

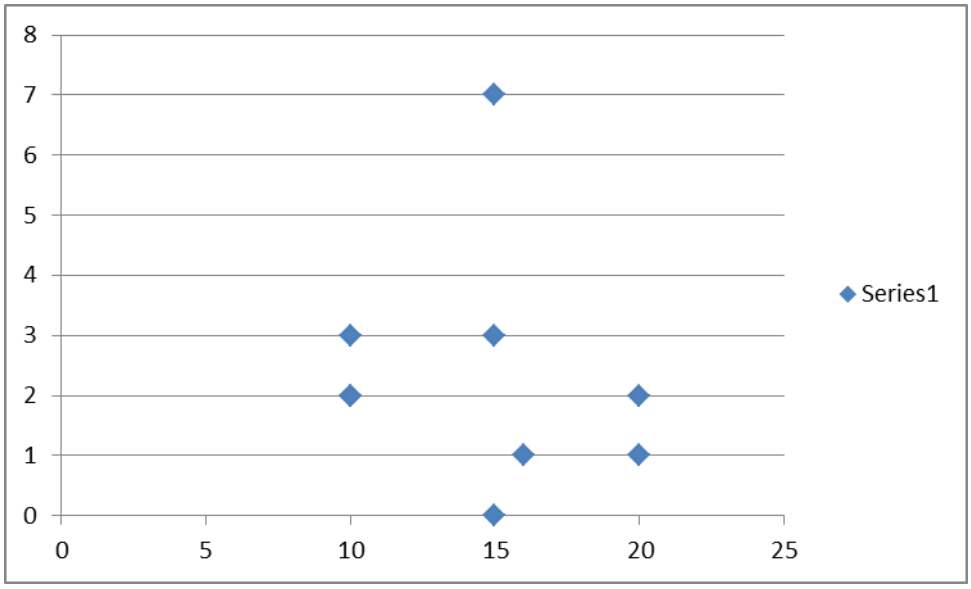

Figure.51 Size vs No of Secondary Sites within Domain Area – Hellenistic Period

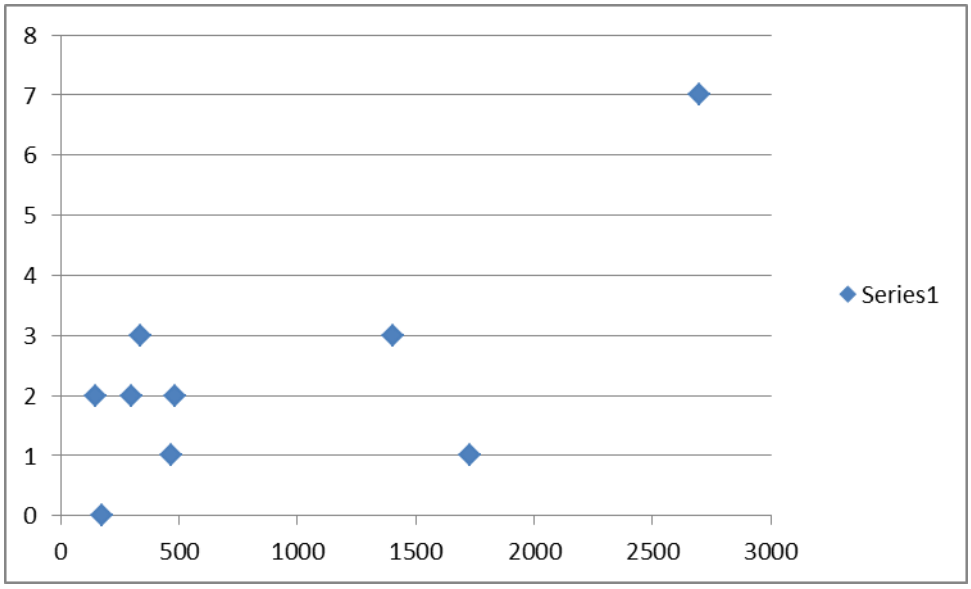

Figure.52 Size of Agricultural Land within Domain Area vs No of Secondary Sites within Domain Area – Hellenistic Period

D. Roman Period

Table.38 Agricultural Land and Domain Area Ratios for Roman Period settlements

Site No.	Size (ha)	Agricultural Land (ha)	Non-Agricultural Land (ha)	Total land in domain (ha)	% of agricultural land	% of non-agricultural land
5	4	115,46	19,8	135,26	85,36153	14,63847
10	3,5	68,09	26,47	94,56	72,00719	27,99281
11	3,5	5,93	98,81	104,74	5,661638	94,33836
12	6	351,97	59,76	411,73	85,48563	14,51437
13	5	72,25	0	72,25	100	0
15	1,2	93,1	44,57	137,67	67,62548	32,37452
16	6	228,56	24,56	253,12	90,29709	9,702908
17	1,3	57,81	68,99	126,8	45,59148	54,40852
18	5	58,44	203,65	262,09	22,29768	77,70232
19	3	198,14	186,24	384,38	51,54795	48,45205
20	1	204,37	162,82	367,19	55,65783	44,34217
21	8	258,98	351,15	610,13	42,44669	57,55331
22	1	119,32	10,22	129,54	92,11055	7,889455
23	1	85,8	0	85,8	100	0
24	1	23,04	82,5	105,54	21,83059	78,16941
25	1	72,98	-43,21	29,77	245,1461	-145,146
26	0,8	300,56	7	307,56	97,72402	2,275979
27	6	88,72	0	88,72	100	0
29	0,4	25,6	339,22	364,82	7,017159	92,98284
31	1	34,63	266,76	301,39	11,4901	88,5099
32	1	129,78	68,21	197,99	65,54877	34,45123
33	1	82,88	590,29	673,17	12,3119	87,6881
36	5	0	88,65	88,65	0	100
37	5	0	92,53	92,53	0	100
38	3	219,15	155,23	374,38	58,53678	41,46322
39	5	32,44	373,19	405,63	7,997436	92,00256
41	1	14,69	199,49	214,18	6,858717	93,14128
42	1	103,74	149,98	253,72	40,88759	59,11241
43	3	183,84	162,31	346,15	53,10992	46,89008
44	16	208,52	144,59	353,11	59,05242	40,94758
46	1	397,8	202,41	600,21	66,2768	33,7232
47	6	175,96	419,36	595,32	29,55721	70,44279
48	3	45,93	435,73	481,66	9,535772	90,46423
49	3,5	21,31	366,71	388,02	5,491985	94,50802
50	1	0	296,19	296,19	0	100

Table.38 cont.						
51	5	135,23	361,48	496,71	27,22514	72,77486
52	4,5	165,52	1029,19	1194,71	13,85441	86,14559
53	3	246,95	117,43	364,38	67,77265	32,22735
55	4,5	204,41	200,88	405,29	50,43549	49,56451
58	2	0	37,86	37,86	0	100
59	6	29,41	128,61	158,02	18,61157	81,38843
60	2	432,78	123,16	555,94	77,84653	22,15347
61	2	151,66	155,89	307,55	49,31231	50,68769
62	10	0	30,85	30,85	0	100
63	5	0	118,86	118,86	0	100
64	6	208,16	354,54	562,7	36,99307	63,00693
65	1	8,87	178,16	187,03	4,742555	95,25745
66	15	137,24	41,57	178,81	76,75186	23,24814
67	4	221,94	64,72	286,66	77,42273	22,57727
68	1	174,66	0	174,66	100	0
69	1	88,06	0	88,06	100	0
70	8	472,12	0	472,12	100	0
71	2	276,29	173,94	450,23	61,36641	38,63359
72	2	35,32	42,45	77,77	45,41597	54,58403
75	1	491,02	271,78	762,8	64,37074	35,62926
77	1	797	327,97	1124,97	70,84633	29,15367
79	5	0	755,67	755,67	0	100
80	6	30,95	93,7	124,65	24,82952	75,17048
81	10	32,56	22,82	55,38	58,79379	41,20621
82	4	523,06	321,44	844,5	61,93724	38,06276
83	1,5	172,28	184,77	357,05	48,25095	51,74905
84	2	153,19	30	183,19	83,62356	16,37644
85	4,5	283,94	41,48	325,42	87,2534	12,7466
86	3	172,18	7	179,18	96,09331	3,906686
87	1	46,71	17,93	64,64	72,26176	27,73824
88	1,5	150,13	22	172,13	87,21896	12,78104
92	1	115,39	486,4	601,79	19,17446	80,82554
101	25	78,37	601,61	679,98	11,52534	88,47466
104	3	781,75	1101,95	1883,7	41,50077	58,49923
105	2	173,69	563,11	736,8	23,57356	76,42644
107	2	223,25	30,85	254,1	87,85911	12,14089
108	3	190,06	0	190,06	100	0
109	1	173,88	47,75	221,63	78,45508	21,54492
111	1	152,71	-46,48	106,23	143,7541	-43,7541
112	1	539,81	746,48	1286,29	41,96643	58,03357
114	2	51,26	179,19	230,45	22,24344	77,75656

Table.38 cont.						
115	20	0	80,3	80,3	0	100
116	2	838,57	1548,71	2387,28	35,12659	64,87341
117	5	72,93	304,98	377,91	19,29825	80,70175
118	9	85,08	48,6	133,68	63,64452	36,35548
119	15	22,29	71,15	93,44	23,85488	76,14512
122	9	481,94	143,43	625,37	77,06478	22,93522
123	6	233,26	39,03	272,29	85,66602	14,33398
124	9	267,62	122,8	390,42	68,54669	31,45331
126	4	0	781,24	781,24	0	100
127	5	17,95	747,29	765,24	2,345669	97,65433
128	3	311,29	770,06	1081,35	28,78716	71,21284
129	4	121,73	524,88	646,61	18,82588	81,17412
130	3	79,37	499,34	578,71	13,71499	86,28501
131	20	0	1575,61	1575,61	0	100
132	15	0	1116,64	1116,64	0	100
133	5	0	1175,63	1175,63	0	100
134	8	282,02	323,33	605,35	46,58792	53,41208
136	8	170,59	648,72	819,31	20,82118	79,17882
139	3	201,14	0	201,14	100	0
140	5	309,9	0	309,9	100	0
141	5	31,2	148,56	179,76	17,35648	82,64352
145	1	236,55	37,06	273,61	86,45517	13,54483
146	3	648,9	0	648,9	100	0
151	1	20,47	49,97	70,44	29,06019	70,93981
156	1	438,74	0	438,74	100	0
157	1	0	139,2	139,2	0	100
160	1	17,54	29,75	47,29	37,09029	62,90971
161	10	59,24	181,78	241,02	24,57887	75,42113
164	1	147,82	113,88	261,7	56,48452	43,51548
165	1	189,76	549,47	739,23	25,66995	74,33005
	463,7	17687,5	26392,6	44080,1		

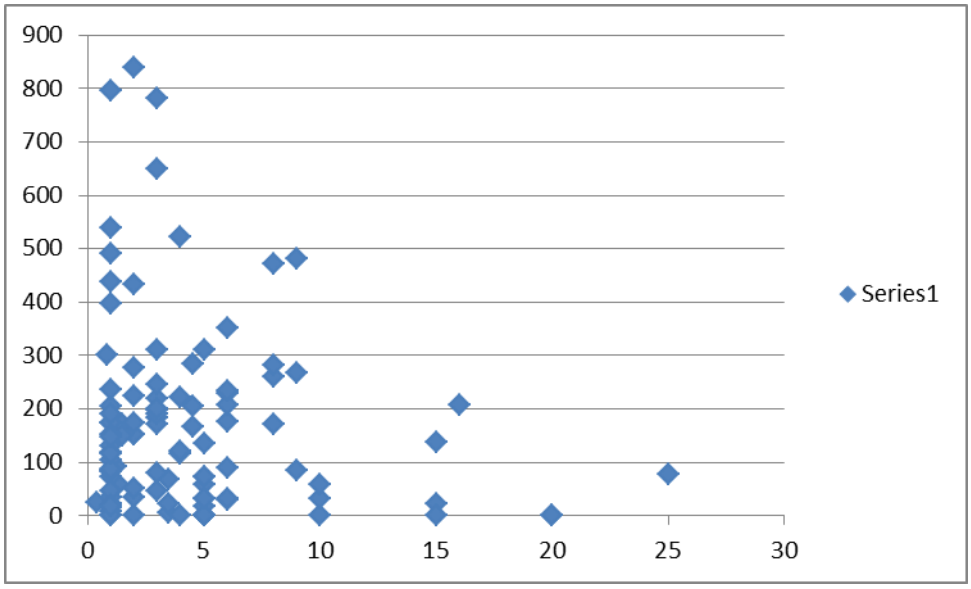

Figure.53 Size vs Agricultural Land – Roman Period

Table.39 Agricultural Land, Domain Area Ratios and Number of Secondary Sites for 1st order sites of Roman Period

Site No.	Size/ (ha)	Total Area (ha)	Agricultural Land (ha)	Non-agricultural land (ha)	% of Agricultural	% of Non-agricultural	2nd order sites	3rd order sites
44	16	1747	1727	320	98	2	2	6
62	10	643	297	346	46	54	1	1
66	15	5134	3345	1789	65	35	10	9
81	10	2108	147	1961	7	93	3	2
101	20	1893	482	1411	25.4	74.6	3	-
115	20	3505	435	3070	12.4	87.6	2	2
119	15	1047	336	711	32	68	7	-
131	20	5095	315	4780	6.2	93.8	7	2
132	15	3000	160	2840	5.3	94.7	1	-
161	10	3790	1404	2386	37	63	2	7

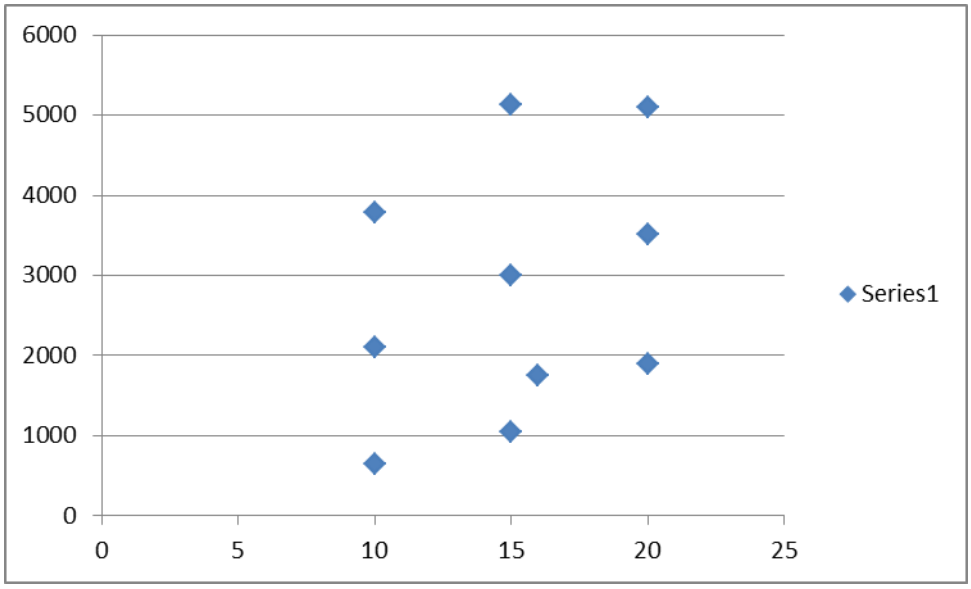

Figure.54 Size vs. Size of Domain Land – Roman Period

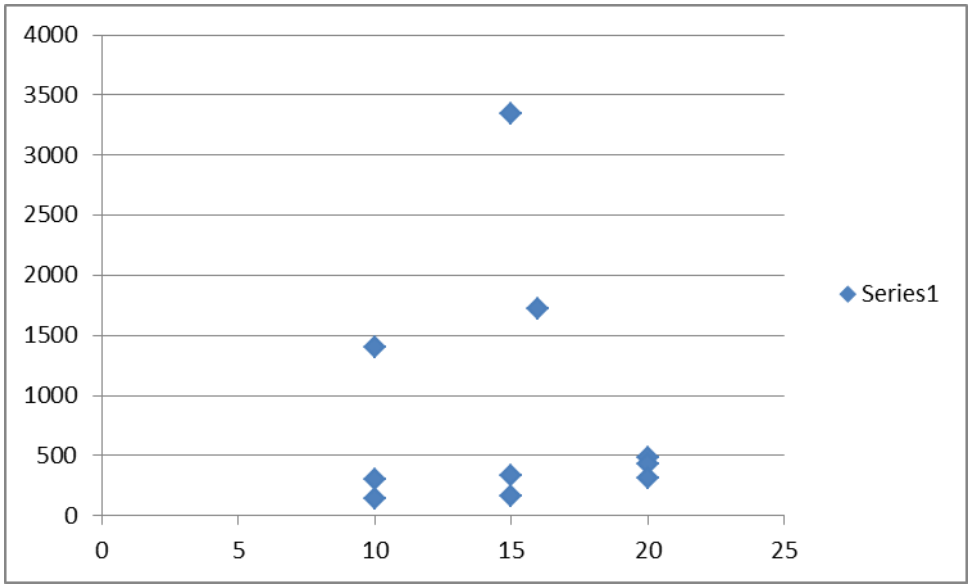

Figure.55 Size vs Size of Agricultural Land within Domain Area – Roman Period

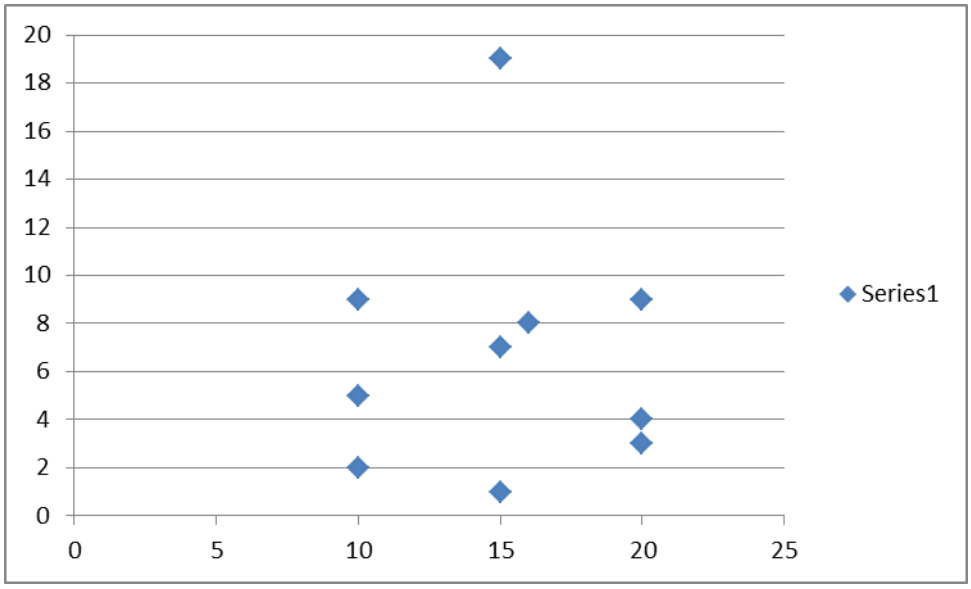

Figure.56 Size vs No of Secondary Sites within Domain Area Roman Period

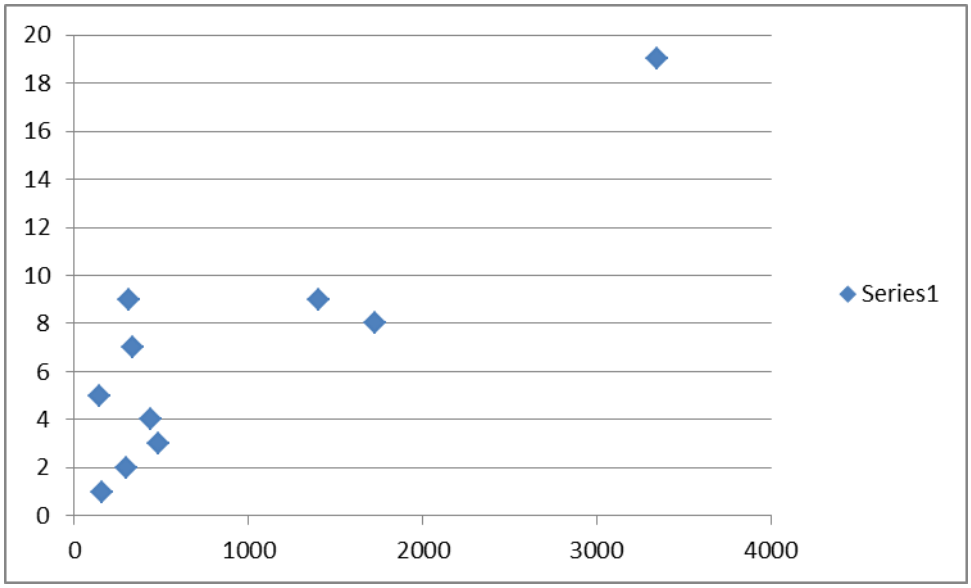

Figure.57 Size of Agricultural Land within Domain Area vs No of Secondary Sites within Domain Area – Roman Period

Table.40 Chart showing the significancy or insignificancy of correlation between all variables

	Late Archaic	**Late Classical**	**Hellenistic**	**Roman**
1	X	X	X	X
2	X	X	X	X
3	X	X	X	X
4	X	X	X	X
5	√	√	√	√

X= Insignificant, no correlation √=Significant correlation

1.Size of settlement (all the sites) vs Size of agricultural land
2.Size of settlement (only demes) vs Size of domain area
3.Size of settlement (only demes) vs Size of agricultural land
4.Size of settlement (only demes) vs no. of secondary sites within the domain area
5.Size of agricultural land within the domain area vs no. of secondary sites within the domain area.

V.6. Epilogue on Settlement Patterns in Klazomenian Khora

This section is confined to an overview of the settlement patterns for defining the shifts from one period to another. A strict definition of settlement pattern for each period provides us with remarkable conclusions about the processes of state formation and urbanization or basically the stages of the *polis* formation. In this work state formation and urbanization are conceptualized as different processes yet both are defined as the subsets of *polis* formation. State formation which required an organized stratified society with its institutions is closely linked with the organization of the territory. Therefore it is suggested that the state formation had begun by the Late Geometric-Early Archaic period. On the other hand urbanization is a process, which is closely linked with the organized settlement layout at the settlement center as well as the increased urban population within a stratified society. Late Archaic period is suggested to be the beginning of the urbanization process on the basis of the evidence from the settlement center as well as the organization of the *khora*, which saw the emergence of *demes-like* primary settlements distributed regularly over the territory. The conscientious arrangement of the *khora* with those large central places regularly distributed within the territory implies the introduction of a new administrative system,[286] which aims the diffuse use of the territory and its control. Within the scope of the study the land potential of Klazomenian *khora* is estimated and a number around 39,754 people is suggested to be supported. The population estimations shows that the

[286] This phenomenon may be linked with the general political environment of the era, particularly the policy of Darius I.

size of the population never exceeded the maximum carrying capacity On the other hand the population estimations executed for each period sees the dramatic increases from Late Geometric period to Late Classical period with a significant fluctuation during the 5th century BC. As a middle sized *polis,* Klazomenai had an economy based on agriculture, but trade had a significant economic input as well. The amphora production capacity as well as its distribution in a wide geography and the presence of industrial quarters in the town proves the significance of trade as an economical component in Klazomenai beginning with Late Archaic period.

Late Geometric period is likely to be the time span when the colonizers of Klazomenai aimed to put claim on the borders of the Klazomenian khora. Like any other Ionian polis the extension of its borders have been determined more or less by the topography. Most of the Late Geometric settlements were clustered around the settlement center where also sporadic findings of Geometric period were found around the Bronze Age settlement Liman Tepe, without any organized settlement lay out. The rest of the sites dated into Late Geometric period were situated at the fringes of the *khora*. The phenomenon of extra-urban cult centers of the era implies the beginnings of the conscious planning of the territory as well as its integration with the *asty* to be formed. It is a common phenomenon for the entire Greek *koine* that most of those sanctuaries were situated at the relatively inaccessible geographies and served as markers of the political frontiers.[287] It may also be assumed that the demand

[287] De Polignac, F. 1995(a), 46-59.

for land during Late Geometric period urged societies to put control over the land to be exploited permanently.

None of the settlements dated into Late Geometric period exceeds 10 ha. They are either dispersed farmsteads or hamlets. Therefore we can hardly speak of an urban population nor at the settlement center neither in the territory. On the other hand Late Geometric period sees the beginnings of the arrangement of territory which refers to the state formation.

The transition from Late Geometric period to Early Archaic period is hallmarked with the increase in the number of settlements which actually doubled up the number of settlements from Late Geometric period to Early Archaic period. However none of the Early Archaic settlements are classified as 1st order settlements. The shifts in the number and the size of settlements from Late Geometric period to Early Archaic period are not crucial for the process of urbanization.

The processes and developments in terms of settlement pattern during Early Archaic period are related to the organization of the *khora* and marking the frontiers as it has been during the previous era. As it is already discussed for determining the frontiers of the khora, tumuli were consciously situated at the fringes of the khora as well as the asty which might have been recently formed. The placement of those tumuli during Early Archaic period is contemporary with the rise of ancestery cult in Attica and Argolid and most probably the by-product of similar ideology in the cognitive context. Therefore it may be assumed that taking the possession of the land of *khora* and determining its frontiers has been achieved during Early Archaic period.

Eventhough it is not possible to date the initial using phase of the forts and the border marks precisely, we may expect them to be dated into Early Archaic period.

In terms of morphologies for the land choice no significant shifts are followed. 50-60% of the settlements were situated on low hilltops and slopes from Late Geometric to Roman period. The second most preferred morphology are plains where 25-35 % of the settlements were situated on plains through all periods. 10-20% of the settlements were always in the valleys and few of the settlements were located in straits from Late Archaic period to Roman period. The distribution of preferred morphologies did not show any significant changes from Late Geometric period to Roman period. Most of the settlements were situated either on hilltops or hillslopes and it continued into the Roman period in this fashion. Perhaps this is caused by the site loss factor of the survey methodology. Sophisticated environmental study is a lacking part of the project and no bore drills or any type of environmental analysis employed for certain areas, yet it is a future aim. In short, the alluvial plains in the region and for entire Ionian region are relatively recent formations and that may have prevented us from finding the surface scatters.

A noteworthy shift is followed in terms of soil types. The most significant preference for soil thickness for Late Geometric and Early Archaic period ranges between 0-20, which is not appropriate for agricultural activities. Few preferred soil with thickness 50-90 cm. Settlement patterns are associated with the types of agricultural systems undoubtedly. The clusters of settlements nucleated at certain parts of the *khora* as well as the preferred type of soil for

the settlements, which is not available for agriculture imply an open field cultivation rather than dispersed farmsteads. Most probably the settlements clustered at certain points of the given region were using the wide plains at Kuşçular, İçmeler and Kalabak in a collective manner.

In conclusion Late Geometric and Early Archaic periods saw the state formation which can be traced through the organization of the *khora* and attested with the construction of the city wall and striking coins which required an organized community and yields to the state formation.

Late Archaic period seems to be a turning point for the urbanization process in Klazomenai. The aspects of the urbanization process can be followed both at the settlement center and the khora. The organized settlement layout and the division of residential and industrial quarters are the hallmarks of the era. The fortification of the central settlement at İskele is dated to second half of 7th century BC if not earlier. The city was already striking coins; mass production of olive oil and pottery accompanied with overseas trade has been the traits of the era. Therefore by looking at the settlement center one can claim that urbanization process has started with Early Archaic period and perhaps achieved in Late Archaic period the evidence from the *khora* is complemantary with it.

Late Archaic period is hallmarked with the dramatic increase in the number of settlements and the regular distribution of those settlements that reveal the diffuse use of the territory. The 1st order sites which are eight in number has been initially founded during Late Archaic period and continuously inhabited into Roman period with a hiatus during 5th century BC. These sites are highly

likely to be the *demes* of Klazomenai. This phenomenon refers to the presence of urban population. The well-organized settlement center combined with the *demes* organization in its territory imply the urbanization of Klazomenai.

5th century BC is defined as a hiatus in the settlement history of Klazomenai on the basis of lacking evidence at the settlement center. Archaeological evidence reinforce the textual evidence *(Pausanias VII.3.9)* for that Klazomenians have moved to Karantina Island during the 5th century BC. One of the major aims of the survey was seeking whether there were any settlements of the era in the khora. The field surveys yielded to the discovery of 21 sites, which of 17 are settlements dated into the 5th century BC. However as it is already discussed that the related material is very arbitrary and may also either be dated to the end of 6th century BC or the beginning of the 4th century BC which may not be revealing the presence of settlement on the mainland during the movement to the island, but rather the diminishing settlement of Late Archaic period or flourishing settlements of 4th century BC. Anyhow, despite the probability of those cases here we have to say a few words for the settlement pattern of the 5th century BC. The dramatic decrease in the number of settlements reinforces the view that the mainland has been abandoned drastically in any case. Regarding the fact that all the settlements dated into the 5th century BC have also been inhabited during the Late Archaic period, I dare to say that those settlements were perhaps the latest abandoned ones. It is not difficult to estimate the diminishing of those settlements in terms of size and population.

The following period namely Late Classical period is defined with the significant increase in the number of settlements again. In terms of settlement pattern Late Classical period doesnot differ from the traits of Late Archaic period. The evidence from the *khora* is coherent with the excavation results of the settlement center and evidently indicates the re-occupation of the mainland and the diffuse use of the territory. All the 1st order sites that have been founded during Late Archaic period –*demes*- were re-occupied after the hiatus that took place in 5th century BC. The significant preference in land choice directed to more arable land in comparison with the 5th century BC settlement habits, which preferred more rocky places. The most significant trait of the era is the absorbance of dispersed farmsteads by 2nd order settlements, in other words nucleated villages. A cross tabulation of Late Archaic period and Late Classical period clearly shows that 18 settlements were abandoned from Late Archaic to Late Classical period and they were mostly 3rd order sites with insignificant exceptions. On the other hand during Late Classical period 11 new settlements have been founded and they were mostly 2nd order sites. A tendency towards the nucleated settlements rather than dispersed farmsteads imply the open field cultivation rather than private farms.

In 380's Klazomenai had found itself in war with Kyme for its attempt to expand its territory towards northeast for preserving the ability of its grain ships to enter the harbours of Smyrna and perhaps Phocaea. It had claimed an area of *peraea* around the mouth of Hermos *(Diodoros 15.18.3)*, which implies the great need for grain supply and dramatic increase of population size.

The process that has begun in Late Classical period carried out through Hellenistic period. The 1st order sites were maintained with one more addition whereas the number of 3rd order settlements decreased dramatically. So for Hellenistic period we may claim that synoceism was the policy of the era admittedly. A great number of the dispersed farmsteads were absorbed by the villages. Therefore we can readily speak of synoceism process that began by Late Classical period and achieved during Hellenistic period, where open field cultivation was adopted commonly. The shift in soil types is significant since almost all the settlements of Hellenistic period and most of Late Classical period were founded on arable land.

The settlement pattern of Roman period is utterly different from the previous. First of all Roman period is hallmarked with the baby boom of settlements. The number of settlements raised up to 105. The 1st order settlements of the previous periods were maintained with one addition. It is apparent that the wise organization of the *khora* with the regular distribution of *demes* during Late Archaic period was embraced and maintained in the following periods. This implies that such arrangement was mainly oriented with the constant traits of the land such as topographical features and the agricultural potential. The number of villages were duplicated whereas the number of the dispersed farmsteads explicitly ascended. It is possible to see a dendritic settlement system during the Roman period. This refers to shift from open field cultivation to private farmsteads.

VI.CONCLUSIONS

Systematic archaeological surveys conducted in different parts of the Greek *koine* –in particular the Greek mainland and Aegean islands enabled us to examine the history of settlement patterns in different regions and investigate the similarities and differences. Even if a basic comparison of the results reveals some similarities in terms of changing settlement patterns, still the settlement history of each region was primarily created by their own cultural and environmental dynamics. For that reason the previous chapter is confined to a specific definition of settlement patterns from Early Iron Age to Roman period in Klazomenian *khora*. In this chapter the settlement patterns of Klazomenai is evaluated in a wider scope in comparison with other regions of Greek *koine* whereever the evidence is available.

It is apparent that the settlement patterns, which is basically the spatial distribution of sites defined with other dependent variables such as population and land potential, has considerably changed through time at all regions of the Greek *koine*. The evidence mostly comes from the mainland Greece and Aegean islands, where systematic field surveys were conducted. One of the main concerns of the present study was to make a comparison of the settlement patterns in micro and macro scales for presenting the differences and similarities. However the evidence is quite fragmentary for a holistic conclusion. The lacking evidence from our study region, namely Ionia and Aolis and geographically coastal Western Anatolia prevents us from making such comparisons in micro scales. Therefore it is not yet possible to present

stereotypical Ionian *polis* formation model by discussing the aspects of settlement patterns in this specific region. The study let us present the models of settlement patterns merely for Klazomenai, without making any inferences in a regional scale. On the other hand the study is also far from making any inferences at macro scale with a fully holistic view since the evidence is enormously confined to mainland Greece and Aegean islands, but not anywhere else. Yet still the evidence is available for defining the position of Klazomenai in Aegean dynamics in terms of settlement patterns through archaeological periods.

Early Iron Age is perhaps the most enigmatic period still needs to be investigated for all regions of Greek *koine*. For most parts of mainland Greece and Aegean islands typicality may be pronounced in terms of settlement patterns. Widespread desertation of Late Bronze Age settlements and discontinuity of occupation are common phenomenons[288], as it is for Klazomenian territory. Transition from Late Bronze Age to Geometric periods was only determined at two sites Yarentepe **(28)** and Köytepe **(74)**, which both have plus functions as fort, cult place and workshop. The findings from the early phases of Early Iron Age were found only at cult sites situated at discrete places where most clear statement was particularly made for Laconia[289] and Nemea[290], which perfectly corresponds to the situation in Klazomenai. Astonishingly the cult places situated at the fringes of the territory –Söğüt **(73)**, Köytepe **(74)**, Inkaya **(89)** reveal no discontinuity in occupation from Late

[288]Catling, R.W.V. 2002, 153.
[289] Catling, R.W.V. 2002, 154.
[290]Wright, J.C.-J.F. Cherry-J.L. et al. 1990, 611

Bronze Age to Geometric periods and accompanied with the earliest material affiliated with the founders of Klazomenai.

Early Iron Age until its final phases -8th c. BC is hallmarked with the predominance of a few, widely spaced nucleated settlements that contained the bulk of population at most parts of Greece, namely Boeotia[291], Argolid[292], Methana[293], Messenia.[294] In few places such as Berbati Limnes[295] and Melos[296] dispersed rural settlements expanded conspicuously contrary to the common situation. In Klazomenai settlement pattern of Early Iron Age dramatically differs from all the regions mentioned above except several points. The widespread desertation of Late Bronze Age settlements and discontinuity in occupation as well as the use of cult places during Geometric periods are common features for all regions including Klazomenai and strongly emphasize a new political and social organization detached from Bronze Age dynamics and state formation.

The distinctive feature that distinguishes Klazomenai in terms of settlement patterns is the dispersed small settlements clustered around the Bronze Age settlement within a radius of 4 km and cult places, tumuli and forts situated at the fringes of its territory instead of sparsely distributed primary settlements that contained the bulk of the population. At most parts of Greek geography those primary settlements that have been formed with the agglomeration of large number of populations evolved into central places of

[291] Bintliff, J.-A. Snodgrass, 1985, 139; Bintliff, J. 1999 (a), 15-17.
[292] Jameson, M.H. etal 1994, 374.
[293] Mee, C.B. - H.A. Forbes (eds) 1997, 57.
[294] Alcock, S.E. etal. 2005, 158.
[295] Wells, B.-C. Runnels 1996, 219-222.
[296] Renfrew, C.-J.M. Wagstaff 1982, 142.

Archaic and Classical periods[297]. On the other hand primary settlements appeared by Late Archaic period –in the 2nd half of 6th century BC- in Klazomenian territory. These diversities might have been related to different socio-political dynamics, where Greek mainland was the center and the Western Anatolian coast was then the periphery after a period of broad scale political turmoil that is defined as 'dark age' archaeologically. It is archaeologically attested that the land of Klazomenai was not empty prior to the arrival of migrants from mainland Greece, on the contrary has been a location for a large port settlement, which had a significant position within Aegean trade network.[298] The interaction of newcomers with the new geography and the indigenous community requires to be investigated, but it is apparent that they had mingled to a certain extent and the newcomers have not refrained from being settled around the old settlement in a rather dispersed and unorganized fashion.

Early Archaic period, late 8th and 7th centuries BC are crucial for state formation that is closely linked with the development of political and social instruments at mainland Greece and so for Klazomenai. It is hallmarked with the defensive network around the khora, minting coins and the building of a fortification wall at the settlement center in Klazomenai. For most parts of Greece the isolation that had characterized the previous period was broken.[299] On the other hand the settlements have not expanded dramatically and there have been little change in terms of settlement patterns. For Laconia it is defined

[297] Catling, R.W.V. 2002, 154
[298] Erkanal, H. 2011.
[299] Catling, R.W.V. 2002, 155-6.

as a period of instability and territorrial competition between primary settlements.[300] On the contrary in Boeotia, there is no sign of any further expansion prior to 6th c. BC.[301] In Southern Argolid settlements rapidly increased in size and number from 8th c. to 6th c. BC.[302] At Keos full compliment of primary settlements have been established[303], whereas on Melos and Thera settlement pattern with dispersed hamlets and farmsteads flourished along the urban centers.[304] Only in Attica the number of sites was contracted.[305] Early Archaic period is not defined clearly for all regions since in most survey reports it is not defined as a separate period but more commonly as « Archaic Period ». In Klazomenai the settlement pattern of Early Archaic period didnot differ from Late Geometric dramatically, but the number of sites expanded similar to mainland Greece. The primary settlements have not been established yet, but dispersed settlements farmsteads and hamlets were expanded in a wider area within the territory.

6th century BC seems to be a turning point for Greek poleis at most places. The evidence is very clear at regions where intensive survey was conducted and hallmarked with a radical change in settlement patterns, which is mostly characterized with the significant increase in number of settlements. At mainland Greece at most of the regions a shift from nucleated settlement pattern to widespread dispersion of small sites is typical. For Laconia Late Archaic period is defined as the prelude to the climax of population growth and

[300] Catling, R.W.V. 2002, 157
[301] Bintliff, J.-A. Snodgrass 1985, 139; Osborne, R. 1996, 200.
[302] Runnels, N.C.-T.H. Van Andel 1987, 316; Jameson, M.H. etal (eds.) 1994, 374.
[303] Whitelaw, T.-J.L. Davis 1991, 218-9.
[304] Renfrew, C.-J.W Wagstaff (eds) 1982, 142-4.
[305] Osborne, R. 1989, 297-322.

settlement expansion.[306] Same phenomenon is followed at Boiotia[307], Southern Argolid[308], Keos[309] and Nemea Valley[310]. For Late Archaic period, evidence is also available for the periphery as well, namely from Metaponthum and Kroton at South Sicily where expansion of secondary settlements followed clearly[311]. On the other hand the Late Archaic settlement patterns markedly differed at Berbati Limnes[312], Melos[313] and Thera[314] with the significant reduction of small settlements.

In Klazomenai Late Archaic period is a turning point when urbanization process was clearly initiated as it is attested at the urban center with the urban layout and the division of domestic and industrial spaces as well as the renovation of fortification wall at the settlement center. The evidence from the khora implies the introduction of a new administrative system with the foundation of *demes-like* primary settlements, which aimed the diffuse use of the territory as well as the easy control of it. The marked increase in the number of secondary sites is parallel with the hallmarks of settlement patterns in mainland Greece, but on the other hand strikingly different for the flourishment of primary settlements, which were present at those regions as early as Geometric periods.

The expansion of secondary sites and diffuse use of the territory continued into the 5th century and Late Classical times at mainland Greece while at

[306] Catling, R.W.V. 2002, 174.
[307] Bintliff, J.-A. Snodgrass 1985, 139.
[308] Runnels, N.C.-T.H. Van Andel 1987, 317.
[309] Cherry, J.F.-J.L. Davis and E. Mantzourani 1991, 247-54.
[310] Wright, J.C.-J.F. Cherry-J.L. et al. 1990, 610.
[311] Carter, J.C. 1992, 106-115.
[312]Wells, B.-C. Runnels 1996, 213.
[313] Renfrew, C.-J.M. Wagstaff 1982, 143.
[314] Catling, R.W.V. 2002, 174.

Klazomenai occupation was severely interrupted according to the evidence both from settlement center and the khora. As it is already explained in previous chapter 5th century BC is hallmarked with a hiatus and desertation of settlement center and secondary sites at its territory for Klazomenai.

Late Classical period is defined with widespread increase of rural settlements at most parts of Greece, except few marginal places. In contradiction to the situation in Klazomenian territory dispersed settlements, particularly the isolated farmsteads were significant components of the settlement pattern at most places. For Southern Argolid the Late Classical settlement pattern is defined as a typical market oriented central place distribution[315] where the number of 3rd order dispersed settlements exceeded the number of villages and towns. In parallel with Southern Argolid, at Southern Euboea[316], Keos[317], Attica[318], Berbati Limnes[319], Southern Arkadia[320] and Messenia[321] the increased number of dispersed rural sites during Late Classical period is reported with intensive surveys. The settlement patterns at Laconia[322] and Melos[323] during Late Classical period reflect a strikingly different view resembling the situation in Klazomenai. Decrease in the number of sites is compensated with the increase in site size clearly reflects the nucleation of rural population in those areas. In other words absorbance of dispersed isolated farmsteads and hamlets by large villages became the

[315] Runnels, N.C.-T.H. Van Andel 1987, 317.
[316] Keller, D.-M. Wallace 1986, 155-9.
[317] Cherry, J.F. -J.L. Davis 1998, 219.
[318] Lohmann, H. 1993, 126-248.
[319] Wells, B.-C. Runnels 1996, 229.
[320] Catling, R.W.V. 2002, 184.
[321] Alcock, S.E, etal 2005,159-161.
[322] Catling, R.W.V. 2001, 175.
[323] Renfrew, C.-J.W Wagstaff (eds) 1982, 143-4; Bintliff, J. 1997 (b), 10.

hallmark of the era in those regions totally differentiating from the rest of Greece. The shift in preferred locations for settlements, decisive tendency to more arable lands is clearly followed in Klazomenian territory as well as in Laconia[324], which implies a remarkable change in agricultural practices during Late Classical period.

In most parts of Greece decline in number of settlements begin with Late Hellenistic period and continues into Roman period. Decrease in number of sites in Achaea[325], Nemea[326], Northern Keos[327], Methana[328], Boeotia[329], Laconia[330] and Southern Argolid[331] is typical from Late Hellenistic period to Late Roman period. At most places Late Roman period is hallmarked with the upturn. On the other hand Euboea, Arkadia, Messenia, Berbati Limnes, Melos and Laconia do not fit in this picture with their distinctive features of settlement patterns during the Hellenistic and Roman periods as well as Crete, Samos and Chios, where no decline is followed through the systematic archaeological surveys. In Euboea even a slight rise in site number is determined all through Roman period.[332] The evidence from Southern Arkadia for Late Hellenistic – Early Roman period is quite bleak whereas a moderate recovery is clear during Late Roman period.[333] In Messenia site loss is determined at northern and sothwestern parts, but population seems to be

[324] Catling, R.W.V. 2001, 175.
[325] Shipley, G. 2002, 329.
[326] Wright, J.C.-J.F. Cherry-J.L. et al. 1990, 616-7; Alcock, S.E. 1993, 43-4.
[327] Cherry, J.F. -J.L. Davis 1998, 334-5.
[328] Bowden, H.-D. Gill 1997,77-83.
[329] Bintliff, J.-A. Snodgrass 1985, 148.
[330] Shipley, G. 2002, 257-337.
[331] Runnels, N.C.-T.H. Van Andel 1987, 397.
[332] Sackett, L.H. etal 1966, 11-2.
[333] Shipley, G. 2002, 330.

concentrated rather at coastal parts.[334] In Berbati Limnes the survey results clearly implied marked increase in the number of rural settlements from Hellenistic period to Late Roman period.[335] At Melos strikingly an increase in number of settlements determined from Hellenistic period to Late Roman period.[336]

During the Hellenistic period the settlement center of Klazomenai has been moved to Karantina island and remained there through the Roman periods, but the territory on the mainland maintained its position, where the large settlements founded during the Late Archaic period have been occupied from Hellenistic period to Roman period and the territory have been intensively used for agricultural activities. As it is the case for most parts of Greece the settlement number decreased remarkably during the Hellenistic period in Klazomenian territory, but this doesnot refer to a decline in population or a recession in terms of urbanization. The decline is due to the synoceism of settlements which is a process that has begun during Late Classical period. Most of the dispersed settlements, isolated farmsteads were absorbed by the large villages and the settlements were clustered on arable lands which may be referring to a well-organzed open field cultivation. The view changed markedly during the Roman periods when the settlement number increased dramatically, particularly the isolated farmsteads and hamlets. This refers to decisive preference of private farmsteads than open field cultivation.

[334] İbid.
[335] Wells, B.-C. Runnels 1996, 336.
[336] Renfrew, C.-J.W Wagstaff (eds) 1982, 145.

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APPENDIX 1- SITE CATALOGUE

The systematic archaeological surveys conducted within and around the territory of Klazomenai between years 2006-2010 documented 212 archaeological sites. 138 archaeological sites are discerned from the corpus of the sites for this study since the subject of the present work primarily focused on the settlement patterns from Late Geometric period to Roman period in the Klazomenian *khora*. The rest of the sites are not included in this study either for being not located within the suggested borders of the Klazomenian *khora* or for antedating-postdating the period of time that the present study is concerned with.

This appendix includes an inventory of the archaeological sites used in this work. The inventory numbers of the sites are not sequent since the original database site numbers are used and the sites are classified according to sub-regions. All the sites are listed below the subregion they are located at except for border marks, which are listed separately at the end of the inventory. The site number is a 3 digit number which also includes the date that the site was documented. For example; 2006/001 means site no:001 was documented in year 2006. The inventory includes also the name of the site; code and the name of the sub-region; geographical coordinate in longitude latitude and map codes for 1:25.000 scaled topographical maps of 1979, which are obtained from Turkish Republic, General Command of Mapping Turkey (*T.C. Harita Genel Komutanlığı)* and 1:5000 scaled cadastral maps wherever available, obtained from local municipality of Urla/İzmir. The settlements are classified according to their size into three-tier system. The settlements larger than 10 hectares are

categorized as 3, which have either city wall or urban layout; the settlements sized between 3 hectares and 10 hectares are categorized as 2 and finally the settlements smaller than 3 hectares with scanty surface scatters are categorized as 1, which are farmsteads. Category 4 includes only Klazomenai and Limantepe which are urban centers in both the political and urban layout sense in the region. The sites are categorized according to their function as settlement, fort, tumulus, agricultural terrace, necropolis, cult place, workshop or border mark. The morphology of the site is explained briefly in the inventory. The sites are roughly classified into macro archaeological periods as Late Geometric period, Early Archaic period, Late Archaic period, 5th century BC, Late Classical period, Hellenistic period and Roman period. During the site work Prehistoric sites as well as Byzantine and Ottoman are documented, but excluded in this study for not being relevant to the scope of the study. Yet still the Prehistoric or Byzantine or Ottoman dating is mentioned in the inventory for providing comprehensive information about the site. The findings for the dating of sites are listed. All ceramic dates are generic assessments based upon brief inspections in the field and short studies in laboratory. Finally a detailed description of each site is provided.

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1. URLA CENTER

Site No: 2006/005
Site Name: Dörtyol
Subregion: 1/Urla
Long./Lat.: 38 20 18N/26 46 08 E
Map Code: L17B4-L17b16a
Size: 2 / (4ha.)
Function: Settlement / Tumulus?
Morphology: Hillock
Period: Roman / Byzantine
Dating and Findings: Late Roman Red-Brown slipped ware – XVI.a; Byzantine Green slashed glazed ware.
Description: Dörtyol is a low hilltop of limestone formation, situated at the crossroads of old Çeşme-Urla road. The hilltop and its environs are intensively surveyed. The quantity of the surface findings is not much in number, but extends within an area of ca. 4 ha. The remnants of round walls on top of the hill resemble to Archaic tumulus peribolos, but these are likely to belong to windmills of recent history. The lack of any pottery predating Roman period reinforce the possibility of windmills rather than tumuli.
The hilltop and the environs covering 40 ha. intensively surveyed. The surface visibility was good since including the hill itself the environs are being used as agricultural fields. On top of the hill an illicit excavation trench was found. The soil depth exceeds 90 cm at most places.

Fig.1 Aerial image of Dörtyol Tepe

Site No: 2006/007
Site Name: Yenimahalle
Subregion: 1/Urla
Long./Lat.: 38 19 00 N/26 46 18 E
Map Code: L17B4-L17b16d
Size: 1 / (1.4 ha.)
Function: Farmstead
Morphology: Low hilltop of limestone
Period: Late Archaic? / Byzantine
Dating and Findings:
Late Archaic: Several black glazed body sherds.
Byzantine: Green slashed glazed ware.
Description: Yenimahalle is a low hilltop of limestone, covering an area of 1.4 ha. and it is located at the center of Urla. The slopes and the hilltop destructed by the modern inhabitants and the surface is covered with modern construction scraps which influences the visibility in a negative way. The bedrock is very close to the surface and this is another reason for not expecting the remains to be preserved to the day. Yet still few fragments found on the surface dated to the Byzantine era. There are few likely to be Archaic but still not diagnostic.
Part of the hill was destructed where the section of the limestone bedrock and the remains of a dry wall are visible. The soil thickness doesnot exceed 20 cm. at most places. The hill is covered with olive trees and the soil is white and coarse grained.

Fig.2 Yenimahalle, the section showing the remains of wall foundation and limestone formation

Site No: 2006/008
Site Name: Kızılcaköy
Subregion: 1/Urla
Long./Lat.: 38 20 27 N/26 44 52 E
Map Code: L17 A3-L17a20b
Size: 2 / (4ha.)
Function: Settlement / Necropolis
Morphology: Hillslope
Period: Early Archaic / Late Archaic / 5th Century BC
Dating and Findings:
Archaic – 5th c. BC: Few terracotta sarchophagus fragments and black glazed sherds.
Description: Kızılcaköy is 19th century AD village located to the North of Urla, on the slopes of a hill of volcanic formation. The ruins of a mosque, houses and graves of Ottoman period are well preserved. To 200 m. north west of the village settlement wall foundations and traces of installation on bedrock refer to the presence of an earlier settlement. Unfortunately diagnostic surface findings are extremely few in number. Few fragments of sarchophagi and glazed pottery dated into Archaic and 5th century BC recorded by previous researches let us date the site.
The surface visibility was very low during our visit to the site. Yet it is possible to estimate the size of the site on the basis of foundation walls and the traces of the installations on the bedrock.

Fig.3 Kızılcaköy, Traces of terrace walls

Fig.4 Kızılcaköy, traces of a press installation hewn into bedrock

Site No: 2006/010
Site Name: Dündarlıtepe
Subregion: 1/Urla
Long./Lat.: 38 19 02 N/26 45 39 E
Map Code: L17B4-L17b16d
Size: 2 / (6 ha.)
Function: Settlement
Morphology: Hilltop
Period: Late Classical / Hellenistic? / Roman / Byzantine
Dating and Findings:
Late Classical: Black Glazed roof-tiles ; Banded closed vessel base –X.b.1
Hellenistic?: Moulded bowl (1) XV.b.4
Roman: Late Roman red-brown slipped ware (2) –XVI.a; Glass pieces
Byzantine: Green and yellow slashed glazed ware
Description: Dündarlıtepe is not far from Urla center, on the way to Kuşçular village. It is small hill of limestone. It is surrounded with agricultural fields and there are agricultural terraces on the eastern slope which are not used anymore. The surface findings extend within 3.5 hectares and consist of mainly coarseware and rooftiles. The black glazed rooftiles determine the presence of a Classical settlement, whereas the large amount of roman rooftiles point to Roman settlement. Hellenistic settlement is represented with few fragments as well as red glazed stroter mentioned by previous researchers. The rest of the findings are dated into Roman and Byzantine periods and few are likely to be dated into Hellenistic period. The eastern slopes of the hill are defined with agricultural terraces. These terraces might have been used in the antiquity as well, but the final period of use dated into the Otoman period. On the northwest

slope of the hill there is a rock cut cavern with a diameter of 20 meters. There is a niche on the southern wall of the cavern, it might have been used as a shelter or a storage place. The fragments of a stone hand grinder reinforce the possible use of cavern as a cellar. The surface findings are concentrated particularly at the western and southern slopes.

Notes: The hilltop and the agricultural fields surrounding the hill are intensively surveyed covering an area of ca. 17 ha. The surface visibility both on the hill and the agricultural fields was high.

Fig.5 Dündarlıtepe general view

Fig.6 The sections at Dündarlıtepe revealing the wall remains

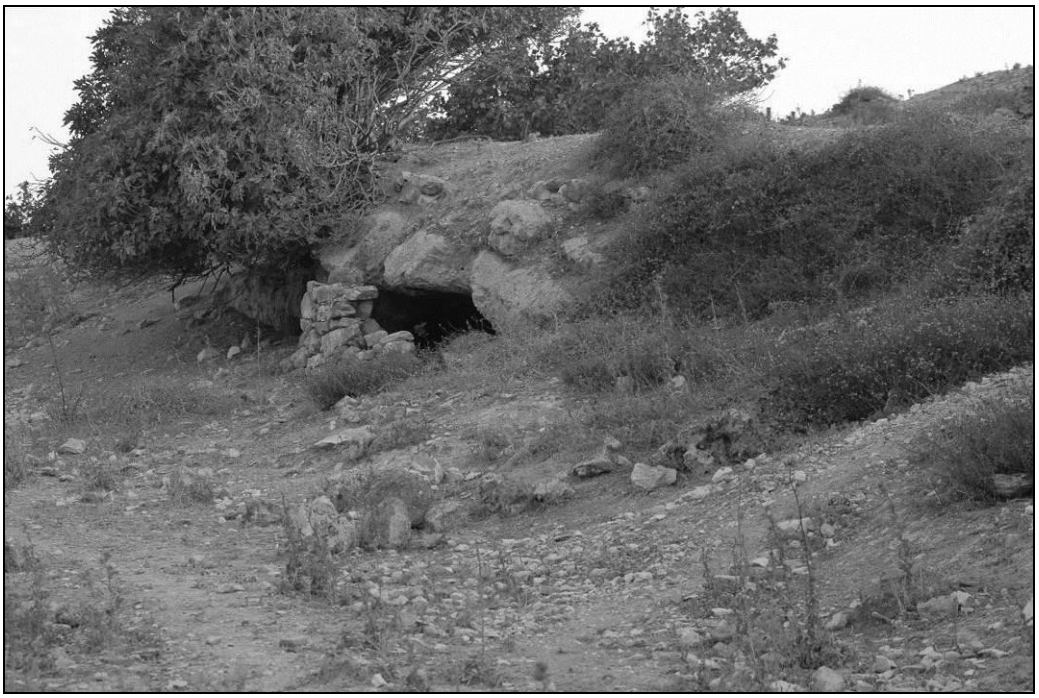


Fig.7 The cavern with niche at Dündarlıtepe

Site No: 2006/012
Site Name: Yakatepe
Subregion: 1/ Urla
Long./Lat.: 38 19 56 N/26 45 03 E
Map Code: L17A3-L17a20b
Size: 2 / (3.5 ha.)
Function: Settlement
Morphology: Hilltop
Period: Late Classical / Hellenistic? / Roman / Byzantine
Dating and Findings:
Late Classical: Fishplate base (1) –XIV.a.1; Black Glazed roof-tile fragments;
Hellenistic: Unguantraium rim (1); Plastic handle (1)
Roman: Late Roman red-brown slipped ware (21) –XVI.a; White slipped roof-tile fragments
Byzantine: Green and yellow slashed glazed ware (30)
Description: Small hillock and olive groves situated to the south of Urla center, on the way to Kuşçular village. The surface findings are very scattered and few in number and the surface visibility was low due to dense cover of weed. Several pieces of black glazed rooftiles point out Late Classical settlement. The rest of the fragments are dated into Roman and Byzantine periods, perhaps several body sherds and a base fragment may be pointing out Hellenistic settlement.

Fig.8 View of Yakatepe

Site No: 2006/013
Site Name: 1000 Konutlar
Subregion: 1/Urla
Long./Lat.: 38 20 01 N/26 46 11 E
Map Code: L17B4-L17b16a
Size: 2 / (ca. 3 ha.)
Function: Settlement
Morphology: Plain
Period: Late Geometric? / Early Archaic / Late Archaic/ Late Classical / Hellenistic / Roman
Dating and Findings:
Late Geometric-Early Archaic: Rosette Bowl base (1) –V.a; Kotyle handle fragment
Late Archaic: Krater rim (1); Terracotta sarchophagus fragments; Band Bowl rim (1) –V.b
Late Classical: Black Glazed roof-tile fragments; Mushroom Amphora –IX.g.1; Klazomenian Amphora rim (1) –IX.f; Lekane rim (1) –VIII.b.4
Hellenistic: Red glazed bowl body sherd (2)
Roman: White slipped roof-tile fragments; Ribbed ware body sherds; Late Roman red-brown slipped ware (7) –XVI.a; Cooking ware (5) –XIX.b
Description: 1000 konutlar is in Urla center and destructed by modern construction today. The related material has been found during the previous years. It is difficult to estimate its size now, but the distribution of the surface findings has been noted by the previous researchers and it might be around 3 or 4 hectares.

Site No: 2006/015
Site Name: Toptepe
Subregion: 1/Urla
Long./Lat.: 38 19 18 N/26 46 24 E
Map Code: L17B4-L17b16d
Size: 1 / (1.2 ha.)
Function: Farmstead
Morphology: Hilltop
Period: Early Archaic / Late Archaic / 5th century BC / Late Classical / Roman / Byzantine
Dating and Findings:
Early Archaic: Klazomenian Amphora rim (1) –IX.a.2
Late Archaic-5th c. BC: Klazomenian Black Figured sherd (1); Olpe rim (1) –XII.e; Chian Amphora rim (1) –IX.b.2
Late Classical: Black Glazed roof-tile fragments;
Roman: Late Roman red-brown slipped ware (3) –XVI.a
Byzantine: Green slashed glazed ware (9)
Description: Toptepe is a limestone formation hill situated to northeast of Urla center. The surface findings extend to 1.2 hectares and includes mostly pottery

dated into Roman and Byzantine era. The finds are scanty in number yet provides us with the evidence for long settlement history.
The hill and the fields around the hill to the east direction surveyed intensively. The northern part of the hill is destructed by motorway construction and its section was visible where the remains of walls and terracotta waterpipes could have been seen. The surface findings were concentrated at the western slope.

Site No: 2007/016
Site Name: Kamantepe
Subregion: 1/Urla
Long./Lat.: 38 19 02 N/26 46 24 E
Map Code: L17B4-L17b16d
Size: 2 / (6 ha.)
Function: Settlement
Morphology: Hilltop
Period: Roman / Byzantine
Dating and Findings: The surface findings dated into Roman and Byzantine eras are abundant in numbers. A Roman sarcophagus and an inscription on the pediment of the mosque are secondary uses of these materials that determine the Roman inhabitance at the area. Late Roman red-brown slipped ware – XVI.a; Green slashed glazed ware.
Description: Kamantepe is a limestone formation hill 300 m. Southwest of Toptepe. There is a mosque and a bath dated to 14th – 15th century named after the hill as Kamanlı. An area of 6 hectares to the southwest of those buildings reveal surface findings dated into the Roman and Byzantine eras.

Site No: 2007 / 017
Site Name: Üçdeğirmen
Subregion: 1/ Urla
Long./Lat.: 38 19 47 N/26 45 32 E
Map Code: L17B4-L17b16a
Size: 1 / (1.3 ha.)
Function: Farmstead
Morphology: Hilltop
Period: Late Archaic / Roman / Byzantine
Dating and Findings: Most of the surface findings dated into Roman (Late Roman Red-Brown slipped ware (9) –XVI.a) and Byzantine (Green slashed glazed ware (11)) periods, but few body sherds of banded pottery and glazed pottery are dated into the Archaic period.
Description: Üçdeğirmen is a small hilltop of limestone on the way to İçmeler. On the north-eastern slope surface material concentrated within an area of 1.3 ha. The glazed pottery of Byzantine era and white slipped rooftiles of Roman period are typical. Few sherds of black glazed and banded amphora date the site into Archaic period. Previous research notes mention the remains of an

Archaic tumulus due to the heap of stones found on top of the hill, but it might have belonged to a windmill perhaps, which is more coherent with the name of the hill.
A modern construction is placed on top of the hill. The bedrock is very close to the surface on the hill. The environs of the hill surveyed intensively, but the pottery distribution determined merely on the north east slope.

Fig.9 View of Üçdeğirmentepe

Site No: 2007/020
Site Name: Malaş
Subregion: 1/Urla
Long./Lat.: 38 20 34 N/26 45 26 E
Map Code: L17B4-L17b16a
Size: 1 (ca. 1ha.)
Function: Farmstead
Morphology: Hillslope
Period: Late Geometric? / Early Archaic / Late Archaic / Roman
Dating and Findings:
Late Geometric: Kalathos body sherd(1) –III
Archaic: Lekane rim (1) –VII.a.1; Kylix handle (1); Terracotta sarcophagus fragments
Roman: Late Roman red-brown slipped ware (5) –XVI.a; Terra Sigillata plate fragment (1) –XVI.b; Glass ware fragment
Description: Malaş is located ca. 1.5 km to the south of Yıldıztepe (004) close to the urban center of Klazomenai. Today the construction activities continue

in this area rapidly and the surface is densely covered with the modern construction material remains. Due to this the surface visibility is quite low. It is on the large coastal alluvium plain where the soil thickness reaches to 90 cm and probably the representation of archaeological material is low.

Site No: 2007/027
Site Name: Trafo
Subregion: 1/Urla
Long./Lat.: 38 18 54 N/26 45 50 E
Map Code: L17B4-L17b16d
Size: 2/ (6 ha.)
Function: Settlement
Morphology: Hillslope
Period: Late Archaic/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Klazomenian amphora rim (3) –IX.a.3; Sarchophagus fragments; Black figured pottery body sherd (1)
Late Classical: Black glazed roof-tile;
Hellenistic: Unguantarium rim (1)
Roman: White slipped roof-tile fragments; Terra sigillata plate (2) –XVI.b; Ribbed ware fragments; Late Roman red-brown slipped ware (6) –XVI.a
Byzantine: Green slashed glazed ware (8)
Description: This site is named after the hill that is crowned with a transformer station on top. The surface findings are concentrated on the southwest of the hill on the plain. Akpınar stream flows close to the site almost 250 km north. It is an agricultural field, the visibility was not low at that time we visited the site. The extension of the surface findings reach to 6 ha. Most of the surface findings consist of black glazed roof tiles of Classical period and pottery fragments of Roman and Byzantine eras. A few numbers of Hellenistic and Archaic fragments indicate to the presence of settlement during those periods.

Site No: 2007/040
Subregion: 1/Urla
Site Name: Saraçtepe
Long./Lat.: 38 20 57 N/26 43 57 E
Map Code: L17A3-L17a20b
Size: 1/ (1 ha.)
Function: Farmstead/ Agricultural Terrace/ Necropolis?
Morphology: Hillslope
Period: Late Geometric / Early Archaic/ Late Archaic / Late Classical / Hellenistic / Byzantine
Dating and Findings:
Late Geometric: Kalathos (1) –III

Archaic: Klazomenian amphora rim (2) –IX.a.3; Khios amphora rim (1) –IX.b.1; Waveline body fragment (1); Fruitstand rim (1) –VI.a.1; One handled bowl rim (1) –V.c.1
Late Classical: Klazomenian amphora rim (1) –IX.f; Lekane rim (1) –VII.b.5; Black glazed roof-tile fragments; Attic black glazed bowl base (1) –XIV.b.4
Byzantine: Jug, coarseware
Description: Saraçtepe is a hilltop 4 km. to the northwest of Urla centrum where today a chicken farm is located. The site is situated on the northeast slope of the hill. The surface findings distributed in an area of almost a hectare. However the site might be larger in size, since the surface findings are visible in the area cleaned for agricultural activities, otherwise the whole area is covered with dense macquis. The fragments of sarcophagi and pithoi of Archaic period may be indicating to the presence of a burial ground as well.

Fig.10 View of Saraçtepe

Fig.11 Aerial image of Saraçtepe and the location of the settlement

Site No: 2008/ 106
Site Name: Andız
Subregion: 1/ Urla
Long./Lat.: 38 19 23 N/26 47 51 E
Map Code: L17B4-L17b16c
Size: Ø: 39 m. H: 7 m.
Function: Tumulus
Morphology: Plain
Description: The tumulus is located on the Urla-Çeşme motorway entrance. Its diameter is 45 m and height reaches to 5 m. It is not destructed. It does not have a *peribolos* wall visible and rather looks like a natural hillock. Few amount of pottery fragments dated into Roman and Byzantine periods were scattered around it.

Fig.12 Aerial image of Andız tumulus

Fig.13 View of Andız tumulus

Site No:2008/109
Site Name: Kemalbey Çiftliği
Subregion: 1/ Urla
Long./Lat.: 38 18 11 N/26 45 32 E
Map Code: L17B4-L17b16d
Size: 1/ (1 ha.)
Function: Farmstead
Morphology: Hilltop
Period: Roman/ Byzantine
Dating and Findings: Surface findings are scanty and include few diagnostic finds. White slipped roof-tile fragments and green slashed glazed ware fragments.
Description: The site is near the Çeşme-İzmir motorway close to Urla center. It was recently re-arranged as a farm during our visit to the site. The surface findings are scarce in number mostly consisting of coarse ware and roof-tiles dated into Roman and Byzantine periods.

Site No: 2008/139
Site Name: Spor Salonu
Subregion: 1/Urla
Long./Lat.: 38 19 46 N/26 46 31 E
Map Code: L17B4-L17b16b
Size: 2/ (ca.3 ha.?)
Function: Settlement
Morphology: Valley
Period: Late Archaic/ Late Classical/ Roman
Dated by previous researches. The site doesnot exist anymore.
Description: The site is reported by previous researchers. It is amongst the modern villas near Çeşme – İzmir motorway. During our visit it was neither possible to determine the size of the site nor finding diagnostic surface findings to date the site. Therefore the description is fully based on previous reports.
Aydın, B. 2006, "A Survey of Clazomenaean Close Territory in Turkey-İzmir-Urla", in Özgen, E.-Günel, S. (eds) 2006 Studies in Honor of Hayat Erkanal; Cultural Reflections, 95-107, Homer.

Site No: 2008/140
Site Name: Göller
Subregion: 1/Urla
Long./Lat.: 38 18 47 N/26 45 20 E
Map Code: L17B4-L17b16d
Size: 2/ (5 ha.)
Function: Settlement
Morphology: Plain
Period: Late Classical/ Hellenistic/ Roman/ Byzantine

Dating and Findings:
Late Classical: Klazomenian amphora rim (1) –IX.f.1; Black glazed salt cellar rim (1)
Hellenistic: Megara bowl body sherd (1) –XV.a.2; Bowl rim (1) –XV.b.2
Roman: Late Roman red-brown slipped ware (7) –XVI.a; Ribbed ware fragments
Byzantine: Green slashed glazed ware; Late antique coarse ware fragments
Description: Göller is located to the south of Dündarlıtepe (010), Kamanlı (016) and Trafo (027) hills and ca. 2 km to the northeast of Mandalan plain. As the name of the site refers this area is likely to be a lake basin and as it is the case for Mandalan the rock type in this area is classified as volcanic tuff, andesite and basalt whereas the soil thickness is more than 90 cm. The extension of the surface findings reaches ca. 5 hectares. The surface findings mostly include coarse ware, but the few numbers of diagnostic sherds provides us with the evidence for dating the settlement history from Late Classical to Byzantine period.

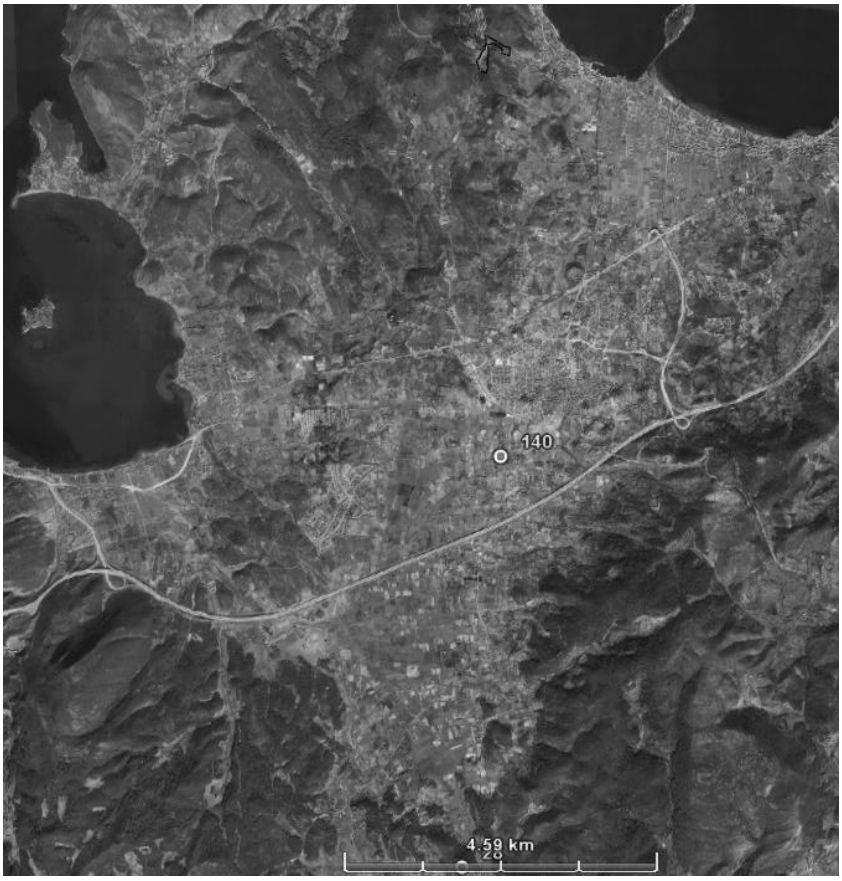


Fig.14 Location of Göller (140) on satellite image

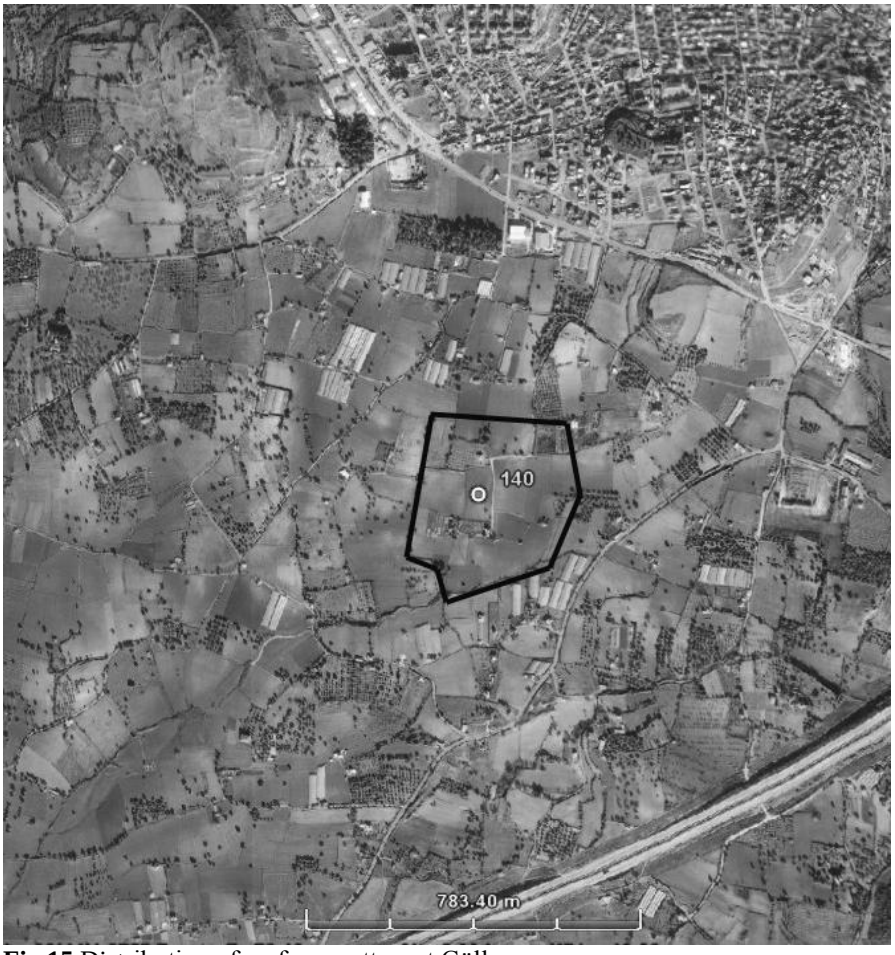


Fig.15 Distribution of surface scatters at Göller

Site No: 2009/141
Site Name: Bardakçı Kulübesi
Subregion: 1/Urla
Long./Lat.: 38 20 56 N/26 46 35 E
Map Code: L17B4-L17b16b
Size: 2/ (5 ha.)
Function: Settlement
Morphology: Plain
Period: Late Classical/ Roman
Dating and Findings: The surface findings are scanty and mostly consisting of roof-tiles and coarse ware. Black glazed roof tile fragments date the site into Late Classical period and Late Roman red-brown slipped ware _XVI.a as well as white slipped roof-tiles into Roman period.
Description: The site is located on the coastal plain of alluvium, inland ca. 1.5 km from the coastline. The surface findings extend in an area of ca. 5 hectares include pottery dated into Late Classical and Roman periods as well as abundant number of black glazed roof-tiles referring to the presence of a settlement during the Late Classical period.

Fig.16 Location of Bardakçı Kulübesi on satellite image

Fig.17 Distribution of surface scatters at Bardakçı Kulübesi

2.URLA İSKELE

Site No: 2006/003
Site Name: Cankurtaran
Subregion: 2/İskele
Long./Lat.: 38 21 39 N/26 45 46 E
Map Code: L17B4-L17b11d
Size: -
Function: Necropolis / Agricultural Terrace
Morphology: Volcanic hill on the coastal plain
Period: Late Archaic / Byzantine
Dating and Findings: The surface findings are very scanty and only several are diagnostic.
Late Archaic: Klazomenian Black Figure body fragments, one is bearing a siren figure and the other bears a warrior figure, mid. 6th c. BC
Byzantine: Yellow and Green slash glazed ware.
Description: Monastırakhia necropolis, which has been excavated by Oikonomos lies to the northwest of the hill. Agricultural terraces could be followed on the slopes of the hill particularly on the western slopes. As it is a common phenomenon it is not possible to date the agricultural terraces certainly. However it may be assumed that this area had been convenient for farming activities. Surface material is very scanty, but the several diagnostic findings are outstanding within the context of surface material. To the north of the hill a small stream flows which is active only in winter months, but the area is marshy and covered with reeds. To the west of the hill a Roman cistern and the remains of a water system with terracotta pipes are well preserved. There is a well and a small square building to the northeast of the cistern.
The site was known to us from the previous researches carried out around the settlement center of Klazomenai by the excavation team. During our visit in 2006 the surface was densely covered macquis and the visibility was low. Yet still the traces of the agricultural terraces were clear. The few fragments of sarcophagi and and pithoi are associated with the Monastırakhia necropolis extended towards the northwest slopes of the hill.

Fig.18.1

Fig.18.2

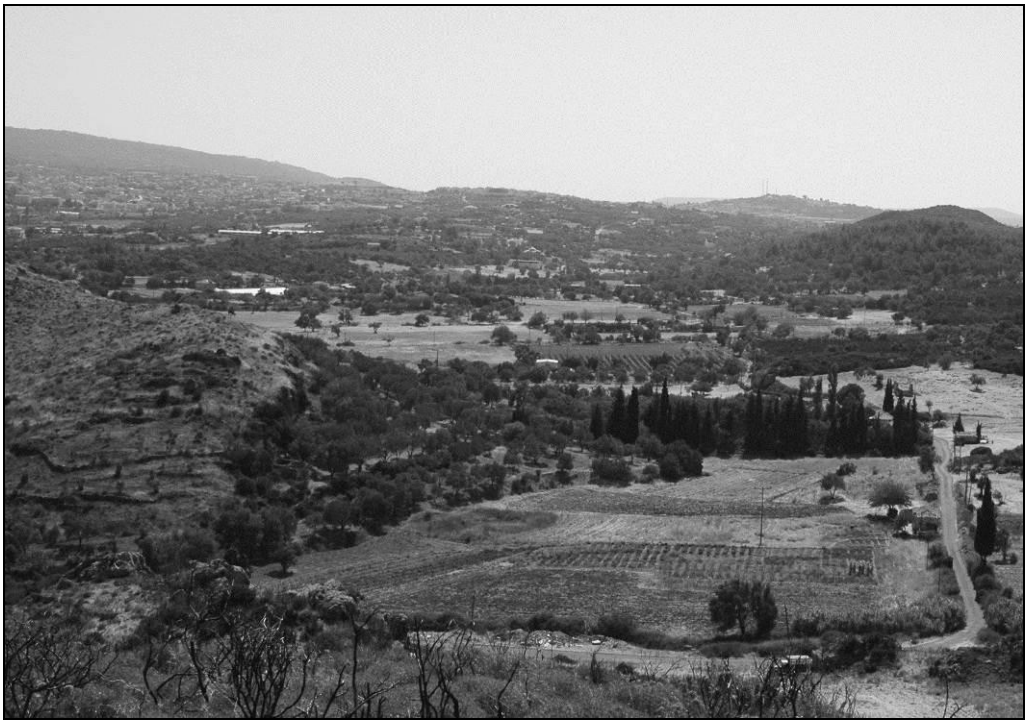


Fig.19 Agricultural terraces on the western slopes of Cankurtaran Tepe.

Fig.20 Aerial imagery of Cankurtaran Tepe

Site No: 2006/004
Site Name: Yıldıztepe
Subregion: 2/İskele
Long./Lat.: 38 21 18 N/26 45 52 E
Map Code: L17B4-L17b11d
Size: -
Function: Necropolis
Morphology: Hill on the coastal plain
Period: Late Geometric / Early Archaic / Late Archaic/ 5th c. BC /Late Classical / Roman
Dating and Findings: The surface findings few in number, but provide us with precise dating.
Late Geometric: Kotyle rim (1) –II
Early Archaic: East Greek Bowl base (1) –V.b
Late Archaic: One handled Bowl rim (1) – V.c.1; Plate rim (1) –VI.a.1
5th c. BC/ Late Classical: Lekane rim (1) –VII.b.1; Black Glazed roof-tile fragments
Roman: Late Roman Red-Brown slipped ware rim (5) –XVI.a
Description: Yıldıztepe is a hilltop of volcanic rock crowned with a monument comemorating the martyrs of Turkish Independence War. One of the necropoleis of Klazomenai lies to the southern skirts of the hill. a throughly investigated necropolis of Klazomenai is placed. The number of surface findings are not much in number but the diagnostic sherds provide us with precise dating.
The site was known to us from the previous researches carried out around the settlement center of Klazomenai by the excavation team and the necropolis is excavated and has been studied as a PhD project. The summit of the hill and the slopes are covered with recently planted pine trees, so the surface was densely covered with pine needles. The surface visibility was low and few Roman and byzantine sherds as well as sevaral undiagnostic sherds were found. The pottery used in this study for dating the site compiled from previous researches.
Reference: Ü. Güngör 2006, Klazomenai Yıldıztepe Nekropolisi, unpublished PhD. Dissertation, İzmir.

Fig.21 View of Yıldıztepe

Site No: 2006/006
Site Name: Taşharmanı
Subregion: 2/İskele
Long./Lat.: 38 21 48N/26 46 02 E
Map Code: L17B4-L17b11d
Size: 2 / (4 ha.)
Function: Settlement / Cult Place
Morphology: Hillock / Plain
Period: Early Archaic / Late Archaic / Late Classical
Dating and Findings:
Early Archaic/ Late Archaic: Votive lamps; Body sherds of banded amphora; Klazomenian Amphora (3) –IX.a.2; Lekane rim (1) –VII.a.4; Mortar base (1) –VIII.a
Late Classical: Black Glazed roof-tile fragments; Krater handle with ivy decoration
Description: Taşharmanı is not far from the urban center of Klazomenai at İskele. It is a hillock of volcanic formation placed on a geographic pocket of plain. There are niches and the traces of installations on the bedrock. These traces are accompanied with many numbers of terracotta oil lamps which are known to be votive oil lamps from the Archaic period. This spot is 500 m to the north of so-called acropolois of the town. The niches and the lamps imply the presence of cultic activities. Just across the low hilltop with the niches an area of 4 ha. reveal surface material of Classical period which included rooftiles.
The small plain across the hillock where on the western slope the niche is placed surveyed with intensive methods. The votive oil lamps and Archaic

sherds are found around the niche whereas the rest of the findings consisting of coarseware and black glazed rooftile fragments found scattered within an area of 4 ha. on the plain. The surface visibility was quite fine since the plain is used as agriculture fields and most of the area was recently ploughed. The soil thickness reaches to 90 cm. at most places and the lack of fine fragments might be due to intensive farming and ploughing.

Fig.21 Votive lamps found around the niche building

Fig.22 View of niche building at Taşharmanı

Site No: 2009/142
Site Name: Çiftliktepe
Subregion: 2/İskele
Long./Lat.: 38 21 56 N/26 45 21 E
Map Code: L17B4-L17b11d
Size: 1
Function: Settlement?/Necropolis / Agricultural Terrace
Morphology: Hillslope
Dating and Findings: The surface findings are scanty and mostly consisting of fragments of terracotta sarcophagus and roof-tiles. Few sherds of glazed pottery date the site into Late Geometric period and one Milet amphora rim – IX.a.2 into Late Archaic period.
Period: Late Geometric/ Late Archaic/ Late Classical
Description: Çiftliktepe is located 1 km. northwest of the urban center of Klazomenai on top of a hill looking over the northern coastline. The surface findings mostly include the fragments of Archaic terracotta sarchophagus, pithoi and roof-tiles. The nature of the surface findings refer to the presence of a necropolis here. The eastern slopes of the hill are terraced for agricultural activities and perhaps the roof-tiles as well indicate to a small farmstead or temporary settlement.

Site No: 2009/143
Site Name: Şirinoba
Subregion: 2/İskele
Long./Lat.: 38 21 22 N/26 45 22 E
Map Code: L17B4-L17b11d
Size: 1
Function: Necropolis/ Settlement?
Morphology: Hillslope
Period: Late Archaic/ 5th century BC
Dated by previous researches. **Aydın, B. 2006**, "A Survey of Clazomenaean Close Territory in Turkey-İzmir-Urla", in Özgen, E.-Günel, S. (eds) 2006 Studies in Honor of Hayat Erkanal; Cultural Reflections, 95-107, Homer.
Description: The site is located near the modern houses of Şirinoba Koop on the southern slopes of a rocky hill. The surface findings include entirely sarcophagi fragments characterizing the site as a necropolis of Archaic period. Few amounts of pottery sherds are not diagnostic.

3.ÇEŞMEALTI

Site No: 2006/001
Site Name: Dubatepe
Subregion: 3/Çeşmealtı
Long./Lat.: 38 23 01 N/26 45 35 E (37 m)
Map Code: L17/b1-L17b11a
Function: Fort / Tumulus
Morphology: Volcanic hill on coastal plain
Period: Early Archaic / Late Classical / Roman
Dating and Findings: The site is classified as Early Archaic due to the presence of tumulus on its southern slopes. Fragments of white slipped roof-tiles and black glazed roof-tiles date the site into Roman and Late Classical periods. The surface findings include few fragments of coarse ware.
Description: Dubatepe is a low hilltop situated on the northern coast of Klazomenian territory, located at Çeşmealtı 2.5 km. to the north of settlement center. It is a fortified hilltop strategically located for controlling the sea traffic at the northern sea. Neither the surface findings nor the architectural features let us present a precise dating for the fort, yet it is highly likely that it has been built prior to the Hellenistic period taking into consideration the centralized political system of the later era. The traces of the walls are visible on the surface at north, south and east sides of the hilltop. At some places both faces of the wall are visible as it is shown on the plan. The hill extends towards east with a very steep slope and there lies below a narrow beach. The remains of the fortification are visible on the steep east and south slopes. The thickness of the walls reaches up to 60 cm. and they have been built in dry-wall technique.
The remains of a tumulus are found on the southern slope of the hill. It is severely destroyed, but the Klazomenai Excavations archive provided us with a photograph of the tumulus from 1981, when it was still well-preserved. The picture clearly shows that it was built of a round crepis wall and heaped earth. It is dated into Early Archaic period since such tumuli are known to be used as a burial practice merely during the Early Archaic period in Klazomenai. Its diameter is approximately 12 meters. Surface findings are few in number and consist of coarse ware sherds and roof-tiles.
The site has been visited several times in 2006-2010 seasons. The surface visibility was low due to thick maquis on the slopes during our first visit, but then went through several fires unfortunately. Despite the increasing visibility due to the fire the amount of the surface material did not change dramatically. The low number of surface findings is due to the function of the site as well as the soil thickness that does not exceed 20 cm. The remains of the fort is under serious threat due to the ongoing construction activities of a large holiday camp Nebioğlu whereas the tumulus is already severely destructed.

Fig.23 View of Dubatepe

Fig.24 Aerial imagery of Dubatepe

Fig.25 Traces of walls on Dubatepe

Fig.26 *Krepis* of Early Archaic tumulus on Dubatepe (Klazomenai Excavation Archive, 1981)

Fig.27 View of tumulus in 2006

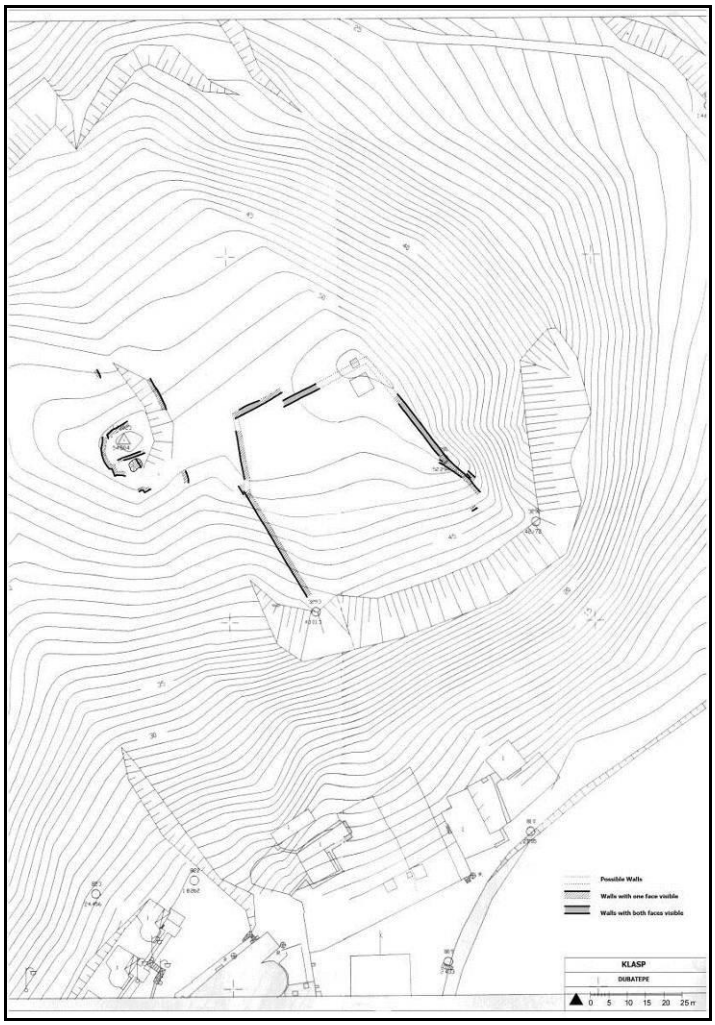


Fig.28 Plan of fortification walls on Dubatepe

Site No: 2006/002
Site Name: Nalbanttepe
Subregion: 3/Çeşmealtı
Long./Lat.: 38 22 43 N/26 45 24 E
Map Code: L17/b1-L17b11a
Size: -
Function: Tumulus / Agricultural Terrace
Morphology: Mass of volcanic hill on the coastal plain
Period: Early Archaic / Late Archaic/ Late Classical

Dating and Findings: The tumuli are dated into Early Archaic period due to their construction technique. They have already been investigated in 1980 and dated to Early Archaic period on the basis of their context findings, which is a rosette bowl. The surface findings are few in number.
Early Archaic: Ionian Kyliks body fragment (2)
Late Archaic: Olpe rim (1) –XII.e
Late Classical: Klazomenian Amphora rim (1) –IX.f.1; Lekane rim (1) – VII.b.4
Description: Nalbanttepe is a mass of volcanic hill 1500 x 500 m., situated across Dubatepe (001). Two tumuli are found at the norther tip of the hill, but both were severely destructed long before our visit. Yet the remains of the *krepis* walls are more or less preserved. The diameter of the tumuli are ca. 12-15 m. Klazomenai Excavations archive provided us with the photographs of the tumuli from 1981 in their well preserved situation. The picture clearly shows that they were built of a round *krepis* wall and heaped earth. They are dated into Early Archaic period since it was a common type during that period. The pottery fragments found around the tumuli are few but diagnostic, which included a fragmentary Ionian kylix of Archaic period together with black glazed pottery fragments and a lekane fragment of 4th century BC. It is not clear whether these findings are associated with the burial. If so this may be referring to the secondary use of the tumuli.
The remains and the traces of agricultural terraces built of small stone block extend for ca. 500 m. on the north-east slopes. It is clear that the terraces have not been used for long time, yet it is difficult to claim that they were necessarily used in the antiquity. The terraces are likely to be used during the Ottoman period, but this does not disprove the possibility that the very same area might have been used for agricultural terraces in the antiquity as well.
The northern part of the hill covering 17 ha. surveyed with intensive methods whereas the rest of the hill investigated thoroughly. The surface was covered with dense macquis and the visibility was low. The amount of the surface findings is very few in number not only due to the visibility, but function of the site as well. The agricultural terraces could be followed at some places clearly extending ca. 500 m. in north-south direction, mostly covered with scrubs.

Fig.29 Aerial imagery of Nalbanttepe ▲(tumulus) ▌(agricultural terrace)

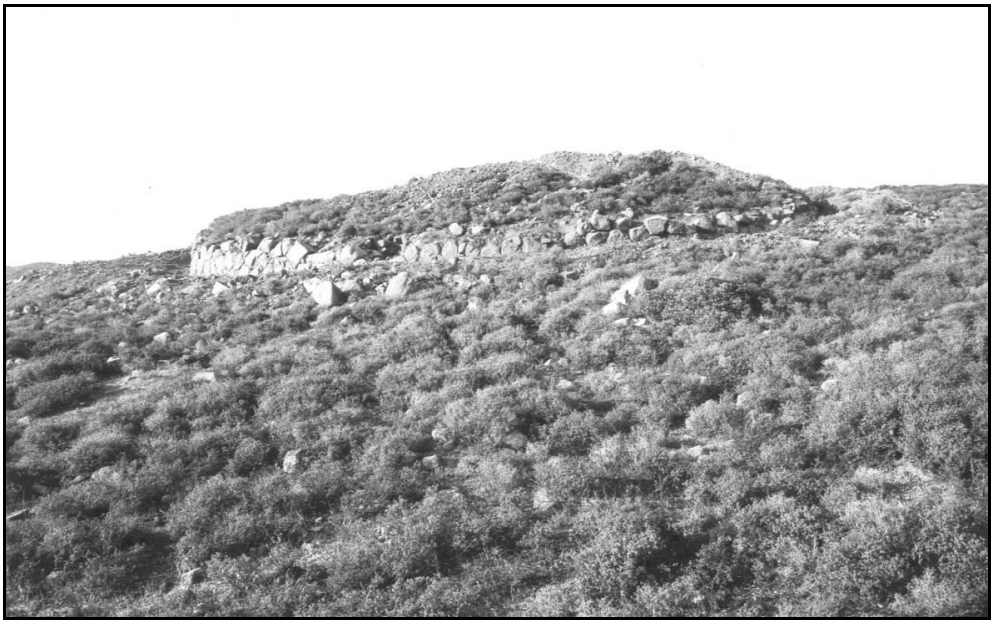


Fig.30 Tumulus on Nalbanttepe, 1981 (Klazomenai Excavation Archive)

Fig.31 Stone cut sarchophagus and lid, 1981. (Klazomenai Excavation Archive)

Fig.32 Tumulus on Nalbanttepe

Fig.33 The view of stone cut sarchophagus in 2006

Fig.34 Agricultural terraces on eastern slope of Nalbanttepe

Site No: 2007/019
Site Name: Kocadere
Subregion: 3/Çeşmealtı
Long./Lat.: 38 22 34 N/26 44 58 E
Map Code: L17B1-L17a15c
Size: 2/ (3 ha.)
Function: Settlement
Morphology: Hillslope
Period: Roman / Byzantine
Dating and Findings: The diagnostic surface findings consist of Byzantine green slashed glazed ware fragments and white slipped roof-tiles which determine the Byzantine and Roman settlement.
Description: Kocadere has been inhabited during the Ottoman period and recorded as a village in Ottoman records. It is situated on a hillslope of limestone, inclined towards east and looking over the northern bay. The surface findings cover an area of 3 hectares. The surface findings merely consist of pottery fragments dated into Roman and Byzantine eras. The stone piles might have belonged to the structures. To the east of the village there is an Ottoman cemetery and sporadic finds of column fragments dated into the Byzantine era.

Site No: 2008/021
Site Name: Bozavlu
Subregion: 3/Çeşmealtı
Long./Lat.: 38 21 10 N/26 44 37 E
Map Code: L17A3-L17b11a
Size: 2/ (8 ha.)
Function: Settlement / Tumulus / Agricultural Terrace
Morphology: Colluvial Plain
Period: Early Archaic/ Late Archaic/Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Archaic: Orientalizing closed jar fragments (3); Krater handles (3); Lekane rim (1) –VII.a.3; Fruitstand rim (1) –VI.a.2; Banded ware body sherds and base (4)
Late Classical: Black Glazed roof-tile fragments; Cup skyphos base (1) –XIV.c
Hellenistic: Megara Bowl Fragment (1) –XV.a.1
Roman: White slipped roof-tile fragments; Late Roman red-brown slipped ware (9) –XVI.a; Roman ribbed ware body sherds (8)
Byzantine: Green and yellow slashed glazed ware (12); Late Antique brown glazed ware (3)
Description: Bozavlu is located along the Evrenkaya valley and it is a micro geographical pocket of colluvial plain encircled with volcanic hills. The area is suitable for agriculture and covered with fields. The slopes of the hills are covered sparsely with olive trees. The surface findings extend from the fields towards eastern slopes, which are defined with agricultural terraces. The

intensity of the pottery concentrates in an area of 8 hectares and diagnostic finds imply a long settlement history from Early Archaic to Byzantine era. There are reused architectural fragments such as columns, bases or stone cut devices scattered around. For instance a rock cut sarcophagus was used as a basin and other sort of rock cut devices used for different aims by the contemporary inhabitants. On the western slopes of the hill a round wall looks like the remains of a crepis wall that might have belonged to a tumulus. The Archaic finds clearly concentrate on the eastern slopes and perhaps the size of the settlement was smaller than 8 ha. The distribution of Archaic finds are confined to 3 or 4 ha. and the diagnostic finds of Archaic period include slags of sarchophagus which may be referring to a production center.

Bozavlu is a small colluvial plain covering ca. 60 ha. surrounded by hilltops. The entire plain investigated throughly, the area where the surface findings are concentrated surveyed with intensive methods. The surface visibility was quite high due to the conditions of the time of our visit which was after a rainy day. The ploughed agricultural fields reinforced the visibility of surface findings.

Fig.35 Aerial image of Bozavlu and the distribution of surface scatters

Fig.36 View of Bozavlu

Site No: 2008/ 121
Site Name: Kocadere
Subregion: 3/Çeşmealtı
Long./Lat.: 38 22 26 N/26 44 37 E
Map Code: L17B1-L17a15c
Size: Ø: 45 m., H: 8 m. / Ø: 36 m., H: 10 m
Function: Tumulus
Morphology: Hilltop
Description: Kocadere tumuli are two in number and situated on a high hilltop near Kocadere village, looking over northern sea. They are placed 37 meters distanced from eachother. One has a diameter of 45 m. and 8 m. height whereas the other has a diameter of 36 m. and height of 10 m. Both have *peribolos* walls topped with heaped earth, which dates them into Early Archaic period due to the construction technique. Both tumuli are destructed with illegal digs and no associated findings were recorded, only few scattered sherds around the tumuli.

Fig.37 View of Kocadere tumuli

4.KUŞÇULAR

Site No: 2007/022
Site Name: Devederesi
Subregion: 4/Kuşçular
Long./Lat.: 38 17 08 N/26 45 31 E
Map Code: L17B4-L17b21a
Size: 1/ (ca.1ha.)
Function: Farmstead
Morphology: Hillslope
Period: Roman / Byzantine
Dating and Findings: Late Roman Red-Brown slipped ware fragments; Roman ribbed ware fragments; Late antique coarse ware; Green and yellow slashed glazed ware.
Description: Devederesi is an Ottoman village located to the east of the plain where Kuşçular village is situated today. The site is ca. 2 km to the south of the village. The scattered architectural marble fragments of Roman and Byzantine eras as well as few pottery fragments indicate to Roman and Byzantine settlements. The site is located on the western slopes of limestone hill. There are remains of agricultural terraces which are likely to be used prior to the Ottoman period as well.

Site No: 2007/023
Site Name: Helvacılar
Subregion: 4/Kuşçular
Long./Lat.: 38 17 18 N/26 45 29 E
Map Code: L17B4-L17b21a
Size: 1 (ca.1 ha.)
Function: Farmstead
Morphology: Plain
Period: Late Archaic? /Roman / Byzantine
Dating and Findings:
Late Archaic: Lekane rim ? –VII.a.4
Roman: Late Roman red-brown slipped ware (6) –XVI.a
Byzantine: Green slashed glazed ware (4)
Description: Helvacılar is a village located to the southwest of Urla center and 1 km southeast of Kuşçular village. It is situated on the northern slopes of a small valley. It is characterized with a mosque perhaps dated into 15th century AD. The surface findings are very scarce in number and consist of Byzantine and Roman pottery. It is classified as an Archaic hamlet due to few number of glazed fragments that are likely to be dated into Archaic period. The distribution of the surface findings do not exceed an area less than a hectare.

Site No:2007/024
Site Name: Helvacılar-Devederesi
Subregion: Kuşçular
Long./Lat.: 38 17 23 N/26 45 15 E
Map Code: L17B4-L17b21a
Size: 1/ (1ha.)
Function: Farmstead
Morphology: Plain
Period: Early Archaic / Late Archaic / Roman
Dating and Findings: The surface findings are very scanty. Few diagnostic finds date the site tentatively.
Archaic: East Greek kotyle body sherd (1); Lekane rim ? (1) –VII.a.1
Roman: White slipped roof-tile fragments; Ribbed ware fragments
Description: This site is situated on the plain of Urla basin, right next to the motorway. The extension of the surface material does not exceed a hectare. The surface findings mostly consist of coarse ware and roof-tile fragments dated into Roman period. It is on the colluvial plain situated between the hilltops of Helvacılar and Devederesi. Only one fragment which is very typically dated into end of 7th century BC, a body sherd of East Greek kotyle classified this finding place as Early Archaic. The thickness of the soil changes between 20 cm to 50 cm and the erosion from the hilltops contributed to that.

Site No: 2007/025
Site Name: Kuşçular Village
Subregion: 4/Kuşçular
Long./Lat.: 38 17 40 N/26 45 29 E
Map Code: L17B4-L17b21a
Size: 1 (1 ha.)
Function: Farmstead
Morphology: Hillslope
Period: Roman/ Byzantine
Dating and Findings: Few number of surface findings include several ribbed ware fragments and coarse ware fragments of Roman period and two fragments of green glazed ware and a closed vessel of Byzantine period.
Description: Kuşçular village is located on the eastern fringe of Mandalan plain which is the largest agricultural area of the region. The site is situated on the western slopes of a hill which demarcates the plain to the east. The site is defined with a Selçuklu mosque where the old settlement of the village was situated. It is likely to be a farmstead during the Roman and Byzantine periods. The surface findings are scanty and the diagnostic finds merely dated into Roman and Byzantine periods.

Site No: 2007/026
Site Name: Sarıaptallar
Subregion: 4/Kuşçular
Long./Lat.: 38 16 02 N/26 44 33 E
Map Code: L17A3-L17a25c
Size: 1 (0.8 ha.) / 2 (3.5 ha.) The site is classified as 3rd order for Archaic and Classical periods on the basis of limited distribution of pottery of the mentioned period. It should be classified as 2nd order for Roman and Byzantine periods. This site at least for Roman and Byzantine eras could be classified as 2nd order settlement.
Function: Farmstead? / Settlement
Morphology: Hillslope
Period: Early Archaic / Late Archaic/ Late Classical /Roman /Byzantine
Dating and Findings:
Archaic: Band bowl body sherd (1) –V.b; Rosette bowl body sherd (1); North Ionian amphora rim (1) –IX.d.1; Samian amphora rim (1) –IX.c.3; Hydria rim and neck (1) –X.a.2
Late Classical: Black glazed roof-tile fragments; Klazomenian amphora rim (1) –IX.f.1
Roman: White slipped roof-tile fragments; Ribbed ware body fragments (5)
Byzantine: Green slashed glazed ware (13)
Description: Sarıaptallar, originally Seraptalari is a Greek village 6 km south of Urla. It is situated on the northern slopes of the hill. The distribution of archaeological finds covers an area less than a hectare. The remains of foundations square planned are visible on the slope despite the thick maquis. It is not possible to determine the extension of the surface findings precisely. The

surface findings are scanty yet points out a long settlement history. The scarcity of the surface findings as well as the limited extension of them may be due to the presence of village ruins right above the earlier layers.

Fig.38 Sarıaptallar

Site No: 2007/033
Site Name: Akçahisar
Subregion: 4/Kuşçular
Long./Lat.: 38 14 16 N/26 44 01 E
Map Code: L17D2-L17d05b
Size: 1/ (1 ha.)
Function: Farmstead / Fort
Morphology: Hilltop
Period: Early Archaic/ Late Archaic/ Late Classical/ Hellenistic/ Roman
Dating and Findings:
Archaic: Terracotta Sarcophagus fragments; Klazomenian amphora rim (1) –IX.a.2; Khios amphora rim (1) –IX.b.1
Late Classical: Black Glazed roof-tile fragments
Hellenistic: Megara bowl (1) –XV.a.2
Roman: Terra Sigillata (3) –XVI.b; White slipped roof-tiles
Description: The stronghold at this site is reported by previous researchers. However during our visit this site was owned by a rich farmer where he grows vines and palm trees for exporting. Unfortunately it seems likely that they tried hard to disguise or destruct the archaeological remains with certain landscaping has been done. Yet still at the edge of the vineyards looking over the hilltop at the slopes the ashlar masonry blocks are visible. The architecture is defined as

Late Classical-Early Hellenistic by the previous researchers. The upper settlement layer is dated into the Roman period and characterized with the negative architecture of a presumably farm house, which is accompanied with an olive oil press installation. Both the olive press and the dwelling are on the bedrock and the traces hewn on the bedrock are clear.

Fig.39 View of Akçahisar

Site No: 2007/043
Site Name: Adatepe
Subregion: 4/Kuşçular
Long./Lat.: 38 17 39 N/26 42 31 E
Map Code: L17A3-L17a25a
Size: 1/ (1 ha.) for Archaic period, but might have been much larger in Classical, Roman and Byzantine Periods 2 (at least 3 ha.)
Function: Farmstead/ Settlement/ Tumulus
Morphology: Hillslope
Period: Early Archaic/ Late Archaic/ Late Classical/ Roman/ Byzantine
Dating and Findings: The site is classified as Archaic due to the presence of tumuli.
Late Classical: Black glazed roof-tile fragments
Roman: Late Roman red-brown slipped ware (4) –XVI.a
Byzantine: Green slashed glazed ware
Description: Adatepe is a hilltop located to the southwest of Malkaca plain. To the south of the hilltop on the plain there are dispersed ruins of foundations and heaps of stone blocks which might have belonged to at least six different

dwellings. The abundant numbers of white slipped roof-tiles date these buildings into the Roman period. The settlement is extended on the southwest slopes of the hill and the small pocket of plain down the southwest slope. Several pieces of black glazed roof tiles of Classical period date the settlement into Late Classical period as well. The remains of two tumuli are situated on the northern part of the hill. The krepis walls of the tumuli cannot be traced clearly due to the thick scrubs on the surface yet the heaps of stones mark the places of the tumuli. A few number of stone cut press fragments point out wine or olive oil production.

Fig.40 Aerial imagery of Adatepe and the location of tumulus; distribution of surface scatters

Fig.41 View of Adatepe

Site No: 2009/164
Site Name: Mersinboğazı
Subregion: 4/Kuşçular
Long./Lat.: 38 17 27 N/26 46 25 E
Map Code: L17 B4- L17b21a
Size: 1
Function: Settlement, Agricultural terraces
Morphology: Strait
Period: Late Archaic/ 5th century BC/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Skyphos body sherd (1)
5th c. BC: Lekane rim (1) –VII.b.1
Late Classical: Black glazed roof-tile fragments
Hellenistic: Plate rim (1) –XV.b.4
Roman: White slipped roof-tile fragments
Byzantine: Green glazed ware; Late antique coarse ware fragments
Description: Mersinboğazı is a 1 km long strait extending in East-West direction which is situated amongst the high hilltops that sets the natural frontier between Klazomenai and Teos and connects the Urla basin to Ovacık plain. The surface findings mostly consist of coarse ware and un-diagnostic sherds. Though few diagnostic findings define the settlement history beginning from Archaic period. The soil thickness is less than 20 cm in this area and as it is expected the surface material is not well preserved. The both sides of the strait are covered with agricultural terraces on the hillslopes.

Site No: 2009/165
Site Name: Arapderesi
Subregion: 4/Kuşçular
Long./Lat.: 38 16 51 N/26 46 38 E
Map Code: L17 B4- L17b21b
Size: 1
Function: Farmstead
Morphology: Strait
Period: Roman/ Byzantine
Dating and Findings: Surface findings are consisting of white slipped roof-tile fragments and late antique coarse ware fragments.
Description: Arapderesi is a narrow strait of ca. 5 km extending through the range of hilltops that set a natural frontier between Klazomenai and Teos. It extends from Urla basin to the plain where İhsaniye and Bademler are located. The site is located at the northern tip of the strait which forms a small plain area among the high hilltops. The surface findings entirely consist of pottery fragments dated to Roman and Byzantine periods. On the both sides of the strait the hills are covered with agricultural terraces. The Late Roman-Byzantine settlement not larger than 3 hectares is represented with the well preserved foundations of dwellings dispersed on the slopes and architectural fragments such as columns and bases.

Mandalan Plain

Fig.42 Distribution of sites on Mandalan Plain

Fig.43 Distribution of sites on Mandalan Plain

Fig.44 General View of Mandalan Plain

Site No: 2007/066
Site Name: Mandalan 1
Subregion: 4/ Kuşçular
Long./Lat.: 38 17 34 N/26 43 59 E
Map Code: L17A3-L17a25b
Size: 3/ (15 ha.)
Function: Settlement
Morphology: Plain
Period: Late Archaic/ 5th century BC/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Bowl rim (1) –V.d; Lekane rim (1) –VII.a.5; Klazomenian amphora rim (2) –IX.a.3
5th c. BC: Olpe rim (1) –XII.e; Lekane rim (1) –VII.b.1
Late Classical: Fishplate (2) –XIV.a; Black glazed roof-tile fragments
Hellenistic: Megara bowl body fragment (1) –XV.a; Plate rim (1) –XV.b.4
Roman: Late Roman red-brown slipped ware (4) –XVI.a; Ribbed ware fragments; Glass ware fragment
Byzantine: Green and yellow slashed glazed ware
Lopas XVII.a
Description: Mandalan is the largest plain in the Klazomenian territory covering an area of ca. 10 km2 and it is intensively used for farming activities in the present day. The entire plain surveyed intensively and the surveys yielded to the discovery of 5 archaeological sites on the plain. The plain has been a marshy area until 20 years ago. The soil thickness reaches to 90 cm and more at most parts of the plain. The archaeological sites are all located at the margins of the plain, but nothing more than several sherds were found in the central part. This might be a reason to assume that perhaps it was a lake basin since it is not an alluvial deposit where the archaeological layers would be sealed.
The site is situated to the northern tip of the plain by the Çeşme-İzmir motorway. The extension of the surface findings reaches to 15 ha. The Roman and Byzantine pottery particularly concentrated within an area of 3 ha. Perhaps the size of the settlement was diminished during the later periods. This plain is thought to be used for open field agriculture after the Late Archaic period and wide extension of the surface material may be related to that phenomenon and the size of the site might have been diminished from the Hellenistic period when private farmsteads probably replaced the open field agriculture tradition.

Fig.45 Distribution of surface scatters at Mandalan 1

Site No: 2007/067
Site Name: Mandalan 2
Subregion: 4/ Kuşçular
Long./Lat.: 38 17 48 N/26 43 55 E
Map Code: L17A3-L17a25b
Size: 2/ (4 ha.)
Function: Settlement
Morphology: Plain
Period: Neolithic/ Calcolithic/ Late Classical/ Hellenistic/ Roman
Dating and Findings: The surface findings include abundant numbers of Neolithic and Calcolithic pottery as well obsidian and flintstone tools. Late Classical and Hellenistic finds are very few in number whereas Roman ware are abundant.
Late Classical: Fishplate base (1) –XIV.a
Hellenistic: Plate rim (1) –XV.b.4
Roman: Late Roman red-brown slipped ware –XVI.a
Description: The site is only 1.5 km to the west of Mandalan 1 (066) on the northwest side of the Mandalan plain, just by the motorway. It is partly

destructed by the motorway. The surface findings are abundant in number including particularly Neolithic and Calcolithic as well as Hellenistic and Roman. Hellenistic and Roman findings may be associated with Mandalan 1 (066).

Fig.46 Distribution of surface scatters at Mandalan 2

Site No: 2007/ 068
Site Name: Mandalan 3
Subregion: 4/ Kuşçular
Long./Lat.: 38 17 48 N/26 44 25 E
Map Code: L17A3-L17a25b
Size: 1/ (1 ha.)
Function: Farmstead
Morphology: Plain
Period: Late Classical/ Roman/ Byzantine
Late Classical: Mushroom amphora rim (1) –IX.g.2
Roman: Late Roman red-brown slipped ware (5) –XVI.a
Byzantine: Green slashed glazed ware.

Dating and Findings: Few amount of pottery distributed within an area of a hectare. The surface findings include Roman and Late Classical roof-tiles together with several pottery sherds dated into Roman and Byzantine eras. Amongst the diagnostic finds a mushroom rimmed amphora dates the site into Late Classical period.
Description: The site is located to the northern tip of the Mandalan plain not far from 066 and 067. Most probably it is a farmstead due to its size and the amount of pottery. The surface findings consist of few diagnostic sherds mostly Roman and Byzantine and extending in an area of 1 hectare.

Site No: 2007/069
Site Name: Mandalan 4
Subregion: 4/ Kuşçular
Long./Lat.: 38 17 37 N/26 44 22 E
Map Code: L17A3-L17a25b
Size: 1/ (2 ha.)
Function: Farmstead
Morphology: Plain
Period: Late Archaic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Bowl rim (1) –V.d; Plate rim (1) –VI.a
Roman: Late Roman red-brown slipped ware (7) –XVI.a
Byzantine: Green and yellow slashed glazed ware
Cooking ware Lopas XVII.a
Description: The site is located to the north of the plain. The few amount of surface findings include a few diagnostic sherds mostly Roman and Byzantine and extending in an area of 2 hectares.

Site No: 2007/070
Site Name: Mandalan 5
Subregion: 4/ Kuşçular
Long./Lat.: 38 16 30 N/26 43 57 E
Map Code: L17A3-L17a25b
Size: 2/(8 ha.)
Function: Settlement
Morphology: Plain
Period: Late Archaic/ Late Classical/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Klazomenian amphora rim (1) –IX.a.3
Late Classical: Klazomenian amphora rim (2) –IX.f.1-2
Roman: Late Roman red-brown slipped ware (5) –XVI.a; Terrasigilatta plate base(1) –XVI.b
Byzantine: Green glazed slashed ware; Coarse ware fragments

Description: The site is located to the southwest tip of the plain. The surface findings are abundant in number. The diagnostic finds include mostly fragments of Roman and Byzantine pottery as well as Late Archaic and Late Classical sherds. There are scattered building blocks around.

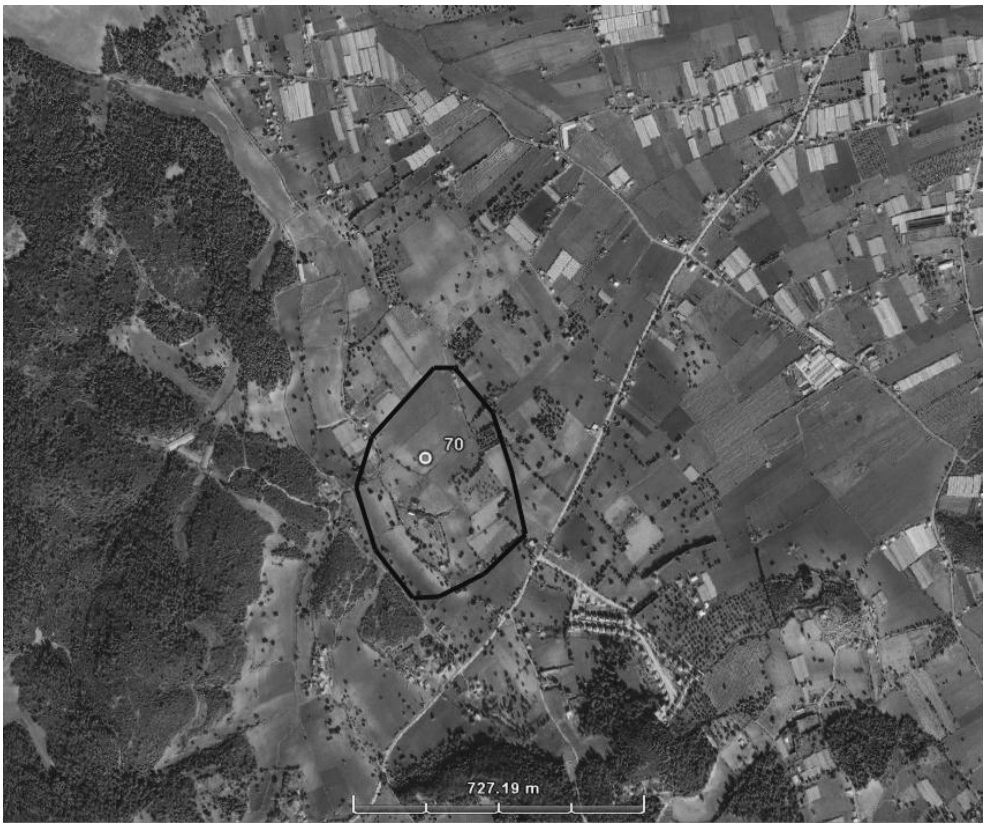


Fig.47 Distribution of surface scatters at Mandalan 5

Site No: 2007/071
Site Name: Tavşantepe West
Subregion: 4/ Kuşçular
Long./Lat.: 38 16 27 N/26 45 22 E
Map Code: L17 B4- L17b21a
Size: 1/ (2 ha.)
Function: Farmstead
Morphology: Hillslope
Period: Late Classical/Roman/ Byzantine
Late Classical: Kantharos base (1) –XIV.e
Roman: Late Roman red-brown slipped ware (5) –XVI.a; Ribbed ware fragments
Byzantine: Green glazed slashed ware; Coarse ware fragments
Dating and Findings: The roof-tiles and pithos fragments are much in number.

Description: Tavşantepe is located to the southwest of Mandalan plain. The site is located on the western slopes of Tavşantepe which is terraced and covered with pine trees. The distribution of surface findings extends from the terraces to fields by the hill, covering 2 ha.

Site No: 2007/072
Site Name: Tavşantepe East
Subregion: 4/ Kuşçular
Long./Lat.: 38 16 50 N/26 45 22 E
Map Code: L17 B4- L17b21a
Size: 1/ (2 ha.)
Function: Farmstead
Morphology: Plain
Period: Late Geometric / Early Archaic/ Late Archaic/ Late Classical/ Roman
Dating and Findings:
Late Geometric: Kalathos body fragment (1) –III
Archaic: Band bowl rim (1) –V.b; Samos amphora rim (1) –IX.e.2
Late Classical: Kylix foot; Black glazed roof-tile fragments
Roman: Late Roman red-brown slipped ware (7); White slipped roof-tile fragments
Description: The site is located on the plain to the east of a hillock which is situated to the north of Tavşantepe and ca. 500 meters away from Devederesi village. The surface findings cover an area of 2 hectares. There is an Ottoman and a Roman graveyard close by.

5.YAĞCILAR

Site No: 2007/046
Site Name: Yörükevi
Subregion: 5/Yağcılar
Long./Lat.: 38 14 44 N/26 42 31 E
Map Code: L17D2-L17d05a
Size: 1 (ca.1 ha)
Function: Settlement
Morphology: Plain
Period: Hellenistic? / Roman
Dating and Findings: The findings are very scanty mostly due to the use of the area as a construction area. Few amounts of Roman ribbed ware and one red glazed bowl sherd possibly dated into Hellenistic period.
Description: It is located on the southern slope of a hilltop situated on the way to Yağcılar from Urla. It is a small plain, where animal pens and simple structures with various functions are situated. The surface is covered with the remains of modern construction activities, yet still few fragments of Hellenistic

and Roman periods were accessible. On the surface remains of the wall foundations are visible at some places.

Site No:2007/047
Site Name: Fidanlık
Subregion: 5/Yağcılar
Long./Lat.: 38 14 17 N/26 41 38 E
Map Code: L17D2-L17d04b
Size: 2 / (6 ha.)
Function: Settlement
Morphology: High Plain
Period: Late Archaic / Late Classical / Roman / Byzantine
Dating and Findings:
Late Archaic: Klazomenian amphora rim (1) –IX.a.3
Late Classical: Klazomenian amphora foot (1) – IX.f
Roman: White slipped roof-tile fragments; Late Roman red-brown slipped ware (3) –XVI.a
Byzantine: Green slashed glazed ware (2)
Description: This site is near a tree plantation area at the junction of Demircili-Urla road on the way to Yağcılar. The bedrock is very close to the surface in some parts and the negative architectural traces of the structures are visible. The site extends towards the sloping plain where stone blocks and remains of structure foundations are visible. The surface findings are sparsely distributed in an area covering 6 hectares, but few in number yet diagnostic finds provide us with the information for dating.

Site No: 2007/048
Site Name: Motopomp
Subregion: 5/Yağcılar
Long./Lat.: 38 15 27 N/26 40 59 E
Map Code: L17A3-L17a24c
Size: 2/ (3 ha.)
Function: Settlement
Morphology: Hilltop
Period: EBA I /Roman/Byzantine
Dating and Findings: The site has already been published with its Early Bronze Age material. The surface findings dated into Roman period are abundant and include manyLate Roman red-brown slipped ware (XVI.a) and few terra sigillata (XVI.b) as well as typical green slashed glazed ware of Byzantine era.
Description: It is a hillock of limestone in Yağcılar village which is marked with the water pump on its top. The surface findings include pottery fragments typical for Early Bronze Age I and Roman period.

*Tuncel, R. “Irerp Survey Program: New PH Settlements in the İzmir Region”, in Erkanal, H. Etal (eds) Proc. Of Int. Symp. The Aegean in the Neolithic, Calcolithic and EBA, Oct. 13-19 1997, Urla-İzmir, Ankara 2008.

Site No: 2007/049
Site Name: Yemişliboğaz
Subregion: 5/Yağcılar
Long./Lat.: 38 14 18 N/26 40 11 E
Map Code: L17D2-L17d04a
Size: 2/ (3.5)
Function: Settlement/ Tumulus/ Fort
Morphology: Hilltop
Period: Early Archaic/ Late Archaic/ Roman/ Byzantine
Dating and Findings: The site is classified as Archaic due to the tumuli. The findings are very scanty and mostly coarse ware of late antique.
Description: Yemişliboğaz gives the impression of a fortified settlement covering 3.5 hectares from aerial images. However our visit to the site revealed that it was not fortified with properly built walls, yet surrounded with a rubble wall of heaped stones surrounding the entire hill whose width reaches almost a meter. The wall of heaped stones encircle an area of 270x275 meters and at some points below the heaped stones regularly placed blocks are visible. So it is not a fortified settlement as it is expected, but still protected with this temporary stone structure presumably topped with wooden fences or other sort of devices. Within the encircled area at several places heap of stones are reminiscent of Early Archaic tumuli. Most of the area is covered with macquis densely which reduced the surface visibility. The site is situated on top of a hill overlooking the southern coast where Aerae and Teos are clearly visible. This site is classified as a part of the defensive network due to its location on the fringe of the southern border. The site might have served as a temporary settlement during the times of turmoil and associated with the use of meadows around it during the time of peace. The Archaic tumuli are associated with claiming on the territory and the use meadows during the early phases of the polis formation. The scarcity of the surface findings imply that this site might have been a temporary settlement accompanied with animal pens, presumably a refuge settlement.

Fig.48 Walls of heaped earth encircling Yemişliboğaz hill

Fig.49 Aerial image of Yemişliboğaz

Site No: 2007/050
Site Name: Kaplanboğazı
Subregion: 5/Yağcılar
Long./Lat.: 38 14 59 N/26 40 41 E
Map Code: L17A3-L17a24c
Size: 1/ (0.3 ha.)
Function: Farmstead
Morphology: High Plain
Period: Roman/ Byzantine
Dating and Findings: Surface findings consist of few numbers of typical green glazed Byzantine sherds and red-brown slipped Roman wares (XVI.a) as well as white slipped Roman roof-tile fragments.
Description: Kaplanboğazı is a high meadow placed at the very beginning of the strait extending from Yağcılar to southern coast. It is a micro geographical pocket where today a several families are farming. The surface findings are scarce in number and dispersed in an area of 0.3 hectares. It might have been a farm house dated into Roman and Byzantine periods.

Site No:2007/064
Site Name: Osmanbey Çiftliği
Subregion: 5/ Yağcılar
Long./Lat.: 38 16 37 N/26 42 00 E
Map Code: L17A3-L17a25a
Size: 2/ (6 ha.)
Function: Settlement
Morphology: Strait / Colluvial Plain
Period: Late Geometric/ Early Archaic/ Late Archaic/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Geometric: Skyphos (3) -I
Early Archaic: Bowl rim (2) –V.b; Chian amphora rim (1) –IX.b.2
Late Archaic: Plate rim (1) –VI.a.1; Bowl rim (3) –V.d; Milet amphora rim (4) –IX.e.2; Klazomenian amphora (5) –IX.a.3
Late Classical: Black glazed pottery fragments; Black glazed roof-tile fragments
Hellenistic. Lekythos rim (1) –X.a.6; Bowl rim (1) –XV.b
Roman: Late Roman red-brown slipped ware (5) –XVI.a
Byzantine: Green slashed glazed ware
Lopas, Khytra –XVII.a; XVII.b
Description: The site is located on a small colluvial plain which forms a small geographical unit on the strait which extends from Malkaca plain to Yağcılar surrounded with high hilltops covered densely with pine trees. The surface findings are distributed within 6 ha. At northeast tip of the strait a small farm house owned by family is placed where the vineyards are. The colluvial plain where the site is located no farming is done. The surface visibility was good due to the lack of vegetation in the area. The number of surface findings is

abundant in number and determines a long settlement history from Early Archaic to Byzantine era. It is a secluded place due to its location amongst the high hilltops.

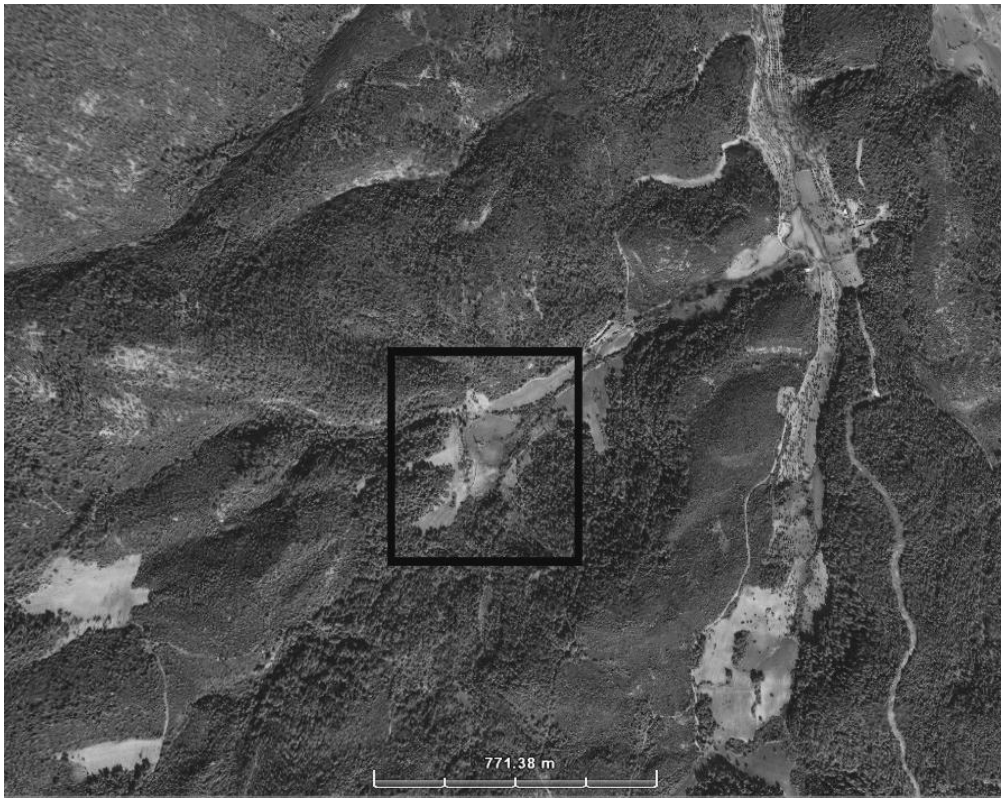


Fig.50 Aerial imagery of Osmanbey Çiftliği and the location of archaeological site

Fig.51 View of Osmanbey Çiftliği

Site No: 2007/ 065
Site Name: Erincikler
Subregion: 5/ Yağcılar
Long./Lat.: 38 17 32 N/26 42 08 E
Map Code: L17A3-L17a25a
Size: 1/ (1 ha.)
Function: Farmstead
Morphology: Strait
Period: Late Archaic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Klazomenian amphora rim (1) –IX.a.3
Roman: Late Roman red-brown slipped ware (5) –XVI.a
Byzantine: Green and yellow slashed glazed ware (7)
Description: The site is located to the west of Adatepe (043) not far from İçmeler by the Çeşme-İzmir motorway. The surface findings are distributed within an area of 1 ha. The sections of an illegal trench opened in the area provided us with diagnostic finds to date the site.

Site No: 2008/ 105
Site Name: Demirlikuyu
Subregion: 5/ Yağcılar
Long./Lat.: 38 14 06 N/26 40 21 E
Map Code: L17D2-L17d04a
Size: 2/ (>3 ha.)
Function: Settlement
Morphology: Hilltop
Period: Roman/ Byzantine
Dating and Findings: Few fragments of ribbed ware and green slashed glazed ware
Description: This site is located 500 km to the southeast of site no: 049, which is defined as a refuge settlement. It is situated at the beginning of a narrow strait extending to the southern coast on a mountainous landscape. The surface findings that consist of coarse ware and roof-tiles extend in an area of ca. 3 hectares. The soil thickness is less than 20 cm and bedrock is very close to the surface. The foundations of several structures are visible on the surface.

Site No: 2009/146
Site Name: Dutlupınar
Subregion: 5/Yağcılar
Long./Lat.: 38 16 42 N/26 40 36 E
Map Code: L17A3-L17a24b
Size: 2/(ca. 3 ha.)
Function: Settlement
Morphology: Hillslope

Period: Roman/ Byzantine
Dating and Findings: Surface findings are very scanty and include few diagnostic finds. White slipped roof-tile fragments and late antique coarse ware fragments.
Description: Dutlupınar is a Late Roman-Byzantine site represented with surface findings consisting of pottery sherds as well as abundant number of Roman roof-tile fragments and building blocks. It is situated on top of a hill looking over the narrow strait extending from İçmeler to Yağcılar village and presumably used as a route in the antiquity as well due to flimsy remains of pavements and surface scatters all through the way. The surface material is clearly visible within an area cleared from vegetation around 1 ha. in particular. Around this flat top it is covered with pine trees and macquis. Despite the heavy vegetation the surface findings are visible within an area of at least 3 ha.

Site No: 2009/156
Site Name: Delikkaya
Subregion: 5/Yağcılar
Long./Lat.: 38 17 13 N/26 40 36 E
Map Code: L17A3-L17a24b
Size: 1/ (1.5 ha.)
Function: Farmstead
Morphology: Hillslope
Period: Roman
Dating and Findings: Surface findings are consisting of white slipped roof-tile fragments and late antique coarse ware fragments.
Description: The site is situated on top of a hill on the strait which is extending from İçmeler to Yağcılar village and presumably the ancient route. The site is defined with well preserved foundations of dwellings and Roman pottery dispersed in an area of 1.5 hectares.

Site No: 2009/157
Site Name: Kiliseyanı
Subregion: 4/Yağcılar
Long./Lat.: 38 14 46 N/26 40 26 E
Map Code: L17D2-L17d04a
Size: 1
Function: Farmstead
Morphology: Hilltop
Period: Roman
Dating and Findings: Surface findings are consisting of white slipped roof-tile fragments and late antique coarse ware fragments.
Description: The site is situated 1.5 km to the southwest of Yağcılar village, on a hilltop which is densely covered with pinetrees and macquis. The surface material consists of roof-tiles and coarse ware dated into the Roman period.

The foundations of the structures are visible partly but difficult to define the layout plans due to the visibility.

6.ÇOBANPINARI VALLEY

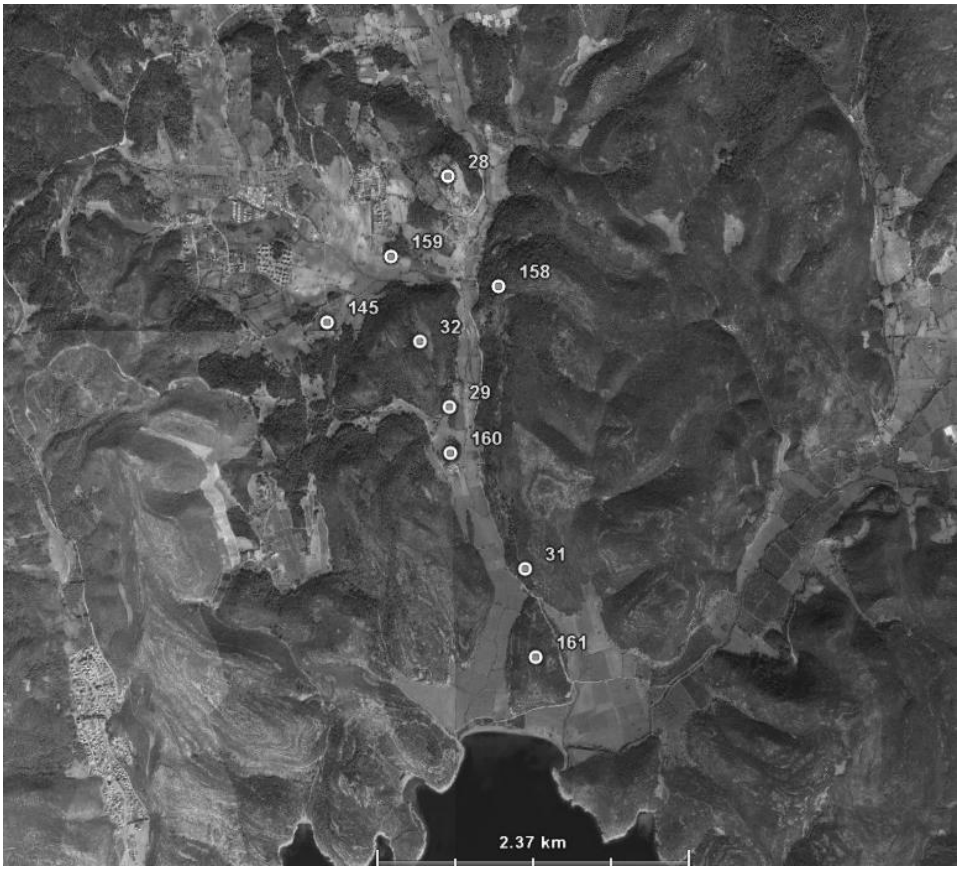


Fig.52 Distribution of sites at Çobanpınarı Valley

Site No: 2007/028
Site Name: Yarentepe
Subregion: 4/Kuşçular
Long./Lat.: 38 15 34 N/26 45 03 E
Map Code: L17A3-L17a25c
Size: 2 (4 ha.) / 3 for 5thc-LC
Function: Settlement/Fort
Morphology: Hilltop
Period: MBA/ LBA/ Late Geometric/ Early Archaic/ Late Archaic/ 5th century BC/ Late Classical
Dating and Findings: The surface findings are collected systematically by dividing the site into 6 areas.

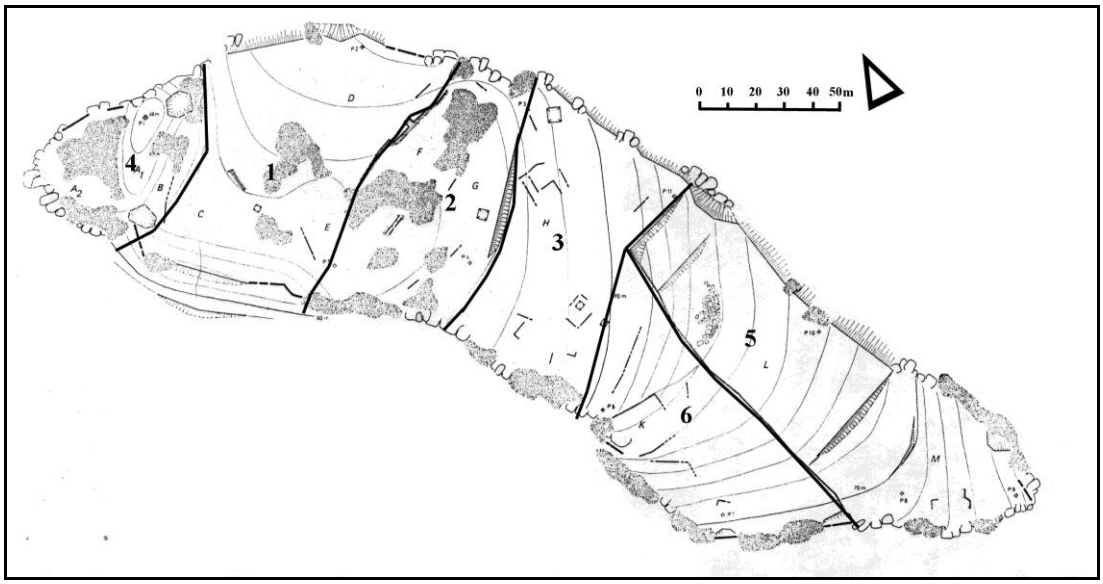


Fig.53 Plan of Yarentepe and divided areas for pottery collection

1st Area

Late Geometric: Bird Bowl body fragment (1)

Archaic: Rosette Bowl (2) – VI.b.2; Bird Bowl body fragment (1); Band bowl (6) –V.b; Hydria (2) –X.a.2; Gray monochrome ware fragments; North Ionian amphora (7) –IX.d.1; Orientalising plate rim (1); Lekane rim (2) –VII.a.1-VII.a.4; Body fragments of banded ware (7).

5th c. BC: Slim amphora (2) –IX.h

Late Classical: Klazomenian amphora –IX.f

Fragments of cooking ware (7) – XVII.a; XIX.b

2nd Area

Findings of Middle/Late Bronze Age pottery

Late Geometric: Kalathos (1) –III; East Greek kotyle (1) -II

Archaic: Band bowl (5) –V.b; Attic black glazed Kylix rim (1) –XIV.d.1; Plate rim (1) –VI.b; Fruitstand (1) –VI.a.2; North Ionian amphora (1) –IX.d.1; Body fragments of banded ware (5); Krater handle fragment; Gray monochrome ware fragments

5th c. BC: Slim amphora rim (1) –IX.h

Lasana, pithos and cooking ware fragments.

3rd Area

Archaic: Band bowl (1) –V.b; Khios amphora rim (1) –IX.b.3; Terracotta altar fragment; North Ionian amphora rim (1) –IX.d.1; Lekane rim –VIII.a.4

Late Classical: Klazomenian amphora rim (1) –IX.f

4th Area

Archaic: North Ionian amphora (1) –IX.d.1; Fragments of banded ware

5th Area

Archaic: North Ionian amphora (1) –IX.d.1; Mortar (1) –XIII.2

6th Area

Archaic: East Greek bowl (1) –IV.b.1; Mortar (2) –XII.a, 2; Hydria rim –X.a.2

5th c. BC: Bell Krater boy sherd (1)

Late Classical: Oinokhoe (1) –X.a.1; Bowls (3) –V.d

Description: Yarentepe is situated on a narrow hill 380 x 100 m that lies in northwest-southeast direction. It is a limestone formation and the hill which is inclined towards southeast connects with a steep hilltop which provides a natural protection on this direction. On the other directions the hill is fortified with walls of regularly cut stone blocks, which is very well preserved particularly on the southern part. The hill is formed of three natural terraces. The northwest and southeast tips are relatively more rocky and the remains of the structures are visible in the middle terrace where the public buildings and residential quarters were presumably placed. The illegal digs are very much in number and revealed the cultural deposits of earlier settlement phases. For this reason the surface findings include abundant number of pottery fragments dating the settlement history from Middle Bronze Age to Late Classical Period. The site is overlooking Çobanpınarı valley which opens to southern coast and sees Teian harbour. The valley is an alluvial deposit with fertile soil available for agriculture. Yarentepe is presumably Daphnous where the oligarchs have settled in 412 BC. *(Thucydides VIII.14:3)*

N. Tuna, "İzmir İli Arkeolojik Yüzey Araştırmaları, 1988", VII. Araştırma Sonuçları Toplantısı, Antalya, 18-23 mayıs 1989, T.C. Kültür Bakanlığı Anıtlar ve Müzeler Genel Müdürlüğü, 279-294.

Fig.54 View of Yarentepe

Fig.55 View of Çobanpınarı valley from Yarentepe

Fig.56 View of fortification walls at Yarentepe

Fig.57 View of fortification walls at Yarentepe

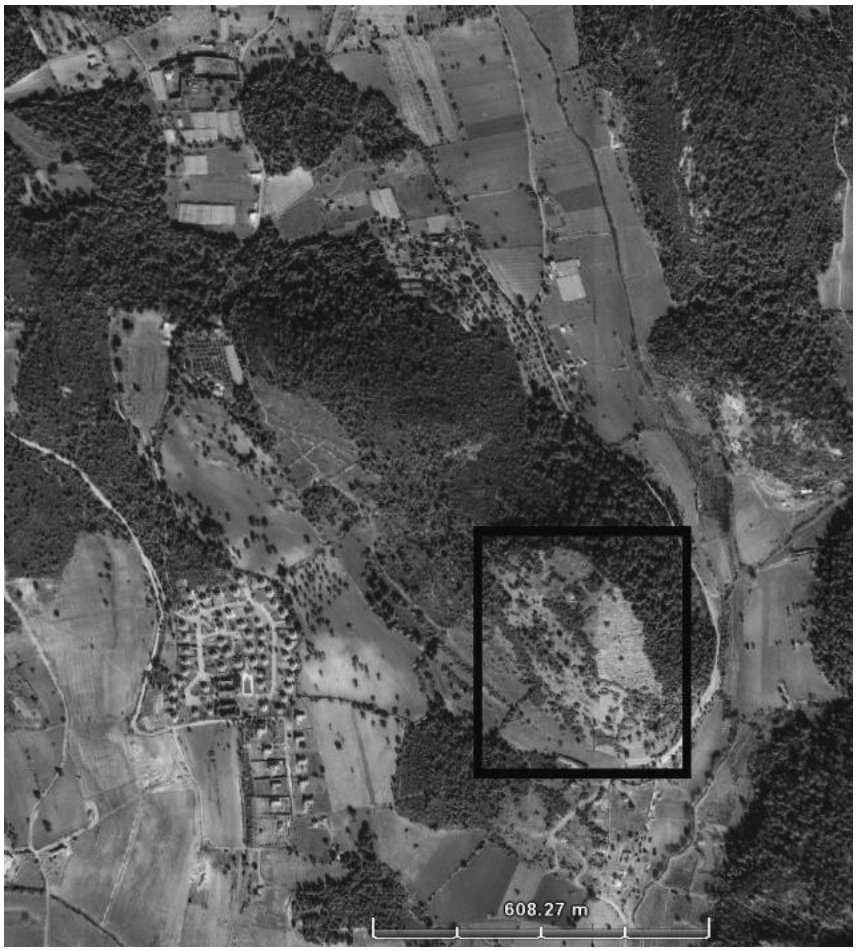


Fig.58 Aerial imagery of Yarentepe and the location of the site

Site No: 2007/029
Site Name: Çobanpınarı 1
Subregion: 6/ Çobanpınarı
Long./Lat.: 38 14 33 N/26 45 00 E
Map Code: L17D2-L17d05b
Size: 1/ (0.4)
Function: Farmstead
Morphology: Hillslope
Period: Late Archaic / Late Classical / Roman
Dating and Findings:
Late Archaic: Hydria rim (1) –X.a.2
Late Classical; Black glazed roof-tile fragments; Mushroom amphora rim (1) –IX.g.1
Roman: Late Roman red-brown slipped ware (4) –XVI.a; White slipped roof-tile fragments
Lopas (1) –XVII.a
Description: Çobanpınarı is the valley which is extending from Yarentepe hill to the southern sea ending at Azmak. This valley is likely to be the farthest point of the Klazomenian territory since the southern coast might have been under the hegemony of Teos most of the time. There are more than one sites classified as (1) in terms of size dispersed in this valley. This site is close to the valley basin which is divided by Çobanpınarı stream flowing in the middle of the valley with a low flow most of the year. It is situated on a low hilltop and the extension of surface findings does not exceed a hectare. The findings consist of mostly white slipped Roman roof tile fragments and stroters as well as a few number of fragments dated into Late Archaic and Late Classical periods.

Site No: 2007/031
Site Name: Çobanpınarı 2
Subregion: 6/Çobanpınarı
Long./Lat.: 38 14 01 N/26 45 20 E
Map Code: L17C1-L17c01a
Size: 1/ (1 ha.)
Function: Farmstead
Morphology: Valley basin
Period: Roman
Dating and Findings: White slipped roof-tiles; Late Roman red-brown slipped ware (3) –XVI.a
Description: The findings associated with the site consist of scattered roof-tiles dated into the Roman period. It is close to the valley basin and situated at the lowest slope of the hill on the eastern side of the valley. The extension of the surface findings covers a very limited area not more than 0.5 hectare.

Site No: 2007/032
Site Name: Çobanpınarı 4
Subregion: 6/Çobanpınarı
Long./Lat.: 38 14 57 N/26 44 37 E
Map Code: L17A3-L17a25c
Size: 1/ (1 ha.)
Function: Farmstead
Morphology: Hillslope
Period: Early Archaic/ Late Archaic/ Late Classical/ Roman
Dating and Findings:
Archaic: Orientalizing oinochoe base (1); Terracotta sarcophagus fragments
Late Classical: Mushroom amphora rim (1) –IX.g.1
Roman: Ribbed ware fragments (3)
Description: This site is located 2 km. southwest of Yarentepe, situated on the southeast slope of the valley. The visibility is limited since those hills flanking the valley are densely covered with pine trees. However this site exposed surface findings few in number though a long habitation period. Few fragments of Archaic period as well as black glazed roof-tiles of Classical period attest the inhabitance prior the Roman period.

Site No: 2008/145
Site Name: Çobanpınarı 5
Subregion: 6/Çobanpınarı
Long./Lat.: 38 15 00 N/26 44 20 E
Map Code: L17A3-L17a24b
Size: 1/ (0.3 ha.)
Function: Farmstead
Morphology: Hillslope
Period: Late Archaic/ Roman/ Byzantine
Dated by previous researches. **Aydın, B. 2006**, "A Survey of Clazomenaean Close Territory in Turkey-İzmir-Urla", in Özgen, E.-Günel, S. (eds) 2006 Studies in Honor of Hayat Erkanal; Cultural Reflections, 95-107, Homer.
Description: The site is located in Çobanpınarı valley extending from Yarentepe (028) to the southern coast. The surface findings few in number and extend in an area of 0.3 hectares.

Site No: 2009/151
Site Name: Çobanpınarı 2
Subregion: 6/Çobanpınarı
Long./Lat.: 38 14 35 N/26 44 54 E
Map Code: L17D2-L17d05b
Size: 1
Function: Farmstead
Morphology: Valley Basin

Period: Late Archaic/ Roman/ Byzantine
Dating and Findings: Surface findings are very scanty and include few diagnostic finds. White slipped roof-tile fragments and late antique coarse ware fragments. One amphora base –IX.c.4. Banded ware body sherd (1).
Description: The site is located in Çobanpınarı valley extending from Yarentepe (028) to the southern coast. The surface findings few in number and extend in an area of ca. 0.3 hectares, mostly consisting of Roman and Byzantine pottery. Several fragments are dated into the Archaic period.

Site No: 2009/158
Site Name: Çobanpınarı 7
Subregion: 6/Çobanpınarı
Long./Lat.: 38 15 08 N/26 45 12 E
Map Code: L17B4-L17b21d
Function: Workshop
Morphology: Hilltop
Description: The site is located almost 1 km to the southeast of Yarentepe (28) on the eastern slopes of Çobanpınarı valley. It is a high hilltop of limestone formation. It is barren rock. The cavities and the traces of the blocks that have been cut out are very clear. It is apparently a stone quarry which most probably provided building blocks for Yarentepe.

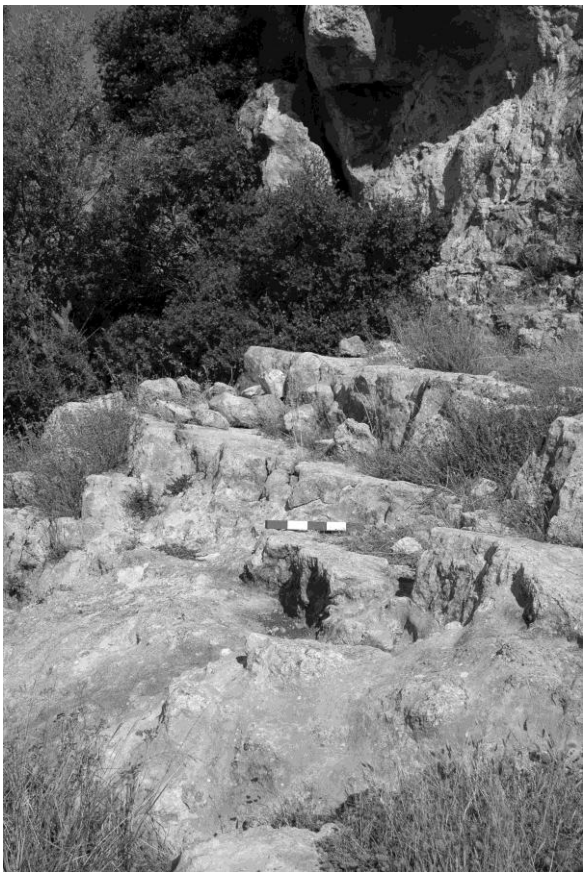


Fig.59 Traces of rock cutting at Çobanpınarı quarry

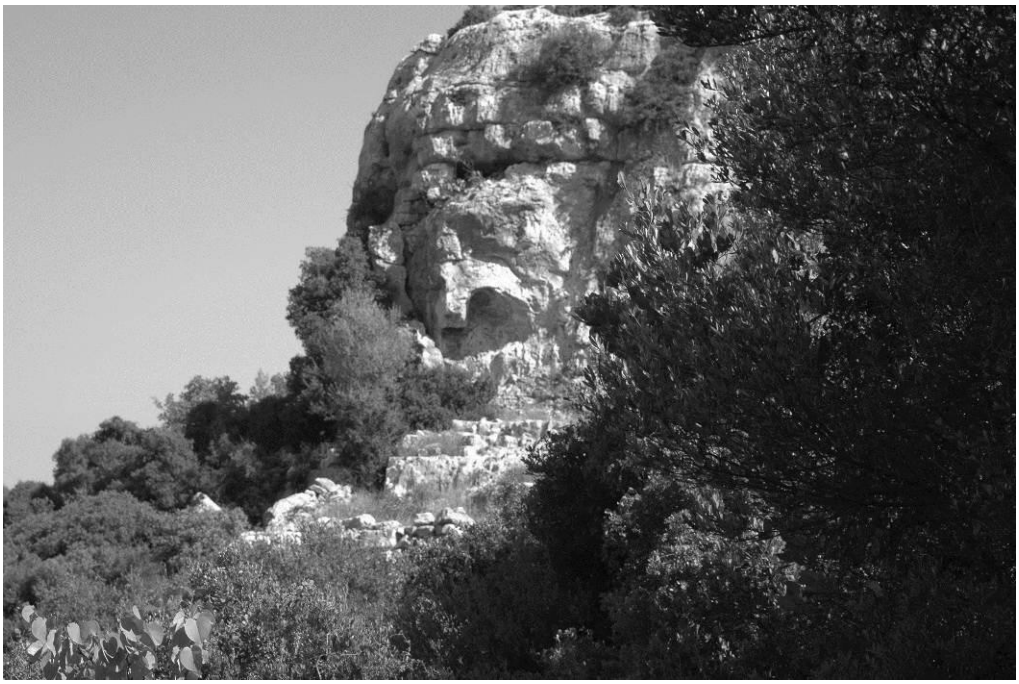


Fig.60 View of Çobanpınarı quarry

Fig.61 Agricultural terraces at Çobanpınarı

Site No: 2009/160
Site Name: Çobanpınarı 8
Subregion: 6/Çobanpınarı
Long./Lat.: 38 14 29 N/26 44 57 E
Map Code: L17D2-L17d05b
Size: 2/ (5 ha.)
Function: Settlement
Morphology: Hilltop
Period: Late Archaic/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Khios amphora (1) –IX.b.3; Kylix base (1) –XIV.d.2
Late Classical: Mushroom rim (1) –IX.g.2; Black glazed roof-tile fragments
Hellenistic: Plate rim (1) –XV.b4
Roman: Late Roman red-brown slipped ware (3) –XVI.a; White slipped roof-tile fragments
Byzantine: Green and yellow slashed glazed ware
Description: The site is located on the slopes of the hills on the western side of Çobanpınarı valley. It is defined with pottery sherds, building blocks, a well and stone cut devices for oliveoil/wine pressing.

Fig.62 Remains of walls at Çobanpınarı 8 (160)

Fig.63 Ancient building blocks used for the rim of the well

Site No:2009/161
Site Name: Çobanpınarı 9
Subregion: 6/Çobanpınarı
Long./Lat.: 38 13 50 N/26 45 21 E
Map Code: L17C1-L17c01a
Size: 3/ (10 ha.)
Function: Settlement
Morphology: Hilltop
Period: Late Archaic/ Late Classical/Hellenistic/ Roman
Dating and Findings:
Late Archaic: Klazomenian amphora rim (1) –IX.a.3
Late Classical: Black glazed roof-tile fragments
Hellenistic: Lekane rim (2) –VII.c.1-2
Roman: Ribbed ware fragments ; White slipped roof-tile fragments
Description: The site is located on a hilltop of limestone formation which is situated at the southern end of Çobanpınarı valley, overlooking Azmak coast. The site is defined with building blocks, foundations of structures, architectural elements as well as pottery dated into Hellenistic and Roman periods extending in an area almost reaching to 10 hectares.

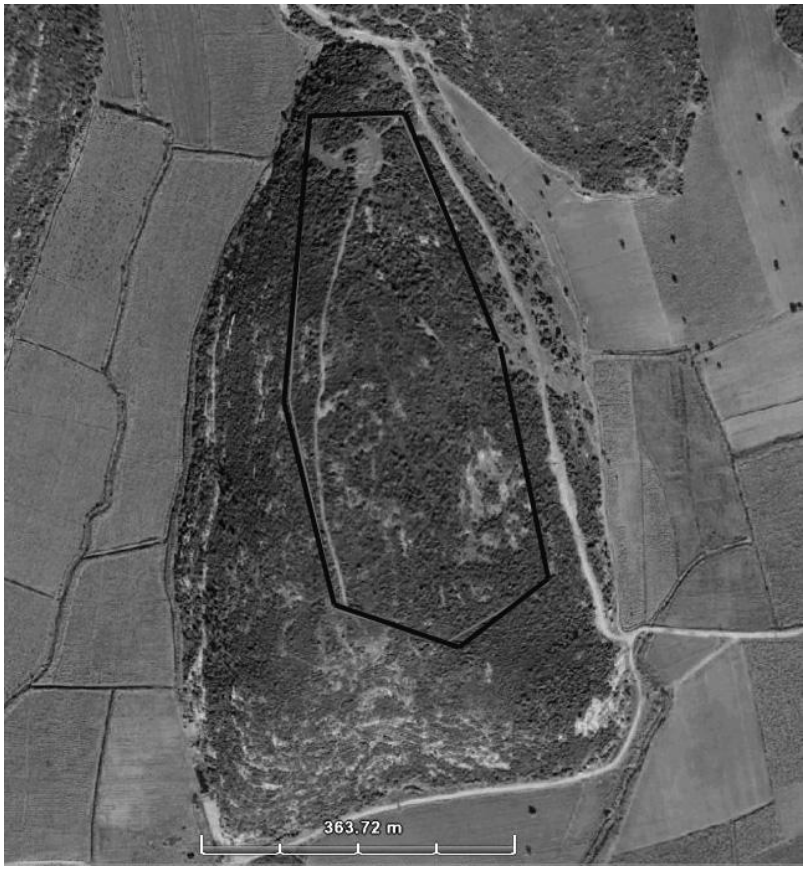


Fig.64 Distribution of surface scatters Çobanpınarı 9

Fig.65 Architectural fragments found at Çobanpınarı 9

Fig.66 Remains of wall foundations at Çobanpınarı 9

7.ÖZBEK

Site No: 2006/011
Site Name: Özbek Metal Workshop
Subregion: 7/ Özbek
Long./Lat.: 38 21 59 N/26 40 56 E
Map Code: L17A3-L17a14c
Size: 2 / (3ha.)
Function: Settlement
Morphology: Coastal hill
Period: Hellenistic / Roman
Dating and Findings:
Hellenistic: Unguantarium rim (1); Plate rim (1) –XV.b.4
Roman: White slipped roof-tile fragments; Late Roman red-brown slipped ware (7) –XVI.a; Roman ribbed body fragments (5)
Description: The site is named after the 19th century AD metal workshop located on the coast near Özbek. It is situated on the western slopes of volcanic hill formation on the coast, located to the North of Eğriliman. The surface findings extend to 3 hectares and includes the foundations of structures as well as pottery fragments. The slopes facing west are completely terraced for

agricultural activities, likely to be vineyards. The diagnostic surface findings are dated into Hellenistic and Roman period.
The surface visibility was high during our visit. The slopes are today covered with sparsely distributed olive trees, some likely to be very old.

Fig.67 Metal workshop on Özbek coast

Fig.68 Settlement on the olive grove

Site No: 2007/036
Site Name: Eğriliman
Subregion: 7/ Özbek Menteş
Long./Lat.: 38 21 12 N/26 41 03 E
Map Code: L17A3-L17a14c
Size: 2/ (5 ha.?)
Function: Settlement
Morphology: Coastal plain
Period: Roman
Dating and Findings: Few numbers of ribbed ware of Roman period.
Description: This site cannot be defined since the whole area is today re-arranged as a modern port and summer resort. Few fragments of terra-sigilatta body sherds found around the hillslopes which are densely covered with macquis dates the site into the Roman period but nothing else. It seems likely that there would be settlement due to its suitable setting, but cannot be proved archaeologically in the meantime with survey.

Site No: 2007/037
Site Name: Andız
Subregion: 7/ Özbek Menteş
Long./Lat.: 38 20 59 N/26 40 56 E
Map Code: L17A3-L17a14c
Size: 2 (5 ha.)
Function: Settlement
Morphology: Coastal plain
Period: Late Classical/ Roman
Dating and Findings: Few fragments of black glazed roof-tiles and ribbed ware.
Description: This site cannot be defined since the whole area is today re-arranged as a summer resort. Few fragments of black glazed rooftiles of Classical period, terra-sigilatta body sherds and undiagnostic sherds attest the ancient occupation though. The topography of the site, a small coastal plain encircled with hilltops gives us a tentative past image of the site. The very few number of fragments are found dispersed in different points.

Site No: 2007/038
Site Name: Akkum
Subregion: 7/ Özbek Menteş
Long./Lat.: 38 22 37 N/26 40 53 E
Map Code: L17A2-L17a14b
Size: 2/ (3 ha.)
Function: Settlement
Morphology: Coastal Plain

Period: Roman/ Byzantine
Dating and Findings:
Roman: Late Roman red-brown slipped ware (7) –XVI.a
Byzantine: Green glazed slashed ware (4)
Description: Akkum is the port of Özbek village which has been the largest settlement on Menteş peninsula during the Roman and Byzantine era. It is a large alluvium plain on the coast formed by sea transgression and river flows. The hillslopes around the coastal plain expose abundant number of pottery fragments dated into the Roman and Byzantine.

Site No: 2007/039
Site Name: Özbek Village
Subregion: 7/Özbek Menteş
Long./Lat.: 38 21 57 N/26 42 23 E
Map Code: L17A3-L17a15d
Size: 2/ (5 ha.?)
Function: Settlement
Morphology: Hillslope
Period: Roman / Byzantine
Dating and Findings:
Roman: Late Roman red-brown slipped ware (6) –XVI.a
Byzantine: Green glazed slashed ware (2)
Description: Özbek is the largest settlement on the Menteş peninsula. The architectural fragments reused in the contemporary structures testify the settlement history reaching back to Roman period. It has been a large village during the Byzantine era and Ottoman period. It is still a lively one of Urla. It is situated on a hillslope and plain encircled with hilltops. Not any earlier evidence of settlement history, perhaps disguised by the dense architectural layer of later periods. It is a suitable setting for the land choice patterns of the earlier periods, but cannot be attested archaeologically.

Site No: 2007/058
Site Name: Özbek Koop
Subregion: 7/ Özbek
Long./Lat.: 38 20 42 N/26 41 47 E
Map Code: L17A3-L17a19b
Size: 1/ (2 ha.)
Function: Farmstead
Morphology: Coastal Plain
Period: Roman
Dating and Findings: White slipped roof-tile fragments; Ribbed ware fragments; Glass cup fragment; Late antique coarse ware.

Description: The site is located to the northeast of modern summer resort Özbek Koop on a hillslope right above the small coastal plain of gravel that forms a micro-geographical unit. The surface findings merely consist of Roman period pottery and roof-tiles extending in an area of ca. 2 hectares.

Site No: 2007/ 059
Site Name: Karapınar
Subregion: 7/ Özbek
Long./Lat.: 38 20 30 N/26 42 03 E
Map Code: L17A3-L17a20a
Size: 2/ (6 ha.)
Function: Settlement
Morphology: Coastal Plain
Period: Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Classical: Black glazed roof-tile fragments
Hellenistic: Plate rim (2) –XV.b.4
Roman: Late Roman red-brown slipped ware (23) –XVI.a; White slipped roof-tile fragments
Byzantine: Green slashed glazed ware
Description: The site is located on the southeast slope of the Karapınar hill facing towards Gülbahçe bay. It is looking over a plain of alluvial deposit, which is contemporarily covered with fields and sparsely distributed farm houses. The surface findings extend in an area of 6 hectares. On the slope 1.5 hectares are exposing the remains of structure foundations facing towards the bay, dated into Roman period.

Fig.69 Aerial imagery of Karapınar Tepe and distribution of surface scatters

Fig.70 The wall remains on Karapınar Tepe

Site No: 2007/060
Site Name: Turasan
Subregion: 7/ Özbek
Long./Lat.: 38 19 38 N/26 43 06 E
Map Code: L17A3-L17a20a
Size: 1/ (2 ha.)
Function: Farmstead
Morphology: Hillslope
Period: Late Archaic/ Late Classical/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Klazomenian amphora rim (3) –IX.a.3; Plate rim (1) –VI.b
Late Classical: Lekane rim (1) –VIII.b5
Roman: Late Roman red-brown slipped ware (18) –XVI.a; Ribbed ware fragments
Byzantine: Green slashed glazed ware
Description: The site is located on the western slope of Turasan tepe which is situated to the east of coastal plain between İçmeler and Menteş Eğriliman. The slopes of the hill are terraced for agricultural activities but it is not possible to argue for the ancient use of the terraces though it is a suitable setting. The surface findings were extended within an area of 2 ha. mostly consisting of coarse ware and roof-tile fragments.

Fig.71 Aerial imagery of Turasan and the location of the archaeological site

Site No: 2007/061
Site Name: Beyliktepe
Subregion: 7/ Özbek
Long./Lat.: 38 20 08 N/26 42 24 E
Map Code: L17A3-L17a20a
Size: 1/ (2 ha.)
Function: Farmstead
Morphology: Hillslope
Period: Late Archaic/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Klazomenian amphora rim (2) –IX.a.3
Late Classical: Black glazed roof-tile fragments; Lekane rim (1) –VIII.b.5
Hellenistic: Lekane rim (2) –VIII.c.2; Hydria rim (2) –X.a.6; Plate (1) –XV.b.5
Roman: Late Roman red-brown slipped ware (13) –XVI.a; White slipped roof-tile fragments
Byzantine: Green slashed glazed ware
Cooking ware XVII.a
Description: The site is located on the western slope of Beyliktepe facing towards Gülbahçe bay and extends to the fields on the coastal bay by the resort. The surface findings concentrate within an area of 2 ha. dating from Late Archaic period to Byzantine era. Roman and Byzantine findings are scattered at a larger area on the alluvial plain where soil thickness reaches to 90 cm. Perhaps the lack of earlier findings on the slopes but not on the plain is related to the deep alluvial deposits that sealed early layers.

Fig.72 Aerial imagery of Beyliktepe and the location of the archaeological site

Fig.73 View of Beyliktepe

Site No: 2007/062
Site Name: Gerçinektepe
Subregion: 7/ Özbek
Long./Lat.: 38 20 08 N/26 41 51 E
Map Code: L17A3-L17a19b
Size: 3/ (10 ha.)
Function: Settlement
Morphology: Hillslope
Period: Late Archaic/ Late Classsical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Bowl rim (2) –V.d; Olpe rim (2) –XII.e
Late Classical: Fishplate base (1) –XIV.a
Hellenistic: Plate (1) –XV.b.4; Hydria rim (1) –X.a.6
Roman: Late Roman red-brown slipped ware (9) –XVI.a
Byzantine: Green slashed glazed ware
Coarse ware –XIX.c
Description: The site is on the western slope of Gerçinektepe which is situated on the Özbek coast facing Gülbahçe bay. The remains of foundations and the extension of surface findings cover an area of 10 ha. The hill is situated on the alluvial coastal plain but the hill itself is a limestone formation and the bedrock is very close to the surface. Despite this disadvantage the surface material is not few in number. The surface finds mostly consist of Roman and Byzantine pottery, but few amount of earlier findings let us date the site into Late Archaic, Late Classical and Hellenistic periods. On the basis of pottery

distribution it is not possible to determine whether the size of the site have changed from Late Archaic period to Byzantine era.

Fig.74 Aerial imagery of Gerçinektepe and the distribution of surface scatters

Fig.75 View from Gerçinektepe

Site No: 2007/063
Site Name: Ortatepe
Subregion: 7/ Özbek
Long./Lat.: 38 20 56 N/26 41 51 E
Map Code: L17A3-L17a19b
Size: 2/ (5 ha.)
Function: Settlement
Morphology: Hillslope
Period: Late Archaic/ 5th century BC/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Bowl rim (2) –V.d; Chian amphora rim (1) –IX.b.3
5th c. BC: Plate rim (2) –XV.b4-5
Late Classical: Fishplate (1) –XIV.a.1; Klazomenian amphora rim (1) –IX.f.1
Hellenistic: Lekane rim (1) –VII.c
Roman: Late Roman red-brown slipped ware (7) –XVI.a
Byzantine: Green and yellow slashed glazed ware
Description: The site is located on the western slope of the low hilltop called Ortatepe. The surface findings merely consist of pottery sherds which include mostly Roman and Byzantine as well as few fragments dated to earlier periods. The bedrock of gravel and sandstone is close to the surface and the surface findings are mostly worn out and very few in numbers. The number of diagnostic finds is not much.

Fig.76 Aerial imagery of Ortatepe and distribution of surface scatters

Fig.77 View from Ortatepe

Site No: 2008/101
Site Name: Burgaz
Subregion: 7/ Özbek
Long./Lat.: 38 22 26 N/26 43 51 E
Map Code: L17A3-L17a15c
Size: 3/ PH(3 ha.) / G-EA (3 ha.)/ LA (20 ha.)/ 5th C. (5 ha.?)/ LC (20 ha.)/ H (20 ha.)/ R-B (30 ha.)
Function: Settlement
Morphology: Plain
Period: Neolithic/ Calcolithic/ EBA/ Late Geometric/ Early Archaic/ Late Archaic/ 5th century BC/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Geometric: Skyphos rim and base –I;Kotyle base –II; Krater rim; Kalathos body fragments
Archaic: Band bowl rim and base; V.b; Klazomenian amphora –IX.a.2; Klazomenian amphora –IX.a.3; Samos amphora –IX.c.2; Milet amphora –IX.e.2; Fruitstand –VI.a.1-2; One handled bowl –V.c.1; Bowl –V.d.1; Mortar rim and base –XIII.a-b; Banded and wave line ware base and body fragments; Black figured oinokhoe body and base; Krater rim; Lekane rim –VII.a.1-4; Olpe rim and base –XII.c-d-e
5th c. BC: Kylix base –XIV.d.1-3; One handled bowl –V.c.2; Lekane rim –VII.b.1; Slim amphora –IX.h.1
Late Classical: Black glazed roof-tile fragments; Fishplate base –XIV.a.1; Lekane –VII.b.2; Mushroom amphora rim –IX.g.1-2; Klazomenian amphora rim –IX.f.1-2; Attic black glazed pottery fragments

Hellenistic: Megara bowl rim and body fragment –XV.a.1-2; Unguantarium base; Bowl –XV.b3-5; Plate –XV.b.4; XV.b.2-3; Bowl rim –XV.b.2-3
Roman: Late Roman red-brown slipped ware –XVI.a; Terra sigillata ware –XVI.b; Lamp fragment; Ribbed ware fragments; Late Roman amphora foot; White slipped roof-tile fragments; Late antique coarse ware
Byzantine: Green and yellow slashed glazed ware fragments, coarse ware
Description: Burgaz is a colluvial plain among the hilltops situated between Kocadere and Özbek. The area is covered with agricultural fields and covers an area of ca. 90 ha. The whole plain is surveyed with intensive methods and it is found out that the site has been inhabited from Neolithic period to Byzantine era. An assessment of surface findings enabled us to determine the changing size of the site and shifting of the places of settlements from one period to the other.
Prehistorical settlement which has been inhabited from Neolithic period to Early Bronze Age covers an area of 3 ha. It is situated by a hilltop of limestone where the slopes of the hill are carved and shaped as banks.
There are two spots on the plain where geometric finds are concentrated, pointing out two different settlements probably house clusters distanced 650 meters from eachother. The surface findings show that the Bronze Age settlement continued into the Geometric period and another one was founded to the east.
Archaic settlement is a large one covering 20 ha. probably with the halos of the surface findings. It might be much smaller during the Early Archaic period. The location of the Archaic settlement clearly shows that it was formed by the *synoikismos* of Geometric settlements.
Since the number of pottery that could be dated into 5th century BC is very few we assume that the size of the settlement was dramatically diminished then. Late Classical-Hellenistic settlement expands again to 20 ha. Roman and Byzantine surface scatter covers a larger area sizes up to 30 ha.
Burgaz is one of the largest settlements with long settlement history from Neolithic period to Byzantine era within the territory of Klazomenai and it is highly likely that it is one of the sites that had been mentioned in the ancient literature, but not certainly localized yet; Daphnous (Thuc.8.23.6; 31.2; I.Erythrai 501.5), Lampsos (Steph. Byz. 410.25-411.1), Skyphia (Steph. Byz.580.5-6), Polichna (Thuc. 8.14.3, 23.6)

Fig.78 Location of Burgaz (101) on Menteş Peninsula

Fig.79 Distribution of Prehistoric settlement at Burgaz (101)

Fig.80 Distribution of Geometric pottery at Burgaz (101)

Fig.81 Distribution of Archaic pottery at Burgaz

Fig.82 Distribution of 5th c. BC pottery at Burgaz

Fig.83 Distribution of Late Classical pottery at Burgaz

Site No: 2008/118
Site Name: Ulalıdağ
Subregion: 7/Özbek
Long./Lat.: 38 21 43 N/26 41 50 E
Map Code: L17A3-L17a14c
Size: 2/ (9 ha.)
Function: Settlement
Period: Late Archaic/ Late Classical/ Hellenistic/ Roman/ Byzantine
Morphology: Plain
Dating and Findings:
Late Archaic: Banded bowl rim (1) –V.b; Banded ware base (1)
Late Classical: Black glazed bowl body fragments; Black glazed roof-tile fragments
Hellenistic: Bowl rim (2) –XV.b.3; Lekane rim (6) –V.c.1-4
Roman: Late Roma red-brown slipped ware (18) –XVI.a; Ribbed ware fragments; White slipped roof-tile fragments
Byzantine: Yellow and green slashed glazed ware; Coarse ware
Description: The site is located on the alluvial plain which forms a micro geographical pocket amongst the high hilltops near Özbek and the soil thickness reaches to 50 cm at most places. The surface scatters cover an area of 9 ha. and the findings are mostly consisting of Roman and Byzantine pottery with a few number of pottery that could be dated to periods prior to Roman period. This might be related to the alluvial deposits that have sealed earlier cultural deposits. Therefore it is not possible to determine the size of settlements before Roman period.

Fig.84 Distribution of surface scatters at Ulalıdağ (118)

Site No: 2008/119
Site Name: Özbek Plain
Subregion: 7/Özbek
Long./Lat.: 38 21 18 N/26 41 42 E
Map Code: L17A3-L17a14c
Size: 3/ (15 ha.)
Function: Settlement
Morphology: Plain
Period: Late Archaic/ 5th century BC/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Samos amphora rim (1) –IX.c; Bowl rim (1) –V.b; Lekane rim (1) –VII.a.1
5th c. BC-Late Classical: Kylix base (1); Lekane rim (2) –VII.b1
Hellenistic: Lekane rim (1) –VII.c.3
Roman: Late Roman red-brown slipped ware (5) –XVI.a; Ribbed ware fragments; Terra sigillata plate base (2) –XVI.b
Byzantine: Yellow and green slashed glazed ware; Coarse ware
Description: The site is located ca. 1 km. to the south of Site No: 118, on the same alluvial plain. As a common phenomenon the findings dated prior to Roman period are very few in number and do not provide su with sufficient evidence to determine the size and the function of settlements prior to Roman period, but gives us evidence for dating.

Fig.85 Distribution of surface scatters at Özbek Plain (119)

Fig.86 Location of Ulalıdağ (118) and Özbek Plain (119)

Site No: 2008/136
Site Name: Yuvaca
Subregion: 7/Özbek
Long./Lat.: 38 23 10 N/26 41 53 E
Map Code: L17A2-L17a15a
Size: 2/ (8 ha.)
Function: Settlement
Morphology: Valley
Period: Late Geometric/ Early Archaic/ Late Archaic/ 5th century BC/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Geometric: Kalathos body fragments; Amphora body fragment
Archaic: Samos amphora rim (3) –IX.c.1-2; Klazomenian amphora rim (1) –IX.a.2; Khios amphora (1) –IX.b.3; Hydria rim (1) –X.a.4; Lekane rim (1) –VII.a.3; Banded ware fragments
5th c. BC: Lekane rim (3) –VII.b.1-3; Stemless cup base
Late Classical: Klazomenian amphora rim (1) –IX.f.1; Lekane rim (1) –VII.b.4; Black glazed roof-tile fragments
Hellenistic: Plate rim (1) –XV.b.4; Megara bowl body fragment (1) -XV.a.2

Roman: White slipped roof-tile fragments; Late Roman red-brown slipped ware (9) –XVI.a
Byzantine: Green slashed glazed ware; Coarse ware fragment
Description: The site is located at Yuvaca situated 3 km to the north of Özbek village. The surface findings indicate to a long settlement history from Geometric period to Byzantine era, extending in an area of 8 hectares. The foundations of the structures and rock cut devices are visible on the surface concentrated in area of 2 hectares to the south of the site. It is a small geographical pocket of colluvial plain amongst high hilltops, situated at the end of a small valley reaching to the alluvial plain on the coast of Akkum. The rock cut devices for olive oil or wine presses found scattered in the area. The settlement is accompanied with a necropolis, which extends from the western high slopes to the plain. Unfortunately some of the burials were destructed by illegal digs and there found scattered fragments of Archaic terracotta sarchophagi.

Fig.87 Distribution of surface scatters at Yuvaca (136)

Fig.88 Olive oil/wine production devices at Yuvaca

Fig.89 Olive oil/wine production devices at Yuvaca

Fig.90 Sarcophagus fragments revealed with illicit excavations at Yuvaca

8.ZEYTİNALAN

Site No: 2007/018
Site Name: Çayır
Subregion: 8/Zeytinalan
Long./Lat.: 38 20 48 N/26 47 34 E
Map Code: L17B4-L17b16b
Size: 2 / (5 ha.)
Function: Settlement
Morphology: Coastal Plain
Period: Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings: The salvage excavations revealed the presence of a necropolis near the site. Sporadic evidence points out the use of the necropolis since Early Archaic period into the Roman period.
Late Classical: Klazomenian Amphora rim (2) –X.a.3; Black Glazed roof-tile fragments
Hellenistic: Unguantarium rim (1)
Roman: Late Roman Red-Brown slipped ware (9) –XVI.a; Ribbed ware body sherd (4)
Byzantine: Green slashed glazed ware (3)
Description: Çayır is the coastal plain to the east of Klazomenai settlement center at İskele covering ca. 100 ha. This area is well known to the excavators of the site for being one of the necropoleis of Klazomenai and for the burials that are being unearthed during the construction activities in the area. The area is rapidly filling with modern construction and some parts are still reserved for fields. The site is on the old way to İzmir from Urla situated 2.5 km to the east of Klazomenai settlement center. The site is near the northern coastline situated

on the northern slopes of low hill range, gently sloping towards the coastline. The area is covered with fields and sparsely distributed olive trees. The extension of surface findings that consist of pottery fragments dated from Classical period to Byzantine era reach to almost 5 hectares.
The whole plain investigated thoroughly and the spots where surface findings are concentrated intensive survey methods conducted. The area where the site is situated is reserved for vineyards and ploughed fields where the surface visibility was high.

Site No: 2007/053
Site Name: Zeytinalanı Camii
Subregion: 8/Zeytinalan
Long./Lat.: 38 21 55 N/26 50 29 E
Map Code: L17B4-L17b12c
Size: 2/ (3 ha.)
Function: Settlement
Morphology: Coastal Plain
Period: Late Classical/ Roman
Dating and Findings:
Late Classical: Black glazed roof-tie fragments are abundant in number. Klazomenian amphora rim (1) –IX.f
Roman: Ribbed ware fragments; Late Roman red-brown slipped ware fragments (4) –XVI.a
Description: The site is located to the southwest of Zeytinalanı camii. The landscape is dramatically modified with the modern construction. Most of the area is covered with greenhouses. The size of the site can hardly be estimated but the distribution of the pottery shows an area larger than 3 hectares. The surface findings are mostly un-diagnostic, only a few could be dated into Late Classical and Roman periods. The black glazed roof-tiles and pithos fragments indicate to a Classical settlement.

Site No: 2008/124
Site Name: Kalabak
Subregion: 8/ Zeytinalan
Long./Lat.: 38 20 53 N/26 48 14 E
Map Code: L17B4-L17b17a
Size: 2/ (9 ha.)
Function: Settlement
Morphology: Coastal Plain
Period: Early Archaic/ Late Archaic/ 5th century BC?/ Late Classical/ Roman/ Byzantine
Dating and Findings:
Archaic: Mortar rim and base (2) –XII.a-b; Milet amphora rim (1) –Ix.e.1; Khios amphora rim (1) –IX.b.2; Samos amphora rim (5) –IX.c.1-3; North

Ionian amphora rim (1) –IX.d.1; Plate rim (1) –VI.a; Lekane rim (1) –VII.a.2; Bowl rim (1) –V.d;
5th c. BC: Slim amphora rim (1) –IX.h.1; Stemless cup base (1) –XIV.b.2
Late Classical: Black glazed roof-tile fragments; Klazomenian amphora rim (1) –IX.f.1; Kantharos base (1) –XIV.e; Black glazed bowl base (2)
Roman: Late Roman red-brown slipped ware (8) –XVI.a; Terra sigillata (1) –XVI.b; White slipped roof-tile fragments
Byzantine: Yellow and green slashd glazed ware; Late antique coarse ware fragements
Description: The site is near the northern coastline situated on the northern slopes of low hill range, gently sloping towards the coastline. The area is covered with fields and sparsely distributed olive trees. The extension of surface findings reaches to 9 hectares. However the site is not defined with any architectural remains other than few scattered building blocks.

Fig.91 Distribution of surface scatters at Kalabak (124)

9.İÇMELER

Site No: 2007/041
Site Name: Hırsızçeşme
Subregion: 9/ İçmeler
Long./Lat.: 38 17 56 N/26 41 00 E
Map Code: L17A3-L17a19c
Size: 1/ (1 ha.)
Function: Farmstead
Morphology: Hillslope
Period: Early Archaic/ Late Archaic/ Roman/ Byzantine
Dating and Findings:
Archaic: Klazomenian amphora rim (1) –IX.a.2; East Greek Bowl rim (1) –V.d
Roman: Terra sigillata plate fragments (2) –XVI.b
Byzantine: Green slashed glazed ware
Description: Hırsıztepe is hillock on the way from İçmeler to Yağcılar with a farmhouse on the northern slope. Around the farm house several marble blocks and a column fragment are scattered and might have belonged to an ancient structure due to the clamp cavities. The area is mostly covered with dense macquis. The surface findings are visible in a restricted part of the whole area and include pottery dated into Archaic, Roman and Byzantine periods. To the south of the hillock the foundations of structures are visible.

Site No: 2007/042
Site Name: Malkaca
Subregion: 9/İçmeler
Long./Lat.: 38 18 02 N/26 41 33 E
Map Code: L17A3-L17a19c
Size: 1/(1 ha.)
Function: Farmstead
Morphology: Coastal Plain
Period: Late Archaic/ Late Classical/ Hellenistic?/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Milet amphora rim (1) –IX.e.2; Perryrrhanterion base (1)
Late Classical: Black glazed roof-tile fragments
Hellenistic: Vessel base (1) –X.b.4
Roman: Late Roman red-brown slipped ware –XVI.a
Byzantine: Green slashed glazed ware
Description: The site is located on the southwest of the coastal plain called Malkaca at İçmeler area, next to the Çeşme-İzmir motorway. Around the ruins of a structure presumably dated into Byzantine era. The surface findings extend in an area of a hectare, including black glazed roof-tiles of Classical period.

Fig.92 Aerial imagery of Malgaca Plain

Site No: 2007/044
Site Name: Küpalanı
Subregion: 9/İçmeler
Long./Lat.: 38 19 02 N/26 42 23 E
Map Code: L17A3-L17a20d
Size: 3/ (16 ha.)
Function: Settlement
Morphology: Hilltop / Plain
Period: Late Archaic / Late Classical / Hellenistic / Roman / Byzantine
Dating and Findings:
Late Archaic: Klazomenian amphora (5) –IX.a.3; Hydria rim (3) –X.a.1; Bowl rim (4) –V.c.1; Plastic wave-line coarse ware –XIX.c
Late Classical: Klazomenian amphora rim (2) –IX.f; Black glazed roof-tile fragments; Bowl rim (2) –V.c.3
Hellenistic: Moulded Bowl (1) –XV.b.1; Kantharos rim (1) –XV.c; Closed vessel base (1) –X.b.5
Roman: Late Roman red-brown slipped ware (abundant) –XVI.a; Terra sigillatta plate (7) –XVI.b
Byzantine: Green slashed glazed ware
Description: Küpalanı is a narrow long hilltop extending in north-south direction. It is divided into two by the construction of Çeşme-İzmir road. The sections clearly reveal that the hill is of limestone and the soil thickness is less than 20 cm. on the hill. However the surface findings extend towards east on the plain where fields are locted now. The extension of the surface findings reach to 16 hectares. On top of the hill the foundation remains of architectural

structures are visible and presumably dated into the Roman period. The hilltop and its environs surveyed with intensive methods. The surface findings are mainly concentrated on the eastern slopes and the fields to the east of the hill covering an area of 16 ha. but the extension of the surface scatters distributed in an area of ca. 55 ha. This might be due to the use of plain for agricultural activities in the antiquity as well.

Fig.93 View of Küpalanı

Fig.94 Aerial image of Küpalanı and the distribution of surface scatters

Site No:2007/ 045
Site Name: İçmetepe
Subregion: 9/İçmeler
Long./Lat.: 38 18 35 N/26 40 23 E
Map Code: L17A3-L17a19d
Size: -
Function: Tumulus / Settlement?
Period: Late Geometric/ Early Archaic / Roman / Byzantine
Dating and Findings: Late Geometric finds are reported by the previous researchers though few in number. The site is classified as Archaic due to the presence of the tumuli. Few amounts of Late Roman red-brown slipped ware fragments (XVI.a) and green slashed glazed ware are found around the tumuli.
Description: İçmetepe is rocky hilltop on the Çeşme-İzmir road at İçmeler. On the northern tip of the hill which is elevated dramatically and looking over the northern sea, three tumuli are situated. Unfortunately all of them are destructed by the illegal digs and robbed. Their diameters range between 10-15 meters. The tumuli are dated into Early Archaic period, but the few amount of pottery fragments dispersed around are from Roman and Byzantine periods. Previous researchers reported the presence of Geometric pottery as well, but we have not found any fragments during our visit. Tumuli are completely destructed by illegal digs.

Fig.95 Aerial image of İçmetepe and the location of tumuli

Site No: 2008/114
Site Name: Çarpantepe
Subregion: 9/İçmeler
Long./Lat.: 38 19 26 N/26 39 29 E
Map Code: L17A3-L17a19d
Size: 1/ (2 ha.)
Function: Farmstead
Morphology: Hilltop
Period: Late Classical/ Roman/ Byzantine
Dating and Findings:
Late Classical: Klazomenian amphora rim (2) –IX.f.1; Black glazed roof-tile fragments
Roman: White slipped roof-tile fragments; Ribbed ware fragments; Late Roman red-brown slipped ware –XVI.a
Byzantine: Yellow and green slashed glazed ware fragments
Description: Çarpantepe is the northern tip of the range of low hillocks, a mass height extending in north-south direction and separating the coastal plain of Gülbahçe from Urla basin. The site is situated on the northern slopes of the hill which is a rocky volcanic formation. The surface findings extend in an area of 2 to 3 hectares and consist of pottery fragments dated into Late Classical, Roman and Byzantine periods. The site is also defined with the foundations of the structures on the eastern coast and agricultural terraces of large blocks on the western slopes.

Site No: 2008/115
Site Name: Çiftlikova
Subregion: 9/ İçmeler
Long./Lat.: 38 19 10 N/26 39 16 E
Map Code: L17A3-L17a19d
Size: 3/ (20 ha.?)
Function: Settlement
Morphology: Plain
Period: Hellenistic/ Roman
Dating and Findings:
Hellenistic: Unguantarium base
Roman: Late Roman red-brown slipped ware –XVI.a; Ribbed ware fragments; White slipped roof-tile fragments; Coarse ware fragments
Description: Çiftlikova is a micro geographical unit, an alluvial plain which is part of Gülbahçe coastal plain and lies beneath Çarpantepe. The surface findings extend in an area of 20 hectares surprisingly, but consist of highly worn out pottery sherds. Only few are diagnostic and dated into Hellenistic and Late Roman period. The site is not defined with any architectural remains. This site is probably associated with site no: 114. It is likely to be the agricultural field of the small village situated on Çarpantepe. The extension and the condition of the pottery remind the use of pottery sherds for manuring.

Fig.96 Distribution of surface scatters at Çarpantepe (114) and Çiftlikova (115)

10.GÜLBAHÇE

Site No: 2007/051
Site Name: Alibey Çiftliği
Subregion: 10/ Gülbahçe
Long./Lat.: 38 18 10 N/26 38 22 E
Map Code: L17A3-L17a18c
Size: 2/ (5 ha.)
Function: Settlement
Morphology: Alluvial plain
Period: Prehistoric?/ Early Archaic/ Late Archaic/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Archaic: Khios amphora rim (1) –IX.b.1
Late Classical: Black glazed roof-tile fragments
Hellenistic: Plate rim (1) –XV.b.4
Roman: White slipped roof-tile fragments; Ribbed ware fragments (5); Late Roman red-brown slipped ware (8) –XVI.a
Byzantine: Green and yellow glazed ware.
Few slags of coarseware.

Description: Alibey Çiftliği is a compound of standing buildings which have served as caravanserai during the last century. It is on the plain below the Hacıgebeş hill where site no: 052 is located and close to Tatarderesi. It is situated at the eastern end of an inlet presumably filled by sea transgression, on a small plain. Around the Ottoman buildings to the east there are dispersed stone blocks that hardly expose a regular plan. However the clamp traces on the blocks determine the presence of ancient structures. To the north the stone blocks placed in a circular plan with a diameter of 12 m seems like flanking an entrance of 8 meters. However no diagnostic pottery sherds associated with this structure is found. The diagnostic pottery is very rare yet provides us with the settlement history from Early Archaic period to Byzantine era.

Fig. 97 Alibey Çiftliği Aerial image and the distribution of surface scatters

Fig.98 Alibey Çiftliği, round planned wall foundations of large blocks similar to bastions

Fig.99 Alibey Çiftliği, Scattered building blocks

Site No: 2007/052
Site Name: Hacıgebeş
Subregion: 10/Gülbahçe
Long./Lat.: 38 17 59 N/26 37 55 E
Map Code: L17A3-L17a18c
Size: 2/ (4.5 ha.)
Function: Settlement/ Fort/ Tumulus/ Necropolis
Morphology: Hilltop
Period: Late Bronze Age/ Late Geometric/ Early Archaic/ Late Archaic/ 5th century BC/ Roman/ Byzantine
Dating and Findings:
Archaic: Band Bowl rim (1) –V.b ; Klazomenian amphora rim (1) –IX.a.2; Khios amphora rim (1) –IX.b.3; Plate rim (1) –VI.a.1
5th c. BC: Attic black glazed kylix-vicup foot (1) –XIV.d.1
Roman: Red-brown slipped ware (9) –XVI.a
Byzantine: Green slashed glazed ware and late antique coarse ware fragments.
Description: Hacıgebeş hill is crowned with a fortress which is characterized with large stone blocks placed on naturally rocky promontory, looking over the northern coast. It is a very strategic watch-point controlling a wide area. The area where the fort is placed is very rocky and densely covered with macquis. Perhaps due to the low visibility no diagnostic sherds were found associated with the fort. To the southwest of the fort on the high plateau a necropolis is located. This necropolis was reported by the local people due to illegal excavations, and during our visit many graves were destructed and robbed. Three cist graves, two pithos burials were documented. The cist graves are formed of orthostatic blocks and the pithoi are placed into the pits hewn into bedrock. Two pots and a bronze dagger were brought to us by the local people. These findings and the pithoi are dated to Late Bronze Age. On the southwest slopes of the hill among the dense pine trees several heaped stones that may be marking the place of Archaic tumuli are recorded. The sparsely distributed pottery fragments cover an area of 4.5 hectares and mostly consist of coarse ware and roof-tiles.

Fig.100 View from Hacıgebeş Tepe

Fig.101 Hacıgebeş Tepe, Cist Grave

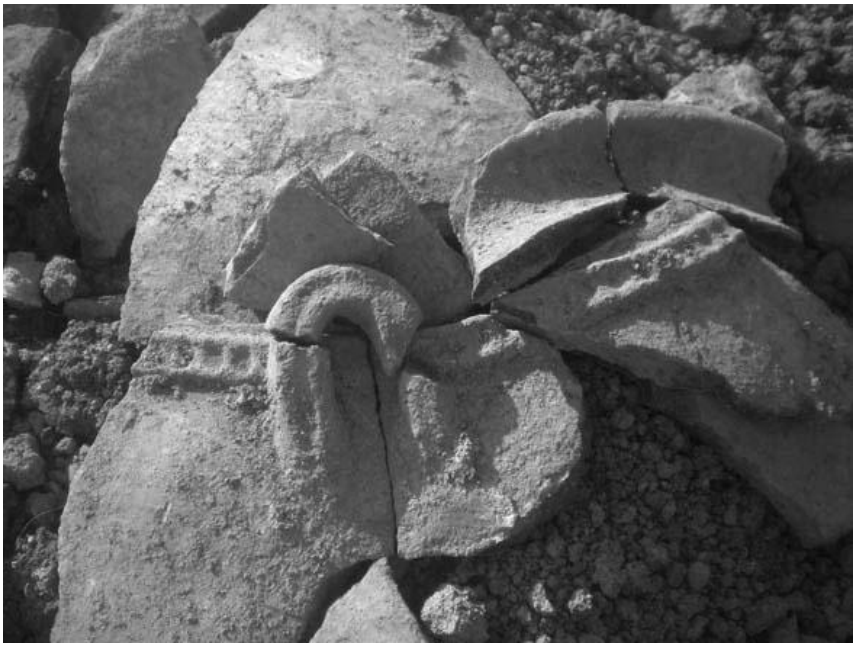


Fig. 102 Fragments of pithos used for burial

Fig.103 The burial gift bronze dagger revealed with illicit excavation

Fig.104 The burial gift, hand-made vessel

Site No: 2007/ 078-079
Site Name: Cinderesi
Subregion: 10/ Gülbahçe
Long./Lat.: 38 21 13 N/26 38 16 E
Map Code: L17A3-L17a13c
Size: -
Function: Fort
Morphology: Coastal Hilltop
Period: MBA/ Early Archaic/ Late Archaic/ 5th c.BC/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Archaic: Chian amphora (2) –IX.b.2, IX.b.3; Klazomenian amphora rim (3) –IX.f.1,2; Lekane rim (1) –VII.a.5
5th c. BC: Olpe rim (1) –XII.e
Late Classical: Klazomenian amphora rim (3) –IX.f.1,2; Fishplate (1) –XIV.a.3; Kantharos base (1) –XIV.e; Lekane rim (1) –VIII.b.2, VIII.b.5
Hellenistic: Bowl rim (4) –XV.b.5; Plate rim and base (2) –XV.b.4; Lekythos rim (1) –VII.a
Roman: Late Roman red-brown slipped ware; White slipped roof-tile fragments; Ribbed ware fragments
Byzantine: Gren slashed glazed ware
Cooking ware; Lopas XVII.a and khytra XVII.b; Abundant number of coarse ware
Description: Cinderesi is a volcanic hill on Gülbahçe coast looking over the bay and the fort is situated on top of that hill. The eastern face of the fort is looking over Gülbahçe cove and on that side a gentle slope from the highest point of the hill continues into the sea. Part of the polygonal wall surrounding this face of the hill is preserved at a certain height and length. The gentle slope continuing towards the coast was terraced and perhaps some type of shelters and structures were placed on those terraces as it may be followed from the poorly preserved remains of foundations. The other face of the hill is extremely steep and rocky, and such topography did not require a wall. The summit of the hill is covering an area of 50 meters in diameter and enclosed by the polygonal wall attached to the rocky cliffs. The cavities of various sizes hewn into bedrock in this area imply the presence of various installations. Some of those cavities are perhaps likely to have belonged to metal production. The other cavities served as beds for stone blocks, stairs and post holes.
Even though polygonal wall is a typical masonry, it is not possible to offer a certain date for its construction unless excavating. However the surface findings indicate the long time range for the use of the fort. The surface finds include sherds of handmade prehistoric ware as well as diagnostic finds of Archaic, Classical, Roman and Byzantine periods.
Cinderesi fort is accompanied with a settlement of 5 ha. On the basis of surface finds the settlement and the fort were both occupied during the same time range. The number of surface finds at the settlement is low in number, so it is sensible to suggest that Cinderesi was a *phrourion*, a permanent fort and it was accompanied by a *phroura*, a garrison. Due to its strategic location on the passage opening to the territory of Erythrai, Cinderesi fortification has been

used as a border fort from Prehistoric times to Byzantine era. The defensive network guarding the borders of Klazomenai is likely to be formed during the early archaic period and Cinderesi fort became part of it.

Fig.105 Wall remains on Cinderesi

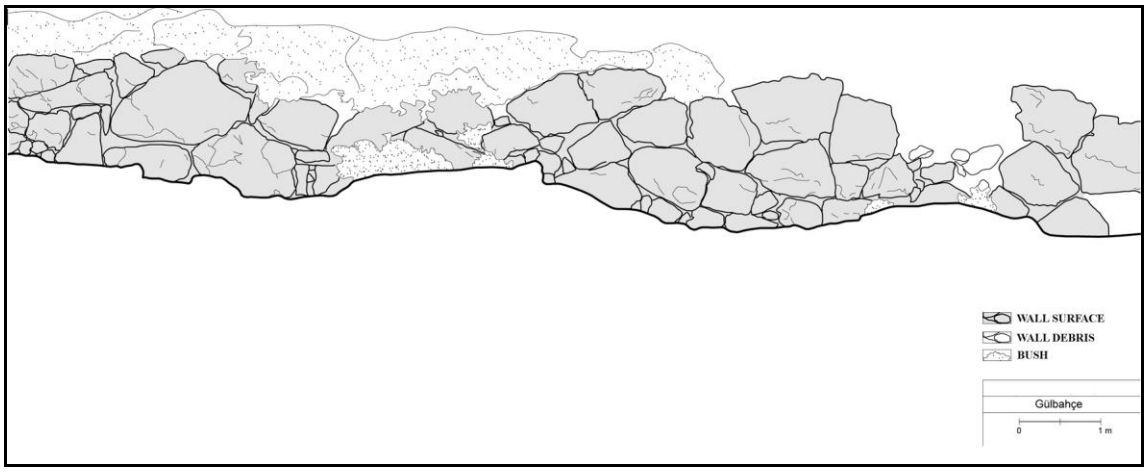
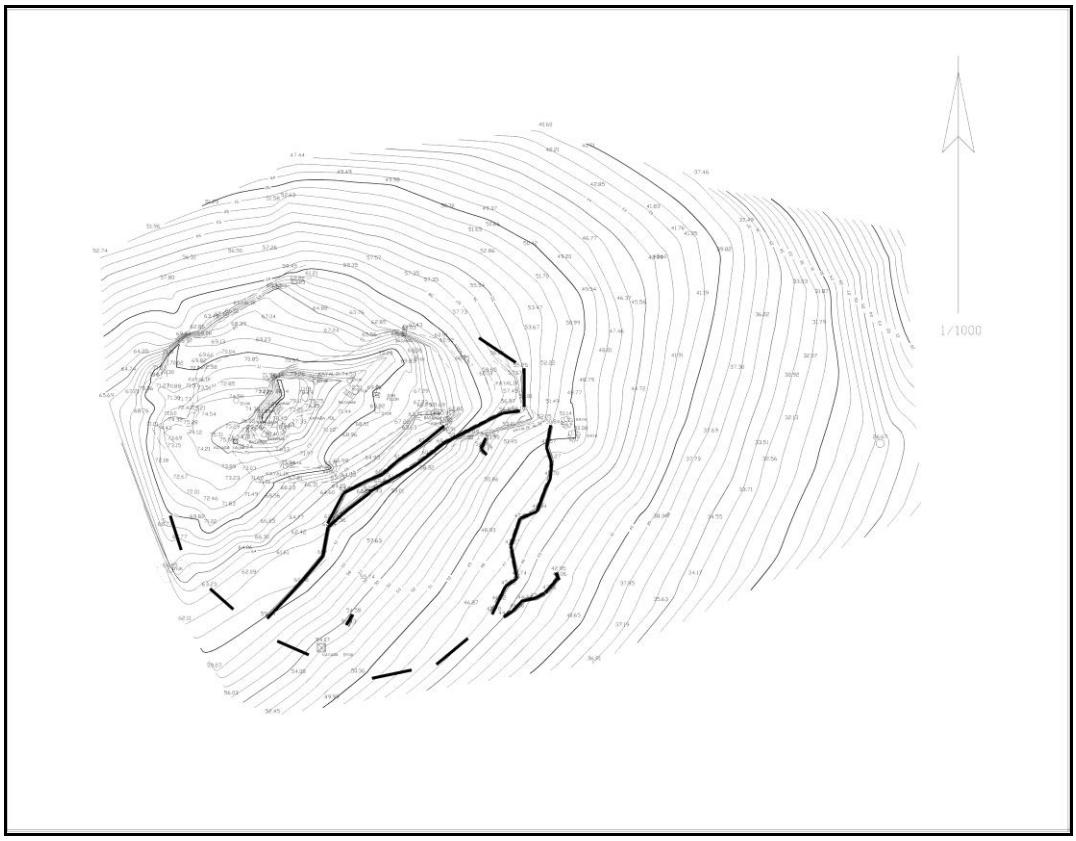


Fig.106 Drawing of wall remains on Cinderesi



Site No: 2007/080
Site Name: Hamam
Subregion: 10/ Gülbahçe
Long./Lat.: 38 19 42 N/26 39 00 E
Map Code: L17A3-L17a19a
Size: 2/ (6 ha.)
Function: Settlement
Morphology: Hillslope, Coastal Plain
Period: Roman
Dating and Findings:
Late Roman red-brown slipped ware –XVI.a; Terra sigillatta plate base (2) –XVI.b; White slipped roof-tile fragments; Roman lamp –XVI.c; Tessera
Description: The site is located on the northern tip of Çarpantepe (114) to the north of İçmeler area. The site is marked with a small Roman bath still standing. It is a single roomed rectangular arched building housing a pool inside with benches around it. It is situated at the point where Tatarderesi is flowing in to the sea where the inlet extending from Hacıgebeş (052) and Alibey Çiftliği (051) ends. The site is extending from the gentle northern slopes of Çarpantepe to the alluvial plain around the Roman bath. There is a cistern and the foundations of several houses on the slopes looking over the bay. The floors of some houses are partially preserved where even the flimsy remains of mosaics and thesserai scattered around can be seen.

Fig.107 Distribution of surface scatters at Gülbahçe Hamam

Fig.108 View from Gülbahçe Hamam

Site No: 2007/081
Site Name: Değirmen
Subregion: 10/ Gülbahçe
Long./Lat.: 38 20 16 N/26 39 10 E
Map Code: L17A3-L17a19a
Size: 3/ (10 ha.)
Function: Settlement
Morphology: Coastal Plain
Period: EBA1/ EBA3/ Late Archaic/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Plate rim (2) –VI.b; Klazomenian amphora rim (3) –IX.a.3; Samos amphora rim (1) -IX.c.3; Lekane (rim) –VII.a.5; Bowl rim (2) –V.b
Late Classical: Olpe base (1) –XII.f; Lekane rim (2) –VIII.b.5; Black glazed roof-tile fragments
Hellenistic: Megara bowl body sherd (1) –XV.a; Bowl rim (2) –XV.b.3
Roman: Abundant Late Roman red-brown slipped ware –XVI.a; Terra sigilatta (7) –XVI.b; Ribbed ware fragments; White slipped roof-tile fragments
Byzantine: Green and yellow slashed glazed ware; Late antique coarse ware
Description: The site is located on the coastal plain of alluvium deposits that might have been formed with sea transgression. The site is marked with a windmill that has been used in the last century and the ruins of a church dated into the Byzantine era. The prehistoric pottery is abundant and dated into EBA 1 and EBA 3. The prehistoric settlement is particularly concentrated around the hillock where the windmill is placed and extends in an area of 2 hectares at most. However the extension of surface findings dated to later periods reaches to 10 hectares. The coastline might have been subsided since the cultural deposits are very clear as sections on the coast. The cycle of sea transgression and silting process that is investigated on the coast of Limantepe/ Klazomenai is seen here as well.

Fig.110 Distribution of surface scatters at Gülbahçe Değirmen

Fig.111 Coast section showing the sinking coastline

Site No: 2008/ 092
Site Name: Ballıkaya
Subregion: 10/ Gülbahçe
Long./Lat.: 38 19 26 N/26 38 25 E
Map Code: L17A3-L17a18c
Size: 1/ (?)
Function: Farmstead
Morphology: Hillslope
Period: Roman
Dating and Findings: Late Roman red-brown slipped ware
Description: This site is reported by previous researchers. It is located within the campus of Yüksek Teknoloji Enstitüsü. The old reports tell us the surface findings consist of roof tiles and Roman pottery fragments as well as building block indication to a Roman hamlet perhaps. Unfortunately during our visit to the site in 2009 summer the landscape was dramatically changed and it was not possible to see any remains.

Site No: 2008/117
Site Name: Gülbahçe
Subregion: 10/Gülbahçe
Long./Lat.: 38 20 30 N/26 38 22
Map Code: L17A3-L17a18b
Size: 2/ (5 ha.)
Function: Settlement
Morphology: Plain
Period: Late Archaic/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Funnel (1) –XVIII; Banded ware fragments (3)
Hellenistic: Bowl rim (3) –XV.b.3; Unguantarium body and foot (1)
Roman: Late Roman red-brown slipped ware (12) –XVI.a; Ribbed ware fragments; White slipped roof-tile fragments
Byzantine: Green slashed glazed ware
Description: The site is situated on Gülbahçe alluvial plain where the modern village and the agricultural fields are located today. The soil thickness exceeds 90 cm. at most places. The surface findings dated prior to Roman period are very few in number and it is not possible to determine the size of the early settlement probably due to alluvial deposits that sealed the earlier cultural deposits. Yet the intensive agriculture techniques with plough revealed some pottery sherds of Archaic and Hellenistic pottery. The site is defined with surface findings extend in an area of 5 hectares.

Fig.112 Distribution of surface scatters at Gülbahçe (117)

11.SÖĞÜT-KOKAR

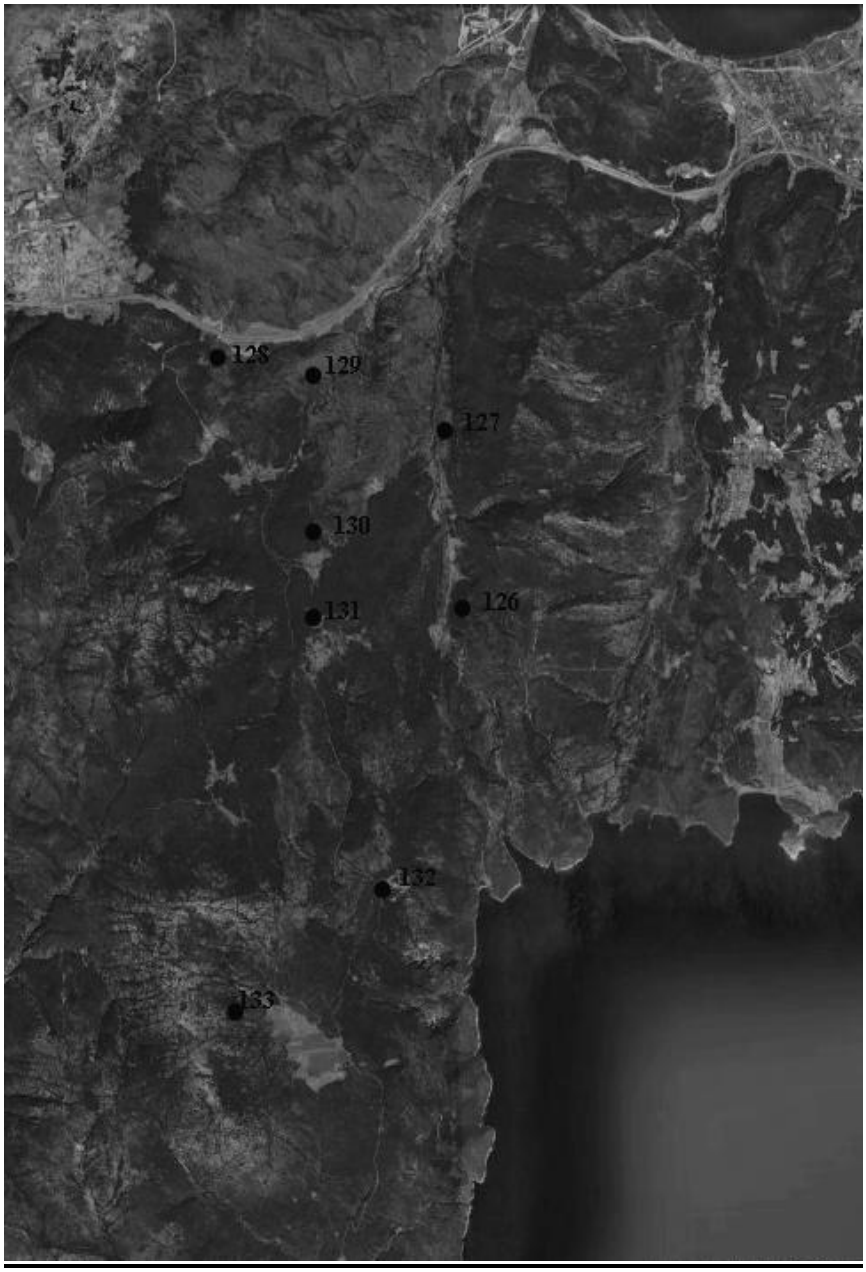


Fig.113

Site No: 2007/073
Site Name: Söğüt Cave
Subregion: 11/ Söğüt-Kokar
Long./Lat.: 38 14 51 N/26 37 57 E
Map Code: L17D2-L17d03b
Function: Cult
Morphology: Valley basin
Period: Prehistoric/Archaic/ Late Classical/ Roman/Byzantine

Dating and Findings:
Archaic: Klazomenian amphora rim (2) –IX.a.2, 3; Chian amphora rim (1) –IX.b.1
Late Classical: Mushroom amphora rim (1) –IX.g.1
Roman: Late Roman red-brown slipped ware –XVI.a; Terra Sigillata plate base (1) –XVI.b
Byzantine: Late antique coarse ware
Description: The site is situated in the narrow valley surrounded with rocky mountain range that extends from Zeytinler to Kokar cape. The cave is not far from Söğüt village (site no: 127) only a km to the south of it. It is a natural cave on a high hilltop of volcanic rock, and it faces towards west where Söğüt plain, which is a geographical pocket along the strait from Zeytinler to Kokar. The cave has a ca. 12 m. wide entrance with a pavement at the front that has been almost entirely destructed. The height of the entrance reaches to ca. 2m. The depth of the cave reaches to 12 m. and the natural protrusions are shaped by human to form a podium consisting of three steps. Right across the entrance above the podium a throne and a cross on top of it are carved out of natural rock. The relief was apparently modified in the later periods and a cross was carved out. The throne is reminiscent of a Kybele relief. The surface findings around the cave consist of pottery sherds and stone tools dated from Early Bronze Age to Byzantine era. Due to the location of the cave looking over the large plain of Söğüt, it seems likely that it is the place that had been allotted to Alexander games. (Strabon XIV.31) The sanctuary is also one of the extra-urban cult centers that marked the borders between Klazomenai, Erythrai and Teos as well as serving as a common pasture for those during the formation of the poleis in Early Archaic period.

Uhri, A. – A. K. Öz 2008, "Söğüt Mevkii Kutsal Alanı Urla Hakkında İlk Gözlemler", III.-IV. Ulusal Arkeolojik Araştırmalar Sempozyumu, ANATOLIA Suppl. No.2, Ankara University Journal of the Archaeology Department Faculty of Letters, Ankara-2008, 295-303.

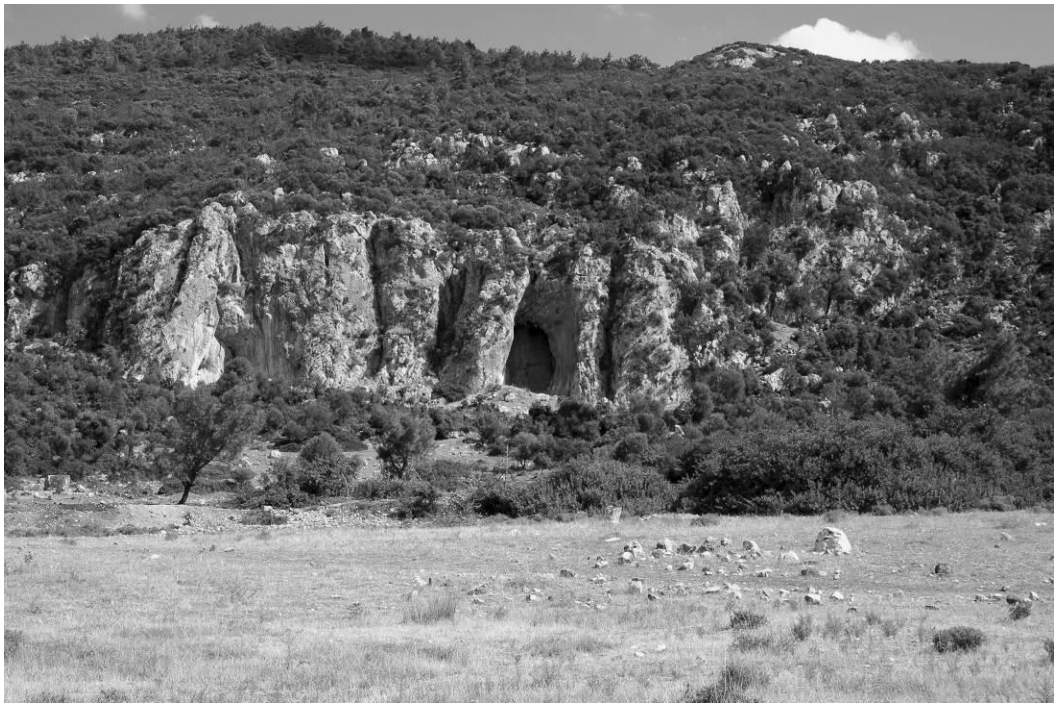


Fig.114 View of Söğüt Cult Cave

Fig.115 Rock carvings in Söğüt Cult Cave

Site No: 2008/126
Site Name: Söğüt
Subregion: 11/Söğüt-Kokar
Long./Lat.: 38 14 02 N/26 37 52 E
Map Code: L17D2-L17d03b
Size: 2/(4 ha.)
Function: Settlement
Morphology: Valley
Period: Late Geometric/ Early Archaic/ Late Archaic/ Roman
Dating and Findings:
Late Geometric: Skyphos handle fragments (2)
Archaic: Klazomenian amphora rim (1) –IX.a.2; Hydria rim (1) –X.a.2
Roman: Late Roman red-brown slipped ware (5) -XVI.a
Description: The sites no: 126-133 are located at the mountainous region which defines the border between Erythrai and Klazomenai. The mountain range extending from Zeytinler to Kokar cape consist of Ulaştıran, Keneli, Kıran and Koraka hills form a natural frontier. These sites are located to the east of this natural border in the narrow valley opening to Kokar cove. The settlements are dispersed on either micro geographical units of alluvium formations among the rocky volcanic hills or hillslopes. Söğüt is situated on volcanic formation of tuff and basalt bedrock and the soil thickness hardly reach to 20 cm. The surface findings extend in an area of 4 hectares including mostly coarse ware. The diagnostic finds though indicate to a long settlement history beginning with Late Geometric-Early Archaic period. The site is defined with architectural remains as well. The traces of foundations are visible on the surface and there are many rock cut devices scattered around used for olive oil or wine production.

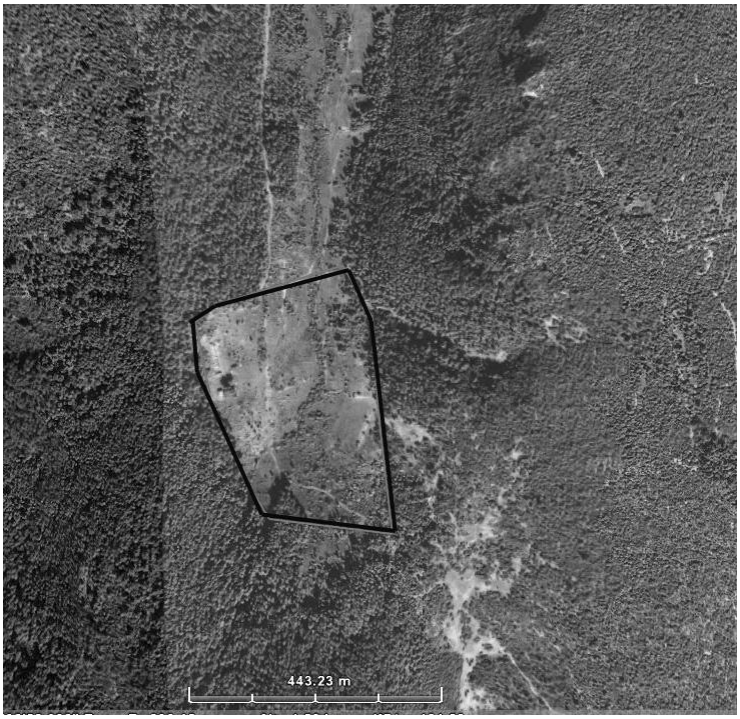


Fig.116 Distribution of surface scatters at Söğüt (126)

Fig.117 Rock cut devices for olive oil/wine production at Söğüt

Fig.118 Building blocks at Söğüt (126)

Site No: 2008/127
Site Name: Söğüt Village
Subregion: 11/Söğüt-Kokar
Long./Lat.: 38 15 22 N/26 37 40 E
Map Code: L17A3-L17a23c
Size: 2/ (ca.5 ha.)
Function: Settlement
Morphology: Valley
Period: Roman/ Byzantine
Dating and Findings: Surface findings are very scanty and include few diagnostic finds. Late Roman red-brown slipped ware (1) –XVI.a and Green slashed glazed ware fragments and late antique coarse ware fragments.
Description: Söğüt is an Ottoman village covering almost 5 hectares. The foundations of the houses are still well preserved. Rock cut devices are scattered around. It is situated on an alluvial formation. Few amount of Roman and Byzantine pottery scattered on the surface.

Site No: 2008/128
Site Name: Belen
Subregion: 11/Söğüt-Kokar
Long./Lat.: 38 15 54 N/26 35 26 E
Map Code: L17A4-L17a22c
Size: 2/ (3 ha.)

Function: Settlement
Morphology: Valley
Period: Late Archaic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Banded ware fragments; Terracotta weight
Roman: Late Roman red-bron slipped ware (3) –XVI.a; White slipped roof-tile fragments
Byzantine: Late antique coarse ware fragments
Description: The remains of Late Roman-Byzantine period are still standing and covering an area of ca. 5 hectares. The small chapel of the village is still preserved. The surface is densely covered with building blocks which prevented the visibility of pottery sherds. Few fragments mostly include Roman and Byzantine pottery, but also one little fragment that may belong to Archaic period. The representation of early periods on the surface is an expected phenomenon here.

Fig.119 Remains of chapel at Belen (128)

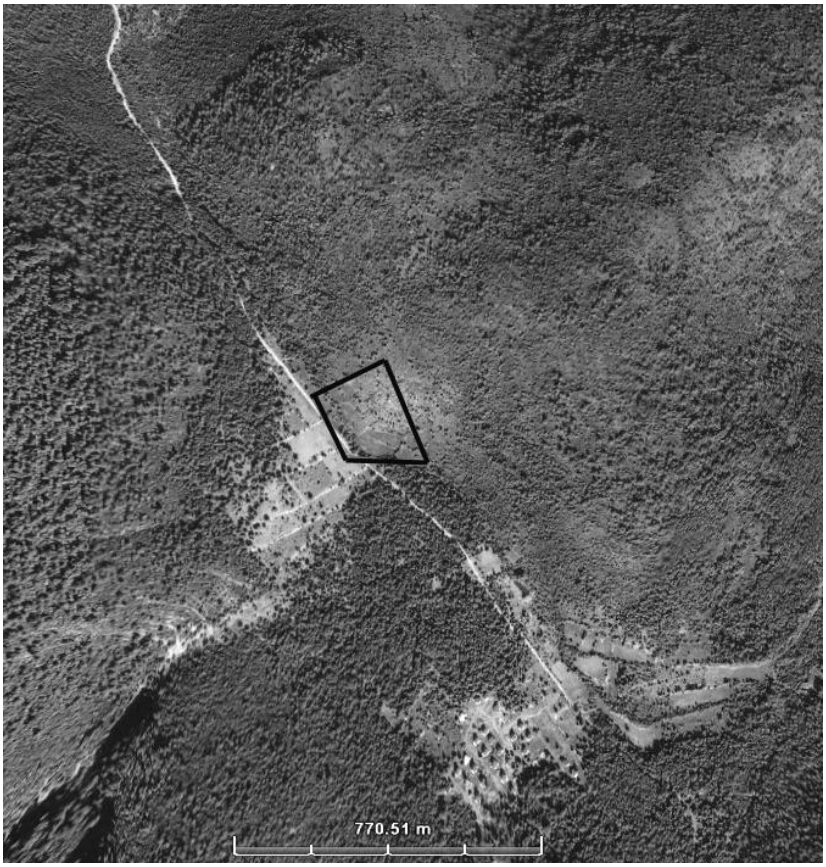


Fig.120 Distribution of surface scatters at Belen

Fig.121 Rock cut device for olive oil/wine production at Belen

Site No: 2008/129
Site Name: Kopana
Subregion: 11/Söğüt-Kokar
Long./Lat.: 38 15 47 N/26 36 21 E
Map Code: L17A4-L17a23d
Size: 2/ (4 ha.)
Function: Settlement
Morphology: Valley
Period: Roman/ Byzantine
Dating and Findings: Surface findings are very scanty and include few diagnostic finds. White slipped roof-tile fragments and late antique coarse ware fragments.
Description: Kopana is situated 1.5 km to the east of Belen, placed on an alluvial formation. The surface findings include architectural remains of structure foundations and rock cut devices for olive oil or wine production as well as pottery fragments of Roman and Byzantine periods extending in an area of 4 hectares.

Site No: 2008/130
Site Name: Küçükçukur
Subregion: 11/Söğüt-Kokar
Long./Lat.: 38 14 37 N/26 36 24 E
Map Code: L17D1-L17d03a
Size: 2/ (3 ha.)
Function: Settlement
Morphology: Valley
Period: Roman/ Byzantine
Dating and Findings: Surface findings are very scanty and include few diagnostic finds. White slipped roof-tile fragments and late antique coarse ware fragments.
Description: Küçükçukur is a small Late Roman settlement with a size of 3 ha. Most of the surface findings are coarse ware and un-diagnostic pottery sherds, few could be dated to Roman period. There is a chapel still standing with a square plan. Foundations of structures are visible on the surface.

Fig.122 Remains of chapel at Küçükçukur (130)

Site No: 2008/131
Site Name: Gönemise
Subregion: 11/Söğüt-Kokar
Long./Lat.: 38 13 59 N/26 36 22 E
Map Code: L17D1-L17d03a
Size: 3/ (20 ha.)
Function: Settlement
Morphology: Valley
Period: Roman/ Byzantine
Dating and Findings: Surface findings are very scanty and include few diagnostic finds. White slipped roof-tile fragments and late antique coarse ware fragments.
Description: Gönemise is Late Roman-Byzantine settlement whose size reaches to 20 hectares. The site is defined architecturally with structure foundations as well as building blocks and stone cut devices scattered around. It sis ituated on a flat area over volcanic rock, where the soil thickness does not exceed 20 cm. The walls of the small chapel are still standing.

Fig.123 Remains of chapel at Gönemise

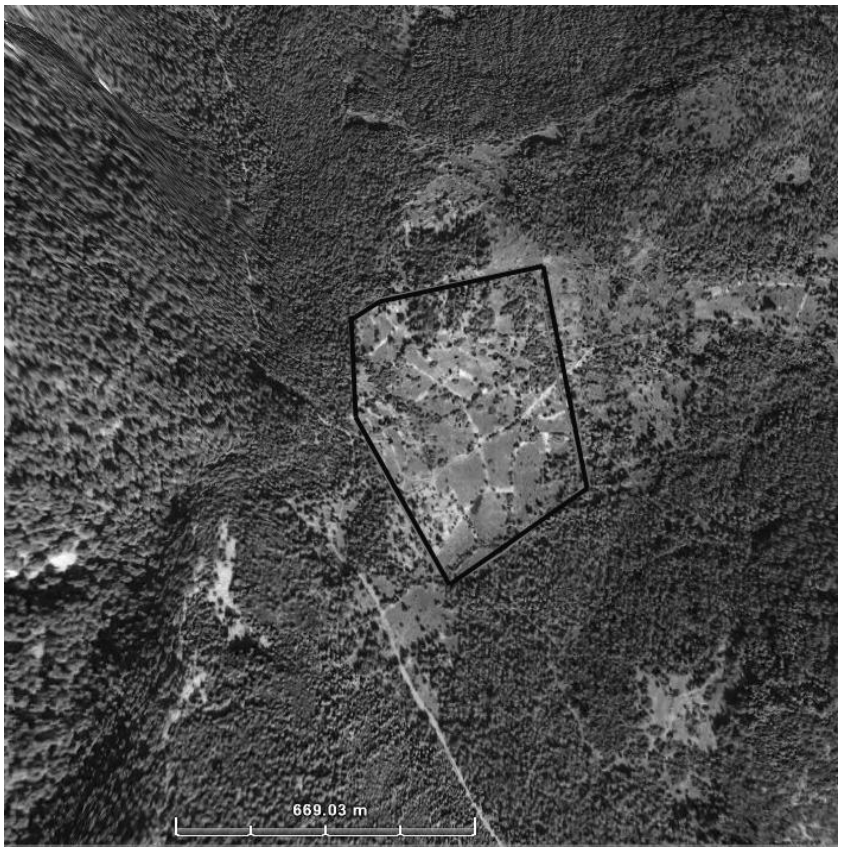


Fig.124 Distribution of surface scatters at Gönemise

Fig.125 Rock cut device for olive oil/wine production at Gönemise

Site No: 2008/132
Site Name: Manastır
Subregion: 11/Söğüt-Kokar
Long./Lat.: 38 12 04 N/26 37 07 E
Map Code: L17D1-L17d03d
Size: 3/ (15 ha.)
Function: Settlement
Morphology: Valley/ Hillslope
Period: Prehistoric / Late Archaic/ Late Classical/ Hellenistic/ Roman
Dating and Findings:
Late Archaic: Khios amphora rim (1) –IX.b.3; Klazomenian amphora (1) –IX.a.3
Late Classical: Black glazed roof-tile fragments
Hellenistic: Lekythos rim (1) –XII.a
Roman: Late Roman red-brown slipped ware
Description: Manastır is located on a hillslope densely covered with macquis and pine trees. It is defined with abundant number of architectural fragments indicating monumental buildings. The surface material in terms of pottery is not visible and very scanty in number. This site requires a more careful investigation for being one of the largest settlements with a long settlement history.

Fig.126 View of Manastır

Fig.127 Architectural fragments at Manastır

Site No: 2008/133
Site Name: Kızılağaç
Subregion: 11/Söğüt-Kokar
Long./Lat.: 38 11 15 N/26 35 49 E
Map Code: L17D1-L17d08a
Size: 2/ (5 ha.)
Function: Settlement
Morphology: Valley
Period: Roman/ Byzantine
Dating and Findings: Surface findings are very scanty and include few diagnostic finds. White slipped roof-tile fragments and late antique coarse ware fragments.
Description: Kızılağaç is situated ca. 8 km to the north of Kokar cape and placed on a flat area amongst the rocky region. The bedrock is very close to the surface and the surface material is very much worn out and scanty. The distribution of the surface fragments covers an area of 5 hectares. Today the site is within a farm owned by a businessman. It was not possible to stay long for investigation due to hostile attitude. However the local people informed us that there were remains of an ancient site few years ago.

12.OVACIK-IHSANIYE-BADEMLER

Fig.128 Cluster of settlements on the high mountain range marking the eastern border of Klazomenian territory; Sites: 083-088

Site No: 2007/ 083
Site Name: Peynirdağ
Subregion: 12/ Bademler-İhsaniye
Long./Lat.: 38 18 26 N/26 48 12 E
Map Code: L17B4-L17b17d
Size: 1/ (1.5 ha.)
Function: Farmstead
Morphology: Hillslope
Period: Early Archaic/ Late Archaic/ Roman/ Byzantine
Dating and Findings: Surface findings are very scanty due to the low visibility caused by dense vegetation as well as rocky and steep topography.
Archaic: Rosette bowl base (1) –V.a; Klazomenian amphora rim (1) –IX.a.3
Roman: Late Roman red-brown slipped ware (5) –XVI.a; Terra sigillata plate base (1) –XVI.b; Ribbed ware fragments
Byzantine: Green slashed glazed ware; Late antique coarse ware
Description: Peynirdağı is a hilltop of limestone part of the range of mountains that border the Klazomenian territory at the eastern direction. It is a rocky hill where the soil thickness is less than 20 cm in most part of it. It serves as a natural passage, but not the easiest one, from Klazomenai to Teian territory. Most of the slopes are terraced and terraces are built of large limestone blocks, which is not typical for the agricultural terraces of the last century. For this case we can undoubtedly assume that these terraces were used in the antiquity. The typical flora of the area is olive trees and dense macquis. The site is one of the steepest settlements of all our inquiry and the soil thickness is very low. Due to those conditions one can hardly expect well preserved surface material. Most of the surface findings are un-diagnostic coarse ware, yet still few fragments provides us with the dating of settlement history. The size of the site hardly reaches to 2 hectares whereas the agricultural terraces cover almost all the slopes. The function of the site is quite debatable. The scarcity of the pottery findings might be interpreted as perhaps a small farmstead. This site is rather characterized with the agricultural terraces than remains that indicate to a permanent settlement.

Site No: 2007/084
Site Name: Ovacık 1
Subregion: 12/ Bademler-İhsaniye
Long./Lat.: 38 17 56 N/26 48 38 E
Map Code: L17B4-L17b17d
Size: 1/ (2 ha.)
Function: Farmstead
Morphology: Plain
Period: Roman/ Byzantine
Dating and Findings: Surface findings are scanty and mostly un-diagnostic. Late Roman red-brown slipped ware (3) –XVI.a; Ribbed ware fragments; White slipped roof-tile fragments; Green and yellow slashed glazed ware; Late antique plastic handle

Description: Ovacık is a small village located on the old road from Urla to Seferihisar, which seems likely to be the ancient route between Teos and Klazomenai as well. The village is on the colluvial plain encircled with high hilltops that covers an area of almost 100 hectares. The surveys revealed several sites (no: 084-088) dispersed on the plain and the rims of the plain on the slopes of the hills. Ovacık1/ 084 is between Ovacık and İhsaniye, which is another village on the plain. The surface findings extend in an area of 2 hectares and consist of pottery dated into Roman and Byzantine periods, but not earlier. Most of the findings are fragments of coarse ware like pithoi and roof-tiles.

Site No: 2007/085
Site Name: Ovacık 2
Subregion: 12/ Bademler-İhsaniye
Long./Lat.: 38 17 17 N/26 49 31 E
Map Code: L17B4-L17b22b
Size: 2/ (4.5 ha.)
Function: Settlement
Morphology: Hillslope
Period: Late Archaic / Roman/ Byzantine
Dating and Findings: Surface findings are scanty and include few diagnostic finds, mostly roof-tile fragments and coarse ware.
Late Archaic: Plate rim (1) –VI.a
Roman: Late Roman red-brown slipped ware (3) –XVI.a; White slipped roof-tile fragments
Byzantine; Green and yellow slashed glazed ware; Coarse ware
Description: This site is located at the end of the strait called Balıklıdere which connects the two colluvial plains where Ovacık and Bademler are situated. It is situated on a hillslope of limestone. The surface findings mostly consist of pottery fragments dated to Roman and Byzantine periods besides few possibly Archaic. The southern slopes are marked with agricultural terraces built of large of stone blocks that might have been used in the antiquity. There are also scattered building blocks with clamp traces around the site.

Site No: 2007/086
Site Name: Ovacık 3
Subregion: 12/ Bademler-İhsaniye
Long./Lat.: 38 17 52 N/26 47 51 E
Map Code: L17B4-L17b21b
Size: 1/ (2 ha.)
Function: Farmstead
Morphology: Hillslope

Period: Late Archaic/ 5th century BC/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Klazomenian amphora rim (2) –IX.a.3; Chian amphora rim (1) –IX.b.3; Funnel rim (1) –XVIII; Olpe rim (2) –XII.e
5th c. BC: Table amphora rim (1); Lekane rim (1) –VII.b.1
Late Classical: Attic black glazed bowl base and body sherds; Fishplate base (1) –XIV.a.3
Hellenistic: Lekanis rim (1) –VII.c.5
Roman: Late Roman red-brown slipped ware (9) –XVI.a; Terra sigilatta plate base (3) –XVI.b; White slipped roof-tile fragments
Byzantine: Yellow and green slashed glazed ware
Description: This area is marked with Çiftekayalar which is a limestone formation protrudes on the plain with a wide flat top. The site is located to the south of the hill.

Site No: 2007/087
Site Name: Baykuşboğazı 1
Subregion: 12/ Bademler-İhsaniye
Long./Lat.: 38 17 49 N/26 47 52 E
Map Code: L17B4-L17b21b
Size: 1/ (1 ha.)
Function: Farmstead
Morphology: Colluvial Plain
Period: Roman/ Byzantine
Dating and Findings: Surface findings are scanty and include few diagnostic finds. Late Roman red-brown slipped ware –XVI.a and Green-yellow slashed glazed ware.
Description: The site is situated on the colluvial plain extending before the Çiftekayalar which stands as a landmark. There were several building blocks and pottery fragments of Late Roman-Byzantine era scattered within an area of ca. 1 ha.

Site No: 2007/088
Site Name: Baykuşboğazı 2
Subregion: 12/ Bademler-İhsaniye
Long./Lat.: 38 17 29 N/26 47 54 E
Map Code: L17B4-L17b21b
Size: 1/ (1.5 ha.)
Function: Farmstead
Morphology: Hillslope/ Colluvial plain
Period: Late Archaic/ Late Classical/ Roman
Dating and Findings:
Late Archaic: Chian amphora rim (1) –IX.b.3

Late Classical: Black glazed roof-tile fragments; Lekane rim (1) –VII.b.4
Roman: Late Roman red-brown slipped ware –XVI.a; Ribbed ware fragments
Description: This site is located at the end of the narrow strait called Baykuşboğazı on the moderately sloped skirts of a hillock. A low flow stream flows to the east of the site. The site is marked with the ruins of a square planned structure 5 x 5 m. The walls are standing to 1 m high and the foundations are well preserved. It is likely to be a detached house of Late Roman period since there were no other architectural remains. The surface findings mostly consist of coarse ware and roof-tiles. The few number of diagnostic pottery indicate to a settlement history extending back to Archaic period. The extension of the surface findings reach to 1.5 hectares.

Site No: 2008/111
Site Name: Balıklıdere
Subregion: 12/Bademler-İhsaniye-Ovacık
Long./Lat.: 38 17 32 N/26 48 48 E
Map Code: L17B4-L17b22a
Size: 1/ (1 ha.)
Function: Farmstead
Morphology: Strait
Period: Roman/ Byzantine
Dating and Findings: Surface findings are scanty and include few diagnostic finds. Late Roman red-brown slipped ware fragments; White slipped roof-tile fragments; Green slashed glazed ware.
Description: Balıklıdere is the name of the strait, which is ca. 1.5 km long extending from Urla basin to the plain where Bademler, Ovacık and İhsaniye are located. At one of the narrowest points of the strait agricultural terraces built of large blocks below and small ones above –perhaps indicating to different phases of use- extends for 150-200 m. The site is situated nearby the agricultural terraces built of large blocks below and small blocks above at the both sides across eachother. The surface scatter is found in an area of 1 ha. near the terraces. The surface findings are few in number and the diagnostic ones dated into Roman and Byzantine periods. It might be a detached farm house in Late Roman-Byzantine period.

Site No: 2008/112
Site Name: Çamlıköy
Subregion: 12/Bademler-İhsaniye-Ovacık
Long./Lat.: 38 19 13 N/26 51 59 E
Map Code: L17B4-L17b18d
Size: 1/ (1 ha.)
Function: Farmstead
Morphology: Hillslope
Period: Roman/ Byzantine

Dating and Findings: Roman and Byzantine coarse ware fragments.
Description: Çamlıköy is located in a valley extending in north-south direction. The western hills of the valley are formed with the range of mountains that defines the natural frontier of Klazomenian territory. The location of the site is out of the presumed borders, but it is dated into Late Roman-Byzantine era whereas the borders were not valid anymore. The surface findings are very scanty and mostly consist of coarse ware and few roof-tiles.

13.ZEYTİNLER

Site No: 2007/074
Site Name: Köytepe
Subregion: 13/ Zeytinler-Uzunkuyu
Long./Lat.: 38 16 44 N/26 33 31 E
Map Code: L17A4-L17a22a
Size: 2/ (9 ha.)
Function: Settlement/ Cult / Workshop
Morphology: Hilltop
Period: Neolithic/ Late Geometric/EarlyArchaic/ Late Archaic/ 5th c. BC?/ Late Classical/ Hellenistic/ Byzantine
Dating and Findings:
Late Geometric: Kotyle fragment (1) –II; Skyphos handle (1) –I; Few sherds of glazed body sherds
Archaic: Archaic altar fragment; Black Figure amphora body sherd with meander; Samos amphora rim (1) –IX.c.1; Samos amphora rim (3) –IX.c.2; Milet amphora rim (4) –IX.e.2; Chian amphora (2) –IX.b.3; North Ionian amphora base (1) –IX.d.2; Lekane rim (1) –VII.a.3; Mortar base (1) –XIII.a; Mortar rim (1) XIII.b
Late Classical: Trefoil rim oinochoe (1) –X.a.1; Klazomenian amphora rim and base (3) –IX.f.1, IX.f.2; Stemless cup base (1) –XIV.b.1
Hellenistic: Plate body (1) –XV.b.4
Byzantine: Green and yellow slashed glazed ware; late antique coarse ware
Description: Köytepe is a high hilltop of volcanic formation situated by the İzmir-Çeşme motorway, to the north of Zeytinler village. It is overlooking Barbaros plain which might have been a lake. The sections of the hill are visible since it was partly destructed by the construction of the road. The hill is an area for tree plantation and densely covered with pine trees. On the top of the hill the foundations of a building 15 x 13 meters is documented. The width of its walls reaches to 90 cm. The slopes of the hill are terraced and the surface findings scattered within an area of 9 ha. The diagnostic finds consist of pottery dated from Neolithic period to Byzantine era. There are building blocks scattered around the rectangular building, no mortar was used for construction. A pithos burial which has been destructed by illegal digs recorded close to the building. The fragments of the pithos and a trefoil rimmed oinokhoe found

scattered, and most probably dated into Archaic period. Köytepe is likely to be the location for Zeus Olympios which is identified with an inscription found at Zeytinler. The structure might be associated with Zeus Olympios cult and its situation on the border between Erythrai and Klazomenai supports this assumption. To the north of Köytepe, not distanced more than 100 m. on the slope of a hillock a considerable number of metal slags are found and implying the presence of a metal workshop.
Simon 1986, 64; Erythrai I, no: 231; Ath. Mitt. 16 1891, 286 no.5.

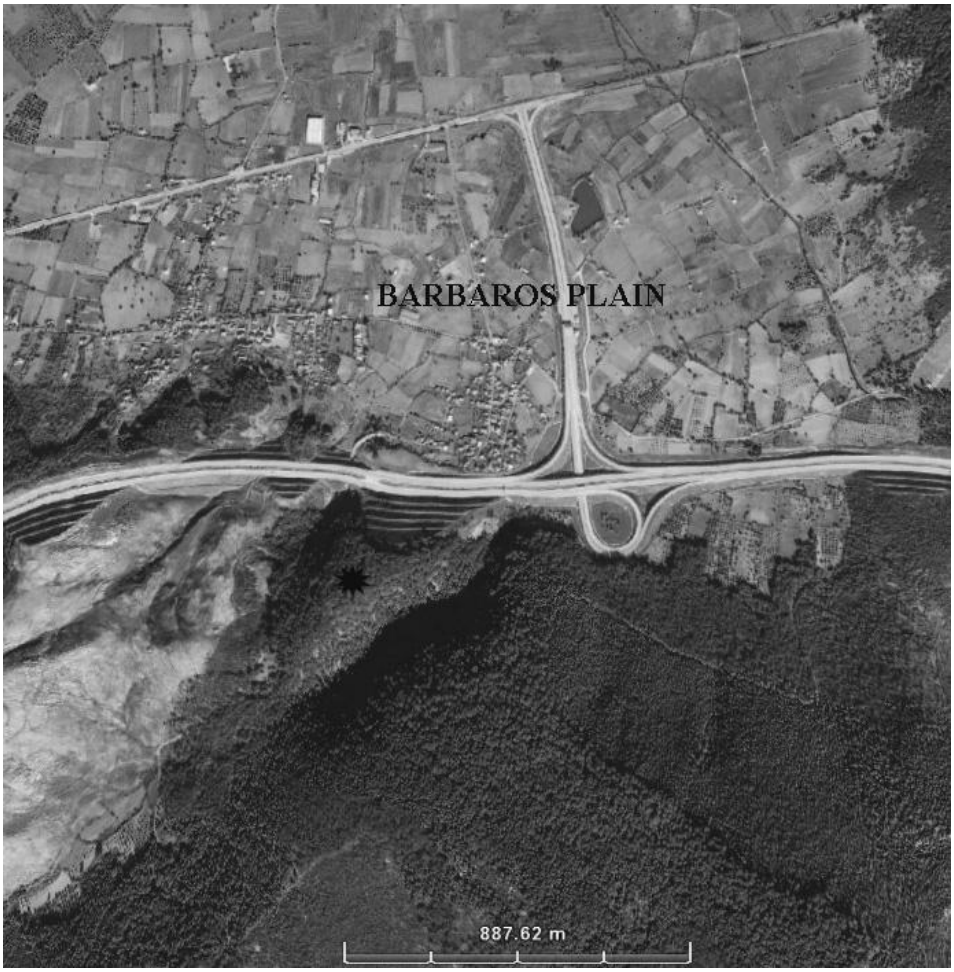


Fig.129 Location of Köytepe

Fig.130 Remains of wall on Köytepe

Site No: 2007/075
Site Name: Uzunkuyu
Subregion: 13/ Zeytinler-Uzunkuyu
Long./Lat.: 38 17 07 N/26 34 21 E
Map Code: L17A4-L17a22a
Size: 1/ (1 ha.)
Function: Farmstead
Morphology: Plain
Period: Roman
Dating and Findings: Late Roman red-brown slipped ware fragments and white slipped roof-tile fragments.
Description: The site is situated on Barboros plain where Uzunkuyu village is located. The surface findings merely consist of pottery and roof-tiles dated into Roman period. The surface findings distribution covers an area of 1 hectare, presumably a Roman farm house.

Site No: 2007/077
Site Name: Dedemezarı
Subregion: 13/ Zeytinler-Uzunkuyu
Long./Lat.: 38 16 57 N/26 34 16 E
Map Code: L17A4-L17a22a
Size: 1/ (1 ha.)
Function: Farmstead
Morphology: Plain
Period: Late Archaic/ 5th century BC/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Samos amphora rim (1) –IX.c.2
5th c. BC: Slim amphora rim (1) –IX.h.2
Hellenistic: Olpe base (1)
Roman: Late Roman red-brown slipped ware
Byzantine: Green glazed ware
Description: The site is situated on the southeast tip of Barbaros plain, 1.5 km to the east of Köytepe (074). The site is named as Dedemezarı due to several Ottoman graves located not far from the site. The area is covered with agricultural fields and during our visit it was ploughed and the visibility was high. The surface findings are not much in number and the extension of them does not exceed a hectare. The site is located on the alluvial deposits where soil thickness exceeds 90 cm at most places. The archaeological layers are likely to be sealed below the alluvial deposits and the size of the site might be larger. The extensive surveys conducted on the plain yielded to the discovery of archaeological sites at the margins of the plain but not on the plain. This phenomenon is similar to the situation at Mandalan plain. Both plains are main agricultural areas of the region and both are depression areas which has been marshy lately. At both plains Neolithic, Calcolithic sites are located at the margins. Therefore it may be assumed that both plains were lake basins in the antiquity and prehistoric times. However this is a suggestion to be explored by geo-archaeological methods. The flat white and red stones, which might be sedimentary rocks of a lake found abundantly on Köytepe hill and on the plain. The surface findings include several diagnostic sherds yet still point out a long settlement history. The building blocks and the pieces of installations used for olive oil or wine production found scattered.

Site No: 2008/ 104
Site Name: Gümüşlüktepe
Subregion: 13/ Zeytinler-Uzunkuyu
Long./Lat.: 38 17 41 N/26 35 01 E
Map Code: L17A3-L17a22b
Size: 1/ (2 – 3 ha.)
Function: Farmstead
Morphology: Hilltop
Period: Late Archaic/ Late Classical / Roman/ Byzantine
Dating and Findings:

Late Archaic: Chian amphora rim –IX.b.2
Late Classical: Black glazed kantharos body sherd
Roman: Late Roman red-brown slipped ware –XVI.a; Ribbed ware fragments
Byzantine: Green and yellow slashed glazed ware; Late antique coarse ware.
Description: The site is located on the western slopes of Gümüşlüktepe overlooking the Barbaros plain where Uzunkuyu and Zeytinler villages are placed. It is a high volcanic hilltop where the thickness of the soil is less than 20 cm. The surface findings mostly consist of undiagnostic coarse ware. There are only few fragments that may be dated into Archaic and Classical periods. The scarcity of surface findings dated prior to Roman period perhaps may be pointing out that it was a temporary settlement. Regarding its geographical location the site is probably in the disputed area between Erythrai and Klazomenai, where the meadows were situated for animal husbandry.

Fig.131 Location of Gümüşlüktepe on satellite image

14.BARBAROS

Site No: 2009/116
Site Name: Karapınar
Subregion: 14/Barbaros
Long./Lat.: 38 21 06 N/26 36 05 E
Map Code: L17A4-L17a13d
Size: 1/ (2 ha.)
Function: Farmstead
Morphology: Plain
Period: Roman/ Byzantine
Dating and Findings: Surface findings mostly consist of Roman roof-tile fragments and coarse ware fragments. Few Late Roman red-brown slipped ware –XVI.a and ribbed ware fragmens; Green slashed glazed ware.
Description: The site is located to the northwest of Gülbahçe in a very narrow valley where Karapınar stream flows towards Gülbahçe cove. The surface findings are sparsely distributed covering an area of 2 hectares. The diagnostic finds are few in number and dated into Late Roman-Byzantine period. The remains of structure foundations accompanied with a cistern indicate a permanent settlement most likely to be dated into Late Roman-Byzantine era.

15.GÜZELBAHÇE

Site No: 2007/054
Site Name: Sivricetepe
Subregion: 15/ Güzelbahçe
Long./Lat.: 38 21 17 N/26 50 44 E
Map Code: L17B4-L17b12c
Function: Fort
Morphology: Hilltop
Period: Prehistoric/ Late Classical/ Roman/ Byzantine
Dating and Findings:
Late Classical: Few fragments of black glazed roof-tile
Roman: White slipped roof-tile fragments; Ribbed ware fragments
Byzantine: Green slashed glazed ware
Description: Sivricetepe is a natural hilltop of limestone crowned with a Byzantine fort. The entrance of the fort is on the northwest and well preserved revealing a rectangular plan. Within the walls a small chapel of 15th century is situated. The diagnostic surface findings are not much in number, but indicate to the long term use of the hill presumably as a fort. (U. Peschlow, IsttMitt 25, 1975)

Fig.132 View of Sivricetepe

Fig.133 Plan of Sivricetepe Fort

Fig.134 Wall Remains on Sivricetepe

Site No: 2007/055
Site Name: Çalıtepe
Subregion: 15/ Güzelbahçe
Long./Lat.: 38 22 05 N/26 51 45 E
Map Code: L17B4-L17b13d
Size: 2/ (4.5)
Function: Settlement
Morphology: Hilltop
Period: Midle Bronze Age/ Late Geometric? / Late Archaic/ Late Classical/ Hellenistic/ Roman
Dating and Findings:
Late Geometric?: Hydria rim (1) – X.a.5
Late Archaic: Samos amphora rim (1) –IX.c.2; North Ionian amphora rim (1) –IX.d.1; Milet amphora rim (1) –IX.e.2; Gray monochrome ware fragments
Late Classical: Attic black glazed bowl and kantharos body sherd (2); Black glazed roof tile fragments
Hellenistic: Dinoid coarse ware rim (1) –VIII.b
Roman: Ribbed ware fragments (3); White slipped roof-tile fragments
Description: It is a natural hilltop of limestone, today crowned with modern villas. The site is located at the junction of the roads leading to Smyrna, Teos and Klazomenai. It was not possible to make a survey around the buildings, yet the sections cut by dozers revealed the cultural deposits that contained diagnostic pottery.

Fig.135 View of Çalıtepe

Fig.136 Aerial imagery of Çalıtepe

Site No: 2007/089
Site Name: Inkaya
Subregion: 15/ Güzelbahçe
Long./Lat.: 38 19 54 N/26 49 47 E
Map Code: L17B4-L17b17b
Size: -
Function: Cult Place
Morphology: Hilltop
Period: Prehistoric-Roman
Dating and Findings: Late Geometric skyphos –I; Late Geometric kotyle –II; Phaleron cup –IV; Kalathos –III; Rosette bowl –V.a; Band bowls –V.b,Votive cups –V.e; One handled bowls –V.c1-3; Unguantariums; Olpe base –XII.e; Olpe –XII.c; Black figure oinochoe base; Black figure dinos rim; Late Roman red-brown slipped ware –XVI.a; Ribbed ware fragments
Description: Inkaya is a sacred cave situated on the east slope of Kocadağ, which is part of the mountain range that marks the eastern border of Klazomenian territory. Kocadağ is located to the south of Zeytinalan, a steep hilltop alon the motorway from Çeşme to İzmir. The cave has been studied and published by E.Ö. Atalay in 1987 and the Klazomenai excavation team for several times. It is a deep cave composed of three separate galleries. Abundant pottery mostly consisting of votives was found in the entrance gallery. Strabon (XIV.I.36) mentions an Apollon temple near Smyrna and hot springs which may be located as Balçova or İnciraltı. There are no architectural remains to be associated with such temple, but perhaps it may be affiliated with Apollon cult during the Classical times. Yet the findings refer to the use of place back in the prehistoric times. However the Prehistoric use might not be necessarily cultic, perhaps served as a shelter.
Atalay, E. Ö. "Izmir ve Aydın yörelerinde Mağara Araştırmaları", V. Araştırma Sonuçları Toplantısı Cilt:2, 6-10 Nisan 1987 Ankara, 297-321.

Site No: 2008/ 107
Site Name: Sungurlu
Subregion: 15/ Güzelbahçe
Long./Lat.: 38 19 57 N/26 49 05 E
Map Code: L17B4-L17b17a
Function: Farmstead / Settlement
Size: 1/ (2 ha.); The architectural remains of agricultural terraces and foundations of structures that might have belonged to Roman and Byzantine eras cover a larger area ca. 2/ (5 ha.)
Morphology: Plain
Period: Late Archaic/ Late Classical/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Banded ware base; Lekane rim(1) –VII.a.4
Late Classical: Black glazed bowl body fragments; Klazomenian amphora rim (1) –IX.f.1

Roman: Late Roman red-brown slipped ware –XVI.a; Ribbed ware fragments; White slipped roof-tile fragments

Description: The site is located on the colluvial plain by the lower slopes of Kocadağ, which is part of the limestone mountain range defining the eastern border of Klazomenian territory. In the present day the land is used for farming but there is a modern settlement Sungurlu sitesi near by and the landscape is likely to change in the near future due to modern construction activities. On the surface building blocks are scattered and the flimsy foundations of structures are visible. The surface findings dated prior to Roman period do not exceed an area of 2 ha. whereas the extension of Roman and Byzantine pottery reaches to 5 ha. The ruins of agricultural terraces and the foundations of structures are likely to be dated into Late Roman-Byzantine era.

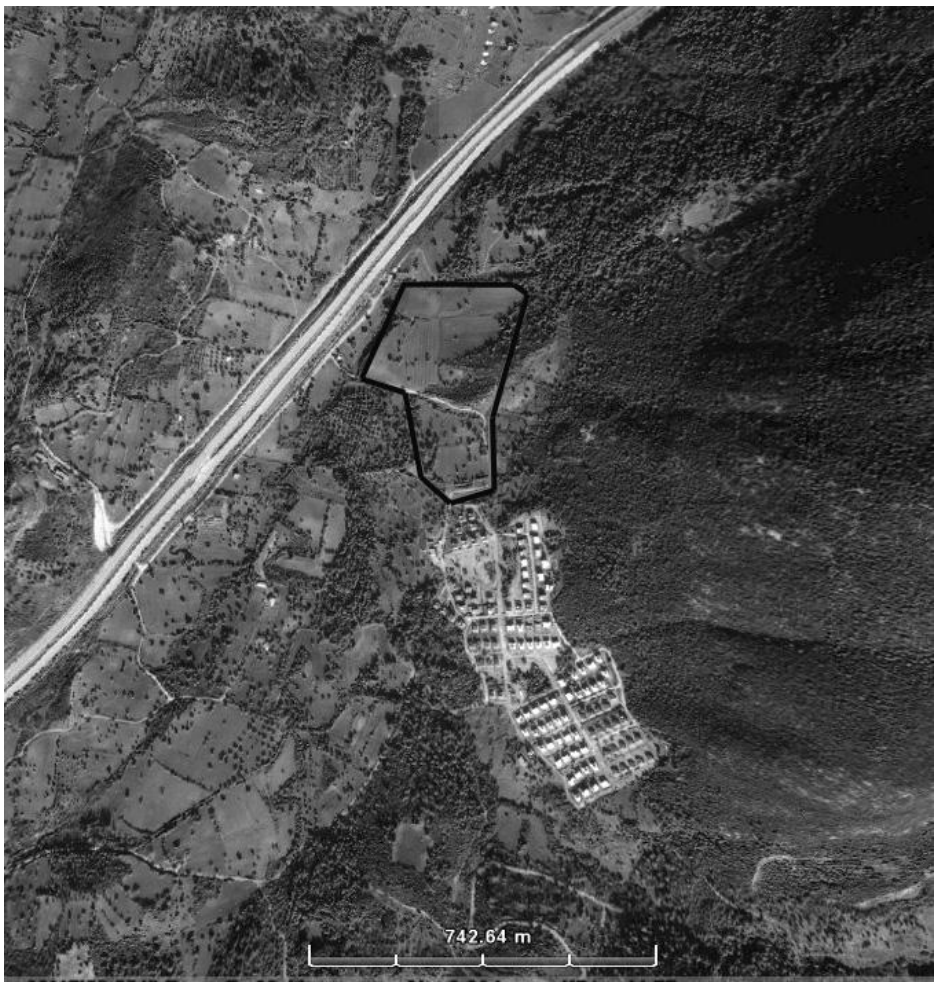


Fig.137 Distribution of surface scatters at Sungurlu

Fig.138 Wall remains at Sungurlu

Site No: 2008/ 108
Site Name: Kekliktepe
Subregion: 15/ Güzelbahçe
Long./Lat.: 38 20 09 N/26 47 59 E
Map Code: L17B4-L17b17a
Size: 1/ (2.5 ha.)
Function: Farmstead
Morphology: Hilltop
Period: Late Archaic/ Late Classical/ Roman
Dating and Findings:
Late Archaic: Klazomenian amphora rim (4) –IX.a.3; Samos amphora rim (1) –IX.c.2; Hydria rim (1) –X.a.2; Bowl rim (2) –V.d; Lekane rim (2) –VII.a.4; Banded ware base fragments
Late Classical: Lekane rim (1) –VIII.b.5; Few fragments of black glazed roof-tile
Roman: Late Roman red-brown slipped ware –XVI.a; Ribbed ware fragments; Coarse ware fragments
Description: Kekliktepe is a hillock near Kalabak on the northern side of the Urla-Çeşme motorway. Today the hill is covered with modern houses and the surface visibility is very low due to that. The surface findings are scanty in number and sparsely distributed covering an area of 2.5 hectares. The size of the site may be larger but it is not possible to determine the actual size,

Fig.139 Distribution of surface scatters at Kekliktepe

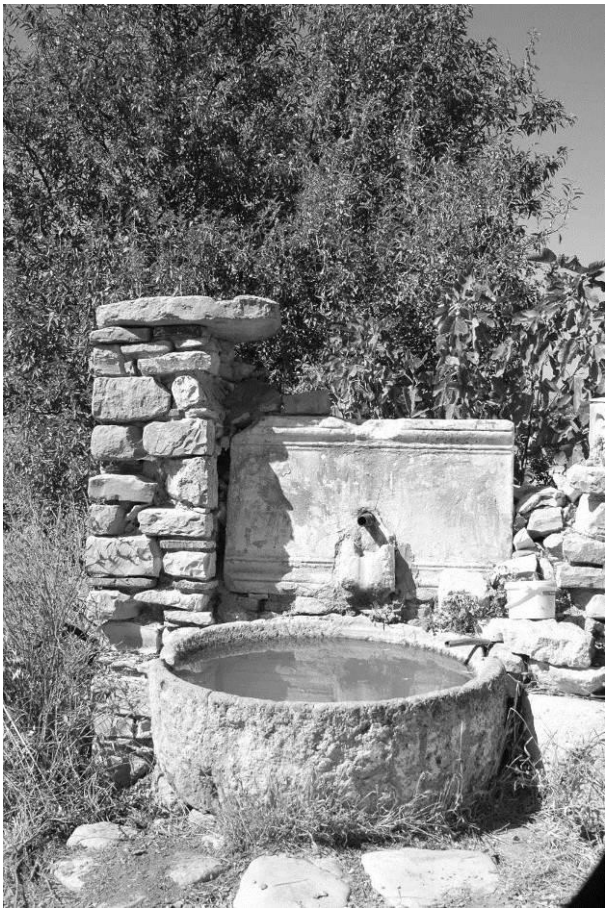


Fig.140 Fountain built of second used ancient material

Site No: 2008/122
Site Name: Kızıldere
Subregion: 15/Güzelbahçe
Long./Lat.: 38 18 52 N/26 49 18 E
Map Code: L17B4-L17b17d
Size: 2/ (9 ha.)
Function: Settlement
Morphology: Hillslope
Period: Late Archaic/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Klazomenian amphora rim (1) –IX.a.3; Bowl rim (1) –V.d; Bowl rim (1) –V.c.1; Plate rim (1) –VI.a.1
Late Classical: Fishplate (1) –XIV.a.3; Mushrrom amphora rim (1) –IX.g.1; Stemless cup base (1) –XIV.b; Black glazed roof-tile fragments
Hellenistic: Lekane rim (1) –VII.c.1
Roman: Late Roman red-brown slipped ware (9) –XVI.a; Terra sigillata plate base (1) –XVI.b; Ribbed ware fragments; White slipped roof-tile fragments
Byzantine: Yellow and green slashed glazed ware fragments
Description: The site is located on the depression area between Pertevpaşa hill which is the eastern natural frontier of Klazomenian territory and Peynircidağı hill. It is a limestone formation rocky area. The site has a secluded location. Today the site is known as Urgancı bağı where vineyards are placed on terraces, but not being cultivated in the present day. The extension of the surface finds dated from Late Archaic period to Byzantine period reach to 10 hectares. The site is also defined with architectural fragments and structure foundations. Abundant numbers of roof-tiles and architectural fragments dated into Classical and Roman periods indicate to permanent settlement.

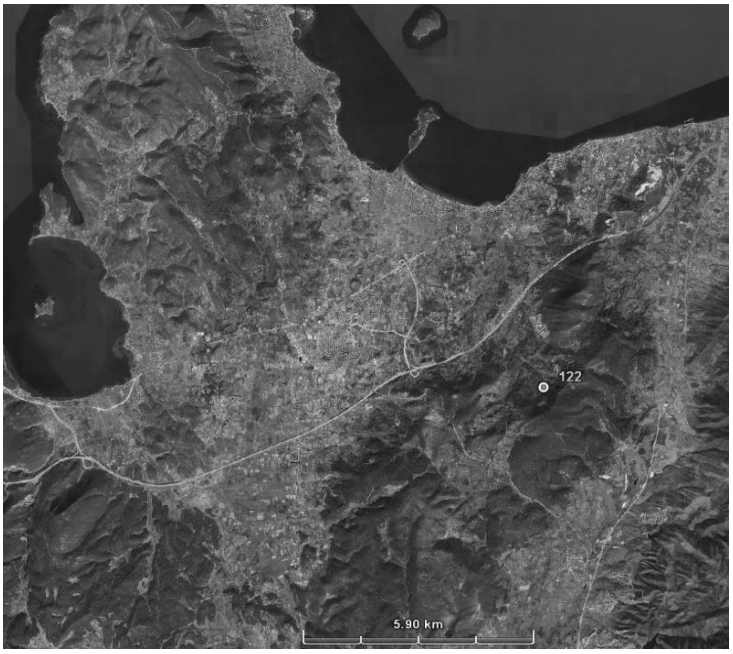


Fig.141 Location of Kızıldere

Site No: 2008/123
Site Name: Kavcıhacı
Subregion: 15/ Güzelbahçe
Long./Lat.: 38 19 53 N/26 48 11 E
Map Code: L17B4-L17b17a
Size: 2/ (6 ha.)
Function: Settlement
Morphology: Plain
Period: Late Geometric/ Early Archaic/ Late Archaic/ 5th century BC/ Late Classical/ Roman/ Byzantine
Dating and Findings:
Late Geometric: Skyphos body sherds (4) -I
Archaic: Klazomenian amphora rim (2) –IX.a.2; IX.a.3; Hydria rim (1) –X.a.2
5th c. BC: Stemless cup base
Late Classical: Lekane rim (1) –VII.b4; Black glazed roof-tile fragments
Roman: Late Roman red-brown slipped ware (7) –XVI.a; Terra sigillata (1) –XVI.b
Byzantine: Yellow and green slashed glazed ware ; Coarse ware
Description: The site is located between Kekliktepe and Kavcıhacı hills on the coastal plain of Güzelbahçe. The surface findings merely consist of pottery sherds dated from Geometric to Byzantine period. The site is not defined with any architectural remain probably due to the modified landscape by modern construction. Yet still it was possible to estimate the extension of the surface material that reaches to 6 hectares.

Fig.142 Distribution of surface scatters Kavcıhacı

Site No: 2008/134
Site Name: Tınaztepe
Subregion: 15/ Güzelbahçe
Long./Lat.: 38 20 58 N/26 50 42 E
Map Code: L17B4-L17b12c
Size: 2/ (8 ha.)
Function: Settlement
Morphology: Hillslope
Period: 5th c. BC?/Roman
Dating and Findings: A single sherd of a stemless cup may have belonged to 5th c. BC. Surface findings are very scanty and include few diagnostic finds. White slipped roof-tile fragments and late antique coarse ware fragments.
Description: Tınaztepe is located 600 m to the south of Sivricetepe on the slopes of a hillock called Tınaztepe. The surface material consists of pottery fragments few in number almost entirely dated into Roman period. Only several fragments with red glaze might be 5th century though not diagnostic. Its size reaches to 5 hectares on the basis of sparsely distributed pottery fragments.

Fig.143 View of Tınaztepe

Fig.144 Distribution of surface scatters at Tınaztepe

18.URLA ISLANDS

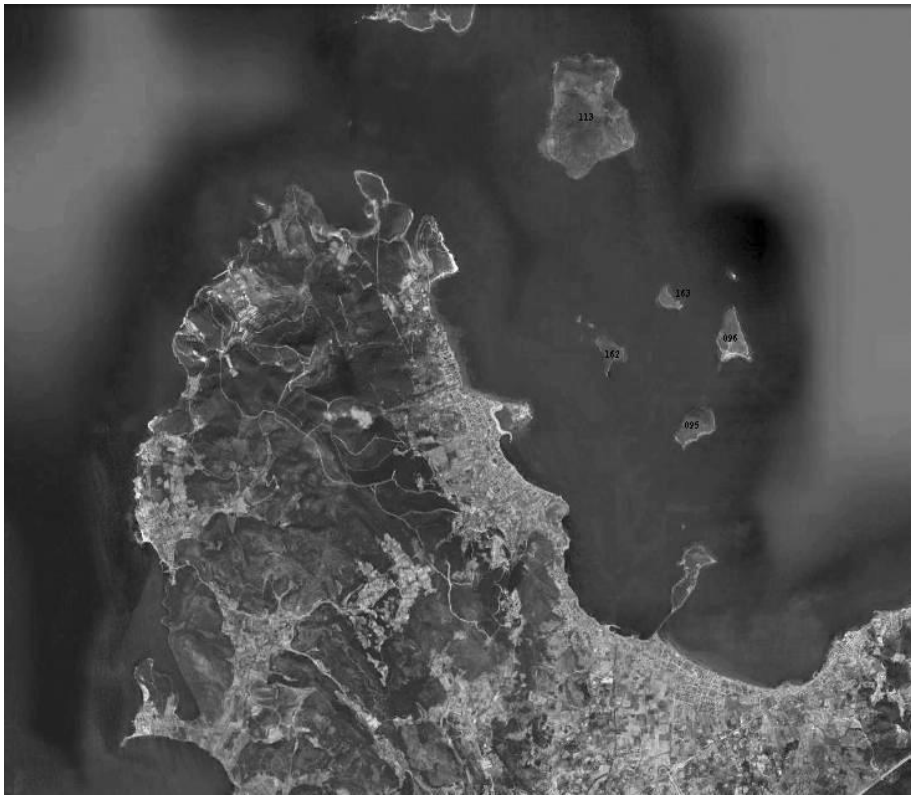


Fig.145 Urla Islands

Site No: 2009/095
Site Name: Pırnallı
Subregion: 18/İslands
Long./Lat.: 38 23 47 N/26 47 13 E
Map Code: L17B1-L17b11b
Size: 25 ha.; Settlement size 4 ha.
Function: Settlement
Morphology: The northern tip of the island is a small hilltop and the southern tip is a gentle slope extending towards the coast. The middle part is a relatively flat area where the settlement is situated o the coast.
Period: Archaic - Byzantine
Dating and Findings:
Archaic: Klazomenian amphora rim (2) – IX.a.2; Mortar rim (1) – XIII.c; Olpe (1) –XII.d
Classical: Lekane rim (5) –VII.b1-4; VII.c
Roman: Late Roman red-brown slipped ware –XVI.a; White slipped roof-tile fragments
Description: Pırnallı is one of the islands at the Northern sea of Klazomenai. Its size is ca. 25 hectares. The islands were either inhabited or used for agricultural activities from the antiquity to the end of Ottoman period, but not then. Due to the lack of human inhabitation the surface flora of macquis and scrubs is very dense and the visibility is extremely limited. For surveying the islands no sampling strategy was applied and the entire area of the islands is intensively surveyed as far as it is possible. The surface findings consisting of pottery sherds dated from Archaic period to Byzantine era are particularly concentrated on the southeast coast within an area of 4 ha. The abundant number of coarse ware and roof-tiles dated into Roman period substantiate a permanent settlement during that period on the island. The eastern and northeastern slopes of the island are marked with agricultural terraces. It is well known from historical sources that that the islands have always been used for vineyards until the Ottoman period. The pottery fragments dated into the periods prior to the Roman period are very few in number and perhaps there were not any permanent settlements on those small islands during those periods. They might have been used only for agricultural activities and storage. To the west on the hilltop there are foundations of structures perhaps belonging to 6 or 10 structures accompanied with abundant number of pottery fragments dated into Late Roman-Byzantine era.

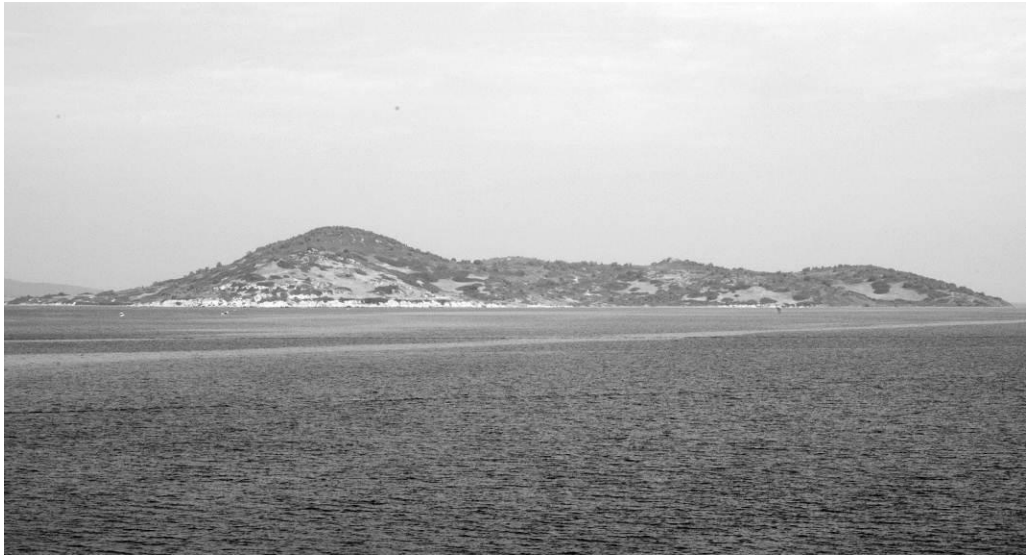


Fig.146 View of Pırnallı Island

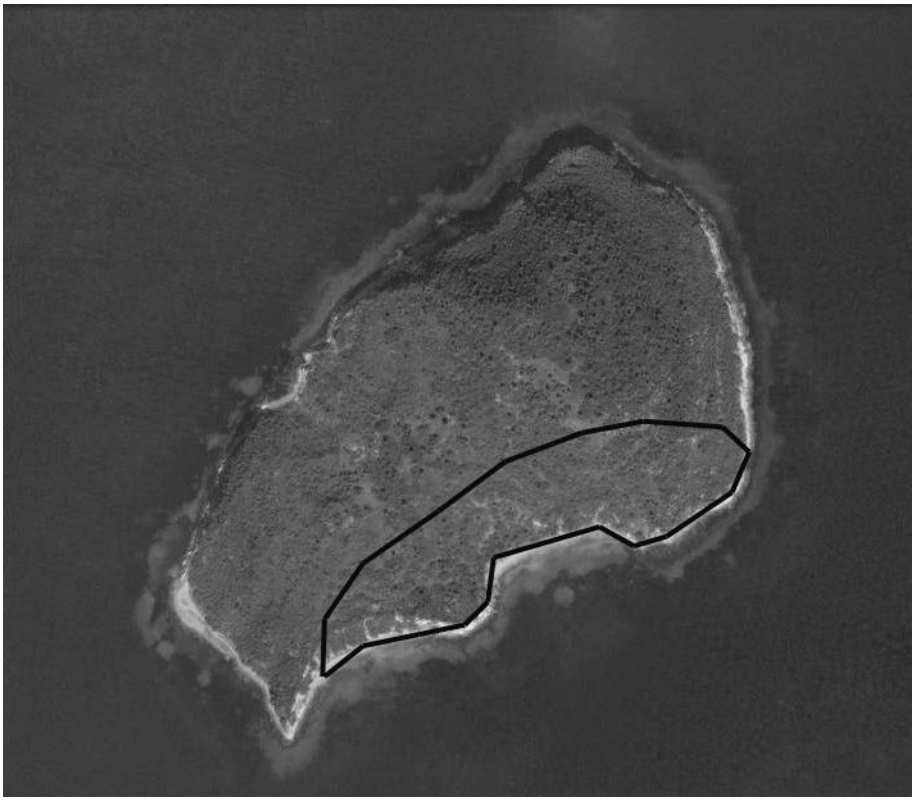


Fig.147 Location of concentrated surface scatters on Pırnallı Island

Fig.148 Remains of buildings on Pırnallı Island

Fig.149 Remains of wall foundations on Pırnallı Island

Site No: 2009/096
Site Name: Yassıca
Subregion: 18/ İslands
Long./Lat.: 38 24 40 N/26 47 43 E
Map Code: L17B1-L17b06c
Size: 17 ha.; Settlement size: 3-5 ha.
Function: Settlement
Morphology: Yassıca has a flat topography referring to its to Turkish name. The land is elevated towards north and the southern coasts are gently extending towards the sea.
Period: Archaic-Byzantine
Dating and Findings: Klazomenian amphora (2) –IX.f.1; Chian amphora (1) –IX.b.2; Slim amphora rim (1) –IX.h.1-2; Klazomenian amphora (4) –IX.a.3; Kantharos base (1) –XIV.e; Hydria (2) –X.a.2-3; Lekane rim (2) -VII.c1-2; Black glazed kylix handle; Attic black glazed kantharos rim; Late Roman red-brown slipped ware fragments; Ribbed ware fragments; Yellow and green slashed glazed ware; Late antique coarse ware; Terracotta discoid weight
Description: Yassıca is one of the popular touristic spots in the İzmir cove. For this reason the surface has been cleaned and facilities have been built on the southern coast of the island. The surface visibility is much better in comparison with the other islands. The surface findings consisting of pottery fragments dated into Archaic, Classical, Roman and Byzantine periods are concentrated on the southeast part of the island, covering an area of 3 or 5 ha. The northern tip defined with surface material consisting of coarse ware, which is also very scarce in number. On the western coast the foundations of structures are visible on the surface whose width reaches to 60-80 cm. The walls are built without any mortars which dates them prior to Roman period. The number of Byzantine and Roman period fragments is unusually few in number whereas Archaic and Classical pottery is more in number. The traces of the walls might have been extending towards the southern coast but due to the touristic facilities and the landscaping not possible to record them archaeologically. On the eastern coast the flimsy traces of the agricultural terraces are visible.

Fig.150 View of Yassıca Island

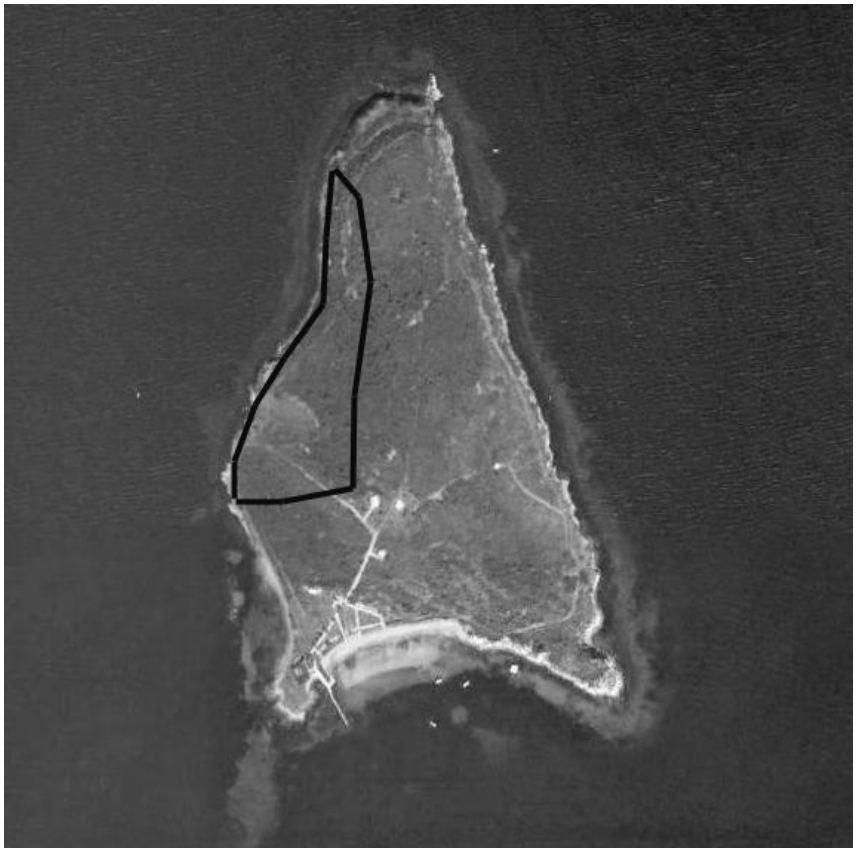


Fig.151 Distribution of surface scatters on Yassıca Island

Site No: 2009/097
Site Name: Yılan Island
Subregion: 18/ İslands
Long./Lat.: 38 19 54 N/26 40 36 E
Map Code: L17A3-L17a19b
Size: 13 ha.; Settlement size: ca. 2 ha.
Function: Settlement
Morphology: It is a small flat island elevated gently towards north.
Period: Archaic - Byzantine
Dating and Findings: The surface findings are very scanty and include few diagnostic finds. Klazomenian amphora (2) –IX.a.2; Late Roman red-brown slipped ware; Ribbed ware fragments; White slipped roof-tile fragments; Green and yellow slashed glazed ware; Late antique coarse ware
Description: Yılan Island is located at Gülbahçe cove 1.2 km distanced to the mainland from western coast. The island is marked with a church building named Ayos Theodoras. Milioris reports that there were no permanent settlements on the island, but the land was used for agriculture, growing olives, grapes, grain and legumes. The survey on the island yielded to the discovery surface scatter distributed in an area of 2 ha. on the southern coast. The surface findings are scarce in number and mostly consisting of Byzantine and Roman pottery fragments and roof-tiles. There are several arbitrary fragments that may be dated into Archaic and Classical periods.

Site No: 2009/113
Site Name: Hekim İsland
Subregion: 18/İslands
Long./Lat.: 38 26 41 N/26 46 06 E
Map Code:
Size: 20 ha.
Function: Settlement
Morphology:
Period: Late Archaic/ Late Classical/ Hellenistic/ Roman/ Byzantine
Dating and Findings:
Late Archaic: Klazomenian amphora rim (2) –IX.a.3; Samos amphora rim (1) –IX.c.3; Bowl rim (2) –V.d; Lekane rim (3) –VII.a.2; Fruitstand (2) –VI.a.1
Late Classical: Fishplate (1) –XIV.a.2; Klazomenian amphora (3) –IX.f.1; Hydria rim (1) –X.a.3
Hellenistic: Lekanis rim (2) –VII.c.3
Roman: Late Roman red-brown slipped ware –XVI.a; Ribbed ware fragments; White slipped roof-tile fragments; lamp fragment
Byzantine: Yellow and green slashed glazed ware; Coarse ware fragments
Description: Hekim Island is the second largest one of the Urla islands after Uzunada. It is named after the physician who has owned the island during the Late Ottoman period. The remains of the settlement dated to Ottoman period are only 300 meters inland from the western coast. The scattered architectural fragments of Late Roman-Byzantine era as well as the remains of two wells,

standing walls of the houses and the remains of a chapel are well preserved. The western coast sections reveal the cultural deposits of earlier periods in the very same area defined with pottery fragments dated to Archaic and Classical periods. The surface findings are concentrated on the western and southern coasts. The surface findings are scarce and barely diagnostic at the rest of the island.

Fig.152 Location of concentrated surface scatters on Hekim Island

Fig.153 Remains of buildings on Hekim Island

Fig.154 The sections on the coast of Hekim Island exposing archaeological layers

Site No:2009/162
Site Name: Akçada
Subregion: 18/İslands
Long./Lat.: 38 24 25 N/26 48 18 E
Map Code: L17B1-L17b06d
Size: 13.5 ha.
Function: Settlement
Period: Late Archaic/ Late Classical/ Roman
Dating and Findings:
Late Archaic: Klazomenian amphora rim (2) –IX.a.3; Chian amphora rim (1) –IX.b.2; Bowl rim (1) –V.c.1; Banded ware fragments
Late Classical: Lekane rim (1) –VII.b.4; Black glazed body sherds.
Roman: Late Roman red-brown slipped ware (3) –XVI.a; White slipped roof-tile fragments
Description: It is one of the small rocky islets on the northern sea. The surface findings are concentrated on the southern part of the island which is defined with a moderately sloping land whereas the northern part is rocky and high. The surface findings mostly consist of pottery fragments dated into the Classical period as well as few Roman and Archaic. The agricultural terraces are on the both sides of the rocky northern tip on the east and west coasts.

Fig.155 Location of concentrated surface scatters on Akçada Island

Site No: 2009/163
Site Name: İncirliada
Subregion: 18/İslands
Long./Lat.: 38 24 56 N/26 46 54 E
Map Code: L17B1-L17b06c
Size: 8 ha.
Period: Archaic/Roman/ Byzantine
Dating and Findings: The surface findings are very scanty and only consisting of coarse ware fragments and one terracotta discoid weight, which might be Archaic.
Description: Akçaada is a very small rocky islet covered with very dense macquis. The surface findings merely consist of few pottery fragments. Only several of the findings are diagnostic. It is hard to tell the presence of any kind of settlement or agricultural activity here.

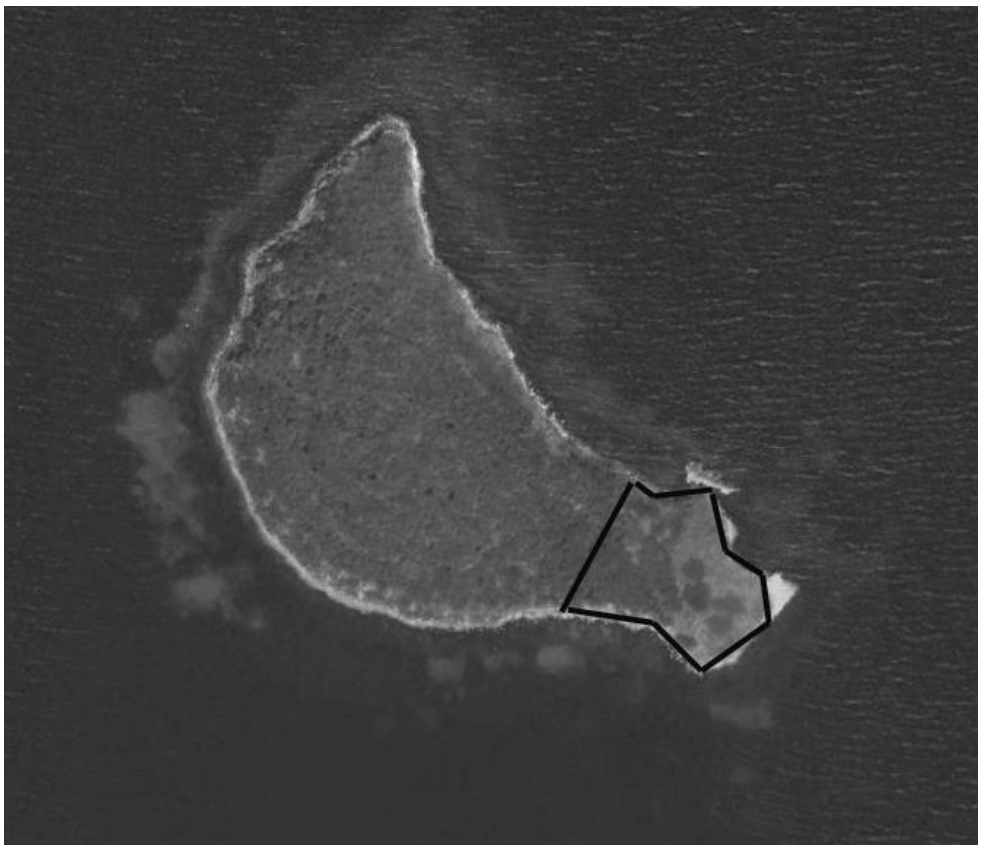


Fig.156 Location of concentrated surface scatters on Incirli Island

BORDER MARKS

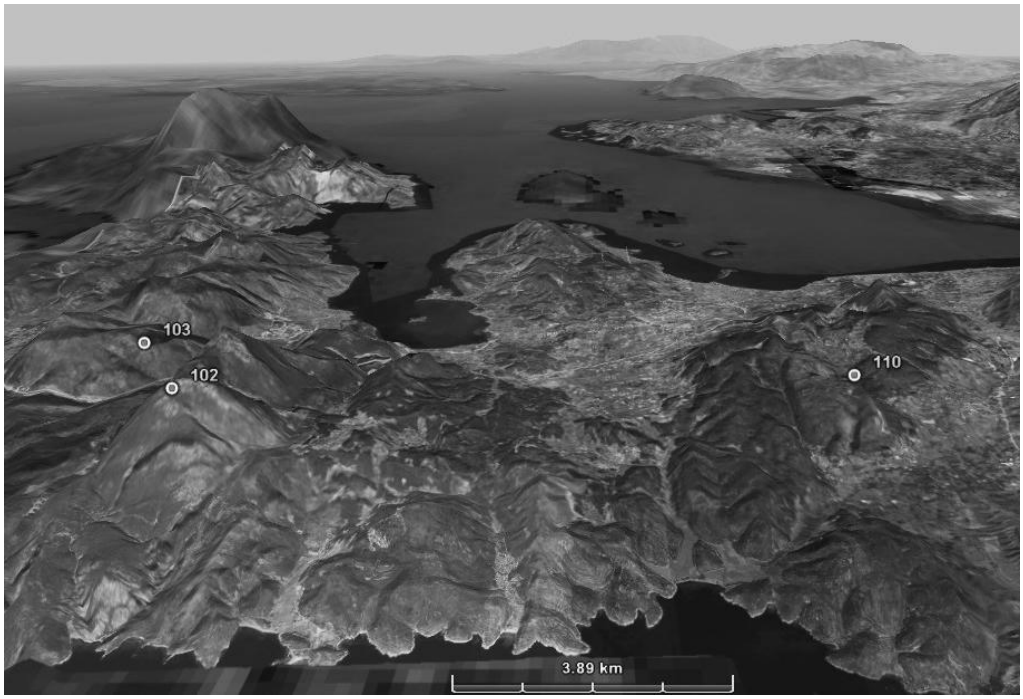


Fig.157 Distribution of border marks at the fringes of Klazomenian territory

Site No: 2008/102
Site Name: Border-mark 1
Subregion: 10/ Gülbahçe
Long./Lat.: 38 16 50 N/26 37 33 E
Map Code: L17A3-L17a23b
Function: Border Mark
Morphology: High Hilltop
Description: This border-mark is situated on the rocky promontory of the hill located to the south of Hacıgebeş hill where site no: 052 is situated. It is incised on a large rock and 20 cm high written OP. This border-mark is assumed to be marking the end point of Klazomenian territory to the west.

Fig.158 Border mark 1

Site No: 2008/103
Site Name: Border mark 2
Subregion: 10/ Gülbahçe
Long./Lat.: 38 17 40 N/26 36 40 E
Map Code: L17A3-L17a23a
Size: -
Function: Border Mark
Morphology: High Hilltop
Description: This bordermark is situated 2 km to the northwest of the first one (102), found on the peak of Hacıgebeş hill where site no: 052 is situated. It is very similar to the first one 20 cm high incised on a large rock, written OP. There are several more large rocks distanced from eachother ca. 50 meters bearing same type of incision written "O". Like 102 this one also marks the western border of Klazomenian territory. These marks are not easy to find and not easily visible. So presumable we found only two of those in this area, but there might be a series of those marking the borders officially.

Fig.159 Border mark 2

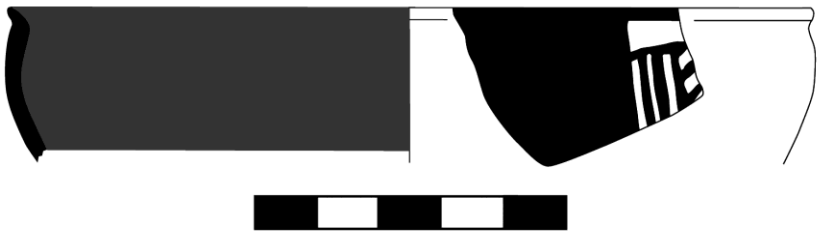
Site No: 2008/110
Site Name: Bordermark 3
Subregion: 12/ Bademler-İhsaniye-Ovacık
Long./Lat.: 38 17 15 N/26 48 22 E
Map Code: L17B4-L17b22a
Size: -
Function: Bordermark
Morphology: Hilltop
Description: The third bordermark is located Balıklıdere near İhsaniye on top of a hill which is part of the range of mountains naturally defining the border between Teos and Klazomenai. It is incised on a large rock written OPOC.

Fig.160 Border mark 3

APPENDIX 2- POTTERY CATALOGUE

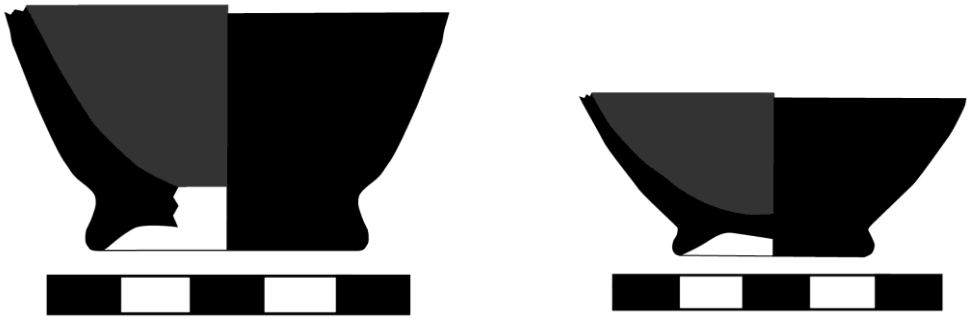
I.Late Geometric Skyphos

(2006/089)



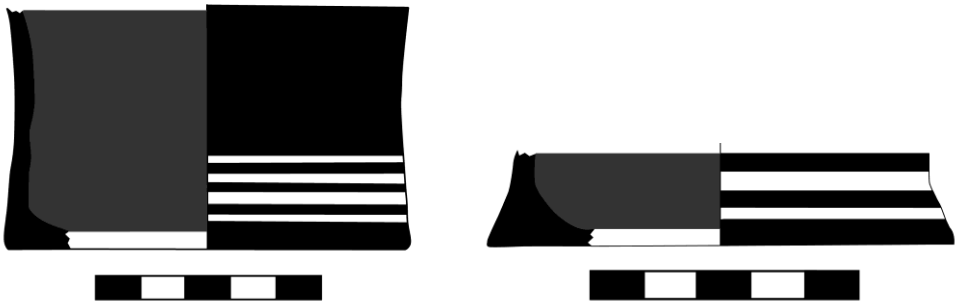
(2006/089)

II.Late Geometric Kotyle



(2006/089)

III. Late Geometric Kalathos



(2006/040) (2006/053)

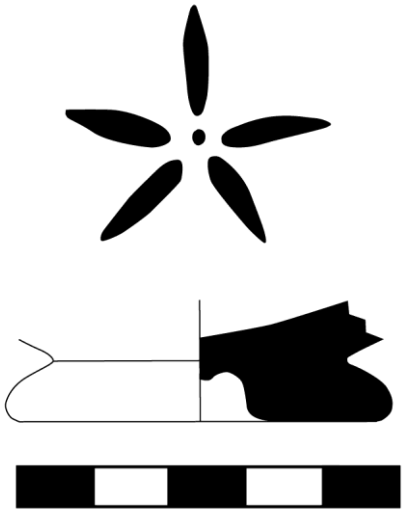
IV. Late Geometric Phaleron Cup

(2006/089)

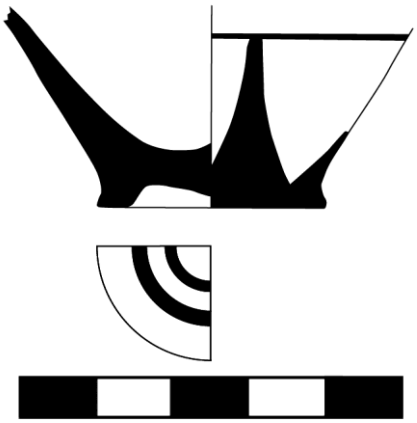
V.East Greek Bowls

V.a.Rosette Bowl

(2006/013)



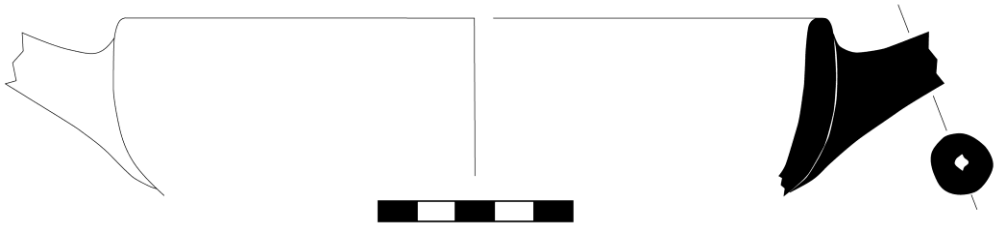
(2007/083)



(2006/089)

V.b Band Bowls

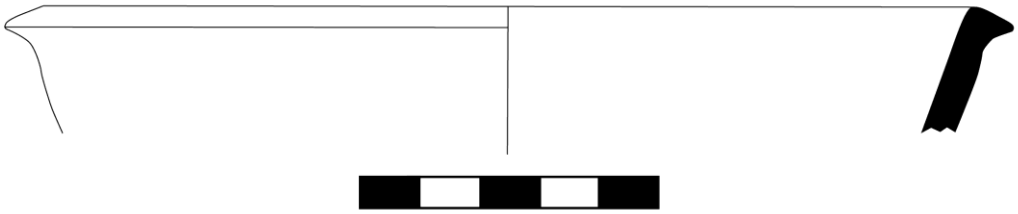
(2007/052)



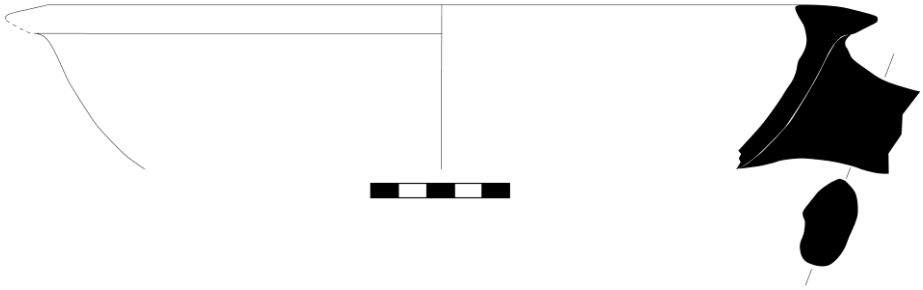
(2006/ 055)

(2008/101)

V.c One handled bowls

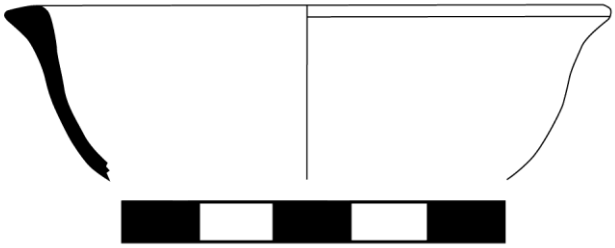


(2008/107) 6th c. BC



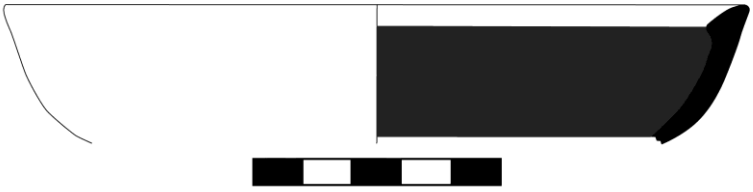
(2008/122) 6th c. BC

V.c.1



(2006/089) early 5th c. BC

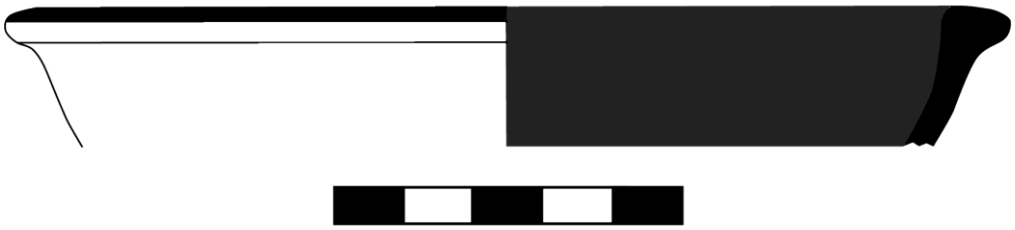
V.c.2



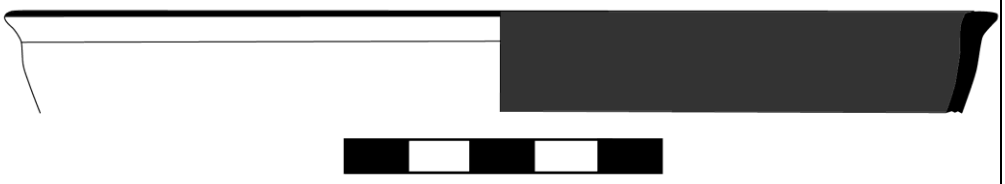
(2008/021) 2nd quarter of 4th c. BC

V.c.3

V.d Outturned rim bowls



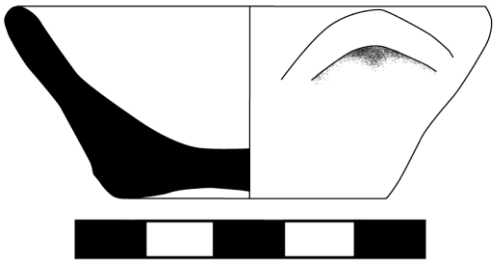
(2008/108)

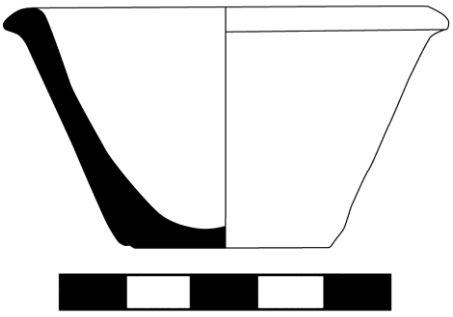


(2006/041)

(2008/101)

V.e. Votive Cups



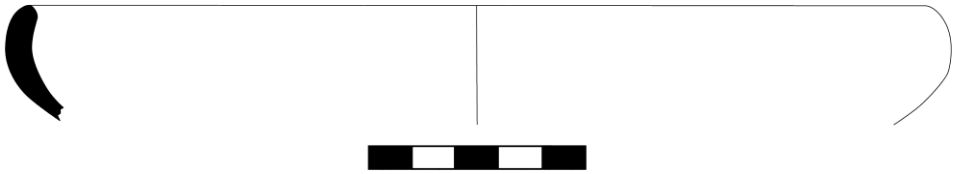


(2006/089)

VI. Plates/Fruitstands

VI.a Fruitstands

(2006/072)



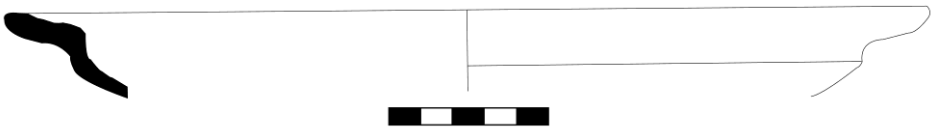
(2006/146)

VI.a.1

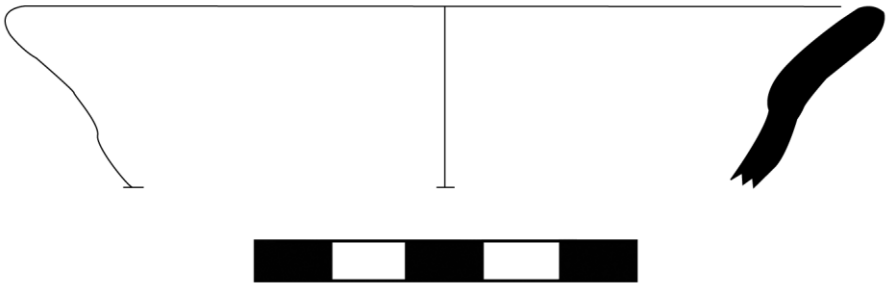
(2008/021)

VI.a.2

VI.b Plates



(2008/060)

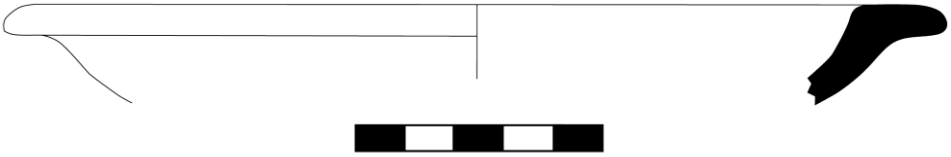


(2007/081)

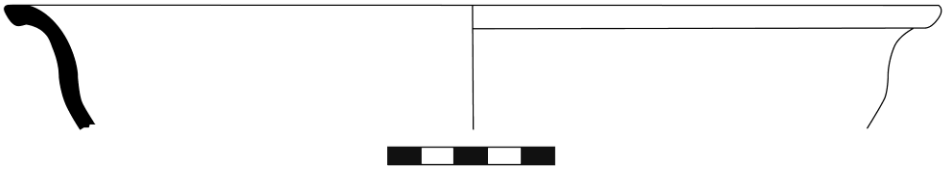
VI.b

VII.Lekane/ Lekanis

VII.a Archaic Lekane (Archaic)

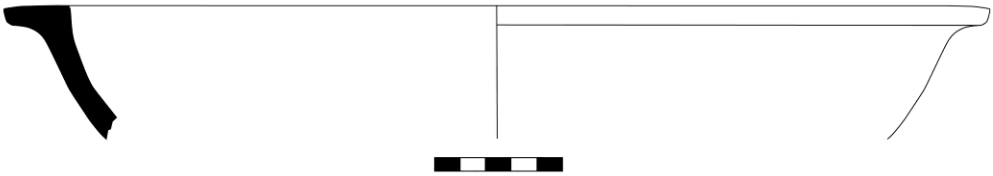


VII.a.1 (2008/101)

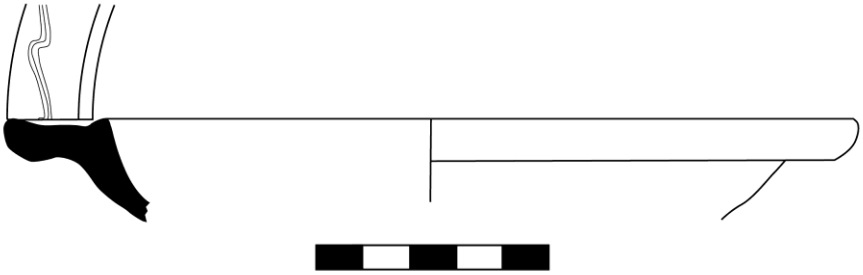


VII.a.2 (2008/124)

VII.a.3 (2008/074)

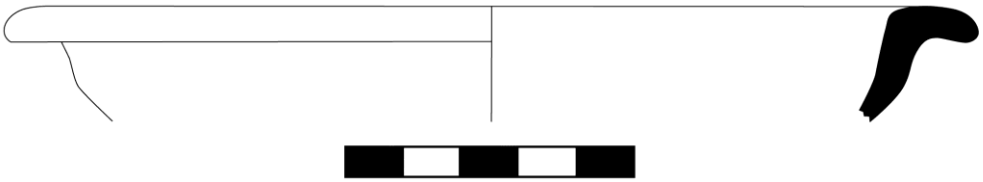


VII.a.4 (2008/108)



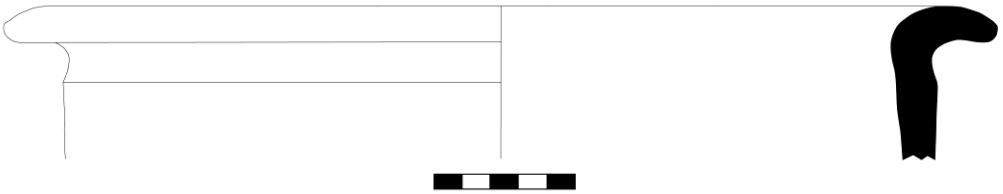
VII.a.5 (2007/081)

VII.b Lekane (Classical)



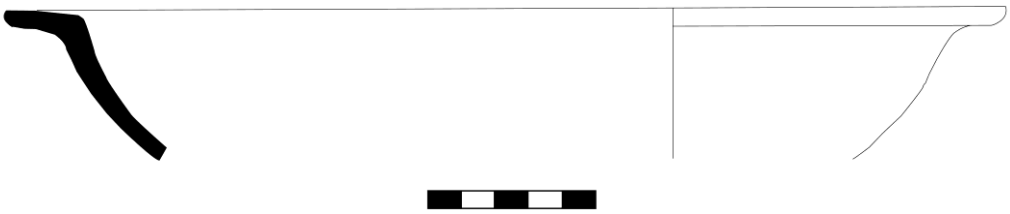
VII.b.1 (2007/062) 5th c. BC

VIII.b.2 (2008/101)



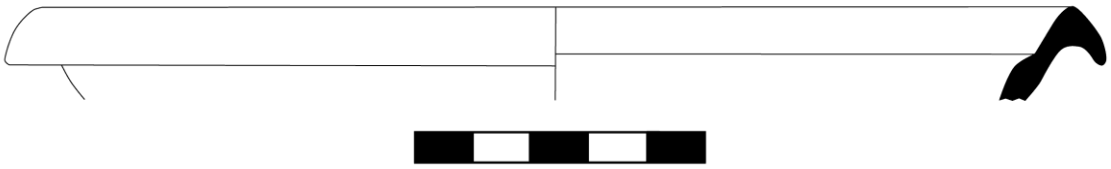
VIII.b.3 (2006/044) 5th c. BC

VII.b.4 (2006/004)

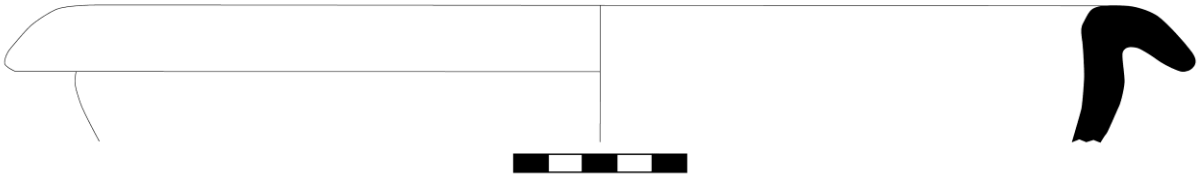


VIII.b.5 (2006/040)

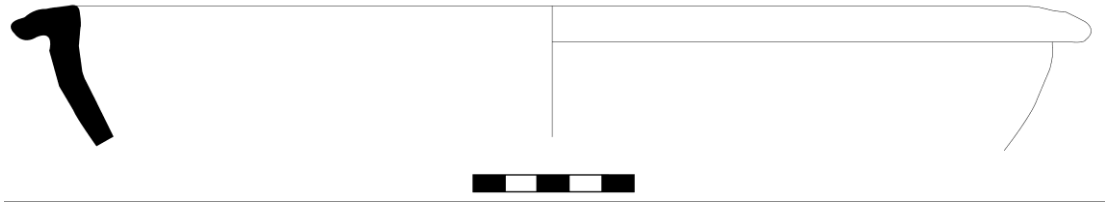
VII.c Lekane (Hellenistic)



VII.c.1 (2007/027)

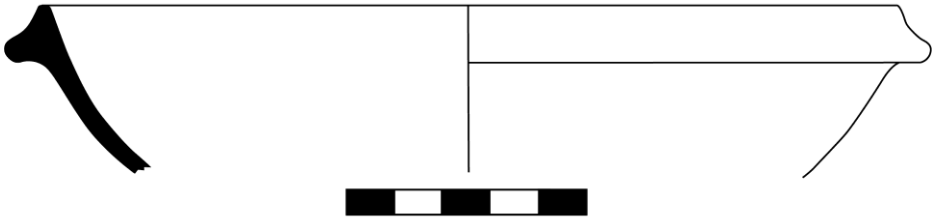


VIII.c.2 (2007/063)



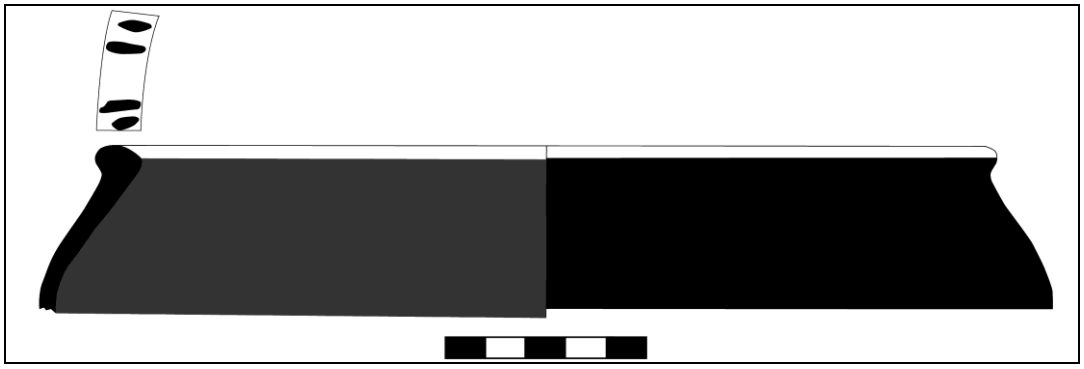
VIIc.3 (2006/032)

VII.c.4 (2006/033)

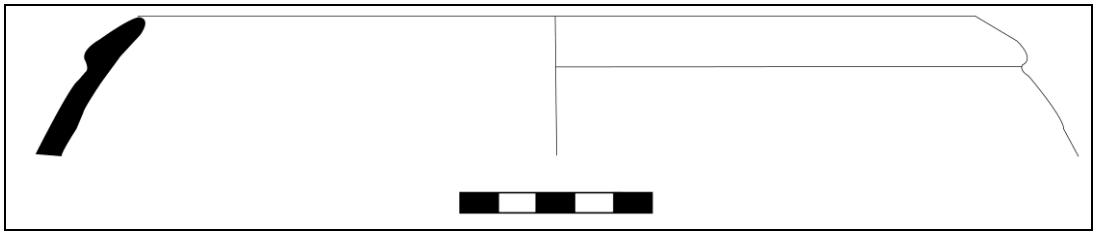


VII.c.5 (2007/081)

VIII. Dinos

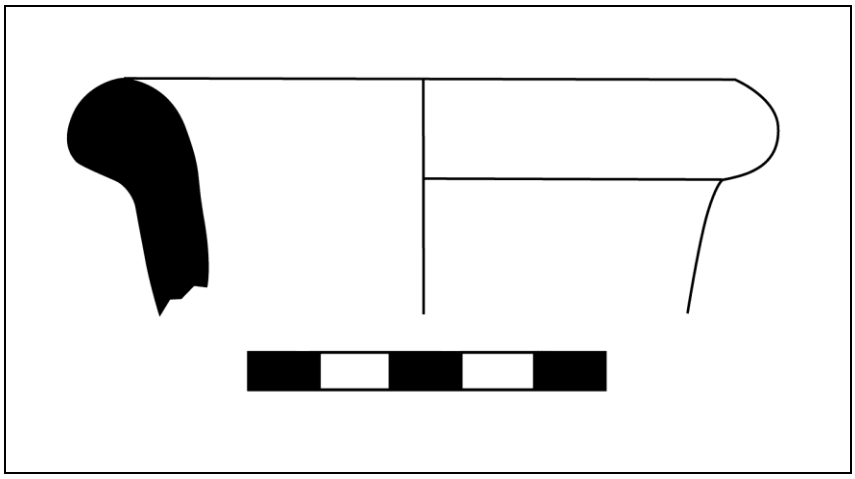


VIII.a (2006/089)

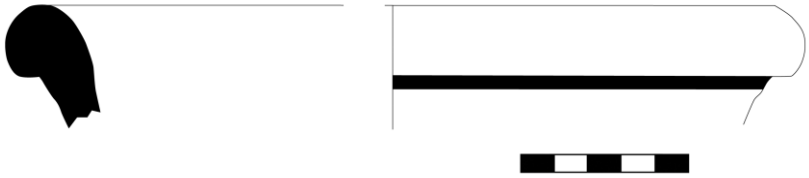


VIII.b (2006/055)

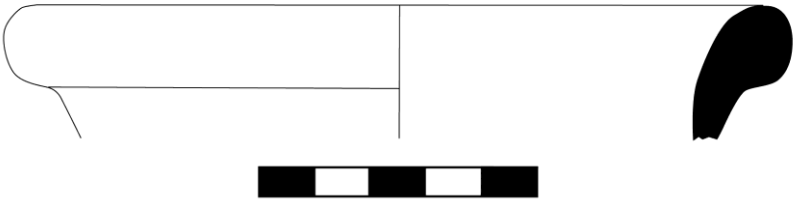
IX. AMPHORAE
IX.a Klazomenian Amphorae



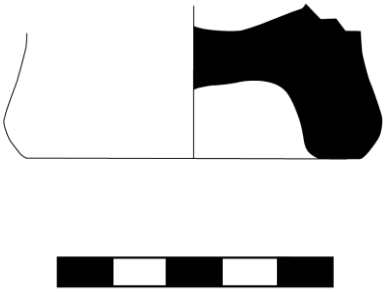
IX.a.1 (2008/060)



(2009/006)

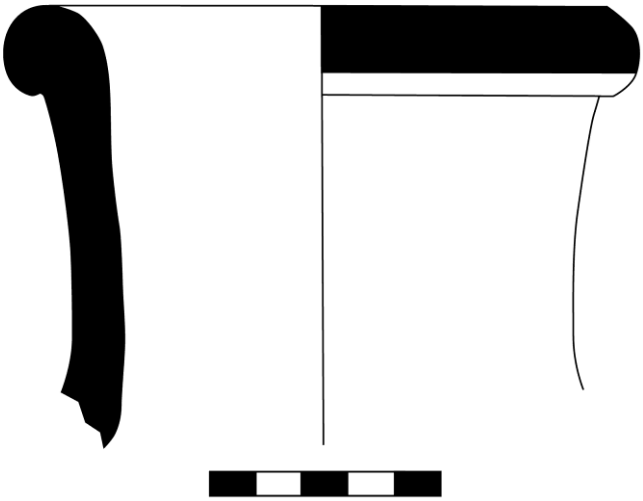


(2006/010)

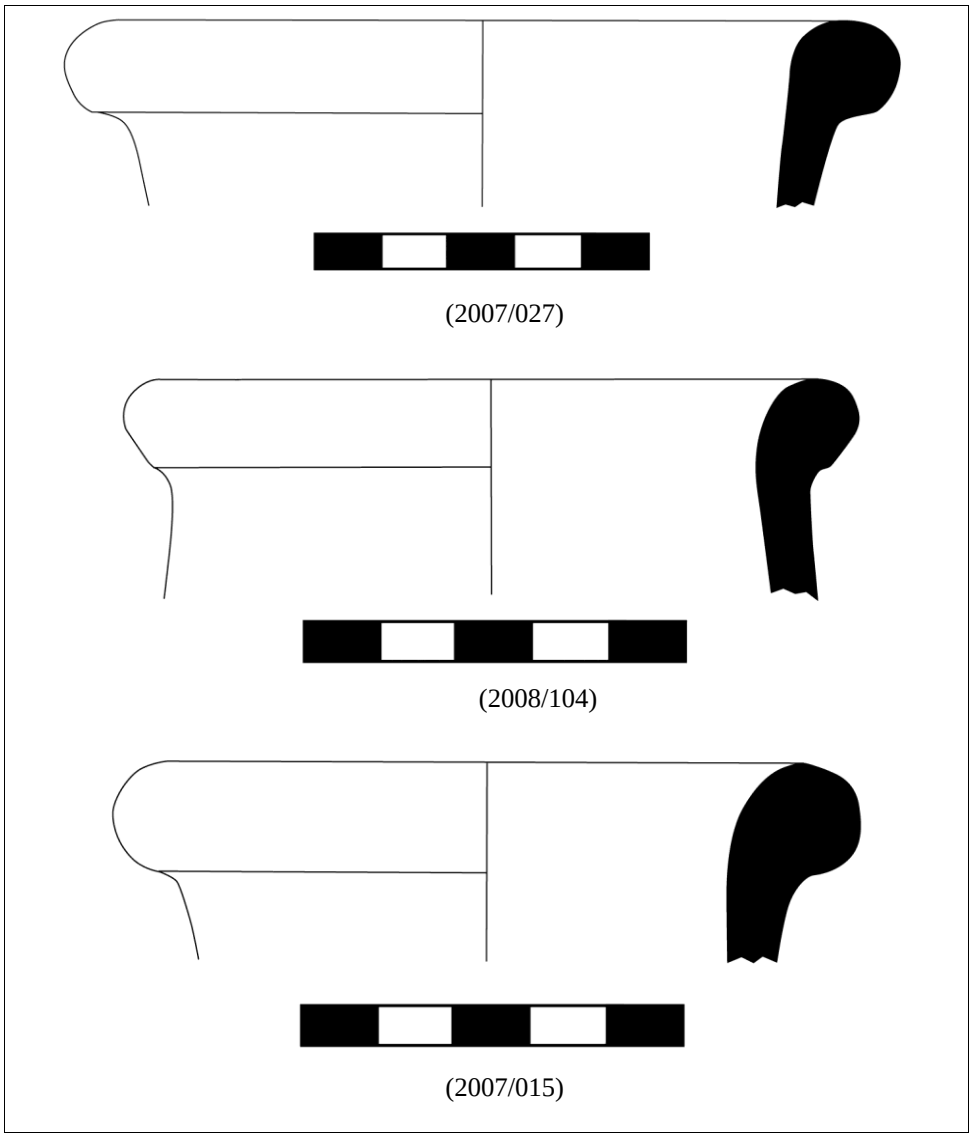


(2007/066)

IX.a.2

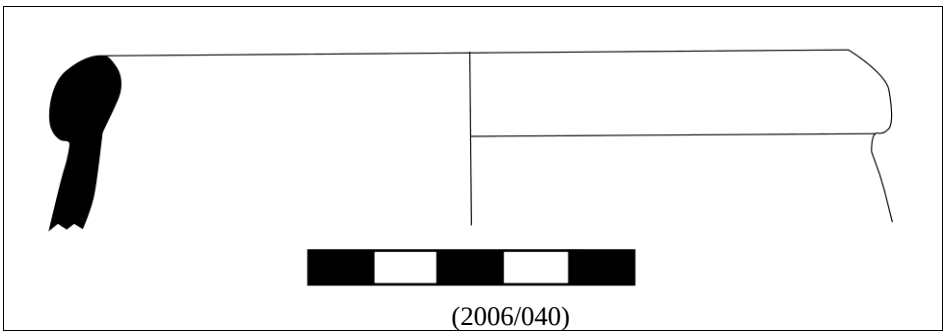


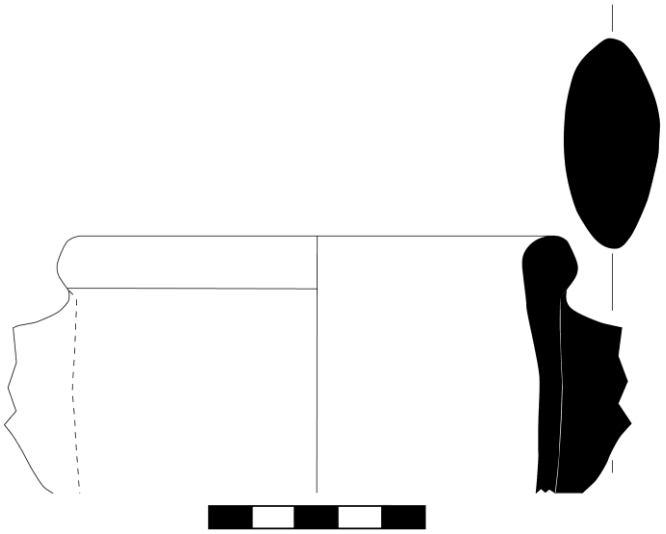
(2008/108)



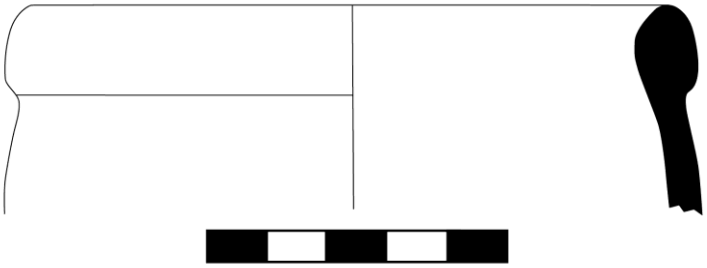
X.a3

IX.b. Amphora (Chian)



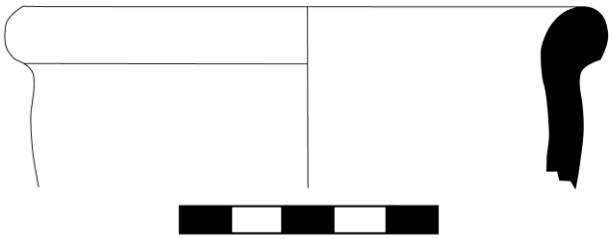


(2007/051)

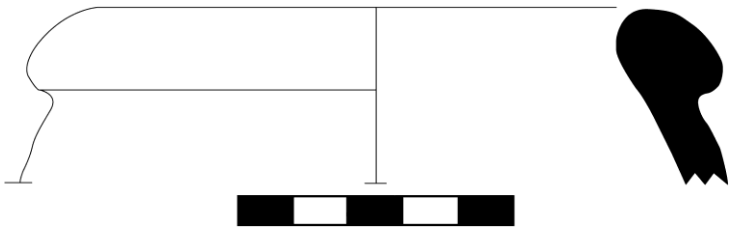


(2008/073)

IX.b.1

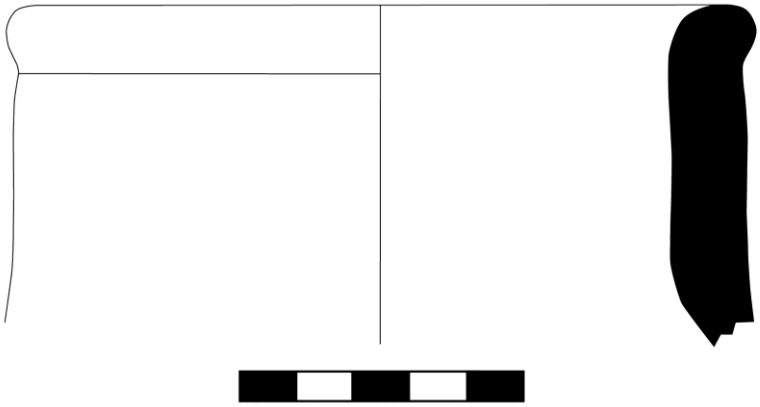


(2008/104)

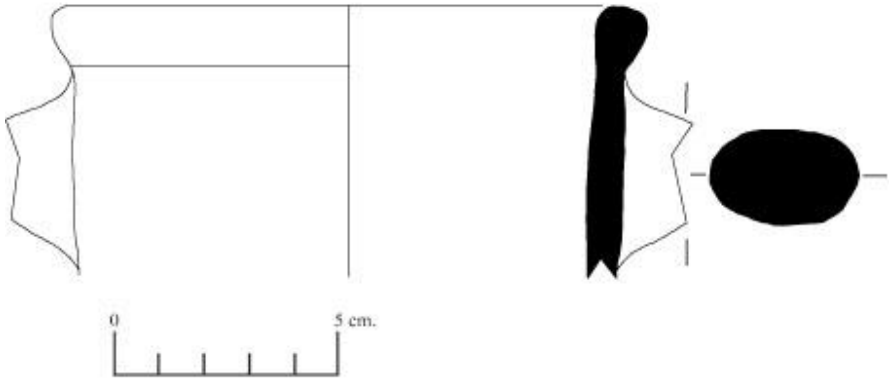


(2006/079)

IX.b.2



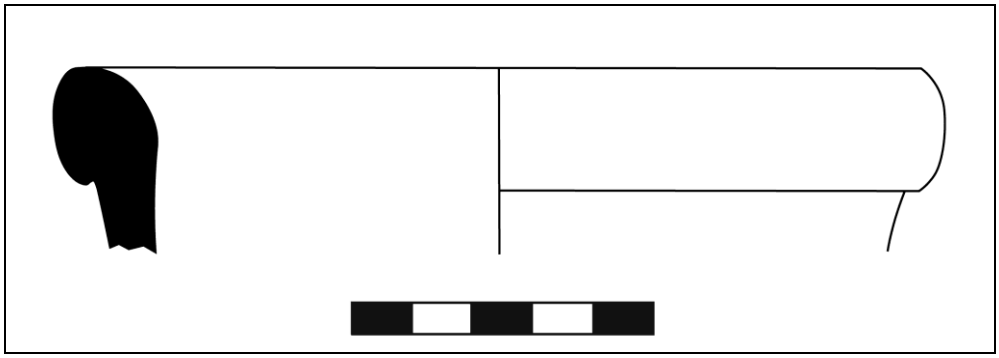
(2007/052)



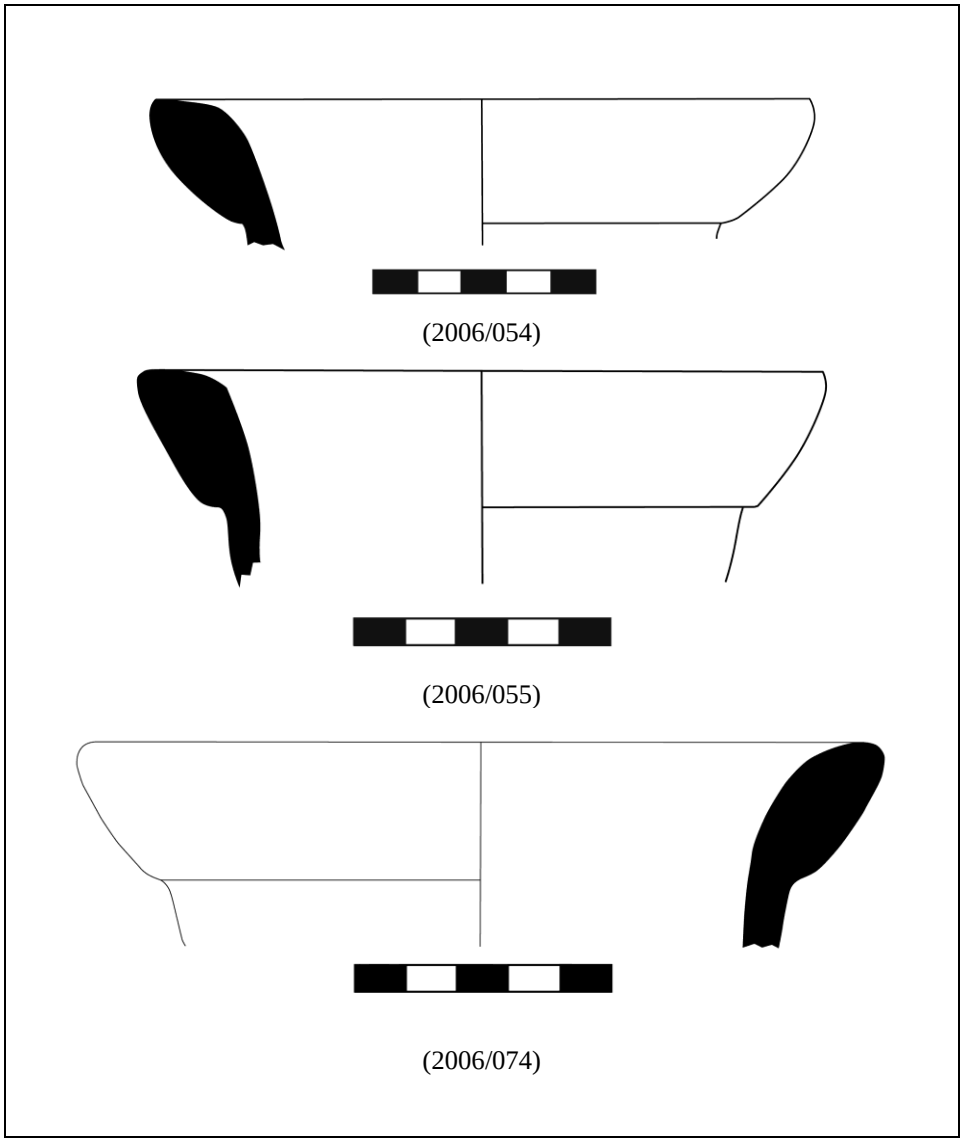
(2007/064)

IX.b.3

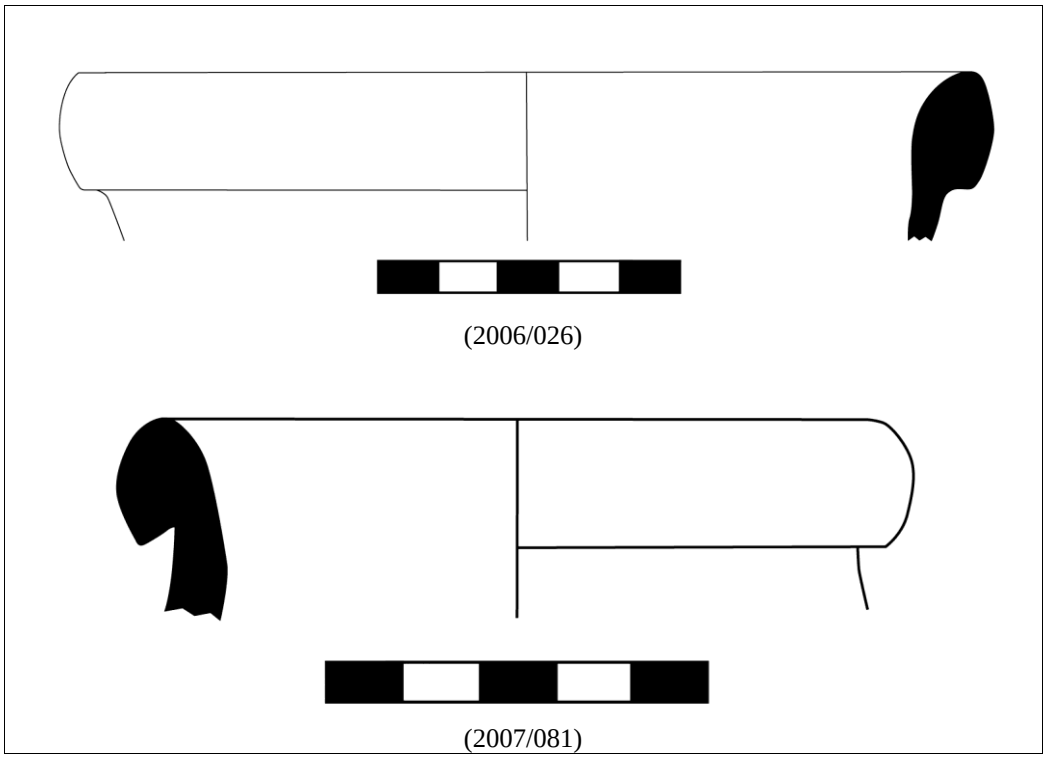
IX.c.Amphora (Samian)



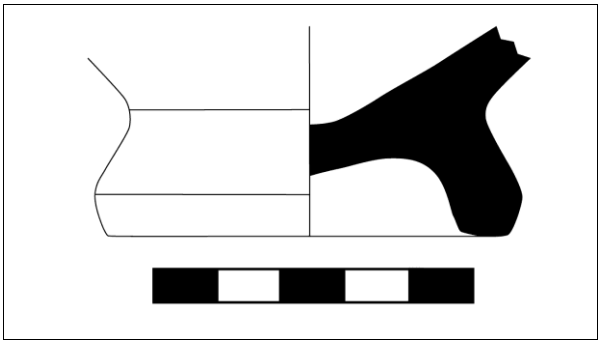
IX.c.1(2007/018)



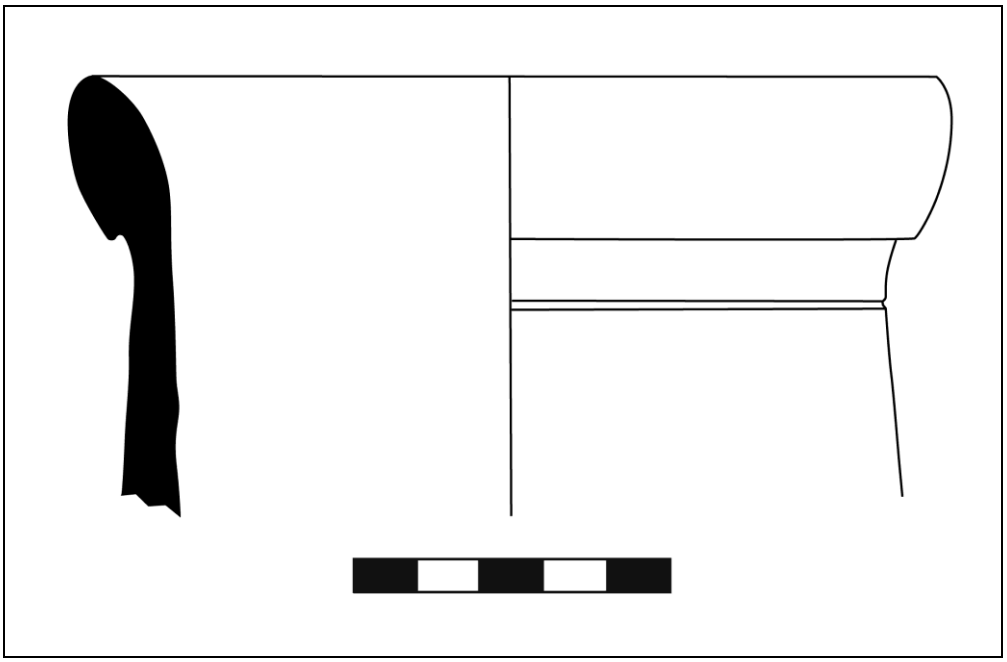
IX.c.2



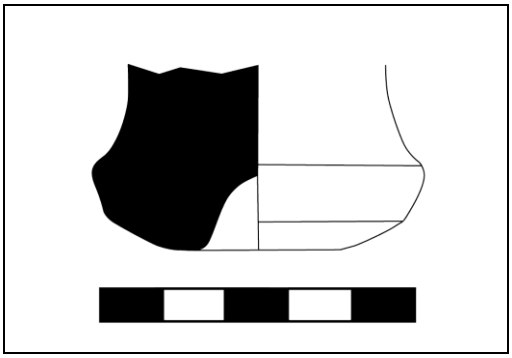
IX.c.3


IX.c.4 (2006/151)

IX.d North Ionian Amphora

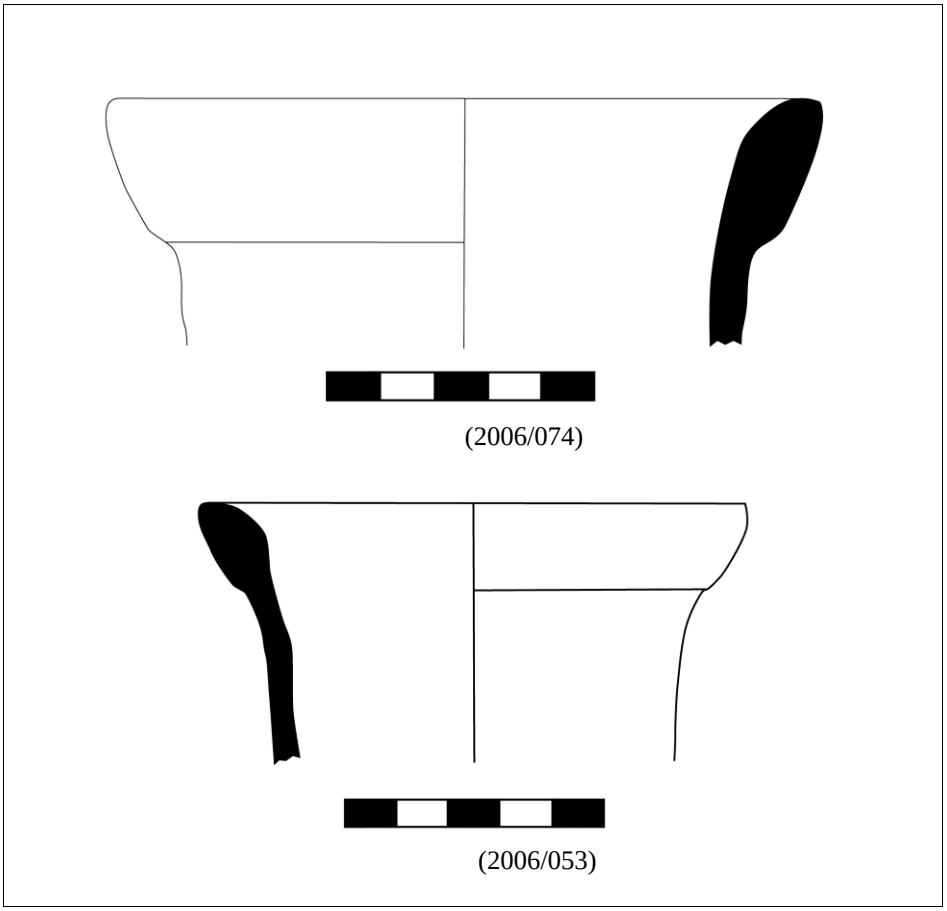


IX.d.1 (2008/124)

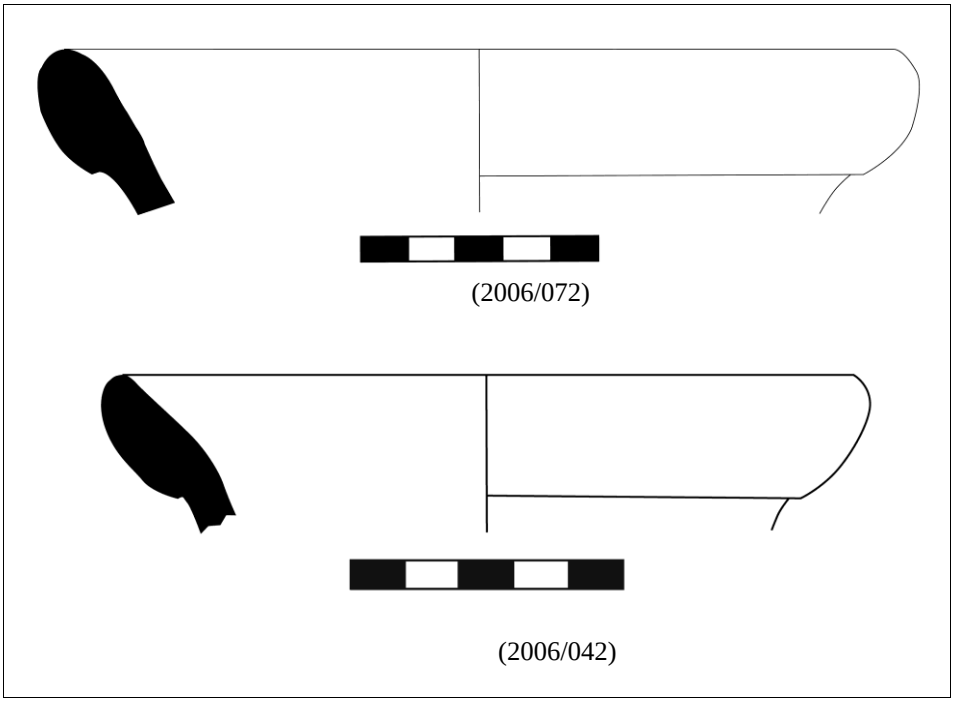


IX.d.2 (2009/047)

IX.e. Amphora (Milet)

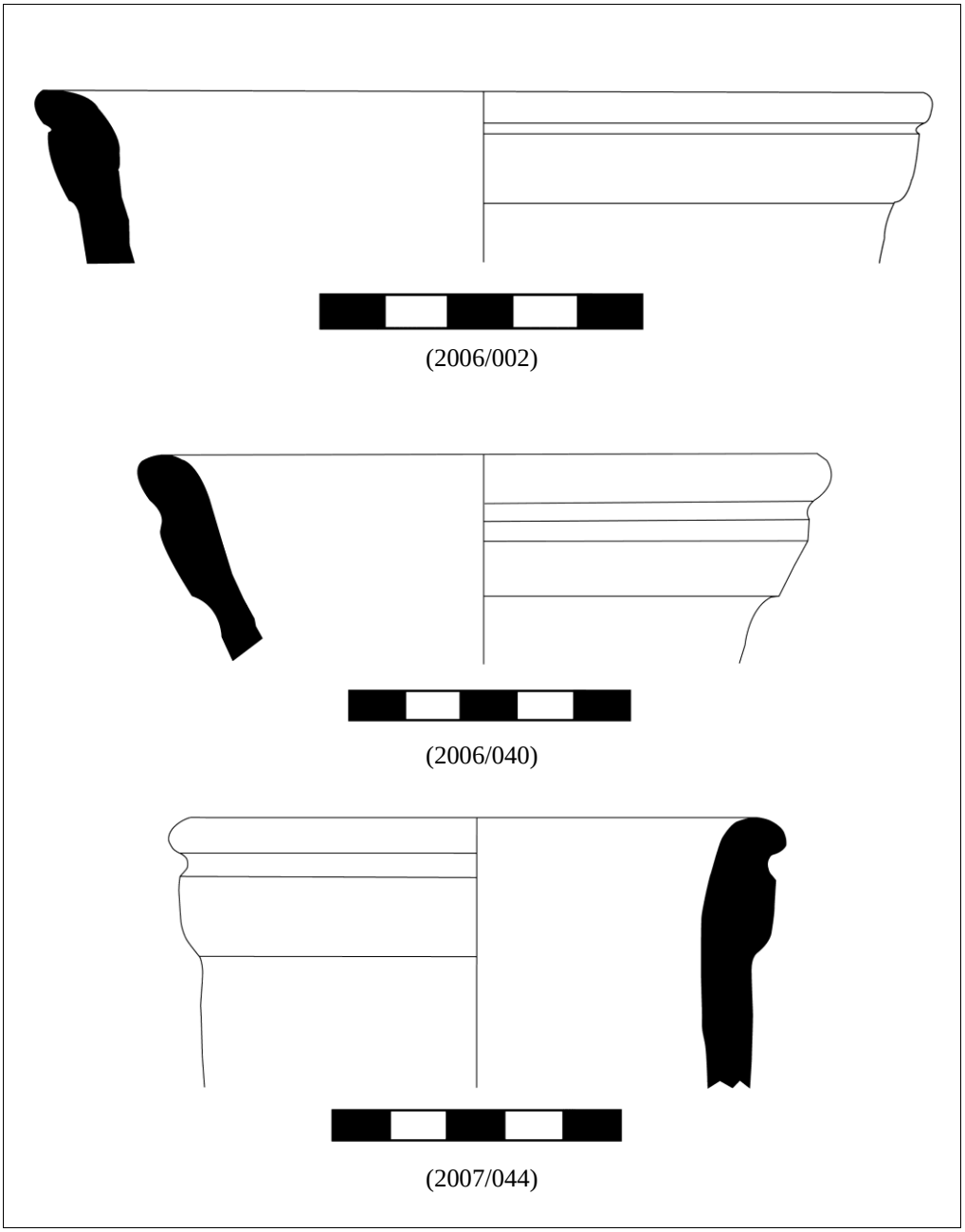


X.e.1

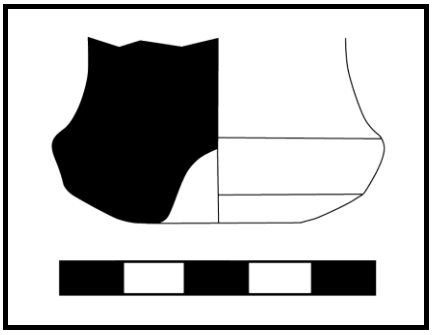


X.e.2

IX.f. Klazomenian Amphora (Classical Period)

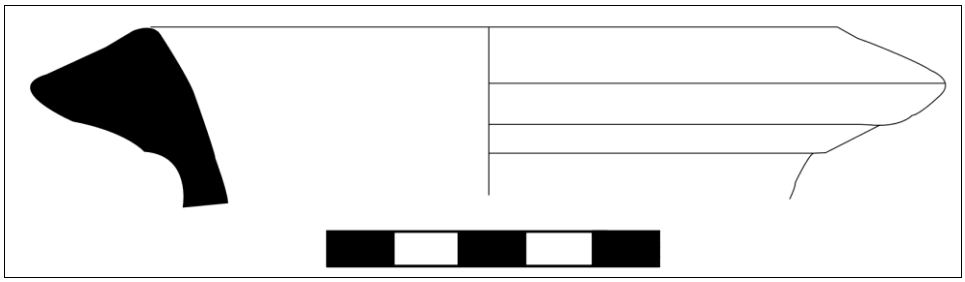


IX.f.1

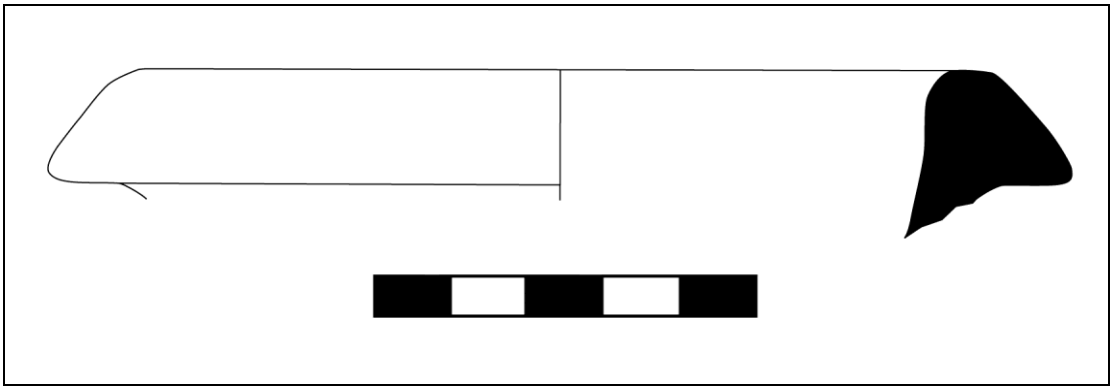


IX.f.2 (2006/047)

IX.g Mushroom Rimmed Amphorae

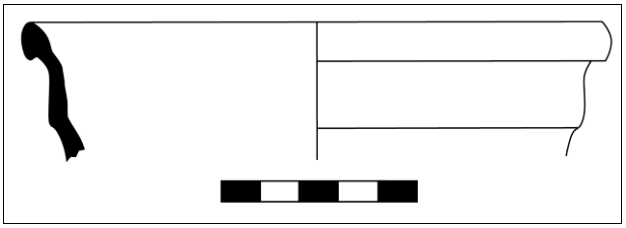


IX.g.1 (2006/029)

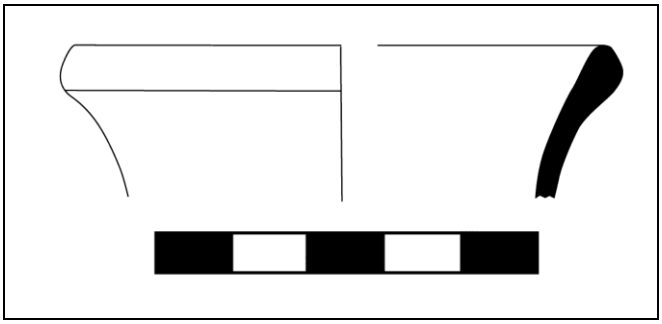


IX.g.2 (2007/068)

IX.h. Slim Amphora

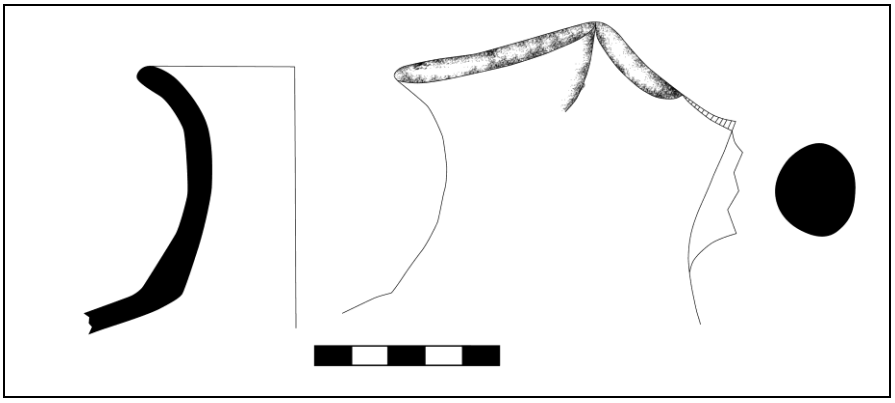


IX.h.1 (2006/028)

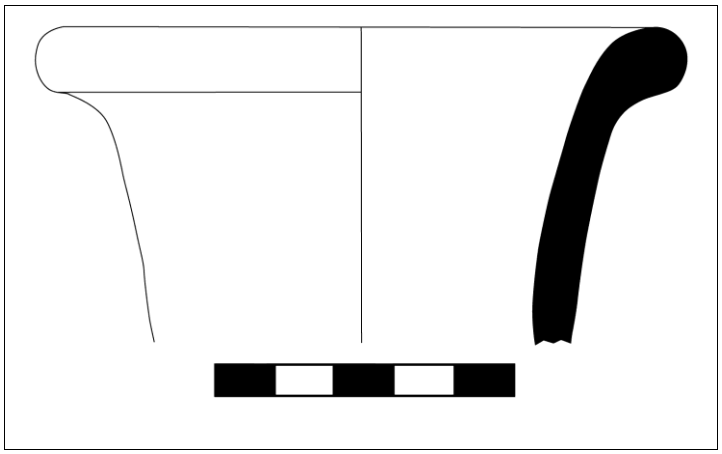


IX.h.2 (2006/077)

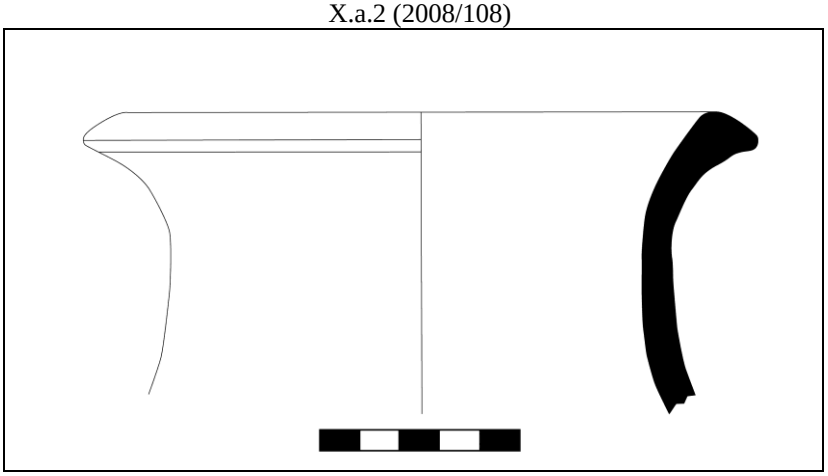
X.a Oinochoe /Hydria rim



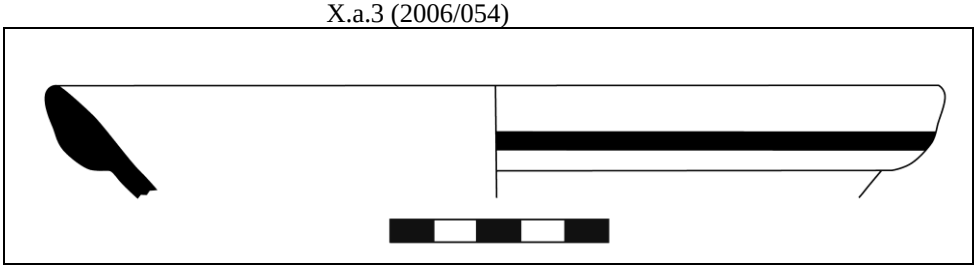
X.a.1 (2006/074)



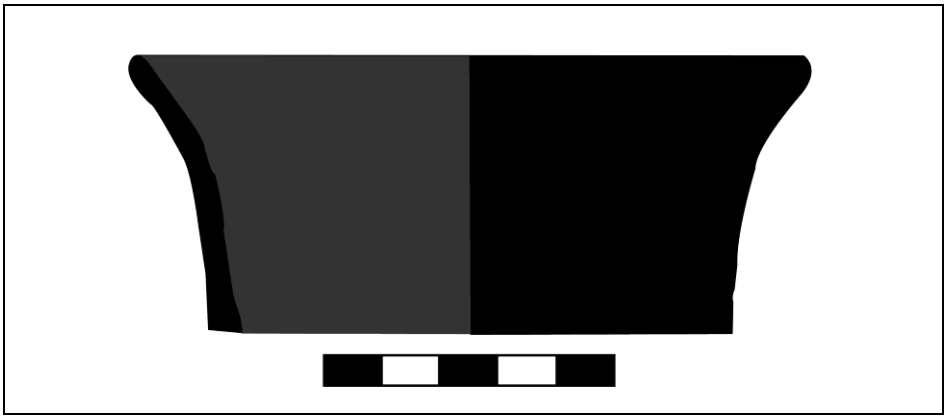
X.a.2 (2008/108)



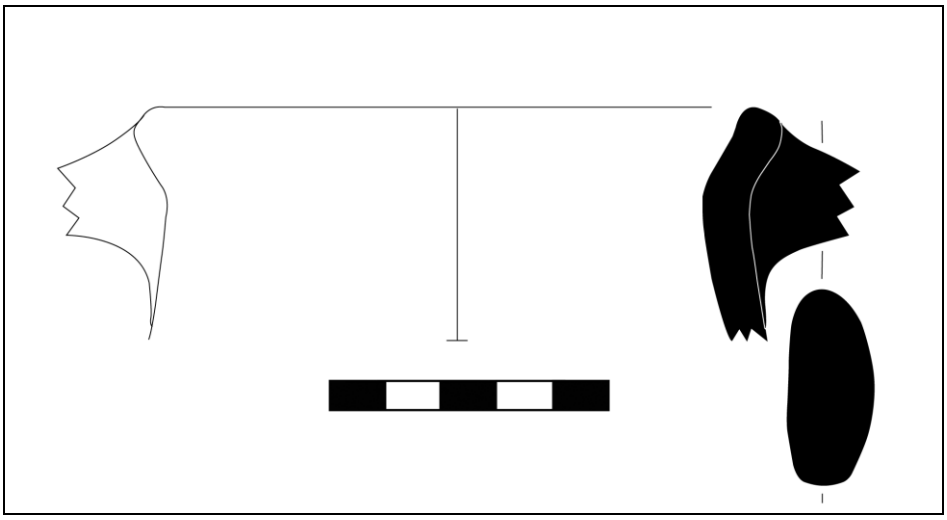
X.a.3 (2006/054)



X.a.4 (2008/136)

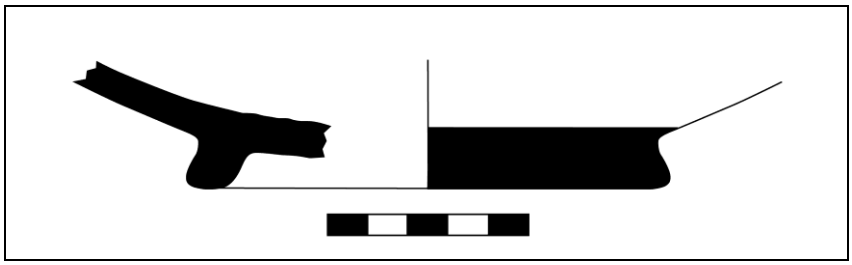


X.a.5 (2006/055)

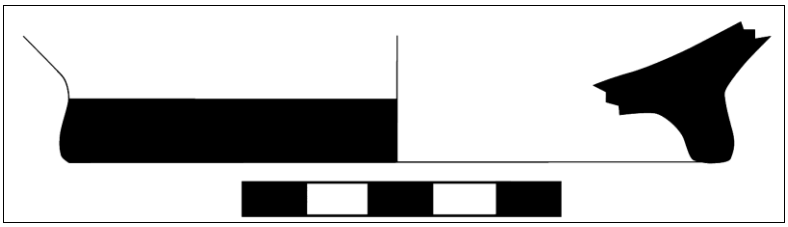


X.a.6 (2007/049)

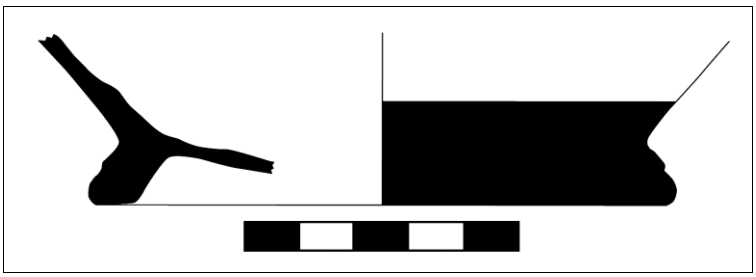
X.b Oinochoe/ Hydria base



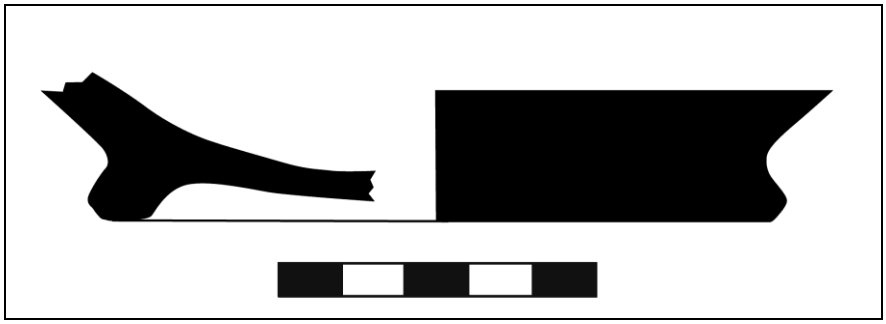
X.b.1 (2008/101)



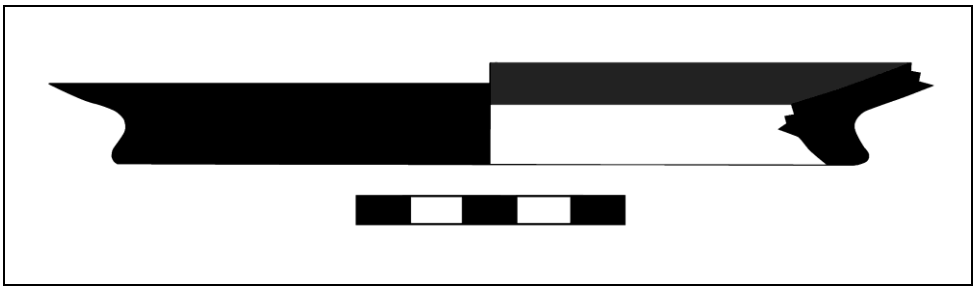
X.b.2 (2008/123)



X.b.3 (2006/089)

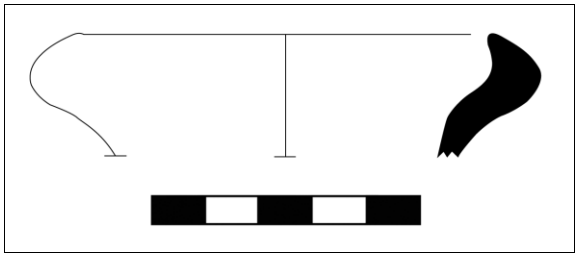


X.b.4 (2006/042)

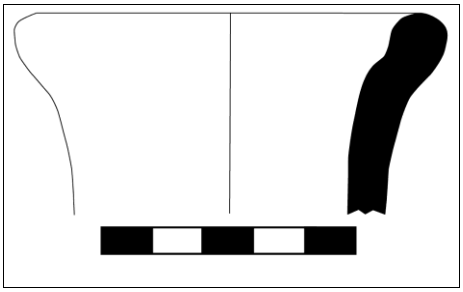


X.b.5 (2007/044)

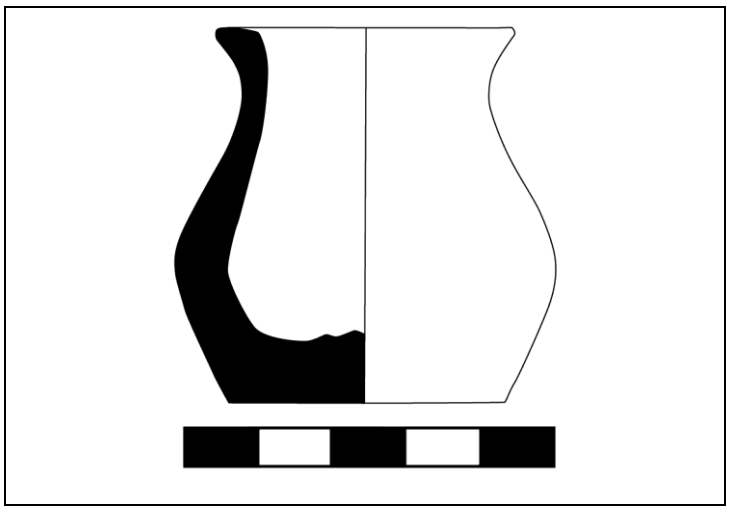
XII. Lekythos/Olpe



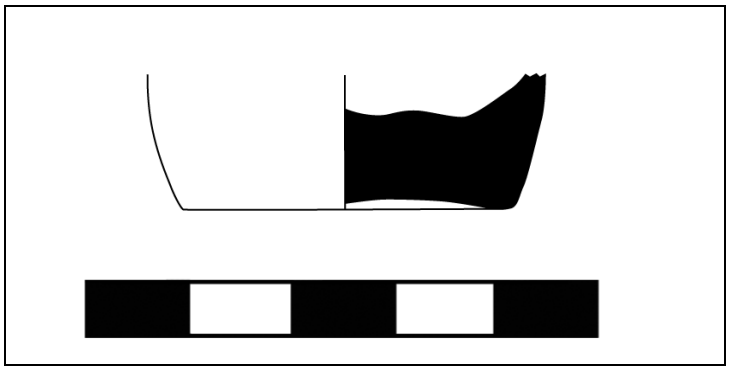
XII.a (2007/049)



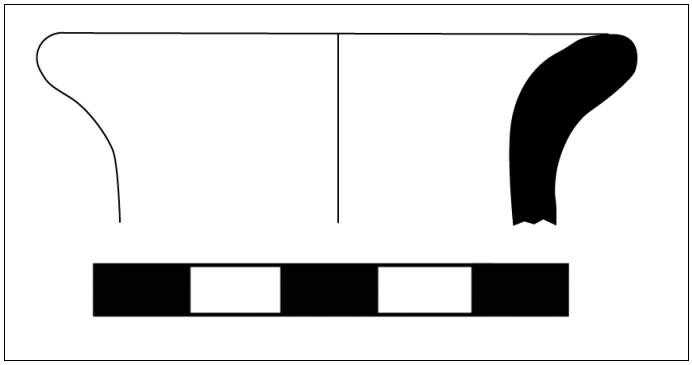
XII.b (2007/064)



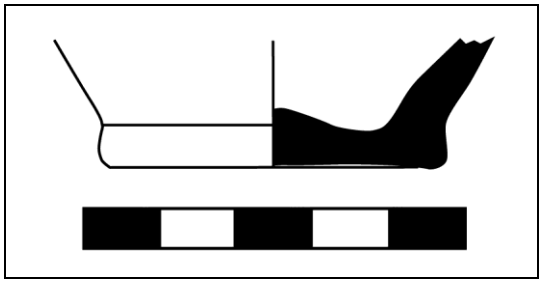
XXII.c (2006/089)



XII.d (2008/101)

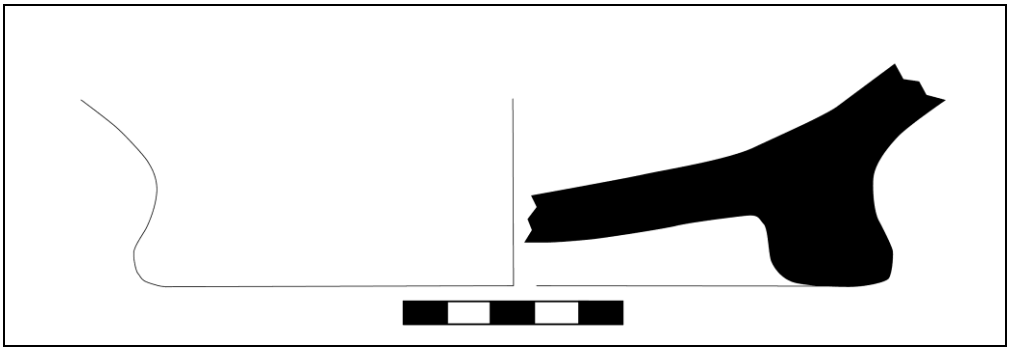


XII.e (2007/062)

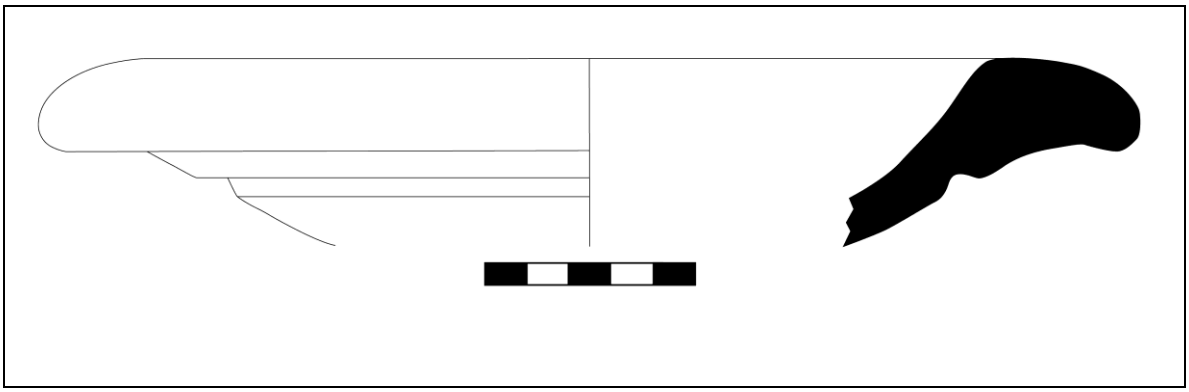


XII.f (2008/081)

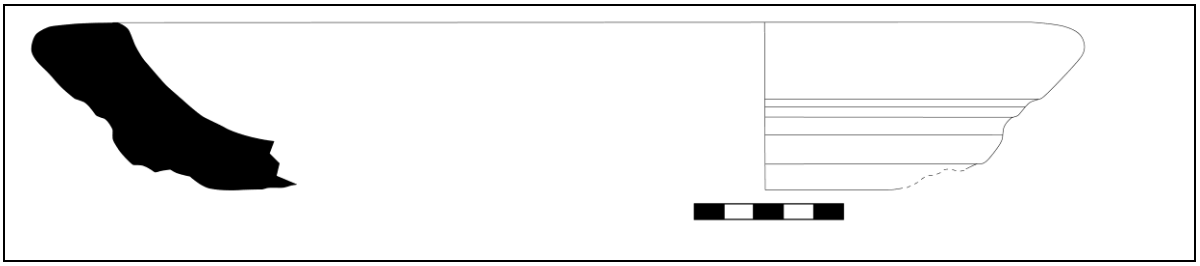
XIII. Mortar



XIII.a (2006/074)

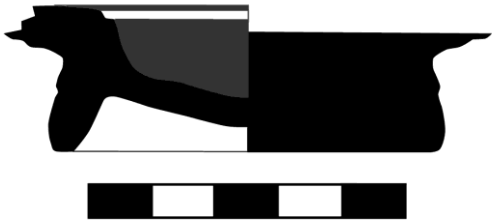


XIII.b (2006/074)



XIII.c (2009/095)

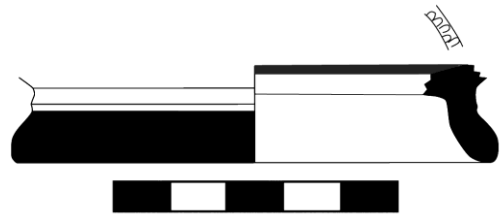
XIV Black Glazed Pottery
XIV.a Fishplates



(2007/012) (2008/113)

(2008/122)

XIV.b Stemless



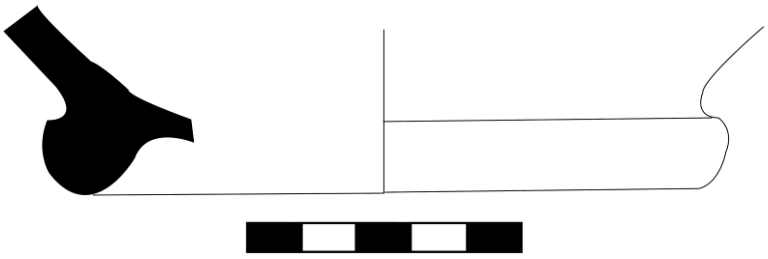
(2006/074)

(2006/055)

(2008/122)

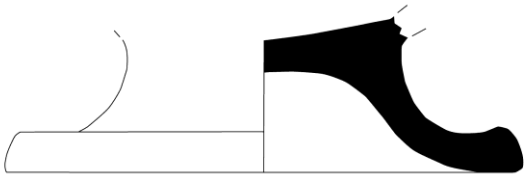
(2006/040)

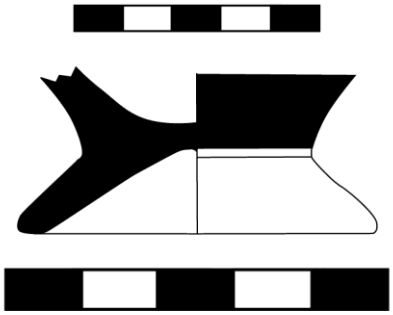
XIV.c.Cup Skyphos



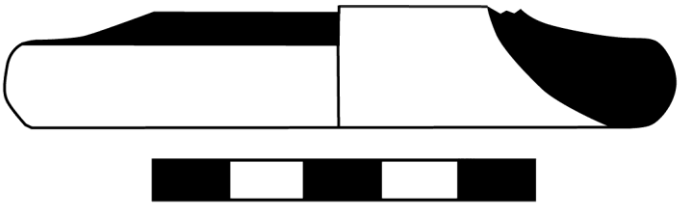
(2008/021) Late Archaic

XIV.d Kylix



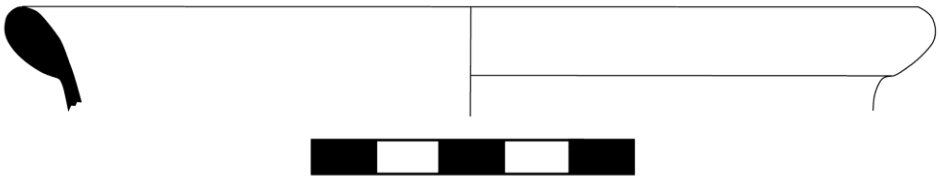


XIV.d.1 (2007/052) XIV.d.2 (2009/160)

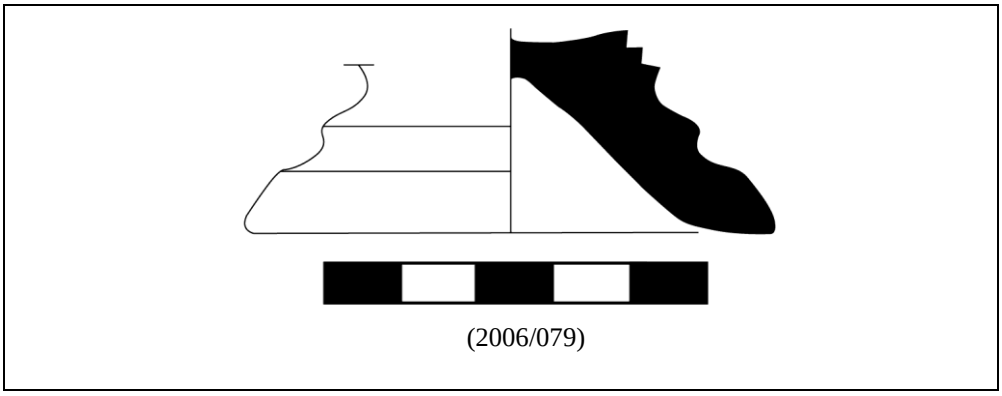


XIV.d.3 (200(/101)

XIV.E Kantharos



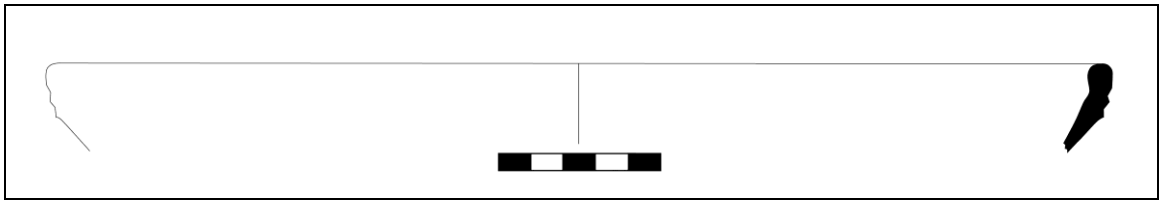
2009/096



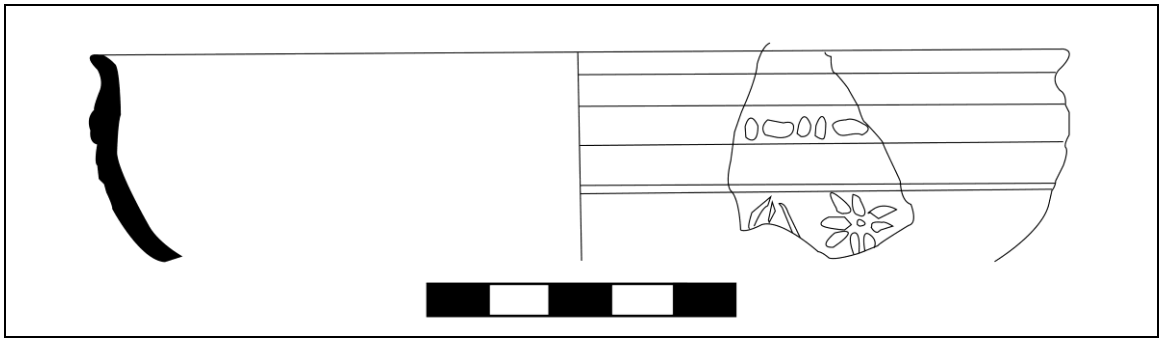
XIV.e

XV.Hellenistic Vessels

XV.a Megara Bowl

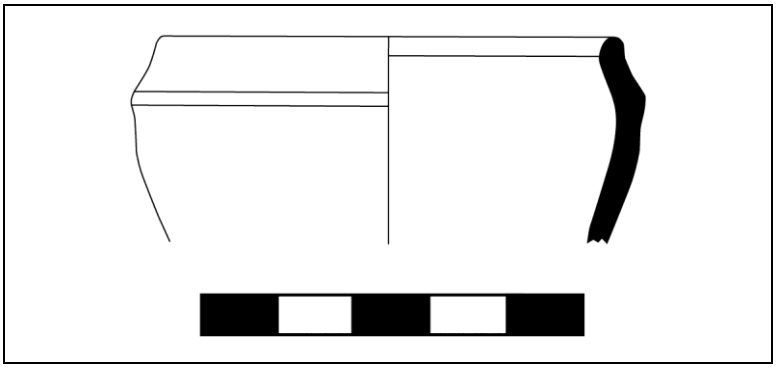


XV.a.1 (2006/033)

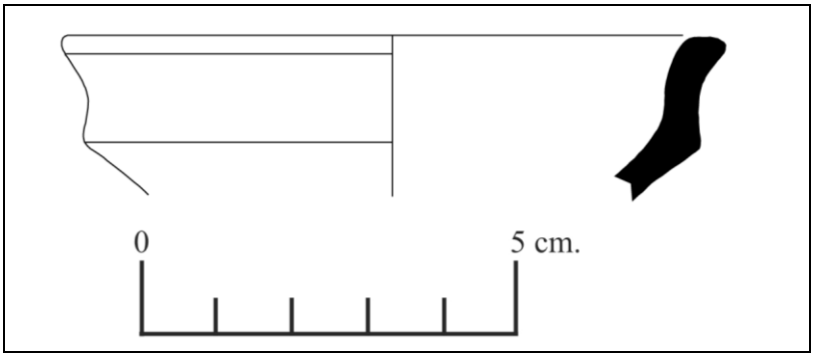


XV.a.2 (2006/033)

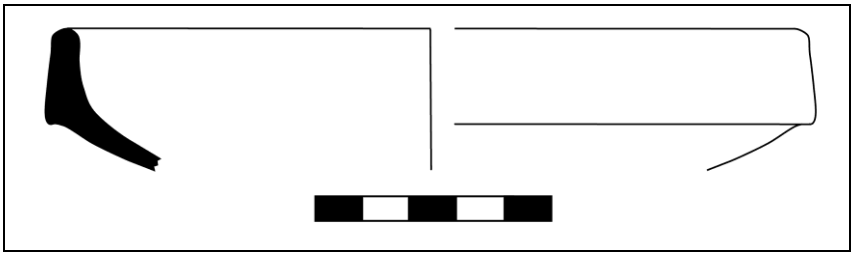
XV.b Hellenistic bowls and plates

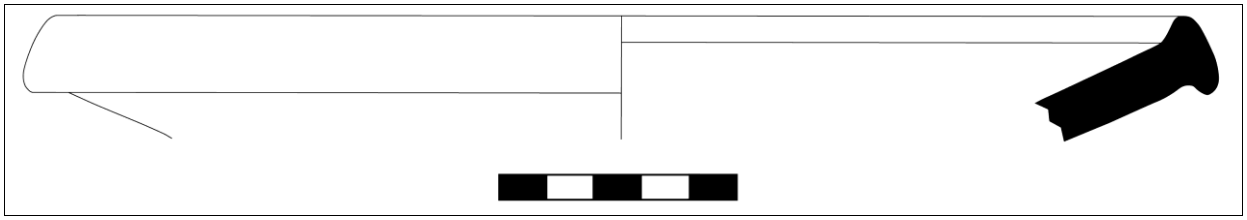


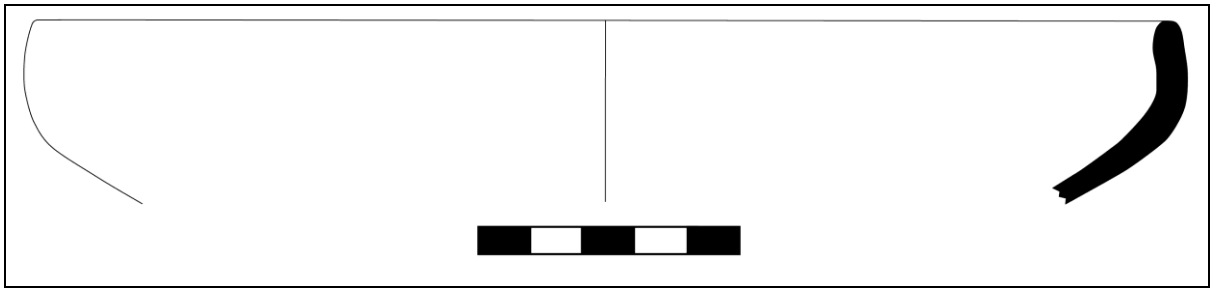
XV.b.1 (2006/044)



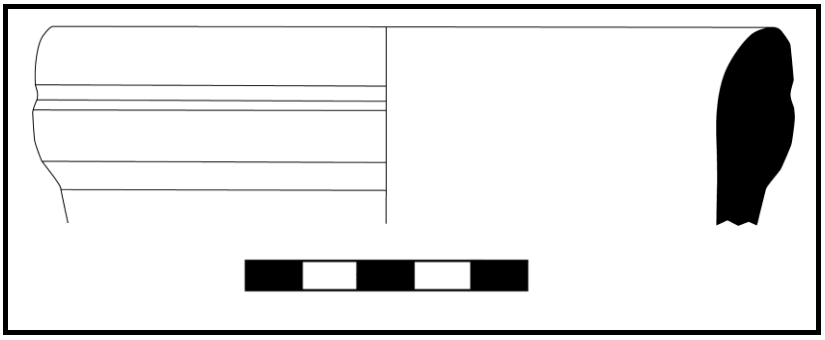
XV.b.2 (2007/064)


XV.b.3 (2008/011)


XV.b.4 (2007/051)


XV.b.5 (2007/052)

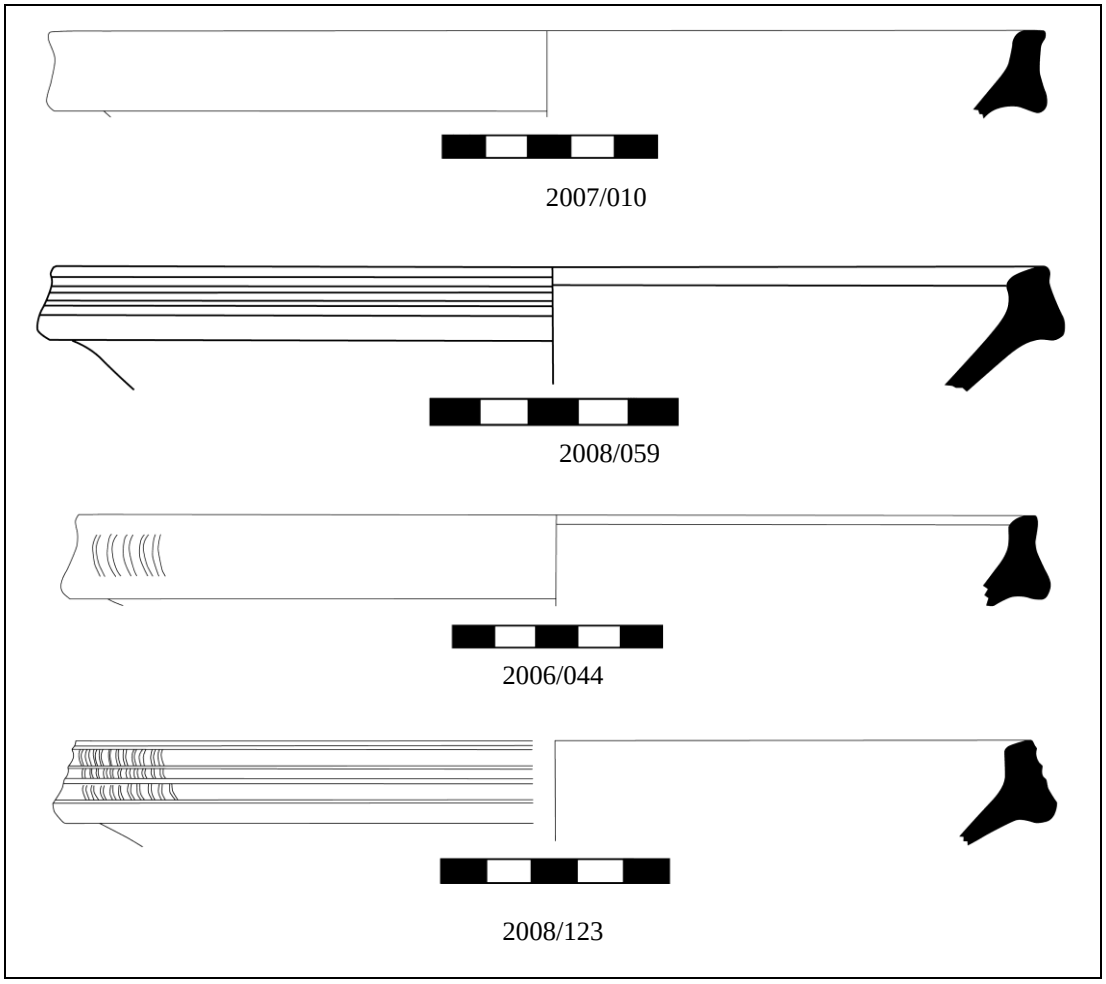
XV.c

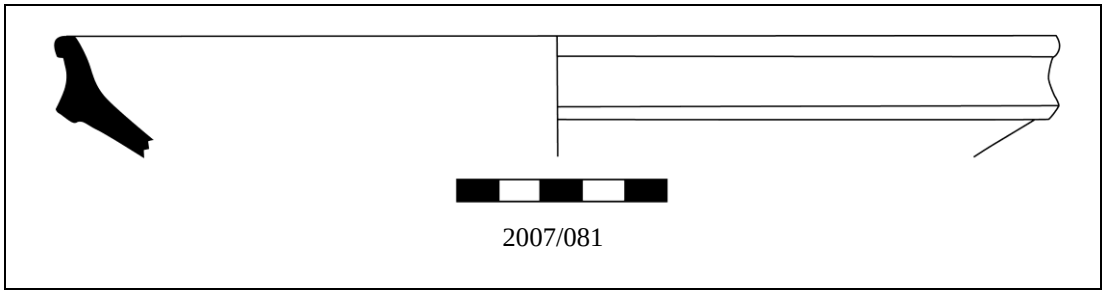


XV.c (2006/044)

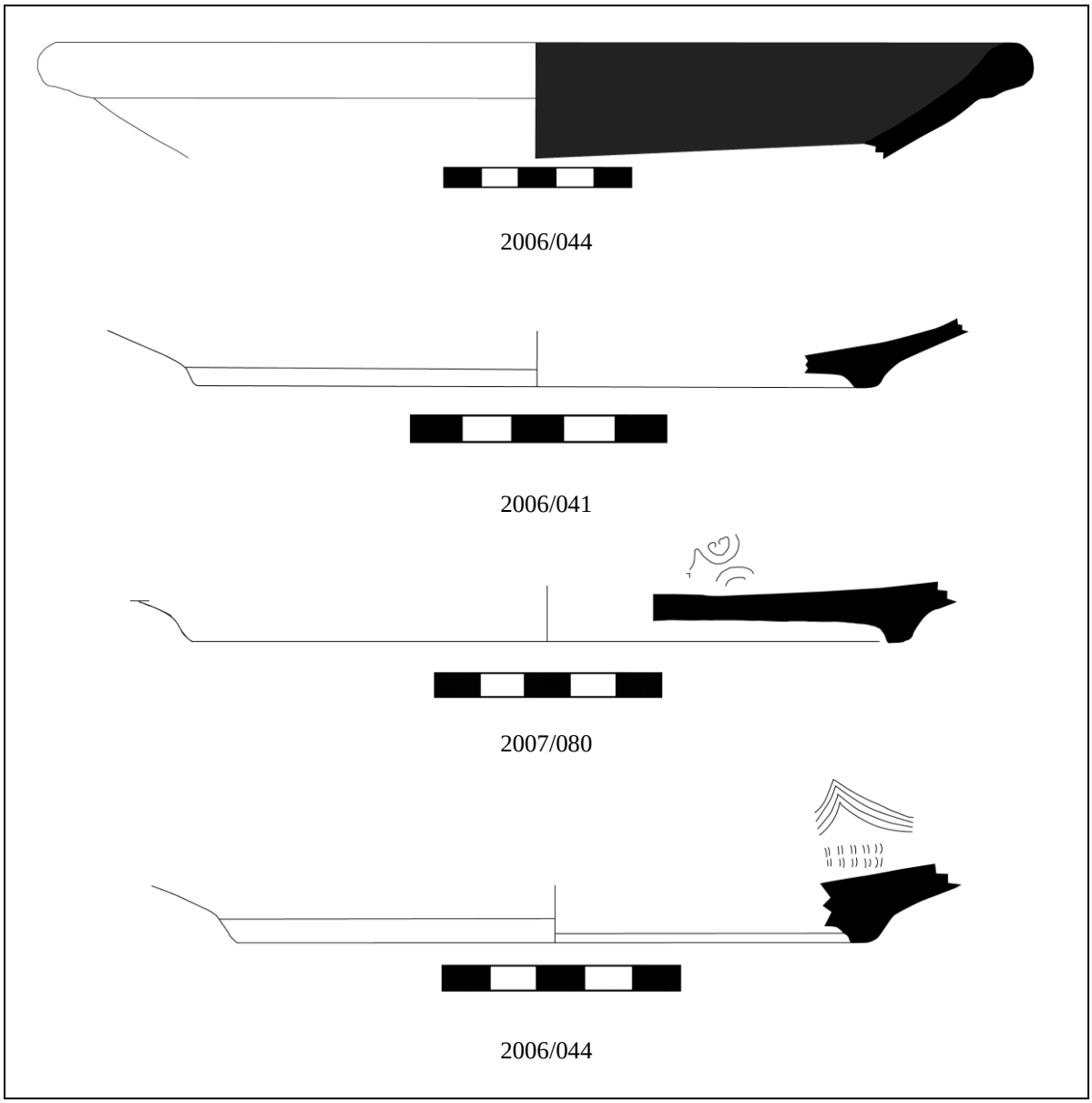
XVI.Roman Ware

XVI.a Late Roman Red-Brown Slipped Ware

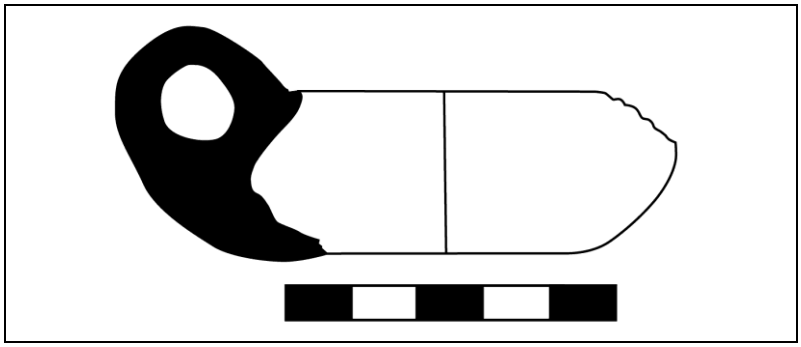




XVI.b Terra Sigillata



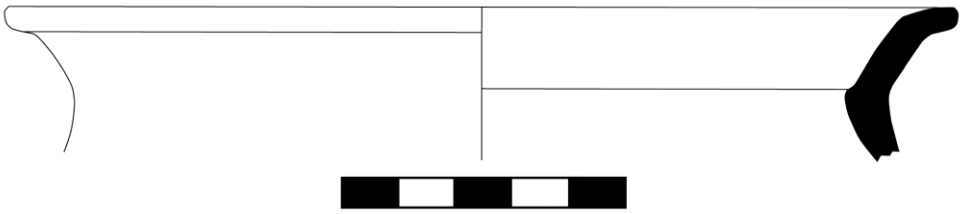
XVI.c Roman Lamp



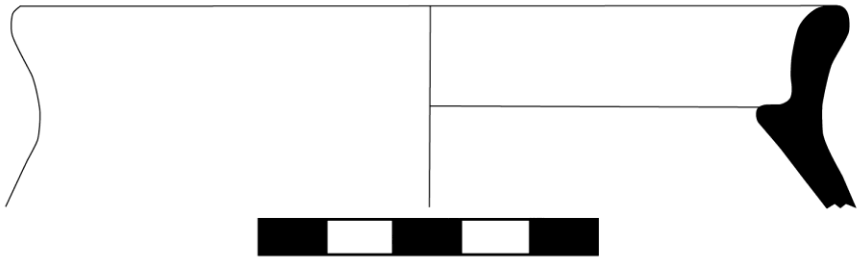
2007/080

XVII. COOKING WARE

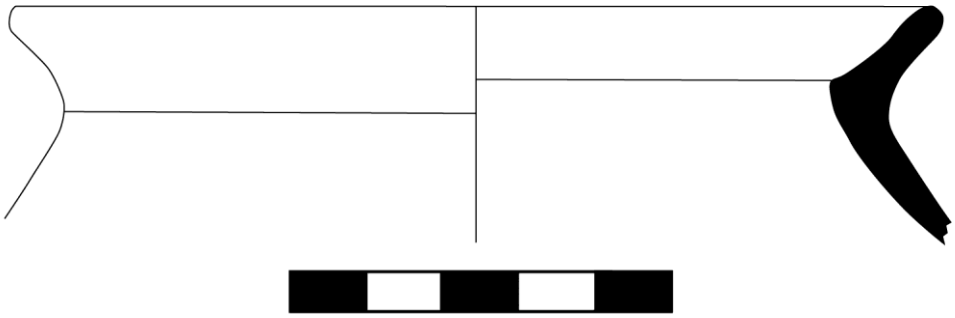
XVII.a Lopas



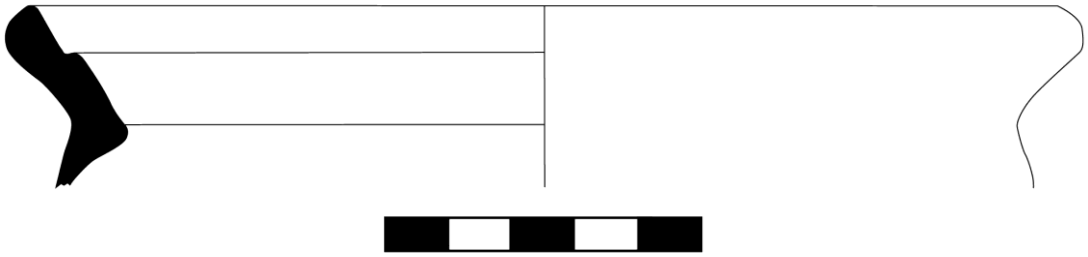
2006/044



2007/064

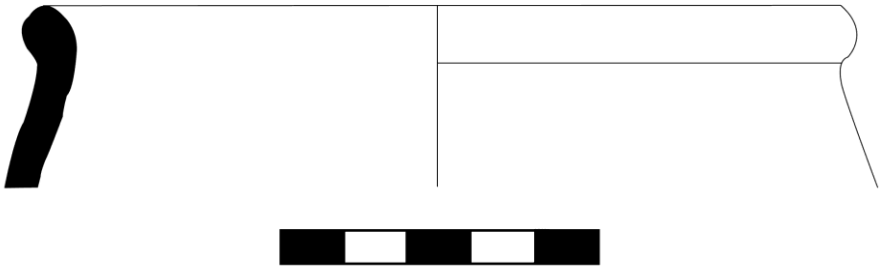


2007/069

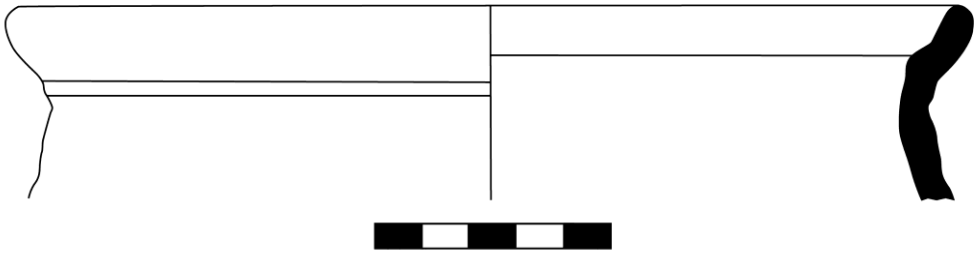


2008/113

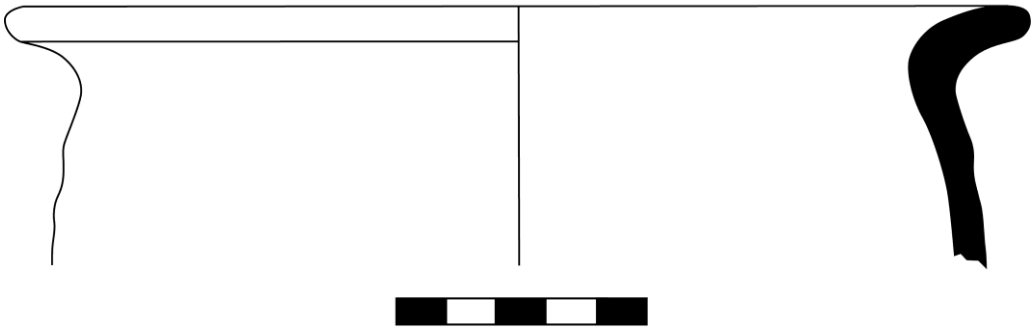
XVII.bKhytra



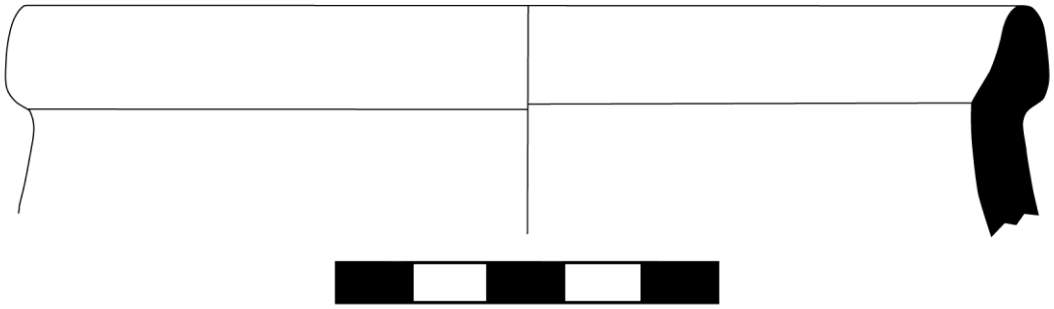
2006/032



2007/081

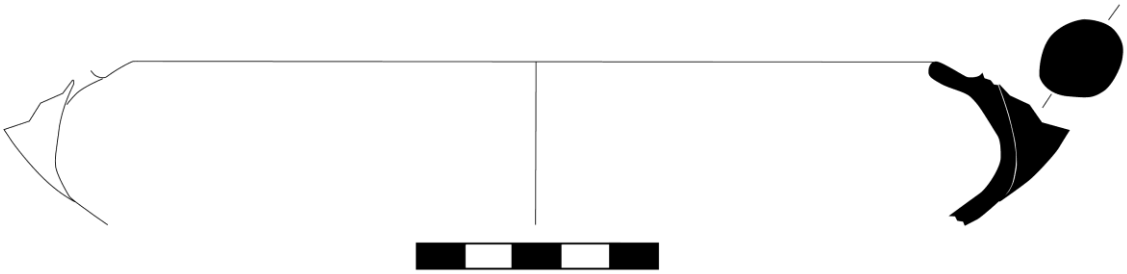


2007/081

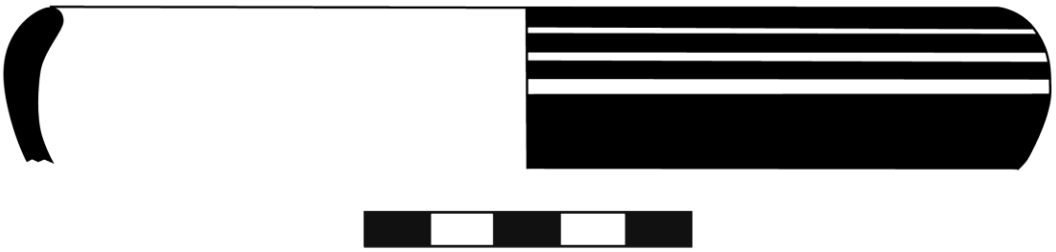


2007/064

XVIII.Funnel

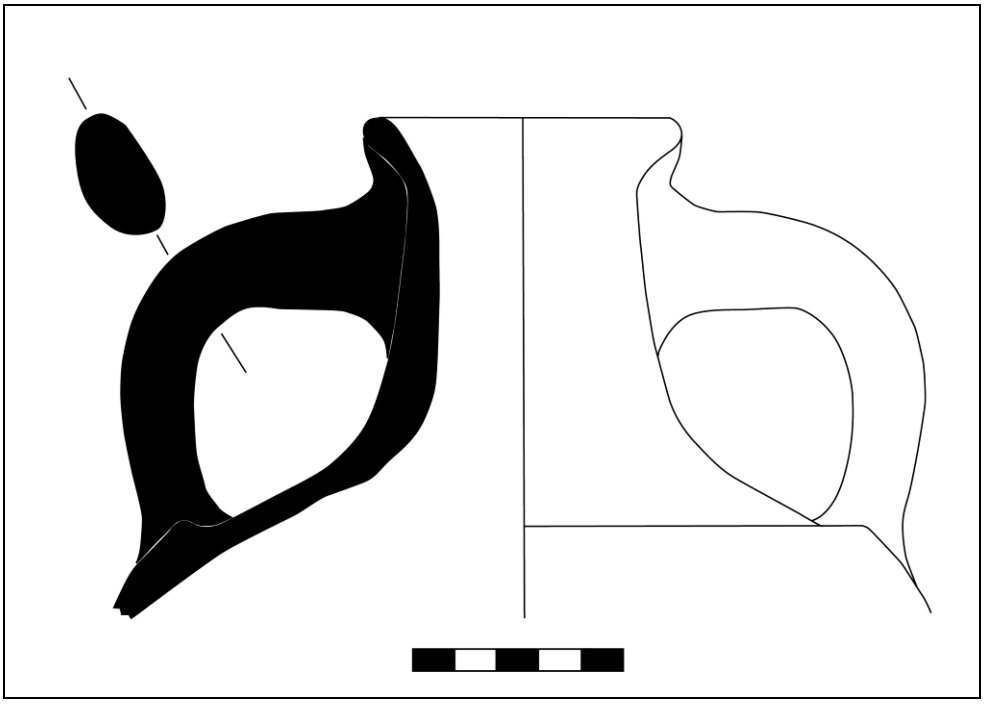


2007/086

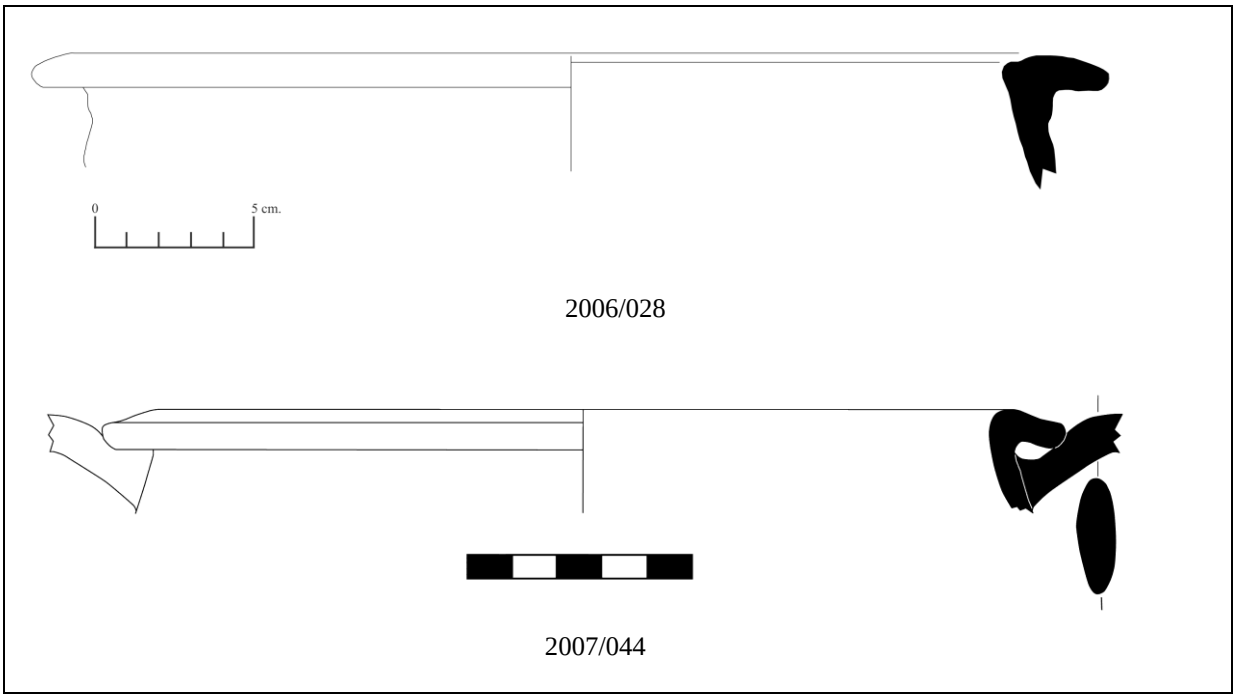


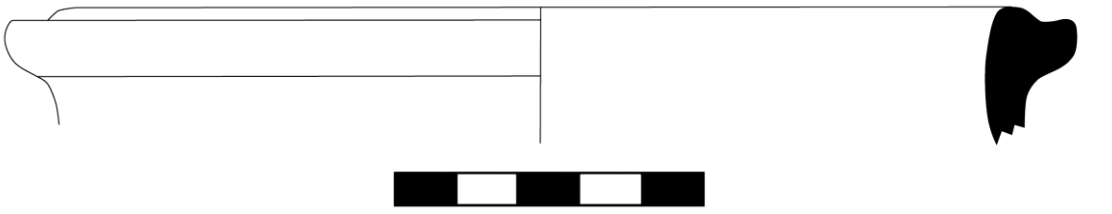
2008/117

XIX. Late Antique Coarse Ware

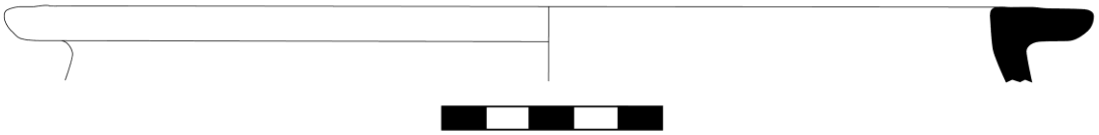


XIX.a (2008/104)



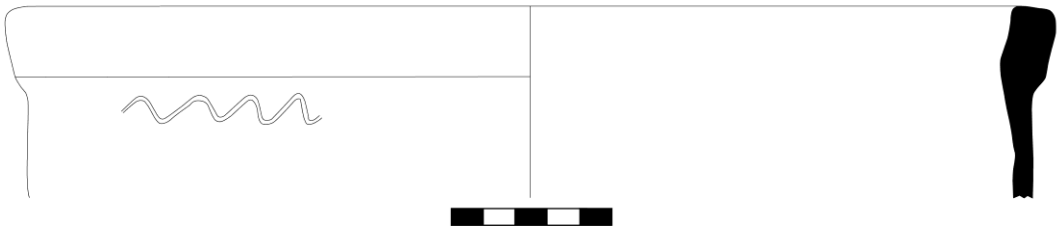


2007/044

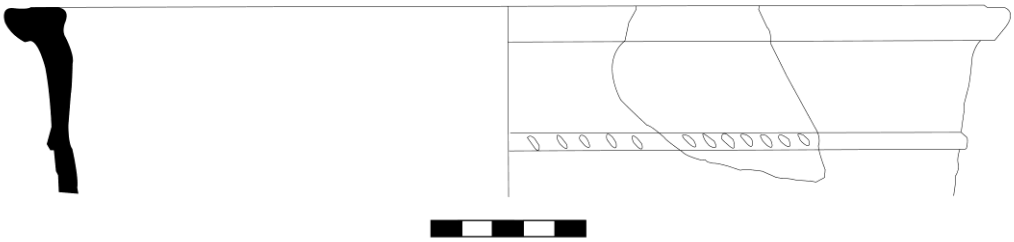


2007/044

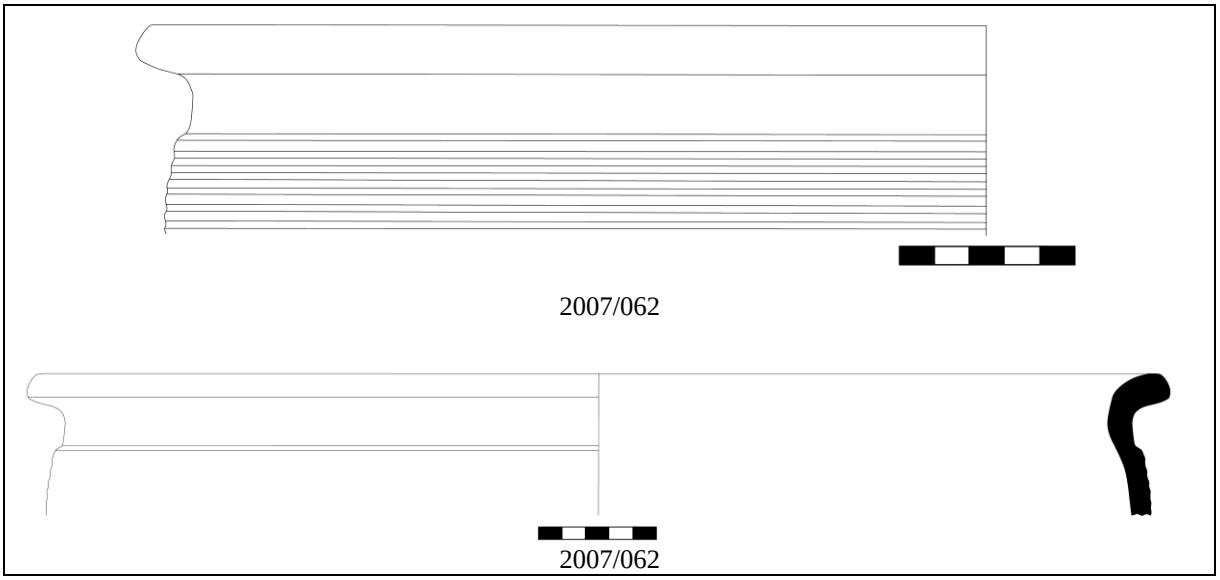
XIX.b



2007/044



2007/054



XIX.c

APPENDIX 3-INDEX FOR GEOGRAPHICAL AND TOPOGRAPHICAL DATA

Appendix 3 includes the maps showing the distribution of sites on soil, rock, slope, aspect and elevation maps for each period. Each map is accompanied with a chart showing number of sites for each class of soil, rock, slope, aspect and elevation as well as the percentage of sites, percentage of area for each class, difference of percentage of sites from percentage of area, expected number of sites statistically and finally the chisquare value for testing the significance of most preferred type of soil, rock, slope, aspect or elevation. The two last columns show the expected number of sites and chisquare values for testing the null hypothesis which claims the equal distribution amongst the classes of geographical and topographical features. The bar charts below each table for each topographic and geographical parameter show the distribution of area, sites and finally the difference to make visible any preference.

The distribution maps are produced with the aid of ArcGIS and MapINFO programs. Here an assessment in detail is not included since the results are evaluated in the text at the relevant chapters wherever it is necessary.

Class	Soil Thickness Values
1	x > 90 cm
2	90 >x> 50 cm
3	50 >x> 20 cm
4	20 >x> 0 cm
5	Barren Rock
6	No data

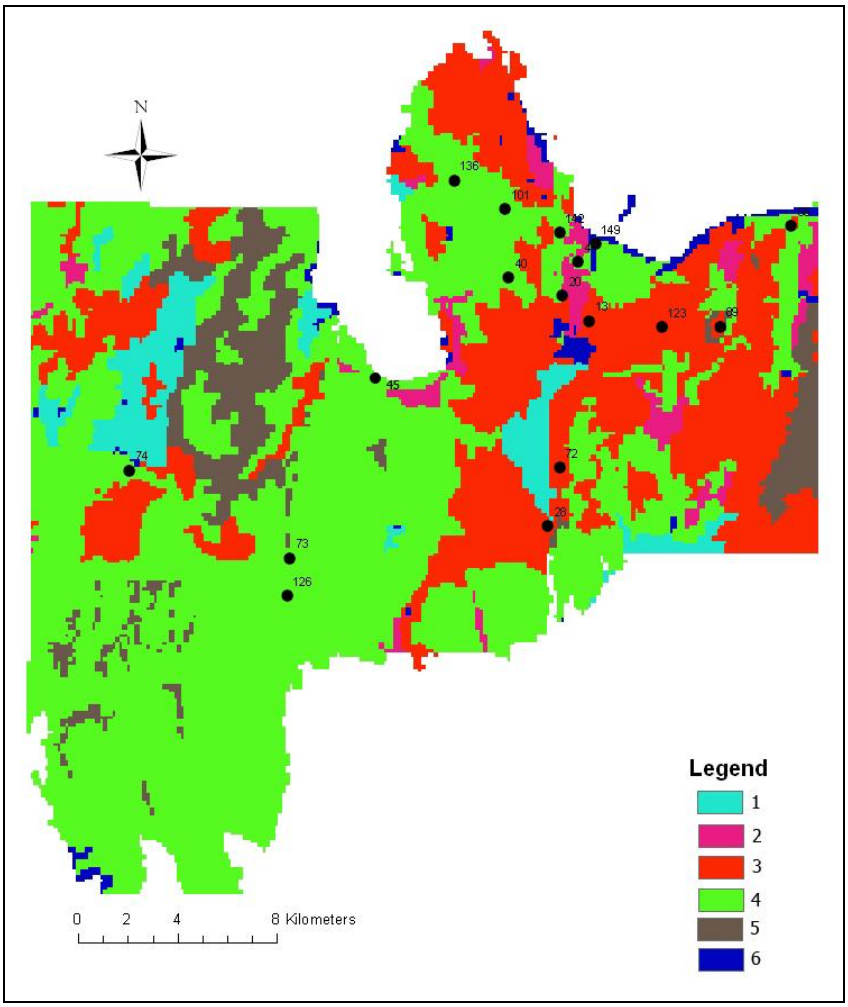
Class	Rock Type	Age
1	Mudstone, Sandstone, Gravel	E.Cretaceous, Cretaceous, L.Miocene
2	Tuff, Basalt, Tranchite, Andesite, Spilite	E.Miocene, L.Miocene
3	Limestone	L. Miocene, Mesosoic, Jurassic, Ladinian
4	Serpentine, Opholite, Manzonite, Diorite, Plate Dike	M. Miocene, E. Cretaceous
5	Alluvium	Quaternary

Class	Slope Values
1	0-5
2	5-10
3	10-15
4	15-20
5	20-25
6	25-30
7	30-35
8	35-40

Class	Aspect Values
1	Flat
2	2-22.5 / N
3	22.5-67.5 / NE
4	67.5-112.5 / E
5	112.5-157.5 / SE
6	157.5-202.5 / S
7	202.5-247.5 / SW
8	247.5-292.5 / W
9	292.5-337.5 / NW
10	337.5-0 / N

Class	Elevation Values
1	0-50m.
2	51-100m.
3	101-150m.
4	151-200m.
5	201-250m.
6	251-300m.
7	301-350m.
8	351-400m.
9	401-450m.
10	451-500m.
11	501-550m.
12	551-600m.
13	601-650m.
14	651-700m.

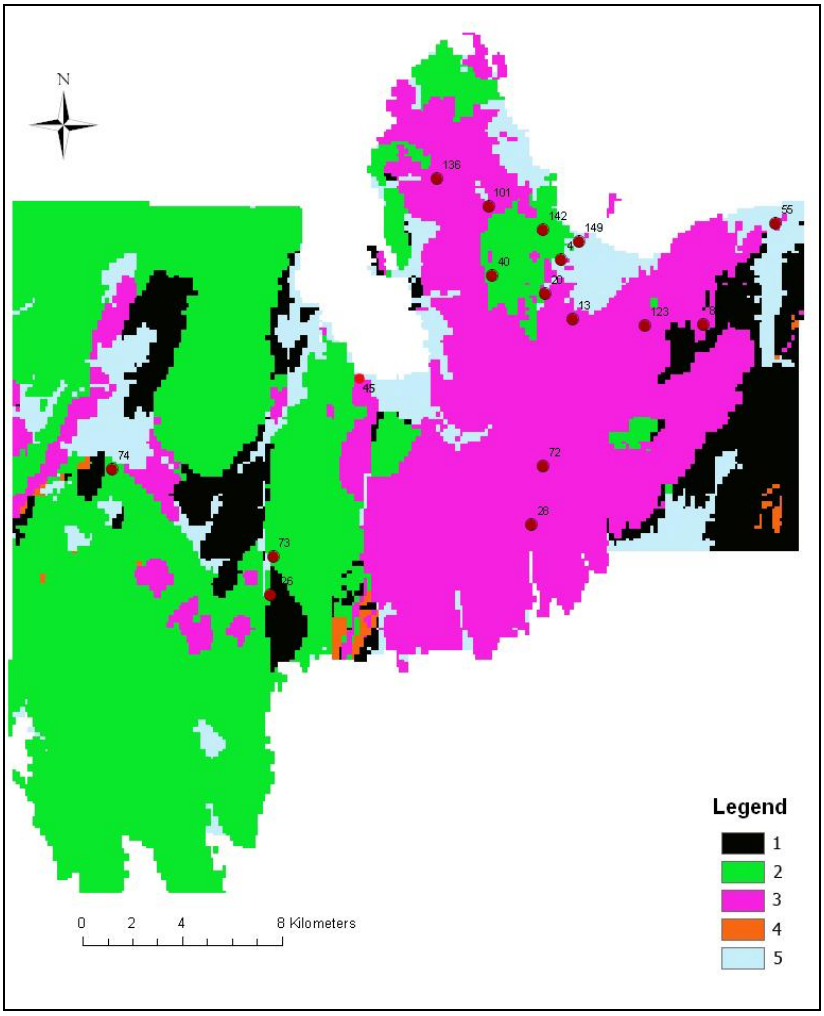
1.Late Geometric Period



Distribution of Late Geometric sites on soil map

Soil	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	0	0	7.9	7.9	1.2	1.2
2	1	6.25	1.4	-4.85	0.3	1.6
3	6	37.50	56.9	19.4	9.1	1.05
4	9	56.25	25.5	-30.75	4.1	5.8
5	0	0	2.9	2.9	0.4	0.4
6	0	0	5.4	5.4	0.9	0.9
	16	100	100			10.95

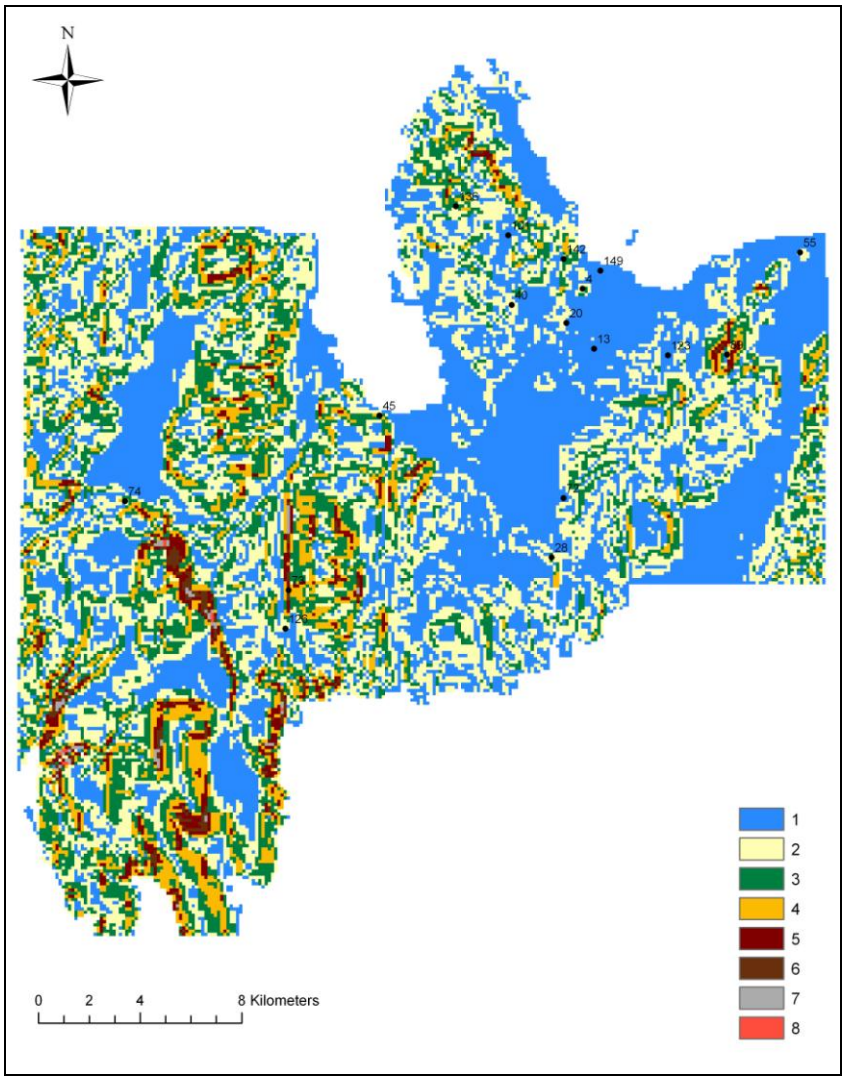
10.95 < **11.07** (There are no significant divergences in the equal distribution of sites on all types of soil)



Distribution of Late Geometric sites on rock map

Rock	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	0	0	11,6	11,6	1.8	1.8
2	6	37,50	44,3	6,8	7.1	0.17
3	9	56,25	33,2	-23,05	5.3	2.58
4	0	0	0,5	0,5	0.1	0.1
5	1	6,25	10,4	4,15	1.7	0.28
	16	100	100		16	4.93

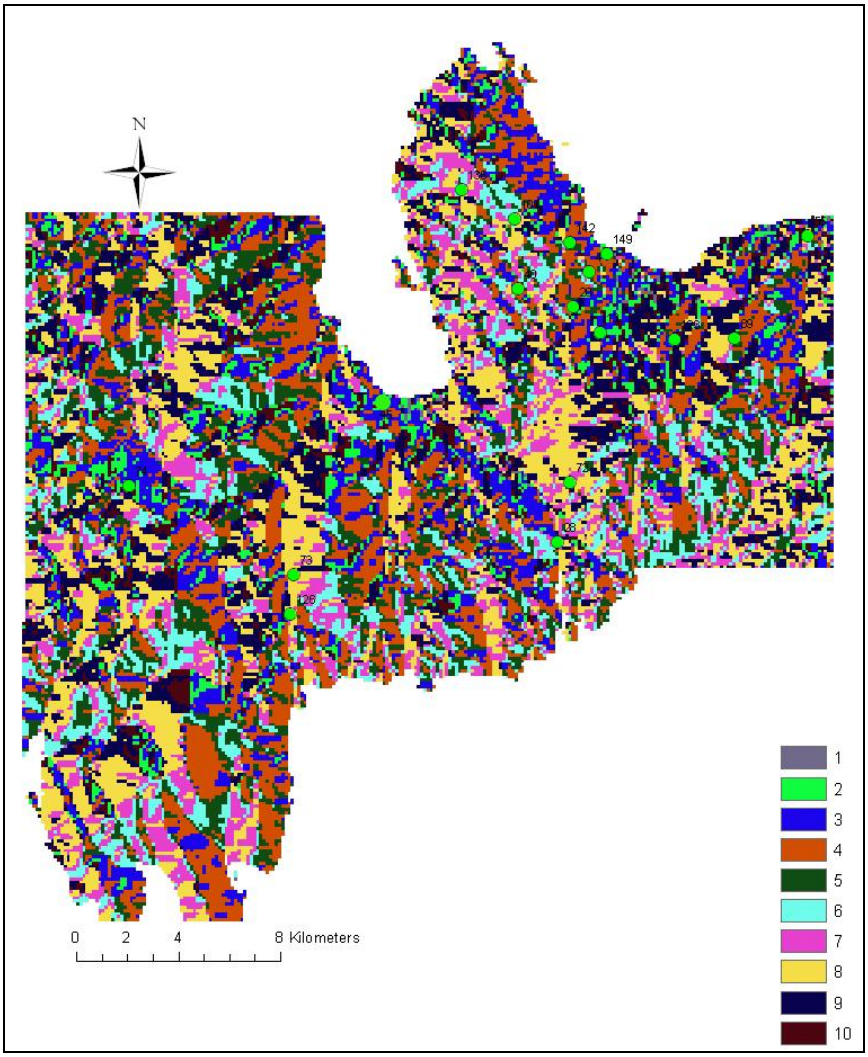
4.93 < **9.48** (There are no significant divergences in the equal distribution of sites on all types of rock)



Distribution of Late Geometric sites on slope map

Slope	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	5	31,25	39,8	8,55	6.34	0.28
2	5	31,25	31,1	-0,15	4.95	0.0005
3	2	12,50	17,9	5,14	2.87	0.26
4	3	18,75	7,7	-11,05	1.23	2.54
5	0	0	2,5	2,5	0.45	0.45
6	1	6,25	0,7	-5,55	0.12	6.45
7	0	0	0,2	0,2	0.04	0.03
	16	100	100		16	10.02

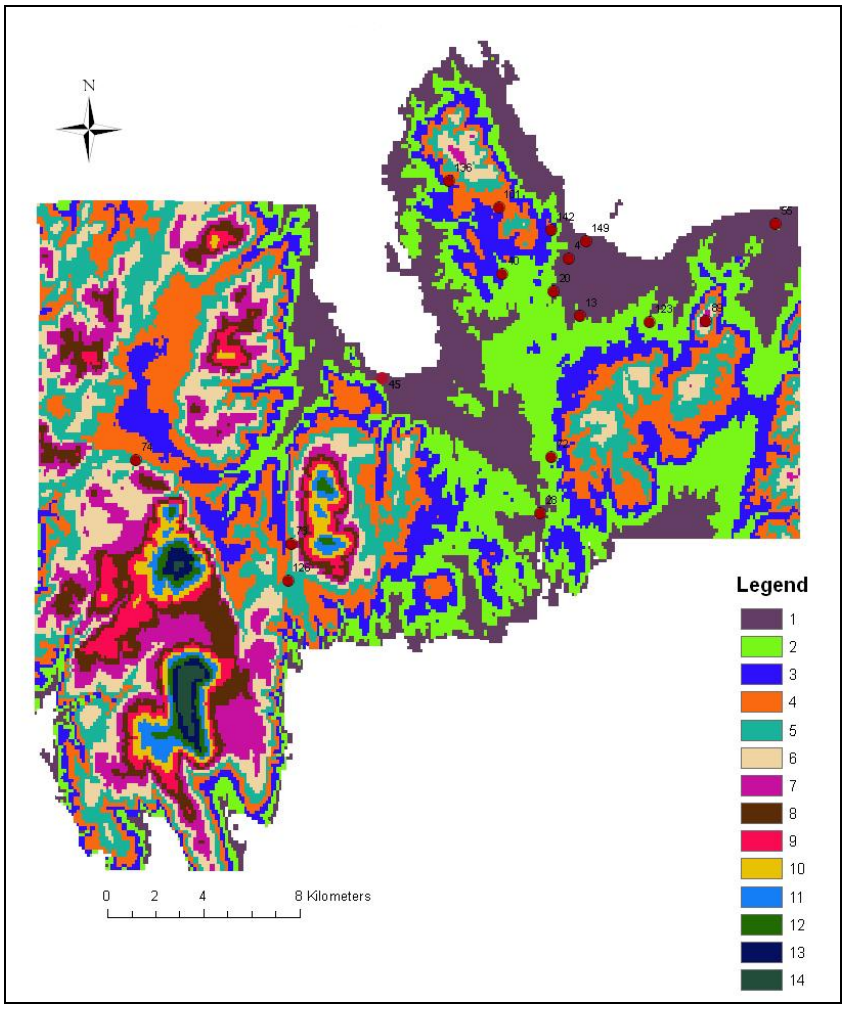
10.02 < **12.59** (There are no significant divergences in the equal distribution of sites on all classes of slope)



Distribution of Late Geometric sites on aspect map

Aspect	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	1	6,25	0,3	-5,95	0.05	18.05
2	1	6,25	4,9	-1,35	0.8	0.05
3	1	6,25	12,1	5,85	1.9	0.42
4	5	31,25	16,8	-14,4	2.7	1.95
5	0	0	11,8	11,8	1.85	1.85
6	1	6,25	9,9	3,65	1.6	0.22
7	1	6,25	11,2	4,95	1.8	0.35
8	2	0	16,0	16,0	2.6	0.13
9	1	6,25	12,2	5,95	1.9	0.42
10	2	12,5	4,8	-7,7	0.8	1.8
	16	100	100		16	25.24

25.24 > **16.91** (Sites are <u>not</u> equally distributed across all classes of aspect)

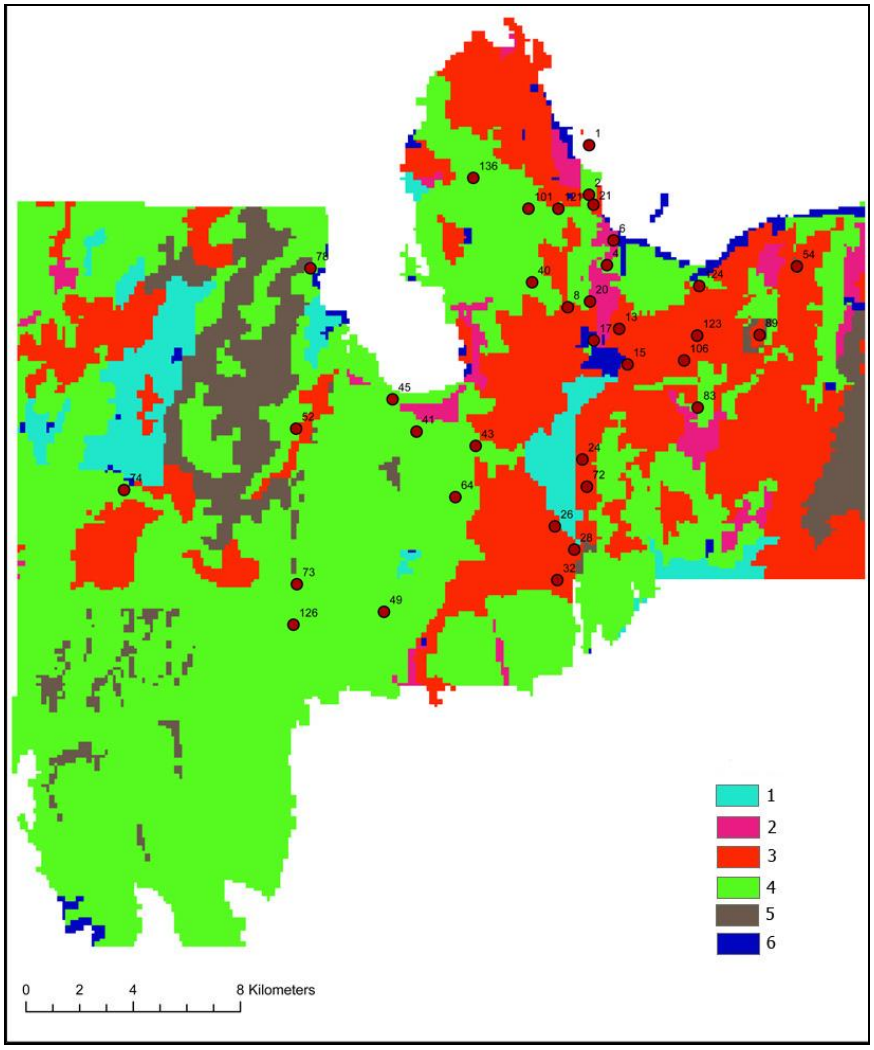


Distribution of Late Geometric sites on elevation map

Elevation	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	3	18,75	16,5	-2,25	2.64	0.05
2	6	37,50	17,3	-20,2	2.76	3.80
3	2	12,50	13,4	0,9	2.14	0.009
4	2	12,50	13,9	1,4	2.22	0.02
5	2	12,50	12,1	-0,4	1.93	0.0002
6	1	6,25	9,4	3,15	1.50	0.16
7	0	0	6,9	6,9	1.10	1.10
8	0	0	4,3	4,3	0.69	0.69
9	0	0	2,4	2,4	0.39	0.39
10	0	0	1,4	1,4	0.23	0.23
11	0	0	1,0	1,0	0.17	0.17
12	0	0	0,6	0,6	0.097	0.97
13	0	0	0,4	0,4	0.07	0.07
14	0	0	0,3	0,3	0.06	0.06
	16	100	100		16	7.721

7.721 < **22.362** (There are no significant divergences in the equal distribution of sites on all classes of elevation)

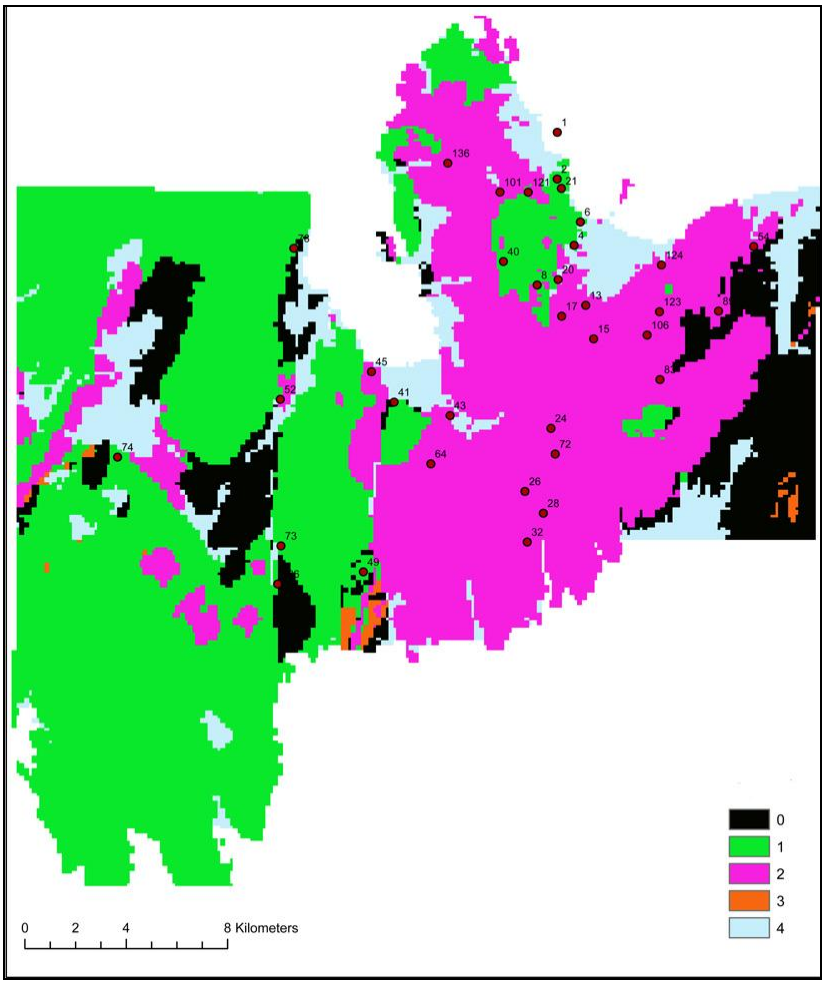
2.Early Archaic Period



Distribution of Early Archaic Sites on Soil Map

Soil	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	0	0	7,9	7,9	2.8	2.8
2	3	8,6	1,4	-7,2	0.5	12.5
3	13	37,1	56,9	19,8	19.9	2.39
4	18	51,5	25,5	-26	8.92	9.26
5	1	2,8	2,9	0,1	1.02	0.0004
6	0	0	5,3	5,3	1.86	1.86
	35	100	100		35	28.810

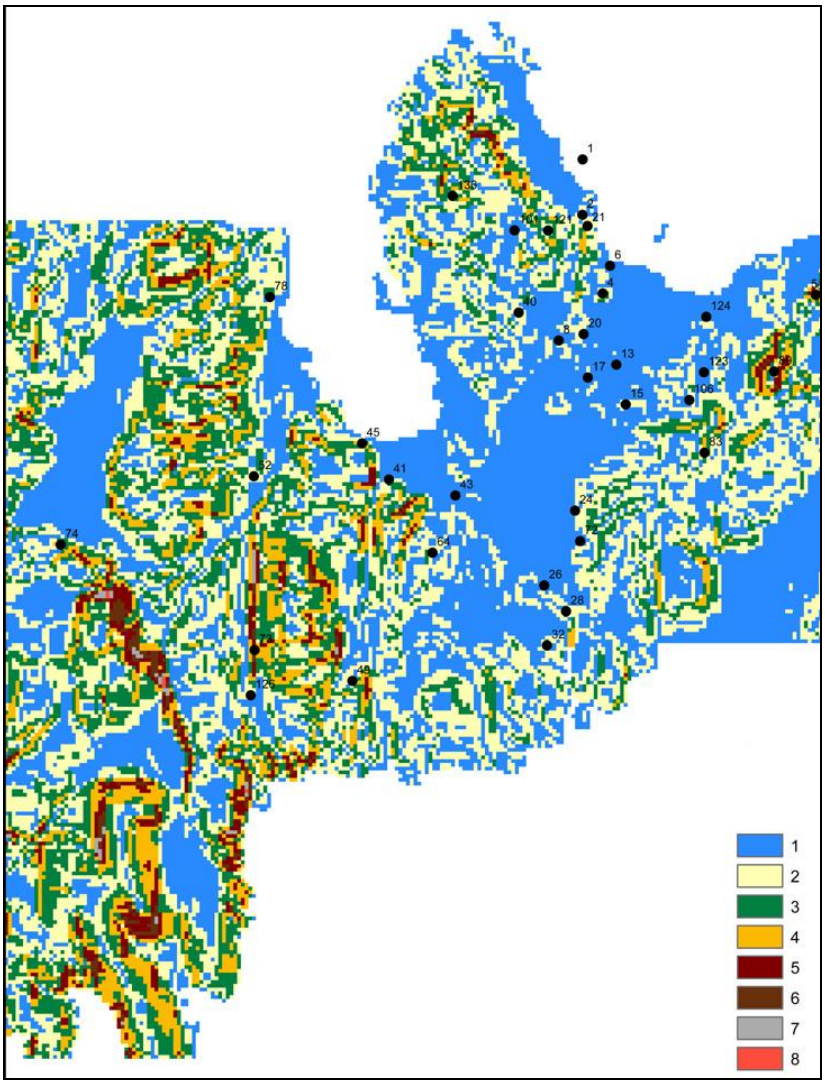
28.810 > **11.070** (Sites are <u>not</u> equally distributed across all types of soil)



Distribution of Early Archaic Sites on Rock Map

Rock	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	0	0	11,6	11,6	4.06	4.06
2	14	40	44,3	4,3	15.50	0.145
3	19	54,3	33,2	-21,1	11.62	4.687
4	0	0	0,5	0,5	0.18	0.18
5	2	5,7	10,4	4,7	3.64	0.738
	35	100	100		35	9.81

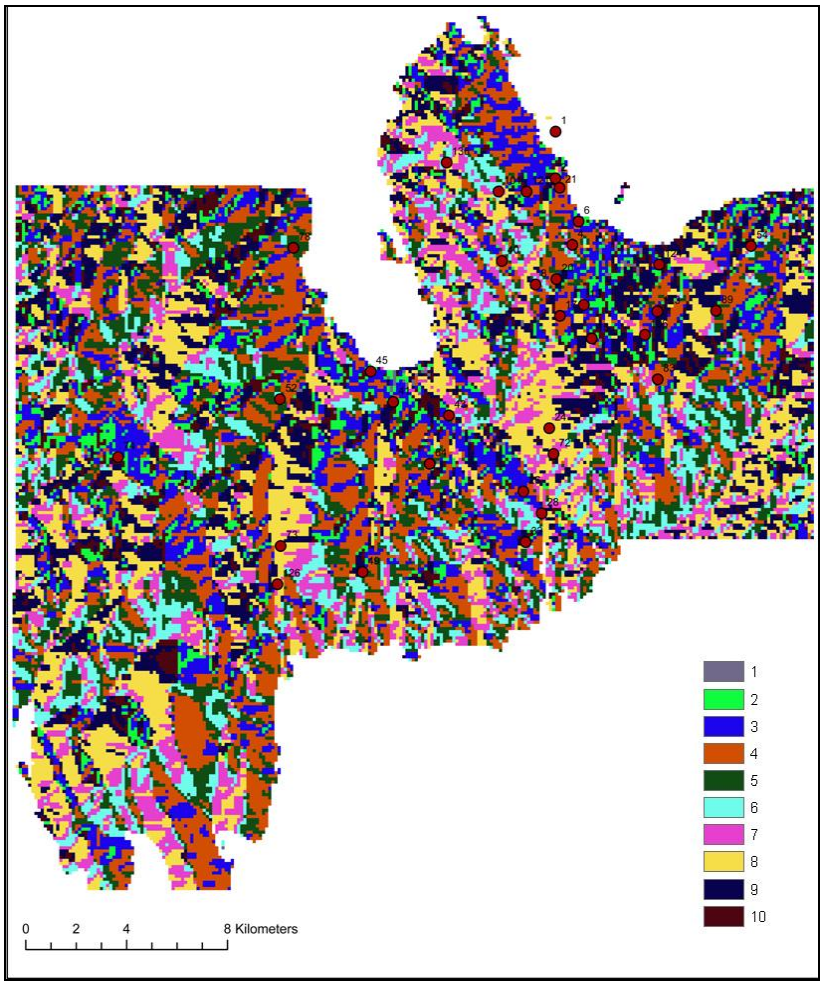
9.81 > **9.487** (Sites are <u>not</u> equally distributed across all types of soil)



Distribution of Early Archaic Sites on Slope Map

Slope	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	13	37,2	39,8	2,6	13.93	0.062
2	14	40	31,1	-8,9	10.88	0.894
3	3	8,6	17,9	9,3	6.265	1.701
4	4	11,4	7,7	-3,7	2.695	0.631
5	0	0	2,5	2,5	0.875	0.875
6	1	2,8	0,7	-2,1	0.245	2.326
7	0	0	0,2	0,2	0.105	0.105
	35	100	100		35	6.594

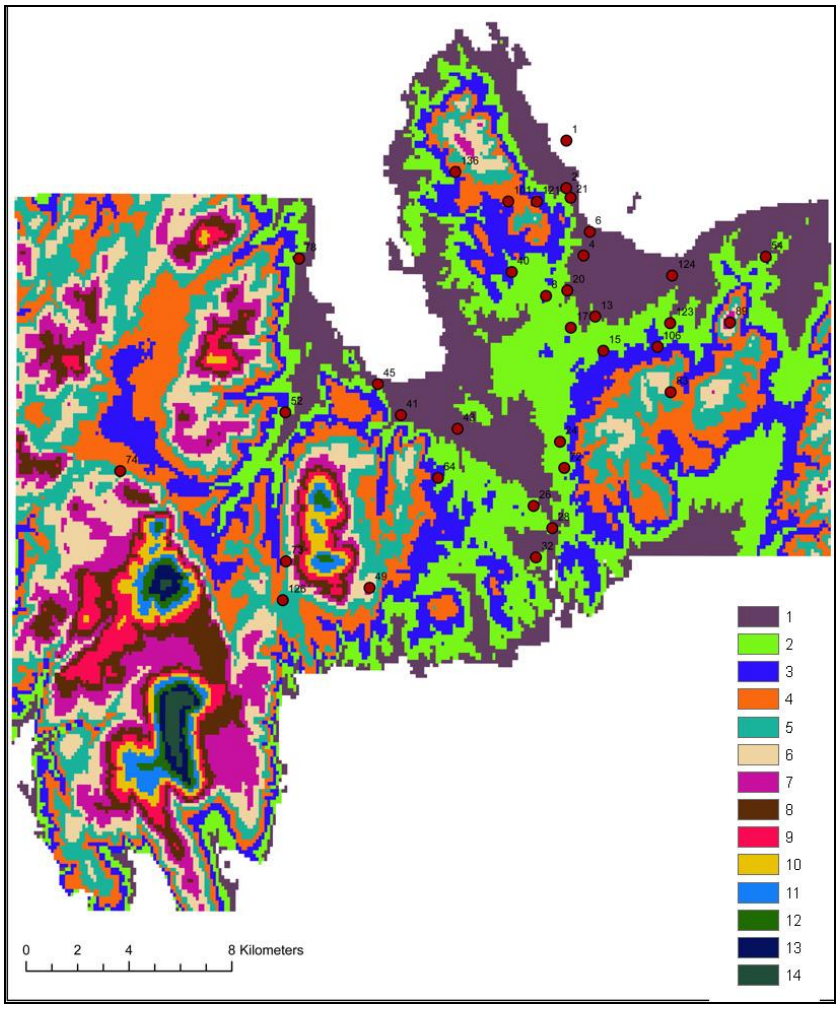
6.594 < **12.591** (There are no significant divergences in the equal distribution of sites on all classes of slope)



Distribution of Early Archaic Sites on Aspect Map

Aspect	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	2	5,7	0,3	-5,4	0.105	34.2
2	2	5,7	4,9	-0,8	1.715	0.047
3	6	17,2	12,1	-5,1	4.235	0.735
4	9	25,7	16,8	-8,9	5.88	1.655
5	2	5,7	11,8	6,1	4.13	1.098
6	2	5,7	9,9	4,2	3.465	0.619
7	1	2,9	11,2	8,3	3.92	2.175
8	4	11,5	16,0	4,5	5.6	0.457
9	2	5,7	12,2	6,5	4.27	1.206
10	5	14,2	4,8	-9,4	1.68	1.037
	35	100	100		35	43.229

43.229 > **16.919** (Sites are <u>not</u> equally distributed across all types of soil)

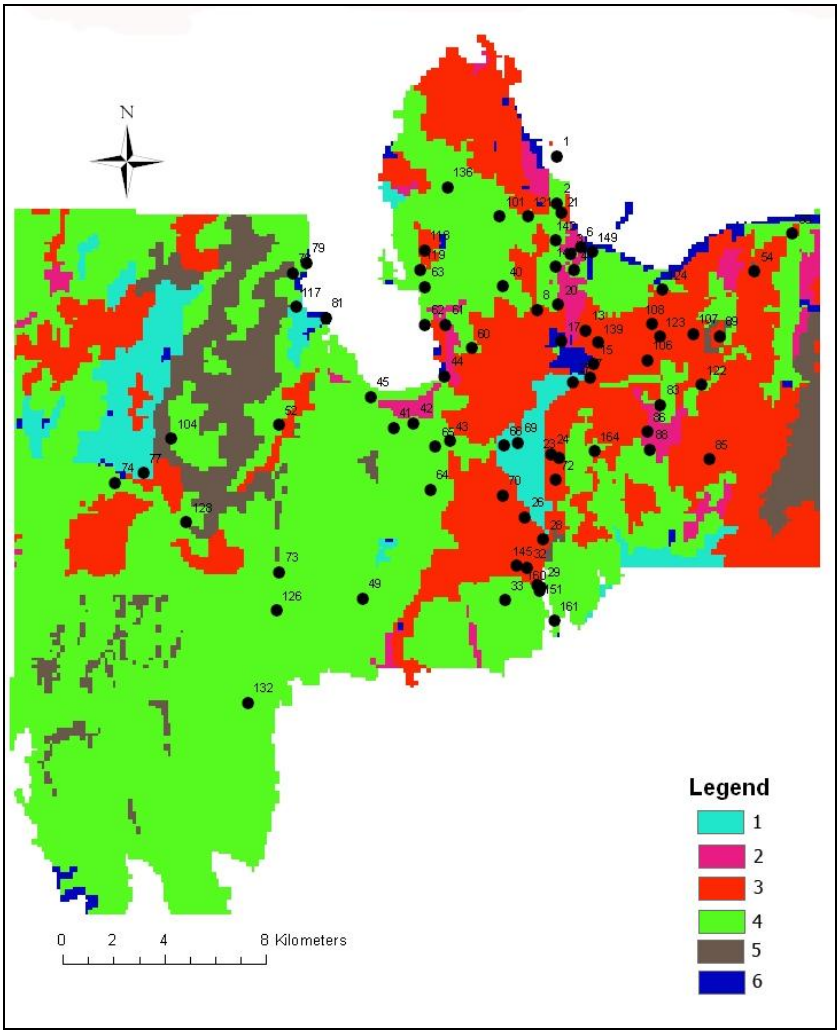


Distribution of Early Archaic Sites on Elevation Map

Elevation	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	9	25,7	16,5	-9,2	5.775	1.800
2	13	37,2	17,3	-19,9	6.055	0.069
3	5	14,4	13,4	-1	4.69	0.020
4	2	5,7	13,9	8,2	4.865	1.687
5	4	11,4	12,1	0,7	4.235	0.013
6	1	2,8	9,4	6,6	3.29	1.593
7	1	2,8	6,9	4,1	2.415	0.829
8	0	0	4,3	4,3	1.505	1.505
9	0	0	2,4	2,4	0.84	0.840
10	0	0	1,4	1,4	0.49	0.490
11	0	0	1,0	1	0.35	0.350
12	0	0	0,6	0,6	0.21	0.210
13	0	0	0,4	0,4	0.14	0.140
14	0	0	0,3	0,3	0.105	0.105
	35	100	100		35	9.651

9.651 < **22.3620** (There are no significant divergences in the equal distribution of sites on all classes of elevation)

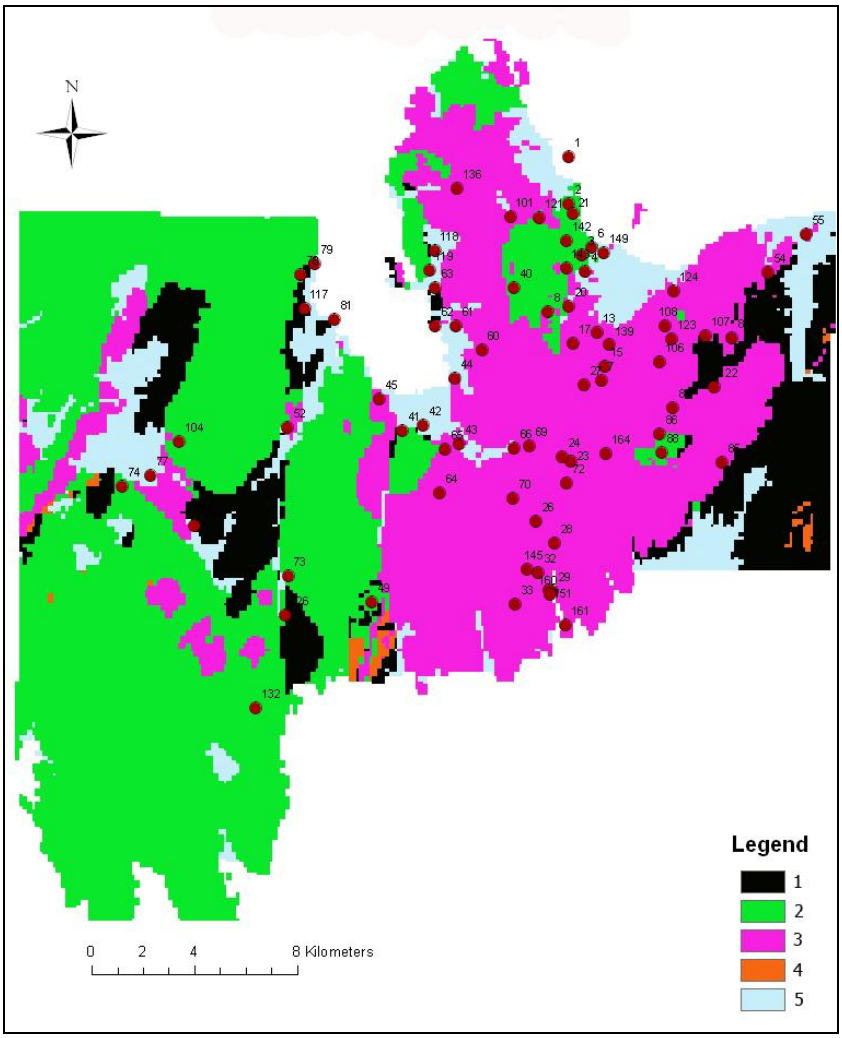
3.Late Archaic Period



Distribution of Late Archaic sites on Soil Map

Soil	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	3	3,9	7,9	4.0	6.004	1.503
2	6	7,9	1,4	-6,5	1.064	22.898
3	28	36,9	56,9	20	43.244	5.373
4	38	50	25,5	-24,4	19.38	17.889
5	1	1,3	2,9	1,6	2.204	0.657
6	0	0	5,3	5,3	4.028	4.028
	76	100	100		76	52.348

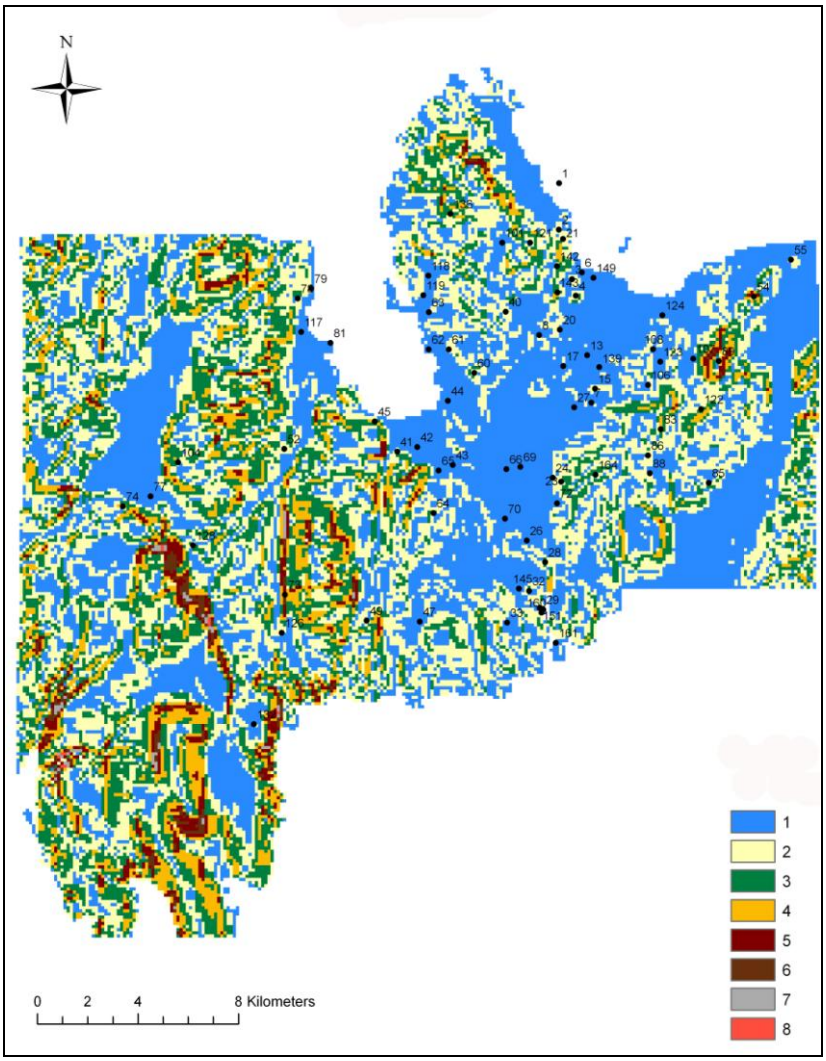
52.348 > **11.075** (Sites are <u>not</u> equally distributed across all types of soil)



Distribution of Late Archaic sites on Rock Map

Rock	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	4	5,3	11,6	6,3	8,816	2,630882
2	20	26,3	44,3	18	33,668	5,548718
3	42	55,2	33,2	-22	25,232	11,14322
4	0	0	0,5	0,5	0,38	0,38
5	10	13,2	10,4	-2,8	7,904	0,555822
	76	100	100		76	20,25865

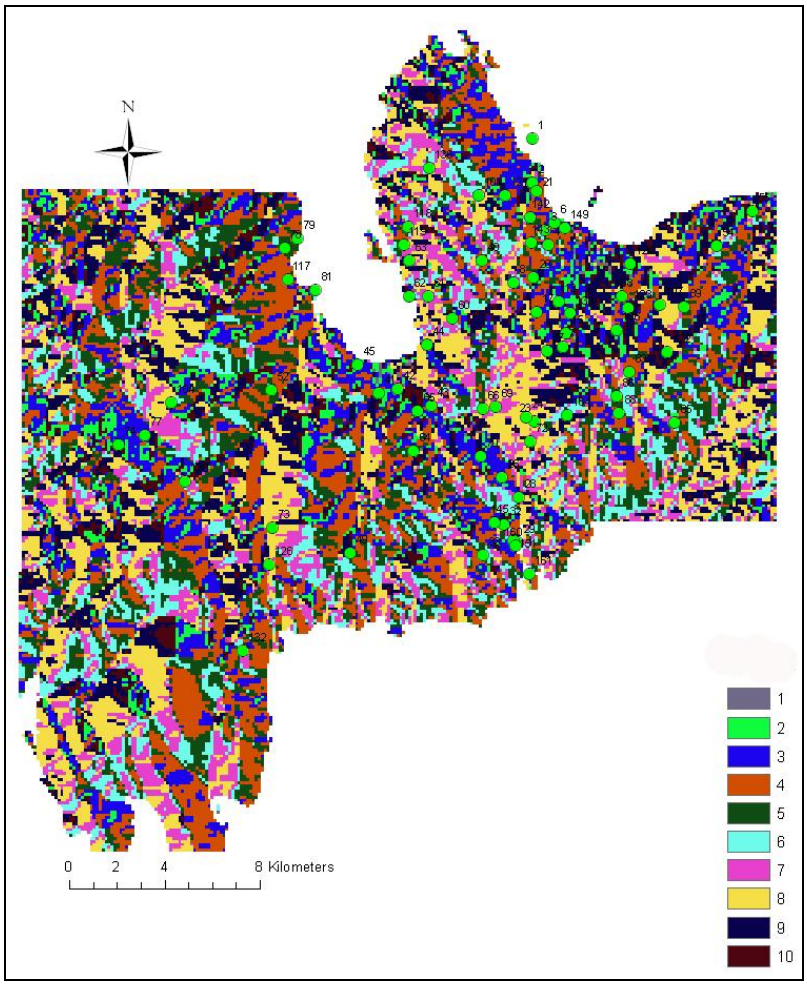
20,25865 > **9,48773** (Sites are <u>not</u> equally distributed across all types of rock)



Distribution of Late Archaic sites on Slope Map

Slope	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	40	52,6	39,8	-12,8	30,248	3,144059
2	24	31,5	31,1	-0,4	23,636	0,005606
3	6	7,9	17,9	10	13,604	4,250281
4	4	5,2	7,7	2,5	5,852	0,586108
5	1	1,4	2,5	1,1	1,9	0,426316
6	1	1,4	0,7	-0,7	0,532	0,411699
7	0	0	0,2	0,2	0,152	0,152
	76	100	100			8,976068

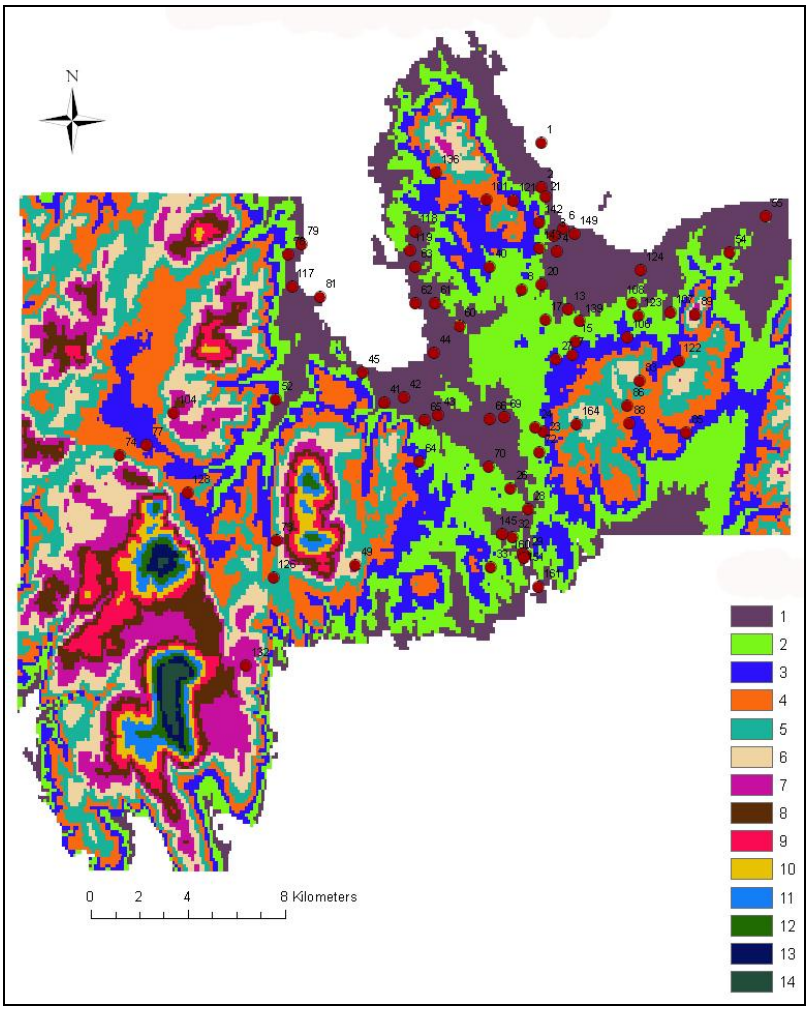
8,9760 < **12,5916** (There are no significant divergences in the equal distribution of sites on all classes of elevation)



Distribution of Late Archaic sites on Aspect Map

Aspect	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	16	21	0,3	-20,7	0,228	1091,035
2	4	5,3	4,9	-0,4	3,724	0,020455
3	8	10,5	12,1	1,6	9,196	0,155548
4	18	23,7	16,8	-6,9	12,768	2,14394
5	5	6,6	11,8	5,2	8,968	1,75569
6	4	5,3	9,9	4,6	7,524	1,650528
7	3	3,9	11,2	7,3	8,512	3,569331
8	6	7,9	16,0	8,1	12,16	3,120526
9	7	9,3	12,2	2,9	9,272	0,556728
10	5	6,5	4,8	-1,7	3,648	0,50107
	76	100	100		76	1104,509

1104,509 > **16,9190** (Sites are <u>not</u> equally distributed across all classes of aspect)

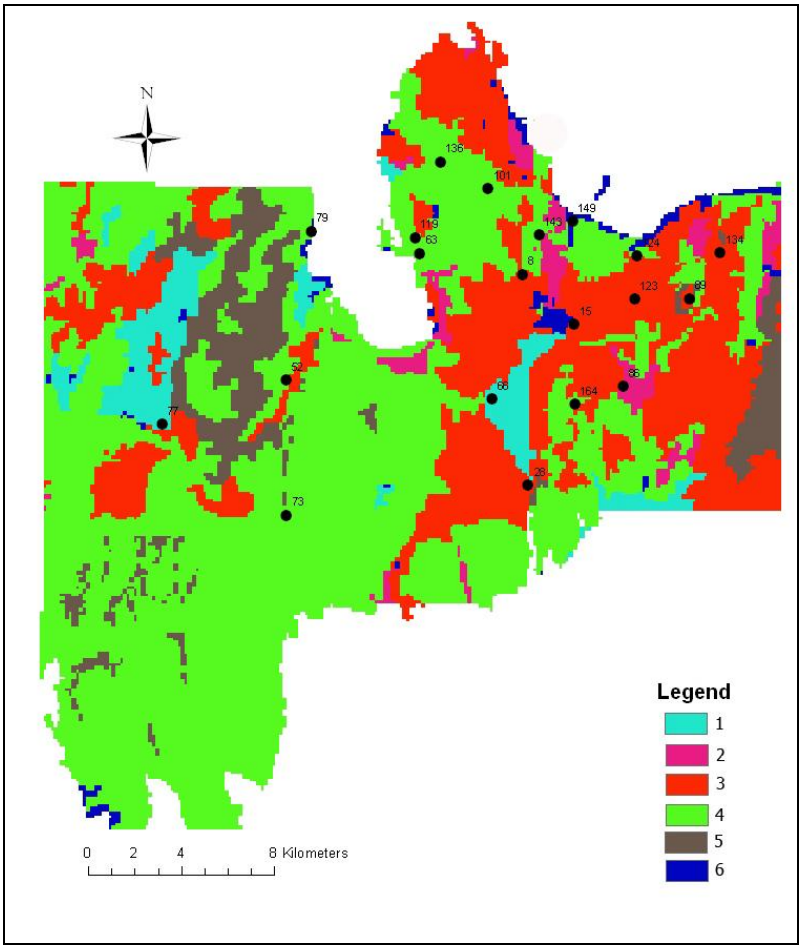


Distribution of Late Archaic sites on Elevation Map

Elevation	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	29	38,2	16,5	-21,7	12,54	21,60539
2	22	28,9	17,3	-11,6	13,148	5,959682
3	11	14,5	13,4	-1,1	10,184	0,065383
4	6	7,9	13,9	6	10,564	1,9718
5	4	5,2	12,1	6,9	9,196	2,935887
6	1	1,3	9,4	8,1	7,144	5,283978
7	3	3,9	6,9	3	5,244	0,960247
8	0	0	4,3	4,3	3,268	3,268
9	0	0	2,4	2,4	1,824	1,824
10	0	0	1,4	1,4	1,064	1,064
11	0	0	1,0	1	0,76	0,76
12	0	0	0,6	0,6	0,456	0,456
13	0	0	0,4	0,4	0,304	0,304
14	0	0	0,3	0,3	0,228	0,228
	76	100	100			46,68637

46,68637 > **22,3620** (Sites are <u>not</u> equally distributed across all classes of elevation)

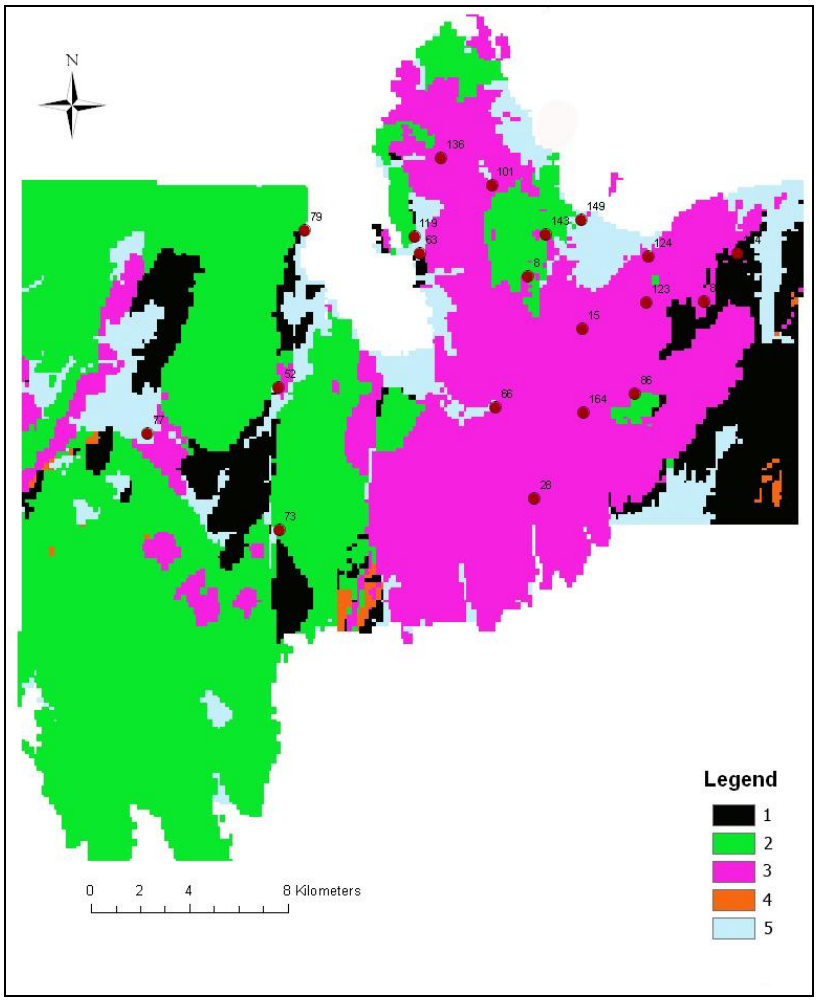
4.5th Century BC



Distribution of 5th c. BC sites on Soil Map

Soil	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	2	10	7,9	-2,1	1,59	0,111646
2	0	0	1,4	1,4	0,28	0,28
3	7	35	56,9	21,9	11,38	1,6858
4	11	55	25,5	-29,5	5,1	6,82549
5	0	0	2,9	2,9	0,58	0,58
6	0	0	5,3	5,3	1,07	1,06
	20	100	100		20	10,54294

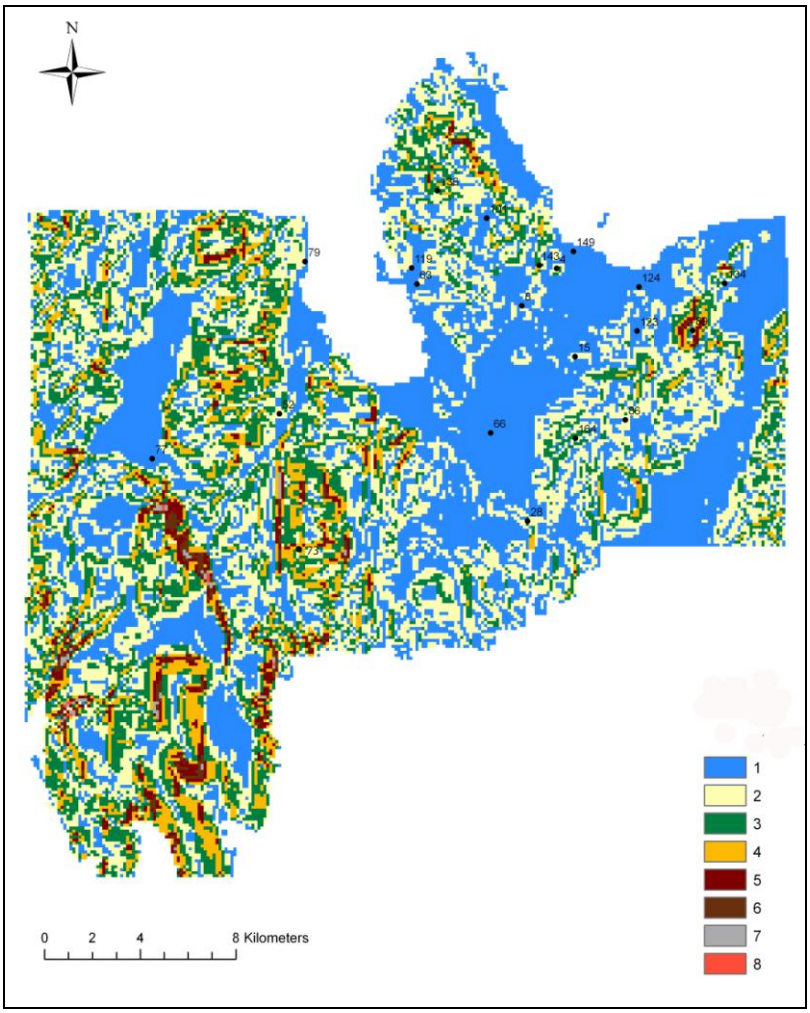
10,54294 < **11,0705** (There are no significant divergences in the equal distribution of sites on all types of soil)



Distribution of 5th c. BC sites on Rock Map

Rock	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	3	15	11,6	-3,4	2,32	0,19931
2	3	15	44,3	2,9	8,86	3,875801
3	11	55	33,2	-21,8	6,64	2,862892
4	0	0	0,5	0,5	0,1	0,1
5	3	15	10,4	-4,6	2,08	0,406923
	20	100	100		20	7,444926

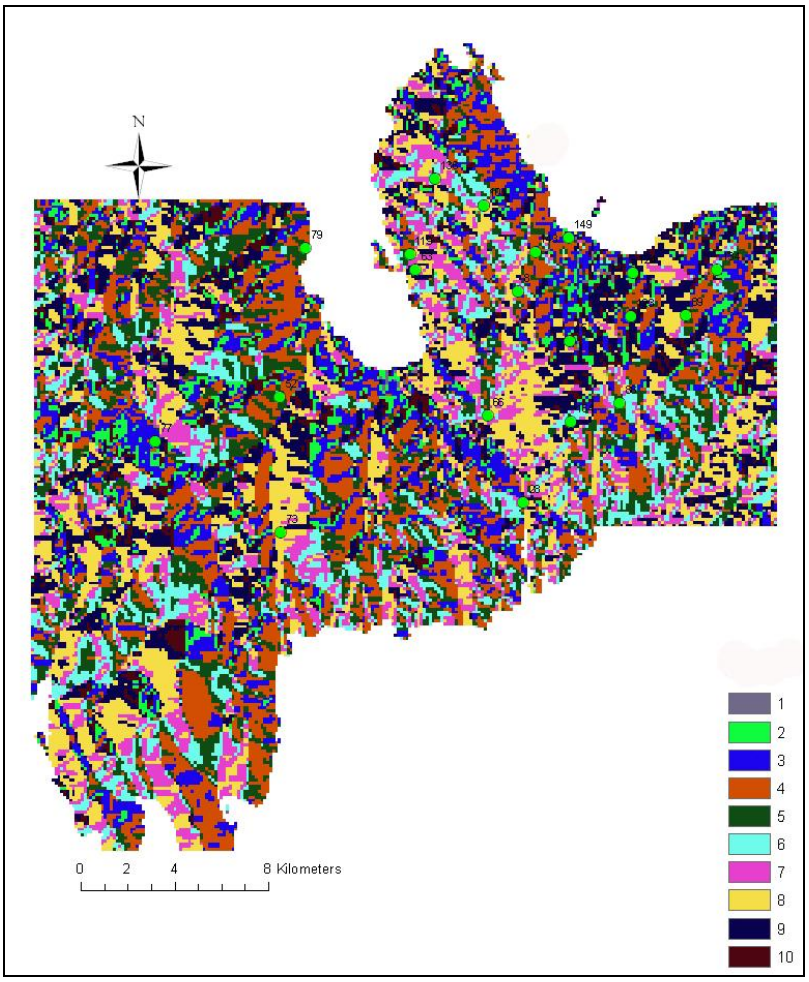
7,4449 < **9,4877** (There are no significant divergences in the equal distribution of sites on all types of rock)



Distribution of 5th c. BC sites on Slope Map

Slope	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	9	45	39,8	-5,2	7,96	0,135879
2	7	35	31,1	-3,9	6,22	0,097814
3	3	15	17,9	2,9	3,58	0,093966
4	1	5	7,7	2,7	1,54	0,189351
5	0	0	2,5	2,5	0,5	0,5
6	0	0	0,7	0,7	0,15	0,14
7	0	0	0,2	0,2	0,05	0,04
	20	100	100		20	1,19701

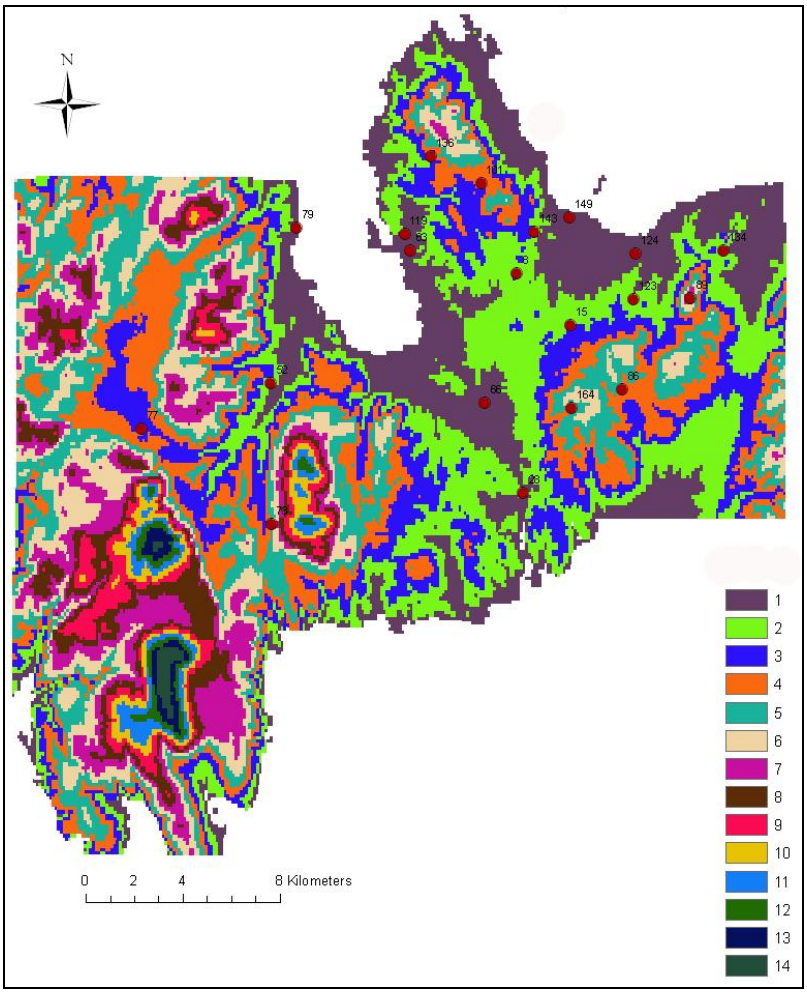
1,19701 < **12,5916** (There are no significant divergences in the equal distribution of sites on all classes of slope)



Distribution of 5th c. BC sites on Aspect Map

Aspect	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	4	20	0,3	-19,7	0,06	258,7267
2	0	0	4,9	4,9	0,98	0,98
3	1	5	12,1	7,1	2,42	0,833223
4	5	25	16,8	-8,2	3,36	0,800476
5	2	10	11,8	1,8	2,36	0,054915
6	3	15	9,9	-5,1	1,98	0,525455
7	1	5	11,2	6,2	2,24	0,686429
8	0	0	16	16	3,2	3,2
9	1	5	12,2	7,2	2,44	0,849836
10	3	15	4,8	-10,2	0,96	4,335
	20				20	270,992

270,992 > 16,9190 (Sites are <u>not</u> equally distributed across all classes of aspect)

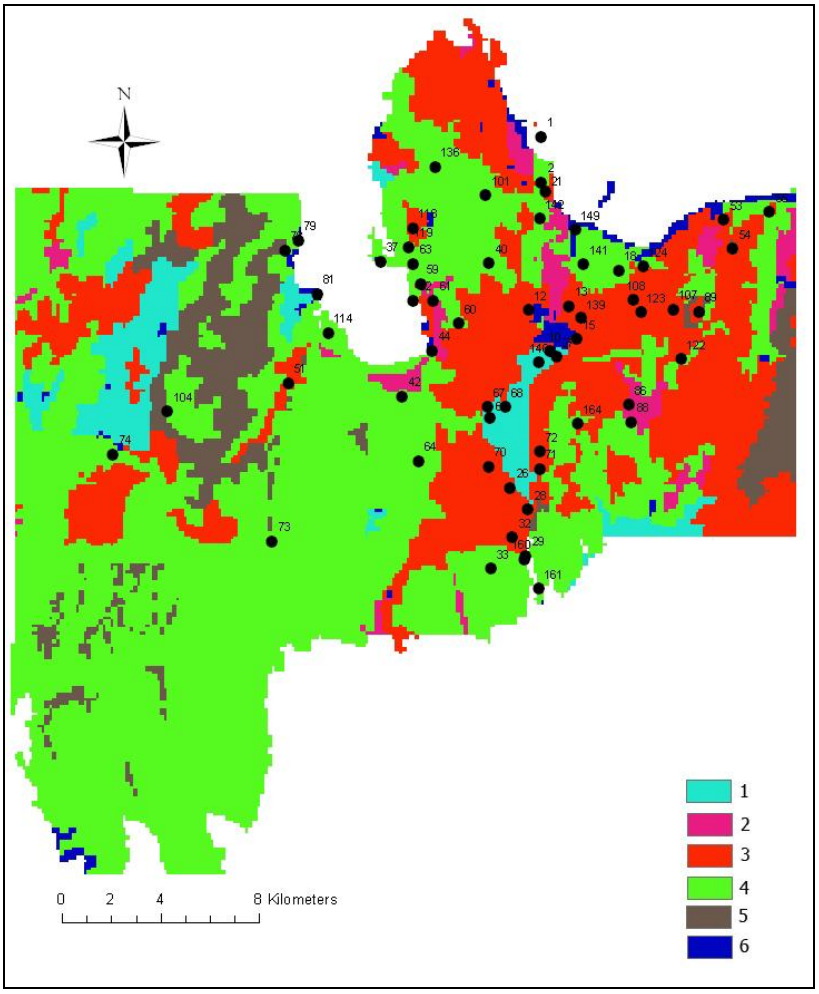


Distribution of 5th c. BC sites on Elevation Map

Elevation	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	6	30	16,5	-13,5	3,3	2,209091
2	7	35	17,3	-17,7	3,47	3,62185
3	3	15	13,4	-1,6	2,69	0,038209
4	3	15	13,9	-1,1	2,78	0,01741
5	0	0	12,1	12,1	2,42	2,42
6	1	5	9,4	4,4	1,88	0,411915
7	0	0	6,9	6,9	1,38	1,38
8	0	0	4,3	4,3	0,86	0,86
9	0	0	2,4	2,4	0,48	0,48
10	0	0	1,4	1,4	0,28	0,28
11	0	0	1,0	1	0,2	0,2
12	0	0	0,6	0,6	0,12	0,12
13	0	0	0,4	0,4	0,08	0,08
14	0	0	0,3	0,3	0,06	0,06
	20	100	100		20	12,17847

12,17847 < **22,3620** (There are no significant divergences in the equal distribution of sites on all classes of elevation)

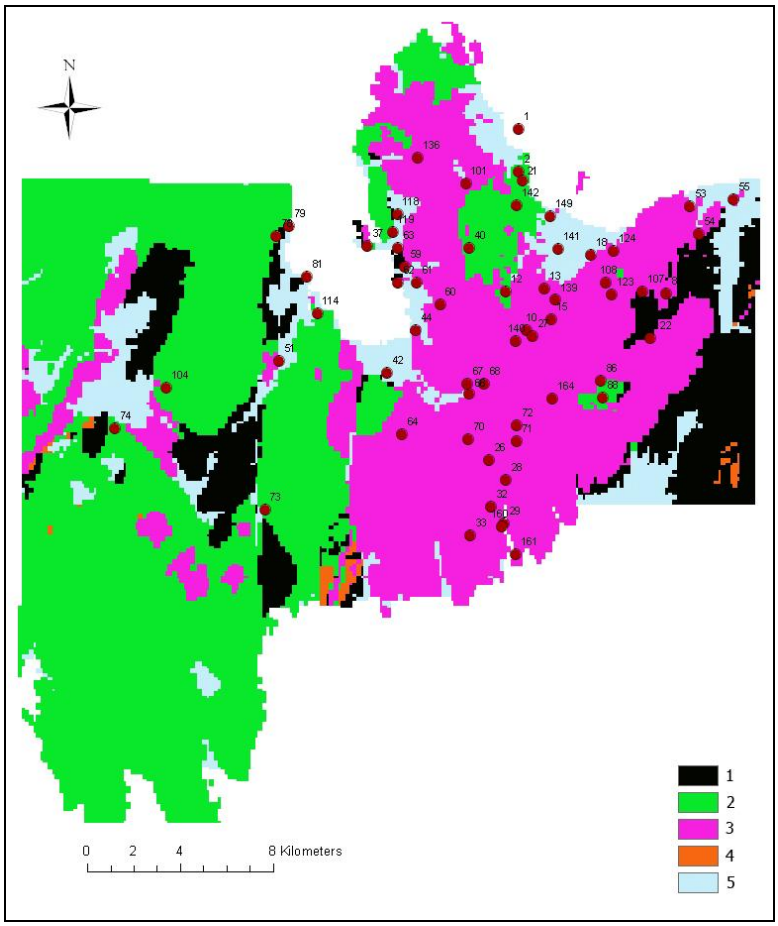
5.Late Classical Period



Distribution of Late Classical sites on Soil Map

Soil	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	5	7,6	7,9	0,3	5,214	0,008783
2	4	6,1	1,4	-4,7	0,924	10,24002
3	28	42,4	56,9	14,5	37,554	2,430604
4	28	42,4	25,5	-16,9	16,83	7,413482
5	1	1,5	2,9	1,4	1,914	0,436466
6	0	0	5,4	5,4	3,564	3,564
	66	100	100		66	24,09335

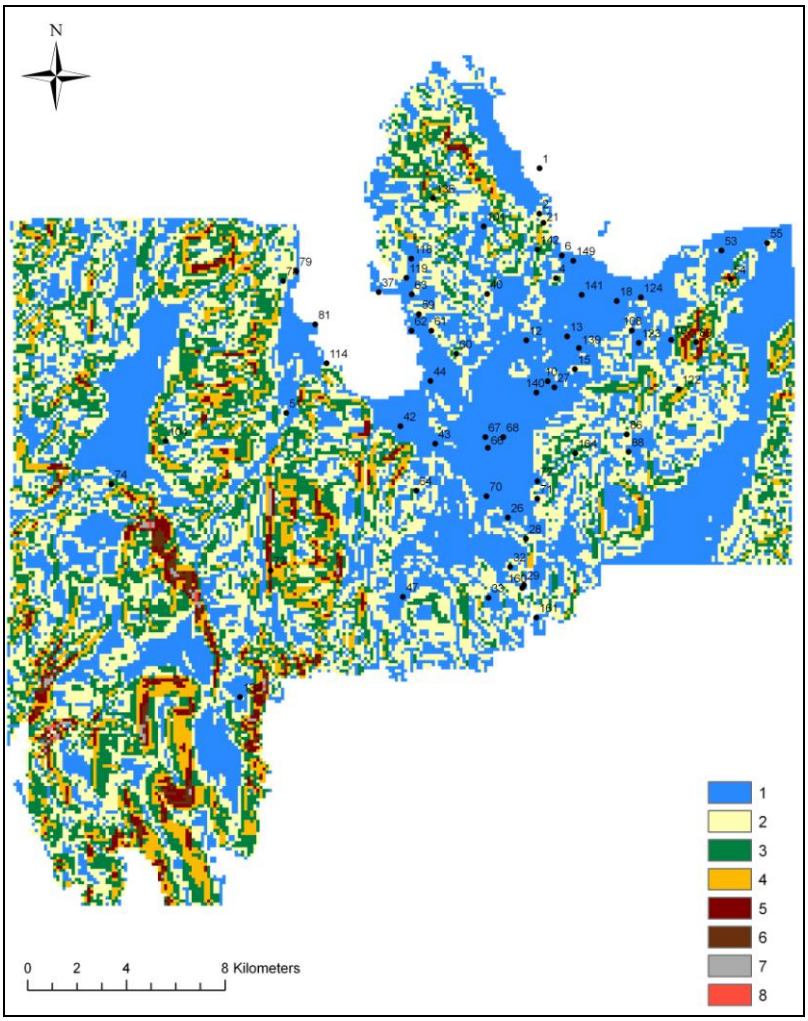
24,09335 > **11,0705** (Sites are <u>not</u> equally distributed across all types of soil)



Distribution of Late Classical sites on Rock Map

Rock	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	3	4,5	11,6	7,1	7,656	2,831549
2	15	22,8	44,3	21,5	29,238	6,933465
3	36	54,5	33,2	-21,3	21,912	9,057674
4	0	0	0,5	0,5	0,33	0,33
5	12	18,2	10,4	-7,8	6,864	3,843021
	66	100	100		66	22,99571

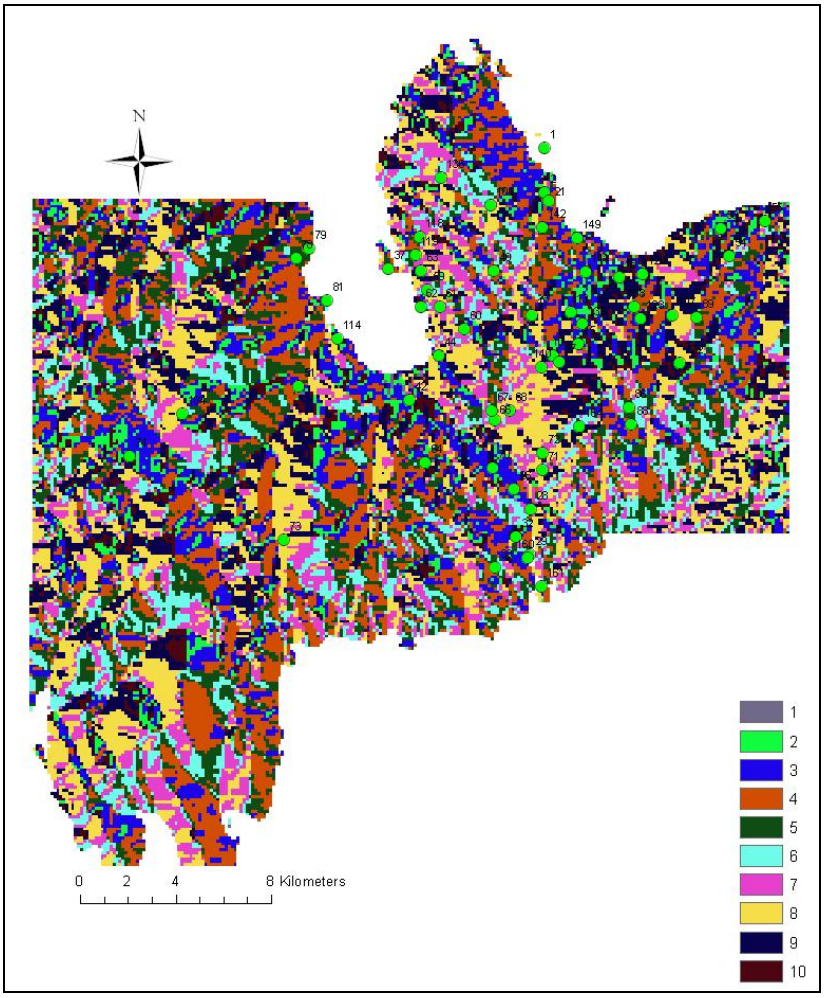
22,99571 > **9,48773** (Sites are <u>not</u> equally distributed across all types of soil)



Distribution of Late Classical sites on Slope Map

Slope	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	39	59,1	39,8	-19,3	26,268	6,171152
2	19	28,7	31,1	2,4	20,592	0,12308
3	4	6,1	17,9	11,8	11,814	5,168325
4	2	3,1	7,7	4,6	5,082	1,869092
5	1	1,5	2,5	1	1,65	0,256061
6	1	1,5	0,7	-0,8	0,462	0,626502
7	0	0	0,2	0,2	0,132	0,132
					66	14,34621

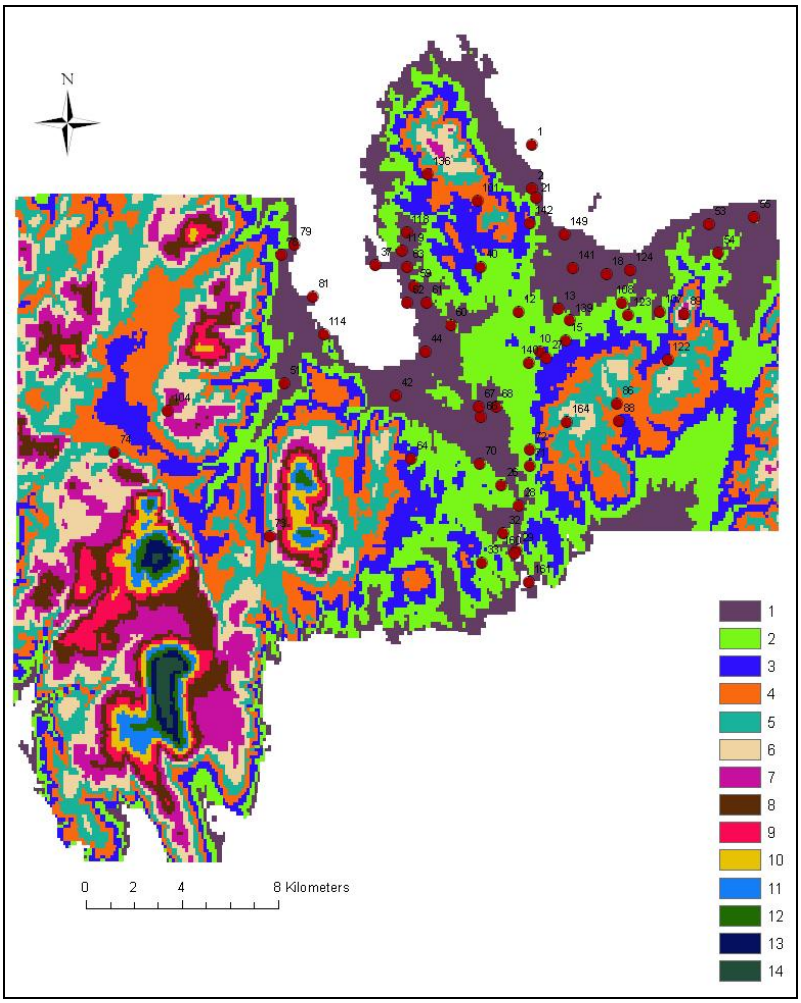
14,34621 > **12,5916** (Sites are <u>not</u> equally distributed across all classes of slope)



Distribution of Late Classical sites on Aspect Map

Aspect	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	22	33,2	0,3	-32,9	0,198	2400,642
2	2	3,1	4,9	1,8	3,234	0,470858
3	4	6,1	12,1	6	7,986	1,989506
4	14	21,2	16,8	-4,4	11,088	0,764768
5	3	4,5	11,8	7,3	7,788	2,943624
6	3	4,5	9,9	5,4	6,534	1,91141
7	3	4,5	11,2	6,7	7,392	2,609532
8	3	4,5	16	11,5	10,56	5,412273
9	6	9,1	12,2	3,1	8,052	0,522939
10	6	9,1	4,8	-4,3	3,168	2,531636
					66	2419,799

2419,799 > **16,9190** (Sites are <u>not</u> equally distributed across all classes of aspect)

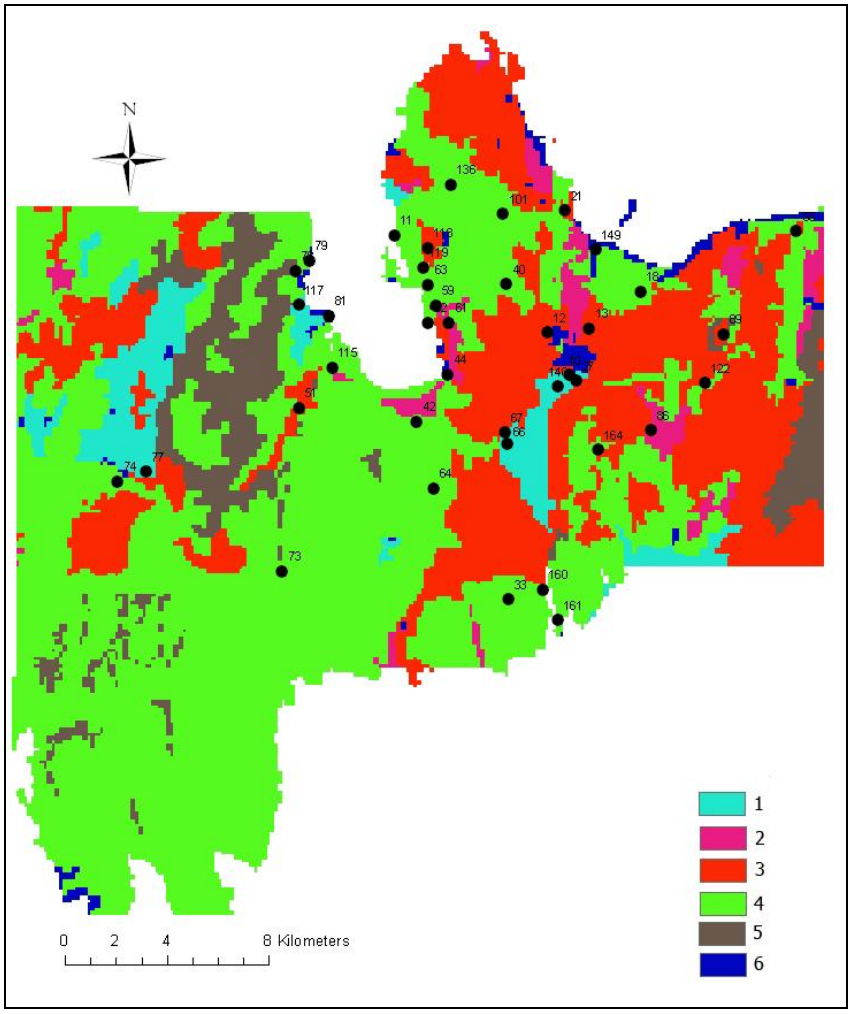


Distribution of Late Classical sites on Elevation Map

Elevation	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	30	45,4	16,5	-28,9	10,89	33,53463
2	20	30,3	17,3	-13	11,418	6,450405
3	8	12,1	13,4	1,3	8,844	0,080545
4	3	4,5	13,9	9,4	9,174	4,155033
5	2	3,1	12,1	9	8,052	4,548771
6	1	1,5	9,4	7,9	6,204	4,365186
7	2	3,1	6,9	3,8	4,554	1,432349
8	0	0	4,3	4,3	2,838	2,838
9	0	0	2,4	2,4	1,584	1,584
10	0	0	1,4	1,4	0,924	0,924
11	0	0	1,0	1	0,66	0,66
12	0	0	0,6	0,6	0,396	0,396
13	0	0	0,4	0,4	0,264	0,264
14	0	0	0,3	0,3	0,198	0,198
					66	61,43092

61,43092 > **22,3620** (Sites are <u>not</u> equally distributed across all classes of elevation)

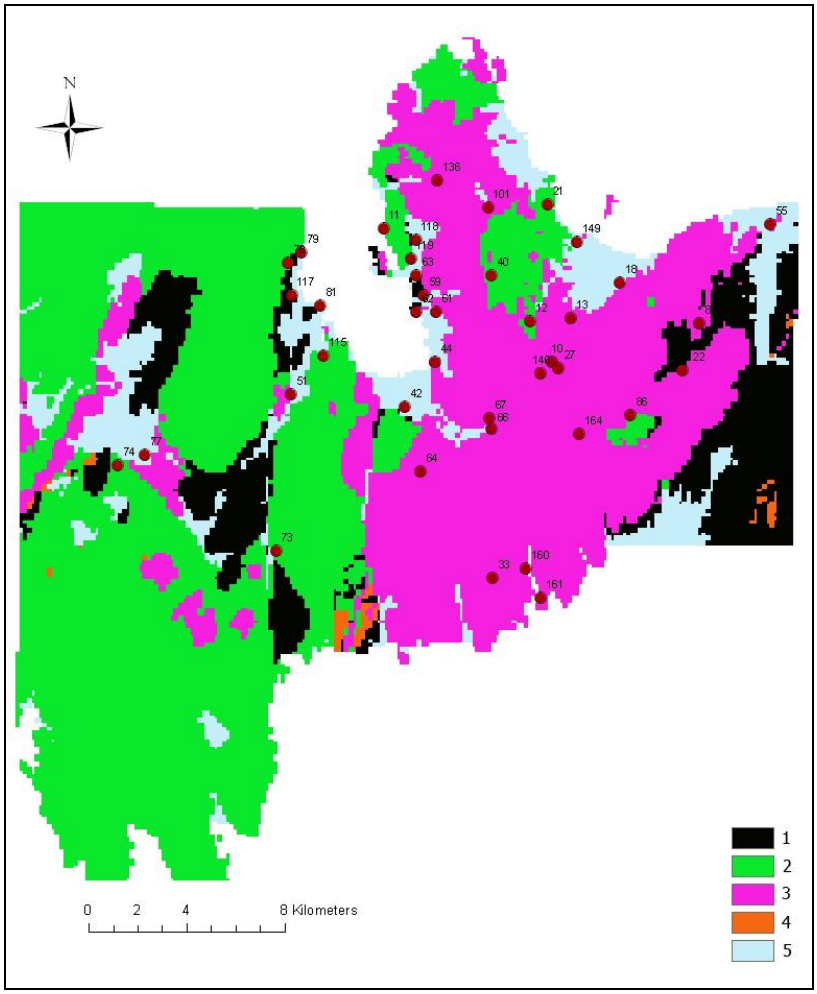
6.Hellenistic Period



Distribution of Hellenistic sites on Soil Map

Soil	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	6	14,6	7,9	-6,7	3,239	2,353542
2	3	7,4	1,4	-6	0,574	10,25344
3	9	21,9	56,9	35	23,329	8,801073
4	23	56,1	25,5	30,6	10,455	15,0528
5	0	0	2,9	2,9	1,189	1,189
6	0	0	5,3	5,3	2,214	2,214
	41				41	39,86386

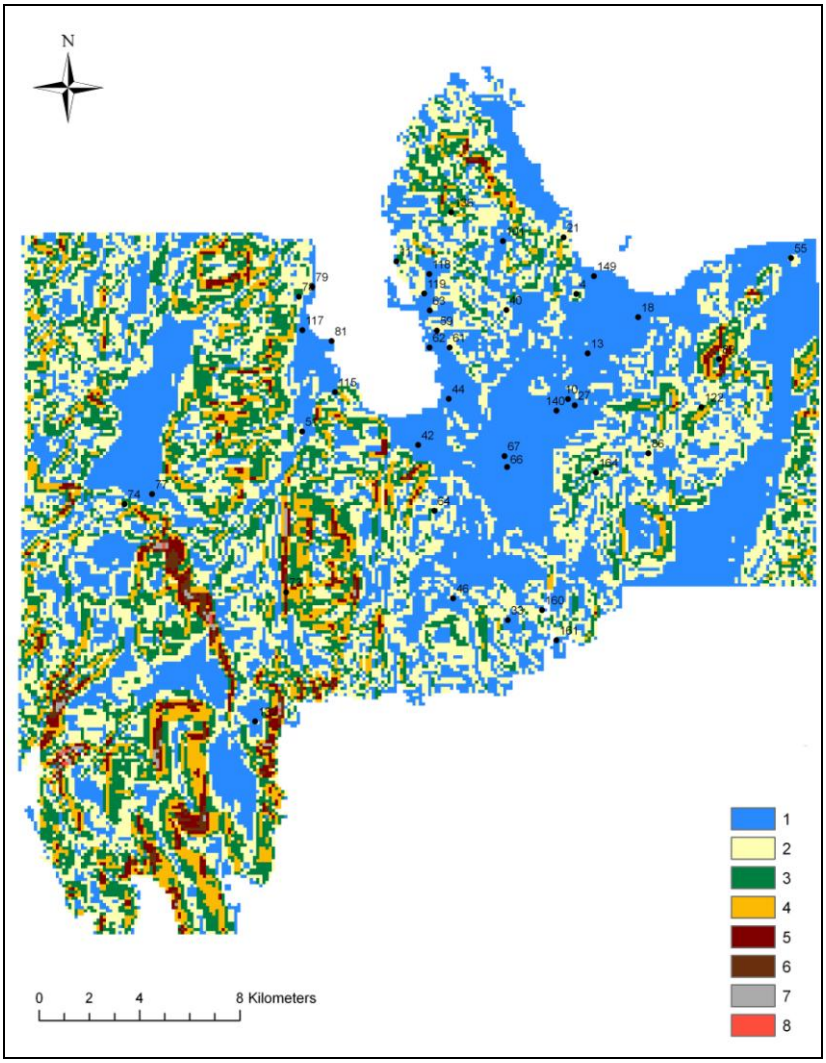
39,86386 > **11,705** (Sites are <u>not</u> equally distributed across all types of soil)



Distribution of Hellenistic sites on Rock Map

Rock	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	3	7,3	11,6	4,3	4,756	0,648347
2	7	17,1	44,3	27,2	18,163	6,860792
3	20	4,8	33,2	28,4	13,612	2,997836
4	0	0	0,5	0,5	0,205	0,205
5	11	26,8	10,4	-16,4	4,264	10,64111
					41	21,35309

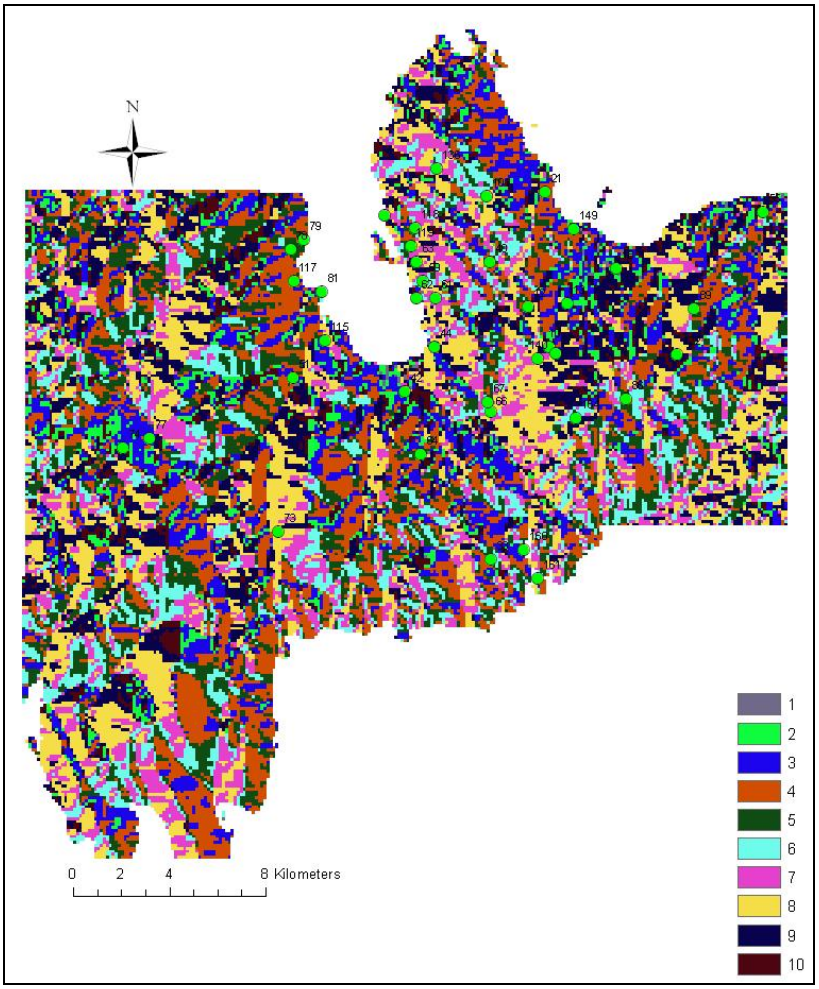
21,35309 > **9,48773** (Sites are <u>not</u> equally distributed across all types of rock)



Distribution of Hellenistic sites on Slope Map

Slope	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	26	63,4	39,8	-23,6	16,318	5,744645
2	10	24,4	31,2	6,7	12,792	0,609386
3	3	7,3	17,9	10,6	7,339	2,565325
4	2	4,9	7,7	2,8	3,157	0,424026
5	0	0	2,5	2,5	1,025	1,025
6	0	0	0,7	0,7	0,287	0,287
7	0	0	0,2	0,2	0,082	0,082
	41	100	100		41	10,73738

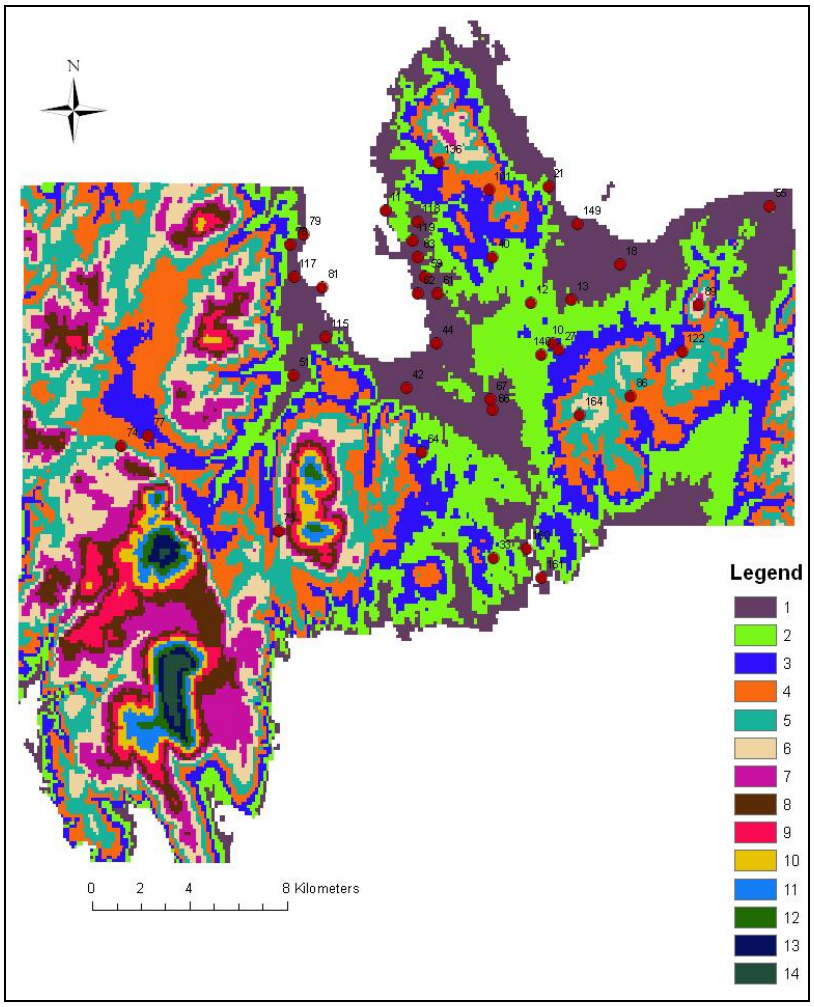
10,73738 < **12,5916** (There are no significant divergences in the equal distribution of sites on all classes of slope)



Distribution of Hellenistic sites on Aspect Map

Aspect	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	17	41,5	0,3	-41.2	0,123	2315,716
2	1	2,5	4,9	2,4	2,009	0,50676
3	1	2,5	12,1	9,6	4,961	3,162572
4	8	19,5	16,8	-2,7	6,888	0,179521
5	3	7,4	11,8	4,4	4,838	0,698273
6	2	4,8	9,9	5,1	4,059	1,044464
7	2	4,8	11,2	6,4	4,592	1,46308
8	2	4,8	16,0	11,2	6,56	3,169756
9	2	4,8	12,2	7,4	5,002	1,80168
10	3	7,4	4,8	-2,6	1,968	0,541171
					41	2328,284

2328,284 > **16,9190** (Sites are <u>not</u> equally distributed across all types of rock)

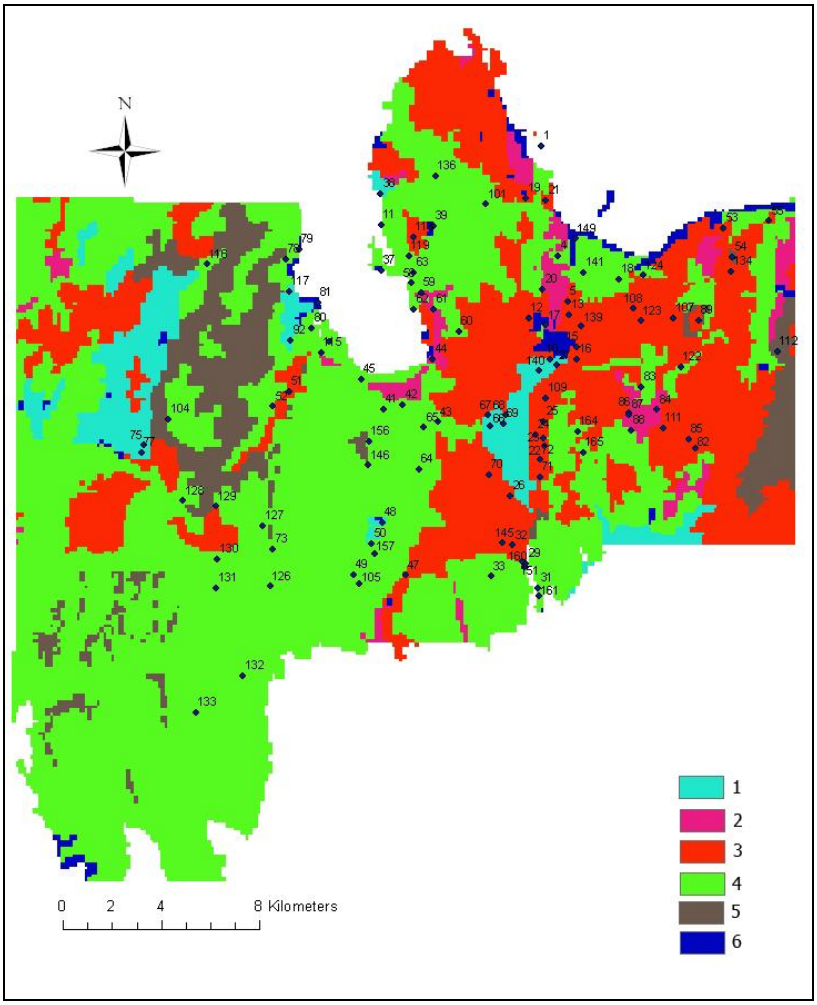


Distribution of Hellenistic sites on Elevation Map

Elevation	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	23	56,1	16,5	-39,6	6,765	38,9616
2	7	17,1	17,3	0,2	7,093	0,001219
3	5	12,2	13,4	1,2	5,494	0,044419
4	3	7,3	13,9	6,6	5,699	1,278224
5	1	2,4	12,1	9,7	4,961	3,162572
6	1	2,4	9,4	7	3,854	2,113471
7	1	2,4	6,9	4,5	2,829	1,182482
8	0	0	4,3	4,3	1,763	1,763
9	0	0	2,4	2,4	0,984	0,984
10	0	0	1,4	1,4	0,574	0,574
11	0	0	1,0	1,0	0,41	0,41
12	0	0	0,6	0,6	0,246	0,246
13	0	0	0,4	0,4	0,164	0,164
14	0	0	0,3	0,3	0,164	0,164
					41	51,04899

51,04899 > **22,3620** (Sites are <u>not</u> equally distributed across all classes of elevation)

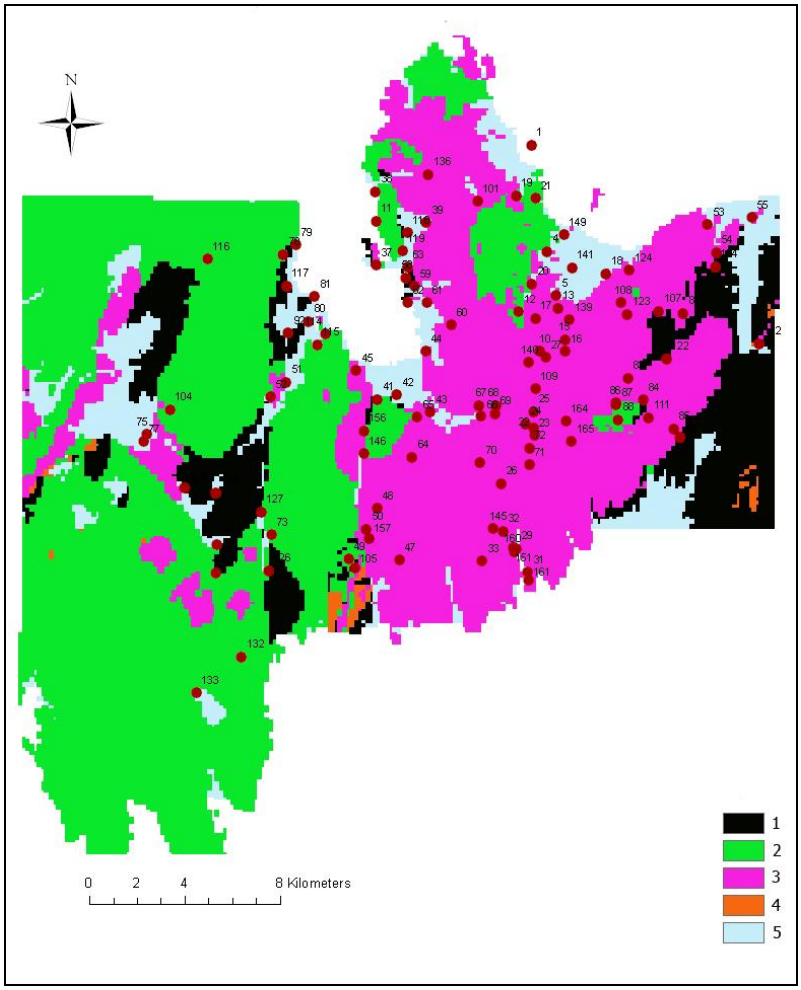
7.Roman Period



Distribution of Roman sites on Soil Map

Soil	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	13	11,4	7,9	-3,5	9,006	1,771268
2	7	6,2	1,4	-4,8	1,71	16,36497
3	39	34,2	56,9	22,7	64,866	10,31434
4	53	46,5	25,5	-21	29,07	19,69883
5	2	1,7	2,9	1,2	3,306	0,515921
6	0	0	5,3	5,3	6,042	6,042
					114	54,70733

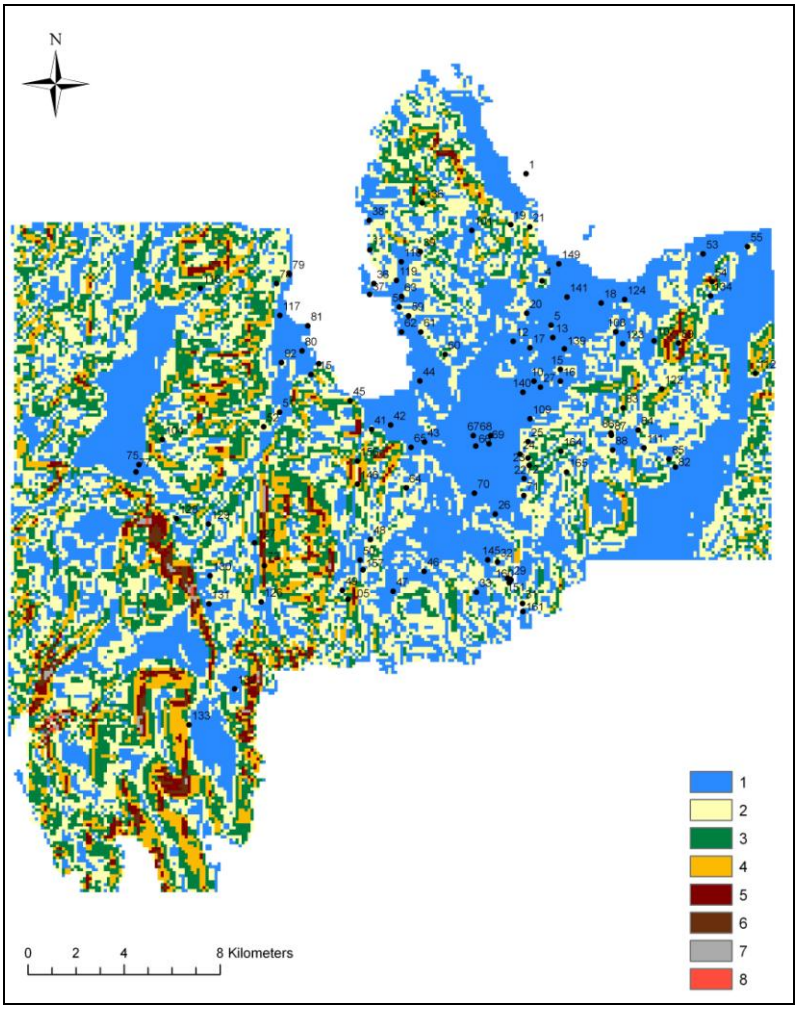
54,70733 > **11,0705** (Sites are <u>not</u> equally distributed across all types of soil)



Distribution of Roman sites on Rock Map

Rock	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	10	8,8	11,6	2,8	13,224	0,786008
2	18	15,8	44,3	28,5	50,502	20,91759
3	63	55,2	33,2	-22	37,848	16,71484
4	0	0	0,5	0,5	0,57	0,57
5	23	20,2	10,4	-9,8	11,856	10,47476
					114	49,46319

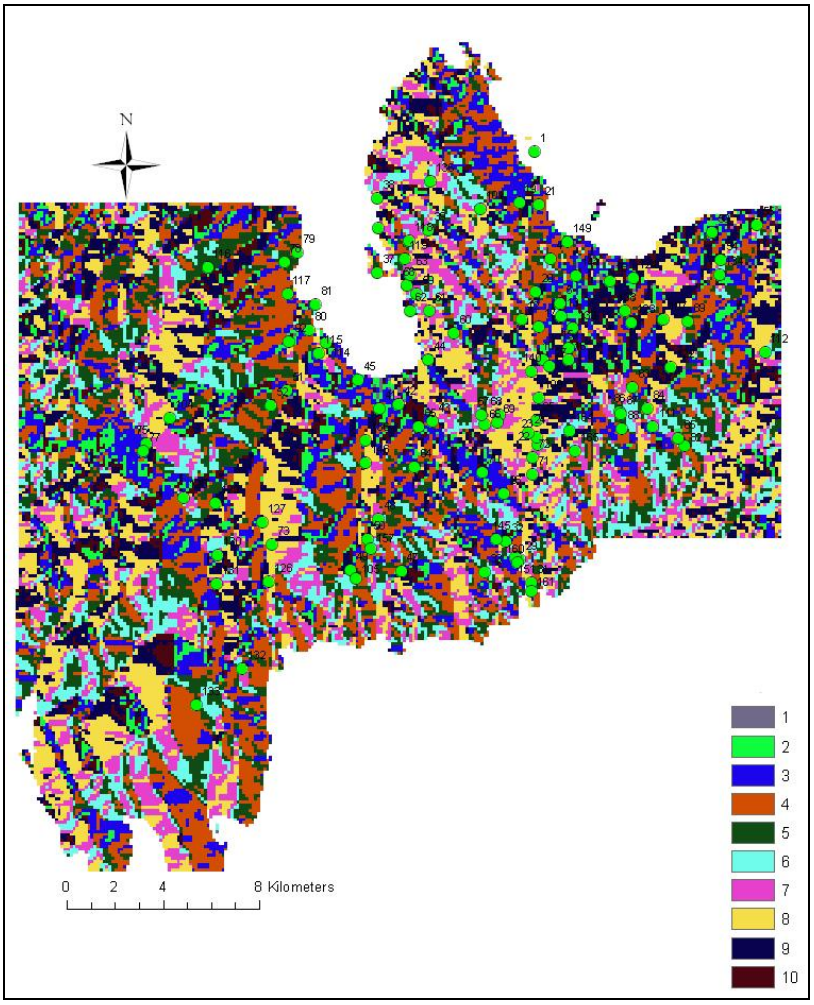
49,46319 > **9,48773** (Sites are <u>not</u> equally distributed across all types of rock)



Distribution of Roman sites on Slope Map

Slope	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	64	56,2	39,8	-16,4	45,372	7,647941
2	37	32,5	31,1	-1,4	35,568	0,057654
3	8	7,1	17,9	10,8	20,406	7,542332
4	3	2,6	7,7	5,1	8,778	3,80329
5	1	0,8	2,5	1,7	2,85	1,200877
6	1	0,8	0,7	-0,1	0,798	0,051133
7	0	0	0,2	0,2	0,228	0,228
					114	20,53123

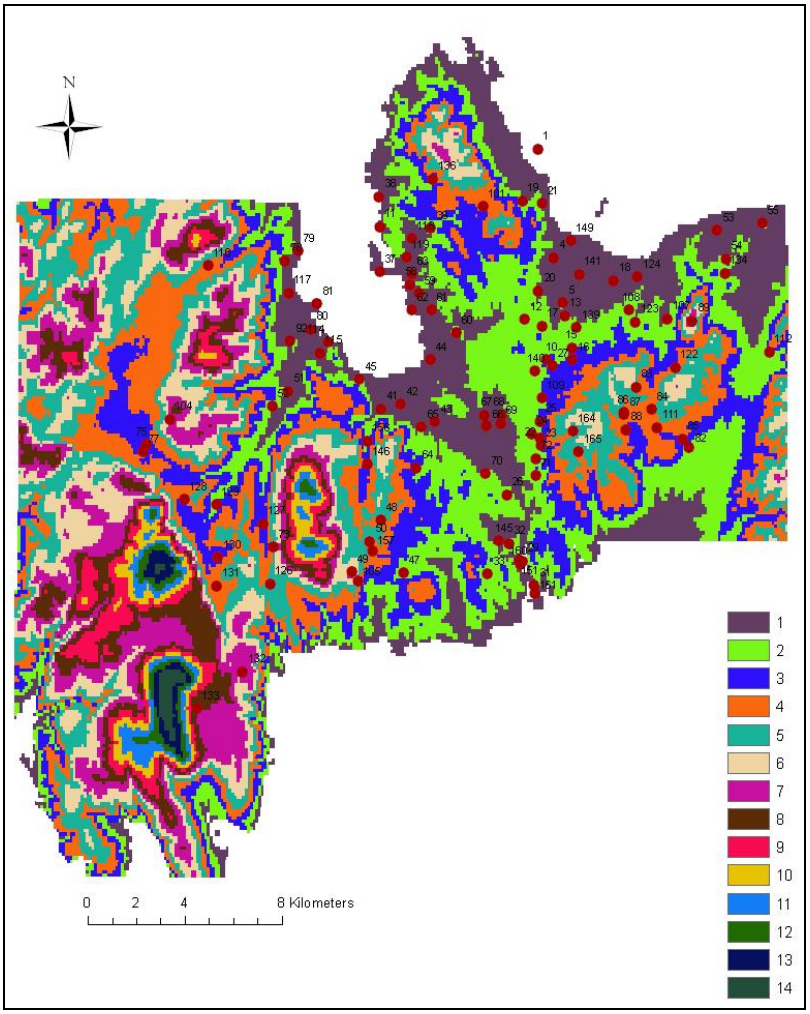
20,53123 > **12,5916** (Sites are <u>not</u> equally distributed across all classes of slope)



Distribution of Roman sites on Aspect Map

Aspect	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	30	26,2	0,3	-25,9	0,342	2571,921
2	4	3,5	4,9	1,4	5,586	0,450304
3	8	7,1	12,1	5	13,794	2,433698
4	20	17,4	16,8	-0,6	19,152	0,037547
5	7	6,2	11,8	5,6	13,452	3,094581
6	8	7,1	9,9	2,8	11,286	0,956743
7	7	6,1	11,2	5,1	12,768	2,605719
8	16	14,1	16,0	1,9	18,24	0,275088
9	9	7,9	12,2	4,3	13,908	1,731986
10	5	4,4	4,8	0,4	5,472	0,040713
					114	2583,547

2583,547 > **16,9190** (Sites are <u>not</u> equally distributed across all classes of aspect)



Distribution of Roman sites on Elevation Map

Elevation	No. Of sites	% of sites	% of Area	Difference	Expected no. Of sites	Chisquare
1	47	41,3	16,5	-24,8	18,924	41,65408
2	25	21,9	17,3	-4,6	19,722	1,412498
3	19	16,7	13,4	-3,3	15,276	0,907841
4	12	10,5	13,9	3,4	15,846	0,933467
5	6	5,4	12,1	6,7	13,794	4,40383
6	1	0,8	9,4	8,6	10,716	8,809318
7	3	2,6	6,9	4,3	7,866	3,010165
8	1	0,8	4,3	3,5	4,902	3,105998
9	0	0	2,4	2,4	2,736	2,736
10	0	0	1,4	1,4	1,596	1,596
11	0	0	1,0	1	1,14	1,14
12	0	0	0,6	0,6	0,684	0,684
13	0	0	0,4	0,4	0,456	0,456
14	0	0	0,3	0,3	0,342	0,342
					114	71,1912

71,1912 > **22,3620** (Sites are <u>not</u> equally distributed across all classes of elevation)

CURRICULUM VITAE

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EDUCATION:

2004-2011 Middle East Technical University, Department of Settlement Archaeology, Ph. D. Program,
Thesis Subject: The Urbanization Process and Spatial Organization in Klazomenian Khora fom Iron Age to Byzantine era.
Supervisor: N. Tuna, Y. Ersoy

2002-2003 Ege University, Institute of Social Sciences, Department of Classical Archaeology, Ph.D. Program, Must and Elective courses are completed.

1998-2002 Ege University, Institute of Social Sciences, Department of Classical Archaeology, MA Program,
M.a. Thesis: Klazomenai Zeytinyağı işliğinin Kullanım Evreleri (Small findings and the dating of Klazomenai Olive Oil Installation)
Supervisor: G. Bakır

1992-1996 Ege University, Faculty of Letters, Department of Classical Archaeology,
Ba Thesis: Klazomenai'de Ortaya Çıkarılan Zeytinyağı İşliği, (Olive Oil Installation at Klazomenai)
Supervisor: Y. Ersoy

1984-1991 American Collegiate Institute in İzmir

EXCAVATION AND SURVEY EXPERIENCES:

Klazomenai 1993-1995 / 1998-2002
Trench Supervisor
(G. Bakır, Ege University)

Kinet Höyük 1995-1999
Illustrator
(M.H. Gates, Bilkent University)

Ephesos 1997
Illustrator
(F. Krinzinger, Austrian Institute of Archaeology, Vienna)

Datça-Burgaz 2004 – 2009
Trench Supervisor
(N. Tuna, METU, Ankara)

Tokat-Komana Survey 2004
Surveyor and Illustrator
(B. Erciyas, METU, Ankara)

Urla and Seferihisar Survey Project (TUBITAK 105K224) 2006-2010
Site Director
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WORK EXPERIENCE:

1996-2004 Professional Tourist Guide (Licensed by Ministry of Culture and Tourism)

1997-2002 Editor and translator of "Rotarian" Magazine published by the Rotary Foundation in Turkey

2003-2011 Middle East Technical University, Settlement Archaeology, OYP Research Assistant

AWARDS AND SCHOLARSHIPS:

2006 ARIT, Turkish Fellowship Program

2007-2008 DAAD, German Academic Exchange Service, Scholarship for Phd. Students, Martin Luther University, Institute for Archaeology (Prof. Dr. A. Furtwaengler)

2007 METU, Graduate School of Sciences, 2005-2006 Graduate Courses Performance Award

FOREIGN LANGUAGES:
English (Advanced)
German (Basic)

SYMPOSIUMS AND WORKSHOPS:

2002 "The Impact of Ionian Migration on Western Anatolian Cultures in the Light of Literary and Archaeological Evidence", *Exogeneous Factors in the Development of Cultures of the Anciet Near East; Interaction and Migration, Freie Universitat Berlin*, Internationales Hauptseminar der Freien Universitat Berlin und Ege Universitat İzmir.

2005 "The Olive Oil Extraction Plant at Klazomenai", *Archaeometry Symposium at METU(Middle East Technical University)*, 11. Mart 2005, Ankara.

2005 "Göç Olgusunun Arkeolojik Materyal ile Tanımlanması: Ion Göçleri Örneği", (The Identification of Migration with Archaeological Material: Ionian Migration as a Case Study), *Mersin University KAAM, Arkeolojide Yerleşim Çalışmaları (Studies in Settlement Archaeology)*, 7.-9. April 2005, Mersin.

2005 "Ionia'da Kentleşme Sürecinde Göçün Etkisi: Ion Göçleri Arkeolojik Materyal ile Tanımlanabilirmi?"(The Impact of Ionian Migraion on the Process of Urbanization in Ionia) *Ankara University, DTCF, Arkeolojik Araştırmalar Sempozyumu*, 27.-29. April 2005, Ankara.

2005 N. Tuna, N. Atıcı, İ. Sakarya, **E.Koparal**, "Burgaz Datça Excavation on the Cnidian Peninsula" (Poster) , *Die Karer und die Anderen, Internationales Kolloqium an der Freien Universitat Berlin*. 13-15 October 2005, Berlin.

2006 **E. Koparal,** "Klazomenian Khora Survey Project: Defining the Urbanization Process in Klazomenai", *BIAA Graduate Work-in-Progress.* 4th December, 2006.

2007 Y. E. Ersoy-**E. Koparal,** "Klazomenai Khorası ve Teos Sur içi Yerleşim Yüzey Araştırmaları", *25. Araştırma Sonuçları Toplantısı*, 28 Mayıs-01 Haziran 2007, Kocaeli.

2008 **E. Koparal,** "Klazomenian Khora Survey Project", *Martin Luther University, Institute of Archaeology, Halle-Wittenberg, PHD Studies and Projects Seminar*,22.12.2008.

2008 **E. Koparal,** "Klazomenian Khora Survey Project", *Amsterdam Vrije University, Department of Archaeology,* 6 March 2008.

2008 **E. Koparal,** "Spatial Organization in Klazomenian Khora", *Bridge: Searchers and Thinkers, Practical and Theoretical Aprroaches from Prehistory to Byzantine Times,Hacettepe University-Ankara,* 17.12.2008.

2008 N. Tuna, N. Atıcı, İ. Sakarya, **E.Koparal**, "Burgaz Antik yerleşiminde İÖ 4.-3. yüzyılda zeytinyağı ve şarap atölyeleri üzerine öndeğerlendirmeler", Mersin University KAAM International Symposium on Wine and Olive Oil Production in Anatolia during Antiquity, 6-8 November 2008.

2008 **E. Koparal,** E. İplikçi, A. Savaş Bakır, **"**Klazomenai Olive Oil Plant: Dating, Reconstruction and Contemporary Use of It", Olive Oil and Wine Production in Anatolia During the Antiquity, Int. Semp. In Mersin-Turkey, 06-08 November 2008.

2008 Y. E. Ersoy-**E. Koparal,** "Urla ve Seferihisar İlçeleri Yüzey Araştırması 2007 Yılı çalışmaları", *26. Araştırma Sonuçları Toplantısı*, 26-30 Mayıs 2008, Ankara.

2009 Y. E. Ersoy-**E. Koparal,** "Urla ve Seferihisar İlçeleri Yüzey Araştırması 2008 Yılı Çalışmaları", *27. Araştırma Sonuçları Toplantısı*, 25-29 Mayıs 2009, Denizli.

2010 Y. E. Ersoy-N. Tuna, **E. Koparal,** "Urla ve Seferihisar İlçeleri Yüzey Araştırması 2009 Yılı Çalışmaları", *28. Araştırma Sonuçları Toplantısı*, Mayıs 2010, İstanbul.

2011 Y. E. Ersoy-**E. Koparal,** "Urla ve Seferihisar İlçeleri Yüzey Araştırması 20010 Yılı Çalışmaları", *29. Araştırma Sonuçları Toplantısı*, Mayıs 2010, Malatya.

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E. Koparal, "Archaic Olive Oil Extraction Plant in Klazomenai", in A. Moustaka, E. Skarlatidou, M.C. Tzannes, Y. Ersoy (eds.), *Klazomenai, Teos and Abdera: Metropoleis and Colony, Proceedings of the International Symposium held at the Archaeological Museum of Abdera (Oct. 2001)*, Thessaloniki 2004, 221-234.

E. Koparal, "Göç Olgusunun Arkeolojik Materyal ile Tanımlanması: Ion Göçleri Örneği" (The Identification of Migration with Archaeological Material: Ionian Migration as a Case Study), *OLBA 12*, November 2005, 1-21.

B. Erciyas-**E. Koparal** (eds), Black Sea Studies Symposium Proceedings, Ege Yayınları, *Settlement Archaeology Series 16-17 April 2004, Ankara, Symposium Proceedings 1*.

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Numan Tuna, Nadire Atıcı, İlham Sakarya, **Elif Koparal**, "Burgaz Kazıları 2005 Yılı Çalışmaları*" 28. Kazı Sonuçları Toplantısı"1. Cilt*, 29 mayıs-' Haziran 2006, Çanakkale, 295-322.

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E. Koparal, "Border Forts of Klazomenai: Cinderesi Fortification", in: R. Einicke S. Lehmann H. Löhr A. Mehnert G. Mehnert A. Slawisch (Hrsg.), *Zurück zum Gegenstand. Festschrift für Andreas E. Furtwängler,* ZAKSSchriften 16 (Langenweißbach 2009), 501-507.

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Oil and Wine Production in Anatolia During the Antiquity, Proceeding of the Int. Semp. In Mersin-Turkey, 06-08 November 2008,Ege Yayınları, İstanbul 2009.

Y. E. Ersoy-**E. Koparal,** "Urla ve Seferihisar İlçeleri Yüzey Araştırması 2008 Yılı Çalışmaları", *27. Araştırma Sonuçları Toplantısı*, 25-29 Mayıs 2009, Denizli.

Y. E. Ersoy-N. Tuna - **E. Koparal,** "Urla ve Seferihisar İlçeleri Yüzey Araştırması 2009 Yılı Çalışmaları", *28. Araştırma Sonuçları Toplantısı*, 25-29 Mayıs 2010, İstanbul.

TURKISH SUMMARY/TÜRKÇE ÖZET

"Urbanization Process and Spatial Organization in Klazomenian Khora from Early Iron Age to Roman Period / Klazomenai Khora'sında Erken Demir Çağı'ndan Roma Dönemi'ne dek Kentleşme süreci ve Mekansal Düzen" başlıklı çalışmanın temel veri kaynağı antik Klazomenai yerleşiminin artalanını oluşturduğu düşünülen yaklaşık 350 km^2'lik bir alanda gerçekleştirilen sistematik arkeolojik yüzey araştırmasıdır. Tezin başlıca amacı yüzey araştırmasından elde edilen verilerin çağdaş arkeolojik kuram çerçevesinde değerlendirilmesi ve böylelikle Klazomenai'de Erken Demir Çağı'ndan Roma dönemine dek uzanan süreçte makro arkeolojik dönemler bazında kentleşme sürecinin açıklanması ve yerleşim düzenlerinin tanımlanmasıdır. Çalışmanın başlıca amaçlarından biri Kuzey Ionia bölgesinde yeralan Klazomenai yerleşiminde kent devleti oluşumunu süreçsel olarak açıklamak ve zamansal olarak başlangıcını belirlemektir. Erken Demir Çağı'ndan Roma Dönemi'ne kadar olan süreçte her dönem için yerleşim kademelenmesinin belirlenmesi ve bunun dönemsel olarak değişimini belirleyen çevresel, ekonomik ve politik faktörlerin açıklanması amaçlanmıştır. Bunun için doğal çevre ile kültürel, sosyal ve politik yapılanma arasındaki karmaşık ilişkilerin tanımlanması ve bu farklı dinamiklerin değerlendirilmesi gereklidir.

Bu amaçların yanında çalışmanın özgün değeri şu şekilde tanımlanabilir: Klazomenai, Teos, Lebedos ve Erythrai'nin bulunduğu Urla-Çeşme yarımadası 1980'lerin başından bu yana modern yapılaşma tehdidi altındadır. Dolayısı ile bu alanda yerleşim hiyerarşisi açısından ikincil derecede

olan ancak arkeolojik kuramsal çerçevede önem taşıyan arkeolojik sitlerin acilen belgelenmesi gerekmektedir. Tez çalışmamın saha çalışması kısmen buna hizmet etmekte olup Klazomenai çevresindeki ikincil yerleşimleri belgelemeye yöneliktir. Bu amaç çerçevesinde bir kültürel envanter veritabanı hazırlanmıştır. Çalışma elde edilen verilerin optimum değerlendirilmesini öngörmekte ve buna yönelik olarak multi-disipliner bir yaklaşımı benimsemektedir. Arkeolojik literatürde genellikle salt yazılı belgeye dayalı olarak yer alan Ion kent-devlet modelini kültürel, politik ve çevresel dinamikler çerçevesinde yeniden tanımlamak ve Ion kent-devletlerinin türdeşliklerini sınamak için Klazomenai özelinde kentleşme sürecine ilişkin kriterleri sorgulamak tez çalışmasının en önemli özgün değerlerinden biridir. Çalışmanın Ionia bölgesinde kent-devlet oluşumuna dair bölgeye ilişkin arkeolojik veri ile teorik bilgileri bütünleştirmeyi amaçlayan yeni bir kuramsal çerçeve oluşturması beklenmektedir.

Çalışmanın öznesini bir Ion *polisi* oluşturduğundan *polis* kavramına ilişkin tartışmalar çalışma kapsamında irdelenmiştir. *Polis* olgusunu kavramsallaştırmak Klasik Arkeolojinin oldum olası en önemli sorunsallarından biridir. Her ne kadar *polis'e* tekabül eden tek bir model oluşturulmaya çalışılmışsa da, Ehrenberg'in söylediği gibi biçim ve gelişim süreci olarak birbirinden oldukça farklı çok sayıda bağımsız kent-devlet *polis* tanımı altında toplanmıştır. *Polis'*in soyut olarak tanımlanması yazılı kaynaklar sayesinde oldukça tutarlı sonuçlar ortaya koyarken, fiziksel karşılığı – yani somut unsurları halen bazı açmazları barındırır. Genel anlamda kentleşme olgusu için önerilen şartların *polis* için de geçerli olduğu sorgulanmadan

kabullenilmektedir. Yerleşim dokusundan okunabilen merkezileşme, maddi kültür ürünlerinin dağılımı ile saptanabilen uzak mesafeli ticaret ve kazı ile ortaya çıkarılan anıtsal mimari ve kamu alanları polisin varlığını belgeleyen somut veriler olarak kabul edilirken, yazılı kaynaklardan bilinen yurttaşlık olgusu, sosyal tabakalaşma ve devlet organizasyonu *polis*'in tamamlayıcı soyut unsurları olarak kabul edilmektedir. *Polis* kavramının antik Yunan çalışmaları için anahtar bir terim olması ve pek çok yanılgıyı içinde barındıran bir kavrama dönüşmesi ise 18. yy.da Avrupa'da Aydınlanma süreci ile beraber düşünsel diskurların dönüşümü ile bağıntılıdır. Fransız devrimi öncesinde sadece Pers tarihinin bir bölümü olarak algılanan antik Yunan tarihi, dönüşen ideolojiler ile birlikte bağımsız bir çalışma alanı haline gelmiştir. Yunan yazılı kaynaklarının tercüme edilmesi de bu döneme rastlar ve genellikle dönemin yükselen ideolojilerine hizmet etmeye yöneliktir. Adam Smith ve John Millar'ın çalışmaları antik çağdan modern döneme uzanan süreci evrimsel olarak tanımlayan ilk çalışmalar olmuş, böylelikle avrupa-merkezli yaklaşımın temelleri atılmış ve antik Yunan tarihinin siyasallaştırılması süreci başlamıştır. Yazılı metinlerde sıkça *polise* ilişkin olarak sözü geçen yurttaşlık kavramı dönüşüm içindeki düşünsel diskurların temel odağını oluşturmuştur. Fransız devrimi ve Sanayi devrimi ile yeniden şekillenen politik, ekonomik ve sosyal yapılanma ile milliyetçilik ve Avrupalı kimliği ortaya çıkmıştır. 19. Yüzyılda sanayi devrimi ile beraber Avrupa'nın doğu ülkeleri karşısındaki tartışılmaz teknolojik üstünlüğü düşünsel alanda karşılığını doğudan hiçbir miras alınmadığı ve Avrupa toplumlarının temelinin antik Yunan uygarlığına dayandığı iddiasını yaratmıştır. Doğu tüm dünya tarihinin statik parçası olarak

tanımlanırken, antik Yunan uygarlığı evrim gösteren batı uygarlığının organik bir parçası halini almıştır. Xenophon'un Hellenika'sı Yunan ulusal tarihinin temelini oluşturan eser olarak kabul edilmiş, böylelikle antik Yunan tarihi, coğrafi olarak Kıta Yunanistan'a; zamansal olarak ta Solon'dan Aristoteles'e uzanan bir sürece sıkıştırılmıştır. Klasik Arkeolojinin *polis* ve Helen uygarlığına ilişkin yanılgılarının temelini bu oluşturur. Tüm Akdeniz'de ve hatta Karadeniz'de geniş bir coğrafyaya yayılmış olan Helen toplulukları koloniler olarak tanımlanmakla yetinilmiş, Yunan tarihinin organik bir parçası olamamışlardır. Kuşkusuz bunun başlıca sebebi Grek *koine'*sinin tümüne ilişkin yazılı belgenin azlığıdır. Ancak öte yandan Helen topluluklarının birbirinden farklı oluşumlar gösterdiği ve bununda en çok Akdeniz ve Karadeniz'deki farklı kültürlerle özellikle Yakın Doğu ile kurulan ticari ve kültürel ilişkiden kaynaklandığı gerçeğinin avrupa-merkezli düşünce ile uyuşmazlığına bağlı olduğu da açıktır.

De Fustel kentleşmeyi bir dizi devrim ile şekillenen ve gelişim gösteren bir süreç olarak tanımlar. Meyer, Beloch ve Rostovtzeff'in çalışmaları ile *polis* daha geniş bir perspektif ile Doğu Akdeniz bağlamında tanımlanmaya çalışılmıştır. Ancak bu çabaların hiçbiri *polis*'in kent tartışmaları içindeki yerini sarsamamış ve Yunan çalışmalarında *polis*, kent ve uygarlık ile türdeş bir kavram olarak algılanmıştır. Ne Minos ve Miken uygarlıklarının keşfi ne de bu uygarlıklara ait Helenli olmayan öğeler bu algıyı değiştirebilmiştir.

Polis antik çağda dönüşen bir kavram olmakla beraber günümüzde de *polis* çalışmaları çerçevesinde sentetik olarak evrilmeye devam etmektedir. *Polis* oluşum süreci ile bağıntılı olarak kentleşmenin süreçsel olarak

tanımlanması çabaları pek çok yanılgıyı barındırır. Tek bir merkez yerleşime bağlı ikincil yerleşimlerden oluşan düzenli yerleşim dokusu; kent planının oluşması dolayısı ile konut alanları, kamu alanları, üretim alanları, kutsal alanlar ve mezarlıklar gibi farklı işlevlere sahip alanların düzenlenmesi; savunma duvarının varlığı; vergi listelerinde yeralmak ve sikke basmış olmak her koşulda kentleşme sürecinin tamamlandığını göstermez. Ancak kuşkusuz merkezileşmenin ve kurumsallaşmanın varlığını ortaya koyar. Dolayısı ile polis çalışmalarında bu iki süreç, yani kentleşme ve merkezileşme birbirinden ayırt edilebilmelidir. Ancak antik kaynaklarda *polis* olarak adlandırılan tüm yerleşimlerin –antik çağda da evrilen bir kavram olduğu göz önünde bulundurularak- *polis* olduğu kabullenilmelidir. Zira *polis'in* kentleşme ile türdeş kullanımı günümüze özgü bir yanılgıdır. Diğer bir deyişle Helenlerin *polis* tanımı ile günümüz tarihçilerinin tanımı arasında büyük fark vardır. Helenlerin *polisi* hem topluluk hem de yerleşim için kullanmış olması bilinçli bir seçim olmalıdır.

Polis'in varlığını sürdürmesi her şeyden çok ekonomik koşullarla en başta da tarım ve denizaşırı ticaret hacmi ile ilişkilidir. Ancak her *polis'*in ekonomiye bağlı iç dinamikleri birbirinden farklıdır. Bu farklılık doğal olarak tüm *polis*'lerin aynı ekonomik hacim ve işleyişe sahip olmadığını ve *polisler* arasında bir hiyerarşinin varolduğunu ortaya koyar. Tüm dönemler ve birbirinden bunca farklı coğrafyalar için tek bir *polis* modeli önerilemez. Bazı *polis*'ler için merkezi kurumların yanısıra elit bir vatandaş grubunun varlığından sözedilebilse dahi nüfusun geri kalanının kentli olmasını gerektirmez. Nüfusunun büyük çoğunluğu çiftçi olan ve ekonominin ticaretten

ziyade tarıma dayalı olduğu bir *polis* için kentleşmeden ziyade merkezileşmenin varlığından söz edilebilir.

Ion *polis*'leri de politik olarak bir birlik oluşturmuş olup belki birlik içinde eşit siyasi koşullara sahip olmakla beraber farklı ekonomik şartlara sahip olmuş olmalıdır. *Auterkia* antik Yunan dünyasında ekonomik yeterlilik anlamına gelir. *Polis*'in ilk ortaya çıktığı süreçte gelenek ve politik koşullar önemli bir rol oynamış olabilir. Ancak Attika Delos birliği vergi listelerine bakıldığında bir yerleşimin *polis* olarak tanımlanabilmesi için Atina'nın çıkarlarına uymakla beraber ekonomik olarak bağımsız olması yeterliydi. Her ne kadar savunma duvarı, anıtsal mimari ve kamu alanlarının varlığı arkeologlar için *polis*'in somut unsurları olarak kabul görse de ekonomik bağımsızlık antik dünyada en geçerli ölçüt olmalıdır. Ancak arkeolojik kontekstte ekonomik bağımsızlığı saptamak anıtsal mimari, kamu alanları ve sur duvarlarını belirlemekten çok daha zor ve karmaşık bir süreçtir. Bunun için merkez yerleşimlerin *khora*'sının iyi tanımlanması, arazi kullanımı ve tarımsal faaliyetlerin belirlenmesi çağdaş arkeolojik kuram çerçevesinde *polis*'in tanımına ilişkin en önemli ölçütlerdir. Bu tanımları yapmak ve açıklamak ise ancak sistematik arkeolojik yüzey araştırması ile mümkündür.

Aristoteles *Politika* adlı eserinde (VII, 1326.b29) son derece ütopik bir yaklaşımla bir Grek *polis*'inin ekonomik olarak tamamen bağımsız olduğundan ve teritoryasında gerekli tüm kaynak ve ürünlere sahip olduğundan söz eder ve *auterkeia* terimini kullanır. Ancak Kıta Yunanistan'da sözgelimi en güçlü *polis* olan Atina'nın coğrafi konumu, tarıma elverişililiği ve doğal kaynakları düşünülecek olursa bu iddia gerçeklikten çok uzaktır. Buna göre Aristoteles'in

sözleri belki de yeniden yorumlanmalıdr ve ekonomik bağımsızlığın sadece maddi kaynaklarla elde edilmediği ancak ulaşılan teknolojik seviye, yaşam standartı, geçim koşulları ve toplumsal örgütlenmenin ekonomik bağımsızlıkla ve dolayısı ile *polis* oluşumu ile birebir bağıntılı olduğu düşünülmelidir. Finley'in Grek *polisi* için önerdiği ekonomik modelin geçerliliğini yitirmesi büyük ölçüde coğrafi ve zamansal farklılıkları göz ardı etmesinin yanısıra ticaretin ekonomideki payını küçümsemesindendir. Kenti üretici olmaktan ziyade tüketici olarak konumlandırmış ve kentleşme sürecini ekonomik bir gelişim olarak tanımlamaktansa kültürel bir süreç olarak açıklamayı yeğlemiştir.

Polis ve *khora* çalışmaları genellikle kırsalın merkez yerleşimi desteklediği ve merkez yerleşimin varlığını bu sayede sürdürdüğü üzerine kurgular üretmiştir. Bu ortaçağ avrupasının ekonomik modellerinin benimsenmesinin yarattığı bir yanılgı olmalıdır. Gerçekte antik dünyada *khora* ile *polis* ayrımının olması mümkün değildir, zira *polis* hem merkezi hem de teritoryayı kapsayan bir kavramdır. Arkeolojik metodolojinin merkez ve kırsalı ayırması doğal olmakla beraber merkez yerleşime dair süreçlerin açıklanabilmesi için kırsal alanın iyi tanımlanması gerektiği de açıktır. Bu çalışma 1980'li yılların başından beri arkeolojik kazıların sistemli bir biçimde yürütüldüğü Klazomenai yerleşiminde kentleşme süreci, ekonomik bağımsızlık, nüfus ve arai kullanımına dair bazı sorunsalları açıklayabilmek adına yerleşimin art-alanında gerçekleştirilen sistematik arkeolojik yüzey araştırmalarının sonuçlarının bir değerlendirmesini sunmaktadır.

Klazomenai İzmir iline bağlı Çeşme-Karaburun yarımadasında yeralmakta ve komşularını diğer Grek *polisleri* Teos, Smyrna ve Erythrai oluşturmaktadır. Bunlar arasında en kapsamlı kazısı yapılan Klazomenai'dir. Kentleşme sürecinin açıklanması ve art-alanındaki yerleşim kademelenmesi ve düzenin belirlenmesinde merkez yerleşimde yürütülen arkeolojik kazıların sonuçları da bütünleyici veri olarak kullanılmış ve art-alanına dair elde edilen sonuçlar merkez yerleşimden elde edilen sonuçlar ile kıyaslanarak sınanmıştır.

Urla – İskele mahallesinde yer alan merkez yerleşimde yürütülen kazı çalışmaları Erken Arkaik dönemden itibaren kent planının düzenli bir biçimde oluşturulmaya başlandığını ve savunma duvarının inşa edildiğini, ticarete yönelik üretim yapıldığını Geç Arkaik dönemden itibaren üretim alanları ile iskan alanlarının belirgin biçimde kent dokusu içinde birbirinden ayrıldığını ve düzenlendiğini, tarımsal faaliyetlerin artı üretime geçtiğini tarım ürünlerinin ticari meta olarak pazarlandığını ortaya koymuştur. Dolayısı ile merkez yerleşimde yürütülen kazı çalışmaları Klazomenai'de merkezileşme sürecinin ve kentleşme sürecinin başlangıcına ilişkin olarak bir terminus sunmaktadır.

Çalışma kapsamında farklı veri türleri kullanılarak Klazomenai khorasının sınırlarına dair br öneride bulunmak mümkün olmuştur. Sınanmaya açık bir öneri olmakla beraber Ion *polis*'lerinin teritoryasının coğrafi bir birim olduğu düşünülebilir. Sınırlar her ne kadar politik ve ekonomik koşullara bağlı olarak değişken olsa da doğal sınırlar çoğu zaman değişmemekte ve yerleşimin politik sınırını da belirlemektedir. Bunun en önemli sebebi kuşkusuz antik dönem teknolojisinin doğaya müdahale etme yetisinin sınırlı olmasındandır.

Nitekim Klazomenai *khora'*sının çekirdeğini oluşturan alanı sınırlayan doğal topogafik sınırların ekonomik ve politik sınırlar içinde geçerliliğini koruduğu anlaşılmıştır. Klazomenai *khorası* batıda Balıklıova'dan Kırandağı'na uzanan yüksek tepeler ve akarsular ile sınırlanırken, doğu sınırını yükseklikleri 300 m.yi bulan Çiftlikdağı, Değirmendağ, Pertevpaşa dağı, Kocadağ, Sivricetepe ve Çalıtepe oluşturmaktadır. Strabon Teos ve Klazomenai'nin Erythrai'yi anakaraya bağlayan kıstak üzerinde yeraldığından sözeder. Erythrai ile Klazomenai arasındaki sınırın ise kıstağın sona erdiği alanda, sıcak su kaynaklarının bulunduğu Hypokremnos'ta olduğunu anlatır (XIV:31-C 644). Bölgede çalışan bilim adamları çoğunlukla Hypokremnos'u Urlanın kuzey kıyısında yeralan İçmeler olarak lokalize etmişlerdir. Ancak topografik yapıyı baz alarak önerdiğimiz sınırların başka tür datalarla sınanması sonucunda ortaya çıkan sonuç Hypokremnos'un İçmeler değil Güzelbahçe olabileceğini ortaya koymuştur. Strabon'un tarifine uygun olarak önerdiğimiz alanda doğal sıcak su kaynağı üzerine inşa edilmiş bir Roma dönemi yapısı bulunmaktadır. Klazomenai'nin daha ziyade kuzey denizinde etkin olduğu güneyde ise hegemonyanın güçlü komşusu Teos'un elinde olduğu anlaşılmaktadır. Bilinen iki antik yazıt bu görüşü desteklemektedir. Her iki yazıtta sınır anlaşmazlıklarına ilişkindir. İlk yazıt Kos'ta Askylepion'da elegeçmiş olan mermer bir steldir ve MÖ 4. Yüzyılın son çeyreğine tarihlenmektedir. Yazıtta Teos ve Klazomenai arasında ortaya çıkan bir sınır anlaşmazlığından ve buna ilişkin olarak koan yargıçlarının çözümünden sözedilmektedir. Sözkonusu anlaşmazlık MÖ 301'den önce Antigonos'un yönetiminde gerçekleşti ise şayet konunun Teos ve Lebedos'un synoikismosu ile ilişkili olması muhtemeldir. Bu

süreçte Teos teritorya sınırlarını genişletme hevesine kapılmış olabilir. Ancak Teos ve Klazomenai arasında anlaşmazlığa neden olan yerleşimin neresi olduğu yazıtta belirtilmemiştir. Ancak bizim önerimiz bu yerleşimin bugünkü Demircili'de bulunan Aerae olduğudur. Zira Strabon'da Teos'un Klazomenai yönünde son yerleşiminin Ereae adında bir yer olduğundan sözeder.

Diğer yazıt Berlin Statliche Müzesinde bulunan ve MÖ 2. Yüzyılın ilk yarısına tarihlenen ve olasılıkla Klazomenai'de bulunmuş olan mermer bir blok üzerinde yeralmaktadır. Her iki yüzünde farklı dekretler bulunur. İlk yüzde dorik dialektte Knidos'tan gelen yargıcın kararı yeralırken, diğer yüzünde Temnos ve Klazomenai arasında yapılan anlaşmanın metni yeralmaktadır. Temnos ve Klazomenai arasındaki anlaşmazlığın, Klazomenai'lilerin Temnos'a ait kutsal alana saldırdığı iddiasından çıktığı anlaşılmaktadır. Ancak Temnos bu iddiayı doğrulayacak kanıt gösteremediğinden Knidos'lu yargıç Klazomenai hakkındaki suçlamayı düşürmüştür. Bu yazıttan açıkça anlaşılacağı gibi Klazomenai, adalarıda kullanarak Kuzey denizi kontrol etmekteydi. Bu hem ticari hem de savunma açısından oldukça önemli bir strateji olmalıydı ve körfezin hemen diğer yakasındaki Temnos'luları iftira atma raddesine getirecek kadar rahatsız etmişti. Zira İzmir körfezinin kontrolü bugünde olduğu gibi büyük önem taşımaktaydı.

Sınırların belirlenmesine yönelik olarak kullandığımız diğer veriler teritoryada savunma sistemi ağı, kült merkezlerinin konumlanması, antik peyzajda tümülüslerin konumlanışı ve nihayet sınır işaretlerinin dağılımıdır. Sivricetepe kalesi (54) Güzelbahçe mevkiinde Smyrna ile Klazomenai arasındaki sınırı koruyan kaledir. Üzerinde ortaçağa ait bir kale ve şapelin izleri

bulunmaktadır. Ancak yaptığımız çalışmalarda duvar temelinin daha erken tarihlerde inşa edildiği anlaşılmıştır. Yüzey buluntuları Tunç çağından Bizans dönemine dek uzanan uzun bir kullanım sürecine işaret eder. Kuzeybatıda alçak volkanik bir tepe üzerinde yeralan poligonal duvarlı yapı Cinderesi kalesi (78) olarak adlandırılmıştır. Tepenin Gülbahçe körfezine hakim konumdaki doğu yüzü yumuşak eğimli bir yamaçtır ve duvarlar ile çevrilidir. Arka yüz ise çok sarp olduğundan doğal olarak korunmaktadır. Kale içinde anakaya üzerine işlenmiş bir takım tesislerin izlerine rastlanmıştır. Kalenin hemen yakınındaki düzlükte yeralan yaklaşık 3 ha.lık yerleşim yüzeyde az sayıda seramik ile temsil edilmektedir. Bu alanın kale ile bağlantılı bir *phrourion* yani bir garnizon olduğunu düşünmekteyiz. Yüzey buluntusu bu tepeninde stratejik konumundan ötürü Tunç çağından Bizans dönemine dek savunma amaçlı kullanıldığına işaret etmektedir. Klazomenai'nin kuzey denizine bakan sınırı ise Dubatepe (1) ile korunmaktadır. Bu yöndeki deniz trafiği bu tepe üzerinden kontrol ediliyor olmalıdır. Yüzeyde 10x8 m.lik bir yapının izleri bulunmakta ve denize bakan yüzde duvar kalınlığı 1.5 m.ye ulaşmaktadır. Hacıgebeş tepesi (52) Klazomenai'den Gülbahçeye uzanan yol üzerinde yeralır. Tepe bugün alüvyonla dolmuş olan derin dar bir körfeze hakimdir. Tepe üzerinde Geç Tunç Çağı-Erken demir çağına ait bir mezarlık ve yüksek kayalık bir alandan oluşan savunma tertibatı bulunmaktadır. Klazomenai'den Erythrai'ye uzanan yolu kontrol etmek için önemli bir konuma sahiptir. Kaçak kazıcılar tarafından açılan mezarlardan elegeçen buluntular Geç Tunç Çağı ve Erken Demir Çağı'na ait olmakla beraber yüzey buluntusu Arkaik, Klasik, Helenistik, Roma ve Bizans dönemlerine aittir. Yemişliboğaz (49) hava fotoğraflarından surlu bir

yerleşim izlenimi veren bir alandır. Ancak bu alanda yapılan çalışmada Güney denizine hakim yüksek bir tepelikte yığma taşlardan oluşan basit bir duvarla çevrili 2 ha.lık bir alan olduğu anlaşılmıştır. Yüzey buluntusunun çok az olduğu bu alan acil durumlarda geçici iskan olarak kullanılmış, savunmaya yönelik bir yapılanma olmalıdır. Yarentepe (28) savunma duvarı ile tahkim edilmiş 4 ha.lık bir yerleşimdir. Konum olarak Güney denizine açılan ve Teos'un karşısında bulunan Çobanpınarı vadisine hakim durumdadır. Yüzey buluntuları Orta Tunç Çağından Helenistik döneme dek uzanmaktadır. Akçahisar (33) güneyde bugün büyük ölçüde tahrip edilmiş ancak yine de varlığı izlenebilen bir tahkimat duvarına sahip bir kale olup Klazomenai *khora*'sının güneydoğu sınırında konumlanmaktadır. Klazomenai'nin çevresindeki savunma sistemi ağını oluşturan kale ve gözetleme alanlarının konumları topografyaya bağlı olarak önerilen sınırlar ile örtüşmektedir.

Kırsal alanlarda yeralan kült alanlarının konumlarının *polis* nüvelerinin oluşum sürecinde yerleşimler arasında sınırlara işaret ettiği De polignac tarafından ortaya atılmış ve pek çok örnekle sınanmış bir modeldir. *Khora'*ların sınır uçlarında bulunan kült alanlarının bilinçli olarak seçildiği böylelikle kırsal ile merkezin bütünleştirildiği ve birkaç *polis* tarafından kullanılan ortak alanlar oldukları önesürülmüştür. Klazomenai çevresinde merkezden uzak kült alanları yine önerilen sınır uçlarında konumlanmaktadır. Söğüt kült mağarası (73) 20 m. yüksekliğinde 11 m. genişliğinde bir galeriden oluşan doğal bir mağaradır. Mağaranın içinde doğal yüzeye oyulmuş taht biçimli bir kabartma ve bunun üzerinde bir haç vardır. Ancak dikkatli incelendiğinde kabartmanın üzerindeki haçın daha sonradan şekillendirildiği anlaşılmaktadır. Büyük olasılıkla

kabartmanın orijinal şekli bölgede yaygın olan taht üzerinde oturan Kybele figürüdür. Kuşkusuz bunu arkeolojik olarak ispatlamak mümkün değildir. Ancak mağarada galeri içinde ve önünde bulunan yüzey malzemesinin hristiyanlık döneminden çok önce prehistorik dönemlere dek uzanması mağaranın çok erken dönemlerden itibaren kült alanı olarak kullanıldığını gösterir. Mağaranın önünde yeralan düzlüğün Helenistik dönemde Alexander oyunlarının düzenlendiği alan olması Strabon'un tarifini göz önünde bulundurmak sureti ile mümkündür. Inkaya mağarası (89) Smyrna ile sınır oluşturan Kocadağ üzerinde bulunur. Mağarada elegeçen çok sayıda adak kandili ve kaplar Prehistorik dönemden yakın geçmişe dek bu alanın bir kült merkezi olduğuna işaret eder. Köytepe (74), Uzunkuyu-Zeytinler mevkiinde sık makilik ve çam ağaçları ile kaplı bir tepedir. Tepenin kuzey yamacı otoban inşası sırasında tahrip edilmiş olup kesitten antik döneme ait stratigrafinin varlığı izlenebilmektedir. Yüzey buluntusu da görünürlük çok sınırlı olmasına rağmen sayıca fazladır ve Arkaik dönemden Helenistik döneme uzanan bir sürece işaret etmektedir. Tepe üzerinde kaçakçılar tarafından açılmış bir 4. Yüzyıl mezarının yanısıra duvarları yüzeyden kolaylıkla izlenen 15x7 m.lik bir yapının temelleri belgelenmiştir. Köytepenin Erythrai ile Klazomenai arasında bir tapınım alanı olması muhtemeldir. Yazıtlardan yine bu alanda Korykos (Kırandağ) dağı civarında bir Kybele kültünün varolduğu ve kahin kadınların bu alanda yaşadığı bilinmektedir. (Pausanias) Son zamanlarda Erythrai yüzey araştırmalarında elegeçen Kybele steli bunu doğrular niteliktedir. Önceki yıllarda alanda yürütülen yüzey araştırmalarından bilinen bir başka kült alanı Kokar (Korykos) körfezindedir. Korunaklı küçük bir liman olan bu körfez

antik çağda doğal bir limandır, yakın tarihte 2. Dünya savaşında aynı amaçla kullanılmıştır. Körfezin hemen üzerinde yeralan İnceburun tepesi üzerinde denizden yaklaşık 150 m. yükseklikte bir mağara bulunmaktadır. Mağaranın dar girişi yaklaşık 30 m. genişliğnde bir galeriye açılır. Toplam 40 m. boyunca birbirine bağlı galerilerden oluşan mağara içinde çok sayıda Erken Arkaik döneme ait seramik elegeçmiştir. Buluntular arasındaki üç yüzlü Hekate figürinleri sayıca fazla olup buranın bir Hekate tapınım alanı olduğunu düşündürür.

Sözünü ettiğim bu kült alanları haritaya işlendiğinde yine önerilen sınırlar ile örtüştüğü görülmüştür. Tümünün erken Arkaik dönemde kullanım görmüş olması bölgede merkezileşme sürecinin Erken Arkaik dönemde başladığı önerisi ile de tutarlılık göstermektedir.

Arkaik dönem tümülüslerinin konumlanışı antik dönem peyzajını tanımlayan bir diğer olgudur. Tümülüsler özellikle Arkaik dönem bağlamında toplumun ileri gelenlerinin gömüldüğü anıt mezarlardır ve arazideki konumlanışları bilinçli seçimlere dayanmış olmalıdır. Yüzey araştırmaları sonucunda belgelenen tümülüslerin bir kısmının yerleşimin *asty*'sini sınırlarken diğerlerinin sınır uçlarında yüksek tepelik alanlarda konumlandığı anlaşılmıştır. Dubatepe (19), Nalbanttepe (2), Kocadere (121), Dörtyoltepe (5), Üçdeğirmen (17) ve Bozavlu (21) tümülüsleri asty çevresini sınırlarken Adatepe (43), İçmetepe (45), Yemişliboğaz (49), Hacıgebeş (52), Hırsızçeşme (41), Andız (106) tümülüsleri teritora sınırlarında yeralmaktadır.

Son olarak yüzey araştırmaları sonucunda belgelenen üç adet sınır işaretinin konumlanışı da önerilen sınırları onaylar niteliktedir. Arazide belirgin büyük kayalar üzerine yazılan bu sınır işaretlerinden ilki Tatarderesi ile Söğütderesi'nin kesiştiği yüksek tepeliktedir, ikincisi yine bundan fazla uzakta olmayan Tatarderesi mevkiindedir. Her iki sınır işareti de Klazomenai'nin Erythrai ile olan sınırını göstermektedir. Belgelenen üçüncü sınır işareti ise Teos ile olan sınırı göstermektedir ve İhsaniye'nin kuzeyinde Balıklıdere mevkiinde yeralan yüksek tepeliktedir. Sınır işaretlerinin gösterdiği sınırlar daha önceden topografya ve yazılı kaynaklara bağlı olarak belirlenen sınırlar ile örtüşmektedir. Böylelikle *khora*'nın değişmez çekirdek arazisinin sınırlarının gerçeğe en yakın şekilde tespit edildiği düşünülmektedir.

Çalışmanın temel amacı Klazomenai'nin art-alanında belgelenen merkeze bağlı ikincil yerleşimlerin dönemler için yerleşim kademelenmesi, mekansal düzeninin ve arazi kullanımının belirlenmesi; böylelikle nüfus değişimleri ve arazi potansiyeline ilişkin bilgi üretilmesi ve tüm bu verilerin kullanımı ile Klazomenai'nin Erken Demir Çağı'ndan Roma Dönemi'ne kadar süren tarihsel sürecinde kentleşme ve merkezileşme kavramlarını süreçsel olarak açıklayabilmek ve bir kurgu oluşturabilmektir. Kuşkusuz bu kurgu bölgede yürütülen sistematik arkeolojik yüzey araştırmasından elde edilen verinin elverdiği ölçüde gerçeğe yakın olacaktır. Bu kurgunun değişkenliği temelde iki nedenden ötürüdür. İlk olarak çalışma alanı 1980'li yılların başından bu yana yoğun olarak kentleşmenin izlendiği bir bölgedir ve bu da antik sitlerin hızla tahrip olması ile sonuçlanmaktadır. Dolayısı ile yüzey araştırması ile elde edilen veri bütün ve eksiksiz bir manzaraya tekabül

etmekten uzaktır. İkincisi yüzey araştırması metod olarak pekçok sapmayı doğasında barındırmaktadır. Klazomenai *khora*'sını oluşturan 350 kilometrekarelik alanın tümü ekstansif yöntemle taranmış olmakla beraber ancak % 13'lük bölümünde intensif yüzey araştırması gerçekleştirilmiştir. Bu da kentleşmeye bağlı tahriple beraber çalışma alanında tüm antik sitlerin belgelenmemesine engel teşkil eden bir başka sebeptir. Sonuç olarak bölgede gerçekleştirilen yüzey araştırmaları ile optimum düzeyde belgelenme yapılmış olmakla beraber hem işin doğası hem de bölgenin durumundan ötürü tümüyle bütüncül bir veriye sahip olmamızın mümkün olmadığı ortadadır. Bu bağlamda sözkonusu çalışma Klazomenai *khora*'sında yeralan merkeze bağlı ikincil yerleşimlerin mekansal düzeni ile ilişkili bir öneri ve ya bir kurgu sunmaktadır.

Tarım potansiyeli antik yerleşimler için ekonomik yeterliliğinin sınanması, nüfus değişimlerinin belirlenmesi ve yerleşim düzenlerinin tanımlanması açısından en önemli değişkenlerden biridir. Arazi potansiyeli genellikle antik topluluklar ve yerleşimler için genellikle sadece temel tahıl ürünlerinin yetiştirildiği ve buna bağlı olarak tek tip diyetin varolduğunu öngörerek hesaplanır. Bu çalışmada toprak türü, toprak kalınlığı ve yamaç eğimi başlıca parametreler olarak kullanılmış ve Klazomenai *khora*'sının %36,6'lık kısmını oluşturan 12,800 ha.lık alanda tahıl tarımı yapıldığı varsayılmıştır. Ancak bu hesaplama Klazomenai için tarımdan daha önemli yaygın olan teras tarımını hesaba katmamaktadır. Oysa tarım terası yani şarap ve zeytinyağı üretimi dış ticaret yolu ile 1'e 3 oranında ekonomik hacim artışına yolaçmaktadır. Terasların varlığı ile beraber özellikle Arkaik dönem içinde belirlenen ticari amphora üretiminin artışı Klazomenai'de teras tarımının

yaygın olduğunu ve elde edilen şarap ve zeytinyağının ticari meta olarak pazarlandığını ortaya koyar. Teras tarımının hesaba katılması ile ulaşılan sonuç Klazomenai *khora*'sının tarım potansiyelinin yaklaşık 39,000 kişiyi besleyebileceğidir.

Nüfus hesaplamaları için başlıca üç yöntem kullanılmış ve bunlardan aslında sadece bir tanesi benimsenmiştir. Diğer yöntemlerin kullanılması sadece sınama amaçlıdır. İlk yöntem kentli nüfusun %60'ının yerleşim merkezini daimi olarak iskan ettiğini nüfusun %40'ının ise kırsal yerleşimlerde yaşadığını öngörür. Bundan yola çıkarak yerleşim merkezinin büyüklüğünü sabit değer olarak alıp hektar başına 150 insan düştüğünü hesaplayarak kırsal nüfusun hesaplanmasına dayanır. Bir diğer yöntem ikincil yerleşimler için yerleşim kademelenmesini gözardı ederek yine hektar başına 150 insan düştüğünü öngörür ve yerleşim merkezinde yaşayan kentli nüfusun sabit değer olarak eklenmesi ile bir sonuca ulaşır. Ancak her iki yöntemde kanımca doğru sayısal sonuçlara ulaşamayı engelleyen sapmalar taşımaktadır. Bu nedenle benimsediğimiz yöntemde kırsal yerleşimlerin yerleşim kademelenmesi gözönünde tutulmuş, çiftlik, mezra ve köyler için hektar başına farklı değerler kullanılmıştır. Hesaplanan kırsal nüfus yerleşim merkezi için öngörülen sabit değer ile toplanarak sonuca ulaşılmıştır. Kırsal nüfus değerleri tüm yerleşimlern aynı anda iskan edilmediğini öngörerek 0.75 düzeltme faktörü ile çarpılmıştır. Her üç metod ile elde edilen dönemsel nüfus değerleri aynı oranda nüfus artışı ve nüfus azalmalarına işaret eder.

Sonuçlara göre Geç Geometrik dönem için öngörülen nüfus sayısı en fazla 2700-4000 kişiden fazla değildir. Erken Arkaik döneme geçişte makul bir

nüfus artışı gerçekleşmiştir. En önemli nüfus artış oranı Geç Arkaik dönemde yaşanmış olmalıdır ki bu dönem Klazomenai'nin kentleşme süreci için bir dönüm noktası teşkil etmektedir. Mö 5. Yüzyıl Klazomenai tarihinde politik karmaşanın hüküm sürdüğü ve yerleşim merkezinin anakaradan Karantina adasına taşındığı dönemdir. Yüzey araştırmaları bu döneme tarihlenen çok az sayıda ikincil yerleşim belgelemiştir. Ancak bu tarihleyici kriterin sadece yüzey buluntusu olarak seramik olmasından kaynaklanıp yanıltıcı sonuçlar doğurmuş olması muhtemeldir. Yüzey araştırması sonuçlarına göre Geç Arkaik dönem olarak tanımladığımız MÖ 6. Yüzyılın sonundan MÖ 5. Yüzyıla geçişte kırsal nüfusun 2/3'ü Klazomenai topraklarını terk etmiştir. Geç Klasik dönem olarak tanımladığımız MÖ 4. Yüzyıla geçişte nüfus tekrar Geç Arkaik dönemdeki sayısına ulaşmıştır. Helenistik dönem nüfusu Geç Klasik dönemden belirgin bir farklılık göstermemektedir. Aynı durum Roma dönemine geçişte de sözkonusudur. Sonuç olarak önemli nüfus artışlarının izlendiği dönemler Geç Arkaik dönem ve Geç Klasik dönemdir. Bu durum Klazomenai'nin politik tarihçesi ve idari gelişimi ile tutarlılık göstermektedir.

Her dönem için merkeze bağlı ikincil yerleşimlerin yerleşim düzeninin tanımlanması Klazomenai için polis oluşum süreci, kentleşme ve kurumsallaşma açısından önemli sonuçlar ortaya koymuştur. Bu çalışmada kurumsallaşma ve kentleşme farklı politik olgular olarak irdelenmiş ancak *polis* oluşum sürecinin alt süreçleri olarak tanımlanmıştır. Kurumsallaşma ya da digger bir deyişle devlet oluşumu tabakalaşmış bir örgütlü toplumun varlığı ile doğrudan bağıntılıdır. Bu da hem yerleşim merkezinde hem de kırsal alanda yerleşim dokusu ile yansımaktadır. Kurumsallaşma ya da devlet oluşumunun

Klazomenai için Geç Geometrik dönemde başladığı ve Erken Arkaik dönemde gerçekleştiği söylenebilir. Yerleşim merkezinde tahkimat duvarının inşası ile belirlenirken kırsal alanda sınırların bilinçli olarak savunma sistemi, ritüel peyzajın oluşumu ile tanımlanmaktadır. Diğer yandan kentleşme sürecinin başlangıcı yerleşim merkezinde düzenli kent planı ile tanımlanırken kırsal alanda ikincil yerleşimlerin tüm khora'ya dağılması ve bunun belli bir idari system içinde kontrol altına alınması ile yansımaktadır. Buna bağlı olarak Geç Arkaik dönemde kırsal yerleşimlerin büyük *demes* benzeri yerleşimler ile idari kontrolü kentleşme sürecine ile bağıntılı yeni bir idari sistemin varlığına işaret eder.

Nüfus hesaplamalarında elde edilen sayısal değerler, tarım potansiyeli için belirlenen maksimum değeri hiçbir dönemde aşmadığından Klazomenai'nin tarım ve yine tarım ürünlerine dayalı dış ticaret ile kendi kendine yeten bir kent devlet olduğunu ortaya koymaktadır.

Orta büyüklükte bir *polis* olarak Klazomenai'nin ekonomisi temel olarak tarıma dayalı olmakla beraber yine tarım ürünlerinin ihracına dayalı dış ticaret önemli bir girdi oluşturmaktadır. Ticari amphora üretimi kapasitesi ve coğrafi dağılımı, kentin yerleşim alanının dışına taşınmış endüstriyel alanların varlığı Geç Arkaik dönemde ticaretin Klazomenai ekonomisindeki önemini açıkça ortaya koymaktadır.

Geç Geometrik dönem ise büyük ölçüde topografik yapı ile belirlenen ve kırsal alanın değişmez çekirdek alanını oluşturan bölgenin bilinçli olarak korunmaya başlandığını ve sahiplenildiği dönemdir. Geç Geometrik dönem yerleşimlerinin çoğu yerleşim merkezi etrafında odaklanmıştır, geri kalanı ise

kırsal alanın sınırlarında yeralmaktadır. Geç Geometrik dönemden itibaren kullanılan merkez dışındaki kült alanları *khora*'nın bilinçli olarak düzenlenmeye başlandığını ve sınırlara sahip çıkıldığını gösterir.

Geç Geometrik döeneme tarihlenen yerleşimlerin hiçbiri 10 ha.'I geçmemektedir. Bunların tümü dağınık düzende mezra ya da köyaltı yerleşimdir. Bu nedenle ne yerleşim merkezinde ne de kırsal alanda kentli nüfustan sözedilemez.

Geç Geometrik dönemden Erken Arkaik döneme geçiş ikincil yerleşimlerin sayısındaki belirgin artış ile tanımlanmaktadır. Ancak yine de Erken Arkaik dönem yerleşimlerinin hiçbiri birincil derecede yerleşim değildir. Yerleşim sayısındaki artış yerleşim büyüklüğündeki artış ile beraber olmadığından kentleşme süreci ile ilişkili bir gelişme değildir.

Yerleşim yeri seçimi açısından morfolojik olarak bir değişimden sözedilemez. Yerleşimlerin % 50-60'ı tepe yamaçları ve alçak tepeler üzerinde yeralmaktadır. Morfolojik olarak ovalar ikinci sırada tercih edilmiştir. Aslında yerleşim seçiminde morfolojik olarak belirgin bir değişim Geç Geometrik dönemden Roma dönemine dek izlenmemektedir.

Yerleşim seçiminde toprak türü açısından Geç Geometrik dönemden Erken Arkaik döneme geçişte bir değişim sözkonusudur. Erken Arkaik dönemde yer seçiminde tarımsal elverişlilik önemli bir parameter olmuştur.

Geç Arkaik dönem kentleşme süreci açısından bir dönüm noktası teşkil etmektedir. Yerleşim sayısı ve yerleşimlerin büyüklüğü belirgin biçimde artmıştır. Kırsal alan yaygın bir biçimde kullanılmaya başlanmış ve *demes* benzeri büyük yerleşimler ile control edlerek yeni bir idari siste

oluşturulmuştur. Sayısı 8'I bulan bu yerleşimler kırsal alanda düzenli bir dağılım göstermektedir.

Mö 5. Yüzyıl hem yüzey araştırması sonuçları hem de kazı sonuçları açısından tanımlanması en karmaşık dönemdir. Dönemin politik konjünktürü le ilgili olarak hem yerleşim sayısında hem de kırsal nüfusta belirgin bir azalma sözkonusudur.

Geç Klasik dönem kırsal alanın tekrar yaygın biçimde iskanı ve buna bağlı olarak yerleşim sayısının belirgin artışı ile tanımlanır. Yerleşim düzeni açısından en önemli farklılık çiftlik yerleşimlerinin çoğunun köy ölçeğinde yerleşimler tarafından soğurulmasıdır. Dağınık yerleşim düzeni yerine nüveleşmiş yerleşim düzeni ortak tarım alanlarının kullanımına işaret ediyor olmalıdır. Bu süreç Helenistik dönemde de sürmüş sinoikismos yolu ile küçük yerleşimler birleşerek büyük köy yerleşimlerini oluşturmuşlardır.

Roma dönemi içinse yerleşim düzeni tamamen farklıdır. Öncelikle yerleşim sayısındaki artış çok belirgin olup sayısı 105'e yükselmiştir. Kırsal alanın düzenini sağlayan *demes* benzeri yerleşimler iskan edilmeye devam edilmiş olsalıkla aynı fonksiyonu sürdürmüşlerdir. Ancak Geç Klasik dönem ve Helenistik dönemin aksine dağınık düzendeki çiftlik ve köyaltı yerleşimlerin sayısı artmıştır.